PART B

Final Environmental Impact Statement

For:

Modified Belleayre Resort at Catskill Park

Towns of Shandaken and Middletown
Ulster and Delaware Counties
New York

Applicant:
Crossroads Ventures, LLC
PO Box 466 (6 Galli Curci Road)
Highmount, NY 12441

Lead Agency:
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Contact: Mr. Daniel Whitehead
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Date of Acceptance of SDEIS: April 17, 2013
Date of SDEIS Public Hearing: May 29, 2013
Close of SDEIS Comment Period: July 24, 2013
Date of Acceptance of FEIS: September 2, 2015

September 2015

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Involved Agencies:
NYSDOH
NYSDOT

NYCDEP
Town of Shandaken Planning Board
Town of Middletown Planning Board
Ulster County Department of Health
Ulster County Bridges and Highways

Interested Agencies:
Ulster County Planning Board
Delaware County Planning Board
US Army Corps of Engineers
Delaware River Basin Commission

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Changes made to the Preliminary FEIS subsequent to the July 10, 2015 Decision and Ruling of the Commissioner are indicated within this FEIS. The changes consist, in part, of revised information that staff were directed to include in the FEIS. Additions are indicated as underlined text and deletions are indicated as ~~strikethrough text~~.

TABLE OF CONTENTS

Exhibit 1	SDEIS Public Hearing Transcript (on CD)
Exhibit 2	Written Public Comments on SDEIS (on CD)
Exhibit 3	DEIS Comments and Responses (Transcripts and Comments) (on CD)

EXECUTIVE SUMMARY

1.0 Introduction

This Final Environmental Impact Statement (FEIS) has been prepared on a project proposal for the Modified Belleayre Resort at Catskill Park (the "Project' or "Modified Project"). The New York State Department of Environmental Conservation (NYS DEC), as the lead agency for the SEQRA review of the Modified Belleayre Resort at Catskill Park has required the preparation of this FEIS in accordance with the SEQRA regulations. The Supplemental Draft Environmental Impact Statement (SDEIS) was accepted as complete on April 27, 2013, a public hearing was held on May 29, 2013, and the public comment period on the SDEIS closed on July 24, 2013. This FEIS incorporates the SDEIS by reference.

The FEIS addresses in the following responsiveness summary all of the comments on the SDEIS. The Transcript of the public comments made at the public hearing on May 29, 2013 is attached as exhibit 1. All of the written comments received during the public comment period are attached as exhibit 2. As a result of the public comments and involved and interested agency reviews, a number of changes have been made to the project, particularly in the area of stormwater management. All of these changes are set forth in the Errata Section of this document and any revised reports or relevant correspondence can also be found in this Errata section.

It is also important to note that while the project evaluated in the SDEIS was greatly changed in comparison to the original project evaluated in the DEIS, there are a few comments from the review of the DEIS that could pertain to the Modified Project. The major change to the project evaluated in the DEIS is that the entire Big Indian component was eliminated and the 1,200 acres at Big Indian was added to the NYS Forest Preserve. Some of the development components from Big Indian were relocated to Highmount as part of the project that was the subject of the SDEIS. To ensure that this FEIS remains focused on the most recent public comments, any "hold-over" comments are addressed in exhibit 3 and are keyed to the administrative proceedings that were previously held in connection with the original project. Since the Big Indian Plateau portion of the project, the most controversial aspect of the original project, has been eliminated, only those comments that pertain to the modified project and to issues previously identified by the NYSDEC Commissioner as subject to adjudication (Crossroads Ventures, LLC - Interim Decision, December 29, 2006) are further addressed herein.

1.1 Background

The Modified Project represents the Applicant's preferred alternative that has been shaped by the Issues Conference and NYSDEC Commissioner's Decision on the Issues to be Adjudicated, the 2007 Agreement In Principle (AIP)[1], the environmental studies undertaken as part of the SDEIS,

[1] The issues conference hearing parties received encouragement to meet and attempt to narrow the issues for adjudication and potentially agree upon an alternative project design that would address the issues identified for adjudication Over a period of several months, the Project Sponsor, the NYCDEP, the State of New York, the Watershed Inspector General and all of the groups that had requested and been awarded party status participated in the development of the revised project design contained in the AIP. However, when the AIP was executed in September, 2007, not all of the hearing parties executed the final AIP. http://www.dec.ny.gov/permits/54704.html

involved and interested agency review and public comment. The continuing goal of the design of the Modified Project, among others, is to avoid steep slopes and to consolidate project facilities to avoid and mitigate potential environmental impacts. The Modified Project has incorporated in its design all of the mitigation measures set forth in the AIP and additional measures developed in the SDEIS and this FEIS. The Modified Project advances a reasonable and feasible alternative project design that minimizes or avoids potentially significant adverse environmental impacts previously identified in regard to the original proposed Belleayre Resort project. The Modified Project will continue to provide important economic and social benefits. The table set forth below lists the original elements of the project and the major revisions to the project that occurred after the AIP and that were included in the SDEIS. For an overall history of the project please see sections 1.2A, 1.3B and 2.6 of the SDEIS.

The following table provides comparative statistics for the DEIS project and the Modified Project evaluated in the SDEIS.

Table ES-1 Comparison of DEIS and Modified Projects

Project Component	DEIS Project	SDEIS Project	Difference	Difference (%)
total project site size (ac.)	1,960	739	-1,221	-62%
acreage to be developed	573	218	-355	-62%
acreage added to Forest Preserve	0	1,189	1,189	N/A
conservation easement lands (ac.)	0	203	203	N/A
number of lodging structures	121	29	-92	-76%
hotel lodging units (#)	400	370	-30	-8%
single family home lots	21	0	-21	-100%
overall density (units and rooms/acre)	0.38	0.85	0.47	124%
total length of roads (mi.)	8.2	1.5	-6.7	-82%
length of roads on >20% (mi.)	5.1	0.1	-5.0	-98%
impervious surfaces (ac.)	85	21	-64	-67%
golf courses	2	1	-1	-50%

- The size of the project, in terms of its total size as well as the area to be developed, has been reduced by over 60%. The size of the project, in terms of its number of lodging structures, has been reduced by over 70%.
- The size of the project, in terms of its total number of lodging units, has been reduced by 143 units or 19%.
- The size of the project in terms of its single family homes has been reduced by 100%.
- The length of proposed roads and the total amount of proposed impervious surfaces have been reduced by 82% and 67%, respectively.
- Roads on lands with slopes greater than 20% have essentially been eliminated.
- Nearly 1,200 acres of land formerly proposed for development are now in State ownership to become New York State Forest Preserve lands.
- 203 acres of land (the Adelstein parcel) have been placed in a Conservation Easement held by the City of New York.

In addition the following qualitative improvements are also accomplished by the proposed Modified Project.

- With the exception of a very small portion of the Wildacres site (+/- 12 acres), stormwater discharges to the sensitive Ashokan Reservoir and Watershed Basin have been eliminated.
- Detached lodging units proposed to be built only on slopes less than or equal to 20% will provide significant stormwater management benefits for this project primarily by reducing the potential for erosion and sedimentation during project construction
- Impacts to views from the Wilderness Area lands in the Forest Preserve have been eliminated.
- Two previously proposed private wastewater treatment plants have been eliminated, and treatment is now consolidated at NYCDEP's Pine Hill WWTP.
- Revised plans for water supply for the Project no longer include the Rosenthal wells eliminating potential impacts to Birch Creek.
- The Big Indian Golf Course has been eliminated and the remaining Highmount Golf Club Golf Course was reconfigured to minimize and avoid wetland and stream impacts. Moreover, it will be managed in accordance with an Organic Golf Course Management Plan developed in concert with representatives of the environmental parties to the AIP.
- The Wildacres Resort, Highmount Spa Resort and detached lodging units will be designed and constructed with green building design elements set forth by the United States Green Buildings Council. Crossroads is committed to obtaining Silver or higher rating under the Leadership in Energy and Environmental Design ("LEED") program, for the Wildacres Hotel, Highmount Hotel and Highmount Lodge building.
- The design of the stormwater facilities at the Wildacres Resort maximizes the use of stormwater runoff for irrigation of the golf course,
- Financial security will be provided to ensure that construction stormwater and sediment and erosion control are carried out in conformance with NYSDEC and NYCDEP permits.

2.0 Proposed Actions

The following is a summary description of the major components of the Modified Project. Where there have been changes as a result of agency review and public comment after the acceptance of the SDEIS these changes have also been described.

2.1 Modified Project Design and Layout

Any updated project plan drawings are included in the updated Site Plans in the Errata section of this FEIS. From an overall standpoint, the project design and layout did not change substantially for this FEIS. The following design changes are reflected in the current plans.

- The road improvement plans for County Route 49A have been supplemented with details showing additional flow rate controls and erosion protection measures at culverts, ditches and flow paths.
- Contributing drainage areas to all design points below the Highmount Ski Area have been confirmed and corrected where needed.
- All work areas have been updated to include all areas of disturbance.
- Rock outlet protection has been added to include all swale, pipe and basin discharge points.
- Additional wetland protection fencing is proposed.

2.2 Overall

The project still consists of two development areas; Wildacres Resort (Wildacres) and Highmount Spa Resort (Highmount) both located to the west of Belleayre Mountain Ski Center (BMSC). Wildacres is planned to be a 3.5-4 star, 4-season resort with a focus on outdoor recreation such as golf, skiing, tennis, swimming and hiking. The Wildacres Hotel is proposed across from the upper entrance to the Ski Center and the proposed new Belleayre West lift. Highmount is planned to be a 5-star, 4-season resort focused on spa and wellness center facilities and providing ski-in/ski-out access to BMSC trails. The westernmost portion of the project site, known as the Adelstein parcel, has been put under a Conservation Easement granted to the City of New York. There are no plans for use of the Adelstein parcel at this time.

The following table, "Project Development Summary," provides a general description of the different areas of the project site and the development proposed for the different areas.

Table ES-2 Project Development Summary

Project Area	Hotel/ Units	Detached Units	Other Improvements	Golf or Ski
Wildacres				
NE Corner, Front 9 Village	0/0	94	Clubhouse, Pool, Tennis (2)	6 Holes
North of Gunnison	0/0	0	Golf Maintenance	2 Holes
Main Parcel	1/250	69	Golf Clubhouse with Hotel, Parking Garage, Marlowe Clubhouse, Tennis (2)	10 Holes, Lift nearby
Wilderness Activity Center	0/0	0	Wilderness Activity Center in Existing Buildings	Lift Nearby

Highmount				
Main Parcel	1/120	96*		3 Trails, Lift
North of CR 49A	0/0	0	None	None
West of CR 49A	0/0	0	Conference/Additional Space	None
Adelstein Cons. Easement	0/0	0	None	None

* 80 of the 120 detached units at Highmount allowed under the AIP are fractional units that are housed within the multi-level hotel/spa and lodge buildings. There are 16 detached units in 8 buildings.

2.3 Highmount Spa Resort

The following are the development components proposed at Highmount.

1. Main Hotel/Spa Building – located in the northwest portion of the parcel this building has a footprint of 299,117 square feet and has 6 horseshoe-shaped levels intersecting with the upward slope of the ground topography.
    a. 120 hotel rooms
    b. 53 fractional lodging units within the building
    (formerly East and West Lodge in the AIP)
    c. Café and sundry shop
    d. 125-seat restaurant
    e. 50-seat lounge
    f. Spa-30 treatment rooms, lap pool, cafe
    g. Fitness facilities
    h. Executive conference center with 3 conference rooms, one board room and one large meeting room

2. Adjacent Lodge Building – located to the southwest of the hotel/spa building and across the entrance driveway this building has a footprint of 51,887 square feet and has 4 levels.
    a. 27 fractional lodging units within one building[2]
    b. 1 common room for owners (card room, library or the like)
    c. 16 Detached Lodging Units[3] –

3. 12,000 square feet Auxiliary Conference/Clubhouse functions west of County Route 49A. This will be an adaptive reuse of the Leach Farm buildings within an overall footprint of approximately 7,300 square feet.

[2] formerly individual detached units in the AIP

[3] The AIP allows for up to 120 detached lodging units. Eighty (80) of these are no longer detached, but instead are now proposed as fractional units located within the hotel/spa and lodge buildings, and there are now only 16 detached units located below the hotel/spa in 8 duplexes (2,500 sf). The remaining 24 detached lodging units allowed at Highmount under the AIP have been relocated to the Wildacres Resort as part of the Modified Project which represents the Applicant's preferred layout.

4. Skiing
   a. Lift from hotel/spa building to the top of old Highmount
   b. Trails – two down from the top of old Highmount, and one from the hotel/spa down to the bottom of old Highmount.

5. Driveway access off of County Route 49A to hotel/spa, lodge and detached units – 1,580 feet (0.3 miles) long.

6. Parking
   a. 310 covered spaces within hotel/spa building
   b. 31 covered spaces within the Lodge building
   c. 1-car garage and 1 surface parking space per unit at each detached unit (total spaces = 32)

2.4 Wildacres Resort

The following are the development components proposed at Wildacres.

1. 250 unit hotel with a footprint of 4.0 acres and has 8 levels that step down the hillside across County Route 49A from the upper Ski Center entrance. See subsection D for building information.
   a. Resort-related shops up to a total of 13,000 square feet
   b. Two restaurants one with 150 seats and one with 300 seats
   c. 100-seat beverage lounge
   d. Indoor Pool
   e. Two Tennis Courts
   f. Full Service Spa with 15 treatment rooms and a grotto pool
   g. Fitness Center
   h. Conference Center with 500-seat ballroom/auditorium
   i. 200-seat ballroom
   j. Eight meeting rooms

2. Existing Marlowe Mansion to be adaptively reused as a social club for detached lodging unit guests, and resort operational offices.
   a. Library
   b. Meeting Rooms
   c. Game Rooms
   d. Reception, sales and operations office space

3. Highmount Golf Club – located on two areas north of Gunnison Road and on the main parcel south of Gunnison Road.
   a. 18-hole championship organic managed golf course
   b. Practice range and practice green
   c. Clubhouse connected to the Hotel (footprint size included with hotel size provided above)
      (1) 40-seat snack bar

(2) Pro shop
(3) Cart storage
(4) Locker rooms with steam and sauna

d. Maintenance Facility
(1) +/- 1,500 sf offices, restrooms, lockers, break room
(2) +/- 4,800 sf maintenance area – garage bays, mechanic space, storage, etc.
(3) +/- 1,000 sf organic fertilizer and pesticide storage area
(4) covered wash down, rinse/recovery area
(5) 2 +/- 1,000 gallons above ground fuel storage tanks

e. Two on-course restroom buildings

4. 163 detached lodging units (2 and 3-bedrooms) in multiple-unit buildings clustered in the northeast portion of the site and near the hotel. In the northeast corner of Wildacres is the area known as the Front-9 Village that has a total of 94 units contained in 11 buildings. Ten (10) of these 11 buildings contain a third floor unit that was added in after the units were removed from the upper part of Highmount. Around the Wildacres Hotel are the other 69 detached units at Wildacres. Collectively these consist of 7 buildings and are referred to as the West Village. Each of the 7 buildings in the West Village contains two third-floor units. Originally these units were proposed for the upper portion of Highmount; these units have been relocated and the plans showing them as on the upper part of Highmount is no longer the preferred alternative. One of the units in the building closest to the driving range will be used for Resort-operations.

5. Clubhouse and recreation amenities for detached lodging unit occupants in the Front-9 Village. Footprint is 4,720 square feet.
a. 40-seat snack bar
b. Outdoor swimming pool
c. Health club
d. Game rooms
e. Reception, sales and operations office
f. Two tennis courts

6. Wilderness Activity Center – adaptive re-use of former Highmount Ski Area buildings along County Route 49A.
a. Existing main lodge building of Highmount Ski Area
(1) Café with lounge and library
(2) Locker rooms and weight training room
(3) Jacuzzi, sauna and steam room

b. 20-feet addition to existing main lodge
(1) inside rock climbing wall
(2) outdoor rock/ice climbing wall
(3) enlarged outdoor deck

c. Existing ski rental shop – outdoor products sales and rental shop
d. Staff to include guides to direct Resort guests to other off-site recreational uses including hiking, fishing, mountain biking, tubing, among others.
e. Shuttle access for Resort guests (Wildacres and Highmount)

7. Roads (all roads are internal and will be privately maintained)
   a. Access connecting County Route 49A and Gunnison Road – 4,511 feet
   b. Connector to detached lodging units near 16th Fairway – 1,029 feet
   c. Front 9 Village Access off County Route 49A – 1,889 feet

8. Driveways
   a. Hotel driveway off of County Route 49A across from upper entrance to Ski Center
   b. Connection between hotel and parking garage
   c. Golf maintenance access off of Gunnison Road
   d. Wilderness Activity Center shuttle access off County Route 49A
   e. Driveways to detached lodging units.

9. Parking
   a. Under hotel-250 covered spaces
   b. Parking garage – 208 covered spaces
   c. Golf clubhouse – 72 surface spaces
   d. Golf maintenance-18 surface spaces
   e. Front-9 Village-45 surface spaces
   f. Detached Units – 173 covered (under building) spaces & 70 surface visitor spaces

2.5 Stormwater Management Design Updates

Stormwater management has been re-designed for the Modified Project in order to ensure that the Project meets the latest updates to the NYSDEC and NYCDEP stormwater regulations. Specific measures were listed in the previous section. The most up to date Stormwater Management Design Report that addresses all of the public and agency comments can be found in the Errata section. The overall goal of the revised stormwater management plan was to incorporate stormwater management as part of the overall project design. This includes protecting the site's natural resources and environmentally sensitive areas, minimizing development impacts and impervious areas by using effective site planning principles, and incorporating design features that effectively manage stormwater runoff such as green roofs, bioretention areas and an irrigation pond that captures water for re-use. The plan utilizes these elements in order to achieve the primary goal of meeting water quality objectives, while at the same time mitigating potential impacts associated with increased stormwater runoff. Specifically, the objectives of the stormwater management plan are to enhance the quality of stormwater runoff to prevent water quality degradation, and preserve water quality in receiving water bodies including New York City water supply reservoirs, promote infiltration and evapotranspiration, and to prevent increased runoff from developed land to reduce the potential for flooding, erosion and flood damage.

Phosphorus loadings in runoff were recalculated for the Modified Project. Under existing conditions it is estimated that the site produces 89.4 kg of phosphorus per year. Under the developed conditions, including the proposed stormwater management practices, phosphorus export is in runoff estimated to be 148.9 kg, or an increase of 59.5 kg per year. In any case, the total phosphorus export in runoff for the DEIS project was 346 kg per year. To put these numbers in perspective, during the Issues Conference it was established that the annual production of phosphorus in excrement from a single dairy cow is approximately 34 kg. Thus, the Modified project's increase in phosphorus loading from stormwater runoff is approximately equivalent to the waste of 2 dairy cows as opposed to the DEIS project and its 10 cow equivalent increase in phosphorus loading from stormwater runoff.

The vast majority of additional phosphorus in project stormwater runoff occurs in the Pepacton watershed. Phosphorus from project wastewater is discharged from the Pine Hill WWTP in the Ashokan watershed. Phosphorus loading from the Modified Project wastewater has been estimated to be 111 kg per year.

3.0 Environmental Setting, Potential Impacts and Mitigation Measures

Section 3 of the SDEIS provided full discussion of these topics. The remainder of this section focuses primarily on the topics and issues for which updated information is provided in the FEIS.

3.1 Surface Waters Including Aquatic Habitats

See Section 2.5 above regarding stormwater management.
Section 3.1 of the FEIS addresses a number of issues that were raised in regards to trout and trout habitat. Section 3.1 includes an explanation of how the potential for thermal impacts has been minimized through proper stormwater management practice selection in accordance with the NYSDEC Stormwater Management Design Manual. More detail is also provided about the minimization of impervious areas in the drainages of potential trout habitat. There is also elaboration on the topic of heritage strain brook trout and how the historic stocking of Catskill streams has resulted in heritage genetics only being feasible in only the most remote and inaccessible streams in the Catskills.

3.2 Groundwater Resources

The FEIS contains no material changes to this section. See DEIS section 3.2 for a discussion of this subject.

3.3 Soils

The FEIS contains no material changes to this section. See DEIS section 3.3 for a discussion of this subject.

3.4 Terrestrial and Aquatic Ecology

As per section 3.1 above, the FEIS provides additional information regarding trout and trout habitat.

3.5 Traffic

An updated traffic impact study was completed for the SDEIS. The traffic impact study assessed the project's effects during the worst case condition: recent winter peak hour for existing traffic which is Saturday afternoons when skiers are leaving BMSC.

Approximately 60% of the trips generated by the resort during the peak hour will be trips between the resort and BMSC. Of these trips, it is estimated that 90% will use the resort's shuttle system or utilize ski-in/ski-out facilities. Approximately 168 cars would be added to the road system from the resort during the Saturday afternoon peak.

The analysis of traffic levels indicates that some roadway improvements should be installed in order to improve traffic movements. These include constructing a right turn lane on County Route 49A to facilitate right turns onto NY Route 28 eastbound towards Kingston. A left turn lane would be constructed on NY Route 28 to facilitate left hand turns off of NY Route 28 and onto County Route 49A towards the resort and BMSC. A three-phase traffic signal would also be installed at the NY Route 28/County Route 49A intersection.

The entrance to Wildacres Hotel is proposed to be located along County Route 49A across the road from the BMSC upper driveway. Because of existing sight distance problems in this location, this section of County Route 49A will be improved with reconstructed vertical and horizontal curves. As part of this reconstruction a center left turn lane from County Route 49A into the BMSC upper driveway and into the Wildacres Hotel will be added to County Route 49A.

The section of County Route 49A above the BMSC upper driveway will also be improved in order to widen the road and to alleviate some existing limitations due to horizontal and vertical curves. The vast majority of the proposed improvements are necessary under the existing baseline conditions. Currently, drainage controls along the section of County Route 49A near the Highmount Ski is apparently inadequate during heavy storm events. As part of the road improvements to County Route 49A proposed in this area, drainage improvements will be made to alleviate these currently inadequate drainage conditions. Larger rip-rapped drainage swales will be installed along the side of County Route 49A and the culverts that currently carry water under the road will be replaced by larger culverts set at the proper elevations. These drainage improvement plans were reviewed in the field with engineers from Ulster County Department of Public Works Highways and Bridges Division who agreed that the proposed measures would improve drainage along this section of County Route 49A.

A typographical error in Figure 3.8 of the SDEIS Traffic Impact Study has been corrected and the corrected version is included in the Errata section.

3.6 Visual Resources

The FEIS evaluates potential visual impacts from the Highmount Spa Resort on the nearby Galli Curci Mansion. Analyses of topography and vegetation along with photographs and mapping are provided in the Errata section of this FEIS that demonstrate that the proposed hotel will not visually impact the Galli Curci Mansion.

3.7 Noise

The FEIS contains no material changes to this section, but citations to sources of analysis methodologies have been provided to clarify information provided in the SDEIS. See SDEIS section 3.7 for a discussion of this subject.

3.8 Land Use and Planning

The project is an allowed use requiring special use permit approvals from the Shandaken and Middletown Planning Boards in accordance with the current zoning regulations of both Towns. At this time it is believed that no variances are required for the project. Should the need for a variance be identified during the local review processes, the appropriate application materials will be filed. Project review is currently underway in both Towns.

3.9 Socioeconomics

Socioeconomic studies of the Modified Project by HVS and Ragatz Associates were updated and are included in the Errata section of this FEIS.

The FEIS contains a November 2013 HVS Feasibility Study and Sensitivity Analysis, Proposed Belleayre Resort at Catskill Park. Several comments on the SDEIS expressed support for a smaller project. However, the updated HVS report concluded "that the only logical and economically feasible approach to the development of the subject property calls for the construction of both resort components. Only the entirety of the subject resort (rather than Wildacres alone) can generate the critical mass in terms of market awareness that is necessary to overcome the limitations associated with the surrounding area".

In March 2013 Ragatz Associate issued "The Shared Ownership Resort Real Estate Industry in North America: 2013. The Executive Summary of this report is included in the Errata section. In this study it is acknowledged that economic conditions for the most part are less positive prior to 2008. However, this 2013 study notes the measureable improvements and positive trends since the depth of the country's economy in 2009, including those in: (a) the stock market; (b) the housing market; (c) consumer consumption; (d) unemployment rates; (e) consumer confidence; and (f) manufacturing. The country is on the road to recovery, and there is no longer a "long-term major decline in the U.S. and global economies". High income households once again are spending on high-cost discretionary products, including resort real estate. It also is noted that all components of the resort real estate industry have been rebounding over the past 12 months throughout most of the U.S. There has been a 13 percent gain in time share sales in the past three years with a reported $6.9 billion in sales for 2012 according to the American Resort Development Association. Ragatz Associates believes as much in the success of Belleayre Resort in August 2013 as was stated in May 2008 Ragatz Feasibility Report

3.10 Community Services

The FEIS contains no material changes to this section. See SDEIS section 3.10 for a discussion of this subject.

3.11 Global Climate Change and Carbon Footprint

A correction was made to the greenhouse gas generation from the project. The following is an excerpt from section 3.11 of the FEIS Responses to Public Comment section.

The proposed emissions of CO_2e from heating sources during operations should be reported as 32,808 tpy based on propane as the heating fuel. The value of 15,725 tpy of CO_2e disclosed in Table 2-3 of Appendix 28 in the DGEIS for all heating sources was based on natural gas and is not applicable to propane. This represents an increase in reportable emissions of 17,083 tpy. This would raise the total emissions from all sources (heating, hot water, vehicles, etc.), as reported in Table 2-6 of the DGEIS, from 25,053 tpy CO_2e to 42,136 tpy CO_2e. This is still below the major source threshold of 100,000 tpy CO_2e. The impacts would also be reduced by the proposed mitigation, but it is not feasible to quantify those reductions. Although natural gas would generate lower CO_2e emissions, it was determined that natural gas is not an alternative, as the closest natural gas pipeline is 35 miles away and the utilities have no plans to extend a line toward the site.

3.12 Air Quality

The FEIS contains no material changes to this section. See SDEIS section 3.12 for a discussion of this subject.

3.13 Cultural Resources

NYS Office of Parks, Recreation and Historic Recreation (OPRHP) has determined that the Modified Project will not have any adverse impacts on cultural resources. OPRHP will be consulted when more detailed plans for the adaptive reuse of the Marlowe Mansion and the Leach Farm buildings are available.

In their September 13, 2013 letter, a copy of which is included in the Errata section, OPRHP states the following. “As part of this evaluation several historic resources were identified within the project study area. These features included several properties that were determined to be eligible for inclusion in the National Register of Historic Places and the Amelita Galli-Curci Estate, which is listed on the National Register.”

"On January 6, 2003 and again on December 4, 2009 Ken Markunus of our staff (now retired) determined that the original and then modified project would have No Adverse Impact on the historic resources that were identified as part of the review process. An evaluation of the 2011 plans, found in the SDEIS, would indicate that these previous findings remain valid."

3.14 Catskill Forest Preserve

The FEIS contains no material changes to this section. See SDEIS section 3.14 for a discussion of this subject.

4.0 Alternatives

The following table provides a comparison of the plan that was the subject of the DEIS, the plan that was developed as part of the AIP, and the preferred alternative plan.

Table ES-3
Comparison of DEIS Plan, AIP Plan Alternative and the Preferred Alternative Plan

Project Component	DEIS Project Plan	AIP Plan Alternative	Preferred Alternative Plan
total project site size (ac.)	1,960	739	739
acreage to be developed	573	235	218
acreage added to Forest Preserve	0	1,189	1,189
conservation easement lands (ac.)	0	203	203
number of lodging structures	121	58	29
hotel lodging units (#)	400	370	370
detached lodging units (#)	351	259	259
overall density (units/acre)	0.38	0.85	0.85
total length of roads (mi.)	8.2	2.6	1.5
length of roads on >20% (mi.)	5.1	1.1	
impervious surfaces (ac.)	85	27	21
golf courses	2	1	1

4.1 Eliminating Entire Highmount Development

The Errata section of this FEIS contains an expanded assessment of the No-Highmount Alternative. Responses to public comments can be found in subsection 5.0 of that section of the FEIS.

See section 3.7 above in regards to the HVS revised market study and HVS' conclusion that a "Wildacres-only" project is not a viable alternative.

The proposed Modified Belleayre Resort at Catskill Park is an integrated singular development project. Although it's major components (Highmount Golf Club, Wildacres Resort and Highmount Spa Resort) are physically separated to the north and west of BMSC they are connected by County Route 49A.

This Scoping Document prescribed alternative involves reducing the size of the project by pursuing development of the Wildacres component of the project only. The intended purpose of such an alternative would be to eliminate the physical disturbance in total to one tract of land and thereby avoid the potential environmental impacts associated with site development. This alternative would result in the following:

- approximately 42 acres less project site disturbance;
- approximately 3 acres less project site impervious area; and
- approximately 328,000 cubic yard less of project site earthwork.

However, as examined in detail for the proposed action, it is noted that the extensive investment in terms of site design and construction planning already minimize or avoid environmental impacts associated with the full construction of the site, especially with the Modified Project having removed the upper portion of the access road on steep slopes and the elimination of the higher elevation units, i.e. the AIP Plan Alternative.

The applicant asserts that from a market demand standpoint the proposed project cannot consist of either portion of the project standing alone individually. The project must make an approach to the broadest segment of the market. The project must be of sufficient scale and quality to make a recognizable impact of the target market's impression of the area. The project must offer a variety of activities and facilities to accommodate all members of the family and all levels of proficiency at the various activities.

HVS is the leading national consulting firm providing appraisal and financial consulting services to the hotel industry. HVS examined the potential development of the Belleayre Resort by examining detailed estimates of initial project costs and future revenues and expenses once the Resort was operational. By relating the financial performance of the Resort (i.e., net income after expenses) and then relating this performance to the initial cost of the development, the project's return on initial investment can be measured.

The HVS study provides detailed projection of income based on all revenue producing components of the project (i.e., room charges, food, golf, spa, retail sales, conference fees) applying regionally adjusted industry benchmarks in terms of rates, occupancy, and golf rounds played. Expenses, also benchmarked to industry standards, included fixed costs (i.e., property taxes, insurance, operating reserves) and variable operating costs (including labor, supplies, marketing, administrative, fees, and others). Income and expense streams over the 10 year analysis period were adjusted based on historical inflation trends as calculated by the Consumer Price Index and an average rate of 3 percent per year was utilized.

The marketability and demand-based viability of the proposed project requires the full breadth of project components, including both hotels to fully cover the marketplace from a 3 to 5 star hotel, a golf course, fractional interest and time share units. As analyzed by HVS Consulting Services, this market-driven need for all components to be considered as an integrated whole, is also reflected in the financial performance of the proposed project

Based on this financial analysis as well as their in-house market data and review of other documents prepared for the Belleayre Resort project, the HVS Consulting study concludes that the proposed project – namely, full development of all project components – is the only feasible and viable approach. This is based on the following findings:

- Critical mass is essential to attracting sufficient patron demand and market awareness for the Resort. This is critical to overcome the current limitations of the surrounding area.
- Economies of scale generated by operating efficiencies resulting from managing the two facilities together is important to providing enough expense sharing which contributes to the overall feasibility of the project.
- Elimination of market segmentation, thereby allowing for both middle and top elements of the target marketplace to create customer base.

The *No Build Highmount Alternative* is not considered a reasonable or feasible alternative based on the information on market and financial viability presented in the SDEIS and the FEIS. It is unlikely that this alternative would ever attract sufficient equity investment or financing or, if built, would be marginally performing or scaled back to a substantially lower quality development without the integration of well-designed and high performance environmental standards. The findings further enforce that the proposed Resort represents an attractive investment opportunity only when considered collectively, in its entirety. The Applicant would not pursue the Wildacres potion of the Project without the ability to develop the Highmount Spa and related facilities as presently designed.

5.0 Permits and Approvals Required

The following permits and approvals are required for the Modified Project; no new approvals that need to be obtained were identified in the public comment process.

<u>Local</u>
Town of Shandaken Planning Board
Special Use Permit
Site Plan Approval
Town of Shandaken Town Board
Approval to Form Transportation Corporation(s)

Town of Middletown Planning Board
Special Use Permit
Site Plan Approval

Town of Middletown Town Board
    Approval to Form Transportation Corporation(s)

<u>Ulster and Delaware County</u>
Health Department (Ulster only)
    Water Supply Infrastructure
    Wastewater Disposal Infrastructure
    Food service
    Hotels
    Swimming Pools
Department of Public Works Bridges and Highways Division
    Road Improvements and Driveways
<u>Regional</u>
NYCDEP
    Wastewater Treatment Plant Connection
    Stormwater Pollution Prevention and Impervious Surfaces

Delaware River Basin Committee
    Groundwater Withdrawal Approval

<u>State</u>
NYSDEC
    Streambank Disturbance (golf cart bridge crossings)
    Individual SPDES Permits for Stormwater Discharges associated with Construction and Operations
    Petroleum Bulk Storage Registration
    Chemical Bulk Storage Registration
    Sewer and Water System Infrastructure Signoffs

NYSDOH (Delaware County Facilities)
    Water Supply
    Sewer System Infrastructure Signoffs
    Food Service for Delaware County Portion
    Hotels
    Swimming Pools
NYSDOT
    NY Route 28 Improvements
    Speed Signage Approvals

<u>Federal</u>
None required.

ERRATA

1.0 Narrative Summary of Changes

The following is a summary of changes to DEIS information and/or new or additional information that has been added to the EIS as a result of the preparation of this FEIS. The entries below are listed by the FEIS section number and the comment/response number where the information is provided.

1. Executive Summary. The County Route 49A improvement plans have been updated to include wider and stone lined swales and rip rap culvert outlet protection.
2. Executive Summary. Existing condition subcatchment mapping has been adjusted slightly based on additional field inspections.
3. Executive Summary. Additional rock outlet protection and wetland protection fencing have been added to the project plans.
4. Executive Summary. Additional information is provided in regards to trout and trout habitat including thermal impact avoidance, minimization of impervious area and non-heritage strains in local waters.
5. Executive Summary. A typographical error in Section 3.8 of the Traffic Impact Study has been corrected.
6. Executive Summary. Documentation of no visual impact to the Galli Curci Mansion is provided.
7. Executive Summary. A 2013 feasibility and market study prepared by HVS is included. The study demonstrates the need for both the Wildacres and Highmount components of the project and why the no-Highmount alternative is not viable.
8. Executive Summary. The executive summary of a 2013 report on the state of the shared ownership real estate market prepared by Ragatz Associates documenting recent market gains is provided.
9. Executive Summary. Greenhouse gas emissions were reevaluated using propane instead of natural gas as the heating fuel source.
10. Executive Summary. A letter from NYSOPRHP dated 9/13/13 stating that the project will not impact any historic resources, including Galli Curci Mansion, is provided.
11. Executive Summary. Additional information regarding the No-Highmount alternative is provided, including environmental and socioeconomic evidence.
12. Section 13, #1. Survey mapping of the Adelstein Conservation Easement, including the building envelope is provided.
13. Section 1.4, #2. Information is provided as to why no mining permit is required for the project.
14. Section 1.4, #14. Applications for site plan and special use permits have been made to Shandaken and Middletown.
15. Section 3.1.1, #1. Stormwater modeling and design were updated using C soils for all areas of the golf course.
16. Section 3.1.1, #3. Stormwater cold climate specifics are provided.
17. Section 3.1.3, #1. Information is provided on why the project will not impact water supply for the Galli Curci Mansion.
18. Section 3.2, #5. Additional information is provided on how blasting will not affect

shallow groundwater.

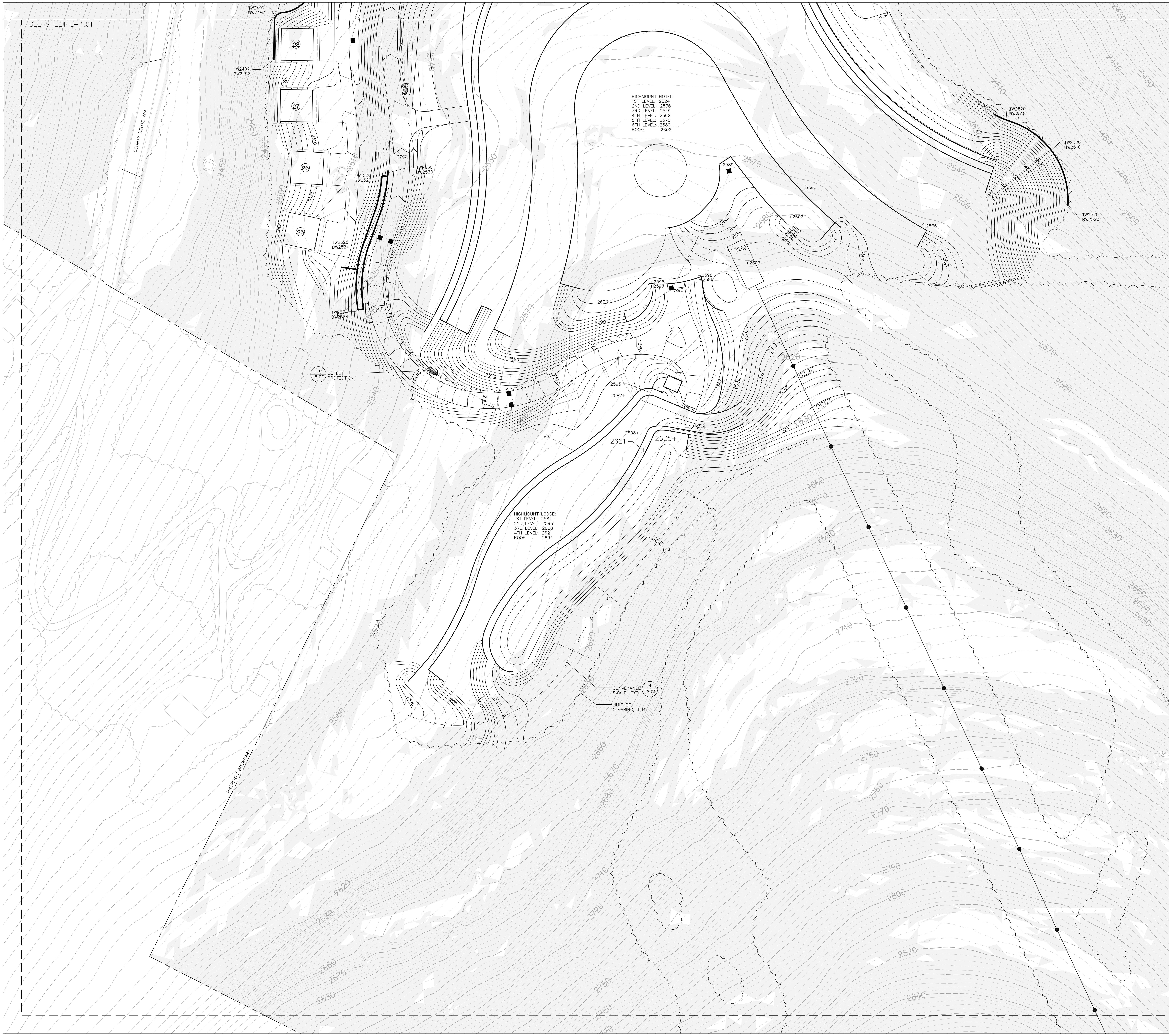
19. Section 3.5, #1. Additional information is provided on the correct air quality modeling for traffic.
20. Section 3.5, #2. Additional information is provided on why a mesoscale air quality assessment is not warranted.
21. Section 3.6, #6. Additional information is provided to document that the Highmount Spa Resort will not visually impact the Galli Curci Mansion.
22. Section 3.7, #1. References to sources of information used in the project noise assessment have been added.
23. Section 3/7, #2 & #5. Additional information is provided regarding lack of noise impacts at the Galli Curci Mansion.
24. Section 3.8.2, #1. Additional information is provided to show how the project meets the density requirements of the Shandaken zoning code.
25. Section 3.9. Additional information is provided on how the project will benefit, rather than harm, existing businesses in the area, local employment benefits and lack of impacts on service providers.
26. Section 3.9, #43. Tax generation tables were corrected to account for the geography of the Onteora Library District is provided.

2.0 Revised Information

The following is a list of the revised reports, plans, figures, tables, etc., that are contained in the remainder of this Errata section that follows.

2.1 Project Plan Drawings
- 2.1.a Grading and Drainage Plans L-4.00 through L-4.09
- 2.1.b Detail Sheets L-8.00 and L-8.01
- 2.1.c Erosion and Sediment Control Plans L-3.08 through L-3.13
- 2.1.d Construction Phasing for Phase 1 Development L-3.01
- 2.1.e Final Stabilization Plan L-3.26

2.2 Updated Stormwater Management Design Report
2.3 Table – Corrected Table 3.8 from Traffic Impact Study
2.4 Galli Curci Visual Impact Assessment
2.5 HVS November 2013 Feasibility Study and Sensitivity Analysis
2.6 Ragatz March 2013 Executive Summary, The Shared Ownership Real Estate Industry in North America
2.7 NYSOPRHP September 13, 2013 Letter
2.8 No Highmount Alternative Additional Analysis
2.9 Adelstein Conservation Easement Survey Mapping
2.10 Figure – Irrigation Pond Outlet
2.11 Figure – Test Pit Information Front 9 Village
2.12 Figures – Updated CR 49A Improvement Plans
2.13 Table – Updated SWPPP Table 11
2.14 Figure – Revised Figure 3-8, Wetlands Activities Plan
2.15 Highmount Hotel Section View
2.16 Tables – Updated Tax Revenue Tables



GRADING NOTES

1. EXISTING BASE INFORMATION DERIVED FROM FIELD SURVEY DATED 03/21/08 PERFORMED BY RETTEW ENGINEERING & SURVEYING P.C..
2. ALL PROPOSED GRADES SHALL BE SET IN THE FIELD BY A NEW YORK STATE LICENSED LAND SURVEYOR.
3. PITCH EVENLY BETWEEN SPOT GRADES. ALL PAVED AREAS MUST PITCH TO DRAIN AT A MINIMUM SLOPE OF ONE-EIGHTH INCH (1/8") PER FOOT. MAXIMUM CROSSPITCH OF ALL SIDEWALKS IS 2%. ANY DISCREPANCIES NOT ALLOWING THIS TO OCCUR SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE PRIOR TO CONTINUING WORK.
4. WALKS SHALL NOT EXCEED 1 IN 20 SLOPE LONGITUDINALLY. RAMPS SHALL NOT EXCEED 1 IN 12 OR 30' IN LENGTH. ANY DISCREPANCIES NOT ALLOWING THIS TO OCCUR SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE PRIOR TO CONTINUING WORK. MAXIMUM CROSSPITCH OF ALL SIDEWALKS IS 2%.
5. ALL PROPOSED TOP OF VERTICAL CURB ELEVATIONS ARE SIX INCHES (6") ABOVE BOTTOM OF CURB UNLESS SHOWN OTHERWISE.
6. WHERE NEW PAVING MEETS EXISTING PAVING, NEW PAVING SHALL MEET THE LINE AND GRADE OF THE EXISTING PAVING WITH NEW.
7. EXCAVATION REQUIRED WITHIN 3 FEET OF EXISTING UTILITY LINE SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO ADDITIONAL COST TO OWNER.
8. ALL AREAS REQUIRING FILL SHALL BE BROUGHT TO GRADE REQUIRED IN 6" MAXIMUM COMPACTED LIFTS. GENERAL FILL SHALL BE FREE OF DELETERIOUS MATERIAL, CONTAIN NO GRAVEL LARGER THAN 2", AND SHALL BE COMPACTED IN AN APPROVED MANNER.
9. GRADE AREAS ADJACENT TO BUILDING LINES TO DRAIN AWAY FROM STRUCTURE AND PREVENT PONDING. FINISH SURFACES SHALL BE FREE FROM IRREGULAR SURFACE CHANGES.
10. EXCAVATION REQUIRED WITHIN DRIP LINE OF TREES DESIGNATED TO REMAIN SHALL BE DONE BY HAND. PLANT MATERIALS DAMAGED BY CONTRACTOR SHALL BE REPLACED IN KIND.
11. SLOPE SIDES OF EXCAVATIONS TO COMPLY WITH LOCAL CODES AND ORDINANCES HAVING JURISDICTION AND OSHA REGULATIONS. MAINTAIN SIDE SLOPES OF EXCAVATIONS IN A SAFE CONDITION UNTIL COMPLETION OF BACKFILLING.
12. THE GENERAL CONTRACTOR SHALL MAINTAIN OR ADJUST TO NEW FINISH GRADE AS NECESSARY ALL UTILITY AND SITE STRUCTURES SUCH AS LIGHT POLES, SIGN POLES, MAN HOLES, CATCH BASINS, HAND HOLES, WATER AND GAS GATES, HYDRANTS, ETC., FROM MAINTAINED UTILITY AND SITE SYSTEMS UNLESS OTHERWISE NOTED ON THE UTILITY DRAWINGS OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
13. CONTRACTOR SHALL BLEND NEW EARTHWORK SMOOTHLY INTO EXISTING, PROVIDING VERTICAL CURVES OR ROUNDINGS AT ALL TOP AND BOTTOM OF SLOPES.
14. CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF THE EXISTING DRAINAGE SYSTEM AT ALL TIMES. DURING EARTHWORK OPERATIONS, DRAINAGE OF THE SITE AND ADJACENT AREAS SHALL BE MAINTAINED CONTINUOUSLY TO PREVENT EROSION OR DAMAGE RESULTING FROM CONCENTRATED RUN-OFF. WHEN IT IS NECESSARY TO INTERRUPT THE EXISTING DRAINAGE PATTERNS AND/OR UTILITIES, PROVIDE TEMPORARY FACILITIES UNTIL WORK IS PERMANENTLY STABILIZED AND APPROVED BY OWNER'S REPRESENTATIVE.
15. THE GENERAL CONTRACTOR SHALL MAINTAIN OR ADJUST TO NEW FINISH GRADE AS NECESSARY ALL UTILITY AND SITE STRUCTURES SUCH AS LIGHT POLES, SIGN POLES, MAN HOLES, CATCH BASINS, HAND HOLES, WATER AND GAS GATES, HYDRANTS, ETC., FROM MAINTAINED UTILITY AND SITE SYSTEMS UNLESS OTHERWISE NOTED ON THE UTILITY DRAWINGS OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
16. IN ALL LAWN AREAS, ROUGH GRADE SHALL BE BROUGHT TO WITHIN 6" OF FINISHED GRADE UNLESS OTHERWISE NOTED.
17. CONTRACTOR SHALL ESTABLISH PERMANENT SECONDARY BENCHMARKS PRIOR TO THE START OF CONSTRUCTION. ALL SECONDARY BENCHMARKS SHALL BE SO LOCATED THAT THEY WILL NOT BE DISTURBED BY CONSTRUCTION.

LEGEND — SYMBOL

PROPERTY BOUNDARY
EXISTING CONTOUR
PROPOSED CONTOUR
EXISTING TREELINE
TREELINE (LIMIT OF CLEARING)
STORMWATER POND
4 L8.01 SWALE
5 L8.00 CULVERT/ROCK OUTLET PROTECTION
CATCH BASIN/PIPE
ISOLATED WETLANDS
NON-ISOLATED WETLANDS
SLOPES OVER 20%

0 25 50 100
SCALE: 1"=50'

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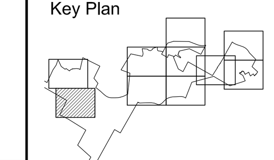
Crossroads Ventures, L.L.C.
PO Box 267
Mt. Tremper, NY 12457

The Modified Belleayre Resort at Catskill Park

Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

Title
Grading and Drainage Plan

Key Plan



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Revisions
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2 02/21/2014

Project: 07074
Date: 03/30/2011

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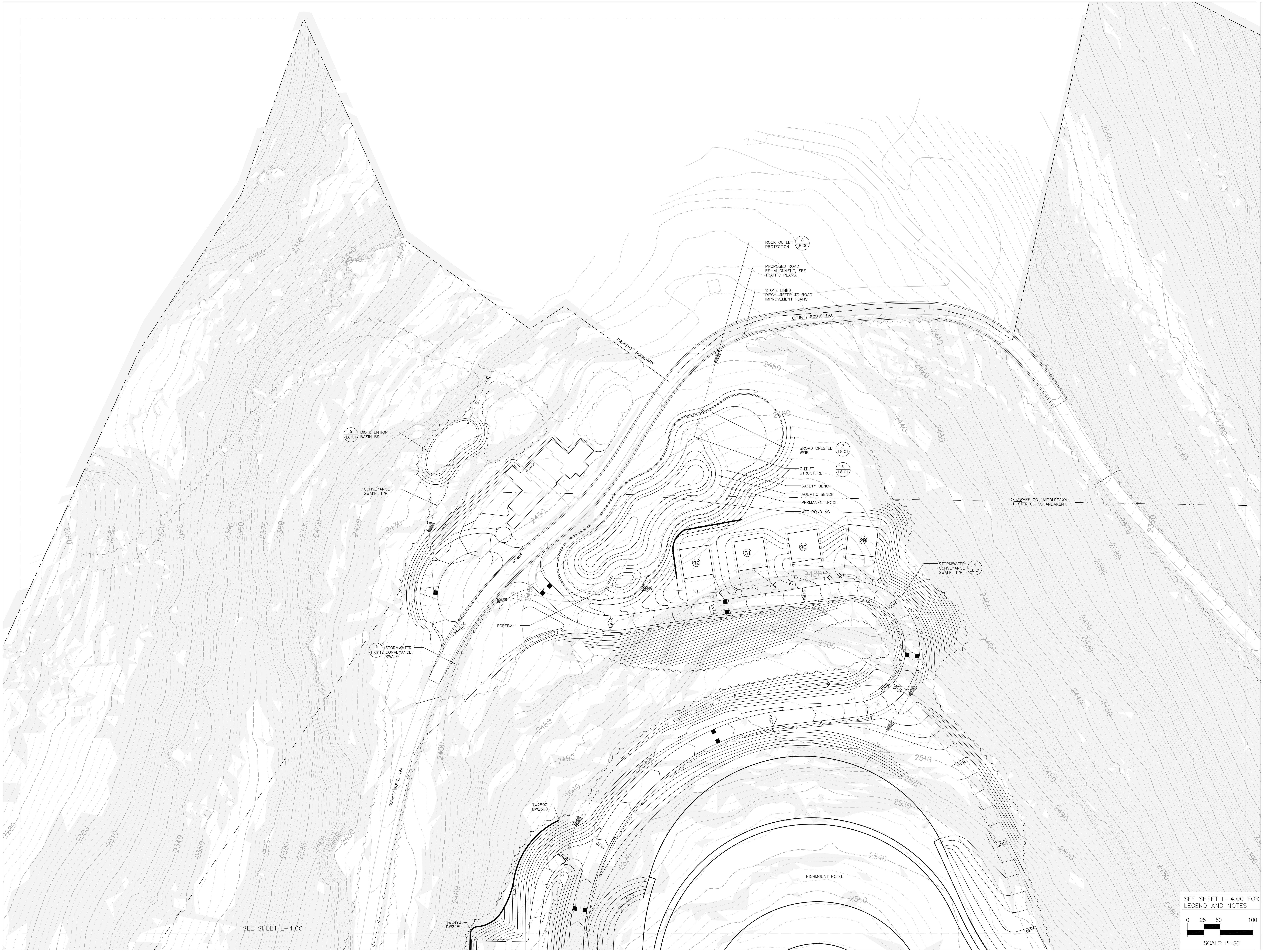

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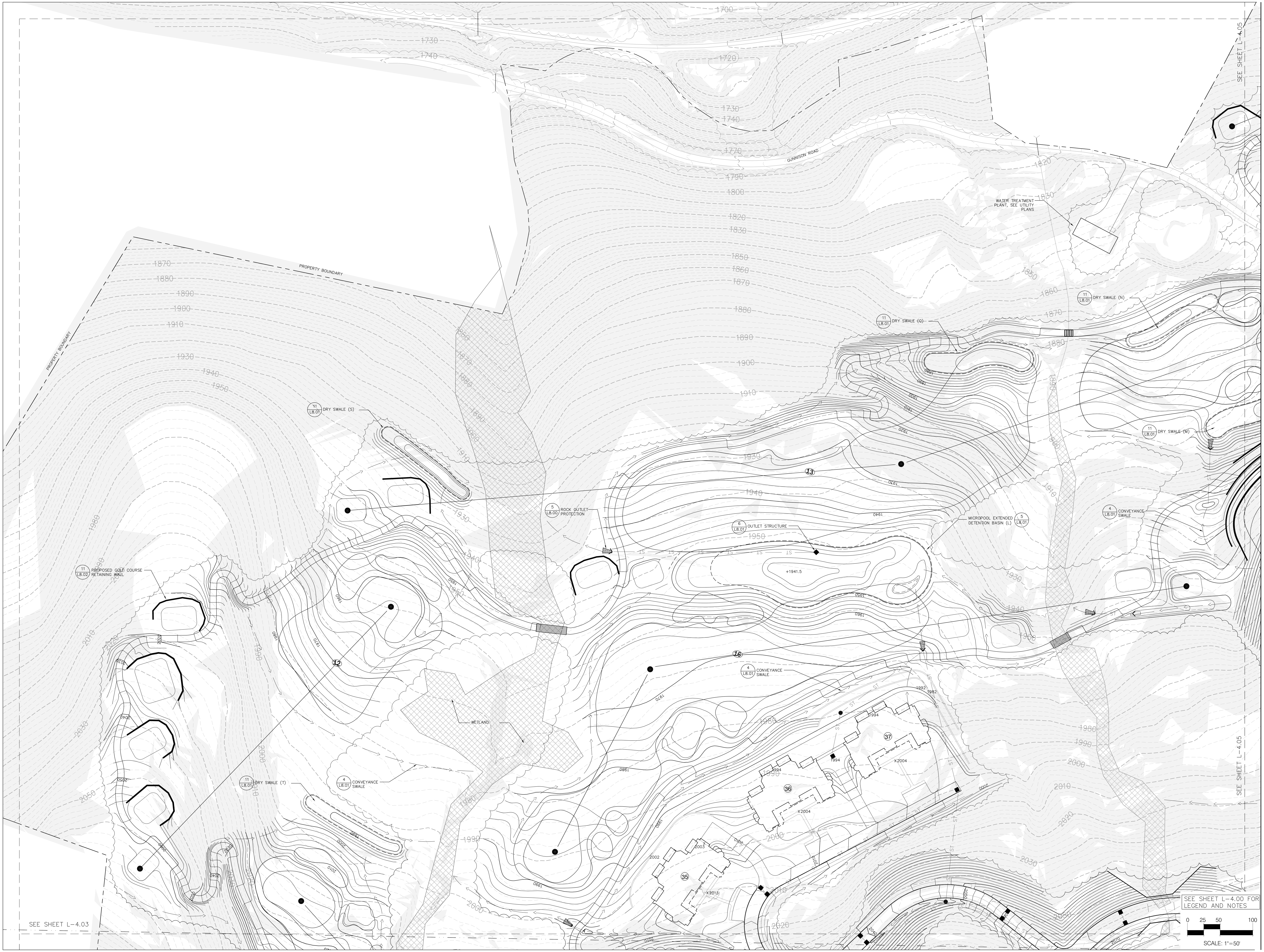

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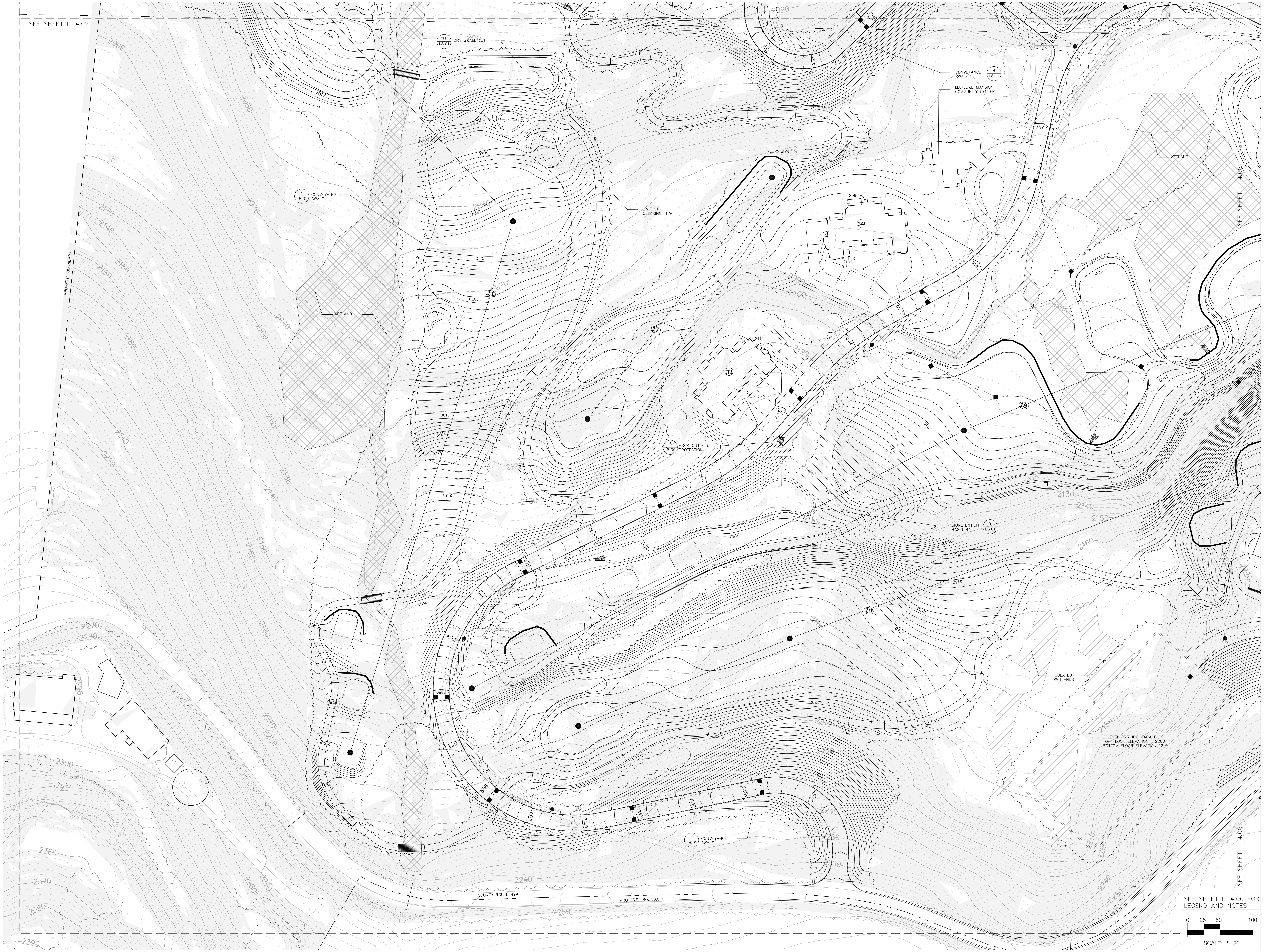

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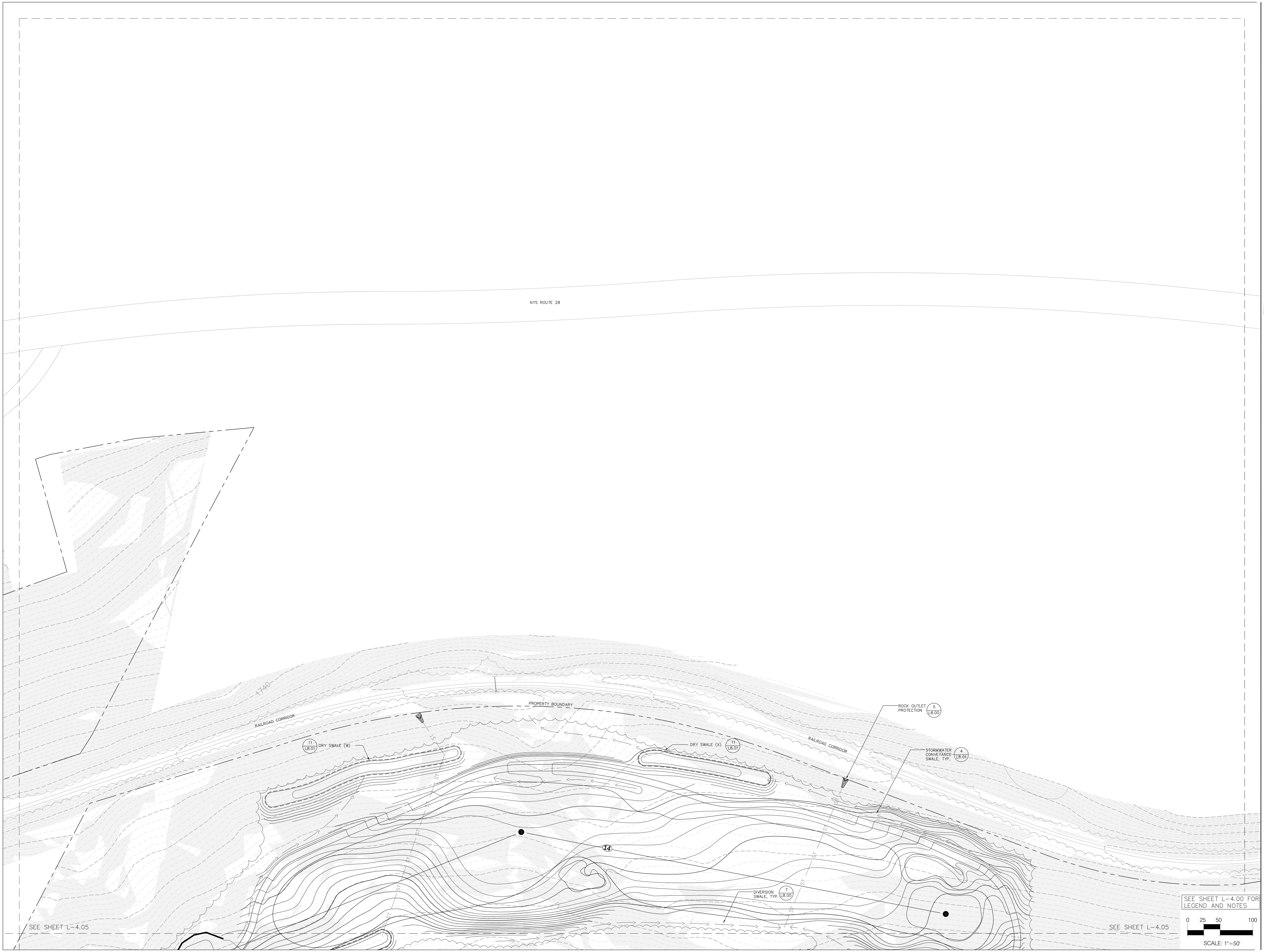

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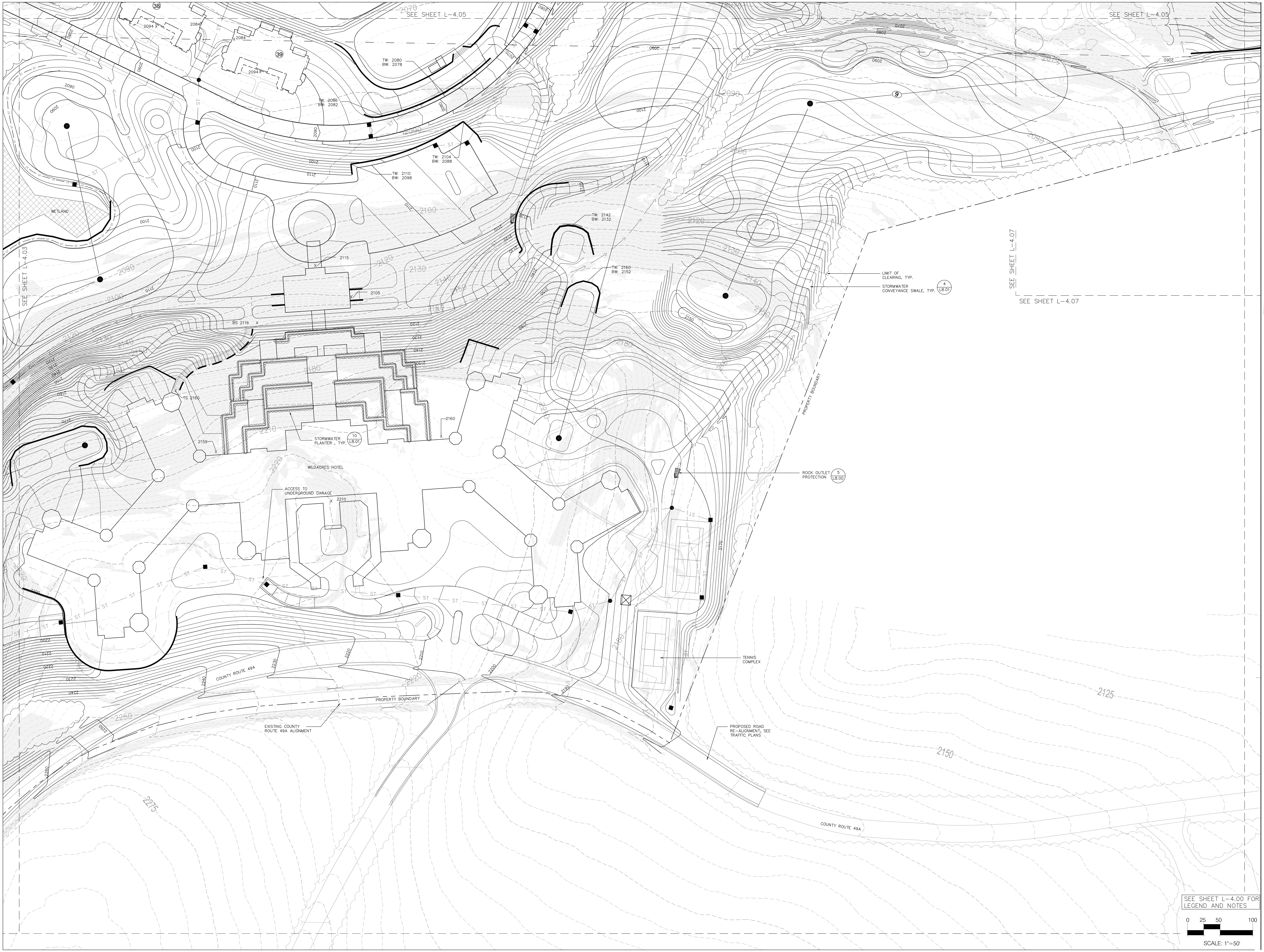

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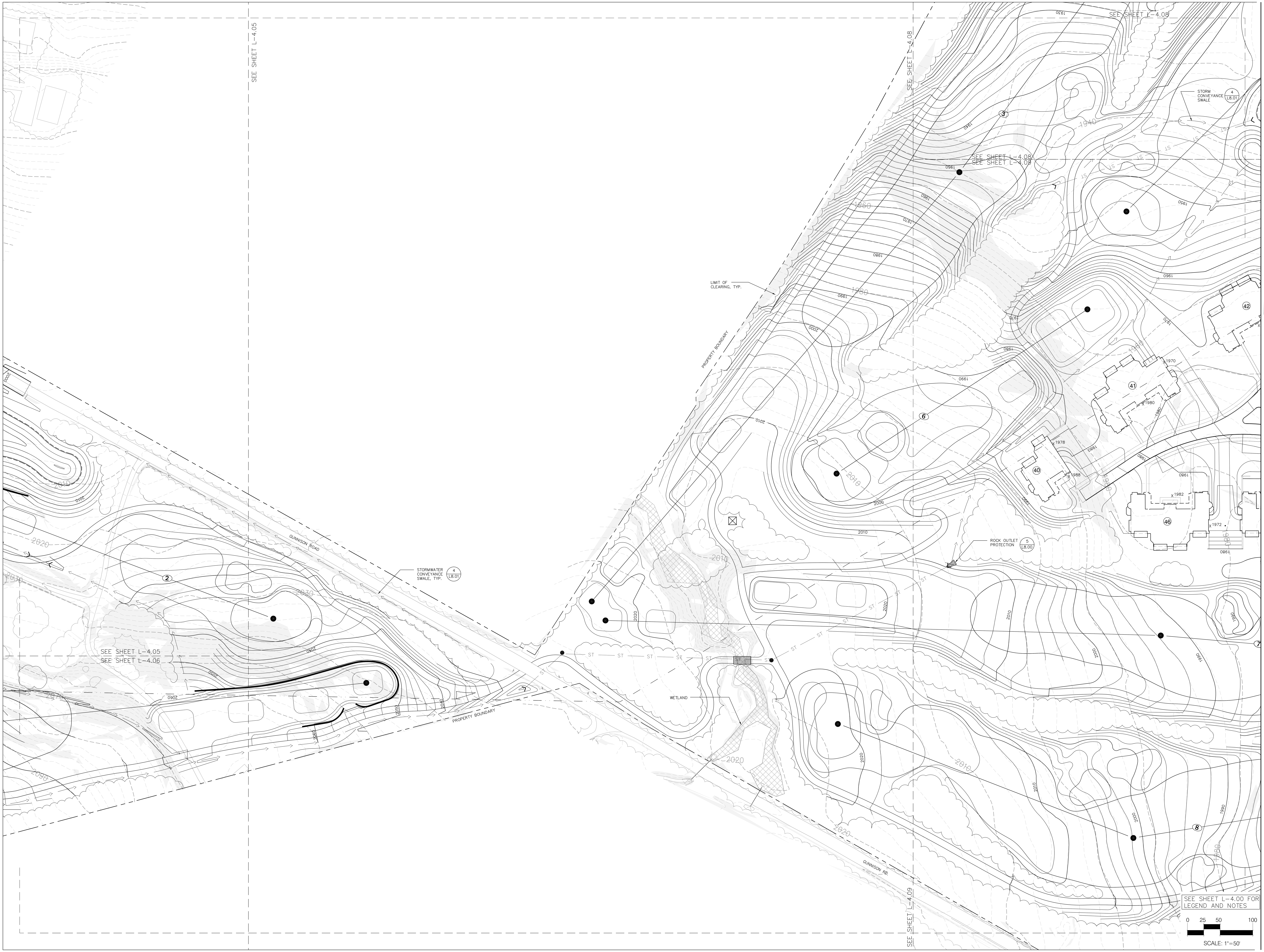

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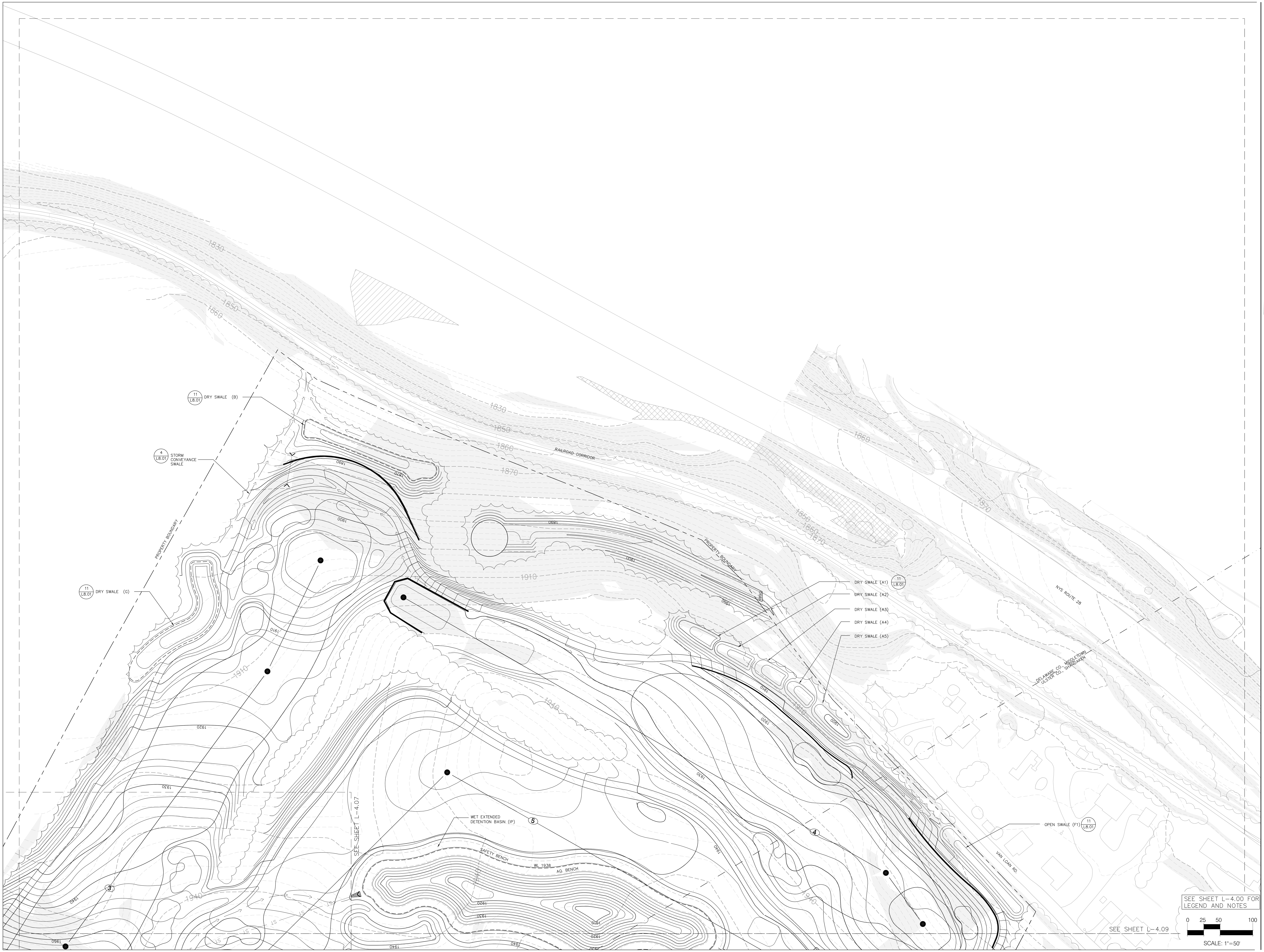

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PREPARED FOR:
Crossroads Ventures, L.L.C.
PO Box 267
Mt. Tremper, NY 12457

The Modified Belleayre Resort at Catskill Park

Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

Title
Grading and Drainage Plan

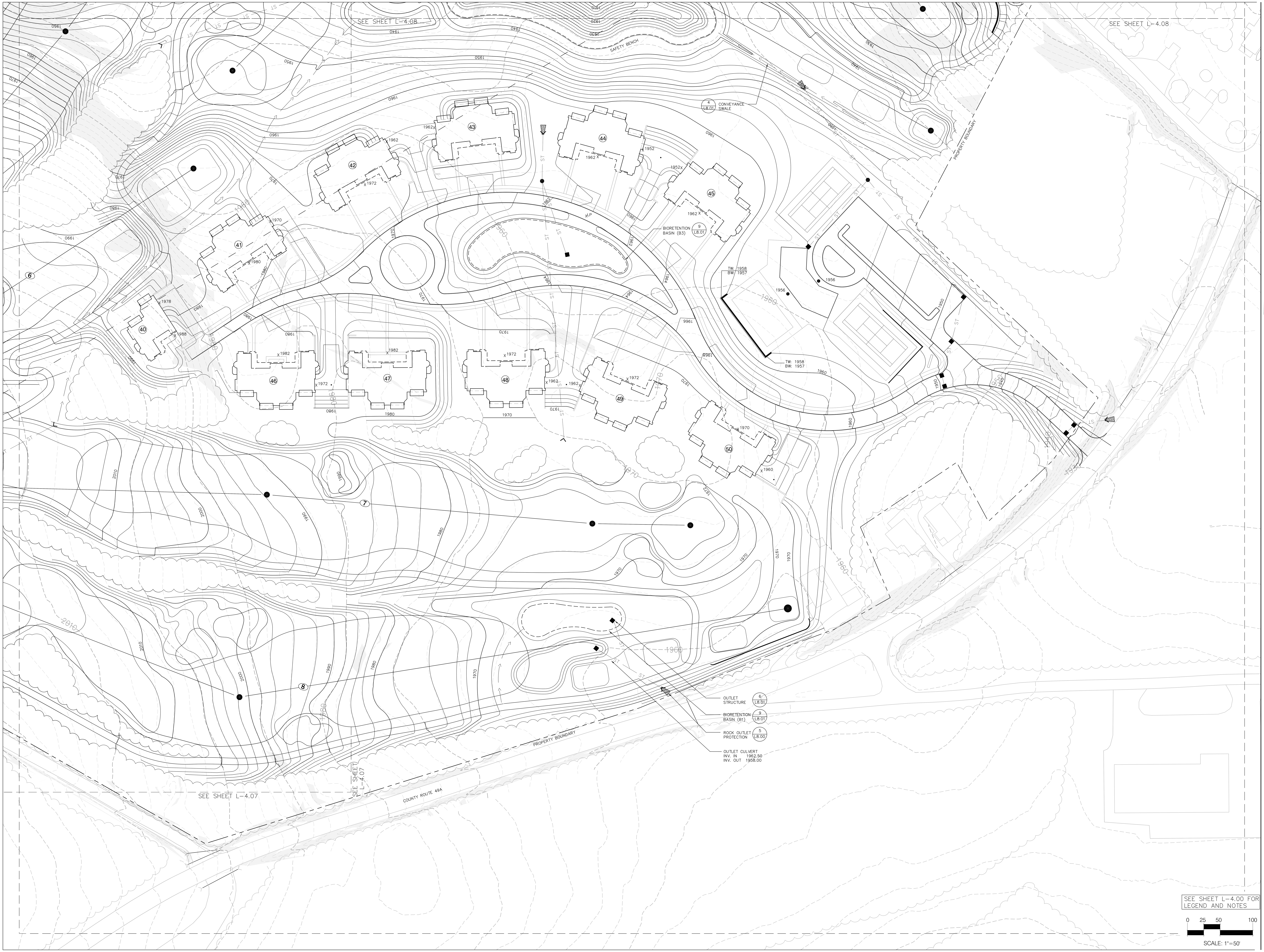
Key Plan

NORTH

Revisions
1 03/02/2012
2 02/21/2014

Project: 07074
Date: 03/30/2011

Drawing
L-4.08



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Checked KJF/SJA

REGISTERED LANDSCAPE ARCHITECT DAVID ROWLAND CARR JR. 001206 STATE OF NEW YORK

This drawing is not certified for the purposes of construction, unless it is specifically noted as issued for construction.

Submission:

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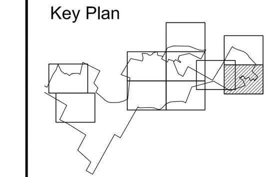

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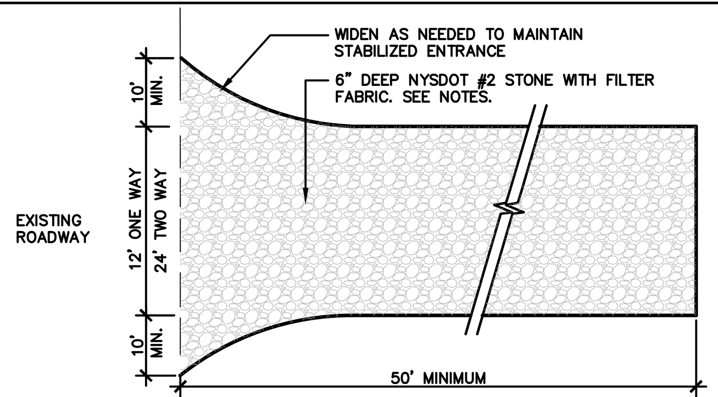
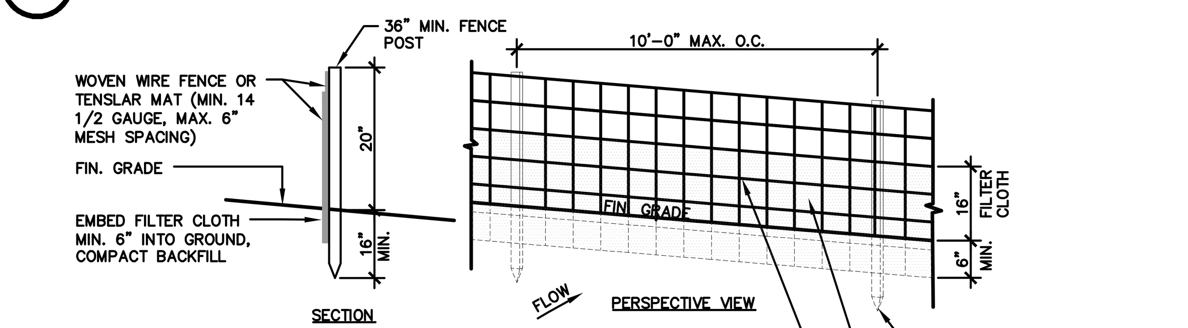


CONSTRUCTION SPECIFICATIONS

1. MINIMUM STONE SIZE SHALL BE 1"-4" STONE, INSTALLED OVER FILTER FABRIC TO A MINIMUM DEPTH OF 6".
2. MINIMUM WIDTH SHALL BE 12' FOR ONE WAY TRAFFIC, 24' FOR TWO WAY TRAFFIC. MINIMUM LENGTH SHALL BE 50'.
3. ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH ENTRANCE. IF IMPRACTICAL, A MOUNTABLE DIVERSION BERM PREVENTING RUNOFF ONTO ADJACENT ROAD SHALL BE PERMITTED.
4. ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY SHALL BE REMOVED IMMEDIATELY.
5. ALL VEHICLE WASHING SHALL BE DONE IN A STONE STABILIZED AREA WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
6. INSPECT AND MAINTAIN AS NEEDED TO CONFORM TO SPECIFICATIONS AND STORMWATER POLLUTION PREVENTION PLAN.

1 STABILIZED CONSTRUCTION ENTRANCE

SCALE: NTS

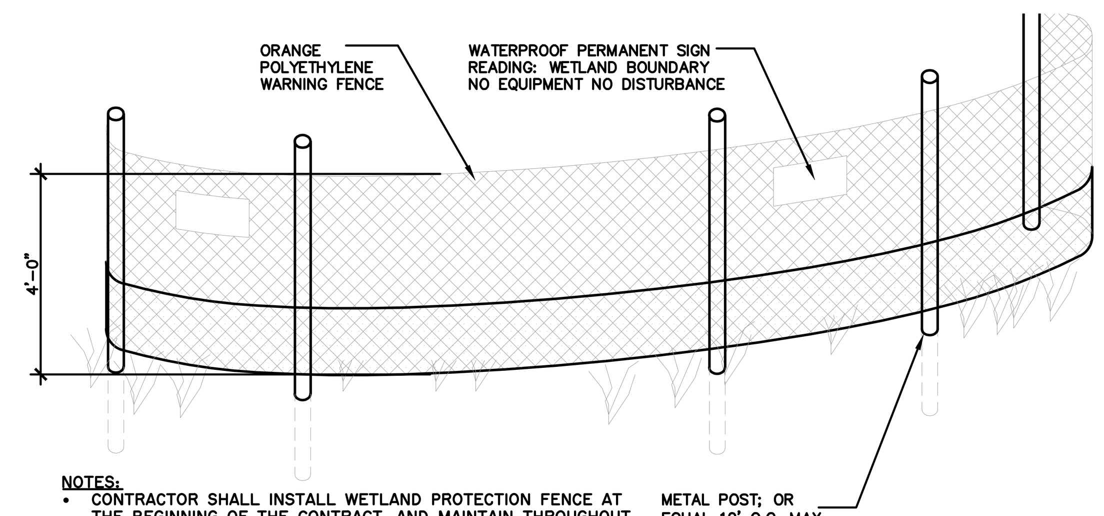


CONSTRUCTION SPECIFICATIONS

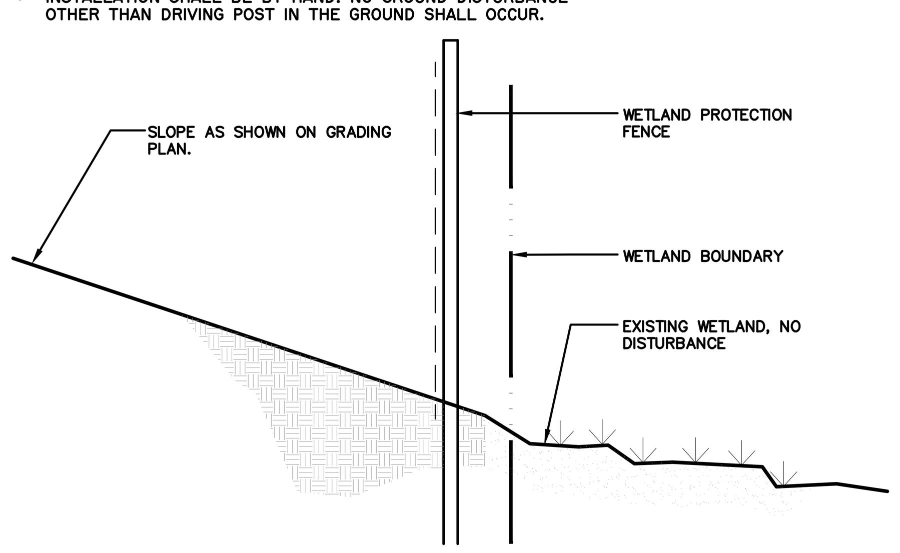
1. SILT FENCE SHALL BE INSTALLED PARALLEL TO CONTOURS IN ALL AREAS WHERE SILT FENCE IS REQUIRED.
2. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
3. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 12 1/2 GAUGE, 6" MAXIMUM MESH OPENING.
4. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
5. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN 1/3 HEIGHT OF SILT FENCE IS REACHED OR WHEN "BULGES" DEVELOP IN THE SILT FENCE.

2 SILT FENCE

SCALE: NTS



NOTES:
- CONTRACTOR SHALL INSTALL WETLAND PROTECTION FENCE AT THE BEGINNING OF THE CONTRACT, AND MAINTAIN THROUGHOUT ITS DURATION. THE CONTRACTOR SHALL NOT DISTURB EXISTING WETLAND AREAS WITHIN THE FENCED AREAS.
- INSTALLATION SHALL BE BY HAND. NO GROUND DISTURBANCE OTHER THAN DRIVING POST IN THE GROUND SHALL OCCUR.

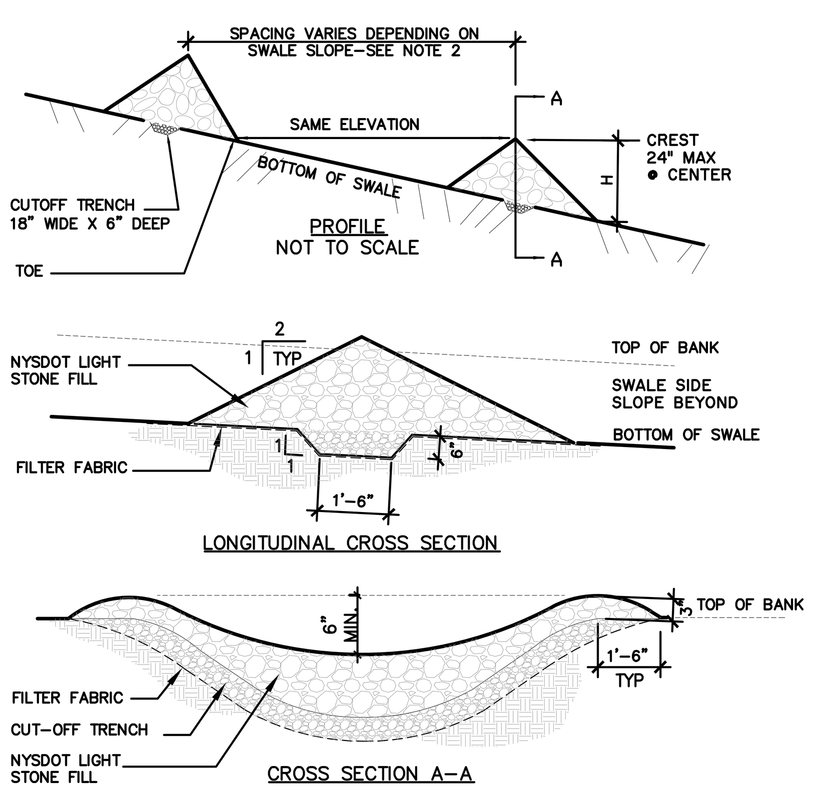


3 WETLAND PROTECTION FENCE

SCALE: NTS

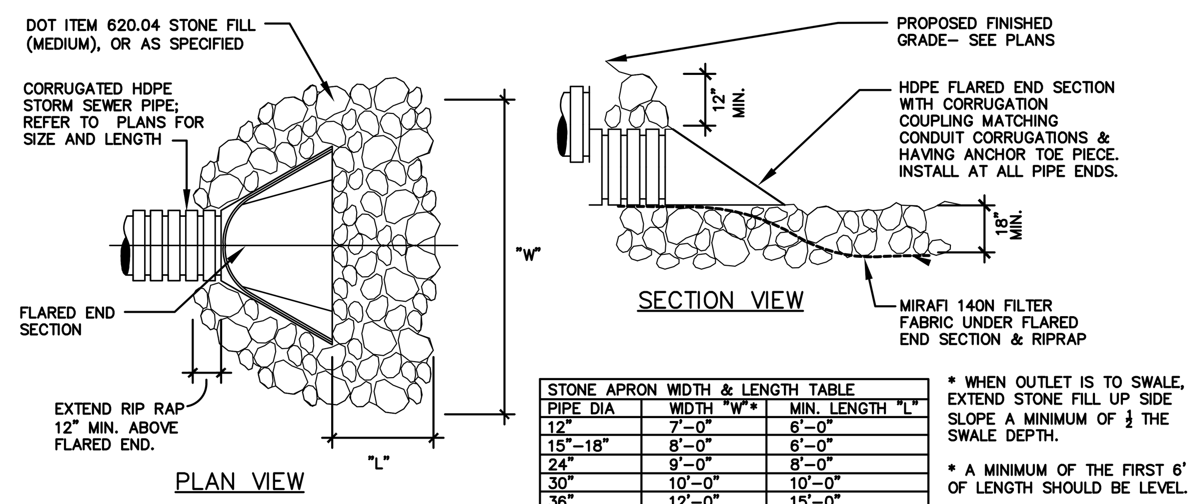
NOTES:

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES, AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
   SPACING= HEIGHT (FT.) / SLOPE (FT./FT.)
3. EXTEND STONE A MINIMUM 1'-6" BEYOND TOP BANK OF SWALE.
4. PROTECT SWALE/CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.
6. ONCE SITE HAS ACHIEVED PERMANENT STABILIZATION AS DETERMINED BY THE OWNER'S REPRESENTATIVE, CONTRACTOR SHALL CLEAN/REPAIR/RESTORE CHECKDAMS TO FINISHED CONDITION AND REPAIR AFFECTED AREAS.



4 STONE CHECKDAM

SCALE: NTS



STONE APRON WIDTH & LENGTH TABLE

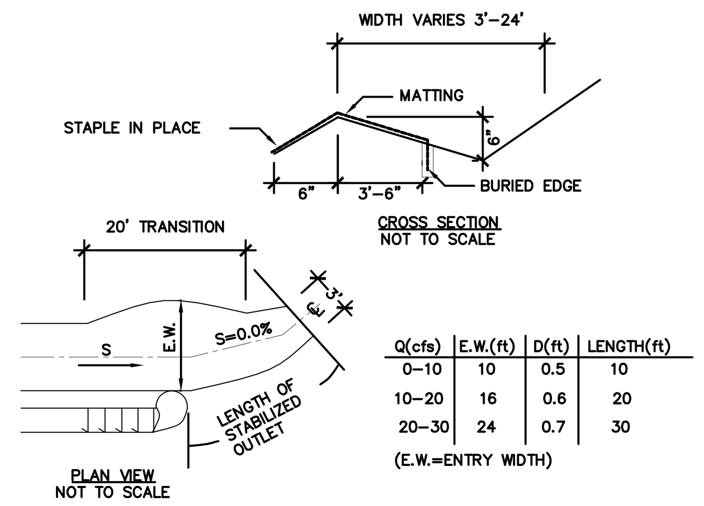
PIPE DIA	WIDTH "W"	MIN. LENGTH "L"
12"	7'-0"	6'-0"
15"-18"	8'-0"	6'-0"
24"	9'-0"	8'-0"
30"	10'-0"	10'-0"
36"	12'-0"	15'-0"
48"	15'-0"	20'-0"

* WHEN OUTLET IS TO SWALE, EXTEND STONE FILL UP SIDE SLOPE A MINIMUM OF 1/2 THE SWALE DEPTH.

* A MINIMUM OF THE FIRST 6' OF LENGTH SHOULD BE LEVEL.

5 FLARED END SECTION AND OUTLET PROTECTION

SCALE: NTS



Q(cfs)	E.W.(ft)	D(ft)	LENGTH(ft)
0-10	10	0.5	10
10-20	16	0.6	20
20-30	24	0.7	30

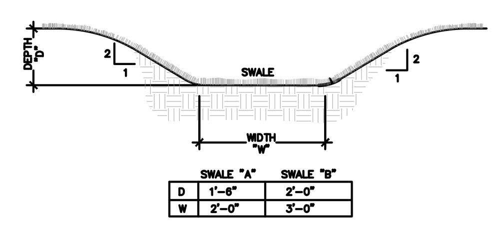
(E.W.=ENTRY WIDTH)

CONSTRUCTION SPECIFICATIONS

1. THE MATTING SHOULD BE A MINIMUM OF 4FT. WIDE EXTENDING 6 INCHES OVER THE LIP AND BURIED 6 INCHES DEEP IN A VERTICAL TRENCH ON THE LOWER EDGE. THE UPPER EDGE SHOULD BUTT AGAINST SMOOTHLY CUT SOD AND BE SECURELY HELD IN PLACE WITH CLOSELY SPACED HEAVY DUTY WIRE STAPLES AT LEAST 12 INCHES IN LENGTH
2. ENSURE THAT THE LIP IS LEVEL TO UNIFORMLY SPREAD DISCHARGE.
3. THE LIP SHALL BE CONSTRUCTED ON UNDISTURBED SOIL NOT FILL.
4. A 20 FOOT TRANSITION SECTION WILL BE CONSTRUCTED FROM THE DIVERSION CHANNEL TO THE SPREADER TO SMOOTHLY BLEND THE DIFFERENT DIMENSION AND GRADES.
5. THE RUNOFF DISCHARGE WILL BE OUTLETED ONTO A STABILIZED VEGETATED SLOPE NOT EXCEEDING 10%
6. SEED AND MULCH THE DISTURBED AREA IMMEDIATELY AFTER CONSTRUCTION.

6 LEVEL SPREADER

SCALE: NTS



	SWALE "A"	SWALE "B"
D	1'-6"	2'-0"
W	2'-0"	3'-0"

CROSS-SECTION

CONSTRUCTION SPECIFICATIONS

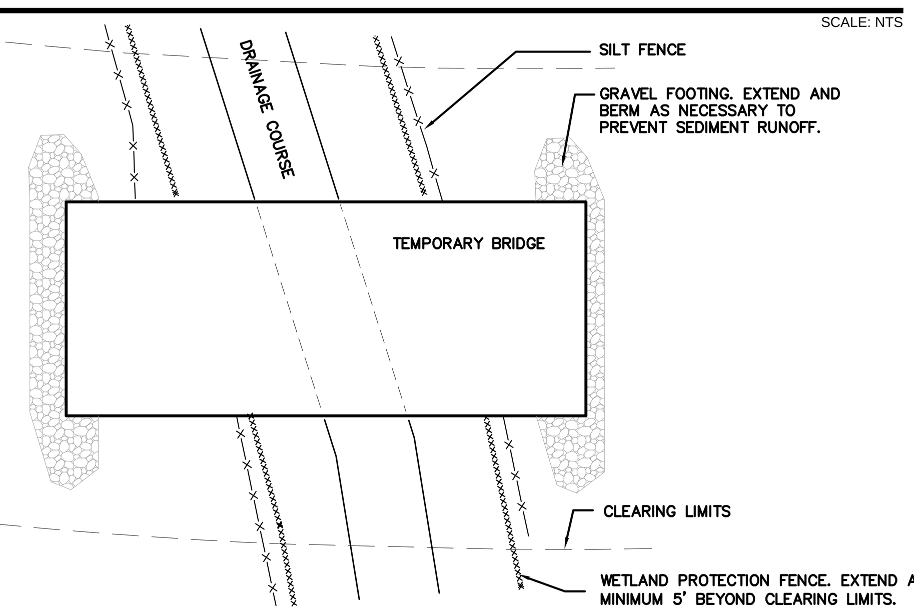
1. ALL TEMPORARY SWALES SHALL HAVE UNINTERUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSIVE VELOCITY.
4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE SWALE.
5. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
6. FILLS SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.
7. ALL EARTH REMOVED AND NOT NEEDED FOR CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE SWALE.
8. STABILIZATION SHALL BE AS PER THE FLOW CANNEL STABILIZATION CHART BELOW.

TYPE OF TREATMENT	CHANNEL GRADE	"A" (5 AC. OR LESS)	"B" (5 AC. - 10 AC)
1	0.5 - 3.0%	SEED & STRAW MULCH	SEED & STRAW MULCH
2	3.1 - 5.0%	SEED & STRAW MULCH	SEED USING JUTE OR EXCELSIOR
3	5.1 - 8.0%	SEED WITH JUTE OR	LINED WITH 4-8" RIPRAP
4	8.1-20%	LINED WITH 4-8" RIPRAP	ENGINEERED DESIGN LINED WITH 4"-8" RIP-RAP - REVIEWED/APPROVED BY QUALIFIED INSPECTOR.

9. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.
10. POSITIVE DRAINAGE 0.5% OR STEEPER DEPENDENT ON TOPOGRAPHY.

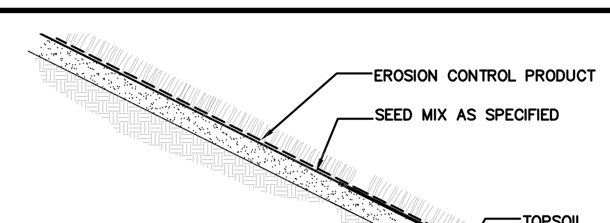
7 DIVERSION SWALE

SCALE: NTS



8 TEMPORARY STREAM CROSSING

SCALE: NTS

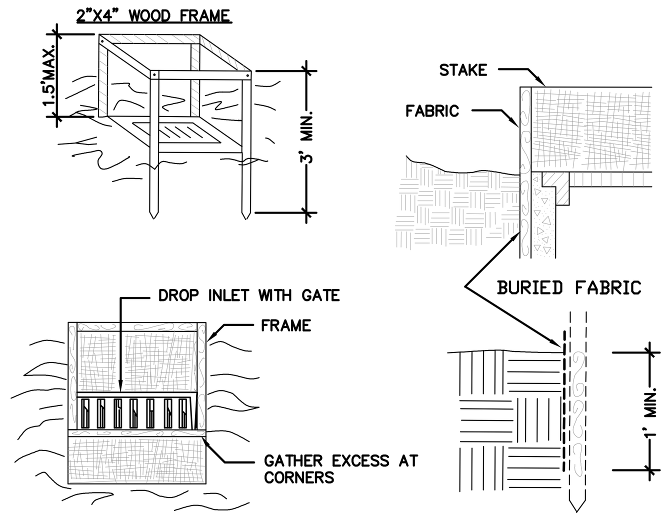


NOTES:

1. ALL SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH HYDROSEED APPLICATION OF "FLEXTERRA" BONDED FIBER MATRIX, ROLLED EROSION CONTROL PRODUCT, OR APPROVED EQUAL. ADDITIONAL STABILIZATION OPTIONS BASED ON SLOPE CATEGORIES ARE LISTED ON SHEET L3.22.
2. SLOPES LESS THAN 3:1 SHALL BE STABILIZED AS DIRECTED BY ON-SITE EROSION CONTROL SPECIALIST. OPTIONS BASED ON SLOPE CATEGORIES ARE LISTED ON SHEET L3.22.
3. INSTALL EROSION CONTROL PRODUCTS IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. ANY PROPOSED SUBSTITUTIONS SHALL BE SUBMITTED TO OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO INSTALLATION.
4. ALL PROPOSED SLOPE STABILIZATION METHODS SHALL BE VERIFIED AND/OR APPROVED BY EROSION CONTROL SPECIALIST PRIOR TO INSTALLATION.

9 SLOPE STABILIZATION

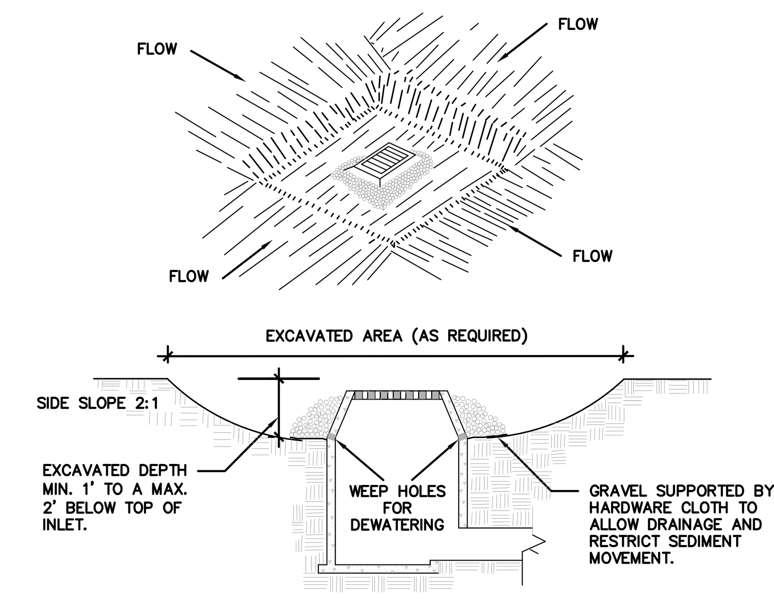
SCALE: NTS



CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY. MAXIMUN DRAINAGE AREA 1 ACRE

TYPE A - FILTER FABRIC INLET PROTECTION



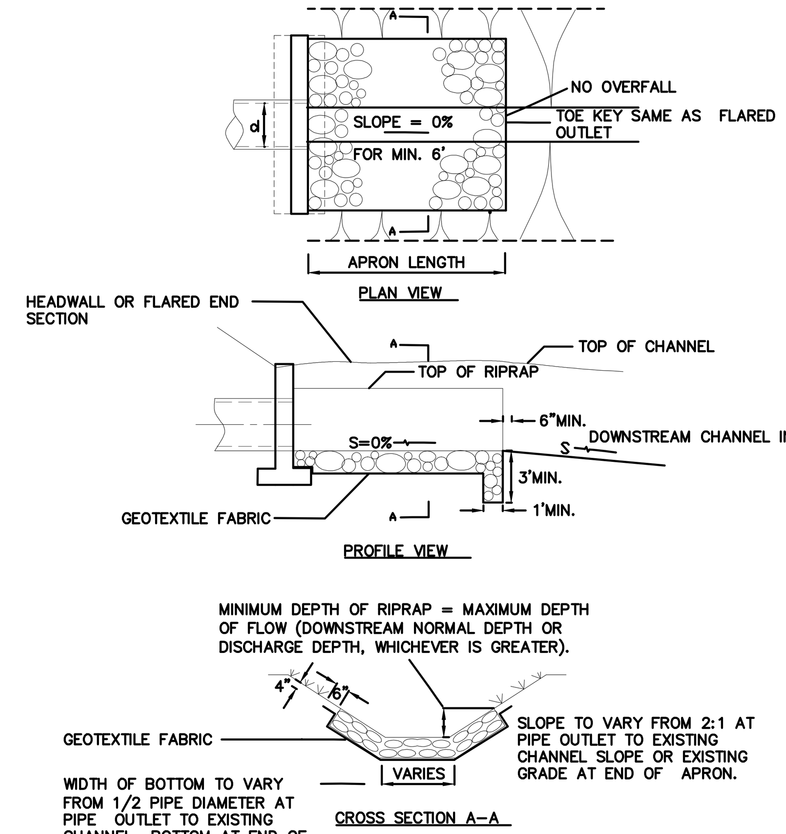
CONSTRUCTION SPECIFICATIONS

1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING. MAXIMUM DRAINAGE AREA 1 ACRE

TYPE B - EXCAVATED INLET PROTECTION

10 INLET PROTECTION AT CATCH BASIN

SCALE: NTS



STONE APRON WIDTH & LENGTH TABLE

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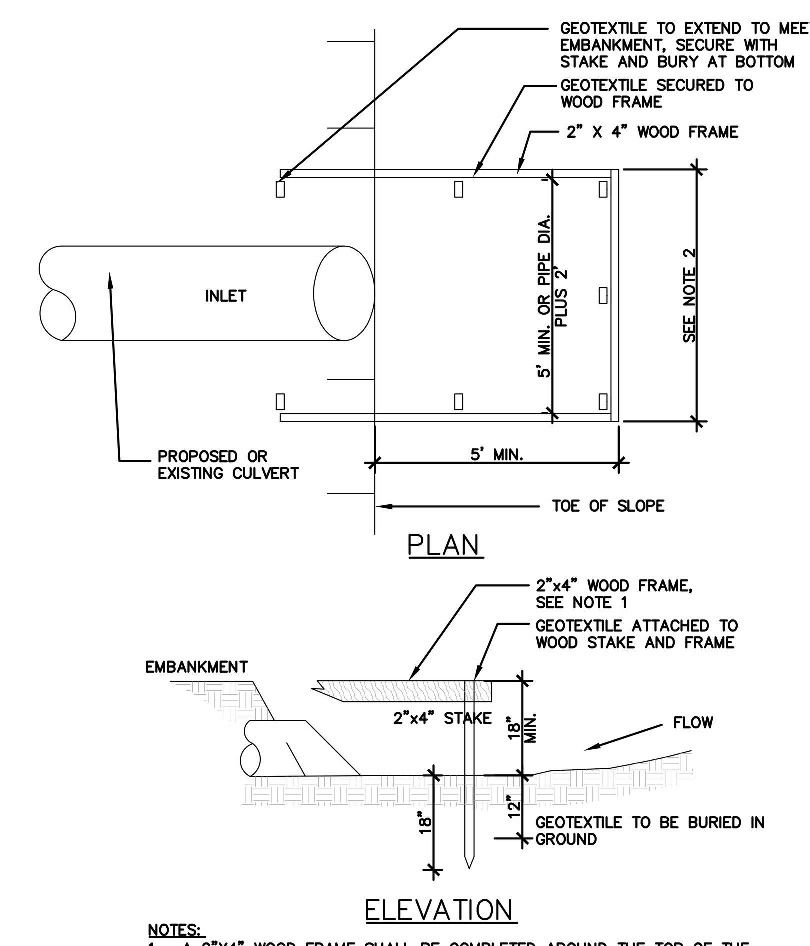
* WHEN OUTLET IS TO SWALE, EXTEND STONE FILL UP SIDE SLOPE A MINIMUM OF 1/2 THE SWALE DEPTH.

* A MINIMUM OF THE FIRST 6' OF LENGTH SHOULD BE LEVEL.

11 TEMPORARY AND PERMANENT OUTLET PROTECTION

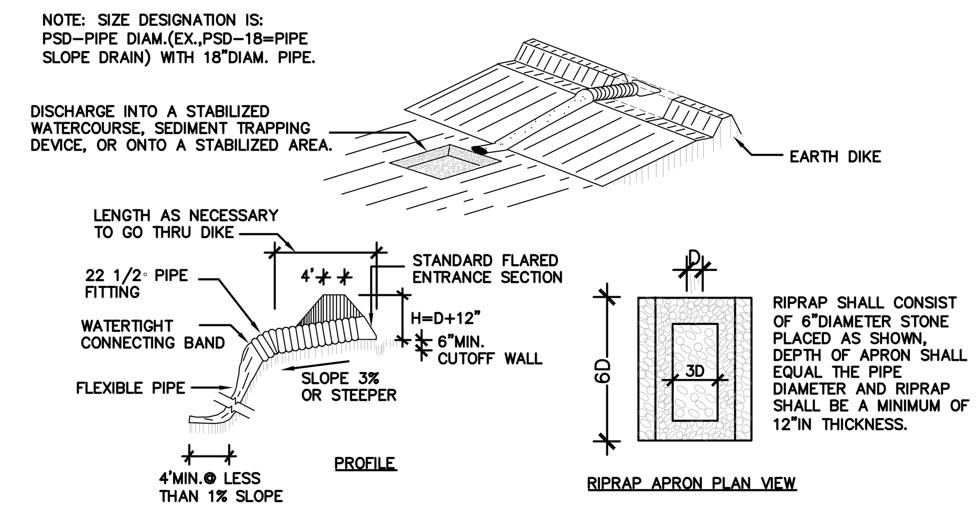
SCALE: NTS



NOTES:
1. A 2"X4" WOOD FRAME SHALL BE COMPLETED AROUND THE TOP OF THE STAKES OVER THE ATTACHED FABRIC FOR OVERFLOW STABILITY.
2. SPACE STAKES EVENLY AROUND INLET TO A MAXIMUM OF 36" APART.

12 INLET PROTECTION AT CULVERT

SCALE: NTS

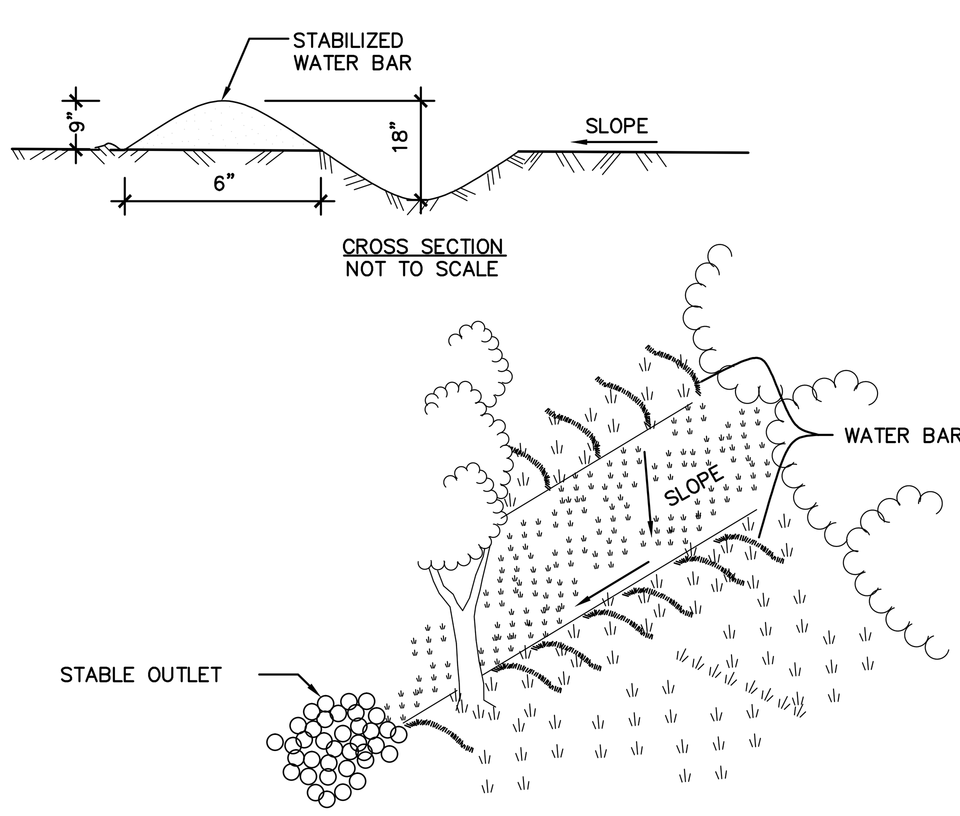


CONSTRUCTION SPECIFICATIONS

1. THE INLET PIPE SHALL HAVE A SLOPE OF 3% OR STEEPER.
2. THE TOP OF THE EARTH DIKE OVER THE INLET PIPE AND THOSE DIKES CARRYING WATER TO THE PIPE SHALL BE AT LEAST 1' HIGHER AT ALL POINTS THAN THE TOP OF THE INLET PIPE.
3. THE INLET PIPE SHALL BE CORRUGATED METAL PIPE WITH WATERTIGHT CONNECTING BANDS.
4. THE FLEXIBLE TUBING SHALL BE THE SAME DIAMETER AS THE INLET PIPE AND SHALL BE CONSTRUCTED OF A DURABLE MATERIAL WITH HOLD-DOWN GROMMETS SPACED AT 10' ON CENTER.
5. THE FLEXIBLE TUBING SHALL BE SECURELY FASTENED TO THE CORRUGATED METAL PIPE WITH METAL STRAPPING OR WATERTIGHT CONNECTING COLLARS.
6. THE FLEXIBLE TUBING SHALL BE SECURELY ANCHORED TO THE SLOPE BY STAKING AT THE GROMMETS PROVIDED.
7. A RIPRAP APRON SHALL BE PROVIDED AT THE OUTLET. THIS SHALL CONSIST OF 6"DIAMETER STONE PLACED AS SHOWN.
8. THE SOIL AROUND AND UNDER INLET PIPE AND ENTRANCE SECTION SHALL BE HAND TAMPED IN 4"LIFTS TO THE TOP OF EARTH DIKE.
9. FOLLOW-UP INSPECTION AND ANY NEEDED MAINTENANCE SHALL BE PERFORMED AFTER EACH STORM. * DRAINAGE AREA MUST NOT EXCEED 5 ACRES.

13 PIPE SLOPE DRAIN

SCALE: NTS



CONSTRUCTION SPECIFICATIONS

1. INSTALL THE WATER BAR AS SOON AS THE RIGHT OF WAY IS CLEARED AND GRADED.
2. DISK OR STRIP THE SOD FROM THE BASE FOR THE CONSTRUCTED RIDGE BEFORE PLACING FILL.
3. TRACK THE RIDGE TO COMPACT IT TO THE DESIGN CROSS SECTION.
4. THE OUTLET SHALL BE LOCATED ON AN UNDISTURBED AREA. FIELD SPACING WILL BE ADJUSTED TO USE THE MOST STABLE OUTLET AREAS. OUTLET PROTECTION WILL BE PROVIDED WHEN NATURAL AREAS ARE NOT ADEQUATE.
5. VEHICLE CROSSING SHALL BE STABILIZED WITH GRAVEL. EXPOSED AREAS SHALL BE IMMEDIATELY SEEDED AND MULCHED.
6. PERIODICALLY INSPECT WATER BARS FOR EROSION DAMAGE AND SEDIMENT. CHECK OUTLET AREAS AND MAKE REPAIRS AS NEEDED TO RESTORE OPERATION.

14 WATER BAR

SCALE: NTS

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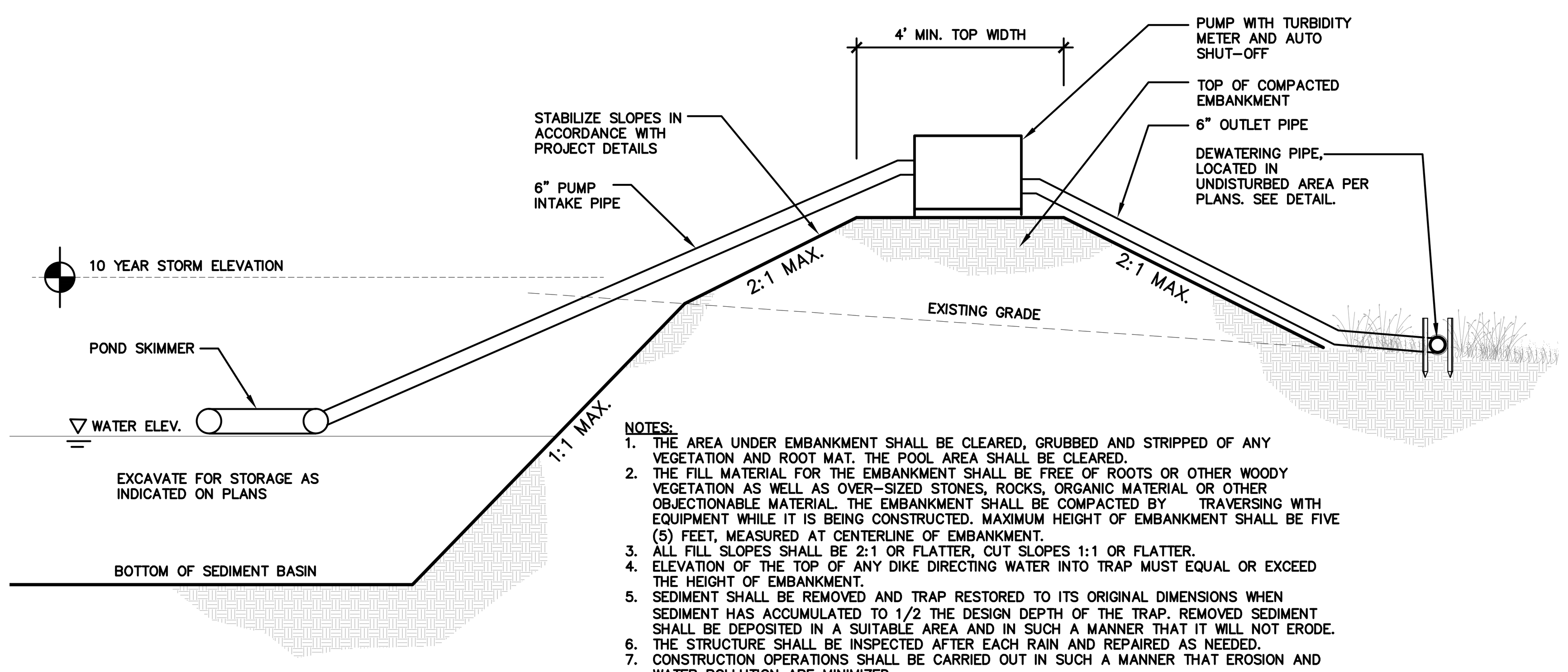
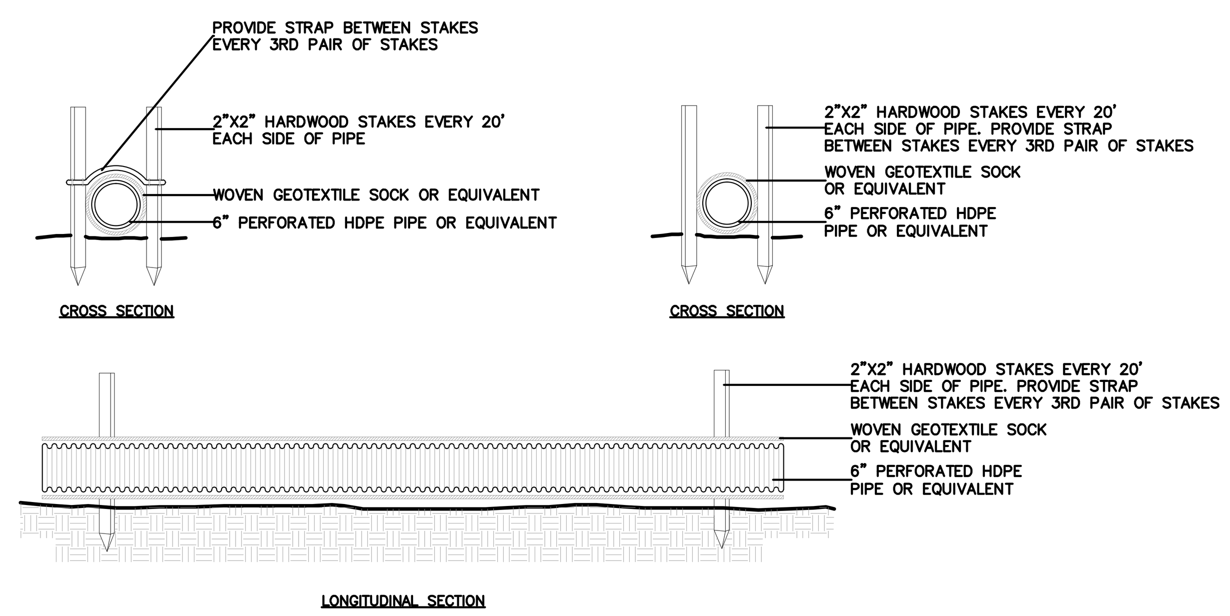


NOTES:
1. THE AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED. MAXIMUM HEIGHT OF EMBANKMENT SHALL BE FIVE (5) FEET, MEASURED AT CENTERLINE OF EMBANKMENT.
3. ALL FILL SLOPES SHALL BE 2:1 OR FLATTER, CUT SLOPES 1:1 OR FLATTER.
4. ELEVATION OF THE TOP OF ANY DIKE DIRECTING WATER INTO TRAP MUST EQUAL OR EXCEED THE HEIGHT OF EMBANKMENT.
5. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
6. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRED AS NEEDED.
7. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE MINIMIZED.
8. THE STRUCTURE SHALL BE REMOVED AND THE AREA STABILIZED WHEN DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
9. DRAINAGE AREA IS LIMITED TO 15 ACRES OR LESS.
10. SEDIMENT BASINS TO BE CONVERTED TO PERMANENT STORMWATER MANAGEMENT PRACTICES SHALL BE CONVERTED AT THE DISCRETION OF THE ON-SITE EROSION CONTROL SPECIALIST.

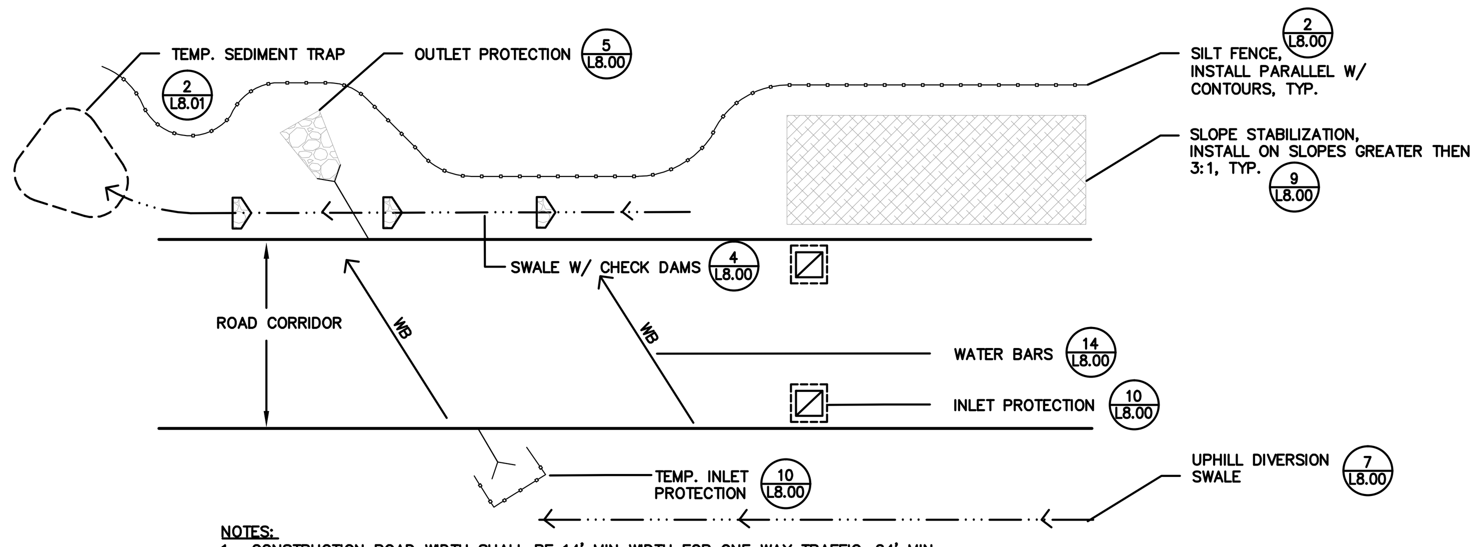
1 SEDIMENT TRAP AND DEWATERING DEVICE

SCALE: NTS



2 SEDIMENT TRAP DEWATERING DISPERSION PIPE

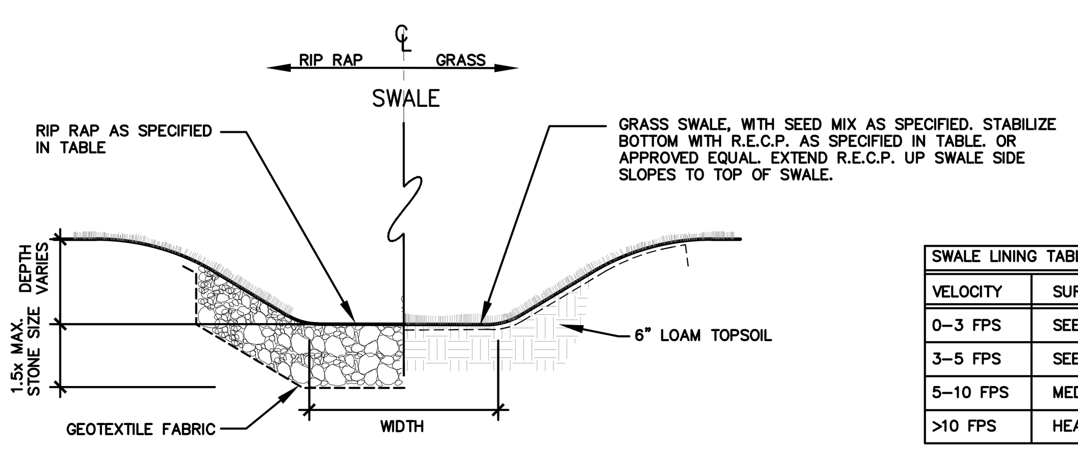
SCALE: NTS



NOTES:
1. CONSTRUCTION ROAD WIDTH SHALL BE 14' MIN WIDTH FOR ONE WAY TRAFFIC, 24' MIN. WIDTH FOR TWO WAY TRAFFIC.
2. SURFACE SHALL BE #2 NYSDOT STONE, MINIMUM 12" DEPTH. PROVIDE FILTER FABRIC UNDER STONE IF APPLICABLE BASED ON SOIL CONDITIONS.
3. DIVERT SURFACE DRAINAGE TO TEMPORARY OR PERMANENT ROADSIDE SWALE. STABILIZE AND INSTALL CHECKDAMS IN ACCORDANCE WITH DETAILS, AND DISCHARGE TO SEDIMENT BASIN. DIVERT CLEAN UPHILL RUNOFF AROUND OR UNDER ACCESS ROAD.
4. STABILIZE AND MAINTAIN SIDE SLOPES AS SOON AS GRADING IS ACCOMPLISHED.
5. PROVIDE APPROPRIATE SEDIMENT CONTROL MEASURES TO PREVENT OFFSITE SEDIMENTATION.

3 CONSTRUCTION ROAD STABILIZATION

SCALE: NTS



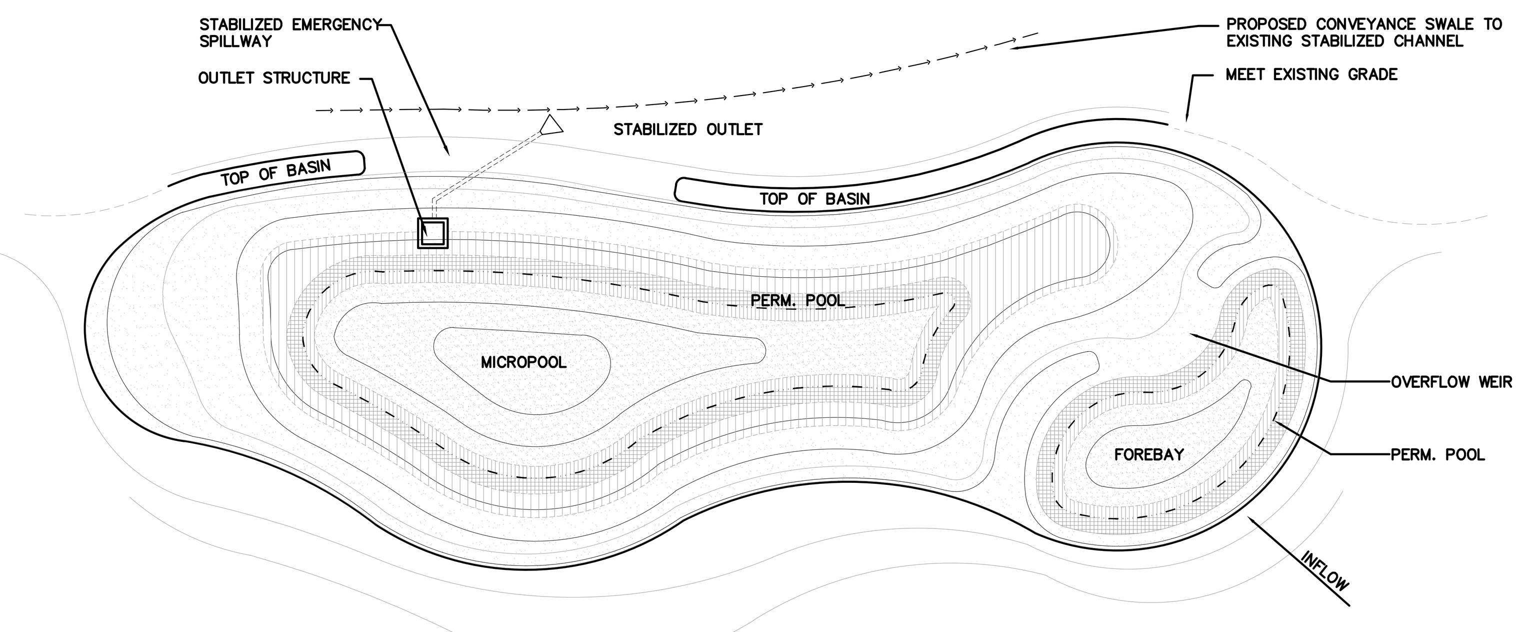
SWALE LINING TABLE	
VELOCITY	SURFACING/LINING
0-3 FPS	SEED AND R.E.C.P.
3-5 FPS	SEED AND TRM
5-10 FPS	MED. STONE FILL PER NYSDOT
>10 FPS	HEAVY STONE FILL PER NYSDOT

NOTES:
1. EROSION CONTROL PRODUCTS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. ANY PROPOSED SUBSTITUTION SHALL BE SUBMITTED TO OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO CONSTRUCTION.
3. FINAL SURFACING BASED ON FINAL STORMWATER MODELING CALCULATIONS.

- ROLLED EROSION CONTROL PRODUCT (R.E.C.P.) SHALL BE ECS-2 BY EAST COAST EROSION BLANKETS, OR APPROVED EQUAL.
- TURF REINFORCEMENT MAT (T.R.M.) SHALL BE ECP-2 BY EAST COAST EROSION BLANKETS, OR APPROVED EQUAL.

4 CONVEYANCE SWALE

SCALE: NTS



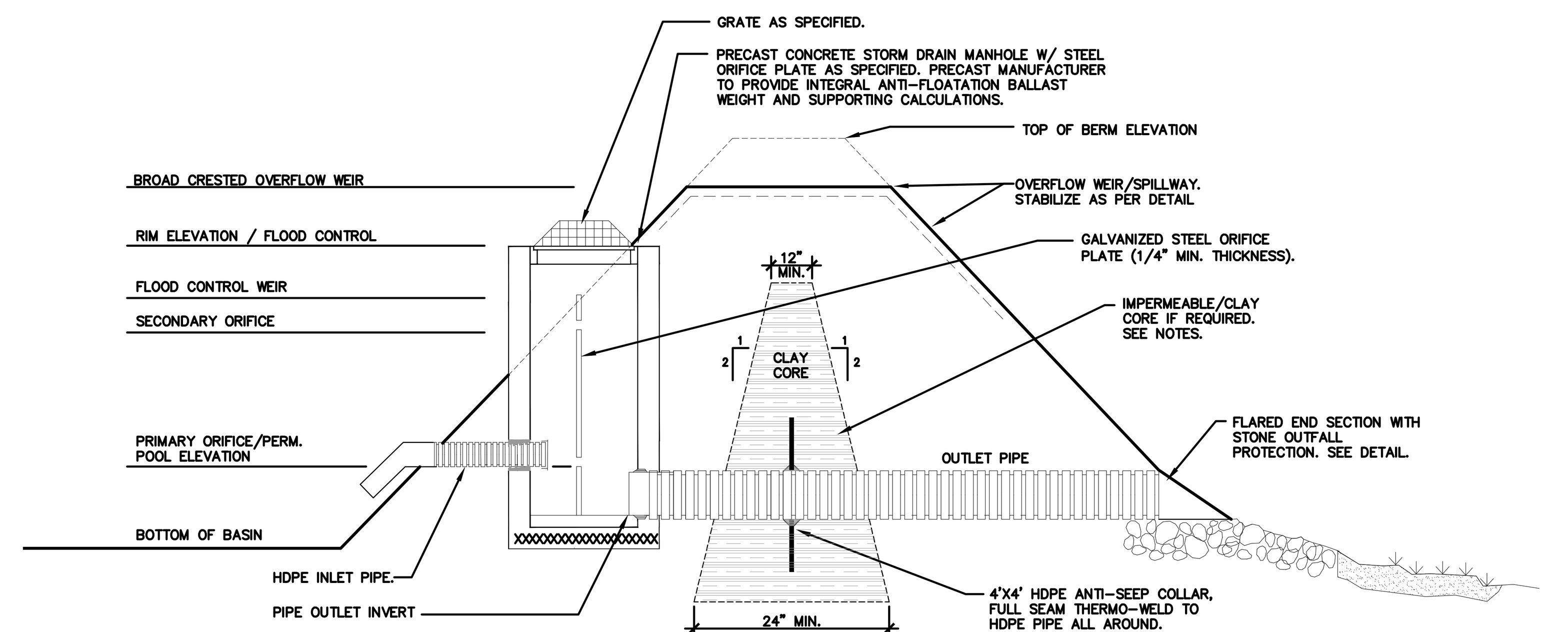
NOTES:
1. POND DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NYSDEC STORMWATER DESIGN MANUAL, INCLUDING WQv STORAGE REQUIREMENTS, BENCHING AND PLANTING.
2. ALL DISCHARGE POINTS SIZED AND SET IN ACCORDANCE WITH STORMWATER CALCULATIONS.
3. PLANTING FOR WET PONDS (P2) SHALL BE THE SAME AS SHOWN ON MICROPOOL EXTENDED DETENTION POND DETAIL, ADJUSTED TO CONFORM TO WET POND WATER ELEVATIONS.

PLANTING KEY

SYMBOL	ZONE	PLANT DESCRIPTION	HYDROLOGIC CONDITIONS
	ZONE 1	DEEP WATER POOL	1-6' DEEP PERM. POOL
	ZONE 2	SHALLOW WATER	6"-12" DEEP POOL
	ZONE 3	SHORELINE FRINGE	REGULARLY INUNDATED
	ZONE 4	RIPARIAN FRINGE	PERIODICALLY INUNDATED
	ZONE 5	FLOODPLAIN	INFREQUENTLY INUNDATED

5 MICROPOOL EXTENDED DETENTION POND (P-1)

SCALE: NTS



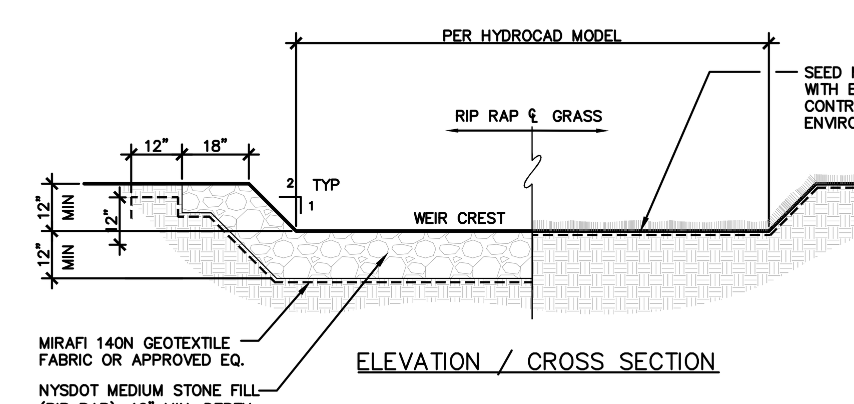
POND AND OUTLET STRUCTURE ELEVATIONS

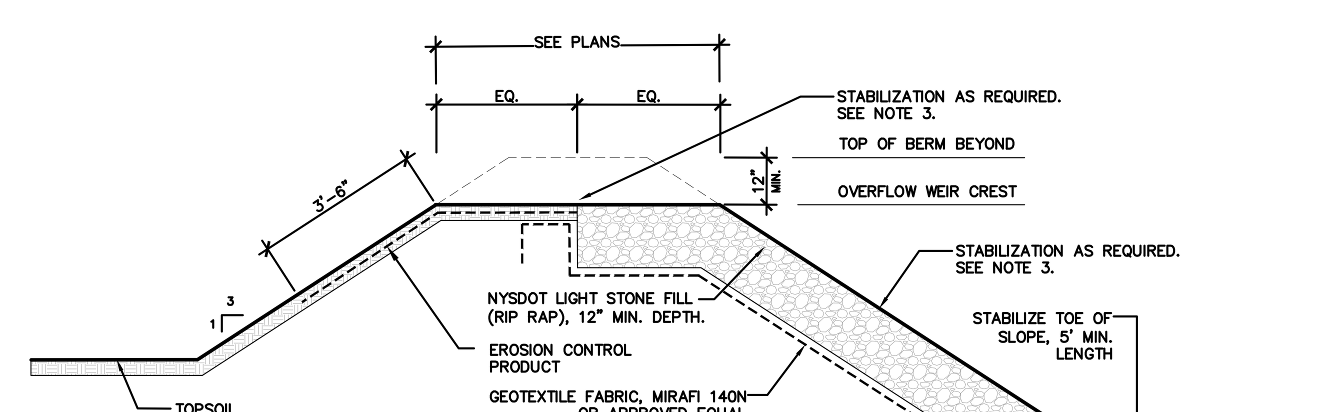
DESCRIPTION	Pond -		Pond C		Pond L		Pond AC		Pond IP	
Pond Elevations	Elev.		Elev.		Elev.		Elev.		Elev.	
BOTTOM OF POND ELEV.	1395.00		2514.00		1343.50		2448.00		1331.00	
PERM. POOL ELEV.	1396.00		2511.00		1344.75		2454.50		1337.00	
DEP WQv ELEV.	1398.75		2521.75		1345.75		2454.50		1337.00	
CPv ELEV.	1398.16		2521.38		1347.77		2455.86		1338.37	
10-YR. DET. PEAK ELEV.	2001.12		2523.83		1349.11		2457.42		1340.22	
100-YR. DET. PEAK ELEV.	2002.46		2524.25		1350.28		2458.24		1343.07	
TOP OF BERM ELEV.	2003.75		2525.25		1351.75		2458.75		1344.50	
Pond Outlets	Elev.	Size	Elev.	Size	Elev.	Size	Elev.	Size	Elev.	Size
PRIMARY ORIFICE (INV.)	1395.00	2"	2511.00	1.75"	1344.75	2.5"	2454.50	1"	N.A.	N.A.
SECONDARY ORIFICE	N.A.	N.A.	2520.50	3"	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
FLOOD CONTROL WEIR IN PLATE	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	2456.25	12"x12"	N.A.	N.A.
FLOOD CONTROL INLET (RIM ELEV.)	1398.12	24"x24"	2523.50	24"x24"	1348.00	36"x36"		N.A.	N.A.	N.A.
BROAD CRESTED OVERFLOW WEIR (LENGTH)	2002.00	10'	2524.00	50'	1350.00	25'	2457.50	30'	1343.00	25'
OUTLET PIPE INVERT (INV.)	1395.00	18"	2517.50	18"	1343.00	36"	2453.00	18"	1342.50	18"

NOTES:
1. PONDS TYPICALLY EXCAVATED OUT OF EXISTING GRADE WITH MINIMAL OR NO FILL EMBANKMENT. SEE GRADING AND DRAINAGE PLANS.
2. IF FILL EMBANKMENT IS USED, EMBANKMENT FILL SHALL CONSIST OF A WELL GRADED MIXTURE OF SILT, CLAY, SAND AND GRAVEL AS SPECIFIED. IF SUITABLE, EXCAVATED ON SITE MATERIAL MAY BE USED. IF EXISTING SOILS ARE NOT DEEMED SUITABLE, AN IMPERMEABLE/CLAY CORE MAY BE REQUIRED. FINAL DESIGN CONTINGENT UPON GEOTECHNICAL SOIL ANALYSIS AND RECCOMENDATION, AND APPROVAL BY OWNER'S REPRESENTATIVE.
3. FINAL INVERT ELEVATIONS, ORIFICE SIZE AND DESIGN, AND SPILLWAY DIMENSIONS TO BE VERIFIED PRIOR TO CONSTRUCTION.

6 POND OUTLET STRUCTURE

SCALE: NTS

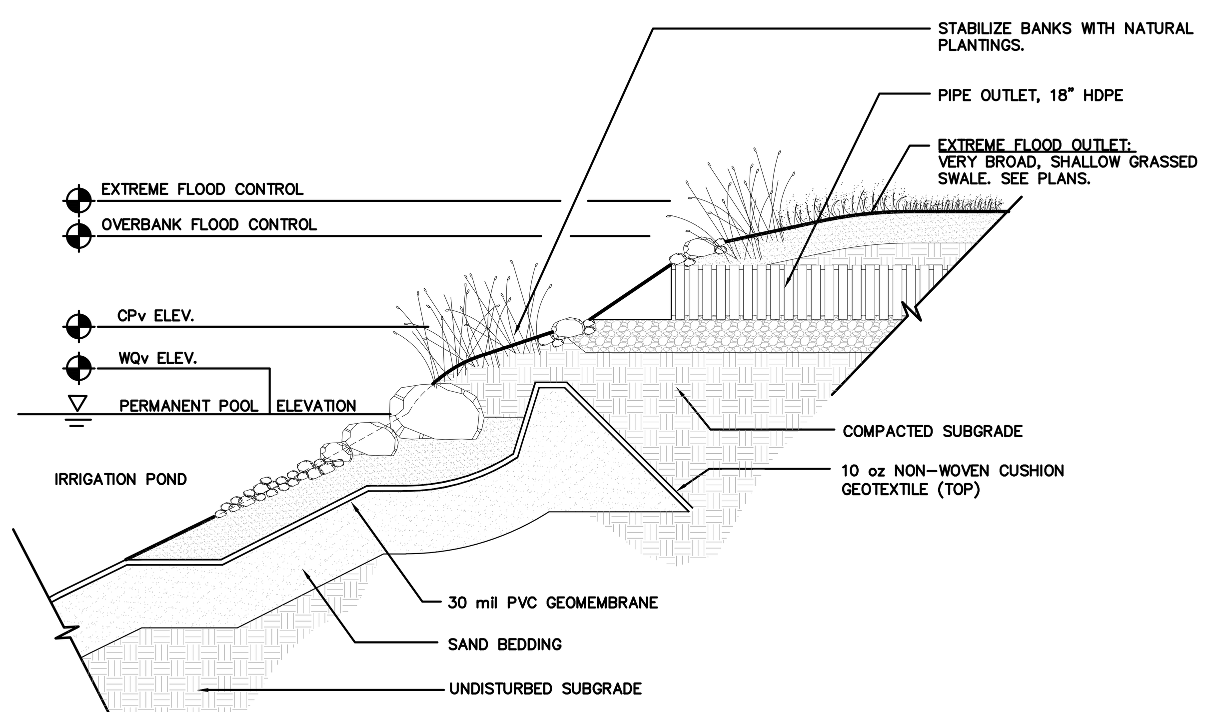




NOTES:
1. EROSION CONTROL PRODUCTS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. ANY PROPOSED SUBSTITUTION SHALL BE SUBMITTED TO OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO CONSTRUCTION.
3. FINAL SURFACING AND STABILIZATION BASED ON STORMWATER MODELING CALCULATIONS

7 BROAD CRESTED WEIR

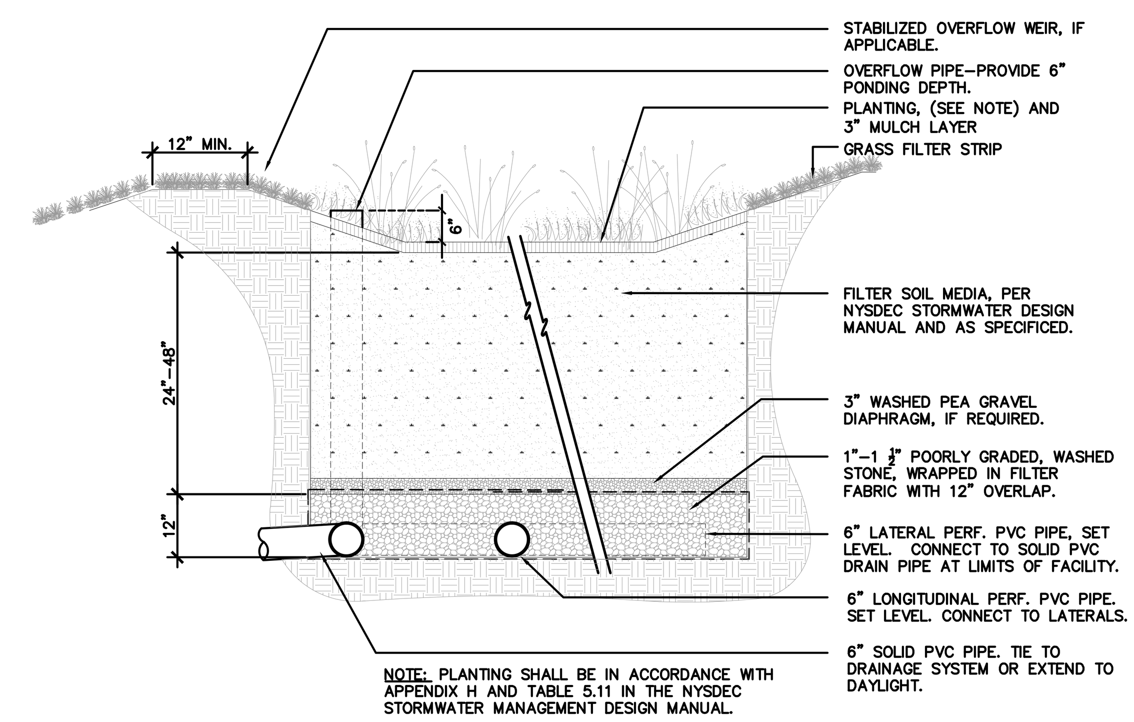
SCALE: NTS



NOTES:
1. POND DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NYSDEC STORMWATER DESIGN MANUAL, INCLUDING WQv STORAGE REQUIREMENTS, BENCHING AND PLANTING.
2. ALL DISCHARGE POINTS SIZED AND SET IN ACCORDANCE WITH STORMWATER CALCULATIONS.
3. PLANTING FOR IRRIGATION POND SHALL BE THE SAME AS SHOWN ON MICROPOOL EXTENDED DETENTION POND DETAIL, ADJUSTED TO CONFORM TO WATER ELEVATIONS AT IRRIGATION POND.

8 IRRIGATION POND AND OUTLET

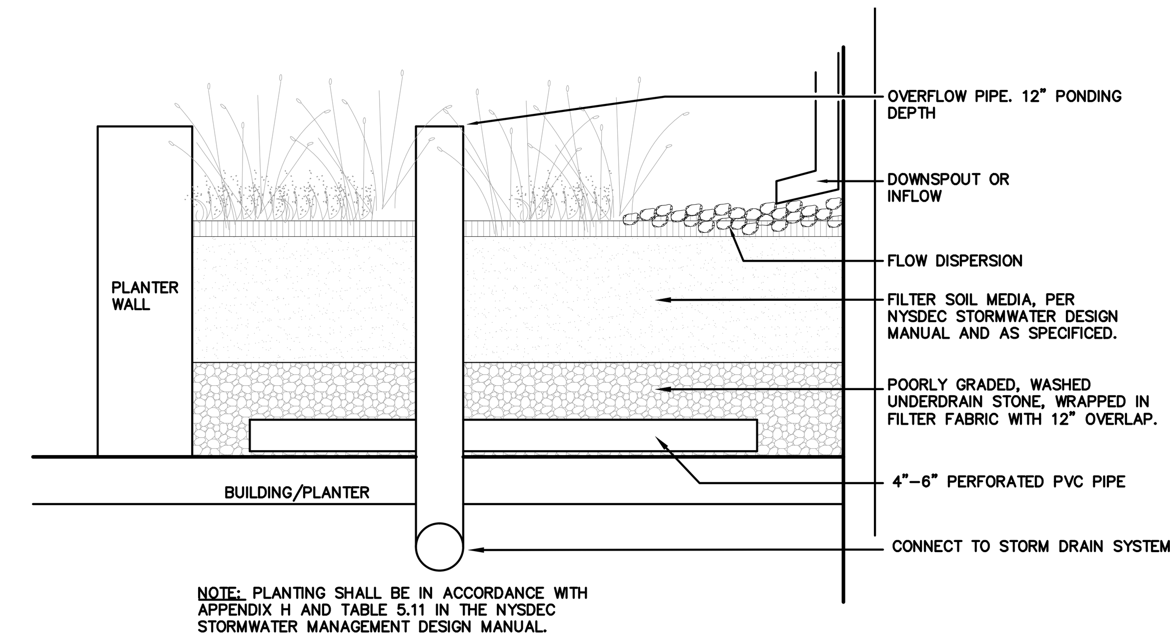
SCALE: NTS



NOTE: PLANTING SHALL BE IN ACCORDANCE WITH APPENDIX H AND TABLE 5.11 IN THE NYSDEC STORMWATER MANAGEMENT DESIGN MANUAL.

9 BIORETENTION AREA

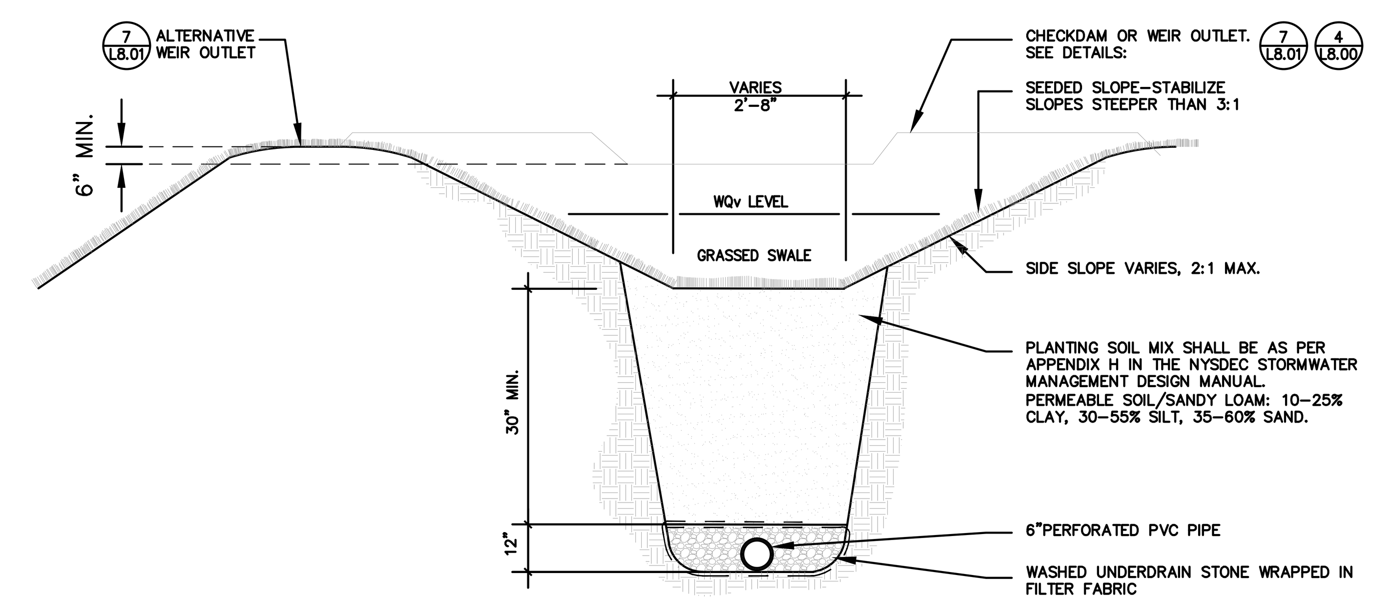
SCALE: NTS



NOTE: PLANTING SHALL BE IN ACCORDANCE WITH APPENDIX H AND TABLE 5.11 IN THE NYSDEC STORMWATER MANAGEMENT DESIGN MANUAL.

10 STORMWATER PLANTER

SCALE: NTS



11 DRY SWALE

SCALE: NTS

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Drawn MJT/JTS
Checked KJF/SJA

REGISTERED LANDSCAPE ARCHITECT · DAVID ROWLAND CARR JR · 001206 · STATE OF NEW YORK

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Submission:
FOR REGULATORY APPROVALS ONLY

PREPARED FOR:
Crossroads Ventures, L.L.C.
PO Box 267
Mt. Tremper, NY 12457

The Modified Belleayre Resort at Catskill Park
Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

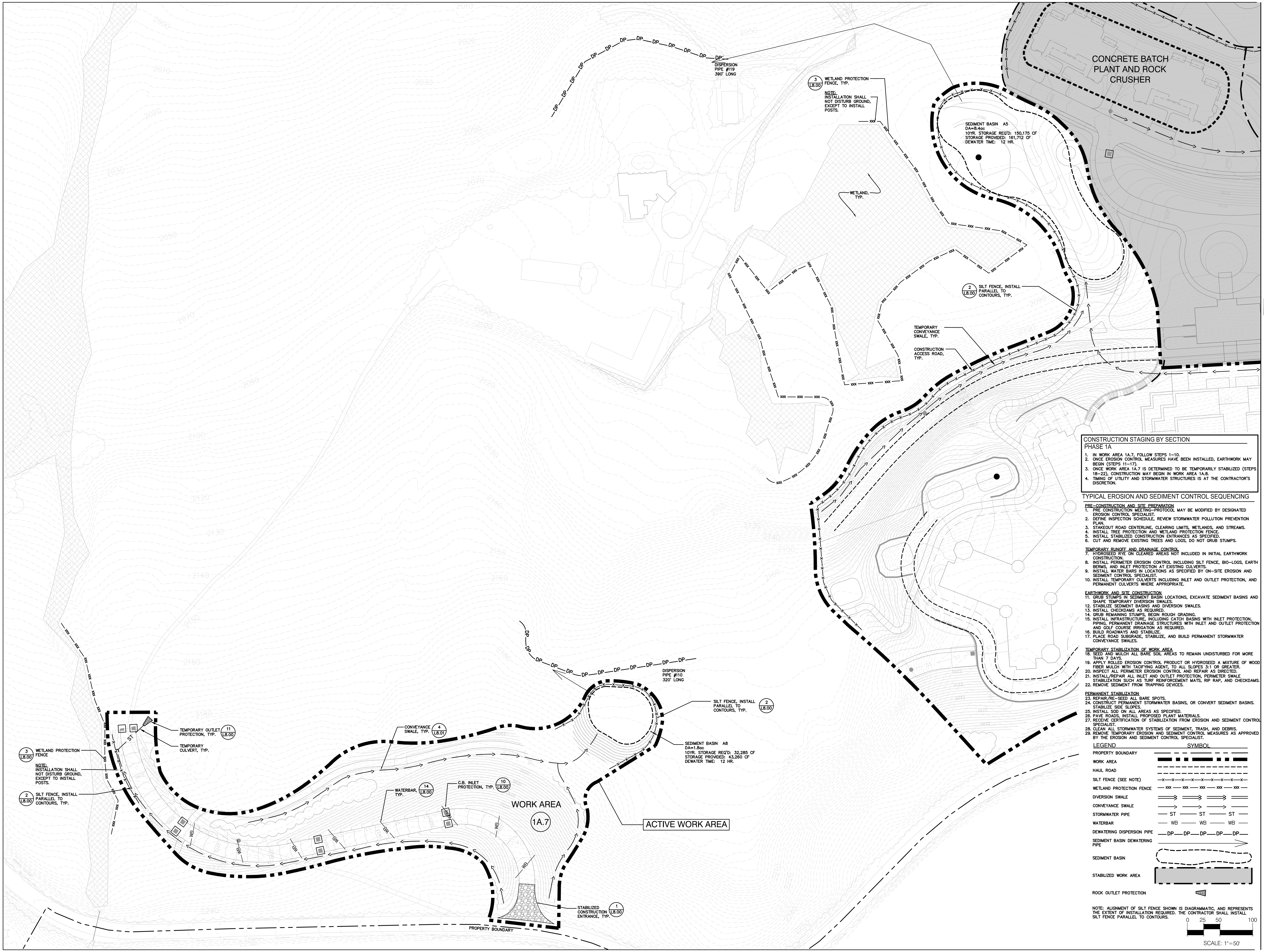
Title
Site Details

Key Plan

Revisions
1 03/02/2012
2 02/21/2014

Project: 07074
Date: 03/30/11

Drawing
L-8.01



CONSTRUCTION STAGING BY SECTION

PHASE 1A

1. IN WORK AREA 1A.7, FOLLOW STEPS 1–10.
2. ONCE EROSION CONTROL MEASURES HAVE BEEN INSTALLED, EARTHWORK MAY BEGIN (STEPS 11–17).
3. ONCE WORK AREA 1A.7 IS DETERMINED TO BE TEMPORARILY STABILIZED (STEPS 18–22), CONSTRUCTION MAY BEGIN IN WORK AREA 1A.8.
4. TIMING OF UTILITY AND STORMWATER STRUCTURES IS AT THE CONTRACTOR'S DISCRETION.

TYPICAL EROSION AND SEDIMENT CONTROL SEQUENCING

PRE–CONSTRUCTION AND SITE PREPARATION

1. PRE CONSTRUCTION MEETING–PROTOCOL MAY BE MODIFIED BY DESIGNATED EROSION CONTROL SPECIALIST.
2. DEFINE INSPECTION SCHEDULE, REVIEW STORMWATER POLLUTION PREVENTION PLAN.
3. STAKEOUT ROAD CENTERLINE, CLEARING LIMITS, WETLANDS, AND STREAMS.
4. INSTALL TREE PROTECTION AND WETLAND PROTECTION FENCE.
5. INSTALL STABILIZED CONSTRUCTION ENTRANCES AS SPECIFIED.
6. CUT AND REMOVE EXISTING TREES AND LOGS, DO NOT GRUB STUMPS.

TEMPORARY RUNOFF AND DRAINAGE CONTROL

7. HYDROSEED RYE ON CLEARED AREAS NOT INCLUDED IN INITIAL EARTHWORK CONSTRUCTION.
8. INSTALL PERIMETER EROSION CONTROL INCLUDING SILT FENCE, BIO–LOGS, EARTH BERMS, AND INLET PROTECTION AT EXISTING CULVERTS.
9. INSTALL WATER BARS IN LOCATIONS AS SPECIFIED BY ON–SITE EROSION AND SEDIMENT CONTROL SPECIALIST.
10. INSTALL TEMPORARY CULVERTS INCLUDING INLET AND OUTLET PROTECTION, AND PERMANENT CULVERTS WHERE APPROPRIATE.

EARTHWORK AND SITE CONSTRUCTION

11. GRUB STUMPS IN SEDIMENT BASIN LOCATIONS, EXCAVATE SEDIMENT BASINS AND SHAPE TEMPORARY DIVERSION SWALES.
12. STABILIZE SEDIMENT BASINS AND DIVERSION SWALES.
13. INSTALL CHECKDAMS AS REQUIRED.
14. GRUB REMAINING STUMPS, BEGIN ROUGH GRADING.
15. INSTALL INFRASTRUCTURE, INCLUDING CATCH BASINS WITH INLET PROTECTION, PIPING, PERMANENT DRAINAGE STRUCTURES WITH INLET AND OUTLET PROTECTION AND GOLF COURSE IRRIGATION AS REQUIRED.
16. BUILD ROADWAYS AND STABILIZE.
17. PLACE ROAD SUBGRADE, STABILIZE, AND BUILD PERMANENT STORMWATER CONVEYANCE SWALES.

TEMPORARY STABILIZATION OF WORK AREA

18. SEED AND MULCH ALL BARE SOIL AREAS TO REMAIN UNDISTURBED FOR MORE THAN 7 DAYS.
19. APPLY ROLLED EROSION CONTROL PRODUCT OR HYDROSEED A MIXTURE OF WOOD FIBER MULCH WITH TACIFYING AGENT, TO ALL SLOPES 3:1 OR GREATER.
20. INSPECT ALL PERIMETER EROSION CONTROL AND REPAIR AS DIRECTED.
21. INSTALL/REPAIR ALL INLET AND OUTLET PROTECTION, PERIMETER SWALE STABILIZATION SUCH AS TURF REINFORCEMENT MATS, RIP RAP, AND CHECKDAMS.
22. REMOVE SEDIMENT FROM TRAPPING DEVICES.

PERMANENT STABILIZATION

23. REPAIR/RE–SEED ALL BARE SPOTS.
24. CONSTRUCT PERMANENT STORMWATER BASINS, OR CONVERT SEDIMENT BASINS. STABILIZE SIDE SLOPES.
25. INSTALL SOD ON ALL AREAS AS SPECIFIED.
26. PAVE ROADS, INSTALL PROPOSED PLANT MATERIALS.
27. RECEIVE CERTIFICATION OF STABILIZATION FROM EROSION AND SEDIMENT CONTROL SPECIALIST.
28. CLEAN ALL STORMWATER SYSTEMS OF SEDIMENT, TRASH, AND DEBRIS.
29. REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS APPROVED BY THE EROSION AND SEDIMENT CONTROL SPECIALIST.

LEGEND	SYMBOL
PROPERTY BOUNDARY	
WORK AREA	
HAUL ROAD	
SILT FENCE (SEE NOTE)	—x—x—x—x—
WETLAND PROTECTION FENCE	— xxx — xxx —
DIVERSION SWALE	
CONVEYANCE SWALE	
STORMWATER PIPE	— ST — ST — ST —
WATERBAR	— WB — WB — WB —
DEWATERING DISPERSION PIPE	—DP—DP—DP—DP—DP—
SEDIMENT BASIN DEWATERING PIPE	
SEDIMENT BASIN	
STABILIZED WORK AREA	
ROCK OUTLET PROTECTION	

NOTE: ALIGNMENT OF SILT FENCE SHOWN IS DIAGRAMMATIC, AND REPRESENTS THE EXTENT OF INSTALLATION REQUIRED. THE CONTRACTOR SHALL INSTALL SILT FENCE PARALLEL TO CONTOURS.

0 25 50 100

SCALE: 1"=50'

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Design MJT/JTS
Drawn MJT/JTS
Checked KJF/SJA

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Submission:
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PREPARED FOR:
Crossroads Ventures, L.L.C.
PO Box 267
Mt. Tremper, NY 12457

The Modified Belleayre Resort at Catskill Park

Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

Title: Sediment and Erosion Control Plan- Wildacres

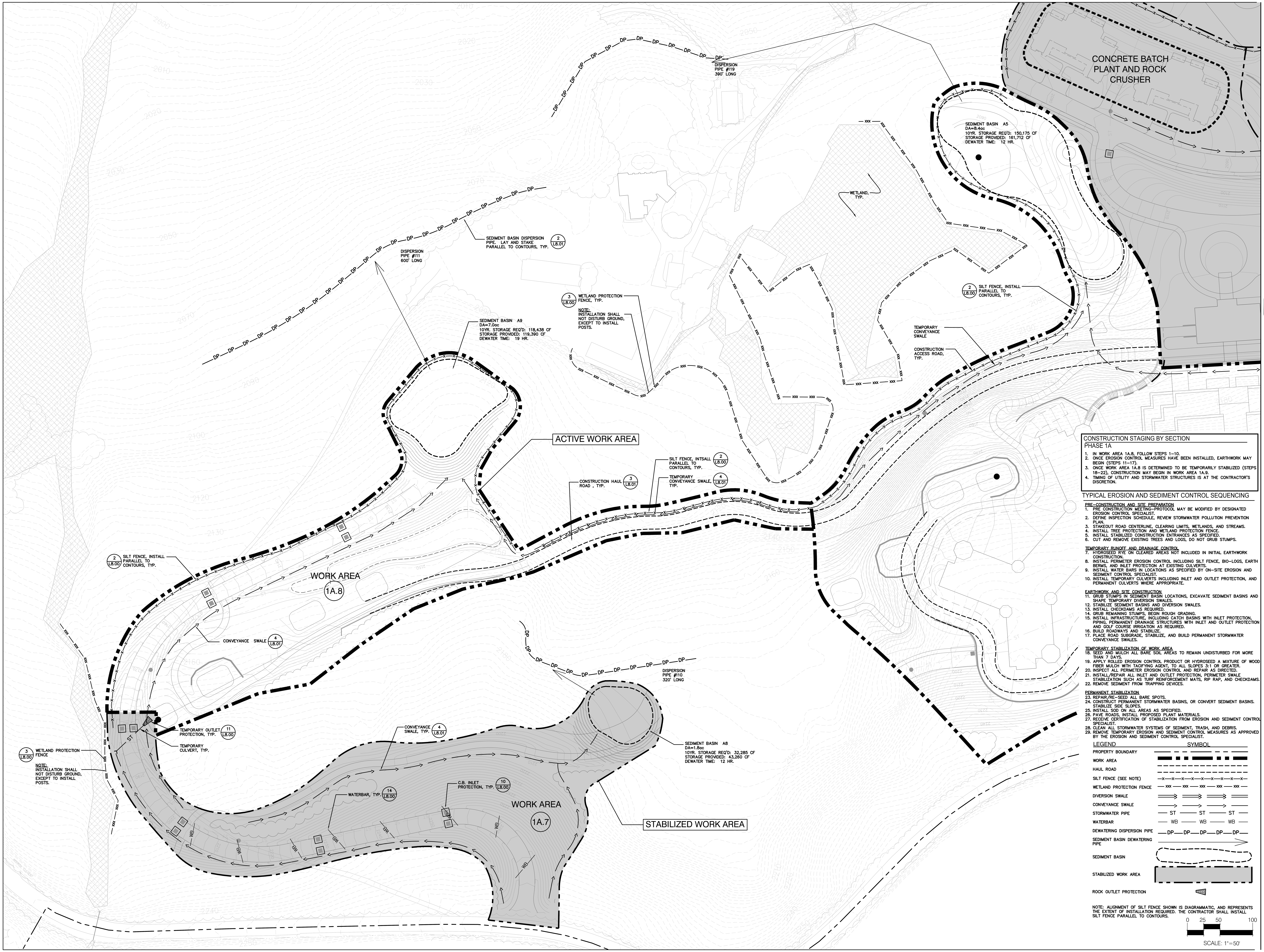
Key Plan

NORTH

Revisions
1 03/02/2012
2 02/21/2014

Project: 07074
Date: 03/30/2011

Drawing
L-3.08



CONSTRUCTION STAGING BY SECTION

PHASE 1A

1. IN WORK AREA 1A.8, FOLLOW STEPS 1–10.
2. ONCE EROSION CONTROL MEASURES HAVE BEEN INSTALLED, EARTHWORK MAY BEGIN (STEPS 11–17).
3. ONCE WORK AREA 1A.8 IS DETERMINED TO BE TEMPORARILY STABILIZED (STEPS 18–22), CONSTRUCTION MAY BEGIN IN WORK AREA 1A.9.
4. TIMING OF UTILITY AND STORMWATER STRUCTURES IS AT THE CONTRACTOR'S DISCRETION.

TYPICAL EROSION AND SEDIMENT CONTROL SEQUENCING

PRE-CONSTRUCTION AND SITE PREPARATION

1. PRE CONSTRUCTION MEETING–PROTOCOL MAY BE MODIFIED BY DESIGNATED EROSION CONTROL SPECIALIST.
2. DEFINE INSPECTION SCHEDULE, REVIEW STORMWATER POLLUTION PREVENTION PLAN.
3. STAKEOUT ROAD CENTERLINE, CLEARING LIMITS, WETLANDS, AND STREAMS.
4. INSTALL TREE PROTECTION AND WETLAND PROTECTION FENCE.
5. INSTALL STABILIZED CONSTRUCTION ENTRANCES AS SPECIFIED.
6. CUT AND REMOVE EXISTING TREES AND LOGS, DO NOT GRUB STUMPS.

TEMPORARY RUNOFF AND DRAINAGE CONTROL

7. HYDROSEED RYE ON CLEARED AREAS NOT INCLUDED IN INITIAL EARTHWORK CONSTRUCTION.
8. INSTALL PERIMETER EROSION CONTROL INCLUDING SILT FENCE, BIO–LOGS, EARTH BERMS, AND INLET PROTECTION AT EXISTING CULVERTS.
9. INSTALL WATER BARS IN LOCATIONS AS SPECIFIED BY ON–SITE EROSION AND SEDIMENT CONTROL SPECIALIST.
10. INSTALL TEMPORARY CULVERTS INCLUDING INLET AND OUTLET PROTECTION, AND PERMANENT CULVERTS WHERE APPROPRIATE.

EARTHWORK AND SITE CONSTRUCTION

11. GRUB STUMPS IN SEDIMENT BASIN LOCATIONS, EXCAVATE SEDIMENT BASINS AND SHAPE TEMPORARY DIVERSION SWALES.
12. STABILIZE SEDIMENT BASINS AND DIVERSION SWALES.
13. INSTALL CHECKDAMS AS REQUIRED.
14. GRUB REMAINING STUMPS, BEGIN ROUGH GRADING.
15. INSTALL INFRASTRUCTURE, INCLUDING CATCH BASINS WITH INLET PROTECTION, PIPING, PERMANENT DRAINAGE STRUCTURES WITH INLET AND OUTLET PROTECTION AND GOLF COURSE IRRIGATION AS REQUIRED.
16. BUILD ROADWAYS AND STABILIZE.
17. PLACE ROAD SUBGRADE, STABILIZE, AND BUILD PERMANENT STORMWATER CONVEYANCE SWALES.

TEMPORARY STABILIZATION OF WORK AREA

18. SEED AND MULCH ALL BARE SOIL AREAS TO REMAIN UNDISTURBED FOR MORE THAN 7 DAYS.
19. APPLY ROLLED EROSION CONTROL PRODUCT OR HYDROSEED A MIXTURE OF WOOD FIBER MULCH WITH TACIFYING AGENT, TO ALL SLOPES 3:1 OR GREATER.
20. INSPECT ALL PERIMETER EROSION CONTROL AND REPAIR AS DIRECTED.
21. INSTALL/REPAIR ALL INLET AND OUTLET PROTECTION, PERIMETER SWALE STABILIZATION SUCH AS TURF REINFORCEMENT MATS, RIP RAP, AND CHECKDAMS.
22. REMOVE SEDIMENT FROM TRAPPING DEVICES.

PERMANENT STABILIZATION

23. REPAIR/RE–SEED ALL BARE SPOTS.
24. CONSTRUCT PERMANENT STORMWATER BASINS, OR CONVERT SEDIMENT BASINS. STABILIZE SIDE SLOPES.
25. INSTALL SOD ON ALL AREAS AS SPECIFIED.
26. PAVE ROADS, INSTALL PROPOSED PLANT MATERIALS.
27. RECEIVE CERTIFICATION OF STABILIZATION FROM EROSION AND SEDIMENT CONTROL SPECIALIST.
28. CLEAN ALL STORMWATER SYSTEMS OF SEDIMENT, TRASH, AND DEBRIS.
29. REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS APPROVED BY THE EROSION AND SEDIMENT CONTROL SPECIALIST.

LEGEND	SYMBOL
PROPERTY BOUNDARY	
WORK AREA	
HAUL ROAD	
SILT FENCE (SEE NOTE)	—x—x—x—x—x—
WETLAND PROTECTION FENCE	— xxx — xxx — xxx —
DIVERSION SWALE	
CONVEYANCE SWALE	
STORMWATER PIPE	— ST — ST — ST —
WATERBAR	— WB — WB — WB —
DEWATERING DISPERSION PIPE	—DP—DP—DP—DP—DP—
SEDIMENT BASIN DEWATERING PIPE	
SEDIMENT BASIN	
STABILIZED WORK AREA	
ROCK OUTLET PROTECTION	

NOTE: ALIGNMENT OF SILT FENCE SHOWN IS DIAGRAMMATIC, AND REPRESENTS THE EXTENT OF INSTALLATION REQUIRED. THE CONTRACTOR SHALL INSTALL SILT FENCE PARALLEL TO CONTOURS.

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REGISTERED LANDSCAPE ARCHITECT DAVID ROWLAND CARR JR. 001206 STATE OF NEW YORK

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The Modified Belleayre Resort at Catskill Park

Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

Title
Sediment and Erosion Control Plan- Wildacres

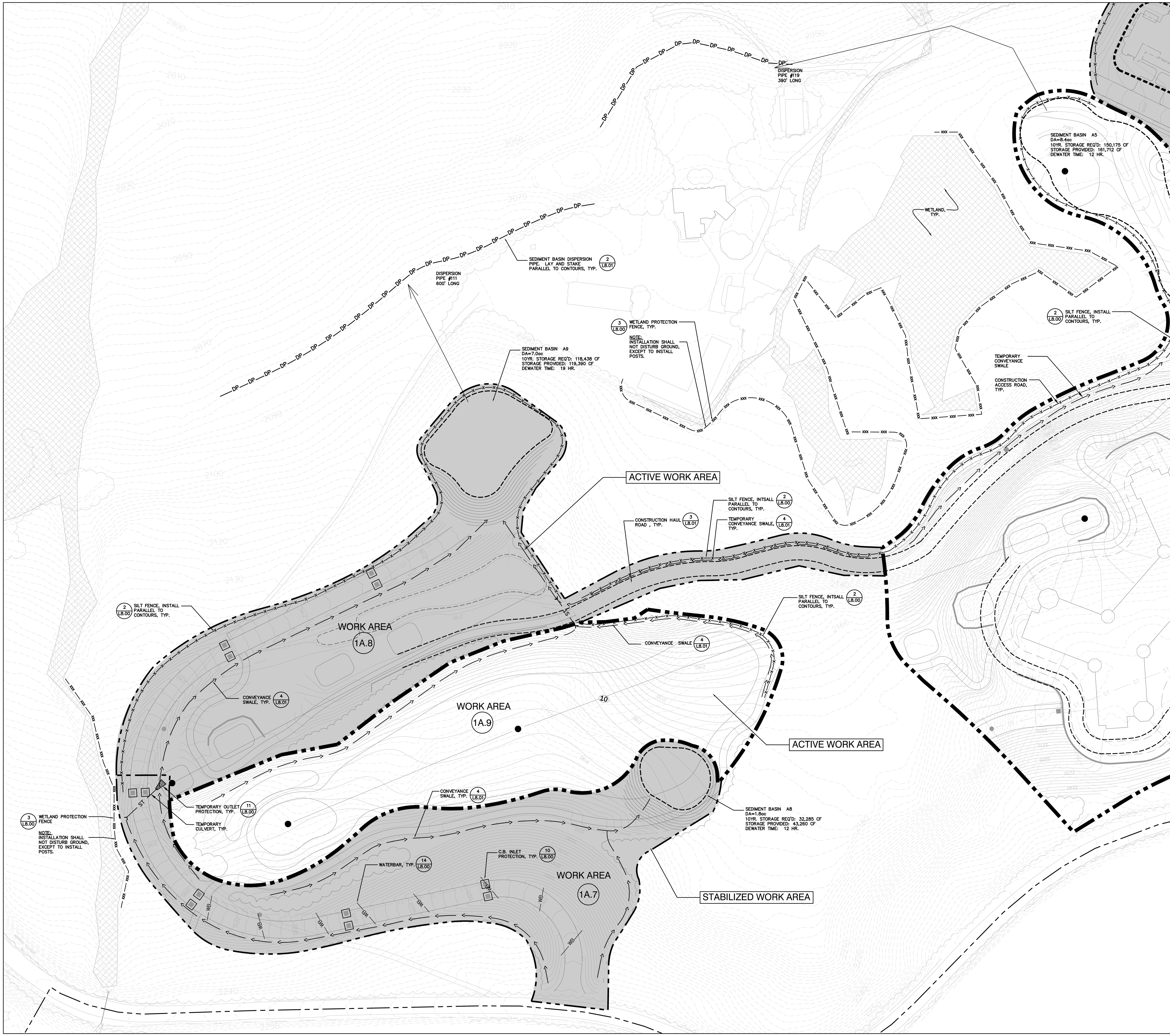
Key Plan

NORTH

Revisions
1 03/02/2012
2 02/21/2014

Project: 07074
Date: 03/30/2011

Drawing
L-3.09



CONSTRUCTION STAGING BY SECTION

PHASE 1A

1. IN WORK AREA 1A.9, FOLLOW STEPS 1–10.
2. ONCE EROSION CONTROL MEASURES HAVE BEEN INSTALLED, EARTHWORK MAY BEGIN (STEPS 11–17).
3. ONCE WORK AREA 1A.9 IS DETERMINED TO BE TEMPORARILY STABILIZED (STEPS 18–22), CONSTRUCTION MAY BEGIN IN WORK AREA 1A.10.
4. TIMING OF UTILITY AND STORMWATER STRUCTURES IS AT THE CONTRACTOR'S DISCRETION.

TYPICAL EROSION AND SEDIMENT CONTROL SEQUENCING

PRE-CONSTRUCTION AND SITE PREPARATION

1. PRE CONSTRUCTION MEETING-PROTOCOL MAY BE MODIFIED BY DESIGNATED EROSION CONTROL SPECIALIST.
2. DEFINE INSPECTION SCHEDULE, REVIEW STORMWATER POLLUTION PREVENTION PLAN.
3. STAKEOUT ROAD CENTERLINE, CLEARING LIMITS, WETLANDS, AND STREAMS.
4. INSTALL TREE PROTECTION AND WETLAND PROTECTION FENCE.
5. INSTALL STABILIZED CONSTRUCTION ENTRANCES AS SPECIFIED.
6. CUT AND REMOVE EXISTING TREES AND LOGS, DO NOT GRUB STUMPS.

TEMPORARY RUNOFF AND DRAINAGE CONTROL

7. HYDROSEED RYE ON CLEARED AREAS NOT INCLUDED IN INITIAL EARTHWORK CONSTRUCTION.
8. INSTALL PERIMETER EROSION CONTROL INCLUDING SILT FENCE, BIO-LOGS, EARTH BERMS, AND INLET PROTECTION AT EXISTING CULVERTS.
9. INSTALL WATER BARS IN LOCATIONS AS SPECIFIED BY ON-SITE EROSION AND SEDIMENT CONTROL SPECIALIST.
10. INSTALL TEMPORARY CULVERTS INCLUDING INLET AND OUTLET PROTECTION, AND PERMANENT CULVERTS WHERE APPROPRIATE.

EARTHWORK AND SITE CONSTRUCTION

11. GRUB STUMPS IN SEDIMENT BASIN LOCATIONS, EXCAVATE SEDIMENT BASINS AND SHAPE TEMPORARY DIVERSION SWALES.
12. STABILIZE SEDIMENT BASINS AND DIVERSION SWALES.
13. INSTALL CHECKDAMS AS REQUIRED.
14. GRUB REMAINING STUMPS, BEGIN ROUGH GRADING.
15. INSTALL INFRASTRUCTURE, INCLUDING CATCH BASINS WITH INLET PROTECTION, PIPING, PERMANENT DRAINAGE STRUCTURES WITH INLET AND OUTLET PROTECTION AND GOLF COURSE IRRIGATION AS REQUIRED.
16. BUILD ROADWAYS AND STABILIZE.
17. PLACE ROAD SUBGRADE, STABILIZE, AND BUILD PERMANENT STORMWATER CONVEYANCE SWALES.

TEMPORARY STABILIZATION OF WORK AREA

18. SEED AND MULCH ALL BARE SOIL AREAS TO REMAIN UNDISTURBED FOR MORE THAN 7 DAYS.
19. APPLY ROLLED EROSION CONTROL PRODUCT OR HYDROSEED A MIXTURE OF WOOD FIBER MULCH WITH TACIFYING AGENT, TO ALL SLOPES 3:1 OR GREATER.
20. INSPECT ALL PERIMETER EROSION CONTROL AND REPAIR AS DIRECTED.
21. INSTALL/REPAIR ALL INLET AND OUTLET PROTECTION, PERIMETER SWALE STABILIZATION SUCH AS TURF REINFORCEMENT MATS, RIP RAP, AND CHECKDAMS.
22. REMOVE SEDIMENT FROM TRAPPING DEVICES.

PERMANENT STABILIZATION

23. REPAIR/RE-SEED ALL BARE SPOTS.
24. CONSTRUCT PERMANENT STORMWATER BASINS, OR CONVERT SEDIMENT BASINS. STABILIZE SIDE SLOPES.
25. INSTALL SOD ON ALL AREAS AS SPECIFIED.
26. PAVE ROADS, INSTALL PROPOSED PLANT MATERIALS.
27. RECEIVE CERTIFICATION OF STABILIZATION FROM EROSION AND SEDIMENT CONTROL SPECIALIST.
28. CLEAN ALL STORMWATER SYSTEMS OF SEDIMENT, TRASH, AND DEBRIS.
29. REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS APPROVED BY THE EROSION AND SEDIMENT CONTROL SPECIALIST.

LEGEND	SYMBOL
PROPERTY BOUNDARY	
WORK AREA	
HAUL ROAD	
SILT FENCE (SEE NOTE)	—X—X—X—X—X—X—X—X—
WETLAND PROTECTION FENCE	— XXX — XXX — XXX — XXX — XXX —
DIVERSION SWALE	
CONVEYANCE SWALE	
STORMWATER PIPE	— ST — ST — ST —
WATERBAR	— WB — WB — WB —
DEWATERING DISPERSION PIPE	—DP—DP—DP—DP—DP—
SEDIMENT BASIN DEWATERING PIPE	
SEDIMENT BASIN	
STABILIZED WORK AREA	
ROCK OUTLET PROTECTION	

NOTE: ALIGNMENT OF SILT FENCE SHOWN IS DIAGRAMMATIC, AND REPRESENTS THE EXTENT OF INSTALLATION REQUIRED. THE CONTRACTOR SHALL INSTALL SILT FENCE PARALLEL TO CONTOURS.

0 25 50 100
SCALE: 1"=50'

NORTH

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Landscape Architecture and Engineering, PC
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Design MJT/JTS
Drawn MJT/JTS
Checked KJF/SJA

Submission:
FOR REGULATORY APPROVALS ONLY

PREPARED FOR:
Crossroads Ventures, L.L.C.
PO Box 267
Mt. Tremper, NY 12457

The Modified Belleayre Resort at Catskill Park

Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

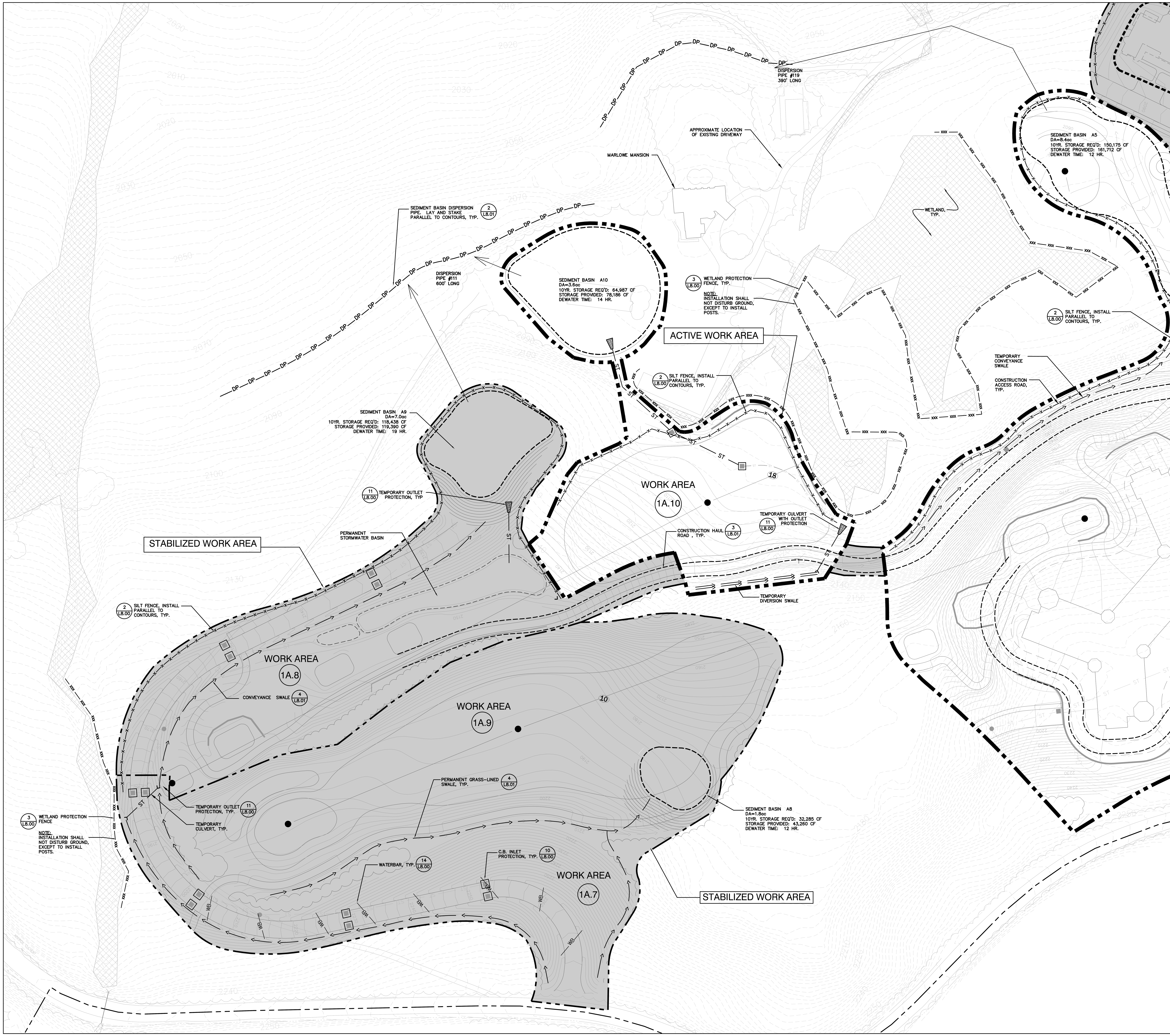
Title: Sedimentt and Erosion Control Plan- Wildacres

Key Plan

Revisions
1 03/02/2012
2 02/21/2014

Project: 07074
Date: 03/30/2011

Drawing
L-3.10



CONSTRUCTION STAGING BY SECTION

PHASE 1A

1. IN WORK AREA 1A.10, FOLLOW STEPS 1–10.
2. ONCE EROSION CONTROL MEASURES HAVE BEEN INSTALLED, EARTHWORK MAY BEGIN (STEPS 11–17).
3. ONCE WORK AREA 1A.10 IS DETERMINED TO BE TEMPORARILY STABILIZED (STEPS 18–22), CONSTRUCTION MAY BEGIN IN WORK AREA 1A.11.
4. TIMING OF UTILITY AND STORMWATER STRUCTURES IS AT THE CONTRACTOR'S DISCRETION.

TYPICAL EROSION AND SEDIMENT CONTROL SEQUENCING

PRE-CONSTRUCTION AND SITE PREPARATION

1. PRE CONSTRUCTION MEETING–PROTOCOL MAY BE MODIFIED BY DESIGNATED EROSION CONTROL SPECIALIST.
2. DEFINE INSPECTION SCHEDULE, REVIEW STORMWATER POLLUTION PREVENTION PLAN.
3. STAKEOUT ROAD CENTERLINE, CLEARING LIMITS, WETLANDS, AND STREAMS.
4. INSTALL TREE PROTECTION AND WETLAND PROTECTION FENCE.
5. INSTALL STABILIZED CONSTRUCTION ENTRANCES AS SPECIFIED.
6. CUT AND REMOVE EXISTING TREES AND LOGS, DO NOT GRUB STUMPS.

TEMPORARY RUNOFF AND DRAINAGE CONTROL

7. HYDROSEED RYE ON CLEARED AREAS NOT INCLUDED IN INITIAL EARTHWORK CONSTRUCTION.
8. INSTALL PERIMETER EROSION CONTROL INCLUDING SILT FENCE, BIO-LOGS, EARTH BERMS, AND INLET PROTECTION AT EXISTING CULVERTS.
9. INSTALL WATER BARS IN LOCATIONS AS SPECIFIED BY ON-SITE EROSION AND SEDIMENT CONTROL SPECIALIST.
10. INSTALL TEMPORARY CULVERTS INCLUDING INLET AND OUTLET PROTECTION, AND PERMANENT CULVERTS WHERE APPROPRIATE.

EARTHWORK AND SITE CONSTRUCTION

11. GRUB STUMPS IN SEDIMENT BASIN LOCATIONS, EXCAVATE SEDIMENT BASINS AND SHAPE TEMPORARY DIVERSION SWALES.
12. STABILIZE SEDIMENT BASINS AND DIVERSION SWALES.
13. INSTALL CHECKDAMS AS REQUIRED.
14. GRUB REMAINING STUMPS, BEGIN ROUGH GRADING.
15. INSTALL INFRASTRUCTURE, INCLUDING CATCH BASINS WITH INLET PROTECTION, PIPING, PERMANENT DRAINAGE STRUCTURES WITH INLET AND OUTLET PROTECTION AND GOLF COURSE IRRIGATION AS REQUIRED.
16. BUILD ROADWAYS AND STABILIZE.
17. PLACE ROAD SUBGRADE, STABILIZE, AND BUILD PERMANENT STORMWATER CONVEYANCE SWALES.

TEMPORARY STABILIZATION OF WORK AREA

18. SEED AND MULCH ALL BARE SOIL AREAS TO REMAIN UNDISTURBED FOR MORE THAN 7 DAYS.
19. APPLY ROLLED EROSION CONTROL PRODUCT OR HYDROSEED A MIXTURE OF WOOD FIBER MULCH WITH TACIFYING AGENT, TO ALL SLOPES 3:1 OR GREATER.
20. INSPECT ALL PERIMETER EROSION CONTROL AND REPAIR AS DIRECTED.
21. INSTALL/REPAIR ALL INLET AND OUTLET PROTECTION, PERIMETER SWALE STABILIZATION SUCH AS TURF REINFORCEMENT MATS, RIP RAP, AND CHECKDAMS.
22. REMOVE SEDIMENT FROM TRAPPING DEVICES.

PERMANENT STABILIZATION

23. REPAIR/RE-SEED ALL BARE SPOTS.
24. CONSTRUCT PERMANENT STORMWATER BASINS, OR CONVERT SEDIMENT BASINS. STABILIZE SIDE SLOPES.
25. INSTALL SOD ON ALL AREAS AS SPECIFIED.
26. PAVE ROADS, INSTALL PROPOSED PLANT MATERIALS.
27. RECEIVE CERTIFICATION OF STABILIZATION FROM EROSION AND SEDIMENT CONTROL SPECIALIST.
28. CLEAN ALL STORMWATER SYSTEMS OF SEDIMENT, TRASH, AND DEBRIS.
29. REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS APPROVED BY THE EROSION AND SEDIMENT CONTROL SPECIALIST.

LEGEND	SYMBOL
PROPERTY BOUNDARY	
WORK AREA	
HAUL ROAD	
SILT FENCE (SEE NOTE)	—x—x—x—x—x—x—x—
WETLAND PROTECTION FENCE	— xxx — xxx — xxx — xxx — xxx —
DIVERSION SWALE	
CONVEYANCE SWALE	
STORMWATER PIPE	— ST — ST — ST —
WATERBAR	— WB — WB — WB —
DEWATERING DISPERSION PIPE	—DP—DP—DP—DP—DP—
SEDIMENT BASIN DEWATERING PIPE	
SEDIMENT BASIN	
STABILIZED WORK AREA	
ROCK OUTLET PROTECTION	

NOTE: ALIGNMENT OF SILT FENCE SHOWN IS DIAGRAMMATIC, AND REPRESENTS THE EXTENT OF INSTALLATION REQUIRED. THE CONTRACTOR SHALL INSTALL SILT FENCE PARALLEL TO CONTOURS.

0 25 50 100

SCALE: 1"=50'

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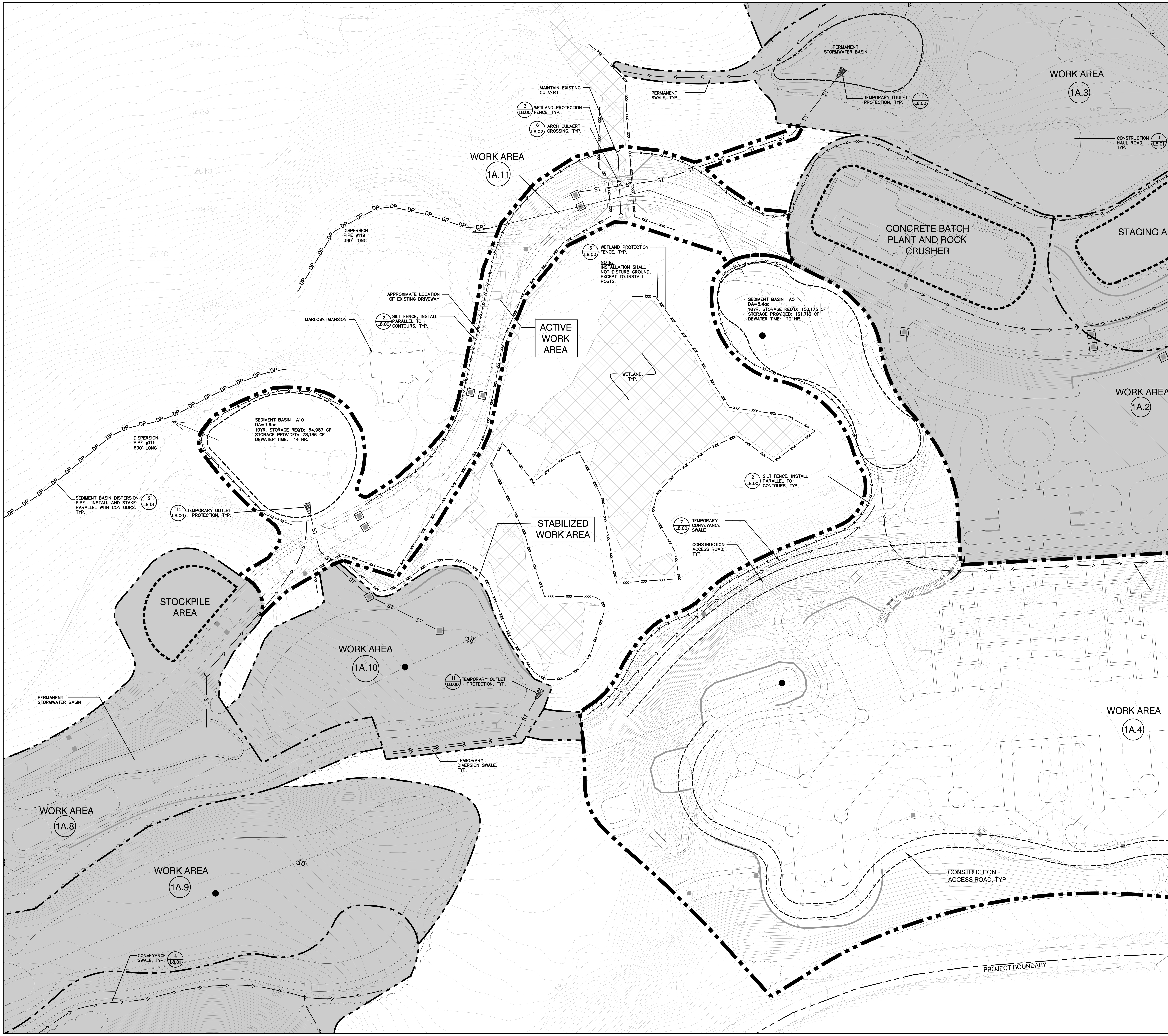

CONSTRUCTION STAGING BY SECTION

PHASE 1A

1. IN WORK AREA 1A.11, FOLLOW STEPS 1–10.
2. ONCE EROSION CONTROL MEASURES HAVE BEEN INSTALLED, EARTHWORK MAY BEGIN (STEPS 11–17).
3. ONCE WORK AREA 1A.11 IS DETERMINED TO BE TEMPORARILY STABILIZED (STEPS 18–22), CONSTRUCTION MAY BEGIN IN WORK AREA 1A.12.
4. TIMING OF UTILITY AND STORMWATER STRUCTURES IS AT THE DISCRETION OF THE CONTRACTOR.

TYPICAL EROSION AND SEDIMENT CONTROL SEQUENCING

PRE–CONSTRUCTION AND SITE PREPARATION

1. PRE CONSTRUCTION MEETING–PROTOCOL MAY BE MODIFIED BY DESIGNATED EROSION CONTROL SPECIALIST.
2. DEFINE INSPECTION SCHEDULE, REVIEW STORMWATER POLLUTION PREVENTION PLAN.
3. STAKEOUT ROAD CENTERLINE, CLEARING LIMITS, WETLANDS, AND STREAMS.
4. INSTALL TREE PROTECTION AND WETLAND PROTECTION FENCE.
5. INSTALL STABILIZED CONSTRUCTION ENTRANCES AS SPECIFIED.
6. CUT AND REMOVE EXISTING TREES AND LOGS, DO NOT GRUB STUMPS.

TEMPORARY RUNOFF AND DRAINAGE CONTROL

7. HYDROSEED RYE ON CLEARED AREAS NOT INCLUDED IN INITIAL EARTHWORK CONSTRUCTION.
8. INSTALL PERIMETER EROSION CONTROL INCLUDING SILT FENCE, BIO–LOGS, EARTH BERMS, AND INLET PROTECTION AT EXISTING CULVERTS.
9. INSTALL WATER BARS IN LOCATIONS AS SPECIFIED BY ON–SITE EROSION AND SEDIMENT CONTROL SPECIALIST.
10. INSTALL TEMPORARY CULVERTS INCLUDING INLET AND OUTLET PROTECTION, AND PERMANENT CULVERTS WHERE APPROPRIATE.

EARTHWORK AND SITE CONSTRUCTION

11. GRUB STUMPS IN SEDIMENT BASIN LOCATIONS, EXCAVATE SEDIMENT BASINS AND SHAPE TEMPORARY DIVERSION SWALES.
12. STABILIZE SEDIMENT BASINS AND DIVERSION SWALES.
13. INSTALL CHECKDAMS AS REQUIRED.
14. GRUB REMAINING STUMPS, BEGIN ROUGH GRADING.
15. INSTALL INFRASTRUCTURE, INCLUDING CATCH BASINS WITH INLET PROTECTION, PIPING, PERMANENT DRAINAGE STRUCTURES WITH INLET AND OUTLET PROTECTION AND GOLF COURSE IRRIGATION AS REQUIRED.
16. BUILD ROADWAYS AND STABILIZE.
17. PLACE ROAD SUBGRADE, STABILIZE, AND BUILD PERMANENT STORMWATER CONVEYANCE SWALES.

TEMPORARY STABILIZATION OF WORK AREA

18. SEED AND MULCH ALL BARE SOIL AREAS TO REMAIN UNDISTURBED FOR MORE THAN 7 DAYS.
19. APPLY ROLLED EROSION CONTROL PRODUCT OR HYDROSEED A MIXTURE OF WOOD FIBER MULCH WITH TACIFYING AGENT, TO ALL SLOPES 3:1 OR GREATER.
20. INSPECT ALL PERIMETER EROSION CONTROL AND REPAIR AS DIRECTED.
21. INSTALL/REPAIR ALL INLET AND OUTLET PROTECTION, PERIMETER SWALE STABILIZATION SUCH AS TURF REINFORCEMENT MATS, RIP RAP, AND CHECKDAMS.
22. REMOVE SEDIMENT FROM TRAPPING DEVICES.

PERMANENT STABILIZATION

23. REPAIR/RE–SEED ALL BARE SPOTS.
24. CONSTRUCT PERMANENT STORMWATER BASINS, OR CONVERT SEDIMENT BASINS. STABILIZE SIDE SLOPES.
25. INSTALL SOD ON ALL AREAS AS SPECIFIED.
26. PAVE ROADS, INSTALL PROPOSED PLANT MATERIALS.
27. RECEIVE CERTIFICATION OF STABILIZATION FROM EROSION AND SEDIMENT CONTROL SPECIALIST.
28. CLEAN ALL STORMWATER SYSTEMS OF SEDIMENT, TRASH, AND DEBRIS.
29. REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS APPROVED BY THE EROSION AND SEDIMENT CONTROL SPECIALIST.

LEGEND	SYMBOL
PROPERTY BOUNDARY	
WORK AREA	
HAUL ROAD	
SILT FENCE (SEE NOTE)	—x—x—x—x—x—
WETLAND PROTECTION FENCE	— XXX — XXX — XXX — XXX — XXX —
DIVERSION SWALE	
CONVEYANCE SWALE	
STORMWATER PIPE	— ST — ST — ST —
WATERBAR	— WB — WB — WB —
DEWATERING DISPERSION PIPE	—DP—DP—DP—DP—DP—
SEDIMENT BASIN DEWATERING PIPE	
SEDIMENT BASIN	
STABILIZED WORK AREA	
ROCK OUTLET PROTECTION	

NOTE: ALIGNMENT OF SILT FENCE SHOWN IS DIAGRAMMATIC, AND REPRESENTS THE EXTENT OF INSTALLATION REQUIRED. THE CONTRACTOR SHALL INSTALL SILT FENCE PARALLEL TO CONTOURS.

0 25 50 100

SCALE: 1"=50'

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Design MJT/JTS
Drawn MJT/JTS
Checked KJF/SJA

REGISTERED LANDSCAPE ARCHITECT DAVID ROWLAND CARR JR. 001206 STATE OF NEW YORK

This drawing is not certified for the purposes of construction, unless it is specifically noted as issued for construction.

Submission:

FOR REGULATORY APPROVALS ONLY

PREPARED FOR:
Crossroads Ventures, L.L.C.
PO Box 267
Mt. Tremper, NY 12457

The Modified Belleayre Resort at Catskill Park

Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

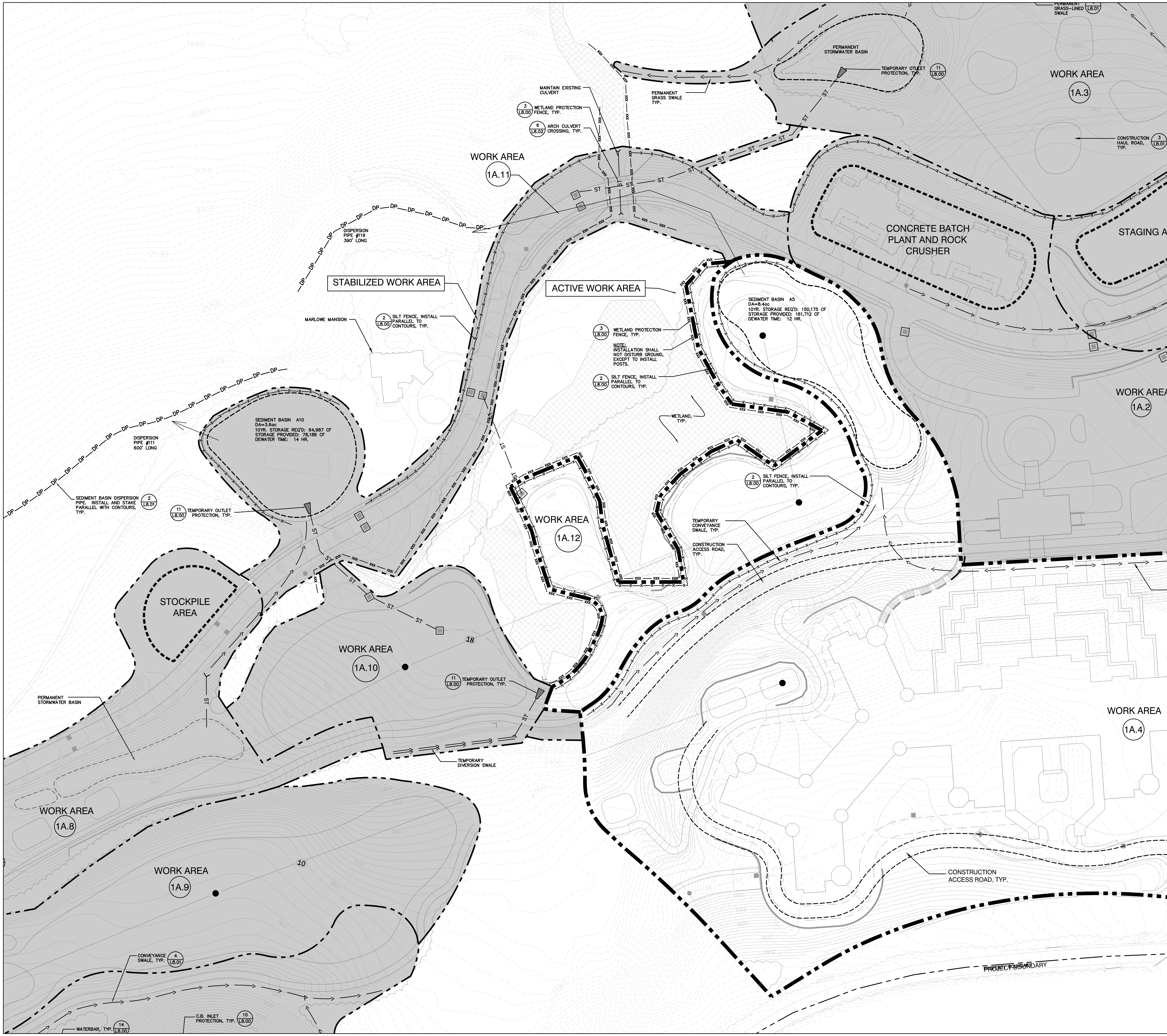
Title
Sedimement and Erosion Control Plan- Wildacres

Key Plan

Revisions
1 03/02/2012
2 02/21/2014

Project: 07074
Date: 03/30/2011

Drawing
L-3.12



CONSTRUCTION STAGING BY SECTION

PHASE 1A

1. IN WORK AREA 1A.12, FOLLOW STEPS 1–10.
2. ONCE EROSION CONTROL MEASURES HAVE BEEN INSTALLED, EARTHWORK MAY BEGIN (STEPS 11–17).
3. ONCE WORK AREA 1A.12 IS DETERMINED TO BE TEMPORARILY STABILIZED (STEPS 18–22), FINISH CONSTRUCTION IN WORK AREA 1A.4.
4. ONCE WORK AREA 1A.4 IS DETERMINED TO BE TEMPORARILY STABILIZED, FINAL STABILIZATION CAN BEGIN IN ALL WORK AREAS (STEPS 23–29).
5. TIMING OF UTILITY AND STORMWATER STRUCTURES IS AT THE DISCRETION OF THE CONTRACTOR.

TYPICAL EROSION AND SEDIMENT CONTROL SEQUENCING

PRE–CONSTRUCTION AND SITE PREPARATION

1. PRE CONSTRUCTION MEETING–PROTOCOL MAY BE MODIFIED BY DESIGNATED EROSION CONTROL SPECIALIST.
2. DEFINE INSPECTION SCHEDULE, REVIEW STORMWATER POLLUTION PREVENTION PLAN.
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TEMPORARY RUNOFF AND DRAINAGE CONTROL

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8. INSTALL PERIMETER EROSION CONTROL INCLUDING SILT FENCE, BIO–LOGS, EARTH BERMS, AND INLET PROTECTION AT EXISTING CULVERTS.
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EARTHWORK AND SITE CONSTRUCTION

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16. BUILD ROADWAYS AND STABILIZE.
17. PLACE ROAD SUBGRADE, STABILIZE, AND BUILD PERMANENT STORMWATER CONVEYANCE SWALES.

TEMPORARY STABILIZATION OF WORK AREA

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22. REMOVE SEDIMENT FROM TRAPPING DEVICES.

PERMANENT STABILIZATION

23. REPAIR/RE–SEED ALL BARE SPOTS.
24. CONSTRUCT PERMANENT STORMWATER BASINS, OR CONVERT SEDIMENT BASINS. STABILIZE SIDE SLOPES.
25. INSTALL SOD ON ALL AREAS AS SPECIFIED.
26. PAVE ROADS, INSTALL PROPOSED PLANT MATERIALS.
27. RECEIVE CERTIFICATION OF STABILIZATION FROM EROSION AND SEDIMENT CONTROL SPECIALIST.
28. CLEAN ALL STORMWATER SYSTEMS OF SEDIMENT, TRASH, AND DEBRIS.
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LEGEND	SYMBOL
PROPERTY BOUNDARY	
WORK AREA	
HAUL ROAD	
SILT FENCE (SEE NOTE)	—x—x—x—x—x—
WETLAND PROTECTION FENCE	— xxx — xxx — xxx —
DIVERSION SWALE	
CONVEYANCE SWALE	
STORMWATER PIPE	— ST — ST — ST —
WATERBAR	— WB — WB — WB —
DEWATERING DISPERSION PIPE	—DP—DP—DP—DP—DP—
SEDIMENT BASIN DEWATERING PIPE	
SEDIMENT BASIN	
STABILIZED WORK AREA	
ROCK OUTLET PROTECTION	

NOTE: ALIGNMENT OF SILT FENCE SHOWN IS DIAGRAMMATIC, AND REPRESENTS THE EXTENT OF INSTALLATION REQUIRED. THE CONTRACTOR SHALL INSTALL SILT FENCE PARALLEL TO CONTOURS.

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SCALE: 1"=50'

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Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

Title: Sediment and Erosion Control Plan- Wildacres

Key Plan

Revisions
1 03/02/2012
2 02/21/2014

Project: 07074
Date: 03/30/2011

Drawing
L-3.13

Location 1.A		
Wildacres Main Parcel		
Work Area	Acreage	Discharge Point
1A.1	5.4	9
1A.2	5.3	9, 8
1A.3	4.6	9, 8
1A.4	16.3	10, 9, 8
1A.4a*	1.5	9
1A.5*	3.4	9, 8
1A.6*	2.6	7, 8
1A.7*	2.9	7, 8
1A.8*	3.7	7,8
1A.9*	3.6	7,8
1A.10*	2.4	8
1A.11*	2.8	9
1A.12*	2	9

Location 1.B		
Northeast Wildacres		
Work Area	Acreage	Discharge Point
1B.1	7.9	11
1B.2	4.8	10, 11
1B.3	5	11
1B.4	5.1	11
1B.5	3.8	11
1B.6	5.1	16, 12
1B.7	5.6	16, 11, 12
1B.8	6.4	16, 10, 11

Location 1.C		
Highmount		
Work Area	Acreage	Discharge Point
1C.1	10.0	4, 1a
1C.2	4.8	5
1C.3	11.1	6
1C.4	1.0	3,4,5
1C.5	1.0	5,5A,6
1C.6	1.0	6
1C.7	1.0	5,5A
1C.8	1.0	6
1C.9	1.0	2
1C.10	1.0	2
1C.11	0.9	2,5,5A,6
1C.12	1.0	6
1C.13	1.0	6
1C.14	1.0	6
1C.15	1.0	6
1C.16	1.0	6
1C.17	0.8	5,5A

*other work areas in 1A that will be opened then closed while Wildacres Hotel (1A.4) is open, total area not to exceed 20 acres at a time

LABEL KEY

1B.8
- WORK AREA
- SITE LOCATION
  - A. WILDACRES MAIN PARCEL
  - B. NORTHEAST WILDACRES
  - C. HIGHMOUNT

0 150 300 600

SCALE: 1"=300'

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Town of Shandaken & Town of Middletown, New York

Title
Construction Staging Plan For Phase (1A) Development

Key Plan

NORTH

Revisions
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2 02/21/2014

Project: 07074
Date: 03/30/201

Drawing
L-3.01

Erosion Control Techniques		
Erosion Control Product	**Manufacturer (Distributor)**	**Intended Slope**
1:1 or Steeper Slope (100%+)		
Sod	Varies based on availability	1:1 and steeper
Erosion Control Blanket		
CF072RR-Double Net Coconut (100)	Greenfix America (ECT)	1:1 and steeper
CF072B-Double Organic Net Coconut (100)	Greenfix America (ECT)	1:1 and steeper
BioD-Mat (Bristle Coir Woven Blanket)	RoLanka	1:1 and steeper
BioD-Mesh (Mattress Coir Woven Blanket)	RoLanka	1:1 and steeper
BioD-OCF (Biodegradable Coir Stiched Blanket)	RoLanka	1:1 and steeper
C 125 coconut fiber matrix (36 months)	North American Green (EJ Prescott)	1:1 and steeper
C 125 BN coconut fiber matrix (24 months)	North American Green (EJ Prescott)	1:1 and steeper
ECC-2 Coconut blanket with double UV stabilized Poly net	East Coast / ACF Environmental	1:1 and steeper
ECC-2B Coconut biodegradable blanket with double jute netting	East Coast / ACF Environmental	1:1 and steeper
Webs/Grids/Walls		
EnviroGrid (Cellular Confinement System)2",3",4",6",8"	American Excelsior Company (ECT)	1:1 and steeper
Geoweb Cellular Confinement System	Presto	1:1 and steeper
Tenax Tenweb Geocells	Tenax Corporation (ECT)	1:1 and steeper
Evergreen Retaining Wall	Evergreen	1:1 and steeper
Tensar (Geogrid)	Tensar Earth Technologies, Inc.	1:1 and steeper
Tensar (Gabions)	Tensar Earth Technologies, Inc.	1:1 and steeper
Slopetame	Invisible Structures, Inc.	1:1 and steeper
Modular Gabion Systems	MGS (ECT)	1:1 and steeper
TerraCell (Cellular Confinement System)	Webtec, Inc. (ECT)	1:1 and steeper
TerraGrid Geogrid	Webtec, Inc. (ECT)	1:1 and steeper
Rip Rap	Varies based on availability	1:1 and steeper
Gabion Wall	Varies based on availability	1:1 and steeper
Fieldstone Wall	Varies based on availability	1:1 and steeper
Boulder Wall	Varies based on availability	1:1 and steeper
Hydraulic Mulch		
Soilguard Bonded Fiber Matrix	Mat Inc.	1:1 and steeper
Flexterra Bonded Fiber Matrix	Profile Products	1:1 and steeper
1:1-2:1 Slope (50% to 100%)		
Sod	Varies based on availability	50%-100%
Erosion Control Blanket		
CFS072R-Double Net Straw Coconut (70/30)	Greenfix America (ECT)	50%-100%
CFS072B-Double Organic Net Straw Coconut (70/30)	Greenfix America (ECT)	50%-100%
SC 150 30%coconut/70% straw fiber matrix (24 months)	North American Green (EJ Prescott)	50%-100%
SC 150 BN 30%coconut/70%straw fiber matrix (18 months)	North American Green (EJ Prescott)	50%-100%
Curlex I (wood fiber, brown)	American Excelsior Company (ECT)	66% 5f/s
Curlex QuickGRASS (wood fiber, green)	American Excelsior Company (ECT)	66% 5f/s green
Curlex II (Double Sided)	American Excelsior Company (ECT)	66% 7f/s sandy
ECS-2B Straw biodegradable blanket with double poly net	East Coast / ACF Environmental	50%-100%
ECSC-2 Straw/Coconut blanket with double polypropylene net	East Coast / ACF Environmental	50%-100%
ECSC-2B Straw/Coconut biodegradable blanket with jute net	East Coast / ACF Environmental	50%-100%
Hydraulic Mulch		
Soilguard Bonded Fiber Matrix	Mat Inc.	1:1 and steeper
Flexterra Bonded Fiber Matrix	Profile Products	1:1 and steeper
Hydro-Blanket Bonded Fiber Matrix	Terra-Mulch / Profile Products	50%-100%
2:1-3:1 Slope (33% to 50%)		
Sod		33%-50%
Erosion Control Blanket		
Enkamat (7000, 7200, 7900, S, and Composite)	Colbond (ECT)	33%-100%
S150 straw fiber matrix (10 months)	North American Green (EJ Prescott)	33%-66%
DS 150 straw fiber matrix (45-60 days)	North American Green (EJ Prescott)	33%-66%
WS072-Double Net Straw	Greenfix America (ECT)	33%-50%
WS072B-Double Organic Net Straw	Greenfix America (ECT)	33%-50%
S 150 BN straw fiber matrix (10 months)	North American Green (EJ Prescott)	33%-50%
ECX-1 Excelsior wood fiber blanket with single polypropylene net	East Coast / ACF Environmental	33%-50%
ECS-2 Straw blanket with double polypropylene net	East Coast / ACF Environmental	33%-50%
ECS-2B Straw biodegradable blanket with double poly net	East Coast / ACF Environmental	33%-50%
Hydraulic Mulch		
Soilguard Bonded Fiber Matrix	Mat Inc.	1:1 and steeper
Flexterra Bonded Fiber Matrix	Profile Products	1:1 and steeper
Hydro-Blanket Bonded Fiber Matrix	Terra-Mulch / Profile Products	50%-100%
Terra-Wood w/ Tacking Agent 3	Terra-Mulch / Profile Products	33%-50%
5:1-3:1 Slope (20% to 33%)		
Sod	Varies based on availability	20%-50%
Erosion Control Blanket		
S75 straw fiber matrix (10 months)	North American Green (EJ Prescott)	20%-50%
DS75 straw fiber matrix (45-60 days)	North American Green (EJ Prescott)	20%-50%
S75 BN straw fiber matrix (10 months)	North American Green (EJ Prescott)	20%-50%
TerraJute	Webtec Inc. (ECT)	<50%
ECS-1 Straw blanket with single polypropylene netting	East Coast / ACF Environmental	20%-50%
ECS-1B Straw blanket with single organic jute netting	East Coast / ACF Environmental	20%-50%
Hydraulic Mulch		
Flexterra Bonded Fiber Matrix	Profile Products	1:1 and steeper
Hydro-Blanket Bonded Fiber Matrix	Terra-Mulch / Profile Products	50%-100%
Terra-Wood w/ Tacking Agent 3	Terra-Mulch / Profile Products	33%-50%
Terra-Wood	Terra-Mulch / Profile Products	20%-33%
Terra-Blend w/ Tacking Agent 3	Terra-Mulch / Profile Products	20%-33%
10:1-5:1 Slope (10% to 20%)		
Sod	Varies based on availability	0-33%
Erosion Control Blanket		
WS05-Single Net Straw	Greenfix America (ECT)	0-33%
CF072RP-Nylon Reinforced Coconut (100)	Greenfix America (ECT)	0-33%
Curlex III (HV)	American Excelsior Company (ECT)	0-33%
Tenax Radix (Erosion Control Netting)	Geotenax Corp. (ECT)	0-33%
Woven Coir-Synthetic Turf Reinforcement Mat	RoLanka	0-33%
TerraGuard	Webtec Inc. (ECT)	0-33%
Hydraulic Mulch		
Terra-Wood	Terra-Mulch / Profile Products	20%-33%
Terra-Blend	Terra-Mulch / Profile Products	0%-25%
Cellulose w/ Tacking Agent 3	Terra-Mulch / Profile Products	0%-25%
20:1-10:1 Slope (5% to 10%)		
Sod	Varies based on availability	0%-10%
General		
Jute		0%-10%
Paper Mulch		0%-10%
Hydro Seed		0%-10%
Tractor Seed		0%-10%

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Submission:
FOR REGULATORY APPROVALS ONLY

The Modified Belleayre Resort at Catskill Park

Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

PREPARED FOR:
Crossroads Ventures, L.L.C.
PO Box 267
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Title
Final Stabilization Plan

Key Plan

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Drawing
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Stormwater

Management Design Report

for:

<u>The Modified Belleayre Resort at Catskill Park</u>

Towns of Shandaken and Middletown
Ulster and Delaware Counties
New York

<u>Applicant:</u>

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Preparation Date:

March 2012

Updated Feb. 2014

Table of Contents

Figures

Tables

1.0 INTRODUCTION

This report describes the proposed stormwater management plan for the Modified Belleayre Resort at Catskill Park (the Project), and provides the criteria, methodologies and assumptions used to form the basis of the design. The proposed project includes the development of a resort hotels and spa facilities with recreational amenities on +/-739 acres of land to the west of the adjacent to the Belleayre Mountain Ski Center (BMSC), in the Towns of Shandaken and Middletown, New York. The currently proposed project represents a reduction of the originally proposed project, which included an additional 1,400 acres of lands on two parcels, known as the Adelstein and Big Indian parcels. These lands are no longer included in the plans for development, and therefore will remain undisturbed.

The goal of the proposed stormwater management plan is to incorporate stormwater management as part of the overall project design. This includes protecting the site's natural resources and environmentally sensitive areas, minimizing development impacts and impervious areas by using effective site planning principles, and incorporating design features that effectively manage stormwater runoff such as green roofs, bioretention areas and an irrigation pond that captures water for re-use. The plan utilizes these elements in order to achieve the primary goal of meeting water quality objectives, while at the same time mitigating potential impacts associated with increased stormwater runoff. Specifically, the objectives of the stormwater management plan are to enhance the quality of stormwater runoff to prevent water quality degradation, and preserve water quality in receiving water bodies including New York City water supply reservoirs, promote infiltration and evapotranspiration, and to prevent increased runoff from developed land to reduce the potential for flooding, erosion and flood damage.

The management plan was developed in accordance with the procedures presented in the AIP document 'Exhibit F, Stormwater Quantity and Quality Protocols'. Additionally, the plan incorporates the design standards established in The New York State Department of Environmental Conservation Stormwater Management Design Manual, (August, 2010), and the Rules and Regulations for the Protection from Contamination, Degradation, and Pollution of the New York City Water Supply and its sources, 10 NYCRR §128-3.9.

2.0 PROJECT LOCATION

The Project is located in the Central Catskill region of New York State near the intersection of the boundaries of Delaware County, Ulster County and Greene County. The site is located approximately 35 miles west of the City of Kingston, off Exit 19 of the New York State Thruway.

The project site includes lands in the Town of Shandaken in Ulster County and lands in the Town of Middletown in Delaware County, that are located west of the adjacent BMSC. The 739 acres that comprise the Modified Project site are located on either side of Ulster County Route 49A just south and west of the hamlet of Highmount. See Figure 1, Site Location Map, in Appendix A.

3.0 PROJECT DESCRIPTION

The Modified Project consists of two development areas; Wildacres Resort (Wildacres) and Highmount Spa Resort (Highmount). Wildacres is planned to be a 3.5-4 star, 4-season resort with a focus on different types of outdoor recreation including golf, skiing, tennis, hiking, etc. Highmount is planned to be a 5-star, 4-season resort focused on spa and wellness center facilities and providing ski-in/ski-out access to Belleayre Mountain Ski Center trails. In accordance with the AIP, there are two parcels of land that were part of the original project, but are no longer included within the scope of the Modified Project. The western portion of the project site, 203 acres known as the Adelstein parcel, has been put under a Conservation Easement granted to the City of New York. The AIP and the Modified Project also contemplate the conveyance of the Big Indian parcels containing approximately 1,189 acres of undeveloped land into public ownership and potential for eventual inclusion into the State Forest Preserve. Since there is no longer development proposed on these parcels, they are not included in this report. Refer to the Project Master Plan, sheets L-1.00 and L1.01 in the SDEIS plan set, for the overall Modified Project location and design.

Wildacres Resort (Wildacres) is located on approximately 254 acres on the eastern side of the Project site with access from County Route 49A south of the Alpine Osteria and near the upper driveway to BMSC as well as access from Gunnison/Kraft Road. The Wildacres Resort is made up of two large contiguous areas, defined as Wildacres East, (also called the Front-9 Village), and Wildacres West, (also called the West Village).

Wildacres West includes the following development components.

1. A 250-unit hotel with a footprint of 4.0 acres, that has nine levels that step down the existing hillside. Ancillary hotel uses include dining, spa services, tennis courts and limited hotel-related commercial. Parking for the hotel will be located within the building, and within an adjacent parking garage to the west.
2. Adaptive re-use of the existing Marlowe Mansion, to be utilized as a social club for detached lodging unit guests, and resort operational offices.
3. An 18-hole championship golf course, clubhouse, parking and maintenance facility. The clubhouse is attached to the hotel and the maintenance facility is located off of Gunnison Road near the 15th hole. The course itself is spread throughout both the west and east side of Wildacres. Surface parking is provided at the Clubhouse.

4. 2 and 3-bedroom detached lodging units in nine and ten-unit buildings. There are 7 lodging buildings (69 units) located on the main parcel near the hotel and Marlowe Mansion, collectively referred to as the West Village. Each unit includes garage parking plus surface parking spaces for guests.

Access to Wildacres West for the Golf Course and detached lodging units is off of County Route 49A west of the Hotel, and off of Gunnison Road. These access points are connected with an internal road that will be privately maintained. Access to the Hotel is across from the main access road/upper driveway to the BMSC and the proposed new Belleayre West lift.

Wildacres East includes the following development components.

1. A portion of the 18-hole golf course.

2. 2 and 3-bedroom detached lodging units in multiple-unit buildings clustered within the front 9 portion of the golf course. There are 11 lodging buildings (94 units) collectively referred to as the Front-9 Village. Each unit includes garage parking plus surface parking spaces for guests.

3. Clubhouse and recreation amenities for the Front-9 Village, including a health club, swimming pool and tennis courts. Surface parking is provided adjacent to the Clubhouse.

Access to Wildacres East is off of County Route 49A in the vicinity of BMSC's lower parking lots.

Highmount Spa Resort (Highmount) is located on approximately 237 acres with development proposed to the south and west of the former Highmount Ski Area with access proposed off of County Route 49A. Development proposed for Highmount includes the following.

1. A 120 unit hotel with spa facilities and 53 "semi-detached lodging units" within the hotel.

2. A multi-level lodge building south of the hotel/spa that includes 27 "semi-detached" lodging units.

3. Sixteen (16) additional detached lodging units in 8 buildings located along the access road to the Hotel.

4. An Auxiliary Conference/Clubhouse facility north of County Route 49A. This will be an adaptive reuse of some of the existing Leach Farm buildings.

5. A ski lift and trails, providing potential ski in/out connections to the old Highmount Ski Area and Belleayre Mountain.

6. A Wilderness Activity Center that will service both Wildacres and Highmount Resorts, located in existing buildings at the base of the former Highmount Ski Area that will be adaptively reused.

The driveway access off of County Route 49A will service the hotel/spa, lodge and all detached units. Parking for the hotel/spa and lodge will be within their respective buildings. Parking for the detached units will include two (2) surface parking spaces per unit at each lodging building along the access road.

The Project will have its own central water supply system and the source of potable water will be wells that are located in the valley near NY Route 28. The K-well property is located off Todd Mountain Road and the Q-well or Quarry parcel is located off Moran Road. The Project will also have its own central wastewater collection system, and wastewater will be sent to the Pine Hill wastewater treatment plant.

4.0 EXISTING SITE CONDITIONS

Vegetation

Vegetation on the 739 acre project site is primarily beech-maple mesic forest present on approximately 588 acres, or nearly ¾ of the project site. The next most prevalent vegetation covertype is Hemlock-northern hardwoods forest at 72 acres, followed by open meadow, (ski slopes at old Highmount Ski Area), at 41 acres. These ski slopes had previously been mown at least several times each year, however maintenance is no longer being carried out and these slopes are beginning to undergo ecological succession. In addition to these primary vegetation cover types, there are a few seasonal residences and hotel/motels within and directly adjacent to the project site. The grounds around these buildings include areas of maintained lawns and landscape plantings of various trees and shrubs, and open areas with naturally occurring, non-maintained meadow grasses. Refer to Figure 2 in Appendix A, Ecological Communities, and the Existing Subcatchment Maps, sheets L5.00 and L5.01 in the SDEIS plan set, for surveyed vegetation and cover types.

Soils

Detailed mapping of the soils on and around where development is proposed was prepared by an LA Group certified soil scientists, based on extensive research and on-site investigations. Soils mapping for the project site is shown on the Soil Inventory Mapping, sheets L2.02 and L2.03 in the SDEIS plan set, and test pit data is summarized in Appendix H of this report. Additionally Appendix 12, “Soil Test Results”, of the project DEIS includes a full inventory of test pit logs, percolation test results, as well as the laboratory reports from analyses of soil samples taken from the project site (sieve analyses and hydrometer testing).

The lands on and around the project site are mostly areas of shallow and moderately deep, very stony soils formed in glacial till derived from red shale and sandstone. There are some areas of deep glacial till soils that have a very firm fragipan. At the base of slopes along the outlet of small streams coming off the slopes there are some broad areas of very gravelly (actually channery and flaggy) glacial outwash. A few areas of the deep till do not have a fragipan. The soils on and around the site have a relatively moderate content of fine, colloidal material that do not settle out readily when they are in solution.

The mapped soils include Elka silt loam, Halcott, Halcott-Udorthents, Halcott-Vly complex, Lairdsville Silt Clay Loam, Lewbeach channery silt loam, Onteora-Suny complex, Rubble Land, Tunkhannock very channery loam, Vly-Elka complex, Vly Halcott complex, Vly channery silt loam and Willowemoc Channery silt loam. The Hydrologic Soil Groups for these soils are predominately C and D, with most of the developed area falling into Hydrologic Soil Group C.

Most of the Lewbeach soils were found to have a fragipan at a depth of 16 to 40 inches with bedrock typically not encountered in the generally seven to eight foot deep test pits. Percolation tests performed above the fragipan had percolation rates that ranged from 5 minutes 35 seconds to 27 minutes. Percolation tests within the fragipan typically had percolation rates that were greater than 60 minutes. Typically there was no evidence of seasonal high ground water in the Lewbeach soils.

The Vly soils did not have a fragipan but bedrock was usually contacted in test pits excavated in Vly soils. Depth to bedrock in Vly soils ranged from 24 inches to 72 inches. Percolation tests performed above the bedrock boundary layer ranged from 5 minutes 10 seconds to fourteen minutes two seconds.

Two test pits were excavated in Willowemoc soils and they, like the Lewbeach and Vly soils, had characteristics consistent with County soil survey descriptions. Fragipan depth ranged from 28 to 40 inches and bedrock was not encountered. Mottling at 28 inches is indicative of the seasonal high water that occurs from October to May.

The test pits in Halcott soil confirmed their shallow depth to bedrock. In the five test pits in Halcott soil the depth to bedrock ranged from 12 to 22 inches. As a result of the test pit work done on the site, the preliminary high intensity soils maps were revised to reflect a lesser amount of Halcott soils on the project site. Some of the areas originally mapped as Halcott rock outcropping were merely areas of other soils with large rock, rather than bedrock, on the soil surface.

A test pit excavated in Elka soils to confirm this mapping unit did confirm the correct soil series and characteristics described in the County soil survey. The characteristics include a bedrock depth greater than six feet and a very stony and channery soil profile.

Based on the extensive soil investigations, mapping and test pit confirmations, the silt/clay soils, fragipans, shallow depths to bedrock and seasonally high groundwater are limiting factors in the design of stormwater management facilities.

Hydrology

Overall, the site drains from south to north. Existing drainage patterns on the site and on adjacent contributing areas are illustrated on the Existing Subcatchment Plans, sheets L5.00 and L5.01 in the SDEIS plan set. These plans also including the watershed divide between the Ashokan and Pepacton watersheds (source: NYSDEC). Essentially all of the site is within the Pepacton watershed, with only a very small portion of the Wildacres site along the lower section of County Route 49A being within the Ashokan watershed. Additional wetland and watercourse mapping for the site is included on the Wetland Inventory, sheets L2.06-2.09 in the SDEIS plan set.

At Highmount, drainage currently runs as sheet flow overland from the high point at the top of the old ski area overland and is collected in drainage swales on the uphill side of County Route 49A. This drainage passes underneath County Route 49A via a number of culverts including a 55-inch elliptical culvert near the base of the Highmount Ski Area.

At Wildacres West, existing runoff from lands south of County Route 49A, including the western portion of the Belleayre Mountain Ski Area and lands east of Highmount, is conveyed through culverts under Route 49A, runs in channelized streams through the property, collects in an east/west channel along the railroad corridor north of the site, and exits the channel via a number of culverts that pass under the railroad bed to the north.

At Wildacres east, drainage in the Pepacton watershed runs overland and is collected in the same channel along the railroad corridor, before it is conveyed through culverts under the railbed. Drainage in the Ashokan watershed also runs overland, and is collected in a roadside ditch on County Rt. 49A, which eventually drains to catch basin with a 24" culvert that runs under 49A to a ditch along Rt. 28.

There are three primary drainage courses through the site, all located at Wildacres. (See Wetland Inventory, sheets L2.06-2.09 in the SDEIS plan set). The first is an intermittent stream with a substrate consisting of rock, boulder and gravel that originates on State lands east of the former Highmount Ski Area and flows north through the Resort. This drainage is located within Wetland 16, and is a mapped intermittent tributary of the Bush Kill. To the east of the existing Wildacres Hotel (Marlowe Mansion) there is a second drainage that originates in a seepy area south of the Mansion. In the vicinity of the existing Hotel driveway seasonal or storm flow becomes channelized, then passes under the existing driveway and continues north and down the slope. This unmapped intermittent watercourse is identified as being within Wetlands 19-22.The third drainage originates on the western portion of the BMSC, crosses under County Rt. 49A, then flows as channelized drainage to the point where it enters the western corner of Wildacres East. This mapped intermittent tributary of the Bush Kill is within Wetland 24. The drainage then turns northwest and continues to the railroad corridor to the north. All three of the primary drainages are rocky, cobbly channels that convey storm flows and seasonal flows. Their locations and contributing watersheds are further illustrated on the Existing Subcatchment Plans, sheets L5.00-5.01 in the SDEIS plan set.

Topography

The topography within the portions of the project site proposed to be developed ranges from a maximum elevation of 3,100 feet above mean sea level (AMSL) near the top of the lift at the former Highmount Ski Center to a minimum elevation of 1,734 feet AMSL at the railroad corridor in the north corner of Wildacres West. Detailed topography information at 2 foot, 5 foot and 20 foot contour intervals is illustrated on the Existing Conditions Plans, sheets L2.00-2.01 in the SDEIS plan set. Detailed slope classifications are illustrated on the Slope Mapping, sheets L2.04-2.05 in the SDEIS plan set.

At Highmount, with the exception of the lands at its very top where grades are less steep, the former Highmount Ski Area consists of steep north-facing slopes with elevations ranging from a high point of approximately 3,400 feet down to 2,260 feet AMSL. To the west of the flatter lands at the top, elevations decrease via a combination of steep slopes and flatter plateaus, typical of the topography of mountains in the Catskills. The less steep areas at the top and the flatter plateaus are more suitable for development.

The Wildacres portions of the project site consist of areas of varying topography. Elevations in this area range from approximately 2,260 to 1,800 feet AMSL. On the western half topography is generally moderate, with the same combination of steep slopes and flatter plateaus mentioned above. The eastern side is generally flatter, and suitable for more dense development.

As per the AIP, proposed lodging units will be built only on slopes less than or equal to 20% and this will provide significant stormwater management benefits for this project. This commitment by Crossroads is an enhancement beyond current NYSDEC and NYCDEP regulatory standards for steep slope construction, and is consistent with the 'site planning as green infrastructure' goals for stormwater management outlined by NYSDEC.

Resource Mapping

Detailed mapping of existing conditions and environmental resources is provided in the SDEIS project plan set as noted in the sections above.

5.0 METHODOLOGY

The Stormwater Management Plan was developed in accordance with the procedures presented in the AIP document 'Exhibit F, Stormwater Quantity and Quality Protocols'. The plan incorporates the design standards established in The NYSDEC New York State Stormwater Management Design Manual, August, 2010 (SMDM), and the Rules and Regulations for the Protection from Contamination, Degradation, and Pollution of the New York City Water Supply and its sources, 10 NYCRR §128-3.9.

Stormwater Model and Analysis

As per the AIP, stormwater modeling was performed using the computer program HydroCAD (version 9.10) produced by HydroCAD Software Solutions, LLC, and all stormwater calculations were completed utilizing the SCS TR-20 and , TR-55 methods, widely accepted engineering practices, and recommended procedures listed in the SMDM. During a September 18, 2008 meeting with NYCDEP, NYSDEC and the NGO's it was again confirmed that the HydroCAD model was the proper model to use.

Storm Events Analyzed

The Type II storm is synthetic rainfall distribution that SCS has mapped for the project site, based on available National Weather Service duration-frequency data. Type II represents the most intense, short duration rainfall of the four different distributions, and is the design storm utilized in the stormwater model as per the AIP and as confirmed during a September 18, 2008 meeting with NYCDEP, NYSDEC and the NGO's.

The return interval storm events analyzed during the development of the plan are those specified in the AIP and in the August 2010 SMDM. However, because the 2007 AIP references the then-current SMDM that was subsequently updated, it was appropriate to update the rainfall amounts of the design storm events to be consistent with the 2010 SMDM.

The storm events analyzed are:

1. The 90% rainfall event totaling **1.1** inches as per Figure 4.1 of the SMDM, used as the basis for the DEC **Water Quality Volume** treatment goals. Since the modified project no longer includes the lands to the east of BMSC, the entire project site now falls directly under the 1.1" contour on the 90% rainfall map that is Figure 4.1 of the SMDM. This is a revision of the 1.3" event listed in Exhibit F of the AIP. See Figure 3 in Appendix A, showing the project site in the context of SMDM Figure 4.1

2. The 1-Year, Type II Design Storm having a 24-hour rainfall total of **2.8** inches as per Figure 4.4 of the Manual, used as the basis for **Channel Protection Volume** extended detention requirements. This storm event is also used to meet ***NYC DEP*** **Water Quality Volume** treatment goals. The precipitation map in the updated 2010 SMDM for the 1-yr storm event has been updated from the previous version, and therefore is different than the 3.5 inches listed in the AIP document 'Exhibit F'.

3. The 10-Year, Type II Design Storm having a 24-hour rainfall total of **6.0** inches, as per Figure 4.5 of the Manual, used as the basis for meeting the **Overbank Flood Control** Criteria. This map/figure did not change in the updated 2010 SMDM.

4. The 100-Year, Type II Design Storm having a 24-hour rainfall total of **8.0** inches as per Figure 4.6 of the Manual, used as the basis for meeting the **Extreme Flood Control** criteria. This map/figure did not change in the updated 2010 SMDM.

5. The 25-Year Design Storm having a 24-hour rainfall total of **6.5** inches. The inclusion of this storm is a local and NYC DEP requirement for peak rate attenuation.

Design Process

Once an environmental resources analysis of the project site is complete, the stormwater management design process begins with the identification of design points, typically located at points of confluence where flows can be easily measured, locations that are down gradient of proposed development, and as close as possible to the areas of proposed development. These are used to develop the subcatchment mapping, and ultimately to compare the rate and volume of runoff in the pre-development and post-development conditions. Once the subcatchment areas are defined, data is collected to determine both quantity and quality requirements. Using this data, the design is then developed in accordance with the SMDM 5-step process in order to meet the required goals.

The August 2010 SMDM includes a five-step process that integrates site planning and stormwater management, and requires the use of green infrastructure practices to treat stormwater. The five steps include;

1. Site planning to preserve natural features and reduce impervious cover,
2. Calculation of the initial Water Quality Volume for the site,
3. Providing Runoff Reduction by incorporation of green infrastructure techniques and standard stormwater management practices (SMP's) with Runoff Reduction Volume (RRv) capacity.
4. Using standard SMP's where applicable, to treat the portion of water quality volume (WQv) not addressed by green infrastructure techniques and standard SMP's with RRv capacity, and
5. Design of volume and peak rate control practices where required.

The original design of this overall project integrated site planning and stormwater management and incorporated green infrastructure practices such as green roofs and cisterning water for re-use, prior to the issuance of the 2010 SMDM update. The Modified Project continues the commitment to these practices and articulates the specific steps from the revised manual listed above. Specific aspects of the design and the process are included in more detail in the body of the report below.

6.0 PRE-DEVELOPMENT MAPPING AND ANALYSIS

Design Points were identified during fall of 2006 field investigations and inspected again in the spring of 2007. The locations of these design points are listed in the AIP Exhibit F, included in Appendix B. After the AIP was issued, additional discussions regarding the Design Points were held with DEC, DEP and the NGO's in September and November of 2008. The discussions addressed how the AIP design points would be analyzed in the context of a proposed stormwater management concept, based on the Modified Project. At the conclusion of the discussions the participants agreed that Design Points 1-6 would be moved closer to the proposed development at Highmount, to create the most accurate storm water model for the Modified Project. Based on these changes, the Design Points were re-numbered, and the adjusted locations were then field verified in October, 2008, by LA Group staff. Design Point 13 was eliminated based on these field investigations. The adjusted Design Points are listed below, and shown on the Existing Subcatchment Plans, sheets L5.00-5.01 in the SDEIS plan set.

Modified Project Design Points

Design Point	Structure Type	Location	Notes
1a	Drainage Ditch at Woods Road	+/-600' west of ex Leach Farm (below HM)	New Design Point
2	18" Culvert	Along Rte. 49A (below Highmount)	Previously DP 14
3	12" Culvert	Along Rte. 49A (below Highmount)	Previously DP 15
4	18" Culvert	Along Rte. 49A (East Side of Highmount)	Adjusted DP
5	18" Culvert	Along Rte. 49A (East Side of Highmount)	Adjusted DP
5a	12" Culvert	Along Rte. 49A (East Side of Highmount)	Adjusted DP
6	55" Elliptical Culvert	Along Rte. 49A (Bottom of old ski area)	Adjusted DP
6a	30" Culvert	Along Rte. 49A (Bottom of old ski area)	Adjusted DP
7	36"x48" Culvert	At Railbed, ± 70' North of Gunnison Rd.	No Change
8	(2) 18" Culverts	At Railbed ± 190' North of Gunnison Rd.	No Change
9	24"x36" Culvert	At Railbed ± 890' North of Gunnison Rd.	No Change
10	60"x96" Stone Culvert	At Railbed, ± 1405' North of Gunnison Rd.	No Change
11	24"x36" Culvert	At Railbed, ± 2105' North of Gunnison Rd.	No Change
12	24" Culvert	Intersection of Van Loan Road & Rte. 49A	No Change
16	24" culvert	Intersection of Ulster Del. Trnpke & Rte. 49A	New Design Point

**Note: Design Point 13 was eliminated*

Based on these Design Points, individual subcatchments were derived from field observation and mapped data. The individual subcatchments include the following.

Cover Types

Areas of cover type are from the project site survey and vegetation community type mapping derived from field observation. These cover types were used to help determine runoff coefficients, and typically include impervious and vegetated areas.

Soils

Soils types and hydrologic soil groups are identified based on-site high intensity soils mapping and used in conjunction with the cover types to help determine runoff coefficients. Based on the collected soil data, Hydrologic Soil Group C is used throughout the existing analysis.

Time of Concentration Flow Paths

Time of concentration flow paths will begin with a sheet flow segment, transitioning to shallow concentrated flow and channel flow where these conditions exist. Specific flow paths and channel conditions are based on existing conditions mapping, survey and field observation, and the position and orientation of channels was verified using GPS positioning.

At Highmount, the site is divided into eight existing subcatchments, that terminate at design points 1a, 2, 3, 4, 5, 5a, 6 and6a located along County Route 49A. The eight subcatchments total approximately 183 acres of primarily wooded and meadow cover types, on Hydrologic Group C soils. There are also a few existing structures, driveways, and dirt access roads at the old Highmount ski area.

Wildacres West includes ten existing subcatchments that terminate at design points 7 through 9, and includes runoff from off-site lands to the south. The ten subcatchments total approximately 301 acres of primarily wooded cover type on Hydrologic C soils. Also included are some existing structures, driveways, meadow areas and wetland areas.

Wildacres East includes seventeen existing subcatchments that terminate at design points 10, 11, 12 and 16. Nine of the seventeen are on off-site lands including the western portion of BMSC and its access road, totaling approximately 90 acres. All seventeen subcatchments total approximately 254 acres of primarily wooded and meadow cover types on Hydrologic Group C soils. There are also existing structures, lawn areas, driveways and roads. Design points 12 and 16 include subcatchments that are within the Ashoken watershed. All other project subcatchments are within the Pepacton watershed. The total watershed area at Wildacres, (East and West), is 555 acres.

The existing subcatchments and their characteristics were entered into the HydoCAD model in order to create the pre-development condition that can be used as a baseline comparison for the post-development model. The existing peak discharge rates and volumes at each Design Point for the 10, 25 and 100-yr storm events are summarized in Table 7 in Appendix C. The WQv and 1-yr storm events are analyzed separately.

7.0 STORMWATER MANAGEMENT PLAN AND DESIGN PROCESS

The proposed project incorporates stormwater management as part of the overall project design. This includes protecting the site's natural resources and environmentally sensitive areas, minimizing development impacts and impervious areas by using effective site planning principles, and incorporating design features that effectively manage stormwater runoff such as green roofs, bioretention areas and an irrigation pond that captures water for re-use. The plan utilizes these elements in order to achieve the primary goal of meeting water quality objectives, while at the same time mitigating potential impacts associated with increased stormwater runoff. Specifically, the objectives of the stormwater management plan are to:

- Enhance the quality of stormwater runoff to prevent water quality degradation, and preserve water quality in receiving water bodies including New York City water supply reservoirs,
- Promote infiltration and evapotranspiration,
- Prevent increased runoff from developed land to reduce the potential for flooding, erosion and flood damage.

The plan is developed in accordance with the NYSDEC design criteria and process outlined in Section 5 above, and 10 NYCRR §128-3.9. Specific steps are described in detail later in the report. In general, stormwater is conveyed through a series of stabilized rip rap and grassed swales, storm pipes, culverts and in some cases sheet flow. It is collected, treated and attenuated in catch basins, micropool extended detention ponds, bioretention areas, dry swales, sections of porous pavement, stormwater planters, wet extended detention ponds, including one that will function as a cistern for irrigation, and a green roof. Controlled release structures within the detention ponds regulate the rate at which stormwater is discharged. The existing soils limit the ability to use infiltration for treatment, so underdrains are included in the bioretention areas, dry swales and stormwater planters. The wet pond used to store irrigation water is an isolated man-made pond with a liner and is not associated with any of the watercourses on the project site. Sufficient freeboard will be maintained in the irrigation ponds so that required treatment and attenuation can be achieved.

Even though there are no direct discharges to Trout Waters, concerns relating to thermal loading were considered in the selection of stormwater management practices. This is one of the reasons Micropool Extended Detention Ponds are primarily used throughout the plan instead of other treatment devices, which could potentially result in increased stream temperatures. Only two Wet Extended Detention Ponds are utilized. The first is the irrigation Pond mentioned above, however since it will be used for irrigation, potential for stormwater discharges from the pond is greatly reduced. The second is at Highmount and functions both as a treatment device and decorative water feature. Using Bioretention and Dry Swales also helps, as it reduces the amount of stormwater that would be required to pond, and potentially warm, prior to being discharged. Even though 24 hours of extended detention of the 1 yr. storm event is required, using these practices and the Micropool Extended Detention Ponds minimize the potential for thermal loading.

Stormwater management devices will be vegetated with plant species adapted to survive in fluctuating hydrologic conditions, and all conveyances will have sufficient erosion protection including rolled erosion control products and/or grasses. Treated stormwater will be discharged at controlled rates to stabilized swales and existing channels and drainage ways throughout the site. Existing hydrologic patterns that include stormwater runoff from off-site areas located above the proposed development areas, are maintained to the maximum extent practicable. This is achieved by ensuring this runoff does not flow over proposed development areas, and allowing it to bypass disturbed areas and proposed stormwater management practices whenever possible.

By implementing these practices and creating positive drainage with effective site grading within each of the drainage areas, the proposed stormwater management systems are capable of minimizing erosion potential, treating stormwater runoff from developed project areas, and reducing post-development runoff rates from the 1, 10, 25 and 100-year storm.

The five steps outlined in the SMDM, (Site Planning to Preserve Natural Features, Water Quality Volume, Runoff Reduction Volume, Channel Protection Volume, and Overbank Flood and Extreme Flood Control), are discussed in the following sections.

Site Planning to Preserve Natural Features

On a larger scale, the preservation of land is a direct result of the AIP process which resulted in the Modified Project. In accordance with the AIP, the 203 acre Adelstein parcel has been placed in a Conservation Easement to the City of New York. The Conservation Easement allows for passive recreational activities on the property. The AIP and the Modified Project contemplate the conveyance of the Big Indian parcels containing approximately 1,189 acres of undeveloped land into public ownership and potential for eventual inclusion into the State Forest Preserve. The lands are contiguous with the Big Indian Wilderness Area and nearby the Shandaken Wild Forest. Together, the Adelstein parcel and the Big Indian parcels represent nearly 1,400 acres of lands to remain undisturbed and preserved as a result of the Modified Project.

As a result of the reduced project scope, the Modified Project entails development of approximately 235 acres as opposed to the 573 acres of development proposed under the original project. Similarly the Modified Project includes a total of 21 acres of impervious surfaces as compared to the 85 acres of impervious surfaces proposed in the original project.

Specific to the current Modified Project, the design process considered site planning strategies that can be beneficial to a stormwater management plan. Some of these are listed in Table 3.1 in Chapter 3 of the SMDM. There are two categories, Preservation of Natural Resources and Reduction of Imperious Cover.

Preservation of Natural Resources includes:

- Preservation of Undisturbed Areas
- Preservation of Buffers
- Reduction of Clearing and Grading
- Locating Development in Less Sensitive Areas
- Open Space Design
- Soil Restoration

Reduction of Impervious Cover includes:

- Roadway Reduction
- Sidewalk Reduction
- Driveway Reduction
- Cul-de-sac Reduction
- Building Footprint Reduction
- Parking Reduction

These planning principles were included during the site design and concept refinement process at Wildacres and Highmount. Based on the existing site conditions and natural resource analysis included in Section 4 above, areas that are more suitable for development were identified, along with natural areas that should be preserved. Development was then clustered in the more suitable areas, (such as the flatter plateaus within the topography), slopes steeper than 20% were avoided, and other natural resource areas such as wetland and streams were preserved. This allows for significant open space, both as undeveloped natural areas and designed open space areas designated for recreation.

The buildings, being the largest components, are located in the flattest areas and designed to fit into the topography, to reduce as much as possible the necessary clearing and grading. Roads were then strategically located to connect the developed areas, using the same principles of avoiding sensitive areas and minimizing grading as much as possible. Potential impacts to wetland and stream buffer areas are also minimized by avoidance, spanning streams with bridges, and minimizing grading within buffer areas to the maximum extent practicable. Soils with high capacity for infiltration do not exist on the site, however the development of the golf course will include the installation of topsoil with a much higher infiltration potential, thereby increasing groundwater recharge. Post-construction soil restoration is also specified as part of the stormwater pollution prevention plan (SWPPP).

As part of the same planning process, impervious areas were also minimized. All cart paths for the golf course will be constructed of porous pavement. Even though the soils have limited infiltration capacity, this approach maximizes the opportunity for infiltration to occur. Many of the detached lodging units utilize narrow, shared driveways, and in most cases parking underneath the units. Road widths are minimized as much as possible, based on the amount of anticipated traffic and the project components they serve. The Wildacres Hotel incorporates most of its parking within the footprint of the building (underground), and additional hotel parking is provided in a two-story parking garage, further reducing the necessary parking footprint. Roof terraces are planted to reduce the hotel's impervious area. The Highmount Hotel/Spa and adjacent lodge are designed with a green roof, essentially eliminating an impervious rooftop. Parking for the hotel/spa and lodge are again included within the footprint of the building eliminating more potential impervious area.

Proposed Subcatchment Mapping

Subcatchment mapping of the proposed project area was developed based on the previously identified design points and existing subcatchment mapping. The same methodology used in the development of the existing subcatchment mapping with regards to cover types, soils and time of concentration flow paths were used for the proposed mapping, based on the proposed development plan.

Cover types in the proposed conditions include forest, meadow and wetlands in the undisturbed areas, lawn areas, roads and paving, roof area and porous paving. The lawn areas are broken into two categories based on anticipated soils after construction. Hydrologic Group C soils are anticipated in all areas with the exception of the tees, greens and fairways on the golf course. These areas are anticipated as Hydrologic B soils, based on the high porosity requirements typical of the quality soils necessary to establish golf course quality grass on fairways, tees and greens. Soils for these golf course components consist of a sandy loam or loamy sand as defined by the USDA, sand, and may times gravel to facilitate subsurface drainage. Subsurface preparation for building fairways, tees and greens should begin 12”-18” below the anticipated finished grade. Benefits of using these course textured soils include less compaction and increased infiltration rates, which are crucial to maintaining healthy turf. Even though these areas are anticipated to have soils with Hydroligic Group B soils, Hydrologic Group C soils have been used in the model as a conservative measure. The porous pavement golf cart paths were considered to have the same CN value as Turf on a Hydrologic C soil (CN 74). This is another conservative measure as it is expected they will function as intended providing significant infiltration, resulting in a much lower CN value ranging anywhere between 50 and 90. Time of concentration flow paths are based on a combination of the existing topography and proposed grading, and sheet flow is limited to a distance of 100’ as required.

At Highmount, the proposed watershed is divided into several subcatchments totaling approximately 182 acres. At Wildacres, the proposed watershed is divided into several subcatchments totaling approximately 558 acres. This is the same watershed area identified in the pre-development condition. In the proposed condition, proposed grading results in 2.5 acres of the 26 acres draining to the Ashoken reservoir under existing conditions now draining to the Pepacton reservoir.

The data collected during the subcatchment mapping process is then entered into the HydroCAD model and used as part of the basis for the stormwater management design.

Water Quality Volume Calculations

The required water quality volume (WQv) was calculated for each drainage area contributing to a design point, based on the proposed design. The calculation was performed in accordance with the equation presented in Table 4.1 in Chapter 4 of the Manual, utilizing both the 1.1 inch storm event required by DEC, and the 2.8 inch storm event required by DEP. The resulting volumes determined the amount of treatment required, and were then used as the basis for the Runoff Reduction Volume calculation required by NYSDEC. A summary of the WQv required by drainage area is included in Tables 1 and 3, Appendix C, and detailed supporting calculations can be found in Table 2, Water Quality Volume Calculation Table, also in Appendix C.

As part of the above calculation, the percent of impervious area within each drainage area is also calculated. This is used not only to determine the WQv, but also to identify additional DEP treatment requirements above and beyond what is required by DEC, in accordance with DEP’s April 2010 updated regulations. Section 18-39(c)(6) of the April 2010 DEP regulations states that if impervious surfaces cover 20% or more of a drainage area for which stormwater practices are designed, runoff from that drainage area shall be treated by two different types of stormwater management practices in series. Based on our analysis of this DEP requirement and its relationship to DEC’s SMDM requirements, it is our understanding that the calculation to determine the percentage of impervious area is performed at the design point which defines the contributing drainage area. There appears to be a potential correlation between the DEC design process and this DEP requirement, however the regulations do not include sufficient language or information about how the DEC and DEP calculations and process could integrate with one another.

Based on the above, all of the drainage areas in this project for which stormwater management practices are designed do not include impervious surfaces greater than 20% of the total drainage area. A summary of this information is in the DEP WQv summary, Table 2 in Appendix C, and supporting calculations can be found in the Water Quality Volume Calculation Table 3, in Appendix C.

Runoff Reduction Volume Calculations (RRv)

Section 4.3 of the SMDM states the RRv requirement can be accomplished by application of on-site green infrastructure techniques, standard stormwater management practices with runoff reduction capacity, and good operation and maintenance. If by using these techniques the calculated RRv is greater than the required WQv, the RRv requirement is met. If the RRv is less than the required WQv, then the design must at a minimum, reduce a percentage of the runoff from impervious areas to be constructed on the site. The percent reduction is based on the Hydrologic Soil Group of the site, and is determined by the Specific Reduction Factor (S). The Specific Reduction Factor (S) for this project is 0.30, based on the 'C' soils present.

Green Infrastructure Practices

Listed below are the green infrastructure techniques and standard stormwater management practices with runoff reduction capacity acceptable for runoff reduction, as noted in Tables 3.2 and 3.5 of the Manual, and an evaluation of its use within this project.

Conservation of Natural Areas

As described in the Site Planning section above, there are several natural areas throughout and around the project site that that have been protected. These natural areas are a critical component of the design, from both an environmental standpoint and an aesthetic standpoint. These areas provide context and setting for the Resort as a whole, integrating it with the surrounding landscape. These preserved areas at Wildacres and Highmount are clearly marked on the project plans, and designated for protection during construction as shown on the Erosion and Sediment Control Plans, sheets L3.02-3.21 in the SDEIS plan set. While these areas are clearly protected and will be maintained by the Resort, no conservation easements are planned.

In an effort to maintain the existing hydrology of the site as much as possible, runoff from these undisturbed areas does not flow into stormwater management practices (SMP's), before reaching the design points. These areas are included in the initial WQv calculation; however, since they do not drain to a Stormwater management Practice (SMP), the areas are not included in the adjusted WQv calculations, and no area reductions are taken for the RRv calculation.

Even though there are no conservation easements planned within Wildacres or Highmount, the 203-acre Adelstein parcel to the west of Highmount and County Route 49A has been placed in a

Conservation Easement with the City of New York. This represents the protection and conservation of a significant parcel of land, adjacent to the project site. However since it is separate from the project site and not included in the site's watershed, it is not included or accounted for in the RRv calculation.

Sheetflow to Riparian Buffers/Filter Strips

This technique is not used for this Project primarily due to the slope requirements and the maximum length of overland flow restrictions in the SMDM. Most portions of the project site where this technique could be applied are steeper than the allowable maximum contributing slope ranging from 6%-15% Additionally as part of this plan, all runoff from developed areas is typically treated and attenuated prior to being discharged into these naturally occurring areas, so the natural hydrology can be maintained as much as possible.

Vegetated Open Swales

RRv is not applied for this technique due to site topography prohibiting the required design flows and flow depths, and exceeding slope requirements of 4 percent. However, vegetated swales are an integral part of the design with respect to stormwater conveyance. And in many cases, Dry Swales are used instead.

Tree Planting/Tree Box

There are several natural areas with existing trees that are being preserved, and an extensive tree planting plan is included as part of this project. However RRv is not applied for this technique due to limiting slope requirements of 5% for proposed trees and 6%-15% for existing trees and distance limitations based on proximity to impervious areas. There appears to be several other limiting factors related to the applicability of this technique, such as a correlation to Rooftop Disconnection, Sheet Flow to Filter Strip and Natural Conservation Areas, but it is not clear how all these factors and/or restrictions can be integrated into a project of this size and scope. This is another reason why this technique is not applied to the RRv calculation, however this appears to be a conservative measure based on the existing wooded areas to be preserved and the extensive tree planting plan.

Disconnection of Rooftop Runoff

RRv is not applied for this technique due to the limiting infiltration capabilities of the project site soils.

Stream Daylighting

An impervious area reduction is not taken for this practice because the project does not qualify as a re-development project as defined in the SMDM, and therefore stream daylighting is not an applicable practice. However in one location there is a culvert approximately 25' long that will be removed and replaced with bridge that will span a portion of a stream and the area where the culvert is removed.

Rain Garden

RRv is not applied for this technique. Rain gardens are typically applied within very small drainage areas usually associated with residential development. The contributing drainage areas for individual homes exceeds the maximum contributing area of 1,000 sf (for a rain garden), specified in SMDM. Instead, Bioretention practices are incorporated as part of the plan. In addition to this practice being more appropriate for larger contributing drainage areas, this results in fewer practices for a larger area which can simplify operations and maintenance.

Green Roof

The Highmount Hotel and Spa and adjacent Lodge building will be constructed with Green Roofs covering the entirety of the structures. This represents a significant reduction in impervious area, as the roofs are planned to total 8.5 acres in size. The Green Roof will be an ‘intensive system’, including a lightweight growing media with depths ranging from 12” to 36”, a filter fabric type layer and drainage aeration layer. Excess water will be drained away in small collection pipes. The roof will contain a mix of herbaceous and low growing woody vegetation that will be regularly maintained. In the stormwater model, it is assumed that herbaceous lawn will cover the entire roof and the growing media will be 12” deep. Additional plantings and greater soil depths will increase the performance of the roof.

There are 2 possible ways to model the green roof within hydrocad. If you were to model the roof as a pond, you would include the storage within the growing media and drainage layer . The outlets would be exfiltration, representing surface water percolating through the growing media, and horizontal orifices at the bottom of the drainage layer to collect the water that exfiltrates through the growing media. After exploring this option and it’s reaction within the model, it was decided that modeling the roof as a subcatchment only was the most accurate, and conservative method to use.

In the HydroCAD model, the green roof is modeled as a subcatchment with a specific CN value. The CN value was provided by the green roof manufacturer based on TR-55 calculations and data acquired from lab testing of green roof materials. The manufacturer also provided a runoff rate for certain storm events, based on the CN value of 72. We modeled the project scenario independently and found that the rates generated were consistent with the rates provided by the manufacturer. Based on the scenario above and the information provided by the manufacturer, it is our opinion that this is the most accurate way to model the green roof within HydroCAD. Refer to Appendix C for supporting calculations provided by the manufacturer.
The entire required WQv is applied towards the RRv. Refer to the manufacturers data in Appendix C for the Green Roof WQv calculations.

Stormwater Planters

The Wildacres Hotel will include a series of stormwater planters on the rooftop terraces. The planters are designed as flow through planters with a 12” ponding depth, 18” of soil media, a 12” gravel drainage layer and an underdrain. A small overflow pipe is included for larger storm events. Collectively, the planters will treat nearly an acre of impervious roof terrace, before discharging to a collection system. As a flow-through planter on ‘C’ soils, 45% of the provided WQv is applied towards the RRv. See sheet L8.01 in the SDEIS plan set for the planter detail, and the Stormwater Management Plans for the location.

Rain Tanks/Cisterns

There are no traditional rain tanks and cisterns proposed as part of this project. However, the proposed irrigation pond located in the Front-9 Village portion of Wildacres east will function exactly like a cistern, storing stormwater runoff for re-use as irrigation for the golf course. Forty five (45) acres of proposed development, including the Wildacres Hotel, adjacent parking garage, portions of the golf course and the entire Front-9 Village drain to the irrigation pond. The pond is designed as a 'traditional' stormwater management practice, (Wet Pond), with a static water elevation, and sufficient freeboard to store the entire WQv and attenuate the larger storm events. None of this storage is applied to the RRv because of the uncertainty of how the calculation would be applied, since the pond will function both as a treatment and attenuation device and a storage device for re-use.

Porous Pavement

The infiltration capacity of the existing soils is a limiting factor preventing the widespread use of porous pavement on this project. However, porous pavement will be used to construct all of the golf cart paths along the golf course. The cross section of the paving design, (See sheet L8.02 in the SDEIS plan set), will include a perforated underdrain in the event adequate infiltration is not realized. As a conservative measure, no storage credit is applied to the RRv and they are not used to provide WQv treatment, due to the limited infiltration capacity of the existing soil. Any runoff from the cart paths will infiltrate as the soils allow, then sheet flow across the golf course or other grassed areas into a stormwater management practice. However it is expected they will function as intended, providing infiltration and reducing runoff, since the construction of the cart paths in many areas will be in fill soils and infiltration will be realized. As a conservative measure, the CN value for all cart paths was set at 98.

Bioretention

Bioretention is a primary treatment device used throughout the project, used mostly to treat the WQv in small drainage areas with high percentages of impervious areas. The bioretention areas are designed with a 6" maximum ponding depth, an overflow pipe, a 48" depth of soil filter media, a 12" gravel drainage layer and an underdrain. In most cases where these practice are used, the WQv requirement for the DEC storm is met, and overflow from larger events is directed via the overflow pipe, or over a weir to a standard SMP for attenuation. In many cases the Bioretention areas are oversized and the WQv requirement for the DEP storm is met, and therefore in a few cases these practices meet the total RRv requirement for a specific drainage area. As a bioretention practice on 'C' soils, 40% of the provided WQv is applied towards the RRv.

Dry Swale

Dry Swales are used throughout the project primarily to convey and treat the WQv associated with runoff from the golf course, which in most cases is all pervious. The dry swales are designed with an 18" ponding depth, a 30" depth of soil filter media, a 12" gravel drainage layer and an underdrain. In almost all cases where these practice are used, the WQv requirement for the DEC storm and DEP storm is met. Overflow from larger events is either directed over a weir to a standard SMP for attenuation and additional treatment, or discharged to conveyance swales or existing drainage channels at a controlled rate to ensure adequate attenuation is provided. As an open channel practice on 'C' soils, 20% of the provided WQv is applied towards the RRv.

RRv Summary

The RRv goals and the minimum RRv requirements were calculated in accordance with the equations and methodologies presented in Section 4.3 of the Manual, utilizing the 1.1 inch storm event required by DEC. A summary of the WQv and RRv by drainage area is included in Tables 1 and 3 in Appendix C. Detailed supporting calculations can be found in Table 2, also in Appendix C. The calculations show that the minimum RRv is met in every drainage area, and in some area 100% of the RRv requirement is met. Justification evaluating the use of each green infrastructure technique and site limitations is presented in the paragraphs above. Based on this information the project meets the RRv requirements.

Remaining Water Quality Volume

Micropool Extended Detention Ponds (P1) and Wet Extended Detention Ponds (P3) are used to treat the remaining WQv from the drainage areas contributing to those practices. In all cases, the WQv requirements for the DEC 1.1 inch storm and DEP 2.8 inch storm are met. The ponds are typically designed with a forebay, a micropool or permanent pool, and a controlled release structure that regulates discharge from the pond. Emergency spillways or weirs are also provided. See sheet L8.01 in the SDEIS plan set for details. Treated water is discharged from the ponds to conveyance swales or existing drainage channels at a controlled rate to ensure adequate attenuation. Detailed supporting calculations listing required and provided WQv can be found in Table 2, Appendix C. Based on the plans and supporting calculations, the necessary WQv for both the 1.1 inch (DEC) and 2.8" (DEP) storm events is provided, and therefore the requirements are met.

Volume and Peak Rate Control

Channel Protection Volume (CPv)

Stream Channel Protection Volume (CPv) requirements are designed to protect stream channels from erosion, by providing 24-hour (12-hour in trout waters) extended detention of the one-year, 24-hour storm event. For this project, the 1-year event is **2.8 inches** as per Figure 4.4 of the Manual. The required CPv is calculated utilizing the Plug Flow Calculation in HydroCAD (TR-20) or the figures and calculations, (TR-55) in Appendix B of the SMDM. The CPv requirements are typically met using Micropool Extended Detention Ponds and Wet Extended Detention to provide the necessary attenuation. A summary of the required and provided CPv and supporting calculations can be found in Tables 5 and 6, Appendix C. Where detailed calculations are not provided, refer to the plug flow detention time listed in the HydroCAD report (Appendices E, F and G). Based on the plans and supporting calculations, the CPv requirements are met.

Overbank Flood (Qp) and Extreme Flood (Qf) Control

The primary purpose of the Overbank Flood (Qp) control sizing criterion is to prevent an increase in the frequency and magnitude of out-of-bank flooding generated by urban development. It requires storage and attenuation of the 10-year, 24-hour storm to ensure post-development peak discharge rates do not exceed the pre-development condition. For this project, the 10-yr event is **6.0 inches**, as per Figure 4.5 of the SMDM.

In addition to DEC requirements, a local and DEP requirement is the analysis of the 25-Year Design Storm to ensure peak rate attenuation. For this project, the 25-yr event is **6.5 inches**.

The intent of the Extreme Flood (Qf) criteria is to (a) prevent the increased risk of flood damage from large storm events, (b) maintain the boundaries of the pre-development 100-year floodplain, and (c) protect the physical integrity of stormwater management practices. It requires storage and attenuation of the 100-year, 24-hour storm to ensure post-development peak discharge rates do not exceed the pre-development condition. For this project, the 100-yr event is **8.0 inches** as per Figure 4.6 of the SMDM.

For this project, the 25-year storm, Qp and Qf requirements listed above are met using Micropool Extended Detention Ponds (P-1), Wet Ponds, (P-2) and standard Detention basins (no treatment, attenuation only) to provide the attenuation necessary to match the pre-development conditions. Stormwater is routed by conveyance swales, closed system piping or overland sheet flow to these Detention Ponds where it is stored for a period of time and released at a controlled rate through a controlled release structure, and/or over a broad crested weir. Treated storm water is typically discharged from the ponds directly to existing drainage courses, or to constructed conveyance swales that distribute the runoff to existing drainage courses. In most cases runoff cannot be discharged as sheet flow due to the presence of slopes over 10 percent. In all cases conveyance swales are constructed with a stabilized surface, such as grass, grass with turf reinforcement mat, cobbles or rip rap, designed to support anticipated velocities without experiencing erosion. The swale surface materials along with the proposed grading controls flow rates.

All of the project data and calculations mentioned in previous sections is collected and included in the HydroCAD model, to determine the peak rate flows at each of the design points in the post development condition. This information is then compared to the pre-development rates at each design point to ensure the pre-development peak discharge rates are not exceeded. Refer to Table 7, Appendix C, for a comparison of pre and post-development peak discharge rates and volumes. Based on this comparison, post-development peak discharge rates do not exceed the pre-development condition at any of the identified design points, and therefore the requirements are met.

Using the design process described above, the proposed techniques and stormwater management practices are incorporated into the overall project design. The Grading and Drainage Plans, supported by the Proposed Subcatchment mapping, (sheets L4.00-4.11 and L5.03-L5.15 in the SDEIS plan set), show how the specific components are integrated into the overall project. Specific descriptions are as follows.

Along the proposed Highmount access road from County Route 49A to the Hotel, stormwater is primarily collected in catch basins and conveyed through a closed pipe system to the detention pond north of the proposed hotel. There is one dry swale north of the hotel that treats runoff from the three buildings west of the Hotel and adjacent paved surfaces. The green roof on the Hotel and Lodge are designed to infiltrate only rainfall that falls directly on the roof. Sheet flow from adjacent areas is directed around the roof areas, and does not enter the green roof system. Any potential overflow or drainage from the green roofs will be routed through the detention pond to the north. The detention pond to the north is a Wet Extended Detention Pond (P-3). Runoff is directed to the Wet Extended detention pond, which will function both as an aesthetic pond and an attenuation device, where it is treated and released at a controlled rate into an adjacent roadside ditch on Route 49A which leads to Design Point 4. The pond is designed with a static water elevation and adequate freeboard to pass the 100-year storm event.

The Leach Farm north of Route 49A utilizes a single bioretention area for treatment and attenuation. Flows are conveyed through a piping system from the building roof and paved areas to a stable outlet before it enters the bioretention area via surface flow. Once treated, stormwater is discharged to a drainage ditch along an existing woods road, which eventually drains to Design Point 1A.

Design Points 2 and 3 have minimal runoff directed to them in the proposed condition, mostly associated with undisturbed areas. Design Points 5, 5a and 6a also have very few changes as a result of the proposed condition, with no runoff from developed areas flowing to the points.

At Wildacres West, runoff is either directed to Design Points 7, 8 and 9, or to the irrigation pond located north of the Front-9 Village at Wildacres East. On the western side of Wildacres west, sheet flow over the proposed golf course is directed to dry swales using grading and shaping of the landform. Runoff is treated in the dry swales and discharged via standard conveyance swales to existing adjacent drainage courses. In this area, existing wooded areas including the existing riparian corridor are preserved to the maximum extent practicable.

Runoff from the first portion of the Wildacres West access road, (Route 49A to the first lodging building), is collected in a series of catch basins and roadside swales, treated in a bioretention area adjacent to the 18^{th} tee, and released into a proposed roadside swale leading eventually to an existing drainage channel. Runoff from the central portion of the access road (first lodging building to the clubhouse), the lodging buildings, the golf course clubhouse and a portion of the clubhouse entry drive are also collected in catch basins and pipes, and conveyed in a closed system to micropool extended detention ponds adjacent to the driving range and the 16^{th} fairway. Stormwater is treated and released from the ponds into conveyance swales, leading directly to an existing drainage course running through the center of the site. Golf course runoff from the central portion of the site is directed via sheet flow to dry swales using grading and shaping of the landform. Runoff is treated in the dry swales and discharged via standard conveyance swales to existing adjacent drainage courses. These areas drain to Design Points 8 and 9. Runoff from the eastern portion of the access road, (clubhouse to Gunnison Road), the clubhouse parking lot and the 1st hole are also collected in catch basins and roadside swales, and primarily conveyed to a micropool extended detention pond east of the 1st green. Runoff from the rooftop terraces of the Hotel is collected and treated in a series of built in, flow-through stormwater planters, and conveyed to the drainage system leading to the same pond east of the 1st green. Treated water is then released to an existing ditch on Gunnison Road that eventually drains to Design Point 9. The lower portion of the access road is treated in a dry swale behind the 1st green, and released to the same ditch on Gunnison Road.

With the exception of the rooftop terraces, runoff from the Hotel roof, the adjacent parking garage, areas south and east of the Hotel and the 9th hole, is conveyed to the irrigation pond at Wildacres east. Runoff is collected in piping systems and directed to a conveyance swale east of the 9th hole, then under Gunnison Road and the adjacent drainage course in a closed pipe, before being discharged to another surface swale that drains to the irrigation pond.

In the proposed condition, the watershed for Design Point 10 is almost entirely made up of areas outside of the project boundary. The primary drainage course that collects runoff from this watershed has a very small section that crosses the project site in the western corner of Wildacres east. There are no proposed stormwater management practices that discharge to this drainage course or Design Point 10.

At Wildacres East, a majority of the drainage area, along with the portions of Wildacres west noted above, is treated in the irrigation pond. Runoff from the Front-9 Village is directed via sheet flow to a bioretention area in the boulevard of the access driveway, treated, and released through a pipe to the irrigation pond for additional treatment and attenuation. Runoff from the Front-9 Clubhouse and adjacent paved areas is collected in catch basins and also conveyed to the irrigation pond. Lawn areas adjacent to the pond and a portion of the 5th, 6th and 7th holes also drain to the pond. Runoff collected in the pond is stored for re-use as irrigation for the golf course. The pond is designed with sufficient freeboard to treat the required WQv, and provide the necessary attenuation for the 1, 10, 25 and 100-year storm events. Overflow from the pond in severe storm events is conveyed as sheet flow and shallow concentrated flow to a conveyance swale west of the 3rd green, where is it discharged into the existing drainage channel along the railroad bed at the north end of the property, and eventually drains to Design Point 11. Golf course runoff from the 3rd hole and areas north of the irrigation pond is directed via sheet flow to dry swales using grading and shaping of the landform. Runoff is treated in the dry swales and discharged via standard conveyance swales to existing drainage courses along the northern property boundary.

The southern portion of Wildacres east, composed primarily of 7th and 8th holes is the only part of the proposed project within the Ashokan Watershed. Runoff from the golf course is directed via sheet flow to a bioretention area adjacent to the 8th tee using grading and shaping of the landform. Runoff is treated in the bioretention area and discharged in a pipe to the existing drainage ditch along Route 49A.

Overflow from larger storm events will be released over a weir into an adjacent detention basin where it will be attenuated and released at a controlled rate through a pipe into the same drainage ditch along Route 49A, which drains to Design Point 16. Design Point 12 includes only a very small portion of the project area located at the entrance to Wildacres East.

8.0 POST-CONSTRUCTION MAINTENANCE REQUIREMENTS

All operational phase stormwater management practices will be maintained in accordance with the project Stormwater Pollution Prevention Plan required by NYSDEC. This includes, but is not limited to, cleaning of sediment from drainage inlet sumps, removal of sediment from SMPs, cleaning conveyance piping and channels of obstructions, inspection and repair as required of any outlet control mechanisms, and repairing any other detriments in the design that is resulting in the facilities not functioning as intended in the design.

Sediment removed as part of detention basin maintenance will be used on site. As part of golf course maintenance, the application of very thin layers of coarse topdressing to the golf course turf is typical. Much of the materials that will accumulate in the SMP's will be sand from road sanding and other coarse materials. With proper amending, this type of material is suitable for use as topdressing on the golf course.

Two annual inspections will be conducted after completion of the project. They will take place in April and September of each year. Any necessary repairs will occur during the growing season. An annual report will be prepared to report on any maintenance or required repairs.

9.0 CONCLUSION

The stormwater management goals and objectives for this project listed in the introductory paragraph, specifically meeting water quality objectives while at the same time mitigating potential impacts associated with increased stormwater runoff, have been met. The goals are met through the use of thoughtful and careful site planning, preservation of the site's natural resources and environmentally sensitive areas, minimizing development impacts and impervious areas, and incorporating design features such as green infrastructure techniques and standard stormwater management practices that effectively manage stormwater runoff and compliment the overall project design.

Additionally, the information presented above, supporting calculations and project plans demonstrate that the project and associated stormwater management plan has been developed in accordance with the procedures presented in the AIP document 'Exhibit F, Stormwater Quantity and Quality Protocols', the New York State DEC Stormwater Management Design Manual, (August, 2010), and the Rules and Regulations for the Protection from Contamination, Degradation, and Pollution of the New York City Water Supply and its sources, 10 NYCRR §128-3.9.

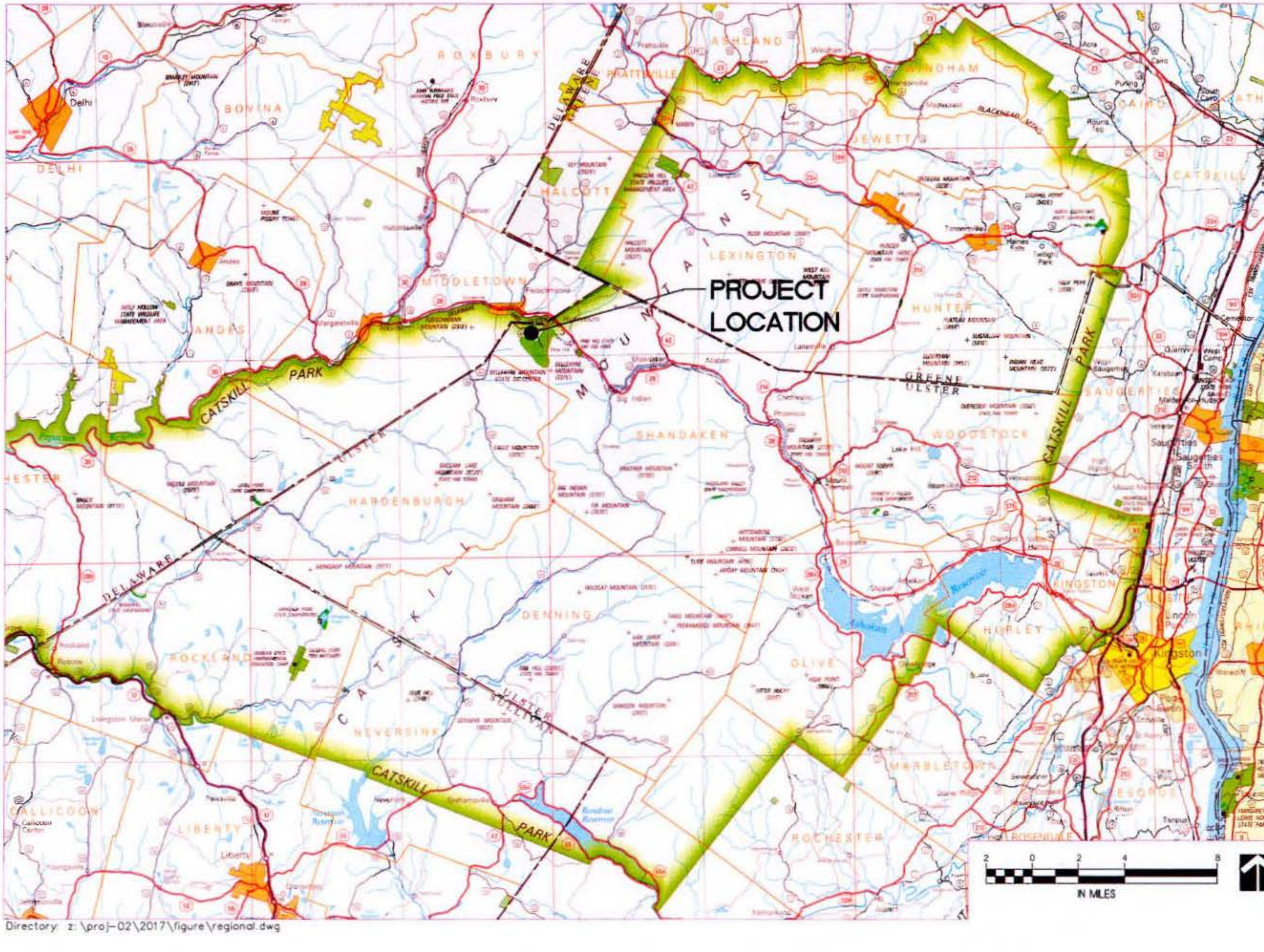
10.0 REFERENCES

1. Urban Hydrology for Small Watersheds. Published by the U.S. Soil Conservation Service, Washington, D.C., June 1986.
2. HydroCAD (version 9.10) Stormwater Modeling Software, by HydroCAD Software Solutions, LLC.
3. NYSDEC Stormwater Management Design Manual. Published by the New York State Department of Environmental Conservation, Updated August 2010.
4. Rules and Regulations for the Protection from Contamination, Degradation, and Pollution of the New York City Water Supply and its sources, 10 NYCRR §128-3.9.

G:\Proj-07\07074_Crossroads\07074hydrocad\Storm Report\07074_Stormreport-021914_Final.Doc

APPENDIX A

Figures



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BELLEAYRE RESORT AT CATSKILL PARK

REGIONAL LOCATION MAP

Project: 00052

Date:

FIG. 1

Directory: z:\proj-02\2017\figure\regional.dwg

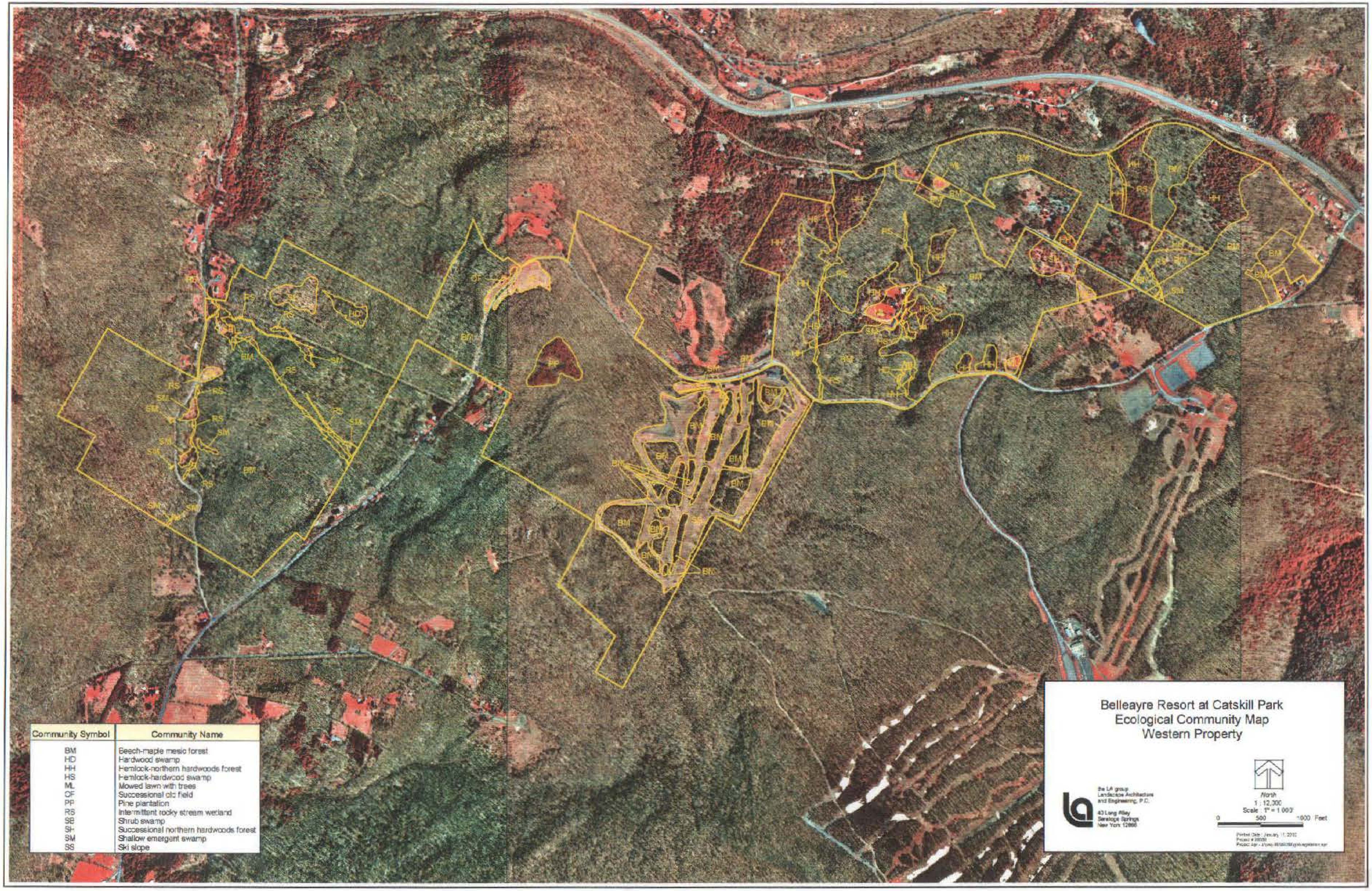
Belleayre Resort at Catskill Park
Ecological Community Map
Western Property
Community Symbol
Community Name
BM Beech-maple mesic forest
HD Hardwood swamp
HH Hemlock-northern hardwoods forest
HS Hemlock-hardwood swamp
ML Mowed lawn with trees
OF Successional old field
PP Pine plantation
RS Intermittent rocky stream wetland
SB Shrub swamp
SH Successional northern hardwoods forest
SM Shallow emergent swamp
SS Ski slope
the LA group
Landscape Architecture
and Engineering, P.C.
43 Long Alley
Saratoga Springs
New York 12866
North
1 : 12,000
Scale : 1" = 1 000'
0
500
1000 Feet

FIG. 2

90% Rainfall in New York State

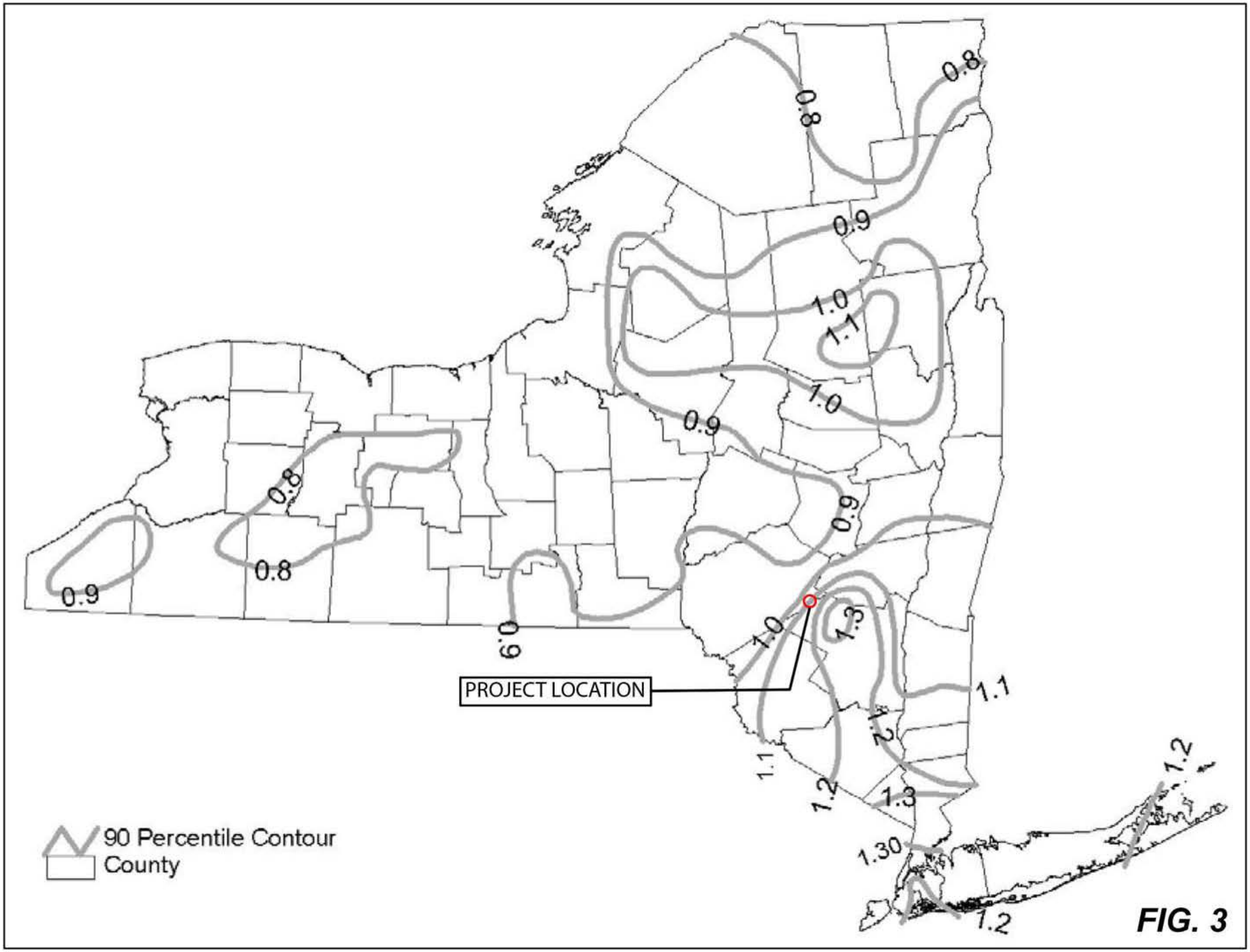

FIG. 3

APPENDIX B

AIP Exhibit F - ‘Stormwater Quantity and Quality Protocols’

'AIP APPENDIX F'

CROSSROADS SETTLEMENT DISCUSSIONS
BELLEAYRE RESORT AT CATSKILL PARK
WILDACRES AND HIGHMOUNT
STORMWATER QUANTITY AND QUALITY PROTOCOLS

The following provides the proposed methodologies to be employed and assumptions that will be used for advancing stormwater management design[1] for Wildacres resort and the alternative development plan for the lands that were formerly Highmount Estates.

A. Model Used

The Stormwater Model that will be used is the; HydroCAD Stormwater Modeling System, Version 7.1 or higher, by Applied Microcomputer Systems. The SCS TR-20 method will be utilized.

B. Storms Analyzed

The intensity of rainfall varies considerably during a storm as well as over geographic regions. To represent various regions of the United States, SCS developed four rainfall distributions (I, IA, II, and III) from available National Weather Service duration-frequency data. Type II is the type of storm that SCS has mapped for the Crossroads assemblage. Type II represents the most intense, short duration rainfall of the four different distributions.

The storms analyzed are those specified in the August 2003 New York State Stormwater Management Design Manual (the Manual). Those storms are:

1. The Water Quality volume, the 90% rainfall event totaling 1.3 inches as per Figure 4.1 of the Manual.

2. The Channel Protection Volume, 1-Year, Type II Design Storm having a 24-hour rainfall total of 3.5 inches as per Figure 4.4 of the Manual.

3. The Overbank Flood Control Volume, 10-Year, Type II Design Storm having a 24-hour rainfall total of 6.0 inches, as per Figure 4.5 of the Manual.

4. The Extreme Storm, 100-Year, Type II Design Storm having a 24-hour rainfall total of 8.0 inches as per Figure 4.6 of the Manual.

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[1] This document, and all future stormwater design for the proposed project, will meet or exceed NYSDEC SPDES General Permit 02-01 requirements, the NYSDEC Design Guidelines, and the New York Standards and Specifications for Erosion and Sediment Control. As a result, general comments contained in Charles D. Silver's documents "Technical Comments on the Camarda Park Proposal to the Town of Carmel, NY" dated July 1, 2005 and SEQRA Comments of the New York City Watershed Inspector General to the Town of Patterson Planning Board" dated September 25, 2006 will be met.

5. The 25-Year Design Storm having a 24-hour rainfall total of 6.5 inches. The inclusion of this storm is a local and DEP requirement and will be required as the project moves through the respective reviews.

C. Identification of Design Points

A revised pre-development model will be created for use in predicting stormwater runoff at the proposed Design Points. Revised Design Points have been identified at points of interest where flows can be easily determined, locations that are down gradient of proposed development, and as close as possible to the areas of proposed development. Revised Design Points were identified during fall of 2006 field investigations and inspected again in the spring of 2007.

Design Point	Structure Type	Location
1	Drop inlet with 24” Smooth Steel Pipe	± 380’ upgradient from mountain stream in village
2	Drop inlet with 24” Smooth Steel Pipe	± 720’ upgradient (east) from Design Point 1
3	Drop inlet with 24” Smooth Steel Pipe	± 1920’ upgradient (east) from Design Point 2
4	Drop inlet with 24” Smooth Steel Pipe	± 1040’ upgradient (east) from Design Point 3
5	Drop inlet with 24” Smooth Steel Pipe	± 1100’ upgradient (southeast) from Design Point 4
6	Drop inlet with 24” Smooth Steel Pipe	± 420’ upgradient (southeast) from Design Point 5
7	4’ x 3’ Stone Culvert	± 70’ downgradient (north) from Gunnison Road
8	(2) 18” Smooth Steel Pipes	± 190’ downgradient (north) from Gunnison Road
9	2’ x 3’ Stone Culvert	± 890’ downgradient (north) from Gunnison Road
10	5’ x 8’ Stone Culvert	± 1405’ downgradient (north) of Gunnison Road
11	2’ x 3’ Stone Culvert	± 2105’ downgradient (north) of Gunnison Road
12	CB w/ 24” CMP	At Intersection of Van Loan Road & Rte. 49A
13	12” Smooth Steel Pipe	Along Rte. 49A (below Highmount)
14	12” Smooth Steel Pipe	Along Rte. 49A (below Highmount)
15	12” Smooth Steel Pipe	Along Rte. 49A (below Highmount)

D. Pre-Development Subcatchment Mapping

Once the Design Points are chosen, individual subcatchments are derived from field observation and mapped data. The individual subcatchments include;

1. Areas of cover type taken from air photos and field observation, and vegetation community type mapping derived from field observation.

2. Soils types compiled from on-site high intensity soils mapping.

3. Time of concentration flow paths based on existing conditions and mapping. These will begin with a sheet flow segment, transitioning to shallow concentrated flow and channel flow where these conditions exist. Channel conditions were determined by field observation, and the position and orientation of channels was established using GPS data.

E. Proposed Flow Paths

The flow paths within each subcatchment have been field verified to include existing culvert sizes and pitches, the geometry, cover type and slope of existing swales or ditches and the condition of cover types for sheet flow and shallow concentrated flow components. Reach segments will be included to link individual subcatchments together to create a path to the individual design points. Reaches will be described in a similar fashion as the time of concentration segments. A separate reach will be described for every significant change in cover type, slope or geometry.

These factors will combine to create a pre-development HydroCAD Model that will accurately predict the existing hydrology.

F. Proposed Methodology

The proposed stormwater management plan for the sites will be developed in accordance with the guidelines established in the Manual and the Rules and Regulations for the Protection from Contamination, Degradation, and Pollution of the New York City Water Supply and its sources, 10 NYCRR §128-3.9. The primary design goal is to meet the water quality objectives as discussed in the Manual. In order to achieve the primary goal of meeting water quality objectives, while at the same time mitigating potential impacts associated with increased stormwater runoff, the design of the stormwater management system will follow the guidelines presented in the Manual and 10 NYCRR §128-3.9.

The proposed ponds will be located in close proximity to the golf course and other proposed facilities and in locations that provide the best opportunity for treatment and flow attenuation. Subcatchments will be created around areas that contribute to the individual basins or proposed points such as catch basins or culverts. The subcatchments will be linked by reaches, which will be modeled, including pipes, culverts, swales and any facilities that will transmit runoff. The proposed flows associated with the five design storms will be treated and attenuated at or below the pre-development rates at each design point.

G. Construction phasing

This project is being administered under an individual industrial permit for construction stormwater discharges. The permit will be issued following a detailed evaluation by NYSDEC. Specific discharge points will be identified for water quality monitoring. An annual report will be prepared to report on any necessary maintenance or repairs.

The individual stormwater permit process incorporates a control program for both construction and operational phases of the project. During construction, temporary basins will be sized for the 10-year event and clean water will be diverted or protected during construction. A rigorous phasing and subphasing program is being implemented that incorporates rapid revegetation. Enhanced stormwater controls, including reinforced silt fence, extensive use of rolled erosion control products, temporary tarps to cover soil, wood cellulose bonded fiber matrix products

(Eco Aegis, Eco Fibre, Soil Guard), along with an independent work force to repair temporary stormwater facilities will be implemented. These types of construction phase measures are conceptually presented in materials prepared by Charles Silver (see Footnote 1 on page 1).

The stormwater modeling is making use of extensive site-specific soils data and regional information on runoff quality and quantity.

The following goals will be met by the construction phasing and erosion control/sediment control program:

1. Land disturbance will be divided into small compartments that can be rapidly constructed and stabilized.

2. Where possible, water flowing from areas up-slope of construction will be diverted away or around exposed construction areas to limit erosion and pollutant loading into relatively clean water.

3. Construction will be sequenced to maximize immediate permanent stabilization and utilize effective temporary stabilization where and when necessary.

4. The extent of areas of unstabilized soils are reflected in the phasing plans attached as an exhibit to the Agreement in Principle. Unstabilized areas will always be protected with enhanced erosion control measures in place. Construction phasing will attempt to disturb only 15 to 18 acres per phase.

5. The erosion control program will dictate the construction sequencing.

   The construction phasing and erosion control plans will protect local surface water resources and the New York City drinking water supply, while at the same time allowing for the construction of the project to occur in a logical and controlled manner in a timeframe that does not make the construction of the project economically unfeasible.

   The golf course at Wildacres is proposed to be built in a two-year period. A substantial amount of sod is proposed to be used. If enough sod is available and the timing is correct, 9 holes are proposed to be opened in the second year of development.

   Central to the understanding of the overall process is the hierarchy of project phases, subphases or stages, and subcatchments.

   a. Phases – Phases represent various components of the Wild Acres project.

   b. Subphases or Stages – All subphases will have balanced cuts and fills. Some subphases will include the “transition areas” that tie together some contiguous golf holes (i.e., tee/green complexes, tee complexes, green complexes). It is important that these areas be graded at the same time in order to accurately create the golf course the way it was designed by the golf course architect.

c. Subcatchments – Each subphase includes subcatchments (which relate to the HydroCAD model). The subcatchments form the basis for designing the permanent and temporary, construction phase retention basins.

The phasing below describes a sequence for typical golf course construction. Simultaneously, work will continue at the hotel site.

Temporary sediment basins and other sediment controls will be installed in accordance with the construction details, stabilized and functional prior to mass earthwork.

d. General Construction Phases

(1) Construction stakeout and golf course centerline stakeout for entire phase.
(2) Centerline clearing for Subphase 1.
(3) Construction access and perimeter control for Subphase 1.
(4) Temporary basins rough grade and stabilized in Subphase 1.
(5) Tree harvest without grubbing in Subphase 1.
(6) Stump grub, fine grade stormwater basins and stormwater swales, stabilizing swales with rock or geotextile in Subphase 1.
(7) Rough and final grade Subphase 1.
(8) Install permanent irrigation lines in Subphase 1.
(9) 9A. Stabilize Subphase 1 with temporary measures as specified, and
(10) 9B. Perform Steps 2, 3 and 4 in the Subphase 2.
(11) Upon completion of temporary stabilization of Subphase 1, repeat Steps 5-8 in Subphase 2.
(12) After permanent irrigation lines are installed in Subphase 2 immediately topsoil, install irrigation heads and install permanent stabilization (sod/seed) in Subphase 2.
(13) Continue topsoiling and permanently stabilize into Subphase 1 which was previously temporarily stabilized.
(14) Perform Steps 2 and 3 in the Subphase 3.
(15) When a portion of Subphase 1 requires topsoiling and final stabilization, clear, but don't grub, a portion of Subphase 3.
(16) After Subphase 1 is completely permanently stabilized, construct Subphase 3 through temporary stabilization (Steps 4 through 9A).
(17) Continue construction through Subphases 4 then 5 and 6 using the same sequence described above for Subphases 1, 2 and 3.
(18) Upon establishment of permanent cover, remove temporary drainage swales and basins. Convert appropriate temporary basins to be utilized during operations to their permanent condition (by Subphase).
(19) Stabilize all remaining disturbed areas (by Subphase).
(20) Remove perimeter erosion control after vegetation stabilization is established (by Subphase).

Whenever disturbed soil in an area in excess of 5 acres is to be left open for more than 7 days, temporary surface stabilization measures, including rapid mulching will be applied. In areas of disturbed soil less than 5 acres in size, the 14-day requirement would apply. If irrigation water is not yet available near the completion of any subphase, apply temporary stabilization measures such as high tack wood fiber bonded matrix (tackifier) and move to next Subphase. Minimal areas will be disturbed, and by phasing the project in this manner, the construction sequence can limit exposed soils yet progress in a logical fashion.

It is anticipated that construction work will occur six days a week and many activities will occur 10-12 hours daily especially during June and July in order to accomplish this segmented construction process within the construction season.

H. Sediment and Erosion Control Protocol

Central to the construction phasing and erosion control plan are a number of factors designed to mitigate potential impacts commonly associated with construction projects that involve large amounts of earthwork activities. These include:

1. Perimeter erosion control will be installed at the current work area prior to site disturbance.

2. All of the relatively small compartments of construction and soil disturbance will have temporary sediment basins designed to capture and hold all runoff from a storm with the volume and intensity that can be expected to occur from a 10-year, 24-hour, type II storm.

3. The runoff water captured in the temporary stormwater basins will be treated with Chitosan® flocculent to reduce stormwater turbidity prior to dewatering the stormwater basins when deemed necessary by the Erosion Control Superintendent. The Erosion Control Superintendent will notify the Independent Stormwater Monitor (Independent Monitor) that Chitosan® is being used. Use of Chitosan® will conform to the following requirements:

   Water Treatment Chemical (WTC) Authorization
   (Draft SPDES Permit NY 027 0661)

   The permittee is authorized to use Storm Klear Liqui-Floc (chitosan acetate) during construction periods only, for the treatment of stormwater which accumulates in any stormwater management pond, provided the following conditions are met.

   Dosage – Runoff water collected in ponds shall be treated with chitosan based on the turbidity level and quantity of water being treated, at doses which result in a maximum concentration for the appropriate turbidity range, as follows:

Pond Turbidity	Maximum Pond Concentration (mg/l)
100-400	1.0
400-1400	1.1
1400-2400	1.2
2400-3400	1.3
3400-4400	1.4
4400-5000	1.5

Discharge – Stormwater treated with Storm Klear Liqui-Floc shall be discharged in accordance with the following requirements:

- No treated stormwater may be directly discharged to any surface water under any conditions.
- No treated stormwater may be discharged which exceeds a 50 NTU turbidity value, in any manner.
- Whenever possible, treated stormwater must be transferred from a stormwater management pond to an Irrigation Pond for future irrigation purposes.
- Stormwater which cannot be transferred to an Irrigation Pond, due to insufficient capacity or for any other reason, must be discharged to the ground (overland flow) at a location which is at least 300 feet from the nearest surface water, including intermittent streams, in an area which is fully vegetated at the disposal location and over the entire pathway to the surface water.
- Discharge of the treated stormwater to land must be performed in a manner which results in even and controlled distribution of the stormwater, and which will not result in scouring, channelization, or erosive velocities.

No other WTC may be used by the permittee without prior authorization, on a case-by-case basis, by the Department.

4. Temporary stabilization will be widely implemented during the construction process so that the amount of active construction and unstabilized soil never aggregates more than that presented in the construction phasing plans attached as an exhibit to the Agreement in Principle.

5. Erosion control measures and practices will be kept in place until the areas that they serve are permanently stabilized.

The following provides a description of how these plans will be implemented.

a. There will be a dedicated erosion control team of 4 to 6 people plus supervisory personnel (Erosion Control Superintendent), whose primary role will be repairing, maintaining and upgrading erosion control devices such as silt fence, construction fence and wattles. These crews will be equipped with all the necessary equipment and supplies necessary to effectively maintain the erosion control devices. The site work contractor will install all erosion controls and will also be responsible for maintaining the temporary sediment basins under the direction of the Erosion Control Superintendent.

b. These crews will be directed by the Erosion Control Superintendent who will be a Certified Professional in Erosion and Sediment Control. The Independent Monitor will have the stop-work authority set forth in the Agreement in Principle.

c. The Erosion Control Superintendent and the crew under their direction will not be employed by the site work contractor, but will be under independent contract to the developer and report directly to the developer’s on-site representative.

d. The site work contractor, as directed by the Erosion Control Superintendent will be responsible for constructing and structurally maintaining the construction phase sediment retention basins that will be constructed site-wide.

e. The Erosion Control Superintendent will be the single point of contact for all issues related to on-site erosion and sediment control. This individual will be responsible for implementation of the construction pollution prevention plan, monitoring of the local watercourses during the construction process, and oversight on the progress of the construction project.

   Given the complexity of the plan to construct the site it will be necessary to have a comprehensive process to share information on the construction process. A constant update of the construction process will be necessary. The contractors will have to closely monitor daily progress as it relates to all the construction tasks from site clearing to final grading. A common set of electronic plans will have to be maintained at a central location that is updated on a frequent basis in order to maintain accurate and up-to-date stormwater control reports.

   Along with the administrative staff it can be anticipated that a significant amount of personnel time will have to be expended to carry out the monitoring requirements on the watercourses and of the stormwater control facilities including the retention basins along with the perimeter controls. Status reports on erosion control facilities as well as the water quality monitoring data will have to be compiled at a central location.

f. All contractors and subcontractors are required to sign the SWPPP and adhere to its protocol. This ensures deliberate implementation of stormwater controls as the SWPPP is a contractual agreement.

Overall project phasing designed to control erosion by limiting the amount of construction at any given time.

The following are measures proposed to mitigate potential erosion.

(1.) Construction will be phased over a multi-year time period so as to reduce the amount of disturbed soil at any given time. Work on subsequent Phases will not begin until the area in the previous Phase is stabilized. Likewise, work on a subsequent subphase or stage will not begin until the area in the previous stage is nearly all stabilized (last 5 acres being stabilized).

(2.) Temporary sediment basins will be located throughout the proposed development. These basins will be sized to capture and hold the runoff from a 10-year storm of 6 inches in 24 hours falling on bare soil.

(3.) Fairway drains will be installed during construction, and during construction these drains will consist of a perforated standpipe surrounded by a gravel/rock jacket all surrounded by perimeter silt fence. These fairway drains will be piped to temporary sediment basins that will be converted to operational phase basins. During final stabilization the silt fence and stone/gravel jacket will be removed, the standpipe cut flush with finished grade and a grate placed over the inlet to the drain pipe.

(4.) Any areas of disturbed soils or soil stockpiles that will not be worked on for a period of fourteen (14) consecutive days will be temporarily stabilized by hydroseeding with ryegrass and mulch. Preferred mulch materials are Eco Aegis® and Soil Guard®.

(5.) Sod will be used in many areas to provide more rapid stabilization. Approximately 50 acres of sod will be used for golf course construction.

(6.) Erosion control products will be chosen based on their suitability for the different slopes. Temporary stabilization will be widely utilized during the construction process to limit exposed soils in accordance with the phasing plan.

(7.) The permanent irrigation system will be used where and when necessary to supplement precipitation and promote rapid germination and rooting of seeded and sodded areas. If irrigation water is not yet available, apply temporary stabilization measures as specified and move to next stage.

(8.) NYCDEP will continue to monitor surface water on and around the Crossroads assemblage during and after construction. Any decreases in water quality that can be attributed to the proposed project will result in changes in construction or operations of the project in order to immediately restore local water quality.

(9.) All erosion control measures will be maintained in good working order; if repair is necessary, it will be initiated within 24 hours of report.

(10.) Built up sediment will be removed from silt fence when it has reached one-third the height of the fence.

(11.) Silt fence will be inspected for depth of sediment, tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in ground.

(12.) All temporary sediment basins will be inspected for stability and integrity once a week or after a storm event of 0.5 inch or more. Any structural failure in sediment basins or trenches that serve them will be repaired within 24 hours after detection.

(13.) All temporary sediment basins or trenches shall be cleaned out when one foot of sediment or half the design depth of the trap has accumulated. All spoils shall be removed to a stabilized upland area.

(14.) Seeded and planted areas will be inspected for bare spots, washouts, and healthy growth. If necessary, spot reseeding or sodding will be implemented.

(15.) A maintenance inspection report will be made after each inspection. Reports will be compiled and maintained on-site.

I. Pollutant loading protocol

1. Sedimentation Basins

Temporary stormwater detention basins will be constructed throughout the area of construction and will be large enough to capture and hold all of the runoff from the 10-year design storm.

Where necessary as approved by the Independent Monitor, basins will be pumped out to the irrigation ponds. Where this is not feasible due to distance and/or topography, the method to empty these basins will be to discharge the water to a spreader pipe laid out in the undisturbed wooded areas below the basins. The spreader pipe will be a four to six inch perforated coil drain pipe with a filter fabric sock around the pipe. The filter fabric sock will reduce spray from the pipe and reduce the potential for undermining the pipe or creating erosion. The sock will also allow the system to act as a soaker hose. The wooded area will polish the stormwater to assure that effluent quality will meet the ambient conditions of the local watercourses. A plan has been developed that allows for the basin dewatering to occur at rates that are the same or less than runoff rates that occur under existing conditions. Dewatering the basins at these rates will prevent erosion in the forested areas below the level spreaders from which dewatering discharges will be made.

2. Water Quality

The project is located within the watershed of one of New York City's water supply reservoirs, the Pepacton Reservoir, therefore the impacts that may result from increased nutrient loading to this Reservoir will be evaluated. Two sources are considered to cumulatively contribute to the overall nutrient export that may be expected from the project development, golf course fertilization and stormwater runoff.

The goal of the project's stormwater management program is to manage runoff water quality to minimize nutrient or contaminant export or closely match pre-development stormwater quality. This will be accomplished by locating stormwater management facilities throughout the project site and by maintaining a low density of development.

The stormwater management system will be composed of appropriate practices for water quality maintenance such as ponds, filtering practices, infiltration practices, and channels. Open channels on slopes over 15% will be rock lined to better manage the velocity of the runoff by providing rough channels.

The proposed pond designs will provide for settling while at the same time minimizing standing water to avoid thermal impacts. The ponds tend to be narrow so that the water is shaded as much as possible. Each pond will have multiple outlets to allow for dispersion of the stormwater events accumulated runoff as well as allowing for infiltration of stormwater captured in the detention ponds. It is necessary to release the stormwater in order to avoid thermal loading associated with standing water and to avoid adverse impacts to local coldwater stream life.

3. Phosphorus Loading

To estimate phosphorus loading at Wildacres a direct calculation method was created using site-specific data collected by NYCDEP. The NYCDEP has operated a stream water quality gauging station on the Big Indian site since 2001. Data sets of stream flow and water quality data have been assembled and approved for use up through 2003. In August 2004, the last evaluation of phosphorus loading was complete.

To create the direct calculation, forest runoff characteristics from Big Indian in the undeveloped condition were utilized. To estimate the runoff quality for a developed site, NYCDEP 1997 (Guidance for Phosphorus Offset Pilot Program, March 1997) was consulted to obtain runoff values for developed areas.

The direct calculation found in the attached document "Total Phosphorus Loading Calculations and Comparisons," August 24, 2004 was determined to be the method with the greatest level of consensus among commenting parties.

This direct method calculation incorporates site specific and regional data. A comparison with the NYCDEP 1997 simple method was completed (see Table B, and pages 9 of 36, 13 of 36, 21 of 36, 25 of 36, 29 of 36, Table 3 and Figure 2).

4. DEP Pollutant Analysis

Pollutant loading analyses will also be performed in accordance with 10 NYCRR §128-3.9.

J. Post Construction Stormwater Controls

In general, stormwater control consisting of a series of road side swales, cross culverts, stormwater micropool extended detention basins and bioretention will be used to capture, convey and detain stormwater runoff from the developed portions of the project site. By creating positive drainage through site grading within each of the subcatchments, the proposed stormwater control systems are capable of reducing post-development runoff rates from a 1, 10, 25 and 100-year storm.

No existing surface waterbodies will be impounded. The ponds used to store irrigation water will be isolated dug ponds and not associated with any of the streams or brooks on the project site. Water levels in the ponds can be controlled by irrigation withdrawals and the amount of replenishment provided so that there is always reserve capacity in the ponds to accept runoff from storm events without the ponds discharging to surface water resources. Sufficient freeboard will be maintained in the irrigation ponds so that they can contain the runoff from the 100-year storm from the areas that drain to them.

The stormwater system for the proposed site will utilize on-site storage with outlet devices to regulate the stormwater discharge. The system is designed to discharge from the storage basins to the existing drainageways. The proposed peak runoff for the project is designed to not exceed the pre-development peak runoff conditions for the 1, 10, 25 and 100-year design storm event.

The majority of the stormwater will be directed through proposed detention basins which will control the release rate from the basins. The detention basins will also serve to capture stormwater contaminants and treat the water quality volume.

The objectives of the stormwater management plan will be to:

- Prevent increased runoff from developed land to reduce potential flooding and flood damage.
- Minimize the erosion potential from new construction.
- Increase water recharge.
- Enhance the quality of stormwater runoff to prevent water quality degradation and preserve water quality in receiving water bodies, including City water supply reservoirs.

These objectives will be accomplished through the implementation of the following:

1. Stormwater impacts associated with clearing and grading, along with the development of golf holes, roads and buildings will be mitigated. This will be achieved through the use of devices such as swales, roadside ditches, catch basins, pipes and micropool extended detention basins. The stormwater facilities will control the 25-year, Type II storm event while withstanding the discharge from a 100-year event.

2. The stormwater system for the proposed project will utilize on-site storage with outlet devices to regulate the stormwater discharge. The system will be designed to discharge from the storage basins to the existing drainageways. The proposed peak runoff for the project is designed to not exceed the pre-development peak runoff conditions for 1, 10, 25 and 100-year design event.

3. The stormwater management system for the project will be designed in accordance with the Manual and 10 NYCRR §128-3.9. This includes peak flow attenuation and water quality treatment through control of the water quality volume.

4. The majority of the stormwater will be directed through proposed ponds. These ponds will also serve to capture and treat water quality volume contaminants.

5. The drainage system will be designed so that it will not adversely affect downstream or adjacent properties.

6. A detailed site re-vegetation and stabilization plan will be developed that will re-establish vegetation quickly after final grade is achieved.

7. Implementation of the operational phase Stormwater Management Plan will result in no net increase in runoff volume to existing drainageways.

8. All operational phase stormwater ponds and bioretention will be maintained in accordance with Section 6.16 and 6.46 of the NYSDEC Stormwater Design Manual and the maintenance requirements included with the stormwater management design report. This includes such things as sediment removal, trash racks, and pond drains.

   Materials removed as part of detention basin maintenance will be used on site. As part of golf course maintenance, the application of very thin layers of coarse topdressing to the golf course turf is typical. Much of the materials that will accumulate in the detention basins will be sand from road sanding. Therefore this material will be suitable for topdressing material on the golf course.

Two annual inspections will be conducted after completion of the project. They will take place in April and September of each year. Any necessary repairs will occur during the growing season. An annual report will be prepared to report on any maintenance or required repairs.

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APPENDIX C

Supporting Calculations and Summary Tables

TABLE 1

The Belleayre Resort at Catskill Park
WQv and RRv Summary

Drainage Area 1a	(cf)
Initial WQv at Design Point	1,773
Subtract Area reductions?	0
Adjusted DEC WQv req'd	1,773
Minimum RRv	488
Runoff Reduction Volumes by GI Techniques	
GI Practice	RRv (cf)
Rain Garden	
Green Roof	
Stormwater Planter (infiltration)	
Stormwater Planter (flow through)	
Cistern	
Permeable Pavement	
Infiltration Area	
Bioretention Areas	1,773
Dry Swales	
Vegetated Swale	
Total Runoff Reduction	1,773
Is RRv>WQv?	YES
Is RRv>minimum RRv?	YES
Total WQv remaining to be treated	0
WQv provided in standard practices	0
Total WQv provided	1,773

Drainage Area 2	(cf)	(af)
Initial WQv at Design Point	7,020	
Subtract Area Reductions	0	
Adjusted WQv	7,020	
Total WQv Required	7,020	
Runoff Reduction Volumes by GI Techniques		
GI Practice	RRv (cf)	
Rain Garden		
Green Roof	4,552	
Stormwater Planter (infiltration)		
Stormwater Planter (flow through)		
Cistern		
Permeable Pavement		
Infiltration Area		
Bioretention Areas		
Dry Swales	1,700	
Vegetated Swale		
Total Runoff Reduction (RRv) Provided	6,252	
Is RRv Provided>WQv Provided?	NO	
Minimum RRv	2,049	
Is RRv>minimum RRv?	YES	
WQv provided in standard practices	0	
Total WQv treated	768	
WQv reduced and treated	7,020	
Is RRv+Wqv provided > WQv Req'd?	Yes	

The Belleayre Resort at Catskill Park

WQv and RRv Summary

Drainage Area 4	(cf)	(af)
Initial WQv at Design Point	36,736	
Subtract Area Reductions	0	
Adjusted WQv	36,736	
Total WQv Required	36,736	
Runoff Reduction Volumes by GI Techniques		
GI Practice	RRv (cf)	
Rain Garden		
Green Roof	26,098	
Stormwater Planter (infiltration)		
Stormwater Planter (flow through)		
Cistern		
Permeable Pavement		
Infiltration Area		
Bioretention Areas		
Dry Swales		
Vegetated Swale		
Total Runoff Reduction (RRv) Provided	26,098	
Is RRv Provided>WQv Provided?	NO	
Minimum RRv	0	
Is RRv>minimum RRv?	YES	
WQv provided in standard practices	49,750	
Total WQv treated	49,750	
WQv reduced and treated	75,848	
Is RRv+Wqv provided > WQv Req'd?	Yes	

Drainage Area 7	(cf)
Initial WQv at Design Point	2,097
Subtract Area Reductions	0
Adjusted WQv	2,097
Total WQv Required	2,097
Runoff Reduction Volumes by GI Techniques	
GI Practice	RRv (cf)
Rain Garden	
Green Roof	0
Stormwater Planter (infiltration)	
Stormwater Planter (flow through)	
Cistern	
Permeable Pavement	
Infiltration Area	
Bioretention Areas	
Dry Swales	2,097
Vegetated Swale	
Total Runoff Reduction (RRv) Provided	2,097
Is RRv Provided>WQv Provided?	NO
Minimum RRv	0
Is RRv>minimum RRv?	YES
WQv provided in standard practices	0
Total WQv treated	0
WQv reduced and treated	2,097
Is RRv+Wqv provided > WQv Req'd?	Yes

The Belleayre Resort at Catskill Park

WQv and RRv Summary

Drainage Area 8	(cf)
Initial WQv at Design Point	27,964
Subtract Area Reductions	0
Adjusted WQv	27,964
Total WQv Required	27,964
Runoff Reduction Volumes by GI Techniques	
GI Practice	RRv (cf)
Rain Garden	
Green Roof	0
Stormwater Planter (infiltration)	
Stormwater Planter (flow through)	
Cistern	
Permeable Pavement	
Infiltration Area	
Bioretention Areas	3,155
Dry Swales	4,811
Vegetated Swale	
Total Runoff Reduction (RRv) Provided	7,966
Is RRv Provided>WQv Provided?	NO
Minimum RRv	5,769
Is RRv>minimum RRv?	YES
WQv provided in standard practices	60,500
Total WQv treated	61,402
WQv reduced and treated	69,368
Is RRv+Wqv provided > WQv Req'd?	Yes

Drainage Area 9	(cf)
Initial WQv at Design Point	12,058
Subtract Area Reductions	0
Adjusted WQv	12,058
Total WQv Required	12,058
Runoff Reduction Volumes by GI Techniques	
GI Practice	RRv (cf)
Rain Garden	
Green Roof	
Stormwater Planter (infiltration)	
Stormwater Planter (flow through)	3,247
Cistern	
Permeable Pavement	
Infiltration Area	
Bioretention Areas	
Dry Swales	1,624
Vegetated Swale	
Total Runoff Reduction (RRv) Provided	4,871
Is RRv Provided>WQv Provided?	NO
Minimum RRv	2,604
Is RRv>minimum RRv?	YES
WQv provided in standard practices	29,000
Total WQv treated	29,377
WQv reduced and treated	34,248
Is RRv+Wqv provided > WQv Req'd?	Yes

The Belleayre Resort at Catskill Park

WQv and RRv Summary

Drainage Area 11	(cf)
Initial WQv at Design Point	51,403
Subtract Area Reductions	0
Adjusted WQv	51,403
Total WQv Required	51,403
Runoff Reduction Volumes by GI Techniques	
GI Practice	RRv (cf)
Rain Garden	
Green Roof	
Stormwater Planter (infiltration)	
Stormwater Planter (flow through)	
Cistern	38,449
Permeable Pavement	
Infiltration Area	
Bioretention Areas	7,200
Dry Swales	2,700
Vegetated Swale	
Total Runoff Reduction (RRv) Provided	48,348
Is RRv Provided>WQv Provided?	NO
Minimum RRv	12,566
Is RRv>minimum RRv?	YES
WQv provided in standard practices	0
Total WQv treated	3,055
WQv reduced and treated	51,403
Is RRv+Wqv provided > WQv Req'd?	Yes

Drainage Area 16	(cf)
Initial WQv at Design Point	2,088
Subtract Area Reductions	0
Adjusted WQv	2,088
Total WQv Required	2,088
Runoff Reduction Volumes by GI Techniques	
GI Practice	RRv (cf)
Rain Garden	
Green Roof	
Stormwater Planter (infiltration)	
Stormwater Planter (flow through)	
Cistern	
Permeable Pavement	
Infiltration Area	
Bioretention Areas	2,088
Dry Swales	
Vegetated Swale	
Total Runoff Reduction (RRv) Provided	2,088
Is RRv Provided>WQv Provided?	YES
Minimum RRv	0
Is RRv>minimum RRv?	YES
WQv provided in standard practices	0
Total WQv treated	0
WQv reduced and treated	2,088
Is RRv+Wqv provided > WQv Req'd?	Yes

TABLE 2

The Belleayre Resort at Catskill Park

Water Quality Volume Calcs

DESIGN POINT	DRAINAGE AREA (Ac)	Storm Device	Contributing Subcatchments		total size (sf)	total size (ac)	total imp (sf)	total imp (ac)	I %	DEC P	Rv	Req'd DEP WQv Acre Ft.	DEP-2.8" Req'd DEP WQv Cu.Ft.	Req'd DEC WQv Acre Ft.	Req'd WQv Cu.Ft.	WQv Provided Cu.Ft.	RRv Credit Cu. Ft.	RRv Applied	Min. RRv	Ai	WQv Treated
1a	4.64	BIO B9	1a		17,305	0.40	10,000	0.23													
			1b		33,455	0.77	8,665	0.20													
				Total	50,760	1.17	18,665	0.43	37	1.1	0.381	0.10	4,512	0.04	1,773	5,200	2080	1,773			1,773
		Totals Draining to SMP's			**50,760**	**1.17**	**18,665**	**0.43**	**37**	**1.1**	**0.381**	**0.10**	**4,512**	**0.04**	**1,773**	**Initial WQv**			488	0.13	
		None/Undisturbed	1c		151,340	3.47	0	0.00													
2	37.08	POND AB																			
		(Lodge Roof)	443		52,272	1.20	52,272	1.20													
				Total	52,272	1.20	52,272	1.20	100	1.1	0.950	0.27	11,587	0.10	4,552	11,290	11,290	4,552			11,290
		Dry swale Z	449a		45,670	1.05	26,150	0.60	57	1.1	0.565	0.14	6,024								
			449b		22,066	0.51	0	0.00													
				Total	67,736	1.56	26,150	0.60	39	1.1	0.397	0.14	6,282	0.06	2,468	8,500	1700	1700			768
		Totals Draining to SMP's			**120,008**	**2.76**	**78,422**	**1.80**	**65**	**1.1**	**0.638**	**0.41**	**17,869**	**0.16**	**7,020**	**Initial WQv**			2,049	0.54	
		None/Undisturbed	14		1,295,954	29.75	38,507	0.88													
			434		19,166	0.44	0	0.00													
			444		28,241	0.65	0	0.00													
			446		55,919	1.28	0	0.00													
			450		95,865	2.20	0	0.00													
				Total	1,495,145	34.32	38,507	0.00													
3	0.71	None/Undisturbed	453		12,482	0.29	8,020	0.18													
			455		18,390	0.42	2,272	0.05													
				Total	30,872	0.71	10,292	0.24													
4	17.63																				
		POND AD																			
		(Hotel Roof)	441		299,693	6.88	299,693	6.88													
			Sub Total		299,693	6.88	299,693	6.88	100	1.1	0.950	1.53	66,432	0.60	26,098	62,574	26,098	26,098			62,574
		POND AC	434		19,166	0.44	0	0.00													
			439		72,310	1.66	13,896	0.32													
			440		33,976	0.78	1,742	0.04													
			445		12,505	0.29	7,680	0.18													
			444		28,241	0.65	19,361	0.44													
			446		55,919	1.28	12,389	0.28													
			447		11,692	0.27	10,130	0.23													
			449		8,350	0.19	8,350	0.19													
			449b		22,066	0.51	0	0.00													
			451		8,072	0.19	8,072	0.19													
			454a		13,080	0.30	13,080	0.30													
			452a		2,110	0.05	0	0.00													
			452		15,741	0.36	12,360	0.28													
			456		90,650	2.08	0	0.00													
			Sub Total		393,878	9.04	107,060	2.46	27	1.1	0.295	0.62	27,078	0.24	10,638	49,750					49,750
		Totals Draining to SMP's			**693,571**	**15.92**	**406,753**	**9.34**	**59**	**1.1**	**0.578**	**2.15**	**93,510**	**0.84**	**36,736**	**Initial WQv**			10,626	2.80	
			16		158,175	3.63	8,620	0.20													
		Total from Undisturbed Areas to DP			158,175	3.63	8,620	0.20													
		Design Point Totals			851,746	19.55	415,373	9.54													

The Belleayre Resort at Catskill Park

Water Quality Volume Calcs

DESIGN POINT	DRAINAGE AREA (Ac)	Storm Device	Contributing Subcatchments		total size (sf)	total size (ac)	total imp (sf)	total imp (ac)	I %	DEC P	Rv	Req'd DEP WQv Acre Ft.	DEP-2.8" Req'd DEP WQv Cu.Ft.	Req'd DEC WQv Acre Ft.	Req'd WQv Cu.Ft.	WQv Provided Cu.Ft.	RRv Credit Cu. Ft.	RRv Applied	Min. RRv	Ai	WQv Treated
5	9.41	None/Undisturbed	17		409,987	9.41	6,970	0.16													
				Total	409,987	9.41															
5A	12.08	None/Undisturbed	18		526,390	12.08	2,494	0.06													
				Total	526,390	12.08															
6	58.49																				
		None/Undisturbed	19		2,547,694	58.49	11,838	0.27													
				Total	2,547,694	58.49	11,838	0.27													
6A	41.92	None/Undisturbed	20		1,826,167	41.92	22,608	0.52													
				Total	1,826,167	41.92	22,608	0.52													
7	152.10	SWALE S	218		96,418	2.21	0	0.00													
				Total	96,418	2.21	0	0.00	0	1.1	0.050	0.03	1,125	0.01	442	4,200	840	442			442
		SWALE T	219		78,985	1.81	0	0.00													
				Total	78,985	1.81	0	0.00	0	1.1	0.050	0.02	921	0.01	362	3,000	600	362			
		SWALE U	220		282,188	6.48	0	0.00													
				Total	282,188	6.48	0	0.00	0	1.1	0.050	0.08	3,292	0.03	1,293	8,800	1,760	1,293			
		None/Undisturbed	2		18,469	0.42	4,400	0.10													
			35		532,030	12.21	15,783	0.36													
			200		3,328,419	76.41	14,331	0.33													
			306		207,204	4.76	0	0.00													
			307		122,324	2.81	0	0.00													
			308		346,246	7.95	0	0.00													
			309		316,725	7.27	13,610	0.31													
			315		363,440	8.34	0	0.00													
				Total	5,234,857	120.18	48,124	1.10													
Totals Draining to SMPs					**457,591**	**10.50**	**0**	**0.00**	**0**	**1.1**	**0.050**	**0.12**	**5,339**	**0.05**	**2,097**				0	0.00	442

The Belleayre Resort at Catskill Park

Water Quality Volume Calcs

DESIGN POINT	DRAINAGE AREA (Ac)	Storm Device	Contributing Subcatchments		total size (sf)	total size (ac)	total imp (sf)	total imp (ac)	I %	DEC P	Rv	Req'd DEP WQv Acre Ft.	DEP-2.8" Req'd DEP WQv Cu.Ft.	Req'd DEC WQv Acre Ft.	Req'd WQv Cu.Ft.	WQv Provided Cu.Ft.	RRv Credit Cu. Ft.	RRv Applied	Min. RRv	Ai	WQv Treated
8	90.19	POND L	1		53,980	1.24	30,818	0.71													
			2a		14,154	0.32	10,932	0.25													
			3		7,863	0.18	4,120	0.09													
			4		4,505	0.10	4,505	0.10													
			9a		3,427	0.08	2,405	0.06													
			10a		3,850	0.09	3,650	0.08													
			11c		16,077	0.37	11,345	0.26													
			12		2,940	0.07	2,610	0.06													
			14a		7,331	0.17	7,331	0.17													
			14b		11,402	0.26	8,075	0.19													
			15		14,991	0.34	12,389	0.28													
			16a		7,317	0.17	6,864	0.16													
			17a		4,370	0.10	3,040	0.07													
			18a		32,445	0.74	20,523	0.47													
			19a		3,974	0.09	2,920	0.07													
			21		4,574	0.11	3,330	0.08													
			22		18,606	0.43	13,274	0.30													
			23		31,919	0.73	0	0.00													
			24		176,265	4.05	0	0.00													
			25		3,751	0.09	2,740	0.06													
			26		3,645	0.08	2,740	0.06													
			302a		155,197	3.56	0	0.00													
			213		194,980	4.48	0	0.00													
				Total	777,562	17.85	153,611	3.53	20	1.1	0.228	#REF!	#REF!	0.37	16,237	44,000					44,000
		POND K	59		7,222	0.17	7,222	0.17													
			62		64,444	1.48	0	0.00													
			63		230,281	5.29	961	0.02													
			65		17,261	0.40	8,740	0.20													
			14c		25,251	0.58	19,361	0.44													
				Total	319,208	7.33	16,923	0.39	5	1.1	0.098	#REF!	#REF!	0.07	2,859	16,500					16,500
		Dry Swale O	223		192,957	4.43	23,966	0.55	12	1.1	0.162	0.17	7,284	0.07	2,862	9,800	1,960	1,960			902
		Dry Swale W	225		187,018	4.29	0	0.00	0	1.1	0.050	0.05	2,182	0.02	857	7,117	1,423	857			0
														0.00							
		Dry Swale M	211		208,648	4.79	0	0.00	0	1.1	0.050	0.06	2,434	0.02	956	9,663	1,933	956			0
		Dry Swale N	212		68,310	1.57	0	0.00	0	1.1	0.050	0.02	797	0.01	313	2,621	524	313			0
		Dry Swale Q	214		158,070	3.63	0	0.00	0	1.1	0.050	0.04	1,844	0.02	724	7,963	1,593	724			0
		Bio B4	27b		3,976	0.09	2,930	0.07													
			28a		4,060	0.09	3,090	0.07													
			30		2,719	0.06	2,010	0.05													
			31		2,909	0.07	2,160	0.05													
			32		3,581	0.08	2,640	0.06													
			33		3,736	0.09	2,780	0.06													
			35a		3,308	0.08	2,400	0.06													
			36		3,204	0.07	2,400	0.06													
			37		4,447	0.10	3,200	0.07													
			38		3,569	0.08	2,730	0.06													
			201		178,777	4.10	0	0.00													
				Total	214,286	4.92	26,340	0.60	12	1.1	0.161	0.18	8,031	0.07	3,155	10,500	4,200	3,155			0
		None/Undisturbed	137		31,485	0.72	0	0.00													
			300		712,598	16.36	3,267	0.08													
			301		91,384	2.10	0	0.00													
			302		186,835	4.29	0	0.00													
			303		251,048	5.76	0	0.00													
			304		212,622	4.88	0	0.00													
			305		150,290	3.45	0	0.00													
			310		157,211	3.61	7,355	0.17													
			311		331,749	7.62	2,085	0.05													
			316		443,073	10.17	5,340	0.12													
			316A		25,125	0.58	2,900	0.07													
				Total	2,593,420	59.54	20,947	0.48													
Totals Draining to SMPs					**2,126,059**	**48.81**	**220,840**	**5.07**	**10**	**1.1**	**0.143**	**1.63**	**71,180**	**0.64**	**27,964**				5,769	1.52	

The Belleayre Resort at Catskill Park

Water Quality Volume Calcs

DESIGN POINT	DRAINAGE AREA (Ac)	Storm Device	Contributing Subcatchments		total size (sf)	total size (ac)	total imp (sf)	total imp (ac)	I %	DEC P	Rv	Req'd DEP WQv Acre Ft.	DEP-2.8" Req'd DEP WQv Cu.Ft.	Req'd DEC WQv Acre Ft.	Req'd WQv Cu.Ft.	WQv Provided Cu.Ft.	RRv Credit Cu. Ft.	RRv Applied	Min. RRv	Ai	WQv Treated
9	45.93																				
		SP1 - Storm Planters	60		42,950	0.99	36,970	0.85	86	1.1	0.825	0.19	8,265	0.07	3,247	9,718	4373	3,247			0
		SWALE J	20A		27,573	0.63	910	0.02													
			20B		27,573	0.63	0	0.00													
			41		7,632	0.18	0	0.00													
			42		7,012	0.16	7,012	0.16													
			43		3,858	0.09	3,000	0.07													
			44		3,652	0.08	3,000	0.07													
				Total	77,300	1.77	13,922	0.32	18	1.1	0.212	0.09	3,825	0.03	1,503	5,628	1126	1,126			377
		POND H	45		423,327	9.72	0	0.00													
			50		3,930	0.09	3,930	0.09													
			51		17,667	0.41	3,600	0.08													
			52		9,545	0.22	1,536	0.04													
			53		19,250	0.44	3,490	0.08													
			54		95,833	2.20	17,600	0.40													
			55		15,270	0.35	11,425	0.26													
			56		18,020	0.41	3,160	0.07													
			57		4,879	0.11	4,049	0.09													
				Total	607,721	13.95	48,790	1.12	8	1.1	0.122	#REF!	#REF!	0.16	6,811	29,000					
		SWALE X	226		108,684	2.50	0	0.00	0	1.1	0.050	0.03	1,268	0.01	498	4,328	866	498			0
		None/Undisturbed	5		92,020	2.11	6,836	0.16													
			6		389,580	8.94	18,130	0.42													
			6a		531,048	12.19	21,575	0.50													
			7		27,573	0.63	9,700	0.22													
			80		123,600	2.84	0	0.00													
				Total	1,163,821	26.72	56,241	1.29													
Totals Draining to SMPs					**836,655**	**19.21**	**99,682**	**2.29**	**12**	**1.1**	**0.157**	**0.70**	**30,694**	**0.28**	**12,058**	**38,956**			2,604	0.69	
10	156.02	None/Undisturbed	9		1,465,881	33.65	21,606	0.50													
			10		1,429,132	32.81	23,435	0.54													
			500		1,350,926	31.01	29,185	0.67													
			501		186,481	4.28	1,002	0.02													
			502		189,050	4.34	1,437	0.03													
			503		130,680	3.00	0	0.00													
			504		1,320,521	30.31	13,939	0.32													
			511		87,120	2.00	0	0.00													
			512		56,628	1.30	0	0.00													
			600		369,868	8.49	9,670	0.22													
			601		267,502	6.14	10,498	0.24													

The Belleayre Resort at Catskill Park

Water Quality Volume Calcs

DESIGN POINT	DRAINAGE AREA (Ac)	Storm Device	Contributing Subcatchments		total size (sf)	total size (ac)	total imp (sf)	total imp (ac)	I %	DEC P	Rv	Req'd DEP WQv Acre Ft.	DEP-2.8" Req'd DEP WQv Cu.Ft.	Req'd DEC WQv Acre Ft.	Req'd WQv Cu.Ft.	WQv Provided Cu.Ft.	RRv Credit Cu. Ft.	RRv Applied	Min. RRv	Ai	WQv Treated
11	90.97	SWALE A1	100a		50,494	1.16	0	0.00	0	1.1	0.050	0.01	589	0.01	231	2,680	536	231			0
		SWALE A2	100b		20,138	0.46	0	0.00	0	1.1	0.050	0.01	235	0.00	92	1,019	204	92			0
		SWALE A3	100c		33,000	0.76	0	0.00	0	1.1	0.050	0.01	385	0.00	151	1,938	388	151			0
		SWALE A4	100d		23,704	0.54	0	0.00	0	1.1	0.050	0.01	277	0.00	109	1,364	273	109			0
		SWALE A5	100e		64,786	1.49	0	0.00	0	1.1	0.050	0.02	756	0.01	297	3,030	606	297			0
		SWALE F1	111		89,380	2.05	0	0.00	0	1.1	0.050	0.02	1,043	0.01	410	4,350	870	410			0
		SWALE B	119		146,387	3.36	0	0.00	0	1.1	0.050	0.04	1,708	0.02	671	6,834	1367	671			0
		SWALE G	125		161,159	3.70	0	0.00	0	1.1	0.050	0.04	1,880	0.02	739	8,399	1680	739			0
		Bio B3	117		237,198	5.45	111,127	2.55	47	1.1	0.472	0.60	26,104	0.24	10,255	18,000	7200	7,200			3,055
		POND IP	61		15,005	0.34	15,005	0.34													
			67		15,005	0.34	15,005	0.34													
			70A		20,212	0.46	7,200	0.17													
			70B		29,474	0.68	7,200	0.17													
			101		38,707	0.89	7,596	0.17													
			102		16,073	0.37	16,073	0.37													
			103		115,694	2.66	53,467	1.23													
			108		20,760	0.48	17,269	0.40													
			109		8,280	0.19	6,175	0.14													
			114		150,302	3.45	0	0.00													
			115		460,843	10.58	54,674	1.26													
			123		43,890	1.01	0	0.00													
			126		74,991	1.72	0	0.00													
			126A		8,000	0.18	0	0.00													
			127		448,894	10.31	0	0.00													
			128		6,878	0.16	6,878	0.16													
			129		13,760	0.32	13,760	0.32													
			130		39,147	0.90	9,220	0.21													
			131		28,363	0.65	17,500	0.40													
			131A		51,300	1.18	51,300	1.18													
			132		12,145	0.28	1,650	0.04													
			133		29,164	0.67	0	0.00													
			134		6,878	0.16	6,878	0.16													
			135		18,297	0.42	4,000	0.09													
			136		45,262	1.04	45,262	1.04													
			138		13,760	0.32	13,760	0.32													
				Total	1,731,083	40	369,872	8	21	1.1	0.242	2.25	97,869	0.88	38,449	98,000	38,449	38,449			0
		None/Undisturbed	12A		550,450	12.64	62,962	1.45													
			12B		655,932	15.06	0	0.00													
			28		141,352	3.24	0	0.00													
				Total	1,347,734	30.94	62,962	1.45													
Totals Draining to SMPs					**2,557,329**	**58.71**	**480,998**	**11.04**	**19**	**1.1**	**0.219**	**3.00**	**130,845**	**1.18**	**51,403**	**145,614**			12,566	3.31	

The Belleayre Resort at Catskill Park

Water Quality Volume Calcs

DESIGN POINT	DRAINAGE AREA (Ac)	Storm Device	Contributing Subcatchments		total size (sf)	total size (ac)	total imp (sf)	total imp (ac)	I %	DEC P	Rv	Req'd DEP WQv Acre Ft.	DEP-2.8" Req'd DEP WQv Cu.Ft.	Req'd DEC WQv Acre Ft.	Req'd WQv Cu.Ft.	WQv Provided Cu.Ft.	RRv Credit Cu. Ft.	RRv Applied	Min. RRv	Ai	WQv Treated
12	5.40	None/Undisturbed	27		68,054	1.56	25,722	0.59													
			27A		141,739	3.25	23,417	0.54													
			29		25,355	0.58	4,025	0.09													
				DP Totals	235,148	5.40	53,164	1.22													
16	18.37																				
		Bio B1	104		455,573	10.46	0	0.00	0	1.1	0.050	0.12	5,315	0.05	2,088	6,893	2757	2,088			0
		None/Undisturbed	11		182,734	4.19	13,434	0.31													
			11A		57,739	1.33	2,726	0.06													
			11B		104,152	2.39	19,475	0.45													
				Total	344,625	7.91	35,635	0.82													
Totals Draining to SMPs					**455,573**	**10.46**	**0**	**0.00**	**0**	**1.1**	**0.050**	**0.12**	**5,315**	**0.05**	**2,088**	**6,893**			0	0.00	

TABLE 3

The Belleayre Resort at Catskill Park

DEP WQv Summary

Drainage Area 1a

DEP WQv req'd	4,512	cf
Total WQv provided	5,200	cf
% of Impervious Area	9	%

Drainage Area 4

DEP WQv req'd	114,751	cf
Total WQv provided	143,084	cf
% of Impervious Area	16	%

Drainage Area 7

DEP WQv req'd	5,339	cf
Total WQv provided	16,000	cf
% of Impervious Area	1	%

Drainage Area 8

DEP WQv req'd	73,018	cf
Total WQv provided	117,882	cf
% of Impervious Area	5	%

Drainage Area 9

DEP WQv req'd	30,694	cf
Total WQv provided	38,956	cf
% of Impervious Area	8	%

Drainage Area 11

DEP WQv req'd	130,845	cf
Total WQv provided	212,614	cf
% of Impervious Area	14	%

Drainage Area 16

DEP WQv req'd	5,315	cf
Total WQv provided	6,893	cf
% of Impervious Area	4	%

Notes:

% impervious is calculated at the design point for each drainage area

GARDEN ROOF® ASSEMBLY RUNOFF CURVE NUMBER

THE BELLEAYRE RESORT - HOTEL ROOF CONSISTS OF:

GARDEN ROOF® -	**269,724**	SF
'BARE' ROOF -	**29,969**	SF
TOTAL	299,693	SF

A THE GARDEN ROOF CAN HOLD .... **2.60** INCHES OF MOISTURE (SYSTEM TOTAL STORAGE - ANTECEDENT RAINFALL)
THE TOTAL MOISTURE STORAGE IS 58,347 CUBIC FEET (436,491 GALLONS).

B THE DESIGN 24-HR STORM IS .... **3.50** INCHES OF RAINFALL 2-YR
WHICH IS 87,410 CF (653,918 gallons)

THE GARDEN ROOF RUNOFF IS .... **0.90** INCHES (B - A)
C WHICH IS 20,323 CF (152,036 gallons)

'BARE' ROOF RUNOFF IS .... **3.27** INCHES BASED ON TR-55 EQUATION 2-2
D WHICH IS 8,158 CF (61,028 gallons)

THE TOTAL RUNOFF IS .... 28,481 CF (213,064 gallons) (C + D)
WHICH IS 1.14 INCHES

WHAT RUNOFF CURVE NUMBER YIELDS 1.14 INCHES OF RUNOFF FROM A 3.50 INCH STORM?

RUNOFF CURVE NUMBER = 72.3 **(COMPOSITE GARDEN ROOF® AND 'BARE' AREAS)**

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9/22/2009

TR-55 Worksheet 4: Graphical Peak Discharge Method

Project Belleayre Resort - Hotel

Location Catskill Park

Condition: **DEVELOPED 1-yr** (for Garden Roof® LEED calculation)

1. Data

Drainage area	299,693	sf	A_m =	0.010750 mi^2
Runoff Curve Number	72.3			
Time of Concentration	6	min	T_c =	0.10 hr
Rainfall distribution	II	(I, IA, II, III)		

	STORM INFO	
2. Frequency, yr	1	
3. Rainfall, P (24 hr)	3.50	
Potential maximum ret., S, in	3.82	From equation 2-4
4. Initial abstraction, I_a, in	0.765	From equation 2-2
5. Compute I_a/P	0.219	
6. Unit peak discharge, q_u, csm/in	966	Use T_c and I_a/P with Exhibit 4-II
7. Runoff, Q, in	1.14	From equation 2-3
8. Pond & Swamp adjustment factor	1	Per table 4-2; F_p = 1 for 0% percent pond & swamp area
9. **Peak discharge, Q_p, cfs**	**11.84**	Where $Q_p = q_u A_m Q F_p$

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GARDEN ROOF® ASSEMBLY RUNOFF CURVE NUMBER

HYDROTECH

THE BELLEAYRE RESORT - LODGE ROOF CONSISTS OF:

GARDEN ROOF® -	**47,044**	SF
'BARE' ROOF -	**5,228**	SF
TOTAL	52,272	SF

A THE GARDEN ROOF CAN HOLD .... **2.60** INCHES OF MOISTURE (SYSTEM TOTAL STORAGE - ANTECEDENT RAINFALL)
THE TOTAL MOISTURE STORAGE IS 10,177 CUBIC FEET (76,131 GALLONS).

B THE DESIGN 24-HR STORM IS .... **3.50** INCHES OF RAINFALL 2-YR
WHICH IS 15,246 CF (114,055 gallons)

THE GARDEN ROOF RUNOFF IS .... **0.90** INCHES (B - A)
C WHICH IS 3,545 CF (26,517 gallons)

'BARE' ROOF RUNOFF IS .... **3.27** INCHES BASED ON TR-55 EQUATION 2-2
D WHICH IS 1,423 CF (10,646 gallons)

THE TOTAL RUNOFF IS .... 4,968 CF (37,164 gallons) (C + D)
WHICH IS 1.14 INCHES

WHAT RUNOFF CURVE NUMBER YIELDS 1.14 INCHES OF RUNOFF FROM A 3.50 INCH STORM?

RUNOFF CURVE NUMBER = 72.3 **(COMPOSITE GARDEN ROOF® AND 'BARE' AREAS)**

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9/22/2009

TR-55 Worksheet 4: Graphical Peak Discharge Method

Project Belleayre Resort - Lodge

Location Catskill Park

Condition: **DEVELOPED 1-yr** (for Garden Roof® LEED calculation)

1. Data

Drainage area	52,272	sf	A_m =	0.001875 mi^2
Runoff Curve Number	72.3			
Time of Concentration	6	min	T_c =	0.10 hr
Rainfall distribution	II	(I, IA, II, III)		

	STORM INFO	
2. Frequency, yr	1	
3. Rainfall, P (24 hr)	3.50	
Potential maximum ret., S, in	3.82	From equation 2-4
4. Initial abstraction, I_a, in	0.765	From equation 2-2
5. Compute I_a/P	0.219	
6. Unit peak discharge, q_u, csm/in	966	Use T_c and I_a/P with Exhibit 4-II
7. Runoff, Q, in	1.14	From equation 2-3
8. Pond & Swamp adjustment factor	1	Per table 4-2; F_p = 1 for 0% percent pond & swamp area
9. **Peak discharge, Q_p, cfs**	**2.07**	Where $Q_p = q_u A_m Q F_p$

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TABLE 5

The Belleayre Resort at Catskill Park

CPv Summary

Design Point	SMP	Req'd (cf)	Provided (cf)
1a	Bioret.-B9	3,305	5,232
4	AB - Gr. Roof		In Pond AC
	AD - Gr. Roof		In Pond AC
	Z - Dry Swale		In Pond AC
	AC - Pond	26,100	33,022
7	S - Dry Swale	2,573	4,200
	T - Dry Swale	2,478	3,000
	U - Dry Swale	2,182	8,800
8	B4 - Bioret.		In Pond L
	M - Dry Swale	4,549	9,663
	N - Dry Swale	1,459	2,621
	O - Dry Swale	7,362	9,800
	Q - Dry Swale	3,375	7,963
	W - Dry Swale	4,077	7,117
	K - Pond	14,220	14,780
	L - Pond	46,150	46,272
9	SP1 - Planter		In Pond H
	J - Dry Swale	5,056	5,628
	X - Dry Swale	2,962	4,328
	H - Pond	25,990	26,069
11	B3 - Bioret.		In Pond IP
	A1-A5 - Dry Sw.	5,181	10,031
	B. - Dry Swale	4,738	6,834
	F1. - Dry Swale	2,893	4,350
	G. - Dry Swale	3,477	8,399
	IP - Pond	165,000	166,713
16	B1-Bioret & 6p	11,909	13,575

TABLE 6

The Belleayre Resort at Catskill Park
Channel Protection Volume Calculations

Dry Swale S - DP7 - Wildacres
Step 1: Determine Qu

P =	2.8	in. (1-yr. storm)
Area =	2.21	acres
CN =	68	
Ia =	0.941	
Ia/P =	0.34	
Tc =	0.115	Hrs.

Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)

Qu =	740	csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi

Qo/Qi = 0.03

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3

Vs/Vr = 0.641

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)

Qd = 0.5 in

Step 5: Determine Cpv

Area = 2.21 acres

Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv =	0.059	ac-ft
Cpv =	2573	ft^3

Dry Swale T - DP7 - Wildacres
Step 1: Determine Qu

P =	2.8	in. (1-yr. storm)
Area =	1.81	acres
CN =	70	
Ia =	0.857	
Ia/P =	0.31	
Tc =	0.03	Hrs.

Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)

Qu =	950	csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi

Qo/Qi = 0.04

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3

Vs/Vr = 0.627

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)

Qd = 0.6 in

Step 5: Determine Cpv

Area = 1.81 acres

Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv =	0.057	ac-ft
Cpv =	2478	ft^3

Channel Protection Volume Calculations

Dry Swale U - DP7 - Wildacres

Step 1: Determine Qu

P =	2.8	in. (1-yr. storm)
Area =	4.79	acres
CN =	66	
Ia =	1.030	
Ia/P =	0.37	
Tc =	0.1	Hrs.

Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)

Qu = 850 csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi

Qo/Qi = 0.04

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3

Vs/Vr = 0.627

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)

Qd = 0.2 in

Step 5: Determine Cpv

Area = 4.79 acres

Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv =	0.050	ac-ft
Cpv =	2182	ft^3

Dry Swale M - DP8 - Wildacres

Step 1: Determine Qu

P =	2.8	in. (1-yr. storm)
Area =	4.79	acres
CN =	66	
Ia =	1.030	
Ia/P =	0.37	
Tc =	0.1	Hrs.

Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)

Qu = 850 csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi

Qo/Qi = 0.02

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3

Vs/Vr = 0.654

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)

Qd = 0.4 in

Step 5: Determine Cpv

Area = 4.79 acres

Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv =	0.104	ac-ft
Cpv =	4549	ft^3

The Belleayre Resort at Catskill Park

Channel Protection Volume Calculations

Dry Swale N - DP8 - Wildacres

Step 1: Determine Qu

P =	2.8	in. (1-yr. storm)
Area =	1.57	acres
CN =	64	
Ia =	1.125	
Ia/P =	0.40	
Tc =	0.08	Hrs.

Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)

Qu = 800 csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi

Qo/Qi = 0.03

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3

Vs/Vr = 0.641

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)

Qd = 0.4 in

Step 5: Determine Cpv

Area = 1.57 acres

Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv =	0.033	ac-ft
Cpv =	1459	ft^3

Dry Swale O - DP8 - Wildacres

Step 1: Determine Qu

P =	2.8	in. (1-yr. storm)
Area =	4.43	acres
CN =	73	
Ia =	0.740	
Ia/P =	0.26	
Tc =	0.07	Hrs.

Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)

Qu = 975 csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi

Qo/Qi = 0.02

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3

Vs/Vr = 0.654

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)

Qd = 0.7 in

Step 5: Determine Cpv

Area = 4.43 acres

Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv =	0.169	ac-ft
Cpv =	7362	ft^3

The Belleayre Resort at Catskill Park

Channel Protection Volume Calculations

Dry Swale Q - DP8 - Wildacres

Step 1: Determine Qu

P =	2.8	in. (1-yr. storm)
Area =	3.63	acres
CN =	66	
Ia =	1.030	
Ia/P =	0.37	
Tc =	0.11	Hrs.

Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)

Qu = 810 csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi

Qo/Qi = 0.03

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3

Vs/Vr = 0.641

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)

Qd = 0.4 in

Step 5: Determine Cpv

Area = 3.63 acres

Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv =	0.077	ac-ft
Cpv =	3375	ft^3

Dry Swale W - DP8 - Wildacres

Step 1: Determine Qu

P =	2.8	in. (1-yr. storm)
Area =	4.29	acres
CN =	66	
Ia =	1.030	
Ia/P =	0.37	
Tc =	0.09	Hrs.

Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)

Qu = 850 csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi

Qo/Qi = 0.02

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3

Vs/Vr = 0.654

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)

Qd = 0.4 in

Step 5: Determine Cpv

Area = 4.29 acres

Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv =	0.094	ac-ft
Cpv =	4077	ft^3

Channel Protection Volume Calculations

Detention Pond K - DP8 - Wildacres West

Step 1: Determine Qu

P = 2.8 in. (1-yr. storm)
Area = 7.33 acres
CN = 71
Ia = 0.817
Ia/P = 0.29
Tc = 0.23 Hrs.
Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)
Qu = 610 csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi
Qo/Qi = 0.03

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3
Vs/Vr = 0.641

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)
Qd = 0.6 in

Step 5: Determine Cpv

Area = 7.33 acres
Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv = 0.235 ac-ft
Cpv = 10224 ft^3

Dry Swale J - DP9 - Wildacres

Step 1: Determine Qu

P = 2.8 in. (1-yr. storm)
Area = 1.77 acres
CN = 83
Ia = 0.410
Ia/P = 0.15
Tc = 0.04 Hrs.
Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)
Qu = 975 csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi
Qo/Qi = 0.02

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3
Vs/Vr = 0.654

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)
Qd = 1.2 in

Step 5: Determine Cpv

Area = 1.77 acres
Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv = 0.116 ac-ft
Cpv = 5056 ft^3

The Belleayre Resort at Catskill Park

Channel Protection Volume Calculations

Dry Swale X - DP9 - Wildacres

Step 1: Determine Qu

P = 2.8 in. (1-yr. storm)
Area = 2.50 acres
CN = 67
Ia = 0.985
Ia/P = 0.35
Tc = 0.1 Hrs.
Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)
Qu = 900 csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi
Qo/Qi = 0.02

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3
Vs/Vr = 0.654

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)
Qd = 0.5 in

Step 5: Determine Cpv

Area = 2.50 acres
Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv = 0.068 ac-ft
Cpv = 2962 ft^3

Dry Swales A1-A5 - DP11 - Wildacres East

Step 1: Determine Qu

P = 2.8 in. (1-yr. storm)
Area = 4.41 acres
CN = 68
Ia = 0.941
Ia/P = 0.34
Tc = 0.175 Hrs.
Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)
Qu = 700 csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi
Qo/Qi = 0.025

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3
Vs/Vr = 0.647

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)
Qd = 0.5 in

Step 5: Determine Cpv

Area = 4.41 acres
Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv = 0.119 ac-ft
Cpv = 5181 ft^3

Channel Protection Volume Calculations

Dry Swale B - DP11 - Wildacres East

Step 1: Determine Qu

P = 2.8 in. (1-yr. storm)
Area = 3.36 acres
CN = 69
Ia = 0.899
Ia/P = 0.32
Tc = 0.21 Hrs.
Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)
Qu = 700 csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi
Qo/Qi = 0.025

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3
Vs/Vr = 0.647

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)
Qd = 0.6 in

Step 5: Determine Cpv

Area = 3.36 acres
Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv = 0.109 ac-ft
Cpv = 4738 ft^3

Dry Swale F1 - DP11 - Wildacres East

Step 1: Determine Qu

P = 2.8 in. (1-yr. storm)
Area = 2.05 acres
CN = 69
Ia = 0.899
Ia/P = 0.32
Tc = 0.13 Hrs.
Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)
Qu = 850 csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi
Qo/Qi = 0.025

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3
Vs/Vr = 0.647

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)
Qd = 0.6 in

Step 5: Determine Cpv

Area = 2.05 acres
Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv = 0.066 ac-ft
Cpv = 2893 ft^3

The Belleayre Resort at Catskill Park

Channel Protection Volume Calculations

Dry Swale G - DP11 - Wildacres East

Step 1: Determine Qu

P =	2.8	in. (1-yr. storm)
Area =	3.70	acres
CN =	66	
Ia =	1.030	
Ia/P =	0.37	
Tc =	0.15	Hrs.

Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)

Qu = 700 csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi

Qo/Qi = 0.025

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3

Vs/Vr = 0.647

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)

Qd = 0.4 in

Step 5: Determine Cpv

Area = 3.70 acres

Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv =	0.080	ac-ft
Cpv =	3477	ft^3

Detention Pond 6p - DP16 - Wildacres East

Step 1: Determine Qu

P =	2.8	in. (1-yr. storm)
Area =	10.46	acres
CN =	67	
Ia =	0.985	
Ia/P =	0.35	
Tc =	0.4	Hrs.

Using Figure 4-II, TR-55 and Tc, determine Qu (csm/in)

Qu = 450 csm/in

Step 2: Determine Qo/Qi

Using Figure B-1, DEC Manual Appendix B for T = 24 hrs. and Qu, determine Qo/Qi

Qo/Qi = 0.04

Step 3: Determine Vs/Vr

Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64 (Qo/Qi)^2 - 0.804 (Qo/Qi)^3

Vs/Vr = 0.627

Step 4: Determine Qd

Using Figure 2.1, TR-55 or SCS TR-16 and P, determine Qd (in of runoff)

Qd = 0.5 in

Step 5: Determine Cpv

Area = 10.46 acres

Cpv = Vs = (Vs/Vr) * Qd * A/12

Cpv =	0.273	ac-ft
Cpv =	11909	ft^3

Reference: NYSDEC Stormwater Management Design Manual, August 2010

TABLE 7

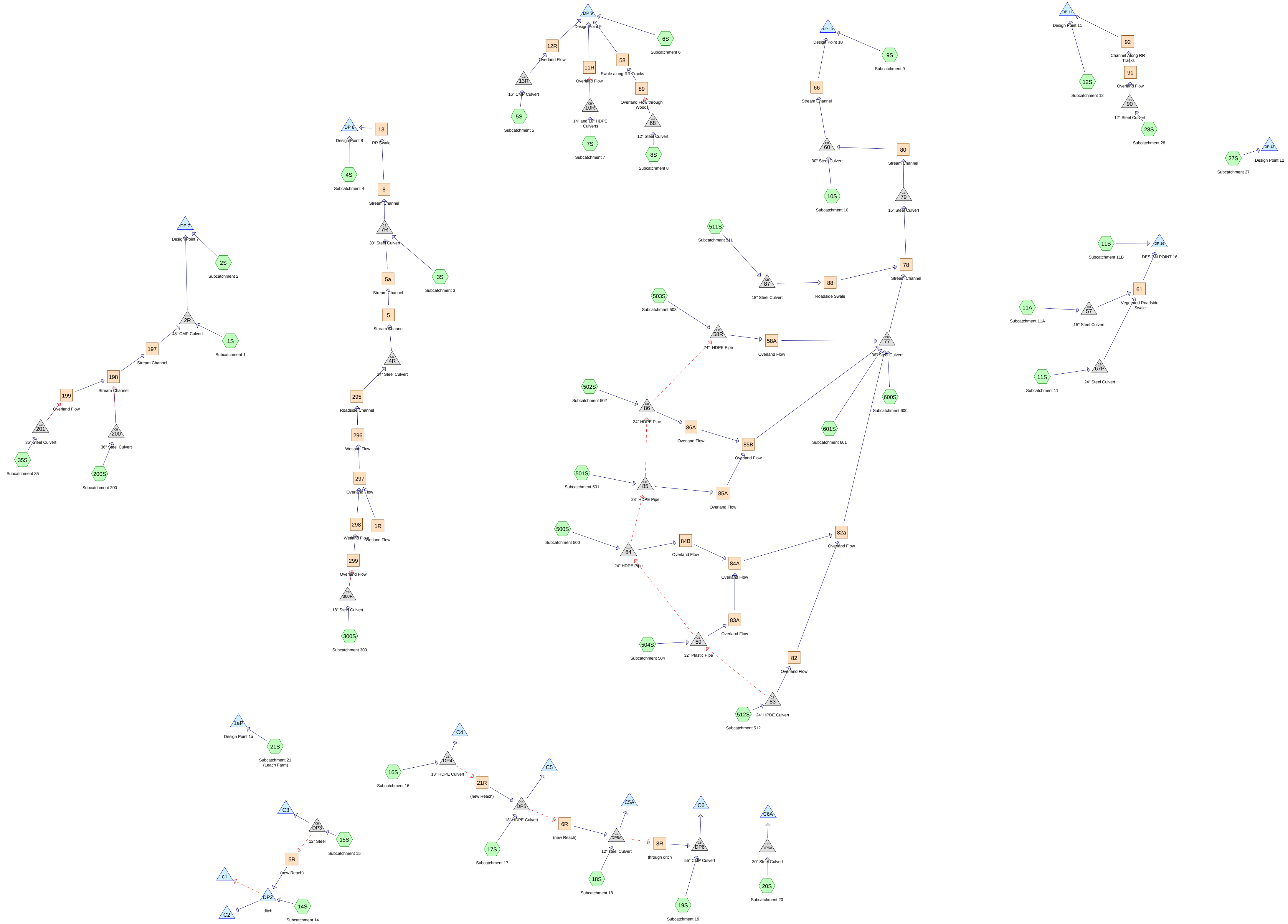
Rate and Volume Summary

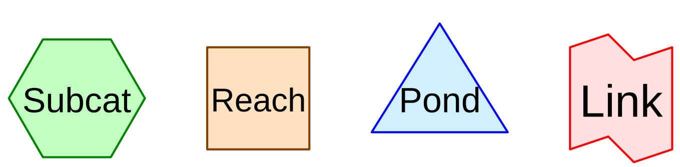
The Belleayre Resort at Catskill Park

			WATERSHED AREA 740.93 ACRES							
DESIGN POINT #	Areas (Ac.)		DESIGN STORM							
			1 YEAR, 2.8"		10 YEAR, 6.0"		25 YEAR, 6.5"		100 YEAR, 8.0"	
			PEAK(cfs)	VOLUME(af)	PEAK	VOLUME	PEAK	VOLUME	PEAK	VOLUME
					cfs	af	cfs	af	cfs	af
1a	4.64	PRE	3.78	0.27	18.08	1.16	20.59	1.32	28.30	1.82
	4.64	POST	2.38	0.22	18.00	1.13	20.41	1.30	27.50	1.80
2	39.11	PRE	17.91	2.01	104.05	9.04	119.98	10.32	169.51	14.31
	37.08	POST	11.88	1.93	59.45	8.88	68.13	10.06	95.90	13.84
3	2.2	PRE	1.69	0.13	6.69	0.53	6.92	0.60	7.55	0.78
	0.71	POST	1.55	0.07	4.81	0.24	5.33	0.26	6.92	0.35
4	10.00	PRE	6.62	0.54	12.07	1.93	12.30	2.13	12.91	2.73
	17.63	POST	4.49	1.31	11.19	4.80	11.42	5.32	12.65	6.16
5	14.63	PRE	10.12	0.74	13.58	2.51	13.95	2.78	15.04	3.60
	9.41	POST	8.88	0.51	12.80	1.78	13.11	2.04	13.99	2.77
5a	12.08	PRE	5.59	0.59	7.57	1.88	7.79	2.08	8.39	2.68
	12.08	POST	5.58	0.59	7.16	1.87	7.35	2.07	7.94	2.67
6	58.49	PRE	30.75	2.98	245.27	16.01	285.33	18.53	409.47	26.51
	58.49	POST	30.72	2.98	206.38	15.21	240.32	17.56	364.96	25.71
6a	41.92	PRE	19.97	2.26	105.37	10.13	120.67	11.55	167.97	16.00
	41.92	POST	19.97	2.26	105.37	10.13	120.67	11.55	167.97	16.00
7	149.01	PRE	67.92	7.58	410.79	34.95	473.10	39.95	667.05	55.58
	152.10	POST	58.61	8.23	401.23	37.10	458.54	42.30	638.40	58.50
8	95.97	PRE	54.72	5.13	307.23	23.06	352.83	26.31	493.88	36.47
	90.19	POST	30.11	4.36	282.34	21.82	326.65	24.94	471.28	34.64
9	56.37	PRE	25.00	3.15	160.25	13.84	184.78	15.76	260.53	21.77
	45.93	POST	19.41	2.89	129.96	12.02	148.17	13.65	214.18	18.67
10	162.41	PRE	43.83	8.50	283.93	38.62	335.86	44.10	531.11	61.22
	156.02	POST	40.55	8.15	266.51	37.07	315.80	42.34	503.11	58.78
11	66.27	PRE	26.04	3.53	145.01	15.91	166.43	18.16	233.04	25.17
	90.97	POST	16.97	1.82	108.57	18.32	131.90	21.56	192.24	31.60
12	7.26	PRE	8.51	0.50	34.88	1.99	39.37	2.25	53.04	3.05
	5.40	POST	7.50	0.41	28.62	1.55	32.17	1.75	42.91	2.36
16	18.79	PRE	11.47	1.03	58.62	4.57	66.97	5.21	92.73	7.21
	18.37	POST	7.03	0.70	40.29	4.33	50.38	4.97	82.02	6.96

APPENDIX D

HydroCAD Data – Existing Model – Entire Site





Routing Diagram for 07074_existing

Prepared by The LA group, Printed 2/21/2014

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.927	74	>75% Grass cover, Good, HSG C (3S, 6S, 12S, 21S, 27S, 504S)
0.724	89	Dirt Road (1S, 3S, 8S)
0.571	98	Dirt Road (6S)
0.586	87	Dirt roads, HSG C (14S)
70.399	71	Meadow, non-grazed, HSG C (1S, 2S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 28S, 35S, 200S, 300S, 500S, 501S, 502S)
0.110	98	Paved Drive (21S)
1.109	98	Paved Road (3S, 35S, 200S, 300S)
0.807	98	Paved parking & roofs (11A, 11B, 11S)
0.301	98	Paved parking, HSG C (9S)
0.739	98	Paved roads (12S, 14S)
0.187	98	Paved, HSG C (19S)
2.114	98	Pavement (1S, 7S, 15S, 16S, 18S, 27S)
0.188	98	Pavment (8S)
0.783	98	Road (504S, 600S, 601S)
1.109	98	Road/Drive (10S)
1.712	98	Roadway (2S, 4S, 17S, 20S, 500S, 501S, 502S)
0.618	98	Roof (21S, 27S, 35S)
1.623	98	Roof Area (1S, 3S, 4S, 5S, 6S, 9S, 10S, 14S, 20S)
0.410	98	Roofs (12S)
647.132	70	Woods, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11A, 11B, 11S, 12S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 27S, 28S, 35S, 200S, 300S, 500S, 501S, 502S, 503S, 504S, 511S, 512S, 600S, 601S)
739.149	**71**	**TOTAL AREA**

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1 Runoff Area=2,611,846 sf 0.88% Impervious Runoff Depth=0.61"
Flow Length=2,860' Tc=17.6 min CN=70 Runoff=36.96 cfs 3.028 af

Subcatchment 2S: Subcatchment 2 Runoff Area=18,469 sf 23.82% Impervious Runoff Depth=0.93"
Flow Length=375' Tc=7.5 min CN=77 Runoff=0.66 cfs 0.033 af

Subcatchment 3S: Subcatchment 3 Runoff Area=2,671,441 sf 1.35% Impervious Runoff Depth=0.65"
Flow Length=2,885' Tc=17.0 min CN=71 Runoff=42.44 cfs 3.312 af

Subcatchment 4S: Subcatchment 4 Runoff Area=796,495 sf 2.51% Impervious Runoff Depth=0.65"
Flow Length=2,020' Tc=15.5 min CN=71 Runoff=13.37 cfs 0.988 af

Subcatchment 5S: Subcatchment 5 Runoff Area=91,345 sf 8.77% Impervious Runoff Depth=0.74"
Flow Length=715' Tc=13.9 min CN=73 Runoff=1.92 cfs 0.129 af

Subcatchment 6S: Subcatchment 6 Runoff Area=1,024,096 sf 3.41% Impervious Runoff Depth=0.69"
Flow Length=2,176' Tc=20.1 min CN=72 Runoff=15.93 cfs 1.355 af

Subcatchment 7S: Subcatchment 7 Runoff Area=876,427 sf 2.73% Impervious Runoff Depth=0.65"
Flow Length=1,860' Tc=23.6 min CN=71 Runoff=11.23 cfs 1.087 af

Subcatchment 8S: Subcatchment 8 Runoff Area=463,566 sf 1.77% Impervious Runoff Depth=0.65"
Flow Length=1,835' Tc=18.8 min CN=71 Runoff=6.92 cfs 0.575 af

Subcatchment 9S: Subcatchment 9 Runoff Area=1,465,881 sf 1.47% Impervious Runoff Depth=0.61"
Flow Length=2,033' Tc=21.6 min CN=70 Runoff=18.18 cfs 1.700 af

Subcatchment 10S: Subcatchment 10 Runoff Area=1,649,824 sf 3.39% Impervious Runoff Depth=0.65"
Flow Length=2,845' Tc=25.8 min CN=71 Runoff=19.86 cfs 2.046 af

Subcatchment 11A: Subcatchment 11A Runoff Area=57,739 sf 4.72% Impervious Runoff Depth=0.65"
Flow Length=480' Tc=15.3 min CN=71 Runoff=0.98 cfs 0.072 af

Subcatchment 11B: Subcatchment 11B Runoff Area=577,903 sf 3.29% Impervious Runoff Depth=0.65"
Flow Length=1,270' Tc=22.3 min CN=71 Runoff=7.69 cfs 0.717 af

Subcatchment 11S: Subcatchment 11 Runoff Area=182,734 sf 7.34% Impervious Runoff Depth=0.69"
Flow Length=984' Tc=11.5 min CN=72 Runoff=3.92 cfs 0.242 af

Subcatchment 12S: Subcatchment 12 Runoff Area=2,326,061 sf 1.82% Impervious Runoff Depth=0.65"
Flow Length=2,390' Tc=34.4 min CN=71 Runoff=22.84 cfs 2.884 af

Subcatchment 14S: Subcatchment 14 Runoff Area=1,703,544 sf 0.76% Impervious Runoff Depth=0.65"
Flow Length=2,585' Tc=26.2 min CN=71 Runoff=20.27 cfs 2.112 af

Subcatchment 15S: Subcatchment 15 Runoff Area=95,640 sf 4.19% Impervious Runoff Depth=0.69"
Flow Length=945' Tc=16.4 min CN=72 Runoff=1.69 cfs 0.127 af

Subcatchment 16S: Subcatchment 16 Runoff Area=435,730 sf 2.13% Impervious Runoff Depth=0.65"
Flow Length=1,844' Tc=18.2 min CN=71 Runoff=6.62 cfs 0.540 af

Subcatchment 17S: Subcatchment 17 Runoff Area=637,108 sf 1.24% Impervious Runoff Depth=0.61"
Flow Length=1,167' Tc=13.5 min CN=70 Runoff=10.59 cfs 0.739 af

Subcatchment 18S: Subcatchment 18 Runoff Area=526,390 sf 0.47% Impervious Runoff Depth=0.61"
Flow Length=2,315' Tc=17.4 min CN=70 Runoff=7.53 cfs 0.610 af

Subcatchment 19S: Subcatchment 19 Runoff Area=2,547,694 sf 0.32% Impervious Runoff Depth=0.61"
Flow Length=2,625' Tc=24.0 min CN=70 Runoff=29.30 cfs 2.954 af

Subcatchment 20S: Subcatchment 20 Runoff Area=1,826,209 sf 1.24% Impervious Runoff Depth=0.65"
Flow Length=3,465' Tc=29.6 min CN=71 Runoff=19.97 cfs 2.264 af

Subcatchment 21S: Subcatchment 21 (Leach Runoff Area=202,100 sf 4.97% Impervious Runoff Depth=0.69"
Flow Length=890' Tc=14.9 min CN=72 Runoff=3.78 cfs 0.267 af

Subcatchment 27S: Subcatchment 27 Runoff Area=316,441 sf 15.61% Impervious Runoff Depth=0.83"
Flow Length=669' Tc=11.4 min CN=75 Runoff=8.51 cfs 0.504 af

Subcatchment 28S: Subcatchment 28 Runoff Area=560,792 sf 0.00% Impervious Runoff Depth=0.61"
Flow Length=1,455' Tc=36.1 min CN=70 Runoff=4.82 cfs 0.650 af

Subcatchment 35S: Subcatchment 35 Runoff Area=532,041 sf 2.97% Impervious Runoff Depth=0.65"
Flow Length=3,110' Tc=22.0 min CN=71 Runoff=7.13 cfs 0.660 af

Subcatchment 200S: Subcatchment 200 Runoff Area=3,328,419 sf 0.43% Impervious Runoff Depth=0.61"
Flow Length=3,545' Tc=23.5 min CN=70 Runoff=38.90 cfs 3.859 af

Subcatchment 300S: Subcatchment 300 Runoff Area=712,598 sf 0.46% Impervious Runoff Depth=0.61"
Flow Length=2,040' Tc=21.0 min CN=70 Runoff=9.01 cfs 0.826 af

Subcatchment 500S: Subcatchment 500 Runoff Area=1,350,926 sf 2.16% Impervious Runoff Depth=0.65"
Flow Length=3,875' Tc=32.0 min CN=71 Runoff=13.91 cfs 1.675 af

Subcatchment 501S: Subcatchment 501 Runoff Area=186,481 sf 0.54% Impervious Runoff Depth=0.61"
Flow Length=2,030' Tc=19.3 min CN=70 Runoff=2.49 cfs 0.216 af

Subcatchment 502S: Subcatchment 502 Runoff Area=189,050 sf 0.76% Impervious Runoff Depth=0.61"
Flow Length=1,300' Tc=13.0 min CN=70 Runoff=3.21 cfs 0.219 af

Subcatchment 503S: Subcatchmant 503 Runoff Area=130,680 sf 0.00% Impervious Runoff Depth=0.61"
Flow Length=1,010' Tc=16.6 min CN=70 Runoff=1.92 cfs 0.152 af

Subcatchment 504S: Subcatchment 504 Runoff Area=1,320,521 sf 1.06% Impervious Runoff Depth=0.61"
Flow Length=3,280' Tc=25.0 min CN=70 Runoff=14.76 cfs 1.531 af

Subcatchment 511S: Subcatchmant 511 Runoff Area=87,120 sf 0.00% Impervious Runoff Depth=0.61"
Flow Length=680' Tc=15.6 min CN=70 Runoff=1.33 cfs 0.101 af

Subcatchment 512S: Subcatchment 512 Runoff Area=56,628 sf 0.00% Impervious Runoff Depth=0.61"
Flow Length=600' Tc=14.0 min CN=70 Runoff=0.92 cfs 0.066 af

Subcatchment 600S: Subcatchment 600 Runoff Area=369,868 sf 2.61% Impervious Runoff Depth=0.65"
Flow Length=1,610' Tc=19.3 min CN=71 Runoff=5.41 cfs 0.459 af

Subcatchment 601S: Subcatchment 601 Runoff Area=267,502 sf 3.92% Impervious Runoff Depth=0.65"
Flow Length=1,070' Tc=15.0 min CN=71 Runoff=4.58 cfs 0.332 af

Reach 1R: Wetland Flow Avg. Flow Depth=0.00' Max Vel=0.00 fps
n=0.070 L=408.0' S=0.0931 '/' Capacity=802.14 cfs Outflow=0.00 cfs 0.000 af

Reach 5: Stream Channel Avg. Flow Depth=0.31' Max Vel=5.41 fps Inflow=7.84 cfs 0.826 af
n=0.050 L=870.0' S=0.1954 '/' Capacity=1,064.40 cfs Outflow=7.67 cfs 0.826 af

Reach 5a: Stream Channel Avg. Flow Depth=0.38' Max Vel=6.12 fps Inflow=7.67 cfs 0.826 af
n=0.050 L=355.0' S=0.2141 '/' Capacity=318.14 cfs Outflow=7.65 cfs 0.826 af

Reach 5R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=415.0' S=0.0217 '/' Capacity=30.57 cfs Outflow=0.00 cfs 0.000 af

Reach 6R: (new Reach) Avg. Flow Depth=0.06' Max Vel=2.08 fps Inflow=0.47 cfs 0.002 af
n=0.030 L=370.0' S=0.0757 '/' Capacity=128.38 cfs Outflow=0.26 cfs 0.002 af

Reach 8: Stream Channel Avg. Flow Depth=0.17' Max Vel=4.92 fps Inflow=42.48 cfs 4.139 af
n=0.050 L=245.0' S=0.2898 '/' Capacity=797.02 cfs Outflow=42.33 cfs 4.139 af

Reach 8R: through ditch Avg. Flow Depth=0.21' Max Vel=3.96 fps Inflow=2.12 cfs 0.023 af
n=0.030 L=495.0' S=0.0646 '/' Capacity=171.61 cfs Outflow=1.92 cfs 0.023 af

Reach 11R: Overland Flow Avg. Flow Depth=0.08' Max Vel=1.38 fps Inflow=11.23 cfs 1.087 af
n=0.080 L=1,180.0' S=0.1695 '/' Capacity=620.77 cfs Outflow=8.15 cfs 1.087 af

Reach 12R: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.93 fps Inflow=1.92 cfs 0.129 af
n=0.080 L=950.0' S=0.1968 '/' Capacity=305.91 cfs Outflow=1.09 cfs 0.129 af

Reach 13: RR Swale Avg. Flow Depth=0.88' Max Vel=6.30 fps Inflow=42.33 cfs 4.139 af
n=0.035 L=450.0' S=0.0444 '/' Capacity=604.81 cfs Outflow=42.00 cfs 4.139 af

Reach 21R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=685.0' S=0.1000 '/' Capacity=79.28 cfs Outflow=0.00 cfs 0.000 af

Reach 58: Swale along RR Tracks Avg. Flow Depth=0.45' Max Vel=2.96 fps Inflow=5.01 cfs 0.575 af
n=0.040 L=1,020.0' S=0.0265 '/' Capacity=139.83 cfs Outflow=4.58 cfs 0.575 af

Reach 58A: Overland Flow Avg. Flow Depth=0.02' Max Vel=0.91 fps Inflow=1.92 cfs 0.152 af
n=0.035 L=478.0' S=0.1004 '/' Capacity=1,456.48 cfs Outflow=1.48 cfs 0.152 af

Reach 61: Vegetated Roadside Swale Avg. Flow Depth=0.34' Max Vel=4.00 fps Inflow=4.82 cfs 0.313 af
n=0.040 L=751.0' S=0.0613 '/' Capacity=59.21 cfs Outflow=4.54 cfs 0.313 af

Reach 66: Stream Channel Avg. Flow Depth=0.45' Max Vel=5.37 fps Inflow=31.12 cfs 6.796 af
n=0.050 L=1,884.0' S=0.1152 '/' Capacity=445.48 cfs Outflow=28.56 cfs 6.796 af

Reach 78: Stream Channel Avg. Flow Depth=0.36' Max Vel=5.48 fps Inflow=18.41 cfs 4.750 af
n=0.050 L=685.0' S=0.1646 '/' Capacity=258.41 cfs Outflow=18.38 cfs 4.750 af

Reach 80: Stream Channel Avg. Flow Depth=0.51' Max Vel=3.61 fps Inflow=18.38 cfs 4.750 af
n=0.050 L=740.0' S=0.0473 '/' Capacity=247.19 cfs Outflow=18.30 cfs 4.750 af

Reach 82: Overland Flow Avg. Flow Depth=0.01' Max Vel=0.07 fps Inflow=0.92 cfs 0.066 af
n=0.400 L=938.0' S=0.1354 '/' Capacity=53.31 cfs Outflow=0.09 cfs 0.066 af

Reach 82a: Overland Flow Avg. Flow Depth=0.29' Max Vel=0.41 fps Inflow=19.39 cfs 3.272 af
n=0.400 L=473.0' S=0.0846 '/' Capacity=164.89 cfs Outflow=15.02 cfs 3.272 af

Reach 83A: Overland Flow Avg. Flow Depth=0.19' Max Vel=0.46 fps Inflow=14.76 cfs 1.531 af
n=0.400 L=441.0' S=0.1678 '/' Capacity=232.26 cfs Outflow=10.30 cfs 1.531 af

Reach 84A: Overland Flow Avg. Flow Depth=0.30' Max Vel=0.49 fps Inflow=21.37 cfs 3.206 af
n=0.400 L=277.0' S=0.1155 '/' Capacity=192.72 cfs Outflow=19.31 cfs 3.206 af

Reach 84B: Overland Flow Avg. Flow Depth=0.20' Max Vel=0.46 fps Inflow=13.91 cfs 1.675 af
n=0.400 L=370.0' S=0.1622 '/' Capacity=228.33 cfs Outflow=11.32 cfs 1.675 af

Reach 85A: Overland Flow Avg. Flow Depth=0.05' Max Vel=0.18 fps Inflow=2.49 cfs 0.216 af
n=0.400 L=505.0' S=0.1525 '/' Capacity=221.40 cfs Outflow=0.86 cfs 0.216 af

Reach 85B: Overland Flow Avg. Flow Depth=0.07' Max Vel=0.17 fps Inflow=2.39 cfs 0.435 af
n=0.400 L=453.0' S=0.0773 '/' Capacity=157.60 cfs Outflow=1.25 cfs 0.435 af

Reach 86A: Overland Flow Avg. Flow Depth=0.08' Max Vel=0.22 fps Inflow=3.21 cfs 0.219 af
n=0.400 L=195.0' S=0.1128 '/' Capacity=190.45 cfs Outflow=1.85 cfs 0.219 af

Reach 88: Roadside Swale Avg. Flow Depth=0.18' Max Vel=3.42 fps Inflow=1.33 cfs 0.101 af
n=0.035 L=472.0' S=0.0763 '/' Capacity=66.89 cfs Outflow=1.30 cfs 0.101 af

Reach 89: Overland Flow through Woods Avg. Flow Depth=0.02' Max Vel=1.46 fps Inflow=6.92 cfs 0.575 af
n=0.035 L=1,051.0' S=0.1884 '/' Capacity=1,000.42 cfs Outflow=5.01 cfs 0.575 af

Reach 91: Overland Flow Avg. Flow Depth=0.15' Max Vel=1.50 fps Inflow=4.82 cfs 0.650 af
n=0.035 L=198.0' S=0.0172 '/' Capacity=137.55 cfs Outflow=4.80 cfs 0.650 af

Reach 92: Channel Along RR Tracks Avg. Flow Depth=0.44' Max Vel=3.40 fps Inflow=4.80 cfs 0.650 af
n=0.035 L=1,907.0' S=0.0293 '/' Capacity=234.34 cfs Outflow=4.30 cfs 0.650 af

Reach 197: Stream Channel Avg. Flow Depth=0.39' Max Vel=6.15 fps Inflow=44.69 cfs 4.519 af
n=0.050 L=1,500.0' S=0.1807 '/' Capacity=9,816.53 cfs Outflow=42.80 cfs 4.519 af

Reach 198: Stream Channel Avg. Flow Depth=0.85' Max Vel=7.12 fps Inflow=45.99 cfs 4.519 af
n=0.050 L=1,262.0' S=0.1212 '/' Capacity=3,729.07 cfs Outflow=44.69 cfs 4.519 af

Reach 199: Overland Flow Avg. Flow Depth=0.05' Max Vel=2.47 fps Inflow=7.13 cfs 0.660 af
n=0.040 L=250.0' S=0.2560 '/' Capacity=451.81 cfs Outflow=7.09 cfs 0.660 af

Reach 295: Roadside Channel Avg. Flow Depth=0.63' Max Vel=4.53 fps Inflow=7.89 cfs 0.826 af
n=0.040 L=379.0' S=0.0501 '/' Capacity=159.47 cfs Outflow=7.84 cfs 0.826 af

Reach 296: Wetland Flow Avg. Flow Depth=0.57' Max Vel=3.75 fps Inflow=7.95 cfs 0.826 af
n=0.040 L=320.0' S=0.0375 '/' Capacity=122.08 cfs Outflow=7.89 cfs 0.826 af

Reach 297: Overland Flow Avg. Flow Depth=0.08' Max Vel=2.89 fps Inflow=8.05 cfs 0.826 af
n=0.040 L=366.0' S=0.2022 '/' Capacity=225.40 cfs Outflow=7.95 cfs 0.826 af

Reach 298: Wetland Flow Avg. Flow Depth=0.07' Max Vel=1.09 fps Inflow=8.98 cfs 0.826 af
n=0.070 L=408.0' S=0.0931 '/' Capacity=802.14 cfs Outflow=8.05 cfs 0.826 af

Reach 299: Overland Flow Avg. Flow Depth=0.14' Max Vel=3.67 fps Inflow=9.01 cfs 0.826 af
n=0.050 L=135.0' S=0.3259 '/' Capacity=130.57 cfs Outflow=8.98 cfs 0.826 af

Pond 1aP: Design Point 1a Inflow=3.78 cfs 0.267 af
Primary=3.78 cfs 0.267 af

Pond 2R: 48" CMP Culvert Peak Elev=1,745.01' Inflow=67.79 cfs 7.547 af
Outflow=67.79 cfs 7.547 af

Pond 4R: 24" Steel Culvert Peak Elev=2,066.25' Inflow=7.84 cfs 0.826 af
Outflow=7.84 cfs 0.826 af

Pond 7R: 30" Steel Culvert Peak Elev=1,816.63' Inflow=42.48 cfs 4.139 af
Outflow=42.48 cfs 4.139 af

Pond 10R: 14" and 16" HDPE Culverts Peak Elev=1,977.01' Inflow=11.23 cfs 1.087 af
Primary=11.02 cfs 1.086 af Secondary=0.21 cfs 0.001 af Outflow=11.23 cfs 1.087 af

Pond 13R: 16" CMP Culvert Peak Elev=1,968.66' Inflow=1.92 cfs 0.129 af
16.0" Round Culvert n=0.025 L=40.0' S=0.0750 '/' Outflow=1.92 cfs 0.129 af

Pond 57: 15" Steel Culvert Peak Elev=2,004.53' Inflow=0.98 cfs 0.072 af
Outflow=0.98 cfs 0.072 af

Pond 58R: 24" HDPE Pipe Peak Elev=2,222.57' Inflow=1.92 cfs 0.152 af
Outflow=1.92 cfs 0.152 af

Pond 59: 32" Plastic Pipe Peak Elev=2,328.82' Inflow=14.76 cfs 1.531 af
Primary=14.76 cfs 1.531 af Secondary=0.00 cfs 0.000 af Outflow=14.76 cfs 1.531 af

Pond 60: 30" Steel Culvert Peak Elev=2,022.48' Inflow=31.12 cfs 6.796 af
Outflow=31.12 cfs 6.796 af

Pond 67P: 24" Steel Culvert Peak Elev=2,003.96' Inflow=3.92 cfs 0.242 af
Outflow=3.92 cfs 0.242 af

Pond 68: 12" Steel Culvert Peak Elev=2,001.25' Inflow=6.92 cfs 0.575 af
Primary=3.27 cfs 0.480 af Secondary=3.65 cfs 0.095 af Outflow=6.92 cfs 0.575 af

Pond 77: 36" Steel Culvert Peak Elev=2,173.69' Inflow=18.21 cfs 4.649 af
Outflow=18.21 cfs 4.649 af

Pond 79: 16" Steel Culvert Peak Elev=2,058.12' Inflow=18.38 cfs 4.750 af
Outflow=18.38 cfs 4.750 af

Pond 83: 24" HPDE Culvert Peak Elev=2,360.44' Inflow=0.92 cfs 0.066 af
Primary=0.92 cfs 0.066 af Secondary=0.00 cfs 0.000 af Outflow=0.92 cfs 0.066 af

Pond 84: 24" HDPE Pipe Peak Elev=2,316.66' Inflow=13.91 cfs 1.675 af
Primary=13.91 cfs 1.675 af Secondary=0.00 cfs 0.000 af Outflow=13.91 cfs 1.675 af

Pond 85: 28" HDPE Pipe Peak Elev=2,295.69' Inflow=2.49 cfs 0.216 af
Primary=2.49 cfs 0.216 af Secondary=0.00 cfs 0.000 af Outflow=2.49 cfs 0.216 af

Pond 86: 24" HDPE Pipe Peak Elev=2,240.86' Inflow=3.21 cfs 0.219 af
Primary=3.21 cfs 0.219 af Secondary=0.00 cfs 0.000 af Outflow=3.21 cfs 0.219 af

Pond 87: 18" Steel Culvert Peak Elev=2,208.59' Inflow=1.33 cfs 0.101 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0167 '/' Outflow=1.33 cfs 0.101 af

Pond 90: 12" Steel Culvert Peak Elev=1,892.13' Inflow=4.82 cfs 0.650 af
Outflow=4.82 cfs 0.650 af

Pond 200: 36" Steel Culvert Peak Elev=2,236.79' Inflow=38.90 cfs 3.859 af
Outflow=38.90 cfs 3.859 af

Pond 201: 36" Steel Culvert Peak Elev=2,235.01' Inflow=7.13 cfs 0.660 af
Outflow=7.13 cfs 0.660 af

Pond 300R: 18" Steel Culvert Peak Elev=2,256.55' Inflow=9.01 cfs 0.826 af
Outflow=9.01 cfs 0.826 af

Pond c1: Inflow=2.34 cfs 0.104 af
Primary=2.34 cfs 0.104 af

Pond C2: Inflow=17.91 cfs 2.008 af
Primary=17.91 cfs 2.008 af

Pond C3: Inflow=1.69 cfs 0.127 af
Primary=1.69 cfs 0.127 af

Pond C4: Inflow=6.62 cfs 0.540 af
Primary=6.62 cfs 0.540 af

Pond C5: Inflow=10.12 cfs 0.737 af
Primary=10.12 cfs 0.737 af

Pond C5A: Inflow=5.59 cfs 0.589 af
Primary=5.59 cfs 0.589 af

Pond C6: Inflow=30.75 cfs 2.976 af
Primary=30.75 cfs 2.976 af

Pond C6A: Inflow=19.97 cfs 2.264 af
Primary=19.97 cfs 2.264 af

Pond DP 10: Design Point 10 Inflow=43.83 cfs 8.495 af
Primary=43.83 cfs 8.495 af

Pond DP 11: Design Point 11 Inflow=26.04 cfs 3.534 af
Primary=26.04 cfs 3.534 af

Pond DP 12: Design Point 12 Inflow=8.51 cfs 0.504 af
Primary=8.51 cfs 0.504 af

Pond DP 16: DESIGN POINT 16 Inflow=11.47 cfs 1.030 af
Primary=11.47 cfs 1.030 af

Pond DP 7: Design Point 7 Inflow=67.92 cfs 7.580 af
Primary=67.92 cfs 7.580 af

Pond DP 8: Design Point 8 Inflow=54.72 cfs 5.126 af
Primary=54.72 cfs 5.126 af

Pond DP 9: Design Point 9 Inflow=25.00 cfs 3.146 af
Primary=25.00 cfs 3.146 af

Pond DP2: ditch Peak Elev=2,434.35' Storage=3,351 cf Inflow=20.27 cfs 2.112 af
Primary=17.91 cfs 2.008 af Secondary=2.34 cfs 0.104 af Outflow=20.25 cfs 2.112 af

Pond DP3: 12" Steel Peak Elev=2,443.76' Inflow=1.69 cfs 0.127 af
Primary=1.69 cfs 0.127 af Secondary=0.00 cfs 0.000 af Outflow=1.69 cfs 0.127 af

Pond DP4: 18" HDPE Culvert Peak Elev=2,370.53' Inflow=6.62 cfs 0.540 af
Primary=6.62 cfs 0.540 af Secondary=0.00 cfs 0.000 af Outflow=6.62 cfs 0.540 af

Pond DP5: 18" HDPE Culvert Peak Elev=2,302.07' Inflow=10.59 cfs 0.739 af
Primary=10.12 cfs 0.737 af Secondary=0.47 cfs 0.002 af Outflow=10.59 cfs 0.739 af

Pond DP5A: 12" steel Culvert Peak Elev=2,274.68' Inflow=7.70 cfs 0.612 af
Primary=5.59 cfs 0.589 af Secondary=2.12 cfs 0.023 af Outflow=7.70 cfs 0.612 af

Pond DP6: 55" CMP Culvert Peak Elev=2,239.99' Inflow=30.75 cfs 2.976 af
Outflow=30.75 cfs 2.976 af

Pond DP6A: 30" Steel Culvert Peak Elev=2,242.17' Inflow=19.97 cfs 2.264 af
Outflow=19.97 cfs 2.264 af

Total Runoff Area = 739.149 ac Runoff Volume = 39.029 af Average Runoff Depth = 0.63"
98.32% Pervious = 726.767 ac 1.68% Impervious = 12.381 ac

Summary for Subcatchment 1S: Subcatchment 1

Runoff = 36.96 cfs @ 12.12 hrs, Volume= 3.028 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	7,405	98	Roof Area
*	15,551	98	Pavement
*	9,714	89	Dirt Road
	75,794	71	Meadow, non-grazed, HSG C
	2,503,382	70	Woods, Good, HSG C
	2,611,846	70	Weighted Average
	2,588,890		99.12% Pervious Area
	22,956		0.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	55	0.0720	2.28		**Sheet Flow, Sheet Flow over Pavement** Smooth surfaces n= 0.011 P2= 4.00"
4.4	45	0.1600	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
10.6	1,315	0.1720	2.07		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
2.2	1,445	0.1868	11.00	70.92	**Trap/Vee/Rect Channel Flow, Mountain Stream w/ Medium Boulders** Bot.W=4.00' D=1.50' Z= 0.2 '/' Top.W=4.60' n= 0.055
17.6	2,860	Total			

Summary for Subcatchment 2S: Subcatchment 2

Runoff = 0.66 cfs @ 12.00 hrs, Volume= 0.033 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	4,400	98	Roadway
	5,009	71	Meadow, non-grazed, HSG C
	9,060	70	Woods, Good, HSG C
	18,469	77	Weighted Average
	14,069		76.18% Pervious Area
	4,400		23.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	90	0.2290	0.23		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.5	70	0.2550	2.52		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	215	0.0547	13.12	137.80	**Trap/Vee/Rect Channel Flow, Vegetated Swale along RR Tracks** Bot.W=2.00' D=3.00' Z= 0.5 '/' Top.W=5.00' n= 0.030
7.5	375	Total			

Summary for Subcatchment 3S: Subcatchment 3

Runoff = 42.44 cfs @ 12.11 hrs, Volume= 3.312 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	18,818	89	Dirt Road
*	24,002	98	Paved Road
*	11,979	98	Roof Area
	73,006	74	>75% Grass cover, Good, HSG C
	2,543,636	70	Woods, Good, HSG C
	2,671,441	71	Weighted Average
	2,635,460		98.65% Pervious Area
	35,981		1.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	100	0.2270	0.23		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.0	307	0.0650	1.27		**Shallow Concentrated Flow, SC Flow overland** Woodland Kv= 5.0 fps
4.1	592	0.2300	2.40		**Shallow Concentrated Flow, overland** Woodland Kv= 5.0 fps
0.4	655	0.1959	28.46	3,073.23	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=25.00' D=4.00' Z= 0.5 '/' Top.W=29.00' n= 0.050 Mountain streams w/large boulders
0.1	50	0.0400	6.18	10.92	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
1.1	1,181	0.1950	18.29	493.73	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=3.00' Z= 2.0 '/' Top.W=15.00' n= 0.050 Mountain streams w/large boulders
17.0	2,885	Total			

Summary for Subcatchment 4S: Subcatchment 4

Runoff = 13.37 cfs @ 12.10 hrs, Volume= 0.988 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	5,009	98	Roof Area
	64,992	71	Meadow, non-grazed, HSG C
*	14,985	98	Roadway
	711,509	70	Woods, Good, HSG C
	796,495	71	Weighted Average
	776,501		97.49% Pervious Area
	19,994		2.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.3000	0.26		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.0	770	0.1860	2.16		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
0.4	200	0.0750	9.49	56.96	**Trap/Vee/Rect Channel Flow, RR Swale w/Gravel and Leaves** Bot.W=1.00' D=2.00' Z= 1.0 '/' Top.W=5.00' n= 0.040
0.8	250	0.0800	5.03	7.55	**Trap/Vee/Rect Channel Flow, RR Swale w/ Gravel and Leaves** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.050
0.6	300	0.0650	8.00	48.03	**Trap/Vee/Rect Channel Flow, RR Swale w/ Cobbles and Leaves** Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00' n= 0.045
1.2	400	0.0600	5.69	14.23	**Trap/Vee/Rect Channel Flow, RR Swale w/ Cobbles and Leaves** Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00' n= 0.045
15.5	2,020	Total			

Summary for Subcatchment 5S: Subcatchment 5

Runoff = 1.92 cfs @ 12.07 hrs, Volume= 0.129 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	40,511	71	Meadow, non-grazed, HSG C
*	8,015	98	Roof Area
	42,819	70	Woods, Good, HSG C
	91,345	73	Weighted Average
	83,330		91.23% Pervious Area
	8,015		8.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.1300	0.18		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	390	0.0920	1.52		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	225	0.0346	7.48	29.91	**Trap/Vee/Rect Channel Flow, Flow in Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
13.9	715	Total			

Summary for Subcatchment 6S: Subcatchment 6

Runoff = 15.93 cfs @ 12.15 hrs, Volume= 1.355 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	24,873	98	Dirt Road
*	10,062	98	Roof Area
	70,635	71	Meadow, non-grazed, HSG C
	777,256	70	Woods, Good, HSG C
	141,270	74	>75% Grass cover, Good, HSG C
	1,024,096	72	Weighted Average
	989,161		96.59% Pervious Area
	34,935		3.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
8.7	1,016	0.1500	1.94		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.7	1,060	0.0750	10.48	83.81	**Trap/Vee/Rect Channel Flow, RR Swale w/ Gravel and Leaves** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.040
20.1	2,176	Total			

Summary for Subcatchment 7S: Subcatchment 7

Runoff = 11.23 cfs @ 12.19 hrs, Volume= 1.087 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	23,914	98	Pavement
	18,513	71	Meadow, non-grazed, HSG C
	834,000	70	Woods, Good, HSG C
	876,427	71	Weighted Average
	852,513		97.27% Pervious Area
	23,914		2.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.1570	0.20		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
15.2	1,760	0.1490	1.93		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
23.6	1,860	Total			

Summary for Subcatchment 8S: Subcatchment 8

Runoff = 6.92 cfs @ 12.14 hrs, Volume= 0.575 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	27,225	71	Meadow, non-grazed, HSG C
*	3,006	89	Dirt Road
*	8,189	98	Pavment
	425,146	70	Woods, Good, HSG C
	463,566	71	Weighted Average
	455,377		98.23% Pervious Area
	8,189		1.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.1570	0.20		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.0	850	0.2200	2.35		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.1	135	0.0850	2.04		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
2.6	310	0.1540	1.96		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.7	440	0.0360	10.52	63.14	**Trap/Vee/Rect Channel Flow, Flow through Vegetated Swale** Bot.W=1.00' D=2.00' Z= 1.0 '/' Top.W=5.00' n= 0.025
18.8	1,835	Total			

Summary for Subcatchment 9S: Subcatchment 9

Runoff = 18.18 cfs @ 12.17 hrs, Volume= 1.700 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	8,494	98	Roof Area
	57,978	71	Meadow, non-grazed, HSG C
	1,386,297	70	Woods, Good, HSG C
	13,112	98	Paved parking, HSG C
	1,465,881	70	Weighted Average
	1,444,275		98.53% Pervious Area
	21,606		1.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0200	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	10	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.3	1,923	0.1100	13.81	662.89	**Trap/Vee/Rect Channel Flow, Flow through Rock Channel** Bot.W=20.00' D=2.00' Z= 2.0 '/' Top.W=28.00' n= 0.050 Mountain streams w/large boulders
21.6	2,033	Total			

Summary for Subcatchment 10S: Subcatchment 10

Runoff = 19.86 cfs @ 12.24 hrs, Volume= 2.046 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	1,108,354	70	Woods, Good, HSG C
	485,520	71	Meadow, non-grazed, HSG C
*	7,623	98	Roof Area
*	48,327	98	Road/Drive
	1,649,824	71	Weighted Average
	1,593,874		96.61% Pervious Area
	55,950		3.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.2	600	0.0780	1.40		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
2.7	455	0.1600	2.80		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
2.8	330	0.1570	1.98		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.6	685	0.0945	7.35	33.08	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=4.00' D=1.00' Z= 0.5 '/' Top.W=5.00' n= 0.050
0.0	30	0.0500	13.31	18.59	**Pipe Channel, 16" Steel Culvert** 16.0" Round Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.012 Steel, smooth
1.4	645	0.0483	7.65	91.77	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=5.00' D=2.00' Z= 0.5 '/' Top.W=7.00' n= 0.050
25.8	2,845	Total			

Summary for Subcatchment 11A: Subcatchment 11A

Runoff = 0.98 cfs @ 12.09 hrs, Volume= 0.072 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
55,013	70	Woods, Good, HSG C
2,726	98	Paved parking & roofs
57,739	71	Weighted Average
55,013		95.28% Pervious Area
2,726		4.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0800	0.15		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	380	0.0875	1.48		**Shallow Concentrated Flow, SC flow through Woods** Woodland Kv= 5.0 fps
15.3	480	Total			

Summary for Subcatchment 11B: Subcatchment 11B

Runoff = 7.69 cfs @ 12.17 hrs, Volume= 0.717 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
558,889	70	Woods, Good, HSG C
19,014	98	Paved parking & roofs
577,903	71	Weighted Average
558,889		96.71% Pervious Area
19,014		3.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0800	0.15		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.0	460	0.0750	1.92		**Shallow Concentrated Flow, Sheet Flow through Meadow** Short Grass Pasture Kv= 7.0 fps
0.8	80	0.0625	1.75		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
6.3	560	0.0875	1.48		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	70	0.0500	7.39	16.25	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=2.00' D=1.00' Z= 0.2 '/' Top.W=2.40' n= 0.030 Earth, grassed & winding
22.3	1,270	Total			

Summary for Subcatchment 11S: Subcatchment 11

Runoff = 3.92 cfs @ 12.05 hrs, Volume= 0.242 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
169,318	70	Woods, Good, HSG C
13,416	98	Paved parking & roofs
182,734	72	Weighted Average
169,318		92.66% Pervious Area
13,416		7.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.0800	2.03		**Sheet Flow, Sheet Flow off Roof** Smooth surfaces n= 0.011 P2= 4.00"
4.4	75	0.0625	0.28		**Sheet Flow, Sheet flow over meadow** Grass: Short n= 0.150 P2= 4.00"
2.9	330	0.0750	1.92		**Shallow Concentrated Flow, Sheet Flow through Meadow** Short Grass Pasture Kv= 7.0 fps
3.4	300	0.0875	1.48		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.6	254	0.0500	7.39	16.25	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=2.00' D=1.00' Z= 0.2 '/' Top.W=2.40' n= 0.030
11.5	984	Total			

Summary for Subcatchment 12S: Subcatchment 12

Runoff = 22.84 cfs @ 12.35 hrs, Volume= 2.884 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	18,687	74	>75% Grass cover, Good, HSG C
	2,265,120	70	Woods, Good, HSG C
*	17,860	98	Roofs
*	24,394	98	Paved roads
	2,326,061	71	Weighted Average
	2,283,807		98.18% Pervious Area
	42,254		1.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0850	0.15		**Sheet Flow, Sheet Flow through Woods**
					Woods: Light underbrush n= 0.400 P2= 4.00"
23.6	2,290	0.1050	1.62		**Shallow Concentrated Flow, SC Flow through Woods**
					Woodland Kv= 5.0 fps
34.4	2,390	Total			

Summary for Subcatchment 14S: Subcatchment 14

Runoff = 20.27 cfs @ 12.23 hrs, Volume= 2.112 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	133,250	71	Meadow, non-grazed, HSG C
	25,526	87	Dirt roads, HSG C
*	5,184	98	Roof Area
	1,531,787	70	Woods, Good, HSG C
	7,797	98	Paved roads
	1,703,544	71	Weighted Average
	1,690,563		99.24% Pervious Area
	12,981		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	80	0.1000	2.21		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
15.2	2,165	0.2260	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.4	90	0.2350	3.39		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
0.3	150	0.0450	8.53	34.11	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
26.2	2,585	Total			

Summary for Subcatchment 15S: Subcatchment 15

Runoff = 1.69 cfs @ 12.11 hrs, Volume= 0.127 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	35,962	71	Meadow, non-grazed, HSG C
	55,670	70	Woods, Good, HSG C
*	4,008	98	Pavement
	95,640	72	Weighted Average
	91,632		95.81% Pervious Area
	4,008		4.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.3	640	0.1600	2.00		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.8	125	0.1500	2.71		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
0.2	80	0.0400	8.04	32.16	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
16.4	945	Total			

Summary for Subcatchment 16S: Subcatchment 16

Runoff = 6.62 cfs @ 12.13 hrs, Volume= 0.540 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	141,134	71	Meadow, non-grazed, HSG C
*	9,278	98	Pavement
	285,318	70	Woods, Good, HSG C
	435,730	71	Weighted Average
	426,452		97.87% Pervious Area
	9,278		2.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.7	644	0.1406	1.87		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.4	200	0.1200	2.42		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
1.0	900	0.1029	15.55	106.89	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.50' Z= 0.7 '/' Top.W=4.50' n= 0.030
18.2	1,844	Total			

Summary for Subcatchment 17S: Subcatchment 17

Runoff = 10.59 cfs @ 12.07 hrs, Volume= 0.739 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	7,884	98	Roadway
	8,494	71	Meadow, non-grazed, HSG C
	620,730	70	Woods, Good, HSG C
	637,108	70	Weighted Average
	629,224		98.76% Pervious Area
	7,884		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2000	0.22		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.8	922	0.2800	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.1	145	0.1160	17.65	143.44	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=2.00' D=2.50' Z= 0.5 '/' Top.W=4.50' n= 0.030
13.5	1,167	Total			

Summary for Subcatchment 18S: Subcatchment 18

Runoff = 7.53 cfs @ 12.12 hrs, Volume= 0.610 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	2,494	98	Pavement
	3,615	71	Meadow, non-grazed, HSG C
	520,281	70	Woods, Good, HSG C
	526,390	70	Weighted Average
	523,896		99.53% Pervious Area
	2,494		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.3280	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
10.5	1,895	0.3630	3.01		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.6	320	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Flow in Roadside Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
17.4	2,315	Total			

Summary for Subcatchment 19S: Subcatchment 19

Runoff = 29.30 cfs @ 12.21 hrs, Volume= 2.954 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	8,146	98	Paved, HSG C
	1,896,646	70	Woods, Good, HSG C
	642,902	71	Meadow, non-grazed, HSG C
	2,547,694	70	Weighted Average
	2,539,548		99.68% Pervious Area
	8,146		0.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.6	2,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods** Woodland Kv= 5.0 fps
0.9	470	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030 Earth, grassed & winding

24.0	2,625	Total

Summary for Subcatchment 20S: Subcatchment 20

Runoff = 19.97 cfs @ 12.27 hrs, Volume= 2.264 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	6,926	98	Roof Area
*	15,682	98	Roadway
	1,050,057	70	Woods, Good, HSG C
	753,544	71	Meadow, non-grazed, HSG C
	1,826,209	71	Weighted Average
	1,803,601		98.76% Pervious Area
	22,608		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
18.7	3,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods** Woodland Kv= 5.0 fps
0.4	310	0.0466	12.12	145.44	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=4.00' Z= 0.5 '/' Top.W=5.00' n= 0.030 Earth, grassed & winding
29.6	3,465	Total			

Summary for Subcatchment 21S: Subcatchment 21 (Leach Farm)

Runoff = 3.78 cfs @ 12.09 hrs, Volume= 0.267 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	147,807	70	Woods, Good, HSG C
*	5,253	98	Roof
*	4,790	98	Paved Drive
	44,250	74	>75% Grass cover, Good, HSG C
	202,100	72	Weighted Average
	192,057		95.03% Pervious Area
	10,043		4.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0840	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.7	460	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	330	0.2300	14.23	21.34	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.030 Earth, clean & winding
14.9	890	Total			

Summary for Subcatchment 27S: Subcatchment 27

Runoff = 8.51 cfs @ 12.04 hrs, Volume= 0.504 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	12,543	98	Roof
*	36,847	98	Pavement
	54,050	74	>75% Grass cover, Good, HSG C
	213,001	70	Woods, Good, HSG C
	316,441	75	Weighted Average
	267,051		84.39% Pervious Area
	49,390		15.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.2200	0.23		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.8	445	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	124	0.0800	11.21	42.02	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.50' Z= 1.0 '/' Top.W=4.00' n= 0.030 Earth, grassed & winding
11.4	669	Total			

Summary for Subcatchment 28S: Subcatchment 28

Runoff = 4.82 cfs @ 12.39 hrs, Volume= 0.650 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
33,932	71	Meadow, non-grazed, HSG C
526,860	70	Woods, Good, HSG C
560,792	70	Weighted Average
560,792		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
15.4	1,205	0.0680	1.30		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
7.4	150	0.0130	0.34	0.51	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.300
36.1	1,455	Total			

Summary for Subcatchment 35S: Subcatchment 35

Runoff = 7.13 cfs @ 12.18 hrs, Volume= 0.660 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	122,752	71	Meadow, non-grazed, HSG C
*	6,708	98	Paved Road
	393,477	70	Woods, Good, HSG C
*	9,104	98	Roof
	532,041	71	Weighted Average
	516,229		97.03% Pervious Area
	15,812		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	120	0.1667	0.52		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.5	230	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	50	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
9.3	1,470	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
22.0	3,110	Total			

Summary for Subcatchment 200S: Subcatchment 200

Runoff = 38.90 cfs @ 12.20 hrs, Volume= 3.859 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	14,331	98	Paved Road
	311,323	71	Meadow, non-grazed, HSG C
	3,002,765	70	Woods, Good, HSG C
	3,328,419	70	Weighted Average
	3,314,088		99.57% Pervious Area
	14,331		0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	100	0.1667	0.50		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.4	215	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	70	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
11.1	1,760	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	160	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
23.5	3,545	Total			

Summary for Subcatchment 300S: Subcatchment 300

Runoff = 9.01 cfs @ 12.16 hrs, Volume= 0.826 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	3,267	98	Paved Road
	6,447	71	Meadow, non-grazed, HSG C
	702,884	70	Woods, Good, HSG C
	712,598	70	Weighted Average
	709,331		99.54% Pervious Area
	3,267		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	120	0.2500	0.25		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.7	1,810	0.2257	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	110	0.0910	12.13	48.50	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
21.0	2,040	Total			

Summary for Subcatchment 500S: Subcatchment 500

Runoff = 13.91 cfs @ 12.31 hrs, Volume= 1.675 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	29,185	98	Roadway
	1,312,724	70	Woods, Good, HSG C
	1,350,926	71	Weighted Average
	1,321,741		97.84% Pervious Area
	29,185		2.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
25.7	3,665	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.1	110	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
32.0	3,875	Total			

Summary for Subcatchment 501S: Subcatchment 501

Runoff = 2.49 cfs @ 12.15 hrs, Volume= 0.216 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,002	98	Roadway
	176,462	70	Woods, Good, HSG C
	186,481	70	Weighted Average
	185,479		99.46% Pervious Area
	1,002		0.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
13.1	1,930	0.2410	2.45		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	2,030	Total			

Summary for Subcatchment 502S: Subcatchment 502

Runoff = 3.21 cfs @ 12.07 hrs, Volume= 0.219 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,437	98	Roadway
	178,596	70	Woods, Good, HSG C
	189,050	70	Weighted Average
	187,613		99.24% Pervious Area
	1,437		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.5	935	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	265	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
13.0	1,300	Total			

Summary for Subcatchment 503S: Subcatchmant 503

Runoff = 1.92 cfs @ 12.11 hrs, Volume= 0.152 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
130,680	70	Woods, Good, HSG C
130,680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.2	655	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	255	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
16.6	1,010	Total			

Summary for Subcatchment 504S: Subcatchment 504

Runoff = 14.76 cfs @ 12.22 hrs, Volume= 1.531 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	1,292,556	70	Woods, Good, HSG C
*	13,939	98	Road
	14,026	74	>75% Grass cover, Good, HSG C
	1,320,521	70	Weighted Average
	1,306,582		98.94% Pervious Area
	13,939		1.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.4375	0.30		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
19.1	2,860	0.2500	2.50		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	320	0.1910	15.31	321.48	**Trap/Vee/Rect Channel Flow, Mountain Stream** Bot.W=4.00' D=3.00' Z= 1.0 '/' Top.W=10.00' n= 0.060
25.0	3,280	Total			

Summary for Subcatchment 511S: Subcatchmant 511

Runoff = 1.33 cfs @ 12.10 hrs, Volume= 0.101 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
87,120	70	Woods, Good, HSG C
87,120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.5	580	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.6	680	Total			

Summary for Subcatchment 512S: Subcatchment 512

Runoff = 0.92 cfs @ 12.08 hrs, Volume= 0.066 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
56,628	70	Woods, Good, HSG C
56,628		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.3125	0.15		**Sheet Flow, Sheet Flow through Woods** Woods: Dense underbrush n= 0.800 P2= 4.00"
2.6	345	0.1900	2.18		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	155	0.1000	8.43	10.12	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.2 '/' Top.W=1.40' n= 0.030 Earth, grassed & winding
14.0	600	Total			

Summary for Subcatchment 600S: Subcatchment 600

Runoff = 5.41 cfs @ 12.14 hrs, Volume= 0.459 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	9,670	98	Road
	360,198	70	Woods, Good, HSG C
	369,868	71	Weighted Average
	360,198		97.39% Pervious Area
	9,670		2.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.0	1,510	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	1,610	Total			

Summary for Subcatchment 601S: Subcatchment 601

Runoff = 4.58 cfs @ 12.09 hrs, Volume= 0.332 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	10,498	98	Road
	257,004	70	Woods, Good, HSG C
	267,502	71	Weighted Average
	257,004		96.08% Pervious Area
	10,498		3.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.7	970	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.0	1,070	Total			

Summary for Reach 1R: Wetland Flow

Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 150.0 sf, Capacity= 802.14 cfs

100.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 50.0 '/' Top Width= 200.00'
Length= 408.0' Slope= 0.0931 '/'
Inlet Invert= 2,208.00', Outlet Invert= 2,170.00'

‡

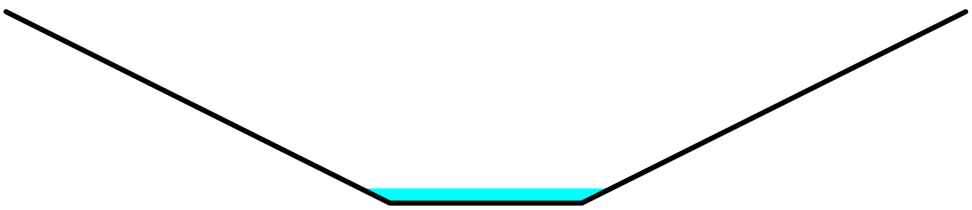
Summary for Reach 5: Stream Channel

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 7.84 cfs @ 12.31 hrs, Volume= 0.826 af
Outflow = 7.67 cfs @ 12.35 hrs, Volume= 0.826 af, Atten= 2%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.41 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 2.00 fps, Avg. Travel Time= 7.2 min

Peak Storage= 1,233 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 1,064.40 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 870.0' Slope= 0.1954 '/'
Inlet Invert= 2,060.00', Outlet Invert= 1,890.00'



Summary for Reach 5a: Stream Channel

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 7.67 cfs @ 12.35 hrs, Volume= 0.826 af
Outflow = 7.65 cfs @ 12.36 hrs, Volume= 0.826 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.12 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.23 fps, Avg. Travel Time= 2.6 min

Peak Storage= 444 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 318.14 cfs

2.50' x 2.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 355.0' Slope= 0.2141 '/'
Inlet Invert= 1,890.00', Outlet Invert= 1,814.00'

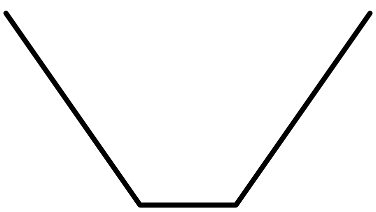
Summary for Reach 5R: (new Reach)

Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 4.8 sf, Capacity= 30.57 cfs

1.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.7 '/' Top Width= 3.80'
Length= 415.0' Slope= 0.0217 '/'
Inlet Invert= 2,443.00', Outlet Invert= 2,434.00'



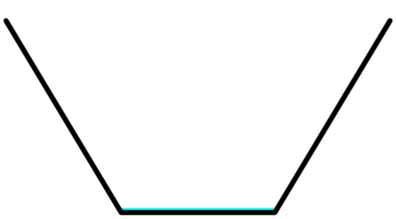
Summary for Reach 6R: (new Reach)

Inflow	=	0.47 cfs @	12.07 hrs, Volume=	0.002 af
Outflow	=	0.26 cfs @	12.10 hrs, Volume=	0.002 af, Atten= 45%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.08 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 5.0 min

Peak Storage= 46 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 2.50' Flow Area= 8.8 sf, Capacity= 128.38 cfs

2.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.6 '/' Top Width= 5.00'
Length= 370.0' Slope= 0.0757 '/'
Inlet Invert= 2,300.00', Outlet Invert= 2,272.00'



Summary for Reach 8: Stream Channel

Inflow Area = 77.687 ac, 1.16% Impervious, Inflow Depth = 0.64" for 1-YEAR event
Inflow = 42.48 cfs @ 12.11 hrs, Volume= 4.139 af
Outflow = 42.33 cfs @ 12.12 hrs, Volume= 4.139 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.92 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.45 fps, Avg. Travel Time= 2.8 min

Peak Storage= 2,108 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00' Flow Area= 51.0 sf, Capacity= 797.02 cfs

50.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 1.0 '/' Top Width= 52.00'
Length= 245.0' Slope= 0.2898 '/'
Inlet Invert= 1,812.00', Outlet Invert= 1,741.00'

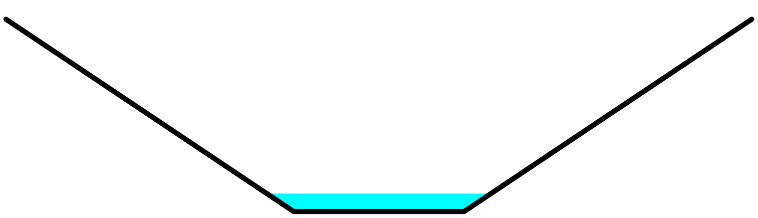
Summary for Reach 8R: through ditch

Inflow = 2.12 cfs @ 12.12 hrs, Volume= 0.023 af
Outflow = 1.92 cfs @ 12.14 hrs, Volume= 0.023 af, Atten= 9%, Lag= 1.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.96 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 5.8 min

Peak Storage= 240 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 2.25' Flow Area= 12.1 sf, Capacity= 171.61 cfs

2.00' x 2.25' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.5 '/' Top Width= 8.75'
Length= 495.0' Slope= 0.0646 '/'
Inlet Invert= 2,272.00', Outlet Invert= 2,240.00'



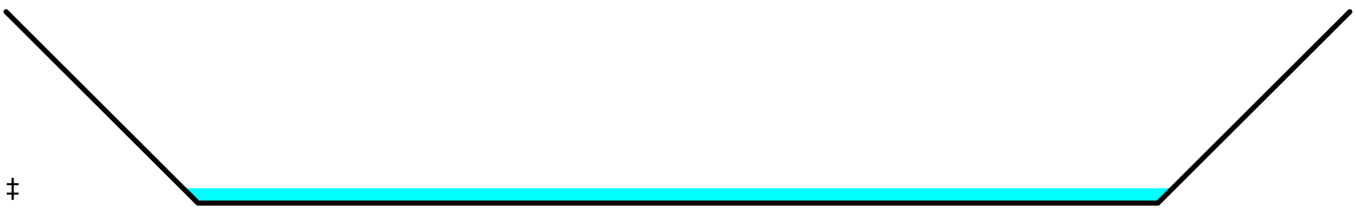
Summary for Reach 11R: Overland Flow

Inflow Area = 20.120 ac, 2.73% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 11.23 cfs @ 12.19 hrs, Volume= 1.087 af
Outflow = 8.15 cfs @ 12.35 hrs, Volume= 1.087 af, Atten= 27%, Lag= 9.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.38 fps, Min. Travel Time= 14.3 min
Avg. Velocity = 0.47 fps, Avg. Travel Time= 41.5 min

Peak Storage= 6,975 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 1.00' Flow Area= 90.0 sf, Capacity= 620.77 cfs

75.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 105.00'
Length= 1,180.0' Slope= 0.1695 '/'
Inlet Invert= 1,973.00', Outlet Invert= 1,773.00'



Summary for Reach 12R: Overland Flow

Inflow Area = 2.097 ac, 8.77% Impervious, Inflow Depth = 0.74" for 1-YEAR event
Inflow = 1.92 cfs @ 12.07 hrs, Volume= 0.129 af
Outflow = 1.09 cfs @ 12.21 hrs, Volume= 0.129 af, Atten= 43%, Lag= 8.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.93 fps, Min. Travel Time= 17.0 min
Avg. Velocity = 0.41 fps, Avg. Travel Time= 38.7 min

Peak Storage= 1,113 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 305.91 cfs

30.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 60.00'
Length= 950.0' Slope= 0.1968 '/'
Inlet Invert= 1,960.00', Outlet Invert= 1,773.00'

Summary for Reach 13: RR Swale

Inflow Area = 77.687 ac, 1.16% Impervious, Inflow Depth = 0.64" for 1-YEAR event
Inflow = 42.33 cfs @ 12.12 hrs, Volume= 4.139 af
Outflow = 42.00 cfs @ 12.14 hrs, Volume= 4.139 af, Atten= 1%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.30 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.29 fps, Avg. Travel Time= 3.3 min

Peak Storage= 3,000 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.88'
Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 604.81 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 4.0 '/' Top Width= 28.00'
Length= 450.0' Slope= 0.0444 '/'
Inlet Invert= 1,740.00', Outlet Invert= 1,720.00'

‡

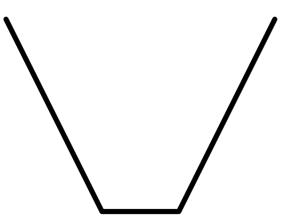
Summary for Reach 21R: (new Reach)

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.50' Flow Area= 5.6 sf, Capacity= 79.28 cfs

1.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.5 '/' Top Width= 3.50'
Length= 685.0' Slope= 0.1000 '/'
Inlet Invert= 2,368.00', Outlet Invert= 2,299.50'



Summary for Reach 58: Swale along RR Tracks

Inflow Area = 10.642 ac, 1.77% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 5.01 cfs @ 12.26 hrs, Volume= 0.575 af
Outflow = 4.58 cfs @ 12.34 hrs, Volume= 0.575 af, Atten= 9%, Lag= 4.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.96 fps, Min. Travel Time= 5.8 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 15.8 min

Peak Storage= 1,580 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 139.83 cfs

2.50' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 1,020.0' Slope= 0.0265 '/'
Inlet Invert= 1,800.00', Outlet Invert= 1,773.00'

Summary for Reach 58A: Overland Flow

Inflow Area = 3.000 ac, 0.00% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 1.92 cfs @ 12.11 hrs, Volume= 0.152 af
Outflow = 1.48 cfs @ 12.21 hrs, Volume= 0.152 af, Atten= 23%, Lag= 5.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.91 fps, Min. Travel Time= 8.8 min
Avg. Velocity = 0.63 fps, Avg. Travel Time= 12.7 min

Peak Storage= 782 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 120.0 sf, Capacity= 1,456.48 cfs

100.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 140.00'
Length= 478.0' Slope= 0.1004 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,172.00'

‡

Summary for Reach 61: Vegetated Roadside Swale

Inflow Area = 5.521 ac, 6.71% Impervious, Inflow Depth = 0.68" for 1-YEAR event
Inflow = 4.82 cfs @ 12.05 hrs, Volume= 0.313 af
Outflow = 4.54 cfs @ 12.09 hrs, Volume= 0.313 af, Atten= 6%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.00 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 1.16 fps, Avg. Travel Time= 10.8 min

Peak Storage= 852 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 59.21 cfs

3.00' x 1.50' deep channel, n= 0.040
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 751.0' Slope= 0.0613 '/'
Inlet Invert= 2,000.00', Outlet Invert= 1,954.00'

Summary for Reach 66: Stream Channel

Inflow Area = 128.756 ac, 2.17% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 31.12 cfs @ 12.22 hrs, Volume= 6.796 af
Outflow = 28.56 cfs @ 12.30 hrs, Volume= 6.796 af, Atten= 8%, Lag= 4.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.37 fps, Min. Travel Time= 5.9 min
Avg. Velocity = 1.27 fps, Avg. Travel Time= 24.7 min

Peak Storage= 10,028 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 445.48 cfs

10.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 26.00'
Length= 1,884.0' Slope= 0.1152 '/'
Inlet Invert= 2,017.00', Outlet Invert= 1,800.00'

‡

Summary for Reach 78: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 18.41 cfs @ 12.83 hrs, Volume= 4.750 af
Outflow = 18.38 cfs @ 12.86 hrs, Volume= 4.750 af, Atten= 0%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.48 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 8.6 min

Peak Storage= 2,296 cf @ 12.86 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.50' Flow Area= 21.0 sf, Capacity= 258.41 cfs

8.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 20.00'
Length= 685.0' Slope= 0.1646 '/'
Inlet Invert= 2,170.75', Outlet Invert= 2,058.00'

‡

Summary for Reach 80: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 18.38 cfs @ 12.86 hrs, Volume= 4.750 af
Outflow = 18.30 cfs @ 12.90 hrs, Volume= 4.750 af, Atten= 0%, Lag= 2.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.61 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 14.3 min

Peak Storage= 3,754 cf @ 12.90 hrs
Average Depth at Peak Storage= 0.51'
Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 247.19 cfs

8.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 24.00'
Length= 740.0' Slope= 0.0473 '/'
Inlet Invert= 2,055.00', Outlet Invert= 2,020.00'

‡

Summary for Reach 82: Overland Flow

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 0.92 cfs @ 12.08 hrs, Volume= 0.066 af
Outflow = 0.09 cfs @ 13.35 hrs, Volume= 0.066 af, Atten= 90%, Lag= 76.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.07 fps, Min. Travel Time= 215.5 min
Avg. Velocity = 0.04 fps, Avg. Travel Time= 361.8 min

Peak Storage= 1,136 cf @ 13.35 hrs
Average Depth at Peak Storage= 0.01'
Bank-Full Depth= 0.50' Flow Area= 75.0 sf, Capacity= 53.31 cfs

100.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 200.00'
Length= 938.0' Slope= 0.1354 '/'
Inlet Invert= 2,347.00', Outlet Invert= 2,220.00'

Summary for Reach 82a: Overland Flow

Inflow Area = 62.628 ac, 1.58% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 19.39 cfs @ 12.58 hrs, Volume= 3.272 af
Outflow = 15.02 cfs @ 12.86 hrs, Volume= 3.272 af, Atten= 23%, Lag= 16.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.41 fps, Min. Travel Time= 19.2 min
Avg. Velocity = 0.08 fps, Avg. Travel Time= 95.1 min

Peak Storage= 17,342 cf @ 12.86 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 164.89 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 473.0' Slope= 0.0846 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,180.00'

Summary for Reach 83A: Overland Flow

Inflow Area = 30.315 ac, 1.06% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 14.76 cfs @ 12.22 hrs, Volume= 1.531 af
Outflow = 10.30 cfs @ 12.40 hrs, Volume= 1.531 af, Atten= 30%, Lag= 10.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.46 fps, Min. Travel Time= 16.1 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 57.8 min

Peak Storage= 9,971 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 232.26 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 441.0' Slope= 0.1678 '/'
Inlet Invert= 2,326.00', Outlet Invert= 2,252.00'

‡

Summary for Reach 84A: Overland Flow

Inflow Area = 61.328 ac, 1.61% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 21.37 cfs @ 12.44 hrs, Volume= 3.206 af
Outflow = 19.31 cfs @ 12.58 hrs, Volume= 3.206 af, Atten= 10%, Lag= 8.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.49 fps, Min. Travel Time= 9.4 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 35.6 min

Peak Storage= 10,840 cf @ 12.58 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 192.72 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 277.0' Slope= 0.1155 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,220.00'

‡

Summary for Reach 84B: Overland Flow

Inflow Area = 31.013 ac, 2.16% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 13.91 cfs @ 12.31 hrs, Volume= 1.675 af
Outflow = 11.32 cfs @ 12.47 hrs, Volume= 1.675 af, Atten= 19%, Lag= 9.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.46 fps, Min. Travel Time= 13.3 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 46.4 min

Peak Storage= 9,006 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 228.33 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 370.0' Slope= 0.1622 '/'
Inlet Invert= 2,312.00', Outlet Invert= 2,252.00'

‡

Summary for Reach 85A: Overland Flow

Inflow Area = 4.281 ac, 0.54% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 2.49 cfs @ 12.15 hrs, Volume= 0.216 af
Outflow = 0.86 cfs @ 12.49 hrs, Volume= 0.216 af, Atten= 65%, Lag= 20.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.18 fps, Min. Travel Time= 46.5 min
Avg. Velocity = 0.08 fps, Avg. Travel Time= 107.2 min

Peak Storage= 2,406 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 221.40 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 505.0' Slope= 0.1525 '/'
Inlet Invert= 2,292.00', Outlet Invert= 2,215.00'

‡

Summary for Reach 85B: Overland Flow

Inflow Area = 8.621 ac, 0.65% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 2.39 cfs @ 12.24 hrs, Volume= 0.435 af
Outflow = 1.25 cfs @ 12.88 hrs, Volume= 0.435 af, Atten= 47%, Lag= 38.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.17 fps, Min. Travel Time= 45.0 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 116.7 min

Peak Storage= 3,382 cf @ 12.88 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 157.60 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 453.0' Slope= 0.0773 '/'
Inlet Invert= 2,215.00', Outlet Invert= 2,180.00'

‡

Summary for Reach 86A: Overland Flow

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 3.21 cfs @ 12.07 hrs, Volume= 0.219 af
Outflow = 1.85 cfs @ 12.19 hrs, Volume= 0.219 af, Atten= 42%, Lag= 7.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.22 fps, Min. Travel Time= 14.9 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 43.4 min

Peak Storage= 1,653 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 190.45 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 195.0' Slope= 0.1128 '/'
Inlet Invert= 2,237.00', Outlet Invert= 2,215.00'

‡

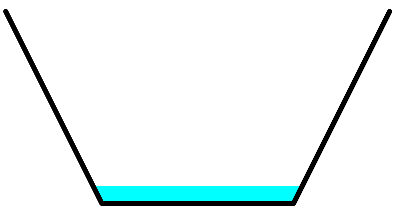
Summary for Reach 88: Roadside Swale

Inflow Area = 2.000 ac, 0.00% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 1.33 cfs @ 12.10 hrs, Volume= 0.101 af
Outflow = 1.30 cfs @ 12.13 hrs, Volume= 0.101 af, Atten= 2%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.42 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 1.13 fps, Avg. Travel Time= 7.0 min

Peak Storage= 179 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 2.00' Flow Area= 6.0 sf, Capacity= 66.89 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 0.5 '/' Top Width= 4.00'
Length= 472.0' Slope= 0.0763 '/'
Inlet Invert= 2,207.00', Outlet Invert= 2,171.00'



Summary for Reach 89: Overland Flow through Woods

Inflow Area = 10.642 ac, 1.77% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 6.92 cfs @ 12.14 hrs, Volume= 0.575 af
Outflow = 5.01 cfs @ 12.26 hrs, Volume= 0.575 af, Atten= 28%, Lag= 7.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.46 fps, Min. Travel Time= 12.0 min
Avg. Velocity = 0.59 fps, Avg. Travel Time= 29.6 min

Peak Storage= 3,596 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 0.50' Flow Area= 100.0 sf, Capacity= 1,000.42 cfs

150.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 100.0 '/' Top Width= 250.00'
Length= 1,051.0' Slope= 0.1884 '/'
Inlet Invert= 1,998.00', Outlet Invert= 1,800.00'

‡

Summary for Reach 91: Overland Flow

Inflow Area = 12.874 ac, 0.00% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 4.82 cfs @ 12.39 hrs, Volume= 0.650 af
Outflow = 4.80 cfs @ 12.40 hrs, Volume= 0.650 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.50 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 0.56 fps, Avg. Travel Time= 5.9 min

Peak Storage= 635 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 137.55 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 198.0' Slope= 0.0172 '/'
Inlet Invert= 1,889.40', Outlet Invert= 1,886.00'

‡

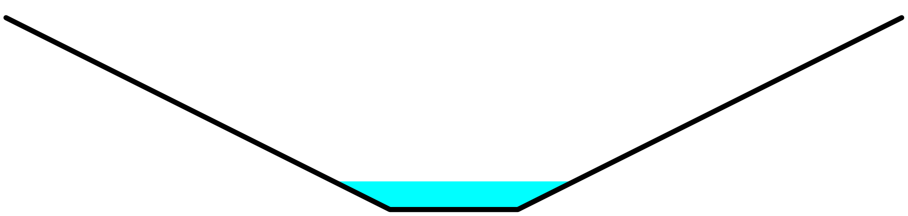
Summary for Reach 92: Channel Along RR Tracks

Inflow Area = 12.874 ac, 0.00% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 4.80 cfs @ 12.40 hrs, Volume= 0.650 af
Outflow = 4.30 cfs @ 12.53 hrs, Volume= 0.650 af, Atten= 10%, Lag= 7.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.40 fps, Min. Travel Time= 9.4 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 23.5 min

Peak Storage= 2,415 cf @ 12.53 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 234.34 cfs

2.00' x 3.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 1,907.0' Slope= 0.0293 '/'
Inlet Invert= 1,885.90', Outlet Invert= 1,830.00'



Summary for Reach 197: Stream Channel

Inflow Area = 88.624 ac, 0.78% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 44.69 cfs @ 12.24 hrs, Volume= 4.519 af
Outflow = 42.80 cfs @ 12.29 hrs, Volume= 4.519 af, Atten= 4%, Lag= 3.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.15 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 2.35 fps, Avg. Travel Time= 10.6 min

Peak Storage= 10,433 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 6.00' Flow Area= 342.0 sf, Capacity= 9,816.53 cfs

15.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 7.0 '/' Top Width= 99.00'
Length= 1,500.0' Slope= 0.1807 '/'
Inlet Invert= 2,015.00', Outlet Invert= 1,744.00'

‡

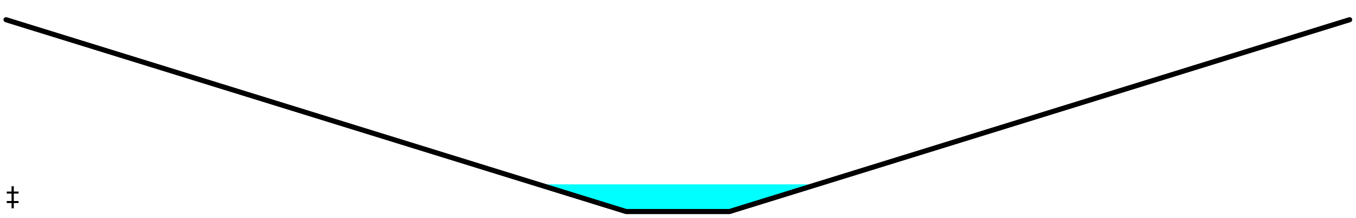
Summary for Reach 198: Stream Channel

Inflow Area = 88.624 ac, 0.78% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 45.99 cfs @ 12.20 hrs, Volume= 4.519 af
Outflow = 44.69 cfs @ 12.24 hrs, Volume= 4.519 af, Atten= 3%, Lag= 2.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.12 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 2.94 fps, Avg. Travel Time= 7.2 min

Peak Storage= 7,920 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.85'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 3,729.07 cfs

4.00' x 6.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 1,262.0' Slope= 0.1212 '/'
Inlet Invert= 2,168.00', Outlet Invert= 2,015.00'



‡

Summary for Reach 199: Overland Flow

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 7.13 cfs @ 12.18 hrs, Volume= 0.660 af
Outflow = 7.09 cfs @ 12.20 hrs, Volume= 0.660 af, Atten= 1%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 4.9 min

Peak Storage= 718 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 0.50' Flow Area= 50.0 sf, Capacity= 451.81 cfs

50.00' x 0.50' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 100.0 '/' Top Width= 150.00'
Length= 250.0' Slope= 0.2560 '/'
Inlet Invert= 2,232.00', Outlet Invert= 2,168.00'

‡

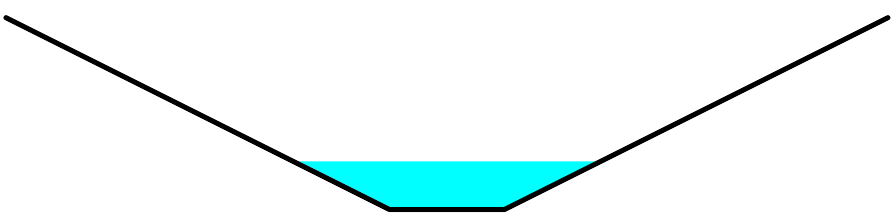
Summary for Reach 295: Roadside Channel

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 7.89 cfs @ 12.29 hrs, Volume= 0.826 af
Outflow = 7.84 cfs @ 12.31 hrs, Volume= 0.826 af, Atten= 1%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.53 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.77 fps, Avg. Travel Time= 3.6 min

Peak Storage= 656 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.63'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 159.47 cfs

1.50' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 11.50'
Length= 379.0' Slope= 0.0501 '/'
Inlet Invert= 2,084.00', Outlet Invert= 2,065.00'



Summary for Reach 296: Wetland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 7.95 cfs @ 12.27 hrs, Volume= 0.826 af
Outflow = 7.89 cfs @ 12.29 hrs, Volume= 0.826 af, Atten= 1%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.75 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.45 fps, Avg. Travel Time= 3.7 min

Peak Storage= 673 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.57'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 122.08 cfs

2.00' x 2.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 320.0' Slope= 0.0375 '/'
Inlet Invert= 2,096.00', Outlet Invert= 2,084.00'

Summary for Reach 297: Overland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 8.05 cfs @ 12.25 hrs, Volume= 0.826 af
Outflow = 7.95 cfs @ 12.27 hrs, Volume= 0.826 af, Atten= 1%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.89 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 0.97 fps, Avg. Travel Time= 6.3 min

Peak Storage= 1,005 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.50' Flow Area= 27.5 sf, Capacity= 225.40 cfs

30.00' x 0.50' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 50.0 '/' Top Width= 80.00'
Length= 366.0' Slope= 0.2022 '/'
Inlet Invert= 2,170.00', Outlet Invert= 2,096.00'

‡

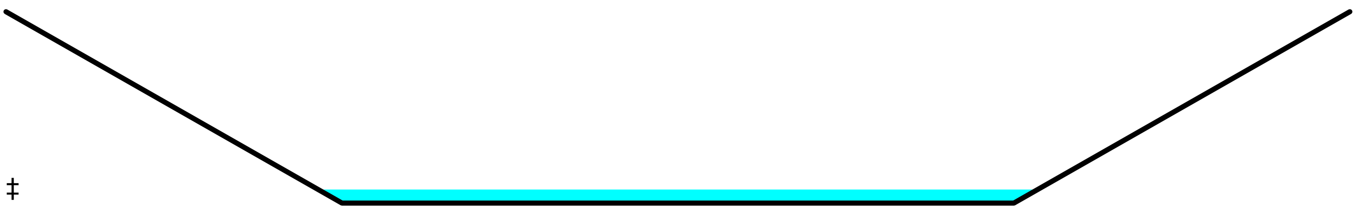
Summary for Reach 298: Wetland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 8.98 cfs @ 12.17 hrs, Volume= 0.826 af
Outflow = 8.05 cfs @ 12.25 hrs, Volume= 0.826 af, Atten= 10%, Lag= 4.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.09 fps, Min. Travel Time= 6.2 min
Avg. Velocity = 0.38 fps, Avg. Travel Time= 18.0 min

Peak Storage= 3,012 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 1.00' Flow Area= 150.0 sf, Capacity= 802.14 cfs

100.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 50.0 '/' Top Width= 200.00'
Length= 408.0' Slope= 0.0931 '/'
Inlet Invert= 2,208.00', Outlet Invert= 2,170.00'



Summary for Reach 299: Overland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 9.01 cfs @ 12.16 hrs, Volume= 0.826 af
Outflow = 8.98 cfs @ 12.17 hrs, Volume= 0.826 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.67 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.46 fps, Avg. Travel Time= 1.5 min

Peak Storage= 330 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 130.57 cfs

10.00' x 0.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 50.0 '/' Top Width= 60.00'
Length= 135.0' Slope= 0.3259 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,208.00'

Summary for Pond 1aP: Design Point 1a

Inflow Area = 4.640 ac, 4.97% Impervious, Inflow Depth = 0.69" for 1-YEAR event
Inflow = 3.78 cfs @ 12.09 hrs, Volume= 0.267 af
Primary = 3.78 cfs @ 12.09 hrs, Volume= 0.267 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond 2R: 48" CMP Culvert

Inflow Area = 148.584 ac, 0.82% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 67.79 cfs @ 12.22 hrs, Volume= 7.547 af
Outflow = 67.79 cfs @ 12.22 hrs, Volume= 7.547 af, Atten= 0%, Lag= 0.0 min
Primary = 67.79 cfs @ 12.22 hrs, Volume= 7.547 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,745.01' @ 12.22 hrs
Flood Elev= 1,749.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,741.00'	**48.0" Round Culvert** L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,741.00' / 1,740.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 12.57 sf
#2	Primary	1,745.50'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=67.76 cfs @ 12.22 hrs HW=1,745.01' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 67.76 cfs @ 5.39 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 4R: 24" Steel Culvert

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 7.84 cfs @ 12.31 hrs, Volume= 0.826 af
Outflow = 7.84 cfs @ 12.31 hrs, Volume= 0.826 af, Atten= 0%, Lag= 0.0 min
Primary = 7.84 cfs @ 12.31 hrs, Volume= 0.826 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,066.25' @ 12.31 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,065.00'	**24.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 2,065.00' / 2,063.00' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	2,068.00'	**50.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=7.84 cfs @ 12.31 hrs HW=2,066.25' TW=2,060.30' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.84 cfs @ 3.80 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 7R: 30" Steel Culvert

Inflow Area = 77.687 ac, 1.16% Impervious, Inflow Depth = 0.64" for 1-YEAR event
Inflow = 42.48 cfs @ 12.11 hrs, Volume= 4.139 af
Outflow = 42.48 cfs @ 12.11 hrs, Volume= 4.139 af, Atten= 0%, Lag= 0.0 min
Primary = 42.48 cfs @ 12.11 hrs, Volume= 4.139 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,816.63' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,813.00'	**30.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 1,813.00' / 1,812.00' S= 0.0333 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Primary	1,816.50'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=42.43 cfs @ 12.11 hrs HW=1,816.63' TW=1,812.17' (Dynamic Tailwater)
1=Culvert (Inlet Controls 36.43 cfs @ 7.42 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 6.00 cfs @ 0.95 fps)

Summary for Pond 10R: 14" and 16" HDPE Culverts

Inflow Area = 20.120 ac, 2.73% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 11.23 cfs @ 12.19 hrs, Volume= 1.087 af
Outflow = 11.23 cfs @ 12.19 hrs, Volume= 1.087 af, Atten= 0%, Lag= 0.0 min
Primary = 11.02 cfs @ 12.19 hrs, Volume= 1.086 af
Secondary = 0.21 cfs @ 12.19 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,977.01' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,975.00'	**14.0" Round 14" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.07 sf
#2	Primary	1,975.00'	**16.0" Round 16" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.40 sf
#3	Secondary	1,977.00'	**50.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=11.02 cfs @ 12.19 hrs HW=1,977.01' TW=1,973.06' (Dynamic Tailwater)
├─**1=14" Culvert** (Inlet Controls 4.86 cfs @ 4.55 fps)
└─**2=16" Culvert** (Inlet Controls 6.16 cfs @ 4.41 fps)

Secondary OutFlow Max=0.20 cfs @ 12.19 hrs HW=1,977.01' TW=1,973.06' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.20 cfs @ 0.31 fps)

Summary for Pond 13R: 16" CMP Culvert

Inflow Area =	2.097 ac,	8.77% Impervious,	Inflow Depth = 0.74"	for 1-YEAR event
Inflow =	1.92 cfs @	12.07 hrs, Volume=	0.129 af	
Outflow =	1.92 cfs @	12.07 hrs, Volume=	0.129 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.92 cfs @	12.07 hrs, Volume=	0.129 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,968.66' @ 12.07 hrs
Flood Elev= 1,969.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,968.00'	**16.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 1,968.00' / 1,965.00' S= 0.0750 '/' Cc= 0.900 n= 0.025, Flow Area= 1.40 sf

Primary OutFlow Max=1.92 cfs @ 12.07 hrs HW=1,968.66' TW=1,960.03' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.92 cfs @ 2.77 fps)

Summary for Pond 57: 15" Steel Culvert

Inflow Area =	1.326 ac,	4.72% Impervious,	Inflow Depth = 0.65"	for 1-YEAR event
Inflow =	0.98 cfs @	12.09 hrs, Volume=	0.072 af	
Outflow =	0.98 cfs @	12.09 hrs, Volume=	0.072 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.98 cfs @	12.09 hrs, Volume=	0.072 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,004.53' @ 12.09 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,004.00'	**15.0" Round 15" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,004.00' / 2,000.00' S= 0.0667 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.98 cfs @ 12.09 hrs HW=2,004.53' TW=2,000.34' (Dynamic Tailwater)
1=15" Smooth Steel Culvert (old) (Inlet Controls 0.98 cfs @ 1.96 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 58R: 24" HDPE Pipe

Inflow Area = 3.000 ac, 0.00% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 1.92 cfs @ 12.11 hrs, Volume= 0.152 af
Outflow = 1.92 cfs @ 12.11 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min
Primary = 1.92 cfs @ 12.11 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,222.57' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,222.00'	**24.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,222.00' / 2,221.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,225.00'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=1.92 cfs @ 12.11 hrs HW=2,222.57' TW=2,220.01' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.92 cfs @ 2.58 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 59: 32" Plastic Pipe

Inflow Area = 30.315 ac, 1.06% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 14.76 cfs @ 12.22 hrs, Volume= 1.531 af
Outflow = 14.76 cfs @ 12.22 hrs, Volume= 1.531 af, Atten= 0%, Lag= 0.0 min
Primary = 14.76 cfs @ 12.22 hrs, Volume= 1.531 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,328.82' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,327.00'	**32.0" Round 32" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,327.00' / 2,324.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 5.59 sf
#2	Secondary	2,331.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=14.76 cfs @ 12.22 hrs HW=2,328.82' TW=2,326.15' (Dynamic Tailwater)
└─**1=32" Plastic Culvert** (Inlet Controls 14.76 cfs @ 3.63 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,327.00' TW=2,315.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 60: 30" Steel Culvert

Inflow Area = 128.756 ac, 2.17% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 31.12 cfs @ 12.22 hrs, Volume= 6.796 af
Outflow = 31.12 cfs @ 12.22 hrs, Volume= 6.796 af, Atten= 0%, Lag= 0.0 min
Primary = 31.12 cfs @ 12.22 hrs, Volume= 6.796 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,022.48' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,020.00'	**30.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,020.00' / 2,019.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Primary	2,021.00'	**15.0" Round Culvert** L= 20.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,021.00' / 2,020.00' S= 0.0500 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 1.23 sf
#3	Primary	2,024.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=31.12 cfs @ 12.22 hrs HW=2,022.48' TW=2,017.42' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 26.29 cfs @ 5.36 fps)
├─**2=Culvert** (Inlet Controls 4.82 cfs @ 3.93 fps)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 67P: 24" Steel Culvert

Inflow Area = 4.195 ac, 7.34% Impervious, Inflow Depth = 0.69" for 1-YEAR event
Inflow = 3.92 cfs @ 12.05 hrs, Volume= 0.242 af
Outflow = 3.92 cfs @ 12.05 hrs, Volume= 0.242 af, Atten= 0%, Lag= 0.0 min
Primary = 3.92 cfs @ 12.05 hrs, Volume= 0.242 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,003.96' @ 12.05 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,003.00'	**24.0" Round 24" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,003.00' / 2,000.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50

3.00
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=3.92 cfs @ 12.05 hrs HW=2,003.96' TW=2,000.32' (Dynamic Tailwater)
1=24" Smooth Steel Culvert (old) (Inlet Controls 3.92 cfs @ 2.63 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 68: 12" Steel Culvert

Inflow Area = 10.642 ac, 1.77% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 6.92 cfs @ 12.14 hrs, Volume= 0.575 af
Outflow = 6.92 cfs @ 12.14 hrs, Volume= 0.575 af, Atten= 0%, Lag= 0.0 min
Primary = 3.27 cfs @ 12.14 hrs, Volume= 0.480 af
Secondary = 3.65 cfs @ 12.14 hrs, Volume= 0.095 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,001.25' @ 12.14 hrs
Flood Elev= 2,001.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,000.00'	**12.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 2,000.00' / 1,999.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	2,000.50'	**2.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=3.27 cfs @ 12.14 hrs HW=2,001.25' TW=1,998.02' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.27 cfs @ 4.16 fps)

Secondary OutFlow Max=3.64 cfs @ 12.14 hrs HW=2,001.25' TW=1,998.02' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 3.64 cfs @ 2.44 fps)

Summary for Pond 77: 36" Steel Culvert

Inflow Area = 88.881 ac, 1.70% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 18.21 cfs @ 12.84 hrs, Volume= 4.649 af
Outflow = 18.21 cfs @ 12.84 hrs, Volume= 4.649 af, Atten= 0%, Lag= 0.0 min
Primary = 18.21 cfs @ 12.84 hrs, Volume= 4.649 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,173.69' @ 12.84 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,172.00'	**36.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 2,172.00' / 2,171.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	2,176.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=18.21 cfs @ 12.84 hrs HW=2,173.69' TW=2,171.11' (Dynamic Tailwater)
└1=**Culvert** (Inlet Controls 18.21 cfs @ 4.43 fps)
└2=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 79: 16" Steel Culvert

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 18.38 cfs @ 12.86 hrs, Volume= 4.750 af
Outflow = 18.38 cfs @ 12.86 hrs, Volume= 4.750 af, Atten= 0%, Lag= 0.0 min
Primary = 18.38 cfs @ 12.86 hrs, Volume= 4.750 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,058.12' @ 12.86 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,056.00'	**16.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,056.00' / 2,055.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 1.40 sf
#2	Primary	2,058.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=18.38 cfs @ 12.86 hrs HW=2,058.12' TW=2,055.50' (Dynamic Tailwater)
└1=**Culvert** (Inlet Controls 8.10 cfs @ 5.80 fps)
└2=**Broad-Crested Rectangular Weir** (Weir Controls 10.28 cfs @ 0.86 fps)

Summary for Pond 83: 24" HPDE Culvert

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 0.92 cfs @ 12.08 hrs, Volume= 0.066 af
Outflow = 0.92 cfs @ 12.08 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min
Primary = 0.92 cfs @ 12.08 hrs, Volume= 0.066 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,360.44' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,360.00'	**24.0" Round 24" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,360.00' / 2,357.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,364.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.92 cfs @ 12.08 hrs HW=2,360.44' TW=2,347.00' (Dynamic Tailwater)
└─**1=24" Plastic Culvert** (Inlet Controls 0.92 cfs @ 1.79 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,360.00' TW=2,327.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 84: 24" HDPE Pipe

Inflow Area =	31.013 ac,	2.16% Impervious, Inflow Depth = 0.65"	for 1-YEAR event
Inflow =	13.91 cfs @	12.31 hrs, Volume=	1.675 af
Outflow =	13.91 cfs @	12.31 hrs, Volume=	1.675 af, Atten= 0%, Lag= 0.0 min
Primary =	13.91 cfs @	12.31 hrs, Volume=	1.675 af
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,316.66' @ 12.31 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,315.00'	**36.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,315.00' / 2,312.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#2	Secondary	2,320.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=13.91 cfs @ 12.31 hrs HW=2,316.66' TW=2,312.17' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 13.91 cfs @ 3.46 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,315.00' TW=2,295.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 85: 28" HDPE Pipe

Inflow Area =	4.281 ac,	0.54% Impervious, Inflow Depth = 0.61"	for 1-YEAR event
Inflow =	2.49 cfs @	12.15 hrs, Volume=	0.216 af
Outflow =	2.49 cfs @	12.15 hrs, Volume=	0.216 af, Atten= 0%, Lag= 0.0 min
Primary =	2.49 cfs @	12.15 hrs, Volume=	0.216 af
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,295.69' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,295.00'	**30.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,295.00' / 2,292.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 4.91 sf
#2	Secondary	2,300.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50

3.00 3.50
Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07
3.20 3.32

Primary OutFlow Max=2.49 cfs @ 12.15 hrs HW=2,295.69' TW=2,292.02' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.49 cfs @ 2.24 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,295.00' TW=2,240.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 86: 24" HDPE Pipe

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 3.21 cfs @ 12.07 hrs, Volume= 0.219 af
Outflow = 3.21 cfs @ 12.07 hrs, Volume= 0.219 af, Atten= 0%, Lag= 0.0 min
Primary = 3.21 cfs @ 12.07 hrs, Volume= 0.219 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,240.86' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**24.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,240.00' / 2,237.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,245.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=3.20 cfs @ 12.07 hrs HW=2,240.86' TW=2,237.06' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.20 cfs @ 2.49 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,240.00' TW=2,222.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 87: 18" Steel Culvert

Inflow Area = 2.000 ac, 0.00% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 1.33 cfs @ 12.10 hrs, Volume= 0.101 af
Outflow = 1.33 cfs @ 12.10 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min
Primary = 1.33 cfs @ 12.10 hrs, Volume= 0.101 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,208.59' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,208.00'	**18.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,208.00' / 2,207.00' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.33 cfs @ 12.10 hrs HW=2,208.59' TW=2,207.18' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.33 cfs @ 2.06 fps)

Summary for Pond 90: 12" Steel Culvert

Inflow Area = 12.874 ac, 0.00% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 4.82 cfs @ 12.39 hrs, Volume= 0.650 af
Outflow = 4.82 cfs @ 12.39 hrs, Volume= 0.650 af, Atten= 0%, Lag= 0.0 min
Primary = 4.82 cfs @ 12.39 hrs, Volume= 0.650 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,892.13' @ 12.39 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,890.00'	**12.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 1,890.00' / 1,889.50' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	1,895.00'	**50.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.82 cfs @ 12.39 hrs HW=1,892.12' TW=1,889.55' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 4.82 cfs @ 6.14 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 200: 36" Steel Culvert

Inflow Area = 76.410 ac, 0.43% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 38.90 cfs @ 12.20 hrs, Volume= 3.859 af
Outflow = 38.90 cfs @ 12.20 hrs, Volume= 3.859 af, Atten= 0%, Lag= 0.0 min
Primary = 38.90 cfs @ 12.20 hrs, Volume= 3.859 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,236.79' @ 12.20 hrs
Flood Elev= 2,248.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert** L= 50.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,234.00' / 2,230.00' S= 0.0800 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=38.88 cfs @ 12.20 hrs HW=2,236.78' TW=2,168.83' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 38.88 cfs @ 5.68 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 201: 36" Steel Culvert

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 7.13 cfs @ 12.18 hrs, Volume= 0.660 af
Outflow = 7.13 cfs @ 12.18 hrs, Volume= 0.660 af, Atten= 0%, Lag= 0.0 min
Primary = 7.13 cfs @ 12.18 hrs, Volume= 0.660 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,235.01' @ 12.18 hrs
Flood Elev= 2,239.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert** L= 30.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,234.00' / 2,233.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=7.13 cfs @ 12.18 hrs HW=2,235.01' TW=2,232.05' (Dynamic Tailwater)
1=Culvert (Barrel Controls 7.13 cfs @ 5.08 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 300R: 18" Steel Culvert

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 9.01 cfs @ 12.16 hrs, Volume= 0.826 af
Outflow = 9.01 cfs @ 12.16 hrs, Volume= 0.826 af, Atten= 0%, Lag= 0.0 min
Primary = 9.01 cfs @ 12.16 hrs, Volume= 0.826 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,256.55' @ 12.16 hrs
Flood Elev= 2,261.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,254.00'	**18.0" Round 18" Steel Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,254.00' / 2,253.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Primary	2,259.00'	**100.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.00 cfs @ 12.16 hrs HW=2,256.54' TW=2,252.14' (Dynamic Tailwater)
1=18" Steel Culvert (Inlet Controls 9.00 cfs @ 5.09 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond c1:

Inflow = 2.34 cfs @ 12.24 hrs, Volume= 0.104 af
Primary = 2.34 cfs @ 12.24 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C2:

Inflow Area = 39.108 ac, 0.76% Impervious, Inflow Depth = 0.62" for 1-YEAR event
Inflow = 17.91 cfs @ 12.24 hrs, Volume= 2.008 af
Primary = 17.91 cfs @ 12.24 hrs, Volume= 2.008 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C3:

Inflow Area = 2.196 ac, 4.19% Impervious, Inflow Depth = 0.69" for 1-YEAR event
Inflow = 1.69 cfs @ 12.11 hrs, Volume= 0.127 af
Primary = 1.69 cfs @ 12.11 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C4:

Inflow Area = 10.003 ac, 2.13% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 6.62 cfs @ 12.13 hrs, Volume= 0.540 af
Primary = 6.62 cfs @ 12.13 hrs, Volume= 0.540 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5:

Inflow Area = 14.626 ac, 1.24% Impervious, Inflow Depth = 0.60" for 1-YEAR event
Inflow = 10.12 cfs @ 12.07 hrs, Volume= 0.737 af
Primary = 10.12 cfs @ 12.07 hrs, Volume= 0.737 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5A:

Inflow Area = 12.084 ac, 0.47% Impervious, Inflow Depth = 0.59" for 1-YEAR event
Inflow = 5.59 cfs @ 12.12 hrs, Volume= 0.589 af
Primary = 5.59 cfs @ 12.12 hrs, Volume= 0.589 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6:

Inflow Area = 58.487 ac, 0.32% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 30.75 cfs @ 12.19 hrs, Volume= 2.976 af
Primary = 30.75 cfs @ 12.19 hrs, Volume= 2.976 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6A:

Inflow Area = 41.924 ac, 1.24% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 19.97 cfs @ 12.27 hrs, Volume= 2.264 af
Primary = 19.97 cfs @ 12.27 hrs, Volume= 2.264 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 10: Design Point 10

Inflow Area = 162.408 ac, 2.03% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 43.83 cfs @ 12.26 hrs, Volume= 8.495 af
Primary = 43.83 cfs @ 12.26 hrs, Volume= 8.495 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 11: Design Point 11

Inflow Area = 66.273 ac, 1.46% Impervious, Inflow Depth = 0.64" for 1-YEAR event
Inflow = 26.04 cfs @ 12.38 hrs, Volume= 3.534 af
Primary = 26.04 cfs @ 12.38 hrs, Volume= 3.534 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 12: Design Point 12

Inflow Area = 7.264 ac, 15.61% Impervious, Inflow Depth = 0.83" for 1-YEAR event
Inflow = 8.51 cfs @ 12.04 hrs, Volume= 0.504 af
Primary = 8.51 cfs @ 12.04 hrs, Volume= 0.504 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 16: DESIGN POINT 16

Inflow Area = 18.787 ac, 4.30% Impervious, Inflow Depth = 0.66" for 1-YEAR event
Inflow = 11.47 cfs @ 12.14 hrs, Volume= 1.030 af
Primary = 11.47 cfs @ 12.14 hrs, Volume= 1.030 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 7: Design Point 7

Inflow Area = 149.008 ac, 0.89% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 67.92 cfs @ 12.22 hrs, Volume= 7.580 af
Primary = 67.92 cfs @ 12.22 hrs, Volume= 7.580 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 8: Design Point 8

Inflow Area = 95.972 ac, 1.42% Impervious, Inflow Depth = 0.64" for 1-YEAR event
Inflow = 54.72 cfs @ 12.13 hrs, Volume= 5.126 af
Primary = 54.72 cfs @ 12.13 hrs, Volume= 5.126 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 9: Design Point 9

Inflow Area = 56.369 ac, 3.06% Impervious, Inflow Depth = 0.67" for 1-YEAR event
Inflow = 25.00 cfs @ 12.24 hrs, Volume= 3.146 af
Primary = 25.00 cfs @ 12.24 hrs, Volume= 3.146 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP2: ditch

Inflow Area = 39.108 ac, 0.76% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 20.27 cfs @ 12.23 hrs, Volume= 2.112 af
Outflow = 20.25 cfs @ 12.24 hrs, Volume= 2.112 af, Atten= 0%, Lag= 0.5 min
Primary = 17.91 cfs @ 12.24 hrs, Volume= 2.008 af
Secondary = 2.34 cfs @ 12.24 hrs, Volume= 0.104 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,434.35' @ 12.24 hrs Surf.Area= 2,787 sf Storage= 3,351 cf

Plug-Flow detention time= 3.7 min calculated for 2.112 af (100% of inflow)
Center-of-Mass det. time= 3.7 min (902.0 - 898.3)

Volume	Invert	Avail.Storage	Storage Description
#1	2,432.00'	5,508 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,432.00	258	0	0
2,434.00	2,218	2,476	2,476
2,435.00	3,846	3,032	5,508

Device	Routing	Invert	Outlet Devices
#1	Primary	2,432.00'	**18.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,432.00' / 2,431.50' S= 0.0125 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,433.36'	**12.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,433.36' / 2,431.00' S= 0.0590 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Primary	2,434.25'	**100.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=17.91 cfs @ 12.24 hrs HW=2,434.35' TW=0.00' (Dynamic Tailwater)
↑1=**Culvert** (Inlet Controls 9.50 cfs @ 5.37 fps)
└3=**Broad-Crested Rectangular Weir** (Weir Controls 8.41 cfs @ 0.85 fps)

Secondary OutFlow Max=2.34 cfs @ 12.24 hrs HW=2,434.35' TW=0.00' (Dynamic Tailwater)
↑2=**Culvert** (Inlet Controls 2.34 cfs @ 2.99 fps)

Summary for Pond DP3: 12" Steel

Inflow Area =	2.196 ac,	4.19% Impervious,	Inflow Depth = 0.69"	for 1-YEAR event
Inflow =	1.69 cfs @	12.11 hrs, Volume=	0.127 af	
Outflow =	1.69 cfs @	12.11 hrs, Volume=	0.127 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.69 cfs @	12.11 hrs, Volume=	0.127 af	
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,443.76' @ 12.11 hrs
Flood Elev= 2,446.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,443.00'	**12.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,443.00' / 2,442.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,445.00'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Secondary	2,445.25'	**50.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=1.69 cfs @ 12.11 hrs HW=2,443.76' TW=0.00' (Dynamic Tailwater)
↑1=**Culvert** (Inlet Controls 1.69 cfs @ 2.63 fps)
└2=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,443.00' TW=2,443.00' (Dynamic Tailwater)
↑3=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond DP4: 18" HDPE Culvert

Inflow Area =	10.003 ac,	2.13% Impervious,	Inflow Depth = 0.65"	for 1-YEAR event
Inflow =	6.62 cfs @	12.13 hrs, Volume=	0.540 af	
Outflow =	6.62 cfs @	12.13 hrs, Volume=	0.540 af,	Atten= 0%, Lag= 0.0 min
Primary =	6.62 cfs @	12.13 hrs, Volume=	0.540 af	
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,370.53' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,369.00'	**18.0" Round Culvert** L= 25.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,369.00' / 2,368.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,371.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=6.62 cfs @ 12.13 hrs HW=2,370.53' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 6.62 cfs @ 3.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,369.00' TW=2,368.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond DP5: 18" HDPE Culvert

Inflow Area =	14.626 ac,	1.24% Impervious,	Inflow Depth = 0.61"	for 1-YEAR event
Inflow =	10.59 cfs @	12.07 hrs, Volume=	0.739 af	
Outflow =	10.59 cfs @	12.07 hrs, Volume=	0.739 af,	Atten= 0%, Lag= 0.0 min
Primary =	10.12 cfs @	12.07 hrs, Volume=	0.737 af	
Secondary =	0.47 cfs @	12.07 hrs, Volume=	0.002 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,302.07' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,299.50'	**18.0" Round Culvert** L= 25.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,299.50' / 2,298.50' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,302.00'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=10.12 cfs @ 12.07 hrs HW=2,302.07' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 10.12 cfs @ 5.73 fps)

Secondary OutFlow Max=0.46 cfs @ 12.07 hrs HW=2,302.07' TW=2,300.04' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.46 cfs @ 0.69 fps)

Summary for Pond DP5A: 12" steel Culvert

Inflow Area = 12.084 ac, 0.47% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 7.70 cfs @ 12.12 hrs, Volume= 0.612 af
Outflow = 7.70 cfs @ 12.12 hrs, Volume= 0.612 af, Atten= 0%, Lag= 0.0 min
Primary = 5.59 cfs @ 12.12 hrs, Volume= 0.589 af
Secondary = 2.12 cfs @ 12.12 hrs, Volume= 0.023 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,274.68' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,272.00'	**12.0" Round Culvert** L= 25.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,272.00' / 2,270.00' S= 0.0800 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf
#2	Secondary	2,274.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=5.59 cfs @ 12.12 hrs HW=2,274.68' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.59 cfs @ 7.11 fps)

Secondary OutFlow Max=2.11 cfs @ 12.12 hrs HW=2,274.68' TW=2,272.19' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 2.11 cfs @ 1.15 fps)

Summary for Pond DP6: 55" CMP Culvert

Inflow Area = 58.487 ac, 0.32% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 30.75 cfs @ 12.19 hrs, Volume= 2.976 af
Outflow = 30.75 cfs @ 12.19 hrs, Volume= 2.976 af, Atten= 0%, Lag= 0.0 min
Primary = 30.75 cfs @ 12.19 hrs, Volume= 2.976 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,239.99' @ 12.19 hrs
Flood Elev= 2,245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,238.00'	**55.0" W x 38.0" H, R=33.0" Elliptical Culvert** L= 25.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,238.00' / 2,237.00' S= 0.0400 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 11.11 sf

#2	Primary	2,243.00'	**100.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=30.75 cfs @ 12.19 hrs HW=2,239.99' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 30.75 cfs @ 4.17 fps)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond DP6A: 30" Steel Culvert

Inflow Area = 41.924 ac, 1.24% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 19.97 cfs @ 12.27 hrs, Volume= 2.264 af
Outflow = 19.97 cfs @ 12.27 hrs, Volume= 2.264 af, Atten= 0%, Lag= 0.0 min
Primary = 19.97 cfs @ 12.27 hrs, Volume= 2.264 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,242.17' @ 12.27 hrs
Flood Elev= 2,245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**30.0" Round Culvert** L= 65.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,240.00' / 2,238.00' S= 0.0308 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 4.91 sf
#2	Primary	2,244.00'	**50.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=19.96 cfs @ 12.27 hrs HW=2,242.16' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 19.96 cfs @ 4.42 fps)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1 Runoff Area=2,611,846 sf 0.88% Impervious Runoff Depth=2.81"
Flow Length=2,860' Tc=17.6 min CN=70 Runoff=200.19 cfs 14.017 af

Subcatchment 2S: Subcatchment 2 Runoff Area=18,469 sf 23.82% Impervious Runoff Depth=3.48"
Flow Length=375' Tc=7.5 min CN=77 Runoff=2.47 cfs 0.123 af

Subcatchment 3S: Subcatchment 3 Runoff Area=2,671,441 sf 1.35% Impervious Runoff Depth=2.90"
Flow Length=2,885' Tc=17.0 min CN=71 Runoff=215.66 cfs 14.815 af

Subcatchment 4S: Subcatchment 4 Runoff Area=796,495 sf 2.51% Impervious Runoff Depth=2.90"
Flow Length=2,020' Tc=15.5 min CN=71 Runoff=67.52 cfs 4.417 af

Subcatchment 5S: Subcatchment 5 Runoff Area=91,345 sf 8.77% Impervious Runoff Depth=3.09"
Flow Length=715' Tc=13.9 min CN=73 Runoff=8.72 cfs 0.540 af

Subcatchment 6S: Subcatchment 6 Runoff Area=1,024,096 sf 3.41% Impervious Runoff Depth=2.99"
Flow Length=2,176' Tc=20.1 min CN=72 Runoff=78.03 cfs 5.864 af

Subcatchment 7S: Subcatchment 7 Runoff Area=876,427 sf 2.73% Impervious Runoff Depth=2.90"
Flow Length=1,860' Tc=23.6 min CN=71 Runoff=58.48 cfs 4.860 af

Subcatchment 8S: Subcatchment 8 Runoff Area=463,566 sf 1.77% Impervious Runoff Depth=2.90"
Flow Length=1,835' Tc=18.8 min CN=71 Runoff=35.42 cfs 2.571 af

Subcatchment 9S: Subcatchment 9 Runoff Area=1,465,881 sf 1.47% Impervious Runoff Depth=2.81"
Flow Length=2,033' Tc=21.6 min CN=70 Runoff=99.71 cfs 7.867 af

Subcatchment 10S: Subcatchment 10 Runoff Area=1,649,824 sf 3.39% Impervious Runoff Depth=2.90"
Flow Length=2,845' Tc=25.8 min CN=71 Runoff=104.27 cfs 9.149 af

Subcatchment 11A: Subcatchment 11A Runoff Area=57,739 sf 4.72% Impervious Runoff Depth=2.90"
Flow Length=480' Tc=15.3 min CN=71 Runoff=4.92 cfs 0.320 af

Subcatchment 11B: Subcatchment 11B Runoff Area=577,903 sf 3.29% Impervious Runoff Depth=2.90"
Flow Length=1,270' Tc=22.3 min CN=71 Runoff=40.00 cfs 3.205 af

Subcatchment 11S: Subcatchment 11 Runoff Area=182,734 sf 7.34% Impervious Runoff Depth=2.99"
Flow Length=984' Tc=11.5 min CN=72 Runoff=18.34 cfs 1.046 af

Subcatchment 12S: Subcatchment 12 Runoff Area=2,326,061 sf 1.82% Impervious Runoff Depth=2.90"
Flow Length=2,390' Tc=34.4 min CN=71 Runoff=121.29 cfs 12.899 af

Subcatchment 14S: Subcatchment 14 Runoff Area=1,703,544 sf 0.76% Impervious Runoff Depth=2.90"
Flow Length=2,585' Tc=26.2 min CN=71 Runoff=106.84 cfs 9.447 af

Subcatchment 15S: Subcatchment 15 Runoff Area=95,640 sf 4.19% Impervious Runoff Depth=2.99"
Flow Length=945' Tc=16.4 min CN=72 Runoff=8.14 cfs 0.548 af

Subcatchment 16S: Subcatchment 16 Runoff Area=435,730 sf 2.13% Impervious Runoff Depth=2.90"
Flow Length=1,844' Tc=18.2 min CN=71 Runoff=33.96 cfs 2.416 af

Subcatchment 17S: Subcatchment 17 Runoff Area=637,108 sf 1.24% Impervious Runoff Depth=2.81"
Flow Length=1,167' Tc=13.5 min CN=70 Runoff=55.82 cfs 3.419 af

Subcatchment 18S: Subcatchment 18 Runoff Area=526,390 sf 0.47% Impervious Runoff Depth=2.81"
Flow Length=2,315' Tc=17.4 min CN=70 Runoff=40.56 cfs 2.825 af

Subcatchment 19S: Subcatchment 19 Runoff Area=2,547,694 sf 0.32% Impervious Runoff Depth=2.81"
Flow Length=2,625' Tc=24.0 min CN=70 Runoff=162.64 cfs 13.672 af

Subcatchment 20S: Subcatchment 20 Runoff Area=1,826,209 sf 1.24% Impervious Runoff Depth=2.90"
Flow Length=3,465' Tc=29.6 min CN=71 Runoff=105.37 cfs 10.127 af

Subcatchment 21S: Subcatchment 21 (Leach Runoff Area=202,100 sf 4.97% Impervious Runoff Depth=2.99"
Flow Length=890' Tc=14.9 min CN=72 Runoff=18.08 cfs 1.157 af

Subcatchment 27S: Subcatchment 27 Runoff Area=316,441 sf 15.61% Impervious Runoff Depth=3.28"
Flow Length=669' Tc=11.4 min CN=75 Runoff=34.88 cfs 1.987 af

Subcatchment 28S: Subcatchment 28 Runoff Area=560,792 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=1,455' Tc=36.1 min CN=70 Runoff=27.33 cfs 3.010 af

Subcatchment 35S: Subcatchment 35 Runoff Area=532,041 sf 2.97% Impervious Runoff Depth=2.90"
Flow Length=3,110' Tc=22.0 min CN=71 Runoff=37.18 cfs 2.950 af

Subcatchment 200S: Subcatchment 200 Runoff Area=3,328,419 sf 0.43% Impervious Runoff Depth=2.81"
Flow Length=3,545' Tc=23.5 min CN=70 Runoff=214.98 cfs 17.862 af

Subcatchment 300S: Subcatchment 300 Runoff Area=712,598 sf 0.46% Impervious Runoff Depth=2.81"
Flow Length=2,040' Tc=21.0 min CN=70 Runoff=49.32 cfs 3.824 af

Subcatchment 500S: Subcatchment 500 Runoff Area=1,350,926 sf 2.16% Impervious Runoff Depth=2.90"
Flow Length=3,875' Tc=32.0 min CN=71 Runoff=74.17 cfs 7.492 af

Subcatchment 501S: Subcatchment 501 Runoff Area=186,481 sf 0.54% Impervious Runoff Depth=2.81"
Flow Length=2,030' Tc=19.3 min CN=70 Runoff=13.58 cfs 1.001 af

Subcatchment 502S: Subcatchment 502 Runoff Area=189,050 sf 0.76% Impervious Runoff Depth=2.81"
Flow Length=1,300' Tc=13.0 min CN=70 Runoff=16.86 cfs 1.015 af

Subcatchment 503S: Subcatchmant 503 Runoff Area=130,680 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=1,010' Tc=16.6 min CN=70 Runoff=10.33 cfs 0.701 af

Subcatchment 504S: Subcatchment 504 Runoff Area=1,320,521 sf 1.06% Impervious Runoff Depth=2.81"
Flow Length=3,280' Tc=25.0 min CN=70 Runoff=82.26 cfs 7.087 af

Subcatchment 511S: Subcatchmant 511 Runoff Area=87,120 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=680' Tc=15.6 min CN=70 Runoff=7.13 cfs 0.468 af

Subcatchment 512S: Subcatchment 512 Runoff Area=56,628 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=600' Tc=14.0 min CN=70 Runoff=4.88 cfs 0.304 af

Subcatchment 600S: Subcatchment 600 Runoff Area=369,868 sf 2.61% Impervious Runoff Depth=2.90"
Flow Length=1,610' Tc=19.3 min CN=71 Runoff=27.88 cfs 2.051 af

Subcatchment 601S: Subcatchment 601 Runoff Area=267,502 sf 3.92% Impervious Runoff Depth=2.90"
Flow Length=1,070' Tc=15.0 min CN=71 Runoff=23.06 cfs 1.483 af

Reach 1R: Wetland Flow Avg. Flow Depth=0.00' Max Vel=0.00 fps
n=0.070 L=408.0' S=0.0931 '/' Capacity=802.14 cfs Outflow=0.00 cfs 0.000 af

Reach 5: Stream Channel Avg. Flow Depth=0.86' Max Vel=9.62 fps Inflow=47.57 cfs 3.824 af
n=0.050 L=870.0' S=0.1954 '/' Capacity=1,064.40 cfs Outflow=47.23 cfs 3.824 af

Reach 5a: Stream Channel Avg. Flow Depth=1.01' Max Vel=10.33 fps Inflow=47.23 cfs 3.824 af
n=0.050 L=355.0' S=0.2141 '/' Capacity=318.14 cfs Outflow=47.19 cfs 3.824 af

Reach 5R: (new Reach) Avg. Flow Depth=0.36' Max Vel=2.82 fps Inflow=1.45 cfs 0.014 af
n=0.030 L=415.0' S=0.0217 '/' Capacity=30.57 cfs Outflow=1.28 cfs 0.014 af

Reach 6R: (new Reach) Avg. Flow Depth=1.66' Max Vel=12.21 fps Inflow=61.07 cfs 1.396 af
n=0.030 L=370.0' S=0.0757 '/' Capacity=128.38 cfs Outflow=60.94 cfs 1.396 af

Reach 8: Stream Channel Avg. Flow Depth=0.49' Max Vel=9.84 fps Inflow=244.25 cfs 18.639 af
n=0.050 L=245.0' S=0.2898 '/' Capacity=797.02 cfs Outflow=243.94 cfs 18.639 af

Reach 8R: through ditch Avg. Flow Depth=1.69' Max Vel=12.15 fps Inflow=93.64 cfs 2.338 af
n=0.030 L=495.0' S=0.0646 '/' Capacity=171.61 cfs Outflow=93.34 cfs 2.338 af

Reach 11R: Overland Flow Avg. Flow Depth=0.24' Max Vel=2.86 fps Inflow=58.48 cfs 4.860 af
n=0.080 L=1,180.0' S=0.1695 '/' Capacity=620.77 cfs Outflow=53.53 cfs 4.860 af

Reach 12R: Overland Flow Avg. Flow Depth=0.12' Max Vel=1.91 fps Inflow=8.72 cfs 0.540 af
n=0.080 L=950.0' S=0.1968 '/' Capacity=305.91 cfs Outflow=7.16 cfs 0.540 af

Reach 13: RR Swale Avg. Flow Depth=2.02' Max Vel=9.99 fps Inflow=243.94 cfs 18.639 af
n=0.035 L=450.0' S=0.0444 '/' Capacity=604.81 cfs Outflow=243.32 cfs 18.639 af

Reach 21R: (new Reach) Avg. Flow Depth=1.27' Max Vel=10.41 fps Inflow=21.89 cfs 0.489 af
n=0.030 L=685.0' S=0.1000 '/' Capacity=79.28 cfs Outflow=21.67 cfs 0.489 af

Reach 58: Swale along RR Tracks Avg. Flow Depth=1.24' Max Vel=5.06 fps Inflow=32.46 cfs 2.571 af
n=0.040 L=1,020.0' S=0.0265 '/' Capacity=139.83 cfs Outflow=31.22 cfs 2.571 af

Reach 58A: Overland Flow Avg. Flow Depth=0.05' Max Vel=1.86 fps Inflow=10.33 cfs 0.701 af
n=0.035 L=478.0' S=0.1004 '/' Capacity=1,456.48 cfs Outflow=9.76 cfs 0.701 af

Reach 61: Vegetated Roadside Swale Avg. Flow Depth=0.87' Max Vel=6.67 fps Inflow=23.00 cfs 1.367 af
n=0.040 L=751.0' S=0.0613 '/' Capacity=59.21 cfs Outflow=22.52 cfs 1.367 af

Reach 66: Stream Channel Avg. Flow Depth=1.32' Max Vel=9.86 fps Inflow=201.20 cfs 30.750 af
n=0.050 L=1,884.0' S=0.1152 '/' Capacity=445.48 cfs Outflow=199.10 cfs 30.750 af

Reach 78: Stream Channel Avg. Flow Depth=1.08' Max Vel=10.30 fps Inflow=137.67 cfs 21.601 af
n=0.050 L=685.0' S=0.1646 '/' Capacity=258.41 cfs Outflow=137.56 cfs 21.601 af

Reach 80: Stream Channel Avg. Flow Depth=1.49' Max Vel=6.58 fps Inflow=137.56 cfs 21.601 af
n=0.050 L=740.0' S=0.0473 '/' Capacity=247.19 cfs Outflow=137.24 cfs 21.601 af

Reach 82: Overland Flow Avg. Flow Depth=0.05' Max Vel=0.19 fps Inflow=4.88 cfs 0.304 af
n=0.400 L=938.0' S=0.1354 '/' Capacity=53.31 cfs Outflow=1.08 cfs 0.304 af

Reach 82a: Overland Flow Avg. Flow Depth=0.76' Max Vel=0.71 fps Inflow=102.73 cfs 13.990 af
n=0.400 L=473.0' S=0.0846 '/' Capacity=164.89 cfs Outflow=93.75 cfs 13.990 af

Reach 83A: Overland Flow Avg. Flow Depth=0.42' Max Vel=0.72 fps Inflow=46.44 cfs 6.251 af
n=0.400 L=441.0' S=0.1678 '/' Capacity=232.26 cfs Outflow=42.99 cfs 6.251 af

Reach 84A: Overland Flow Avg. Flow Depth=0.73' Max Vel=0.81 fps Inflow=104.26 cfs 13.686 af
n=0.400 L=277.0' S=0.1155 '/' Capacity=192.72 cfs Outflow=101.65 cfs 13.686 af

Reach 84B: Overland Flow Avg. Flow Depth=0.51' Max Vel=0.79 fps Inflow=64.71 cfs 7.435 af
n=0.400 L=370.0' S=0.1622 '/' Capacity=228.33 cfs Outflow=61.29 cfs 7.435 af

Reach 85A: Overland Flow Avg. Flow Depth=0.36' Max Vel=0.63 fps Inflow=40.94 cfs 1.763 af
n=0.400 L=505.0' S=0.1525 '/' Capacity=221.40 cfs Outflow=30.88 cfs 1.763 af

Reach 85B: Overland Flow Avg. Flow Depth=0.44' Max Vel=0.50 fps Inflow=43.94 cfs 2.907 af
n=0.400 L=453.0' S=0.0773 '/' Capacity=157.60 cfs Outflow=32.13 cfs 2.907 af

Reach 86A: Overland Flow Avg. Flow Depth=0.29' Max Vel=0.47 fps Inflow=19.91 cfs 1.144 af
n=0.400 L=195.0' S=0.1128 '/' Capacity=190.45 cfs Outflow=17.51 cfs 1.144 af

Reach 88: Roadside Swale Avg. Flow Depth=0.52' Max Vel=6.04 fps Inflow=7.13 cfs 0.468 af
n=0.035 L=472.0' S=0.0763 '/' Capacity=66.89 cfs Outflow=7.06 cfs 0.468 af

Reach 89: Overland Flow through Woods Avg. Flow Depth=0.07' Max Vel=3.01 fps Inflow=35.42 cfs 2.571 af
n=0.035 L=1,051.0' S=0.1884 '/' Capacity=1,000.42 cfs Outflow=32.46 cfs 2.571 af

Reach 91: Overland Flow Avg. Flow Depth=0.41' Max Vel=2.76 fps Inflow=27.33 cfs 3.010 af
n=0.035 L=198.0' S=0.0172 '/' Capacity=137.55 cfs Outflow=27.26 cfs 3.010 af

Reach 92: Channel Along RR Tracks Avg. Flow Depth=1.11' Max Vel=5.58 fps Inflow=27.26 cfs 3.010 af
n=0.035 L=1,907.0' S=0.0293 '/' Capacity=234.34 cfs Outflow=26.10 cfs 3.010 af

Reach 197: Stream Channel Avg. Flow Depth=1.03' Max Vel=10.68 fps Inflow=249.42 cfs 20.813 af
n=0.050 L=1,500.0' S=0.1807 '/' Capacity=9,816.53 cfs Outflow=245.82 cfs 20.813 af

Reach 198: Stream Channel Avg. Flow Depth=1.91' Max Vel=11.20 fps Inflow=251.95 cfs 20.813 af
n=0.050 L=1,262.0' S=0.1212 '/' Capacity=3,729.07 cfs Outflow=249.42 cfs 20.813 af

Reach 199: Overland Flow Avg. Flow Depth=0.13' Max Vel=4.34 fps Inflow=37.18 cfs 2.950 af
n=0.040 L=250.0' S=0.2560 '/' Capacity=451.81 cfs Outflow=37.03 cfs 2.950 af

Reach 295: Roadside Channel Avg. Flow Depth=1.48' Max Vel=7.24 fps Inflow=47.69 cfs 3.824 af
n=0.040 L=379.0' S=0.0501 '/' Capacity=159.47 cfs Outflow=47.57 cfs 3.824 af

Reach 296: Wetland Flow Avg. Flow Depth=1.33' Max Vel=6.01 fps Inflow=47.82 cfs 3.824 af
n=0.040 L=320.0' S=0.0375 '/' Capacity=122.08 cfs Outflow=47.69 cfs 3.824 af

Reach 297: Overland Flow Avg. Flow Depth=0.22' Max Vel=5.23 fps Inflow=48.02 cfs 3.824 af
n=0.040 L=366.0' S=0.2022 '/' Capacity=225.40 cfs Outflow=47.82 cfs 3.824 af

Reach 298: Wetland Flow Avg. Flow Depth=0.21' Max Vel=2.12 fps Inflow=49.31 cfs 3.824 af
n=0.070 L=408.0' S=0.0931 '/' Capacity=802.14 cfs Outflow=48.02 cfs 3.824 af

Reach 299: Overland Flow Avg. Flow Depth=0.32' Max Vel=5.81 fps Inflow=49.32 cfs 3.824 af
n=0.050 L=135.0' S=0.3259 '/' Capacity=130.57 cfs Outflow=49.31 cfs 3.824 af

Pond 1aP: Design Point 1a Inflow=18.08 cfs 1.157 af
Primary=18.08 cfs 1.157 af

Pond 2R: 48" CMP Culvert Peak Elev=1,746.62' Inflow=410.22 cfs 34.829 af
Outflow=410.22 cfs 34.829 af

Pond 4R: 24" Steel Culvert Peak Elev=2,068.33' Inflow=47.57 cfs 3.824 af
Outflow=47.57 cfs 3.824 af

Pond 7R: 30" Steel Culvert Peak Elev=1,817.82' Inflow=244.25 cfs 18.639 af
Outflow=244.25 cfs 18.639 af

Pond 10R: 14" and 16" HDPE Culverts Peak Elev=1,977.49' Inflow=58.48 cfs 4.860 af
Primary=12.76 cfs 3.359 af Secondary=45.72 cfs 1.501 af Outflow=58.48 cfs 4.860 af

Pond 13R: 16" CMP Culvert Peak Elev=1,970.35' Inflow=8.72 cfs 0.540 af
16.0" Round Culvert n=0.025 L=40.0' S=0.0750 '/' Outflow=8.72 cfs 0.540 af

Pond 57: 15" Steel Culvert Peak Elev=2,005.74' Inflow=4.92 cfs 0.320 af
Outflow=4.92 cfs 0.320 af

Pond 58R: 24" HDPE Pipe Peak Elev=2,223.48' Inflow=10.33 cfs 0.701 af
Outflow=10.33 cfs 0.701 af

Pond 59: 32" Plastic Pipe Peak Elev=2,333.12' Inflow=82.26 cfs 7.087 af
Primary=46.44 cfs 6.251 af Secondary=35.81 cfs 0.835 af Outflow=82.26 cfs 7.087 af

Pond 60: 30" Steel Culvert Peak Elev=2,024.67' Inflow=201.20 cfs 30.750 af
Outflow=201.20 cfs 30.750 af

Pond 67P: 24" Steel Culvert Peak Elev=2,006.04' Inflow=18.34 cfs 1.046 af
Outflow=18.34 cfs 1.046 af

Pond 68: 12" Steel Culvert Peak Elev=2,003.19' Inflow=35.42 cfs 2.571 af
Primary=6.20 cfs 1.450 af Secondary=29.22 cfs 1.121 af Outflow=35.42 cfs 2.571 af

Pond 77: 36" Steel Culvert Peak Elev=2,176.45' Inflow=136.21 cfs 21.133 af
Outflow=136.21 cfs 21.133 af

Pond 79: 16" Steel Culvert Peak Elev=2,058.61' Inflow=137.56 cfs 21.601 af
Outflow=137.56 cfs 21.601 af

Pond 83: 24" HPDE Culvert Peak Elev=2,361.09' Inflow=4.88 cfs 0.304 af
Primary=4.88 cfs 0.304 af Secondary=0.00 cfs 0.000 af Outflow=4.88 cfs 0.304 af

Pond 84: 24" HDPE Pipe Peak Elev=2,322.30' Inflow=106.32 cfs 8.327 af
Primary=64.71 cfs 7.435 af Secondary=41.61 cfs 0.892 af Outflow=106.32 cfs 8.327 af

Pond 85: 28" HDPE Pipe Peak Elev=2,301.06' Inflow=52.67 cfs 1.893 af
Primary=40.94 cfs 1.763 af Secondary=11.73 cfs 0.129 af Outflow=52.67 cfs 1.893 af

Pond 86: 24" HDPE Pipe Peak Elev=2,243.78' Inflow=19.91 cfs 1.144 af
Primary=19.91 cfs 1.144 af Secondary=0.00 cfs 0.000 af Outflow=19.91 cfs 1.144 af

Pond 87: 18" Steel Culvert Peak Elev=2,209.88' Inflow=7.13 cfs 0.468 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0167 '/' Outflow=7.13 cfs 0.468 af

Pond 90: 12" Steel Culvert Peak Elev=1,895.28' Inflow=27.33 cfs 3.010 af
Outflow=27.33 cfs 3.010 af

Pond 200: 36" Steel Culvert Peak Elev=2,239.09' Inflow=214.98 cfs 17.862 af
Outflow=214.98 cfs 17.862 af

Pond 201: 36" Steel Culvert Peak Elev=2,236.77' Inflow=37.18 cfs 2.950 af
Outflow=37.18 cfs 2.950 af

Pond 300R: 18" Steel Culvert Peak Elev=2,259.26' Inflow=49.32 cfs 3.824 af
Outflow=49.32 cfs 3.824 af

Pond c1: Inflow=3.14 cfs 0.421 af
Primary=3.14 cfs 0.421 af

Pond C2: Inflow=104.05 cfs 9.040 af
Primary=104.05 cfs 9.040 af

Pond C3: Inflow=6.69 cfs 0.533 af
Primary=6.69 cfs 0.533 af

Pond C4: Inflow=12.07 cfs 1.928 af
Primary=12.07 cfs 1.928 af

Pond C5: Inflow=13.58 cfs 2.512 af
Primary=13.58 cfs 2.512 af

Pond C5A: Inflow=7.57 cfs 1.883 af
Primary=7.57 cfs 1.883 af

Pond C6: Inflow=245.27 cfs 16.010 af
Primary=245.27 cfs 16.010 af

Pond C6A: Inflow=105.37 cfs 10.127 af
Primary=105.37 cfs 10.127 af

Pond DP 10: Design Point 10 Inflow=283.93 cfs 38.617 af
Primary=283.93 cfs 38.617 af

Pond DP 11: Design Point 11 Inflow=145.01 cfs 15.909 af
Primary=145.01 cfs 15.909 af

Pond DP 12: Design Point 12 Inflow=34.88 cfs 1.987 af
Primary=34.88 cfs 1.987 af

Pond DP 16: DESIGN POINT 16 Inflow=58.62 cfs 4.571 af
Primary=58.62 cfs 4.571 af

Pond DP 7: Design Point 7 Inflow=410.79 cfs 34.952 af
Primary=410.79 cfs 34.952 af

Pond DP 8: Design Point 8 Inflow=307.23 cfs 23.056 af
Primary=307.23 cfs 23.056 af

Pond DP 9: Design Point 9 Inflow=160.25 cfs 13.835 af
Primary=160.25 cfs 13.835 af

Pond DP2: ditch Peak Elev=2,434.74' Storage=4,573 cf Inflow=107.26 cfs 9.461 af
Primary=104.05 cfs 9.040 af Secondary=3.14 cfs 0.421 af Outflow=107.19 cfs 9.461 af

Pond DP3: 12" Steel Peak Elev=2,445.30' Inflow=8.14 cfs 0.548 af
Primary=6.69 cfs 0.533 af Secondary=1.45 cfs 0.014 af Outflow=8.14 cfs 0.548 af

Pond DP4: 18" HDPE Culvert Peak Elev=2,372.33' Inflow=33.96 cfs 2.416 af
Primary=12.07 cfs 1.928 af Secondary=21.89 cfs 0.489 af Outflow=33.96 cfs 2.416 af

Pond DP5: 18" HDPE Culvert Peak Elev=2,303.52' Inflow=74.65 cfs 3.908 af
Primary=13.58 cfs 2.512 af Secondary=61.07 cfs 1.396 af Outflow=74.65 cfs 3.908 af

Pond DP5A: 12" steel Culvert Peak Elev=2,276.50' Inflow=101.21 cfs 4.221 af
Primary=7.57 cfs 1.883 af Secondary=93.64 cfs 2.338 af Outflow=101.21 cfs 4.221 af

Pond DP6: 55" CMP Culvert Peak Elev=2,243.64' Inflow=245.27 cfs 16.010 af
Outflow=245.27 cfs 16.010 af

Pond DP6A: 30" Steel Culvert Peak Elev=2,244.63' Inflow=105.37 cfs 10.127 af
Outflow=105.37 cfs 10.127 af

Total Runoff Area = 739.149 ac Runoff Volume = 176.538 af Average Runoff Depth = 2.87"
98.32% Pervious = 726.767 ac 1.68% Impervious = 12.381 ac

Summary for Subcatchment 1S: Subcatchment 1

Runoff = 200.19 cfs @ 12.10 hrs, Volume= 14.017 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	7,405	98	Roof Area
*	15,551	98	Pavement
*	9,714	89	Dirt Road
	75,794	71	Meadow, non-grazed, HSG C
	2,503,382	70	Woods, Good, HSG C
	2,611,846	70	Weighted Average
	2,588,890		99.12% Pervious Area
	22,956		0.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	55	0.0720	2.28		**Sheet Flow, Sheet Flow over Pavement** Smooth surfaces n= 0.011 P2= 4.00"
4.4	45	0.1600	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
10.6	1,315	0.1720	2.07		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
2.2	1,445	0.1868	11.00	70.92	**Trap/Vee/Rect Channel Flow, Mountain Stream w/ Medium Boulders** Bot.W=4.00' D=1.50' Z= 0.2 '/' Top.W=4.60' n= 0.055
17.6	2,860	Total			

Summary for Subcatchment 2S: Subcatchment 2

Runoff = 2.47 cfs @ 11.99 hrs, Volume= 0.123 af, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	4,400	98	Roadway
	5,009	71	Meadow, non-grazed, HSG C
	9,060	70	Woods, Good, HSG C
	18,469	77	Weighted Average
	14,069		76.18% Pervious Area
	4,400		23.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	90	0.2290	0.23		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.5	70	0.2550	2.52		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	215	0.0547	13.12	137.80	**Trap/Vee/Rect Channel Flow, Vegetated Swale along RR Tracks** Bot.W=2.00' D=3.00' Z= 0.5 '/' Top.W=5.00' n= 0.030
7.5	375	Total			

Summary for Subcatchment 3S: Subcatchment 3

Runoff = 215.66 cfs @ 12.10 hrs, Volume= 14.815 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	18,818	89	Dirt Road
*	24,002	98	Paved Road
*	11,979	98	Roof Area
	73,006	74	>75% Grass cover, Good, HSG C
	2,543,636	70	Woods, Good, HSG C
	2,671,441	71	Weighted Average
	2,635,460		98.65% Pervious Area
	35,981		1.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	100	0.2270	0.23		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.0	307	0.0650	1.27		**Shallow Concentrated Flow, SC Flow overland** Woodland Kv= 5.0 fps
4.1	592	0.2300	2.40		**Shallow Concentrated Flow, overland** Woodland Kv= 5.0 fps
0.4	655	0.1959	28.46	3,073.23	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=25.00' D=4.00' Z= 0.5 '/' Top.W=29.00' n= 0.050 Mountain streams w/large boulders
0.1	50	0.0400	6.18	10.92	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
1.1	1,181	0.1950	18.29	493.73	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=3.00' Z= 2.0 '/' Top.W=15.00' n= 0.050 Mountain streams w/large boulders
17.0	2,885	Total			

Summary for Subcatchment 4S: Subcatchment 4

Runoff = 67.52 cfs @ 12.08 hrs, Volume= 4.417 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	5,009	98	Roof Area
	64,992	71	Meadow, non-grazed, HSG C
*	14,985	98	Roadway
	711,509	70	Woods, Good, HSG C
	796,495	71	Weighted Average
	776,501		97.49% Pervious Area
	19,994		2.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.3000	0.26		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.0	770	0.1860	2.16		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
0.4	200	0.0750	9.49	56.96	**Trap/Vee/Rect Channel Flow, RR Swale w/Gravel and Leaves** Bot.W=1.00' D=2.00' Z= 1.0 '/' Top.W=5.00' n= 0.040
0.8	250	0.0800	5.03	7.55	**Trap/Vee/Rect Channel Flow, RR Swale w/ Gravel and Leaves** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.050
0.6	300	0.0650	8.00	48.03	**Trap/Vee/Rect Channel Flow, RR Swale w/ Cobbles and Leaves** Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00' n= 0.045
1.2	400	0.0600	5.69	14.23	**Trap/Vee/Rect Channel Flow, RR Swale w/ Cobbles and Leaves** Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00' n= 0.045
15.5	2,020	Total			

Summary for Subcatchment 5S: Subcatchment 5

Runoff = 8.72 cfs @ 12.06 hrs, Volume= 0.540 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	40,511	71	Meadow, non-grazed, HSG C
*	8,015	98	Roof Area
	42,819	70	Woods, Good, HSG C
	91,345	73	Weighted Average
	83,330		91.23% Pervious Area
	8,015		8.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.1300	0.18		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	390	0.0920	1.52		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	225	0.0346	7.48	29.91	**Trap/Vee/Rect Channel Flow, Flow in Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
13.9	715	Total			

Summary for Subcatchment 6S: Subcatchment 6

Runoff = 78.03 cfs @ 12.13 hrs, Volume= 5.864 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	24,873	98	Dirt Road
*	10,062	98	Roof Area
	70,635	71	Meadow, non-grazed, HSG C
	777,256	70	Woods, Good, HSG C
	141,270	74	>75% Grass cover, Good, HSG C
	1,024,096	72	Weighted Average
	989,161		96.59% Pervious Area
	34,935		3.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
8.7	1,016	0.1500	1.94		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.7	1,060	0.0750	10.48	83.81	**Trap/Vee/Rect Channel Flow, RR Swale w/ Gravel and Leaves** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.040
20.1	2,176	Total			

Summary for Subcatchment 7S: Subcatchment 7

Runoff = 58.48 cfs @ 12.17 hrs, Volume= 4.860 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	23,914	98	Pavement
	18,513	71	Meadow, non-grazed, HSG C
	834,000	70	Woods, Good, HSG C
	876,427	71	Weighted Average
	852,513		97.27% Pervious Area
	23,914		2.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.1570	0.20		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
15.2	1,760	0.1490	1.93		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
23.6	1,860	Total			

Summary for Subcatchment 8S: Subcatchment 8

Runoff = 35.42 cfs @ 12.12 hrs, Volume= 2.571 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	27,225	71	Meadow, non-grazed, HSG C
*	3,006	89	Dirt Road
*	8,189	98	Pavment
	425,146	70	Woods, Good, HSG C
	463,566	71	Weighted Average
	455,377		98.23% Pervious Area
	8,189		1.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.1570	0.20		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.0	850	0.2200	2.35		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.1	135	0.0850	2.04		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
2.6	310	0.1540	1.96		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.7	440	0.0360	10.52	63.14	**Trap/Vee/Rect Channel Flow, Flow through Vegetated Swale** Bot.W=1.00' D=2.00' Z= 1.0 '/' Top.W=5.00' n= 0.025
18.8	1,835	Total			

Summary for Subcatchment 9S: Subcatchment 9

Runoff = 99.71 cfs @ 12.15 hrs, Volume= 7.867 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	8,494	98	Roof Area
	57,978	71	Meadow, non-grazed, HSG C
	1,386,297	70	Woods, Good, HSG C
	13,112	98	Paved parking, HSG C
	1,465,881	70	Weighted Average
	1,444,275		98.53% Pervious Area
	21,606		1.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0200	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	10	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.3	1,923	0.1100	13.81	662.89	**Trap/Vee/Rect Channel Flow, Flow through Rock Channel** Bot.W=20.00' D=2.00' Z= 2.0 '/' Top.W=28.00' n= 0.050 Mountain streams w/large boulders
21.6	2,033	Total			

Summary for Subcatchment 10S: Subcatchment 10

Runoff = 104.27 cfs @ 12.19 hrs, Volume= 9.149 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	1,108,354	70	Woods, Good, HSG C
	485,520	71	Meadow, non-grazed, HSG C
*	7,623	98	Roof Area
*	48,327	98	Road/Drive
	1,649,824	71	Weighted Average
	1,593,874		96.61% Pervious Area
	55,950		3.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.2	600	0.0780	1.40		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
2.7	455	0.1600	2.80		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
2.8	330	0.1570	1.98		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.6	685	0.0945	7.35	33.08	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=4.00' D=1.00' Z= 0.5 '/' Top.W=5.00' n= 0.050
0.0	30	0.0500	13.31	18.59	**Pipe Channel, 16" Steel Culvert** 16.0" Round Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.012 Steel, smooth
1.4	645	0.0483	7.65	91.77	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=5.00' D=2.00' Z= 0.5 '/' Top.W=7.00' n= 0.050
25.8	2,845	Total			

Summary for Subcatchment 11A: Subcatchment 11A

Runoff = 4.92 cfs @ 12.08 hrs, Volume= 0.320 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
55,013	70	Woods, Good, HSG C
2,726	98	Paved parking & roofs
57,739	71	Weighted Average
55,013		95.28% Pervious Area
2,726		4.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0800	0.15		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	380	0.0875	1.48		**Shallow Concentrated Flow, SC flow through Woods** Woodland Kv= 5.0 fps
15.3	480	Total			

Summary for Subcatchment 11B: Subcatchment 11B

Runoff = 40.00 cfs @ 12.16 hrs, Volume= 3.205 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
558,889	70	Woods, Good, HSG C
19,014	98	Paved parking & roofs
577,903	71	Weighted Average
558,889		96.71% Pervious Area
19,014		3.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0800	0.15		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.0	460	0.0750	1.92		**Shallow Concentrated Flow, Sheet Flow through Meadow** Short Grass Pasture Kv= 7.0 fps
0.8	80	0.0625	1.75		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
6.3	560	0.0875	1.48		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	70	0.0500	7.39	16.25	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=2.00' D=1.00' Z= 0.2 '/' Top.W=2.40' n= 0.030 Earth, grassed & winding
22.3	1,270	Total			

Summary for Subcatchment 11S: Subcatchment 11

Runoff = 18.34 cfs @ 12.03 hrs, Volume= 1.046 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
169,318	70	Woods, Good, HSG C
13,416	98	Paved parking & roofs
182,734	72	Weighted Average
169,318		92.66% Pervious Area
13,416		7.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.0800	2.03		**Sheet Flow, Sheet Flow off Roof** Smooth surfaces n= 0.011 P2= 4.00"
4.4	75	0.0625	0.28		**Sheet Flow, Sheet flow over meadow** Grass: Short n= 0.150 P2= 4.00"
2.9	330	0.0750	1.92		**Shallow Concentrated Flow, Sheet Flow through Meadow** Short Grass Pasture Kv= 7.0 fps
3.4	300	0.0875	1.48		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.6	254	0.0500	7.39	16.25	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=2.00' D=1.00' Z= 0.2 '/' Top.W=2.40' n= 0.030
11.5	984	Total			

Summary for Subcatchment 12S: Subcatchment 12

Runoff = 121.29 cfs @ 12.31 hrs, Volume= 12.899 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	18,687	74	>75% Grass cover, Good, HSG C
	2,265,120	70	Woods, Good, HSG C
*	17,860	98	Roofs
*	24,394	98	Paved roads
	2,326,061	71	Weighted Average
	2,283,807		98.18% Pervious Area
	42,254		1.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0850	0.15		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
23.6	2,290	0.1050	1.62		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
34.4	2,390	Total			

Summary for Subcatchment 14S: Subcatchment 14

Runoff = 106.84 cfs @ 12.20 hrs, Volume= 9.447 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	133,250	71	Meadow, non-grazed, HSG C
	25,526	87	Dirt roads, HSG C
*	5,184	98	Roof Area
	1,531,787	70	Woods, Good, HSG C
	7,797	98	Paved roads
	1,703,544	71	Weighted Average
	1,690,563		99.24% Pervious Area
	12,981		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	80	0.1000	2.21		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
15.2	2,165	0.2260	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.4	90	0.2350	3.39		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
0.3	150	0.0450	8.53	34.11	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
26.2	2,585	Total			

Summary for Subcatchment 15S: Subcatchment 15

Runoff = 8.14 cfs @ 12.09 hrs, Volume= 0.548 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	35,962	71	Meadow, non-grazed, HSG C
	55,670	70	Woods, Good, HSG C
*	4,008	98	Pavement
	95,640	72	Weighted Average
	91,632		95.81% Pervious Area
	4,008		4.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.3	640	0.1600	2.00		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.8	125	0.1500	2.71		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
0.2	80	0.0400	8.04	32.16	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
16.4	945	Total			

Summary for Subcatchment 16S: Subcatchment 16

Runoff = 33.96 cfs @ 12.11 hrs, Volume= 2.416 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	141,134	71	Meadow, non-grazed, HSG C
*	9,278	98	Pavement
	285,318	70	Woods, Good, HSG C
	435,730	71	Weighted Average
	426,452		97.87% Pervious Area
	9,278		2.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.7	644	0.1406	1.87		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.4	200	0.1200	2.42		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
1.0	900	0.1029	15.55	106.89	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.50' Z= 0.7 '/' Top.W=4.50' n= 0.030
18.2	1,844	Total			

Summary for Subcatchment 17S: Subcatchment 17

Runoff = 55.82 cfs @ 12.06 hrs, Volume= 3.419 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	7,884	98	Roadway
	8,494	71	Meadow, non-grazed, HSG C
	620,730	70	Woods, Good, HSG C
	637,108	70	Weighted Average
	629,224		98.76% Pervious Area
	7,884		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2000	0.22		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.8	922	0.2800	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.1	145	0.1160	17.65	143.44	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=2.00' D=2.50' Z= 0.5 '/' Top.W=4.50' n= 0.030
13.5	1,167	Total			

Summary for Subcatchment 18S: Subcatchment 18

Runoff = 40.56 cfs @ 12.10 hrs, Volume= 2.825 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	2,494	98	Pavement
	3,615	71	Meadow, non-grazed, HSG C
	520,281	70	Woods, Good, HSG C
	526,390	70	Weighted Average
	523,896		99.53% Pervious Area
	2,494		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.3280	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
10.5	1,895	0.3630	3.01		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.6	320	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Flow in Roadside Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
17.4	2,315	Total			

Summary for Subcatchment 19S: Subcatchment 19

Runoff = 162.64 cfs @ 12.18 hrs, Volume= 13.672 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	8,146	98	Paved, HSG C
	1,896,646	70	Woods, Good, HSG C
	642,902	71	Meadow, non-grazed, HSG C
	2,547,694	70	Weighted Average
	2,539,548		99.68% Pervious Area
	8,146		0.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.6	2,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods** Woodland Kv= 5.0 fps
0.9	470	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030 Earth, grassed & winding

24.0	2,625	Total

Summary for Subcatchment 20S: Subcatchment 20

Runoff = 105.37 cfs @ 12.24 hrs, Volume= 10.127 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	6,926	98	Roof Area
*	15,682	98	Roadway
	1,050,057	70	Woods, Good, HSG C
	753,544	71	Meadow, non-grazed, HSG C
	1,826,209	71	Weighted Average
	1,803,601		98.76% Pervious Area
	22,608		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
18.7	3,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods** Woodland Kv= 5.0 fps
0.4	310	0.0466	12.12	145.44	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=4.00' Z= 0.5 '/' Top.W=5.00' n= 0.030 Earth, grassed & winding
29.6	3,465	Total			

Summary for Subcatchment 21S: Subcatchment 21 (Leach Farm)

Runoff = 18.08 cfs @ 12.07 hrs, Volume= 1.157 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	147,807	70	Woods, Good, HSG C
*	5,253	98	Roof
*	4,790	98	Paved Drive
	44,250	74	>75% Grass cover, Good, HSG C
	202,100	72	Weighted Average
	192,057		95.03% Pervious Area
	10,043		4.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0840	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.7	460	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	330	0.2300	14.23	21.34	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.030 Earth, clean & winding
14.9	890	Total			

Summary for Subcatchment 27S: Subcatchment 27

Runoff = 34.88 cfs @ 12.03 hrs, Volume= 1.987 af, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	12,543	98	Roof
*	36,847	98	Pavement
	54,050	74	>75% Grass cover, Good, HSG C
	213,001	70	Woods, Good, HSG C
	316,441	75	Weighted Average
	267,051		84.39% Pervious Area
	49,390		15.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.2200	0.23		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.8	445	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	124	0.0800	11.21	42.02	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.50' Z= 1.0 '/' Top.W=4.00' n= 0.030 Earth, grassed & winding
11.4	669	Total			

Summary for Subcatchment 28S: Subcatchment 28

Runoff = 27.33 cfs @ 12.32 hrs, Volume= 3.010 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
33,932	71	Meadow, non-grazed, HSG C
526,860	70	Woods, Good, HSG C
560,792	70	Weighted Average
560,792		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
15.4	1,205	0.0680	1.30		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
7.4	150	0.0130	0.34	0.51	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.300
36.1	1,455	Total			

Summary for Subcatchment 35S: Subcatchment 35

Runoff = 37.18 cfs @ 12.15 hrs, Volume= 2.950 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	122,752	71	Meadow, non-grazed, HSG C
*	6,708	98	Paved Road
	393,477	70	Woods, Good, HSG C
*	9,104	98	Roof
	532,041	71	Weighted Average
	516,229		97.03% Pervious Area
	15,812		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	120	0.1667	0.52		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.5	230	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	50	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
9.3	1,470	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
22.0	3,110	Total			

Summary for Subcatchment 200S: Subcatchment 200

Runoff = 214.98 cfs @ 12.17 hrs, Volume= 17.862 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	14,331	98	Paved Road
	311,323	71	Meadow, non-grazed, HSG C
	3,002,765	70	Woods, Good, HSG C
	3,328,419	70	Weighted Average
	3,314,088		99.57% Pervious Area
	14,331		0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	100	0.1667	0.50		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.4	215	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	70	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
11.1	1,760	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	160	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
23.5	3,545	Total			

Summary for Subcatchment 300S: Subcatchment 300

Runoff = 49.32 cfs @ 12.14 hrs, Volume= 3.824 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	3,267	98	Paved Road
	6,447	71	Meadow, non-grazed, HSG C
	702,884	70	Woods, Good, HSG C
	712,598	70	Weighted Average
	709,331		99.54% Pervious Area
	3,267		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	120	0.2500	0.25		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.7	1,810	0.2257	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	110	0.0910	12.13	48.50	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
21.0	2,040	Total			

Summary for Subcatchment 500S: Subcatchment 500

Runoff = 74.17 cfs @ 12.27 hrs, Volume= 7.492 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	29,185	98	Roadway
	1,312,724	70	Woods, Good, HSG C
	1,350,926	71	Weighted Average
	1,321,741		97.84% Pervious Area
	29,185		2.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
25.7	3,665	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.1	110	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
32.0	3,875	Total			

Summary for Subcatchment 501S: Subcatchment 501

Runoff = 13.58 cfs @ 12.12 hrs, Volume= 1.001 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,002	98	Roadway
	176,462	70	Woods, Good, HSG C
	186,481	70	Weighted Average
	185,479		99.46% Pervious Area
	1,002		0.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
13.1	1,930	0.2410	2.45		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	2,030	Total			

Summary for Subcatchment 502S: Subcatchment 502

Runoff = 16.86 cfs @ 12.05 hrs, Volume= 1.015 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,437	98	Roadway
	178,596	70	Woods, Good, HSG C
	189,050	70	Weighted Average
	187,613		99.24% Pervious Area
	1,437		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.5	935	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	265	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
13.0	1,300	Total			

Summary for Subcatchment 503S: Subcatchmant 503

Runoff = 10.33 cfs @ 12.09 hrs, Volume= 0.701 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
130,680	70	Woods, Good, HSG C
130,680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.2	655	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	255	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
16.6	1,010	Total			

Summary for Subcatchment 504S: Subcatchment 504

Runoff = 82.26 cfs @ 12.19 hrs, Volume= 7.087 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	1,292,556	70	Woods, Good, HSG C
*	13,939	98	Road
	14,026	74	>75% Grass cover, Good, HSG C
	1,320,521	70	Weighted Average
	1,306,582		98.94% Pervious Area
	13,939		1.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.4375	0.30		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
19.1	2,860	0.2500	2.50		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	320	0.1910	15.31	321.48	**Trap/Vee/Rect Channel Flow, Mountain Stream** Bot.W=4.00' D=3.00' Z= 1.0 '/' Top.W=10.00' n= 0.060
25.0	3,280	Total			

Summary for Subcatchment 511S: Subcatchmant 511

Runoff = 7.13 cfs @ 12.08 hrs, Volume= 0.468 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
87,120	70	Woods, Good, HSG C
87,120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.5	580	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.6	680	Total			

Summary for Subcatchment 512S: Subcatchment 512

Runoff = 4.88 cfs @ 12.06 hrs, Volume= 0.304 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
56,628	70	Woods, Good, HSG C
56,628		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.3125	0.15		**Sheet Flow, Sheet Flow through Woods** Woods: Dense underbrush n= 0.800 P2= 4.00"
2.6	345	0.1900	2.18		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	155	0.1000	8.43	10.12	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.2 '/' Top.W=1.40' n= 0.030 Earth, grassed & winding
14.0	600	Total			

Summary for Subcatchment 600S: Subcatchment 600

Runoff = 27.88 cfs @ 12.12 hrs, Volume= 2.051 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	9,670	98	Road
	360,198	70	Woods, Good, HSG C
	369,868	71	Weighted Average
	360,198		97.39% Pervious Area
	9,670		2.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.0	1,510	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	1,610	Total			

Summary for Subcatchment 601S: Subcatchment 601

Runoff = 23.06 cfs @ 12.08 hrs, Volume= 1.483 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	10,498	98	Road
	257,004	70	Woods, Good, HSG C
	267,502	71	Weighted Average
	257,004		96.08% Pervious Area
	10,498		3.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.7	970	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.0	1,070	Total			

Summary for Reach 1R: Wetland Flow

Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 150.0 sf, Capacity= 802.14 cfs

100.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 50.0 '/' Top Width= 200.00'
Length= 408.0' Slope= 0.0931 '/'
Inlet Invert= 2,208.00', Outlet Invert= 2,170.00'

‡

Summary for Reach 5: Stream Channel

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 47.57 cfs @ 12.22 hrs, Volume= 3.824 af
Outflow = 47.23 cfs @ 12.24 hrs, Volume= 3.824 af, Atten= 1%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.62 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 2.89 fps, Avg. Travel Time= 5.0 min

Peak Storage= 4,272 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.86'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 1,064.40 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 870.0' Slope= 0.1954 '/'
Inlet Invert= 2,060.00', Outlet Invert= 1,890.00'

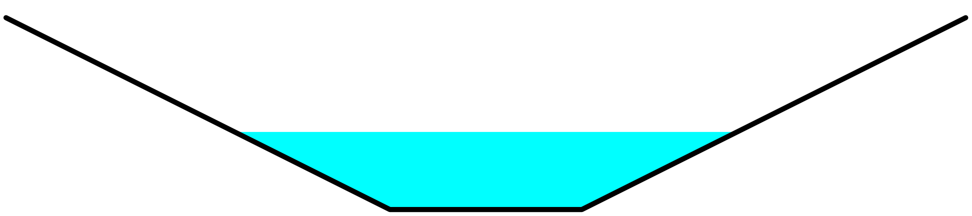
Summary for Reach 5a: Stream Channel

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 47.23 cfs @ 12.24 hrs, Volume= 3.824 af
Outflow = 47.19 cfs @ 12.24 hrs, Volume= 3.824 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.33 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 3.21 fps, Avg. Travel Time= 1.8 min

Peak Storage= 1,622 cf @ 12.24 hrs
Average Depth at Peak Storage= 1.01'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 318.14 cfs

2.50' x 2.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 355.0' Slope= 0.2141 '/'
Inlet Invert= 1,890.00', Outlet Invert= 1,814.00'



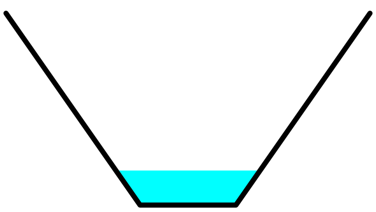
Summary for Reach 5R: (new Reach)

Inflow = 1.45 cfs @ 12.09 hrs, Volume= 0.014 af
Outflow = 1.28 cfs @ 12.12 hrs, Volume= 0.014 af, Atten= 12%, Lag= 2.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.82 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 8.5 min

Peak Storage= 188 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 2.00' Flow Area= 4.8 sf, Capacity= 30.57 cfs

1.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.7 '/' Top Width= 3.80'
Length= 415.0' Slope= 0.0217 '/'
Inlet Invert= 2,443.00', Outlet Invert= 2,434.00'



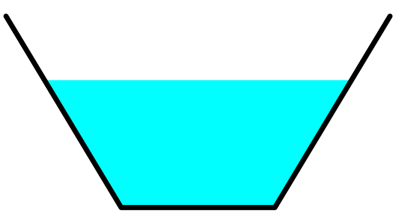
Summary for Reach 6R: (new Reach)

Inflow = 61.07 cfs @ 12.08 hrs, Volume= 1.396 af
Outflow = 60.94 cfs @ 12.08 hrs, Volume= 1.396 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.21 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 4.96 fps, Avg. Travel Time= 1.2 min

Peak Storage= 1,846 cf @ 12.08 hrs
Average Depth at Peak Storage= 1.66'
Bank-Full Depth= 2.50' Flow Area= 8.8 sf, Capacity= 128.38 cfs

2.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.6 '/' Top Width= 5.00'
Length= 370.0' Slope= 0.0757 '/'
Inlet Invert= 2,300.00', Outlet Invert= 2,272.00'



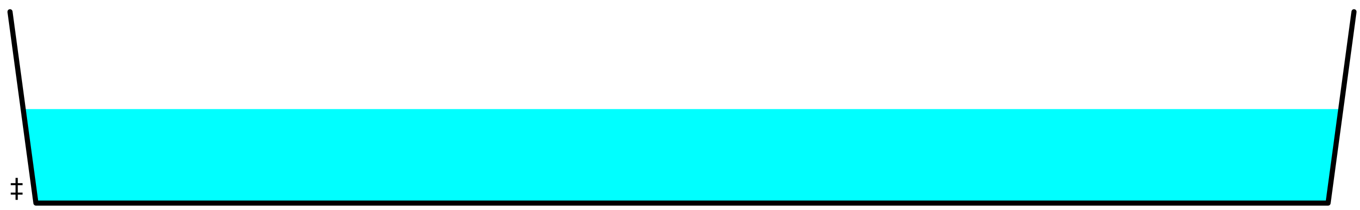
Summary for Reach 8: Stream Channel

Inflow Area = 77.687 ac, 1.16% Impervious, Inflow Depth = 2.88" for 10-YEAR event
Inflow = 244.25 cfs @ 12.11 hrs, Volume= 18.639 af
Outflow = 243.94 cfs @ 12.12 hrs, Volume= 18.639 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.84 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.19 fps, Avg. Travel Time= 1.9 min

Peak Storage= 6,073 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 1.00' Flow Area= 51.0 sf, Capacity= 797.02 cfs

50.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 1.0 '/' Top Width= 52.00'
Length= 245.0' Slope= 0.2898 '/'
Inlet Invert= 1,812.00', Outlet Invert= 1,741.00'



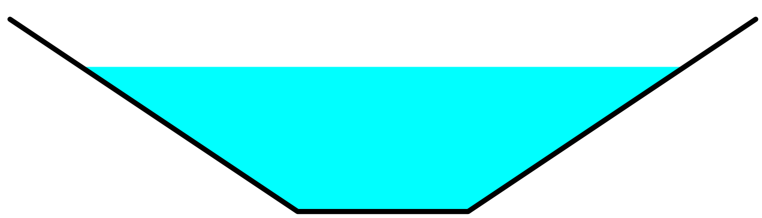
Summary for Reach 8R: through ditch

Inflow = 93.64 cfs @ 12.09 hrs, Volume= 2.338 af
Outflow = 93.34 cfs @ 12.10 hrs, Volume= 2.338 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.15 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 4.22 fps, Avg. Travel Time= 2.0 min

Peak Storage= 3,802 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.69'
Bank-Full Depth= 2.25' Flow Area= 12.1 sf, Capacity= 171.61 cfs

2.00' x 2.25' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.5 '/' Top Width= 8.75'
Length= 495.0' Slope= 0.0646 '/'
Inlet Invert= 2,272.00', Outlet Invert= 2,240.00'



Summary for Reach 11R: Overland Flow

Inflow Area = 20.120 ac, 2.73% Impervious, Inflow Depth = 2.90" for 10-YEAR event
Inflow = 58.48 cfs @ 12.17 hrs, Volume= 4.860 af
Outflow = 53.53 cfs @ 12.25 hrs, Volume= 4.860 af, Atten= 8%, Lag= 4.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.86 fps, Min. Travel Time= 6.9 min
Avg. Velocity = 0.66 fps, Avg. Travel Time= 29.6 min

Peak Storage= 22,120 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 1.00' Flow Area= 90.0 sf, Capacity= 620.77 cfs

75.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 105.00'
Length= 1,180.0' Slope= 0.1695 '/'
Inlet Invert= 1,973.00', Outlet Invert= 1,773.00'

‡

Summary for Reach 12R: Overland Flow

Inflow Area = 2.097 ac, 8.77% Impervious, Inflow Depth = 3.09" for 10-YEAR event
Inflow = 8.72 cfs @ 12.06 hrs, Volume= 0.540 af
Outflow = 7.16 cfs @ 12.13 hrs, Volume= 0.540 af, Atten= 18%, Lag= 4.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.91 fps, Min. Travel Time= 8.3 min
Avg. Velocity = 0.50 fps, Avg. Travel Time= 31.7 min

Peak Storage= 3,559 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 305.91 cfs

30.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 60.00'
Length= 950.0' Slope= 0.1968 '/'
Inlet Invert= 1,960.00', Outlet Invert= 1,773.00'

‡

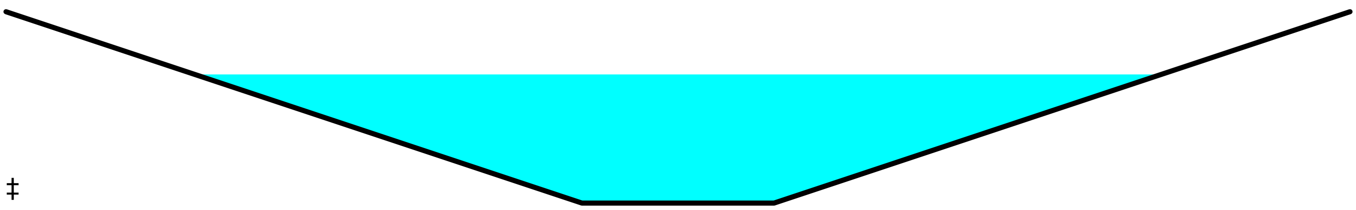
Summary for Reach 13: RR Swale

Inflow Area = 77.687 ac, 1.16% Impervious, Inflow Depth = 2.88" for 10-YEAR event
Inflow = 243.94 cfs @ 12.12 hrs, Volume= 18.639 af
Outflow = 243.32 cfs @ 12.12 hrs, Volume= 18.639 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.99 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.19 fps, Avg. Travel Time= 2.4 min

Peak Storage= 10,956 cf @ 12.12 hrs
Average Depth at Peak Storage= 2.02'
Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 604.81 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 4.0 '/' Top Width= 28.00'
Length= 450.0' Slope= 0.0444 '/'
Inlet Invert= 1,740.00', Outlet Invert= 1,720.00'



‡

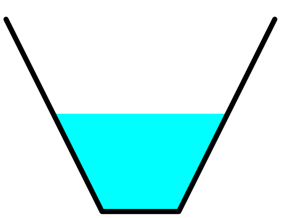
Summary for Reach 21R: (new Reach)

Inflow = 21.89 cfs @ 12.11 hrs, Volume= 0.489 af
Outflow = 21.67 cfs @ 12.12 hrs, Volume= 0.489 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.41 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 3.83 fps, Avg. Travel Time= 3.0 min

Peak Storage= 1,426 cf @ 12.12 hrs
Average Depth at Peak Storage= 1.27'
Bank-Full Depth= 2.50' Flow Area= 5.6 sf, Capacity= 79.28 cfs

1.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.5 '/' Top Width= 3.50'
Length= 685.0' Slope= 0.1000 '/'
Inlet Invert= 2,368.00', Outlet Invert= 2,299.50'



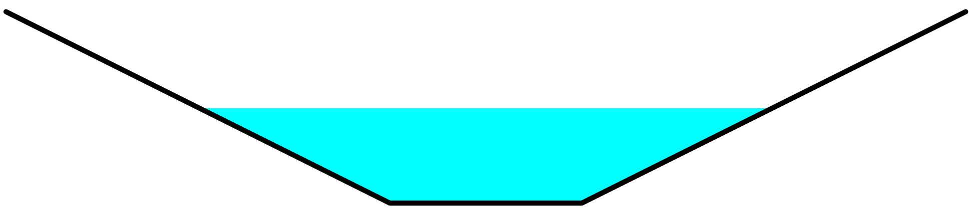
Summary for Reach 58: Swale along RR Tracks

Inflow Area = 10.642 ac, 1.77% Impervious, Inflow Depth = 2.90" for 10-YEAR event
Inflow = 32.46 cfs @ 12.18 hrs, Volume= 2.571 af
Outflow = 31.22 cfs @ 12.22 hrs, Volume= 2.571 af, Atten= 4%, Lag= 2.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.06 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 1.49 fps, Avg. Travel Time= 11.4 min

Peak Storage= 6,288 cf @ 12.22 hrs
Average Depth at Peak Storage= 1.24'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 139.83 cfs

2.50' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 1,020.0' Slope= 0.0265 '/'
Inlet Invert= 1,800.00', Outlet Invert= 1,773.00'



Summary for Reach 58A: Overland Flow

Inflow Area = 3.000 ac, 0.00% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 10.33 cfs @ 12.09 hrs, Volume= 0.701 af
Outflow = 9.76 cfs @ 12.13 hrs, Volume= 0.701 af, Atten= 6%, Lag= 2.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.86 fps, Min. Travel Time= 4.3 min
Avg. Velocity = 0.67 fps, Avg. Travel Time= 11.9 min

Peak Storage= 2,503 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 1.00' Flow Area= 120.0 sf, Capacity= 1,456.48 cfs

100.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 140.00'
Length= 478.0' Slope= 0.1004 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,172.00'

‡

Summary for Reach 61: Vegetated Roadside Swale

Inflow Area = 5.521 ac, 6.71% Impervious, Inflow Depth = 2.97" for 10-YEAR event
Inflow = 23.00 cfs @ 12.04 hrs, Volume= 1.367 af
Outflow = 22.52 cfs @ 12.06 hrs, Volume= 1.367 af, Atten= 2%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.67 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.72 fps, Avg. Travel Time= 7.3 min

Peak Storage= 2,536 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.87'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 59.21 cfs

3.00' x 1.50' deep channel, n= 0.040
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 751.0' Slope= 0.0613 '/'
Inlet Invert= 2,000.00', Outlet Invert= 1,954.00'

Summary for Reach 66: Stream Channel

Inflow Area = 128.756 ac, 2.17% Impervious, Inflow Depth = 2.87" for 10-YEAR event
Inflow = 201.20 cfs @ 12.24 hrs, Volume= 30.750 af
Outflow = 199.10 cfs @ 12.29 hrs, Volume= 30.750 af, Atten= 1%, Lag= 3.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.86 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 1.66 fps, Avg. Travel Time= 18.9 min

Peak Storage= 38,044 cf @ 12.29 hrs
Average Depth at Peak Storage= 1.32'
Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 445.48 cfs

10.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 26.00'
Length= 1,884.0' Slope= 0.1152 '/'
Inlet Invert= 2,017.00', Outlet Invert= 1,800.00'

‡

Summary for Reach 78: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 2.85" for 10-YEAR event
Inflow = 137.67 cfs @ 12.50 hrs, Volume= 21.601 af
Outflow = 137.56 cfs @ 12.51 hrs, Volume= 21.601 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.30 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.74 fps, Avg. Travel Time= 6.6 min

Peak Storage= 9,152 cf @ 12.51 hrs
Average Depth at Peak Storage= 1.08'
Bank-Full Depth= 1.50' Flow Area= 21.0 sf, Capacity= 258.41 cfs

8.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 20.00'
Length= 685.0' Slope= 0.1646 '/'
Inlet Invert= 2,170.75', Outlet Invert= 2,058.00'

‡

Summary for Reach 80: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 2.85" for 10-YEAR event
Inflow = 137.56 cfs @ 12.51 hrs, Volume= 21.601 af
Outflow = 137.24 cfs @ 12.53 hrs, Volume= 21.601 af, Atten= 0%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.58 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.11 fps, Avg. Travel Time= 11.1 min

Peak Storage= 15,436 cf @ 12.53 hrs
Average Depth at Peak Storage= 1.49'
Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 247.19 cfs

8.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 24.00'
Length= 740.0' Slope= 0.0473 '/'
Inlet Invert= 2,055.00', Outlet Invert= 2,020.00'

‡

Summary for Reach 82: Overland Flow

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 4.88 cfs @ 12.06 hrs, Volume= 0.304 af
Outflow = 1.08 cfs @ 12.39 hrs, Volume= 0.304 af, Atten= 78%, Lag= 19.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.19 fps, Min. Travel Time= 82.5 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 306.4 min

Peak Storage= 5,367 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 0.50' Flow Area= 75.0 sf, Capacity= 53.31 cfs

100.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 200.00'
Length= 938.0' Slope= 0.1354 '/'
Inlet Invert= 2,347.00', Outlet Invert= 2,220.00'

‡

Summary for Reach 82a: Overland Flow

Inflow Area = 62.628 ac, 1.58% Impervious, Inflow Depth = 2.68" for 10-YEAR event
Inflow = 102.73 cfs @ 12.43 hrs, Volume= 13.990 af
Outflow = 93.75 cfs @ 12.58 hrs, Volume= 13.990 af, Atten= 9%, Lag= 9.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.71 fps, Min. Travel Time= 11.2 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 75.1 min

Peak Storage= 62,793 cf @ 12.58 hrs
Average Depth at Peak Storage= 0.76'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 164.89 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 473.0' Slope= 0.0846 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,180.00'

‡

Summary for Reach 83A: Overland Flow

Inflow Area = 30.315 ac, 1.06% Impervious, Inflow Depth = 2.47" for 10-YEAR event
Inflow = 46.44 cfs @ 12.19 hrs, Volume= 6.251 af
Outflow = 42.99 cfs @ 12.34 hrs, Volume= 6.251 af, Atten= 7%, Lag= 8.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.72 fps, Min. Travel Time= 10.2 min
Avg. Velocity = 0.18 fps, Avg. Travel Time= 41.7 min

Peak Storage= 26,371 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 232.26 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 441.0' Slope= 0.1678 '/'
Inlet Invert= 2,326.00', Outlet Invert= 2,252.00'

‡

Summary for Reach 84A: Overland Flow

Inflow Area = 61.328 ac, 1.61% Impervious, Inflow Depth = 2.68" for 10-YEAR event
Inflow = 104.26 cfs @ 12.35 hrs, Volume= 13.686 af
Outflow = 101.65 cfs @ 12.43 hrs, Volume= 13.686 af, Atten= 3%, Lag= 5.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.81 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 0.18 fps, Avg. Travel Time= 25.6 min

Peak Storage= 34,837 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 192.72 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 277.0' Slope= 0.1155 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,220.00'

‡

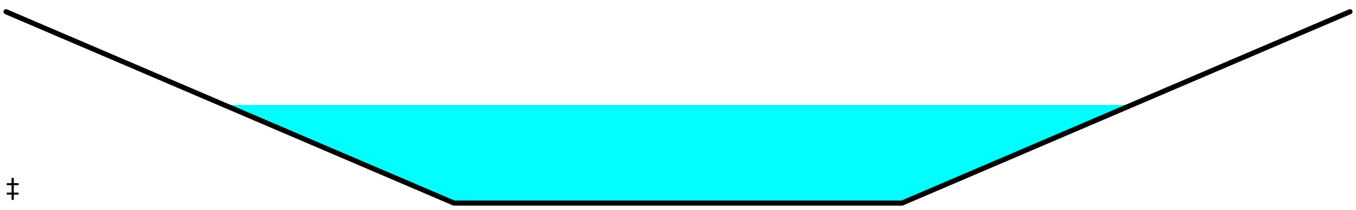
Summary for Reach 84B: Overland Flow

Inflow Area = 31.013 ac, 2.16% Impervious, Inflow Depth = 2.88" for 10-YEAR event
Inflow = 64.71 cfs @ 12.23 hrs, Volume= 7.435 af
Outflow = 61.29 cfs @ 12.35 hrs, Volume= 7.435 af, Atten= 5%, Lag= 7.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.79 fps, Min. Travel Time= 7.8 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 33.0 min

Peak Storage= 28,732 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.51'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 228.33 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 370.0' Slope= 0.1622 '/'
Inlet Invert= 2,312.00', Outlet Invert= 2,252.00'



‡

Summary for Reach 85A: Overland Flow

Inflow Area = 4.281 ac, 0.54% Impervious, Inflow Depth = 4.94" for 10-YEAR event
Inflow = 40.94 cfs @ 12.20 hrs, Volume= 1.763 af
Outflow = 30.88 cfs @ 12.35 hrs, Volume= 1.763 af, Atten= 25%, Lag= 9.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.63 fps, Min. Travel Time= 13.4 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 80.5 min

Peak Storage= 24,805 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 221.40 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 505.0' Slope= 0.1525 '/'
Inlet Invert= 2,292.00', Outlet Invert= 2,215.00'

‡

Summary for Reach 85B: Overland Flow

Inflow Area = 8.621 ac, 0.65% Impervious, Inflow Depth = 4.05" for 10-YEAR event
Inflow = 43.94 cfs @ 12.29 hrs, Volume= 2.907 af
Outflow = 32.13 cfs @ 12.44 hrs, Volume= 2.907 af, Atten= 27%, Lag= 9.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.50 fps, Min. Travel Time= 15.0 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 87.7 min

Peak Storage= 28,986 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 157.60 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 453.0' Slope= 0.0773 '/'
Inlet Invert= 2,215.00', Outlet Invert= 2,180.00'

‡

Summary for Reach 86A: Overland Flow

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 3.16" for 10-YEAR event
Inflow = 19.91 cfs @ 12.19 hrs, Volume= 1.144 af
Outflow = 17.51 cfs @ 12.24 hrs, Volume= 1.144 af, Atten= 12%, Lag= 2.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.47 fps, Min. Travel Time= 6.9 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 31.1 min

Peak Storage= 7,194 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 190.45 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 195.0' Slope= 0.1128 '/'
Inlet Invert= 2,237.00', Outlet Invert= 2,215.00'

‡

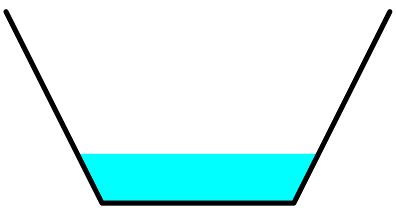
Summary for Reach 88: Roadside Swale

Inflow Area = 2.000 ac, 0.00% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 7.13 cfs @ 12.08 hrs, Volume= 0.468 af
Outflow = 7.06 cfs @ 12.10 hrs, Volume= 0.468 af, Atten= 1%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.04 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 1.71 fps, Avg. Travel Time= 4.6 min

Peak Storage= 551 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 2.00' Flow Area= 6.0 sf, Capacity= 66.89 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 0.5 '/' Top Width= 4.00'
Length= 472.0' Slope= 0.0763 '/'
Inlet Invert= 2,207.00', Outlet Invert= 2,171.00'



Summary for Reach 89: Overland Flow through Woods

Inflow Area = 10.642 ac, 1.77% Impervious, Inflow Depth = 2.90" for 10-YEAR event
Inflow = 35.42 cfs @ 12.12 hrs, Volume= 2.571 af
Outflow = 32.46 cfs @ 12.18 hrs, Volume= 2.571 af, Atten= 8%, Lag= 3.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.01 fps, Min. Travel Time= 5.8 min
Avg. Velocity = 0.78 fps, Avg. Travel Time= 22.3 min

Peak Storage= 11,342 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 0.50' Flow Area= 100.0 sf, Capacity= 1,000.42 cfs

150.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 100.0 '/' Top Width= 250.00'
Length= 1,051.0' Slope= 0.1884 '/'
Inlet Invert= 1,998.00', Outlet Invert= 1,800.00'

‡

Summary for Reach 91: Overland Flow

Inflow Area = 12.874 ac, 0.00% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 27.33 cfs @ 12.32 hrs, Volume= 3.010 af
Outflow = 27.26 cfs @ 12.33 hrs, Volume= 3.010 af, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.76 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.85 fps, Avg. Travel Time= 3.9 min

Peak Storage= 1,954 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 137.55 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 198.0' Slope= 0.0172 '/'
Inlet Invert= 1,889.40', Outlet Invert= 1,886.00'

‡

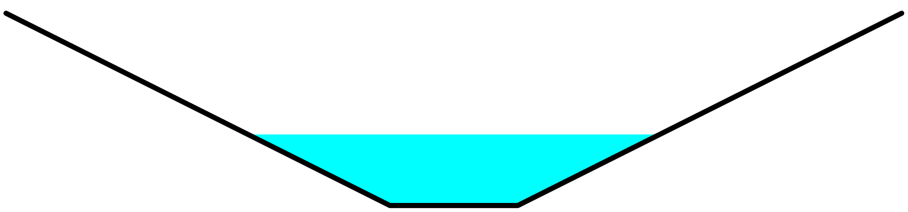
Summary for Reach 92: Channel Along RR Tracks

Inflow Area = 12.874 ac, 0.00% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 27.26 cfs @ 12.33 hrs, Volume= 3.010 af
Outflow = 26.10 cfs @ 12.42 hrs, Volume= 3.010 af, Atten= 4%, Lag= 5.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.58 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 1.89 fps, Avg. Travel Time= 16.8 min

Peak Storage= 8,922 cf @ 12.42 hrs
Average Depth at Peak Storage= 1.11'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 234.34 cfs

2.00' x 3.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 1,907.0' Slope= 0.0293 '/'
Inlet Invert= 1,885.90', Outlet Invert= 1,830.00'



Summary for Reach 197: Stream Channel

Inflow Area = 88.624 ac, 0.78% Impervious, Inflow Depth = 2.82" for 10-YEAR event
Inflow = 249.42 cfs @ 12.20 hrs, Volume= 20.813 af
Outflow = 245.82 cfs @ 12.22 hrs, Volume= 20.813 af, Atten= 1%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.68 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 3.38 fps, Avg. Travel Time= 7.4 min

Peak Storage= 34,532 cf @ 12.22 hrs
Average Depth at Peak Storage= 1.03'
Bank-Full Depth= 6.00' Flow Area= 342.0 sf, Capacity= 9,816.53 cfs

15.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 7.0 '/' Top Width= 99.00'
Length= 1,500.0' Slope= 0.1807 '/'
Inlet Invert= 2,015.00', Outlet Invert= 1,744.00'

‡

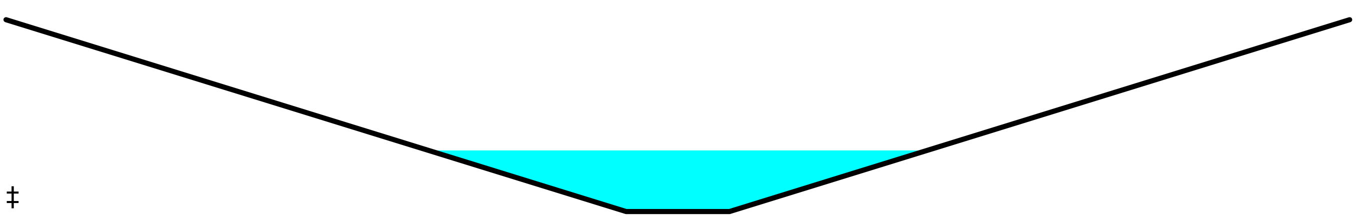
Summary for Reach 198: Stream Channel

Inflow Area = 88.624 ac, 0.78% Impervious, Inflow Depth = 2.82" for 10-YEAR event
Inflow = 251.95 cfs @ 12.17 hrs, Volume= 20.813 af
Outflow = 249.42 cfs @ 12.20 hrs, Volume= 20.813 af, Atten= 1%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.20 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 4.08 fps, Avg. Travel Time= 5.2 min

Peak Storage= 28,094 cf @ 12.20 hrs
Average Depth at Peak Storage= 1.91'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 3,729.07 cfs

4.00' x 6.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 1,262.0' Slope= 0.1212 '/'
Inlet Invert= 2,168.00', Outlet Invert= 2,015.00'



‡

Summary for Reach 199: Overland Flow

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 2.90" for 10-YEAR event
Inflow = 37.18 cfs @ 12.15 hrs, Volume= 2.950 af
Outflow = 37.03 cfs @ 12.16 hrs, Volume= 2.950 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.34 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.27 fps, Avg. Travel Time= 3.3 min

Peak Storage= 2,133 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.50' Flow Area= 50.0 sf, Capacity= 451.81 cfs

50.00' x 0.50' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 100.0 '/' Top Width= 150.00'
Length= 250.0' Slope= 0.2560 '/'
Inlet Invert= 2,232.00', Outlet Invert= 2,168.00'

‡

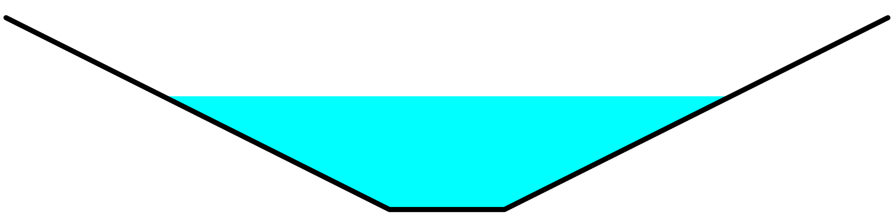
Summary for Reach 295: Roadside Channel

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 47.69 cfs @ 12.21 hrs, Volume= 3.824 af
Outflow = 47.57 cfs @ 12.22 hrs, Volume= 3.824 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.24 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.46 fps, Avg. Travel Time= 2.6 min

Peak Storage= 2,491 cf @ 12.22 hrs
Average Depth at Peak Storage= 1.48'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 159.47 cfs

1.50' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 11.50'
Length= 379.0' Slope= 0.0501 '/'
Inlet Invert= 2,084.00', Outlet Invert= 2,065.00'



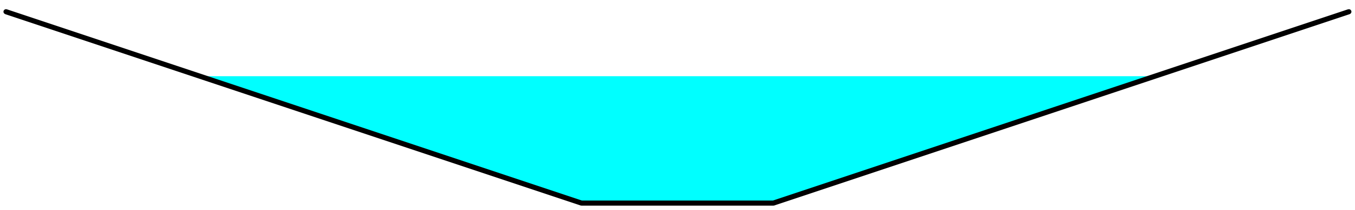
Summary for Reach 296: Wetland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 47.82 cfs @ 12.20 hrs, Volume= 3.824 af
Outflow = 47.69 cfs @ 12.21 hrs, Volume= 3.824 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.01 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.02 fps, Avg. Travel Time= 2.6 min

Peak Storage= 2,539 cf @ 12.21 hrs
Average Depth at Peak Storage= 1.33'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 122.08 cfs

2.00' x 2.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 320.0' Slope= 0.0375 '/'
Inlet Invert= 2,096.00', Outlet Invert= 2,084.00'



Summary for Reach 297: Overland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 48.02 cfs @ 12.18 hrs, Volume= 3.824 af
Outflow = 47.82 cfs @ 12.20 hrs, Volume= 3.824 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.23 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 4.3 min

Peak Storage= 3,348 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 0.50' Flow Area= 27.5 sf, Capacity= 225.40 cfs

30.00' x 0.50' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 50.0 '/' Top Width= 80.00'
Length= 366.0' Slope= 0.2022 '/'
Inlet Invert= 2,170.00', Outlet Invert= 2,096.00'

‡

Summary for Reach 298: Wetland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 49.31 cfs @ 12.15 hrs, Volume= 3.824 af
Outflow = 48.02 cfs @ 12.18 hrs, Volume= 3.824 af, Atten= 3%, Lag= 2.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.12 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.55 fps, Avg. Travel Time= 12.3 min

Peak Storage= 9,224 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 150.0 sf, Capacity= 802.14 cfs

100.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 50.0 '/' Top Width= 200.00'
Length= 408.0' Slope= 0.0931 '/'
Inlet Invert= 2,208.00', Outlet Invert= 2,170.00'

‡

Summary for Reach 299: Overland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 49.32 cfs @ 12.14 hrs, Volume= 3.824 af
Outflow = 49.31 cfs @ 12.15 hrs, Volume= 3.824 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.81 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.10 fps, Avg. Travel Time= 1.1 min

Peak Storage= 1,146 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 130.57 cfs

10.00' x 0.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 50.0 '/' Top Width= 60.00'
Length= 135.0' Slope= 0.3259 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,208.00'

‡

Summary for Pond 1aP: Design Point 1a

Inflow Area = 4.640 ac, 4.97% Impervious, Inflow Depth = 2.99" for 10-YEAR event
Inflow = 18.08 cfs @ 12.07 hrs, Volume= 1.157 af
Primary = 18.08 cfs @ 12.07 hrs, Volume= 1.157 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond 2R: 48" CMP Culvert

Inflow Area = 148.584 ac, 0.82% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 410.22 cfs @ 12.16 hrs, Volume= 34.829 af
Outflow = 410.22 cfs @ 12.16 hrs, Volume= 34.829 af, Atten= 0%, Lag= 0.0 min
Primary = 410.22 cfs @ 12.16 hrs, Volume= 34.829 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,746.62' @ 12.16 hrs
Flood Elev= 1,749.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,741.00'	**48.0" Round Culvert** L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,741.00' / 1,740.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 12.57 sf
#2	Primary	1,745.50'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=410.10 cfs @ 12.16 hrs HW=1,746.62' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 90.91 cfs @ 7.23 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 319.19 cfs @ 2.85 fps)

Summary for Pond 4R: 24" Steel Culvert

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 47.57 cfs @ 12.22 hrs, Volume= 3.824 af
Outflow = 47.57 cfs @ 12.22 hrs, Volume= 3.824 af, Atten= 0%, Lag= 0.0 min
Primary = 47.57 cfs @ 12.22 hrs, Volume= 3.824 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,068.33' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,065.00'	**24.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 2,065.00' / 2,063.00' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	2,068.00'	**50.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=47.56 cfs @ 12.22 hrs HW=2,068.33' TW=2,060.86' (Dynamic Tailwater)
-1=**Culvert** (Inlet Controls 23.11 cfs @ 7.36 fps)
-2=**Broad-Crested Rectangular Weir** (Weir Controls 24.45 cfs @ 1.47 fps)

Summary for Pond 7R: 30" Steel Culvert

Inflow Area = 77.687 ac, 1.16% Impervious, Inflow Depth = 2.88" for 10-YEAR event
Inflow = 244.25 cfs @ 12.11 hrs, Volume= 18.639 af
Outflow = 244.25 cfs @ 12.11 hrs, Volume= 18.639 af, Atten= 0%, Lag= 0.0 min
Primary = 244.25 cfs @ 12.11 hrs, Volume= 18.639 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,817.82' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,813.00'	**30.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 1,813.00' / 1,812.00' S= 0.0333 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Primary	1,816.50'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=244.18 cfs @ 12.11 hrs HW=1,817.82' TW=1,812.49' (Dynamic Tailwater)
-1=**Culvert** (Inlet Controls 44.64 cfs @ 9.09 fps)
-2=**Broad-Crested Rectangular Weir** (Weir Controls 199.54 cfs @ 3.03 fps)

Summary for Pond 10R: 14" and 16" HDPE Culverts

Inflow Area = 20.120 ac, 2.73% Impervious, Inflow Depth = 2.90" for 10-YEAR event
Inflow = 58.48 cfs @ 12.17 hrs, Volume= 4.860 af
Outflow = 58.48 cfs @ 12.17 hrs, Volume= 4.860 af, Atten= 0%, Lag= 0.0 min
Primary = 12.76 cfs @ 12.17 hrs, Volume= 3.359 af
Secondary = 45.72 cfs @ 12.17 hrs, Volume= 1.501 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,977.49' @ 12.17 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,975.00'	**14.0" Round 14" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.07 sf
#2	Primary	1,975.00'	**16.0" Round 16" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.40 sf
#3	Secondary	1,977.00'	**50.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=12.76 cfs @ 12.17 hrs HW=1,977.49' TW=1,973.23' (Dynamic Tailwater)
├─**1=14" Culvert** (Inlet Controls 5.60 cfs @ 5.24 fps)
└─**2=16" Culvert** (Inlet Controls 7.16 cfs @ 5.13 fps)

Secondary OutFlow Max=45.70 cfs @ 12.17 hrs HW=1,977.49' TW=1,973.23' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 45.70 cfs @ 1.88 fps)

Summary for Pond 13R: 16" CMP Culvert

Inflow Area =	2.097 ac, 8.77% Impervious, Inflow Depth = 3.09"	for 10-YEAR event	
Inflow =	8.72 cfs @ 12.06 hrs, Volume=	0.540 af	
Outflow =	8.72 cfs @ 12.06 hrs, Volume=	0.540 af,	Atten= 0%, Lag= 0.0 min
Primary =	8.72 cfs @ 12.06 hrs, Volume=	0.540 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,970.35' @ 12.06 hrs
Flood Elev= 1,969.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,968.00'	**16.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 1,968.00' / 1,965.00' S= 0.0750 '/' Cc= 0.900 n= 0.025, Flow Area= 1.40 sf

Primary OutFlow Max=8.72 cfs @ 12.06 hrs HW=1,970.35' TW=1,960.11' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 8.72 cfs @ 6.24 fps)

Summary for Pond 57: 15" Steel Culvert

Inflow Area =	1.326 ac, 4.72% Impervious, Inflow Depth = 2.90"	for 10-YEAR event	
Inflow =	4.92 cfs @ 12.08 hrs, Volume=	0.320 af	
Outflow =	4.92 cfs @ 12.08 hrs, Volume=	0.320 af,	Atten= 0%, Lag= 0.0 min
Primary =	4.92 cfs @ 12.08 hrs, Volume=	0.320 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,005.74' @ 12.08 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,004.00'	**15.0" Round 15" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,004.00' / 2,000.00' S= 0.0667 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=4.92 cfs @ 12.08 hrs HW=2,005.74' TW=2,000.87' (Dynamic Tailwater)
↑—**1=15" Smooth Steel Culvert (old)** (Inlet Controls 4.92 cfs @ 4.01 fps)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 58R: 24" HDPE Pipe

Inflow Area =	3.000 ac,	0.00% Impervious,	Inflow Depth = 2.81"	for 10-YEAR event
Inflow =	10.33 cfs @	12.09 hrs, Volume=	0.701 af	
Outflow =	10.33 cfs @	12.09 hrs, Volume=	0.701 af,	Atten= 0%, Lag= 0.0 min
Primary =	10.33 cfs @	12.09 hrs, Volume=	0.701 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,223.48' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,222.00'	**24.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,222.00' / 2,221.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,225.00'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=10.32 cfs @ 12.09 hrs HW=2,223.48' TW=2,220.05' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 10.32 cfs @ 4.14 fps)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 59: 32" Plastic Pipe

Inflow Area =	30.315 ac,	1.06% Impervious,	Inflow Depth = 2.81"	for 10-YEAR event
Inflow =	82.26 cfs @	12.19 hrs, Volume=	7.087 af	
Outflow =	82.26 cfs @	12.19 hrs, Volume=	7.087 af,	Atten= 0%, Lag= 0.0 min
Primary =	46.44 cfs @	12.19 hrs, Volume=	6.251 af	
Secondary =	35.81 cfs @	12.19 hrs, Volume=	0.835 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,333.12' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,327.00'	**32.0" Round 32" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,327.00' / 2,324.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 5.59 sf
#2	Secondary	2,331.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=46.44 cfs @ 12.19 hrs HW=2,333.12' TW=2,326.40' (Dynamic Tailwater)
└─**1=32" Plastic Culvert** (Inlet Controls 46.44 cfs @ 8.32 fps)

Secondary OutFlow Max=35.79 cfs @ 12.19 hrs HW=2,333.12' TW=2,322.25' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 35.79 cfs @ 4.22 fps)

Summary for Pond 60: 30" Steel Culvert

Inflow Area = 128.756 ac, 2.17% Impervious, Inflow Depth = 2.87" for 10-YEAR event
Inflow = 201.20 cfs @ 12.24 hrs, Volume= 30.750 af
Outflow = 201.20 cfs @ 12.24 hrs, Volume= 30.750 af, Atten= 0%, Lag= 0.0 min
Primary = 201.20 cfs @ 12.24 hrs, Volume= 30.750 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,024.67' @ 12.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,020.00'	**30.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,020.00' / 2,019.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Primary	2,021.00'	**15.0" Round Culvert** L= 20.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,021.00' / 2,020.00' S= 0.0500 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 1.23 sf
#3	Primary	2,024.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=201.20 cfs @ 12.24 hrs HW=2,024.67' TW=2,018.31' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 43.72 cfs @ 8.91 fps)
├─**2=Culvert** (Inlet Controls 9.10 cfs @ 7.42 fps)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 148.38 cfs @ 2.21 fps)

Summary for Pond 67P: 24" Steel Culvert

Inflow Area = 4.195 ac, 7.34% Impervious, Inflow Depth = 2.99" for 10-YEAR event
Inflow = 18.34 cfs @ 12.03 hrs, Volume= 1.046 af
Outflow = 18.34 cfs @ 12.03 hrs, Volume= 1.046 af, Atten= 0%, Lag= 0.0 min
Primary = 18.34 cfs @ 12.03 hrs, Volume= 1.046 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,006.04' @ 12.03 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,003.00'	**24.0" Round 24" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,003.00' / 2,000.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50

3.00
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31
3.32

Primary OutFlow Max=18.32 cfs @ 12.03 hrs HW=2,006.04' TW=2,000.85' (Dynamic Tailwater)
↑—**1=24" Smooth Steel Culvert (old)** (Inlet Controls 17.07 cfs @ 5.43 fps)
└—**2=Broad-Crested Rectangular Weir** (Weir Controls 1.25 cfs @ 0.57 fps)

Summary for Pond 68: 12" Steel Culvert

Inflow Area = 10.642 ac, 1.77% Impervious, Inflow Depth = 2.90" for 10-YEAR event
Inflow = 35.42 cfs @ 12.12 hrs, Volume= 2.571 af
Outflow = 35.42 cfs @ 12.12 hrs, Volume= 2.571 af, Atten= 0%, Lag= 0.0 min
Primary = 6.20 cfs @ 12.12 hrs, Volume= 1.450 af
Secondary = 29.22 cfs @ 12.12 hrs, Volume= 1.121 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,003.19' @ 12.12 hrs
Flood Elev= 2,001.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,000.00'	**12.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 2,000.00' / 1,999.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	2,000.50'	**2.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=6.20 cfs @ 12.12 hrs HW=2,003.19' TW=1,998.07' (Dynamic Tailwater)
└—**1=Culvert** (Inlet Controls 6.20 cfs @ 7.89 fps)

Secondary OutFlow Max=29.20 cfs @ 12.12 hrs HW=2,003.19' TW=1,998.07' (Dynamic Tailwater)
└—**2=Broad-Crested Rectangular Weir** (Weir Controls 29.20 cfs @ 5.43 fps)

Summary for Pond 77: 36" Steel Culvert

Inflow Area = 88.881 ac, 1.70% Impervious, Inflow Depth = 2.85" for 10-YEAR event
Inflow = 136.21 cfs @ 12.50 hrs, Volume= 21.133 af
Outflow = 136.21 cfs @ 12.50 hrs, Volume= 21.133 af, Atten= 0%, Lag= 0.0 min
Primary = 136.21 cfs @ 12.50 hrs, Volume= 21.133 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,176.45' @ 12.50 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,172.00'	**36.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 2,172.00' / 2,171.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	2,176.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=136.21 cfs @ 12.50 hrs HW=2,176.45' TW=2,171.83' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 58.44 cfs @ 8.27 fps)
2=**Broad-Crested Rectangular Weir** (Weir Controls 77.77 cfs @ 1.74 fps)

Summary for Pond 79: 16" Steel Culvert

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 2.85" for 10-YEAR event
Inflow = 137.56 cfs @ 12.51 hrs, Volume= 21.601 af
Outflow = 137.56 cfs @ 12.51 hrs, Volume= 21.601 af, Atten= 0%, Lag= 0.0 min
Primary = 137.56 cfs @ 12.51 hrs, Volume= 21.601 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,058.61' @ 12.51 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,056.00'	**16.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,056.00' / 2,055.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 1.40 sf
#2	Primary	2,058.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=137.56 cfs @ 12.51 hrs HW=2,058.61' TW=2,056.49' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 9.37 cfs @ 6.71 fps)
2=**Broad-Crested Rectangular Weir** (Weir Controls 128.19 cfs @ 2.11 fps)

Summary for Pond 83: 24" HPDE Culvert

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 4.88 cfs @ 12.06 hrs, Volume= 0.304 af
Outflow = 4.88 cfs @ 12.06 hrs, Volume= 0.304 af, Atten= 0%, Lag= 0.0 min
Primary = 4.88 cfs @ 12.06 hrs, Volume= 0.304 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,361.09' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,360.00'	**24.0" Round 24" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,360.00' / 2,357.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,364.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=4.88 cfs @ 12.06 hrs HW=2,361.09' TW=2,347.03' (Dynamic Tailwater)
└─**1=24" Plastic Culvert** (Inlet Controls 4.88 cfs @ 2.80 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,360.00' TW=2,327.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 84: 24" HDPE Pipe

Inflow Area = 31.013 ac, 2.16% Impervious, Inflow Depth = 3.22" for 10-YEAR event
Inflow = 106.32 cfs @ 12.23 hrs, Volume= 8.327 af
Outflow = 106.32 cfs @ 12.23 hrs, Volume= 8.327 af, Atten= 0%, Lag= 0.0 min
Primary = 64.71 cfs @ 12.23 hrs, Volume= 7.435 af
Secondary = 41.61 cfs @ 12.23 hrs, Volume= 0.892 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,322.30' @ 12.23 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,315.00'	**36.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,315.00' / 2,312.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#2	Secondary	2,320.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=64.71 cfs @ 12.23 hrs HW=2,322.30' TW=2,312.49' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 64.71 cfs @ 9.15 fps)

Secondary OutFlow Max=41.58 cfs @ 12.23 hrs HW=2,322.30' TW=2,301.04' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 41.58 cfs @ 4.52 fps)

Summary for Pond 85: 28" HDPE Pipe

Inflow Area = 4.281 ac, 0.54% Impervious, Inflow Depth = 5.31" for 10-YEAR event
Inflow = 52.67 cfs @ 12.20 hrs, Volume= 1.893 af
Outflow = 52.67 cfs @ 12.20 hrs, Volume= 1.893 af, Atten= 0%, Lag= 0.0 min
Primary = 40.94 cfs @ 12.20 hrs, Volume= 1.763 af
Secondary = 11.73 cfs @ 12.20 hrs, Volume= 0.129 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,301.06' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,295.00'	**30.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,295.00' / 2,292.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 4.91 sf
#2	Secondary	2,300.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50

3.00 3.50
Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07
3.20 3.32

Primary OutFlow Max=40.92 cfs @ 12.20 hrs HW=2,301.06' TW=2,292.28' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 40.92 cfs @ 8.34 fps)

Secondary OutFlow Max=11.66 cfs @ 12.20 hrs HW=2,301.06' TW=2,243.69' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 11.66 cfs @ 2.75 fps)

Summary for Pond 86: 24" HDPE Pipe

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 3.16" for 10-YEAR event
Inflow = 19.91 cfs @ 12.19 hrs, Volume= 1.144 af
Outflow = 19.91 cfs @ 12.19 hrs, Volume= 1.144 af, Atten= 0%, Lag= 0.0 min
Primary = 19.91 cfs @ 12.19 hrs, Volume= 1.144 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,243.78' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**24.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,240.00' / 2,237.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,245.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=19.86 cfs @ 12.19 hrs HW=2,243.77' TW=2,237.28' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 19.86 cfs @ 6.32 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,240.00' TW=2,222.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 87: 18" Steel Culvert

Inflow Area = 2.000 ac, 0.00% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 7.13 cfs @ 12.08 hrs, Volume= 0.468 af
Outflow = 7.13 cfs @ 12.08 hrs, Volume= 0.468 af, Atten= 0%, Lag= 0.0 min
Primary = 7.13 cfs @ 12.08 hrs, Volume= 0.468 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,209.88' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,208.00'	**18.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,208.00' / 2,207.00' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=7.12 cfs @ 12.08 hrs HW=2,209.87' TW=2,207.51' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 7.12 cfs @ 4.03 fps)

Summary for Pond 90: 12" Steel Culvert

Inflow Area =	12.874 ac,	0.00% Impervious,	Inflow Depth = 2.81"	for 10-YEAR event
Inflow =	27.33 cfs @	12.32 hrs, Volume=	3.010 af	
Outflow =	27.33 cfs @	12.32 hrs, Volume=	3.010 af,	Atten= 0%, Lag= 0.0 min
Primary =	27.33 cfs @	12.32 hrs, Volume=	3.010 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,895.28' @ 12.32 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,890.00'	**12.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 1,890.00' / 1,889.50' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	1,895.00'	**50.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=27.33 cfs @ 12.32 hrs HW=1,895.28' TW=1,889.81' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 8.27 cfs @ 10.53 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 19.05 cfs @ 1.34 fps)

Summary for Pond 200: 36" Steel Culvert

Inflow Area =	76.410 ac,	0.43% Impervious,	Inflow Depth = 2.81"	for 10-YEAR event
Inflow =	214.98 cfs @	12.17 hrs, Volume=	17.862 af	
Outflow =	214.98 cfs @	12.17 hrs, Volume=	17.862 af,	Atten= 0%, Lag= 0.0 min
Primary =	214.98 cfs @	12.17 hrs, Volume=	17.862 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,239.09' @ 12.17 hrs
Flood Elev= 2,248.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert** L= 50.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,234.00' / 2,230.00' S= 0.0800 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=214.93 cfs @ 12.17 hrs HW=2,239.09' TW=2,169.90' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 64.51 cfs @ 9.13 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 150.42 cfs @ 2.75 fps)

Summary for Pond 201: 36" Steel Culvert

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 2.90" for 10-YEAR event
Inflow = 37.18 cfs @ 12.15 hrs, Volume= 2.950 af
Outflow = 37.18 cfs @ 12.15 hrs, Volume= 2.950 af, Atten= 0%, Lag= 0.0 min
Primary = 37.18 cfs @ 12.15 hrs, Volume= 2.950 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,236.77' @ 12.15 hrs
Flood Elev= 2,239.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert** L= 30.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,234.00' / 2,233.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=37.17 cfs @ 12.15 hrs HW=2,236.77' TW=2,232.13' (Dynamic Tailwater)
├─**1=Culvert** (Barrel Controls 37.17 cfs @ 7.13 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 300R: 18" Steel Culvert

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 49.32 cfs @ 12.14 hrs, Volume= 3.824 af
Outflow = 49.32 cfs @ 12.14 hrs, Volume= 3.824 af, Atten= 0%, Lag= 0.0 min
Primary = 49.32 cfs @ 12.14 hrs, Volume= 3.824 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,259.26' @ 12.14 hrs
Flood Elev= 2,261.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,254.00'	**18.0" Round 18" Steel Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,254.00' / 2,253.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Primary	2,259.00'	**100.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=49.31 cfs @ 12.14 hrs HW=2,259.26' TW=2,252.32' (Dynamic Tailwater)
├─**1=18" Steel Culvert** (Inlet Controls 14.26 cfs @ 8.07 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 35.04 cfs @ 1.36 fps)

Summary for Pond c1:

Inflow	=	3.14 cfs @	12.20 hrs, Volume=	0.421 af
Primary	=	3.14 cfs @	12.20 hrs, Volume=	0.421 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C2:

Inflow Area = 39.108 ac, 0.76% Impervious, Inflow Depth = 2.77" for 10-YEAR event

Inflow	=	104.05 cfs @	12.20 hrs, Volume=	9.040 af
Primary	=	104.05 cfs @	12.20 hrs, Volume=	9.040 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C3:

Inflow Area = 2.196 ac, 4.19% Impervious, Inflow Depth = 2.91" for 10-YEAR event

Inflow	=	6.69 cfs @	12.09 hrs, Volume=	0.533 af
Primary	=	6.69 cfs @	12.09 hrs, Volume=	0.533 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C4:

Inflow Area = 10.003 ac, 2.13% Impervious, Inflow Depth = 2.31" for 10-YEAR event

Inflow	=	12.07 cfs @	12.11 hrs, Volume=	1.928 af
Primary	=	12.07 cfs @	12.11 hrs, Volume=	1.928 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5:

Inflow Area = 14.626 ac, 1.24% Impervious, Inflow Depth = 2.06" for 10-YEAR event

Inflow	=	13.58 cfs @	12.08 hrs, Volume=	2.512 af
Primary	=	13.58 cfs @	12.08 hrs, Volume=	2.512 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5A:

Inflow Area = 12.084 ac, 0.47% Impervious, Inflow Depth = 1.87" for 10-YEAR event

Inflow	=	7.57 cfs @	12.09 hrs, Volume=	1.883 af
Primary	=	7.57 cfs @	12.09 hrs, Volume=	1.883 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6:

Inflow Area = 58.487 ac, 0.32% Impervious, Inflow Depth = 3.28" for 10-YEAR event
Inflow = 245.27 cfs @ 12.13 hrs, Volume= 16.010 af
Primary = 245.27 cfs @ 12.13 hrs, Volume= 16.010 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6A:

Inflow Area = 41.924 ac, 1.24% Impervious, Inflow Depth = 2.90" for 10-YEAR event
Inflow = 105.37 cfs @ 12.24 hrs, Volume= 10.127 af
Primary = 105.37 cfs @ 12.24 hrs, Volume= 10.127 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 10: Design Point 10

Inflow Area = 162.408 ac, 2.03% Impervious, Inflow Depth = 2.85" for 10-YEAR event
Inflow = 283.93 cfs @ 12.22 hrs, Volume= 38.617 af
Primary = 283.93 cfs @ 12.22 hrs, Volume= 38.617 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 11: Design Point 11

Inflow Area = 66.273 ac, 1.46% Impervious, Inflow Depth = 2.88" for 10-YEAR event
Inflow = 145.01 cfs @ 12.33 hrs, Volume= 15.909 af
Primary = 145.01 cfs @ 12.33 hrs, Volume= 15.909 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 12: Design Point 12

Inflow Area = 7.264 ac, 15.61% Impervious, Inflow Depth = 3.28" for 10-YEAR event
Inflow = 34.88 cfs @ 12.03 hrs, Volume= 1.987 af
Primary = 34.88 cfs @ 12.03 hrs, Volume= 1.987 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 16: DESIGN POINT 16

Inflow Area = 18.787 ac, 4.30% Impervious, Inflow Depth = 2.92" for 10-YEAR event
Inflow = 58.62 cfs @ 12.11 hrs, Volume= 4.571 af
Primary = 58.62 cfs @ 12.11 hrs, Volume= 4.571 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 7: Design Point 7

Inflow Area = 149.008 ac, 0.89% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 410.79 cfs @ 12.16 hrs, Volume= 34.952 af
Primary = 410.79 cfs @ 12.16 hrs, Volume= 34.952 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 8: Design Point 8

Inflow Area = 95.972 ac, 1.42% Impervious, Inflow Depth = 2.88" for 10-YEAR event
Inflow = 307.23 cfs @ 12.11 hrs, Volume= 23.056 af
Primary = 307.23 cfs @ 12.11 hrs, Volume= 23.056 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 9: Design Point 9

Inflow Area = 56.369 ac, 3.06% Impervious, Inflow Depth = 2.95" for 10-YEAR event
Inflow = 160.25 cfs @ 12.18 hrs, Volume= 13.835 af
Primary = 160.25 cfs @ 12.18 hrs, Volume= 13.835 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP2: ditch

Inflow Area = 39.108 ac, 0.76% Impervious, Inflow Depth = 2.90" for 10-YEAR event
Inflow = 107.26 cfs @ 12.20 hrs, Volume= 9.461 af
Outflow = 107.19 cfs @ 12.20 hrs, Volume= 9.461 af, Atten= 0%, Lag= 0.2 min
Primary = 104.05 cfs @ 12.20 hrs, Volume= 9.040 af
Secondary = 3.14 cfs @ 12.20 hrs, Volume= 0.421 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,434.74' @ 12.20 hrs Surf.Area= 3,428 sf Storage= 4,573 cf

Plug-Flow detention time= 2.6 min calculated for 9.461 af (100% of inflow)
Center-of-Mass det. time= 2.4 min (853.6 - 851.2)

Volume	Invert	Avail.Storage	Storage Description
#1	2,432.00'	5,508 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,432.00	258	0	0
2,434.00	2,218	2,476	2,476
2,435.00	3,846	3,032	5,508

Device	Routing	Invert	Outlet Devices
#1	Primary	2,432.00'	**18.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,432.00' / 2,431.50' S= 0.0125 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,433.36'	**12.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,433.36' / 2,431.00' S= 0.0590 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Primary	2,434.25'	**100.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=104.01 cfs @ 12.20 hrs HW=2,434.74' TW=0.00' (Dynamic Tailwater)
├1=**Culvert** (Inlet Controls 10.60 cfs @ 6.00 fps)
└3=**Broad-Crested Rectangular Weir** (Weir Controls 93.41 cfs @ 1.90 fps)

Secondary OutFlow Max=3.14 cfs @ 12.20 hrs HW=2,434.74' TW=0.00' (Dynamic Tailwater)
└2=**Culvert** (Inlet Controls 3.14 cfs @ 3.99 fps)

Summary for Pond DP3: 12" Steel

Inflow Area =	2.196 ac,	4.19% Impervious, Inflow Depth = 2.99"	for 10-YEAR event	
Inflow =	8.14 cfs @	12.09 hrs, Volume=	0.548 af	
Outflow =	8.14 cfs @	12.09 hrs, Volume=	0.548 af,	Atten= 0%, Lag= 0.0 min
Primary =	6.69 cfs @	12.09 hrs, Volume=	0.533 af	
Secondary =	1.45 cfs @	12.09 hrs, Volume=	0.014 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,445.30' @ 12.09 hrs
Flood Elev= 2,446.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,443.00'	**12.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,443.00' / 2,442.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,445.00'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Secondary	2,445.25'	**50.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.69 cfs @ 12.09 hrs HW=2,445.30' TW=0.00' (Dynamic Tailwater)
├1=**Culvert** (Inlet Controls 4.48 cfs @ 5.70 fps)
└2=**Broad-Crested Rectangular Weir** (Weir Controls 2.21 cfs @ 1.48 fps)

Secondary OutFlow Max=1.45 cfs @ 12.09 hrs HW=2,445.30' TW=2,443.32' (Dynamic Tailwater)
└3=**Broad-Crested Rectangular Weir** (Weir Controls 1.45 cfs @ 0.59 fps)

Summary for Pond DP4: 18" HDPE Culvert

Inflow Area = 10.003 ac, 2.13% Impervious, Inflow Depth = 2.90" for 10-YEAR event
Inflow = 33.96 cfs @ 12.11 hrs, Volume= 2.416 af
Outflow = 33.96 cfs @ 12.11 hrs, Volume= 2.416 af, Atten= 0%, Lag= 0.0 min
Primary = 12.07 cfs @ 12.11 hrs, Volume= 1.928 af
Secondary = 21.89 cfs @ 12.11 hrs, Volume= 0.489 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,372.33' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,369.00'	**18.0" Round Culvert** L= 25.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,369.00' / 2,368.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,371.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=12.07 cfs @ 12.11 hrs HW=2,372.33' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 12.07 cfs @ 6.83 fps)

Secondary OutFlow Max=21.89 cfs @ 12.11 hrs HW=2,372.33' TW=2,369.27' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 21.89 cfs @ 2.62 fps)

Summary for Pond DP5: 18" HDPE Culvert

Inflow Area = 14.626 ac, 1.24% Impervious, Inflow Depth = 3.21" for 10-YEAR event
Inflow = 74.65 cfs @ 12.08 hrs, Volume= 3.908 af
Outflow = 74.65 cfs @ 12.08 hrs, Volume= 3.908 af, Atten= 0%, Lag= 0.0 min
Primary = 13.58 cfs @ 12.08 hrs, Volume= 2.512 af
Secondary = 61.07 cfs @ 12.08 hrs, Volume= 1.396 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,303.52' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,299.50'	**18.0" Round Culvert** L= 25.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,299.50' / 2,298.50' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,302.00'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=13.58 cfs @ 12.08 hrs HW=2,303.52' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 13.58 cfs @ 7.68 fps)

Secondary OutFlow Max=60.99 cfs @ 12.08 hrs HW=2,303.52' TW=2,301.66' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 60.99 cfs @ 4.01 fps)

Summary for Pond DP5A: 12" steel Culvert

Inflow Area = 12.084 ac, 0.47% Impervious, Inflow Depth = 4.19" for 10-YEAR event
Inflow = 101.21 cfs @ 12.09 hrs, Volume= 4.221 af
Outflow = 101.21 cfs @ 12.09 hrs, Volume= 4.221 af, Atten= 0%, Lag= 0.0 min
Primary = 7.57 cfs @ 12.09 hrs, Volume= 1.883 af
Secondary = 93.64 cfs @ 12.09 hrs, Volume= 2.338 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,276.50' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,272.00'	**12.0" Round Culvert** L= 25.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,272.00' / 2,270.00' S= 0.0800 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf
#2	Secondary	2,274.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=7.57 cfs @ 12.09 hrs HW=2,276.50' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 7.57 cfs @ 9.63 fps)

Secondary OutFlow Max=93.56 cfs @ 12.09 hrs HW=2,276.50' TW=2,273.69' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 93.56 cfs @ 4.67 fps)

Summary for Pond DP6: 55" CMP Culvert

Inflow Area = 58.487 ac, 0.32% Impervious, Inflow Depth = 3.28" for 10-YEAR event
Inflow = 245.27 cfs @ 12.13 hrs, Volume= 16.010 af
Outflow = 245.27 cfs @ 12.13 hrs, Volume= 16.010 af, Atten= 0%, Lag= 0.0 min
Primary = 245.27 cfs @ 12.13 hrs, Volume= 16.010 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,243.64' @ 12.13 hrs
Flood Elev= 2,245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,238.00'	**55.0" W x 38.0" H, R=33.0" Elliptical Culvert** L= 25.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,238.00' / 2,237.00' S= 0.0400 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 11.11 sf

#2	Primary	2,243.00'	**100.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=245.07 cfs @ 12.13 hrs HW=2,243.64' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 107.26 cfs @ 9.65 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 137.81 cfs @ 2.15 fps)

Summary for Pond DP6A: 30" Steel Culvert

Inflow Area = 41.924 ac, 1.24% Impervious, Inflow Depth = 2.90" for 10-YEAR event
Inflow = 105.37 cfs @ 12.24 hrs, Volume= 10.127 af
Outflow = 105.37 cfs @ 12.24 hrs, Volume= 10.127 af, Atten= 0%, Lag= 0.0 min
Primary = 105.37 cfs @ 12.24 hrs, Volume= 10.127 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,244.63' @ 12.24 hrs
Flood Elev= 2,245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**30.0" Round Culvert** L= 65.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,240.00' / 2,238.00' S= 0.0308 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 4.91 sf
#2	Primary	2,244.00'	**50.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=105.35 cfs @ 12.24 hrs HW=2,244.63' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 38.33 cfs @ 7.81 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 67.02 cfs @ 2.13 fps)

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1 Runoff Area=2,611,846 sf 0.88% Impervious Runoff Depth=3.21"
Flow Length=2,860' Tc=17.6 min CN=70 Runoff=229.44 cfs 16.025 af

Subcatchment 2S: Subcatchment 2 Runoff Area=18,469 sf 23.82% Impervious Runoff Depth=3.92"
Flow Length=375' Tc=7.5 min CN=77 Runoff=2.77 cfs 0.138 af

Subcatchment 3S: Subcatchment 3 Runoff Area=2,671,441 sf 1.35% Impervious Runoff Depth=3.31"
Flow Length=2,885' Tc=17.0 min CN=71 Runoff=246.49 cfs 16.899 af

Subcatchment 4S: Subcatchment 4 Runoff Area=796,495 sf 2.51% Impervious Runoff Depth=3.31"
Flow Length=2,020' Tc=15.5 min CN=71 Runoff=77.12 cfs 5.038 af

Subcatchment 5S: Subcatchment 5 Runoff Area=91,345 sf 8.77% Impervious Runoff Depth=3.51"
Flow Length=715' Tc=13.9 min CN=73 Runoff=9.90 cfs 0.613 af

Subcatchment 6S: Subcatchment 6 Runoff Area=1,024,096 sf 3.41% Impervious Runoff Depth=3.41"
Flow Length=2,176' Tc=20.1 min CN=72 Runoff=88.97 cfs 6.675 af

Subcatchment 7S: Subcatchment 7 Runoff Area=876,427 sf 2.73% Impervious Runoff Depth=3.31"
Flow Length=1,860' Tc=23.6 min CN=71 Runoff=66.91 cfs 5.544 af

Subcatchment 8S: Subcatchment 8 Runoff Area=463,566 sf 1.77% Impervious Runoff Depth=3.31"
Flow Length=1,835' Tc=18.8 min CN=71 Runoff=40.48 cfs 2.932 af

Subcatchment 9S: Subcatchment 9 Runoff Area=1,465,881 sf 1.47% Impervious Runoff Depth=3.21"
Flow Length=2,033' Tc=21.6 min CN=70 Runoff=114.38 cfs 8.994 af

Subcatchment 10S: Subcatchment 10 Runoff Area=1,649,824 sf 3.39% Impervious Runoff Depth=3.31"
Flow Length=2,845' Tc=25.8 min CN=71 Runoff=119.38 cfs 10.436 af

Subcatchment 11A: Subcatchment 11A Runoff Area=57,739 sf 4.72% Impervious Runoff Depth=3.31"
Flow Length=480' Tc=15.3 min CN=71 Runoff=5.62 cfs 0.365 af

Subcatchment 11B: Subcatchment 11B Runoff Area=577,903 sf 3.29% Impervious Runoff Depth=3.31"
Flow Length=1,270' Tc=22.3 min CN=71 Runoff=45.75 cfs 3.656 af

Subcatchment 11S: Subcatchment 11 Runoff Area=182,734 sf 7.34% Impervious Runoff Depth=3.41"
Flow Length=984' Tc=11.5 min CN=72 Runoff=20.87 cfs 1.191 af

Subcatchment 12S: Subcatchment 12 Runoff Area=2,326,061 sf 1.82% Impervious Runoff Depth=3.31"
Flow Length=2,390' Tc=34.4 min CN=71 Runoff=138.91 cfs 14.714 af

Subcatchment 14S: Subcatchment 14 Runoff Area=1,703,544 sf 0.76% Impervious Runoff Depth=3.31"
Flow Length=2,585' Tc=26.2 min CN=71 Runoff=122.31 cfs 10.776 af

Subcatchment 15S: Subcatchment 15 Runoff Area=95,640 sf 4.19% Impervious Runoff Depth=3.41"
Flow Length=945' Tc=16.4 min CN=72 Runoff=9.28 cfs 0.623 af

Subcatchment 16S: Subcatchment 16 Runoff Area=435,730 sf 2.13% Impervious Runoff Depth=3.31"
Flow Length=1,844' Tc=18.2 min CN=71 Runoff=38.81 cfs 2.756 af

Subcatchment 17S: Subcatchment 17 Runoff Area=637,108 sf 1.24% Impervious Runoff Depth=3.21"
Flow Length=1,167' Tc=13.5 min CN=70 Runoff=63.90 cfs 3.909 af

Subcatchment 18S: Subcatchment 18 Runoff Area=526,390 sf 0.47% Impervious Runoff Depth=3.21"
Flow Length=2,315' Tc=17.4 min CN=70 Runoff=46.49 cfs 3.230 af

Subcatchment 19S: Subcatchment 19 Runoff Area=2,547,694 sf 0.32% Impervious Runoff Depth=3.21"
Flow Length=2,625' Tc=24.0 min CN=70 Runoff=186.61 cfs 15.631 af

Subcatchment 20S: Subcatchment 20 Runoff Area=1,826,209 sf 1.24% Impervious Runoff Depth=3.31"
Flow Length=3,465' Tc=29.6 min CN=71 Runoff=120.67 cfs 11.552 af

Subcatchment 21S: Subcatchment 21 (Leach Runoff Area=202,100 sf 4.97% Impervious Runoff Depth=3.41"
Flow Length=890' Tc=14.9 min CN=72 Runoff=20.59 cfs 1.317 af

Subcatchment 27S: Subcatchment 27 Runoff Area=316,441 sf 15.61% Impervious Runoff Depth=3.71"
Flow Length=669' Tc=11.4 min CN=75 Runoff=39.37 cfs 2.247 af

Subcatchment 28S: Subcatchment 28 Runoff Area=560,792 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=1,455' Tc=36.1 min CN=70 Runoff=31.42 cfs 3.441 af

Subcatchment 35S: Subcatchment 35 Runoff Area=532,041 sf 2.97% Impervious Runoff Depth=3.31"
Flow Length=3,110' Tc=22.0 min CN=71 Runoff=42.53 cfs 3.366 af

Subcatchment 200S: Subcatchment 200 Runoff Area=3,328,419 sf 0.43% Impervious Runoff Depth=3.21"
Flow Length=3,545' Tc=23.5 min CN=70 Runoff=246.71 cfs 20.421 af

Subcatchment 300S: Subcatchment 300 Runoff Area=712,598 sf 0.46% Impervious Runoff Depth=3.21"
Flow Length=2,040' Tc=21.0 min CN=70 Runoff=56.57 cfs 4.372 af

Subcatchment 500S: Subcatchment 500 Runoff Area=1,350,926 sf 2.16% Impervious Runoff Depth=3.31"
Flow Length=3,875' Tc=32.0 min CN=71 Runoff=84.97 cfs 8.546 af

Subcatchment 501S: Subcatchment 501 Runoff Area=186,481 sf 0.54% Impervious Runoff Depth=3.21"
Flow Length=2,030' Tc=19.3 min CN=70 Runoff=15.57 cfs 1.144 af

Subcatchment 502S: Subcatchment 502 Runoff Area=189,050 sf 0.76% Impervious Runoff Depth=3.21"
Flow Length=1,300' Tc=13.0 min CN=70 Runoff=19.29 cfs 1.160 af

Subcatchment 503S: Subcatchmant 503 Runoff Area=130,680 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=1,010' Tc=16.6 min CN=70 Runoff=11.83 cfs 0.802 af

Subcatchment 504S: Subcatchment 504 Runoff Area=1,320,521 sf 1.06% Impervious Runoff Depth=3.21"
Flow Length=3,280' Tc=25.0 min CN=70 Runoff=94.41 cfs 8.102 af

Subcatchment 511S: Subcatchmant 511 Runoff Area=87,120 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=680' Tc=15.6 min CN=70 Runoff=8.16 cfs 0.535 af

Subcatchment 512S: Subcatchment 512 Runoff Area=56,628 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=600' Tc=14.0 min CN=70 Runoff=5.59 cfs 0.347 af

Subcatchment 600S: Subcatchment 600 Runoff Area=369,868 sf 2.61% Impervious Runoff Depth=3.31"
Flow Length=1,610' Tc=19.3 min CN=71 Runoff=31.88 cfs 2.340 af

Subcatchment 601S: Subcatchment 601 Runoff Area=267,502 sf 3.92% Impervious Runoff Depth=3.31"
Flow Length=1,070' Tc=15.0 min CN=71 Runoff=26.32 cfs 1.692 af

Reach 1R: Wetland Flow Avg. Flow Depth=0.00' Max Vel=0.00 fps
n=0.070 L=408.0' S=0.0931 '/' Capacity=802.14 cfs Outflow=0.00 cfs 0.000 af

Reach 5: Stream Channel Avg. Flow Depth=0.93' Max Vel=10.02 fps Inflow=54.74 cfs 4.372 af
n=0.050 L=870.0' S=0.1954 '/' Capacity=1,064.40 cfs Outflow=54.38 cfs 4.372 af

Reach 5a: Stream Channel Avg. Flow Depth=1.08' Max Vel=10.73 fps Inflow=54.38 cfs 4.372 af
n=0.050 L=355.0' S=0.2141 '/' Capacity=318.14 cfs Outflow=54.33 cfs 4.372 af

Reach 5R: (new Reach) Avg. Flow Depth=0.49' Max Vel=3.28 fps Inflow=2.36 cfs 0.028 af
n=0.030 L=415.0' S=0.0217 '/' Capacity=30.57 cfs Outflow=2.19 cfs 0.028 af

Reach 6R: (new Reach) Avg. Flow Depth=1.84' Max Vel=12.77 fps Inflow=73.07 cfs 1.753 af
n=0.030 L=370.0' S=0.0757 '/' Capacity=128.38 cfs Outflow=72.94 cfs 1.753 af

Reach 8: Stream Channel Avg. Flow Depth=0.53' Max Vel=10.39 fps Inflow=280.71 cfs 21.271 af
n=0.050 L=245.0' S=0.2898 '/' Capacity=797.02 cfs Outflow=280.40 cfs 21.271 af

Reach 8R: through ditch Avg. Flow Depth=1.84' Max Vel=12.70 fps Inflow=111.29 cfs 2.899 af
n=0.030 L=495.0' S=0.0646 '/' Capacity=171.61 cfs Outflow=110.99 cfs 2.899 af

Reach 11R: Overland Flow Avg. Flow Depth=0.26' Max Vel=3.01 fps Inflow=66.91 cfs 5.544 af
n=0.080 L=1,180.0' S=0.1695 '/' Capacity=620.77 cfs Outflow=61.75 cfs 5.544 af

Reach 12R: Overland Flow Avg. Flow Depth=0.13' Max Vel=2.02 fps Inflow=9.90 cfs 0.613 af
n=0.080 L=950.0' S=0.1968 '/' Capacity=305.91 cfs Outflow=8.26 cfs 0.613 af

Reach 13: RR Swale Avg. Flow Depth=2.15' Max Vel=10.36 fps Inflow=280.40 cfs 21.271 af
n=0.035 L=450.0' S=0.0444 '/' Capacity=604.81 cfs Outflow=279.70 cfs 21.271 af

Reach 21R: (new Reach) Avg. Flow Depth=1.41' Max Vel=10.89 fps Inflow=26.51 cfs 0.627 af
n=0.030 L=685.0' S=0.1000 '/' Capacity=79.28 cfs Outflow=26.28 cfs 0.627 af

Reach 58: Swale along RR Tracks Avg. Flow Depth=1.33' Max Vel=5.26 fps Inflow=37.40 cfs 2.932 af
n=0.040 L=1,020.0' S=0.0265 '/' Capacity=139.83 cfs Outflow=36.07 cfs 2.932 af

Reach 58A: Overland Flow Avg. Flow Depth=0.08' Max Vel=2.41 fps Inflow=19.95 cfs 0.913 af
n=0.035 L=478.0' S=0.1004 '/' Capacity=1,456.48 cfs Outflow=18.74 cfs 0.913 af

Reach 61: Vegetated Roadside Swale Avg. Flow Depth=0.94' Max Vel=6.93 fps Inflow=26.19 cfs 1.556 af
n=0.040 L=751.0' S=0.0613 '/' Capacity=59.21 cfs Outflow=25.68 cfs 1.556 af

Reach 66: Stream Channel Avg. Flow Depth=1.46' Max Vel=10.43 fps Inflow=245.12 cfs 35.104 af
n=0.050 L=1,884.0' S=0.1152 '/' Capacity=445.48 cfs Outflow=242.07 cfs 35.104 af

Reach 78: Stream Channel Avg. Flow Depth=1.17' Max Vel=10.72 fps Inflow=158.19 cfs 24.667 af
n=0.050 L=685.0' S=0.1646 '/' Capacity=258.41 cfs Outflow=158.08 cfs 24.667 af

Reach 80: Stream Channel Avg. Flow Depth=1.60' Max Vel=6.84 fps Inflow=158.08 cfs 24.667 af
n=0.050 L=740.0' S=0.0473 '/' Capacity=247.19 cfs Outflow=157.76 cfs 24.667 af

Reach 82: Overland Flow Avg. Flow Depth=0.06' Max Vel=0.21 fps Inflow=5.59 cfs 0.347 af
n=0.400 L=938.0' S=0.1354 '/' Capacity=53.31 cfs Outflow=1.34 cfs 0.347 af

Reach 82a: Overland Flow Avg. Flow Depth=0.78' Max Vel=0.72 fps Inflow=108.18 cfs 15.567 af
n=0.400 L=473.0' S=0.0846 '/' Capacity=164.89 cfs Outflow=99.92 cfs 15.567 af

Reach 83A: Overland Flow Avg. Flow Depth=0.43' Max Vel=0.73 fps Inflow=47.98 cfs 6.935 af
n=0.400 L=441.0' S=0.1678 '/' Capacity=232.26 cfs Outflow=44.85 cfs 6.935 af

Reach 84A: Overland Flow Avg. Flow Depth=0.75' Max Vel=0.82 fps Inflow=109.24 cfs 15.220 af
n=0.400 L=277.0' S=0.1155 '/' Capacity=192.72 cfs Outflow=106.85 cfs 15.220 af

Reach 84B: Overland Flow Avg. Flow Depth=0.53' Max Vel=0.80 fps Inflow=67.54 cfs 8.284 af
n=0.400 L=370.0' S=0.1622 '/' Capacity=228.33 cfs Outflow=64.43 cfs 8.284 af

Reach 85A: Overland Flow Avg. Flow Depth=0.39' Max Vel=0.66 fps Inflow=44.06 cfs 2.133 af
n=0.400 L=505.0' S=0.1525 '/' Capacity=221.40 cfs Outflow=36.00 cfs 2.133 af

Reach 85B: Overland Flow Avg. Flow Depth=0.53' Max Vel=0.55 fps Inflow=58.39 cfs 3.621 af
n=0.400 L=453.0' S=0.0773 '/' Capacity=157.60 cfs Outflow=44.18 cfs 3.621 af

Reach 86A: Overland Flow Avg. Flow Depth=0.35' Max Vel=0.53 fps Inflow=26.75 cfs 1.488 af
n=0.400 L=195.0' S=0.1128 '/' Capacity=190.45 cfs Outflow=25.31 cfs 1.488 af

Reach 88: Roadside Swale Avg. Flow Depth=0.56' Max Vel=6.30 fps Inflow=8.16 cfs 0.535 af
n=0.035 L=472.0' S=0.0763 '/' Capacity=66.89 cfs Outflow=8.09 cfs 0.535 af

Reach 89: Overland Flow through Woods Avg. Flow Depth=0.07' Max Vel=3.17 fps Inflow=40.48 cfs 2.932 af
n=0.035 L=1,051.0' S=0.1884 '/' Capacity=1,000.42 cfs Outflow=37.40 cfs 2.932 af

Reach 91: Overland Flow Avg. Flow Depth=0.44' Max Vel=2.89 fps Inflow=31.42 cfs 3.441 af
n=0.035 L=198.0' S=0.0172 '/' Capacity=137.55 cfs Outflow=31.34 cfs 3.441 af

Reach 92: Channel Along RR Tracks Avg. Flow Depth=1.19' Max Vel=5.79 fps Inflow=31.34 cfs 3.441 af
n=0.035 L=1,907.0' S=0.0293 '/' Capacity=234.34 cfs Outflow=30.08 cfs 3.441 af

Reach 197: Stream Channel Avg. Flow Depth=1.11' Max Vel=11.12 fps Inflow=286.27 cfs 23.787 af
n=0.050 L=1,500.0' S=0.1807 '/' Capacity=9,816.53 cfs Outflow=282.49 cfs 23.787 af

Reach 198: Stream Channel Avg. Flow Depth=2.03' Max Vel=11.61 fps Inflow=289.00 cfs 23.787 af
n=0.050 L=1,262.0' S=0.1212 '/' Capacity=3,729.07 cfs Outflow=286.27 cfs 23.787 af

Reach 199: Overland Flow Avg. Flow Depth=0.14' Max Vel=4.53 fps Inflow=42.53 cfs 3.366 af
n=0.040 L=250.0' S=0.2560 '/' Capacity=451.81 cfs Outflow=42.37 cfs 3.366 af

Reach 295: Roadside Channel Avg. Flow Depth=1.57' Max Vel=7.50 fps Inflow=54.87 cfs 4.372 af
n=0.040 L=379.0' S=0.0501 '/' Capacity=159.47 cfs Outflow=54.74 cfs 4.372 af

Reach 296: Wetland Flow Avg. Flow Depth=1.41' Max Vel=6.23 fps Inflow=55.01 cfs 4.372 af
n=0.040 L=320.0' S=0.0375 '/' Capacity=122.08 cfs Outflow=54.87 cfs 4.372 af

Reach 297: Overland Flow Avg. Flow Depth=0.24' Max Vel=5.46 fps Inflow=55.22 cfs 4.372 af
n=0.040 L=366.0' S=0.2022 '/' Capacity=225.40 cfs Outflow=55.01 cfs 4.372 af

Reach 298: Wetland Flow Avg. Flow Depth=0.22' Max Vel=2.23 fps Inflow=56.55 cfs 4.372 af
n=0.070 L=408.0' S=0.0931 '/' Capacity=802.14 cfs Outflow=55.22 cfs 4.372 af

Reach 299: Overland Flow Avg. Flow Depth=0.34' Max Vel=6.02 fps Inflow=56.57 cfs 4.372 af
n=0.050 L=135.0' S=0.3259 '/' Capacity=130.57 cfs Outflow=56.55 cfs 4.372 af

Pond 1aP: Design Point 1a Inflow=20.59 cfs 1.317 af
Primary=20.59 cfs 1.317 af

Pond 2R: 48" CMP Culvert Peak Elev=1,746.76' Inflow=472.44 cfs 39.811 af
Outflow=472.44 cfs 39.811 af

Pond 4R: 24" Steel Culvert Peak Elev=2,068.39' Inflow=54.74 cfs 4.372 af
Outflow=54.74 cfs 4.372 af

Pond 7R: 30" Steel Culvert Peak Elev=1,817.97' Inflow=280.71 cfs 21.271 af
Outflow=280.71 cfs 21.271 af

Pond 10R: 14" and 16" HDPE Culverts Peak Elev=1,977.54' Inflow=66.91 cfs 5.544 af
Primary=12.96 cfs 3.700 af Secondary=53.96 cfs 1.845 af Outflow=66.91 cfs 5.544 af

Pond 13R: 16" CMP Culvert Peak Elev=1,970.84' Inflow=9.90 cfs 0.613 af
16.0" Round Culvert n=0.025 L=40.0' S=0.0750 '/' Outflow=9.90 cfs 0.613 af

Pond 57: 15" Steel Culvert Peak Elev=2,006.01' Inflow=5.62 cfs 0.365 af
Outflow=5.62 cfs 0.365 af

Pond 58R: 24" HDPE Pipe Peak Elev=2,224.74' Inflow=19.95 cfs 0.913 af
Outflow=19.95 cfs 0.913 af

Pond 59: 32" Plastic Pipe Peak Elev=2,333.44' Inflow=94.41 cfs 8.102 af
Primary=47.98 cfs 6.935 af Secondary=46.43 cfs 1.166 af Outflow=94.41 cfs 8.102 af

Pond 60: 30" Steel Culvert Peak Elev=2,024.80' Inflow=245.12 cfs 35.104 af
Outflow=245.12 cfs 35.104 af

Pond 67P: 24" Steel Culvert Peak Elev=2,006.09' Inflow=20.87 cfs 1.191 af
Outflow=20.87 cfs 1.191 af

Pond 68: 12" Steel Culvert Peak Elev=2,003.47' Inflow=40.48 cfs 2.932 af
Primary=6.52 cfs 1.588 af Secondary=33.97 cfs 1.344 af Outflow=40.48 cfs 2.932 af

Pond 77: 36" Steel Culvert Peak Elev=2,176.51' Inflow=156.43 cfs 24.133 af
Outflow=156.43 cfs 24.133 af

Pond 79: 16" Steel Culvert Peak Elev=2,058.67' Inflow=158.08 cfs 24.667 af
Outflow=158.08 cfs 24.667 af

Pond 83: 24" HPDE Culvert Peak Elev=2,361.17' Inflow=5.59 cfs 0.347 af
Primary=5.59 cfs 0.347 af Secondary=0.00 cfs 0.000 af Outflow=5.59 cfs 0.347 af

Pond 84: 24" HDPE Pipe Peak Elev=2,322.82' Inflow=127.17 cfs 9.712 af
Primary=67.54 cfs 8.284 af Secondary=59.63 cfs 1.428 af Outflow=127.17 cfs 9.712 af

Pond 85: 28" HDPE Pipe Peak Elev=2,301.83' Inflow=72.44 cfs 2.572 af
Primary=44.06 cfs 2.133 af Secondary=28.38 cfs 0.439 af Outflow=72.44 cfs 2.572 af

Pond 86: 24" HDPE Pipe Peak Elev=2,246.02' Inflow=37.71 cfs 1.599 af
Primary=26.75 cfs 1.488 af Secondary=10.96 cfs 0.111 af Outflow=37.71 cfs 1.599 af

Pond 87: 18" Steel Culvert Peak Elev=2,210.23' Inflow=8.16 cfs 0.535 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0167 '/' Outflow=8.16 cfs 0.535 af

Pond 90: 12" Steel Culvert Peak Elev=1,895.32' Inflow=31.42 cfs 3.441 af
Outflow=31.42 cfs 3.441 af

Pond 200: 36" Steel Culvert Peak Elev=2,239.23' Inflow=246.71 cfs 20.421 af
Outflow=246.71 cfs 20.421 af

Pond 201: 36" Steel Culvert Peak Elev=2,237.07' Inflow=42.53 cfs 3.366 af
Outflow=42.53 cfs 3.366 af

Pond 300R: 18" Steel Culvert Peak Elev=2,259.29' Inflow=56.57 cfs 4.372 af
Outflow=56.57 cfs 4.372 af

Pond c1: Inflow=3.23 cfs 0.483 af
Primary=3.23 cfs 0.483 af

Pond C2: Inflow=119.98 cfs 10.322 af
Primary=119.98 cfs 10.322 af

Pond C3: Inflow=6.92 cfs 0.595 af
Primary=6.92 cfs 0.595 af

Pond C4: Inflow=12.30 cfs 2.130 af
Primary=12.30 cfs 2.130 af

Pond C5: Inflow=13.95 cfs 2.783 af
Primary=13.95 cfs 2.783 af

Pond C5A: Inflow=7.79 cfs 2.084 af
Primary=7.79 cfs 2.084 af

Pond C6: Inflow=285.33 cfs 18.530 af
Primary=285.33 cfs 18.530 af

Pond C6A: Inflow=120.67 cfs 11.552 af
Primary=120.67 cfs 11.552 af

Pond DP 10: Design Point 10 Inflow=335.86 cfs 44.097 af
Primary=335.86 cfs 44.097 af

Pond DP 11: Design Point 11 Inflow=166.43 cfs 18.155 af
Primary=166.43 cfs 18.155 af

Pond DP 12: Design Point 12 Inflow=39.37 cfs 2.247 af
Primary=39.37 cfs 2.247 af

Pond DP 16: DESIGN POINT 16 Inflow=66.97 cfs 5.212 af
Primary=66.97 cfs 5.212 af

Pond DP 7: Design Point 7 Inflow=473.10 cfs 39.950 af
Primary=473.10 cfs 39.950 af

Pond DP 8: Design Point 8 Inflow=352.83 cfs 26.309 af
Primary=352.83 cfs 26.309 af

Pond DP 9: Design Point 9 Inflow=184.78 cfs 15.764 af
Primary=184.78 cfs 15.764 af

Pond DP2: ditch Peak Elev=2,434.80' Storage=4,761 cf Inflow=123.28 cfs 10.804 af
Primary=119.98 cfs 10.322 af Secondary=3.23 cfs 0.483 af Outflow=123.21 cfs 10.804 af

Pond DP3: 12" Steel Peak Elev=2,445.32' Inflow=9.28 cfs 0.623 af
Primary=6.92 cfs 0.595 af Secondary=2.36 cfs 0.028 af Outflow=9.28 cfs 0.623 af

Pond DP4: 18" HDPE Culvert Peak Elev=2,372.43' Inflow=38.81 cfs 2.756 af
Primary=12.30 cfs 2.130 af Secondary=26.51 cfs 0.627 af Outflow=38.81 cfs 2.756 af

Pond DP5: 18" HDPE Culvert Peak Elev=2,303.70' Inflow=87.02 cfs 4.536 af
Primary=13.95 cfs 2.783 af Secondary=73.07 cfs 1.753 af Outflow=87.02 cfs 4.536 af

Pond DP5A: 12" steel Culvert Peak Elev=2,276.75' Inflow=119.08 cfs 4.983 af
Primary=7.79 cfs 2.084 af Secondary=111.29 cfs 2.899 af Outflow=119.08 cfs 4.983 af

Pond DP6: 55" CMP Culvert Peak Elev=2,243.76' Inflow=285.33 cfs 18.530 af
Outflow=285.33 cfs 18.530 af

Pond DP6A: 30" Steel Culvert Peak Elev=2,244.72' Inflow=120.67 cfs 11.552 af
Outflow=120.67 cfs 11.552 af

Total Runoff Area = 739.149 ac Runoff Volume = 201.530 af Average Runoff Depth = 3.27"
98.32% Pervious = 726.767 ac 1.68% Impervious = 12.381 ac

Summary for Subcatchment 1S: Subcatchment 1

Runoff = 229.44 cfs @ 12.10 hrs, Volume= 16.025 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	7,405	98	Roof Area
*	15,551	98	Pavement
*	9,714	89	Dirt Road
	75,794	71	Meadow, non-grazed, HSG C
	2,503,382	70	Woods, Good, HSG C
	2,611,846	70	Weighted Average
	2,588,890		99.12% Pervious Area
	22,956		0.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	55	0.0720	2.28		**Sheet Flow, Sheet Flow over Pavement** Smooth surfaces n= 0.011 P2= 4.00"
4.4	45	0.1600	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
10.6	1,315	0.1720	2.07		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
2.2	1,445	0.1868	11.00	70.92	**Trap/Vee/Rect Channel Flow, Mountain Stream w/ Medium Boulders** Bot.W=4.00' D=1.50' Z= 0.2 '/' Top.W=4.60' n= 0.055
17.6	2,860	Total			

Summary for Subcatchment 2S: Subcatchment 2

Runoff = 2.77 cfs @ 11.99 hrs, Volume= 0.138 af, Depth= 3.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	4,400	98	Roadway
	5,009	71	Meadow, non-grazed, HSG C
	9,060	70	Woods, Good, HSG C
	18,469	77	Weighted Average
	14,069		76.18% Pervious Area
	4,400		23.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	90	0.2290	0.23		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.5	70	0.2550	2.52		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	215	0.0547	13.12	137.80	**Trap/Vee/Rect Channel Flow, Vegetated Swale along RR Tracks** Bot.W=2.00' D=3.00' Z= 0.5 '/' Top.W=5.00' n= 0.030
7.5	375	Total			

Summary for Subcatchment 3S: Subcatchment 3

Runoff = 246.49 cfs @ 12.09 hrs, Volume= 16.899 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	18,818	89	Dirt Road
*	24,002	98	Paved Road
*	11,979	98	Roof Area
	73,006	74	>75% Grass cover, Good, HSG C
	2,543,636	70	Woods, Good, HSG C
	2,671,441	71	Weighted Average
	2,635,460		98.65% Pervious Area
	35,981		1.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	100	0.2270	0.23		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.0	307	0.0650	1.27		**Shallow Concentrated Flow, SC Flow overland** Woodland Kv= 5.0 fps
4.1	592	0.2300	2.40		**Shallow Concentrated Flow, overland** Woodland Kv= 5.0 fps
0.4	655	0.1959	28.46	3,073.23	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=25.00' D=4.00' Z= 0.5 '/' Top.W=29.00' n= 0.050 Mountain streams w/large boulders
0.1	50	0.0400	6.18	10.92	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
1.1	1,181	0.1950	18.29	493.73	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=3.00' Z= 2.0 '/' Top.W=15.00' n= 0.050 Mountain streams w/large boulders
17.0	2,885	Total			

Summary for Subcatchment 4S: Subcatchment 4

Runoff = 77.12 cfs @ 12.08 hrs, Volume= 5.038 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	5,009	98	Roof Area
	64,992	71	Meadow, non-grazed, HSG C
*	14,985	98	Roadway
	711,509	70	Woods, Good, HSG C
	796,495	71	Weighted Average
	776,501		97.49% Pervious Area
	19,994		2.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.3000	0.26		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.0	770	0.1860	2.16		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
0.4	200	0.0750	9.49	56.96	**Trap/Vee/Rect Channel Flow, RR Swale w/Gravel and Leaves** Bot.W=1.00' D=2.00' Z= 1.0 '/' Top.W=5.00' n= 0.040
0.8	250	0.0800	5.03	7.55	**Trap/Vee/Rect Channel Flow, RR Swale w/ Gravel and Leaves** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.050
0.6	300	0.0650	8.00	48.03	**Trap/Vee/Rect Channel Flow, RR Swale w/ Cobbles and Leaves** Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00' n= 0.045
1.2	400	0.0600	5.69	14.23	**Trap/Vee/Rect Channel Flow, RR Swale w/ Cobbles and Leaves** Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00' n= 0.045
15.5	2,020	Total			

Summary for Subcatchment 5S: Subcatchment 5

Runoff = 9.90 cfs @ 12.06 hrs, Volume= 0.613 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	40,511	71	Meadow, non-grazed, HSG C
*	8,015	98	Roof Area
	42,819	70	Woods, Good, HSG C
	91,345	73	Weighted Average
	83,330		91.23% Pervious Area
	8,015		8.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.1300	0.18		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	390	0.0920	1.52		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	225	0.0346	7.48	29.91	**Trap/Vee/Rect Channel Flow, Flow in Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
13.9	715	Total			

Summary for Subcatchment 6S: Subcatchment 6

Runoff = 88.97 cfs @ 12.13 hrs, Volume= 6.675 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	24,873	98	Dirt Road
*	10,062	98	Roof Area
	70,635	71	Meadow, non-grazed, HSG C
	777,256	70	Woods, Good, HSG C
	141,270	74	>75% Grass cover, Good, HSG C
	1,024,096	72	Weighted Average
	989,161		96.59% Pervious Area
	34,935		3.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
8.7	1,016	0.1500	1.94		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.7	1,060	0.0750	10.48	83.81	**Trap/Vee/Rect Channel Flow, RR Swale w/ Gravel and Leaves** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.040
20.1	2,176	Total			

Summary for Subcatchment 7S: Subcatchment 7

Runoff = 66.91 cfs @ 12.17 hrs, Volume= 5.544 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	23,914	98	Pavement
	18,513	71	Meadow, non-grazed, HSG C
	834,000	70	Woods, Good, HSG C
	876,427	71	Weighted Average
	852,513		97.27% Pervious Area
	23,914		2.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.1570	0.20		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
15.2	1,760	0.1490	1.93		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
23.6	1,860	Total			

Summary for Subcatchment 8S: Subcatchment 8

Runoff = 40.48 cfs @ 12.12 hrs, Volume= 2.932 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	27,225	71	Meadow, non-grazed, HSG C
*	3,006	89	Dirt Road
*	8,189	98	Pavment
	425,146	70	Woods, Good, HSG C
	463,566	71	Weighted Average
	455,377		98.23% Pervious Area
	8,189		1.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.1570	0.20		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.0	850	0.2200	2.35		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.1	135	0.0850	2.04		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
2.6	310	0.1540	1.96		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.7	440	0.0360	10.52	63.14	**Trap/Vee/Rect Channel Flow, Flow through Vegetated Swale** Bot.W=1.00' D=2.00' Z= 1.0 '/' Top.W=5.00' n= 0.025
18.8	1,835	Total			

Summary for Subcatchment 9S: Subcatchment 9

Runoff = 114.38 cfs @ 12.15 hrs, Volume= 8.994 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	8,494	98	Roof Area
	57,978	71	Meadow, non-grazed, HSG C
	1,386,297	70	Woods, Good, HSG C
	13,112	98	Paved parking, HSG C
	1,465,881	70	Weighted Average
	1,444,275		98.53% Pervious Area
	21,606		1.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0200	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	10	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.3	1,923	0.1100	13.81	662.89	**Trap/Vee/Rect Channel Flow, Flow through Rock Channel** Bot.W=20.00' D=2.00' Z= 2.0 '/' Top.W=28.00' n= 0.050 Mountain streams w/large boulders
21.6	2,033	Total			

Summary for Subcatchment 10S: Subcatchment 10

Runoff = 119.38 cfs @ 12.19 hrs, Volume= 10.436 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	1,108,354	70	Woods, Good, HSG C
	485,520	71	Meadow, non-grazed, HSG C
*	7,623	98	Roof Area
*	48,327	98	Road/Drive
	1,649,824	71	Weighted Average
	1,593,874		96.61% Pervious Area
	55,950		3.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.2	600	0.0780	1.40		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
2.7	455	0.1600	2.80		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
2.8	330	0.1570	1.98		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.6	685	0.0945	7.35	33.08	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=4.00' D=1.00' Z= 0.5 '/' Top.W=5.00' n= 0.050
0.0	30	0.0500	13.31	18.59	**Pipe Channel, 16" Steel Culvert** 16.0" Round Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.012 Steel, smooth
1.4	645	0.0483	7.65	91.77	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=5.00' D=2.00' Z= 0.5 '/' Top.W=7.00' n= 0.050
25.8	2,845	Total			

Summary for Subcatchment 11A: Subcatchment 11A

Runoff = 5.62 cfs @ 12.08 hrs, Volume= 0.365 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
55,013	70	Woods, Good, HSG C
2,726	98	Paved parking & roofs
57,739	71	Weighted Average
55,013		95.28% Pervious Area
2,726		4.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0800	0.15		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	380	0.0875	1.48		**Shallow Concentrated Flow, SC flow through Woods** Woodland Kv= 5.0 fps
15.3	480	Total			

Summary for Subcatchment 11B: Subcatchment 11B

Runoff = 45.75 cfs @ 12.16 hrs, Volume= 3.656 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
558,889	70	Woods, Good, HSG C
19,014	98	Paved parking & roofs
577,903	71	Weighted Average
558,889		96.71% Pervious Area
19,014		3.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0800	0.15		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.0	460	0.0750	1.92		**Shallow Concentrated Flow, Sheet Flow through Meadow** Short Grass Pasture Kv= 7.0 fps
0.8	80	0.0625	1.75		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
6.3	560	0.0875	1.48		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	70	0.0500	7.39	16.25	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=2.00' D=1.00' Z= 0.2 '/' Top.W=2.40' n= 0.030 Earth, grassed & winding
22.3	1,270	Total			

Summary for Subcatchment 11S: Subcatchment 11

Runoff = 20.87 cfs @ 12.03 hrs, Volume= 1.191 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
169,318	70	Woods, Good, HSG C
13,416	98	Paved parking & roofs
182,734	72	Weighted Average
169,318		92.66% Pervious Area
13,416		7.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.0800	2.03		**Sheet Flow, Sheet Flow off Roof** Smooth surfaces n= 0.011 P2= 4.00"
4.4	75	0.0625	0.28		**Sheet Flow, Sheet flow over meadow** Grass: Short n= 0.150 P2= 4.00"
2.9	330	0.0750	1.92		**Shallow Concentrated Flow, Sheet Flow through Meadow** Short Grass Pasture Kv= 7.0 fps
3.4	300	0.0875	1.48		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.6	254	0.0500	7.39	16.25	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=2.00' D=1.00' Z= 0.2 '/' Top.W=2.40' n= 0.030
11.5	984	Total			

Summary for Subcatchment 12S: Subcatchment 12

Runoff = 138.91 cfs @ 12.30 hrs, Volume= 14.714 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	18,687	74	>75% Grass cover, Good, HSG C
	2,265,120	70	Woods, Good, HSG C
*	17,860	98	Roofs
*	24,394	98	Paved roads
	2,326,061	71	Weighted Average
	2,283,807		98.18% Pervious Area
	42,254		1.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0850	0.15		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
23.6	2,290	0.1050	1.62		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
34.4	2,390	Total			

Summary for Subcatchment 14S: Subcatchment 14

Runoff = 122.31 cfs @ 12.20 hrs, Volume= 10.776 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	133,250	71	Meadow, non-grazed, HSG C
	25,526	87	Dirt roads, HSG C
*	5,184	98	Roof Area
	1,531,787	70	Woods, Good, HSG C
	7,797	98	Paved roads
	1,703,544	71	Weighted Average
	1,690,563		99.24% Pervious Area
	12,981		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	80	0.1000	2.21		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
15.2	2,165	0.2260	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.4	90	0.2350	3.39		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
0.3	150	0.0450	8.53	34.11	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
26.2	2,585	Total			

Summary for Subcatchment 15S: Subcatchment 15

Runoff = 9.28 cfs @ 12.08 hrs, Volume= 0.623 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	35,962	71	Meadow, non-grazed, HSG C
	55,670	70	Woods, Good, HSG C
*	4,008	98	Pavement
	95,640	72	Weighted Average
	91,632		95.81% Pervious Area
	4,008		4.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.3	640	0.1600	2.00		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.8	125	0.1500	2.71		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
0.2	80	0.0400	8.04	32.16	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
16.4	945	Total			

Summary for Subcatchment 16S: Subcatchment 16

Runoff = 38.81 cfs @ 12.11 hrs, Volume= 2.756 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	141,134	71	Meadow, non-grazed, HSG C
*	9,278	98	Pavement
	285,318	70	Woods, Good, HSG C
	435,730	71	Weighted Average
	426,452		97.87% Pervious Area
	9,278		2.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.7	644	0.1406	1.87		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.4	200	0.1200	2.42		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
1.0	900	0.1029	15.55	106.89	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.50' Z= 0.7 '/' Top.W=4.50' n= 0.030
18.2	1,844	Total			

Summary for Subcatchment 17S: Subcatchment 17

Runoff = 63.90 cfs @ 12.06 hrs, Volume= 3.909 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	7,884	98	Roadway
	8,494	71	Meadow, non-grazed, HSG C
	620,730	70	Woods, Good, HSG C
	637,108	70	Weighted Average
	629,224		98.76% Pervious Area
	7,884		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2000	0.22		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.8	922	0.2800	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.1	145	0.1160	17.65	143.44	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=2.00' D=2.50' Z= 0.5 '/' Top.W=4.50' n= 0.030
13.5	1,167	Total			

Summary for Subcatchment 18S: Subcatchment 18

Runoff = 46.49 cfs @ 12.10 hrs, Volume= 3.230 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	2,494	98	Pavement
	3,615	71	Meadow, non-grazed, HSG C
	520,281	70	Woods, Good, HSG C
	526,390	70	Weighted Average
	523,896		99.53% Pervious Area
	2,494		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.3280	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
10.5	1,895	0.3630	3.01		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.6	320	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Flow in Roadside Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
17.4	2,315	Total			

Summary for Subcatchment 19S: Subcatchment 19

Runoff = 186.61 cfs @ 12.18 hrs, Volume= 15.631 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	8,146	98	Paved, HSG C
	1,896,646	70	Woods, Good, HSG C
	642,902	71	Meadow, non-grazed, HSG C
	2,547,694	70	Weighted Average
	2,539,548		99.68% Pervious Area
	8,146		0.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.6	2,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods** Woodland Kv= 5.0 fps
0.9	470	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030 Earth, grassed & winding

24.0	2,625	Total

Summary for Subcatchment 20S: Subcatchment 20

Runoff = 120.67 cfs @ 12.24 hrs, Volume= 11.552 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	6,926	98	Roof Area
*	15,682	98	Roadway
	1,050,057	70	Woods, Good, HSG C
	753,544	71	Meadow, non-grazed, HSG C
	1,826,209	71	Weighted Average
	1,803,601		98.76% Pervious Area
	22,608		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
18.7	3,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods** Woodland Kv= 5.0 fps
0.4	310	0.0466	12.12	145.44	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=4.00' Z= 0.5 '/' Top.W=5.00' n= 0.030 Earth, grassed & winding
29.6	3,465	Total			

Summary for Subcatchment 21S: Subcatchment 21 (Leach Farm)

Runoff = 20.59 cfs @ 12.07 hrs, Volume= 1.317 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	147,807	70	Woods, Good, HSG C
*	5,253	98	Roof
*	4,790	98	Paved Drive
	44,250	74	>75% Grass cover, Good, HSG C
	202,100	72	Weighted Average
	192,057		95.03% Pervious Area
	10,043		4.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0840	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.7	460	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	330	0.2300	14.23	21.34	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.030 Earth, clean & winding
14.9	890	Total			

Summary for Subcatchment 27S: Subcatchment 27

Runoff = 39.37 cfs @ 12.03 hrs, Volume= 2.247 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	12,543	98	Roof
*	36,847	98	Pavement
	54,050	74	>75% Grass cover, Good, HSG C
	213,001	70	Woods, Good, HSG C
	316,441	75	Weighted Average
	267,051		84.39% Pervious Area
	49,390		15.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.2200	0.23		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.8	445	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	124	0.0800	11.21	42.02	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.50' Z= 1.0 '/' Top.W=4.00' n= 0.030 Earth, grassed & winding
11.4	669	Total			

Summary for Subcatchment 28S: Subcatchment 28

Runoff = 31.42 cfs @ 12.32 hrs, Volume= 3.441 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
33,932	71	Meadow, non-grazed, HSG C
526,860	70	Woods, Good, HSG C
560,792	70	Weighted Average
560,792		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
15.4	1,205	0.0680	1.30		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
7.4	150	0.0130	0.34	0.51	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.300
36.1	1,455	Total			

Summary for Subcatchment 35S: Subcatchment 35

Runoff = 42.53 cfs @ 12.15 hrs, Volume= 3.366 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	122,752	71	Meadow, non-grazed, HSG C
*	6,708	98	Paved Road
	393,477	70	Woods, Good, HSG C
*	9,104	98	Roof
	532,041	71	Weighted Average
	516,229		97.03% Pervious Area
	15,812		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	120	0.1667	0.52		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.5	230	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	50	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
9.3	1,470	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
22.0	3,110	Total			

Summary for Subcatchment 200S: Subcatchment 200

Runoff = 246.71 cfs @ 12.17 hrs, Volume= 20.421 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	14,331	98	Paved Road
	311,323	71	Meadow, non-grazed, HSG C
	3,002,765	70	Woods, Good, HSG C
	3,328,419	70	Weighted Average
	3,314,088		99.57% Pervious Area
	14,331		0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	100	0.1667	0.50		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.4	215	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	70	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
11.1	1,760	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	160	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
23.5	3,545	Total			

Summary for Subcatchment 300S: Subcatchment 300

Runoff = 56.57 cfs @ 12.14 hrs, Volume= 4.372 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	3,267	98	Paved Road
	6,447	71	Meadow, non-grazed, HSG C
	702,884	70	Woods, Good, HSG C
	712,598	70	Weighted Average
	709,331		99.54% Pervious Area
	3,267		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	120	0.2500	0.25		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.7	1,810	0.2257	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	110	0.0910	12.13	48.50	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
21.0	2,040	Total			

Summary for Subcatchment 500S: Subcatchment 500

Runoff = 84.97 cfs @ 12.27 hrs, Volume= 8.546 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	29,185	98	Roadway
	1,312,724	70	Woods, Good, HSG C
	1,350,926	71	Weighted Average
	1,321,741		97.84% Pervious Area
	29,185		2.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
25.7	3,665	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.1	110	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
32.0	3,875	Total			

Summary for Subcatchment 501S: Subcatchment 501

Runoff = 15.57 cfs @ 12.12 hrs, Volume= 1.144 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,002	98	Roadway
	176,462	70	Woods, Good, HSG C
	186,481	70	Weighted Average
	185,479		99.46% Pervious Area
	1,002		0.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
13.1	1,930	0.2410	2.45		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	2,030	Total			

Summary for Subcatchment 502S: Subcatchment 502

Runoff = 19.29 cfs @ 12.05 hrs, Volume= 1.160 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,437	98	Roadway
	178,596	70	Woods, Good, HSG C
	189,050	70	Weighted Average
	187,613		99.24% Pervious Area
	1,437		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.5	935	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	265	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
13.0	1,300	Total			

Summary for Subcatchment 503S: Subcatchmant 503

Runoff = 11.83 cfs @ 12.09 hrs, Volume= 0.802 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
130,680	70	Woods, Good, HSG C
130,680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.2	655	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	255	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
16.6	1,010	Total			

Summary for Subcatchment 504S: Subcatchment 504

Runoff = 94.41 cfs @ 12.19 hrs, Volume= 8.102 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	1,292,556	70	Woods, Good, HSG C
*	13,939	98	Road
	14,026	74	>75% Grass cover, Good, HSG C
	1,320,521	70	Weighted Average
	1,306,582		98.94% Pervious Area
	13,939		1.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.4375	0.30		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
19.1	2,860	0.2500	2.50		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	320	0.1910	15.31	321.48	**Trap/Vee/Rect Channel Flow, Mountain Stream** Bot.W=4.00' D=3.00' Z= 1.0 '/' Top.W=10.00' n= 0.060
25.0	3,280	Total			

Summary for Subcatchment 511S: Subcatchmant 511

Runoff = 8.16 cfs @ 12.08 hrs, Volume= 0.535 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
87,120	70	Woods, Good, HSG C
87,120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.5	580	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.6	680	Total			

Summary for Subcatchment 512S: Subcatchment 512

Runoff = 5.59 cfs @ 12.06 hrs, Volume= 0.347 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
56,628	70	Woods, Good, HSG C
56,628		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.3125	0.15		**Sheet Flow, Sheet Flow through Woods** Woods: Dense underbrush n= 0.800 P2= 4.00"
2.6	345	0.1900	2.18		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	155	0.1000	8.43	10.12	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.2 '/' Top.W=1.40' n= 0.030 Earth, grassed & winding
14.0	600	Total			

Summary for Subcatchment 600S: Subcatchment 600

Runoff = 31.88 cfs @ 12.12 hrs, Volume= 2.340 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	9,670	98	Road
	360,198	70	Woods, Good, HSG C
	369,868	71	Weighted Average
	360,198		97.39% Pervious Area
	9,670		2.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.0	1,510	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	1,610	Total			

Summary for Subcatchment 601S: Subcatchment 601

Runoff = 26.32 cfs @ 12.07 hrs, Volume= 1.692 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	10,498	98	Road
	257,004	70	Woods, Good, HSG C
	267,502	71	Weighted Average
	257,004		96.08% Pervious Area
	10,498		3.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.7	970	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.0	1,070	Total			

Summary for Reach 1R: Wetland Flow

Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 150.0 sf, Capacity= 802.14 cfs

100.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 50.0 '/' Top Width= 200.00'
Length= 408.0' Slope= 0.0931 '/'
Inlet Invert= 2,208.00', Outlet Invert= 2,170.00'

Summary for Reach 5: Stream Channel

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 54.74 cfs @ 12.21 hrs, Volume= 4.372 af
Outflow = 54.38 cfs @ 12.23 hrs, Volume= 4.372 af, Atten= 1%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.02 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 2.98 fps, Avg. Travel Time= 4.9 min

Peak Storage= 4,721 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.93'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 1,064.40 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 870.0' Slope= 0.1954 '/'
Inlet Invert= 2,060.00', Outlet Invert= 1,890.00'

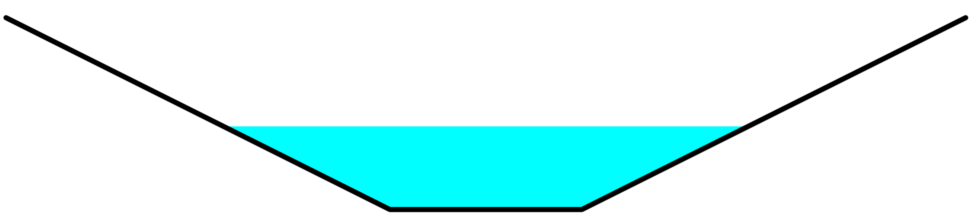
Summary for Reach 5a: Stream Channel

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 54.38 cfs @ 12.23 hrs, Volume= 4.372 af
Outflow = 54.33 cfs @ 12.24 hrs, Volume= 4.372 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.73 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 3.31 fps, Avg. Travel Time= 1.8 min

Peak Storage= 1,798 cf @ 12.24 hrs
Average Depth at Peak Storage= 1.08'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 318.14 cfs

2.50' x 2.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 355.0' Slope= 0.2141 '/'
Inlet Invert= 1,890.00', Outlet Invert= 1,814.00'



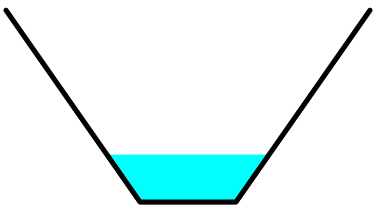
Summary for Reach 5R: (new Reach)

Inflow	=	2.36 cfs @	12.08 hrs,	Volume=	0.028 af
Outflow	=	2.19 cfs @	12.11 hrs,	Volume=	0.028 af, Atten= 7%, Lag= 1.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.28 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 7.6 min

Peak Storage= 276 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 2.00' Flow Area= 4.8 sf, Capacity= 30.57 cfs

1.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.7 '/' Top Width= 3.80'
Length= 415.0' Slope= 0.0217 '/'
Inlet Invert= 2,443.00', Outlet Invert= 2,434.00'



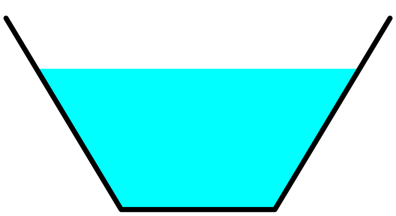
Summary for Reach 6R: (new Reach)

Inflow	=	73.07 cfs @	12.07 hrs,	Volume=	1.753 af
Outflow	=	72.94 cfs @	12.08 hrs,	Volume=	1.753 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.77 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 5.29 fps, Avg. Travel Time= 1.2 min

Peak Storage= 2,113 cf @ 12.08 hrs
Average Depth at Peak Storage= 1.84'
Bank-Full Depth= 2.50' Flow Area= 8.8 sf, Capacity= 128.38 cfs

2.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.6 '/' Top Width= 5.00'
Length= 370.0' Slope= 0.0757 '/'
Inlet Invert= 2,300.00', Outlet Invert= 2,272.00'



Summary for Reach 8: Stream Channel

Inflow Area = 77.687 ac, 1.16% Impervious, Inflow Depth = 3.29" for 25-YEAR event
Inflow = 280.71 cfs @ 12.11 hrs, Volume= 21.271 af
Outflow = 280.40 cfs @ 12.11 hrs, Volume= 21.271 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.39 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.28 fps, Avg. Travel Time= 1.8 min

Peak Storage= 6,609 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 1.00' Flow Area= 51.0 sf, Capacity= 797.02 cfs

50.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 1.0 '/' Top Width= 52.00'
Length= 245.0' Slope= 0.2898 '/'
Inlet Invert= 1,812.00', Outlet Invert= 1,741.00'

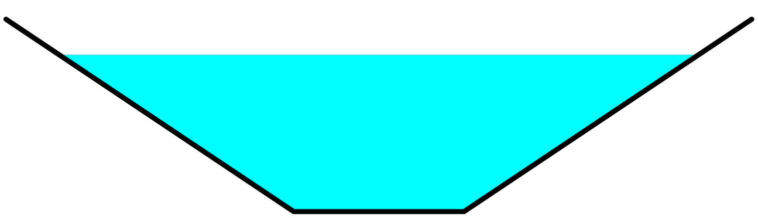
Summary for Reach 8R: through ditch

Inflow = 111.29 cfs @ 12.09 hrs, Volume= 2.899 af
Outflow = 110.99 cfs @ 12.09 hrs, Volume= 2.899 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.70 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.45 fps, Avg. Travel Time= 1.9 min

Peak Storage= 4,325 cf @ 12.09 hrs
Average Depth at Peak Storage= 1.84'
Bank-Full Depth= 2.25' Flow Area= 12.1 sf, Capacity= 171.61 cfs

2.00' x 2.25' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.5 '/' Top Width= 8.75'
Length= 495.0' Slope= 0.0646 '/'
Inlet Invert= 2,272.00', Outlet Invert= 2,240.00'



Summary for Reach 11R: Overland Flow

Inflow Area = 20.120 ac, 2.73% Impervious, Inflow Depth = 3.31" for 25-YEAR event
Inflow = 66.91 cfs @ 12.17 hrs, Volume= 5.544 af
Outflow = 61.75 cfs @ 12.24 hrs, Volume= 5.544 af, Atten= 8%, Lag= 4.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.01 fps, Min. Travel Time= 6.5 min
Avg. Velocity = 0.69 fps, Avg. Travel Time= 28.7 min

Peak Storage= 24,176 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.00' Flow Area= 90.0 sf, Capacity= 620.77 cfs

75.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 105.00'
Length= 1,180.0' Slope= 0.1695 '/'
Inlet Invert= 1,973.00', Outlet Invert= 1,773.00'

‡

Summary for Reach 12R: Overland Flow

Inflow Area = 2.097 ac, 8.77% Impervious, Inflow Depth = 3.51" for 25-YEAR event
Inflow = 9.90 cfs @ 12.06 hrs, Volume= 0.613 af
Outflow = 8.26 cfs @ 12.13 hrs, Volume= 0.613 af, Atten= 17%, Lag= 4.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.02 fps, Min. Travel Time= 7.9 min
Avg. Velocity = 0.51 fps, Avg. Travel Time= 30.8 min

Peak Storage= 3,892 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 305.91 cfs

30.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 60.00'
Length= 950.0' Slope= 0.1968 '/'
Inlet Invert= 1,960.00', Outlet Invert= 1,773.00'

‡

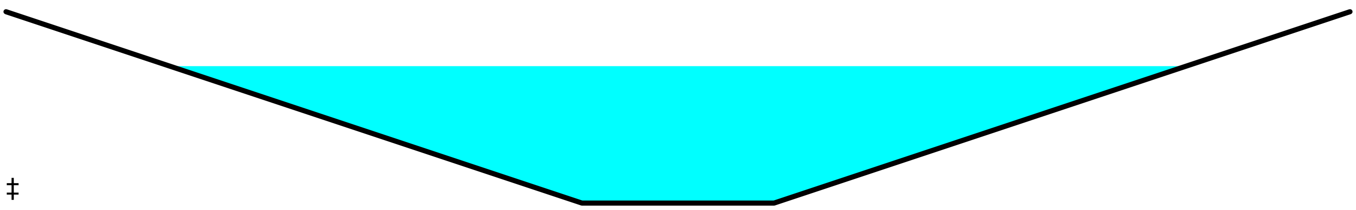
Summary for Reach 13: RR Swale

Inflow Area = 77.687 ac, 1.16% Impervious, Inflow Depth = 3.29" for 25-YEAR event
Inflow = 280.40 cfs @ 12.11 hrs, Volume= 21.271 af
Outflow = 279.70 cfs @ 12.12 hrs, Volume= 21.271 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.36 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 3.28 fps, Avg. Travel Time= 2.3 min

Peak Storage= 12,152 cf @ 12.12 hrs
Average Depth at Peak Storage= 2.15'
Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 604.81 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 4.0 '/' Top Width= 28.00'
Length= 450.0' Slope= 0.0444 '/'
Inlet Invert= 1,740.00', Outlet Invert= 1,720.00'



‡

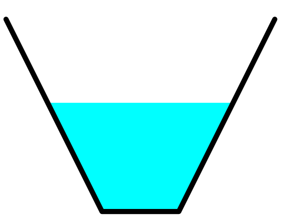
Summary for Reach 21R: (new Reach)

Inflow = 26.51 cfs @ 12.11 hrs, Volume= 0.627 af
Outflow = 26.28 cfs @ 12.12 hrs, Volume= 0.627 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.89 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 4.10 fps, Avg. Travel Time= 2.8 min

Peak Storage= 1,653 cf @ 12.12 hrs
Average Depth at Peak Storage= 1.41'
Bank-Full Depth= 2.50' Flow Area= 5.6 sf, Capacity= 79.28 cfs

1.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.5 '/' Top Width= 3.50'
Length= 685.0' Slope= 0.1000 '/'
Inlet Invert= 2,368.00', Outlet Invert= 2,299.50'



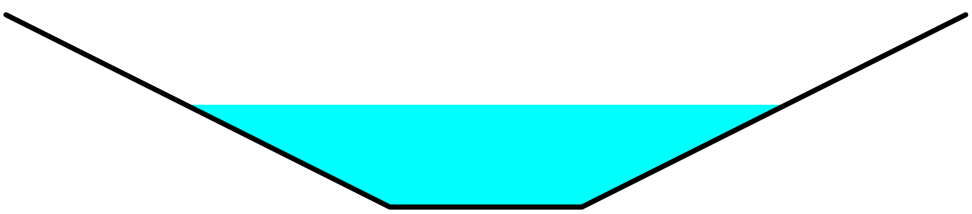
Summary for Reach 58: Swale along RR Tracks

Inflow Area = 10.642 ac, 1.77% Impervious, Inflow Depth = 3.31" for 25-YEAR event
Inflow = 37.40 cfs @ 12.17 hrs, Volume= 2.932 af
Outflow = 36.07 cfs @ 12.21 hrs, Volume= 2.932 af, Atten= 4%, Lag= 2.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.26 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 1.54 fps, Avg. Travel Time= 11.0 min

Peak Storage= 6,994 cf @ 12.21 hrs
Average Depth at Peak Storage= 1.33'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 139.83 cfs

2.50' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 1,020.0' Slope= 0.0265 '/'
Inlet Invert= 1,800.00', Outlet Invert= 1,773.00'



Summary for Reach 58A: Overland Flow

Inflow Area = 3.000 ac, 0.00% Impervious, Inflow Depth = 3.65" for 25-YEAR event
Inflow = 19.95 cfs @ 12.17 hrs, Volume= 0.913 af
Outflow = 18.74 cfs @ 12.21 hrs, Volume= 0.913 af, Atten= 6%, Lag= 2.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.41 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 0.68 fps, Avg. Travel Time= 11.7 min

Peak Storage= 3,720 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 1.00' Flow Area= 120.0 sf, Capacity= 1,456.48 cfs

100.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 140.00'
Length= 478.0' Slope= 0.1004 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,172.00'

‡

Summary for Reach 61: Vegetated Roadside Swale

Inflow Area = 5.521 ac, 6.71% Impervious, Inflow Depth = 3.38" for 25-YEAR event
Inflow = 26.19 cfs @ 12.04 hrs, Volume= 1.556 af
Outflow = 25.68 cfs @ 12.06 hrs, Volume= 1.556 af, Atten= 2%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.93 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.77 fps, Avg. Travel Time= 7.1 min

Peak Storage= 2,782 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.94'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 59.21 cfs

3.00' x 1.50' deep channel, n= 0.040
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 751.0' Slope= 0.0613 '/'
Inlet Invert= 2,000.00', Outlet Invert= 1,954.00'

Summary for Reach 66: Stream Channel

Inflow Area = 128.756 ac, 2.17% Impervious, Inflow Depth = 3.27" for 25-YEAR event
Inflow = 245.12 cfs @ 12.24 hrs, Volume= 35.104 af
Outflow = 242.07 cfs @ 12.29 hrs, Volume= 35.104 af, Atten= 1%, Lag= 2.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.43 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 1.71 fps, Avg. Travel Time= 18.4 min

Peak Storage= 43,725 cf @ 12.29 hrs
Average Depth at Peak Storage= 1.46'
Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 445.48 cfs

10.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 26.00'
Length= 1,884.0' Slope= 0.1152 '/'
Inlet Invert= 2,017.00', Outlet Invert= 1,800.00'

‡

Summary for Reach 78: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 3.26" for 25-YEAR event
Inflow = 158.19 cfs @ 12.47 hrs, Volume= 24.667 af
Outflow = 158.08 cfs @ 12.49 hrs, Volume= 24.667 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.72 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.79 fps, Avg. Travel Time= 6.4 min

Peak Storage= 10,105 cf @ 12.49 hrs
Average Depth at Peak Storage= 1.17'
Bank-Full Depth= 1.50' Flow Area= 21.0 sf, Capacity= 258.41 cfs

8.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 20.00'
Length= 685.0' Slope= 0.1646 '/'
Inlet Invert= 2,170.75', Outlet Invert= 2,058.00'

‡

Summary for Reach 80: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 3.26" for 25-YEAR event
Inflow = 158.08 cfs @ 12.49 hrs, Volume= 24.667 af
Outflow = 157.76 cfs @ 12.51 hrs, Volume= 24.667 af, Atten= 0%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.84 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.14 fps, Avg. Travel Time= 10.8 min

Peak Storage= 17,074 cf @ 12.51 hrs
Average Depth at Peak Storage= 1.60'
Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 247.19 cfs

8.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 24.00'
Length= 740.0' Slope= 0.0473 '/'
Inlet Invert= 2,055.00', Outlet Invert= 2,020.00'

‡

Summary for Reach 82: Overland Flow

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 5.59 cfs @ 12.06 hrs, Volume= 0.347 af
Outflow = 1.34 cfs @ 12.36 hrs, Volume= 0.347 af, Atten= 76%, Lag= 18.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.21 fps, Min. Travel Time= 76.2 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 301.4 min

Peak Storage= 6,116 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 0.50' Flow Area= 75.0 sf, Capacity= 53.31 cfs

100.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 200.00'
Length= 938.0' Slope= 0.1354 '/'
Inlet Invert= 2,347.00', Outlet Invert= 2,220.00'

‡

Summary for Reach 82a: Overland Flow

Inflow Area = 62.628 ac, 1.58% Impervious, Inflow Depth = 2.98" for 25-YEAR event
Inflow = 108.18 cfs @ 12.42 hrs, Volume= 15.567 af
Outflow = 99.92 cfs @ 12.58 hrs, Volume= 15.567 af, Atten= 8%, Lag= 9.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.72 fps, Min. Travel Time= 11.0 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 73.3 min

Peak Storage= 65,751 cf @ 12.58 hrs
Average Depth at Peak Storage= 0.78'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 164.89 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 473.0' Slope= 0.0846 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,180.00'

‡

Summary for Reach 83A: Overland Flow

Inflow Area = 30.315 ac, 1.06% Impervious, Inflow Depth = 2.75" for 25-YEAR event
Inflow = 47.98 cfs @ 12.19 hrs, Volume= 6.935 af
Outflow = 44.85 cfs @ 12.33 hrs, Volume= 6.935 af, Atten= 7%, Lag= 8.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.73 fps, Min. Travel Time= 10.1 min
Avg. Velocity = 0.18 fps, Avg. Travel Time= 40.4 min

Peak Storage= 27,165 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.43'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 232.26 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 441.0' Slope= 0.1678 '/'
Inlet Invert= 2,326.00', Outlet Invert= 2,252.00'

‡

Summary for Reach 84A: Overland Flow

Inflow Area = 61.328 ac, 1.61% Impervious, Inflow Depth = 2.98" for 25-YEAR event
Inflow = 109.24 cfs @ 12.34 hrs, Volume= 15.220 af
Outflow = 106.85 cfs @ 12.42 hrs, Volume= 15.220 af, Atten= 2%, Lag= 4.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.82 fps, Min. Travel Time= 5.6 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 24.8 min

Peak Storage= 36,111 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 192.72 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 277.0' Slope= 0.1155 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,220.00'

‡

Summary for Reach 84B: Overland Flow

Inflow Area = 31.013 ac, 2.16% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 67.54 cfs @ 12.23 hrs, Volume= 8.284 af
Outflow = 64.43 cfs @ 12.35 hrs, Volume= 8.284 af, Atten= 5%, Lag= 7.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.80 fps, Min. Travel Time= 7.7 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 31.9 min

Peak Storage= 29,764 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 228.33 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 370.0' Slope= 0.1622 '/'
Inlet Invert= 2,312.00', Outlet Invert= 2,252.00'

‡

Summary for Reach 85A: Overland Flow

Inflow Area = 4.281 ac, 0.54% Impervious, Inflow Depth = 5.98" for 25-YEAR event
Inflow = 44.06 cfs @ 12.20 hrs, Volume= 2.133 af
Outflow = 36.00 cfs @ 12.38 hrs, Volume= 2.133 af, Atten= 18%, Lag= 10.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.66 fps, Min. Travel Time= 12.8 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 78.2 min

Peak Storage= 27,589 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 221.40 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 505.0' Slope= 0.1525 '/'
Inlet Invert= 2,292.00', Outlet Invert= 2,215.00'

‡

Summary for Reach 85B: Overland Flow

Inflow Area = 8.621 ac, 0.65% Impervious, Inflow Depth = 5.04" for 25-YEAR event
Inflow = 58.39 cfs @ 12.31 hrs, Volume= 3.621 af
Outflow = 44.18 cfs @ 12.44 hrs, Volume= 3.621 af, Atten= 24%, Lag= 7.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.55 fps, Min. Travel Time= 13.7 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 85.1 min

Peak Storage= 36,274 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 157.60 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 453.0' Slope= 0.0773 '/'
Inlet Invert= 2,215.00', Outlet Invert= 2,180.00'

‡

Summary for Reach 86A: Overland Flow

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 4.11" for 25-YEAR event
Inflow = 26.75 cfs @ 12.19 hrs, Volume= 1.488 af
Outflow = 25.31 cfs @ 12.27 hrs, Volume= 1.488 af, Atten= 5%, Lag= 4.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.53 fps, Min. Travel Time= 6.1 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 29.9 min

Peak Storage= 9,263 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 190.45 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 195.0' Slope= 0.1128 '/'
Inlet Invert= 2,237.00', Outlet Invert= 2,215.00'

‡

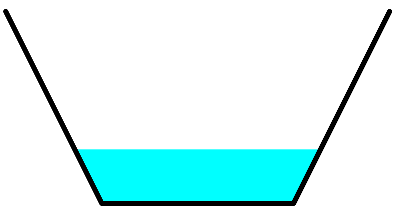
Summary for Reach 88: Roadside Swale

Inflow Area = 2.000 ac, 0.00% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 8.16 cfs @ 12.08 hrs, Volume= 0.535 af
Outflow = 8.09 cfs @ 12.09 hrs, Volume= 0.535 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.30 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.77 fps, Avg. Travel Time= 4.4 min

Peak Storage= 606 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.56'
Bank-Full Depth= 2.00' Flow Area= 6.0 sf, Capacity= 66.89 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 0.5 '/' Top Width= 4.00'
Length= 472.0' Slope= 0.0763 '/'
Inlet Invert= 2,207.00', Outlet Invert= 2,171.00'



Summary for Reach 89: Overland Flow through Woods

Inflow Area = 10.642 ac, 1.77% Impervious, Inflow Depth = 3.31" for 25-YEAR event
Inflow = 40.48 cfs @ 12.12 hrs, Volume= 2.932 af
Outflow = 37.40 cfs @ 12.17 hrs, Volume= 2.932 af, Atten= 8%, Lag= 3.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.17 fps, Min. Travel Time= 5.5 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 21.7 min

Peak Storage= 12,388 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 0.50' Flow Area= 100.0 sf, Capacity= 1,000.42 cfs

150.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 100.0 '/' Top Width= 250.00'
Length= 1,051.0' Slope= 0.1884 '/'
Inlet Invert= 1,998.00', Outlet Invert= 1,800.00'

‡

Summary for Reach 91: Overland Flow

Inflow Area = 12.874 ac, 0.00% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 31.42 cfs @ 12.32 hrs, Volume= 3.441 af
Outflow = 31.34 cfs @ 12.33 hrs, Volume= 3.441 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.89 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.88 fps, Avg. Travel Time= 3.7 min

Peak Storage= 2,145 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 137.55 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 198.0' Slope= 0.0172 '/'
Inlet Invert= 1,889.40', Outlet Invert= 1,886.00'

‡

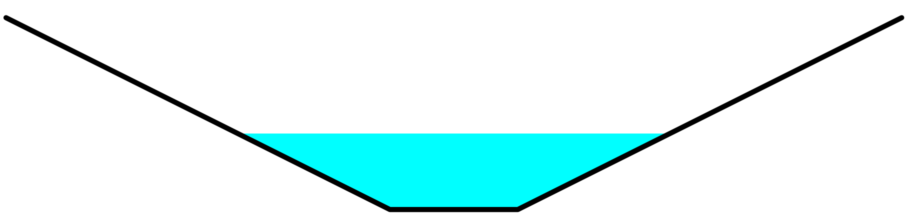
Summary for Reach 92: Channel Along RR Tracks

Inflow Area = 12.874 ac, 0.00% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 31.34 cfs @ 12.33 hrs, Volume= 3.441 af
Outflow = 30.08 cfs @ 12.41 hrs, Volume= 3.441 af, Atten= 4%, Lag= 4.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.79 fps, Min. Travel Time= 5.5 min
Avg. Velocity = 1.95 fps, Avg. Travel Time= 16.3 min

Peak Storage= 9,909 cf @ 12.41 hrs
Average Depth at Peak Storage= 1.19'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 234.34 cfs

2.00' x 3.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 1,907.0' Slope= 0.0293 '/'
Inlet Invert= 1,885.90', Outlet Invert= 1,830.00'



Summary for Reach 197: Stream Channel

Inflow Area = 88.624 ac, 0.78% Impervious, Inflow Depth = 3.22" for 25-YEAR event
Inflow = 286.27 cfs @ 12.19 hrs, Volume= 23.787 af
Outflow = 282.49 cfs @ 12.22 hrs, Volume= 23.787 af, Atten= 1%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.12 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 3.48 fps, Avg. Travel Time= 7.2 min

Peak Storage= 38,096 cf @ 12.22 hrs
Average Depth at Peak Storage= 1.11'
Bank-Full Depth= 6.00' Flow Area= 342.0 sf, Capacity= 9,816.53 cfs

15.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 7.0 '/' Top Width= 99.00'
Length= 1,500.0' Slope= 0.1807 '/'
Inlet Invert= 2,015.00', Outlet Invert= 1,744.00'

‡

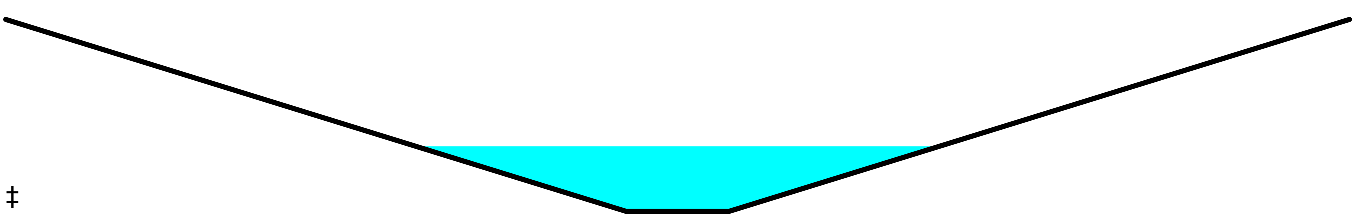
Summary for Reach 198: Stream Channel

Inflow Area = 88.624 ac, 0.78% Impervious, Inflow Depth = 3.22" for 25-YEAR event
Inflow = 289.00 cfs @ 12.17 hrs, Volume= 23.787 af
Outflow = 286.27 cfs @ 12.19 hrs, Volume= 23.787 af, Atten= 1%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.61 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 4.19 fps, Avg. Travel Time= 5.0 min

Peak Storage= 31,126 cf @ 12.19 hrs
Average Depth at Peak Storage= 2.03'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 3,729.07 cfs

4.00' x 6.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 1,262.0' Slope= 0.1212 '/'
Inlet Invert= 2,168.00', Outlet Invert= 2,015.00'



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Summary for Reach 199: Overland Flow

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 3.31" for 25-YEAR event
Inflow = 42.53 cfs @ 12.15 hrs, Volume= 3.366 af
Outflow = 42.37 cfs @ 12.16 hrs, Volume= 3.366 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.53 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.31 fps, Avg. Travel Time= 3.2 min

Peak Storage= 2,338 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 0.50' Flow Area= 50.0 sf, Capacity= 451.81 cfs

50.00' x 0.50' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 100.0 '/' Top Width= 150.00'
Length= 250.0' Slope= 0.2560 '/'
Inlet Invert= 2,232.00', Outlet Invert= 2,168.00'

‡

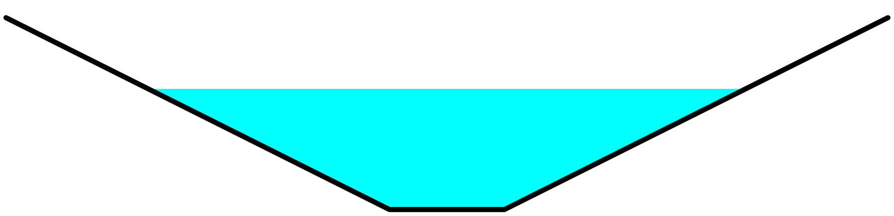
Summary for Reach 295: Roadside Channel

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 54.87 cfs @ 12.20 hrs, Volume= 4.372 af
Outflow = 54.74 cfs @ 12.21 hrs, Volume= 4.372 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.50 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.53 fps, Avg. Travel Time= 2.5 min

Peak Storage= 2,767 cf @ 12.21 hrs
Average Depth at Peak Storage= 1.57'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 159.47 cfs

1.50' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 11.50'
Length= 379.0' Slope= 0.0501 '/'
Inlet Invert= 2,084.00', Outlet Invert= 2,065.00'



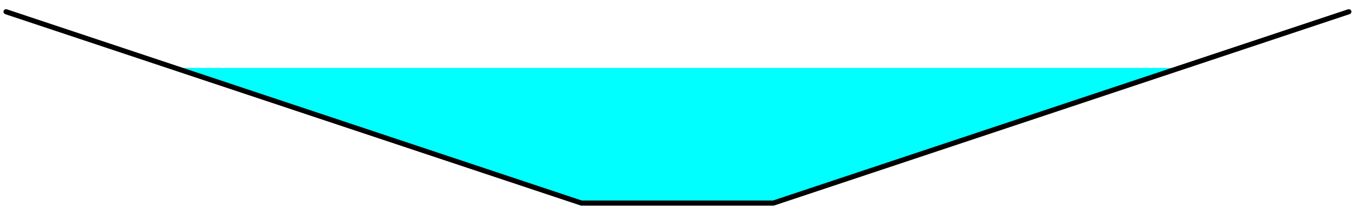
Summary for Reach 296: Wetland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 55.01 cfs @ 12.19 hrs, Volume= 4.372 af
Outflow = 54.87 cfs @ 12.20 hrs, Volume= 4.372 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.23 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.08 fps, Avg. Travel Time= 2.6 min

Peak Storage= 2,819 cf @ 12.20 hrs
Average Depth at Peak Storage= 1.41'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 122.08 cfs

2.00' x 2.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 320.0' Slope= 0.0375 '/'
Inlet Invert= 2,096.00', Outlet Invert= 2,084.00'



Summary for Reach 297: Overland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 55.22 cfs @ 12.18 hrs, Volume= 4.372 af
Outflow = 55.01 cfs @ 12.19 hrs, Volume= 4.372 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.46 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.49 fps, Avg. Travel Time= 4.1 min

Peak Storage= 3,690 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 0.50' Flow Area= 27.5 sf, Capacity= 225.40 cfs

30.00' x 0.50' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 50.0 '/' Top Width= 80.00'
Length= 366.0' Slope= 0.2022 '/'
Inlet Invert= 2,170.00', Outlet Invert= 2,096.00'

‡

Summary for Reach 298: Wetland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 56.55 cfs @ 12.15 hrs, Volume= 4.372 af
Outflow = 55.22 cfs @ 12.18 hrs, Volume= 4.372 af, Atten= 2%, Lag= 1.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.23 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.57 fps, Avg. Travel Time= 11.8 min

Peak Storage= 10,090 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.00' Flow Area= 150.0 sf, Capacity= 802.14 cfs

100.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 50.0 '/' Top Width= 200.00'
Length= 408.0' Slope= 0.0931 '/'
Inlet Invert= 2,208.00', Outlet Invert= 2,170.00'

‡

Summary for Reach 299: Overland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 56.57 cfs @ 12.14 hrs, Volume= 4.372 af
Outflow = 56.55 cfs @ 12.15 hrs, Volume= 4.372 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.02 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.16 fps, Avg. Travel Time= 1.0 min

Peak Storage= 1,269 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 130.57 cfs

10.00' x 0.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 50.0 '/' Top Width= 60.00'
Length= 135.0' Slope= 0.3259 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,208.00'

‡

Summary for Pond 1aP: Design Point 1a

Inflow Area = 4.640 ac, 4.97% Impervious, Inflow Depth = 3.41" for 25-YEAR event
Inflow = 20.59 cfs @ 12.07 hrs, Volume= 1.317 af
Primary = 20.59 cfs @ 12.07 hrs, Volume= 1.317 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond 2R: 48" CMP Culvert

Inflow Area = 148.584 ac, 0.82% Impervious, Inflow Depth = 3.22" for 25-YEAR event
Inflow = 472.44 cfs @ 12.16 hrs, Volume= 39.811 af
Outflow = 472.44 cfs @ 12.16 hrs, Volume= 39.811 af, Atten= 0%, Lag= 0.0 min
Primary = 472.44 cfs @ 12.16 hrs, Volume= 39.811 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,746.76' @ 12.16 hrs
Flood Elev= 1,749.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,741.00'	**48.0" Round Culvert** L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,741.00' / 1,740.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 12.57 sf
#2	Primary	1,745.50'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=472.40 cfs @ 12.16 hrs HW=1,746.76' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 92.63 cfs @ 7.37 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 379.77 cfs @ 3.01 fps)

Summary for Pond 4R: 24" Steel Culvert

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 54.74 cfs @ 12.21 hrs, Volume= 4.372 af
Outflow = 54.74 cfs @ 12.21 hrs, Volume= 4.372 af, Atten= 0%, Lag= 0.0 min
Primary = 54.74 cfs @ 12.21 hrs, Volume= 4.372 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,068.39' @ 12.21 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,065.00'	**24.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 2,065.00' / 2,063.00' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	2,068.00'	**50.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=54.71 cfs @ 12.21 hrs HW=2,068.39' TW=2,060.92' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 23.39 cfs @ 7.45 fps)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 31.31 cfs @ 1.60 fps)

Summary for Pond 7R: 30" Steel Culvert

Inflow Area = 77.687 ac, 1.16% Impervious, Inflow Depth = 3.29" for 25-YEAR event
Inflow = 280.71 cfs @ 12.11 hrs, Volume= 21.271 af
Outflow = 280.71 cfs @ 12.11 hrs, Volume= 21.271 af, Atten= 0%, Lag= 0.0 min
Primary = 280.71 cfs @ 12.11 hrs, Volume= 21.271 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,817.97' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,813.00'	**30.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 1,813.00' / 1,812.00' S= 0.0333 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Primary	1,816.50'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=280.71 cfs @ 12.11 hrs HW=1,817.97' TW=1,812.53' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 45.59 cfs @ 9.29 fps)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 235.11 cfs @ 3.20 fps)

Summary for Pond 10R: 14" and 16" HDPE Culverts

Inflow Area = 20.120 ac, 2.73% Impervious, Inflow Depth = 3.31" for 25-YEAR event
Inflow = 66.91 cfs @ 12.17 hrs, Volume= 5.544 af
Outflow = 66.91 cfs @ 12.17 hrs, Volume= 5.544 af, Atten= 0%, Lag= 0.0 min
Primary = 12.96 cfs @ 12.17 hrs, Volume= 3.700 af
Secondary = 53.96 cfs @ 12.17 hrs, Volume= 1.845 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,977.54' @ 12.17 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,975.00'	**14.0" Round 14" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.07 sf
#2	Primary	1,975.00'	**16.0" Round 16" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.40 sf
#3	Secondary	1,977.00'	**50.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=12.96 cfs @ 12.17 hrs HW=1,977.54' TW=1,973.25' (Dynamic Tailwater)
├─**1=14" Culvert** (Inlet Controls 5.69 cfs @ 5.32 fps)
└─**2=16" Culvert** (Inlet Controls 7.27 cfs @ 5.21 fps)

Secondary OutFlow Max=53.95 cfs @ 12.17 hrs HW=1,977.54' TW=1,973.25' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 53.95 cfs @ 1.99 fps)

Summary for Pond 13R: 16" CMP Culvert

Inflow Area =	2.097 ac,	8.77% Impervious, Inflow Depth = 3.51"	for 25-YEAR event	
Inflow =	9.90 cfs @	12.06 hrs, Volume=	0.613 af	
Outflow =	9.90 cfs @	12.06 hrs, Volume=	0.613 af,	Atten= 0%, Lag= 0.0 min
Primary =	9.90 cfs @	12.06 hrs, Volume=	0.613 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,970.84' @ 12.06 hrs
Flood Elev= 1,969.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,968.00'	**16.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 1,968.00' / 1,965.00' S= 0.0750 '/' Cc= 0.900 n= 0.025, Flow Area= 1.40 sf

Primary OutFlow Max=9.90 cfs @ 12.06 hrs HW=1,970.83' TW=1,960.12' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 9.90 cfs @ 7.09 fps)

Summary for Pond 57: 15" Steel Culvert

Inflow Area =	1.326 ac,	4.72% Impervious, Inflow Depth = 3.31"	for 25-YEAR event	
Inflow =	5.62 cfs @	12.08 hrs, Volume=	0.365 af	
Outflow =	5.62 cfs @	12.08 hrs, Volume=	0.365 af,	Atten= 0%, Lag= 0.0 min
Primary =	5.62 cfs @	12.08 hrs, Volume=	0.365 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,006.01' @ 12.08 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,004.00'	**15.0" Round 15" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,004.00' / 2,000.00' S= 0.0667 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=5.62 cfs @ 12.08 hrs HW=2,006.01' TW=2,000.93' (Dynamic Tailwater)
—**1=15" Smooth Steel Culvert (old)** (Inlet Controls 5.49 cfs @ 4.47 fps)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.13 cfs @ 0.27 fps)

Summary for Pond 58R: 24" HDPE Pipe

Inflow Area = 3.000 ac, 0.00% Impervious, Inflow Depth = 3.65" for 25-YEAR event
Inflow = 19.95 cfs @ 12.17 hrs, Volume= 0.913 af
Outflow = 19.95 cfs @ 12.17 hrs, Volume= 0.913 af, Atten= 0%, Lag= 0.0 min
Primary = 19.95 cfs @ 12.17 hrs, Volume= 0.913 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,224.74' @ 12.17 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,222.00'	**24.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,222.00' / 2,221.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,225.00'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=19.95 cfs @ 12.17 hrs HW=2,224.74' TW=2,220.07' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 19.95 cfs @ 6.35 fps)
—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 59: 32" Plastic Pipe

Inflow Area = 30.315 ac, 1.06% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 94.41 cfs @ 12.19 hrs, Volume= 8.102 af
Outflow = 94.41 cfs @ 12.19 hrs, Volume= 8.102 af, Atten= 0%, Lag= 0.0 min
Primary = 47.98 cfs @ 12.19 hrs, Volume= 6.935 af
Secondary = 46.43 cfs @ 12.19 hrs, Volume= 1.166 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,333.44' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,327.00'	**32.0" Round 32" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,327.00' / 2,324.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 5.59 sf
#2	Secondary	2,331.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=47.98 cfs @ 12.19 hrs HW=2,333.44' TW=2,326.41' (Dynamic Tailwater)
└─**1=32" Plastic Culvert** (Inlet Controls 47.98 cfs @ 8.59 fps)

Secondary OutFlow Max=46.42 cfs @ 12.19 hrs HW=2,333.44' TW=2,322.77' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 46.42 cfs @ 4.75 fps)

Summary for Pond 60: 30" Steel Culvert

Inflow Area = 128.756 ac, 2.17% Impervious, Inflow Depth = 3.27" for 25-YEAR event
Inflow = 245.12 cfs @ 12.24 hrs, Volume= 35.104 af
Outflow = 245.12 cfs @ 12.24 hrs, Volume= 35.104 af, Atten= 0%, Lag= 0.0 min
Primary = 245.12 cfs @ 12.24 hrs, Volume= 35.104 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,024.80' @ 12.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,020.00'	**30.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,020.00' / 2,019.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Primary	2,021.00'	**15.0" Round Culvert** L= 20.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,021.00' / 2,020.00' S= 0.0500 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 1.23 sf
#3	Primary	2,024.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=245.01 cfs @ 12.24 hrs HW=2,024.80' TW=2,018.45' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 44.51 cfs @ 9.07 fps)
├─**2=Culvert** (Inlet Controls 9.28 cfs @ 7.57 fps)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 191.22 cfs @ 2.40 fps)

Summary for Pond 67P: 24" Steel Culvert

Inflow Area = 4.195 ac, 7.34% Impervious, Inflow Depth = 3.41" for 25-YEAR event
Inflow = 20.87 cfs @ 12.03 hrs, Volume= 1.191 af
Outflow = 20.87 cfs @ 12.03 hrs, Volume= 1.191 af, Atten= 0%, Lag= 0.0 min
Primary = 20.87 cfs @ 12.03 hrs, Volume= 1.191 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,006.09' @ 12.03 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,003.00'	**24.0" Round 24" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,003.00' / 2,000.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50

3.00
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=20.84 cfs @ 12.03 hrs HW=2,006.09' TW=2,000.92' (Dynamic Tailwater)
1=24" Smooth Steel Culvert (old) (Inlet Controls 17.26 cfs @ 5.49 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 3.58 cfs @ 0.80 fps)

Summary for Pond 68: 12" Steel Culvert

Inflow Area = 10.642 ac, 1.77% Impervious, Inflow Depth = 3.31" for 25-YEAR event
Inflow = 40.48 cfs @ 12.12 hrs, Volume= 2.932 af
Outflow = 40.48 cfs @ 12.12 hrs, Volume= 2.932 af, Atten= 0%, Lag= 0.0 min
Primary = 6.52 cfs @ 12.12 hrs, Volume= 1.588 af
Secondary = 33.97 cfs @ 12.12 hrs, Volume= 1.344 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,003.47' @ 12.12 hrs
Flood Elev= 2,001.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,000.00'	**12.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 2,000.00' / 1,999.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	2,000.50'	**2.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=6.51 cfs @ 12.12 hrs HW=2,003.47' TW=1,998.07' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.51 cfs @ 8.30 fps)

Secondary OutFlow Max=33.94 cfs @ 12.12 hrs HW=2,003.47' TW=1,998.07' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 33.94 cfs @ 5.72 fps)

Summary for Pond 77: 36" Steel Culvert

Inflow Area = 88.881 ac, 1.70% Impervious, Inflow Depth = 3.26" for 25-YEAR event
Inflow = 156.43 cfs @ 12.48 hrs, Volume= 24.133 af
Outflow = 156.43 cfs @ 12.48 hrs, Volume= 24.133 af, Atten= 0%, Lag= 0.0 min
Primary = 156.43 cfs @ 12.48 hrs, Volume= 24.133 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,176.51' @ 12.48 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,172.00'	**36.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 2,172.00' / 2,171.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	2,176.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=156.42 cfs @ 12.48 hrs HW=2,176.51' TW=2,171.91' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 59.09 cfs @ 8.36 fps)
2=**Broad-Crested Rectangular Weir** (Weir Controls 97.33 cfs @ 1.89 fps)

Summary for Pond 79: 16" Steel Culvert

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 3.26" for 25-YEAR event
Inflow = 158.08 cfs @ 12.49 hrs, Volume= 24.667 af
Outflow = 158.08 cfs @ 12.49 hrs, Volume= 24.667 af, Atten= 0%, Lag= 0.0 min
Primary = 158.08 cfs @ 12.49 hrs, Volume= 24.667 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,058.67' @ 12.49 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,056.00'	**16.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,056.00' / 2,055.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 1.40 sf
#2	Primary	2,058.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=158.06 cfs @ 12.49 hrs HW=2,058.67' TW=2,056.60' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 9.52 cfs @ 6.82 fps)
2=**Broad-Crested Rectangular Weir** (Weir Controls 148.54 cfs @ 2.21 fps)

Summary for Pond 83: 24" HPDE Culvert

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 5.59 cfs @ 12.06 hrs, Volume= 0.347 af
Outflow = 5.59 cfs @ 12.06 hrs, Volume= 0.347 af, Atten= 0%, Lag= 0.0 min
Primary = 5.59 cfs @ 12.06 hrs, Volume= 0.347 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,361.17' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,360.00'	**24.0" Round 24" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,360.00' / 2,357.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,364.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=5.58 cfs @ 12.06 hrs HW=2,361.17' TW=2,347.04' (Dynamic Tailwater)
└─**1=24" Plastic Culvert** (Inlet Controls 5.58 cfs @ 2.91 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,360.00' TW=2,327.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 84: 24" HDPE Pipe

Inflow Area = 31.013 ac, 2.16% Impervious, Inflow Depth = 3.76" for 25-YEAR event
Inflow = 127.17 cfs @ 12.23 hrs, Volume= 9.712 af
Outflow = 127.17 cfs @ 12.23 hrs, Volume= 9.712 af, Atten= 0%, Lag= 0.0 min
Primary = 67.54 cfs @ 12.23 hrs, Volume= 8.284 af
Secondary = 59.63 cfs @ 12.23 hrs, Volume= 1.428 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,322.82' @ 12.23 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,315.00'	**36.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,315.00' / 2,312.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#2	Secondary	2,320.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=67.53 cfs @ 12.23 hrs HW=2,322.82' TW=2,312.51' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 67.53 cfs @ 9.55 fps)

Secondary OutFlow Max=59.58 cfs @ 12.23 hrs HW=2,322.82' TW=2,301.80' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 59.58 cfs @ 5.29 fps)

Summary for Pond 85: 28" HDPE Pipe

Inflow Area = 4.281 ac, 0.54% Impervious, Inflow Depth = 7.21" for 25-YEAR event
Inflow = 72.44 cfs @ 12.20 hrs, Volume= 2.572 af
Outflow = 72.44 cfs @ 12.20 hrs, Volume= 2.572 af, Atten= 0%, Lag= 0.0 min
Primary = 44.06 cfs @ 12.20 hrs, Volume= 2.133 af
Secondary = 28.38 cfs @ 12.20 hrs, Volume= 0.439 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,301.83' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,295.00'	**30.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,295.00' / 2,292.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 4.91 sf
#2	Secondary	2,300.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50

3.00 3.50
Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07
3.20 3.32

Primary OutFlow Max=44.05 cfs @ 12.20 hrs HW=2,301.82' TW=2,292.32' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 44.05 cfs @ 8.97 fps)

Secondary OutFlow Max=28.30 cfs @ 12.20 hrs HW=2,301.82' TW=2,246.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 28.30 cfs @ 3.88 fps)

Summary for Pond 86: 24" HDPE Pipe

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 4.42" for 25-YEAR event
Inflow = 37.71 cfs @ 12.19 hrs, Volume= 1.599 af
Outflow = 37.71 cfs @ 12.19 hrs, Volume= 1.599 af, Atten= 0%, Lag= 0.0 min
Primary = 26.75 cfs @ 12.19 hrs, Volume= 1.488 af
Secondary = 10.96 cfs @ 12.19 hrs, Volume= 0.111 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,246.02' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**24.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,240.00' / 2,237.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,245.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=26.74 cfs @ 12.19 hrs HW=2,246.02' TW=2,237.34' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 26.74 cfs @ 8.51 fps)

Secondary OutFlow Max=10.90 cfs @ 12.19 hrs HW=2,246.02' TW=2,224.71' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 10.90 cfs @ 2.68 fps)

Summary for Pond 87: 18" Steel Culvert

Inflow Area = 2.000 ac, 0.00% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 8.16 cfs @ 12.08 hrs, Volume= 0.535 af
Outflow = 8.16 cfs @ 12.08 hrs, Volume= 0.535 af, Atten= 0%, Lag= 0.0 min
Primary = 8.16 cfs @ 12.08 hrs, Volume= 0.535 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,210.23' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,208.00'	**18.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,208.00' / 2,207.00' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=8.16 cfs @ 12.08 hrs HW=2,210.23' TW=2,207.56' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 8.16 cfs @ 4.62 fps)

Summary for Pond 90: 12" Steel Culvert

Inflow Area = 12.874 ac, 0.00% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 31.42 cfs @ 12.32 hrs, Volume= 3.441 af
Outflow = 31.42 cfs @ 12.32 hrs, Volume= 3.441 af, Atten= 0%, Lag= 0.0 min
Primary = 31.42 cfs @ 12.32 hrs, Volume= 3.441 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,895.32' @ 12.32 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,890.00'	**12.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 1,890.00' / 1,889.50' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	1,895.00'	**50.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=31.41 cfs @ 12.32 hrs HW=1,895.32' TW=1,889.84' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 8.30 cfs @ 10.57 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 23.11 cfs @ 1.44 fps)

Summary for Pond 200: 36" Steel Culvert

Inflow Area = 76.410 ac, 0.43% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 246.71 cfs @ 12.17 hrs, Volume= 20.421 af
Outflow = 246.71 cfs @ 12.17 hrs, Volume= 20.421 af, Atten= 0%, Lag= 0.0 min
Primary = 246.71 cfs @ 12.17 hrs, Volume= 20.421 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,239.23' @ 12.17 hrs
Flood Elev= 2,248.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert** L= 50.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,234.00' / 2,230.00' S= 0.0800 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=246.71 cfs @ 12.17 hrs HW=2,239.23' TW=2,170.02' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 65.77 cfs @ 9.30 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 180.94 cfs @ 2.93 fps)

Summary for Pond 201: 36" Steel Culvert

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 3.31" for 25-YEAR event
Inflow = 42.53 cfs @ 12.15 hrs, Volume= 3.366 af
Outflow = 42.53 cfs @ 12.15 hrs, Volume= 3.366 af, Atten= 0%, Lag= 0.0 min
Primary = 42.53 cfs @ 12.15 hrs, Volume= 3.366 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,237.07' @ 12.15 hrs
Flood Elev= 2,239.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert** L= 30.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,234.00' / 2,233.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=42.53 cfs @ 12.15 hrs HW=2,237.06' TW=2,232.14' (Dynamic Tailwater)
1=Culvert (Barrel Controls 42.53 cfs @ 7.32 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 300R: 18" Steel Culvert

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 56.57 cfs @ 12.14 hrs, Volume= 4.372 af
Outflow = 56.57 cfs @ 12.14 hrs, Volume= 4.372 af, Atten= 0%, Lag= 0.0 min
Primary = 56.57 cfs @ 12.14 hrs, Volume= 4.372 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,259.29' @ 12.14 hrs
Flood Elev= 2,261.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,254.00'	**18.0" Round 18" Steel Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,254.00' / 2,253.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Primary	2,259.00'	**100.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=56.55 cfs @ 12.14 hrs HW=2,259.29' TW=2,252.34' (Dynamic Tailwater)
1=18" Steel Culvert (Inlet Controls 14.31 cfs @ 8.10 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 42.24 cfs @ 1.45 fps)

Summary for Pond c1:

Inflow = 3.23 cfs @ 12.20 hrs, Volume= 0.483 af
Primary = 3.23 cfs @ 12.20 hrs, Volume= 0.483 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C2:

Inflow Area = 39.108 ac, 0.76% Impervious, Inflow Depth = 3.17" for 25-YEAR event
Inflow = 119.98 cfs @ 12.20 hrs, Volume= 10.322 af
Primary = 119.98 cfs @ 12.20 hrs, Volume= 10.322 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C3:

Inflow Area = 2.196 ac, 4.19% Impervious, Inflow Depth = 3.25" for 25-YEAR event
Inflow = 6.92 cfs @ 12.08 hrs, Volume= 0.595 af
Primary = 6.92 cfs @ 12.08 hrs, Volume= 0.595 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C4:

Inflow Area = 10.003 ac, 2.13% Impervious, Inflow Depth = 2.55" for 25-YEAR event
Inflow = 12.30 cfs @ 12.11 hrs, Volume= 2.130 af
Primary = 12.30 cfs @ 12.11 hrs, Volume= 2.130 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5:

Inflow Area = 14.626 ac, 1.24% Impervious, Inflow Depth = 2.28" for 25-YEAR event
Inflow = 13.95 cfs @ 12.07 hrs, Volume= 2.783 af
Primary = 13.95 cfs @ 12.07 hrs, Volume= 2.783 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5A:

Inflow Area = 12.084 ac, 0.47% Impervious, Inflow Depth = 2.07" for 25-YEAR event
Inflow = 7.79 cfs @ 12.09 hrs, Volume= 2.084 af
Primary = 7.79 cfs @ 12.09 hrs, Volume= 2.084 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6:

Inflow Area = 58.487 ac, 0.32% Impervious, Inflow Depth = 3.80" for 25-YEAR event
Inflow = 285.33 cfs @ 12.13 hrs, Volume= 18.530 af
Primary = 285.33 cfs @ 12.13 hrs, Volume= 18.530 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6A:

Inflow Area = 41.924 ac, 1.24% Impervious, Inflow Depth = 3.31" for 25-YEAR event
Inflow = 120.67 cfs @ 12.24 hrs, Volume= 11.552 af
Primary = 120.67 cfs @ 12.24 hrs, Volume= 11.552 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 10: Design Point 10

Inflow Area = 162.408 ac, 2.03% Impervious, Inflow Depth = 3.26" for 25-YEAR event
Inflow = 335.86 cfs @ 12.22 hrs, Volume= 44.097 af
Primary = 335.86 cfs @ 12.22 hrs, Volume= 44.097 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 11: Design Point 11

Inflow Area = 66.273 ac, 1.46% Impervious, Inflow Depth = 3.29" for 25-YEAR event
Inflow = 166.43 cfs @ 12.32 hrs, Volume= 18.155 af
Primary = 166.43 cfs @ 12.32 hrs, Volume= 18.155 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 12: Design Point 12

Inflow Area = 7.264 ac, 15.61% Impervious, Inflow Depth = 3.71" for 25-YEAR event
Inflow = 39.37 cfs @ 12.03 hrs, Volume= 2.247 af
Primary = 39.37 cfs @ 12.03 hrs, Volume= 2.247 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 16: DESIGN POINT 16

Inflow Area = 18.787 ac, 4.30% Impervious, Inflow Depth = 3.33" for 25-YEAR event
Inflow = 66.97 cfs @ 12.11 hrs, Volume= 5.212 af
Primary = 66.97 cfs @ 12.11 hrs, Volume= 5.212 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 7: Design Point 7

Inflow Area = 149.008 ac, 0.89% Impervious, Inflow Depth = 3.22" for 25-YEAR event
Inflow = 473.10 cfs @ 12.16 hrs, Volume= 39.950 af
Primary = 473.10 cfs @ 12.16 hrs, Volume= 39.950 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 8: Design Point 8

Inflow Area = 95.972 ac, 1.42% Impervious, Inflow Depth = 3.29" for 25-YEAR event
Inflow = 352.83 cfs @ 12.11 hrs, Volume= 26.309 af
Primary = 352.83 cfs @ 12.11 hrs, Volume= 26.309 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 9: Design Point 9

Inflow Area = 56.369 ac, 3.06% Impervious, Inflow Depth = 3.36" for 25-YEAR event
Inflow = 184.78 cfs @ 12.17 hrs, Volume= 15.764 af
Primary = 184.78 cfs @ 12.17 hrs, Volume= 15.764 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP2: ditch

Inflow Area = 39.108 ac, 0.76% Impervious, Inflow Depth = 3.32" for 25-YEAR event
Inflow = 123.28 cfs @ 12.20 hrs, Volume= 10.804 af
Outflow = 123.21 cfs @ 12.20 hrs, Volume= 10.804 af, Atten= 0%, Lag= 0.2 min
Primary = 119.98 cfs @ 12.20 hrs, Volume= 10.322 af
Secondary = 3.23 cfs @ 12.20 hrs, Volume= 0.483 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,434.80' @ 12.20 hrs Surf.Area= 3,516 sf Storage= 4,761 cf

Plug-Flow detention time= 2.3 min calculated for 10.803 af (100% of inflow)
Center-of-Mass det. time= 2.3 min (849.6 - 847.3)

Volume	Invert	Avail.Storage	Storage Description
#1	2,432.00'	5,508 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,432.00	258	0	0
2,434.00	2,218	2,476	2,476
2,435.00	3,846	3,032	5,508

Device	Routing	Invert	Outlet Devices
#1	Primary	2,432.00'	**18.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,432.00' / 2,431.50' S= 0.0125 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,433.36'	**12.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,433.36' / 2,431.00' S= 0.0590 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Primary	2,434.25'	**100.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=119.97 cfs @ 12.20 hrs HW=2,434.80' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 10.74 cfs @ 6.08 fps)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 109.22 cfs @ 2.00 fps)

Secondary OutFlow Max=3.23 cfs @ 12.20 hrs HW=2,434.80' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 3.23 cfs @ 4.11 fps)

Summary for Pond DP3: 12" Steel

Inflow Area = 2.196 ac, 4.19% Impervious, Inflow Depth = 3.41" for 25-YEAR event
Inflow = 9.28 cfs @ 12.08 hrs, Volume= 0.623 af
Outflow = 9.28 cfs @ 12.08 hrs, Volume= 0.623 af, Atten= 0%, Lag= 0.0 min
Primary = 6.92 cfs @ 12.08 hrs, Volume= 0.595 af
Secondary = 2.36 cfs @ 12.08 hrs, Volume= 0.028 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,445.32' @ 12.08 hrs
Flood Elev= 2,446.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,443.00'	**12.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,443.00' / 2,442.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,445.00'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Secondary	2,445.25'	**50.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.92 cfs @ 12.08 hrs HW=2,445.32' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 4.50 cfs @ 5.73 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 2.42 cfs @ 1.53 fps)

Secondary OutFlow Max=2.35 cfs @ 12.08 hrs HW=2,445.32' TW=2,443.47' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 2.35 cfs @ 0.70 fps)

Summary for Pond DP4: 18" HDPE Culvert

Inflow Area = 10.003 ac, 2.13% Impervious, Inflow Depth = 3.31" for 25-YEAR event
Inflow = 38.81 cfs @ 12.11 hrs, Volume= 2.756 af
Outflow = 38.81 cfs @ 12.11 hrs, Volume= 2.756 af, Atten= 0%, Lag= 0.0 min
Primary = 12.30 cfs @ 12.11 hrs, Volume= 2.130 af
Secondary = 26.51 cfs @ 12.11 hrs, Volume= 0.627 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,372.43' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,369.00'	**18.0" Round Culvert** L= 25.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,369.00' / 2,368.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,371.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=12.30 cfs @ 12.11 hrs HW=2,372.43' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 12.30 cfs @ 6.96 fps)

Secondary OutFlow Max=26.50 cfs @ 12.11 hrs HW=2,372.43' TW=2,369.41' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 26.50 cfs @ 2.84 fps)

Summary for Pond DP5: 18" HDPE Culvert

Inflow Area = 14.626 ac, 1.24% Impervious, Inflow Depth = 3.72" for 25-YEAR event
Inflow = 87.02 cfs @ 12.07 hrs, Volume= 4.536 af
Outflow = 87.02 cfs @ 12.07 hrs, Volume= 4.536 af, Atten= 0%, Lag= 0.0 min
Primary = 13.95 cfs @ 12.07 hrs, Volume= 2.783 af
Secondary = 73.07 cfs @ 12.07 hrs, Volume= 1.753 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,303.70' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,299.50'	**18.0" Round Culvert** L= 25.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,299.50' / 2,298.50' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,302.00'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=13.94 cfs @ 12.07 hrs HW=2,303.70' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 13.94 cfs @ 7.89 fps)

Secondary OutFlow Max=72.98 cfs @ 12.07 hrs HW=2,303.70' TW=2,301.84' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 72.98 cfs @ 4.30 fps)

Summary for Pond DP5A: 12" steel Culvert

Inflow Area = 12.084 ac, 0.47% Impervious, Inflow Depth = 4.95" for 25-YEAR event
Inflow = 119.08 cfs @ 12.09 hrs, Volume= 4.983 af
Outflow = 119.08 cfs @ 12.09 hrs, Volume= 4.983 af, Atten= 0%, Lag= 0.0 min
Primary = 7.79 cfs @ 12.09 hrs, Volume= 2.084 af
Secondary = 111.29 cfs @ 12.09 hrs, Volume= 2.899 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,276.75' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,272.00'	**12.0" Round Culvert** L= 25.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,272.00' / 2,270.00' S= 0.0800 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf
#2	Secondary	2,274.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=7.79 cfs @ 12.09 hrs HW=2,276.75' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 7.79 cfs @ 9.92 fps)

Secondary OutFlow Max=111.19 cfs @ 12.09 hrs HW=2,276.75' TW=2,273.83' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 111.19 cfs @ 4.95 fps)

Summary for Pond DP6: 55" CMP Culvert

Inflow Area = 58.487 ac, 0.32% Impervious, Inflow Depth = 3.80" for 25-YEAR event
Inflow = 285.33 cfs @ 12.13 hrs, Volume= 18.530 af
Outflow = 285.33 cfs @ 12.13 hrs, Volume= 18.530 af, Atten= 0%, Lag= 0.0 min
Primary = 285.33 cfs @ 12.13 hrs, Volume= 18.530 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,243.76' @ 12.13 hrs
Flood Elev= 2,245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,238.00'	**55.0" W x 38.0" H, R=33.0" Elliptical Culvert** L= 25.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,238.00' / 2,237.00' S= 0.0400 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 11.11 sf

#2	Primary	2,243.00'	**100.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=285.15 cfs @ 12.13 hrs HW=2,243.76' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 108.88 cfs @ 9.80 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 176.27 cfs @ 2.31 fps)

Summary for Pond DP6A: 30" Steel Culvert

Inflow Area = 41.924 ac, 1.24% Impervious, Inflow Depth = 3.31" for 25-YEAR event
Inflow = 120.67 cfs @ 12.24 hrs, Volume= 11.552 af
Outflow = 120.67 cfs @ 12.24 hrs, Volume= 11.552 af, Atten= 0%, Lag= 0.0 min
Primary = 120.67 cfs @ 12.24 hrs, Volume= 11.552 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,244.72' @ 12.24 hrs
Flood Elev= 2,245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**30.0" Round Culvert** L= 65.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,240.00' / 2,238.00' S= 0.0308 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 4.91 sf
#2	Primary	2,244.00'	**50.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=120.67 cfs @ 12.24 hrs HW=2,244.72' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 38.86 cfs @ 7.92 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 81.81 cfs @ 2.26 fps)

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1
Runoff Area=2,611,846 sf 0.88% Impervious Runoff Depth=4.46"
Flow Length=2,860' Tc=17.6 min CN=70 Runoff=319.89 cfs 22.306 af

Subcatchment 2S: Subcatchment 2
Runoff Area=18,469 sf 23.82% Impervious Runoff Depth=5.27"
Flow Length=375' Tc=7.5 min CN=77 Runoff=3.68 cfs 0.186 af

Subcatchment 3S: Subcatchment 3
Runoff Area=2,671,441 sf 1.35% Impervious Runoff Depth=4.58"
Flow Length=2,885' Tc=17.0 min CN=71 Runoff=341.32 cfs 23.403 af

Subcatchment 4S: Subcatchment 4
Runoff Area=796,495 sf 2.51% Impervious Runoff Depth=4.58"
Flow Length=2,020' Tc=15.5 min CN=71 Runoff=106.80 cfs 6.978 af

Subcatchment 5S: Subcatchment 5
Runoff Area=91,345 sf 8.77% Impervious Runoff Depth=4.81"
Flow Length=715' Tc=13.9 min CN=73 Runoff=13.51 cfs 0.841 af

Subcatchment 6S: Subcatchment 6
Runoff Area=1,024,096 sf 3.41% Impervious Runoff Depth=4.69"
Flow Length=2,176' Tc=20.1 min CN=72 Runoff=122.62 cfs 9.197 af

Subcatchment 7S: Subcatchment 7
Runoff Area=876,427 sf 2.73% Impervious Runoff Depth=4.58"
Flow Length=1,860' Tc=23.6 min CN=71 Runoff=92.95 cfs 7.678 af

Subcatchment 8S: Subcatchment 8
Runoff Area=463,566 sf 1.77% Impervious Runoff Depth=4.58"
Flow Length=1,835' Tc=18.8 min CN=71 Runoff=56.11 cfs 4.061 af

Subcatchment 9S: Subcatchment 9
Runoff Area=1,465,881 sf 1.47% Impervious Runoff Depth=4.46"
Flow Length=2,033' Tc=21.6 min CN=70 Runoff=159.85 cfs 12.519 af

Subcatchment 10S: Subcatchment 10
Runoff Area=1,649,824 sf 3.39% Impervious Runoff Depth=4.58"
Flow Length=2,845' Tc=25.8 min CN=71 Runoff=166.07 cfs 14.453 af

Subcatchment 11A: Subcatchment 11A
Runoff Area=57,739 sf 4.72% Impervious Runoff Depth=4.58"
Flow Length=480' Tc=15.3 min CN=71 Runoff=7.78 cfs 0.506 af

Subcatchment 11B: Subcatchment 11B
Runoff Area=577,903 sf 3.29% Impervious Runoff Depth=4.58"
Flow Length=1,270' Tc=22.3 min CN=71 Runoff=63.49 cfs 5.063 af

Subcatchment 11S: Subcatchment 11
Runoff Area=182,734 sf 7.34% Impervious Runoff Depth=4.69"
Flow Length=984' Tc=11.5 min CN=72 Runoff=28.61 cfs 1.641 af

Subcatchment 12S: Subcatchment 12
Runoff Area=2,326,061 sf 1.82% Impervious Runoff Depth=4.58"
Flow Length=2,390' Tc=34.4 min CN=71 Runoff=193.50 cfs 20.377 af

Subcatchment 14S: Subcatchment 14
Runoff Area=1,703,544 sf 0.76% Impervious Runoff Depth=4.58"
Flow Length=2,585' Tc=26.2 min CN=71 Runoff=170.06 cfs 14.924 af

Subcatchment 15S: Subcatchment 15
Runoff Area=95,640 sf 4.19% Impervious Runoff Depth=4.69"
Flow Length=945' Tc=16.4 min CN=72 Runoff=12.77 cfs 0.859 af

Subcatchment 16S: Subcatchment 16 Runoff Area=435,730 sf 2.13% Impervious Runoff Depth=4.58"
Flow Length=1,844' Tc=18.2 min CN=71 Runoff=53.76 cfs 3.817 af

Subcatchment 17S: Subcatchment 17 Runoff Area=637,108 sf 1.24% Impervious Runoff Depth=4.46"
Flow Length=1,167' Tc=13.5 min CN=70 Runoff=88.88 cfs 5.441 af

Subcatchment 18S: Subcatchment 18 Runoff Area=526,390 sf 0.47% Impervious Runoff Depth=4.46"
Flow Length=2,315' Tc=17.4 min CN=70 Runoff=64.82 cfs 4.496 af

Subcatchment 19S: Subcatchment 19 Runoff Area=2,547,694 sf 0.32% Impervious Runoff Depth=4.46"
Flow Length=2,625' Tc=24.0 min CN=70 Runoff=260.86 cfs 21.759 af

Subcatchment 20S: Subcatchment 20 Runoff Area=1,826,209 sf 1.24% Impervious Runoff Depth=4.58"
Flow Length=3,465' Tc=29.6 min CN=71 Runoff=167.97 cfs 15.998 af

Subcatchment 21S: Subcatchment 21 (Leach Runoff Area=202,100 sf 4.97% Impervious Runoff Depth=4.69"
Flow Length=890' Tc=14.9 min CN=72 Runoff=28.30 cfs 1.815 af

Subcatchment 27S: Subcatchment 27 Runoff Area=316,441 sf 15.61% Impervious Runoff Depth=5.04"
Flow Length=669' Tc=11.4 min CN=75 Runoff=53.04 cfs 3.052 af

Subcatchment 28S: Subcatchment 28 Runoff Area=560,792 sf 0.00% Impervious Runoff Depth=4.46"
Flow Length=1,455' Tc=36.1 min CN=70 Runoff=44.12 cfs 4.789 af

Subcatchment 35S: Subcatchment 35 Runoff Area=532,041 sf 2.97% Impervious Runoff Depth=4.58"
Flow Length=3,110' Tc=22.0 min CN=71 Runoff=59.05 cfs 4.661 af

Subcatchment 200S: Subcatchment 200 Runoff Area=3,328,419 sf 0.43% Impervious Runoff Depth=4.46"
Flow Length=3,545' Tc=23.5 min CN=70 Runoff=344.98 cfs 28.426 af

Subcatchment 300S: Subcatchment 300 Runoff Area=712,598 sf 0.46% Impervious Runoff Depth=4.46"
Flow Length=2,040' Tc=21.0 min CN=70 Runoff=79.00 cfs 6.086 af

Subcatchment 500S: Subcatchment 500 Runoff Area=1,350,926 sf 2.16% Impervious Runoff Depth=4.58"
Flow Length=3,875' Tc=32.0 min CN=71 Runoff=118.33 cfs 11.835 af

Subcatchment 501S: Subcatchment 501 Runoff Area=186,481 sf 0.54% Impervious Runoff Depth=4.46"
Flow Length=2,030' Tc=19.3 min CN=70 Runoff=21.73 cfs 1.593 af

Subcatchment 502S: Subcatchment 502 Runoff Area=189,050 sf 0.76% Impervious Runoff Depth=4.46"
Flow Length=1,300' Tc=13.0 min CN=70 Runoff=26.81 cfs 1.615 af

Subcatchment 503S: Subcatchmant 503 Runoff Area=130,680 sf 0.00% Impervious Runoff Depth=4.46"
Flow Length=1,010' Tc=16.6 min CN=70 Runoff=16.51 cfs 1.116 af

Subcatchment 504S: Subcatchment 504 Runoff Area=1,320,521 sf 1.06% Impervious Runoff Depth=4.46"
Flow Length=3,280' Tc=25.0 min CN=70 Runoff=132.03 cfs 11.278 af

Subcatchment 511S: Subcatchmant 511 Runoff Area=87,120 sf 0.00% Impervious Runoff Depth=4.46"
Flow Length=680' Tc=15.6 min CN=70 Runoff=11.37 cfs 0.744 af

Subcatchment 512S: Subcatchment 512 Runoff Area=56,628 sf 0.00% Impervious Runoff Depth=4.46"
Flow Length=600' Tc=14.0 min CN=70 Runoff=7.77 cfs 0.484 af

Subcatchment 600S: Subcatchment 600 Runoff Area=369,868 sf 2.61% Impervious Runoff Depth=4.58"
Flow Length=1,610' Tc=19.3 min CN=71 Runoff=44.20 cfs 3.240 af

Subcatchment 601S: Subcatchment 601 Runoff Area=267,502 sf 3.92% Impervious Runoff Depth=4.58"
Flow Length=1,070' Tc=15.0 min CN=71 Runoff=36.39 cfs 2.343 af

Reach 1R: Wetland Flow Avg. Flow Depth=0.00' Max Vel=0.00 fps
n=0.070 L=408.0' S=0.0931 '/' Capacity=802.14 cfs Outflow=0.00 cfs 0.000 af

Reach 5: Stream Channel Avg. Flow Depth=1.11' Max Vel=11.05 fps Inflow=76.96 cfs 6.086 af
n=0.050 L=870.0' S=0.1954 '/' Capacity=1,064.40 cfs Outflow=76.54 cfs 6.086 af

Reach 5a: Stream Channel Avg. Flow Depth=1.28' Max Vel=11.75 fps Inflow=76.54 cfs 6.086 af
n=0.050 L=355.0' S=0.2141 '/' Capacity=318.14 cfs Outflow=76.48 cfs 6.086 af

Reach 5R: (new Reach) Avg. Flow Depth=0.79' Max Vel=4.09 fps Inflow=5.22 cfs 0.084 af
n=0.030 L=415.0' S=0.0217 '/' Capacity=30.57 cfs Outflow=5.06 cfs 0.084 af

Reach 6R: (new Reach) Avg. Flow Depth=2.30' Max Vel=14.14 fps Inflow=110.29 cfs 2.937 af
n=0.030 L=370.0' S=0.0757 '/' Capacity=128.38 cfs Outflow=110.14 cfs 2.937 af

Reach 8: Stream Channel Avg. Flow Depth=0.65' Max Vel=11.87 fps Inflow=393.51 cfs 29.489 af
n=0.050 L=245.0' S=0.2898 '/' Capacity=797.02 cfs Outflow=393.16 cfs 29.489 af

Reach 8R: through ditch Avg. Flow Depth=2.21' Max Vel=14.07 fps Inflow=166.13 cfs 4.752 af
n=0.030 L=495.0' S=0.0646 '/' Capacity=171.61 cfs Outflow=165.73 cfs 4.752 af

Reach 11R: Overland Flow Avg. Flow Depth=0.32' Max Vel=3.43 fps Inflow=92.95 cfs 7.678 af
n=0.080 L=1,180.0' S=0.1695 '/' Capacity=620.77 cfs Outflow=87.27 cfs 7.678 af

Reach 12R: Overland Flow Avg. Flow Depth=0.16' Max Vel=2.29 fps Inflow=13.51 cfs 0.841 af
n=0.080 L=950.0' S=0.1968 '/' Capacity=305.91 cfs Outflow=11.66 cfs 0.841 af

Reach 13: RR Swale Avg. Flow Depth=2.49' Max Vel=11.29 fps Inflow=393.16 cfs 29.489 af
n=0.035 L=450.0' S=0.0444 '/' Capacity=604.81 cfs Outflow=392.31 cfs 29.489 af

Reach 21R: (new Reach) Avg. Flow Depth=1.78' Max Vel=12.06 fps Inflow=40.86 cfs 1.090 af
n=0.030 L=685.0' S=0.1000 '/' Capacity=79.28 cfs Outflow=40.61 cfs 1.090 af

Reach 58: Swale along RR Tracks Avg. Flow Depth=1.57' Max Vel=5.76 fps Inflow=52.76 cfs 4.061 af
n=0.040 L=1,020.0' S=0.0265 '/' Capacity=139.83 cfs Outflow=51.14 cfs 4.061 af

Reach 58A: Overland Flow Avg. Flow Depth=0.18' Max Vel=4.20 fps Inflow=79.29 cfs 2.494 af
n=0.035 L=478.0' S=0.1004 '/' Capacity=1,456.48 cfs Outflow=78.46 cfs 2.494 af

Reach 61: Vegetated Roadside Swale Avg. Flow Depth=1.13' Max Vel=7.60 fps Inflow=35.98 cfs 2.147 af
n=0.040 L=751.0' S=0.0613 '/' Capacity=59.21 cfs Outflow=35.40 cfs 2.147 af

Reach 66: Stream Channel Avg. Flow Depth=1.89' Max Vel=11.98 fps Inflow=401.95 cfs 48.700 af
n=0.050 L=1,884.0' S=0.1152 '/' Capacity=445.48 cfs Outflow=396.55 cfs 48.700 af

Reach 78: Stream Channel Avg. Flow Depth=1.45' Max Vel=12.09 fps Inflow=242.71 cfs 34.247 af
n=0.050 L=685.0' S=0.1646 '/' Capacity=258.41 cfs Outflow=242.49 cfs 34.247 af

Reach 80: Stream Channel Avg. Flow Depth=1.98' Max Vel=7.68 fps Inflow=242.49 cfs 34.247 af
n=0.050 L=740.0' S=0.0473 '/' Capacity=247.19 cfs Outflow=241.70 cfs 34.247 af

Reach 82: Overland Flow Avg. Flow Depth=0.08' Max Vel=0.25 fps Inflow=7.77 cfs 0.484 af
n=0.400 L=938.0' S=0.1354 '/' Capacity=53.31 cfs Outflow=2.20 cfs 0.484 af

Reach 82a: Overland Flow Avg. Flow Depth=0.83' Max Vel=0.75 fps Inflow=121.34 cfs 20.149 af
n=0.400 L=473.0' S=0.0846 '/' Capacity=164.89 cfs Outflow=113.94 cfs 20.149 af

Reach 83A: Overland Flow Avg. Flow Depth=0.45' Max Vel=0.75 fps Inflow=52.02 cfs 8.937 af
n=0.400 L=441.0' S=0.1678 '/' Capacity=232.26 cfs Outflow=49.23 cfs 8.937 af

Reach 84A: Overland Flow Avg. Flow Depth=0.79' Max Vel=0.84 fps Inflow=121.36 cfs 19.665 af
n=0.400 L=277.0' S=0.1155 '/' Capacity=192.72 cfs Outflow=119.18 cfs 19.665 af

Reach 84B: Overland Flow Avg. Flow Depth=0.56' Max Vel=0.83 fps Inflow=74.94 cfs 10.728 af
n=0.400 L=370.0' S=0.1622 '/' Capacity=228.33 cfs Outflow=72.13 cfs 10.728 af

Reach 85A: Overland Flow Avg. Flow Depth=0.44' Max Vel=0.70 fps Inflow=50.13 cfs 3.078 af
n=0.400 L=505.0' S=0.1525 '/' Capacity=221.40 cfs Outflow=44.08 cfs 3.078 af

Reach 85B: Overland Flow Avg. Flow Depth=0.64' Max Vel=0.61 fps Inflow=73.47 cfs 5.276 af
n=0.400 L=453.0' S=0.0773 '/' Capacity=157.60 cfs Outflow=64.31 cfs 5.276 af

Reach 86A: Overland Flow Avg. Flow Depth=0.39' Max Vel=0.57 fps Inflow=31.62 cfs 2.199 af
n=0.400 L=195.0' S=0.1128 '/' Capacity=190.45 cfs Outflow=30.77 cfs 2.199 af

Reach 88: Roadside Swale Avg. Flow Depth=0.69' Max Vel=6.96 fps Inflow=11.37 cfs 0.744 af
n=0.035 L=472.0' S=0.0763 '/' Capacity=66.89 cfs Outflow=11.28 cfs 0.744 af

Reach 89: Overland Flow through Woods Avg. Flow Depth=0.09' Max Vel=3.61 fps Inflow=56.11 cfs 4.061 af
n=0.035 L=1,051.0' S=0.1884 '/' Capacity=1,000.42 cfs Outflow=52.76 cfs 4.061 af

Reach 91: Overland Flow Avg. Flow Depth=0.54' Max Vel=3.23 fps Inflow=44.12 cfs 4.789 af
n=0.035 L=198.0' S=0.0172 '/' Capacity=137.55 cfs Outflow=44.00 cfs 4.789 af

Reach 92: Channel Along RR Tracks Avg. Flow Depth=1.40' Max Vel=6.33 fps Inflow=44.00 cfs 4.789 af
n=0.035 L=1,907.0' S=0.0293 '/' Capacity=234.34 cfs Outflow=42.47 cfs 4.789 af

Reach 197: Stream Channel Avg. Flow Depth=1.33' Max Vel=12.26 fps Inflow=400.50 cfs 33.087 af
n=0.050 L=1,500.0' S=0.1807 '/' Capacity=9,816.53 cfs Outflow=396.18 cfs 33.087 af

Reach 198: Stream Channel Avg. Flow Depth=2.36' Max Vel=12.65 fps Inflow=403.69 cfs 33.087 af
n=0.050 L=1,262.0' S=0.1212 '/' Capacity=3,729.07 cfs Outflow=400.50 cfs 33.087 af

Reach 199: Overland Flow Avg. Flow Depth=0.17' Max Vel=5.02 fps Inflow=59.05 cfs 4.661 af
n=0.040 L=250.0' S=0.2560 '/' Capacity=451.81 cfs Outflow=58.85 cfs 4.661 af

Reach 295: Roadside Channel Avg. Flow Depth=1.83' Max Vel=8.17 fps Inflow=77.12 cfs 6.086 af
n=0.040 L=379.0' S=0.0501 '/' Capacity=159.47 cfs Outflow=76.96 cfs 6.086 af

Reach 296: Wetland Flow Avg. Flow Depth=1.64' Max Vel=6.79 fps Inflow=77.29 cfs 6.086 af
n=0.040 L=320.0' S=0.0375 '/' Capacity=122.08 cfs Outflow=77.12 cfs 6.086 af

Reach 297: Overland Flow Avg. Flow Depth=0.29' Max Vel=6.04 fps Inflow=77.54 cfs 6.086 af
n=0.040 L=366.0' S=0.2022 '/' Capacity=225.40 cfs Outflow=77.29 cfs 6.086 af

Reach 298: Wetland Flow Avg. Flow Depth=0.27' Max Vel=2.52 fps Inflow=79.00 cfs 6.086 af
n=0.070 L=408.0' S=0.0931 '/' Capacity=802.14 cfs Outflow=77.54 cfs 6.086 af

Reach 299: Overland Flow Avg. Flow Depth=0.40' Max Vel=6.56 fps Inflow=79.00 cfs 6.086 af
n=0.050 L=135.0' S=0.3259 '/' Capacity=130.57 cfs Outflow=79.00 cfs 6.086 af

Pond 1aP: Design Point 1a Inflow=28.30 cfs 1.815 af
Primary=28.30 cfs 1.815 af

Pond 2R: 48" CMP Culvert Peak Elev=1,747.17' Inflow=666.15 cfs 55.394 af
Outflow=666.15 cfs 55.394 af

Pond 4R: 24" Steel Culvert Peak Elev=2,068.54' Inflow=76.96 cfs 6.086 af
Outflow=76.96 cfs 6.086 af

Pond 7R: 30" Steel Culvert Peak Elev=1,818.40' Inflow=393.51 cfs 29.489 af
Outflow=393.51 cfs 29.489 af

Pond 10R: 14" and 16" HDPE Culverts Peak Elev=1,977.71' Inflow=92.95 cfs 7.678 af
Primary=13.51 cfs 4.714 af Secondary=79.44 cfs 2.964 af Outflow=92.95 cfs 7.678 af

Pond 13R: 16" CMP Culvert Peak Elev=1,973.12' Inflow=13.51 cfs 0.841 af
16.0" Round Culvert n=0.025 L=40.0' S=0.0750 '/' Outflow=13.51 cfs 0.841 af

Pond 57: 15" Steel Culvert Peak Elev=2,006.06' Inflow=7.78 cfs 0.506 af
Outflow=7.78 cfs 0.506 af

Pond 58R: 24" HDPE Pipe Peak Elev=2,225.56' Inflow=79.29 cfs 2.494 af
Outflow=79.29 cfs 2.494 af

Pond 59: 32" Plastic Pipe Peak Elev=2,334.34' Inflow=132.03 cfs 11.278 af
Primary=52.02 cfs 8.937 af Secondary=80.01 cfs 2.340 af Outflow=132.03 cfs 11.278 af

Pond 60: 30" Steel Culvert Peak Elev=2,025.18' Inflow=401.95 cfs 48.700 af
Outflow=401.95 cfs 48.700 af

Pond 67P: 24" Steel Culvert Peak Elev=2,006.19' Inflow=28.61 cfs 1.641 af
Outflow=28.61 cfs 1.641 af

Pond 68: 12" Steel Culvert Peak Elev=2,004.28' Inflow=56.11 cfs 4.061 af
Primary=7.35 cfs 1.982 af Secondary=48.76 cfs 2.079 af Outflow=56.11 cfs 4.061 af

Pond 77: 36" Steel Culvert Peak Elev=2,176.75' Inflow=236.10 cfs 33.503 af
Outflow=236.10 cfs 33.503 af

Pond 79: 16" Steel Culvert Peak Elev=2,058.91' Inflow=242.49 cfs 34.247 af
Outflow=242.49 cfs 34.247 af

Pond 83: 24" HPDE Culvert Peak Elev=2,361.44' Inflow=7.77 cfs 0.484 af
Primary=7.77 cfs 0.484 af Secondary=0.00 cfs 0.000 af Outflow=7.77 cfs 0.484 af

Pond 84: 24" HDPE Pipe Peak Elev=2,324.28' Inflow=192.43 cfs 14.175 af
Primary=74.94 cfs 10.728 af Secondary=117.50 cfs 3.447 af Outflow=192.43 cfs 14.175 af

Pond 85: 28" HDPE Pipe Peak Elev=2,303.47' Inflow=135.74 cfs 5.040 af
Primary=50.13 cfs 3.078 af Secondary=85.61 cfs 1.962 af Outflow=135.74 cfs 5.040 af

Pond 86: 24" HDPE Pipe Peak Elev=2,248.01' Inflow=98.51 cfs 3.577 af
Primary=31.62 cfs 2.199 af Secondary=66.89 cfs 1.378 af Outflow=98.51 cfs 3.577 af

Pond 87: 18" Steel Culvert Peak Elev=2,211.61' Inflow=11.37 cfs 0.744 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0167 '/' Outflow=11.37 cfs 0.744 af

Pond 90: 12" Steel Culvert Peak Elev=1,895.43' Inflow=44.12 cfs 4.789 af
Outflow=44.12 cfs 4.789 af

Pond 200: 36" Steel Culvert Peak Elev=2,239.64' Inflow=344.98 cfs 28.426 af
Outflow=344.98 cfs 28.426 af

Pond 201: 36" Steel Culvert Peak Elev=2,238.11' Inflow=59.05 cfs 4.661 af
Outflow=59.05 cfs 4.661 af

Pond 300R: 18" Steel Culvert Peak Elev=2,259.39' Inflow=79.00 cfs 6.086 af
Outflow=79.00 cfs 6.086 af

Pond c1: Inflow=3.49 cfs 0.699 af
Primary=3.49 cfs 0.699 af

Pond C2: Inflow=169.51 cfs 14.308 af
Primary=169.51 cfs 14.308 af

Pond C3: Inflow=7.55 cfs 0.775 af
Primary=7.55 cfs 0.775 af

Pond C4: Inflow=12.91 cfs 2.727 af
Primary=12.91 cfs 2.727 af

Pond C5: Inflow=15.04 cfs 3.595 af
Primary=15.04 cfs 3.595 af

Pond C5A: Inflow=8.39 cfs 2.681 af
Primary=8.39 cfs 2.681 af

Pond C6: Inflow=409.47 cfs 26.510 af
Primary=409.47 cfs 26.510 af

Pond C6A: Inflow=167.97 cfs 15.998 af
Primary=167.97 cfs 15.998 af

Pond DP 10: Design Point 10 Inflow=531.11 cfs 61.220 af
Primary=531.11 cfs 61.220 af

Pond DP 11: Design Point 11 Inflow=233.04 cfs 25.167 af
Primary=233.04 cfs 25.167 af

Pond DP 12: Design Point 12 Inflow=53.04 cfs 3.052 af
Primary=53.04 cfs 3.052 af

Pond DP 16: DESIGN POINT 16 Inflow=92.73 cfs 7.210 af
Primary=92.73 cfs 7.210 af

Pond DP 7: Design Point 7 Inflow=667.05 cfs 55.580 af
Primary=667.05 cfs 55.580 af

Pond DP 8: Design Point 8 Inflow=493.88 cfs 36.466 af
Primary=493.88 cfs 36.466 af

Pond DP 9: Design Point 9 Inflow=260.53 cfs 21.777 af
Primary=260.53 cfs 21.777 af

Pond DP2: ditch Peak Elev=2,434.96' Storage=5,341 cf Inflow=173.08 cfs 15.007 af
Primary=169.51 cfs 14.308 af Secondary=3.49 cfs 0.699 af Outflow=173.00 cfs 15.007 af

Pond DP3: 12" Steel Peak Elev=2,445.36' Inflow=12.77 cfs 0.859 af
Primary=7.55 cfs 0.775 af Secondary=5.22 cfs 0.084 af Outflow=12.77 cfs 0.859 af

Pond DP4: 18" HDPE Culvert Peak Elev=2,372.71' Inflow=53.76 cfs 3.817 af
Primary=12.91 cfs 2.727 af Secondary=40.86 cfs 1.090 af Outflow=53.76 cfs 3.817 af

Pond DP5: 18" HDPE Culvert Peak Elev=2,304.26' Inflow=125.33 cfs 6.532 af
Primary=15.04 cfs 3.595 af Secondary=110.29 cfs 2.937 af Outflow=125.33 cfs 6.532 af

Pond DP5A: 12" steel Culvert Peak Elev=2,277.43' Inflow=174.53 cfs 7.433 af
Primary=8.39 cfs 2.681 af Secondary=166.13 cfs 4.752 af Outflow=174.53 cfs 7.433 af

Pond DP6: 55" CMP Culvert Peak Elev=2,244.08' Inflow=409.47 cfs 26.510 af
Outflow=409.47 cfs 26.510 af

Pond DP6A: 30" Steel Culvert Peak Elev=2,244.98' Inflow=167.97 cfs 15.998 af
Outflow=167.97 cfs 15.998 af

Total Runoff Area = 739.149 ac Runoff Volume = 279.579 af Average Runoff Depth = 4.54"
98.32% Pervious = 726.767 ac 1.68% Impervious = 12.381 ac

Summary for Subcatchment 1S: Subcatchment 1

Runoff = 319.89 cfs @ 12.10 hrs, Volume= 22.306 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	7,405	98	Roof Area
*	15,551	98	Pavement
*	9,714	89	Dirt Road
	75,794	71	Meadow, non-grazed, HSG C
	2,503,382	70	Woods, Good, HSG C
	2,611,846	70	Weighted Average
	2,588,890		99.12% Pervious Area
	22,956		0.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	55	0.0720	2.28		**Sheet Flow, Sheet Flow over Pavement** Smooth surfaces n= 0.011 P2= 4.00"
4.4	45	0.1600	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
10.6	1,315	0.1720	2.07		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
2.2	1,445	0.1868	11.00	70.92	**Trap/Vee/Rect Channel Flow, Mountain Stream w/ Medium Boulders** Bot.W=4.00' D=1.50' Z= 0.2 '/' Top.W=4.60' n= 0.055
17.6	2,860	Total			

Summary for Subcatchment 2S: Subcatchment 2

Runoff = 3.68 cfs @ 11.99 hrs, Volume= 0.186 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	4,400	98	Roadway
	5,009	71	Meadow, non-grazed, HSG C
	9,060	70	Woods, Good, HSG C
	18,469	77	Weighted Average
	14,069		76.18% Pervious Area
	4,400		23.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	90	0.2290	0.23		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.5	70	0.2550	2.52		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	215	0.0547	13.12	137.80	**Trap/Vee/Rect Channel Flow, Vegetated Swale along RR Tracks** Bot.W=2.00' D=3.00' Z= 0.5 '/' Top.W=5.00' n= 0.030
7.5	375	Total			

Summary for Subcatchment 3S: Subcatchment 3

Runoff = 341.32 cfs @ 12.09 hrs, Volume= 23.403 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	18,818	89	Dirt Road
*	24,002	98	Paved Road
*	11,979	98	Roof Area
	73,006	74	>75% Grass cover, Good, HSG C
	2,543,636	70	Woods, Good, HSG C
	2,671,441	71	Weighted Average
	2,635,460		98.65% Pervious Area
	35,981		1.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	100	0.2270	0.23		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.0	307	0.0650	1.27		**Shallow Concentrated Flow, SC Flow overland** Woodland Kv= 5.0 fps
4.1	592	0.2300	2.40		**Shallow Concentrated Flow, overland** Woodland Kv= 5.0 fps
0.4	655	0.1959	28.46	3,073.23	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=25.00' D=4.00' Z= 0.5 '/' Top.W=29.00' n= 0.050 Mountain streams w/large boulders
0.1	50	0.0400	6.18	10.92	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
1.1	1,181	0.1950	18.29	493.73	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=3.00' Z= 2.0 '/' Top.W=15.00' n= 0.050 Mountain streams w/large boulders
17.0	2,885	Total			

Summary for Subcatchment 4S: Subcatchment 4

Runoff = 106.80 cfs @ 12.07 hrs, Volume= 6.978 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	5,009	98	Roof Area
	64,992	71	Meadow, non-grazed, HSG C
*	14,985	98	Roadway
	711,509	70	Woods, Good, HSG C
	796,495	71	Weighted Average
	776,501		97.49% Pervious Area
	19,994		2.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.3000	0.26		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.0	770	0.1860	2.16		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
0.4	200	0.0750	9.49	56.96	**Trap/Vee/Rect Channel Flow, RR Swale w/Gravel and Leaves** Bot.W=1.00' D=2.00' Z= 1.0 '/' Top.W=5.00' n= 0.040
0.8	250	0.0800	5.03	7.55	**Trap/Vee/Rect Channel Flow, RR Swale w/ Gravel and Leaves** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.050
0.6	300	0.0650	8.00	48.03	**Trap/Vee/Rect Channel Flow, RR Swale w/ Cobbles and Leaves** Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00' n= 0.045
1.2	400	0.0600	5.69	14.23	**Trap/Vee/Rect Channel Flow, RR Swale w/ Cobbles and Leaves** Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00' n= 0.045
15.5	2,020	Total			

Summary for Subcatchment 5S: Subcatchment 5

Runoff = 13.51 cfs @ 12.06 hrs, Volume= 0.841 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	40,511	71	Meadow, non-grazed, HSG C
*	8,015	98	Roof Area
	42,819	70	Woods, Good, HSG C
	91,345	73	Weighted Average
	83,330		91.23% Pervious Area
	8,015		8.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.1300	0.18		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	390	0.0920	1.52		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	225	0.0346	7.48	29.91	**Trap/Vee/Rect Channel Flow, Flow in Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
13.9	715	Total			

Summary for Subcatchment 6S: Subcatchment 6

Runoff = 122.62 cfs @ 12.13 hrs, Volume= 9.197 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	24,873	98	Dirt Road
*	10,062	98	Roof Area
	70,635	71	Meadow, non-grazed, HSG C
	777,256	70	Woods, Good, HSG C
	141,270	74	>75% Grass cover, Good, HSG C
	1,024,096	72	Weighted Average
	989,161		96.59% Pervious Area
	34,935		3.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
8.7	1,016	0.1500	1.94		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.7	1,060	0.0750	10.48	83.81	**Trap/Vee/Rect Channel Flow, RR Swale w/ Gravel and Leaves** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.040
20.1	2,176	Total			

Summary for Subcatchment 7S: Subcatchment 7

Runoff = 92.95 cfs @ 12.17 hrs, Volume= 7.678 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	23,914	98	Pavement
	18,513	71	Meadow, non-grazed, HSG C
	834,000	70	Woods, Good, HSG C
	876,427	71	Weighted Average
	852,513		97.27% Pervious Area
	23,914		2.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.1570	0.20		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
15.2	1,760	0.1490	1.93		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
23.6	1,860	Total			

Summary for Subcatchment 8S: Subcatchment 8

Runoff = 56.11 cfs @ 12.11 hrs, Volume= 4.061 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	27,225	71	Meadow, non-grazed, HSG C
*	3,006	89	Dirt Road
*	8,189	98	Pavment
	425,146	70	Woods, Good, HSG C
	463,566	71	Weighted Average
	455,377		98.23% Pervious Area
	8,189		1.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.1570	0.20		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.0	850	0.2200	2.35		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.1	135	0.0850	2.04		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
2.6	310	0.1540	1.96		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.7	440	0.0360	10.52	63.14	**Trap/Vee/Rect Channel Flow, Flow through Vegetated Swale** Bot.W=1.00' D=2.00' Z= 1.0 '/' Top.W=5.00' n= 0.025
18.8	1,835	Total			

Summary for Subcatchment 9S: Subcatchment 9

Runoff = 159.85 cfs @ 12.14 hrs, Volume= 12.519 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	8,494	98	Roof Area
	57,978	71	Meadow, non-grazed, HSG C
	1,386,297	70	Woods, Good, HSG C
	13,112	98	Paved parking, HSG C
	1,465,881	70	Weighted Average
	1,444,275		98.53% Pervious Area
	21,606		1.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0200	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	10	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.3	1,923	0.1100	13.81	662.89	**Trap/Vee/Rect Channel Flow, Flow through Rock Channel** Bot.W=20.00' D=2.00' Z= 2.0 '/' Top.W=28.00' n= 0.050 Mountain streams w/large boulders
21.6	2,033	Total			

Summary for Subcatchment 10S: Subcatchment 10

Runoff = 166.07 cfs @ 12.19 hrs, Volume= 14.453 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	1,108,354	70	Woods, Good, HSG C
	485,520	71	Meadow, non-grazed, HSG C
*	7,623	98	Roof Area
*	48,327	98	Road/Drive
	1,649,824	71	Weighted Average
	1,593,874		96.61% Pervious Area
	55,950		3.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.2	600	0.0780	1.40		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
2.7	455	0.1600	2.80		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
2.8	330	0.1570	1.98		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.6	685	0.0945	7.35	33.08	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=4.00' D=1.00' Z= 0.5 '/' Top.W=5.00' n= 0.050
0.0	30	0.0500	13.31	18.59	**Pipe Channel, 16" Steel Culvert** 16.0" Round Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.012 Steel, smooth
1.4	645	0.0483	7.65	91.77	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=5.00' D=2.00' Z= 0.5 '/' Top.W=7.00' n= 0.050
25.8	2,845	Total			

Summary for Subcatchment 11A: Subcatchment 11A

Runoff = 7.78 cfs @ 12.07 hrs, Volume= 0.506 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
55,013	70	Woods, Good, HSG C
2,726	98	Paved parking & roofs
57,739	71	Weighted Average
55,013		95.28% Pervious Area
2,726		4.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0800	0.15		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	380	0.0875	1.48		**Shallow Concentrated Flow, SC flow through Woods** Woodland Kv= 5.0 fps
15.3	480	Total			

Summary for Subcatchment 11B: Subcatchment 11B

Runoff = 63.49 cfs @ 12.16 hrs, Volume= 5.063 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
558,889	70	Woods, Good, HSG C
19,014	98	Paved parking & roofs
577,903	71	Weighted Average
558,889		96.71% Pervious Area
19,014		3.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0800	0.15		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.0	460	0.0750	1.92		**Shallow Concentrated Flow, Sheet Flow through Meadow** Short Grass Pasture Kv= 7.0 fps
0.8	80	0.0625	1.75		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
6.3	560	0.0875	1.48		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	70	0.0500	7.39	16.25	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=2.00' D=1.00' Z= 0.2 '/' Top.W=2.40' n= 0.030 Earth, grassed & winding
22.3	1,270	Total			

Summary for Subcatchment 11S: Subcatchment 11

Runoff = 28.61 cfs @ 12.03 hrs, Volume= 1.641 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
169,318	70	Woods, Good, HSG C
13,416	98	Paved parking & roofs
182,734	72	Weighted Average
169,318		92.66% Pervious Area
13,416		7.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.0800	2.03		**Sheet Flow, Sheet Flow off Roof** Smooth surfaces n= 0.011 P2= 4.00"
4.4	75	0.0625	0.28		**Sheet Flow, Sheet flow over meadow** Grass: Short n= 0.150 P2= 4.00"
2.9	330	0.0750	1.92		**Shallow Concentrated Flow, Sheet Flow through Meadow** Short Grass Pasture Kv= 7.0 fps
3.4	300	0.0875	1.48		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.6	254	0.0500	7.39	16.25	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=2.00' D=1.00' Z= 0.2 '/' Top.W=2.40' n= 0.030
11.5	984	Total			

Summary for Subcatchment 12S: Subcatchment 12

Runoff = 193.50 cfs @ 12.30 hrs, Volume= 20.377 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	18,687	74	>75% Grass cover, Good, HSG C
	2,265,120	70	Woods, Good, HSG C
*	17,860	98	Roofs
*	24,394	98	Paved roads
	2,326,061	71	Weighted Average
	2,283,807		98.18% Pervious Area
	42,254		1.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0850	0.15		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
23.6	2,290	0.1050	1.62		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
34.4	2,390	Total			

Summary for Subcatchment 14S: Subcatchment 14

Runoff = 170.06 cfs @ 12.20 hrs, Volume= 14.924 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	133,250	71	Meadow, non-grazed, HSG C
	25,526	87	Dirt roads, HSG C
*	5,184	98	Roof Area
	1,531,787	70	Woods, Good, HSG C
	7,797	98	Paved roads
	1,703,544	71	Weighted Average
	1,690,563		99.24% Pervious Area
	12,981		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	80	0.1000	2.21		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
15.2	2,165	0.2260	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.4	90	0.2350	3.39		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
0.3	150	0.0450	8.53	34.11	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
26.2	2,585	Total			

Summary for Subcatchment 15S: Subcatchment 15

Runoff = 12.77 cfs @ 12.08 hrs, Volume= 0.859 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	35,962	71	Meadow, non-grazed, HSG C
	55,670	70	Woods, Good, HSG C
*	4,008	98	Pavement
	95,640	72	Weighted Average
	91,632		95.81% Pervious Area
	4,008		4.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.3	640	0.1600	2.00		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.8	125	0.1500	2.71		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
0.2	80	0.0400	8.04	32.16	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
16.4	945	Total			

Summary for Subcatchment 16S: Subcatchment 16

Runoff = 53.76 cfs @ 12.11 hrs, Volume= 3.817 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	141,134	71	Meadow, non-grazed, HSG C
*	9,278	98	Pavement
	285,318	70	Woods, Good, HSG C
	435,730	71	Weighted Average
	426,452		97.87% Pervious Area
	9,278		2.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.7	644	0.1406	1.87		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.4	200	0.1200	2.42		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
1.0	900	0.1029	15.55	106.89	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.50' Z= 0.7 '/' Top.W=4.50' n= 0.030
18.2	1,844	Total			

Summary for Subcatchment 17S: Subcatchment 17

Runoff = 88.88 cfs @ 12.05 hrs, Volume= 5.441 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	7,884	98	Roadway
	8,494	71	Meadow, non-grazed, HSG C
	620,730	70	Woods, Good, HSG C
	637,108	70	Weighted Average
	629,224		98.76% Pervious Area
	7,884		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2000	0.22		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.8	922	0.2800	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.1	145	0.1160	17.65	143.44	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=2.00' D=2.50' Z= 0.5 '/' Top.W=4.50' n= 0.030
13.5	1,167	Total			

Summary for Subcatchment 18S: Subcatchment 18

Runoff = 64.82 cfs @ 12.10 hrs, Volume= 4.496 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	2,494	98	Pavement
	3,615	71	Meadow, non-grazed, HSG C
	520,281	70	Woods, Good, HSG C
	526,390	70	Weighted Average
	523,896		99.53% Pervious Area
	2,494		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.3280	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
10.5	1,895	0.3630	3.01		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.6	320	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Flow in Roadside Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
17.4	2,315	Total			

Summary for Subcatchment 19S: Subcatchment 19

Runoff = 260.86 cfs @ 12.18 hrs, Volume= 21.759 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	8,146	98	Paved, HSG C
	1,896,646	70	Woods, Good, HSG C
	642,902	71	Meadow, non-grazed, HSG C
	2,547,694	70	Weighted Average
	2,539,548		99.68% Pervious Area
	8,146		0.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.6	2,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods** Woodland Kv= 5.0 fps
0.9	470	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030 Earth, grassed & winding

24.0	2,625	Total

Summary for Subcatchment 20S: Subcatchment 20

Runoff = 167.97 cfs @ 12.24 hrs, Volume= 15.998 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	6,926	98	Roof Area
*	15,682	98	Roadway
	1,050,057	70	Woods, Good, HSG C
	753,544	71	Meadow, non-grazed, HSG C
	1,826,209	71	Weighted Average
	1,803,601		98.76% Pervious Area
	22,608		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
18.7	3,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods** Woodland Kv= 5.0 fps
0.4	310	0.0466	12.12	145.44	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=4.00' Z= 0.5 '/' Top.W=5.00' n= 0.030 Earth, grassed & winding
29.6	3,465	Total			

Summary for Subcatchment 21S: Subcatchment 21 (Leach Farm)

Runoff = 28.30 cfs @ 12.07 hrs, Volume= 1.815 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	147,807	70	Woods, Good, HSG C
*	5,253	98	Roof
*	4,790	98	Paved Drive
	44,250	74	>75% Grass cover, Good, HSG C
	202,100	72	Weighted Average
	192,057		95.03% Pervious Area
	10,043		4.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0840	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.7	460	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	330	0.2300	14.23	21.34	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.030 Earth, clean & winding
14.9	890	Total			

Summary for Subcatchment 27S: Subcatchment 27

Runoff = 53.04 cfs @ 12.03 hrs, Volume= 3.052 af, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	12,543	98	Roof
*	36,847	98	Pavement
	54,050	74	>75% Grass cover, Good, HSG C
	213,001	70	Woods, Good, HSG C
	316,441	75	Weighted Average
	267,051		84.39% Pervious Area
	49,390		15.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.2200	0.23		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.8	445	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	124	0.0800	11.21	42.02	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.50' Z= 1.0 '/' Top.W=4.00' n= 0.030 Earth, grassed & winding
11.4	669	Total			

Summary for Subcatchment 28S: Subcatchment 28

Runoff = 44.12 cfs @ 12.31 hrs, Volume= 4.789 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
33,932	71	Meadow, non-grazed, HSG C
526,860	70	Woods, Good, HSG C
560,792	70	Weighted Average
560,792		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
15.4	1,205	0.0680	1.30		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
7.4	150	0.0130	0.34	0.51	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.300
36.1	1,455	Total			

Summary for Subcatchment 35S: Subcatchment 35

Runoff = 59.05 cfs @ 12.15 hrs, Volume= 4.661 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	122,752	71	Meadow, non-grazed, HSG C
*	6,708	98	Paved Road
	393,477	70	Woods, Good, HSG C
*	9,104	98	Roof
	532,041	71	Weighted Average
	516,229		97.03% Pervious Area
	15,812		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	120	0.1667	0.52		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.5	230	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	50	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
9.3	1,470	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
22.0	3,110	Total			

Summary for Subcatchment 200S: Subcatchment 200

Runoff = 344.98 cfs @ 12.17 hrs, Volume= 28.426 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	14,331	98	Paved Road
	311,323	71	Meadow, non-grazed, HSG C
	3,002,765	70	Woods, Good, HSG C
	3,328,419	70	Weighted Average
	3,314,088		99.57% Pervious Area
	14,331		0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	100	0.1667	0.50		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.4	215	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	70	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
11.1	1,760	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	160	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
23.5	3,545	Total			

Summary for Subcatchment 300S: Subcatchment 300

Runoff = 79.00 cfs @ 12.14 hrs, Volume= 6.086 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	3,267	98	Paved Road
	6,447	71	Meadow, non-grazed, HSG C
	702,884	70	Woods, Good, HSG C
	712,598	70	Weighted Average
	709,331		99.54% Pervious Area
	3,267		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	120	0.2500	0.25		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.7	1,810	0.2257	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	110	0.0910	12.13	48.50	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
21.0	2,040	Total			

Summary for Subcatchment 500S: Subcatchment 500

Runoff = 118.33 cfs @ 12.27 hrs, Volume= 11.835 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	29,185	98	Roadway
	1,312,724	70	Woods, Good, HSG C
	1,350,926	71	Weighted Average
	1,321,741		97.84% Pervious Area
	29,185		2.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
25.7	3,665	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.1	110	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
32.0	3,875	Total			

Summary for Subcatchment 501S: Subcatchment 501

Runoff = 21.73 cfs @ 12.12 hrs, Volume= 1.593 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,002	98	Roadway
	176,462	70	Woods, Good, HSG C
	186,481	70	Weighted Average
	185,479		99.46% Pervious Area
	1,002		0.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
13.1	1,930	0.2410	2.45		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	2,030	Total			

Summary for Subcatchment 502S: Subcatchment 502

Runoff = 26.81 cfs @ 12.05 hrs, Volume= 1.615 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,437	98	Roadway
	178,596	70	Woods, Good, HSG C
	189,050	70	Weighted Average
	187,613		99.24% Pervious Area
	1,437		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.5	935	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	265	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
13.0	1,300	Total			

Summary for Subcatchment 503S: Subcatchmant 503

Runoff = 16.51 cfs @ 12.08 hrs, Volume= 1.116 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
130,680	70	Woods, Good, HSG C
130,680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.2	655	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	255	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
16.6	1,010	Total			

Summary for Subcatchment 504S: Subcatchment 504

Runoff = 132.03 cfs @ 12.19 hrs, Volume= 11.278 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	1,292,556	70	Woods, Good, HSG C
*	13,939	98	Road
	14,026	74	>75% Grass cover, Good, HSG C
	1,320,521	70	Weighted Average
	1,306,582		98.94% Pervious Area
	13,939		1.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.4375	0.30		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
19.1	2,860	0.2500	2.50		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	320	0.1910	15.31	321.48	**Trap/Vee/Rect Channel Flow, Mountain Stream** Bot.W=4.00' D=3.00' Z= 1.0 '/' Top.W=10.00' n= 0.060
25.0	3,280	Total			

Summary for Subcatchment 511S: Subcatchmant 511

Runoff = 11.37 cfs @ 12.08 hrs, Volume= 0.744 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
87,120	70	Woods, Good, HSG C
87,120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.5	580	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.6	680	Total			

Summary for Subcatchment 512S: Subcatchment 512

Runoff = 7.77 cfs @ 12.06 hrs, Volume= 0.484 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
56,628	70	Woods, Good, HSG C
56,628		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.3125	0.15		**Sheet Flow, Sheet Flow through Woods** Woods: Dense underbrush n= 0.800 P2= 4.00"
2.6	345	0.1900	2.18		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	155	0.1000	8.43	10.12	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.2 '/' Top.W=1.40' n= 0.030 Earth, grassed & winding
14.0	600	Total			

Summary for Subcatchment 600S: Subcatchment 600

Runoff = 44.20 cfs @ 12.12 hrs, Volume= 3.240 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	9,670	98	Road
	360,198	70	Woods, Good, HSG C
	369,868	71	Weighted Average
	360,198		97.39% Pervious Area
	9,670		2.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.0	1,510	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	1,610	Total			

Summary for Subcatchment 601S: Subcatchment 601

Runoff = 36.39 cfs @ 12.07 hrs, Volume= 2.343 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	10,498	98	Road
	257,004	70	Woods, Good, HSG C
	267,502	71	Weighted Average
	257,004		96.08% Pervious Area
	10,498		3.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.7	970	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.0	1,070	Total			

Summary for Reach 1R: Wetland Flow

Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 150.0 sf, Capacity= 802.14 cfs

100.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 50.0 '/' Top Width= 200.00'
Length= 408.0' Slope= 0.0931 '/'
Inlet Invert= 2,208.00', Outlet Invert= 2,170.00'

‡

Summary for Reach 5: Stream Channel

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 76.96 cfs @ 12.20 hrs, Volume= 6.086 af
Outflow = 76.54 cfs @ 12.22 hrs, Volume= 6.086 af, Atten= 1%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.05 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 3.22 fps, Avg. Travel Time= 4.5 min

Peak Storage= 6,025 cf @ 12.22 hrs
Average Depth at Peak Storage= 1.11'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 1,064.40 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 870.0' Slope= 0.1954 '/'
Inlet Invert= 2,060.00', Outlet Invert= 1,890.00'

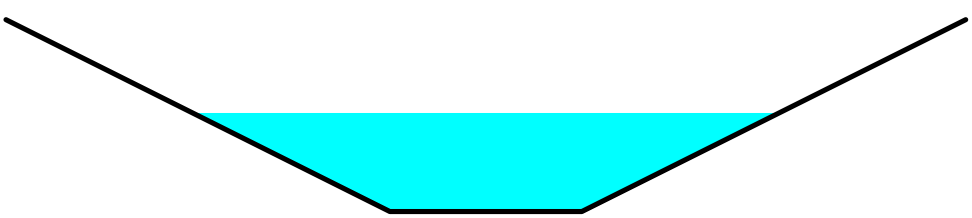
Summary for Reach 5a: Stream Channel

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 76.54 cfs @ 12.22 hrs, Volume= 6.086 af
Outflow = 76.48 cfs @ 12.23 hrs, Volume= 6.086 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.75 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 3.58 fps, Avg. Travel Time= 1.7 min

Peak Storage= 2,311 cf @ 12.23 hrs
Average Depth at Peak Storage= 1.28'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 318.14 cfs

2.50' x 2.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 355.0' Slope= 0.2141 '/'
Inlet Invert= 1,890.00', Outlet Invert= 1,814.00'



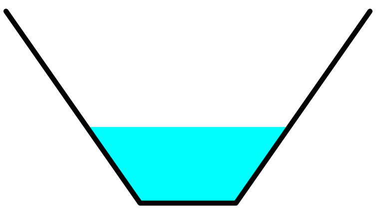
Summary for Reach 5R: (new Reach)

Inflow = 5.22 cfs @ 12.08 hrs, Volume= 0.084 af
Outflow = 5.06 cfs @ 12.11 hrs, Volume= 0.084 af, Atten= 3%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.09 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 1.13 fps, Avg. Travel Time= 6.1 min

Peak Storage= 513 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.79'
Bank-Full Depth= 2.00' Flow Area= 4.8 sf, Capacity= 30.57 cfs

1.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.7 '/' Top Width= 3.80'
Length= 415.0' Slope= 0.0217 '/'
Inlet Invert= 2,443.00', Outlet Invert= 2,434.00'



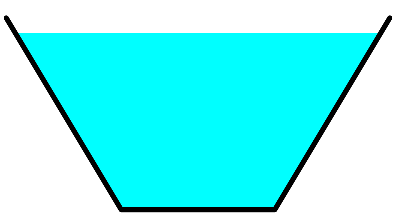
Summary for Reach 6R: (new Reach)

Inflow = 110.29 cfs @ 12.07 hrs, Volume= 2.937 af
Outflow = 110.14 cfs @ 12.08 hrs, Volume= 2.937 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 14.14 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 6.03 fps, Avg. Travel Time= 1.0 min

Peak Storage= 2,883 cf @ 12.08 hrs
Average Depth at Peak Storage= 2.30'
Bank-Full Depth= 2.50' Flow Area= 8.8 sf, Capacity= 128.38 cfs

2.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.6 '/' Top Width= 5.00'
Length= 370.0' Slope= 0.0757 '/'
Inlet Invert= 2,300.00', Outlet Invert= 2,272.00'



Summary for Reach 8: Stream Channel

Inflow Area = 77.687 ac, 1.16% Impervious, Inflow Depth = 4.56" for 100-YEAR event
Inflow = 393.51 cfs @ 12.11 hrs, Volume= 29.489 af
Outflow = 393.16 cfs @ 12.11 hrs, Volume= 29.489 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.87 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.50 fps, Avg. Travel Time= 1.6 min

Peak Storage= 8,116 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 1.00' Flow Area= 51.0 sf, Capacity= 797.02 cfs

50.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 1.0 '/' Top Width= 52.00'
Length= 245.0' Slope= 0.2898 '/'
Inlet Invert= 1,812.00', Outlet Invert= 1,741.00'

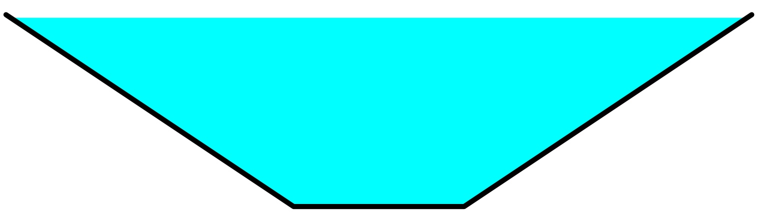
Summary for Reach 8R: through ditch

Inflow = 166.13 cfs @ 12.08 hrs, Volume= 4.752 af
Outflow = 165.73 cfs @ 12.09 hrs, Volume= 4.752 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 14.07 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.92 fps, Avg. Travel Time= 1.7 min

Peak Storage= 5,832 cf @ 12.09 hrs
Average Depth at Peak Storage= 2.21'
Bank-Full Depth= 2.25' Flow Area= 12.1 sf, Capacity= 171.61 cfs

2.00' x 2.25' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.5 '/' Top Width= 8.75'
Length= 495.0' Slope= 0.0646 '/'
Inlet Invert= 2,272.00', Outlet Invert= 2,240.00'



Summary for Reach 11R: Overland Flow

Inflow Area = 20.120 ac, 2.73% Impervious, Inflow Depth = 4.58" for 100-YEAR event
Inflow = 92.95 cfs @ 12.17 hrs, Volume= 7.678 af
Outflow = 87.27 cfs @ 12.23 hrs, Volume= 7.678 af, Atten= 6%, Lag= 3.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.43 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 0.74 fps, Avg. Travel Time= 26.4 min

Peak Storage= 30,005 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00' Flow Area= 90.0 sf, Capacity= 620.77 cfs

75.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 105.00'
Length= 1,180.0' Slope= 0.1695 '/'
Inlet Invert= 1,973.00', Outlet Invert= 1,773.00'

‡

Summary for Reach 12R: Overland Flow

Inflow Area = 2.097 ac, 8.77% Impervious, Inflow Depth = 4.81" for 100-YEAR event
Inflow = 13.51 cfs @ 12.06 hrs, Volume= 0.841 af
Outflow = 11.66 cfs @ 12.12 hrs, Volume= 0.841 af, Atten= 14%, Lag= 3.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.29 fps, Min. Travel Time= 6.9 min
Avg. Velocity = 0.55 fps, Avg. Travel Time= 28.7 min

Peak Storage= 4,835 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 305.91 cfs

30.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 60.00'
Length= 950.0' Slope= 0.1968 '/'
Inlet Invert= 1,960.00', Outlet Invert= 1,773.00'

‡

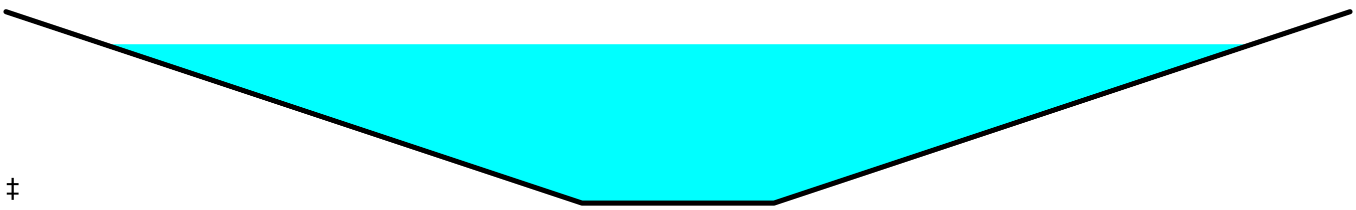
Summary for Reach 13: RR Swale

Inflow Area = 77.687 ac, 1.16% Impervious, Inflow Depth = 4.56" for 100-YEAR event
Inflow = 393.16 cfs @ 12.11 hrs, Volume= 29.489 af
Outflow = 392.31 cfs @ 12.12 hrs, Volume= 29.489 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.29 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 3.52 fps, Avg. Travel Time= 2.1 min

Peak Storage= 15,637 cf @ 12.12 hrs
Average Depth at Peak Storage= 2.49'
Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 604.81 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 4.0 '/' Top Width= 28.00'
Length= 450.0' Slope= 0.0444 '/'
Inlet Invert= 1,740.00', Outlet Invert= 1,720.00'



‡

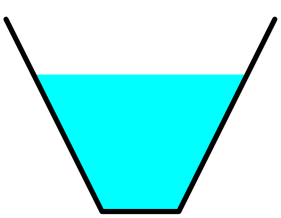
Summary for Reach 21R: (new Reach)

Inflow = 40.86 cfs @ 12.11 hrs, Volume= 1.090 af
Outflow = 40.61 cfs @ 12.12 hrs, Volume= 1.090 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.06 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 4.74 fps, Avg. Travel Time= 2.4 min

Peak Storage= 2,306 cf @ 12.12 hrs
Average Depth at Peak Storage= 1.78'
Bank-Full Depth= 2.50' Flow Area= 5.6 sf, Capacity= 79.28 cfs

1.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.5 '/' Top Width= 3.50'
Length= 685.0' Slope= 0.1000 '/'
Inlet Invert= 2,368.00', Outlet Invert= 2,299.50'



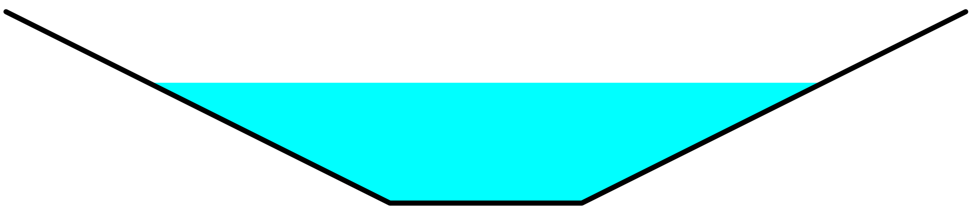
Summary for Reach 58: Swale along RR Tracks

Inflow Area = 10.642 ac, 1.77% Impervious, Inflow Depth = 4.58" for 100-YEAR event
Inflow = 52.76 cfs @ 12.16 hrs, Volume= 4.061 af
Outflow = 51.14 cfs @ 12.20 hrs, Volume= 4.061 af, Atten= 3%, Lag= 2.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.76 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 1.66 fps, Avg. Travel Time= 10.2 min

Peak Storage= 9,051 cf @ 12.20 hrs
Average Depth at Peak Storage= 1.57'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 139.83 cfs

2.50' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 1,020.0' Slope= 0.0265 '/'
Inlet Invert= 1,800.00', Outlet Invert= 1,773.00'



Summary for Reach 58A: Overland Flow

Inflow Area = 3.000 ac, 0.00% Impervious, Inflow Depth = 9.98" for 100-YEAR event
Inflow = 79.29 cfs @ 12.19 hrs, Volume= 2.494 af
Outflow = 78.46 cfs @ 12.20 hrs, Volume= 2.494 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.20 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 10.9 min

Peak Storage= 8,933 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.00' Flow Area= 120.0 sf, Capacity= 1,456.48 cfs

100.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 140.00'
Length= 478.0' Slope= 0.1004 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,172.00'

‡

Summary for Reach 61: Vegetated Roadside Swale

Inflow Area = 5.521 ac, 6.71% Impervious, Inflow Depth = 4.67" for 100-YEAR event
Inflow = 35.98 cfs @ 12.04 hrs, Volume= 2.147 af
Outflow = 35.40 cfs @ 12.06 hrs, Volume= 2.147 af, Atten= 2%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.60 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.93 fps, Avg. Travel Time= 6.5 min

Peak Storage= 3,496 cf @ 12.06 hrs
Average Depth at Peak Storage= 1.13'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 59.21 cfs

3.00' x 1.50' deep channel, n= 0.040
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 751.0' Slope= 0.0613 '/'
Inlet Invert= 2,000.00', Outlet Invert= 1,954.00'

Summary for Reach 66: Stream Channel

Inflow Area = 128.756 ac, 2.17% Impervious, Inflow Depth = 4.54" for 100-YEAR event
Inflow = 401.95 cfs @ 12.23 hrs, Volume= 48.700 af
Outflow = 396.55 cfs @ 12.26 hrs, Volume= 48.700 af, Atten= 1%, Lag= 2.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.98 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 1.83 fps, Avg. Travel Time= 17.1 min

Peak Storage= 62,344 cf @ 12.26 hrs
Average Depth at Peak Storage= 1.89'
Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 445.48 cfs

10.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 26.00'
Length= 1,884.0' Slope= 0.1152 '/'
Inlet Invert= 2,017.00', Outlet Invert= 1,800.00'

‡

Summary for Reach 78: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 4.52" for 100-YEAR event
Inflow = 242.71 cfs @ 12.23 hrs, Volume= 34.247 af
Outflow = 242.49 cfs @ 12.24 hrs, Volume= 34.247 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.09 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.92 fps, Avg. Travel Time= 5.9 min

Peak Storage= 13,739 cf @ 12.24 hrs
Average Depth at Peak Storage= 1.45'
Bank-Full Depth= 1.50' Flow Area= 21.0 sf, Capacity= 258.41 cfs

8.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 20.00'
Length= 685.0' Slope= 0.1646 '/'
Inlet Invert= 2,170.75', Outlet Invert= 2,058.00'

‡

Summary for Reach 80: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 4.52" for 100-YEAR event
Inflow = 242.49 cfs @ 12.24 hrs, Volume= 34.247 af
Outflow = 241.70 cfs @ 12.26 hrs, Volume= 34.247 af, Atten= 0%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.68 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 10.1 min

Peak Storage= 23,294 cf @ 12.26 hrs
Average Depth at Peak Storage= 1.98'
Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 247.19 cfs

8.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 24.00'
Length= 740.0' Slope= 0.0473 '/'
Inlet Invert= 2,055.00', Outlet Invert= 2,020.00'

‡

Summary for Reach 82: Overland Flow

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 7.77 cfs @ 12.06 hrs, Volume= 0.484 af
Outflow = 2.20 cfs @ 12.31 hrs, Volume= 0.484 af, Atten= 72%, Lag= 15.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.25 fps, Min. Travel Time= 63.3 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 288.8 min

Peak Storage= 8,378 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.50' Flow Area= 75.0 sf, Capacity= 53.31 cfs

100.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 200.00'
Length= 938.0' Slope= 0.1354 '/'
Inlet Invert= 2,347.00', Outlet Invert= 2,220.00'

‡

Summary for Reach 82a: Overland Flow

Inflow Area = 62.628 ac, 1.58% Impervious, Inflow Depth = 3.86" for 100-YEAR event
Inflow = 121.34 cfs @ 12.40 hrs, Volume= 20.149 af
Outflow = 113.94 cfs @ 12.56 hrs, Volume= 20.149 af, Atten= 6%, Lag= 9.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.75 fps, Min. Travel Time= 10.6 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 68.7 min

Peak Storage= 72,305 cf @ 12.56 hrs
Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 164.89 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 473.0' Slope= 0.0846 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,180.00'

‡

Summary for Reach 83A: Overland Flow

Inflow Area = 30.315 ac, 1.06% Impervious, Inflow Depth = 3.54" for 100-YEAR event
Inflow = 52.02 cfs @ 12.19 hrs, Volume= 8.937 af
Outflow = 49.23 cfs @ 12.31 hrs, Volume= 8.937 af, Atten= 5%, Lag= 7.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.75 fps, Min. Travel Time= 9.8 min
Avg. Velocity = 0.20 fps, Avg. Travel Time= 37.3 min

Peak Storage= 28,997 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 232.26 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 441.0' Slope= 0.1678 '/'
Inlet Invert= 2,326.00', Outlet Invert= 2,252.00'

‡

Summary for Reach 84A: Overland Flow

Inflow Area = 61.328 ac, 1.61% Impervious, Inflow Depth = 3.85" for 100-YEAR event
Inflow = 121.36 cfs @ 12.32 hrs, Volume= 19.665 af
Outflow = 119.18 cfs @ 12.40 hrs, Volume= 19.665 af, Atten= 2%, Lag= 4.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.84 fps, Min. Travel Time= 5.5 min
Avg. Velocity = 0.20 fps, Avg. Travel Time= 22.9 min

Peak Storage= 39,074 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.79'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 192.72 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 277.0' Slope= 0.1155 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,220.00'

‡

Summary for Reach 84B: Overland Flow

Inflow Area = 31.013 ac, 2.16% Impervious, Inflow Depth = 4.15" for 100-YEAR event
Inflow = 74.94 cfs @ 12.22 hrs, Volume= 10.728 af
Outflow = 72.13 cfs @ 12.33 hrs, Volume= 10.728 af, Atten= 4%, Lag= 6.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.83 fps, Min. Travel Time= 7.5 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 29.5 min

Peak Storage= 32,248 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.56'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 228.33 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 370.0' Slope= 0.1622 '/'
Inlet Invert= 2,312.00', Outlet Invert= 2,252.00'

‡

Summary for Reach 85A: Overland Flow

Inflow Area = 4.281 ac, 0.54% Impervious, Inflow Depth = 8.63" for 100-YEAR event
Inflow = 50.13 cfs @ 12.20 hrs, Volume= 3.078 af
Outflow = 44.08 cfs @ 12.40 hrs, Volume= 3.078 af, Atten= 12%, Lag= 12.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.70 fps, Min. Travel Time= 12.0 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 73.1 min

Peak Storage= 31,778 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 221.40 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 505.0' Slope= 0.1525 '/'
Inlet Invert= 2,292.00', Outlet Invert= 2,215.00'

‡

Summary for Reach 85B: Overland Flow

Inflow Area = 8.621 ac, 0.65% Impervious, Inflow Depth = 7.34" for 100-YEAR event
Inflow = 73.47 cfs @ 12.35 hrs, Volume= 5.276 af
Outflow = 64.31 cfs @ 12.48 hrs, Volume= 5.276 af, Atten= 12%, Lag= 7.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.61 fps, Min. Travel Time= 12.3 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 79.4 min

Peak Storage= 47,384 cf @ 12.48 hrs
Average Depth at Peak Storage= 0.64'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 157.60 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 453.0' Slope= 0.0773 '/'
Inlet Invert= 2,215.00', Outlet Invert= 2,180.00'

‡

Summary for Reach 86A: Overland Flow

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 6.08" for 100-YEAR event
Inflow = 31.62 cfs @ 12.19 hrs, Volume= 2.199 af
Outflow = 30.77 cfs @ 12.27 hrs, Volume= 2.199 af, Atten= 3%, Lag= 4.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.57 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 27.5 min

Peak Storage= 10,607 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 190.45 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 195.0' Slope= 0.1128 '/'
Inlet Invert= 2,237.00', Outlet Invert= 2,215.00'

‡

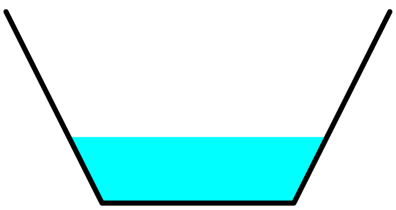
Summary for Reach 88: Roadside Swale

Inflow Area = 2.000 ac, 0.00% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 11.37 cfs @ 12.08 hrs, Volume= 0.744 af
Outflow = 11.28 cfs @ 12.09 hrs, Volume= 0.744 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.96 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.93 fps, Avg. Travel Time= 4.1 min

Peak Storage= 765 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.69'
Bank-Full Depth= 2.00' Flow Area= 6.0 sf, Capacity= 66.89 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 0.5 '/' Top Width= 4.00'
Length= 472.0' Slope= 0.0763 '/'
Inlet Invert= 2,207.00', Outlet Invert= 2,171.00'



Summary for Reach 89: Overland Flow through Woods

Inflow Area = 10.642 ac, 1.77% Impervious, Inflow Depth = 4.58" for 100-YEAR event
Inflow = 56.11 cfs @ 12.11 hrs, Volume= 4.061 af
Outflow = 52.76 cfs @ 12.16 hrs, Volume= 4.061 af, Atten= 6%, Lag= 3.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.61 fps, Min. Travel Time= 4.8 min
Avg. Velocity = 0.87 fps, Avg. Travel Time= 20.1 min

Peak Storage= 15,349 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.09'
Bank-Full Depth= 0.50' Flow Area= 100.0 sf, Capacity= 1,000.42 cfs

150.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 100.0 '/' Top Width= 250.00'
Length= 1,051.0' Slope= 0.1884 '/'
Inlet Invert= 1,998.00', Outlet Invert= 1,800.00'

‡

Summary for Reach 91: Overland Flow

Inflow Area = 12.874 ac, 0.00% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 44.12 cfs @ 12.31 hrs, Volume= 4.789 af
Outflow = 44.00 cfs @ 12.33 hrs, Volume= 4.789 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.23 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.96 fps, Avg. Travel Time= 3.4 min

Peak Storage= 2,697 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 137.55 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 198.0' Slope= 0.0172 '/'
Inlet Invert= 1,889.40', Outlet Invert= 1,886.00'

‡

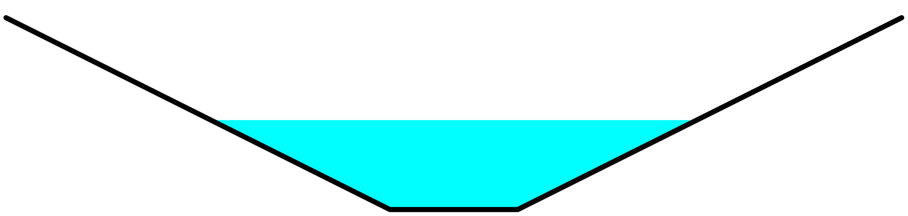
Summary for Reach 92: Channel Along RR Tracks

Inflow Area = 12.874 ac, 0.00% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 44.00 cfs @ 12.33 hrs, Volume= 4.789 af
Outflow = 42.47 cfs @ 12.40 hrs, Volume= 4.789 af, Atten= 3%, Lag= 4.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.33 fps, Min. Travel Time= 5.0 min
Avg. Velocity = 2.09 fps, Avg. Travel Time= 15.2 min

Peak Storage= 12,794 cf @ 12.40 hrs
Average Depth at Peak Storage= 1.40'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 234.34 cfs

2.00' x 3.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 1,907.0' Slope= 0.0293 '/'
Inlet Invert= 1,885.90', Outlet Invert= 1,830.00'



Summary for Reach 197: Stream Channel

Inflow Area = 88.624 ac, 0.78% Impervious, Inflow Depth = 4.48" for 100-YEAR event
Inflow = 400.50 cfs @ 12.19 hrs, Volume= 33.087 af
Outflow = 396.18 cfs @ 12.21 hrs, Volume= 33.087 af, Atten= 1%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.26 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 3.76 fps, Avg. Travel Time= 6.6 min

Peak Storage= 48,470 cf @ 12.21 hrs
Average Depth at Peak Storage= 1.33'
Bank-Full Depth= 6.00' Flow Area= 342.0 sf, Capacity= 9,816.53 cfs

15.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 7.0 '/' Top Width= 99.00'
Length= 1,500.0' Slope= 0.1807 '/'
Inlet Invert= 2,015.00', Outlet Invert= 1,744.00'

‡

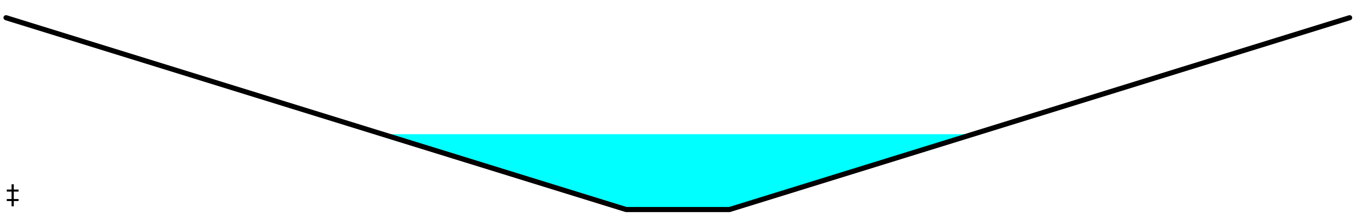
Summary for Reach 198: Stream Channel

Inflow Area = 88.624 ac, 0.78% Impervious, Inflow Depth = 4.48" for 100-YEAR event
Inflow = 403.69 cfs @ 12.17 hrs, Volume= 33.087 af
Outflow = 400.50 cfs @ 12.19 hrs, Volume= 33.087 af, Atten= 1%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.65 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 4.48 fps, Avg. Travel Time= 4.7 min

Peak Storage= 39,966 cf @ 12.19 hrs
Average Depth at Peak Storage= 2.36'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 3,729.07 cfs

4.00' x 6.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 1,262.0' Slope= 0.1212 '/'
Inlet Invert= 2,168.00', Outlet Invert= 2,015.00'



‡

Summary for Reach 199: Overland Flow

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 4.58" for 100-YEAR event
Inflow = 59.05 cfs @ 12.15 hrs, Volume= 4.661 af
Outflow = 58.85 cfs @ 12.16 hrs, Volume= 4.661 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.02 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 2.9 min

Peak Storage= 2,928 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 0.50' Flow Area= 50.0 sf, Capacity= 451.81 cfs

50.00' x 0.50' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 100.0 '/' Top Width= 150.00'
Length= 250.0' Slope= 0.2560 '/'
Inlet Invert= 2,232.00', Outlet Invert= 2,168.00'

‡

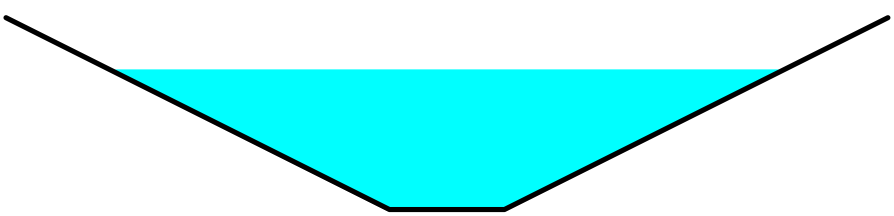
Summary for Reach 295: Roadside Channel

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 77.12 cfs @ 12.19 hrs, Volume= 6.086 af
Outflow = 76.96 cfs @ 12.20 hrs, Volume= 6.086 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.17 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.72 fps, Avg. Travel Time= 2.3 min

Peak Storage= 3,569 cf @ 12.20 hrs
Average Depth at Peak Storage= 1.83'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 159.47 cfs

1.50' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 11.50'
Length= 379.0' Slope= 0.0501 '/'
Inlet Invert= 2,084.00', Outlet Invert= 2,065.00'



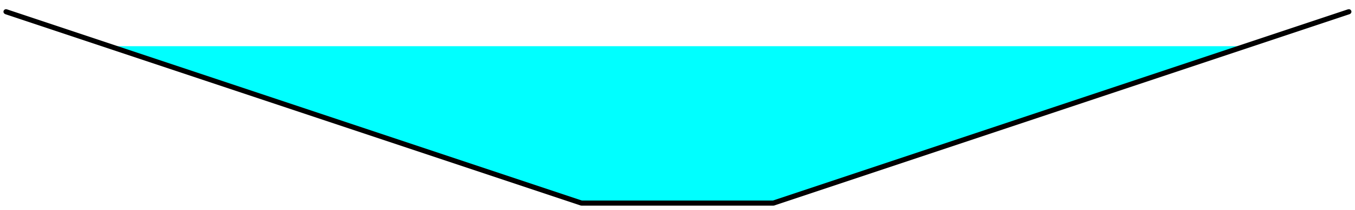
Summary for Reach 296: Wetland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 77.29 cfs @ 12.18 hrs, Volume= 6.086 af
Outflow = 77.12 cfs @ 12.19 hrs, Volume= 6.086 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.79 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.23 fps, Avg. Travel Time= 2.4 min

Peak Storage= 3,633 cf @ 12.19 hrs
Average Depth at Peak Storage= 1.64'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 122.08 cfs

2.00' x 2.00' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 320.0' Slope= 0.0375 '/'
Inlet Invert= 2,096.00', Outlet Invert= 2,084.00'



Summary for Reach 297: Overland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 77.54 cfs @ 12.17 hrs, Volume= 6.086 af
Outflow = 77.29 cfs @ 12.18 hrs, Volume= 6.086 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.04 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.62 fps, Avg. Travel Time= 3.8 min

Peak Storage= 4,682 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 0.50' Flow Area= 27.5 sf, Capacity= 225.40 cfs

30.00' x 0.50' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 50.0 '/' Top Width= 80.00'
Length= 366.0' Slope= 0.2022 '/'
Inlet Invert= 2,170.00', Outlet Invert= 2,096.00'

‡

Summary for Reach 298: Wetland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 79.00 cfs @ 12.14 hrs, Volume= 6.086 af
Outflow = 77.54 cfs @ 12.17 hrs, Volume= 6.086 af, Atten= 2%, Lag= 1.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.52 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 0.63 fps, Avg. Travel Time= 10.9 min

Peak Storage= 12,565 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00' Flow Area= 150.0 sf, Capacity= 802.14 cfs

100.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 50.0 '/' Top Width= 200.00'
Length= 408.0' Slope= 0.0931 '/'
Inlet Invert= 2,208.00', Outlet Invert= 2,170.00'

‡

Summary for Reach 299: Overland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 79.00 cfs @ 12.14 hrs, Volume= 6.086 af
Outflow = 79.00 cfs @ 12.14 hrs, Volume= 6.086 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.56 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.32 fps, Avg. Travel Time= 1.0 min

Peak Storage= 1,626 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 130.57 cfs

10.00' x 0.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 50.0 '/' Top Width= 60.00'
Length= 135.0' Slope= 0.3259 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,208.00'

‡

Summary for Pond 1aP: Design Point 1a

Inflow Area = 4.640 ac, 4.97% Impervious, Inflow Depth = 4.69" for 100-YEAR event
Inflow = 28.30 cfs @ 12.07 hrs, Volume= 1.815 af
Primary = 28.30 cfs @ 12.07 hrs, Volume= 1.815 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond 2R: 48" CMP Culvert

Inflow Area = 148.584 ac, 0.82% Impervious, Inflow Depth = 4.47" for 100-YEAR event
Inflow = 666.15 cfs @ 12.15 hrs, Volume= 55.394 af
Outflow = 666.15 cfs @ 12.15 hrs, Volume= 55.394 af, Atten= 0%, Lag= 0.0 min
Primary = 666.15 cfs @ 12.15 hrs, Volume= 55.394 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,747.17' @ 12.15 hrs
Flood Elev= 1,749.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,741.00'	**48.0" Round Culvert** L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,741.00' / 1,740.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 12.57 sf
#2	Primary	1,745.50'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=665.84 cfs @ 12.15 hrs HW=1,747.17' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 97.51 cfs @ 7.76 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 568.32 cfs @ 3.41 fps)

Summary for Pond 4R: 24" Steel Culvert

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 76.96 cfs @ 12.20 hrs, Volume= 6.086 af
Outflow = 76.96 cfs @ 12.20 hrs, Volume= 6.086 af, Atten= 0%, Lag= 0.0 min
Primary = 76.96 cfs @ 12.20 hrs, Volume= 6.086 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,068.54' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,065.00'	**24.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 2,065.00' / 2,063.00' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	2,068.00'	**50.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=76.92 cfs @ 12.20 hrs HW=2,068.54' TW=2,061.11' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 24.11 cfs @ 7.67 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 52.81 cfs @ 1.95 fps)

Summary for Pond 7R: 30" Steel Culvert

Inflow Area = 77.687 ac, 1.16% Impervious, Inflow Depth = 4.56" for 100-YEAR event
Inflow = 393.51 cfs @ 12.11 hrs, Volume= 29.489 af
Outflow = 393.51 cfs @ 12.11 hrs, Volume= 29.489 af, Atten= 0%, Lag= 0.0 min
Primary = 393.51 cfs @ 12.11 hrs, Volume= 29.489 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,818.40' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,813.00'	**30.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 1,813.00' / 1,812.00' S= 0.0333 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Primary	1,816.50'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=393.28 cfs @ 12.11 hrs HW=1,818.40' TW=1,812.65' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 48.16 cfs @ 9.81 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 345.11 cfs @ 3.63 fps)

Summary for Pond 10R: 14" and 16" HDPE Culverts

Inflow Area = 20.120 ac, 2.73% Impervious, Inflow Depth = 4.58" for 100-YEAR event
Inflow = 92.95 cfs @ 12.17 hrs, Volume= 7.678 af
Outflow = 92.95 cfs @ 12.17 hrs, Volume= 7.678 af, Atten= 0%, Lag= 0.0 min
Primary = 13.51 cfs @ 12.17 hrs, Volume= 4.714 af
Secondary = 79.44 cfs @ 12.17 hrs, Volume= 2.964 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,977.71' @ 12.17 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,975.00'	**14.0" Round 14" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.07 sf
#2	Primary	1,975.00'	**16.0" Round 16" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.40 sf
#3	Secondary	1,977.00'	**50.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=13.51 cfs @ 12.17 hrs HW=1,977.71' TW=1,973.31' (Dynamic Tailwater)
├─**1=14" Culvert** (Inlet Controls 5.92 cfs @ 5.54 fps)
└─**2=16" Culvert** (Inlet Controls 7.58 cfs @ 5.43 fps)

Secondary OutFlow Max=79.41 cfs @ 12.17 hrs HW=1,977.71' TW=1,973.31' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 79.41 cfs @ 2.24 fps)

Summary for Pond 13R: 16" CMP Culvert

Inflow Area = 2.097 ac, 8.77% Impervious, Inflow Depth = 4.81" for 100-YEAR event
Inflow = 13.51 cfs @ 12.06 hrs, Volume= 0.841 af
Outflow = 13.51 cfs @ 12.06 hrs, Volume= 0.841 af, Atten= 0%, Lag= 0.0 min
Primary = 13.51 cfs @ 12.06 hrs, Volume= 0.841 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,973.12' @ 12.06 hrs
Flood Elev= 1,969.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,968.00'	**16.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 1,968.00' / 1,965.00' S= 0.0750 '/' Cc= 0.900 n= 0.025, Flow Area= 1.40 sf

Primary OutFlow Max=13.50 cfs @ 12.06 hrs HW=1,973.11' TW=1,960.15' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 13.50 cfs @ 9.67 fps)

Summary for Pond 57: 15" Steel Culvert

Inflow Area = 1.326 ac, 4.72% Impervious, Inflow Depth = 4.58" for 100-YEAR event
Inflow = 7.78 cfs @ 12.07 hrs, Volume= 0.506 af
Outflow = 7.78 cfs @ 12.07 hrs, Volume= 0.506 af, Atten= 0%, Lag= 0.0 min
Primary = 7.78 cfs @ 12.07 hrs, Volume= 0.506 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,006.06' @ 12.07 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,004.00'	**15.0" Round 15" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,004.00' / 2,000.00' S= 0.0667 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=7.77 cfs @ 12.07 hrs HW=2,006.06' TW=2,001.12' (Dynamic Tailwater)
↑1=**15" Smooth Steel Culvert (old)** (Inlet Controls 5.60 cfs @ 4.56 fps)
└2=**Broad-Crested Rectangular Weir** (Weir Controls 2.18 cfs @ 0.68 fps)

Summary for Pond 58R: 24" HDPE Pipe

Inflow Area = 3.000 ac, 0.00% Impervious, Inflow Depth = 9.98" for 100-YEAR event
Inflow = 79.29 cfs @ 12.19 hrs, Volume= 2.494 af
Outflow = 79.29 cfs @ 12.19 hrs, Volume= 2.494 af, Atten= 0%, Lag= 0.0 min
Primary = 79.29 cfs @ 12.19 hrs, Volume= 2.494 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,225.56' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,222.00'	**24.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,222.00' / 2,221.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,225.00'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=79.29 cfs @ 12.19 hrs HW=2,225.56' TW=2,220.18' (Dynamic Tailwater)
↑1=**Culvert** (Inlet Controls 24.22 cfs @ 7.71 fps)
└2=**Broad-Crested Rectangular Weir** (Weir Controls 55.07 cfs @ 1.96 fps)

Summary for Pond 59: 32" Plastic Pipe

Inflow Area = 30.315 ac, 1.06% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 132.03 cfs @ 12.19 hrs, Volume= 11.278 af
Outflow = 132.03 cfs @ 12.19 hrs, Volume= 11.278 af, Atten= 0%, Lag= 0.0 min
Primary = 52.02 cfs @ 12.19 hrs, Volume= 8.937 af
Secondary = 80.01 cfs @ 12.19 hrs, Volume= 2.340 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,334.34' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,327.00'	**32.0" Round 32" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,327.00' / 2,324.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 5.59 sf
#2	Secondary	2,331.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=52.02 cfs @ 12.19 hrs HW=2,334.34' TW=2,326.44' (Dynamic Tailwater)
└─**1=32" Plastic Culvert** (Inlet Controls 52.02 cfs @ 9.31 fps)

Secondary OutFlow Max=79.96 cfs @ 12.19 hrs HW=2,334.34' TW=2,324.23' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 79.96 cfs @ 5.99 fps)

Summary for Pond 60: 30" Steel Culvert

Inflow Area = 128.756 ac, 2.17% Impervious, Inflow Depth = 4.54" for 100-YEAR event
Inflow = 401.95 cfs @ 12.23 hrs, Volume= 48.700 af
Outflow = 401.95 cfs @ 12.23 hrs, Volume= 48.700 af, Atten= 0%, Lag= 0.0 min
Primary = 401.95 cfs @ 12.23 hrs, Volume= 48.700 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,025.18' @ 12.23 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,020.00'	**30.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,020.00' / 2,019.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Primary	2,021.00'	**15.0" Round Culvert** L= 20.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,021.00' / 2,020.00' S= 0.0500 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 1.23 sf
#3	Primary	2,024.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=401.93 cfs @ 12.23 hrs HW=2,025.18' TW=2,018.87' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 46.86 cfs @ 9.55 fps)
├─**2=Culvert** (Inlet Controls 9.83 cfs @ 8.01 fps)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 345.23 cfs @ 2.92 fps)

Summary for Pond 67P: 24" Steel Culvert

Inflow Area = 4.195 ac, 7.34% Impervious, Inflow Depth = 4.69" for 100-YEAR event
Inflow = 28.61 cfs @ 12.03 hrs, Volume= 1.641 af
Outflow = 28.61 cfs @ 12.03 hrs, Volume= 1.641 af, Atten= 0%, Lag= 0.0 min
Primary = 28.61 cfs @ 12.03 hrs, Volume= 1.641 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,006.19' @ 12.03 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,003.00'	**24.0" Round 24" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,003.00' / 2,000.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50

3.00
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31
3.32

Primary OutFlow Max=28.59 cfs @ 12.03 hrs HW=2,006.19' TW=2,001.11' (Dynamic Tailwater)
1=24" Smooth Steel Culvert (old) (Inlet Controls 17.66 cfs @ 5.62 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 10.93 cfs @ 1.16 fps)

Summary for Pond 68: 12" Steel Culvert

Inflow Area = 10.642 ac, 1.77% Impervious, Inflow Depth = 4.58" for 100-YEAR event
Inflow = 56.11 cfs @ 12.11 hrs, Volume= 4.061 af
Outflow = 56.11 cfs @ 12.11 hrs, Volume= 4.061 af, Atten= 0%, Lag= 0.0 min
Primary = 7.35 cfs @ 12.11 hrs, Volume= 1.982 af
Secondary = 48.76 cfs @ 12.11 hrs, Volume= 2.079 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,004.28' @ 12.11 hrs
Flood Elev= 2,001.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,000.00'	**12.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 2,000.00' / 1,999.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Secondary	2,000.50'	**2.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=7.35 cfs @ 12.11 hrs HW=2,004.28' TW=1,998.09' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.35 cfs @ 9.36 fps)

Secondary OutFlow Max=48.74 cfs @ 12.11 hrs HW=2,004.28' TW=1,998.09' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 48.74 cfs @ 6.45 fps)

Summary for Pond 77: 36" Steel Culvert

Inflow Area = 88.881 ac, 1.70% Impervious, Inflow Depth = 4.52" for 100-YEAR event
Inflow = 236.10 cfs @ 12.24 hrs, Volume= 33.503 af
Outflow = 236.10 cfs @ 12.24 hrs, Volume= 33.503 af, Atten= 0%, Lag= 0.0 min
Primary = 236.10 cfs @ 12.24 hrs, Volume= 33.503 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,176.75' @ 12.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,172.00'	**36.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 2,172.00' / 2,171.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	2,176.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=236.09 cfs @ 12.24 hrs HW=2,176.75' TW=2,172.20' (Dynamic Tailwater)
1=Culvert (Inlet Controls 61.35 cfs @ 8.68 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 174.74 cfs @ 2.33 fps)

Summary for Pond 79: 16" Steel Culvert

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 4.52" for 100-YEAR event
Inflow = 242.49 cfs @ 12.24 hrs, Volume= 34.247 af
Outflow = 242.49 cfs @ 12.24 hrs, Volume= 34.247 af, Atten= 0%, Lag= 0.0 min
Primary = 242.49 cfs @ 12.24 hrs, Volume= 34.247 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,058.91' @ 12.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,056.00'	**16.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,056.00' / 2,055.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 1.40 sf
#2	Primary	2,058.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=242.49 cfs @ 12.24 hrs HW=2,058.91' TW=2,056.97' (Dynamic Tailwater)
1=Culvert (Inlet Controls 9.35 cfs @ 6.70 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 233.13 cfs @ 2.56 fps)

Summary for Pond 83: 24" HPDE Culvert

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 7.77 cfs @ 12.06 hrs, Volume= 0.484 af
Outflow = 7.77 cfs @ 12.06 hrs, Volume= 0.484 af, Atten= 0%, Lag= 0.0 min
Primary = 7.77 cfs @ 12.06 hrs, Volume= 0.484 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,361.44' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,360.00'	**24.0" Round 24" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,360.00' / 2,357.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,364.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=7.77 cfs @ 12.06 hrs HW=2,361.44' TW=2,347.06' (Dynamic Tailwater)
└─**1=24" Plastic Culvert** (Inlet Controls 7.77 cfs @ 3.22 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,360.00' TW=2,327.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 84: 24" HDPE Pipe

Inflow Area = 31.013 ac, 2.16% Impervious, Inflow Depth = 5.48" for 100-YEAR event
Inflow = 192.43 cfs @ 12.22 hrs, Volume= 14.175 af
Outflow = 192.43 cfs @ 12.22 hrs, Volume= 14.175 af, Atten= 0%, Lag= 0.0 min
Primary = 74.94 cfs @ 12.22 hrs, Volume= 10.728 af
Secondary = 117.50 cfs @ 12.22 hrs, Volume= 3.447 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,324.28' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,315.00'	**36.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,315.00' / 2,312.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#2	Secondary	2,320.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=74.93 cfs @ 12.22 hrs HW=2,324.28' TW=2,312.54' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 74.93 cfs @ 10.60 fps)

Secondary OutFlow Max=117.49 cfs @ 12.22 hrs HW=2,324.28' TW=2,303.45' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 117.49 cfs @ 6.87 fps)

Summary for Pond 85: 28" HDPE Pipe

Inflow Area = 4.281 ac, 0.54% Impervious, Inflow Depth = 14.13" for 100-YEAR event
Inflow = 135.74 cfs @ 12.20 hrs, Volume= 5.040 af
Outflow = 135.74 cfs @ 12.20 hrs, Volume= 5.040 af, Atten= 0%, Lag= 0.0 min
Primary = 50.13 cfs @ 12.20 hrs, Volume= 3.078 af
Secondary = 85.61 cfs @ 12.20 hrs, Volume= 1.962 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,303.47' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,295.00'	**30.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,295.00' / 2,292.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 4.91 sf
#2	Secondary	2,300.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50

3.00 3.50
Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07
3.20 3.32

Primary OutFlow Max=50.13 cfs @ 12.20 hrs HW=2,303.47' TW=2,292.38' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 50.13 cfs @ 10.21 fps)

Secondary OutFlow Max=85.54 cfs @ 12.20 hrs HW=2,303.47' TW=2,248.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 85.54 cfs @ 6.17 fps)

Summary for Pond 86: 24" HDPE Pipe

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 9.89" for 100-YEAR event
Inflow = 98.51 cfs @ 12.19 hrs, Volume= 3.577 af
Outflow = 98.51 cfs @ 12.19 hrs, Volume= 3.577 af, Atten= 0%, Lag= 0.0 min
Primary = 31.62 cfs @ 12.19 hrs, Volume= 2.199 af
Secondary = 66.89 cfs @ 12.19 hrs, Volume= 1.378 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,248.01' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**24.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,240.00' / 2,237.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,245.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=31.61 cfs @ 12.19 hrs HW=2,248.01' TW=2,237.38' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 31.61 cfs @ 10.06 fps)

Secondary OutFlow Max=66.81 cfs @ 12.19 hrs HW=2,248.01' TW=2,225.56' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 66.81 cfs @ 5.55 fps)

Summary for Pond 87: 18" Steel Culvert

Inflow Area = 2.000 ac, 0.00% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 11.37 cfs @ 12.08 hrs, Volume= 0.744 af
Outflow = 11.37 cfs @ 12.08 hrs, Volume= 0.744 af, Atten= 0%, Lag= 0.0 min
Primary = 11.37 cfs @ 12.08 hrs, Volume= 0.744 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,211.61' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,208.00'	**18.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,208.00' / 2,207.00' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=11.36 cfs @ 12.08 hrs HW=2,211.61' TW=2,207.69' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 11.36 cfs @ 6.43 fps)

Summary for Pond 90: 12" Steel Culvert

Inflow Area = 12.874 ac, 0.00% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 44.12 cfs @ 12.31 hrs, Volume= 4.789 af
Outflow = 44.12 cfs @ 12.31 hrs, Volume= 4.789 af, Atten= 0%, Lag= 0.0 min
Primary = 44.12 cfs @ 12.31 hrs, Volume= 4.789 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,895.43' @ 12.31 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,890.00'	**12.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 1,890.00' / 1,889.50' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	1,895.00'	**50.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=44.09 cfs @ 12.31 hrs HW=1,895.42' TW=1,889.94' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 8.39 cfs @ 10.69 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 35.70 cfs @ 1.68 fps)

Summary for Pond 200: 36" Steel Culvert

Inflow Area = 76.410 ac, 0.43% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 344.98 cfs @ 12.17 hrs, Volume= 28.426 af
Outflow = 344.98 cfs @ 12.17 hrs, Volume= 28.426 af, Atten= 0%, Lag= 0.0 min
Primary = 344.98 cfs @ 12.17 hrs, Volume= 28.426 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,239.64' @ 12.17 hrs
Flood Elev= 2,248.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert** L= 50.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,234.00' / 2,230.00' S= 0.0800 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=344.81 cfs @ 12.17 hrs HW=2,239.64' TW=2,170.35' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 69.23 cfs @ 9.79 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 275.58 cfs @ 3.37 fps)

Summary for Pond 201: 36" Steel Culvert

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 4.58" for 100-YEAR event
Inflow = 59.05 cfs @ 12.15 hrs, Volume= 4.661 af
Outflow = 59.05 cfs @ 12.15 hrs, Volume= 4.661 af, Atten= 0%, Lag= 0.0 min
Primary = 59.05 cfs @ 12.15 hrs, Volume= 4.661 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,238.11' @ 12.15 hrs
Flood Elev= 2,239.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert** L= 30.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,234.00' / 2,233.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=59.02 cfs @ 12.15 hrs HW=2,238.11' TW=2,232.17' (Dynamic Tailwater)
├─**1=Culvert** (Barrel Controls 54.25 cfs @ 7.67 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 4.78 cfs @ 0.88 fps)

Summary for Pond 300R: 18" Steel Culvert

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 79.00 cfs @ 12.14 hrs, Volume= 6.086 af
Outflow = 79.00 cfs @ 12.14 hrs, Volume= 6.086 af, Atten= 0%, Lag= 0.0 min
Primary = 79.00 cfs @ 12.14 hrs, Volume= 6.086 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,259.39' @ 12.14 hrs
Flood Elev= 2,261.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,254.00'	**18.0" Round 18" Steel Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,254.00' / 2,253.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Primary	2,259.00'	**100.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=78.99 cfs @ 12.14 hrs HW=2,259.39' TW=2,252.40' (Dynamic Tailwater)
├─**1=18" Steel Culvert** (Inlet Controls 14.46 cfs @ 8.18 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 64.52 cfs @ 1.67 fps)

Summary for Pond c1:

Inflow = 3.49 cfs @ 12.20 hrs, Volume= 0.699 af
Primary = 3.49 cfs @ 12.20 hrs, Volume= 0.699 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C2:

Inflow Area = 39.108 ac, 0.76% Impervious, Inflow Depth = 4.39" for 100-YEAR event
Inflow = 169.51 cfs @ 12.20 hrs, Volume= 14.308 af
Primary = 169.51 cfs @ 12.20 hrs, Volume= 14.308 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C3:

Inflow Area = 2.196 ac, 4.19% Impervious, Inflow Depth = 4.24" for 100-YEAR event
Inflow = 7.55 cfs @ 12.08 hrs, Volume= 0.775 af
Primary = 7.55 cfs @ 12.08 hrs, Volume= 0.775 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C4:

Inflow Area = 10.003 ac, 2.13% Impervious, Inflow Depth = 3.27" for 100-YEAR event
Inflow = 12.91 cfs @ 12.11 hrs, Volume= 2.727 af
Primary = 12.91 cfs @ 12.11 hrs, Volume= 2.727 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5:

Inflow Area = 14.626 ac, 1.24% Impervious, Inflow Depth = 2.95" for 100-YEAR event
Inflow = 15.04 cfs @ 12.07 hrs, Volume= 3.595 af
Primary = 15.04 cfs @ 12.07 hrs, Volume= 3.595 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5A:

Inflow Area = 12.084 ac, 0.47% Impervious, Inflow Depth = 2.66" for 100-YEAR event
Inflow = 8.39 cfs @ 12.08 hrs, Volume= 2.681 af
Primary = 8.39 cfs @ 12.08 hrs, Volume= 2.681 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6:

Inflow Area = 58.487 ac, 0.32% Impervious, Inflow Depth = 5.44" for 100-YEAR event
Inflow = 409.47 cfs @ 12.13 hrs, Volume= 26.510 af
Primary = 409.47 cfs @ 12.13 hrs, Volume= 26.510 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6A:

Inflow Area = 41.924 ac, 1.24% Impervious, Inflow Depth = 4.58" for 100-YEAR event
Inflow = 167.97 cfs @ 12.24 hrs, Volume= 15.998 af
Primary = 167.97 cfs @ 12.24 hrs, Volume= 15.998 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 10: Design Point 10

Inflow Area = 162.408 ac, 2.03% Impervious, Inflow Depth = 4.52" for 100-YEAR event
Inflow = 531.11 cfs @ 12.22 hrs, Volume= 61.220 af
Primary = 531.11 cfs @ 12.22 hrs, Volume= 61.220 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 11: Design Point 11

Inflow Area = 66.273 ac, 1.46% Impervious, Inflow Depth = 4.56" for 100-YEAR event
Inflow = 233.04 cfs @ 12.31 hrs, Volume= 25.167 af
Primary = 233.04 cfs @ 12.31 hrs, Volume= 25.167 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 12: Design Point 12

Inflow Area = 7.264 ac, 15.61% Impervious, Inflow Depth = 5.04" for 100-YEAR event
Inflow = 53.04 cfs @ 12.03 hrs, Volume= 3.052 af
Primary = 53.04 cfs @ 12.03 hrs, Volume= 3.052 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 16: DESIGN POINT 16

Inflow Area = 18.787 ac, 4.30% Impervious, Inflow Depth = 4.60" for 100-YEAR event
Inflow = 92.73 cfs @ 12.11 hrs, Volume= 7.210 af
Primary = 92.73 cfs @ 12.11 hrs, Volume= 7.210 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 7: Design Point 7

Inflow Area = 149.008 ac, 0.89% Impervious, Inflow Depth = 4.48" for 100-YEAR event
Inflow = 667.05 cfs @ 12.15 hrs, Volume= 55.580 af
Primary = 667.05 cfs @ 12.15 hrs, Volume= 55.580 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 8: Design Point 8

Inflow Area = 95.972 ac, 1.42% Impervious, Inflow Depth = 4.56" for 100-YEAR event
Inflow = 493.88 cfs @ 12.11 hrs, Volume= 36.466 af
Primary = 493.88 cfs @ 12.11 hrs, Volume= 36.466 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 9: Design Point 9

Inflow Area = 56.369 ac, 3.06% Impervious, Inflow Depth = 4.64" for 100-YEAR event
Inflow = 260.53 cfs @ 12.17 hrs, Volume= 21.777 af
Primary = 260.53 cfs @ 12.17 hrs, Volume= 21.777 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP2: ditch

Inflow Area = 39.108 ac, 0.76% Impervious, Inflow Depth = 4.60" for 100-YEAR event
Inflow = 173.08 cfs @ 12.20 hrs, Volume= 15.007 af
Outflow = 173.00 cfs @ 12.20 hrs, Volume= 15.007 af, Atten= 0%, Lag= 0.1 min
Primary = 169.51 cfs @ 12.20 hrs, Volume= 14.308 af
Secondary = 3.49 cfs @ 12.20 hrs, Volume= 0.699 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,434.96' @ 12.20 hrs Surf.Area= 3,775 sf Storage= 5,341 cf

Plug-Flow detention time= 2.4 min calculated for 15.007 af (100% of inflow)
Center-of-Mass det. time= 2.1 min (839.8 - 837.7)

Volume	Invert	Avail.Storage	Storage Description
#1	2,432.00'	5,508 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,432.00	258	0	0
2,434.00	2,218	2,476	2,476
2,435.00	3,846	3,032	5,508

Device	Routing	Invert	Outlet Devices
#1	Primary	2,432.00'	**18.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,432.00' / 2,431.50' S= 0.0125 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,433.36'	**12.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,433.36' / 2,431.00' S= 0.0590 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Primary	2,434.25'	**100.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=169.40 cfs @ 12.20 hrs HW=2,434.96' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 11.15 cfs @ 6.31 fps)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 158.25 cfs @ 2.24 fps)

Secondary OutFlow Max=3.49 cfs @ 12.20 hrs HW=2,434.96' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 3.49 cfs @ 4.45 fps)

Summary for Pond DP3: 12" Steel

Inflow Area =	2.196 ac,	4.19% Impervious, Inflow Depth = 4.69"	for 100-YEAR event	
Inflow =	12.77 cfs @	12.08 hrs, Volume=	0.859 af	
Outflow =	12.77 cfs @	12.08 hrs, Volume=	0.859 af,	Atten= 0%, Lag= 0.0 min
Primary =	7.55 cfs @	12.08 hrs, Volume=	0.775 af	
Secondary =	5.22 cfs @	12.08 hrs, Volume=	0.084 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,445.36' @ 12.08 hrs
Flood Elev= 2,446.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,443.00'	**12.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,443.00' / 2,442.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,445.00'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Secondary	2,445.25'	**50.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=7.55 cfs @ 12.08 hrs HW=2,445.36' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 4.56 cfs @ 5.80 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 2.99 cfs @ 1.64 fps)

Secondary OutFlow Max=5.21 cfs @ 12.08 hrs HW=2,445.36' TW=2,443.78' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 5.21 cfs @ 0.91 fps)

Summary for Pond DP4: 18" HDPE Culvert

Inflow Area = 10.003 ac, 2.13% Impervious, Inflow Depth = 4.58" for 100-YEAR event
Inflow = 53.76 cfs @ 12.11 hrs, Volume= 3.817 af
Outflow = 53.76 cfs @ 12.11 hrs, Volume= 3.817 af, Atten= 0%, Lag= 0.0 min
Primary = 12.91 cfs @ 12.11 hrs, Volume= 2.727 af
Secondary = 40.86 cfs @ 12.11 hrs, Volume= 1.090 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,372.71' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,369.00'	**18.0" Round Culvert** L= 25.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,369.00' / 2,368.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,371.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=12.91 cfs @ 12.11 hrs HW=2,372.71' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 12.91 cfs @ 7.30 fps)

Secondary OutFlow Max=40.81 cfs @ 12.11 hrs HW=2,372.71' TW=2,369.78' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 40.81 cfs @ 3.39 fps)

Summary for Pond DP5: 18" HDPE Culvert

Inflow Area = 14.626 ac, 1.24% Impervious, Inflow Depth = 5.36" for 100-YEAR event
Inflow = 125.33 cfs @ 12.07 hrs, Volume= 6.532 af
Outflow = 125.33 cfs @ 12.07 hrs, Volume= 6.532 af, Atten= 0%, Lag= 0.0 min
Primary = 15.04 cfs @ 12.07 hrs, Volume= 3.595 af
Secondary = 110.29 cfs @ 12.07 hrs, Volume= 2.937 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,304.26' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,299.50'	**18.0" Round Culvert** L= 25.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,299.50' / 2,298.50' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,302.00'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=15.03 cfs @ 12.07 hrs HW=2,304.26' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 15.03 cfs @ 8.51 fps)

Secondary OutFlow Max=110.20 cfs @ 12.07 hrs HW=2,304.26' TW=2,302.30' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 110.20 cfs @ 4.88 fps)

Summary for Pond DP5A: 12" steel Culvert

Inflow Area = 12.084 ac, 0.47% Impervious, Inflow Depth = 7.38" for 100-YEAR event
Inflow = 174.53 cfs @ 12.08 hrs, Volume= 7.433 af
Outflow = 174.53 cfs @ 12.08 hrs, Volume= 7.433 af, Atten= 0%, Lag= 0.0 min
Primary = 8.39 cfs @ 12.08 hrs, Volume= 2.681 af
Secondary = 166.13 cfs @ 12.08 hrs, Volume= 4.752 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,277.43' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,272.00'	**12.0" Round Culvert** L= 25.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,272.00' / 2,270.00' S= 0.0800 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf
#2	Secondary	2,274.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=8.39 cfs @ 12.08 hrs HW=2,277.42' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 8.39 cfs @ 10.69 fps)

Secondary OutFlow Max=165.97 cfs @ 12.08 hrs HW=2,277.42' TW=2,274.21' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 165.97 cfs @ 5.68 fps)

Summary for Pond DP6: 55" CMP Culvert

Inflow Area = 58.487 ac, 0.32% Impervious, Inflow Depth = 5.44" for 100-YEAR event
Inflow = 409.47 cfs @ 12.13 hrs, Volume= 26.510 af
Outflow = 409.47 cfs @ 12.13 hrs, Volume= 26.510 af, Atten= 0%, Lag= 0.0 min
Primary = 409.47 cfs @ 12.13 hrs, Volume= 26.510 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,244.08' @ 12.13 hrs
Flood Elev= 2,245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,238.00'	**55.0" W x 38.0" H, R=33.0" Elliptical Culvert** L= 25.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,238.00' / 2,237.00' S= 0.0400 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 11.11 sf

#2	Primary	2,243.00'	**100.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=409.43 cfs @ 12.13 hrs HW=2,244.08' TW=0.00' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 113.04 cfs @ 10.17 fps)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 296.39 cfs @ 2.74 fps)

Summary for Pond DP6A: 30" Steel Culvert

Inflow Area = 41.924 ac, 1.24% Impervious, Inflow Depth = 4.58" for 100-YEAR event
Inflow = 167.97 cfs @ 12.24 hrs, Volume= 15.998 af
Outflow = 167.97 cfs @ 12.24 hrs, Volume= 15.998 af, Atten= 0%, Lag= 0.0 min
Primary = 167.97 cfs @ 12.24 hrs, Volume= 15.998 af

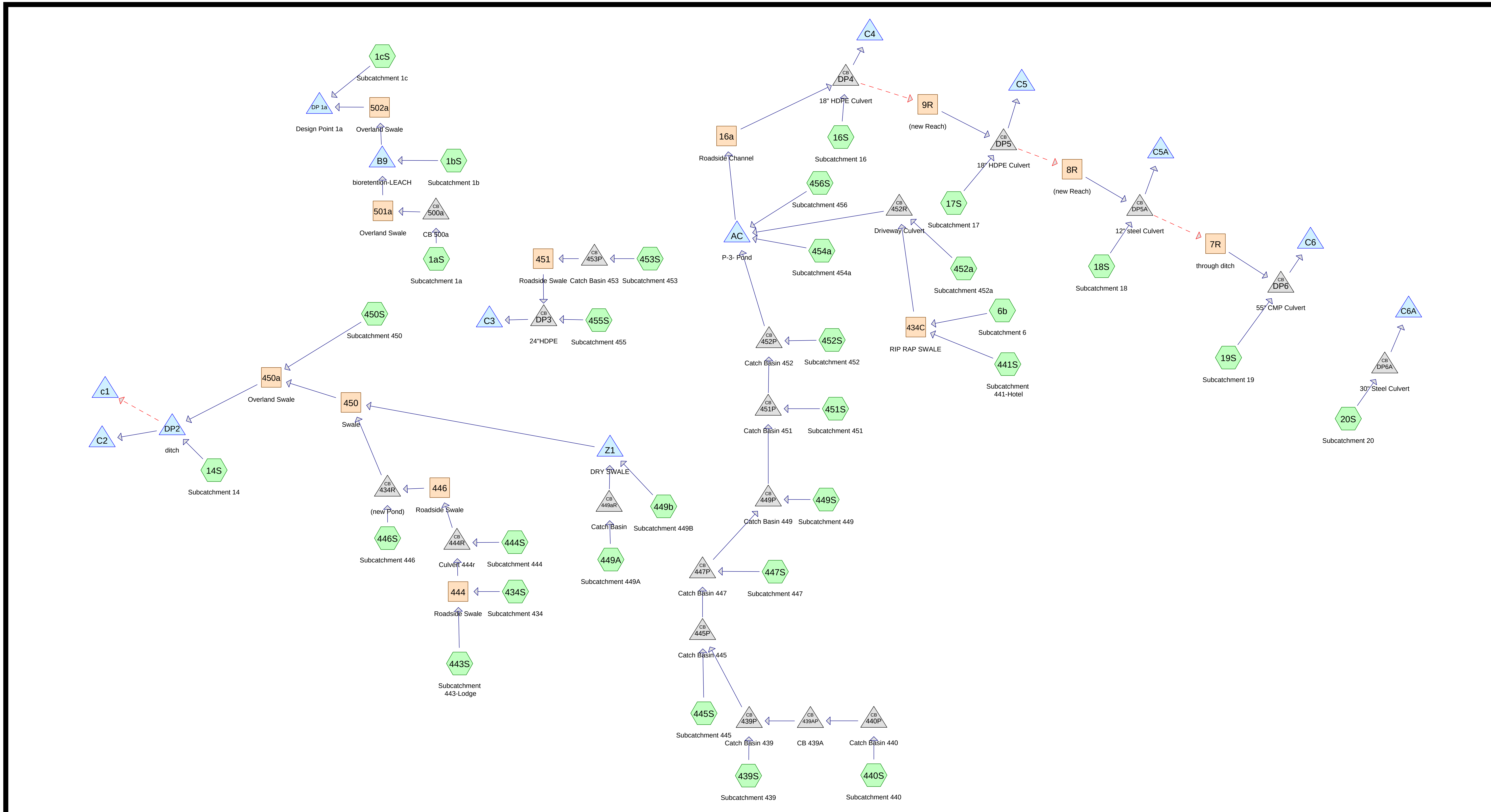
Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,244.98' @ 12.24 hrs
Flood Elev= 2,245.00'

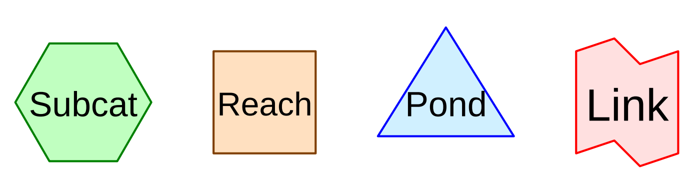
Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**30.0" Round Culvert** L= 65.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,240.00' / 2,238.00' S= 0.0308 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 4.91 sf
#2	Primary	2,244.00'	**50.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=167.92 cfs @ 12.24 hrs HW=2,244.98' TW=0.00' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 40.28 cfs @ 8.21 fps)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 127.64 cfs @ 2.60 fps)

APPENDIX E

HydroCAD Data – Proposed Model – Highmount





Routing Diagram for 07074_Pro-Highmount_v3

Prepared by The LA group, Printed 2/21/2014

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
12.291	74	>75% Grass cover, Good, HSG C (1aS, 1bS, 1cS, 14S, 434S, 439S, 440S, 444S, 445S, 446S, 447S, 449A, 449b, 450S, 452a, 452S, 453S, 455S, 456S)
0.586	87	Dirt roads, HSG C (14S)
1.200	72	Green Roof (443S)
53.595	71	Meadow, non-grazed, HSG C (6b, 14S, 16S, 17S, 18S, 19S, 20S)
0.230	98	Paved (1aS)
0.036	98	Paved parking (1bS)
1.050	98	Paved parking & roofs (439S, 447S, 449A, 449S)
0.179	98	Paved roads (14S)
0.598	98	Paved roads w/curbs & sewers (445S, 451S, 453S, 455S)
0.284	98	Paved roads w/curbs & sewers, HSG C (452S)
0.187	98	Paved, HSG C (19S)
0.255	98	Pavement (16S, 18S)
0.520	98	Roadway (17S, 20S)
0.463	98	Roof (1bS, 454a)
0.278	98	Roof Area (14S, 20S)
0.294	98	Roofs (449A)
0.124	98	Roofs, HSG C (19S, 440S)
0.071	98	Water Surface (1bS)
0.247	98	Water Surface, 0% imp, HSG C (456S)
102.595	70	Woods, Good, HSG C (1cS, 6b, 14S, 16S, 17S, 18S, 19S, 20S, 450S)
6.880	72	green roof (441S)
181.964	**71**	**TOTAL AREA**

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1aS: Subcatchment 1a Runoff Area=17,305 sf 57.79% Impervious Runoff Depth=1.64"
Flow Length=176' Slope=0.0500 '/' Tc=6.0 min CN=88 Runoff=1.15 cfs 0.054 af

Subcatchment 1bS: Subcatchment 1b Runoff Area=33,494 sf 35.08% Impervious Runoff Depth=1.22"
Tc=6.0 min CN=82 Runoff=1.69 cfs 0.078 af

Subcatchment 1cS: Subcatchment 1c Runoff Area=151,340 sf 0.00% Impervious Runoff Depth=0.61"
Flow Length=890' Tc=14.9 min CN=70 Runoff=2.38 cfs 0.175 af

Subcatchment 6b: Subcatchment 6 Runoff Area=41,583 sf 0.00% Impervious Runoff Depth=0.65"
Tc=9.0 min CN=71 Runoff=0.92 cfs 0.052 af

Subcatchment 14S: Subcatchment 14 Runoff Area=1,295,954 sf 1.00% Impervious Runoff Depth=0.65"
Flow Length=2,585' Tc=42.2 min CN=71 Runoff=10.93 cfs 1.607 af

Subcatchment 16S: Subcatchment 16 Runoff Area=158,175 sf 5.45% Impervious Runoff Depth=0.69"
Flow Length=1,161' Tc=6.0 min CN=72 Runoff=4.31 cfs 0.209 af

Subcatchment 17S: Subcatchment 17 Runoff Area=409,987 sf 1.70% Impervious Runoff Depth=0.65"
Flow Length=1,080' Tc=9.4 min CN=71 Runoff=8.88 cfs 0.508 af

Subcatchment 18S: Subcatchment 18 Runoff Area=526,390 sf 0.47% Impervious Runoff Depth=0.61"
Flow Length=2,288' Tc=17.4 min CN=70 Runoff=7.53 cfs 0.610 af

Subcatchment 19S: Subcatchment 19 Runoff Area=2,547,694 sf 0.46% Impervious Runoff Depth=0.61"
Flow Length=2,625' Tc=24.0 min CN=70 Runoff=29.30 cfs 2.954 af

Subcatchment 20S: Subcatchment 20 Runoff Area=1,826,167 sf 1.24% Impervious Runoff Depth=0.65"
Flow Length=3,465' Tc=29.6 min CN=71 Runoff=19.97 cfs 2.264 af

Subcatchment 434S: Subcatchment 434 Runoff Area=19,166 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=414' Tc=6.2 min CN=74 Runoff=0.60 cfs 0.029 af

Subcatchment 439S: Subcatchment 439 Runoff Area=72,310 sf 19.22% Impervious Runoff Depth=1.04"
Flow Length=506' Tc=6.3 min CN=79 Runoff=3.06 cfs 0.144 af

Subcatchment 440S: Subcatchment 440 Runoff Area=33,976 sf 5.13% Impervious Runoff Depth=0.83"
Flow Length=335' Tc=7.6 min CN=75 Runoff=1.07 cfs 0.054 af

Subcatchment 441S: Subcatchment 441-Hotel Runoff Area=299,693 sf 0.00% Impervious Runoff Depth=0.69"
Tc=9.5 min CN=72 Runoff=7.00 cfs 0.397 af

Subcatchment 443S: Subcatchment 443-Lodge Runoff Area=52,272 sf 0.00% Impervious Runoff Depth=0.69"
Tc=9.0 min CN=72 Runoff=1.25 cfs 0.069 af

Subcatchment 444S: Subcatchment 444 Runoff Area=28,241 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=366' Tc=6.0 min CN=74 Runoff=0.89 cfs 0.042 af

Subcatchment 445S: Subcatchment 445 Runoff Area=12,505 sf 61.42% Impervious Runoff Depth=1.72"
Flow Length=450' Tc=6.0 min CN=89 Runoff=0.87 cfs 0.041 af

Subcatchment 446S: Subcatchment 446 Runoff Area=55,919 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=818' Tc=6.2 min CN=74 Runoff=1.74 cfs 0.084 af

Subcatchment 447S: Subcatchment 447 Runoff Area=11,692 sf 86.64% Impervious Runoff Depth=2.25"
Flow Length=344' Tc=6.0 min CN=95 Runoff=0.99 cfs 0.050 af

Subcatchment 449A: Subcatchment 449A Runoff Area=45,670 sf 57.26% Impervious Runoff Depth=1.64"
Flow Length=843' Tc=6.0 min CN=88 Runoff=3.04 cfs 0.143 af

Subcatchment 449b: Subcatchment 449B Runoff Area=22,066 sf 0.00% Impervious Runoff Depth=0.78"
Tc=6.0 min CN=74 Runoff=0.69 cfs 0.033 af

Subcatchment 449S: Subcatchment 449 Runoff Area=8,350 sf 100.00% Impervious Runoff Depth=2.57"
Flow Length=345' Tc=6.0 min CN=98 Runoff=0.76 cfs 0.041 af

Subcatchment 450S: Subcatchment 450 Runoff Area=95,865 sf 0.00% Impervious Runoff Depth=0.69"
Flow Length=740' Slope=0.0600 '/' Tc=6.0 min CN=72 Runoff=2.61 cfs 0.127 af

Subcatchment 451S: Subcatchment 451 Runoff Area=8,072 sf 100.00% Impervious Runoff Depth=2.57"
Flow Length=334' Tc=6.0 min CN=98 Runoff=0.73 cfs 0.040 af

Subcatchment 452a: Subcatchment 452a Runoff Area=2,110 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=188' Slope=0.0600 '/' Tc=6.0 min CN=74 Runoff=0.07 cfs 0.003 af

Subcatchment 452S: Subcatchment 452 Runoff Area=15,741 sf 78.52% Impervious Runoff Depth=2.06"
Flow Length=334' Tc=6.0 min CN=93 Runoff=1.26 cfs 0.062 af

Subcatchment 453S: Subcatchment 453 Runoff Area=12,482 sf 64.25% Impervious Runoff Depth=1.72"
Flow Length=317' Tc=6.0 min CN=89 Runoff=0.86 cfs 0.041 af

Subcatchment 454a: Subcatchment 454a Runoff Area=13,080 sf 100.00% Impervious Runoff Depth=2.57"
Tc=6.0 min CN=98 Runoff=1.18 cfs 0.064 af

Subcatchment 455S: Subcatchment 455 Runoff Area=18,390 sf 12.35% Impervious Runoff Depth=0.93"
Flow Length=346' Slope=0.0400 '/' Tc=6.0 min CN=77 Runoff=0.70 cfs 0.033 af

Subcatchment 456S: Subcatchment 456 Runoff Area=90,650 sf 0.00% Impervious Runoff Depth=0.93"
Flow Length=100' Slope=0.2500 '/' Tc=6.0 min CN=77 Runoff=3.46 cfs 0.162 af

Reach 7R: through ditch Avg. Flow Depth=0.25' Max Vel=2.55 fps Inflow=1.95 cfs 0.021 af
n=0.050 L=495.0' S=0.0646 '/' Capacity=136.08 cfs Outflow=1.62 cfs 0.021 af

Reach 8R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.050 L=370.0' S=0.0757 '/' Capacity=125.74 cfs Outflow=0.00 cfs 0.000 af

Reach 9R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.050 L=685.0' S=0.1000 '/' Capacity=144.54 cfs Outflow=0.00 cfs 0.000 af

Reach 16a: Roadside Channel Avg. Flow Depth=0.10' Max Vel=2.05 fps Inflow=0.44 cfs 1.100 af
n=0.050 L=700.0' S=0.1100 '/' Capacity=187.72 cfs Outflow=0.44 cfs 1.100 af

Reach 434C: RIP RAP SWALE Avg. Flow Depth=0.71' Max Vel=4.07 fps Inflow=7.92 cfs 0.448 af
n=0.040 L=188.0' S=0.0319 '/' Capacity=86.19 cfs Outflow=7.87 cfs 0.448 af

Reach 444: Roadside Swale Avg. Flow Depth=0.21' Max Vel=3.73 fps Inflow=1.80 cfs 0.098 af
n=0.033 L=317.0' S=0.0662 '/' Capacity=95.47 cfs Outflow=1.77 cfs 0.098 af

Reach 446: Roadside Swale Avg. Flow Depth=0.29' Max Vel=3.55 fps Inflow=2.57 cfs 0.140 af
n=0.030 L=720.0' S=0.0354 '/' Capacity=76.79 cfs Outflow=2.35 cfs 0.140 af

Reach 450: Swale Avg. Flow Depth=0.35' Max Vel=3.56 fps Inflow=3.83 cfs 0.224 af
n=0.040 L=826.0' S=0.0533 '/' Capacity=109.41 cfs Outflow=3.41 cfs 0.224 af

Reach 450a: Overland Swale Avg. Flow Depth=0.51' Max Vel=4.22 fps Inflow=5.45 cfs 0.351 af
n=0.050 L=160.0' S=0.0750 '/' Capacity=67.04 cfs Outflow=5.43 cfs 0.351 af

Reach 451: Roadside Swale Avg. Flow Depth=0.21' Max Vel=1.81 fps Inflow=0.86 cfs 0.041 af
n=0.050 L=165.0' S=0.0364 '/' Capacity=46.68 cfs Outflow=0.85 cfs 0.041 af

Reach 501a: Overland Swale Avg. Flow Depth=0.15' Max Vel=3.79 fps Inflow=1.15 cfs 0.054 af
n=0.030 L=90.0' S=0.0889 '/' Capacity=25.98 cfs Outflow=1.15 cfs 0.054 af

Reach 502a: Overland Swale Avg. Flow Depth=0.05' Max Vel=2.32 fps Inflow=0.03 cfs 0.046 af
n=0.030 L=600.0' S=0.2258 '/' Capacity=18.45 cfs Outflow=0.03 cfs 0.046 af

Pond 434R: (new Pond) Peak Elev=2,499.83' Inflow=3.83 cfs 0.224 af
24.0" Round Culvert n=0.013 L=25.0' S=0.0400 '/' Outflow=3.83 cfs 0.224 af

Pond 439AP: CB 439A Peak Elev=2,576.42' Inflow=1.07 cfs 0.054 af
24.0" Round Culvert n=0.013 L=265.0' S=0.0642 '/' Outflow=1.07 cfs 0.054 af

Pond 439P: Catch Basin 439 Peak Elev=2,559.75' Inflow=4.11 cfs 0.199 af
Outflow=4.11 cfs 0.199 af

Pond 440P: Catch Basin 440 Peak Elev=2,585.42' Inflow=1.07 cfs 0.054 af
Outflow=1.07 cfs 0.054 af

Pond 444R: Culvert 444r Peak Elev=2,527.67' Inflow=2.57 cfs 0.140 af
24.0" Round Culvert n=0.013 L=80.0' S=0.0125 '/' Outflow=2.57 cfs 0.140 af

Pond 445P: Catch Basin 445 Peak Elev=2,527.83' Inflow=4.96 cfs 0.240 af
Outflow=4.96 cfs 0.240 af

Pond 447P: Catch Basin 447 Peak Elev=2,516.91' Inflow=5.94 cfs 0.290 af
Outflow=5.94 cfs 0.290 af

Pond 449aR: Catch Basin Peak Elev=2,509.82' Inflow=3.04 cfs 0.143 af
Outflow=3.04 cfs 0.143 af

Pond 449P: Catch Basin 449 Peak Elev=2,507.97' Inflow=6.69 cfs 0.331 af
Outflow=6.69 cfs 0.331 af

Pond 451P: Catch Basin 451 Peak Elev=2,489.03' Inflow=7.41 cfs 0.371 af
Outflow=7.41 cfs 0.371 af

Pond 452P: Catch Basin 452 Peak Elev=2,467.12' Inflow=8.66 cfs 0.433 af
Outflow=8.66 cfs 0.433 af

Pond 452R: Driveway Culvert Peak Elev=2,488.50' Inflow=7.92 cfs 0.451 af
55.0" x 38.0", R=38.0" Elliptical Culvert n=0.013 L=300.0' S=0.0583 '/' Outflow=7.92 cfs 0.451 af

Pond 453P: Catch Basin 453 Peak Elev=2,452.41' Inflow=0.86 cfs 0.041 af
Outflow=0.86 cfs 0.041 af

Pond 500a: CB 500a Peak Elev=2,441.31' Inflow=1.15 cfs 0.054 af
Outflow=1.15 cfs 0.054 af

Pond AC: P-3- Pond Peak Elev=2,455.86' Storage=81,321 cf Inflow=20.04 cfs 1.111 af
Outflow=0.44 cfs 1.100 af

Pond B9: bioretention-LEACH Peak Elev=2,423.51' Storage=5,248 cf Inflow=2.84 cfs 0.133 af
Outflow=0.03 cfs 0.046 af

Pond c1: Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Pond C2: Inflow=11.88 cfs 1.929 af
Primary=11.88 cfs 1.929 af

Pond C3: Inflow=1.55 cfs 0.074 af
Primary=1.55 cfs 0.074 af

Pond C4: Inflow=4.49 cfs 1.309 af
Primary=4.49 cfs 1.309 af

Pond C5: Inflow=8.88 cfs 0.508 af
Primary=8.88 cfs 0.508 af

Pond C5A: Inflow=5.58 cfs 0.589 af
Primary=5.58 cfs 0.589 af

Pond C6: Inflow=30.72 cfs 2.975 af
Primary=30.72 cfs 2.975 af

Pond C6A: Inflow=19.97 cfs 2.264 af
Primary=19.97 cfs 2.264 af

Pond DP 1a: Design Point 1a Inflow=2.38 cfs 0.221 af
Primary=2.38 cfs 0.221 af

Pond DP2: ditch Peak Elev=2,432.08' Storage=3,996 cf Inflow=12.06 cfs 1.958 af
Primary=11.88 cfs 1.929 af Secondary=0.00 cfs 0.000 af Outflow=11.88 cfs 1.929 af

Pond DP3: 24"HDPE Peak Elev=2,442.55' Inflow=1.55 cfs 0.074 af
24.0" Round Culvert n=0.013 L=35.0' S=0.0286 '/' Outflow=1.55 cfs 0.074 af

Pond DP4: 18" HDPE Culvert Peak Elev=2,370.12' Inflow=4.49 cfs 1.309 af
Primary=4.49 cfs 1.309 af Secondary=0.00 cfs 0.000 af Outflow=4.49 cfs 1.309 af

Pond DP5: 18" HDPE Culvert Peak Elev=2,301.65' Inflow=8.88 cfs 0.508 af
Primary=8.88 cfs 0.508 af Secondary=0.00 cfs 0.000 af Outflow=8.88 cfs 0.508 af

Pond DP5A: 12" steel Culvert Peak Elev=2,274.67' Inflow=7.53 cfs 0.610 af
Primary=5.58 cfs 0.589 af Secondary=1.95 cfs 0.021 af Outflow=7.53 cfs 0.610 af

Pond DP6: 55" CMP Culvert Peak Elev=2,239.13' Inflow=30.72 cfs 2.975 af
Outflow=30.72 cfs 2.975 af

Pond DP6A: 30" Steel Culvert Peak Elev=2,241.29' Inflow=19.97 cfs 2.264 af
Outflow=19.97 cfs 2.264 af

Pond Z1: DRY SWALE Peak Elev=2,500.57' Storage=7,689 cf Inflow=3.72 cfs 0.177 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 181.964 ac Runoff Volume = 10.173 af Average Runoff Depth = 0.67"
97.49% Pervious = 177.395 ac 2.51% Impervious = 4.569 ac

Summary for Subcatchment 1aS: Subcatchment 1a

Runoff = 1.15 cfs @ 11.97 hrs, Volume= 0.054 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	0	70	Woods, Good, HSG C
*	0	98	Roof
*	10,000	98	Paved
	7,305	74	>75% Grass cover, Good, HSG C
	17,305	88	Weighted Average
	7,305		42.21% Pervious Area
	10,000		57.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0500	2.22		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	76	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	176	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1bS: Subcatchment 1b

Runoff = 1.69 cfs @ 11.98 hrs, Volume= 0.078 af, Depth= 1.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	1,580	98	Paved parking
	21,744	74	>75% Grass cover, Good, HSG C
	3,090	98	Water Surface
*	7,080	98	Roof
	0	70	Woods, Good, HSG C
	33,494	82	Weighted Average
	21,744		64.92% Pervious Area
	11,750		35.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1cS: Subcatchment 1c

Runoff = 2.38 cfs @ 12.09 hrs, Volume= 0.175 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
135,640	70	Woods, Good, HSG C
15,700	74	>75% Grass cover, Good, HSG C
151,340	70	Weighted Average
151,340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0840	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.7	460	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	330	0.2300	14.23	21.34	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.030 Earth, clean & winding
14.9	890	Total			

Summary for Subcatchment 6b: Subcatchment 6

Runoff = 0.92 cfs @ 12.02 hrs, Volume= 0.052 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
32,433	71	Meadow, non-grazed, HSG C
9,150	70	Woods, Good, HSG C
41,583	71	Weighted Average
41,583		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0					**Direct Entry,**

Summary for Subcatchment 14S: Subcatchment 14

Runoff = 10.93 cfs @ 12.43 hrs, Volume= 1.607 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	133,250	71	Meadow, non-grazed, HSG C
	25,526	87	Dirt roads, HSG C
*	5,184	98	Roof Area
	7,797	98	Paved roads
	921,512	70	Woods, Good, HSG C
	100,101	71	Meadow, non-grazed, HSG C
	102,584	74	>75% Grass cover, Good, HSG C
	1,295,954	71	Weighted Average
	1,282,973		99.00% Pervious Area
	12,981		1.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	80	0.1000	2.21		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
30.4	2,165	0.2260	1.19		**Shallow Concentrated Flow, SC Flow through Woods** Forest w/Heavy Litter Kv= 2.5 fps
1.2	90	0.2350	1.21		**Shallow Concentrated Flow, SC Flow through Grass** Forest w/Heavy Litter Kv= 2.5 fps
0.3	150	0.0450	8.53	34.11	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
42.2	2,585	Total			

Summary for Subcatchment 16S: Subcatchment 16

Runoff = 4.31 cfs @ 11.98 hrs, Volume= 0.209 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	8,620	98	Pavement
	100,893	70	Woods, Good, HSG C
	48,662	71	Meadow, non-grazed, HSG C
	158,175	72	Weighted Average
	149,555		94.55% Pervious Area
	8,620		5.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	421	0.0230	4.64	37.13	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.050 Earth, cobble bottom, clean sides
1.3	740	0.1000	9.68	77.42	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.050 Earth, cobble bottom, clean sides
2.8	1,161	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 17S: Subcatchment 17

Runoff = 8.88 cfs @ 12.02 hrs, Volume= 0.508 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	6,970	98	Roadway
	81,849	71	Meadow, non-grazed, HSG C
	321,168	70	Woods, Good, HSG C
	409,987	71	Weighted Average
	403,017		98.30% Pervious Area
	6,970		1.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.2000	0.48		**Sheet Flow, Sheet Flow through Woods** Grass: Short n= 0.150 P2= 4.00"
5.2	440	0.3200	1.41		**Shallow Concentrated Flow, SC Flow through Woods** Forest w/Heavy Litter Kv= 2.5 fps
0.7	540	0.1160	13.69	54.76	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
9.4	1,080	Total			

Summary for Subcatchment 18S: Subcatchment 18

Runoff = 7.53 cfs @ 12.12 hrs, Volume= 0.610 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	2,494	98	Pavement
	150,905	71	Meadow, non-grazed, HSG C
	372,991	70	Woods, Good, HSG C
	526,390	70	Weighted Average
	523,896		99.53% Pervious Area
	2,494		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.3280	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
10.6	1,910	0.3630	3.01		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	278	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Flow in Roadside Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030

17.4	2,288	Total

Summary for Subcatchment 19S: Subcatchment 19

Runoff = 29.30 cfs @ 12.21 hrs, Volume= 2.954 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	3,678	98	Roofs, HSG C
*	8,160	98	Paved, HSG C
	1,599,802	70	Woods, Good, HSG C
	936,054	71	Meadow, non-grazed, HSG C
	2,547,694	70	Weighted Average
	2,535,856		99.54% Pervious Area
	11,838		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.6	2,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods** Woodland Kv= 5.0 fps
0.9	470	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030 Earth, grassed & winding
24.0	2,625	Total			

Summary for Subcatchment 20S: Subcatchment 20

Runoff = 19.97 cfs @ 12.27 hrs, Volume= 2.264 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	6,926	98	Roof Area
*	15,682	98	Roadway
	952,222	70	Woods, Good, HSG C
	851,337	71	Meadow, non-grazed, HSG C
	1,826,167	71	Weighted Average
	1,803,559		98.76% Pervious Area
	22,608		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
18.7	3,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods** Woodland Kv= 5.0 fps
0.4	310	0.0466	12.12	145.44	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=4.00' Z= 0.5 '/' Top.W=5.00' n= 0.030 Earth, grassed & winding
29.6	3,465	Total			

Summary for Subcatchment 434S: Subcatchment 434

Runoff = 0.60 cfs @ 11.98 hrs, Volume= 0.029 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
19,166	74	>75% Grass cover, Good, HSG C
19,166		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0600	0.30		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 4.00"
0.1	27	0.2240	7.10		**Shallow Concentrated Flow, shallow concentrated flow** Grassed Waterway Kv= 15.0 fps
0.5	287	0.0450	9.08	54.49	**Trap/Vee/Rect Channel Flow, roadside ditch** Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00' n= 0.033
6.2	414	Total			

Summary for Subcatchment 439S: Subcatchment 439

Runoff = 3.06 cfs @ 11.98 hrs, Volume= 0.144 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
13,896	98	Paved parking & roofs
58,414	74	>75% Grass cover, Good, HSG C
72,310	79	Weighted Average
58,414		80.78% Pervious Area
13,896		19.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.1200	0.39		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 4.00"
0.6	84	0.1300	2.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	322	0.0340	3.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.3	506	Total			

Summary for Subcatchment 440S: Subcatchment 440

Runoff = 1.07 cfs @ 12.00 hrs, Volume= 0.054 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
1,742	98	Roofs, HSG C
32,234	74	>75% Grass cover, Good, HSG C
33,976	75	Weighted Average
32,234		94.87% Pervious Area
1,742		5.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
3.0	235	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	335	Total			

Summary for Subcatchment 441S: Subcatchment 441-Hotel

Runoff = 7.00 cfs @ 12.02 hrs, Volume= 0.397 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	299,693	72	green roof
	299,693		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5					**Direct Entry,**

Summary for Subcatchment 443S: Subcatchment 443-Lodge

Runoff = 1.25 cfs @ 12.02 hrs, Volume= 0.069 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	52,272	72	Green Roof
	52,272		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0					**Direct Entry, Highmount Lodge**

Summary for Subcatchment 444S: Subcatchment 444

Runoff = 0.89 cfs @ 11.98 hrs, Volume= 0.042 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
28,241	74	>75% Grass cover, Good, HSG C
28,241		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	66	0.3030	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.5	300	0.0600	10.49	62.92	**Trap/Vee/Rect Channel Flow, TRM SWALE** Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00' n= 0.033 Earth, grassed & winding
2.6	366	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 445S: Subcatchment 445

Runoff = 0.87 cfs @ 11.97 hrs, Volume= 0.041 af, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
7,680	98	Paved roads w/curbs & sewers
4,825	74	>75% Grass cover, Good, HSG C
12,505	89	Weighted Average
4,825		38.58% Pervious Area
7,680		61.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.1800	0.46		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.0	350	0.0800	5.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.6	450	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 446S: Subcatchment 446

Runoff = 1.74 cfs @ 11.98 hrs, Volume= 0.084 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
55,919	74	>75% Grass cover, Good, HSG C
55,919		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	88	0.0680	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.4	730	0.0400	8.56	51.38	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00' n= 0.033 Earth, grassed & winding
6.2	818	Total			

Summary for Subcatchment 447S: Subcatchment 447

Runoff = 0.99 cfs @ 11.97 hrs, Volume= 0.050 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
10,130	98	Paved parking & roofs
1,562	74	>75% Grass cover, Good, HSG C
11,692	95	Weighted Average
1,562		13.36% Pervious Area
10,130		86.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.1	244	0.0328	3.68		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	344	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 449A: Subcatchment 449A

Runoff = 3.04 cfs @ 11.97 hrs, Volume= 0.143 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	13,350	98	Paved parking & roofs
	19,520	74	>75% Grass cover, Good, HSG C
*	12,800	98	Roofs
	45,670	88	Weighted Average
	19,520		42.74% Pervious Area
	26,150		57.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	30	0.5000	0.54		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 4.00"
1.3	300	0.0350	3.80		**Shallow Concentrated Flow, ROAD** Paved Kv= 20.3 fps
0.8	250	0.0050	5.09	16.00	**Pipe Channel, culvert** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
1.1	213	0.0050	3.28	26.23	**Trap/Vee/Rect Channel Flow, trm swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.033 Earth, grassed & winding
0.2	50	0.0050	5.09	16.00	**Pipe Channel, into cb** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
4.3	843	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 449b: Subcatchment 449B

Runoff = 0.69 cfs @ 11.98 hrs, Volume= 0.033 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
22,066	74	>75% Grass cover, Good, HSG C
22,066		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 449S: Subcatchment 449

Runoff = 0.76 cfs @ 11.97 hrs, Volume= 0.041 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
8,350	98	Paved parking & roofs
8,350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0400	2.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.3	245	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.1	345	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 450S: Subcatchment 450

Runoff = 2.61 cfs @ 11.98 hrs, Volume= 0.127 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
40,190	74	>75% Grass cover, Good, HSG C
55,675	70	Woods, Good, HSG C
95,865	72	Weighted Average
95,865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	740	0.0600	7.50	59.97	**Trap/Vee/Rect Channel Flow, conveyance swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.050 swale with checkdams
1.6	740	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 451S: Subcatchment 451

Runoff = 0.73 cfs @ 11.97 hrs, Volume= 0.040 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
8,072	98	Paved roads w/curbs & sewers
8,072		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.8	234	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	334	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 452a: Subcatchment 452a

Runoff = 0.07 cfs @ 11.98 hrs, Volume= 0.003 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
2,110	74	>75% Grass cover, Good, HSG C
2,110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	188	0.0600	9.10	18.20	**Channel Flow,** Area= 2.0 sf Perim= 2.0' r= 1.00' n= 0.040 Earth, cobble bottom, clean sides
0.3	188	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 452S: Subcatchment 452

Runoff = 1.26 cfs @ 11.97 hrs, Volume= 0.062 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
12,360	98	Paved roads w/curbs & sewers, HSG C
3,381	74	>75% Grass cover, Good, HSG C
15,741	93	Weighted Average
3,381		21.48% Pervious Area
12,360		78.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0700	2.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	234	0.0726	5.47		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	334	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 453S: Subcatchment 453

Runoff = 0.86 cfs @ 11.97 hrs, Volume= 0.041 af, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
8,020	98	Paved roads w/curbs & sewers
4,462	74	>75% Grass cover, Good, HSG C
12,482	89	Weighted Average
4,462		35.75% Pervious Area
8,020		64.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	43	0.1160	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.4	57	0.0700	2.27		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.8	217	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	317	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 454a: Subcatchment 454a

Runoff = 1.18 cfs @ 11.97 hrs, Volume= 0.064 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	13,080	98	Roof
	13,080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 455S: Subcatchment 455

Runoff = 0.70 cfs @ 11.98 hrs, Volume= 0.033 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
2,272	98	Paved roads w/curbs & sewers
16,118	74	>75% Grass cover, Good, HSG C
18,390	77	Weighted Average
16,118		87.65% Pervious Area
2,272		12.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	346	0.0400	8.74	69.95	**Trap/Vee/Rect Channel Flow, roadside swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.035 Earth, dense weeds
0.7	346	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 456S: Subcatchment 456

Runoff = 3.46 cfs @ 11.98 hrs, Volume= 0.162 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
79,875	74	>75% Grass cover, Good, HSG C
10,775	98	Water Surface, 0% imp, HSG C
90,650	77	Weighted Average
90,650		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	100	0.2500	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
3.2	100	Total, Increased to minimum Tc = 6.0 min			

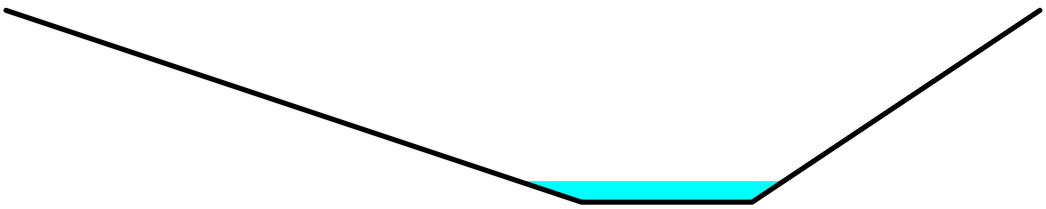
Summary for Reach 7R: through ditch

Inflow = 1.95 cfs @ 12.12 hrs, Volume= 0.021 af
Outflow = 1.62 cfs @ 12.16 hrs, Volume= 0.021 af, Atten= 17%, Lag= 2.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.55 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 10.2 min

Peak Storage= 314 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 2.25' Flow Area= 15.9 sf, Capacity= 136.08 cfs

2.00' x 2.25' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 3.0 1.5 '/' Top Width= 12.13'
Length= 495.0' Slope= 0.0646 '/'
Inlet Invert= 2,272.00', Outlet Invert= 2,240.00'



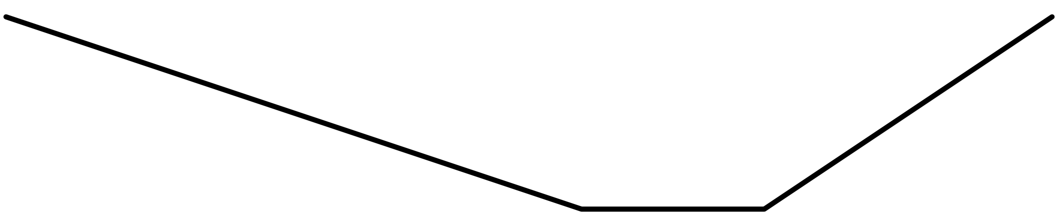
Summary for Reach 8R: (new Reach)

Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.10' Flow Area= 14.1 sf, Capacity= 125.74 cfs

2.00' x 2.10' deep channel, n= 0.050
Side Slope Z-value= 3.0 1.5 '/' Top Width= 11.45'
Length= 370.0' Slope= 0.0757 '/'
Inlet Invert= 2,300.00', Outlet Invert= 2,272.00'



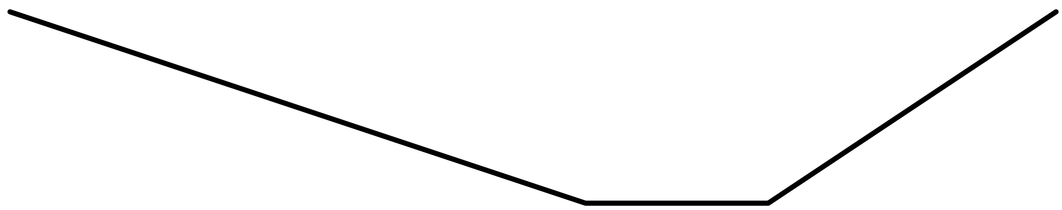
Summary for Reach 9R: (new Reach)

Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.10' Flow Area= 14.1 sf, Capacity= 144.54 cfs

2.00' x 2.10' deep channel, n= 0.050
Side Slope Z-value= 3.0 1.5 '/' Top Width= 11.45'
Length= 685.0' Slope= 0.1000 '/'
Inlet Invert= 2,368.00', Outlet Invert= 2,299.50'



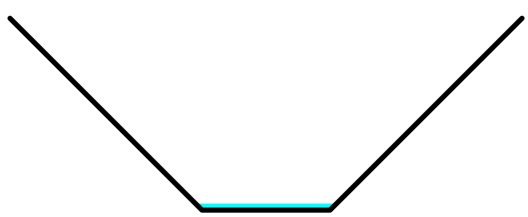
Summary for Reach 16a: Roadside Channel

Inflow Area = 13.998 ac, 12.35% Impervious, Inflow Depth > 0.94" for 1-YEAR event
Inflow = 0.44 cfs @ 18.11 hrs, Volume= 1.100 af
Outflow = 0.44 cfs @ 18.17 hrs, Volume= 1.100 af, Atten= 0%, Lag= 3.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.05 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 1.22 fps, Avg. Travel Time= 9.5 min

Peak Storage= 150 cf @ 18.17 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 3.00' Flow Area= 15.0 sf, Capacity= 187.72 cfs

2.00' x 3.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 8.00'
Length= 700.0' Slope= 0.1100 '/'
Inlet Invert= 2,446.00', Outlet Invert= 2,369.00'



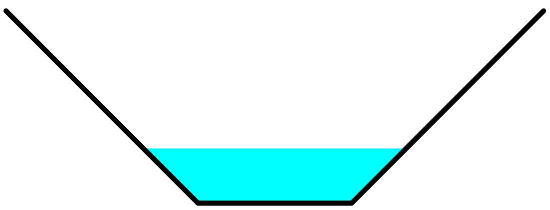
Summary for Reach 434C: RIP RAP SWALE

Inflow Area = 7.835 ac, 0.00% Impervious, Inflow Depth = 0.69" for 1-YEAR event
Inflow = 7.92 cfs @ 12.02 hrs, Volume= 0.448 af
Outflow = 7.87 cfs @ 12.03 hrs, Volume= 0.448 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.07 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.32 fps, Avg. Travel Time= 2.4 min

Peak Storage= 363 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.71'
Bank-Full Depth= 2.50' Flow Area= 11.3 sf, Capacity= 86.19 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 188.0' Slope= 0.0319 '/'
Inlet Invert= 2,494.00', Outlet Invert= 2,488.00'



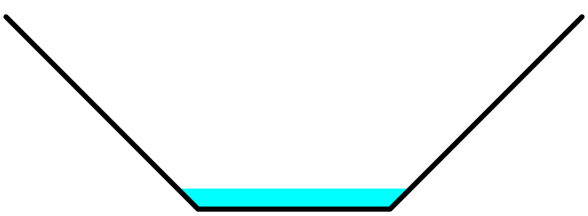
Summary for Reach 444: Roadside Swale

Inflow Area = 1.640 ac, 0.00% Impervious, Inflow Depth = 0.72" for 1-YEAR event
Inflow = 1.80 cfs @ 12.01 hrs, Volume= 0.098 af
Outflow = 1.77 cfs @ 12.02 hrs, Volume= 0.098 af, Atten= 2%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.73 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.09 fps, Avg. Travel Time= 4.8 min

Peak Storage= 150 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 95.47 cfs

2.00' x 2.00' deep channel, n= 0.033 Earth, grassed & winding
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 317.0' Slope= 0.0662 '/'
Inlet Invert= 2,548.00', Outlet Invert= 2,527.00'



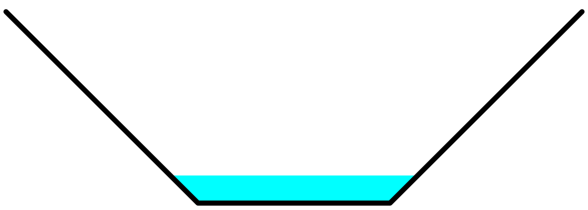
Summary for Reach 446: Roadside Swale

Inflow Area = 2.288 ac, 0.00% Impervious, Inflow Depth = 0.74" for 1-YEAR event
Inflow = 2.57 cfs @ 12.01 hrs, Volume= 0.140 af
Outflow = 2.35 cfs @ 12.04 hrs, Volume= 0.140 af, Atten= 9%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.55 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 1.05 fps, Avg. Travel Time= 11.5 min

Peak Storage= 476 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 76.79 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 720.0' Slope= 0.0354 '/'
Inlet Invert= 2,526.00', Outlet Invert= 2,500.50'



Summary for Reach 450: Swale

Inflow Area = 5.127 ac, 11.71% Impervious, Inflow Depth = 0.52" for 1-YEAR event
Inflow = 3.83 cfs @ 12.01 hrs, Volume= 0.224 af
Outflow = 3.41 cfs @ 12.05 hrs, Volume= 0.224 af, Atten= 11%, Lag= 2.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.56 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 1.10 fps, Avg. Travel Time= 12.5 min

Peak Storage= 791 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 109.41 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 826.0' Slope= 0.0533 '/'
Inlet Invert= 2,497.00', Outlet Invert= 2,453.00'

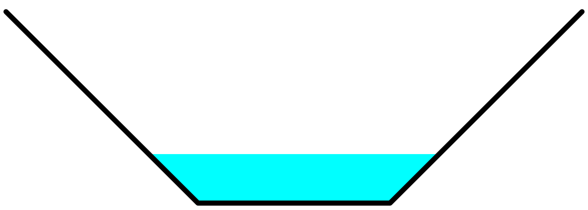
Summary for Reach 450a: Overland Swale

Inflow Area = 7.328 ac, 8.19% Impervious, Inflow Depth = 0.57" for 1-YEAR event
Inflow = 5.45 cfs @ 12.02 hrs, Volume= 0.351 af
Outflow = 5.43 cfs @ 12.02 hrs, Volume= 0.351 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.22 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.26 fps, Avg. Travel Time= 2.1 min

Peak Storage= 206 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.51'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 67.04 cfs

2.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 160.0' Slope= 0.0750 '/'
Inlet Invert= 2,452.00', Outlet Invert= 2,440.00'



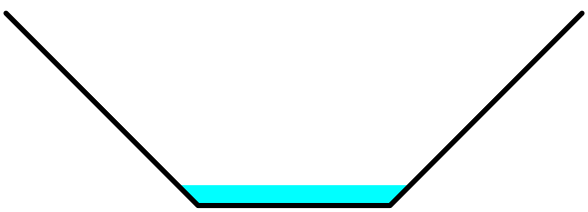
Summary for Reach 451: Roadside Swale

Inflow Area = 0.287 ac, 64.25% Impervious, Inflow Depth = 1.72" for 1-YEAR event
Inflow = 0.86 cfs @ 11.97 hrs, Volume= 0.041 af
Outflow = 0.85 cfs @ 11.99 hrs, Volume= 0.041 af, Atten= 2%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.81 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 0.48 fps, Avg. Travel Time= 5.8 min

Peak Storage= 77 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 46.68 cfs

2.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 165.0' Slope= 0.0364 '/'
Inlet Invert= 2,450.00', Outlet Invert= 2,444.00'



Summary for Reach 501a: Overland Swale

Inflow Area = 0.397 ac, 57.79% Impervious, Inflow Depth = 1.64" for 1-YEAR event
Inflow = 1.15 cfs @ 11.97 hrs, Volume= 0.054 af
Outflow = 1.15 cfs @ 11.98 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.79 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.88 fps, Avg. Travel Time= 1.7 min

Peak Storage= 27 cf @ 11.98 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 2.5 sf, Capacity= 25.98 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.5 '/' Top Width= 3.00'
Length= 90.0' Slope= 0.0889 '/'
Inlet Invert= 2,436.00', Outlet Invert= 2,428.00'

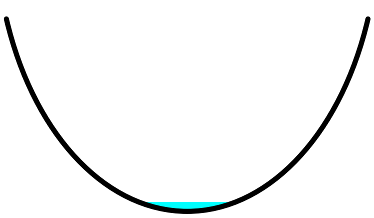
Summary for Reach 502a: Overland Swale

Inflow Area = 1.166 ac, 42.82% Impervious, Inflow Depth > 0.47" for 1-YEAR event
Inflow = 0.03 cfs @ 21.87 hrs, Volume= 0.046 af
Outflow = 0.03 cfs @ 21.92 hrs, Volume= 0.046 af, Atten= 0%, Lag= 3.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.32 fps, Min. Travel Time= 4.3 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 7.7 min

Peak Storage= 8 cf @ 21.92 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 1.00' Flow Area= 1.3 sf, Capacity= 18.45 cfs

2.00' x 1.00' deep Parabolic Channel, n= 0.030 Earth, clean & winding
Length= 600.0' Slope= 0.2258 '/'
Inlet Invert= 2,418.00', Outlet Invert= 2,282.50'



Summary for Pond 434R: (new Pond)

Inflow Area = 3.572 ac, 0.00% Impervious, Inflow Depth = 0.75" for 1-YEAR event
Inflow = 3.83 cfs @ 12.01 hrs, Volume= 0.224 af
Outflow = 3.83 cfs @ 12.01 hrs, Volume= 0.224 af, Atten= 0%, Lag= 0.0 min
Primary = 3.83 cfs @ 12.01 hrs, Volume= 0.224 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,499.83' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,499.00'	**24.0" Round Culvert** L= 25.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,499.00' / 2,498.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.82 cfs @ 12.01 hrs HW=2,499.83' TW=2,497.33' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.82 cfs @ 3.10 fps)

Summary for Pond 439AP: CB 439A

Inflow Area = 0.780 ac, 5.13% Impervious, Inflow Depth = 0.83" for 1-YEAR event
Inflow = 1.07 cfs @ 12.00 hrs, Volume= 0.054 af
Outflow = 1.07 cfs @ 12.00 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 1.07 cfs @ 12.00 hrs, Volume= 0.054 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,576.42' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,576.00'	**24.0" Round Culvert** L= 265.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,576.00' / 2,559.00' S= 0.0642 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.07 cfs @ 12.00 hrs HW=2,576.42' TW=2,559.75' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.07 cfs @ 2.21 fps)

Summary for Pond 439P: Catch Basin 439

Inflow Area = 2.440 ac, 14.71% Impervious, Inflow Depth = 0.98" for 1-YEAR event
Inflow = 4.11 cfs @ 11.99 hrs, Volume= 0.199 af
Outflow = 4.11 cfs @ 11.99 hrs, Volume= 0.199 af, Atten= 0%, Lag= 0.0 min
Primary = 4.11 cfs @ 11.99 hrs, Volume= 0.199 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,559.75' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,559.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,559.00' / 2,527.00' S= 0.0914 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

#2	Primary	2,564.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.10 cfs @ 11.99 hrs HW=2,559.75' TW=2,527.83' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.10 cfs @ 2.95 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 440P: Catch Basin 440

Inflow Area = 0.780 ac, 5.13% Impervious, Inflow Depth = 0.83" for 1-YEAR event
Inflow = 1.07 cfs @ 12.00 hrs, Volume= 0.054 af
Outflow = 1.07 cfs @ 12.00 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 1.07 cfs @ 12.00 hrs, Volume= 0.054 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,585.42' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,585.00'	**24.0" Round Culvert** L= 180.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,585.00' / 2,576.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,589.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.07 cfs @ 12.00 hrs HW=2,585.42' TW=2,576.42' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.07 cfs @ 2.21 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 444R: Culvert 444r

Inflow Area = 2.288 ac, 0.00% Impervious, Inflow Depth = 0.74" for 1-YEAR event
Inflow = 2.57 cfs @ 12.01 hrs, Volume= 0.140 af
Outflow = 2.57 cfs @ 12.01 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min
Primary = 2.57 cfs @ 12.01 hrs, Volume= 0.140 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,527.67' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,527.00'	**24.0" Round Culvert** L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 2,527.00' / 2,526.00' S= 0.0125 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.57 cfs @ 12.01 hrs HW=2,527.67' TW=2,526.27' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.57 cfs @ 2.79 fps)

Summary for Pond 445P: Catch Basin 445

Inflow Area = 2.727 ac, 19.63% Impervious, Inflow Depth = 1.05" for 1-YEAR event
Inflow = 4.96 cfs @ 11.98 hrs, Volume= 0.240 af
Outflow = 4.96 cfs @ 11.98 hrs, Volume= 0.240 af, Atten= 0%, Lag= 0.0 min
Primary = 4.96 cfs @ 11.98 hrs, Volume= 0.240 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,527.83' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,527.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,527.00' / 2,520.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,534.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.95 cfs @ 11.98 hrs HW=2,527.83' TW=2,516.91' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.95 cfs @ 3.10 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 447P: Catch Basin 447

Inflow Area = 2.995 ac, 25.63% Impervious, Inflow Depth = 1.16" for 1-YEAR event
Inflow = 5.94 cfs @ 11.98 hrs, Volume= 0.290 af
Outflow = 5.94 cfs @ 11.98 hrs, Volume= 0.290 af, Atten= 0%, Lag= 0.0 min
Primary = 5.94 cfs @ 11.98 hrs, Volume= 0.290 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,516.91' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,516.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,516.00' / 2,509.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,523.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.94 cfs @ 11.98 hrs HW=2,516.91' TW=2,507.97' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 5.94 cfs @ 3.26 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 449aR: Catch Basin

Inflow Area = 1.048 ac, 57.26% Impervious, Inflow Depth = 1.64" for 1-YEAR event
Inflow = 3.04 cfs @ 11.97 hrs, Volume= 0.143 af
Outflow = 3.04 cfs @ 11.97 hrs, Volume= 0.143 af, Atten= 0%, Lag= 0.0 min
Primary = 3.04 cfs @ 11.97 hrs, Volume= 0.143 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,509.82' @ 11.97 hrs
Flood Elev= 2,512.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,509.00'	**18.0" Round Culvert** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,509.00' / 2,507.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,512.00'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.03 cfs @ 11.97 hrs HW=2,509.82' TW=2,499.45' (Dynamic Tailwater)
↑1=**Culvert** (Inlet Controls 3.03 cfs @ 3.08 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 449P: Catch Basin 449

Inflow Area =	3.187 ac, 30.11% Impervious, Inflow Depth = 1.25" for 1-YEAR event		
Inflow =	6.69 cfs @ 11.98 hrs, Volume=	0.331 af	
Outflow =	6.69 cfs @ 11.98 hrs, Volume=	0.331 af,	Atten= 0%, Lag= 0.0 min
Primary =	6.69 cfs @ 11.98 hrs, Volume=	0.331 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,507.97' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,507.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,507.00' / 2,492.00' S= 0.0429 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,513.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.68 cfs @ 11.98 hrs HW=2,507.97' TW=2,489.03' (Dynamic Tailwater)
↑1=**Culvert** (Inlet Controls 6.68 cfs @ 3.36 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 451P: Catch Basin 451

Inflow Area =	3.372 ac, 33.95% Impervious, Inflow Depth = 1.32" for 1-YEAR event		
Inflow =	7.41 cfs @ 11.98 hrs, Volume=	0.371 af	
Outflow =	7.41 cfs @ 11.98 hrs, Volume=	0.371 af,	Atten= 0%, Lag= 0.0 min
Primary =	7.41 cfs @ 11.98 hrs, Volume=	0.371 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,489.03' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,488.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,488.00' / 2,468.00' S= 0.0571 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,496.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.40 cfs @ 11.98 hrs HW=2,489.03' TW=2,467.12' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 7.40 cfs @ 3.45 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 452P: Catch Basin 452

Inflow Area = 3.734 ac, 38.26% Impervious, Inflow Depth = 1.39" for 1-YEAR event
Inflow = 8.66 cfs @ 11.98 hrs, Volume= 0.433 af
Outflow = 8.66 cfs @ 11.98 hrs, Volume= 0.433 af, Atten= 0%, Lag= 0.0 min
Primary = 8.66 cfs @ 11.98 hrs, Volume= 0.433 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,467.12' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,466.00'	**36.0" Round Culvert** L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,466.00' / 2,462.00' S= 0.0364 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,472.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.65 cfs @ 11.98 hrs HW=2,467.12' TW=2,455.16' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 8.65 cfs @ 3.60 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 452R: Driveway Culvert

Inflow Area = 7.883 ac, 0.00% Impervious, Inflow Depth = 0.69" for 1-YEAR event
Inflow = 7.92 cfs @ 12.03 hrs, Volume= 0.451 af
Outflow = 7.92 cfs @ 12.03 hrs, Volume= 0.451 af, Atten= 0%, Lag= 0.0 min
Primary = 7.92 cfs @ 12.03 hrs, Volume= 0.451 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,488.50' @ 12.03 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,487.50'	**55.0" W x 38.0" H, R=38.0" Elliptical Culvert** L= 300.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,487.50' / 2,470.00' S= 0.0583 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 11.50 sf

Primary OutFlow Max=7.91 cfs @ 12.03 hrs HW=2,488.50' TW=2,455.32' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 7.91 cfs @ 2.54 fps)

Summary for Pond 453P: Catch Basin 453

Inflow Area = 0.287 ac, 64.25% Impervious, Inflow Depth = 1.72" for 1-YEAR event
Inflow = 0.86 cfs @ 11.97 hrs, Volume= 0.041 af
Outflow = 0.86 cfs @ 11.97 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.86 cfs @ 11.97 hrs, Volume= 0.041 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,452.41' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,456.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	2,452.00'	**18.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,452.00' / 2,451.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.86 cfs @ 11.97 hrs HW=2,452.41' TW=2,450.21' (Dynamic Tailwater)
1=Orifice/Grate (Controls 0.00 cfs)
2=Culvert (Inlet Controls 0.86 cfs @ 2.19 fps)

Summary for Pond 500a: CB 500a

Inflow Area = 0.397 ac, 57.79% Impervious, Inflow Depth = 1.64" for 1-YEAR event
Inflow = 1.15 cfs @ 11.97 hrs, Volume= 0.054 af
Outflow = 1.15 cfs @ 11.97 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 1.15 cfs @ 11.97 hrs, Volume= 0.054 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,441.31' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,440.75'	**12.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,440.75' / 2,436.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,446.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.15 cfs @ 11.97 hrs HW=2,441.31' TW=2,436.15' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.15 cfs @ 2.54 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond AC: P-3- Pond

Inflow Area = 13.998 ac, 12.35% Impervious, Inflow Depth = 0.95" for 1-YEAR event
Inflow = 20.04 cfs @ 11.99 hrs, Volume= 1.111 af
Outflow = 0.44 cfs @ 18.11 hrs, Volume= 1.100 af, Atten= 98%, Lag= 367.0 min
Primary = 0.44 cfs @ 18.11 hrs, Volume= 1.100 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Starting Elev= 2,454.60' Surf.Area= 18,074 sf Storage= 49,750 cf
Peak Elev= 2,455.86' @ 18.11 hrs Surf.Area= 34,571 sf Storage= 81,321 cf (31,572 cf above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= 957.1 min (1,801.5 - 844.4)

Volume	Invert	Avail.Storage	Storage Description
#1	2,448.00'	190,566 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
2,448.00	2,220	247.0	0	0	2,220
2,450.00	2,450	550.0	4,668	4,668	21,454
2,452.00	9,960	590.0	11,567	16,235	25,257
2,454.00	14,058	650.0	23,901	40,135	31,306
2,455.00	21,032	724.0	17,428	57,564	39,427
2,456.00	37,023	950.0	28,653	86,217	69,544
2,458.00	44,800	1,000.0	81,700	167,916	77,544
2,458.50	45,800	1,004.0	22,650	190,566	78,356

Device	Routing	Invert	Outlet Devices
#1	Primary	2,453.00'	**24.0" Round Culvert** L= 120.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,453.00' / 2,450.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,454.60'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	2,456.25'	**18.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Primary	2,457.50'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.44 cfs @ 18.11 hrs HW=2,455.86' TW=2,446.10' (Dynamic Tailwater)
└1=**Culvert** (Passes 0.44 cfs of 20.65 cfs potential flow)
  ├2=**Orifice/Grate** (Orifice Controls 0.44 cfs @ 5.04 fps)
  └3=**Orifice/Grate** (Controls 0.00 cfs)
└4=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond B9: bioretention-LEACH

Inflow Area = 1.166 ac, 42.82% Impervious, Inflow Depth = 1.37" for 1-YEAR event
Inflow = 2.84 cfs @ 11.98 hrs, Volume= 0.133 af
Outflow = 0.03 cfs @ 21.87 hrs, Volume= 0.046 af, Atten= 99%, Lag= 593.4 min
Primary = 0.03 cfs @ 21.87 hrs, Volume= 0.046 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,423.51' @ 21.87 hrs Surf.Area= 10,593 sf Storage= 5,248 cf

Plug-Flow detention time= 2,263.1 min calculated for 0.046 af (34% of inflow)
Center-of-Mass det. time= 2,133.4 min (2,964.5 - 831.1)

Volume	Invert	Avail.Storage	Storage Description
#1	2,418.00'	1,366 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 3,414 cf Overall x 40.0% Voids
#2	2,419.00'	2,048 cf	**filter media (Prismatic)** Listed below (Recalc) 13,656 cf Overall x 15.0% Voids
#3	2,423.00'	8,215 cf	**surface storage (Prismatic)** Listed below (Recalc)
		11,629 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,418.00	3,414	0	0
2,419.00	3,414	3,414	3,414

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,419.00	3,414	0	0
2,423.00	3,414	13,656	13,656

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,423.00	3,414	0	0
2,424.00	4,100	3,757	3,757
2,425.00	4,815	4,458	8,215

Device	Routing	Invert	Outlet Devices
#1	Primary	2,418.50'	**24.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,418.50' / 2,418.00' S= 0.0076 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,423.00'	**1.000 in/hr Exfiltration over Surface area above 2,423.00'** Excluded Surface area = 10,242 sf
#3	Device 1	2,423.50'	**12.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.03 cfs @ 21.87 hrs HW=2,423.51' TW=2,418.05' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.03 cfs of 30.30 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.01 cfs)
  └─**3=Orifice/Grate** (Weir Controls 0.02 cfs @ 0.34 fps)

Summary for Pond c1:

Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C2:

Inflow Area = 37.079 ac, 2.42% Impervious, Inflow Depth = 0.62" for 1-YEAR event
Inflow = 11.88 cfs @ 12.48 hrs, Volume= 1.929 af
Primary = 11.88 cfs @ 12.48 hrs, Volume= 1.929 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C3:

Inflow Area = 0.709 ac, 33.34% Impervious, Inflow Depth = 1.25" for 1-YEAR event
Inflow = 1.55 cfs @ 11.98 hrs, Volume= 0.074 af
Primary = 1.55 cfs @ 11.98 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C4:

Inflow Area = 17.629 ac, 10.93% Impervious, Inflow Depth > 0.89" for 1-YEAR event
Inflow = 4.49 cfs @ 11.99 hrs, Volume= 1.309 af
Primary = 4.49 cfs @ 11.99 hrs, Volume= 1.309 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5:

Inflow Area = 9.412 ac, 1.70% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 8.88 cfs @ 12.02 hrs, Volume= 0.508 af
Primary = 8.88 cfs @ 12.02 hrs, Volume= 0.508 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5A:

Inflow Area = 12.084 ac, 0.47% Impervious, Inflow Depth = 0.59" for 1-YEAR event
Inflow = 5.58 cfs @ 12.12 hrs, Volume= 0.589 af
Primary = 5.58 cfs @ 12.12 hrs, Volume= 0.589 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6:

Inflow Area = 58.487 ac, 0.46% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 30.72 cfs @ 12.19 hrs, Volume= 2.975 af
Primary = 30.72 cfs @ 12.19 hrs, Volume= 2.975 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6A:

Inflow Area = 41.923 ac, 1.24% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 19.97 cfs @ 12.27 hrs, Volume= 2.264 af
Primary = 19.97 cfs @ 12.27 hrs, Volume= 2.264 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 1a: Design Point 1a

Inflow Area = 4.640 ac, 10.76% Impervious, Inflow Depth > 0.57" for 1-YEAR event
Inflow = 2.38 cfs @ 12.09 hrs, Volume= 0.221 af
Primary = 2.38 cfs @ 12.09 hrs, Volume= 0.221 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP2: ditch

Inflow Area = 37.079 ac, 2.42% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 12.06 cfs @ 12.43 hrs, Volume= 1.958 af
Outflow = 11.88 cfs @ 12.48 hrs, Volume= 1.929 af, Atten= 1%, Lag= 3.2 min
Primary = 11.88 cfs @ 12.48 hrs, Volume= 1.929 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,432.08' @ 12.48 hrs Surf.Area= 3,249 sf Storage= 3,996 cf
Flood Elev= 2,435.00' Surf.Area= 8,869 sf Storage= 20,532 cf

Plug-Flow detention time= 18.3 min calculated for 1.929 af (99% of inflow)
Center-of-Mass det. time= 9.8 min (917.7 - 907.9)

Volume	Invert	Avail.Storage	Storage Description
#1	2,430.00'	20,532 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,430.00	614	0	0
2,432.00	3,129	3,743	3,743
2,434.00	6,150	9,279	13,022
2,435.00	8,869	7,510	20,532

Device	Routing	Invert	Outlet Devices
#1	Primary	2,431.00'	**49.0" W x 33.0" H, R=25.1"/77.3" Arch CMP_Arch_1/2 49x33** L= 35.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,431.00' / 2,429.00' S= 0.0571 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 8.90 sf
#2	Secondary	2,433.36'	**18.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,433.36' / 2,431.00' S= 0.0590 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Primary	2,434.50'	**100.0' long x 35.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=11.88 cfs @ 12.48 hrs HW=2,432.08' TW=0.00' (Dynamic Tailwater)
├─**1=CMP_Arch_1/2 49x33** (Inlet Controls 11.88 cfs @ 3.14 fps)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,430.00' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.00 cfs)

Summary for Pond DP3: 24"HDPE

Inflow Area = 0.709 ac, 33.34% Impervious, Inflow Depth = 1.25" for 1-YEAR event
Inflow = 1.55 cfs @ 11.98 hrs, Volume= 0.074 af
Outflow = 1.55 cfs @ 11.98 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min
Primary = 1.55 cfs @ 11.98 hrs, Volume= 0.074 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,442.55' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,442.00'	**24.0" Round Culvert** L= 35.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,442.00' / 2,441.00' S= 0.0286 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.54 cfs @ 11.98 hrs HW=2,442.55' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.54 cfs @ 2.22 fps)

Summary for Pond DP4: 18" HDPE Culvert

Inflow Area = 17.629 ac, 10.93% Impervious, Inflow Depth > 0.89" for 1-YEAR event
Inflow = 4.49 cfs @ 11.99 hrs, Volume= 1.309 af
Outflow = 4.49 cfs @ 11.99 hrs, Volume= 1.309 af, Atten= 0%, Lag= 0.0 min
Primary = 4.49 cfs @ 11.99 hrs, Volume= 1.309 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,370.12' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,369.00'	**18.0" Round Culvert** L= 25.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,369.00' / 2,368.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,371.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=4.48 cfs @ 11.99 hrs HW=2,370.12' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.48 cfs @ 3.18 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,369.00' TW=2,368.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond DP5: 18" HDPE Culvert

Inflow Area = 9.412 ac, 1.70% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 8.88 cfs @ 12.02 hrs, Volume= 0.508 af
Outflow = 8.88 cfs @ 12.02 hrs, Volume= 0.508 af, Atten= 0%, Lag= 0.0 min
Primary = 8.88 cfs @ 12.02 hrs, Volume= 0.508 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,301.65' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,299.50'	**18.0" Round Culvert** L= 25.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,299.50' / 2,298.50' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,302.00'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=8.86 cfs @ 12.02 hrs HW=2,301.64' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 8.86 cfs @ 5.01 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,299.50' TW=2,300.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond DP5A: 12" steel Culvert

Inflow Area = 12.084 ac, 0.47% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 7.53 cfs @ 12.12 hrs, Volume= 0.610 af
Outflow = 7.53 cfs @ 12.12 hrs, Volume= 0.610 af, Atten= 0%, Lag= 0.0 min
Primary = 5.58 cfs @ 12.12 hrs, Volume= 0.589 af
Secondary = 1.95 cfs @ 12.12 hrs, Volume= 0.021 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,274.67' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,272.00'	**12.0" Round Culvert** L= 25.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,272.00' / 2,271.50' S= 0.0200 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf
#2	Secondary	2,274.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=5.58 cfs @ 12.12 hrs HW=2,274.67' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.58 cfs @ 7.10 fps)

Secondary OutFlow Max=1.95 cfs @ 12.12 hrs HW=2,274.67' TW=2,272.22' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 1.95 cfs @ 1.12 fps)

Summary for Pond DP6: 55" CMP Culvert

Inflow Area = 58.487 ac, 0.46% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 30.72 cfs @ 12.19 hrs, Volume= 2.975 af
Outflow = 30.72 cfs @ 12.19 hrs, Volume= 2.975 af, Atten= 0%, Lag= 0.0 min
Primary = 30.72 cfs @ 12.19 hrs, Volume= 2.975 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,239.13' @ 12.19 hrs
Flood Elev= 2,245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,238.00'	**96.0" W x 48.0" H Box Culvert** L= 25.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,238.00' / 2,237.00' S= 0.0400 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 32.00 sf
#2	Primary	2,243.00'	**100.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=30.70 cfs @ 12.19 hrs HW=2,239.13' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 30.70 cfs @ 3.41 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond DP6A: 30" Steel Culvert

Inflow Area = 41.923 ac, 1.24% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 19.97 cfs @ 12.27 hrs, Volume= 2.264 af
Outflow = 19.97 cfs @ 12.27 hrs, Volume= 2.264 af, Atten= 0%, Lag= 0.0 min
Primary = 19.97 cfs @ 12.27 hrs, Volume= 2.264 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,241.29' @ 12.27 hrs
Flood Elev= 2,245.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**64.0" W x 43.0" H, R=32.5"/99.3" Arch CMP_Arch_1/2 64x43** L= 65.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,240.00' / 2,238.00' S= 0.0308 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 15.13 sf

#2	Primary	2,244.50'	**50.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=19.96 cfs @ 12.27 hrs HW=2,241.29' TW=0.00' (Dynamic Tailwater)
├─**1=CMP_Arch_1/2 64x43** (Inlet Controls 19.96 cfs @ 3.42 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond Z1: DRY SWALE

Inflow Area = 1.555 ac, 38.61% Impervious, Inflow Depth = 1.36" for 1-YEAR event
Inflow = 3.72 cfs @ 11.97 hrs, Volume= 0.177 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,500.57' @ 24.35 hrs Surf.Area= 5,605 sf Storage= 7,689 cf

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	2,498.50'	13,550 cf	**surface storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,498.50	1,800	0	0
2,500.50	5,500	7,300	7,300
2,501.50	7,000	6,250	13,550

Device	Routing	Invert	Outlet Devices
#1	Primary	2,500.75'	**30.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,498.50' TW=2,497.00' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1aS: Subcatchment 1a Runoff Area=17,305 sf 57.79% Impervious Runoff Depth=4.63"
Flow Length=176' Slope=0.0500 '/' Tc=6.0 min CN=88 Runoff=3.06 cfs 0.153 af

Subcatchment 1bS: Subcatchment 1b Runoff Area=33,494 sf 35.08% Impervious Runoff Depth=3.99"
Tc=6.0 min CN=82 Runoff=5.31 cfs 0.255 af

Subcatchment 1cS: Subcatchment 1c Runoff Area=151,340 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=890' Tc=14.9 min CN=70 Runoff=12.67 cfs 0.812 af

Subcatchment 6b: Subcatchment 6 Runoff Area=41,583 sf 0.00% Impervious Runoff Depth=2.90"
Tc=9.0 min CN=71 Runoff=4.43 cfs 0.231 af

Subcatchment 14S: Subcatchment 14 Runoff Area=1,295,954 sf 1.00% Impervious Runoff Depth=2.90"
Flow Length=2,585' Tc=42.2 min CN=71 Runoff=58.64 cfs 7.187 af

Subcatchment 16S: Subcatchment 16 Runoff Area=158,175 sf 5.45% Impervious Runoff Depth=2.99"
Flow Length=1,161' Tc=6.0 min CN=72 Runoff=19.42 cfs 0.906 af

Subcatchment 17S: Subcatchment 17 Runoff Area=409,987 sf 1.70% Impervious Runoff Depth=2.90"
Flow Length=1,080' Tc=9.4 min CN=71 Runoff=43.02 cfs 2.274 af

Subcatchment 18S: Subcatchment 18 Runoff Area=526,390 sf 0.47% Impervious Runoff Depth=2.81"
Flow Length=2,288' Tc=17.4 min CN=70 Runoff=40.56 cfs 2.825 af

Subcatchment 19S: Subcatchment 19 Runoff Area=2,547,694 sf 0.46% Impervious Runoff Depth=2.81"
Flow Length=2,625' Tc=24.0 min CN=70 Runoff=162.64 cfs 13.672 af

Subcatchment 20S: Subcatchment 20 Runoff Area=1,826,167 sf 1.24% Impervious Runoff Depth=2.90"
Flow Length=3,465' Tc=29.6 min CN=71 Runoff=105.37 cfs 10.127 af

Subcatchment 434S: Subcatchment 434 Runoff Area=19,166 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=414' Tc=6.2 min CN=74 Runoff=2.48 cfs 0.117 af

Subcatchment 439S: Subcatchment 439 Runoff Area=72,310 sf 19.22% Impervious Runoff Depth=3.68"
Flow Length=506' Tc=6.3 min CN=79 Runoff=10.60 cfs 0.509 af

Subcatchment 440S: Subcatchment 440 Runoff Area=33,976 sf 5.13% Impervious Runoff Depth=3.28"
Flow Length=335' Tc=7.6 min CN=75 Runoff=4.29 cfs 0.213 af

Subcatchment 441S: Subcatchment 441-Hotel Runoff Area=299,693 sf 0.00% Impervious Runoff Depth=2.99"
Tc=9.5 min CN=72 Runoff=32.34 cfs 1.716 af

Subcatchment 443S: Subcatchment 443-Lodge Runoff Area=52,272 sf 0.00% Impervious Runoff Depth=2.99"
Tc=9.0 min CN=72 Runoff=5.75 cfs 0.299 af

Subcatchment 444S: Subcatchment 444 Runoff Area=28,241 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=366' Tc=6.0 min CN=74 Runoff=3.68 cfs 0.172 af

Subcatchment 445S: Subcatchment 445 Runoff Area=12,505 sf 61.42% Impervious Runoff Depth=4.74"
Flow Length=450' Tc=6.0 min CN=89 Runoff=2.25 cfs 0.113 af

Subcatchment 446S: Subcatchment 446 Runoff Area=55,919 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=818' Tc=6.2 min CN=74 Runoff=7.23 cfs 0.341 af

Subcatchment 447S: Subcatchment 447 Runoff Area=11,692 sf 86.64% Impervious Runoff Depth=5.41"
Flow Length=344' Tc=6.0 min CN=95 Runoff=2.26 cfs 0.121 af

Subcatchment 449A: Subcatchment 449A Runoff Area=45,670 sf 57.26% Impervious Runoff Depth=4.63"
Flow Length=843' Tc=6.0 min CN=88 Runoff=8.09 cfs 0.404 af

Subcatchment 449b: Subcatchment 449B Runoff Area=22,066 sf 0.00% Impervious Runoff Depth=3.18"
Tc=6.0 min CN=74 Runoff=2.87 cfs 0.134 af

Subcatchment 449S: Subcatchment 449 Runoff Area=8,350 sf 100.00% Impervious Runoff Depth=5.76"
Flow Length=345' Tc=6.0 min CN=98 Runoff=1.64 cfs 0.092 af

Subcatchment 450S: Subcatchment 450 Runoff Area=95,865 sf 0.00% Impervious Runoff Depth=2.99"
Flow Length=740' Slope=0.0600 '/' Tc=6.0 min CN=72 Runoff=11.77 cfs 0.549 af

Subcatchment 451S: Subcatchment 451 Runoff Area=8,072 sf 100.00% Impervious Runoff Depth=5.76"
Flow Length=334' Tc=6.0 min CN=98 Runoff=1.58 cfs 0.089 af

Subcatchment 452a: Subcatchment 452a Runoff Area=2,110 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=188' Slope=0.0600 '/' Tc=6.0 min CN=74 Runoff=0.27 cfs 0.013 af

Subcatchment 452S: Subcatchment 452 Runoff Area=15,741 sf 78.52% Impervious Runoff Depth=5.18"
Flow Length=334' Tc=6.0 min CN=93 Runoff=2.98 cfs 0.156 af

Subcatchment 453S: Subcatchment 453 Runoff Area=12,482 sf 64.25% Impervious Runoff Depth=4.74"
Flow Length=317' Tc=6.0 min CN=89 Runoff=2.24 cfs 0.113 af

Subcatchment 454a: Subcatchment 454a Runoff Area=13,080 sf 100.00% Impervious Runoff Depth=5.76"
Tc=6.0 min CN=98 Runoff=2.57 cfs 0.144 af

Subcatchment 455S: Subcatchment 455 Runoff Area=18,390 sf 12.35% Impervious Runoff Depth=3.48"
Flow Length=346' Slope=0.0400 '/' Tc=6.0 min CN=77 Runoff=2.59 cfs 0.122 af

Subcatchment 456S: Subcatchment 456 Runoff Area=90,650 sf 0.00% Impervious Runoff Depth=3.48"
Flow Length=100' Slope=0.2500 '/' Tc=6.0 min CN=77 Runoff=12.79 cfs 0.603 af

Reach 7R: through ditch Avg. Flow Depth=1.61' Max Vel=7.08 fps Inflow=65.17 cfs 1.541 af
n=0.050 L=495.0' S=0.0646 '/' Capacity=136.08 cfs Outflow=64.30 cfs 1.541 af

Reach 8R: (new Reach) Avg. Flow Depth=1.21' Max Vel=6.54 fps Inflow=37.94 cfs 0.584 af
n=0.050 L=370.0' S=0.0757 '/' Capacity=125.74 cfs Outflow=37.46 cfs 0.584 af

Reach 9R: (new Reach) Avg. Flow Depth=0.52' Max Vel=4.74 fps Inflow=8.82 cfs 0.092 af
n=0.050 L=685.0' S=0.1000 '/' Capacity=144.54 cfs Outflow=7.79 cfs 0.092 af

Reach 16a: Roadside Channel Avg. Flow Depth=0.50' Max Vel=5.07 fps Inflow=6.39 cfs 3.988 af
n=0.050 L=700.0' S=0.1100 '/' Capacity=187.72 cfs Outflow=6.39 cfs 3.988 af

Reach 434C: RIP RAP SWALE Avg. Flow Depth=1.63' Max Vel=6.17 fps Inflow=36.76 cfs 1.947 af
n=0.040 L=188.0' S=0.0319 '/' Capacity=86.19 cfs Outflow=36.68 cfs 1.947 af

Reach 444: Roadside Swale Avg. Flow Depth=0.52' Max Vel=6.07 fps Inflow=8.08 cfs 0.416 af
n=0.033 L=317.0' S=0.0662 '/' Capacity=95.47 cfs Outflow=8.03 cfs 0.416 af

Reach 446: Roadside Swale Avg. Flow Depth=0.71' Max Vel=5.72 fps Inflow=11.48 cfs 0.588 af
n=0.030 L=720.0' S=0.0354 '/' Capacity=76.79 cfs Outflow=11.06 cfs 0.588 af

Reach 450: Swale Avg. Flow Depth=0.92' Max Vel=5.94 fps Inflow=22.13 cfs 1.267 af
n=0.040 L=826.0' S=0.0533 '/' Capacity=109.41 cfs Outflow=20.96 cfs 1.267 af

Reach 450a: Overland Swale Avg. Flow Depth=1.32' Max Vel=6.80 fps Inflow=29.77 cfs 1.816 af
n=0.050 L=160.0' S=0.0750 '/' Capacity=67.04 cfs Outflow=29.72 cfs 1.816 af

Reach 451: Roadside Swale Avg. Flow Depth=0.38' Max Vel=2.49 fps Inflow=2.24 cfs 0.113 af
n=0.050 L=165.0' S=0.0364 '/' Capacity=46.68 cfs Outflow=2.22 cfs 0.113 af

Reach 501a: Overland Swale Avg. Flow Depth=0.27' Max Vel=5.37 fps Inflow=3.06 cfs 0.153 af
n=0.030 L=90.0' S=0.0889 '/' Capacity=25.98 cfs Outflow=3.06 cfs 0.153 af

Reach 502a: Overland Swale Avg. Flow Depth=0.54' Max Vel=10.08 fps Inflow=5.39 cfs 0.321 af
n=0.030 L=600.0' S=0.2258 '/' Capacity=18.45 cfs Outflow=5.37 cfs 0.321 af

Pond 434R: (new Pond) Peak Elev=2,501.37' Inflow=17.73 cfs 0.929 af
24.0" Round Culvert n=0.013 L=25.0' S=0.0400 '/' Outflow=17.73 cfs 0.929 af

Pond 439AP: CB 439A Peak Elev=2,576.88' Inflow=4.29 cfs 0.213 af
24.0" Round Culvert n=0.013 L=265.0' S=0.0642 '/' Outflow=4.29 cfs 0.213 af

Pond 439P: Catch Basin 439 Peak Elev=2,560.51' Inflow=14.83 cfs 0.722 af
Outflow=14.83 cfs 0.722 af

Pond 440P: Catch Basin 440 Peak Elev=2,585.88' Inflow=4.29 cfs 0.213 af
Outflow=4.29 cfs 0.213 af

Pond 444R: Culvert 444r Peak Elev=2,528.59' Inflow=11.48 cfs 0.588 af
24.0" Round Culvert n=0.013 L=80.0' S=0.0125 '/' Outflow=11.48 cfs 0.588 af

Pond 445P: Catch Basin 445 Peak Elev=2,528.63' Inflow=17.06 cfs 0.836 af
Outflow=17.06 cfs 0.836 af

Pond 447P: Catch Basin 447 Peak Elev=2,517.75' Inflow=19.30 cfs 0.957 af
Outflow=19.30 cfs 0.957 af

Pond 449aR: Catch Basin Peak Elev=2,510.65' Inflow=8.09 cfs 0.404 af
Outflow=8.09 cfs 0.404 af

Pond 449P: Catch Basin 449 Peak Elev=2,508.84' Inflow=20.93 cfs 1.049 af
Outflow=20.93 cfs 1.049 af

Pond 451P: Catch Basin 451 Peak Elev=2,489.92' Inflow=22.50 cfs 1.138 af
Outflow=22.50 cfs 1.138 af

Pond 452P: Catch Basin 452 Peak Elev=2,468.07' Inflow=25.47 cfs 1.294 af
Outflow=25.47 cfs 1.294 af

Pond 452R: Driveway Culvert Peak Elev=2,489.83' Inflow=36.91 cfs 1.960 af
55.0" x 38.0", R=38.0" Elliptical Culvert n=0.013 L=300.0' S=0.0583 '/' Outflow=36.91 cfs 1.960 af

Pond 453P: Catch Basin 453 Peak Elev=2,452.69' Inflow=2.24 cfs 0.113 af
Outflow=2.24 cfs 0.113 af

Pond 500a: CB 500a Peak Elev=2,441.91' Inflow=3.06 cfs 0.153 af
Outflow=3.06 cfs 0.153 af

Pond AC: P-3- Pond Peak Elev=2,457.41' Storage=142,218 cf Inflow=74.95 cfs 4.001 af
Outflow=6.39 cfs 3.988 af

Pond B9: bioretention-LEACH Peak Elev=2,424.01' Storage=7,194 cf Inflow=8.37 cfs 0.409 af
Outflow=5.39 cfs 0.321 af

Pond c1: Inflow=3.21 cfs 0.092 af
Primary=3.21 cfs 0.092 af

Pond C2: Inflow=59.45 cfs 8.882 af
Primary=59.45 cfs 8.882 af

Pond C3: Inflow=4.81 cfs 0.235 af
Primary=4.81 cfs 0.235 af

Pond C4: Inflow=11.19 cfs 4.802 af
Primary=11.19 cfs 4.802 af

Pond C5: Inflow=12.80 cfs 1.781 af
Primary=12.80 cfs 1.781 af

Pond C5A: Inflow=7.16 cfs 1.868 af
Primary=7.16 cfs 1.868 af

Pond C6: Inflow=206.38 cfs 15.213 af
Primary=206.38 cfs 15.213 af

Pond C6A: Inflow=105.37 cfs 10.127 af
Primary=105.37 cfs 10.127 af

Pond DP 1a: Design Point 1a Inflow=18.00 cfs 1.134 af
Primary=18.00 cfs 1.134 af

Pond DP2: ditch Peak Elev=2,434.27' Storage=14,773 cf Inflow=64.29 cfs 9.003 af
Primary=59.45 cfs 8.882 af Secondary=3.21 cfs 0.092 af Outflow=62.65 cfs 8.974 af

Pond DP3: 24"HDPE Peak Elev=2,443.01' Inflow=4.81 cfs 0.235 af
24.0" Round Culvert n=0.013 L=35.0' S=0.0286 '/' Outflow=4.81 cfs 0.235 af

Pond DP4: 18" HDPE Culvert Peak Elev=2,371.97' Inflow=20.01 cfs 4.893 af
Primary=11.19 cfs 4.802 af Secondary=8.82 cfs 0.092 af Outflow=20.01 cfs 4.893 af

Pond DP5: 18" HDPE Culvert Peak Elev=2,303.15' Inflow=50.74 cfs 2.365 af
Primary=12.80 cfs 1.781 af Secondary=37.94 cfs 0.584 af Outflow=50.74 cfs 2.365 af

Pond DP5A: 12" steel Culvert Peak Elev=2,276.08' Inflow=72.33 cfs 3.409 af
Primary=7.16 cfs 1.868 af Secondary=65.17 cfs 1.541 af Outflow=72.33 cfs 3.409 af

Pond DP6: 55" CMP Culvert Peak Elev=2,242.01' Inflow=206.38 cfs 15.213 af
Outflow=206.38 cfs 15.213 af

Pond DP6A: 30" Steel Culvert Peak Elev=2,243.86' Inflow=105.37 cfs 10.127 af
Outflow=105.37 cfs 10.127 af

Pond Z1: DRY SWALE Peak Elev=2,501.12' Storage=11,005 cf Inflow=10.96 cfs 0.539 af
Outflow=5.81 cfs 0.338 af

Total Runoff Area = 181.964 ac Runoff Volume = 44.464 af Average Runoff Depth = 2.93"
97.49% Pervious = 177.395 ac 2.51% Impervious = 4.569 ac

Summary for Subcatchment 1aS: Subcatchment 1a

Runoff = 3.06 cfs @ 11.97 hrs, Volume= 0.153 af, Depth= 4.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	0	70	Woods, Good, HSG C
*	0	98	Roof
*	10,000	98	Paved
	7,305	74	>75% Grass cover, Good, HSG C
	17,305	88	Weighted Average
	7,305		42.21% Pervious Area
	10,000		57.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0500	2.22		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	76	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	176	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1bS: Subcatchment 1b

Runoff = 5.31 cfs @ 11.97 hrs, Volume= 0.255 af, Depth= 3.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	1,580	98	Paved parking
	21,744	74	>75% Grass cover, Good, HSG C
	3,090	98	Water Surface
*	7,080	98	Roof
	0	70	Woods, Good, HSG C
	33,494	82	Weighted Average
	21,744		64.92% Pervious Area
	11,750		35.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1cS: Subcatchment 1c

Runoff = 12.67 cfs @ 12.07 hrs, Volume= 0.812 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
135,640	70	Woods, Good, HSG C
15,700	74	>75% Grass cover, Good, HSG C
151,340	70	Weighted Average
151,340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0840	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.7	460	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	330	0.2300	14.23	21.34	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.030 Earth, clean & winding
14.9	890	Total			

Summary for Subcatchment 6b: Subcatchment 6

Runoff = 4.43 cfs @ 12.01 hrs, Volume= 0.231 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
32,433	71	Meadow, non-grazed, HSG C
9,150	70	Woods, Good, HSG C
41,583	71	Weighted Average
41,583		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0					**Direct Entry,**

Summary for Subcatchment 14S: Subcatchment 14

Runoff = 58.64 cfs @ 12.42 hrs, Volume= 7.187 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	133,250	71	Meadow, non-grazed, HSG C
	25,526	87	Dirt roads, HSG C
*	5,184	98	Roof Area
	7,797	98	Paved roads
	921,512	70	Woods, Good, HSG C
	100,101	71	Meadow, non-grazed, HSG C
	102,584	74	>75% Grass cover, Good, HSG C
	1,295,954	71	Weighted Average
	1,282,973		99.00% Pervious Area
	12,981		1.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	80	0.1000	2.21		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
30.4	2,165	0.2260	1.19		**Shallow Concentrated Flow, SC Flow through Woods** Forest w/Heavy Litter Kv= 2.5 fps
1.2	90	0.2350	1.21		**Shallow Concentrated Flow, SC Flow through Grass** Forest w/Heavy Litter Kv= 2.5 fps
0.3	150	0.0450	8.53	34.11	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
42.2	2,585	Total			

Summary for Subcatchment 16S: Subcatchment 16

Runoff = 19.42 cfs @ 11.97 hrs, Volume= 0.906 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	8,620	98	Pavement
	100,893	70	Woods, Good, HSG C
	48,662	71	Meadow, non-grazed, HSG C
	158,175	72	Weighted Average
	149,555		94.55% Pervious Area
	8,620		5.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	421	0.0230	4.64	37.13	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.050 Earth, cobble bottom, clean sides
1.3	740	0.1000	9.68	77.42	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.050 Earth, cobble bottom, clean sides
2.8	1,161	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 17S: Subcatchment 17

Runoff = 43.02 cfs @ 12.01 hrs, Volume= 2.274 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	6,970	98	Roadway
	81,849	71	Meadow, non-grazed, HSG C
	321,168	70	Woods, Good, HSG C
	409,987	71	Weighted Average
	403,017		98.30% Pervious Area
	6,970		1.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.2000	0.48		**Sheet Flow, Sheet Flow through Woods** Grass: Short n= 0.150 P2= 4.00"
5.2	440	0.3200	1.41		**Shallow Concentrated Flow, SC Flow through Woods** Forest w/Heavy Litter Kv= 2.5 fps
0.7	540	0.1160	13.69	54.76	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
9.4	1,080	Total			

Summary for Subcatchment 18S: Subcatchment 18

Runoff = 40.56 cfs @ 12.10 hrs, Volume= 2.825 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	2,494	98	Pavement
	150,905	71	Meadow, non-grazed, HSG C
	372,991	70	Woods, Good, HSG C
	526,390	70	Weighted Average
	523,896		99.53% Pervious Area
	2,494		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.3280	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
10.6	1,910	0.3630	3.01		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	278	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Flow in Roadside Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030

17.4 2,288 Total

Summary for Subcatchment 19S: Subcatchment 19

Runoff = 162.64 cfs @ 12.18 hrs, Volume= 13.672 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	3,678	98	Roofs, HSG C
*	8,160	98	Paved, HSG C
	1,599,802	70	Woods, Good, HSG C
	936,054	71	Meadow, non-grazed, HSG C
	2,547,694	70	Weighted Average
	2,535,856		99.54% Pervious Area
	11,838		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.6	2,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods** Woodland Kv= 5.0 fps
0.9	470	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030 Earth, grassed & winding
24.0	2,625	Total			

Summary for Subcatchment 20S: Subcatchment 20

Runoff = 105.37 cfs @ 12.24 hrs, Volume= 10.127 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	6,926	98	Roof Area
*	15,682	98	Roadway
	952,222	70	Woods, Good, HSG C
	851,337	71	Meadow, non-grazed, HSG C
	1,826,167	71	Weighted Average
	1,803,559		98.76% Pervious Area
	22,608		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods**
					Woods: Light underbrush n= 0.400 P2= 4.00"
18.7	3,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods**
					Woodland Kv= 5.0 fps
0.4	310	0.0466	12.12	145.44	**Trap/Vee/Rect Channel Flow, Vegetated Swale**
					Bot.W=1.00' D=4.00' Z= 0.5 '/' Top.W=5.00'
					n= 0.030 Earth, grassed & winding
29.6	3,465	Total			

Summary for Subcatchment 434S: Subcatchment 434

Runoff = 2.48 cfs @ 11.98 hrs, Volume= 0.117 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
19,166	74	>75% Grass cover, Good, HSG C
19,166		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0600	0.30		**Sheet Flow, sheet flow**
					Grass: Short n= 0.150 P2= 4.00"
0.1	27	0.2240	7.10		**Shallow Concentrated Flow, shallow concentrated flow**
					Grassed Waterway Kv= 15.0 fps
0.5	287	0.0450	9.08	54.49	**Trap/Vee/Rect Channel Flow, roadside ditch**
					Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00'
					n= 0.033
6.2	414	Total			

Summary for Subcatchment 439S: Subcatchment 439

Runoff = 10.60 cfs @ 11.98 hrs, Volume= 0.509 af, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
13,896	98	Paved parking & roofs
58,414	74	>75% Grass cover, Good, HSG C
72,310	79	Weighted Average
58,414		80.78% Pervious Area
13,896		19.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.1200	0.39		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 4.00"
0.6	84	0.1300	2.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	322	0.0340	3.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.3	506	Total			

Summary for Subcatchment 440S: Subcatchment 440

Runoff = 4.29 cfs @ 11.99 hrs, Volume= 0.213 af, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
1,742	98	Roofs, HSG C
32,234	74	>75% Grass cover, Good, HSG C
33,976	75	Weighted Average
32,234		94.87% Pervious Area
1,742		5.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
3.0	235	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	335	Total			

Summary for Subcatchment 441S: Subcatchment 441-Hotel

Runoff = 32.34 cfs @ 12.01 hrs, Volume= 1.716 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	299,693	72	green roof
	299,693		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5					**Direct Entry,**

Summary for Subcatchment 443S: Subcatchment 443-Lodge

Runoff = 5.75 cfs @ 12.01 hrs, Volume= 0.299 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	52,272	72	Green Roof
	52,272		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0					**Direct Entry, Highmount Lodge**

Summary for Subcatchment 444S: Subcatchment 444

Runoff = 3.68 cfs @ 11.97 hrs, Volume= 0.172 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
28,241	74	>75% Grass cover, Good, HSG C
28,241		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	66	0.3030	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.5	300	0.0600	10.49	62.92	**Trap/Vee/Rect Channel Flow, TRM SWALE** Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00' n= 0.033 Earth, grassed & winding
2.6	366	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 445S: Subcatchment 445

Runoff = 2.25 cfs @ 11.97 hrs, Volume= 0.113 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
7,680	98	Paved roads w/curbs & sewers
4,825	74	>75% Grass cover, Good, HSG C
12,505	89	Weighted Average
4,825		38.58% Pervious Area
7,680		61.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.1800	0.46		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.0	350	0.0800	5.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.6	450	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 446S: Subcatchment 446

Runoff = 7.23 cfs @ 11.98 hrs, Volume= 0.341 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
55,919	74	>75% Grass cover, Good, HSG C
55,919		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	88	0.0680	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.4	730	0.0400	8.56	51.38	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00' n= 0.033 Earth, grassed & winding
6.2	818	Total			

Summary for Subcatchment 447S: Subcatchment 447

Runoff = 2.26 cfs @ 11.97 hrs, Volume= 0.121 af, Depth= 5.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
10,130	98	Paved parking & roofs
1,562	74	>75% Grass cover, Good, HSG C
11,692	95	Weighted Average
1,562		13.36% Pervious Area
10,130		86.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.1	244	0.0328	3.68		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	344	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 449A: Subcatchment 449A

Runoff = 8.09 cfs @ 11.97 hrs, Volume= 0.404 af, Depth= 4.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	13,350	98	Paved parking & roofs
	19,520	74	>75% Grass cover, Good, HSG C
*	12,800	98	Roofs
	45,670	88	Weighted Average
	19,520		42.74% Pervious Area
	26,150		57.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	30	0.5000	0.54		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 4.00"
1.3	300	0.0350	3.80		**Shallow Concentrated Flow, ROAD** Paved Kv= 20.3 fps
0.8	250	0.0050	5.09	16.00	**Pipe Channel, culvert** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
1.1	213	0.0050	3.28	26.23	**Trap/Vee/Rect Channel Flow, trm swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.033 Earth, grassed & winding
0.2	50	0.0050	5.09	16.00	**Pipe Channel, into cb** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
4.3	843	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 449b: Subcatchment 449B

Runoff = 2.87 cfs @ 11.97 hrs, Volume= 0.134 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
22,066	74	>75% Grass cover, Good, HSG C
22,066		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 449S: Subcatchment 449

Runoff = 1.64 cfs @ 11.97 hrs, Volume= 0.092 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
8,350	98	Paved parking & roofs
8,350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0400	2.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.3	245	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.1	345	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 450S: Subcatchment 450

Runoff = 11.77 cfs @ 11.97 hrs, Volume= 0.549 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
40,190	74	>75% Grass cover, Good, HSG C
55,675	70	Woods, Good, HSG C
95,865	72	Weighted Average
95,865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	740	0.0600	7.50	59.97	**Trap/Vee/Rect Channel Flow, conveyance swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.050 swale with checkdams
1.6	740	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 451S: Subcatchment 451

Runoff = 1.58 cfs @ 11.97 hrs, Volume= 0.089 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
8,072	98	Paved roads w/curbs & sewers
8,072		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.8	234	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	334	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 452a: Subcatchment 452a

Runoff = 0.27 cfs @ 11.97 hrs, Volume= 0.013 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
2,110	74	>75% Grass cover, Good, HSG C
2,110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	188	0.0600	9.10	18.20	**Channel Flow,** Area= 2.0 sf Perim= 2.0' r= 1.00' n= 0.040 Earth, cobble bottom, clean sides
0.3	188	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 452S: Subcatchment 452

Runoff = 2.98 cfs @ 11.97 hrs, Volume= 0.156 af, Depth= 5.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
12,360	98	Paved roads w/curbs & sewers, HSG C
3,381	74	>75% Grass cover, Good, HSG C
15,741	93	Weighted Average
3,381		21.48% Pervious Area
12,360		78.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0700	2.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	234	0.0726	5.47		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	334	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 453S: Subcatchment 453

Runoff = 2.24 cfs @ 11.97 hrs, Volume= 0.113 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
8,020	98	Paved roads w/curbs & sewers
4,462	74	>75% Grass cover, Good, HSG C
12,482	89	Weighted Average
4,462		35.75% Pervious Area
8,020		64.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	43	0.1160	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.4	57	0.0700	2.27		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.8	217	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	317	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 454a: Subcatchment 454a

Runoff = 2.57 cfs @ 11.97 hrs, Volume= 0.144 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	13,080	98	Roof
	13,080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 455S: Subcatchment 455

Runoff = 2.59 cfs @ 11.97 hrs, Volume= 0.122 af, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
2,272	98	Paved roads w/curbs & sewers
16,118	74	>75% Grass cover, Good, HSG C
18,390	77	Weighted Average
16,118		87.65% Pervious Area
2,272		12.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	346	0.0400	8.74	69.95	**Trap/Vee/Rect Channel Flow, roadside swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.035 Earth, dense weeds
0.7	346	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 456S: Subcatchment 456

Runoff = 12.79 cfs @ 11.97 hrs, Volume= 0.603 af, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
79,875	74	>75% Grass cover, Good, HSG C
10,775	98	Water Surface, 0% imp, HSG C
90,650	77	Weighted Average
90,650		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	100	0.2500	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
3.2	100	Total, Increased to minimum Tc = 6.0 min			

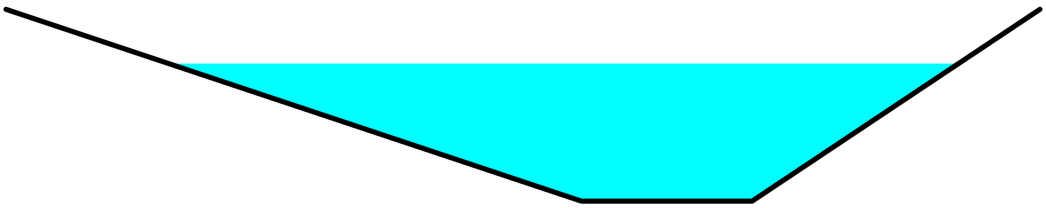
Summary for Reach 7R: through ditch

Inflow = 65.17 cfs @ 12.04 hrs, Volume= 1.541 af
Outflow = 64.30 cfs @ 12.06 hrs, Volume= 1.541 af, Atten= 1%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.08 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.02 fps, Avg. Travel Time= 4.1 min

Peak Storage= 4,494 cf @ 12.06 hrs
Average Depth at Peak Storage= 1.61'
Bank-Full Depth= 2.25' Flow Area= 15.9 sf, Capacity= 136.08 cfs

2.00' x 2.25' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 3.0 1.5 '/' Top Width= 12.13'
Length= 495.0' Slope= 0.0646 '/'
Inlet Invert= 2,272.00', Outlet Invert= 2,240.00'



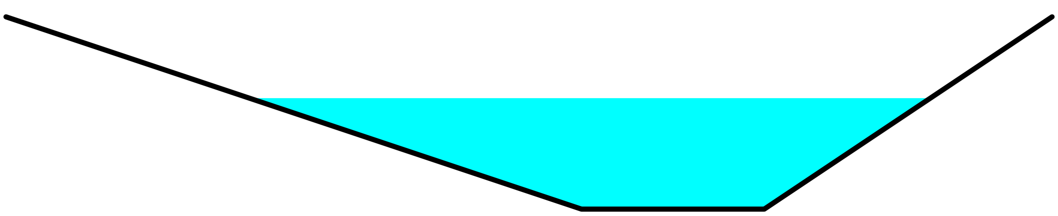
Summary for Reach 8R: (new Reach)

Inflow	=	37.94 cfs @	12.01 hrs, Volume=	0.584 af
Outflow	=	37.46 cfs @	12.02 hrs, Volume=	0.584 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.54 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.75 fps, Avg. Travel Time= 3.5 min

Peak Storage= 2,121 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.21'
Bank-Full Depth= 2.10' Flow Area= 14.1 sf, Capacity= 125.74 cfs

2.00' x 2.10' deep channel, n= 0.050
Side Slope Z-value= 3.0 1.5 '/' Top Width= 11.45'
Length= 370.0' Slope= 0.0757 '/'
Inlet Invert= 2,300.00', Outlet Invert= 2,272.00'



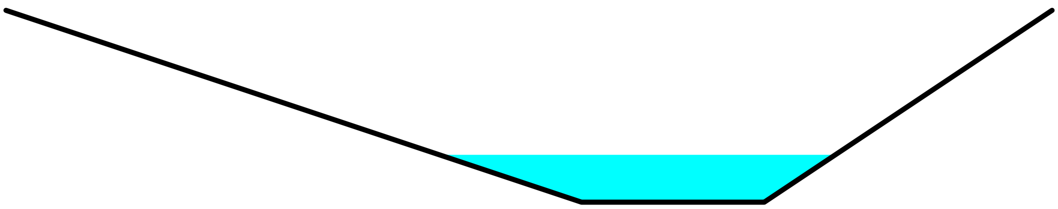
Summary for Reach 9R: (new Reach)

Inflow	=	8.82 cfs @	11.98 hrs, Volume=	0.092 af
Outflow	=	7.79 cfs @	12.00 hrs, Volume=	0.092 af, Atten= 12%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.74 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 1.12 fps, Avg. Travel Time= 10.1 min

Peak Storage= 1,124 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 2.10' Flow Area= 14.1 sf, Capacity= 144.54 cfs

2.00' x 2.10' deep channel, n= 0.050
Side Slope Z-value= 3.0 1.5 '/' Top Width= 11.45'
Length= 685.0' Slope= 0.1000 '/'
Inlet Invert= 2,368.00', Outlet Invert= 2,299.50'



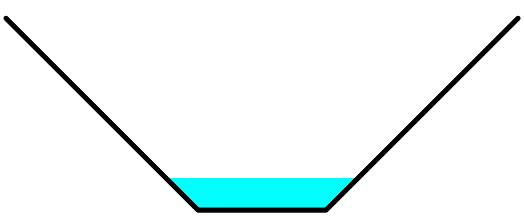
Summary for Reach 16a: Roadside Channel

Inflow Area = 13.998 ac, 12.35% Impervious, Inflow Depth > 3.42" for 10-YEAR event
Inflow = 6.39 cfs @ 12.59 hrs, Volume= 3.988 af
Outflow = 6.39 cfs @ 12.62 hrs, Volume= 3.988 af, Atten= 0%, Lag= 1.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.07 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 1.54 fps, Avg. Travel Time= 7.6 min

Peak Storage= 883 cf @ 12.62 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 3.00' Flow Area= 15.0 sf, Capacity= 187.72 cfs

2.00' x 3.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 8.00'
Length= 700.0' Slope= 0.1100 '/'
Inlet Invert= 2,446.00', Outlet Invert= 2,369.00'



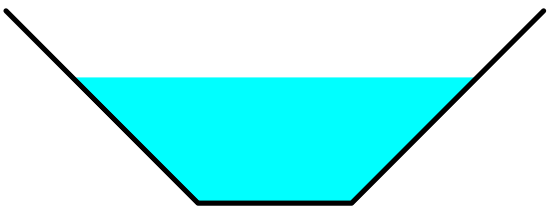
Summary for Reach 434C: RIP RAP SWALE

Inflow Area = 7.835 ac, 0.00% Impervious, Inflow Depth = 2.98" for 10-YEAR event
Inflow = 36.76 cfs @ 12.01 hrs, Volume= 1.947 af
Outflow = 36.68 cfs @ 12.02 hrs, Volume= 1.947 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.17 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.91 fps, Avg. Travel Time= 1.6 min

Peak Storage= 1,117 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.63'
Bank-Full Depth= 2.50' Flow Area= 11.3 sf, Capacity= 86.19 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 188.0' Slope= 0.0319 '/'
Inlet Invert= 2,494.00', Outlet Invert= 2,488.00'



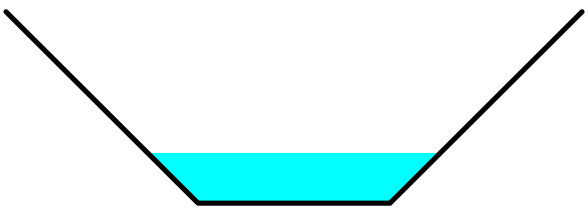
Summary for Reach 444: Roadside Swale

Inflow Area =	1.640 ac,	0.00% Impervious, Inflow Depth = 3.04"	for 10-YEAR event
Inflow =	8.08 cfs @	12.00 hrs, Volume=	0.416 af
Outflow =	8.03 cfs @	12.01 hrs, Volume=	0.416 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.07 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.59 fps, Avg. Travel Time= 3.3 min

Peak Storage= 419 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 95.47 cfs

2.00' x 2.00' deep channel, n= 0.033 Earth, grassed & winding
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 317.0' Slope= 0.0662 '/'
Inlet Invert= 2,548.00', Outlet Invert= 2,527.00'



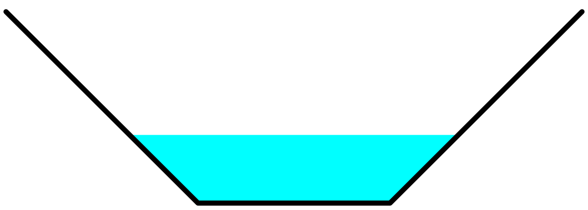
Summary for Reach 446: Roadside Swale

Inflow Area = 2.288 ac, 0.00% Impervious, Inflow Depth = 3.08" for 10-YEAR event
Inflow = 11.48 cfs @ 11.99 hrs, Volume= 0.588 af
Outflow = 11.06 cfs @ 12.02 hrs, Volume= 0.588 af, Atten= 4%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.72 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 1.49 fps, Avg. Travel Time= 8.1 min

Peak Storage= 1,391 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.71'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 76.79 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 720.0' Slope= 0.0354 '/'
Inlet Invert= 2,526.00', Outlet Invert= 2,500.50'



Summary for Reach 450: Swale

Inflow Area = 5.127 ac, 11.71% Impervious, Inflow Depth = 2.97" for 10-YEAR event
Inflow = 22.13 cfs @ 12.02 hrs, Volume= 1.267 af
Outflow = 20.96 cfs @ 12.04 hrs, Volume= 1.267 af, Atten= 5%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.94 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 1.47 fps, Avg. Travel Time= 9.4 min

Peak Storage= 2,913 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.92'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 109.41 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 826.0' Slope= 0.0533 '/'
Inlet Invert= 2,497.00', Outlet Invert= 2,453.00'

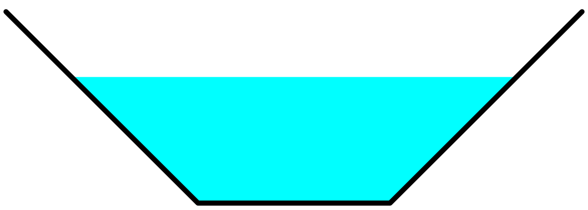
Summary for Reach 450a: Overland Swale

Inflow Area = 7.328 ac, 8.19% Impervious, Inflow Depth = 2.97" for 10-YEAR event
Inflow = 29.77 cfs @ 12.02 hrs, Volume= 1.816 af
Outflow = 29.72 cfs @ 12.02 hrs, Volume= 1.816 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.80 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.61 fps, Avg. Travel Time= 1.7 min

Peak Storage= 700 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.32'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 67.04 cfs

2.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 160.0' Slope= 0.0750 '/'
Inlet Invert= 2,452.00', Outlet Invert= 2,440.00'



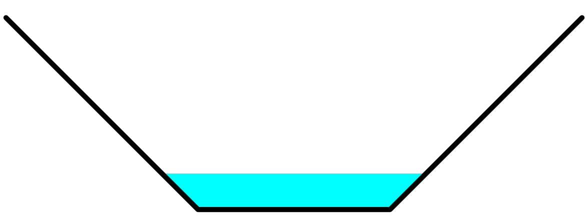
Summary for Reach 451: Roadside Swale

Inflow Area = 0.287 ac, 64.25% Impervious, Inflow Depth = 4.74" for 10-YEAR event
Inflow = 2.24 cfs @ 11.97 hrs, Volume= 0.113 af
Outflow = 2.22 cfs @ 11.98 hrs, Volume= 0.113 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.49 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 4.7 min

Peak Storage= 147 cf @ 11.98 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 46.68 cfs

2.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 165.0' Slope= 0.0364 '/'
Inlet Invert= 2,450.00', Outlet Invert= 2,444.00'



Summary for Reach 501a: Overland Swale

Inflow Area = 0.397 ac, 57.79% Impervious, Inflow Depth = 4.63" for 10-YEAR event
Inflow = 3.06 cfs @ 11.97 hrs, Volume= 0.153 af
Outflow = 3.06 cfs @ 11.97 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.37 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.17 fps, Avg. Travel Time= 1.3 min

Peak Storage= 51 cf @ 11.97 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00' Flow Area= 2.5 sf, Capacity= 25.98 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.5 '/' Top Width= 3.00'
Length= 90.0' Slope= 0.0889 '/'
Inlet Invert= 2,436.00', Outlet Invert= 2,428.00'

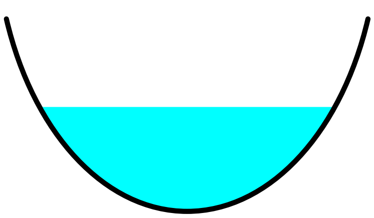
Summary for Reach 502a: Overland Swale

Inflow Area = 1.166 ac, 42.82% Impervious, Inflow Depth > 3.31" for 10-YEAR event
Inflow = 5.39 cfs @ 12.04 hrs, Volume= 0.321 af
Outflow = 5.37 cfs @ 12.05 hrs, Volume= 0.321 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.08 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.55 fps, Avg. Travel Time= 6.4 min

Peak Storage= 320 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 1.00' Flow Area= 1.3 sf, Capacity= 18.45 cfs

2.00' x 1.00' deep Parabolic Channel, n= 0.030 Earth, clean & winding
Length= 600.0' Slope= 0.2258 '/'
Inlet Invert= 2,418.00', Outlet Invert= 2,282.50'



Summary for Pond 434R: (new Pond)

Inflow Area =	3.572 ac, 0.00% Impervious,	Inflow Depth = 3.12"	for 10-YEAR event
Inflow =	17.73 cfs @ 12.00 hrs,	Volume=	0.929 af
Outflow =	17.73 cfs @ 12.00 hrs,	Volume=	0.929 af, Atten= 0%, Lag= 0.0 min
Primary =	17.73 cfs @ 12.00 hrs,	Volume=	0.929 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,501.37' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,499.00'	**24.0" Round Culvert** L= 25.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,499.00' / 2,498.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=17.71 cfs @ 12.00 hrs HW=2,501.37' TW=2,497.85' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 17.71 cfs @ 5.64 fps)

Summary for Pond 439AP: CB 439A

Inflow Area =	0.780 ac, 5.13% Impervious,	Inflow Depth = 3.28"	for 10-YEAR event
Inflow =	4.29 cfs @ 11.99 hrs,	Volume=	0.213 af
Outflow =	4.29 cfs @ 11.99 hrs,	Volume=	0.213 af, Atten= 0%, Lag= 0.0 min
Primary =	4.29 cfs @ 11.99 hrs,	Volume=	0.213 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,576.88' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,576.00'	**24.0" Round Culvert** L= 265.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,576.00' / 2,559.00' S= 0.0642 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.29 cfs @ 11.99 hrs HW=2,576.88' TW=2,560.49' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.29 cfs @ 3.20 fps)

Summary for Pond 439P: Catch Basin 439

Inflow Area =	2.440 ac, 14.71% Impervious,	Inflow Depth = 3.55"	for 10-YEAR event
Inflow =	14.83 cfs @ 11.98 hrs,	Volume=	0.722 af
Outflow =	14.83 cfs @ 11.98 hrs,	Volume=	0.722 af, Atten= 0%, Lag= 0.0 min
Primary =	14.83 cfs @ 11.98 hrs,	Volume=	0.722 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,560.51' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,559.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,559.00' / 2,527.00' S= 0.0914 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

#2	Primary	2,564.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=14.82 cfs @ 11.98 hrs HW=2,560.51' TW=2,528.63' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 14.82 cfs @ 4.18 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 440P: Catch Basin 440

Inflow Area = 0.780 ac, 5.13% Impervious, Inflow Depth = 3.28" for 10-YEAR event
Inflow = 4.29 cfs @ 11.99 hrs, Volume= 0.213 af
Outflow = 4.29 cfs @ 11.99 hrs, Volume= 0.213 af, Atten= 0%, Lag= 0.0 min
Primary = 4.29 cfs @ 11.99 hrs, Volume= 0.213 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,585.88' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,585.00'	**24.0" Round Culvert** L= 180.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,585.00' / 2,576.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,589.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.29 cfs @ 11.99 hrs HW=2,585.88' TW=2,576.88' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.29 cfs @ 3.20 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 444R: Culvert 444r

Inflow Area = 2.288 ac, 0.00% Impervious, Inflow Depth = 3.08" for 10-YEAR event
Inflow = 11.48 cfs @ 11.99 hrs, Volume= 0.588 af
Outflow = 11.48 cfs @ 11.99 hrs, Volume= 0.588 af, Atten= 0%, Lag= 0.0 min
Primary = 11.48 cfs @ 11.99 hrs, Volume= 0.588 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,528.59' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,527.00'	**24.0" Round Culvert** L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 2,527.00' / 2,526.00' S= 0.0125 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=11.46 cfs @ 11.99 hrs HW=2,528.59' TW=2,526.70' (Dynamic Tailwater)
└—**1=Culvert** (Inlet Controls 11.46 cfs @ 4.29 fps)

Summary for Pond 445P: Catch Basin 445

Inflow Area = 2.727 ac, 19.63% Impervious, Inflow Depth = 3.68" for 10-YEAR event
Inflow = 17.06 cfs @ 11.98 hrs, Volume= 0.836 af
Outflow = 17.06 cfs @ 11.98 hrs, Volume= 0.836 af, Atten= 0%, Lag= 0.0 min
Primary = 17.06 cfs @ 11.98 hrs, Volume= 0.836 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,528.63' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,527.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,527.00' / 2,520.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,534.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=17.04 cfs @ 11.98 hrs HW=2,528.63' TW=2,517.75' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 17.04 cfs @ 4.35 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 447P: Catch Basin 447

Inflow Area = 2.995 ac, 25.63% Impervious, Inflow Depth = 3.83" for 10-YEAR event
Inflow = 19.30 cfs @ 11.98 hrs, Volume= 0.957 af
Outflow = 19.30 cfs @ 11.98 hrs, Volume= 0.957 af, Atten= 0%, Lag= 0.0 min
Primary = 19.30 cfs @ 11.98 hrs, Volume= 0.957 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,517.75' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,516.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,516.00' / 2,509.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,523.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=19.26 cfs @ 11.98 hrs HW=2,517.75' TW=2,508.83' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 19.26 cfs @ 4.50 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 449aR: Catch Basin

Inflow Area = 1.048 ac, 57.26% Impervious, Inflow Depth = 4.63" for 10-YEAR event
Inflow = 8.09 cfs @ 11.97 hrs, Volume= 0.404 af
Outflow = 8.09 cfs @ 11.97 hrs, Volume= 0.404 af, Atten= 0%, Lag= 0.0 min
Primary = 8.09 cfs @ 11.97 hrs, Volume= 0.404 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,510.65' @ 11.97 hrs
Flood Elev= 2,512.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,509.00'	**18.0" Round Culvert** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,509.00' / 2,507.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,512.00'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.08 cfs @ 11.97 hrs HW=2,510.65' TW=2,500.88' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.08 cfs @ 4.57 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 449P: Catch Basin 449

Inflow Area = 3.187 ac, 30.11% Impervious, Inflow Depth = 3.95" for 10-YEAR event
Inflow = 20.93 cfs @ 11.98 hrs, Volume= 1.049 af
Outflow = 20.93 cfs @ 11.98 hrs, Volume= 1.049 af, Atten= 0%, Lag= 0.0 min
Primary = 20.93 cfs @ 11.98 hrs, Volume= 1.049 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,508.84' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,507.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,507.00' / 2,492.00' S= 0.0429 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,513.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=20.88 cfs @ 11.98 hrs HW=2,508.83' TW=2,489.92' (Dynamic Tailwater)
1=Culvert (Inlet Controls 20.88 cfs @ 4.61 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 451P: Catch Basin 451

Inflow Area = 3.372 ac, 33.95% Impervious, Inflow Depth = 4.05" for 10-YEAR event
Inflow = 22.50 cfs @ 11.98 hrs, Volume= 1.138 af
Outflow = 22.50 cfs @ 11.98 hrs, Volume= 1.138 af, Atten= 0%, Lag= 0.0 min
Primary = 22.50 cfs @ 11.98 hrs, Volume= 1.138 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,489.92' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,488.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,488.00' / 2,468.00' S= 0.0571 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,496.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=22.46 cfs @ 11.98 hrs HW=2,489.92' TW=2,468.07' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 22.46 cfs @ 4.71 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 452P: Catch Basin 452

Inflow Area = 3.734 ac, 38.26% Impervious, Inflow Depth = 4.16" for 10-YEAR event
Inflow = 25.47 cfs @ 11.97 hrs, Volume= 1.294 af
Outflow = 25.47 cfs @ 11.97 hrs, Volume= 1.294 af, Atten= 0%, Lag= 0.0 min
Primary = 25.47 cfs @ 11.97 hrs, Volume= 1.294 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,468.07' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,466.00'	**36.0" Round Culvert** L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,466.00' / 2,462.00' S= 0.0364 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,472.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=25.42 cfs @ 11.97 hrs HW=2,468.07' TW=2,456.46' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 25.42 cfs @ 4.89 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 452R: Driveway Culvert

Inflow Area = 7.883 ac, 0.00% Impervious, Inflow Depth = 2.98" for 10-YEAR event
Inflow = 36.91 cfs @ 12.02 hrs, Volume= 1.960 af
Outflow = 36.91 cfs @ 12.02 hrs, Volume= 1.960 af, Atten= 0%, Lag= 0.0 min
Primary = 36.91 cfs @ 12.02 hrs, Volume= 1.960 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,489.83' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,487.50'	**55.0" W x 38.0" H, R=38.0" Elliptical Culvert** L= 300.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,487.50' / 2,470.00' S= 0.0583 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 11.50 sf

Primary OutFlow Max=36.88 cfs @ 12.02 hrs HW=2,489.83' TW=2,456.75' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 36.88 cfs @ 4.08 fps)

Summary for Pond 453P: Catch Basin 453

Inflow Area = 0.287 ac, 64.25% Impervious, Inflow Depth = 4.74" for 10-YEAR event
Inflow = 2.24 cfs @ 11.97 hrs, Volume= 0.113 af
Outflow = 2.24 cfs @ 11.97 hrs, Volume= 0.113 af, Atten= 0%, Lag= 0.0 min
Primary = 2.24 cfs @ 11.97 hrs, Volume= 0.113 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,452.69' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,456.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	2,452.00'	**18.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,452.00' / 2,451.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.24 cfs @ 11.97 hrs HW=2,452.69' TW=2,450.37' (Dynamic Tailwater)
—**1=Orifice/Grate** (Controls 0.00 cfs)
—**2=Culvert** (Inlet Controls 2.24 cfs @ 2.83 fps)

Summary for Pond 500a: CB 500a

Inflow Area = 0.397 ac, 57.79% Impervious, Inflow Depth = 4.63" for 10-YEAR event
Inflow = 3.06 cfs @ 11.97 hrs, Volume= 0.153 af
Outflow = 3.06 cfs @ 11.97 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.0 min
Primary = 3.06 cfs @ 11.97 hrs, Volume= 0.153 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,441.91' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,440.75'	**12.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,440.75' / 2,436.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,446.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.06 cfs @ 11.97 hrs HW=2,441.91' TW=2,436.27' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 3.06 cfs @ 3.90 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond AC: P-3- Pond

Inflow Area = 13.998 ac, 12.35% Impervious, Inflow Depth = 3.43" for 10-YEAR event
Inflow = 74.95 cfs @ 11.99 hrs, Volume= 4.001 af
Outflow = 6.39 cfs @ 12.59 hrs, Volume= 3.988 af, Atten= 91%, Lag= 36.3 min
Primary = 6.39 cfs @ 12.59 hrs, Volume= 3.988 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Starting Elev= 2,454.60' Surf.Area= 18,074 sf Storage= 49,750 cf
Peak Elev= 2,457.41' @ 12.59 hrs Surf.Area= 42,432 sf Storage= 142,218 cf (92,468 cf above start)

Plug-Flow detention time= 963.0 min calculated for 2.845 af (71% of inflow)
Center-of-Mass det. time= 605.2 min (1,420.5 - 815.3)

Volume	Invert	Avail.Storage	Storage Description
#1	2,448.00'	190,566 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
2,448.00	2,220	247.0	0	0	2,220
2,450.00	2,450	550.0	4,668	4,668	21,454
2,452.00	9,960	590.0	11,567	16,235	25,257
2,454.00	14,058	650.0	23,901	40,135	31,306
2,455.00	21,032	724.0	17,428	57,564	39,427
2,456.00	37,023	950.0	28,653	86,217	69,544
2,458.00	44,800	1,000.0	81,700	167,916	77,544
2,458.50	45,800	1,004.0	22,650	190,566	78,356

Device	Routing	Invert	Outlet Devices
#1	Primary	2,453.00'	**24.0" Round Culvert** L= 120.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,453.00' / 2,450.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,454.60'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	2,456.25'	**18.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Primary	2,457.50'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=6.39 cfs @ 12.59 hrs HW=2,457.41' TW=2,446.50' (Dynamic Tailwater)
1=**Culvert** (Passes 6.39 cfs of 27.94 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 0.68 cfs @ 7.83 fps)
3=**Orifice/Grate** (Orifice Controls 5.71 cfs @ 3.81 fps)
4=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond B9: bioretention-LEACH

Inflow Area = 1.166 ac, 42.82% Impervious, Inflow Depth = 4.20" for 10-YEAR event
Inflow = 8.37 cfs @ 11.97 hrs, Volume= 0.409 af
Outflow = 5.39 cfs @ 12.04 hrs, Volume= 0.321 af, Atten= 36%, Lag= 4.2 min
Primary = 5.39 cfs @ 12.04 hrs, Volume= 0.321 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,424.01' @ 12.04 hrs Surf.Area= 10,932 sf Storage= 7,194 cf

Plug-Flow detention time= 432.5 min calculated for 0.321 af (79% of inflow)
Center-of-Mass det. time= 349.0 min (1,148.6 - 799.6)

Volume	Invert	Avail.Storage	Storage Description
#1	2,418.00'	1,366 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 3,414 cf Overall x 40.0% Voids
#2	2,419.00'	2,048 cf	**filter media (Prismatic)** Listed below (Recalc) 13,656 cf Overall x 15.0% Voids
#3	2,423.00'	8,215 cf	**surface storage (Prismatic)** Listed below (Recalc)
		11,629 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,418.00	3,414	0	0
2,419.00	3,414	3,414	3,414

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,419.00	3,414	0	0
2,423.00	3,414	13,656	13,656

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,423.00	3,414	0	0
2,424.00	4,100	3,757	3,757
2,425.00	4,815	4,458	8,215

Device	Routing	Invert	Outlet Devices
#1	Primary	2,418.50'	**24.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,418.50' / 2,418.00' S= 0.0076 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,423.00'	**1.000 in/hr Exfiltration over Surface area above 2,423.00'** Excluded Surface area = 10,242 sf
#3	Device 1	2,423.50'	**12.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.39 cfs @ 12.04 hrs HW=2,424.01' TW=2,418.54' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.39 cfs of 32.11 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.02 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 5.38 cfs @ 3.42 fps)

Summary for Pond c1:

Inflow = 3.21 cfs @ 12.45 hrs, Volume= 0.092 af
Primary = 3.21 cfs @ 12.45 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C2:

Inflow Area = 37.079 ac, 2.42% Impervious, Inflow Depth = 2.87" for 10-YEAR event
Inflow = 59.45 cfs @ 12.45 hrs, Volume= 8.882 af
Primary = 59.45 cfs @ 12.45 hrs, Volume= 8.882 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C3:

Inflow Area = 0.709 ac, 33.34% Impervious, Inflow Depth = 3.99" for 10-YEAR event
Inflow = 4.81 cfs @ 11.98 hrs, Volume= 0.235 af
Primary = 4.81 cfs @ 11.98 hrs, Volume= 0.235 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C4:

Inflow Area = 17.629 ac, 10.93% Impervious, Inflow Depth > 3.27" for 10-YEAR event
Inflow = 11.19 cfs @ 11.98 hrs, Volume= 4.802 af
Primary = 11.19 cfs @ 11.98 hrs, Volume= 4.802 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5:

Inflow Area = 9.412 ac, 1.70% Impervious, Inflow Depth = 2.27" for 10-YEAR event
Inflow = 12.80 cfs @ 12.01 hrs, Volume= 1.781 af
Primary = 12.80 cfs @ 12.01 hrs, Volume= 1.781 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5A:

Inflow Area = 12.084 ac, 0.47% Impervious, Inflow Depth = 1.86" for 10-YEAR event
Inflow = 7.16 cfs @ 12.04 hrs, Volume= 1.868 af
Primary = 7.16 cfs @ 12.04 hrs, Volume= 1.868 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6:

Inflow Area = 58.487 ac, 0.46% Impervious, Inflow Depth = 3.12" for 10-YEAR event
Inflow = 206.38 cfs @ 12.13 hrs, Volume= 15.213 af
Primary = 206.38 cfs @ 12.13 hrs, Volume= 15.213 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6A:

Inflow Area = 41.923 ac, 1.24% Impervious, Inflow Depth = 2.90" for 10-YEAR event
Inflow = 105.37 cfs @ 12.24 hrs, Volume= 10.127 af
Primary = 105.37 cfs @ 12.24 hrs, Volume= 10.127 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 1a: Design Point 1a

Inflow Area = 4.640 ac, 10.76% Impervious, Inflow Depth = 2.93" for 10-YEAR event
Inflow = 18.00 cfs @ 12.07 hrs, Volume= 1.134 af
Primary = 18.00 cfs @ 12.07 hrs, Volume= 1.134 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP2: ditch

Inflow Area = 37.079 ac, 2.42% Impervious, Inflow Depth = 2.91" for 10-YEAR event
Inflow = 64.29 cfs @ 12.38 hrs, Volume= 9.003 af
Outflow = 62.65 cfs @ 12.45 hrs, Volume= 8.974 af, Atten= 3%, Lag= 4.3 min
Primary = 59.45 cfs @ 12.45 hrs, Volume= 8.882 af
Secondary = 3.21 cfs @ 12.45 hrs, Volume= 0.092 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,434.27' @ 12.45 hrs Surf.Area= 6,881 sf Storage= 14,773 cf
Flood Elev= 2,435.00' Surf.Area= 8,869 sf Storage= 20,532 cf

Plug-Flow detention time= 7.2 min calculated for 8.974 af (100% of inflow)
Center-of-Mass det. time= 5.3 min (867.5 - 862.2)

Volume	Invert	Avail.Storage	Storage Description
#1	2,430.00'	20,532 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,430.00	614	0	0
2,432.00	3,129	3,743	3,743
2,434.00	6,150	9,279	13,022
2,435.00	8,869	7,510	20,532

Device	Routing	Invert	Outlet Devices
#1	Primary	2,431.00'	**49.0" W x 33.0" H, R=25.1"/77.3" Arch CMP_Arch_1/2 49x33** L= 35.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,431.00' / 2,429.00' S= 0.0571 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 8.90 sf
#2	Secondary	2,433.36'	**18.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,433.36' / 2,431.00' S= 0.0590 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Primary	2,434.50'	**100.0' long x 35.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=59.44 cfs @ 12.45 hrs HW=2,434.27' TW=0.00' (Dynamic Tailwater)
├─**1=CMP_Arch_1/2 49x33** (Inlet Controls 59.44 cfs @ 6.68 fps)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=3.21 cfs @ 12.45 hrs HW=2,434.27' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 3.21 cfs @ 2.86 fps)

Summary for Pond DP3: 24"HDPE

Inflow Area = 0.709 ac, 33.34% Impervious, Inflow Depth = 3.99" for 10-YEAR event
Inflow = 4.81 cfs @ 11.98 hrs, Volume= 0.235 af
Outflow = 4.81 cfs @ 11.98 hrs, Volume= 0.235 af, Atten= 0%, Lag= 0.0 min
Primary = 4.81 cfs @ 11.98 hrs, Volume= 0.235 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,443.01' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,442.00'	**24.0" Round Culvert** L= 35.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,442.00' / 2,441.00' S= 0.0286 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.80 cfs @ 11.98 hrs HW=2,443.01' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.80 cfs @ 3.02 fps)

Summary for Pond DP4: 18" HDPE Culvert

Inflow Area = 17.629 ac, 10.93% Impervious, Inflow Depth > 3.33" for 10-YEAR event
Inflow = 20.01 cfs @ 11.98 hrs, Volume= 4.893 af
Outflow = 20.01 cfs @ 11.98 hrs, Volume= 4.893 af, Atten= 0%, Lag= 0.0 min
Primary = 11.19 cfs @ 11.98 hrs, Volume= 4.802 af
Secondary = 8.82 cfs @ 11.98 hrs, Volume= 0.092 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,371.97' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,369.00'	**18.0" Round Culvert** L= 25.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,369.00' / 2,368.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,371.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=11.19 cfs @ 11.98 hrs HW=2,371.97' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 11.19 cfs @ 6.33 fps)

Secondary OutFlow Max=8.79 cfs @ 11.98 hrs HW=2,371.97' TW=2,368.48' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 8.79 cfs @ 1.87 fps)

Summary for Pond DP5: 18" HDPE Culvert

Inflow Area =	9.412 ac,	1.70% Impervious, Inflow Depth = 3.02"	for 10-YEAR event	
Inflow =	50.74 cfs @	12.01 hrs, Volume=	2.365 af	
Outflow =	50.74 cfs @	12.01 hrs, Volume=	2.365 af,	Atten= 0%, Lag= 0.0 min
Primary =	12.80 cfs @	12.01 hrs, Volume=	1.781 af	
Secondary =	37.94 cfs @	12.01 hrs, Volume=	0.584 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,303.15' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,299.50'	**18.0" Round Culvert** L= 25.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,299.50' / 2,298.50' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,302.00'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=12.80 cfs @ 12.01 hrs HW=2,303.15' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 12.80 cfs @ 7.24 fps)

Secondary OutFlow Max=37.94 cfs @ 12.01 hrs HW=2,303.15' TW=2,301.20' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 37.94 cfs @ 3.29 fps)

Summary for Pond DP5A: 12" steel Culvert

Inflow Area =	12.084 ac,	0.47% Impervious, Inflow Depth = 3.39"	for 10-YEAR event	
Inflow =	72.33 cfs @	12.04 hrs, Volume=	3.409 af	
Outflow =	72.33 cfs @	12.04 hrs, Volume=	3.409 af,	Atten= 0%, Lag= 0.0 min
Primary =	7.16 cfs @	12.04 hrs, Volume=	1.868 af	
Secondary =	65.17 cfs @	12.04 hrs, Volume=	1.541 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,276.08' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,272.00'	**12.0" Round Culvert** L= 25.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,272.00' / 2,271.50' S= 0.0200 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf
#2	Secondary	2,274.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=7.16 cfs @ 12.04 hrs HW=2,276.08' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 7.16 cfs @ 9.11 fps)

Secondary OutFlow Max=65.13 cfs @ 12.04 hrs HW=2,276.08' TW=2,273.60' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 65.13 cfs @ 4.12 fps)

Summary for Pond DP6: 55" CMP Culvert

Inflow Area = 58.487 ac, 0.46% Impervious, Inflow Depth = 3.12" for 10-YEAR event
Inflow = 206.38 cfs @ 12.13 hrs, Volume= 15.213 af
Outflow = 206.38 cfs @ 12.13 hrs, Volume= 15.213 af, Atten= 0%, Lag= 0.0 min
Primary = 206.38 cfs @ 12.13 hrs, Volume= 15.213 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,242.01' @ 12.13 hrs
Flood Elev= 2,245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,238.00'	**96.0" W x 48.0" H Box Culvert** L= 25.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,238.00' / 2,237.00' S= 0.0400 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 32.00 sf
#2	Primary	2,243.00'	**100.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=206.30 cfs @ 12.13 hrs HW=2,242.01' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 206.30 cfs @ 6.45 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond DP6A: 30" Steel Culvert

Inflow Area = 41.923 ac, 1.24% Impervious, Inflow Depth = 2.90" for 10-YEAR event
Inflow = 105.37 cfs @ 12.24 hrs, Volume= 10.127 af
Outflow = 105.37 cfs @ 12.24 hrs, Volume= 10.127 af, Atten= 0%, Lag= 0.0 min
Primary = 105.37 cfs @ 12.24 hrs, Volume= 10.127 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,243.86' @ 12.24 hrs
Flood Elev= 2,245.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**64.0" W x 43.0" H, R=32.5"/99.3" Arch CMP_Arch_1/2 64x43** L= 65.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,240.00' / 2,238.00' S= 0.0308 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 15.13 sf

#2	Primary	2,244.50'	**50.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=105.35 cfs @ 12.24 hrs HW=2,243.86' TW=0.00' (Dynamic Tailwater)
├─**1=CMP_Arch_1/2 64x43** (Inlet Controls 105.35 cfs @ 6.96 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond Z1: DRY SWALE

Inflow Area = 1.555 ac, 38.61% Impervious, Inflow Depth = 4.16" for 10-YEAR event
Inflow = 10.96 cfs @ 11.97 hrs, Volume= 0.539 af
Outflow = 5.81 cfs @ 12.06 hrs, Volume= 0.338 af, Atten= 47%, Lag= 5.1 min
Primary = 5.81 cfs @ 12.06 hrs, Volume= 0.338 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,501.12' @ 12.06 hrs Surf.Area= 6,432 sf Storage= 11,005 cf

Plug-Flow detention time= 195.3 min calculated for 0.338 af (63% of inflow)
Center-of-Mass det. time= 90.0 min (887.6 - 797.6)

Volume	Invert	Avail.Storage	Storage Description
#1	2,498.50'	13,550 cf	**surface storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,498.50	1,800	0	0
2,500.50	5,500	7,300	7,300
2,501.50	7,000	6,250	13,550

Device	Routing	Invert	Outlet Devices
#1	Primary	2,500.75'	**30.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.79 cfs @ 12.06 hrs HW=2,501.12' TW=2,497.91' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Weir Controls 5.79 cfs @ 1.99 fps)

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1aS: Subcatchment 1a Runoff Area=17,305 sf 57.79% Impervious Runoff Depth=5.11"
Flow Length=176' Slope=0.0500 '/' Tc=6.0 min CN=88 Runoff=3.36 cfs 0.169 af

Subcatchment 1bS: Subcatchment 1b Runoff Area=33,494 sf 35.08% Impervious Runoff Depth=4.45"
Tc=6.0 min CN=82 Runoff=5.89 cfs 0.285 af

Subcatchment 1cS: Subcatchment 1c Runoff Area=151,340 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=890' Tc=14.9 min CN=70 Runoff=14.51 cfs 0.929 af

Subcatchment 6b: Subcatchment 6 Runoff Area=41,583 sf 0.00% Impervious Runoff Depth=3.31"
Tc=9.0 min CN=71 Runoff=5.05 cfs 0.263 af

Subcatchment 14S: Subcatchment 14 Runoff Area=1,295,954 sf 1.00% Impervious Runoff Depth=3.31"
Flow Length=2,585' Tc=42.2 min CN=71 Runoff=67.18 cfs 8.198 af

Subcatchment 16S: Subcatchment 16 Runoff Area=158,175 sf 5.45% Impervious Runoff Depth=3.41"
Flow Length=1,161' Tc=6.0 min CN=72 Runoff=22.04 cfs 1.031 af

Subcatchment 17S: Subcatchment 17 Runoff Area=409,987 sf 1.70% Impervious Runoff Depth=3.31"
Flow Length=1,080' Tc=9.4 min CN=71 Runoff=49.03 cfs 2.593 af

Subcatchment 18S: Subcatchment 18 Runoff Area=526,390 sf 0.47% Impervious Runoff Depth=3.21"
Flow Length=2,288' Tc=17.4 min CN=70 Runoff=46.49 cfs 3.230 af

Subcatchment 19S: Subcatchment 19 Runoff Area=2,547,694 sf 0.46% Impervious Runoff Depth=3.21"
Flow Length=2,625' Tc=24.0 min CN=70 Runoff=186.61 cfs 15.631 af

Subcatchment 20S: Subcatchment 20 Runoff Area=1,826,167 sf 1.24% Impervious Runoff Depth=3.31"
Flow Length=3,465' Tc=29.6 min CN=71 Runoff=120.67 cfs 11.552 af

Subcatchment 434S: Subcatchment 434 Runoff Area=19,166 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=414' Tc=6.2 min CN=74 Runoff=2.80 cfs 0.132 af

Subcatchment 439S: Subcatchment 439 Runoff Area=72,310 sf 19.22% Impervious Runoff Depth=4.13"
Flow Length=506' Tc=6.3 min CN=79 Runoff=11.83 cfs 0.571 af

Subcatchment 440S: Subcatchment 440 Runoff Area=33,976 sf 5.13% Impervious Runoff Depth=3.71"
Flow Length=335' Tc=7.6 min CN=75 Runoff=4.83 cfs 0.241 af

Subcatchment 441S: Subcatchment 441-Hotel Runoff Area=299,693 sf 0.00% Impervious Runoff Depth=3.41"
Tc=9.5 min CN=72 Runoff=36.76 cfs 1.953 af

Subcatchment 443S: Subcatchment 443-Lodge Runoff Area=52,272 sf 0.00% Impervious Runoff Depth=3.41"
Tc=9.0 min CN=72 Runoff=6.53 cfs 0.341 af

Subcatchment 444S: Subcatchment 444 Runoff Area=28,241 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=366' Tc=6.0 min CN=74 Runoff=4.15 cfs 0.195 af

Subcatchment 445S: Subcatchment 445 Runoff Area=12,505 sf 61.42% Impervious Runoff Depth=5.22"
Flow Length=450' Tc=6.0 min CN=89 Runoff=2.46 cfs 0.125 af

Subcatchment 446S: Subcatchment 446 Runoff Area=55,919 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=818' Tc=6.2 min CN=74 Runoff=8.16 cfs 0.386 af

Subcatchment 447S: Subcatchment 447 Runoff Area=11,692 sf 86.64% Impervious Runoff Depth=5.91"
Flow Length=344' Tc=6.0 min CN=95 Runoff=2.45 cfs 0.132 af

Subcatchment 449A: Subcatchment 449A Runoff Area=45,670 sf 57.26% Impervious Runoff Depth=5.11"
Flow Length=843' Tc=6.0 min CN=88 Runoff=8.87 cfs 0.446 af

Subcatchment 449b: Subcatchment 449B Runoff Area=22,066 sf 0.00% Impervious Runoff Depth=3.61"
Tc=6.0 min CN=74 Runoff=3.24 cfs 0.152 af

Subcatchment 449S: Subcatchment 449 Runoff Area=8,350 sf 100.00% Impervious Runoff Depth=6.26"
Flow Length=345' Tc=6.0 min CN=98 Runoff=1.78 cfs 0.100 af

Subcatchment 450S: Subcatchment 450 Runoff Area=95,865 sf 0.00% Impervious Runoff Depth=3.41"
Flow Length=740' Slope=0.0600 '/' Tc=6.0 min CN=72 Runoff=13.36 cfs 0.625 af

Subcatchment 451S: Subcatchment 451 Runoff Area=8,072 sf 100.00% Impervious Runoff Depth=6.26"
Flow Length=334' Tc=6.0 min CN=98 Runoff=1.72 cfs 0.097 af

Subcatchment 452a: Subcatchment 452a Runoff Area=2,110 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=188' Slope=0.0600 '/' Tc=6.0 min CN=74 Runoff=0.31 cfs 0.015 af

Subcatchment 452S: Subcatchment 452 Runoff Area=15,741 sf 78.52% Impervious Runoff Depth=5.68"
Flow Length=334' Tc=6.0 min CN=93 Runoff=3.24 cfs 0.171 af

Subcatchment 453S: Subcatchment 453 Runoff Area=12,482 sf 64.25% Impervious Runoff Depth=5.22"
Flow Length=317' Tc=6.0 min CN=89 Runoff=2.46 cfs 0.125 af

Subcatchment 454a: Subcatchment 454a Runoff Area=13,080 sf 100.00% Impervious Runoff Depth=6.26"
Tc=6.0 min CN=98 Runoff=2.78 cfs 0.157 af

Subcatchment 455S: Subcatchment 455 Runoff Area=18,390 sf 12.35% Impervious Runoff Depth=3.92"
Flow Length=346' Slope=0.0400 '/' Tc=6.0 min CN=77 Runoff=2.91 cfs 0.138 af

Subcatchment 456S: Subcatchment 456 Runoff Area=90,650 sf 0.00% Impervious Runoff Depth=3.92"
Flow Length=100' Slope=0.2500 '/' Tc=6.0 min CN=77 Runoff=14.34 cfs 0.680 af

Reach 7R: through ditch Avg. Flow Depth=1.76' Max Vel=7.43 fps Inflow=78.70 cfs 1.926 af
n=0.050 L=495.0' S=0.0646 '/' Capacity=136.08 cfs Outflow=77.80 cfs 1.926 af

Reach 8R: (new Reach) Avg. Flow Depth=1.33' Max Vel=6.89 fps Inflow=46.49 cfs 0.763 af
n=0.050 L=370.0' S=0.0757 '/' Capacity=125.74 cfs Outflow=46.00 cfs 0.763 af

Reach 9R: (new Reach) Avg. Flow Depth=0.61' Max Vel=5.17 fps Inflow=11.63 cfs 0.208 af
n=0.050 L=685.0' S=0.1000 '/' Capacity=144.54 cfs Outflow=10.63 cfs 0.208 af

Reach 16a: Roadside Channel Avg. Flow Depth=0.67' Max Vel=5.86 fps Inflow=10.44 cfs 4.491 af
n=0.050 L=700.0' S=0.1100 '/' Capacity=187.72 cfs Outflow=10.42 cfs 4.491 af

Reach 434C: RIP RAP SWALE Avg. Flow Depth=1.75' Max Vel=6.38 fps Inflow=41.80 cfs 2.216 af
n=0.040 L=188.0' S=0.0319 '/' Capacity=86.19 cfs Outflow=41.71 cfs 2.216 af

Reach 444: Roadside Swale Avg. Flow Depth=0.56' Max Vel=6.31 fps Inflow=9.17 cfs 0.473 af
n=0.033 L=317.0' S=0.0662 '/' Capacity=95.47 cfs Outflow=9.11 cfs 0.473 af

Reach 446: Roadside Swale Avg. Flow Depth=0.77' Max Vel=5.94 fps Inflow=13.02 cfs 0.668 af
n=0.030 L=720.0' S=0.0354 '/' Capacity=76.79 cfs Outflow=12.58 cfs 0.668 af

Reach 450: Swale Avg. Flow Depth=1.02' Max Vel=6.27 fps Inflow=26.99 cfs 1.453 af
n=0.040 L=826.0' S=0.0533 '/' Capacity=109.41 cfs Outflow=25.66 cfs 1.453 af

Reach 450a: Overland Swale Avg. Flow Depth=1.46' Max Vel=7.15 fps Inflow=36.08 cfs 2.078 af
n=0.050 L=160.0' S=0.0750 '/' Capacity=67.04 cfs Outflow=36.03 cfs 2.078 af

Reach 451: Roadside Swale Avg. Flow Depth=0.40' Max Vel=2.56 fps Inflow=2.46 cfs 0.125 af
n=0.050 L=165.0' S=0.0364 '/' Capacity=46.68 cfs Outflow=2.43 cfs 0.125 af

Reach 501a: Overland Swale Avg. Flow Depth=0.28' Max Vel=5.55 fps Inflow=3.36 cfs 0.169 af
n=0.030 L=90.0' S=0.0889 '/' Capacity=25.98 cfs Outflow=3.36 cfs 0.169 af

Reach 502a: Overland Swale Avg. Flow Depth=0.57' Max Vel=10.35 fps Inflow=5.97 cfs 0.367 af
n=0.030 L=600.0' S=0.2258 '/' Capacity=18.45 cfs Outflow=5.94 cfs 0.367 af

Pond 434R: (new Pond) Peak Elev=2,501.77' Inflow=20.13 cfs 1.054 af
24.0" Round Culvert n=0.013 L=25.0' S=0.0400 '/' Outflow=20.13 cfs 1.054 af

Pond 439AP: CB 439A Peak Elev=2,576.94' Inflow=4.83 cfs 0.241 af
24.0" Round Culvert n=0.013 L=265.0' S=0.0642 '/' Outflow=4.83 cfs 0.241 af

Pond 439P: Catch Basin 439 Peak Elev=2,560.61' Inflow=16.61 cfs 0.812 af
Outflow=16.61 cfs 0.812 af

Pond 440P: Catch Basin 440 Peak Elev=2,585.94' Inflow=4.83 cfs 0.241 af
Outflow=4.83 cfs 0.241 af

Pond 444R: Culvert 444r Peak Elev=2,528.74' Inflow=13.02 cfs 0.668 af
24.0" Round Culvert n=0.013 L=80.0' S=0.0125 '/' Outflow=13.02 cfs 0.668 af

Pond 445P: Catch Basin 445 Peak Elev=2,528.74' Inflow=19.05 cfs 0.937 af
Outflow=19.05 cfs 0.937 af

Pond 447P: Catch Basin 447 Peak Elev=2,517.87' Inflow=21.48 cfs 1.070 af
Outflow=21.48 cfs 1.070 af

Pond 449aR: Catch Basin Peak Elev=2,510.84' Inflow=8.87 cfs 0.446 af
Outflow=8.87 cfs 0.446 af

Pond 449P: Catch Basin 449 Peak Elev=2,508.96' Inflow=23.25 cfs 1.170 af
Outflow=23.25 cfs 1.170 af

Pond 451P: Catch Basin 451 Peak Elev=2,490.04' Inflow=24.95 cfs 1.266 af
Outflow=24.95 cfs 1.266 af

Pond 452P: Catch Basin 452 Peak Elev=2,468.21' Inflow=28.18 cfs 1.437 af
Outflow=28.18 cfs 1.437 af

Pond 452R: Driveway Culvert Peak Elev=2,490.02' Inflow=41.97 cfs 2.231 af
55.0" x 38.0", R=38.0" Elliptical Culvert n=0.013 L=300.0' S=0.0583 '/' Outflow=41.97 cfs 2.231 af

Pond 453P: Catch Basin 453 Peak Elev=2,452.73' Inflow=2.46 cfs 0.125 af
Outflow=2.46 cfs 0.125 af

Pond 500a: CB 500a Peak Elev=2,442.04' Inflow=3.36 cfs 0.169 af
Outflow=3.36 cfs 0.169 af

Pond AC: P-3- Pond Peak Elev=2,457.61' Storage=150,940 cf Inflow=84.25 cfs 4.504 af
Outflow=10.44 cfs 4.491 af

Pond B9: bioretention-LEACH Peak Elev=2,424.12' Storage=7,661 cf Inflow=9.25 cfs 0.454 af
Outflow=5.97 cfs 0.367 af

Pond c1: Inflow=5.00 cfs 0.189 af
Primary=5.00 cfs 0.189 af

Pond C2: Inflow=68.13 cfs 10.058 af
Primary=68.13 cfs 10.058 af

Pond C3: Inflow=5.33 cfs 0.263 af
Primary=5.33 cfs 0.263 af

Pond C4: Inflow=11.42 cfs 5.315 af
Primary=11.42 cfs 5.315 af

Pond C5: Inflow=13.11 cfs 2.038 af
Primary=13.11 cfs 2.038 af

Pond C5A: Inflow=7.35 cfs 2.066 af
Primary=7.35 cfs 2.066 af

Pond C6: Inflow=240.32 cfs 17.558 af
Primary=240.32 cfs 17.558 af

Pond C6A: Inflow=120.67 cfs 11.552 af
Primary=120.67 cfs 11.552 af

Pond DP 1a: Design Point 1a Inflow=20.41 cfs 1.296 af
Primary=20.41 cfs 1.296 af

Pond DP2: ditch Peak Elev=2,434.56' Storage=16,910 cf Inflow=73.52 cfs 10.275 af
Primary=68.13 cfs 10.058 af Secondary=5.00 cfs 0.189 af Outflow=73.13 cfs 10.247 af

Pond DP3: 24"HDPE Peak Elev=2,443.07' Inflow=5.33 cfs 0.263 af
24.0" Round Culvert n=0.013 L=35.0' S=0.0286 '/' Outflow=5.33 cfs 0.263 af

Pond DP4: 18" HDPE Culvert Peak Elev=2,372.06' Inflow=23.05 cfs 5.522 af
Primary=11.42 cfs 5.315 af Secondary=11.63 cfs 0.208 af Outflow=23.05 cfs 5.522 af

Pond DP5: 18" HDPE Culvert Peak Elev=2,303.30' Inflow=59.60 cfs 2.801 af
Primary=13.11 cfs 2.038 af Secondary=46.49 cfs 0.763 af Outflow=59.60 cfs 2.801 af

Pond DP5A: 12" steel Culvert Peak Elev=2,276.28' Inflow=86.05 cfs 3.993 af
Primary=7.35 cfs 2.066 af Secondary=78.70 cfs 1.926 af Outflow=86.05 cfs 3.993 af

Pond DP6: 55" CMP Culvert Peak Elev=2,242.58' Inflow=240.32 cfs 17.558 af
Outflow=240.32 cfs 17.558 af

Pond DP6A: 30" Steel Culvert Peak Elev=2,244.48' Inflow=120.67 cfs 11.552 af
Outflow=120.67 cfs 11.552 af

Pond Z1: DRY SWALE Peak Elev=2,501.20' Storage=11,528 cf Inflow=12.11 cfs 0.599 af
Outflow=7.80 cfs 0.398 af

Total Runoff Area = 181.964 ac Runoff Volume = 50.662 af Average Runoff Depth = 3.34"
97.49% Pervious = 177.395 ac 2.51% Impervious = 4.569 ac

Summary for Subcatchment 1aS: Subcatchment 1a

Runoff = 3.36 cfs @ 11.97 hrs, Volume= 0.169 af, Depth= 5.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	0	70	Woods, Good, HSG C
*	0	98	Roof
*	10,000	98	Paved
	7,305	74	>75% Grass cover, Good, HSG C
	17,305	88	Weighted Average
	7,305		42.21% Pervious Area
	10,000		57.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0500	2.22		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	76	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	176	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1bS: Subcatchment 1b

Runoff = 5.89 cfs @ 11.97 hrs, Volume= 0.285 af, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	1,580	98	Paved parking
	21,744	74	>75% Grass cover, Good, HSG C
	3,090	98	Water Surface
*	7,080	98	Roof
	0	70	Woods, Good, HSG C
	33,494	82	Weighted Average
	21,744		64.92% Pervious Area
	11,750		35.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1cS: Subcatchment 1c

Runoff = 14.51 cfs @ 12.07 hrs, Volume= 0.929 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
135,640	70	Woods, Good, HSG C
15,700	74	>75% Grass cover, Good, HSG C
151,340	70	Weighted Average
151,340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0840	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.7	460	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	330	0.2300	14.23	21.34	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.030 Earth, clean & winding
14.9	890	Total			

Summary for Subcatchment 6b: Subcatchment 6

Runoff = 5.05 cfs @ 12.01 hrs, Volume= 0.263 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
32,433	71	Meadow, non-grazed, HSG C
9,150	70	Woods, Good, HSG C
41,583	71	Weighted Average
41,583		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0					**Direct Entry,**

Summary for Subcatchment 14S: Subcatchment 14

Runoff = 67.18 cfs @ 12.42 hrs, Volume= 8.198 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	133,250	71	Meadow, non-grazed, HSG C
	25,526	87	Dirt roads, HSG C
*	5,184	98	Roof Area
	7,797	98	Paved roads
	921,512	70	Woods, Good, HSG C
	100,101	71	Meadow, non-grazed, HSG C
	102,584	74	>75% Grass cover, Good, HSG C
	1,295,954	71	Weighted Average
	1,282,973		99.00% Pervious Area
	12,981		1.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	80	0.1000	2.21		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
30.4	2,165	0.2260	1.19		**Shallow Concentrated Flow, SC Flow through Woods** Forest w/Heavy Litter Kv= 2.5 fps
1.2	90	0.2350	1.21		**Shallow Concentrated Flow, SC Flow through Grass** Forest w/Heavy Litter Kv= 2.5 fps
0.3	150	0.0450	8.53	34.11	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
42.2	2,585	Total			

Summary for Subcatchment 16S: Subcatchment 16

Runoff = 22.04 cfs @ 11.97 hrs, Volume= 1.031 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	8,620	98	Pavement
	100,893	70	Woods, Good, HSG C
	48,662	71	Meadow, non-grazed, HSG C
	158,175	72	Weighted Average
	149,555		94.55% Pervious Area
	8,620		5.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	421	0.0230	4.64	37.13	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.050 Earth, cobble bottom, clean sides
1.3	740	0.1000	9.68	77.42	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.050 Earth, cobble bottom, clean sides
2.8	1,161	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 17S: Subcatchment 17

Runoff = 49.03 cfs @ 12.01 hrs, Volume= 2.593 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	6,970	98	Roadway
	81,849	71	Meadow, non-grazed, HSG C
	321,168	70	Woods, Good, HSG C
	409,987	71	Weighted Average
	403,017		98.30% Pervious Area
	6,970		1.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.2000	0.48		**Sheet Flow, Sheet Flow through Woods** Grass: Short n= 0.150 P2= 4.00"
5.2	440	0.3200	1.41		**Shallow Concentrated Flow, SC Flow through Woods** Forest w/Heavy Litter Kv= 2.5 fps
0.7	540	0.1160	13.69	54.76	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
9.4	1,080	Total			

Summary for Subcatchment 18S: Subcatchment 18

Runoff = 46.49 cfs @ 12.10 hrs, Volume= 3.230 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	2,494	98	Pavement
	150,905	71	Meadow, non-grazed, HSG C
	372,991	70	Woods, Good, HSG C
	526,390	70	Weighted Average
	523,896		99.53% Pervious Area
	2,494		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.3280	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
10.6	1,910	0.3630	3.01		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	278	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Flow in Roadside Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030

17.4	2,288	Total

Summary for Subcatchment 19S: Subcatchment 19

Runoff = 186.61 cfs @ 12.18 hrs, Volume= 15.631 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	3,678	98	Roofs, HSG C
*	8,160	98	Paved, HSG C
	1,599,802	70	Woods, Good, HSG C
	936,054	71	Meadow, non-grazed, HSG C
	2,547,694	70	Weighted Average
	2,535,856		99.54% Pervious Area
	11,838		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.6	2,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods** Woodland Kv= 5.0 fps
0.9	470	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030 Earth, grassed & winding
24.0	2,625	Total			

Summary for Subcatchment 20S: Subcatchment 20

Runoff = 120.67 cfs @ 12.24 hrs, Volume= 11.552 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	6,926	98	Roof Area
*	15,682	98	Roadway
	952,222	70	Woods, Good, HSG C
	851,337	71	Meadow, non-grazed, HSG C
	1,826,167	71	Weighted Average
	1,803,559		98.76% Pervious Area
	22,608		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
18.7	3,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods** Woodland Kv= 5.0 fps
0.4	310	0.0466	12.12	145.44	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=4.00' Z= 0.5 '/' Top.W=5.00' n= 0.030 Earth, grassed & winding
29.6	3,465	Total			

Summary for Subcatchment 434S: Subcatchment 434

Runoff = 2.80 cfs @ 11.98 hrs, Volume= 0.132 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
19,166	74	>75% Grass cover, Good, HSG C
19,166		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0600	0.30		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 4.00"
0.1	27	0.2240	7.10		**Shallow Concentrated Flow, shallow concentrated flow** Grassed Waterway Kv= 15.0 fps
0.5	287	0.0450	9.08	54.49	**Trap/Vee/Rect Channel Flow, roadside ditch** Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00' n= 0.033
6.2	414	Total			

Summary for Subcatchment 439S: Subcatchment 439

Runoff = 11.83 cfs @ 11.97 hrs, Volume= 0.571 af, Depth= 4.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
13,896	98	Paved parking & roofs
58,414	74	>75% Grass cover, Good, HSG C
72,310	79	Weighted Average
58,414		80.78% Pervious Area
13,896		19.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.1200	0.39		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 4.00"
0.6	84	0.1300	2.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	322	0.0340	3.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.3	506	Total			

Summary for Subcatchment 440S: Subcatchment 440

Runoff = 4.83 cfs @ 11.99 hrs, Volume= 0.241 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
1,742	98	Roofs, HSG C
32,234	74	>75% Grass cover, Good, HSG C
33,976	75	Weighted Average
32,234		94.87% Pervious Area
1,742		5.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
3.0	235	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	335	Total			

Summary for Subcatchment 441S: Subcatchment 441-Hotel

Runoff = 36.76 cfs @ 12.01 hrs, Volume= 1.953 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	299,693	72	green roof
	299,693		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5					**Direct Entry,**

Summary for Subcatchment 443S: Subcatchment 443-Lodge

Runoff = 6.53 cfs @ 12.01 hrs, Volume= 0.341 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	52,272	72	Green Roof
	52,272		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0					**Direct Entry, Highmount Lodge**

Summary for Subcatchment 444S: Subcatchment 444

Runoff = 4.15 cfs @ 11.97 hrs, Volume= 0.195 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
28,241	74	>75% Grass cover, Good, HSG C
28,241		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	66	0.3030	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.5	300	0.0600	10.49	62.92	**Trap/Vee/Rect Channel Flow, TRM SWALE** Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00' n= 0.033 Earth, grassed & winding
2.6	366	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 445S: Subcatchment 445

Runoff = 2.46 cfs @ 11.97 hrs, Volume= 0.125 af, Depth= 5.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
7,680	98	Paved roads w/curbs & sewers
4,825	74	>75% Grass cover, Good, HSG C
12,505	89	Weighted Average
4,825		38.58% Pervious Area
7,680		61.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.1800	0.46		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.0	350	0.0800	5.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.6	450	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 446S: Subcatchment 446

Runoff = 8.16 cfs @ 11.98 hrs, Volume= 0.386 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
55,919	74	>75% Grass cover, Good, HSG C
55,919		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	88	0.0680	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.4	730	0.0400	8.56	51.38	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00' n= 0.033 Earth, grassed & winding
6.2	818	Total			

Summary for Subcatchment 447S: Subcatchment 447

Runoff = 2.45 cfs @ 11.97 hrs, Volume= 0.132 af, Depth= 5.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
10,130	98	Paved parking & roofs
1,562	74	>75% Grass cover, Good, HSG C
11,692	95	Weighted Average
1,562		13.36% Pervious Area
10,130		86.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.1	244	0.0328	3.68		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	344	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 449A: Subcatchment 449A

Runoff = 8.87 cfs @ 11.97 hrs, Volume= 0.446 af, Depth= 5.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	13,350	98	Paved parking & roofs
	19,520	74	>75% Grass cover, Good, HSG C
*	12,800	98	Roofs
	45,670	88	Weighted Average
	19,520		42.74% Pervious Area
	26,150		57.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	30	0.5000	0.54		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 4.00"
1.3	300	0.0350	3.80		**Shallow Concentrated Flow, ROAD** Paved Kv= 20.3 fps
0.8	250	0.0050	5.09	16.00	**Pipe Channel, culvert** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
1.1	213	0.0050	3.28	26.23	**Trap/Vee/Rect Channel Flow, trm swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.033 Earth, grassed & winding
0.2	50	0.0050	5.09	16.00	**Pipe Channel, into cb** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
4.3	843	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 449b: Subcatchment 449B

Runoff = 3.24 cfs @ 11.97 hrs, Volume= 0.152 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
22,066	74	>75% Grass cover, Good, HSG C
22,066		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 449S: Subcatchment 449

Runoff = 1.78 cfs @ 11.97 hrs, Volume= 0.100 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
8,350	98	Paved parking & roofs
8,350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0400	2.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.3	245	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.1	345	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 450S: Subcatchment 450

Runoff = 13.36 cfs @ 11.97 hrs, Volume= 0.625 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
40,190	74	>75% Grass cover, Good, HSG C
55,675	70	Woods, Good, HSG C
95,865	72	Weighted Average
95,865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	740	0.0600	7.50	59.97	**Trap/Vee/Rect Channel Flow, conveyance swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.050 swale with checkdams
1.6	740	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 451S: Subcatchment 451

Runoff = 1.72 cfs @ 11.97 hrs, Volume= 0.097 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
8,072	98	Paved roads w/curbs & sewers
8,072		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.8	234	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	334	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 452a: Subcatchment 452a

Runoff = 0.31 cfs @ 11.97 hrs, Volume= 0.015 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
2,110	74	>75% Grass cover, Good, HSG C
2,110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	188	0.0600	9.10	18.20	**Channel Flow,** Area= 2.0 sf Perim= 2.0' r= 1.00' n= 0.040 Earth, cobble bottom, clean sides
0.3	188	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 452S: Subcatchment 452

Runoff = 3.24 cfs @ 11.97 hrs, Volume= 0.171 af, Depth= 5.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
12,360	98	Paved roads w/curbs & sewers, HSG C
3,381	74	>75% Grass cover, Good, HSG C
15,741	93	Weighted Average
3,381		21.48% Pervious Area
12,360		78.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0700	2.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	234	0.0726	5.47		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	334	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 453S: Subcatchment 453

Runoff = 2.46 cfs @ 11.97 hrs, Volume= 0.125 af, Depth= 5.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
8,020	98	Paved roads w/curbs & sewers
4,462	74	>75% Grass cover, Good, HSG C
12,482	89	Weighted Average
4,462		35.75% Pervious Area
8,020		64.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	43	0.1160	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.4	57	0.0700	2.27		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.8	217	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	317	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 454a: Subcatchment 454a

Runoff = 2.78 cfs @ 11.97 hrs, Volume= 0.157 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	13,080	98	Roof
	13,080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 455S: Subcatchment 455

Runoff = 2.91 cfs @ 11.97 hrs, Volume= 0.138 af, Depth= 3.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
2,272	98	Paved roads w/curbs & sewers
16,118	74	>75% Grass cover, Good, HSG C
18,390	77	Weighted Average
16,118		87.65% Pervious Area
2,272		12.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	346	0.0400	8.74	69.95	**Trap/Vee/Rect Channel Flow, roadside swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.035 Earth, dense weeds
0.7	346	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 456S: Subcatchment 456

Runoff = 14.34 cfs @ 11.97 hrs, Volume= 0.680 af, Depth= 3.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
79,875	74	>75% Grass cover, Good, HSG C
10,775	98	Water Surface, 0% imp, HSG C
90,650	77	Weighted Average
90,650		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	100	0.2500	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
3.2	100	Total, Increased to minimum Tc = 6.0 min			

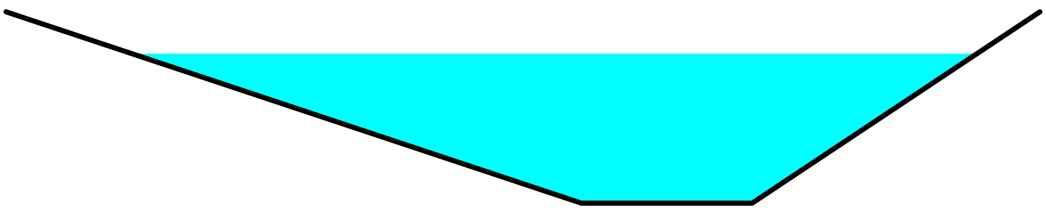
Summary for Reach 7R: through ditch

Inflow = 78.70 cfs @ 12.04 hrs, Volume= 1.926 af
Outflow = 77.80 cfs @ 12.05 hrs, Volume= 1.926 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.43 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.13 fps, Avg. Travel Time= 3.9 min

Peak Storage= 5,181 cf @ 12.05 hrs
Average Depth at Peak Storage= 1.76'
Bank-Full Depth= 2.25' Flow Area= 15.9 sf, Capacity= 136.08 cfs

2.00' x 2.25' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 3.0 1.5 '/' Top Width= 12.13'
Length= 495.0' Slope= 0.0646 '/'
Inlet Invert= 2,272.00', Outlet Invert= 2,240.00'



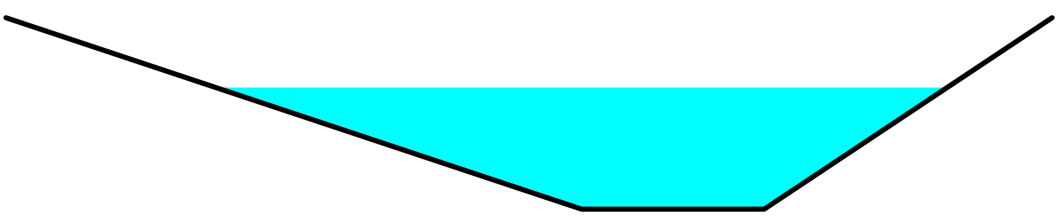
Summary for Reach 8R: (new Reach)

Inflow	=	46.49 cfs @	12.01 hrs, Volume=	0.763 af
Outflow	=	46.00 cfs @	12.02 hrs, Volume=	0.763 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.89 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.89 fps, Avg. Travel Time= 3.3 min

Peak Storage= 2,469 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.33'
Bank-Full Depth= 2.10' Flow Area= 14.1 sf, Capacity= 125.74 cfs

2.00' x 2.10' deep channel, n= 0.050
Side Slope Z-value= 3.0 1.5 '/' Top Width= 11.45'
Length= 370.0' Slope= 0.0757 '/'
Inlet Invert= 2,300.00', Outlet Invert= 2,272.00'



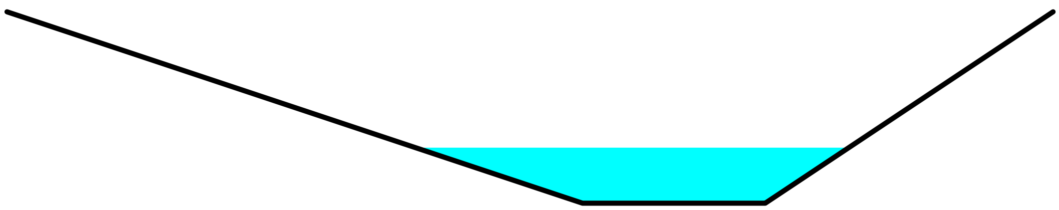
Summary for Reach 9R: (new Reach)

Inflow	=	11.63 cfs @	11.98 hrs, Volume=	0.208 af
Outflow	=	10.63 cfs @	12.00 hrs, Volume=	0.208 af, Atten= 9%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.17 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 1.53 fps, Avg. Travel Time= 7.5 min

Peak Storage= 1,407 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.61'
Bank-Full Depth= 2.10' Flow Area= 14.1 sf, Capacity= 144.54 cfs

2.00' x 2.10' deep channel, n= 0.050
Side Slope Z-value= 3.0 1.5 '/' Top Width= 11.45'
Length= 685.0' Slope= 0.1000 '/'
Inlet Invert= 2,368.00', Outlet Invert= 2,299.50'



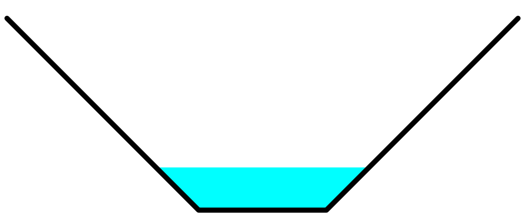
Summary for Reach 16a: Roadside Channel

Inflow Area = 13.998 ac, 12.35% Impervious, Inflow Depth > 3.85" for 25-YEAR event
Inflow = 10.44 cfs @ 12.39 hrs, Volume= 4.491 af
Outflow = 10.42 cfs @ 12.42 hrs, Volume= 4.491 af, Atten= 0%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.86 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.56 fps, Avg. Travel Time= 7.5 min

Peak Storage= 1,246 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.67'
Bank-Full Depth= 3.00' Flow Area= 15.0 sf, Capacity= 187.72 cfs

2.00' x 3.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 8.00'
Length= 700.0' Slope= 0.1100 '/'
Inlet Invert= 2,446.00', Outlet Invert= 2,369.00'



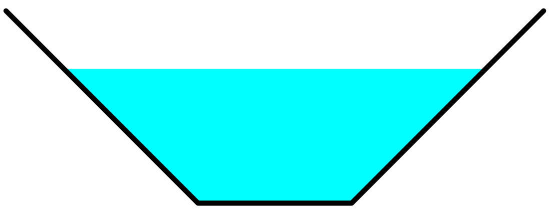
Summary for Reach 434C: RIP RAP SWALE

Inflow Area = 7.835 ac, 0.00% Impervious, Inflow Depth = 3.39" for 25-YEAR event
Inflow = 41.80 cfs @ 12.01 hrs, Volume= 2.216 af
Outflow = 41.71 cfs @ 12.02 hrs, Volume= 2.216 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.38 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.96 fps, Avg. Travel Time= 1.6 min

Peak Storage= 1,229 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.75'
Bank-Full Depth= 2.50' Flow Area= 11.3 sf, Capacity= 86.19 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 188.0' Slope= 0.0319 '/'
Inlet Invert= 2,494.00', Outlet Invert= 2,488.00'



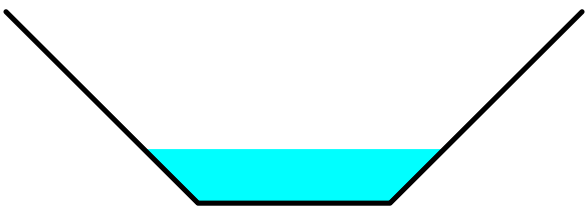
Summary for Reach 444: Roadside Swale

Inflow Area = 1.640 ac, 0.00% Impervious, Inflow Depth = 3.46" for 25-YEAR event
Inflow = 9.17 cfs @ 11.99 hrs, Volume= 0.473 af
Outflow = 9.11 cfs @ 12.01 hrs, Volume= 0.473 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.31 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.64 fps, Avg. Travel Time= 3.2 min

Peak Storage= 458 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.56'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 95.47 cfs

2.00' x 2.00' deep channel, n= 0.033 Earth, grassed & winding
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 317.0' Slope= 0.0662 '/'
Inlet Invert= 2,548.00', Outlet Invert= 2,527.00'



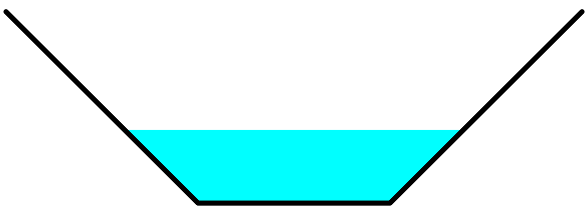
Summary for Reach 446: Roadside Swale

Inflow Area = 2.288 ac, 0.00% Impervious, Inflow Depth = 3.50" for 25-YEAR event
Inflow = 13.02 cfs @ 11.99 hrs, Volume= 0.668 af
Outflow = 12.58 cfs @ 12.02 hrs, Volume= 0.668 af, Atten= 3%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.94 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.53 fps, Avg. Travel Time= 7.8 min

Peak Storage= 1,525 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.77'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 76.79 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 720.0' Slope= 0.0354 '/'
Inlet Invert= 2,526.00', Outlet Invert= 2,500.50'



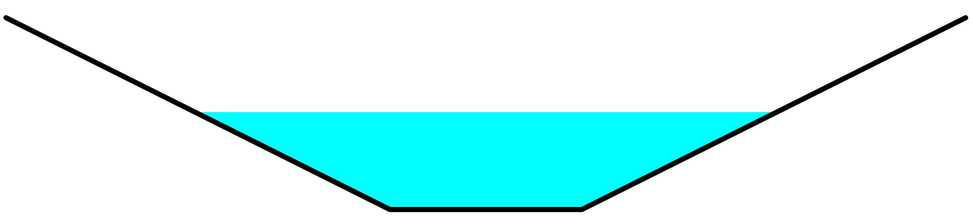
Summary for Reach 450: Swale

Inflow Area = 5.127 ac, 11.71% Impervious, Inflow Depth = 3.40" for 25-YEAR event
Inflow = 26.99 cfs @ 12.01 hrs, Volume= 1.453 af
Outflow = 25.66 cfs @ 12.04 hrs, Volume= 1.453 af, Atten= 5%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.27 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 1.51 fps, Avg. Travel Time= 9.1 min

Peak Storage= 3,379 cf @ 12.04 hrs
Average Depth at Peak Storage= 1.02'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 109.41 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 826.0' Slope= 0.0533 '/'
Inlet Invert= 2,497.00', Outlet Invert= 2,453.00'



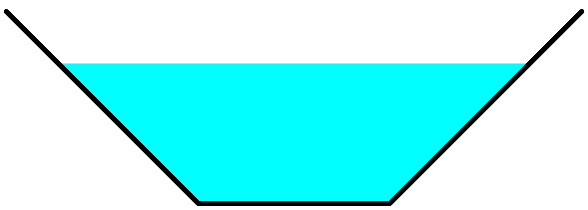
Summary for Reach 450a: Overland Swale

Inflow Area = 7.328 ac, 8.19% Impervious, Inflow Depth = 3.40" for 25-YEAR event
Inflow = 36.08 cfs @ 12.01 hrs, Volume= 2.078 af
Outflow = 36.03 cfs @ 12.02 hrs, Volume= 2.078 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.15 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.66 fps, Avg. Travel Time= 1.6 min

Peak Storage= 806 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.46'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 67.04 cfs

2.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 160.0' Slope= 0.0750 '/'
Inlet Invert= 2,452.00', Outlet Invert= 2,440.00'



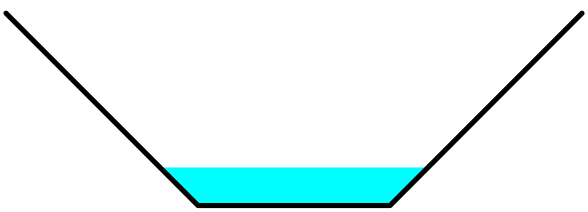
Summary for Reach 451: Roadside Swale

Inflow Area = 0.287 ac, 64.25% Impervious, Inflow Depth = 5.22" for 25-YEAR event
Inflow = 2.46 cfs @ 11.97 hrs, Volume= 0.125 af
Outflow = 2.43 cfs @ 11.98 hrs, Volume= 0.125 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.56 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 4.6 min

Peak Storage= 156 cf @ 11.98 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 46.68 cfs

2.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 165.0' Slope= 0.0364 '/'
Inlet Invert= 2,450.00', Outlet Invert= 2,444.00'



Summary for Reach 501a: Overland Swale

Inflow Area = 0.397 ac, 57.79% Impervious, Inflow Depth = 5.11" for 25-YEAR event
Inflow = 3.36 cfs @ 11.97 hrs, Volume= 0.169 af
Outflow = 3.36 cfs @ 11.97 hrs, Volume= 0.169 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.55 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 1.2 min

Peak Storage= 55 cf @ 11.97 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 2.5 sf, Capacity= 25.98 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.5 '/' Top Width= 3.00'
Length= 90.0' Slope= 0.0889 '/'
Inlet Invert= 2,436.00', Outlet Invert= 2,428.00'

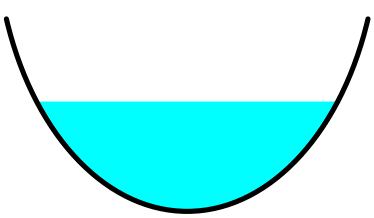
Summary for Reach 502a: Overland Swale

Inflow Area = 1.166 ac, 42.82% Impervious, Inflow Depth > 3.78" for 25-YEAR event
Inflow = 5.97 cfs @ 12.04 hrs, Volume= 0.367 af
Outflow = 5.94 cfs @ 12.05 hrs, Volume= 0.367 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.35 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 6.4 min

Peak Storage= 344 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.57'
Bank-Full Depth= 1.00' Flow Area= 1.3 sf, Capacity= 18.45 cfs

2.00' x 1.00' deep Parabolic Channel, n= 0.030 Earth, clean & winding
Length= 600.0' Slope= 0.2258 '/'
Inlet Invert= 2,418.00', Outlet Invert= 2,282.50'



Summary for Pond 434R: (new Pond)

Inflow Area = 3.572 ac, 0.00% Impervious, Inflow Depth = 3.54" for 25-YEAR event
Inflow = 20.13 cfs @ 12.00 hrs, Volume= 1.054 af
Outflow = 20.13 cfs @ 12.00 hrs, Volume= 1.054 af, Atten= 0%, Lag= 0.0 min
Primary = 20.13 cfs @ 12.00 hrs, Volume= 1.054 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,501.77' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,499.00'	**24.0" Round Culvert** L= 25.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,499.00' / 2,498.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=20.10 cfs @ 12.00 hrs HW=2,501.77' TW=2,497.95' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 20.10 cfs @ 6.40 fps)

Summary for Pond 439AP: CB 439A

Inflow Area = 0.780 ac, 5.13% Impervious, Inflow Depth = 3.71" for 25-YEAR event
Inflow = 4.83 cfs @ 11.99 hrs, Volume= 0.241 af
Outflow = 4.83 cfs @ 11.99 hrs, Volume= 0.241 af, Atten= 0%, Lag= 0.0 min
Primary = 4.83 cfs @ 11.99 hrs, Volume= 0.241 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,576.94' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,576.00'	**24.0" Round Culvert** L= 265.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,576.00' / 2,559.00' S= 0.0642 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.83 cfs @ 11.99 hrs HW=2,576.94' TW=2,560.59' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.83 cfs @ 3.31 fps)

Summary for Pond 439P: Catch Basin 439

Inflow Area = 2.440 ac, 14.71% Impervious, Inflow Depth = 4.00" for 25-YEAR event
Inflow = 16.61 cfs @ 11.98 hrs, Volume= 0.812 af
Outflow = 16.61 cfs @ 11.98 hrs, Volume= 0.812 af, Atten= 0%, Lag= 0.0 min
Primary = 16.61 cfs @ 11.98 hrs, Volume= 0.812 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,560.61' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,559.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,559.00' / 2,527.00' S= 0.0914 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

#2	Primary	2,564.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.59 cfs @ 11.98 hrs HW=2,560.60' TW=2,528.74' (Dynamic Tailwater)
└1=**Culvert** (Inlet Controls 16.59 cfs @ 4.31 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 440P: Catch Basin 440

Inflow Area = 0.780 ac, 5.13% Impervious, Inflow Depth = 3.71" for 25-YEAR event
Inflow = 4.83 cfs @ 11.99 hrs, Volume= 0.241 af
Outflow = 4.83 cfs @ 11.99 hrs, Volume= 0.241 af, Atten= 0%, Lag= 0.0 min
Primary = 4.83 cfs @ 11.99 hrs, Volume= 0.241 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,585.94' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,585.00'	**24.0" Round Culvert** L= 180.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,585.00' / 2,576.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,589.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.83 cfs @ 11.99 hrs HW=2,585.94' TW=2,576.94' (Dynamic Tailwater)
└1=**Culvert** (Inlet Controls 4.83 cfs @ 3.31 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 444R: Culvert 444r

Inflow Area = 2.288 ac, 0.00% Impervious, Inflow Depth = 3.50" for 25-YEAR event
Inflow = 13.02 cfs @ 11.99 hrs, Volume= 0.668 af
Outflow = 13.02 cfs @ 11.99 hrs, Volume= 0.668 af, Atten= 0%, Lag= 0.0 min
Primary = 13.02 cfs @ 11.99 hrs, Volume= 0.668 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,528.74' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,527.00'	**24.0" Round Culvert** L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 2,527.00' / 2,526.00' S= 0.0125 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=13.00 cfs @ 11.99 hrs HW=2,528.74' TW=2,526.75' (Dynamic Tailwater)
└1=**Culvert** (Inlet Controls 13.00 cfs @ 4.49 fps)

Summary for Pond 445P: Catch Basin 445

Inflow Area = 2.727 ac, 19.63% Impervious, Inflow Depth = 4.12" for 25-YEAR event
Inflow = 19.05 cfs @ 11.98 hrs, Volume= 0.937 af
Outflow = 19.05 cfs @ 11.98 hrs, Volume= 0.937 af, Atten= 0%, Lag= 0.0 min
Primary = 19.05 cfs @ 11.98 hrs, Volume= 0.937 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,528.74' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,527.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,527.00' / 2,520.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,534.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=19.02 cfs @ 11.98 hrs HW=2,528.74' TW=2,517.86' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 19.02 cfs @ 4.49 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 447P: Catch Basin 447

Inflow Area = 2.995 ac, 25.63% Impervious, Inflow Depth = 4.28" for 25-YEAR event
Inflow = 21.48 cfs @ 11.98 hrs, Volume= 1.070 af
Outflow = 21.48 cfs @ 11.98 hrs, Volume= 1.070 af, Atten= 0%, Lag= 0.0 min
Primary = 21.48 cfs @ 11.98 hrs, Volume= 1.070 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,517.87' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,516.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,516.00' / 2,509.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,523.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=21.44 cfs @ 11.98 hrs HW=2,517.86' TW=2,508.95' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 21.44 cfs @ 4.65 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 449aR: Catch Basin

Inflow Area = 1.048 ac, 57.26% Impervious, Inflow Depth = 5.11" for 25-YEAR event
Inflow = 8.87 cfs @ 11.97 hrs, Volume= 0.446 af
Outflow = 8.87 cfs @ 11.97 hrs, Volume= 0.446 af, Atten= 0%, Lag= 0.0 min
Primary = 8.87 cfs @ 11.97 hrs, Volume= 0.446 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,510.84' @ 11.97 hrs
Flood Elev= 2,512.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,509.00'	**18.0" Round Culvert** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,509.00' / 2,507.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,512.00'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.87 cfs @ 11.97 hrs HW=2,510.84' TW=2,501.04' (Dynamic Tailwater)
├**1=Culvert** (Inlet Controls 8.87 cfs @ 5.02 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 449P: Catch Basin 449

Inflow Area = 3.187 ac, 30.11% Impervious, Inflow Depth = 4.40" for 25-YEAR event
Inflow = 23.25 cfs @ 11.98 hrs, Volume= 1.170 af
Outflow = 23.25 cfs @ 11.98 hrs, Volume= 1.170 af, Atten= 0%, Lag= 0.0 min
Primary = 23.25 cfs @ 11.98 hrs, Volume= 1.170 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,508.96' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,507.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,507.00' / 2,492.00' S= 0.0429 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,513.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=23.20 cfs @ 11.98 hrs HW=2,508.95' TW=2,490.04' (Dynamic Tailwater)
├**1=Culvert** (Inlet Controls 23.20 cfs @ 4.76 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 451P: Catch Basin 451

Inflow Area = 3.372 ac, 33.95% Impervious, Inflow Depth = 4.51" for 25-YEAR event
Inflow = 24.95 cfs @ 11.97 hrs, Volume= 1.266 af
Outflow = 24.95 cfs @ 11.97 hrs, Volume= 1.266 af, Atten= 0%, Lag= 0.0 min
Primary = 24.95 cfs @ 11.97 hrs, Volume= 1.266 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,490.04' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,488.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,488.00' / 2,468.00' S= 0.0571 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,496.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=24.90 cfs @ 11.97 hrs HW=2,490.04' TW=2,468.20' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 24.90 cfs @ 4.86 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 452P: Catch Basin 452

Inflow Area = 3.734 ac, 38.26% Impervious, Inflow Depth = 4.62" for 25-YEAR event
Inflow = 28.18 cfs @ 11.97 hrs, Volume= 1.437 af
Outflow = 28.18 cfs @ 11.97 hrs, Volume= 1.437 af, Atten= 0%, Lag= 0.0 min
Primary = 28.18 cfs @ 11.97 hrs, Volume= 1.437 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,468.21' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,466.00'	**36.0" Round Culvert** L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,466.00' / 2,462.00' S= 0.0364 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,472.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=28.13 cfs @ 11.97 hrs HW=2,468.20' TW=2,456.66' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 28.13 cfs @ 5.05 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 452R: Driveway Culvert

Inflow Area = 7.883 ac, 0.00% Impervious, Inflow Depth = 3.40" for 25-YEAR event
Inflow = 41.97 cfs @ 12.02 hrs, Volume= 2.231 af
Outflow = 41.97 cfs @ 12.02 hrs, Volume= 2.231 af, Atten= 0%, Lag= 0.0 min
Primary = 41.97 cfs @ 12.02 hrs, Volume= 2.231 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,490.02' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,487.50'	**55.0" W x 38.0" H, R=38.0" Elliptical Culvert** L= 300.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,487.50' / 2,470.00' S= 0.0583 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 11.50 sf

Primary OutFlow Max=41.92 cfs @ 12.02 hrs HW=2,490.01' TW=2,456.98' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 41.92 cfs @ 4.28 fps)

Summary for Pond 453P: Catch Basin 453

Inflow Area = 0.287 ac, 64.25% Impervious, Inflow Depth = 5.22" for 25-YEAR event
Inflow = 2.46 cfs @ 11.97 hrs, Volume= 0.125 af
Outflow = 2.46 cfs @ 11.97 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.0 min
Primary = 2.46 cfs @ 11.97 hrs, Volume= 0.125 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,452.73' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,456.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	2,452.00'	**18.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,452.00' / 2,451.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.46 cfs @ 11.97 hrs HW=2,452.73' TW=2,450.39' (Dynamic Tailwater)
—**1=Orifice/Grate** (Controls 0.00 cfs)
—**2=Culvert** (Inlet Controls 2.46 cfs @ 2.90 fps)

Summary for Pond 500a: CB 500a

Inflow Area = 0.397 ac, 57.79% Impervious, Inflow Depth = 5.11" for 25-YEAR event
Inflow = 3.36 cfs @ 11.97 hrs, Volume= 0.169 af
Outflow = 3.36 cfs @ 11.97 hrs, Volume= 0.169 af, Atten= 0%, Lag= 0.0 min
Primary = 3.36 cfs @ 11.97 hrs, Volume= 0.169 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,442.04' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,440.75'	**12.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,440.75' / 2,436.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,446.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.36 cfs @ 11.97 hrs HW=2,442.04' TW=2,436.28' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 3.36 cfs @ 4.28 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond AC: P-3- Pond

Inflow Area = 13.998 ac, 12.35% Impervious, Inflow Depth = 3.86" for 25-YEAR event
Inflow = 84.25 cfs @ 11.99 hrs, Volume= 4.504 af
Outflow = 10.44 cfs @ 12.39 hrs, Volume= 4.491 af, Atten= 88%, Lag= 24.3 min
Primary = 10.44 cfs @ 12.39 hrs, Volume= 4.491 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Starting Elev= 2,454.60' Surf.Area= 18,074 sf Storage= 49,750 cf
Peak Elev= 2,457.61' @ 12.39 hrs Surf.Area= 43,243 sf Storage= 150,940 cf (101,190 cf above start)

Plug-Flow detention time= 855.3 min calculated for 3.349 af (74% of inflow)
Center-of-Mass det. time= 553.4 min (1,365.8 - 812.5)

Volume	Invert	Avail.Storage	Storage Description
#1	2,448.00'	190,566 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
2,448.00	2,220	247.0	0	0	2,220
2,450.00	2,450	550.0	4,668	4,668	21,454
2,452.00	9,960	590.0	11,567	16,235	25,257
2,454.00	14,058	650.0	23,901	40,135	31,306
2,455.00	21,032	724.0	17,428	57,564	39,427
2,456.00	37,023	950.0	28,653	86,217	69,544
2,458.00	44,800	1,000.0	81,700	167,916	77,544
2,458.50	45,800	1,004.0	22,650	190,566	78,356

Device	Routing	Invert	Outlet Devices
#1	Primary	2,453.00'	**24.0" Round Culvert** L= 120.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,453.00' / 2,450.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,454.60'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	2,456.25'	**18.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Primary	2,457.50'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=10.44 cfs @ 12.39 hrs HW=2,457.61' TW=2,446.67' (Dynamic Tailwater)
- **1=Culvert** (Passes 7.32 cfs of 28.76 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.71 cfs @ 8.13 fps)
  - **3=Orifice/Grate** (Orifice Controls 6.61 cfs @ 4.41 fps)
- **4=Broad-Crested Rectangular Weir** (Weir Controls 3.12 cfs @ 0.91 fps)

Summary for Pond B9: bioretention-LEACH

Inflow Area = 1.166 ac, 42.82% Impervious, Inflow Depth = 4.67" for 25-YEAR event
Inflow = 9.25 cfs @ 11.97 hrs, Volume= 0.454 af
Outflow = 5.97 cfs @ 12.04 hrs, Volume= 0.367 af, Atten= 35%, Lag= 4.2 min
Primary = 5.97 cfs @ 12.04 hrs, Volume= 0.367 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,424.12' @ 12.04 hrs Surf.Area= 11,013 sf Storage= 7,661 cf

Plug-Flow detention time= 388.5 min calculated for 0.367 af (81% of inflow)
Center-of-Mass det. time= 309.4 min (1,106.1 - 796.6)

Volume	Invert	Avail.Storage	Storage Description
#1	2,418.00'	1,366 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 3,414 cf Overall x 40.0% Voids
#2	2,419.00'	2,048 cf	**filter media (Prismatic)** Listed below (Recalc) 13,656 cf Overall x 15.0% Voids
#3	2,423.00'	8,215 cf	**surface storage (Prismatic)** Listed below (Recalc)
		11,629 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,418.00	3,414	0	0
2,419.00	3,414	3,414	3,414

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,419.00	3,414	0	0
2,423.00	3,414	13,656	13,656

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,423.00	3,414	0	0
2,424.00	4,100	3,757	3,757
2,425.00	4,815	4,458	8,215

Device	Routing	Invert	Outlet Devices
#1	Primary	2,418.50'	**24.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,418.50' / 2,418.00' S= 0.0076 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,423.00'	**1.000 in/hr Exfiltration over Surface area above 2,423.00'** Excluded Surface area = 10,242 sf
#3	Device 1	2,423.50'	**12.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.96 cfs @ 12.04 hrs HW=2,424.12' TW=2,418.57' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.96 cfs of 32.51 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.02 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 5.95 cfs @ 3.79 fps)

Summary for Pond c1:

Inflow = 5.00 cfs @ 12.42 hrs, Volume= 0.189 af
Primary = 5.00 cfs @ 12.42 hrs, Volume= 0.189 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C2:

Inflow Area = 37.079 ac, 2.42% Impervious, Inflow Depth = 3.26" for 25-YEAR event
Inflow = 68.13 cfs @ 12.42 hrs, Volume= 10.058 af
Primary = 68.13 cfs @ 12.42 hrs, Volume= 10.058 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C3:

Inflow Area = 0.709 ac, 33.34% Impervious, Inflow Depth = 4.45" for 25-YEAR event
Inflow = 5.33 cfs @ 11.98 hrs, Volume= 0.263 af
Primary = 5.33 cfs @ 11.98 hrs, Volume= 0.263 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C4:

Inflow Area = 17.629 ac, 10.93% Impervious, Inflow Depth > 3.62" for 25-YEAR event
Inflow = 11.42 cfs @ 11.98 hrs, Volume= 5.315 af
Primary = 11.42 cfs @ 11.98 hrs, Volume= 5.315 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5:

Inflow Area = 9.412 ac, 1.70% Impervious, Inflow Depth = 2.60" for 25-YEAR event
Inflow = 13.11 cfs @ 12.01 hrs, Volume= 2.038 af
Primary = 13.11 cfs @ 12.01 hrs, Volume= 2.038 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5A:

Inflow Area = 12.084 ac, 0.47% Impervious, Inflow Depth = 2.05" for 25-YEAR event
Inflow = 7.35 cfs @ 12.04 hrs, Volume= 2.066 af
Primary = 7.35 cfs @ 12.04 hrs, Volume= 2.066 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6:

Inflow Area = 58.487 ac, 0.46% Impervious, Inflow Depth = 3.60" for 25-YEAR event
Inflow = 240.32 cfs @ 12.13 hrs, Volume= 17.558 af
Primary = 240.32 cfs @ 12.13 hrs, Volume= 17.558 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6A:

Inflow Area = 41.923 ac, 1.24% Impervious, Inflow Depth = 3.31" for 25-YEAR event
Inflow = 120.67 cfs @ 12.24 hrs, Volume= 11.552 af
Primary = 120.67 cfs @ 12.24 hrs, Volume= 11.552 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 1a: Design Point 1a

Inflow Area = 4.640 ac, 10.76% Impervious, Inflow Depth = 3.35" for 25-YEAR event
Inflow = 20.41 cfs @ 12.07 hrs, Volume= 1.296 af
Primary = 20.41 cfs @ 12.07 hrs, Volume= 1.296 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP2: ditch

Inflow Area = 37.079 ac, 2.42% Impervious, Inflow Depth = 3.33" for 25-YEAR event
Inflow = 73.52 cfs @ 12.38 hrs, Volume= 10.275 af
Outflow = 73.13 cfs @ 12.42 hrs, Volume= 10.247 af, Atten= 1%, Lag= 2.2 min
Primary = 68.13 cfs @ 12.42 hrs, Volume= 10.058 af
Secondary = 5.00 cfs @ 12.42 hrs, Volume= 0.189 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,434.56' @ 12.42 hrs Surf.Area= 7,679 sf Storage= 16,910 cf
Flood Elev= 2,435.00' Surf.Area= 8,869 sf Storage= 20,532 cf

Plug-Flow detention time= 7.1 min calculated for 10.247 af (100% of inflow)
Center-of-Mass det. time= 5.1 min (863.3 - 858.1)

Volume	Invert	Avail.Storage	Storage Description
#1	2,430.00'	20,532 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,430.00	614	0	0
2,432.00	3,129	3,743	3,743
2,434.00	6,150	9,279	13,022
2,435.00	8,869	7,510	20,532

Device	Routing	Invert	Outlet Devices
#1	Primary	2,431.00'	**49.0" W x 33.0" H, R=25.1"/77.3" Arch CMP_Arch_1/2 49x33** L= 35.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,431.00' / 2,429.00' S= 0.0571 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 8.90 sf
#2	Secondary	2,433.36'	**18.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,433.36' / 2,431.00' S= 0.0590 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Primary	2,434.50'	**100.0' long x 35.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=68.12 cfs @ 12.42 hrs HW=2,434.56' TW=0.00' (Dynamic Tailwater)
—**1=CMP_Arch_1/2 49x33** (Inlet Controls 63.97 cfs @ 7.19 fps)
—**3=Broad-Crested Rectangular Weir** (Weir Controls 4.15 cfs @ 0.67 fps)

Secondary OutFlow Max=5.00 cfs @ 12.42 hrs HW=2,434.56' TW=0.00' (Dynamic Tailwater)
—**2=Culvert** (Inlet Controls 5.00 cfs @ 3.29 fps)

Summary for Pond DP3: 24"HDPE

Inflow Area = 0.709 ac, 33.34% Impervious, Inflow Depth = 4.45" for 25-YEAR event
Inflow = 5.33 cfs @ 11.98 hrs, Volume= 0.263 af
Outflow = 5.33 cfs @ 11.98 hrs, Volume= 0.263 af, Atten= 0%, Lag= 0.0 min
Primary = 5.33 cfs @ 11.98 hrs, Volume= 0.263 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,443.07' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,442.00'	**24.0" Round Culvert** L= 35.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,442.00' / 2,441.00' S= 0.0286 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.32 cfs @ 11.98 hrs HW=2,443.07' TW=0.00' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 5.32 cfs @ 3.11 fps)

Summary for Pond DP4: 18" HDPE Culvert

Inflow Area = 17.629 ac, 10.93% Impervious, Inflow Depth > 3.76" for 25-YEAR event
Inflow = 23.05 cfs @ 11.98 hrs, Volume= 5.522 af
Outflow = 23.05 cfs @ 11.98 hrs, Volume= 5.522 af, Atten= 0%, Lag= 0.0 min
Primary = 11.42 cfs @ 11.98 hrs, Volume= 5.315 af
Secondary = 11.63 cfs @ 11.98 hrs, Volume= 0.208 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,372.06' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,369.00'	**18.0" Round Culvert** L= 25.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,369.00' / 2,368.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,371.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=11.42 cfs @ 11.98 hrs HW=2,372.06' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 11.42 cfs @ 6.46 fps)

Secondary OutFlow Max=11.62 cfs @ 11.98 hrs HW=2,372.06' TW=2,368.58' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 11.62 cfs @ 2.06 fps)

Summary for Pond DP5: 18" HDPE Culvert

Inflow Area = 9.412 ac, 1.70% Impervious, Inflow Depth = 3.57" for 25-YEAR event
Inflow = 59.60 cfs @ 12.01 hrs, Volume= 2.801 af
Outflow = 59.60 cfs @ 12.01 hrs, Volume= 2.801 af, Atten= 0%, Lag= 0.0 min
Primary = 13.11 cfs @ 12.01 hrs, Volume= 2.038 af
Secondary = 46.49 cfs @ 12.01 hrs, Volume= 0.763 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,303.30' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,299.50'	**18.0" Round Culvert** L= 25.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,299.50' / 2,298.50' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,302.00'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=13.11 cfs @ 12.01 hrs HW=2,303.30' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 13.11 cfs @ 7.42 fps)

Secondary OutFlow Max=46.47 cfs @ 12.01 hrs HW=2,303.30' TW=2,301.33' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 46.47 cfs @ 3.58 fps)

Summary for Pond DP5A: 12" steel Culvert

Inflow Area = 12.084 ac, 0.47% Impervious, Inflow Depth = 3.97" for 25-YEAR event
Inflow = 86.05 cfs @ 12.04 hrs, Volume= 3.993 af
Outflow = 86.05 cfs @ 12.04 hrs, Volume= 3.993 af, Atten= 0%, Lag= 0.0 min
Primary = 7.35 cfs @ 12.04 hrs, Volume= 2.066 af
Secondary = 78.70 cfs @ 12.04 hrs, Volume= 1.926 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,276.28' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,272.00'	**12.0" Round Culvert** L= 25.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,272.00' / 2,271.50' S= 0.0200 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf
#2	Secondary	2,274.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=7.35 cfs @ 12.04 hrs HW=2,276.28' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 7.35 cfs @ 9.36 fps)

Secondary OutFlow Max=78.70 cfs @ 12.04 hrs HW=2,276.28' TW=2,273.75' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 78.70 cfs @ 4.42 fps)

Summary for Pond DP6: 55" CMP Culvert

Inflow Area = 58.487 ac, 0.46% Impervious, Inflow Depth = 3.60" for 25-YEAR event
Inflow = 240.32 cfs @ 12.13 hrs, Volume= 17.558 af
Outflow = 240.32 cfs @ 12.13 hrs, Volume= 17.558 af, Atten= 0%, Lag= 0.0 min
Primary = 240.32 cfs @ 12.13 hrs, Volume= 17.558 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,242.58' @ 12.13 hrs
Flood Elev= 2,245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,238.00'	**96.0" W x 48.0" H Box Culvert** L= 25.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,238.00' / 2,237.00' S= 0.0400 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 32.00 sf
#2	Primary	2,243.00'	**100.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=240.30 cfs @ 12.13 hrs HW=2,242.58' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 240.30 cfs @ 7.51 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond DP6A: 30" Steel Culvert

Inflow Area = 41.923 ac, 1.24% Impervious, Inflow Depth = 3.31" for 25-YEAR event
Inflow = 120.67 cfs @ 12.24 hrs, Volume= 11.552 af
Outflow = 120.67 cfs @ 12.24 hrs, Volume= 11.552 af, Atten= 0%, Lag= 0.0 min
Primary = 120.67 cfs @ 12.24 hrs, Volume= 11.552 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,244.48' @ 12.24 hrs
Flood Elev= 2,245.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**64.0" W x 43.0" H, R=32.5"/99.3" Arch CMP_Arch_1/2 64x43** L= 65.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,240.00' / 2,238.00' S= 0.0308 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 15.13 sf

#2	Primary	2,244.50'	**50.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=120.67 cfs @ 12.24 hrs HW=2,244.48' TW=0.00' (Dynamic Tailwater)
1=**CMP_Arch_1/2 64x43** (Inlet Controls 120.67 cfs @ 7.98 fps)
2=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond Z1: DRY SWALE

Inflow Area = 1.555 ac, 38.61% Impervious, Inflow Depth = 4.62" for 25-YEAR event
Inflow = 12.11 cfs @ 11.97 hrs, Volume= 0.599 af
Outflow = 7.80 cfs @ 12.04 hrs, Volume= 0.398 af, Atten= 36%, Lag= 4.2 min
Primary = 7.80 cfs @ 12.04 hrs, Volume= 0.398 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,501.20' @ 12.04 hrs Surf.Area= 6,552 sf Storage= 11,528 cf

Plug-Flow detention time= 182.2 min calculated for 0.398 af (67% of inflow)
Center-of-Mass det. time= 80.7 min (875.5 - 794.8)

Volume	Invert	Avail.Storage	Storage Description
#1	2,498.50'	13,550 cf	**surface storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,498.50	1,800	0	0
2,500.50	5,500	7,300	7,300
2,501.50	7,000	6,250	13,550

Device	Routing	Invert	Outlet Devices
#1	Primary	2,500.75'	**30.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.79 cfs @ 12.04 hrs HW=2,501.20' TW=2,498.01' (Dynamic Tailwater)
1=**Orifice/Grate** (Weir Controls 7.79 cfs @ 2.20 fps)

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1aS: Subcatchment 1a Runoff Area=17,305 sf 57.79% Impervious Runoff Depth=6.57"
Flow Length=176' Slope=0.0500 '/' Tc=6.0 min CN=88 Runoff=4.25 cfs 0.217 af

Subcatchment 1bS: Subcatchment 1b Runoff Area=33,494 sf 35.08% Impervious Runoff Depth=5.86"
Tc=6.0 min CN=82 Runoff=7.63 cfs 0.375 af

Subcatchment 1cS: Subcatchment 1c Runoff Area=151,340 sf 0.00% Impervious Runoff Depth=4.46"
Flow Length=890' Tc=14.9 min CN=70 Runoff=20.19 cfs 1.293 af

Subcatchment 6b: Subcatchment 6 Runoff Area=41,583 sf 0.00% Impervious Runoff Depth=4.58"
Tc=9.0 min CN=71 Runoff=6.95 cfs 0.364 af

Subcatchment 14S: Subcatchment 14 Runoff Area=1,295,954 sf 1.00% Impervious Runoff Depth=4.58"
Flow Length=2,585' Tc=42.2 min CN=71 Runoff=93.59 cfs 11.353 af

Subcatchment 16S: Subcatchment 16 Runoff Area=158,175 sf 5.45% Impervious Runoff Depth=4.69"
Flow Length=1,161' Tc=6.0 min CN=72 Runoff=30.07 cfs 1.421 af

Subcatchment 17S: Subcatchment 17 Runoff Area=409,987 sf 1.70% Impervious Runoff Depth=4.58"
Flow Length=1,080' Tc=9.4 min CN=71 Runoff=67.49 cfs 3.592 af

Subcatchment 18S: Subcatchment 18 Runoff Area=526,390 sf 0.47% Impervious Runoff Depth=4.46"
Flow Length=2,288' Tc=17.4 min CN=70 Runoff=64.82 cfs 4.496 af

Subcatchment 19S: Subcatchment 19 Runoff Area=2,547,694 sf 0.46% Impervious Runoff Depth=4.46"
Flow Length=2,625' Tc=24.0 min CN=70 Runoff=260.86 cfs 21.759 af

Subcatchment 20S: Subcatchment 20 Runoff Area=1,826,167 sf 1.24% Impervious Runoff Depth=4.58"
Flow Length=3,465' Tc=29.6 min CN=71 Runoff=167.97 cfs 15.998 af

Subcatchment 434S: Subcatchment 434 Runoff Area=19,166 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=414' Tc=6.2 min CN=74 Runoff=3.77 cfs 0.181 af

Subcatchment 439S: Subcatchment 439 Runoff Area=72,310 sf 19.22% Impervious Runoff Depth=5.51"
Flow Length=506' Tc=6.3 min CN=79 Runoff=15.55 cfs 0.762 af

Subcatchment 440S: Subcatchment 440 Runoff Area=33,976 sf 5.13% Impervious Runoff Depth=5.04"
Flow Length=335' Tc=7.6 min CN=75 Runoff=6.49 cfs 0.328 af

Subcatchment 441S: Subcatchment 441-Hotel Runoff Area=299,693 sf 0.00% Impervious Runoff Depth=4.69"
Tc=9.5 min CN=72 Runoff=50.30 cfs 2.691 af

Subcatchment 443S: Subcatchment 443-Lodge Runoff Area=52,272 sf 0.00% Impervious Runoff Depth=4.69"
Tc=9.0 min CN=72 Runoff=8.94 cfs 0.469 af

Subcatchment 444S: Subcatchment 444 Runoff Area=28,241 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=366' Tc=6.0 min CN=74 Runoff=5.60 cfs 0.266 af

Subcatchment 445S: Subcatchment 445 Runoff Area=12,505 sf 61.42% Impervious Runoff Depth=6.69"
Flow Length=450' Tc=6.0 min CN=89 Runoff=3.10 cfs 0.160 af

Subcatchment 446S: Subcatchment 446 Runoff Area=55,919 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=818' Tc=6.2 min CN=74 Runoff=11.01 cfs 0.527 af

Subcatchment 447S: Subcatchment 447 Runoff Area=11,692 sf 86.64% Impervious Runoff Depth=7.40"
Flow Length=344' Tc=6.0 min CN=95 Runoff=3.03 cfs 0.166 af

Subcatchment 449A: Subcatchment 449A Runoff Area=45,670 sf 57.26% Impervious Runoff Depth=6.57"
Flow Length=843' Tc=6.0 min CN=88 Runoff=11.22 cfs 0.574 af

Subcatchment 449b: Subcatchment 449B Runoff Area=22,066 sf 0.00% Impervious Runoff Depth=4.93"
Tc=6.0 min CN=74 Runoff=4.37 cfs 0.208 af

Subcatchment 449S: Subcatchment 449 Runoff Area=8,350 sf 100.00% Impervious Runoff Depth=7.76"
Flow Length=345' Tc=6.0 min CN=98 Runoff=2.19 cfs 0.124 af

Subcatchment 450S: Subcatchment 450 Runoff Area=95,865 sf 0.00% Impervious Runoff Depth=4.69"
Flow Length=740' Slope=0.0600 '/' Tc=6.0 min CN=72 Runoff=18.22 cfs 0.861 af

Subcatchment 451S: Subcatchment 451 Runoff Area=8,072 sf 100.00% Impervious Runoff Depth=7.76"
Flow Length=334' Tc=6.0 min CN=98 Runoff=2.12 cfs 0.120 af

Subcatchment 452a: Subcatchment 452a Runoff Area=2,110 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=188' Slope=0.0600 '/' Tc=6.0 min CN=74 Runoff=0.42 cfs 0.020 af

Subcatchment 452S: Subcatchment 452 Runoff Area=15,741 sf 78.52% Impervious Runoff Depth=7.16"
Flow Length=334' Tc=6.0 min CN=93 Runoff=4.04 cfs 0.216 af

Subcatchment 453S: Subcatchment 453 Runoff Area=12,482 sf 64.25% Impervious Runoff Depth=6.69"
Flow Length=317' Tc=6.0 min CN=89 Runoff=3.10 cfs 0.160 af

Subcatchment 454a: Subcatchment 454a Runoff Area=13,080 sf 100.00% Impervious Runoff Depth=7.76"
Tc=6.0 min CN=98 Runoff=3.43 cfs 0.194 af

Subcatchment 455S: Subcatchment 455 Runoff Area=18,390 sf 12.35% Impervious Runoff Depth=5.27"
Flow Length=346' Slope=0.0400 '/' Tc=6.0 min CN=77 Runoff=3.86 cfs 0.186 af

Subcatchment 456S: Subcatchment 456 Runoff Area=90,650 sf 0.00% Impervious Runoff Depth=5.27"
Flow Length=100' Slope=0.2500 '/' Tc=6.0 min CN=77 Runoff=19.03 cfs 0.915 af

Reach 7R: through ditch Avg. Flow Depth=2.15' Max Vel=8.35 fps Inflow=123.67 cfs 3.949 af
n=0.050 L=495.0' S=0.0646 '/' Capacity=136.08 cfs Outflow=123.11 cfs 3.949 af

Reach 8R: (new Reach) Avg. Flow Depth=1.66' Max Vel=7.79 fps Inflow=74.60 cfs 2.125 af
n=0.050 L=370.0' S=0.0757 '/' Capacity=125.74 cfs Outflow=74.14 cfs 2.125 af

Reach 9R: (new Reach) Avg. Flow Depth=1.08' Max Vel=7.06 fps Inflow=34.42 cfs 1.304 af
n=0.050 L=685.0' S=0.1000 '/' Capacity=144.54 cfs Outflow=33.86 cfs 1.304 af

Reach 16a: Roadside Channel Avg. Flow Depth=1.42' Max Vel=8.53 fps Inflow=41.81 cfs 6.046 af
n=0.050 L=700.0' S=0.1100 '/' Capacity=187.72 cfs Outflow=41.28 cfs 6.046 af

Reach 434C: RIP RAP SWALE Avg. Flow Depth=2.04' Max Vel=6.91 fps Inflow=57.24 cfs 3.056 af
n=0.040 L=188.0' S=0.0319 '/' Capacity=86.19 cfs Outflow=57.14 cfs 3.056 af

Reach 444: Roadside Swale Avg. Flow Depth=0.67' Max Vel=6.91 fps Inflow=12.50 cfs 0.650 af
n=0.033 L=317.0' S=0.0662 '/' Capacity=95.47 cfs Outflow=12.43 cfs 0.650 af

Reach 446: Roadside Swale Avg. Flow Depth=0.91' Max Vel=6.48 fps Inflow=17.73 cfs 0.916 af
n=0.030 L=720.0' S=0.0354 '/' Capacity=76.79 cfs Outflow=17.21 cfs 0.916 af

Reach 450: Swale Avg. Flow Depth=1.23' Max Vel=6.97 fps Inflow=39.86 cfs 2.025 af
n=0.040 L=826.0' S=0.0533 '/' Capacity=109.41 cfs Outflow=38.45 cfs 2.025 af

Reach 450a: Overland Swale Avg. Flow Depth=1.79' Max Vel=7.93 fps Inflow=54.04 cfs 2.886 af
n=0.050 L=160.0' S=0.0750 '/' Capacity=67.04 cfs Outflow=53.98 cfs 2.886 af

Reach 451: Roadside Swale Avg. Flow Depth=0.45' Max Vel=2.76 fps Inflow=3.10 cfs 0.160 af
n=0.050 L=165.0' S=0.0364 '/' Capacity=46.68 cfs Outflow=3.07 cfs 0.160 af

Reach 501a: Overland Swale Avg. Flow Depth=0.33' Max Vel=6.00 fps Inflow=4.25 cfs 0.217 af
n=0.030 L=90.0' S=0.0889 '/' Capacity=25.98 cfs Outflow=4.25 cfs 0.217 af

Reach 502a: Overland Swale Avg. Flow Depth=0.63' Max Vel=10.94 fps Inflow=7.35 cfs 0.506 af
n=0.030 L=600.0' S=0.2258 '/' Capacity=18.45 cfs Outflow=7.33 cfs 0.506 af

Pond 434R: (new Pond) Peak Elev=2,503.30' Inflow=27.49 cfs 1.443 af
24.0" Round Culvert n=0.013 L=25.0' S=0.0400 '/' Outflow=27.49 cfs 1.443 af

Pond 439AP: CB 439A Peak Elev=2,577.12' Inflow=6.49 cfs 0.328 af
24.0" Round Culvert n=0.013 L=265.0' S=0.0642 '/' Outflow=6.49 cfs 0.328 af

Pond 439P: Catch Basin 439 Peak Elev=2,560.89' Inflow=21.97 cfs 1.090 af
Outflow=21.97 cfs 1.090 af

Pond 440P: Catch Basin 440 Peak Elev=2,586.12' Inflow=6.49 cfs 0.328 af
Outflow=6.49 cfs 0.328 af

Pond 444R: Culvert 444r Peak Elev=2,529.37' Inflow=17.73 cfs 0.916 af
24.0" Round Culvert n=0.013 L=80.0' S=0.0125 '/' Outflow=17.73 cfs 0.916 af

Pond 445P: Catch Basin 445 Peak Elev=2,529.05' Inflow=25.05 cfs 1.250 af
Outflow=25.05 cfs 1.250 af

Pond 447P: Catch Basin 447 Peak Elev=2,518.20' Inflow=28.07 cfs 1.415 af
Outflow=28.07 cfs 1.415 af

Pond 449aR: Catch Basin Peak Elev=2,511.73' Inflow=11.22 cfs 0.574 af
Outflow=11.22 cfs 0.574 af

Pond 449P: Catch Basin 449 Peak Elev=2,509.31' Inflow=30.24 cfs 1.539 af
Outflow=30.24 cfs 1.539 af

Pond 451P: Catch Basin 451 Peak Elev=2,490.42' Inflow=32.34 cfs 1.659 af
Outflow=32.34 cfs 1.659 af

Pond 452P: Catch Basin 452 Peak Elev=2,468.64' Inflow=36.36 cfs 1.875 af
Outflow=36.36 cfs 1.875 af

Pond 452R: Driveway Culvert Peak Elev=2,490.60' Inflow=57.49 cfs 3.076 af
55.0" x 38.0", R=38.0" Elliptical Culvert n=0.013 L=300.0' S=0.0583 '/' Outflow=57.49 cfs 3.076 af

Pond 453P: Catch Basin 453 Peak Elev=2,452.83' Inflow=3.10 cfs 0.160 af
Outflow=3.10 cfs 0.160 af

Pond 500a: CB 500a Peak Elev=2,442.51' Inflow=4.25 cfs 0.217 af
Outflow=4.25 cfs 0.217 af

Pond AC: P-3- Pond Peak Elev=2,458.04' Storage=169,834 cf Inflow=112.57 cfs 6.059 af
Outflow=41.81 cfs 6.046 af

Pond B9: bioretention-LEACH Peak Elev=2,424.44' Storage=9,035 cf Inflow=11.88 cfs 0.593 af
Outflow=7.35 cfs 0.506 af

Pond c1: Inflow=5.95 cfs 0.373 af
Primary=5.95 cfs 0.373 af

Pond C2: Inflow=95.90 cfs 13.837 af
Primary=95.90 cfs 13.837 af

Pond C3: Inflow=6.92 cfs 0.345 af
Primary=6.92 cfs 0.345 af

Pond C4: Inflow=12.65 cfs 6.162 af
Primary=12.65 cfs 6.162 af

Pond C5: Inflow=13.99 cfs 2.771 af
Primary=13.99 cfs 2.771 af

Pond C5A: Inflow=7.94 cfs 2.672 af
Primary=7.94 cfs 2.672 af

Pond C6: Inflow=364.96 cfs 25.707 af
Primary=364.96 cfs 25.707 af

Pond C6A: Inflow=167.97 cfs 15.998 af
Primary=167.97 cfs 15.998 af

Pond DP 1a: Design Point 1a Inflow=27.50 cfs 1.798 af
Primary=27.50 cfs 1.798 af

Pond DP2: ditch Peak Elev=2,434.73' Storage=18,232 cf Inflow=101.95 cfs 14.239 af
Primary=95.90 cfs 13.837 af Secondary=5.95 cfs 0.373 af Outflow=101.85 cfs 14.210 af

Pond DP3: 24"HDPE Peak Elev=2,443.25' Inflow=6.92 cfs 0.345 af
24.0" Round Culvert n=0.013 L=35.0' S=0.0286 '/' Outflow=6.92 cfs 0.345 af

Pond DP4: 18" HDPE Culvert Peak Elev=2,372.59' Inflow=47.08 cfs 7.466 af
Primary=12.65 cfs 6.162 af Secondary=34.42 cfs 1.304 af Outflow=47.08 cfs 7.466 af

Pond DP5: 18" HDPE Culvert Peak Elev=2,303.72' Inflow=88.59 cfs 4.896 af
Primary=13.99 cfs 2.771 af Secondary=74.60 cfs 2.125 af Outflow=88.59 cfs 4.896 af

Pond DP5A: 12" steel Culvert Peak Elev=2,276.91' Inflow=131.61 cfs 6.621 af
Primary=7.94 cfs 2.672 af Secondary=123.67 cfs 3.949 af Outflow=131.61 cfs 6.621 af

Pond DP6: 55" CMP Culvert Peak Elev=2,243.45' Inflow=364.96 cfs 25.707 af
Outflow=364.96 cfs 25.707 af

Pond DP6A: 30" Steel Culvert Peak Elev=2,244.93' Inflow=167.97 cfs 15.998 af
Outflow=167.97 cfs 15.998 af

Pond Z1: DRY SWALE Peak Elev=2,501.38' Storage=12,688 cf Inflow=15.59 cfs 0.782 af
Outflow=12.70 cfs 0.582 af

Total Runoff Area = 181.964 ac Runoff Volume = 69.993 af Average Runoff Depth = 4.62"
97.49% Pervious = 177.395 ac 2.51% Impervious = 4.569 ac

Summary for Subcatchment 1aS: Subcatchment 1a

Runoff = 4.25 cfs @ 11.97 hrs, Volume= 0.217 af, Depth= 6.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	0	70	Woods, Good, HSG C
*	0	98	Roof
*	10,000	98	Paved
	7,305	74	>75% Grass cover, Good, HSG C
	17,305	88	Weighted Average
	7,305		42.21% Pervious Area
	10,000		57.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0500	2.22		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	76	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	176	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1bS: Subcatchment 1b

Runoff = 7.63 cfs @ 11.97 hrs, Volume= 0.375 af, Depth= 5.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	1,580	98	Paved parking
	21,744	74	>75% Grass cover, Good, HSG C
	3,090	98	Water Surface
*	7,080	98	Roof
	0	70	Woods, Good, HSG C
	33,494	82	Weighted Average
	21,744		64.92% Pervious Area
	11,750		35.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1cS: Subcatchment 1c

Runoff = 20.19 cfs @ 12.07 hrs, Volume= 1.293 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
135,640	70	Woods, Good, HSG C
15,700	74	>75% Grass cover, Good, HSG C
151,340	70	Weighted Average
151,340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0840	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.7	460	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	330	0.2300	14.23	21.34	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.030 Earth, clean & winding
14.9	890	Total			

Summary for Subcatchment 6b: Subcatchment 6

Runoff = 6.95 cfs @ 12.01 hrs, Volume= 0.364 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
32,433	71	Meadow, non-grazed, HSG C
9,150	70	Woods, Good, HSG C
41,583	71	Weighted Average
41,583		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0					**Direct Entry,**

Summary for Subcatchment 14S: Subcatchment 14

Runoff = 93.59 cfs @ 12.39 hrs, Volume= 11.353 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	133,250	71	Meadow, non-grazed, HSG C
	25,526	87	Dirt roads, HSG C
*	5,184	98	Roof Area
	7,797	98	Paved roads
	921,512	70	Woods, Good, HSG C
	100,101	71	Meadow, non-grazed, HSG C
	102,584	74	>75% Grass cover, Good, HSG C
	1,295,954	71	Weighted Average
	1,282,973		99.00% Pervious Area
	12,981		1.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	80	0.1000	2.21		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
30.4	2,165	0.2260	1.19		**Shallow Concentrated Flow, SC Flow through Woods** Forest w/Heavy Litter Kv= 2.5 fps
1.2	90	0.2350	1.21		**Shallow Concentrated Flow, SC Flow through Grass** Forest w/Heavy Litter Kv= 2.5 fps
0.3	150	0.0450	8.53	34.11	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
42.2	2,585	Total			

Summary for Subcatchment 16S: Subcatchment 16

Runoff = 30.07 cfs @ 11.97 hrs, Volume= 1.421 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	8,620	98	Pavement
	100,893	70	Woods, Good, HSG C
	48,662	71	Meadow, non-grazed, HSG C
	158,175	72	Weighted Average
	149,555		94.55% Pervious Area
	8,620		5.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	421	0.0230	4.64	37.13	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.050 Earth, cobble bottom, clean sides
1.3	740	0.1000	9.68	77.42	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.050 Earth, cobble bottom, clean sides
2.8	1,161	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 17S: Subcatchment 17

Runoff = 67.49 cfs @ 12.01 hrs, Volume= 3.592 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	6,970	98	Roadway
	81,849	71	Meadow, non-grazed, HSG C
	321,168	70	Woods, Good, HSG C
	409,987	71	Weighted Average
	403,017		98.30% Pervious Area
	6,970		1.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.2000	0.48		**Sheet Flow, Sheet Flow through Woods** Grass: Short n= 0.150 P2= 4.00"
5.2	440	0.3200	1.41		**Shallow Concentrated Flow, SC Flow through Woods** Forest w/Heavy Litter Kv= 2.5 fps
0.7	540	0.1160	13.69	54.76	**Trap/Vee/Rect Channel Flow, Roadside Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
9.4	1,080	Total			

Summary for Subcatchment 18S: Subcatchment 18

Runoff = 64.82 cfs @ 12.10 hrs, Volume= 4.496 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	2,494	98	Pavement
	150,905	71	Meadow, non-grazed, HSG C
	372,991	70	Woods, Good, HSG C
	526,390	70	Weighted Average
	523,896		99.53% Pervious Area
	2,494		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.3280	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
10.6	1,910	0.3630	3.01		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	278	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Flow in Roadside Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030

17.4 2,288 Total

Summary for Subcatchment 19S: Subcatchment 19

Runoff = 260.86 cfs @ 12.18 hrs, Volume= 21.759 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	3,678	98	Roofs, HSG C
*	8,160	98	Paved, HSG C
	1,599,802	70	Woods, Good, HSG C
	936,054	71	Meadow, non-grazed, HSG C
	2,547,694	70	Weighted Average
	2,535,856		99.54% Pervious Area
	11,838		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.6	2,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods** Woodland Kv= 5.0 fps
0.9	470	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030 Earth, grassed & winding
24.0	2,625	Total			

Summary for Subcatchment 20S: Subcatchment 20

Runoff = 167.97 cfs @ 12.24 hrs, Volume= 15.998 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	6,926	98	Roof Area
*	15,682	98	Roadway
	952,222	70	Woods, Good, HSG C
	851,337	71	Meadow, non-grazed, HSG C
	1,826,167	71	Weighted Average
	1,803,559		98.76% Pervious Area
	22,608		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0910	0.16		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
18.7	3,055	0.2960	2.72		**Shallow Concentrated Flow, SC Flow through woods** Woodland Kv= 5.0 fps
0.4	310	0.0466	12.12	145.44	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=4.00' Z= 0.5 '/' Top.W=5.00' n= 0.030 Earth, grassed & winding
29.6	3,465	Total			

Summary for Subcatchment 434S: Subcatchment 434

Runoff = 3.77 cfs @ 11.97 hrs, Volume= 0.181 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
19,166	74	>75% Grass cover, Good, HSG C
19,166		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0600	0.30		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 4.00"
0.1	27	0.2240	7.10		**Shallow Concentrated Flow, shallow concentrated flow** Grassed Waterway Kv= 15.0 fps
0.5	287	0.0450	9.08	54.49	**Trap/Vee/Rect Channel Flow, roadside ditch** Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00' n= 0.033
6.2	414	Total			

Summary for Subcatchment 439S: Subcatchment 439

Runoff = 15.55 cfs @ 11.97 hrs, Volume= 0.762 af, Depth= 5.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
13,896	98	Paved parking & roofs
58,414	74	>75% Grass cover, Good, HSG C
72,310	79	Weighted Average
58,414		80.78% Pervious Area
13,896		19.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.1200	0.39		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 4.00"
0.6	84	0.1300	2.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	322	0.0340	3.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.3	506	Total			

Summary for Subcatchment 440S: Subcatchment 440

Runoff = 6.49 cfs @ 11.99 hrs, Volume= 0.328 af, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
1,742	98	Roofs, HSG C
32,234	74	>75% Grass cover, Good, HSG C
33,976	75	Weighted Average
32,234		94.87% Pervious Area
1,742		5.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
3.0	235	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	335	Total			

Summary for Subcatchment 441S: Subcatchment 441-Hotel

Runoff = 50.30 cfs @ 12.01 hrs, Volume= 2.691 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	299,693	72	green roof
	299,693		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5					**Direct Entry,**

Summary for Subcatchment 443S: Subcatchment 443-Lodge

Runoff = 8.94 cfs @ 12.01 hrs, Volume= 0.469 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	52,272	72	Green Roof
	52,272		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0					**Direct Entry, Highmount Lodge**

Summary for Subcatchment 444S: Subcatchment 444

Runoff = 5.60 cfs @ 11.97 hrs, Volume= 0.266 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
28,241	74	>75% Grass cover, Good, HSG C
28,241		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	66	0.3030	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.5	300	0.0600	10.49	62.92	**Trap/Vee/Rect Channel Flow, TRM SWALE** Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00' n= 0.033 Earth, grassed & winding
2.6	366	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 445S: Subcatchment 445

Runoff = 3.10 cfs @ 11.97 hrs, Volume= 0.160 af, Depth= 6.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
7,680	98	Paved roads w/curbs & sewers
4,825	74	>75% Grass cover, Good, HSG C
12,505	89	Weighted Average
4,825		38.58% Pervious Area
7,680		61.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.1800	0.46		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.0	350	0.0800	5.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.6	450	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 446S: Subcatchment 446

Runoff = 11.01 cfs @ 11.97 hrs, Volume= 0.527 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
55,919	74	>75% Grass cover, Good, HSG C
55,919		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	88	0.0680	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.4	730	0.0400	8.56	51.38	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 0.5 '/' Top.W=4.00' n= 0.033 Earth, grassed & winding
6.2	818	Total			

Summary for Subcatchment 447S: Subcatchment 447

Runoff = 3.03 cfs @ 11.97 hrs, Volume= 0.166 af, Depth= 7.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
10,130	98	Paved parking & roofs
1,562	74	>75% Grass cover, Good, HSG C
11,692	95	Weighted Average
1,562		13.36% Pervious Area
10,130		86.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.1	244	0.0328	3.68		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	344	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 449A: Subcatchment 449A

Runoff = 11.22 cfs @ 11.97 hrs, Volume= 0.574 af, Depth= 6.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	13,350	98	Paved parking & roofs
	19,520	74	>75% Grass cover, Good, HSG C
*	12,800	98	Roofs
	45,670	88	Weighted Average
	19,520		42.74% Pervious Area
	26,150		57.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	30	0.5000	0.54		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 4.00"
1.3	300	0.0350	3.80		**Shallow Concentrated Flow, ROAD** Paved Kv= 20.3 fps
0.8	250	0.0050	5.09	16.00	**Pipe Channel, culvert** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
1.1	213	0.0050	3.28	26.23	**Trap/Vee/Rect Channel Flow, trm swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.033 Earth, grassed & winding
0.2	50	0.0050	5.09	16.00	**Pipe Channel, into cb** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
4.3	843	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 449b: Subcatchment 449B

Runoff = 4.37 cfs @ 11.97 hrs, Volume= 0.208 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
22,066	74	>75% Grass cover, Good, HSG C
22,066		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 449S: Subcatchment 449

Runoff = 2.19 cfs @ 11.97 hrs, Volume= 0.124 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
8,350	98	Paved parking & roofs
8,350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0400	2.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.3	245	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.1	345	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 450S: Subcatchment 450

Runoff = 18.22 cfs @ 11.97 hrs, Volume= 0.861 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
40,190	74	>75% Grass cover, Good, HSG C
55,675	70	Woods, Good, HSG C
95,865	72	Weighted Average
95,865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	740	0.0600	7.50	59.97	**Trap/Vee/Rect Channel Flow, conveyance swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.050 swale with checkdams
1.6	740	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 451S: Subcatchment 451

Runoff = 2.12 cfs @ 11.97 hrs, Volume= 0.120 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
8,072	98	Paved roads w/curbs & sewers
8,072		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.8	234	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	334	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 452a: Subcatchment 452a

Runoff = 0.42 cfs @ 11.97 hrs, Volume= 0.020 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
2,110	74	>75% Grass cover, Good, HSG C
2,110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	188	0.0600	9.10	18.20	**Channel Flow,** Area= 2.0 sf Perim= 2.0' r= 1.00' n= 0.040 Earth, cobble bottom, clean sides
0.3	188	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 452S: Subcatchment 452

Runoff = 4.04 cfs @ 11.97 hrs, Volume= 0.216 af, Depth= 7.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
12,360	98	Paved roads w/curbs & sewers, HSG C
3,381	74	>75% Grass cover, Good, HSG C
15,741	93	Weighted Average
3,381		21.48% Pervious Area
12,360		78.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0700	2.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	234	0.0726	5.47		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	334	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 453S: Subcatchment 453

Runoff = 3.10 cfs @ 11.97 hrs, Volume= 0.160 af, Depth= 6.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
8,020	98	Paved roads w/curbs & sewers
4,462	74	>75% Grass cover, Good, HSG C
12,482	89	Weighted Average
4,462		35.75% Pervious Area
8,020		64.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	43	0.1160	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.4	57	0.0700	2.27		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.8	217	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	317	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 454a: Subcatchment 454a

Runoff = 3.43 cfs @ 11.97 hrs, Volume= 0.194 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	13,080	98	Roof
	13,080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 455S: Subcatchment 455

Runoff = 3.86 cfs @ 11.97 hrs, Volume= 0.186 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
2,272	98	Paved roads w/curbs & sewers
16,118	74	>75% Grass cover, Good, HSG C
18,390	77	Weighted Average
16,118		87.65% Pervious Area
2,272		12.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	346	0.0400	8.74	69.95	**Trap/Vee/Rect Channel Flow, roadside swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.035 Earth, dense weeds
0.7	346	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 456S: Subcatchment 456

Runoff = 19.03 cfs @ 11.97 hrs, Volume= 0.915 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
79,875	74	>75% Grass cover, Good, HSG C
10,775	98	Water Surface, 0% imp, HSG C
90,650	77	Weighted Average
90,650		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	100	0.2500	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
3.2	100	Total, Increased to minimum Tc = 6.0 min			

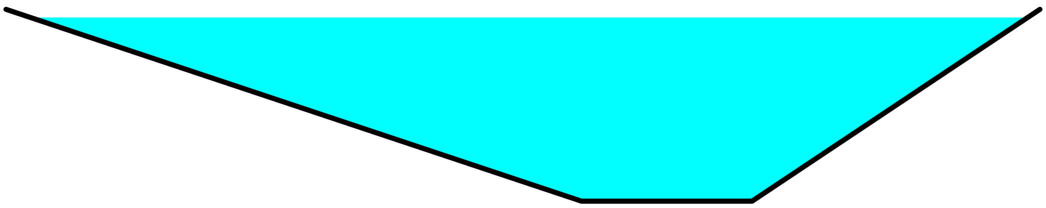
Summary for Reach 7R: through ditch

Inflow = 123.67 cfs @ 12.05 hrs, Volume= 3.949 af
Outflow = 123.11 cfs @ 12.06 hrs, Volume= 3.949 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.35 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.57 fps, Avg. Travel Time= 3.2 min

Peak Storage= 7,298 cf @ 12.06 hrs
Average Depth at Peak Storage= 2.15'
Bank-Full Depth= 2.25' Flow Area= 15.9 sf, Capacity= 136.08 cfs

2.00' x 2.25' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 3.0 1.5 '/' Top Width= 12.13'
Length= 495.0' Slope= 0.0646 '/'
Inlet Invert= 2,272.00', Outlet Invert= 2,240.00'



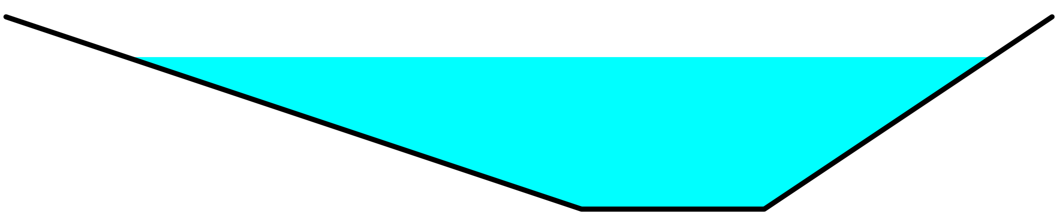
Summary for Reach 8R: (new Reach)

Inflow	=	74.60 cfs @	12.01 hrs, Volume=	2.125 af
Outflow	=	74.14 cfs @	12.02 hrs, Volume=	2.125 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.79 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.74 fps, Avg. Travel Time= 2.2 min

Peak Storage= 3,523 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.66'
Bank-Full Depth= 2.10' Flow Area= 14.1 sf, Capacity= 125.74 cfs

2.00' x 2.10' deep channel, n= 0.050
Side Slope Z-value= 3.0 1.5 '/' Top Width= 11.45'
Length= 370.0' Slope= 0.0757 '/'
Inlet Invert= 2,300.00', Outlet Invert= 2,272.00'



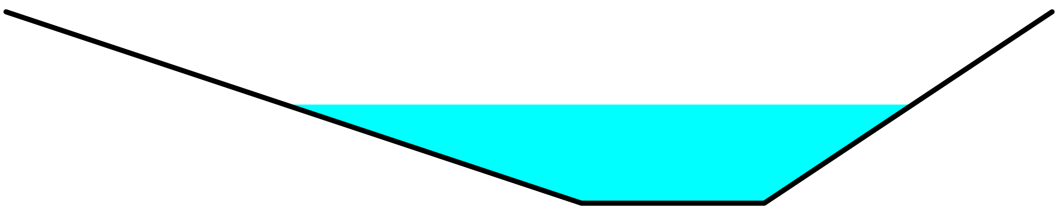
Summary for Reach 9R: (new Reach)

Inflow	=	34.42 cfs @	12.14 hrs, Volume=	1.304 af
Outflow	=	33.86 cfs @	12.16 hrs, Volume=	1.304 af, Atten= 2%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.06 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 2.37 fps, Avg. Travel Time= 4.8 min

Peak Storage= 3,286 cf @ 12.16 hrs
Average Depth at Peak Storage= 1.08'
Bank-Full Depth= 2.10' Flow Area= 14.1 sf, Capacity= 144.54 cfs

2.00' x 2.10' deep channel, n= 0.050
Side Slope Z-value= 3.0 1.5 '/' Top Width= 11.45'
Length= 685.0' Slope= 0.1000 '/'
Inlet Invert= 2,368.00', Outlet Invert= 2,299.50'



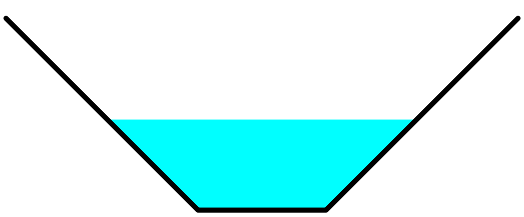
Summary for Reach 16a: Roadside Channel

Inflow Area = 13.998 ac, 12.35% Impervious, Inflow Depth = 5.18" for 100-YEAR event
Inflow = 41.81 cfs @ 12.13 hrs, Volume= 6.046 af
Outflow = 41.28 cfs @ 12.15 hrs, Volume= 6.046 af, Atten= 1%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.53 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.61 fps, Avg. Travel Time= 7.2 min

Peak Storage= 3,386 cf @ 12.15 hrs
Average Depth at Peak Storage= 1.42'
Bank-Full Depth= 3.00' Flow Area= 15.0 sf, Capacity= 187.72 cfs

2.00' x 3.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 8.00'
Length= 700.0' Slope= 0.1100 '/'
Inlet Invert= 2,446.00', Outlet Invert= 2,369.00'



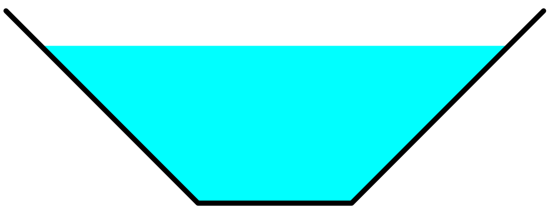
Summary for Reach 434C: RIP RAP SWALE

Inflow Area = 7.835 ac, 0.00% Impervious, Inflow Depth = 4.68" for 100-YEAR event
Inflow = 57.24 cfs @ 12.01 hrs, Volume= 3.056 af
Outflow = 57.14 cfs @ 12.02 hrs, Volume= 3.056 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.91 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.12 fps, Avg. Travel Time= 1.5 min

Peak Storage= 1,555 cf @ 12.02 hrs
Average Depth at Peak Storage= 2.04'
Bank-Full Depth= 2.50' Flow Area= 11.3 sf, Capacity= 86.19 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 188.0' Slope= 0.0319 '/'
Inlet Invert= 2,494.00', Outlet Invert= 2,488.00'



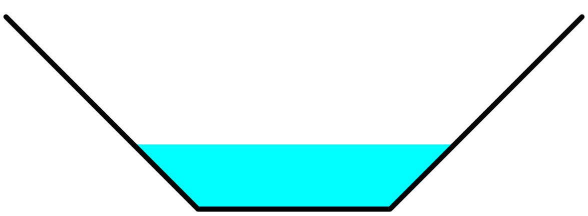
Summary for Reach 444: Roadside Swale

Inflow Area = 1.640 ac, 0.00% Impervious, Inflow Depth = 4.76" for 100-YEAR event
Inflow = 12.50 cfs @ 11.99 hrs, Volume= 0.650 af
Outflow = 12.43 cfs @ 12.00 hrs, Volume= 0.650 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.91 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.78 fps, Avg. Travel Time= 3.0 min

Peak Storage= 570 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.67'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 95.47 cfs

2.00' x 2.00' deep channel, n= 0.033 Earth, grassed & winding
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 317.0' Slope= 0.0662 '/'
Inlet Invert= 2,548.00', Outlet Invert= 2,527.00'



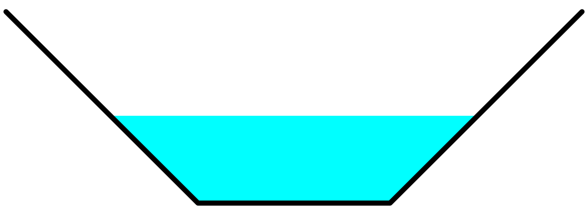
Summary for Reach 446: Roadside Swale

Inflow Area = 2.288 ac, 0.00% Impervious, Inflow Depth = 4.80" for 100-YEAR event
Inflow = 17.73 cfs @ 11.99 hrs, Volume= 0.916 af
Outflow = 17.21 cfs @ 12.01 hrs, Volume= 0.916 af, Atten= 3%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.48 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.66 fps, Avg. Travel Time= 7.2 min

Peak Storage= 1,912 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.91'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 76.79 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 720.0' Slope= 0.0354 '/'
Inlet Invert= 2,526.00', Outlet Invert= 2,500.50'



Summary for Reach 450: Swale

Inflow Area = 5.127 ac, 11.71% Impervious, Inflow Depth = 4.74" for 100-YEAR event
Inflow = 39.86 cfs @ 12.00 hrs, Volume= 2.025 af
Outflow = 38.45 cfs @ 12.02 hrs, Volume= 2.025 af, Atten= 4%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.97 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.62 fps, Avg. Travel Time= 8.5 min

Peak Storage= 4,554 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.23'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 109.41 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 826.0' Slope= 0.0533 '/'
Inlet Invert= 2,497.00', Outlet Invert= 2,453.00'

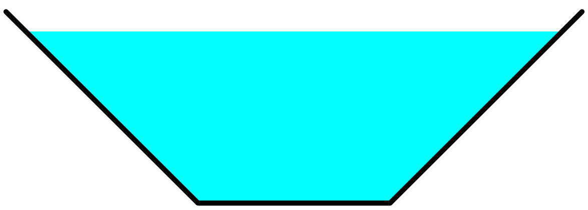
Summary for Reach 450a: Overland Swale

Inflow Area = 7.328 ac, 8.19% Impervious, Inflow Depth = 4.73" for 100-YEAR event
Inflow = 54.04 cfs @ 12.00 hrs, Volume= 2.886 af
Outflow = 53.98 cfs @ 12.01 hrs, Volume= 2.886 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.93 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.79 fps, Avg. Travel Time= 1.5 min

Peak Storage= 1,089 cf @ 12.01 hrs
Average Depth at Peak Storage= 1.79'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 67.04 cfs

2.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 160.0' Slope= 0.0750 '/'
Inlet Invert= 2,452.00', Outlet Invert= 2,440.00'



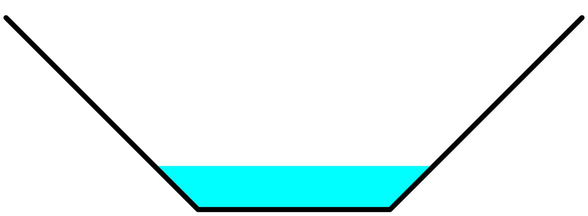
Summary for Reach 451: Roadside Swale

Inflow Area = 0.287 ac, 64.25% Impervious, Inflow Depth = 6.69" for 100-YEAR event
Inflow = 3.10 cfs @ 11.97 hrs, Volume= 0.160 af
Outflow = 3.07 cfs @ 11.98 hrs, Volume= 0.160 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.76 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.65 fps, Avg. Travel Time= 4.3 min

Peak Storage= 184 cf @ 11.98 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 46.68 cfs

2.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 165.0' Slope= 0.0364 '/'
Inlet Invert= 2,450.00', Outlet Invert= 2,444.00'



Summary for Reach 501a: Overland Swale

Inflow Area = 0.397 ac, 57.79% Impervious, Inflow Depth = 6.57" for 100-YEAR event
Inflow = 4.25 cfs @ 11.97 hrs, Volume= 0.217 af
Outflow = 4.25 cfs @ 11.97 hrs, Volume= 0.217 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.00 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 1.2 min

Peak Storage= 64 cf @ 11.97 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 1.00' Flow Area= 2.5 sf, Capacity= 25.98 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.5 '/' Top Width= 3.00'
Length= 90.0' Slope= 0.0889 '/'
Inlet Invert= 2,436.00', Outlet Invert= 2,428.00'

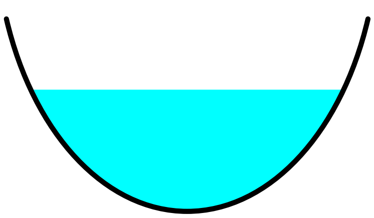
Summary for Reach 502a: Overland Swale

Inflow Area = 1.166 ac, 42.82% Impervious, Inflow Depth > 5.20" for 100-YEAR event
Inflow = 7.35 cfs @ 12.04 hrs, Volume= 0.506 af
Outflow = 7.33 cfs @ 12.06 hrs, Volume= 0.506 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.94 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.61 fps, Avg. Travel Time= 6.2 min

Peak Storage= 402 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.63'
Bank-Full Depth= 1.00' Flow Area= 1.3 sf, Capacity= 18.45 cfs

2.00' x 1.00' deep Parabolic Channel, n= 0.030 Earth, clean & winding
Length= 600.0' Slope= 0.2258 '/'
Inlet Invert= 2,418.00', Outlet Invert= 2,282.50'



Summary for Pond 434R: (new Pond)

Inflow Area =	3.572 ac,	0.00% Impervious,	Inflow Depth = 4.85"	for 100-YEAR event
Inflow =	27.49 cfs @	11.99 hrs, Volume=	1.443 af	
Outflow =	27.49 cfs @	11.99 hrs, Volume=	1.443 af,	Atten= 0%, Lag= 0.0 min
Primary =	27.49 cfs @	11.99 hrs, Volume=	1.443 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,503.30' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,499.00'	**24.0" Round Culvert** L= 25.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,499.00' / 2,498.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=27.45 cfs @ 11.99 hrs HW=2,503.29' TW=2,498.20' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 27.45 cfs @ 8.74 fps)

Summary for Pond 439AP: CB 439A

Inflow Area =	0.780 ac,	5.13% Impervious,	Inflow Depth = 5.04"	for 100-YEAR event
Inflow =	6.49 cfs @	11.99 hrs, Volume=	0.328 af	
Outflow =	6.49 cfs @	11.99 hrs, Volume=	0.328 af,	Atten= 0%, Lag= 0.0 min
Primary =	6.49 cfs @	11.99 hrs, Volume=	0.328 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,577.12' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,576.00'	**24.0" Round Culvert** L= 265.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,576.00' / 2,559.00' S= 0.0642 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.49 cfs @ 11.99 hrs HW=2,577.12' TW=2,560.88' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 6.49 cfs @ 3.60 fps)

Summary for Pond 439P: Catch Basin 439

Inflow Area =	2.440 ac,	14.71% Impervious,	Inflow Depth = 5.36"	for 100-YEAR event
Inflow =	21.97 cfs @	11.98 hrs, Volume=	1.090 af	
Outflow =	21.97 cfs @	11.98 hrs, Volume=	1.090 af,	Atten= 0%, Lag= 0.0 min
Primary =	21.97 cfs @	11.98 hrs, Volume=	1.090 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,560.89' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,559.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,559.00' / 2,527.00' S= 0.0914 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

#2	Primary	2,564.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=21.94 cfs @ 11.98 hrs HW=2,560.89' TW=2,529.05' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 21.94 cfs @ 4.68 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 440P: Catch Basin 440

Inflow Area = 0.780 ac, 5.13% Impervious, Inflow Depth = 5.04" for 100-YEAR event
Inflow = 6.49 cfs @ 11.99 hrs, Volume= 0.328 af
Outflow = 6.49 cfs @ 11.99 hrs, Volume= 0.328 af, Atten= 0%, Lag= 0.0 min
Primary = 6.49 cfs @ 11.99 hrs, Volume= 0.328 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,586.12' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,585.00'	**24.0" Round Culvert** L= 180.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,585.00' / 2,576.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,589.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.49 cfs @ 11.99 hrs HW=2,586.12' TW=2,577.12' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 6.49 cfs @ 3.60 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 444R: Culvert 444r

Inflow Area = 2.288 ac, 0.00% Impervious, Inflow Depth = 4.80" for 100-YEAR event
Inflow = 17.73 cfs @ 11.99 hrs, Volume= 0.916 af
Outflow = 17.73 cfs @ 11.99 hrs, Volume= 0.916 af, Atten= 0%, Lag= 0.0 min
Primary = 17.73 cfs @ 11.99 hrs, Volume= 0.916 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,529.37' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,527.00'	**24.0" Round Culvert** L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 2,527.00' / 2,526.00' S= 0.0125 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=17.72 cfs @ 11.99 hrs HW=2,529.37' TW=2,526.90' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 17.72 cfs @ 5.64 fps)

Summary for Pond 445P: Catch Basin 445

Inflow Area = 2.727 ac, 19.63% Impervious, Inflow Depth = 5.50" for 100-YEAR event
Inflow = 25.05 cfs @ 11.98 hrs, Volume= 1.250 af
Outflow = 25.05 cfs @ 11.98 hrs, Volume= 1.250 af, Atten= 0%, Lag= 0.0 min
Primary = 25.05 cfs @ 11.98 hrs, Volume= 1.250 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,529.05' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,527.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,527.00' / 2,520.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,534.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=25.01 cfs @ 11.98 hrs HW=2,529.05' TW=2,518.20' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 25.01 cfs @ 4.87 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 447P: Catch Basin 447

Inflow Area = 2.995 ac, 25.63% Impervious, Inflow Depth = 5.67" for 100-YEAR event
Inflow = 28.07 cfs @ 11.98 hrs, Volume= 1.415 af
Outflow = 28.07 cfs @ 11.98 hrs, Volume= 1.415 af, Atten= 0%, Lag= 0.0 min
Primary = 28.07 cfs @ 11.98 hrs, Volume= 1.415 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,518.20' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,516.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,516.00' / 2,509.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,523.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=28.01 cfs @ 11.98 hrs HW=2,518.20' TW=2,509.31' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 28.01 cfs @ 5.05 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 449aR: Catch Basin

Inflow Area = 1.048 ac, 57.26% Impervious, Inflow Depth = 6.57" for 100-YEAR event
Inflow = 11.22 cfs @ 11.97 hrs, Volume= 0.574 af
Outflow = 11.22 cfs @ 11.97 hrs, Volume= 0.574 af, Atten= 0%, Lag= 0.0 min
Primary = 11.22 cfs @ 11.97 hrs, Volume= 0.574 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,511.73' @ 11.97 hrs
Flood Elev= 2,512.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,509.00'	**18.0" Round Culvert** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,509.00' / 2,507.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,512.00'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=11.20 cfs @ 11.97 hrs HW=2,511.72' TW=2,501.31' (Dynamic Tailwater)
1=Culvert (Barrel Controls 11.20 cfs @ 6.34 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 449P: Catch Basin 449

Inflow Area = 3.187 ac, 30.11% Impervious, Inflow Depth = 5.79" for 100-YEAR event
Inflow = 30.24 cfs @ 11.97 hrs, Volume= 1.539 af
Outflow = 30.24 cfs @ 11.97 hrs, Volume= 1.539 af, Atten= 0%, Lag= 0.0 min
Primary = 30.24 cfs @ 11.97 hrs, Volume= 1.539 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,509.31' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,507.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,507.00' / 2,492.00' S= 0.0429 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,513.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=30.18 cfs @ 11.97 hrs HW=2,509.31' TW=2,490.42' (Dynamic Tailwater)
1=Culvert (Inlet Controls 30.18 cfs @ 5.17 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 451P: Catch Basin 451

Inflow Area = 3.372 ac, 33.95% Impervious, Inflow Depth = 5.90" for 100-YEAR event
Inflow = 32.34 cfs @ 11.97 hrs, Volume= 1.659 af
Outflow = 32.34 cfs @ 11.97 hrs, Volume= 1.659 af, Atten= 0%, Lag= 0.0 min
Primary = 32.34 cfs @ 11.97 hrs, Volume= 1.659 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,490.42' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,488.00'	**36.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,488.00' / 2,468.00' S= 0.0571 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,496.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=32.28 cfs @ 11.97 hrs HW=2,490.42' TW=2,468.63' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 32.28 cfs @ 5.29 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 452P: Catch Basin 452

Inflow Area = 3.734 ac, 38.26% Impervious, Inflow Depth = 6.02" for 100-YEAR event
Inflow = 36.36 cfs @ 11.97 hrs, Volume= 1.875 af
Outflow = 36.36 cfs @ 11.97 hrs, Volume= 1.875 af, Atten= 0%, Lag= 0.0 min
Primary = 36.36 cfs @ 11.97 hrs, Volume= 1.875 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,468.64' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,466.00'	**36.0" Round Culvert** L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,466.00' / 2,462.00' S= 0.0364 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,472.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=36.30 cfs @ 11.97 hrs HW=2,468.63' TW=2,457.29' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 36.30 cfs @ 5.52 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 452R: Driveway Culvert

Inflow Area = 7.883 ac, 0.00% Impervious, Inflow Depth = 4.68" for 100-YEAR event
Inflow = 57.49 cfs @ 12.02 hrs, Volume= 3.076 af
Outflow = 57.49 cfs @ 12.02 hrs, Volume= 3.076 af, Atten= 0%, Lag= 0.0 min
Primary = 57.49 cfs @ 12.02 hrs, Volume= 3.076 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,490.60' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,487.50'	**55.0" W x 38.0" H, R=38.0" Elliptical Culvert** L= 300.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,487.50' / 2,470.00' S= 0.0583 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 11.50 sf

Primary OutFlow Max=57.41 cfs @ 12.02 hrs HW=2,490.60' TW=2,457.65' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 57.41 cfs @ 5.02 fps)

Summary for Pond 453P: Catch Basin 453

Inflow Area = 0.287 ac, 64.25% Impervious, Inflow Depth = 6.69" for 100-YEAR event
Inflow = 3.10 cfs @ 11.97 hrs, Volume= 0.160 af
Outflow = 3.10 cfs @ 11.97 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min
Primary = 3.10 cfs @ 11.97 hrs, Volume= 0.160 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,452.83' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,456.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	2,452.00'	**18.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,452.00' / 2,451.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.09 cfs @ 11.97 hrs HW=2,452.83' TW=2,450.45' (Dynamic Tailwater)
1=Orifice/Grate (Controls 0.00 cfs)
2=Culvert (Inlet Controls 3.09 cfs @ 3.10 fps)

Summary for Pond 500a: CB 500a

Inflow Area = 0.397 ac, 57.79% Impervious, Inflow Depth = 6.57" for 100-YEAR event
Inflow = 4.25 cfs @ 11.97 hrs, Volume= 0.217 af
Outflow = 4.25 cfs @ 11.97 hrs, Volume= 0.217 af, Atten= 0%, Lag= 0.0 min
Primary = 4.25 cfs @ 11.97 hrs, Volume= 0.217 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,442.51' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,440.75'	**12.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,440.75' / 2,436.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,446.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.25 cfs @ 11.97 hrs HW=2,442.51' TW=2,436.33' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.25 cfs @ 5.41 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond AC: P-3- Pond

Inflow Area = 13.998 ac, 12.35% Impervious, Inflow Depth = 5.19" for 100-YEAR event
Inflow = 112.57 cfs @ 11.99 hrs, Volume= 6.059 af
Outflow = 41.81 cfs @ 12.13 hrs, Volume= 6.046 af, Atten= 63%, Lag= 8.4 min
Primary = 41.81 cfs @ 12.13 hrs, Volume= 6.046 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Starting Elev= 2,454.60' Surf.Area= 18,074 sf Storage= 49,750 cf
Peak Elev= 2,458.04' @ 12.13 hrs Surf.Area= 44,885 sf Storage= 169,834 cf (120,085 cf above start)

Plug-Flow detention time= 635.8 min calculated for 4.904 af (81% of inflow)
Center-of-Mass det. time= 434.7 min (1,239.9 - 805.2)

Volume	Invert	Avail.Storage	Storage Description
#1	2,448.00'	190,566 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
2,448.00	2,220	247.0	0	0	2,220
2,450.00	2,450	550.0	4,668	4,668	21,454
2,452.00	9,960	590.0	11,567	16,235	25,257
2,454.00	14,058	650.0	23,901	40,135	31,306
2,455.00	21,032	724.0	17,428	57,564	39,427
2,456.00	37,023	950.0	28,653	86,217	69,544
2,458.00	44,800	1,000.0	81,700	167,916	77,544
2,458.50	45,800	1,004.0	22,650	190,566	78,356

Device	Routing	Invert	Outlet Devices
#1	Primary	2,453.00'	**24.0" Round Culvert** L= 120.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,453.00' / 2,450.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,454.60'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	2,456.25'	**18.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Primary	2,457.50'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=41.80 cfs @ 12.13 hrs HW=2,458.04' TW=2,447.40' (Dynamic Tailwater)
1=**Culvert** (Passes 8.92 cfs of 30.41 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 0.76 cfs @ 8.72 fps)
3=**Orifice/Grate** (Orifice Controls 8.16 cfs @ 5.44 fps)
4=**Broad-Crested Rectangular Weir** (Weir Controls 32.88 cfs @ 2.02 fps)

Summary for Pond B9: bioretention-LEACH

Inflow Area = 1.166 ac, 42.82% Impervious, Inflow Depth = 6.10" for 100-YEAR event
Inflow = 11.88 cfs @ 11.97 hrs, Volume= 0.593 af
Outflow = 7.35 cfs @ 12.04 hrs, Volume= 0.506 af, Atten= 38%, Lag= 4.4 min
Primary = 7.35 cfs @ 12.04 hrs, Volume= 0.506 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,424.44' @ 12.04 hrs Surf.Area= 11,241 sf Storage= 9,035 cf

Plug-Flow detention time= 301.0 min calculated for 0.506 af (85% of inflow)
Center-of-Mass det. time= 233.9 min (1,023.2 - 789.3)

Volume	Invert	Avail.Storage	Storage Description
#1	2,418.00'	1,366 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 3,414 cf Overall x 40.0% Voids
#2	2,419.00'	2,048 cf	**filter media (Prismatic)** Listed below (Recalc) 13,656 cf Overall x 15.0% Voids
#3	2,423.00'	8,215 cf	**surface storage (Prismatic)** Listed below (Recalc)
		11,629 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,418.00	3,414	0	0
2,419.00	3,414	3,414	3,414

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,419.00	3,414	0	0
2,423.00	3,414	13,656	13,656

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,423.00	3,414	0	0
2,424.00	4,100	3,757	3,757
2,425.00	4,815	4,458	8,215

Device	Routing	Invert	Outlet Devices
#1	Primary	2,418.50'	**24.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,418.50' / 2,418.00' S= 0.0076 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,423.00'	**1.000 in/hr Exfiltration over Surface area above 2,423.00'** Excluded Surface area = 10,242 sf
#3	Device 1	2,423.50'	**12.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.34 cfs @ 12.04 hrs HW=2,424.44' TW=2,418.63' (Dynamic Tailwater)
└─**1=Culvert** (Passes 7.34 cfs of 33.61 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.02 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 7.32 cfs @ 4.66 fps)

Summary for Pond c1:

Inflow	=	5.95 cfs @	12.39 hrs,	Volume=	0.373 af
Primary	=	5.95 cfs @	12.39 hrs,	Volume=	0.373 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C2:

Inflow Area = 37.079 ac, 2.42% Impervious, Inflow Depth = 4.48" for 100-YEAR event
Inflow = 95.90 cfs @ 12.39 hrs, Volume= 13.837 af
Primary = 95.90 cfs @ 12.39 hrs, Volume= 13.837 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C3:

Inflow Area = 0.709 ac, 33.34% Impervious, Inflow Depth = 5.85" for 100-YEAR event
Inflow = 6.92 cfs @ 11.97 hrs, Volume= 0.345 af
Primary = 6.92 cfs @ 11.97 hrs, Volume= 0.345 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C4:

Inflow Area = 17.629 ac, 10.93% Impervious, Inflow Depth > 4.19" for 100-YEAR event
Inflow = 12.65 cfs @ 12.14 hrs, Volume= 6.162 af
Primary = 12.65 cfs @ 12.14 hrs, Volume= 6.162 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5:

Inflow Area = 9.412 ac, 1.70% Impervious, Inflow Depth = 3.53" for 100-YEAR event
Inflow = 13.99 cfs @ 12.01 hrs, Volume= 2.771 af
Primary = 13.99 cfs @ 12.01 hrs, Volume= 2.771 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C5A:

Inflow Area = 12.084 ac, 0.47% Impervious, Inflow Depth = 2.65" for 100-YEAR event
Inflow = 7.94 cfs @ 12.05 hrs, Volume= 2.672 af
Primary = 7.94 cfs @ 12.05 hrs, Volume= 2.672 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6:

Inflow Area = 58.487 ac, 0.46% Impervious, Inflow Depth = 5.27" for 100-YEAR event
Inflow = 364.96 cfs @ 12.14 hrs, Volume= 25.707 af
Primary = 364.96 cfs @ 12.14 hrs, Volume= 25.707 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond C6A:

Inflow Area = 41.923 ac, 1.24% Impervious, Inflow Depth = 4.58" for 100-YEAR event
Inflow = 167.97 cfs @ 12.24 hrs, Volume= 15.998 af
Primary = 167.97 cfs @ 12.24 hrs, Volume= 15.998 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 1a: Design Point 1a

Inflow Area = 4.640 ac, 10.76% Impervious, Inflow Depth = 4.65" for 100-YEAR event
Inflow = 27.50 cfs @ 12.07 hrs, Volume= 1.798 af
Primary = 27.50 cfs @ 12.07 hrs, Volume= 1.798 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP2: ditch

Inflow Area = 37.079 ac, 2.42% Impervious, Inflow Depth = 4.61" for 100-YEAR event
Inflow = 101.95 cfs @ 12.38 hrs, Volume= 14.239 af
Outflow = 101.85 cfs @ 12.39 hrs, Volume= 14.210 af, Atten= 0%, Lag= 0.5 min
Primary = 95.90 cfs @ 12.39 hrs, Volume= 13.837 af
Secondary = 5.95 cfs @ 12.39 hrs, Volume= 0.373 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,434.73' @ 12.39 hrs Surf.Area= 8,134 sf Storage= 18,232 cf
Flood Elev= 2,435.00' Surf.Area= 8,869 sf Storage= 20,532 cf

Plug-Flow detention time= 5.9 min calculated for 14.209 af (100% of inflow)
Center-of-Mass det. time= 4.7 min (852.9 - 848.3)

Volume	Invert	Avail.Storage	Storage Description
#1	2,430.00'	20,532 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,430.00	614	0	0
2,432.00	3,129	3,743	3,743
2,434.00	6,150	9,279	13,022
2,435.00	8,869	7,510	20,532

Device	Routing	Invert	Outlet Devices
#1	Primary	2,431.00'	**49.0" W x 33.0" H, R=25.1"/77.3" Arch CMP_Arch_1/2 49x33** L= 35.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,431.00' / 2,429.00' S= 0.0571 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 8.90 sf
#2	Secondary	2,433.36'	**18.0" Round Culvert** L= 40.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,433.36' / 2,431.00' S= 0.0590 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Primary	2,434.50'	**100.0' long x 35.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=95.88 cfs @ 12.39 hrs HW=2,434.73' TW=0.00' (Dynamic Tailwater)
├─**1=CMP_Arch_1/2 49x33** (Inlet Controls 66.39 cfs @ 7.46 fps)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 29.49 cfs @ 1.29 fps)

Secondary OutFlow Max=5.95 cfs @ 12.39 hrs HW=2,434.73' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 5.95 cfs @ 3.52 fps)

Summary for Pond DP3: 24"HDPE

Inflow Area = 0.709 ac, 33.34% Impervious, Inflow Depth = 5.85" for 100-YEAR event
Inflow = 6.92 cfs @ 11.97 hrs, Volume= 0.345 af
Outflow = 6.92 cfs @ 11.97 hrs, Volume= 0.345 af, Atten= 0%, Lag= 0.0 min
Primary = 6.92 cfs @ 11.97 hrs, Volume= 0.345 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,443.25' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,442.00'	**24.0" Round Culvert** L= 35.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,442.00' / 2,441.00' S= 0.0286 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.90 cfs @ 11.97 hrs HW=2,443.25' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 6.90 cfs @ 3.35 fps)

Summary for Pond DP4: 18" HDPE Culvert

Inflow Area = 17.629 ac, 10.93% Impervious, Inflow Depth = 5.08" for 100-YEAR event
Inflow = 47.08 cfs @ 12.14 hrs, Volume= 7.466 af
Outflow = 47.08 cfs @ 12.14 hrs, Volume= 7.466 af, Atten= 0%, Lag= 0.0 min
Primary = 12.65 cfs @ 12.14 hrs, Volume= 6.162 af
Secondary = 34.42 cfs @ 12.14 hrs, Volume= 1.304 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,372.59' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,369.00'	**18.0" Round Culvert** L= 25.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,369.00' / 2,368.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,371.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=12.65 cfs @ 12.14 hrs HW=2,372.59' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 12.65 cfs @ 7.16 fps)

Secondary OutFlow Max=34.39 cfs @ 12.14 hrs HW=2,372.59' TW=2,369.07' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 34.39 cfs @ 3.16 fps)

Summary for Pond DP5: 18" HDPE Culvert

Inflow Area = 9.412 ac, 1.70% Impervious, Inflow Depth = 6.24" for 100-YEAR event
Inflow = 88.59 cfs @ 12.01 hrs, Volume= 4.896 af
Outflow = 88.59 cfs @ 12.01 hrs, Volume= 4.896 af, Atten= 0%, Lag= 0.0 min
Primary = 13.99 cfs @ 12.01 hrs, Volume= 2.771 af
Secondary = 74.60 cfs @ 12.01 hrs, Volume= 2.125 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,303.72' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,299.50'	**18.0" Round Culvert** L= 25.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,299.50' / 2,298.50' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	2,302.00'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=13.99 cfs @ 12.01 hrs HW=2,303.72' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 13.99 cfs @ 7.92 fps)

Secondary OutFlow Max=74.60 cfs @ 12.01 hrs HW=2,303.72' TW=2,301.65' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 74.60 cfs @ 4.33 fps)

Summary for Pond DP5A: 12" steel Culvert

Inflow Area = 12.084 ac, 0.47% Impervious, Inflow Depth = 6.57" for 100-YEAR event
Inflow = 131.61 cfs @ 12.05 hrs, Volume= 6.621 af
Outflow = 131.61 cfs @ 12.05 hrs, Volume= 6.621 af, Atten= 0%, Lag= 0.0 min
Primary = 7.94 cfs @ 12.05 hrs, Volume= 2.672 af
Secondary = 123.67 cfs @ 12.05 hrs, Volume= 3.949 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,276.91' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,272.00'	**12.0" Round Culvert** L= 25.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,272.00' / 2,271.50' S= 0.0200 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf
#2	Secondary	2,274.50'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=7.94 cfs @ 12.05 hrs HW=2,276.91' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 7.94 cfs @ 10.11 fps)

Secondary OutFlow Max=123.65 cfs @ 12.05 hrs HW=2,276.91' TW=2,274.15' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 123.65 cfs @ 5.13 fps)

Summary for Pond DP6: 55" CMP Culvert

Inflow Area = 58.487 ac, 0.46% Impervious, Inflow Depth = 5.27" for 100-YEAR event
Inflow = 364.96 cfs @ 12.14 hrs, Volume= 25.707 af
Outflow = 364.96 cfs @ 12.14 hrs, Volume= 25.707 af, Atten= 0%, Lag= 0.0 min
Primary = 364.96 cfs @ 12.14 hrs, Volume= 25.707 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,243.45' @ 12.14 hrs
Flood Elev= 2,245.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,238.00'	**96.0" W x 48.0" H Box Culvert** L= 25.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,238.00' / 2,237.00' S= 0.0400 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 32.00 sf
#2	Primary	2,243.00'	**100.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=364.80 cfs @ 12.14 hrs HW=2,243.45' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 282.08 cfs @ 8.82 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 82.72 cfs @ 1.82 fps)

Summary for Pond DP6A: 30" Steel Culvert

Inflow Area = 41.923 ac, 1.24% Impervious, Inflow Depth = 4.58" for 100-YEAR event
Inflow = 167.97 cfs @ 12.24 hrs, Volume= 15.998 af
Outflow = 167.97 cfs @ 12.24 hrs, Volume= 15.998 af, Atten= 0%, Lag= 0.0 min
Primary = 167.97 cfs @ 12.24 hrs, Volume= 15.998 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,244.93' @ 12.24 hrs
Flood Elev= 2,245.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**64.0" W x 43.0" H, R=32.5"/99.3" Arch CMP_Arch_1/2 64x43** L= 65.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,240.00' / 2,238.00' S= 0.0308 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 15.13 sf

#2	Primary	2,244.50'	**50.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=167.91 cfs @ 12.24 hrs HW=2,244.93' TW=0.00' (Dynamic Tailwater)
↑1=**CMP_Arch_1/2 64x43** (Inlet Controls 130.31 cfs @ 8.61 fps)
└2=**Broad-Crested Rectangular Weir** (Weir Controls 37.60 cfs @ 1.76 fps)

Summary for Pond Z1: DRY SWALE

Inflow Area = 1.555 ac, 38.61% Impervious, Inflow Depth = 6.03" for 100-YEAR event
Inflow = 15.59 cfs @ 11.97 hrs, Volume= 0.782 af
Outflow = 12.70 cfs @ 12.02 hrs, Volume= 0.582 af, Atten= 19%, Lag= 2.9 min
Primary = 12.70 cfs @ 12.02 hrs, Volume= 0.582 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,501.38' @ 12.02 hrs Surf.Area= 6,813 sf Storage= 12,688 cf

Plug-Flow detention time= 156.2 min calculated for 0.582 af (74% of inflow)
Center-of-Mass det. time= 65.1 min (853.0 - 787.9)

Volume	Invert	Avail.Storage	Storage Description
#1	2,498.50'	13,550 cf	**surface storage (Prismatic)** Listed below (Recalc)

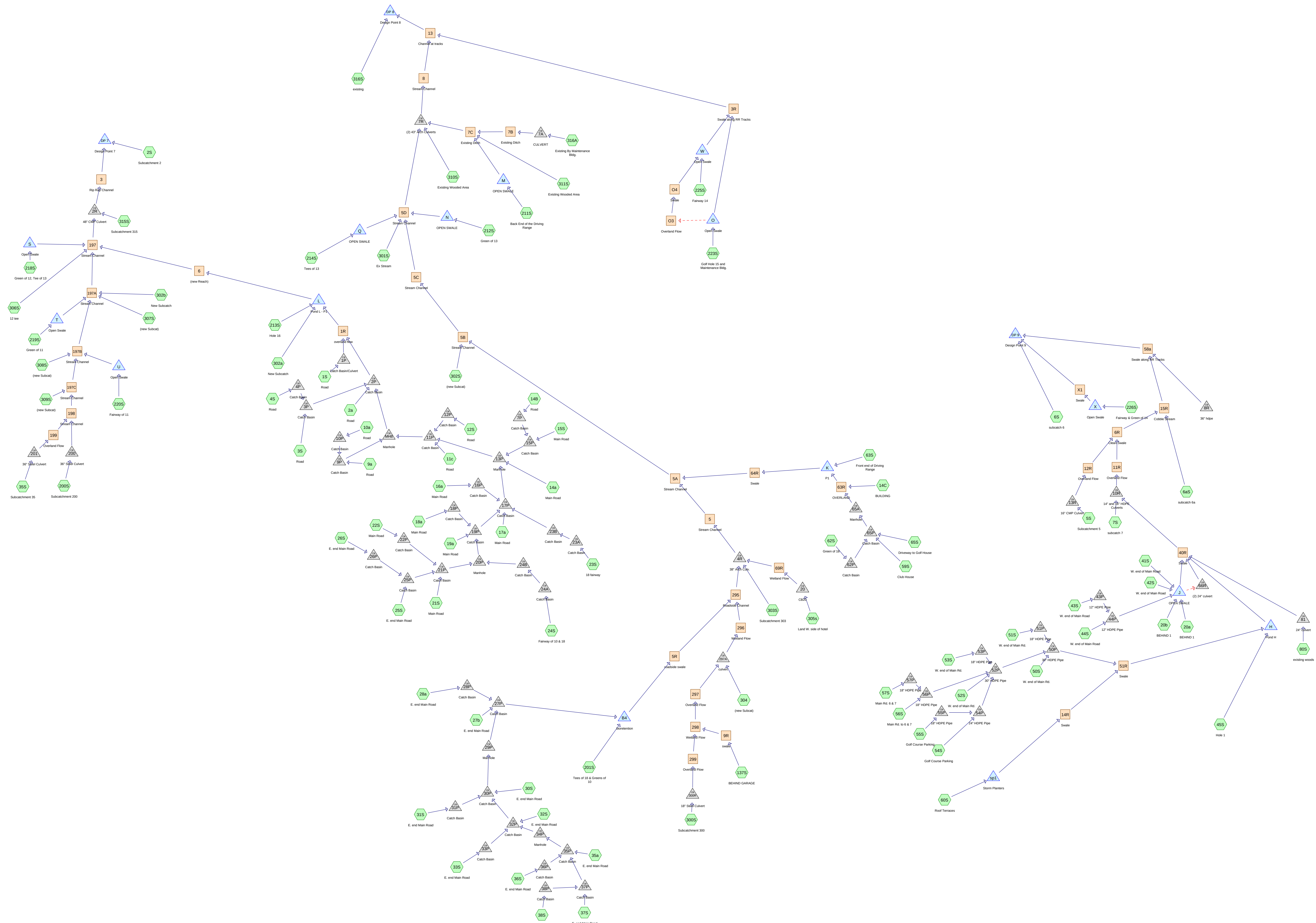
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,498.50	1,800	0	0
2,500.50	5,500	7,300	7,300
2,501.50	7,000	6,250	13,550

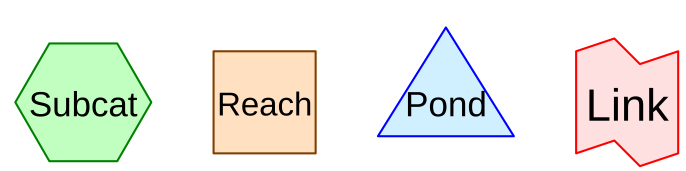
Device	Routing	Invert	Outlet Devices
#1	Primary	2,500.75'	**30.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.68 cfs @ 12.02 hrs HW=2,501.37' TW=2,498.23' (Dynamic Tailwater)
└1=**Orifice/Grate** (Weir Controls 12.68 cfs @ 2.58 fps)

APPENDIX F

HydroCAD Data – Proposed Model – Wildacres West





Routing Diagram for 07074_Pro-WildacresWest

Prepared by The LA group, Printed 2/21/2014

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
46.886	74	>75% Grass cover, Good, HSG C (1S, 2a, 3S, 6aS, 6S, 7S, 9a, 10a, 11c, 12S, 14a, 14B, 14C, 15S, 16a, 17a, 18a, 19a, 20a, 20b, 21S, 22S, 23S, 24S, 25S, 26S, 27b, 28a, 30S, 31S, 32S, 33S, 35a, 36S, 37S, 38S, 43S, 44S, 45S, 51S, 52S, 53S, 54S, 55S, 56S, 57S, 62S, 63S, 65S, 80S, 137S, 201S, 211S, 212S, 213S, 214S, 218S, 219S, 220S, 223S, 225S, 226S, 301S, 302a, 302b, 303S, 304, 305s, 306S, 307S, 308S, 309S, 310S, 311S, 315S, 316S)
38.893	74	Fairway/Tee/Green, Good, HSG C (6aS, 23S, 24S, 45S, 51S, 53S, 60S, 62S, 63S, 80S, 201S, 211S, 212S, 213S, 214S, 218S, 219S, 220S, 223S, 225S, 226S, 303S, 305s, 307S, 309S, 316S)
20.779	71	Meadow, non-grazed, HSG C (2S, 5S, 6aS, 35S, 200S, 300S, 302a, 302b, 302S, 306S, 316A)
5.969	98	Paved (2a, 3S, 4S, 6aS, 6S, 9a, 10a, 11c, 12S, 14a, 15S, 16a, 17a, 18a, 19a, 21S, 22S, 25S, 26S, 27b, 28a, 30S, 31S, 32S, 33S, 35a, 36S, 37S, 38S, 41S, 42S, 43S, 44S, 50S, 51S, 52S, 53S, 54S, 55S, 56S, 57S, 65S, 309S, 310S, 311S, 316S)
0.249	74	Paved (Porous) (307S)
0.027	74	Paved (porous) (302S)
0.558	98	Paved Road (35S, 200S, 300S)
0.067	98	Paved parking (316A)
0.223	98	Paved parking & roofs (7S)
1.166	98	Paved parking, HSG C (5S, 14B, 14C, 20a, 63S, 223S)
3.640	74	Porous Pavement (23S, 24S, 45S, 52S, 53S, 54S, 55S, 56S, 62S, 65S, 80S, 201S, 212S, 213S, 214S, 218S, 219S, 223S, 225S, 226S, 301S, 303S, 304, 305s, 306S, 309S, 310S, 311S, 316S)
0.132	98	Porous Pavement (211S)
0.164	74	Porous Paving (6aS)
0.101	98	Roadway (2S)
2.655	98	Roof (1S, 6aS, 6S, 18a, 35S, 59S, 60S, 223S)
0.031	98	Roof Area (5S)
0.100	98	Roofs (11c)
0.007	98	Roofs, HSG C (63S)
0.667	98	Water Surface, 0% imp, HSG C (63S, 213S)
0.179	98	Water Surface, HSG C (220S)
165.333	70	Woods, Good, HSG C (2S, 5S, 6aS, 6S, 7S, 20b, 24S, 35S, 45S, 63S, 80S, 137S, 200S, 201S, 220S, 223S, 300S, 301S, 302a, 302b, 302S, 303S, 304, 306S, 307S, 308S, 309S, 310S, 311S, 315S, 316A, 316S)
0.389	74	porous paving (220S)
288.212	**72**	**TOTAL AREA**

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Road Runoff Area=53,980 sf 57.09% Impervious Runoff Depth=1.64"
Flow Length=230' Tc=9.6 min CN=88 Runoff=3.16 cfs 0.170 af

Subcatchment 2a: Road Runoff Area=14,154 sf 77.24% Impervious Runoff Depth=2.06"
Flow Length=319' Tc=6.0 min CN=93 Runoff=1.13 cfs 0.056 af

Subcatchment 2S: Subcatchment 2 Runoff Area=18,469 sf 23.82% Impervious Runoff Depth=0.93"
Flow Length=375' Tc=7.8 min CN=77 Runoff=0.66 cfs 0.033 af

Subcatchment 3S: Road Runoff Area=7,863 sf 52.40% Impervious Runoff Depth=1.57"
Flow Length=272' Slope=0.1100 '/' Tc=6.0 min CN=87 Runoff=0.50 cfs 0.024 af

Subcatchment 4S: Road Runoff Area=4,505 sf 100.00% Impervious Runoff Depth=2.57"
Flow Length=274' Tc=6.0 min CN=98 Runoff=0.41 cfs 0.022 af

Subcatchment 5S: Subcatchment 5 Runoff Area=92,020 sf 7.43% Impervious Runoff Depth=0.74"
Flow Length=715' Tc=13.9 min CN=73 Runoff=1.94 cfs 0.130 af

Subcatchment 6aS: subcatch 6a Runoff Area=531,048 sf 4.06% Impervious Runoff Depth=0.69"
Flow Length=1,255' Tc=18.8 min CN=72 Runoff=8.65 cfs 0.703 af

Subcatchment 6S: subcatch 6 Runoff Area=389,580 sf 4.65% Impervious Runoff Depth=0.69"
Flow Length=2,175' Tc=19.1 min CN=72 Runoff=6.26 cfs 0.516 af

Subcatchment 7S: subcatch 7 Runoff Area=27,573 sf 35.18% Impervious Runoff Depth=1.22"
Flow Length=245' Tc=6.0 min CN=82 Runoff=1.39 cfs 0.065 af

Subcatchment 9a: Road Runoff Area=3,427 sf 70.18% Impervious Runoff Depth=1.89"
Flow Length=238' Slope=0.0790 '/' Tc=6.0 min CN=91 Runoff=0.26 cfs 0.012 af

Subcatchment 10a: Road Runoff Area=3,850 sf 94.81% Impervious Runoff Depth=2.46"
Flow Length=271' Slope=0.0940 '/' Tc=6.0 min CN=97 Runoff=0.34 cfs 0.018 af

Subcatchment 11c: Road Runoff Area=16,077 sf 70.57% Impervious Runoff Depth=1.89"
Flow Length=131' Slope=0.0920 '/' Tc=6.0 min CN=91 Runoff=1.20 cfs 0.058 af

Subcatchment 12S: Road Runoff Area=2,940 sf 88.78% Impervious Runoff Depth=2.25"
Flow Length=149' Slope=0.0810 '/' Tc=6.0 min CN=95 Runoff=0.25 cfs 0.013 af

Subcatchment 14a: Main Road Runoff Area=7,340 sf 58.11% Impervious Runoff Depth=1.64"
Flow Length=511' Slope=0.0280 '/' Tc=6.0 min CN=88 Runoff=0.49 cfs 0.023 af

Subcatchment 14B: Road Runoff Area=11,401 sf 70.83% Impervious Runoff Depth=1.89"
Flow Length=526' Tc=6.0 min CN=91 Runoff=0.85 cfs 0.041 af

Subcatchment 14C: BUILDING Runoff Area=25,251 sf 76.67% Impervious Runoff Depth=1.97"
Flow Length=127' Tc=6.8 min CN=92 Runoff=1.90 cfs 0.095 af

Subcatchment 15S: Main Road Runoff Area=15,144 sf 62.60% Impervious Runoff Depth=1.72"
Flow Length=494' Slope=0.0290 '/' Tc=6.0 min CN=89 Runoff=1.05 cfs 0.050 af

Subcatchment 16a: Main Road Runoff Area=7,317 sf 93.81% Impervious Runoff Depth=2.46"
Flow Length=306' Slope=0.0750 '/' Tc=6.0 min CN=97 Runoff=0.65 cfs 0.034 af

Subcatchment 17a: Main Road Runoff Area=4,370 sf 69.57% Impervious Runoff Depth=1.89"
Flow Length=292' Slope=0.0790 '/' Tc=6.0 min CN=91 Runoff=0.33 cfs 0.016 af

Subcatchment 18a: Main Road Runoff Area=30,338 sf 90.27% Impervious Runoff Depth=2.36"
Flow Length=276' Tc=6.0 min CN=96 Runoff=2.64 cfs 0.137 af

Subcatchment 19a: Main Road Runoff Area=3,974 sf 73.48% Impervious Runoff Depth=1.97"
Flow Length=239' Slope=0.0400 '/' Tc=6.0 min CN=92 Runoff=0.31 cfs 0.015 af

Subcatchment 20a: BEHIND 1 Runoff Area=27,573 sf 3.30% Impervious Runoff Depth=0.83"
Flow Length=395' Slope=0.0380 '/' Tc=6.0 min CN=75 Runoff=0.93 cfs 0.044 af

Subcatchment 20b: BEHIND 1 Runoff Area=27,573 sf 0.00% Impervious Runoff Depth=0.74"
Flow Length=236' Tc=6.0 min CN=73 Runoff=0.81 cfs 0.039 af

Subcatchment 21S: Main Road Runoff Area=4,574 sf 72.80% Impervious Runoff Depth=1.89"
Flow Length=269' Slope=0.0610 '/' Tc=6.0 min CN=91 Runoff=0.34 cfs 0.016 af

Subcatchment 22S: Main Road Runoff Area=18,606 sf 71.34% Impervious Runoff Depth=1.89"
Flow Length=261' Tc=6.0 min CN=91 Runoff=1.39 cfs 0.067 af

Subcatchment 23S: 18 fairway Runoff Area=31,919 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=287' Tc=6.8 min CN=74 Runoff=0.97 cfs 0.048 af

Subcatchment 24S: Fairway of 10 & 18 Runoff Area=176,265 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=252' Tc=6.0 min CN=74 Runoff=5.54 cfs 0.264 af

Subcatchment 25S: E. end Main Road Runoff Area=3,751 sf 73.05% Impervious Runoff Depth=1.97"
Flow Length=227' Slope=0.0700 '/' Tc=6.0 min CN=92 Runoff=0.29 cfs 0.014 af

Subcatchment 26S: E. end Main Road Runoff Area=3,645 sf 75.17% Impervious Runoff Depth=1.97"
Flow Length=226' Slope=0.0700 '/' Tc=6.0 min CN=92 Runoff=0.28 cfs 0.014 af

Subcatchment 27b: E. end Main Road Runoff Area=3,976 sf 73.69% Impervious Runoff Depth=1.97"
Flow Length=240' Slope=0.1250 '/' Tc=6.0 min CN=92 Runoff=0.31 cfs 0.015 af

Subcatchment 28a: E. end Main Road Runoff Area=4,060 sf 76.11% Impervious Runoff Depth=1.97"
Flow Length=256' Slope=0.1170 '/' Tc=6.0 min CN=92 Runoff=0.31 cfs 0.015 af

Subcatchment 30S: E. end Main Road Runoff Area=2,719 sf 73.92% Impervious Runoff Depth=1.97"
Flow Length=163' Slope=0.1290 '/' Tc=6.0 min CN=92 Runoff=0.21 cfs 0.010 af

Subcatchment 31S: E. end Main Road Runoff Area=2,909 sf 74.25% Impervious Runoff Depth=1.97"
Flow Length=177' Slope=0.1190 '/' Tc=6.0 min CN=92 Runoff=0.23 cfs 0.011 af

Subcatchment 32S: E. end Main Road Runoff Area=3,581 sf 73.72% Impervious Runoff Depth=1.97"
Flow Length=212' Slope=0.1270 '/' Tc=6.0 min CN=92 Runoff=0.28 cfs 0.014 af

Subcatchment 33S: E. end Main Road Runoff Area=3,736 sf 74.41% Impervious Runoff Depth=1.97"
Flow Length=230' Slope=0.1170 '/' Tc=6.0 min CN=92 Runoff=0.29 cfs 0.014 af

Subcatchment 35a: E. end Main Road Runoff Area=3,308 sf 72.55% Impervious Runoff Depth=1.89"
Flow Length=196' Slope=0.1220 '/' Tc=6.0 min CN=91 Runoff=0.25 cfs 0.012 af

Subcatchment 35S: Subcatchment 35 Runoff Area=532,041 sf 2.97% Impervious Runoff Depth=0.65"
Flow Length=3,110' Tc=22.0 min CN=71 Runoff=7.13 cfs 0.660 af

Subcatchment 36S: E. end Main Road Runoff Area=3,204 sf 74.91% Impervious Runoff Depth=1.97"
Flow Length=198' Slope=0.1210 '/' Tc=6.0 min CN=92 Runoff=0.25 cfs 0.012 af

Subcatchment 37S: E. end Main Road Runoff Area=4,447 sf 71.96% Impervious Runoff Depth=1.89"
Flow Length=243' Slope=0.0620 '/' Tc=6.0 min CN=91 Runoff=0.33 cfs 0.016 af

Subcatchment 38S: E. end Main Road Runoff Area=3,569 sf 76.49% Impervious Runoff Depth=1.97"
Flow Length=207' Slope=0.0720 '/' Tc=6.0 min CN=92 Runoff=0.28 cfs 0.013 af

Subcatchment 41S: W. end of Main Road Runoff Area=7,632 sf 100.00% Impervious Runoff Depth=2.57"
Flow Length=290' Tc=6.0 min CN=98 Runoff=0.69 cfs 0.038 af

Subcatchment 42S: W. end of Main Road Runoff Area=7,012 sf 100.00% Impervious Runoff Depth=2.57"
Flow Length=283' Tc=6.0 min CN=98 Runoff=0.64 cfs 0.034 af

Subcatchment 43S: W. end of Main Road Runoff Area=3,858 sf 77.76% Impervious Runoff Depth=2.06"
Flow Length=244' Tc=6.0 min CN=93 Runoff=0.31 cfs 0.015 af

Subcatchment 44S: W. end of Main Road Runoff Area=3,652 sf 82.15% Impervious Runoff Depth=2.16"
Flow Length=239' Tc=6.0 min CN=94 Runoff=0.30 cfs 0.015 af

Subcatchment 45S: Hole 1 Runoff Area=423,327 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=1,196' Tc=8.7 min CN=74 Runoff=11.87 cfs 0.635 af

Subcatchment 50S: W. end of Main Rd. Runoff Area=3,930 sf 100.00% Impervious Runoff Depth=2.57"
Flow Length=293' Slope=0.1140 '/' Tc=6.0 min CN=98 Runoff=0.36 cfs 0.019 af

Subcatchment 51S: W. end of Main Rd. Runoff Area=17,667 sf 20.38% Impervious Runoff Depth=1.04"
Flow Length=361' Tc=6.0 min CN=79 Runoff=0.76 cfs 0.035 af

Subcatchment 52S: W. end of Main Rd. Runoff Area=9,545 sf 16.09% Impervious Runoff Depth=0.99"
Flow Length=320' Tc=6.0 min CN=78 Runoff=0.39 cfs 0.018 af

Subcatchment 53S: W. end of Main Rd. Runoff Area=19,250 sf 18.13% Impervious Runoff Depth=0.99"
Flow Length=336' Tc=6.0 min CN=78 Runoff=0.78 cfs 0.036 af

Subcatchment 54S: Golf Course Parking Runoff Area=95,833 sf 18.37% Impervious Runoff Depth=0.99"
Flow Length=722' Tc=8.2 min CN=78 Runoff=3.56 cfs 0.181 af

Subcatchment 55S: Golf Course Parking Runoff Area=15,270 sf 74.82% Impervious Runoff Depth=1.97"
Flow Length=259' Tc=6.0 min CN=92 Runoff=1.18 cfs 0.058 af

Subcatchment 56S: Main Rd. to 6 & 7 Runoff Area=18,020 sf 17.54% Impervious Runoff Depth=0.99"
Flow Length=245' Tc=6.0 min CN=78 Runoff=0.73 cfs 0.034 af

Subcatchment 57S: Main Rd. 6 & 7 Runoff Area=4,880 sf 82.97% Impervious Runoff Depth=2.16"
Flow Length=237' Tc=6.0 min CN=94 Runoff=0.40 cfs 0.020 af

Subcatchment 59S: Club House Runoff Area=7,222 sf 100.00% Impervious Runoff Depth=2.57"
Tc=6.0 min CN=98 Runoff=0.65 cfs 0.035 af

Subcatchment 60S: Roof Terraces Runoff Area=42,950 sf 86.08% Impervious Runoff Depth=2.25"
Tc=6.0 min CN=95 Runoff=3.65 cfs 0.185 af

Subcatchment 62S: Green of 18 Runoff Area=64,444 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=433' Tc=8.1 min CN=74 Runoff=1.85 cfs 0.097 af

Subcatchment 63S: Front end of Driving Range Runoff Area=230,281 sf 0.42% Impervious Runoff Depth=0.83"
Flow Length=893' Tc=14.4 min CN=75 Runoff=5.53 cfs 0.367 af

Subcatchment 65S: Driveway to Golf House Runoff Area=17,261 sf 50.63% Impervious Runoff Depth=1.49"
Flow Length=299' Tc=6.0 min CN=86 Runoff=1.05 cfs 0.049 af

Subcatchment 80S: existing woods Runoff Area=123,600 sf 0.00% Impervious Runoff Depth=0.74"
Flow Length=600' Tc=6.0 min CN=73 Runoff=3.62 cfs 0.174 af

Subcatchment 137S: BEHIND GARAGE Runoff Area=31,485 sf 0.00% Impervious Runoff Depth=0.65"
Flow Length=377' Tc=7.8 min CN=71 Runoff=0.73 cfs 0.039 af

Subcatchment 200S: Subcatchment 200 Runoff Area=3,328,419 sf 0.43% Impervious Runoff Depth=0.61"
Flow Length=3,545' Tc=23.5 min CN=70 Runoff=38.90 cfs 3.859 af

Subcatchment 201S: Tees of 18 & Greens of 10 Runoff Area=178,777 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=425' Tc=6.0 min CN=74 Runoff=5.62 cfs 0.268 af

Subcatchment 211S: Back End of the Driving Runoff Area=208,648 sf 2.76% Impervious Runoff Depth=0.83"
Flow Length=905' Tc=6.0 min CN=75 Runoff=7.02 cfs 0.332 af

Subcatchment 212S: Green of 13 Runoff Area=68,310 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=219' Tc=6.0 min CN=74 Runoff=2.15 cfs 0.102 af

Subcatchment 213S: Hole 16 Runoff Area=194,980 sf 0.00% Impervious Runoff Depth=0.88"
Flow Length=690' Tc=11.7 min CN=76 Runoff=5.55 cfs 0.329 af

Subcatchment 214S: Tees of 13 Runoff Area=158,070 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=757' Tc=6.4 min CN=74 Runoff=4.89 cfs 0.237 af

Subcatchment 218S: Green of 12, Tee of 13 Runoff Area=96,418 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=467' Tc=6.9 min CN=74 Runoff=2.92 cfs 0.145 af

Subcatchment 219S: Green of 11 Runoff Area=78,985 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=406' Tc=6.0 min CN=74 Runoff=2.48 cfs 0.118 af

Subcatchment 220S: Fairway of 11 Runoff Area=282,188 sf 2.76% Impervious Runoff Depth=0.78"
Flow Length=869' Tc=12.2 min CN=74 Runoff=6.86 cfs 0.423 af

Subcatchment 223S: Golf Hole 15 and Runoff Area=192,957 sf 12.42% Impervious Runoff Depth=0.93"
Flow Length=401' Tc=6.0 min CN=77 Runoff=7.36 cfs 0.345 af

Subcatchment 225S: Fairway 14 Runoff Area=187,018 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=531' Tc=6.0 min CN=74 Runoff=5.88 cfs 0.280 af

Subcatchment 226S: Fairway & Green of 14 Runoff Area=108,684 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=468' Tc=6.0 min CN=74 Runoff=3.42 cfs 0.163 af

Subcatchment 300S: Subcatchment 300 Runoff Area=712,598 sf 0.46% Impervious Runoff Depth=0.61"
Flow Length=2,040' Tc=21.0 min CN=70 Runoff=9.01 cfs 0.826 af

Subcatchment 301S: Ex Stream Runoff Area=91,384 sf 0.00% Impervious Runoff Depth=0.69"
Flow Length=497' Tc=6.0 min CN=72 Runoff=2.49 cfs 0.121 af

Subcatchment 302a: New Subcatch Runoff Area=155,197 sf 0.00% Impervious Runoff Depth=0.65"
Flow Length=418' Slope=0.3800 '/' Tc=7.6 min CN=71 Runoff=3.64 cfs 0.192 af

Subcatchment 302b: New Subcatch Runoff Area=157,518 sf 0.00% Impervious Runoff Depth=0.69"
Flow Length=985' Tc=8.9 min CN=72 Runoff=3.78 cfs 0.208 af

Subcatchment 302S: (new Subcat) Runoff Area=186,835 sf 0.00% Impervious Runoff Depth=0.61"
Flow Length=1,014' Tc=6.0 min CN=70 Runoff=4.34 cfs 0.217 af

Subcatchment 303S: Subcatchment 303 Runoff Area=251,048 sf 0.00% Impervious Runoff Depth=0.69"
Flow Length=1,450' Tc=9.0 min CN=72 Runoff=5.99 cfs 0.332 af

Subcatchment 304: (new Subcat) Runoff Area=212,622 sf 0.00% Impervious Runoff Depth=0.65"
Flow Length=863' Tc=22.7 min CN=71 Runoff=2.80 cfs 0.264 af

Subcatchment 305s: Land W. side of hotel Runoff Area=150,290 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=965' Tc=7.9 min CN=74 Runoff=4.36 cfs 0.225 af

Subcatchment 306S: 12 tee Runoff Area=207,204 sf 0.00% Impervious Runoff Depth=0.65"
Flow Length=1,072' Tc=7.6 min CN=71 Runoff=4.86 cfs 0.257 af

Subcatchment 307S: (new Subcat) Runoff Area=122,324 sf 0.00% Impervious Runoff Depth=0.69"
Flow Length=1,098' Tc=7.8 min CN=72 Runoff=3.08 cfs 0.162 af

Subcatchment 308S: (new Subcat) Runoff Area=346,246 sf 0.00% Impervious Runoff Depth=0.61"
Flow Length=936' Tc=20.7 min CN=70 Runoff=4.42 cfs 0.401 af

Subcatchment 309S: (new Subcat) Runoff Area=316,725 sf 4.30% Impervious Runoff Depth=0.74"
Flow Length=649' Tc=13.3 min CN=73 Runoff=6.83 cfs 0.447 af

Subcatchment 310S: Existing Wooded Area Runoff Area=157,211 sf 4.68% Impervious Runoff Depth=0.69"
Flow Length=474' Tc=6.0 min CN=72 Runoff=4.28 cfs 0.208 af

Subcatchment 311S: Existing Wooded Area Runoff Area=312,389 sf 0.67% Impervious Runoff Depth=0.69"
Flow Length=1,779' Tc=14.7 min CN=72 Runoff=5.88 cfs 0.413 af

Subcatchment 315S: Subcatchment 315 Runoff Area=363,440 sf 0.00% Impervious Runoff Depth=0.65"
Flow Length=582' Tc=10.3 min CN=71 Runoff=7.56 cfs 0.451 af

Subcatchment 316A: Existing By Maintenance Runoff Area=25,135 sf 11.61% Impervious Runoff Depth=0.74"
Flow Length=370' Tc=6.2 min CN=73 Runoff=0.73 cfs 0.035 af

Subcatchment 316S: existing Runoff Area=423,713 sf 1.26% Impervious Runoff Depth=0.65"
Flow Length=944' Tc=7.4 min CN=71 Runoff=10.03 cfs 0.525 af

Reach 1R: overland flow Avg. Flow Depth=0.73' Max Vel=8.16 fps Inflow=22.09 cfs 1.112 af
n=0.050 L=75.0' S=0.1733 '/' Capacity=136.22 cfs Outflow=22.08 cfs 1.112 af

Reach 3: Rip Rap Channel Avg. Flow Depth=0.51' Max Vel=8.84 fps Inflow=58.49 cfs 8.201 af
n=0.050 L=51.0' S=0.3922 '/' Capacity=672.04 cfs Outflow=58.49 cfs 8.201 af

Reach 3R: Swale along RR Tracks Avg. Flow Depth=0.16' Max Vel=1.56 fps Inflow=0.64 cfs 0.147 af
n=0.040 L=1,045.0' S=0.0258 '/' Capacity=126.24 cfs Outflow=0.56 cfs 0.147 af

Reach 5: Stream Channel Avg. Flow Depth=0.39' Max Vel=7.66 fps Inflow=14.17 cfs 1.903 af
n=0.050 L=160.0' S=0.3000 '/' Capacity=1,318.86 cfs Outflow=14.16 cfs 1.903 af

Reach 5A: Stream Channel Avg. Flow Depth=0.42' Max Vel=6.93 fps Inflow=14.29 cfs 2.546 af
n=0.050 L=340.0' S=0.2206 '/' Capacity=1,130.92 cfs Outflow=14.27 cfs 2.546 af

Reach 5B: Stream Channel Avg. Flow Depth=0.47' Max Vel=6.40 fps Inflow=14.96 cfs 2.763 af
n=0.050 L=120.0' S=0.1667 '/' Capacity=983.02 cfs Outflow=14.95 cfs 2.763 af

Reach 5C: Stream Channel Avg. Flow Depth=0.49' Max Vel=6.17 fps Inflow=14.95 cfs 2.763 af
n=0.050 L=277.0' S=0.1498 '/' Capacity=932.02 cfs Outflow=14.94 cfs 2.763 af

Reach 5D: Stream Channel Avg. Flow Depth=0.50' Max Vel=8.64 fps Inflow=15.31 cfs 2.950 af
n=0.040 L=300.0' S=0.2017 '/' Capacity=385.96 cfs Outflow=15.30 cfs 2.950 af

Reach 5R: roadside swale Avg. Flow Depth=0.21' Max Vel=2.34 fps Inflow=1.07 cfs 0.217 af
n=0.050 L=607.0' S=0.0626 '/' Capacity=61.25 cfs Outflow=1.07 cfs 0.217 af

Reach 6: (new Reach) Avg. Flow Depth=0.06' Max Vel=1.72 fps Inflow=0.40 cfs 1.610 af
n=0.050 L=175.0' S=0.1571 '/' Capacity=217.11 cfs Outflow=0.40 cfs 1.610 af

Reach 6R: Clean Swale Avg. Flow Depth=0.42' Max Vel=4.07 fps Inflow=4.84 cfs 1.634 af
n=0.030 L=245.0' S=0.0327 '/' Capacity=114.21 cfs Outflow=4.83 cfs 1.634 af

Reach 7B: Existing Ditch Avg. Flow Depth=0.12' Max Vel=2.97 fps Inflow=0.73 cfs 0.035 af
n=0.040 L=125.0' S=0.1280 '/' Capacity=172.60 cfs Outflow=0.73 cfs 0.035 af

Reach 7C: Existing Ditch Avg. Flow Depth=0.47' Max Vel=5.26 fps Inflow=6.26 cfs 0.534 af
n=0.050 L=530.0' S=0.1264 '/' Capacity=137.22 cfs Outflow=6.17 cfs 0.534 af

Reach 8: Stream Channel Avg. Flow Depth=0.24' Max Vel=4.68 fps Inflow=22.36 cfs 3.692 af
n=0.050 L=245.0' S=0.2816 '/' Capacity=532.84 cfs Outflow=22.23 cfs 3.692 af

Reach 9R: swale Avg. Flow Depth=0.18' Max Vel=1.89 fps Inflow=0.73 cfs 0.039 af
n=0.030 L=280.0' S=0.0179 '/' Capacity=11.64 cfs Outflow=0.69 cfs 0.039 af

Reach 11R: Overland Flow Avg. Flow Depth=0.05' Max Vel=1.02 fps Inflow=6.08 cfs 1.504 af
n=0.080 L=760.0' S=0.1776 '/' Capacity=635.50 cfs Outflow=3.62 cfs 1.504 af

Reach 12R: Overland Flow Avg. Flow Depth=0.04' Max Vel=1.06 fps Inflow=1.94 cfs 0.130 af
n=0.080 L=588.0' S=0.2058 '/' Capacity=312.77 cfs Outflow=1.46 cfs 0.130 af

Reach 13: Channel at tracks Avg. Flow Depth=0.64' Max Vel=5.26 fps Inflow=22.23 cfs 3.839 af
n=0.035 L=450.0' S=0.0444 '/' Capacity=604.81 cfs Outflow=21.90 cfs 3.839 af

Reach 14R: Swale Avg. Flow Depth=0.03' Max Vel=1.91 fps Inflow=0.14 cfs 0.130 af
n=0.030 L=665.0' S=0.1323 '/' Capacity=305.76 cfs Outflow=0.14 cfs 0.130 af

Reach 15R: Cobble Stream Avg. Flow Depth=0.44' Max Vel=6.24 fps Inflow=13.46 cfs 2.337 af
n=0.050 L=245.0' S=0.1714 '/' Capacity=226.76 cfs Outflow=13.44 cfs 2.337 af

Reach 40R: Swale Avg. Flow Depth=0.41' Max Vel=3.47 fps Inflow=4.73 cfs 1.440 af
n=0.040 L=95.0' S=0.0411 '/' Capacity=106.53 cfs Outflow=4.72 cfs 1.440 af

Reach 51R: Swale Avg. Flow Depth=0.49' Max Vel=4.59 fps Inflow=8.04 cfs 0.533 af
n=0.030 L=535.0' S=0.0374 '/' Capacity=162.52 cfs Outflow=7.75 cfs 0.533 af

Reach 58a: Swale along RR Tracks Avg. Flow Depth=0.74' Max Vel=4.49 fps Inflow=13.44 cfs 2.337 af
n=0.035 L=543.0' S=0.0276 '/' Capacity=163.26 cfs Outflow=13.22 cfs 2.337 af

Reach 63R: OVERLAND Avg. Flow Depth=0.19' Max Vel=5.57 fps Inflow=5.36 cfs 0.277 af
n=0.050 L=126.0' S=0.3595 '/' Capacity=448.14 cfs Outflow=5.35 cfs 0.277 af

Reach 64R: Swale Avg. Flow Depth=0.17' Max Vel=0.68 fps Inflow=0.26 cfs 0.643 af
n=0.040 L=222.0' S=0.0045 '/' Capacity=52.71 cfs Outflow=0.26 cfs 0.643 af

Reach 69R: Wetland Flow Avg. Flow Depth=0.05' Max Vel=0.69 fps Inflow=4.36 cfs 0.225 af
n=0.070 L=487.0' S=0.0657 '/' Capacity=172.83 cfs Outflow=2.69 cfs 0.225 af

Reach 197: Stream Channel Avg. Flow Depth=0.41' Max Vel=7.76 fps Inflow=56.39 cfs 7.750 af
n=0.050 L=599.0' S=0.2763 '/' Capacity=12,139.60 cfs Outflow=56.19 cfs 7.750 af

Reach 197A: Stream Channel Avg. Flow Depth=0.93' Max Vel=7.62 fps Inflow=55.37 cfs 5.874 af
n=0.050 L=601.0' S=0.1248 '/' Capacity=3,783.36 cfs Outflow=55.12 cfs 5.874 af

Reach 197B: Stream Channel Avg. Flow Depth=0.95' Max Vel=7.20 fps Inflow=53.70 cfs 5.466 af
n=0.050 L=252.0' S=0.1091 '/' Capacity=3,537.94 cfs Outflow=53.65 cfs 5.466 af

Reach 197C: Stream Channel Avg. Flow Depth=0.84' Max Vel=8.05 fps Inflow=49.58 cfs 4.965 af
n=0.050 L=426.0' S=0.1573 '/' Capacity=4,247.34 cfs Outflow=49.46 cfs 4.965 af

Reach 198: Stream Channel Avg. Flow Depth=0.75' Max Vel=8.72 fps Inflow=45.99 cfs 4.519 af
n=0.050 L=417.0' S=0.2074 '/' Capacity=4,877.81 cfs Outflow=45.87 cfs 4.519 af

Reach 199: Overland Flow Avg. Flow Depth=0.05' Max Vel=2.47 fps Inflow=7.13 cfs 0.660 af
n=0.040 L=250.0' S=0.2560 '/' Capacity=451.81 cfs Outflow=7.09 cfs 0.660 af

Reach 295: Roadside Channel Avg. Flow Depth=0.81' Max Vel=4.57 fps Inflow=11.56 cfs 1.346 af
n=0.050 L=280.0' S=0.0607 '/' Capacity=140.40 cfs Outflow=11.52 cfs 1.346 af

Reach 296: Wetland Flow Avg. Flow Depth=0.39' Max Vel=1.80 fps Inflow=10.99 cfs 1.129 af
n=0.070 L=427.0' S=0.0328 '/' Capacity=251.85 cfs Outflow=10.50 cfs 1.129 af

Reach 297: Overland Flow Avg. Flow Depth=0.06' Max Vel=3.98 fps Inflow=8.38 cfs 0.865 af
n=0.030 L=195.0' S=0.2872 '/' Capacity=358.18 cfs Outflow=8.36 cfs 0.865 af

Reach 298: Wetland Flow Avg. Flow Depth=0.07' Max Vel=1.11 fps Inflow=9.26 cfs 0.865 af
n=0.070 L=408.0' S=0.0931 '/' Capacity=802.14 cfs Outflow=8.38 cfs 0.865 af

Reach 299: Overland Flow Avg. Flow Depth=0.14' Max Vel=3.67 fps Inflow=9.01 cfs 0.826 af
n=0.050 L=135.0' S=0.3259 '/' Capacity=130.57 cfs Outflow=8.98 cfs 0.826 af

Reach O3: Overland Flow Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=178.0' S=0.1404 '/' Capacity=78.90 cfs Outflow=0.00 cfs 0.000 af

Reach O4: Swale Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.033 L=286.0' S=0.0385 '/' Capacity=59.96 cfs Outflow=0.00 cfs 0.000 af

Reach X1: Swale Avg. Flow Depth=0.01' Max Vel=0.87 fps Inflow=0.02 cfs 0.003 af
n=0.040 L=200.0' S=0.1050 '/' Capacity=153.60 cfs Outflow=0.02 cfs 0.003 af

Pond 1P: Catch Basin/Culvert Peak Elev=1,980.66' Inflow=3.16 cfs 0.170 af
Outflow=3.16 cfs 0.170 af

Pond 2P: Catch Basin Peak Elev=1,997.91' Inflow=19.15 cfs 0.942 af
Outflow=19.15 cfs 0.942 af

Pond 2R: 48" CMP Culvert Peak Elev=1,744.14' Inflow=58.49 cfs 8.201 af
Outflow=58.49 cfs 8.201 af

Pond 3P: Catch Basin Peak Elev=2,009.61' Inflow=0.91 cfs 0.046 af
Outflow=0.91 cfs 0.046 af

Pond 4P: Catch Basin Peak Elev=2,010.01' Inflow=0.41 cfs 0.022 af
Outflow=0.41 cfs 0.022 af

Pond 4R: 38" Arch Culv. Peak Elev=2,065.11' Inflow=14.17 cfs 1.903 af
Outflow=14.17 cfs 1.903 af

Pond 7A: CULVERT Peak Elev=1,900.38' Inflow=0.73 cfs 0.035 af
18.0" Round Culvert n=0.013 L=115.0' S=0.0174 '/' Outflow=0.73 cfs 0.035 af

Pond 7P: Catch Basin Peak Elev=2,066.34' Inflow=0.85 cfs 0.041 af
Outflow=0.85 cfs 0.041 af

Pond 7R: (2) 43" Arch Culverts Peak Elev=1,812.42' Inflow=22.36 cfs 3.692 af
Outflow=22.36 cfs 3.692 af

Pond 8R: 36" hdpe Peak Elev=0.00'
36.0" Round Culvert n=0.013 L=245.0' S=0.1714 '/' Primary=0.00 cfs 0.000 af

Pond 9P: Catch Basin Peak Elev=2,035.81' Inflow=0.60 cfs 0.030 af
Outflow=0.60 cfs 0.030 af

Pond 10P: Catch Basin Peak Elev=2,036.26' Inflow=0.34 cfs 0.018 af
Outflow=0.34 cfs 0.018 af

Pond 10R: 14" and 16" HDPE Culverts Peak Elev=1,976.05' Inflow=6.08 cfs 1.504 af
Outflow=6.08 cfs 1.504 af

Pond 11P: Catch Basin Peak Elev=2,051.60' Inflow=16.51 cfs 0.810 af
Outflow=16.51 cfs 0.810 af

Pond 12P: Catch Basin Peak Elev=2,055.24' Inflow=0.25 cfs 0.013 af
Outflow=0.25 cfs 0.013 af

Pond 13P: Manhole Peak Elev=2,065.40' Inflow=15.07 cfs 0.740 af
Outflow=15.07 cfs 0.740 af

Pond 13R: 16" CMP Culvert Peak Elev=1,960.71' Inflow=1.94 cfs 0.130 af
16.0" Round Culvert n=0.025 L=40.0' S=0.0250 '/' Outflow=1.94 cfs 0.130 af

Pond 15P: Catch Basin Peak Elev=2,066.28' Inflow=1.90 cfs 0.091 af
Outflow=1.90 cfs 0.091 af

Pond 16P: Catch Basin Peak Elev=2,081.09' Inflow=0.65 cfs 0.034 af
Outflow=0.65 cfs 0.034 af

Pond 17P: Catch Basin Peak Elev=2,080.88' Inflow=12.68 cfs 0.626 af
Outflow=12.68 cfs 0.626 af

Pond 18P: Catch Basin Peak Elev=2,093.29' Inflow=2.64 cfs 0.137 af
Outflow=2.64 cfs 0.137 af

Pond 19P: Catch Basin Peak Elev=2,092.26' Inflow=10.76 cfs 0.528 af
Outflow=10.76 cfs 0.528 af

Pond 20: CB20 Peak Elev=2,105.01' Inflow=4.36 cfs 0.225 af
Outflow=4.36 cfs 0.225 af

Pond 20P: Manhole Peak Elev=2,095.53' Inflow=7.83 cfs 0.376 af
30.0" Round Culvert n=0.013 L=107.0' S=0.0318 '/' Outflow=7.83 cfs 0.376 af

Pond 21P: Catch Basin Peak Elev=2,113.80' Inflow=2.31 cfs 0.112 af
Outflow=2.31 cfs 0.112 af

Pond 22P: Catch Basin Peak Elev=2,115.23' Inflow=1.39 cfs 0.067 af
Outflow=1.39 cfs 0.067 af

Pond 23A: Catch Basin Peak Elev=2,093.03' Inflow=0.97 cfs 0.048 af
Outflow=0.97 cfs 0.048 af

Pond 23B: Catch Basin Peak Elev=2,083.51' Inflow=0.97 cfs 0.048 af
Outflow=0.97 cfs 0.048 af

Pond 24A: Catch Basin Peak Elev=2,098.94' Inflow=5.54 cfs 0.264 af
Outflow=5.54 cfs 0.264 af

Pond 24B: Catch Basin Peak Elev=2,096.08' Inflow=5.54 cfs 0.264 af
Outflow=5.54 cfs 0.264 af

Pond 25P: Catch Basin Peak Elev=2,123.19' Inflow=0.57 cfs 0.028 af
Outflow=0.57 cfs 0.028 af

Pond 26P: Catch Basin Peak Elev=2,131.33' Inflow=0.28 cfs 0.014 af
Outflow=0.28 cfs 0.014 af

Pond 27P: Catch Basin Peak Elev=2,148.48' Inflow=2.73 cfs 0.133 af
Outflow=2.73 cfs 0.133 af

Pond 28P: Catch Basin Peak Elev=2,148.52' Inflow=0.31 cfs 0.015 af
Outflow=0.31 cfs 0.015 af

Pond 29P: Manhole Peak Elev=2,162.63' Inflow=2.11 cfs 0.102 af
21.0" Round Culvert n=0.013 L=125.0' S=0.1140 '/' Outflow=2.11 cfs 0.102 af

Pond 30P: Catch Basin Peak Elev=2,174.79' Inflow=2.11 cfs 0.102 af
Outflow=2.11 cfs 0.102 af

Pond 31P: Catch Basin Peak Elev=2,177.43' Inflow=0.23 cfs 0.011 af
Outflow=0.23 cfs 0.011 af

Pond 32P: Catch Basin Peak Elev=2,196.00' Inflow=1.67 cfs 0.081 af
Outflow=1.67 cfs 0.081 af

Pond 33P: Catch Basin Peak Elev=2,198.26' Inflow=0.29 cfs 0.014 af
Outflow=0.29 cfs 0.014 af

Pond 34P: Manhole Peak Elev=2,209.47' Inflow=1.10 cfs 0.054 af
18.0" Round Culvert n=0.013 L=90.3' S=0.1449 '/' Outflow=1.10 cfs 0.054 af

Pond 35P: Catch Basin Peak Elev=2,225.47' Inflow=1.10 cfs 0.054 af
Outflow=1.10 cfs 0.054 af

Pond 36P: Catch Basin Peak Elev=2,225.75' Inflow=0.25 cfs 0.012 af
Outflow=0.25 cfs 0.012 af

Pond 37P: Catch Basin Peak Elev=2,248.84' Inflow=0.61 cfs 0.030 af
Outflow=0.61 cfs 0.030 af

Pond 38P: Catch Basin Peak Elev=2,249.26' Inflow=0.28 cfs 0.013 af
Outflow=0.28 cfs 0.013 af

Pond 43P: 12" HDPE Pipe Peak Elev=1,997.89' Inflow=0.31 cfs 0.015 af
Outflow=0.31 cfs 0.015 af

Pond 44P: 12" HDPE Pipe Peak Elev=1,997.79' Inflow=0.61 cfs 0.030 af
Outflow=0.61 cfs 0.030 af

Pond 50P: 30" HDPE Pipe Peak Elev=2,025.15' Inflow=8.00 cfs 0.402 af
Outflow=8.00 cfs 0.402 af

Pond 51P: 18" HDPE Pipe Peak Elev=2,026.39' Inflow=0.76 cfs 0.035 af
Outflow=0.76 cfs 0.035 af

Pond 52P: 30" HDPE Pipe Peak Elev=2,059.56' Inflow=6.90 cfs 0.348 af
Outflow=6.90 cfs 0.348 af

Pond 53P: 18" HDPE Pipe Peak Elev=2,060.89' Inflow=0.78 cfs 0.036 af
Outflow=0.78 cfs 0.036 af

Pond 54P: 24" HDPE Pipe Peak Elev=2,101.92' Inflow=4.65 cfs 0.239 af
Outflow=4.65 cfs 0.239 af

Pond 55P: 18" HDPE Pipe Peak Elev=2,102.50' Inflow=1.18 cfs 0.058 af
Outflow=1.18 cfs 0.058 af

Pond 56P: 18" HDPE Pipe Peak Elev=2,081.98' Inflow=1.13 cfs 0.054 af
Outflow=1.13 cfs 0.054 af

Pond 57P: 18" HDPE Pipe Peak Elev=2,082.28' Inflow=0.40 cfs 0.020 af
Outflow=0.40 cfs 0.020 af

Pond 62P: Catch Basin Peak Elev=2,083.62' Inflow=1.85 cfs 0.097 af
Outflow=1.85 cfs 0.097 af

Pond 65A: Manhole Peak Elev=2,080.13' Inflow=3.47 cfs 0.181 af
30.0" Round Culvert n=0.013 L=125.0' S=0.0752 '/' Outflow=3.47 cfs 0.181 af

Pond 65P: Catch Basin Peak Elev=2,080.81' Inflow=3.47 cfs 0.181 af
Outflow=3.47 cfs 0.181 af

Pond 66R: (2) 24" culvert Peak Elev=1,990.00' Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 81: 24" culvert Peak Elev=2,013.81' Inflow=3.62 cfs 0.174 af
Outflow=3.62 cfs 0.174 af

Pond 200: 36" Steel Culvert Peak Elev=2,236.79' Inflow=38.90 cfs 3.859 af
Outflow=38.90 cfs 3.859 af

Pond 201: 36" Steel Culvert Peak Elev=2,235.01' Inflow=7.13 cfs 0.660 af
Outflow=7.13 cfs 0.660 af

Pond 297A: culvert Peak Elev=2,113.37' Inflow=10.99 cfs 1.129 af
Outflow=10.99 cfs 1.129 af

Pond 300R: 18" Steel Culvert Peak Elev=2,256.55' Inflow=9.01 cfs 0.826 af
Outflow=9.01 cfs 0.826 af

Pond B4: bioretention Peak Elev=2,143.91' Storage=6,484 cf Inflow=8.33 cfs 0.401 af
Discarded=0.09 cfs 0.184 af Primary=1.07 cfs 0.217 af Outflow=1.16 cfs 0.401 af

Pond DP 7: Design Point 7 Inflow=58.61 cfs 8.234 af
Primary=58.61 cfs 8.234 af

Pond DP 8: Design Point 8 Inflow=30.11 cfs 4.364 af
Primary=30.11 cfs 4.364 af

Pond DP 9: Design Point 9 Inflow=19.41 cfs 2.855 af
Primary=19.41 cfs 2.855 af

Pond H: Pond H Peak Elev=1,999.21' Storage=33,287 cf Inflow=19.61 cfs 1.168 af
Outflow=1.09 cfs 1.165 af

Pond J: OPEN SWALE Peak Elev=1,990.59' Storage=2,690 cf Inflow=3.66 cfs 0.185 af
Discarded=0.07 cfs 0.085 af Primary=1.15 cfs 0.100 af Secondary=0.00 cfs 0.000 af Outflow=1.22 cfs 0.185 af

Pond K: P1 Peak Elev=2,021.87' Storage=22,819 cf Inflow=9.75 cfs 0.643 af
Outflow=0.26 cfs 0.643 af

Pond L: Pond L - P1 Peak Elev=1,947.77' Storage=72,385 cf Inflow=30.16 cfs 1.634 af
Outflow=0.40 cfs 1.610 af

Pond M: OPEN SWALE Peak Elev=1,889.05' Storage=7,672 cf Inflow=7.02 cfs 0.332 af
Discarded=0.08 cfs 0.247 af Primary=0.29 cfs 0.085 af Outflow=0.37 cfs 0.332 af

Pond MH8: Manhole Peak Elev=2,035.43' Inflow=17.11 cfs 0.841 af
42.0" Round Culvert n=0.013 L=158.0' S=0.2335 '/' Outflow=17.11 cfs 0.841 af

Pond N: OPEN SWALE Peak Elev=1,875.04' Storage=2,206 cf Inflow=2.15 cfs 0.102 af
Discarded=0.02 cfs 0.073 af Primary=0.11 cfs 0.029 af Outflow=0.14 cfs 0.102 af

Pond O: Open Swale Peak Elev=1,839.08' Storage=6,772 cf Inflow=7.36 cfs 0.345 af
Discarded=0.08 cfs 0.222 af Primary=0.64 cfs 0.123 af Secondary=0.00 cfs 0.000 af Outflow=0.72 cfs 0.345 af

Pond Q: OPEN SWALE Peak Elev=1,879.03' Storage=6,293 cf Inflow=4.89 cfs 0.237 af
Discarded=0.06 cfs 0.201 af Primary=0.11 cfs 0.036 af Outflow=0.17 cfs 0.237 af

Pond S: Open Swale Peak Elev=1,919.25' Storage=4,277 cf Inflow=2.92 cfs 0.145 af
Discarded=0.04 cfs 0.135 af Primary=0.04 cfs 0.009 af Outflow=0.07 cfs 0.145 af

Pond sp1: Storm Planters Peak Elev=2,150.26' Storage=5,290 cf Inflow=3.65 cfs 0.185 af
Outflow=0.14 cfs 0.130 af

Pond T: Open Swale Peak Elev=1,991.01' Storage=2,397 cf Inflow=2.48 cfs 0.118 af
Discarded=0.03 cfs 0.081 af Primary=0.18 cfs 0.038 af Outflow=0.21 cfs 0.118 af

Pond U: Open Swale Peak Elev=2,015.52' Storage=10,646 cf Inflow=6.86 cfs 0.423 af
Discarded=0.08 cfs 0.323 af Primary=0.30 cfs 0.100 af Outflow=0.38 cfs 0.423 af

Pond W: Open Swale Peak Elev=1,789.52' Storage=8,114 cf Inflow=5.88 cfs 0.280 af
Discarded=0.07 cfs 0.257 af Primary=0.07 cfs 0.024 af Outflow=0.15 cfs 0.280 af

Pond X: Open Swale Peak Elev=1,799.01' Storage=4,347 cf Inflow=3.42 cfs 0.163 af
Discarded=0.07 cfs 0.160 af Primary=0.02 cfs 0.003 af Outflow=0.09 cfs 0.163 af

Total Runoff Area = 288.212 ac Runoff Volume = 17.503 af Average Runoff Depth = 0.73"
96.12% Pervious = 277.025 ac 3.88% Impervious = 11.187 ac

Summary for Subcatchment 1S: Road

Runoff = 3.16 cfs @ 12.01 hrs, Volume= 0.170 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	30,818	98	Roof
	23,162	74	>75% Grass cover, Good, HSG C
	53,980	88	Weighted Average
	23,162		42.91% Pervious Area
	30,818		57.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0200	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.8	130	0.0350	2.81		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.6	230	Total			

Summary for Subcatchment 2a: Road

Runoff = 1.13 cfs @ 11.97 hrs, Volume= 0.056 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	10,932	98	Paved
	3,222	74	>75% Grass cover, Good, HSG C
	14,154	93	Weighted Average
	3,222		22.76% Pervious Area
	10,932		77.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0200	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.9	219	0.0380	3.96		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	319	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S: Subcatchment 2

Runoff = 0.66 cfs @ 12.00 hrs, Volume= 0.033 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	4,400	98	Roadway
	5,009	71	Meadow, non-grazed, HSG C
	9,060	70	Woods, Good, HSG C
	18,469	77	Weighted Average
	14,069		76.18% Pervious Area
	4,400		23.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	90	0.2290	0.23		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	70	0.2550	1.51		**Shallow Concentrated Flow, SC Flow through Woods** Kv= 3.0 fps
0.3	215	0.0547	13.12	137.80	**Trap/Vee/Rect Channel Flow, Vegetated Swale along RR Tracks** Bot.W=2.00' D=3.00' Z= 0.5 '/' Top.W=5.00' n= 0.030
7.8	375	Total			

Summary for Subcatchment 3S: Road

Runoff = 0.50 cfs @ 11.97 hrs, Volume= 0.024 af, Depth= 1.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	4,120	98	Paved
	3,743	74	>75% Grass cover, Good, HSG C
	7,863	87	Weighted Average
	3,743		47.60% Pervious Area
	4,120		52.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1100	3.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	172	0.1100	6.73		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	272	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Road

Runoff = 0.41 cfs @ 11.97 hrs, Volume= 0.022 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	4,505	98	Paved
	4,505		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0500	2.22		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	174	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	274	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 5S: Subcatchment 5

Runoff = 1.94 cfs @ 12.07 hrs, Volume= 0.130 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	39,399	71	Meadow, non-grazed, HSG C
*	1,338	98	Roof Area
	45,785	70	Woods, Good, HSG C
	5,498	98	Paved parking, HSG C
	92,020	73	Weighted Average
	85,184		92.57% Pervious Area
	6,836		7.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.1300	0.18		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	390	0.0920	1.52		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	225	0.0346	7.48	29.91	**Trap/Vee/Rect Channel Flow, Flow in Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
13.9	715	Total			

Summary for Subcatchment 6aS: subcatch 6a

Runoff = 8.65 cfs @ 12.14 hrs, Volume= 0.703 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	7,130	74	Porous Paving
*	2,840	98	Roof
	334,295	70	Woods, Good, HSG C
	27,046	74	>75% Grass cover, Good, HSG C
*	18,735	98	Paved
*	9,300	74	Fairway/Tee/Green, Good, HSG C
	131,702	71	Meadow, non-grazed, HSG C
	531,048	72	Weighted Average
	509,473		95.94% Pervious Area
	21,575		4.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
9.2	915	0.1100	1.66		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	240	0.0950	18.86	150.91	**Trap/Vee/Rect Channel Flow, swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.025 Earth, clean & winding
18.8	1,255	Total			

Summary for Subcatchment 6S: subcatch 6

Runoff = 6.26 cfs @ 12.14 hrs, Volume= 0.516 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	7,240	98	Roof
	293,063	70	Woods, Good, HSG C
	78,387	74	>75% Grass cover, Good, HSG C
*	10,890	98	Paved
	389,580	72	Weighted Average
	371,450		95.35% Pervious Area
	18,130		4.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.7	1,015	0.1950	2.21		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.7	1,060	0.0750	10.48	83.81	**Trap/Vee/Rect Channel Flow, RR Swale w/ Gravel and Leaves** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.040 Earth, cobble bottom, clean sides
19.1	2,175	Total			

Summary for Subcatchment 7S: subcatch 7

Runoff = 1.39 cfs @ 11.98 hrs, Volume= 0.065 af, Depth= 1.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

Area (sf)	CN	Description
9,700	98	Paved parking & roofs
5,730	70	Woods, Good, HSG C
12,143	74	>75% Grass cover, Good, HSG C
27,573	82	Weighted Average
17,873		64.82% Pervious Area
9,700		35.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	20	0.3000	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.1	225	0.1250	1.77		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	245	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 9a: Road

Runoff = 0.26 cfs @ 11.97 hrs, Volume= 0.012 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	2,405	98	Paved
	1,022	74	>75% Grass cover, Good, HSG C
	3,427	91	Weighted Average
	1,022		29.82% Pervious Area
	2,405		70.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0790	2.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	138	0.0790	5.71		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	238	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 10a: Road

Runoff = 0.34 cfs @ 11.97 hrs, Volume= 0.018 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	3,650	98	Paved
	200	74	>75% Grass cover, Good, HSG C
	3,850	97	Weighted Average
	200		5.19% Pervious Area
	3,650		94.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0940	2.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.5	171	0.0940	6.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	271	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 11c: Road

Runoff = 1.20 cfs @ 11.97 hrs, Volume= 0.058 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	7,010	98	Paved
	4,732	74	>75% Grass cover, Good, HSG C
*	4,335	98	Roofs
	16,077	91	Weighted Average
	4,732		29.43% Pervious Area
	11,345		70.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0920	2.83		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.1	31	0.0920	6.16		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	131	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 12S: Road

Runoff = 0.25 cfs @ 11.97 hrs, Volume= 0.013 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	2,610	98	Paved
	330	74	>75% Grass cover, Good, HSG C
	2,940	95	Weighted Average
	330		11.22% Pervious Area
	2,610		88.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0810	2.69		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.1	49	0.0810	5.78		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	149	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 14a: Main Road

Runoff = 0.49 cfs @ 11.97 hrs, Volume= 0.023 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	4,265	98	Paved
	3,075	74	>75% Grass cover, Good, HSG C
	7,340	88	Weighted Average
	3,075		41.89% Pervious Area
	4,265		58.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0280	1.76		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.0	411	0.0280	3.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.9	511	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 14B: Road

Runoff = 0.85 cfs @ 11.97 hrs, Volume= 0.041 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

Area (sf)	CN	Description
8,075	98	Paved parking, HSG C
3,326	74	>75% Grass cover, Good, HSG C
11,401	91	Weighted Average
3,326		29.17% Pervious Area
8,075		70.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0200	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.3	426	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	526	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 14C: BUILDING

Runoff = 1.90 cfs @ 11.98 hrs, Volume= 0.095 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

Area (sf)	CN	Description
19,361	98	Paved parking, HSG C
5,890	74	>75% Grass cover, Good, HSG C
25,251	92	Weighted Average
5,890		23.33% Pervious Area
19,361		76.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0400	0.25		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 4.00"
0.2	27	0.0375	2.90		**Shallow Concentrated Flow, shallow concentrated flow** Grassed Waterway Kv= 15.0 fps
6.8	127	Total			

Summary for Subcatchment 15S: Main Road

Runoff = 1.05 cfs @ 11.97 hrs, Volume= 0.050 af, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	9,480	98	Paved
	5,664	74	>75% Grass cover, Good, HSG C
	15,144	89	Weighted Average
	5,664		37.40% Pervious Area
	9,480		62.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0290	1.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.9	394	0.0290	3.46		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	494	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 16a: Main Road

Runoff = 0.65 cfs @ 11.97 hrs, Volume= 0.034 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	6,864	98	Paved
	453	74	>75% Grass cover, Good, HSG C
	7,317	97	Weighted Average
	453		6.19% Pervious Area
	6,864		93.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0750	2.61		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	206	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	306	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 17a: Main Road

Runoff = 0.33 cfs @ 11.97 hrs, Volume= 0.016 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	3,040	98	Paved
	1,330	74	>75% Grass cover, Good, HSG C
	4,370	91	Weighted Average
	1,330		30.43% Pervious Area
	3,040		69.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0790	2.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	192	0.0790	5.71		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	292	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 18a: Main Road

Runoff = 2.64 cfs @ 11.97 hrs, Volume= 0.137 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	13,586	98	Paved
	2,952	74	>75% Grass cover, Good, HSG C
*	13,800	98	Roof
	30,338	96	Weighted Average
	2,952		9.73% Pervious Area
	27,386		90.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	56	0.0360	1.73		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.9	220	0.0450	4.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	276	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 19a: Main Road

Runoff = 0.31 cfs @ 11.97 hrs, Volume= 0.015 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	2,920	98	Paved
	1,054	74	>75% Grass cover, Good, HSG C
	3,974	92	Weighted Average
	1,054		26.52% Pervious Area
	2,920		73.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0400	2.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	139	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	239	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 20a: BEHIND 1

Runoff = 0.93 cfs @ 11.98 hrs, Volume= 0.044 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

Area (sf)	CN	Description
26,663	74	>75% Grass cover, Good, HSG C
910	98	Paved parking, HSG C
27,573	75	Weighted Average
26,663		96.70% Pervious Area
910		3.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	395	0.0380	6.65	79.79	**Channel Flow,** Area= 12.0 sf Perim= 21.0' r= 0.57' n= 0.030 Earth, grassed & winding
1.0	395	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 20b: BEHIND 1

Runoff = 0.81 cfs @ 11.98 hrs, Volume= 0.039 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	23,963	74	>75% Grass cover, Good, HSG C
	3,610	70	Woods, Good, HSG C
	27,573	73	Weighted Average
	27,573		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1600	0.44		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.4	136	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	236	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 21S: Main Road

Runoff = 0.34 cfs @ 11.97 hrs, Volume= 0.016 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	3,330	98	Paved
	1,244	74	>75% Grass cover, Good, HSG C
	4,574	91	Weighted Average
	1,244		27.20% Pervious Area
	3,330		72.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0610	2.40		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	169	0.0610	5.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	269	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 22S: Main Road

Runoff = 1.39 cfs @ 11.97 hrs, Volume= 0.067 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	13,274	98	Paved
	5,332	74	>75% Grass cover, Good, HSG C
	18,606	91	Weighted Average
	5,332		28.66% Pervious Area
	13,274		71.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0630	2.43		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.7	161	0.0311	3.58		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
1.4	261	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 23S: 18 fairway

Runoff = 0.97 cfs @ 11.99 hrs, Volume= 0.048 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	1,549	74	>75% Grass cover, Good, HSG C
*	3,090	74	Porous Pavement
*	27,280	74	Fairway/Tee/Green, Good, HSG C
	31,919	74	Weighted Average
	31,919		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0640	0.30		**Sheet Flow,**
					Grass: Short n= 0.150 P2= 4.00"
0.7	73	0.0640	1.77		**Shallow Concentrated Flow,**
					Short Grass Pasture Kv= 7.0 fps
0.6	114	0.0100	3.17	7.92	**Trap/Vee/Rect Channel Flow,**
					Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00'
					n= 0.033 Earth, grassed & winding
6.8	287	Total			

Summary for Subcatchment 24S: Fairway of 10 & 18

Runoff = 5.54 cfs @ 11.98 hrs, Volume= 0.264 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	23,070	74	>75% Grass cover, Good, HSG C
	6,012	70	Woods, Good, HSG C
*	8,530	74	Porous Pavement
*	138,653	74	Fairway/Tee/Green, Good, HSG C
	176,265	74	Weighted Average
	176,265		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0800	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.9	152	0.0054	2.69	13.44	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.00' Z= 1.0 '/' Top.W=6.00' n= 0.033 Earth, grassed & winding
5.9	252	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 25S: E. end Main Road

Runoff = 0.29 cfs @ 11.97 hrs, Volume= 0.014 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	2,740	98	Paved
	1,011	74	>75% Grass cover, Good, HSG C
	3,751	92	Weighted Average
	1,011		26.95% Pervious Area
	2,740		73.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0700	2.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	127	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	227	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 26S: E. end Main Road

Runoff = 0.28 cfs @ 11.97 hrs, Volume= 0.014 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	2,740	98	Paved
	905	74	>75% Grass cover, Good, HSG C
	3,645	92	Weighted Average
	905		24.83% Pervious Area
	2,740		75.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0700	2.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	126	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	226	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 27b: E. end Main Road

Runoff = 0.31 cfs @ 11.97 hrs, Volume= 0.015 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	2,930	98	Paved
	1,046	74	>75% Grass cover, Good, HSG C
	3,976	92	Weighted Average
	1,046		26.31% Pervious Area
	2,930		73.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1250	3.20		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	140	0.1250	7.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	240	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 28a: E. end Main Road

Runoff = 0.31 cfs @ 11.97 hrs, Volume= 0.015 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	3,090	98	Paved
	970	74	>75% Grass cover, Good, HSG C
	4,060	92	Weighted Average
	970		23.89% Pervious Area
	3,090		76.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1170	3.12		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	156	0.1170	6.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	256	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 30S: E. end Main Road

Runoff = 0.21 cfs @ 11.97 hrs, Volume= 0.010 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	2,010	98	Paved
	709	74	>75% Grass cover, Good, HSG C
	2,719	92	Weighted Average
	709		26.08% Pervious Area
	2,010		73.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1290	3.24		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.1	63	0.1290	7.29		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	163	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 31S: E. end Main Road

Runoff = 0.23 cfs @ 11.97 hrs, Volume= 0.011 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	2,160	98	Paved
	749	74	>75% Grass cover, Good, HSG C
	2,909	92	Weighted Average
	749		25.75% Pervious Area
	2,160		74.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1190	3.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.2	77	0.1190	7.00		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	177	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 32S: E. end Main Road

Runoff = 0.28 cfs @ 11.97 hrs, Volume= 0.014 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	2,640	98	Paved
	941	74	>75% Grass cover, Good, HSG C
	3,581	92	Weighted Average
	941		26.28% Pervious Area
	2,640		73.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1270	3.22		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	112	0.1270	7.23		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	212	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 33S: E. end Main Road

Runoff = 0.29 cfs @ 11.97 hrs, Volume= 0.014 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	2,780	98	Paved
	956	74	>75% Grass cover, Good, HSG C
	3,736	92	Weighted Average
	956		25.59% Pervious Area
	2,780		74.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1170	3.12		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	130	0.1170	6.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	230	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 35a: E. end Main Road

Runoff = 0.25 cfs @ 11.97 hrs, Volume= 0.012 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	2,400	98	Paved
	908	74	>75% Grass cover, Good, HSG C
	3,308	91	Weighted Average
	908		27.45% Pervious Area
	2,400		72.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1220	3.17		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.2	96	0.1220	7.09		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	196	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 35S: Subcatchment 35

Runoff = 7.13 cfs @ 12.18 hrs, Volume= 0.660 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	122,752	71	Meadow, non-grazed, HSG C
*	6,708	98	Paved Road
	393,477	70	Woods, Good, HSG C
*	9,104	98	Roof
	532,041	71	Weighted Average
	516,229		97.03% Pervious Area
	15,812		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	120	0.1667	0.52		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.5	230	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	50	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
9.3	1,470	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
22.0	3,110	Total			

Summary for Subcatchment 36S: E. end Main Road

Runoff = 0.25 cfs @ 11.97 hrs, Volume= 0.012 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	2,400	98	Paved
	804	74	>75% Grass cover, Good, HSG C
	3,204	92	Weighted Average
	804		25.09% Pervious Area
	2,400		74.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1210	3.16		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.2	98	0.1210	7.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	198	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 37S: E. end Main Road

Runoff = 0.33 cfs @ 11.97 hrs, Volume= 0.016 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	3,200	98	Paved
	1,247	74	>75% Grass cover, Good, HSG C
	4,447	91	Weighted Average
	1,247		28.04% Pervious Area
	3,200		71.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0620	2.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.5	143	0.0620	5.05		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	243	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 38S: E. end Main Road

Runoff = 0.28 cfs @ 11.97 hrs, Volume= 0.013 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	2,730	98	Paved
	839	74	>75% Grass cover, Good, HSG C
	3,569	92	Weighted Average
	839		23.51% Pervious Area
	2,730		76.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0720	2.57		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	107	0.0720	5.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	207	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 41S: W. end of Main Road

Runoff = 0.69 cfs @ 11.97 hrs, Volume= 0.038 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	7,632	98	Paved
	7,632		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0467	2.16		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.9	190	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	290	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 42S: W. end of Main Road

Runoff = 0.64 cfs @ 11.97 hrs, Volume= 0.034 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	7,012	98	Paved
	7,012		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0467	2.16		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.9	183	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	283	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 43S: W. end of Main Road

Runoff = 0.31 cfs @ 11.97 hrs, Volume= 0.015 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	3,000	98	Paved
	858	74	>75% Grass cover, Good, HSG C
	3,858	93	Weighted Average
	858		22.24% Pervious Area
	3,000		77.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1200	3.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	144	0.1110	6.76		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	244	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 44S: W. end of Main Road

Runoff = 0.30 cfs @ 11.97 hrs, Volume= 0.015 af, Depth= 2.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	3,000	98	Paved
	652	74	>75% Grass cover, Good, HSG C
	3,652	94	Weighted Average
	652		17.85% Pervious Area
	3,000		82.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1200	3.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	139	0.1150	6.88		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	239	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 45S: Hole 1

Runoff = 11.87 cfs @ 12.01 hrs, Volume= 0.635 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	29,365	70	Woods, Good, HSG C
	168,858	74	>75% Grass cover, Good, HSG C
*	16,666	74	Porous Pavement
*	208,438	74	Fairway/Tee/Green, Good, HSG C
	423,327	74	Weighted Average
	423,327		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0500	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.2	208	0.1830	2.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	888	0.0690	10.54	55.33	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
8.7	1,196	Total			

Summary for Subcatchment 50S: W. end of Main Rd.

Runoff = 0.36 cfs @ 11.97 hrs, Volume= 0.019 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	3,930	98	Paved
	3,930		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1140	3.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.5	193	0.1140	6.85		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	293	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 51S: W. end of Main Rd.

Runoff = 0.76 cfs @ 11.98 hrs, Volume= 0.035 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	3,600	98	Paved
	8,603	74	>75% Grass cover, Good, HSG C
*	5,464	74	Fairway/Tee/Green, Good, HSG C
	17,667	79	Weighted Average
	14,067		79.62% Pervious Area
	3,600		20.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	86	0.1400	0.40		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.1	14	0.1140	2.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	261	0.1150	6.88		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3	361	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 52S: W. end of Main Rd.

Runoff = 0.39 cfs @ 11.98 hrs, Volume= 0.018 af, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	7,193	74	>75% Grass cover, Good, HSG C
*	1,536	98	Paved
*	816	74	Porous Pavement
	9,545	78	Weighted Average
	8,009		83.91% Pervious Area
	1,536		16.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	40	0.4000	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.5	60	0.0500	2.00		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	220	0.0820	5.81		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	320	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 53S: W. end of Main Rd.

Runoff = 0.78 cfs @ 11.98 hrs, Volume= 0.036 af, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	6,647	74	>75% Grass cover, Good, HSG C
*	3,490	98	Paved
*	4,753	74	Porous Pavement
*	4,360	74	Fairway/Tee/Green, Good, HSG C
	19,250	78	Weighted Average
	15,760		81.87% Pervious Area
	3,490		18.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	40	0.0750	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.4	60	0.0670	2.25		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.8	236	0.0660	5.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.7	336	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 54S: Golf Course Parking

Runoff = 3.56 cfs @ 12.00 hrs, Volume= 0.181 af, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	17,600	98	Paved
	67,503	74	>75% Grass cover, Good, HSG C
*	10,730	74	Porous Pavement
	95,833	78	Weighted Average
	78,233		81.63% Pervious Area
	17,600		18.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	27	0.0760	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.3	33	0.0450	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.7	40	0.0625	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.7	434	0.1470	2.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	188	0.0430	4.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.2	722	Total			

Summary for Subcatchment 55S: Golf Course Parking

Runoff = 1.18 cfs @ 11.97 hrs, Volume= 0.058 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	3,030	74	>75% Grass cover, Good, HSG C
*	11,425	98	Paved
*	815	74	Porous Pavement
	15,270	92	Weighted Average
	3,845		25.18% Pervious Area
	11,425		74.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0330	1.88		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	159	0.0390	4.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	259	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 56S: Main Rd. to 6 & 7

Runoff = 0.73 cfs @ 11.98 hrs, Volume= 0.034 af, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	13,240	74	>75% Grass cover, Good, HSG C
*	3,160	98	Paved
*	1,620	74	Porous Pavement
	18,020	78	Weighted Average
	14,860		82.46% Pervious Area
	3,160		17.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0170	1.44		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.5	145	0.0480	4.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	245	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 57S: Main Rd. 6 & 7

Runoff = 0.40 cfs @ 11.97 hrs, Volume= 0.020 af, Depth= 2.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	4,049	98	Paved
	831	74	>75% Grass cover, Good, HSG C
	4,880	94	Weighted Average
	831		17.03% Pervious Area
	4,049		82.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0160	1.41		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	137	0.0292	3.47		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	237	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 59S: Club House

Runoff = 0.65 cfs @ 11.97 hrs, Volume= 0.035 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	7,222	98	Roof
	7,222		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 60S: Roof Terraces

Runoff = 3.65 cfs @ 11.97 hrs, Volume= 0.185 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	36,970	98	Roof
*	5,980	74	Fairway/Tee/Green, Good, HSG C
	42,950	95	Weighted Average
	5,980		13.92% Pervious Area
	36,970		86.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 62S: Green of 18

Runoff = 1.85 cfs @ 12.01 hrs, Volume= 0.097 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	2,744	74	>75% Grass cover, Good, HSG C
*	2,600	74	Porous Pavement
*	59,100	74	Fairway/Tee/Green, Good, HSG C
	64,444	74	Weighted Average
	64,444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.0350	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.6	78	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	255	0.0512	9.08	47.66	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
8.1	433	Total			

Summary for Subcatchment 63S: Front end of Driving Range

Runoff = 5.53 cfs @ 12.08 hrs, Volume= 0.367 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	75,560	74	>75% Grass cover, Good, HSG C
	16,416	70	Woods, Good, HSG C
	15,620	98	Water Surface, 0% imp, HSG C
*	121,724	74	Fairway/Tee/Green, Good, HSG C
	642	98	Paved parking, HSG C
	319	98	Roofs, HSG C
	230,281	75	Weighted Average
	229,320		99.58% Pervious Area
	961		0.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
5.7	496	0.0430	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	297	0.0330	7.29	38.26	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
14.4	893	Total			

Summary for Subcatchment 65S: Driveway to Golf House

Runoff = 1.05 cfs @ 11.97 hrs, Volume= 0.049 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	5,721	74	>75% Grass cover, Good, HSG C
*	8,740	98	Paved
*	2,800	74	Porous Pavement
	17,261	86	Weighted Average
	8,521		49.37% Pervious Area
	8,740		50.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0350	1.92		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.7	199	0.0830	4.64		**Shallow Concentrated Flow,**
					Unpaved Kv= 16.1 fps
1.6	299	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 80S: existing woods

Runoff = 3.62 cfs @ 11.98 hrs, Volume= 0.174 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	62,404	74	>75% Grass cover, Good, HSG C
	46,340	70	Woods, Good, HSG C
*	3,190	74	Porous Pavement
*	11,666	74	Fairway/Tee/Green, Good, HSG C
	123,600	73	Weighted Average
	123,600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1600	0.44		**Sheet Flow, sheet**
					Grass: Short n= 0.150 P2= 4.00"
0.3	90	0.1300	5.41		**Shallow Concentrated Flow,**
					Grassed Waterway Kv= 15.0 fps
1.1	410	0.0350	6.38	76.58	**Channel Flow,**
					Area= 12.0 sf Perim= 21.0' r= 0.57'
					n= 0.030 Earth, grassed & winding
5.2	600	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 137S: BEHIND GARAGE

Runoff = 0.73 cfs @ 12.01 hrs, Volume= 0.039 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

Area (sf)	CN	Description
10,210	74	>75% Grass cover, Good, HSG C
21,275	70	Woods, Good, HSG C
31,485	71	Weighted Average
31,485		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	97	0.2500	0.24		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.0	280	0.0180	4.68	11.69	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00' n= 0.030 Earth, grassed & winding
7.8	377	Total			

Summary for Subcatchment 200S: Subcatchment 200

Runoff = 38.90 cfs @ 12.20 hrs, Volume= 3.859 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	14,331	98	Paved Road
	311,323	71	Meadow, non-grazed, HSG C
	3,002,765	70	Woods, Good, HSG C
	3,328,419	70	Weighted Average
	3,314,088		99.57% Pervious Area
	14,331		0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	100	0.1667	0.50		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.4	215	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	70	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
11.1	1,760	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	160	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
23.5	3,545	Total			

Summary for Subcatchment 201S: Tees of 18 & Greens of 10

Runoff = 5.62 cfs @ 11.98 hrs, Volume= 0.268 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	64,007	74	>75% Grass cover, Good, HSG C
*	12,310	74	Porous Pavement
*	86,820	74	Fairway/Tee/Green, Good, HSG C
	15,640	70	Woods, Good, HSG C
	178,777	74	Weighted Average
	178,777		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1658	0.44		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.5	93	0.1658	2.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	232	0.0948	13.87	114.45	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.033 Earth, grassed & winding
4.6	425	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 211S: Back End of the Driving Range

Runoff = 7.02 cfs @ 11.98 hrs, Volume= 0.332 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	61,458	74	>75% Grass cover, Good, HSG C
*	5,760	98	Porous Pavement
*	141,430	74	Fairway/Tee/Green, Good, HSG C
	208,648	75	Weighted Average
	202,888		97.24% Pervious Area
	5,760		2.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.3	40	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	765	0.1390	14.96	78.53	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
5.8	905	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 212S: Green of 13

Runoff = 2.15 cfs @ 11.98 hrs, Volume= 0.102 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	9,320	74	>75% Grass cover, Good, HSG C
*	1,810	74	Porous Pavement
*	57,180	74	Fairway/Tee/Green, Good, HSG C
	68,310	74	Weighted Average
	68,310		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.3	119	0.0336	7.35	38.61	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
4.9	219	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 213S: Hole 16

Runoff = 5.55 cfs @ 12.05 hrs, Volume= 0.329 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	45,442	74	>75% Grass cover, Good, HSG C
*	8,230	74	Porous Pavement
*	127,890	74	Fairway/Tee/Green, Good, HSG C
	13,418	98	Water Surface, 0% imp, HSG C
	194,980	76	Weighted Average
	194,980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0118	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.9	590	0.0576	10.81	89.21	**Trap/Vee/Rect Channel Flow, Turf Reinforcement Mat** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.033 Earth, grassed & winding
11.7	690	Total			

Summary for Subcatchment 214S: Tees of 13

Runoff = 4.89 cfs @ 11.99 hrs, Volume= 0.237 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	36,885	74	>75% Grass cover, Good, HSG C
*	9,000	74	Porous Pavement
*	112,185	74	Fairway/Tee/Green, Good, HSG C
	158,070	74	Weighted Average
	158,070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0600	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.7	527	0.0700	11.92	98.35	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.033 Earth, grassed & winding
0.0	20	0.0200	13.34	94.33	**Pipe Channel,** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
0.1	110	0.1500	17.45	143.97	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00'

					n= 0.033 Earth, grassed & winding
6.4	757	Total			

Summary for Subcatchment 218S: Green of 12, Tee of 13

Runoff = 2.92 cfs @ 11.99 hrs, Volume= 0.145 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	40,598	74	>75% Grass cover, Good, HSG C
*	4,120	74	Porous Pavement
*	51,700	74	Fairway/Tee/Green, Good, HSG C
	96,418	74	Weighted Average
	96,418		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0800	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.7	200	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	167	0.1205	17.20	141.94	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.030 Earth, grassed & winding
6.9	467	Total			

Summary for Subcatchment 219S: Green of 11

Runoff = 2.48 cfs @ 11.98 hrs, Volume= 0.118 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	37,165	74	>75% Grass cover, Good, HSG C
*	6,050	74	Porous Pavement
*	35,770	74	Fairway/Tee/Green, Good, HSG C
	78,985	74	Weighted Average
	78,985		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0130	1.29		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	108	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	198	0.0550	10.57	87.18	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.033 Earth, grassed & winding
2.0	406	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 220S: Fairway of 11

Runoff = 6.86 cfs @ 12.05 hrs, Volume= 0.423 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	76,630	74	>75% Grass cover, Good, HSG C
	34,383	70	Woods, Good, HSG C
*	16,925	74	porous paving
*	146,470	74	Fairway/Tee/Green, Good, HSG C
	7,780	98	Water Surface, HSG C
	282,188	74	Weighted Average
	274,408		97.24% Pervious Area
	7,780		2.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.1200	0.39		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 4.00"
7.7	627	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	142	0.1270	15.73	82.57	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.030 Earth, grassed & winding
12.2	869	Total			

Summary for Subcatchment 223S: Golf Hole 15 and Maintenance Bldg.

Runoff = 7.36 cfs @ 11.98 hrs, Volume= 0.345 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	16,393	70	Woods, Good, HSG C
	84,076	74	>75% Grass cover, Good, HSG C
*	7,663	98	Roof
*	62,572	74	Fairway/Tee/Green, Good, HSG C
*	5,950	74	Porous Pavement
	16,303	98	Paved parking, HSG C
	192,957	77	Weighted Average
	168,991		87.58% Pervious Area
	23,966		12.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	30	0.1000	2.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.2	70	0.3000	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.5	233	0.1460	2.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	68	0.0200	5.67	29.79	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
4.1	401	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 225S: Fairway 14

Runoff = 5.88 cfs @ 11.98 hrs, Volume= 0.280 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	55,496	74	>75% Grass cover, Good, HSG C
*	7,480	74	Porous Pavement
*	124,042	74	Fairway/Tee/Green, Good, HSG C
	187,018	74	Weighted Average
	187,018		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.1800	0.46		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.1	147	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	284	0.0560	9.49	49.84	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
5.2	531	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 226S: Fairway & Green of 14

Runoff = 3.42 cfs @ 11.98 hrs, Volume= 0.163 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	28,724	74	>75% Grass cover, Good, HSG C
*	7,290	74	Porous Pavement
*	72,670	74	Fairway/Tee/Green, Good, HSG C
	108,684	74	Weighted Average
	108,684		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	100	0.3100	0.57		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.8	225	0.0840	2.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	100	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	43	0.0470	1.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	468	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 300S: Subcatchment 300

Runoff = 9.01 cfs @ 12.16 hrs, Volume= 0.826 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	3,267	98	Paved Road
	6,447	71	Meadow, non-grazed, HSG C
	702,884	70	Woods, Good, HSG C
	712,598	70	Weighted Average
	709,331		99.54% Pervious Area
	3,267		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	120	0.2500	0.25		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.7	1,810	0.2257	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	110	0.0910	12.13	48.50	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030

21.0	2,040	Total

Summary for Subcatchment 301S: Ex Stream

Runoff = 2.49 cfs @ 11.98 hrs, Volume= 0.121 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	46,362	70	Woods, Good, HSG C
	43,672	74	>75% Grass cover, Good, HSG C
*	1,350	74	Porous Pavement
	91,384	72	Weighted Average
	91,384		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	100	0.2100	0.49		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.4	51	0.0988	2.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	118	0.1610	2.01		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	228	0.1140	10.19	50.95	**Trap/Vee/Rect Channel Flow, Ex Stream** Bot.W=4.00' D=1.00' Z= 1.0 '/' Top.W=6.00' n= 0.040 Mountain streams
5.2	497	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 302a: New Subcatch

Runoff = 3.64 cfs @ 12.00 hrs, Volume= 0.192 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

Area (sf)	CN	Description
67,296	71	Meadow, non-grazed, HSG C
65,469	70	Woods, Good, HSG C
22,432	74	>75% Grass cover, Good, HSG C
155,197	71	Weighted Average
155,197		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.3800	0.28		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.7	318	0.3800	3.08		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.6	418	Total			

Summary for Subcatchment 302b: New Subcatch

Runoff = 3.78 cfs @ 12.02 hrs, Volume= 0.208 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

Area (sf)	CN	Description
61,357	71	Meadow, non-grazed, HSG C
45,086	70	Woods, Good, HSG C
51,075	74	>75% Grass cover, Good, HSG C
157,518	72	Weighted Average
157,518		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0400	0.25		**Sheet Flow,**
					Grass: Short n= 0.150 P2= 4.00"
1.2	285	0.3400	4.08		**Shallow Concentrated Flow,**
					Short Grass Pasture Kv= 7.0 fps
1.1	600	0.0820	9.48	49.76	**Trap/Vee/Rect Channel Flow,**
					Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00'
					n= 0.040 Earth, cobble bottom, clean sides
8.9	985	Total			

Summary for Subcatchment 302S: (new Subcat)

Runoff = 4.34 cfs @ 11.99 hrs, Volume= 0.217 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	46,647	71	Meadow, non-grazed, HSG C
	139,008	70	Woods, Good, HSG C
*	1,180	74	Paved (porous)
	186,835	70	Weighted Average
	186,835		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1600	0.44		**Sheet Flow,**
					Grass: Short n= 0.150 P2= 4.00"
0.2	43	0.1860	3.02		**Shallow Concentrated Flow,**
					Short Grass Pasture Kv= 7.0 fps
1.5	871	0.0600	9.83	51.59	**Trap/Vee/Rect Channel Flow,**
					Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00'
					n= 0.033 Earth, grassed & winding
5.5	1,014	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 303S: Subcatchment 303

Runoff = 5.99 cfs @ 12.02 hrs, Volume= 0.332 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	145,514	70	Woods, Good, HSG C
*	9,520	74	Porous Pavement
	72,299	74	>75% Grass cover, Good, HSG C
*	23,715	74	Fairway/Tee/Green, Good, HSG C
	251,048	72	Weighted Average
	251,048		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	20	0.0800	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.2	86	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	670	0.0850	12.87	67.55	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.030 Earth, grassed & winding
4.9	358	0.0170	1.22	21.30	**Trap/Vee/Rect Channel Flow, ex wetland flow** Bot.W=10.00' D=0.50' Z= 50.0 '/' Top.W=60.00' n= 0.070 Sluggish weedy reaches w/pools
0.6	316	0.0450	9.45	132.34	**Trap/Vee/Rect Channel Flow, ex wetland ditch** Bot.W=5.00' D=2.00' Z= 1.0 '/' Top.W=9.00' n= 0.040 Earth, cobble bottom, clean sides
9.0	1,450	Total			

Summary for Subcatchment 304: (new Subcat)

Runoff = 2.80 cfs @ 12.18 hrs, Volume= 0.264 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	1,900	74	Porous Pavement
	136,810	70	Woods, Good, HSG C
	73,912	74	>75% Grass cover, Good, HSG C
	212,622	71	Weighted Average
	212,622		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.3300	0.27		**Sheet Flow,**
					Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	112	0.3300	2.87		**Shallow Concentrated Flow,**
					Woodland Kv= 5.0 fps
1.2	70	0.0400	1.00		**Shallow Concentrated Flow,**
					Woodland Kv= 5.0 fps
14.5	436	0.0400	0.50		**Shallow Concentrated Flow,**
					Forest w/Heavy Litter Kv= 2.5 fps
0.1	145	0.2500	17.04	1,294.48	**Trap/Vee/Rect Channel Flow, overland**
					Bot.W=50.00' D=0.83' Z= 50.0 '/' Top.W=133.00'
					n= 0.030 Earth, grassed & winding
22.7	863	Total			

Summary for Subcatchment 305s: Land W. side of hotel

Runoff = 4.36 cfs @ 12.00 hrs, Volume= 0.225 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	125,900	74	>75% Grass cover, Good, HSG C
*	7,690	74	Porous Pavement
*	16,700	74	Fairway/Tee/Green, Good, HSG C
	150,290	74	Weighted Average
	150,290		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	100	0.3000	0.56		**Sheet Flow,**
					Grass: Short n= 0.150 P2= 4.00"
4.0	650	0.1500	2.71		**Shallow Concentrated Flow,**
					Short Grass Pasture Kv= 7.0 fps
0.9	215	0.0100	4.01	21.06	**Trap/Vee/Rect Channel Flow,**
					Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00'
					n= 0.033 Earth, grassed & winding
7.9	965	Total			

Summary for Subcatchment 306S: 12 tee

Runoff = 4.86 cfs @ 12.00 hrs, Volume= 0.257 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	75,600	70	Woods, Good, HSG C
*	2,810	74	Porous Pavement
	20,790	74	>75% Grass cover, Good, HSG C
	108,004	71	Meadow, non-grazed, HSG C
	207,204	71	Weighted Average
	207,204		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0700	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.9	182	0.2200	3.28		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	550	0.0650	9.20	27.59	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=2.00' D=1.00' Z= 1.0 '/' Top.W=4.00' n= 0.030 Earth, grassed & winding
0.4	240	0.1600	11.19	72.20	**Trap/Vee/Rect Channel Flow, Ex Wetlnd channel** Bot.W=4.00' D=1.50' Z= 0.2 '/' Top.W=4.60' n= 0.050 Mountain streams w/large boulders
7.6	1,072	Total			

Summary for Subcatchment 307S: (new Subcat)

Runoff = 3.08 cfs @ 12.00 hrs, Volume= 0.162 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	13,050	74	Fairway/Tee/Green, Good, HSG C
*	10,840	74	Paved (Porous)
	24,084	74	>75% Grass cover, Good, HSG C
	74,350	70	Woods, Good, HSG C
	122,324	72	Weighted Average
	122,324		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	66	0.2000	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.1	130	0.0760	1.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	72	0.0350	4.77	14.31	**Trap/Vee/Rect Channel Flow, Grassed Swale** Bot.W=4.00' D=0.50' Z= 4.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
0.9	830	0.1100	14.87	111.53	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=2.00' D=1.50' Z= 2.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
7.8	1,098	Total			

Summary for Subcatchment 308S: (new Subcat)

Runoff = 4.42 cfs @ 12.17 hrs, Volume= 0.401 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

Area (sf)	CN	Description
36,866	74	>75% Grass cover, Good, HSG C
309,380	70	Woods, Good, HSG C
346,246	70	Weighted Average
346,246		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0200	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.0	186	0.3800	1.54		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
2.6	220	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	150	0.0500	0.56		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
0.7	96	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	75	0.0600	0.61		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
0.1	109	0.1800	13.41	160.89	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.050 Mountain streams w/large boulders
20.7	936	Total			

Summary for Subcatchment 309S: (new Subcat)

Runoff = 6.83 cfs @ 12.07 hrs, Volume= 0.447 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	180,807	70	Woods, Good, HSG C
	103,518	74	>75% Grass cover, Good, HSG C
*	13,610	98	Paved
*	7,390	74	Porous Pavement
*	11,400	74	Fairway/Tee/Green, Good, HSG C
	316,725	73	Weighted Average
	303,115		95.70% Pervious Area
	13,610		4.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	72	0.0278	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
4.2	28	0.0714	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.2	549	0.3320	2.88		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.3	649	Total			

Summary for Subcatchment 310S: Existing Wooded Area

Runoff = 4.28 cfs @ 11.98 hrs, Volume= 0.208 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	107,476	70	Woods, Good, HSG C
*	7,355	98	Paved
	39,560	74	>75% Grass cover, Good, HSG C
*	2,820	74	Porous Pavement
	157,211	72	Weighted Average
	149,856		95.32% Pervious Area
	7,355		4.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.2500	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	434	0.1240	10.89	32.66	**Trap/Vee/Rect Channel Flow, ex. vegetated ditch** Bot.W=2.00' D=1.00' Z= 1.0 '/' Top.W=4.00' n= 0.035 Earth, dense weeds
4.1	474	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 311S: Existing Wooded Area

Runoff = 5.88 cfs @ 12.09 hrs, Volume= 0.413 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	103,137	74	>75% Grass cover, Good, HSG C
*	2,085	98	Paved
	205,167	70	Woods, Good, HSG C
*	2,000	74	Porous Pavement
	312,389	72	Weighted Average
	310,304		99.33% Pervious Area
	2,085		0.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0500	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.1	12	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.8	737	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	930	0.1180	9.10	47.75	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.050 Earth, cobble bottom, clean sides
14.7	1,779	Total			

Summary for Subcatchment 315S: Subcatchment 315

Runoff = 7.56 cfs @ 12.03 hrs, Volume= 0.451 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

Area (sf)	CN	Description
315,930	70	Woods, Good, HSG C
47,510	74	>75% Grass cover, Good, HSG C
363,440	71	Weighted Average
363,440		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.2200	0.23		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
2.9	482	0.3150	2.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.3	582	Total			

Summary for Subcatchment 316A: Existing By Maintenance Bldg.

Runoff = 0.73 cfs @ 11.99 hrs, Volume= 0.035 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
	17,032	70	Woods, Good, HSG C
*	2,919	98	Paved parking
	5,184	71	Meadow, non-grazed, HSG C
	25,135	73	Weighted Average
	22,216		88.39% Pervious Area
	2,919		11.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	100	0.4000	0.29		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	270	0.0800	11.83	29.57	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00' n= 0.025 Earth, clean & winding
6.2	370	Total			

Summary for Subcatchment 316S: existing

Runoff = 10.03 cfs @ 12.00 hrs, Volume= 0.525 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 Year Rainfall=2.80"

	Area (sf)	CN	Description
*	5,340	98	Paved
	361,425	70	Woods, Good, HSG C
	33,106	74	>75% Grass cover, Good, HSG C
*	5,210	74	Porous Pavement
*	18,632	74	Fairway/Tee/Green, Good, HSG C
	423,713	71	Weighted Average
	418,373		98.74% Pervious Area
	5,340		1.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	77	0.3120	0.25		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
2.2	867	0.0280	6.71	35.25	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
7.4	944	Total			

Summary for Reach 1R: overland flow

Inflow Area = 9.767 ac, 36.32% Impervious, Inflow Depth = 1.37" for 1 Year event
Inflow = 22.09 cfs @ 11.98 hrs, Volume= 1.112 af
Outflow = 22.08 cfs @ 11.98 hrs, Volume= 1.112 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.16 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.78 fps, Avg. Travel Time= 0.7 min

Peak Storage= 203 cf @ 11.98 hrs
Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 136.22 cfs

3.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 75.0' Slope= 0.1733 '/'
Inlet Invert= 1,963.00', Outlet Invert= 1,950.00'

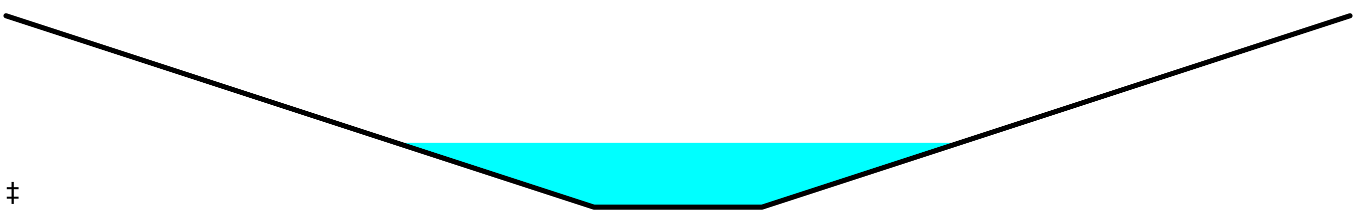
Summary for Reach 3: Rip Rap Channel

Inflow Area = 151.679 ac, 3.12% Impervious, Inflow Depth > 0.65" for 1 Year event
Inflow = 58.49 cfs @ 12.23 hrs, Volume= 8.201 af
Outflow = 58.49 cfs @ 12.23 hrs, Volume= 8.201 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.84 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.68 fps, Avg. Travel Time= 0.5 min

Peak Storage= 337 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.51'
Bank-Full Depth= 1.50' Flow Area= 40.5 sf, Capacity= 672.04 cfs

6.00' x 1.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 14.0 '/' Top Width= 48.00'
Length= 51.0' Slope= 0.3922 '/'
Inlet Invert= 1,740.00', Outlet Invert= 1,720.00'



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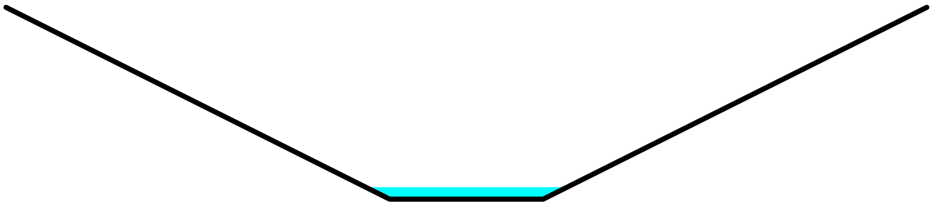
Summary for Reach 3R: Swale along RR Tracks

Inflow Area = 8.723 ac, 6.31% Impervious, Inflow Depth = 0.20" for 1 Year event
Inflow = 0.64 cfs @ 12.51 hrs, Volume= 0.147 af
Outflow = 0.56 cfs @ 12.71 hrs, Volume= 0.147 af, Atten= 12%, Lag= 11.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.56 fps, Min. Travel Time= 11.2 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 21.4 min

Peak Storage= 376 cf @ 12.71 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 2.50' Flow Area= 17.5 sf, Capacity= 126.24 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 1,045.0' Slope= 0.0258 '/'
Inlet Invert= 1,768.00', Outlet Invert= 1,741.00'



Summary for Reach 5: Stream Channel

Inflow Area = 36.096 ac, 1.88% Impervious, Inflow Depth = 0.63" for 1 Year event
Inflow = 14.17 cfs @ 12.29 hrs, Volume= 1.903 af
Outflow = 14.16 cfs @ 12.29 hrs, Volume= 1.903 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.66 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.90 fps, Avg. Travel Time= 0.9 min

Peak Storage= 296 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 1,318.86 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 160.0' Slope= 0.3000 '/'
Inlet Invert= 2,060.00', Outlet Invert= 2,012.00'

Summary for Reach 5A: Stream Channel

Inflow Area = 44.003 ac, 3.44% Impervious, Inflow Depth = 0.69" for 1 Year event
Inflow = 14.29 cfs @ 12.29 hrs, Volume= 2.546 af
Outflow = 14.27 cfs @ 12.30 hrs, Volume= 2.546 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.93 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.80 fps, Avg. Travel Time= 3.1 min

Peak Storage= 700 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 1,130.92 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 340.0' Slope= 0.2206 '/'
Inlet Invert= 2,012.00', Outlet Invert= 1,937.00'

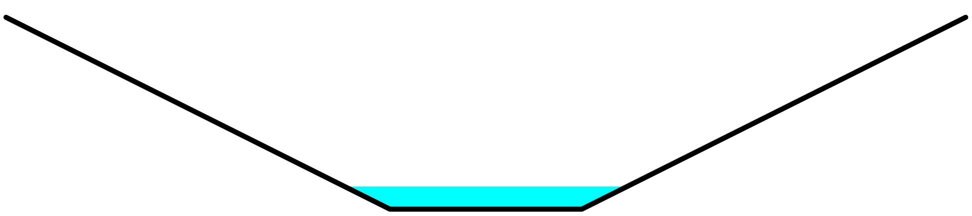
Summary for Reach 5B: Stream Channel

Inflow Area = 48.293 ac, 3.13% Impervious, Inflow Depth = 0.69" for 1 Year event
Inflow = 14.96 cfs @ 12.30 hrs, Volume= 2.763 af
Outflow = 14.95 cfs @ 12.30 hrs, Volume= 2.763 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.40 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.59 fps, Avg. Travel Time= 1.3 min

Peak Storage= 281 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 983.02 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 120.0' Slope= 0.1667 '/'
Inlet Invert= 1,936.00', Outlet Invert= 1,916.00'



Summary for Reach 5C: Stream Channel

Inflow Area = 48.293 ac, 3.13% Impervious, Inflow Depth = 0.69" for 1 Year event
Inflow = 14.95 cfs @ 12.30 hrs, Volume= 2.763 af
Outflow = 14.94 cfs @ 12.31 hrs, Volume= 2.763 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.17 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.51 fps, Avg. Travel Time= 3.1 min

Peak Storage= 671 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 932.02 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 277.0' Slope= 0.1498 '/'
Inlet Invert= 1,915.50', Outlet Invert= 1,874.00'

Summary for Reach 5D: Stream Channel

Inflow Area =	55.587 ac,	2.72% Impervious, Inflow Depth =	0.64"	for 1 Year event
Inflow =	15.31 cfs @	12.31 hrs, Volume=	2.950 af	
Outflow =	15.30 cfs @	12.31 hrs, Volume=	2.950 af, Atten= 0%, Lag= 0.4 min	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.64 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.82 fps, Avg. Travel Time= 2.8 min

Peak Storage= 532 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 385.96 cfs

2.50' x 2.50' deep channel, n= 0.040
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 300.0' Slope= 0.2017 '/'
Inlet Invert= 1,873.50', Outlet Invert= 1,813.00'

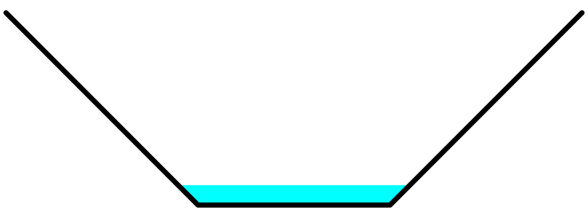
Summary for Reach 5R: roadside swale

Inflow Area = 4.919 ac, 12.29% Impervious, Inflow Depth = 0.53" for 1 Year event
Inflow = 1.07 cfs @ 12.28 hrs, Volume= 0.217 af
Outflow = 1.07 cfs @ 12.36 hrs, Volume= 0.217 af, Atten= 0%, Lag= 4.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.34 fps, Min. Travel Time= 4.3 min
Avg. Velocity = 1.03 fps, Avg. Travel Time= 9.8 min

Peak Storage= 277 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 61.25 cfs

2.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 607.0' Slope= 0.0626 '/'
Inlet Invert= 2,122.00', Outlet Invert= 2,084.00'



Summary for Reach 6: (new Reach)

Inflow Area = 17.806 ac, 19.92% Impervious, Inflow Depth > 1.08" for 1 Year event
Inflow = 0.40 cfs @ 22.98 hrs, Volume= 1.610 af
Outflow = 0.40 cfs @ 23.00 hrs, Volume= 1.610 af, Atten= 0%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.72 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 1.22 fps, Avg. Travel Time= 2.4 min

Peak Storage= 41 cf @ 23.00 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 217.11 cfs

4.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 175.0' Slope= 0.1571 '/'
Inlet Invert= 1,937.50', Outlet Invert= 1,910.00'

Summary for Reach 6R: Clean Swale

Inflow Area = 22.295 ac, 12.75% Impervious, Inflow Depth > 0.88" for 1 Year event
Inflow = 4.84 cfs @ 12.11 hrs, Volume= 1.634 af
Outflow = 4.83 cfs @ 12.12 hrs, Volume= 1.634 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.07 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.10 fps, Avg. Travel Time= 3.7 min

Peak Storage= 291 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 114.21 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 245.0' Slope= 0.0327 '/'
Inlet Invert= 1,838.00', Outlet Invert= 1,830.00'

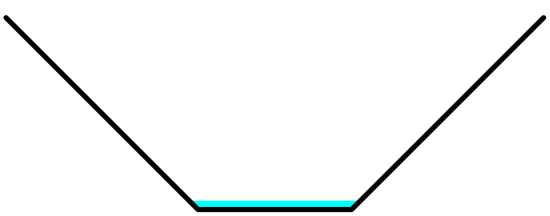
Summary for Reach 7B: Existing Ditch

Inflow Area = 0.577 ac, 11.61% Impervious, Inflow Depth = 0.74" for 1 Year event
Inflow = 0.73 cfs @ 11.99 hrs, Volume= 0.035 af
Outflow = 0.73 cfs @ 11.99 hrs, Volume= 0.035 af, Atten= 1%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.97 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.17 fps, Avg. Travel Time= 1.8 min

Peak Storage= 31 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 2.50' Flow Area= 11.3 sf, Capacity= 172.60 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 125.0' Slope= 0.1280 '/'
Inlet Invert= 1,896.00', Outlet Invert= 1,880.00'



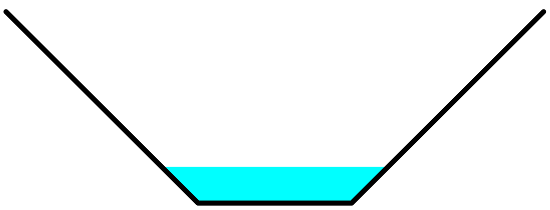
Summary for Reach 7C: Existing Ditch

Inflow Area = 12.538 ac, 1.97% Impervious, Inflow Depth = 0.51" for 1 Year event
Inflow = 6.26 cfs @ 12.07 hrs, Volume= 0.534 af
Outflow = 6.17 cfs @ 12.10 hrs, Volume= 0.534 af, Atten= 2%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.26 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 1.91 fps, Avg. Travel Time= 4.6 min

Peak Storage= 622 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 2.50' Flow Area= 11.3 sf, Capacity= 137.22 cfs

2.00' x 2.50' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 530.0' Slope= 0.1264 '/'
Inlet Invert= 1,880.00', Outlet Invert= 1,813.00'



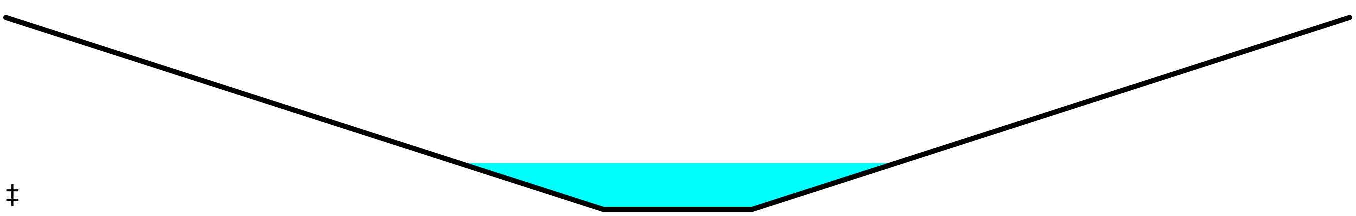
Summary for Reach 8: Stream Channel

Inflow Area = 71.735 ac, 2.69% Impervious, Inflow Depth = 0.62" for 1 Year event
Inflow = 22.36 cfs @ 12.03 hrs, Volume= 3.692 af
Outflow = 22.23 cfs @ 12.04 hrs, Volume= 3.692 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.68 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.95 fps, Avg. Travel Time= 4.3 min

Peak Storage= 1,163 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 1.00' Flow Area= 50.0 sf, Capacity= 532.84 cfs

10.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 40.0 '/' Top Width= 90.00'
Length= 245.0' Slope= 0.2816 '/'
Inlet Invert= 1,810.00', Outlet Invert= 1,741.00'



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Summary for Reach 9R: swale

Inflow Area = 0.723 ac, 0.00% Impervious, Inflow Depth = 0.65" for 1 Year event
Inflow = 0.73 cfs @ 12.01 hrs, Volume= 0.039 af
Outflow = 0.69 cfs @ 12.03 hrs, Volume= 0.039 af, Atten= 5%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.89 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 0.53 fps, Avg. Travel Time= 8.8 min

Peak Storage= 102 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.00' Flow Area= 2.5 sf, Capacity= 11.64 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.5 '/' Top Width= 3.00'
Length= 280.0' Slope= 0.0179 '/'
Inlet Invert= 2,225.00', Outlet Invert= 2,220.00'

Summary for Reach 11R: Overland Flow

Inflow Area = 20.182 ac, 13.31% Impervious, Inflow Depth > 0.89" for 1 Year event
Inflow = 6.08 cfs @ 11.99 hrs, Volume= 1.504 af
Outflow = 3.62 cfs @ 12.08 hrs, Volume= 1.504 af, Atten= 40%, Lag= 5.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.02 fps, Min. Travel Time= 12.4 min
Avg. Velocity = 0.39 fps, Avg. Travel Time= 32.9 min

Peak Storage= 2,700 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 1.00' Flow Area= 90.0 sf, Capacity= 635.50 cfs

75.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 105.00'
Length= 760.0' Slope= 0.1776 '/'
Inlet Invert= 1,973.00', Outlet Invert= 1,838.00'

‡

Summary for Reach 12R: Overland Flow

Inflow Area = 2.112 ac, 7.43% Impervious, Inflow Depth = 0.74" for 1 Year event
Inflow = 1.94 cfs @ 12.07 hrs, Volume= 0.130 af
Outflow = 1.46 cfs @ 12.16 hrs, Volume= 0.130 af, Atten= 25%, Lag= 5.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.06 fps, Min. Travel Time= 9.3 min
Avg. Velocity = 0.42 fps, Avg. Travel Time= 23.3 min

Peak Storage= 811 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 312.77 cfs

30.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 60.00'
Length= 588.0' Slope= 0.2058 '/'
Inlet Invert= 1,959.00', Outlet Invert= 1,838.00'

‡

Summary for Reach 13: Channel at tracks

Inflow Area = 80.458 ac, 3.08% Impervious, Inflow Depth = 0.57" for 1 Year event
Inflow = 22.23 cfs @ 12.04 hrs, Volume= 3.839 af
Outflow = 21.90 cfs @ 12.06 hrs, Volume= 3.839 af, Atten= 1%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.26 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 7.0 min

Peak Storage= 1,874 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.64'
Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 604.81 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 4.0 '/' Top Width= 28.00'
Length= 450.0' Slope= 0.0444 '/'
Inlet Invert= 1,740.00', Outlet Invert= 1,720.00'

‡

Summary for Reach 14R: Swale

Inflow Area = 0.986 ac, 86.08% Impervious, Inflow Depth = 1.59" for 1 Year event
Inflow = 0.14 cfs @ 11.99 hrs, Volume= 0.130 af
Outflow = 0.14 cfs @ 14.35 hrs, Volume= 0.130 af, Atten= 0%, Lag= 141.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.91 fps, Min. Travel Time= 5.8 min
Avg. Velocity = 1.67 fps, Avg. Travel Time= 6.7 min

Peak Storage= 48 cf @ 14.34 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 305.76 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 665.0' Slope= 0.1323 '/'
Inlet Invert= 2,108.00', Outlet Invert= 2,020.00'

Summary for Reach 15R: Cobble Stream

Inflow Area = 34.486 ac, 9.68% Impervious, Inflow Depth = 0.81" for 1 Year event
Inflow = 13.46 cfs @ 12.13 hrs, Volume= 2.337 af
Outflow = 13.44 cfs @ 12.14 hrs, Volume= 2.337 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.24 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 3.3 min

Peak Storage= 528 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 226.76 cfs

4.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 245.0' Slope= 0.1714 '/'
Inlet Invert= 1,830.00', Outlet Invert= 1,788.00'

Summary for Reach 40R: Swale

Inflow Area = 19.549 ac, 12.60% Impervious, Inflow Depth > 0.88" for 1 Year event
Inflow = 4.73 cfs @ 11.99 hrs, Volume= 1.440 af
Outflow = 4.72 cfs @ 11.99 hrs, Volume= 1.440 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.47 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 1.7 min

Peak Storage= 129 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 106.53 cfs

2.50' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 10.50'
Length= 95.0' Slope= 0.0411 '/'
Inlet Invert= 1,983.90', Outlet Invert= 1,980.00'

Summary for Reach 51R: Swale

Inflow Area = 5.219 ac, 37.72% Impervious, Inflow Depth = 1.22" for 1 Year event
Inflow = 8.04 cfs @ 11.99 hrs, Volume= 0.533 af
Outflow = 7.75 cfs @ 12.01 hrs, Volume= 0.533 af, Atten= 4%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.59 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 7.2 min

Peak Storage= 903 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 162.52 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 535.0' Slope= 0.0374 '/'
Inlet Invert= 2,020.00', Outlet Invert= 2,000.00'

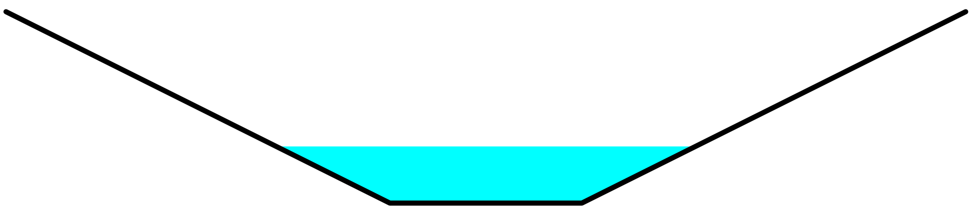
Summary for Reach 58a: Swale along RR Tracks

Inflow Area = 34.486 ac, 9.68% Impervious, Inflow Depth = 0.81" for 1 Year event
Inflow = 13.44 cfs @ 12.14 hrs, Volume= 2.337 af
Outflow = 13.22 cfs @ 12.16 hrs, Volume= 2.337 af, Atten= 2%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.49 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.95 fps, Avg. Travel Time= 9.5 min

Peak Storage= 1,599 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.74'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 163.26 cfs

2.50' x 2.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 543.0' Slope= 0.0276 '/'
Inlet Invert= 1,788.00', Outlet Invert= 1,773.00'



Summary for Reach 63R: OVERLAND

Inflow Area = 2.621 ac, 30.94% Impervious, Inflow Depth = 1.27" for 1 Year event
Inflow = 5.36 cfs @ 11.99 hrs, Volume= 0.277 af
Outflow = 5.35 cfs @ 11.99 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.57 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.61 fps, Avg. Travel Time= 1.3 min

Peak Storage= 121 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 448.14 cfs

5.00' x 2.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 1.0 '/' Top Width= 10.00'
Length= 126.0' Slope= 0.3595 '/'
Inlet Invert= 2,069.90', Outlet Invert= 2,024.60'

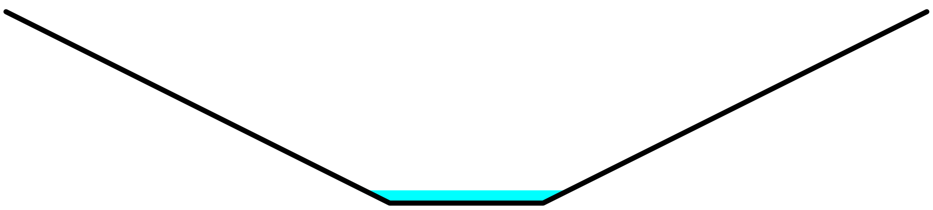
Summary for Reach 64R: Swale

Inflow Area = 7.908 ac, 10.53% Impervious, Inflow Depth > 0.98" for 1 Year event
Inflow = 0.26 cfs @ 17.93 hrs, Volume= 0.643 af
Outflow = 0.26 cfs @ 17.99 hrs, Volume= 0.643 af, Atten= 0%, Lag= 3.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.68 fps, Min. Travel Time= 5.4 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 10.1 min

Peak Storage= 86 cf @ 17.99 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 2.50' Flow Area= 17.5 sf, Capacity= 52.71 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 222.0' Slope= 0.0045 '/'
Inlet Invert= 2,016.50', Outlet Invert= 2,015.50'



Summary for Reach 69R: Wetland Flow

Inflow Area = 3.450 ac, 0.00% Impervious, Inflow Depth = 0.78" for 1 Year event
Inflow = 4.36 cfs @ 12.00 hrs, Volume= 0.225 af
Outflow = 2.69 cfs @ 12.08 hrs, Volume= 0.225 af, Atten= 38%, Lag= 4.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.69 fps, Min. Travel Time= 11.7 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 39.6 min

Peak Storage= 1,890 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 0.50' Flow Area= 63.0 sf, Capacity= 172.83 cfs

76.00' x 0.50' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 100.0 '/' Top Width= 176.00'
Length= 487.0' Slope= 0.0657 '/'
Inlet Invert= 2,098.00', Outlet Invert= 2,066.00'

‡

Summary for Reach 197: Stream Channel

Inflow Area = 143.335 ac, 3.30% Impervious, Inflow Depth > 0.65" for 1 Year event
Inflow = 56.39 cfs @ 12.22 hrs, Volume= 7.750 af
Outflow = 56.19 cfs @ 12.23 hrs, Volume= 7.750 af, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.76 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 2.45 fps, Avg. Travel Time= 4.1 min

Peak Storage= 4,337 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 6.00' Flow Area= 342.0 sf, Capacity= 12,139.60 cfs

15.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 7.0 '/' Top Width= 99.00'
Length= 599.0' Slope= 0.2763 '/'
Inlet Invert= 1,909.50', Outlet Invert= 1,744.00'

‡

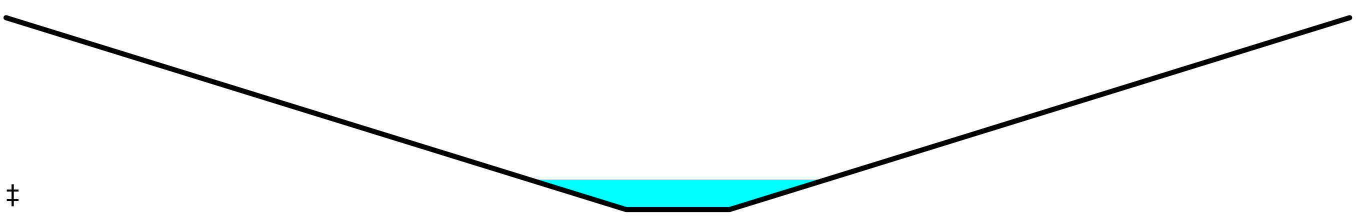
Summary for Reach 197A: Stream Channel

Inflow Area = 118.559 ac, 1.00% Impervious, Inflow Depth = 0.59" for 1 Year event
Inflow = 55.37 cfs @ 12.21 hrs, Volume= 5.874 af
Outflow = 55.12 cfs @ 12.22 hrs, Volume= 5.874 af, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.62 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 3.27 fps, Avg. Travel Time= 3.1 min

Peak Storage= 4,348 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.93'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 3,783.36 cfs

4.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 601.0' Slope= 0.1248 '/'
Inlet Invert= 1,985.00', Outlet Invert= 1,910.00'



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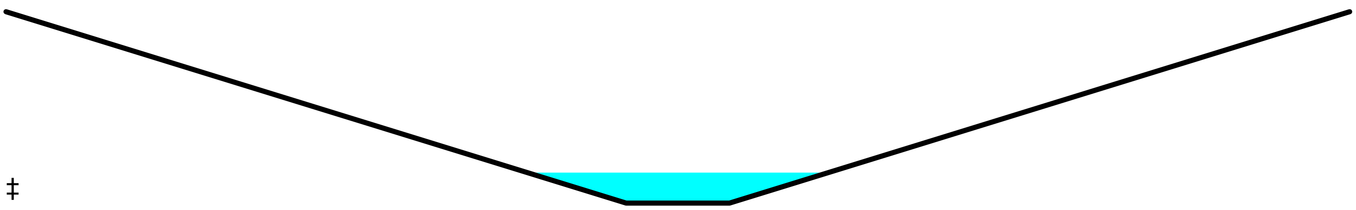
Summary for Reach 197B: Stream Channel

Inflow Area = 110.322 ac, 1.07% Impervious, Inflow Depth = 0.59" for 1 Year event
Inflow = 53.70 cfs @ 12.20 hrs, Volume= 5.466 af
Outflow = 53.65 cfs @ 12.21 hrs, Volume= 5.466 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.20 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 3.07 fps, Avg. Travel Time= 1.4 min

Peak Storage= 1,877 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.95'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 3,537.94 cfs

4.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 252.0' Slope= 0.1091 '/'
Inlet Invert= 2,013.00', Outlet Invert= 1,985.50'



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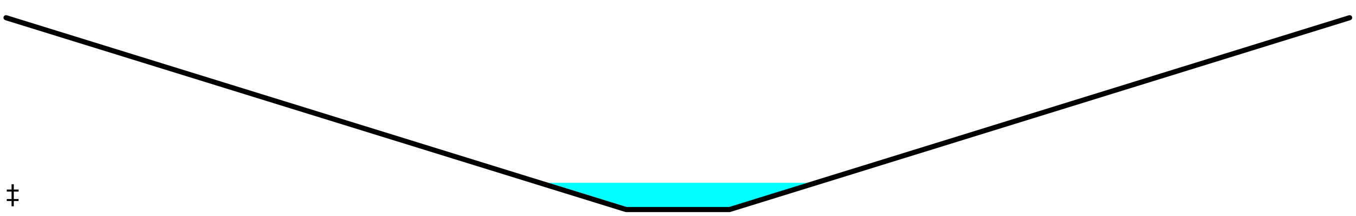
Summary for Reach 197C: Stream Channel

Inflow Area = 95.895 ac, 1.05% Impervious, Inflow Depth = 0.62" for 1 Year event
Inflow = 49.58 cfs @ 12.20 hrs, Volume= 4.965 af
Outflow = 49.46 cfs @ 12.21 hrs, Volume= 4.965 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.05 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 3.37 fps, Avg. Travel Time= 2.1 min

Peak Storage= 2,619 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.84'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 4,247.34 cfs

4.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 426.0' Slope= 0.1573 '/'
Inlet Invert= 2,080.00', Outlet Invert= 2,013.00'



‡

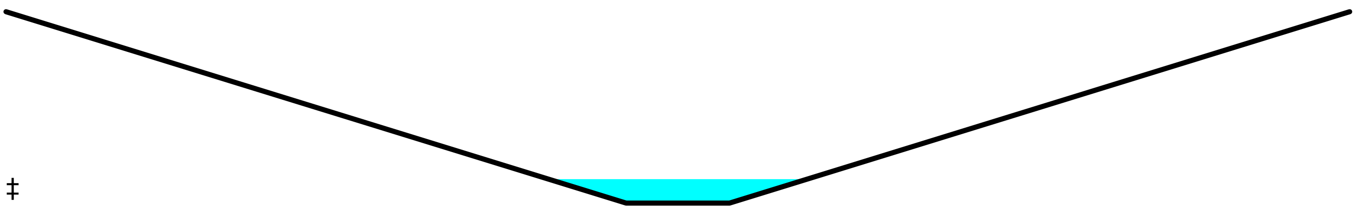
Summary for Reach 198: Stream Channel

Inflow Area = 88.624 ac, 0.78% Impervious, Inflow Depth = 0.61" for 1 Year event
Inflow = 45.99 cfs @ 12.20 hrs, Volume= 4.519 af
Outflow = 45.87 cfs @ 12.21 hrs, Volume= 4.519 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.72 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.64 fps, Avg. Travel Time= 1.9 min

Peak Storage= 2,194 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 4,877.81 cfs

4.00' x 6.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 417.0' Slope= 0.2074 '/'
Inlet Invert= 2,168.00', Outlet Invert= 2,081.50'



‡

Summary for Reach 199: Overland Flow

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 0.65" for 1 Year event
Inflow = 7.13 cfs @ 12.18 hrs, Volume= 0.660 af
Outflow = 7.09 cfs @ 12.20 hrs, Volume= 0.660 af, Atten= 1%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 4.9 min

Peak Storage= 718 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 0.50' Flow Area= 50.0 sf, Capacity= 451.81 cfs

50.00' x 0.50' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 100.0 '/' Top Width= 150.00'
Length= 250.0' Slope= 0.2560 '/'
Inlet Invert= 2,232.00', Outlet Invert= 2,168.00'

‡

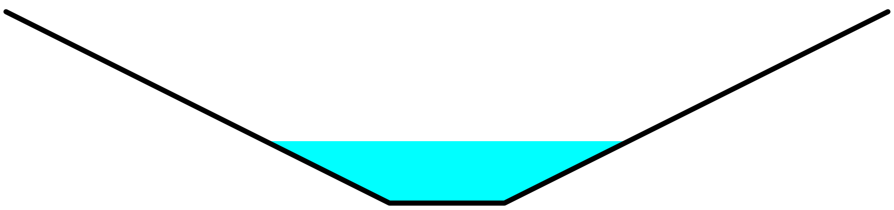
Summary for Reach 295: Roadside Channel

Inflow Area = 26.882 ac, 2.53% Impervious, Inflow Depth = 0.60" for 1 Year event
Inflow = 11.56 cfs @ 12.29 hrs, Volume= 1.346 af
Outflow = 11.52 cfs @ 12.30 hrs, Volume= 1.346 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.57 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.81 fps, Avg. Travel Time= 2.6 min

Peak Storage= 706 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.81'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 140.40 cfs

1.50' x 2.50' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 11.50'
Length= 280.0' Slope= 0.0607 '/'
Inlet Invert= 2,083.00', Outlet Invert= 2,066.00'



Summary for Reach 296: Wetland Flow

Inflow Area = 21.963 ac, 0.34% Impervious, Inflow Depth = 0.62" for 1 Year event
Inflow = 10.99 cfs @ 12.24 hrs, Volume= 1.129 af
Outflow = 10.50 cfs @ 12.29 hrs, Volume= 1.129 af, Atten= 5%, Lag= 3.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.80 fps, Min. Travel Time= 4.0 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 11.8 min

Peak Storage= 2,492 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 2.00' Flow Area= 56.0 sf, Capacity= 251.85 cfs

12.00' x 2.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 8.0 '/' Top Width= 44.00'
Length= 427.0' Slope= 0.0328 '/'
Inlet Invert= 2,098.00', Outlet Invert= 2,084.00'

‡

Summary for Reach 297: Overland Flow

Inflow Area = 17.082 ac, 0.44% Impervious, Inflow Depth = 0.61" for 1 Year event
Inflow = 8.38 cfs @ 12.24 hrs, Volume= 0.865 af
Outflow = 8.36 cfs @ 12.25 hrs, Volume= 0.865 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.98 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 2.4 min

Peak Storage= 410 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 0.50' Flow Area= 27.5 sf, Capacity= 358.18 cfs

30.00' x 0.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 50.0 '/' Top Width= 80.00'
Length= 195.0' Slope= 0.2872 '/'
Inlet Invert= 2,170.00', Outlet Invert= 2,114.00'

‡

Summary for Reach 298: Wetland Flow

Inflow Area = 17.082 ac, 0.44% Impervious, Inflow Depth = 0.61" for 1 Year event
Inflow = 9.26 cfs @ 12.17 hrs, Volume= 0.865 af
Outflow = 8.38 cfs @ 12.24 hrs, Volume= 0.865 af, Atten= 10%, Lag= 4.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.11 fps, Min. Travel Time= 6.1 min
Avg. Velocity = 0.38 fps, Avg. Travel Time= 17.8 min

Peak Storage= 3,086 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 1.00' Flow Area= 150.0 sf, Capacity= 802.14 cfs

100.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 50.0 '/' Top Width= 200.00'
Length= 408.0' Slope= 0.0931 '/'
Inlet Invert= 2,208.00', Outlet Invert= 2,170.00'

‡

Summary for Reach 299: Overland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 0.61" for 1 Year event
Inflow = 9.01 cfs @ 12.16 hrs, Volume= 0.826 af
Outflow = 8.98 cfs @ 12.17 hrs, Volume= 0.826 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.67 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.46 fps, Avg. Travel Time= 1.5 min

Peak Storage= 330 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 130.57 cfs

10.00' x 0.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 50.0 '/' Top Width= 60.00'
Length= 135.0' Slope= 0.3259 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,208.00'

‡

Summary for Reach O3: Overland Flow

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.25' Flow Area= 13.8 sf, Capacity= 78.90 cfs

30.00' x 0.25' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 100.0 '/' Top Width= 80.00'
Length= 178.0' Slope= 0.1404 '/'
Inlet Invert= 1,838.00', Outlet Invert= 1,813.00'

‡

Summary for Reach O4: Swale

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 59.96 cfs

2.00' x 1.50' deep channel, n= 0.033 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 286.0' Slope= 0.0385 '/'
Inlet Invert= 1,810.00', Outlet Invert= 1,799.00'

Summary for Reach X1: Swale

Inflow Area = 2.495 ac, 0.00% Impervious, Inflow Depth = 0.01" for 1 Year event
Inflow = 0.02 cfs @ 16.57 hrs, Volume= 0.003 af
Outflow = 0.02 cfs @ 16.65 hrs, Volume= 0.003 af, Atten= 1%, Lag= 4.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.87 fps, Min. Travel Time= 3.8 min
Avg. Velocity = 0.87 fps, Avg. Travel Time= 3.8 min

Peak Storage= 5 cf @ 16.65 hrs
Average Depth at Peak Storage= 0.01'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 153.60 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 200.0' Slope= 0.1050 '/'
Inlet Invert= 1,794.00', Outlet Invert= 1,773.00'

Summary for Pond 1P: Catch Basin/Culvert

Inflow Area = 1.239 ac, 57.09% Impervious, Inflow Depth = 1.64" for 1 Year event
Inflow = 3.16 cfs @ 12.01 hrs, Volume= 0.170 af
Outflow = 3.16 cfs @ 12.01 hrs, Volume= 0.170 af, Atten= 0%, Lag= 0.0 min
Primary = 3.16 cfs @ 12.01 hrs, Volume= 0.170 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,980.66' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,980.00'	**36.0" Round Culvert** L= 200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,980.00' / 1,964.00' S= 0.0800 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.15 cfs @ 12.01 hrs HW=1,980.66' TW=1,963.69' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.15 cfs @ 2.76 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 2P: Catch Basin

Inflow Area = 8.528 ac, 33.30% Impervious, Inflow Depth = 1.33" for 1 Year event
Inflow = 19.15 cfs @ 11.97 hrs, Volume= 0.942 af
Outflow = 19.15 cfs @ 11.97 hrs, Volume= 0.942 af, Atten= 0%, Lag= 0.0 min
Primary = 19.15 cfs @ 11.97 hrs, Volume= 0.942 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,997.91' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,996.00'	**36.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,996.00' / 1,995.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=19.10 cfs @ 11.97 hrs HW=1,997.91' TW=1,963.72' (Dynamic Tailwater)
1=Culvert (Barrel Controls 19.10 cfs @ 5.74 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 2R: 48" CMP Culvert

Inflow Area = 151.679 ac, 3.12% Impervious, Inflow Depth > 0.65" for 1 Year event
Inflow = 58.49 cfs @ 12.23 hrs, Volume= 8.201 af
Outflow = 58.49 cfs @ 12.23 hrs, Volume= 8.201 af, Atten= 0%, Lag= 0.0 min
Primary = 58.49 cfs @ 12.23 hrs, Volume= 8.201 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 1,744.14' @ 12.23 hrs
Flood Elev= 1,749.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,741.00'	**48.0" Round Culvert** L= 30.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,741.00' / 1,740.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 12.57 sf
#2	Primary	1,746.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=58.48 cfs @ 12.23 hrs HW=1,744.14' TW=1,740.51' (Dynamic Tailwater)
↑1=**Culvert** (Barrel Controls 58.48 cfs @ 7.61 fps)
└2=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: Catch Basin

Inflow Area =	0.284 ac, 69.74% Impervious, Inflow Depth = 1.93" for 1 Year event		
Inflow =	0.91 cfs @ 11.97 hrs, Volume=	0.046 af	
Outflow =	0.91 cfs @ 11.97 hrs, Volume=	0.046 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.91 cfs @ 11.97 hrs, Volume=	0.046 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,009.61' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,009.19'	**18.0" Round Culvert** L= 304.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,009.19' / 1,997.21' S= 0.0394 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,014.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.91 cfs @ 11.97 hrs HW=2,009.61' TW=1,997.91' (Dynamic Tailwater)
↑1=**Culvert** (Inlet Controls 0.91 cfs @ 2.22 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 4P: Catch Basin

Inflow Area =	0.103 ac,100.00% Impervious, Inflow Depth = 2.57" for 1 Year event		
Inflow =	0.41 cfs @ 11.97 hrs, Volume=	0.022 af	
Outflow =	0.41 cfs @ 11.97 hrs, Volume=	0.022 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.41 cfs @ 11.97 hrs, Volume=	0.022 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,010.01' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,009.71'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,009.71' / 2,009.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

#2	Primary	2,014.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.41 cfs @ 11.97 hrs HW=2,010.01' TW=2,009.61' (Dynamic Tailwater)
1=**Culvert** (Barrel Controls 0.41 cfs @ 2.45 fps)
2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 4R: 38" Arch Culv.

Inflow Area = 36.096 ac, 1.88% Impervious, Inflow Depth = 0.63" for 1 Year event
Inflow = 14.17 cfs @ 12.29 hrs, Volume= 1.903 af
Outflow = 14.17 cfs @ 12.29 hrs, Volume= 1.903 af, Atten= 0%, Lag= 0.0 min
Primary = 14.17 cfs @ 12.29 hrs, Volume= 1.903 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,065.11' @ 12.29 hrs
Flood Elev= 2,071.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,064.00'	**57.0" W x 38.0" H, R=28.9"/88.3" Arch CMP_Arch_1/2 57x38** L= 70.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,064.00' / 2,063.00' S= 0.0143 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 11.89 sf
#2	Primary	2,070.00'	**100.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=14.16 cfs @ 12.29 hrs HW=2,065.11' TW=2,060.39' (Dynamic Tailwater)
1=**CMP_Arch_1/2 57x38** (Inlet Controls 14.16 cfs @ 3.17 fps)
2=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7A: CULVERT

Inflow Area = 0.577 ac, 11.61% Impervious, Inflow Depth = 0.74" for 1 Year event
Inflow = 0.73 cfs @ 11.99 hrs, Volume= 0.035 af
Outflow = 0.73 cfs @ 11.99 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 11.99 hrs, Volume= 0.035 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,900.38' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,900.00'	**18.0" Round Culvert** L= 115.0' Ke= 0.500 Inlet / Outlet Invert= 1,900.00' / 1,898.00' S= 0.0174 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.73 cfs @ 11.99 hrs HW=1,900.38' TW=1,896.11' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 0.73 cfs @ 2.09 fps)

Summary for Pond 7P: Catch Basin

Inflow Area = 0.262 ac, 70.83% Impervious, Inflow Depth = 1.89" for 1 Year event
Inflow = 0.85 cfs @ 11.97 hrs, Volume= 0.041 af
Outflow = 0.85 cfs @ 11.97 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 11.97 hrs, Volume= 0.041 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,066.34' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,065.43'	**12.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,065.43' / 2,065.25' S= 0.0164 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,070.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.85 cfs @ 11.97 hrs HW=2,066.34' TW=2,066.28' (Dynamic Tailwater)
—**1=Culvert** (Outlet Controls 0.85 cfs @ 1.49 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 7R: (2) 43" Arch Culverts

Inflow Area = 71.735 ac, 2.69% Impervious, Inflow Depth = 0.62" for 1 Year event
Inflow = 22.36 cfs @ 12.03 hrs, Volume= 3.692 af
Outflow = 22.36 cfs @ 12.03 hrs, Volume= 3.692 af, Atten= 0%, Lag= 0.0 min
Primary = 22.36 cfs @ 12.03 hrs, Volume= 3.692 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,812.42' @ 12.03 hrs
Flood Elev= 1,818.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,811.50'	**64.0" W x 43.0" H, R=32.5"/99.3" Arch CMP_Arch_1/2 64x43 X 2.00** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,811.50' / 1,810.50' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 15.13 sf
#2	Primary	1,816.50'	**100.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=22.34 cfs @ 12.03 hrs HW=1,812.42' TW=1,810.24' (Dynamic Tailwater)
—**1=CMP_Arch_1/2 64x43** (Inlet Controls 22.34 cfs @ 2.86 fps)
—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 8R: 36" hdpe

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 0.00' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,830.00'	**36.0" Round Culvert** L= 245.0' Ke= 0.500 Inlet / Outlet Invert= 1,830.00' / 1,788.00' S= 0.1714 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' TW=1,788.00' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 9P: Catch Basin

Inflow Area = 0.167 ac, 83.21% Impervious, Inflow Depth = 2.19" for 1 Year event
Inflow = 0.60 cfs @ 11.97 hrs, Volume= 0.030 af
Outflow = 0.60 cfs @ 11.97 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min
Primary = 0.60 cfs @ 11.97 hrs, Volume= 0.030 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,035.81' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.40'	**24.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.40' / 2,034.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,039.40'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.60 cfs @ 11.97 hrs HW=2,035.80' TW=2,035.43' (Dynamic Tailwater)
├─**1=Culvert** (Outlet Controls 0.60 cfs @ 1.99 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 10P: Catch Basin

Inflow Area = 0.088 ac, 94.81% Impervious, Inflow Depth = 2.46" for 1 Year event
Inflow = 0.34 cfs @ 11.97 hrs, Volume= 0.018 af
Outflow = 0.34 cfs @ 11.97 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 11.97 hrs, Volume= 0.018 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,036.26' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,036.00'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,036.00' / 2,035.50' S= 0.0278 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,040.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.34 cfs @ 11.97 hrs HW=2,036.25' TW=2,035.80' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 0.34 cfs @ 1.72 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 10R: 14" and 16" HDPE Culverts

Inflow Area =	20.182 ac, 13.31% Impervious, Inflow Depth > 0.89"	for 1 Year event	
Inflow =	6.08 cfs @ 11.99 hrs, Volume=	1.504 af	
Outflow =	6.08 cfs @ 11.99 hrs, Volume=	1.504 af,	Atten= 0%, Lag= 0.0 min
Primary =	6.08 cfs @ 11.99 hrs, Volume=	1.504 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,976.05' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,975.00'	**14.0" Round 14" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.07 sf
#2	Primary	1,975.00'	**16.0" Round 16" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.40 sf
#3	Primary	1,977.00'	**50.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.07 cfs @ 11.99 hrs HW=1,976.05' TW=1,973.04' (Dynamic Tailwater)
—**1=14" Culvert** (Inlet Controls 2.80 cfs @ 2.76 fps)
—**2=16" Culvert** (Inlet Controls 3.27 cfs @ 2.76 fps)
—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 11P: Catch Basin

Inflow Area =	7.752 ac, 29.04% Impervious, Inflow Depth = 1.25"	for 1 Year event	
Inflow =	16.51 cfs @ 11.98 hrs, Volume=	0.810 af	
Outflow =	16.51 cfs @ 11.98 hrs, Volume=	0.810 af,	Atten= 0%, Lag= 0.0 min
Primary =	16.51 cfs @ 11.98 hrs, Volume=	0.810 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,051.60' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,050.00'	**36.0" Round Culvert** L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,050.00' / 2,040.74' S= 0.1029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,060.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=16.48 cfs @ 11.98 hrs HW=2,051.60' TW=2,035.43' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 16.48 cfs @ 4.30 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 12P: Catch Basin

Inflow Area = 0.067 ac, 88.78% Impervious, Inflow Depth = 2.25" for 1 Year event
Inflow = 0.25 cfs @ 11.97 hrs, Volume= 0.013 af
Outflow = 0.25 cfs @ 11.97 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Primary = 0.25 cfs @ 11.97 hrs, Volume= 0.013 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,055.24' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,055.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,055.00' / 2,054.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,060.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.25 cfs @ 11.97 hrs HW=2,055.24' TW=2,051.60' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 0.25 cfs @ 1.68 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 13P: Manhole

Inflow Area = 7.315 ac, 26.40% Impervious, Inflow Depth = 1.21" for 1 Year event
Inflow = 15.07 cfs @ 11.98 hrs, Volume= 0.740 af
Outflow = 15.07 cfs @ 11.98 hrs, Volume= 0.740 af, Atten= 0%, Lag= 0.0 min
Primary = 15.07 cfs @ 11.98 hrs, Volume= 0.740 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,065.40' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,063.88'	**36.0" Round Culvert** L= 137.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,063.88' / 2,055.10' S= 0.0641 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,072.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=15.03 cfs @ 11.98 hrs HW=2,065.40' TW=2,051.60' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 15.03 cfs @ 4.19 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 13R: 16" CMP Culvert

Inflow Area = 2.112 ac, 7.43% Impervious, Inflow Depth = 0.74" for 1 Year event
Inflow = 1.94 cfs @ 12.07 hrs, Volume= 0.130 af
Outflow = 1.94 cfs @ 12.07 hrs, Volume= 0.130 af, Atten= 0%, Lag= 0.0 min
Primary = 1.94 cfs @ 12.07 hrs, Volume= 0.130 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,960.71' @ 12.07 hrs
Flood Elev= 1,972.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,960.00'	**16.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 1,960.00' / 1,959.00' S= 0.0250 '/' Cc= 0.900 n= 0.025, Flow Area= 1.40 sf

Primary OutFlow Max=1.93 cfs @ 12.07 hrs HW=1,960.71' TW=1,959.04' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.93 cfs @ 3.74 fps)

Summary for Pond 15P: Catch Basin

Inflow Area = 0.609 ac, 66.13% Impervious, Inflow Depth = 1.79" for 1 Year event
Inflow = 1.90 cfs @ 11.97 hrs, Volume= 0.091 af
Outflow = 1.90 cfs @ 11.97 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.0 min
Primary = 1.90 cfs @ 11.97 hrs, Volume= 0.091 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,066.28' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,065.43'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,065.43' / 2,065.25' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,070.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.90 cfs @ 11.97 hrs HW=2,066.28' TW=2,065.40' (Dynamic Tailwater)
├─**1=Culvert** (Barrel Controls 1.90 cfs @ 3.58 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 16P: Catch Basin

Inflow Area = 0.168 ac, 93.81% Impervious, Inflow Depth = 2.46" for 1 Year event
Inflow = 0.65 cfs @ 11.97 hrs, Volume= 0.034 af
Outflow = 0.65 cfs @ 11.97 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
Primary = 0.65 cfs @ 11.97 hrs, Volume= 0.034 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,081.09' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,080.59'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,080.59' / 2,080.41' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,084.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.65 cfs @ 11.97 hrs HW=2,081.08' TW=2,080.87' (Dynamic Tailwater)
—**1=Culvert** (Outlet Controls 0.65 cfs @ 2.46 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 17P: Catch Basin

Inflow Area = 6.537 ac, 21.88% Impervious, Inflow Depth = 1.15" for 1 Year event
Inflow = 12.68 cfs @ 11.98 hrs, Volume= 0.626 af
Outflow = 12.68 cfs @ 11.98 hrs, Volume= 0.626 af, Atten= 0%, Lag= 0.0 min
Primary = 12.68 cfs @ 11.98 hrs, Volume= 0.626 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,080.88' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,079.50'	**36.0" Round Culvert** L= 213.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,079.50' / 2,067.47' S= 0.0565 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,084.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.66 cfs @ 11.98 hrs HW=2,080.88' TW=2,065.40' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 12.66 cfs @ 4.00 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 18P: Catch Basin

Inflow Area = 0.696 ac, 90.27% Impervious, Inflow Depth = 2.36" for 1 Year event
Inflow = 2.64 cfs @ 11.97 hrs, Volume= 0.137 af
Outflow = 2.64 cfs @ 11.97 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min
Primary = 2.64 cfs @ 11.97 hrs, Volume= 0.137 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,093.29' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,092.21'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,092.21' / 2,092.03' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,096.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.64 cfs @ 11.97 hrs HW=2,093.29' TW=2,092.25' (Dynamic Tailwater)
—**1=Culvert** (Barrel Controls 2.64 cfs @ 3.87 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 19P: Catch Basin

Inflow Area = 5.536 ac, 21.72% Impervious, Inflow Depth = 1.14" for 1 Year event
Inflow = 10.76 cfs @ 11.98 hrs, Volume= 0.528 af
Outflow = 10.76 cfs @ 11.98 hrs, Volume= 0.528 af, Atten= 0%, Lag= 0.0 min
Primary = 10.76 cfs @ 11.98 hrs, Volume= 0.528 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,092.26' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,091.00'	**36.0" Round Culvert** L= 250.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,091.00' / 2,077.47' S= 0.0541 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,096.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=10.74 cfs @ 11.98 hrs HW=2,092.26' TW=2,080.88' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 10.74 cfs @ 3.82 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 20: CB20

Inflow Area = 3.450 ac, 0.00% Impervious, Inflow Depth = 0.78" for 1 Year event
Inflow = 4.36 cfs @ 12.00 hrs, Volume= 0.225 af
Outflow = 4.36 cfs @ 12.00 hrs, Volume= 0.225 af, Atten= 0%, Lag= 0.0 min
Primary = 4.36 cfs @ 12.00 hrs, Volume= 0.225 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,105.01' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,104.00'	**18.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,104.00' / 2,094.00' S= 0.1538 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,112.00'	**75.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=4.35 cfs @ 12.00 hrs HW=2,105.01' TW=2,098.04' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 4.35 cfs @ 3.43 fps)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 20P: Manhole

Inflow Area = 4.748 ac, 10.68% Impervious, Inflow Depth = 0.95" for 1 Year event
Inflow = 7.83 cfs @ 11.98 hrs, Volume= 0.376 af
Outflow = 7.83 cfs @ 11.98 hrs, Volume= 0.376 af, Atten= 0%, Lag= 0.0 min
Primary = 7.83 cfs @ 11.98 hrs, Volume= 0.376 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,095.53' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,094.40'	**30.0" Round Culvert** L= 107.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,094.40' / 2,091.00' S= 0.0318 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=7.82 cfs @ 11.98 hrs HW=2,095.53' TW=2,092.26' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 7.82 cfs @ 3.62 fps)

Summary for Pond 21P: Catch Basin

Inflow Area =	0.702 ac, 72.23% Impervious, Inflow Depth = 1.91" for 1 Year event		
Inflow =	2.31 cfs @ 11.97 hrs, Volume=	0.112 af	
Outflow =	2.31 cfs @ 11.97 hrs, Volume=	0.112 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.31 cfs @ 11.97 hrs, Volume=	0.112 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,113.80' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,113.21'	**30.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,113.21' / 2,098.84' S= 0.1041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,118.50'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.30 cfs @ 11.97 hrs HW=2,113.80' TW=2,095.53' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 2.30 cfs @ 2.61 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 22P: Catch Basin

Inflow Area =	0.427 ac, 71.34% Impervious, Inflow Depth = 1.89" for 1 Year event		
Inflow =	1.39 cfs @ 11.97 hrs, Volume=	0.067 af	
Outflow =	1.39 cfs @ 11.97 hrs, Volume=	0.067 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.39 cfs @ 11.97 hrs, Volume=	0.067 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,115.23' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,114.64'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,114.64' / 2,114.46' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,118.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.39 cfs @ 11.97 hrs HW=2,115.23' TW=2,113.80' (Dynamic Tailwater)
├─**1=Culvert** (Barrel Controls 1.39 cfs @ 3.20 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 23A: Catch Basin

Inflow Area = 0.733 ac, 0.00% Impervious, Inflow Depth = 0.78" for 1 Year event
Inflow = 0.97 cfs @ 11.99 hrs, Volume= 0.048 af
Outflow = 0.97 cfs @ 11.99 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min
Primary = 0.97 cfs @ 11.99 hrs, Volume= 0.048 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,093.03' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,092.59'	**18.0" Round Culvert** L= 198.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,092.59' / 2,083.20' S= 0.0474 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,097.50'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.97 cfs @ 11.99 hrs HW=2,093.03' TW=2,083.51' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.97 cfs @ 2.25 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 23B: Catch Basin

Inflow Area = 0.733 ac, 0.00% Impervious, Inflow Depth = 0.78" for 1 Year event
Inflow = 0.97 cfs @ 11.99 hrs, Volume= 0.048 af
Outflow = 0.97 cfs @ 11.99 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min
Primary = 0.97 cfs @ 11.99 hrs, Volume= 0.048 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,083.51' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,083.07'	**18.0" Round Culvert** L= 51.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,083.07' / 2,079.50' S= 0.0700 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,096.50'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.97 cfs @ 11.99 hrs HW=2,083.51' TW=2,080.86' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.97 cfs @ 2.25 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 24A: Catch Basin

Inflow Area = 4.046 ac, 0.00% Impervious, Inflow Depth = 0.78" for 1 Year event
Inflow = 5.54 cfs @ 11.98 hrs, Volume= 0.264 af
Outflow = 5.54 cfs @ 11.98 hrs, Volume= 0.264 af, Atten= 0%, Lag= 0.0 min
Primary = 5.54 cfs @ 11.98 hrs, Volume= 0.264 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,098.94' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,098.00'	**30.0" Round Culvert** L= 149.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,098.00' / 2,096.51' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,102.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=5.53 cfs @ 11.98 hrs HW=2,098.94' TW=2,096.08' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.53 cfs @ 3.30 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 24B: Catch Basin

Inflow Area = 4.046 ac, 0.00% Impervious, Inflow Depth = 0.78" for 1 Year event
Inflow = 5.54 cfs @ 11.98 hrs, Volume= 0.264 af
Outflow = 5.54 cfs @ 11.98 hrs, Volume= 0.264 af, Atten= 0%, Lag= 0.0 min
Primary = 5.54 cfs @ 11.98 hrs, Volume= 0.264 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,096.08' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,095.00'	**30.0" Round Culvert** L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,095.00' / 2,094.51' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,100.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=5.53 cfs @ 11.98 hrs HW=2,096.08' TW=2,095.53' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.53 cfs @ 4.02 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 25P: Catch Basin

Inflow Area = 0.170 ac, 74.09% Impervious, Inflow Depth = 1.97" for 1 Year event
Inflow = 0.57 cfs @ 11.97 hrs, Volume= 0.028 af
Outflow = 0.57 cfs @ 11.97 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.57 cfs @ 11.97 hrs, Volume= 0.028 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,123.19' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,122.88'	**24.0" Round Culvert** L= 270.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,122.88' / 2,113.50' S= 0.0347 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,135.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.57 cfs @ 11.97 hrs HW=2,123.19' TW=2,113.80' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.57 cfs @ 1.88 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 26P: Catch Basin

Inflow Area = 0.084 ac, 75.17% Impervious, Inflow Depth = 1.97" for 1 Year event
Inflow = 0.28 cfs @ 11.97 hrs, Volume= 0.014 af
Outflow = 0.28 cfs @ 11.97 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 11.97 hrs, Volume= 0.014 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,131.33' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,131.05'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,131.05' / 2,130.87' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,135.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.28 cfs @ 11.97 hrs HW=2,131.33' TW=2,123.19' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.28 cfs @ 2.35 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 27P: Catch Basin

Inflow Area = 0.815 ac, 74.18% Impervious, Inflow Depth = 1.95" for 1 Year event
Inflow = 2.73 cfs @ 11.97 hrs, Volume= 0.133 af
Outflow = 2.73 cfs @ 11.97 hrs, Volume= 0.133 af, Atten= 0%, Lag= 0.0 min
Primary = 2.73 cfs @ 11.97 hrs, Volume= 0.133 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,148.48' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,147.75'	**21.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,147.75' / 2,145.50' S= 0.0450 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf
#2	Primary	2,152.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.73 cfs @ 11.97 hrs HW=2,148.47' TW=2,143.56' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.73 cfs @ 2.90 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 28P: Catch Basin

Inflow Area = 0.093 ac, 76.11% Impervious, Inflow Depth = 1.97" for 1 Year event
Inflow = 0.31 cfs @ 11.97 hrs, Volume= 0.015 af
Outflow = 0.31 cfs @ 11.97 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min
Primary = 0.31 cfs @ 11.97 hrs, Volume= 0.015 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,148.52' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,148.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,148.00' / 2,147.75' S= 0.0139 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,152.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.31 cfs @ 11.97 hrs HW=2,148.52' TW=2,148.47' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.31 cfs @ 1.12 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 29P: Manhole

Inflow Area = 0.631 ac, 73.96% Impervious, Inflow Depth = 1.95" for 1 Year event
Inflow = 2.11 cfs @ 11.97 hrs, Volume= 0.102 af
Outflow = 2.11 cfs @ 11.97 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 2.11 cfs @ 11.97 hrs, Volume= 0.102 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,162.63' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,162.00'	**21.0" Round Culvert** L= 125.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,162.00' / 2,147.75' S= 0.1140 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

Primary OutFlow Max=2.11 cfs @ 11.97 hrs HW=2,162.63' TW=2,148.47' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.11 cfs @ 2.70 fps)

Summary for Pond 30P: Catch Basin

Inflow Area = 0.631 ac, 73.96% Impervious, Inflow Depth = 1.95" for 1 Year event
Inflow = 2.11 cfs @ 11.97 hrs, Volume= 0.102 af
Outflow = 2.11 cfs @ 11.97 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 2.11 cfs @ 11.97 hrs, Volume= 0.102 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,174.79' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,174.16'	**21.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,174.16' / 2,162.64' S= 0.1239 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf
#2	Primary	2,181.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.11 cfs @ 11.97 hrs HW=2,174.79' TW=2,162.63' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.11 cfs @ 2.70 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 31P: Catch Basin

Inflow Area = 0.067 ac, 74.25% Impervious, Inflow Depth = 1.97" for 1 Year event
Inflow = 0.23 cfs @ 11.97 hrs, Volume= 0.011 af
Outflow = 0.23 cfs @ 11.97 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min
Primary = 0.23 cfs @ 11.97 hrs, Volume= 0.011 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,177.43' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,177.18'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,177.18' / 2,177.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,181.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.23 cfs @ 11.97 hrs HW=2,177.43' TW=2,174.79' (Dynamic Tailwater)
—**1=Culvert** (Barrel Controls 0.23 cfs @ 2.23 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 32P: Catch Basin

Inflow Area = 0.501 ac, 73.93% Impervious, Inflow Depth = 1.94" for 1 Year event
Inflow = 1.67 cfs @ 11.97 hrs, Volume= 0.081 af
Outflow = 1.67 cfs @ 11.97 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min
Primary = 1.67 cfs @ 11.97 hrs, Volume= 0.081 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,196.00' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,195.44'	**21.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,195.44' / 2,174.62' S= 0.1190 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf
#2	Primary	2,202.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.67 cfs @ 11.97 hrs HW=2,196.00' TW=2,174.79' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 1.67 cfs @ 2.54 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 33P: Catch Basin

Inflow Area = 0.086 ac, 74.41% Impervious, Inflow Depth = 1.97" for 1 Year event
Inflow = 0.29 cfs @ 11.97 hrs, Volume= 0.014 af
Outflow = 0.29 cfs @ 11.97 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min
Primary = 0.29 cfs @ 11.97 hrs, Volume= 0.014 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,198.26' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,198.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,198.00' / 2,197.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,202.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.29 cfs @ 11.97 hrs HW=2,198.26' TW=2,196.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.29 cfs @ 1.75 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 34P: Manhole

Inflow Area = 0.334 ac, 73.86% Impervious, Inflow Depth = 1.93" for 1 Year event
Inflow = 1.10 cfs @ 11.97 hrs, Volume= 0.054 af
Outflow = 1.10 cfs @ 11.97 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 1.10 cfs @ 11.97 hrs, Volume= 0.054 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,209.47' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,209.00'	**18.0" Round Culvert** L= 90.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,209.00' / 2,195.92' S= 0.1449 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.10 cfs @ 11.97 hrs HW=2,209.47' TW=2,196.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.10 cfs @ 2.33 fps)

Summary for Pond 35P: Catch Basin

Inflow Area = 0.334 ac, 73.86% Impervious, Inflow Depth = 1.93" for 1 Year event
Inflow = 1.10 cfs @ 11.97 hrs, Volume= 0.054 af
Outflow = 1.10 cfs @ 11.97 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 1.10 cfs @ 11.97 hrs, Volume= 0.054 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,225.47' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,225.00'	**18.0" Round Culvert** L= 121.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,225.00' / 2,209.50' S= 0.1277 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,229.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.10 cfs @ 11.97 hrs HW=2,225.47' TW=2,209.47' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.10 cfs @ 2.33 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 36P: Catch Basin

Inflow Area = 0.074 ac, 74.91% Impervious, Inflow Depth = 1.97" for 1 Year event
Inflow = 0.25 cfs @ 11.97 hrs, Volume= 0.012 af
Outflow = 0.25 cfs @ 11.97 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Primary = 0.25 cfs @ 11.97 hrs, Volume= 0.012 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,225.75' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,225.50'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,225.50' / 2,225.14' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,229.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.25 cfs @ 11.97 hrs HW=2,225.75' TW=2,225.47' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.25 cfs @ 2.42 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 37P: Catch Basin

Inflow Area = 0.184 ac, 73.98% Impervious, Inflow Depth = 1.92" for 1 Year event
Inflow = 0.61 cfs @ 11.97 hrs, Volume= 0.030 af
Outflow = 0.61 cfs @ 11.97 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min
Primary = 0.61 cfs @ 11.97 hrs, Volume= 0.030 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,248.84' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,248.50'	**18.0" Round Culvert** L= 200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,248.50' / 2,225.10' S= 0.1170 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,253.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.61 cfs @ 11.97 hrs HW=2,248.84' TW=2,225.47' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.61 cfs @ 2.00 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 38P: Catch Basin

Inflow Area = 0.082 ac, 76.49% Impervious, Inflow Depth = 1.97" for 1 Year event
Inflow = 0.28 cfs @ 11.97 hrs, Volume= 0.013 af
Outflow = 0.28 cfs @ 11.97 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 11.97 hrs, Volume= 0.013 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,249.26' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,249.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,249.00' / 2,248.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,253.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.28 cfs @ 11.97 hrs HW=2,249.26' TW=2,248.84' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.28 cfs @ 1.73 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 43P: 12" HDPE Pipe

Inflow Area = 0.089 ac, 77.76% Impervious, Inflow Depth = 2.06" for 1 Year event
Inflow = 0.31 cfs @ 11.97 hrs, Volume= 0.015 af
Outflow = 0.31 cfs @ 11.97 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min
Primary = 0.31 cfs @ 11.97 hrs, Volume= 0.015 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,997.89' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,997.50'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,997.50' / 1,997.40' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.31 cfs @ 11.97 hrs HW=1,997.89' TW=1,997.79' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.31 cfs @ 1.59 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 44P: 12" HDPE Pipe

Inflow Area = 0.172 ac, 79.89% Impervious, Inflow Depth = 2.11" for 1 Year event
Inflow = 0.61 cfs @ 11.97 hrs, Volume= 0.030 af
Outflow = 0.61 cfs @ 11.97 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min
Primary = 0.61 cfs @ 11.97 hrs, Volume= 0.030 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,997.79' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,997.40'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,997.40' / 1,997.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.61 cfs @ 11.97 hrs HW=1,997.79' TW=1,990.32' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.61 cfs @ 2.13 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 50P: 30" HDPE Pipe

Inflow Area = 4.233 ac, 26.46% Impervious, Inflow Depth = 1.14" for 1 Year event
Inflow = 8.00 cfs @ 11.99 hrs, Volume= 0.402 af
Outflow = 8.00 cfs @ 11.99 hrs, Volume= 0.402 af, Atten= 0%, Lag= 0.0 min
Primary = 8.00 cfs @ 11.99 hrs, Volume= 0.402 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,025.15' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,024.00'	**30.0" Round Culvert** L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,024.00' / 2,020.00' S= 0.0769 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,030.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.99 cfs @ 11.99 hrs HW=2,025.14' TW=2,020.48' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.99 cfs @ 3.64 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 51P: 18" HDPE Pipe

Inflow Area = 0.406 ac, 20.38% Impervious, Inflow Depth = 1.04" for 1 Year event
Inflow = 0.76 cfs @ 11.98 hrs, Volume= 0.035 af
Outflow = 0.76 cfs @ 11.98 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 11.98 hrs, Volume= 0.035 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,026.39' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,026.00'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,026.00' / 2,025.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,030.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.76 cfs @ 11.98 hrs HW=2,026.38' TW=2,025.14' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.76 cfs @ 2.11 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 52P: 30" HDPE Pipe

Inflow Area = 3.737 ac, 25.34% Impervious, Inflow Depth = 1.12" for 1 Year event
Inflow = 6.90 cfs @ 11.99 hrs, Volume= 0.348 af
Outflow = 6.90 cfs @ 11.99 hrs, Volume= 0.348 af, Atten= 0%, Lag= 0.0 min
Primary = 6.90 cfs @ 11.99 hrs, Volume= 0.348 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,059.56' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,058.50'	**30.0" Round Culvert** L= 301.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,058.50' / 2,026.00' S= 0.1080 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,064.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.90 cfs @ 11.99 hrs HW=2,059.56' TW=2,025.15' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.90 cfs @ 3.50 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 53P: 18" HDPE Pipe

Inflow Area = 0.442 ac, 18.13% Impervious, Inflow Depth = 0.99" for 1 Year event
Inflow = 0.78 cfs @ 11.98 hrs, Volume= 0.036 af
Outflow = 0.78 cfs @ 11.98 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min
Primary = 0.78 cfs @ 11.98 hrs, Volume= 0.036 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,060.89' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,060.50'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,060.50' / 2,060.14' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,064.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.78 cfs @ 11.98 hrs HW=2,060.89' TW=2,059.55' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.78 cfs @ 2.13 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 54P: 24" HDPE Pipe

Inflow Area = 2.551 ac, 26.12% Impervious, Inflow Depth = 1.12" for 1 Year event
Inflow = 4.65 cfs @ 12.00 hrs, Volume= 0.239 af
Outflow = 4.65 cfs @ 12.00 hrs, Volume= 0.239 af, Atten= 0%, Lag= 0.0 min
Primary = 4.65 cfs @ 12.00 hrs, Volume= 0.239 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,101.92' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,101.00'	**24.0" Round Culvert** L= 201.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,101.00' / 2,059.50' S= 0.2065 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,106.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.64 cfs @ 12.00 hrs HW=2,101.92' TW=2,059.55' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.64 cfs @ 3.27 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 55P: 18" HDPE Pipe

Inflow Area = 0.351 ac, 74.82% Impervious, Inflow Depth = 1.97" for 1 Year event
Inflow = 1.18 cfs @ 11.97 hrs, Volume= 0.058 af
Outflow = 1.18 cfs @ 11.97 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.0 min
Primary = 1.18 cfs @ 11.97 hrs, Volume= 0.058 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,102.50' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,102.00'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,102.00' / 2,101.00' S= 0.0208 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,106.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.18 cfs @ 11.97 hrs HW=2,102.50' TW=2,101.90' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.18 cfs @ 3.42 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 56P: 18" HDPE Pipe

Inflow Area = 0.526 ac, 31.48% Impervious, Inflow Depth = 1.24" for 1 Year event
Inflow = 1.13 cfs @ 11.98 hrs, Volume= 0.054 af
Outflow = 1.13 cfs @ 11.98 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 1.13 cfs @ 11.98 hrs, Volume= 0.054 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,081.98' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,081.50'	**18.0" Round Culvert** L= 299.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,081.50' / 2,060.00' S= 0.0719 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,086.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.13 cfs @ 11.98 hrs HW=2,081.98' TW=2,059.55' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 1.13 cfs @ 2.35 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 57P: 18" HDPE Pipe

Inflow Area =	0.112 ac, 82.97% Impervious,	Inflow Depth = 2.16"	for 1 Year event
Inflow =	0.40 cfs @ 11.97 hrs, Volume=	0.020 af	
Outflow =	0.40 cfs @ 11.97 hrs, Volume=	0.020 af, Atten= 0%, Lag= 0.0 min	
Primary =	0.40 cfs @ 11.97 hrs, Volume=	0.020 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,082.28' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,082.00'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,082.00' / 2,081.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,086.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.40 cfs @ 11.97 hrs HW=2,082.28' TW=2,081.97' (Dynamic Tailwater)
├─**1=Culvert** (Outlet Controls 0.40 cfs @ 2.65 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 62P: Catch Basin

Inflow Area =	1.479 ac, 0.00% Impervious,	Inflow Depth = 0.78"	for 1 Year event
Inflow =	1.85 cfs @ 12.01 hrs, Volume=	0.097 af	
Outflow =	1.85 cfs @ 12.01 hrs, Volume=	0.097 af, Atten= 0%, Lag= 0.0 min	
Primary =	1.85 cfs @ 12.01 hrs, Volume=	0.097 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,083.62' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,087.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	2,083.00'	**18.0" Round Culvert** L= 207.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,083.00' / 2,080.00' S= 0.0145 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.85 cfs @ 12.01 hrs HW=2,083.62' TW=2,080.80' (Dynamic Tailwater)
├─**1=Orifice/Grate** (Controls 0.00 cfs)
└─**2=Culvert** (Inlet Controls 1.85 cfs @ 2.68 fps)

Summary for Pond 65A: Manhole

Inflow Area = 2.041 ac, 17.95% Impervious, Inflow Depth = 1.07" for 1 Year event
Inflow = 3.47 cfs @ 11.99 hrs, Volume= 0.181 af
Outflow = 3.47 cfs @ 11.99 hrs, Volume= 0.181 af, Atten= 0%, Lag= 0.0 min
Primary = 3.47 cfs @ 11.99 hrs, Volume= 0.181 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,080.13' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,079.40'	**30.0" Round Culvert** L= 125.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,079.40' / 2,070.00' S= 0.0752 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=3.46 cfs @ 11.99 hrs HW=2,080.13' TW=2,070.09' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.46 cfs @ 2.91 fps)

Summary for Pond 65P: Catch Basin

Inflow Area = 2.041 ac, 17.95% Impervious, Inflow Depth = 1.07" for 1 Year event
Inflow = 3.47 cfs @ 11.99 hrs, Volume= 0.181 af
Outflow = 3.47 cfs @ 11.99 hrs, Volume= 0.181 af, Atten= 0%, Lag= 0.0 min
Primary = 3.47 cfs @ 11.99 hrs, Volume= 0.181 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,080.81' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,079.95'	**24.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,079.95' / 2,079.50' S= 0.0069 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,096.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.46 cfs @ 11.99 hrs HW=2,080.81' TW=2,080.13' (Dynamic Tailwater)
├─**1=Culvert** (Barrel Controls 3.46 cfs @ 3.95 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 66R: (2) 24" culvert

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,990.00' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,990.00'	**24.0" Round Culvert X 2.00** L= 75.0' CPP, end-section conforming to fill, Ke= 0.500

Device	Routing	Invert	Outlet Devices
			Inlet / Outlet Invert= 1,990.00' / 1,984.00' S= 0.0800 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	1,992.50'	**40.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,990.00' TW=1,983.90' (Dynamic Tailwater)
—**1=Culvert** (Controls 0.00 cfs)
—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 81: 24" culvert

Inflow Area = 2.837 ac, 0.00% Impervious, Inflow Depth = 0.74" for 1 Year event
Inflow = 3.62 cfs @ 11.98 hrs, Volume= 0.174 af
Outflow = 3.62 cfs @ 11.98 hrs, Volume= 0.174 af, Atten= 0%, Lag= 0.0 min
Primary = 3.62 cfs @ 11.98 hrs, Volume= 0.174 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,013.81' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,013.00'	**24.0" Round Culvert** L= 350.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,013.00' / 1,983.90' S= 0.0831 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,016.00'	**40.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=3.62 cfs @ 11.98 hrs HW=2,013.81' TW=1,984.31' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 3.62 cfs @ 3.06 fps)
—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 200: 36" Steel Culvert

Inflow Area = 76.410 ac, 0.43% Impervious, Inflow Depth = 0.61" for 1 Year event
Inflow = 38.90 cfs @ 12.20 hrs, Volume= 3.859 af
Outflow = 38.90 cfs @ 12.20 hrs, Volume= 3.859 af, Atten= 0%, Lag= 0.0 min
Primary = 38.90 cfs @ 12.20 hrs, Volume= 3.859 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,236.79' @ 12.20 hrs
Flood Elev= 2,248.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert** L= 50.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,234.00' / 2,230.00' S= 0.0800 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf

#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=38.88 cfs @ 12.20 hrs HW=2,236.78' TW=2,168.75' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 38.88 cfs @ 5.68 fps)
—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 201: 36" Steel Culvert

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 0.65" for 1 Year event
Inflow = 7.13 cfs @ 12.18 hrs, Volume= 0.660 af
Outflow = 7.13 cfs @ 12.18 hrs, Volume= 0.660 af, Atten= 0%, Lag= 0.0 min
Primary = 7.13 cfs @ 12.18 hrs, Volume= 0.660 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,235.01' @ 12.18 hrs
Flood Elev= 2,239.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert** L= 30.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,234.00' / 2,233.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=7.13 cfs @ 12.18 hrs HW=2,235.01' TW=2,232.05' (Dynamic Tailwater)
—**1=Culvert** (Barrel Controls 7.13 cfs @ 5.08 fps)
—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 297A: culvert

Inflow Area = 21.963 ac, 0.34% Impervious, Inflow Depth = 0.62" for 1 Year event
Inflow = 10.99 cfs @ 12.24 hrs, Volume= 1.129 af
Outflow = 10.99 cfs @ 12.24 hrs, Volume= 1.129 af, Atten= 0%, Lag= 0.0 min
Primary = 10.99 cfs @ 12.24 hrs, Volume= 1.129 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,113.37' @ 12.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,112.00'	**36.0" Round Culvert** L= 93.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,112.00' / 2,099.00' S= 0.1398 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,116.00'	**85.0' long x 70.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.99 cfs @ 12.24 hrs HW=2,113.37' TW=2,098.37' (Dynamic Tailwater)
1=Culvert (Inlet Controls 10.99 cfs @ 3.51 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 300R: 18" Steel Culvert

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 0.61" for 1 Year event
Inflow = 9.01 cfs @ 12.16 hrs, Volume= 0.826 af
Outflow = 9.01 cfs @ 12.16 hrs, Volume= 0.826 af, Atten= 0%, Lag= 0.0 min
Primary = 9.01 cfs @ 12.16 hrs, Volume= 0.826 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,256.55' @ 12.16 hrs
Flood Elev= 2,261.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,254.00'	**18.0" Round 18" Steel Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,254.00' / 2,253.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Primary	2,259.00'	**100.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.00 cfs @ 12.16 hrs HW=2,256.54' TW=2,252.14' (Dynamic Tailwater)
1=18" Steel Culvert (Inlet Controls 9.00 cfs @ 5.09 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond B4: bioretention

Inflow Area = 4.919 ac, 12.29% Impervious, Inflow Depth = 0.98" for 1 Year event
Inflow = 8.33 cfs @ 11.98 hrs, Volume= 0.401 af
Outflow = 1.16 cfs @ 12.28 hrs, Volume= 0.401 af, Atten= 86%, Lag= 18.2 min
Discarded = 0.09 cfs @ 12.28 hrs, Volume= 0.184 af
Primary = 1.07 cfs @ 12.28 hrs, Volume= 0.217 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,143.91' @ 12.28 hrs Surf.Area= 7,951 sf Storage= 6,484 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 246.6 min (1,092.1 - 845.5)

Volume	Invert	Avail.Storage	Storage Description
#1	2,143.00'	16,265 cf	**surface storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,143.00	6,377	0	0
2,144.00	8,116	7,247	7,247
2,145.00	9,920	9,018	16,265

Device	Routing	Invert	Outlet Devices
#1	Primary	2,139.00'	**8.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,139.00' / 2,137.00' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Discarded	2,143.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	2,143.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	2,144.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.09 cfs @ 12.28 hrs HW=2,143.91' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=1.07 cfs @ 12.28 hrs HW=2,143.91' TW=2,122.21' (Dynamic Tailwater)
├─**1=Culvert** (Passes 1.07 cfs of 3.23 cfs potential flow)
│ └─**3=Orifice/Grate** (Orifice Controls 1.07 cfs @ 3.06 fps)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond DP 7: Design Point 7

Inflow Area = 152.103 ac, 3.18% Impervious, Inflow Depth > 0.65" for 1 Year event
Inflow = 58.61 cfs @ 12.23 hrs, Volume= 8.234 af
Primary = 58.61 cfs @ 12.23 hrs, Volume= 8.234 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 8: Design Point 8

Inflow Area = 90.185 ac, 2.88% Impervious, Inflow Depth = 0.58" for 1 Year event
Inflow = 30.11 cfs @ 12.04 hrs, Volume= 4.364 af
Primary = 30.11 cfs @ 12.04 hrs, Volume= 4.364 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 9: Design Point 9

Inflow Area = 45.925 ac, 8.18% Impervious, Inflow Depth = 0.75" for 1 Year event
Inflow = 19.41 cfs @ 12.16 hrs, Volume= 2.855 af
Primary = 19.41 cfs @ 12.16 hrs, Volume= 2.855 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond H: Pond H

Inflow Area = 14.937 ac, 13.18% Impervious, Inflow Depth = 0.94" for 1 Year event
Inflow = 19.61 cfs @ 12.01 hrs, Volume= 1.168 af
Outflow = 1.09 cfs @ 13.85 hrs, Volume= 1.165 af, Atten= 94%, Lag= 110.5 min
Primary = 1.09 cfs @ 13.85 hrs, Volume= 1.165 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 1,996.00' Surf.Area= 4,665 sf Storage= 6,646 cf
Peak Elev= 1,999.21' @ 13.85 hrs Surf.Area= 11,916 sf Storage= 33,287 cf (26,641 cf above start)

Plug-Flow detention time= 1,389.3 min calculated for 1.013 af (87% of inflow)
Center-of-Mass det. time= 1,139.5 min (2,026.9 - 887.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,993.00'	95,049 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,993.00	385	0	0
1,994.00	1,192	789	789
1,996.00	4,665	5,857	6,646
1,997.00	6,868	5,767	12,412
1,998.00	9,300	8,084	20,496
2,000.00	13,640	22,940	43,436
2,002.00	18,315	31,955	75,391
2,003.00	21,000	19,658	95,049

Device	Routing	Invert	Outlet Devices
#1	Primary	1,995.00'	**24.0" Round Culvert** L= 335.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,995.00' / 1,983.90' S= 0.0331 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,996.00'	**2.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	1,999.10'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	2,002.00'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=1.09 cfs @ 13.85 hrs HW=1,999.21' TW=1,984.10' (Dynamic Tailwater)
1=**Culvert** (Passes 1.09 cfs of 27.08 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 0.19 cfs @ 8.51 fps)
3=**Orifice/Grate** (Weir Controls 0.90 cfs @ 1.06 fps)
4=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond J: OPEN SWALE

Inflow Area = 1.775 ac, 27.88% Impervious, Inflow Depth = 1.25" for 1 Year event
Inflow = 3.66 cfs @ 11.98 hrs, Volume= 0.185 af
Outflow = 1.22 cfs @ 12.09 hrs, Volume= 0.185 af, Atten= 67%, Lag= 7.0 min
Discarded = 0.07 cfs @ 12.09 hrs, Volume= 0.085 af
Primary = 1.15 cfs @ 12.09 hrs, Volume= 0.100 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,990.59' @ 12.09 hrs Surf.Area= 6,220 sf Storage= 2,690 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 178.4 min (989.9 - 811.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,986.50'	720 cf	**Stone Underdrain (Prismatic)** Listed below (Recalc) 1,800 cf Overall x 40.0% Voids
#2	1,987.50'	675 cf	**Filter Media (Prismatic)** Listed below (Recalc) 4,500 cf Overall x 15.0% Voids
#3	1,990.00'	8,500 cf	**Surface Storage (Prismatic)** Listed below (Recalc)
		9,895 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,986.50	1,800	0	0
1,987.50	1,800	1,800	1,800

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,987.50	1,800	0	0
1,990.00	1,800	4,500	4,500

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,990.00	1,800	0	0
1,991.00	3,200	2,500	2,500
1,992.50	4,800	6,000	8,500

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,986.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,989.50'	**8.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,989.50' / 1,984.00' S= 0.0786 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Secondary	1,991.50'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#4	Primary	1,992.00'	**10.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.07 cfs @ 12.09 hrs HW=1,990.59' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=1.15 cfs @ 12.09 hrs HW=1,990.59' TW=1,984.20' (Dynamic Tailwater)
├─**2=Culvert** (Inlet Controls 1.15 cfs @ 3.30 fps)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,986.50' TW=1,990.00' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond K: P1

Inflow Area = 7.908 ac, 10.53% Impervious, Inflow Depth = 0.98" for 1 Year event
Inflow = 9.75 cfs @ 12.02 hrs, Volume= 0.643 af
Outflow = 0.26 cfs @ 17.93 hrs, Volume= 0.643 af, Atten= 97%, Lag= 354.4 min
Primary = 0.26 cfs @ 17.93 hrs, Volume= 0.643 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 2,018.00' Surf.Area= 2,252 sf Storage= 4,088 cf
Peak Elev= 2,021.87' @ 17.93 hrs Surf.Area= 8,690 sf Storage= 22,819 cf (18,731 cf above start)

Plug-Flow detention time= 1,477.0 min calculated for 0.549 af (85% of inflow)
Center-of-Mass det. time= 1,204.8 min (2,056.1 - 851.4)

Volume	Invert	Avail.Storage	Storage Description
#1	2,014.00'	56,425 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,014.00	117	0	0
2,016.00	896	1,013	1,013
2,016.50	1,162	515	1,528
2,018.00	2,252	2,561	4,088
2,020.00	4,326	6,578	10,666
2,022.00	9,000	13,326	23,992
2,024.00	15,031	24,031	48,023
2,024.50	18,575	8,402	56,425

Device	Routing	Invert	Outlet Devices
#1	Primary	2,017.50'	**24.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,017.50' / 2,016.50' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,018.00'	**1.7" Vert. Orifice/Grate** C= 0.600
#3	Device 1	2,021.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	2,023.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	2,024.00'	**51.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00

Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.26 cfs @ 17.93 hrs HW=2,021.87' TW=2,016.67' (Dynamic Tailwater)
1=**Culvert** (Passes 0.26 cfs of 27.76 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 0.15 cfs @ 9.38 fps)
3=**Orifice/Grate** (Orifice Controls 0.12 cfs @ 2.37 fps)
4=**Orifice/Grate** (Controls 0.00 cfs)
5=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond L: Pond L - P1

Inflow Area = 17.806 ac, 19.92% Impervious, Inflow Depth = 1.10" for 1 Year event
Inflow = 30.16 cfs @ 11.99 hrs, Volume= 1.634 af
Outflow = 0.40 cfs @ 22.98 hrs, Volume= 1.610 af, Atten= 99%, Lag= 659.2 min
Primary = 0.40 cfs @ 22.98 hrs, Volume= 1.610 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 1,944.75' Surf.Area= 10,475 sf Storage= 14,819 cf
Peak Elev= 1,947.77' @ 22.98 hrs Surf.Area= 25,172 sf Storage= 72,385 cf (57,566 cf above start)

Plug-Flow detention time= 2,845.3 min calculated for 1.269 af (78% of inflow)
Center-of-Mass det. time= 2,232.4 min (3,068.0 - 835.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,941.50'	168,156 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,941.50	1,964	0	0
1,942.00	2,435	1,100	1,100
1,944.00	5,350	7,785	8,885
1,946.00	19,017	24,367	33,252
1,948.00	25,967	44,984	78,236
1,950.00	31,290	57,257	135,493
1,951.00	34,037	32,664	168,156

Device	Routing	Invert	Outlet Devices
#1	Primary	1,943.00'	**36.0" Round Culvert** L= 370.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,943.00' / 1,938.00' S= 0.0135 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	1,944.75'	**2.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	1,947.75'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	1,950.00'	**20.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.40 cfs @ 22.98 hrs HW=1,947.77' TW=1,937.56' (Dynamic Tailwater)
1=**Culvert** (Passes 0.40 cfs of 61.56 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 0.28 cfs @ 8.22 fps)
3=**Orifice/Grate** (Weir Controls 0.12 cfs @ 0.48 fps)
4=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond M: OPEN SWALE

Inflow Area = 4.790 ac, 2.76% Impervious, Inflow Depth = 0.83" for 1 Year event
Inflow = 7.02 cfs @ 11.98 hrs, Volume= 0.332 af
Outflow = 0.37 cfs @ 13.46 hrs, Volume= 0.332 af, Atten= 95%, Lag= 88.9 min
Discarded = 0.08 cfs @ 13.46 hrs, Volume= 0.247 af
Primary = 0.29 cfs @ 13.46 hrs, Volume= 0.085 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,889.05' @ 13.46 hrs Surf.Area= 6,545 sf Storage= 7,672 cf

Plug-Flow detention time= 864.0 min calculated for 0.332 af (100% of inflow)
Center-of-Mass det. time= 864.1 min (1,728.2 - 864.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,887.50'	19,290 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,887.50	2,995	0	0
1,888.00	4,500	1,874	1,874
1,889.00	6,437	5,469	7,342
1,890.00	8,574	7,506	14,848
1,890.50	9,195	4,442	19,290

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,887.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,889.00'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.08 cfs @ 13.46 hrs HW=1,889.05' (Free Discharge)
1=**Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.29 cfs @ 13.46 hrs HW=1,889.05' TW=1,880.15' (Dynamic Tailwater)
2=**Broad-Crested Rectangular Weir** (Weir Controls 0.29 cfs @ 0.57 fps)

Summary for Pond MH8: Manhole

Inflow Area = 7.919 ac, 30.19% Impervious, Inflow Depth = 1.27" for 1 Year event
Inflow = 17.11 cfs @ 11.98 hrs, Volume= 0.841 af
Outflow = 17.11 cfs @ 11.98 hrs, Volume= 0.841 af, Atten= 0%, Lag= 0.0 min
Primary = 17.11 cfs @ 11.98 hrs, Volume= 0.841 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,035.43' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,033.90'	**42.0" Round Culvert** L= 158.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,033.90' / 1,997.00' S= 0.2335 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=17.07 cfs @ 11.98 hrs HW=2,035.43' TW=1,997.91' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 17.07 cfs @ 4.21 fps)

Summary for Pond N: OPEN SWALE

Inflow Area = 1.568 ac, 0.00% Impervious, Inflow Depth = 0.78" for 1 Year event
Inflow = 2.15 cfs @ 11.98 hrs, Volume= 0.102 af
Outflow = 0.14 cfs @ 13.08 hrs, Volume= 0.102 af, Atten= 94%, Lag= 65.8 min
Discarded = 0.02 cfs @ 13.08 hrs, Volume= 0.073 af
Primary = 0.11 cfs @ 13.08 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,875.04' @ 13.08 hrs Surf.Area= 2,071 sf Storage= 2,206 cf

Plug-Flow detention time= 785.0 min calculated for 0.102 af (100% of inflow)
Center-of-Mass det. time= 785.2 min (1,652.9 - 867.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,873.50'	5,529 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,873.50	644	0	0
1,874.00	1,260	476	476
1,875.00	2,031	1,646	2,122
1,876.00	3,003	2,517	4,639
1,876.25	4,124	891	5,529

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,873.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,875.00'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.02 cfs @ 13.08 hrs HW=1,875.04' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.11 cfs @ 13.08 hrs HW=1,875.04' TW=1,873.77' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.11 cfs @ 0.55 fps)

Summary for Pond O: Open Swale

Inflow Area = 4.430 ac, 12.42% Impervious, Inflow Depth = 0.93" for 1 Year event
Inflow = 7.36 cfs @ 11.98 hrs, Volume= 0.345 af
Outflow = 0.72 cfs @ 12.51 hrs, Volume= 0.345 af, Atten= 90%, Lag= 31.9 min
Discarded = 0.08 cfs @ 12.51 hrs, Volume= 0.222 af
Primary = 0.64 cfs @ 12.51 hrs, Volume= 0.123 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,839.08' @ 12.51 hrs Surf.Area= 6,711 sf Storage= 6,772 cf

Plug-Flow detention time= 678.5 min calculated for 0.345 af (100% of inflow)
Center-of-Mass det. time= 678.6 min (1,535.5 - 856.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,837.50'	13,965 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,837.50	2,035	0	0
1,838.00	3,275	1,328	1,328
1,839.00	6,500	4,888	6,215
1,840.00	9,000	7,750	13,965

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,837.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,830.00'	**24.0" Round Culvert** L= 400.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,830.00' / 1,768.00' S= 0.1550 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#3	Device 2	1,839.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	1,839.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.08 cfs @ 12.51 hrs HW=1,839.08' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.64 cfs @ 12.51 hrs HW=1,839.08' TW=1,768.13' (Dynamic Tailwater)
└─**2=Culvert** (Passes 0.64 cfs of 43.01 cfs potential flow)
  └─**3=Orifice/Grate** (Weir Controls 0.64 cfs @ 0.95 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,837.50' TW=1,838.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond Q: OPEN SWALE

Inflow Area = 3.629 ac, 0.00% Impervious, Inflow Depth = 0.78" for 1 Year event
Inflow = 4.89 cfs @ 11.99 hrs, Volume= 0.237 af
Outflow = 0.17 cfs @ 15.06 hrs, Volume= 0.237 af, Atten= 97%, Lag= 184.7 min
Discarded = 0.06 cfs @ 15.06 hrs, Volume= 0.201 af
Primary = 0.11 cfs @ 15.06 hrs, Volume= 0.036 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,879.03' @ 15.06 hrs Surf.Area= 4,946 sf Storage= 6,293 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,033.4 min (1,901.6 - 868.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,877.50'	11,728 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,877.50	3,319	0	0
1,878.00	3,840	1,790	1,790
1,879.00	4,913	4,377	6,166
1,880.00	6,211	5,562	11,728

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,877.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,879.00'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.06 cfs @ 15.06 hrs HW=1,879.03' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.11 cfs @ 15.06 hrs HW=1,879.03' TW=1,873.67' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.11 cfs @ 0.43 fps)

Summary for Pond S: Open Swale

Inflow Area = 2.213 ac, 0.00% Impervious, Inflow Depth = 0.78" for 1 Year event
Inflow = 2.92 cfs @ 11.99 hrs, Volume= 0.145 af
Outflow = 0.07 cfs @ 17.09 hrs, Volume= 0.145 af, Atten= 98%, Lag= 306.0 min
Discarded = 0.04 cfs @ 17.09 hrs, Volume= 0.135 af
Primary = 0.04 cfs @ 17.09 hrs, Volume= 0.009 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,919.25' @ 17.09 hrs Surf.Area= 3,211 sf Storage= 4,277 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,218.7 min (2,087.3 - 868.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,917.50'	6,899 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,917.50	1,372	0	0
1,918.00	2,190	891	891
1,920.00	3,818	6,008	6,899

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,917.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,919.25'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.04 cfs @ 17.09 hrs HW=1,919.25' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.04 cfs @ 17.09 hrs HW=1,919.25' TW=1,909.58' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.04 cfs @ 0.17 fps)

Summary for Pond sp1: Storm Planters

Inflow Area = 0.986 ac, 86.08% Impervious, Inflow Depth = 2.25" for 1 Year event
Inflow = 3.65 cfs @ 11.97 hrs, Volume= 0.185 af
Outflow = 0.14 cfs @ 11.99 hrs, Volume= 0.130 af, Atten= 96%, Lag= 1.3 min
Primary = 0.14 cfs @ 11.99 hrs, Volume= 0.130 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,150.26' @ 13.42 hrs Surf.Area= 11,960 sf Storage= 5,290 cf

Plug-Flow detention time= 410.0 min calculated for 0.130 af (70% of inflow)
Center-of-Mass det. time= 315.4 min (1,097.3 - 781.9)

Volume	Invert	Avail.Storage	Storage Description
#1	2,147.50'	2,392 cf	**stone underdrain (Prismatic)** Listed below (Recalc) -Impervious 5,980 cf Overall x 40.0% Voids
#2	2,148.50'	1,346 cf	**filter media (Prismatic)** Listed below (Recalc) 8,970 cf Overall x 15.0% Voids
#3	2,150.00'	11,960 cf	**surface storage (Prismatic)** Listed below (Recalc)
		15,698 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,147.50	5,980	0	0
2,148.50	5,980	5,980	5,980

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,148.50	5,980	0	0
2,150.00	5,980	8,970	8,970

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,150.00	5,980	0	0
2,151.00	5,980	5,980	5,980
2,152.00	5,980	5,980	11,960

Device	Routing	Invert	Outlet Devices
#1	Primary	2,110.00'	**24.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,110.00' / 2,108.00' S= 0.0057 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,148.50'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	2,151.00'	**6.0" Horiz. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.14 cfs @ 11.99 hrs HW=2,150.02' TW=2,108.02' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.14 cfs of 65.87 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.14 cfs)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond T: Open Swale

Inflow Area = 1.813 ac, 0.00% Impervious, Inflow Depth = 0.78" for 1 Year event
Inflow = 2.48 cfs @ 11.98 hrs, Volume= 0.118 af
Outflow = 0.21 cfs @ 12.67 hrs, Volume= 0.118 af, Atten= 92%, Lag= 41.5 min
Discarded = 0.03 cfs @ 12.67 hrs, Volume= 0.081 af
Primary = 0.18 cfs @ 12.67 hrs, Volume= 0.038 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,991.01' @ 12.67 hrs Surf.Area= 2,231 sf Storage= 2,397 cf

Plug-Flow detention time= 764.4 min calculated for 0.118 af (100% of inflow)
Center-of-Mass det. time= 764.6 min (1,632.3 - 867.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,989.50'	5,389 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,989.50	935	0	0
1,990.00	1,375	578	578
1,991.00	2,211	1,793	2,371
1,992.00	3,826	3,019	5,389

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,989.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,991.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.67 hrs HW=1,991.01' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.18 cfs @ 12.67 hrs HW=1,991.01' TW=1,985.55' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.18 cfs @ 0.30 fps)

Summary for Pond U: Open Swale

Inflow Area = 6.478 ac, 2.76% Impervious, Inflow Depth = 0.78" for 1 Year event
Inflow = 6.86 cfs @ 12.05 hrs, Volume= 0.423 af
Outflow = 0.38 cfs @ 14.04 hrs, Volume= 0.423 af, Atten= 94%, Lag= 119.4 min
Discarded = 0.08 cfs @ 14.04 hrs, Volume= 0.323 af
Primary = 0.30 cfs @ 14.04 hrs, Volume= 0.100 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,015.52' @ 14.04 hrs Surf.Area= 6,862 sf Storage= 10,646 cf

Plug-Flow detention time= 1,130.1 min calculated for 0.423 af (100% of inflow)
Center-of-Mass det. time= 1,130.3 min (2,003.8 - 873.5)

Volume	Invert	Avail.Storage	Storage Description
#1	2,013.50'	18,120 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,013.50	2,584	0	0
2,014.00	4,540	1,781	1,781
2,015.00	6,354	5,447	7,228
2,016.00	7,336	6,845	14,073
2,016.50	8,850	4,047	18,120

Device	Routing	Invert	Outlet Devices
#1	Discarded	2,013.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	2,015.50'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.08 cfs @ 14.04 hrs HW=2,015.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.30 cfs @ 14.04 hrs HW=2,015.52' TW=2,013.30' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.30 cfs @ 0.35 fps)

Summary for Pond W: Open Swale

Inflow Area = 4.293 ac, 0.00% Impervious, Inflow Depth = 0.78" for 1 Year event
Inflow = 5.88 cfs @ 11.98 hrs, Volume= 0.280 af
Outflow = 0.15 cfs @ 16.77 hrs, Volume= 0.280 af, Atten= 98%, Lag= 287.2 min
Discarded = 0.07 cfs @ 16.77 hrs, Volume= 0.257 af
Primary = 0.07 cfs @ 16.77 hrs, Volume= 0.024 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,789.52' @ 16.77 hrs Surf.Area= 6,374 sf Storage= 8,114 cf

Plug-Flow detention time= 1,263.3 min calculated for 0.280 af (100% of inflow)
Center-of-Mass det. time= 1,263.4 min (2,131.2 - 867.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,787.50'	25,064 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,787.50	2,399	0	0
1,788.00	3,136	1,384	1,384
1,789.00	4,612	3,874	5,258
1,790.00	8,000	6,306	11,564
1,791.50	10,000	13,500	25,064

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,787.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,789.50'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.07 cfs @ 16.77 hrs HW=1,789.52' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.07 cfs @ 16.77 hrs HW=1,789.52' TW=1,768.08' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.07 cfs @ 0.36 fps)

Summary for Pond X: Open Swale

Inflow Area	=	2.495 ac,	0.00% Impervious, Inflow Depth = 0.78"		for 1 Year event
Inflow	=	3.42 cfs @	11.98 hrs, Volume=	0.163 af	
Outflow	=	0.09 cfs @	16.57 hrs, Volume=	0.163 af,	Atten= 97%, Lag= 275.6 min
Discarded	=	0.07 cfs @	16.57 hrs, Volume=	0.160 af	
Primary	=	0.02 cfs @	16.57 hrs, Volume=	0.003 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,799.01' @ 16.57 hrs Surf.Area= 5,720 sf Storage= 4,347 cf

Plug-Flow detention time= 784.3 min calculated for 0.163 af (100% of inflow)
Center-of-Mass det. time= 784.4 min (1,652.1 - 867.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,794.00'	556 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
			1,391 cf Overall x 40.0% Voids
#2	1,795.00'	522 cf	**Filter Media (Prismatic)** Listed below (Recalc)
			3,478 cf Overall x 15.0% Voids
#3	1,797.50'	9,040 cf	**Surface Storage (Prismatic)** Listed below (Recalc)
		10,118 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,794.00	1,391	0	0
1,795.00	1,391	1,391	1,391

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,795.00	1,391	0	0
1,797.50	1,391	3,478	3,478

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,797.50	1,391	0	0
1,798.00	1,916	827	827
1,799.00	2,930	2,423	3,250
1,800.00	4,105	3,518	6,767
1,800.50	4,984	2,272	9,040

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,794.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,799.00'	**15.0' long x 2.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50

3.00 3.50
Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07
3.20 3.32

Discarded OutFlow Max=0.07 cfs @ 16.57 hrs HW=1,799.01' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.02 cfs @ 16.57 hrs HW=1,799.01' TW=1,794.01' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.02 cfs @ 0.20 fps)

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Road Runoff Area=53,980 sf 57.09% Impervious Runoff Depth=4.63"
Flow Length=230' Tc=9.6 min CN=88 Runoff=8.48 cfs 0.478 af

Subcatchment 2a: Road Runoff Area=14,154 sf 77.24% Impervious Runoff Depth=5.18"
Flow Length=319' Tc=6.0 min CN=93 Runoff=2.68 cfs 0.140 af

Subcatchment 2S: Subcatchment 2 Runoff Area=18,469 sf 23.82% Impervious Runoff Depth=3.48"
Flow Length=375' Tc=7.8 min CN=77 Runoff=2.44 cfs 0.123 af

Subcatchment 3S: Road Runoff Area=7,863 sf 52.40% Impervious Runoff Depth=4.52"
Flow Length=272' Slope=0.1100 '/' Tc=6.0 min CN=87 Runoff=1.37 cfs 0.068 af

Subcatchment 4S: Road Runoff Area=4,505 sf 100.00% Impervious Runoff Depth=5.76"
Flow Length=274' Tc=6.0 min CN=98 Runoff=0.88 cfs 0.050 af

Subcatchment 5S: Subcatchment 5 Runoff Area=92,020 sf 7.43% Impervious Runoff Depth=3.09"
Flow Length=715' Tc=13.9 min CN=73 Runoff=8.78 cfs 0.544 af

Subcatchment 6aS: subcatch 6a Runoff Area=531,048 sf 4.06% Impervious Runoff Depth=2.99"
Flow Length=1,255' Tc=18.8 min CN=72 Runoff=41.95 cfs 3.041 af

Subcatchment 6S: subcatch 6 Runoff Area=389,580 sf 4.65% Impervious Runoff Depth=2.99"
Flow Length=2,175' Tc=19.1 min CN=72 Runoff=30.57 cfs 2.231 af

Subcatchment 7S: subcatch 7 Runoff Area=27,573 sf 35.18% Impervious Runoff Depth=3.99"
Flow Length=245' Tc=6.0 min CN=82 Runoff=4.37 cfs 0.210 af

Subcatchment 9a: Road Runoff Area=3,427 sf 70.18% Impervious Runoff Depth=4.96"
Flow Length=238' Slope=0.0790 '/' Tc=6.0 min CN=91 Runoff=0.63 cfs 0.032 af

Subcatchment 10a: Road Runoff Area=3,850 sf 94.81% Impervious Runoff Depth=5.64"
Flow Length=271' Slope=0.0940 '/' Tc=6.0 min CN=97 Runoff=0.75 cfs 0.042 af

Subcatchment 11c: Road Runoff Area=16,077 sf 70.57% Impervious Runoff Depth=4.96"
Flow Length=131' Slope=0.0920 '/' Tc=6.0 min CN=91 Runoff=2.97 cfs 0.152 af

Subcatchment 12S: Road Runoff Area=2,940 sf 88.78% Impervious Runoff Depth=5.41"
Flow Length=149' Slope=0.0810 '/' Tc=6.0 min CN=95 Runoff=0.57 cfs 0.030 af

Subcatchment 14a: Main Road Runoff Area=7,340 sf 58.11% Impervious Runoff Depth=4.63"
Flow Length=511' Slope=0.0280 '/' Tc=6.0 min CN=88 Runoff=1.30 cfs 0.065 af

Subcatchment 14B: Road Runoff Area=11,401 sf 70.83% Impervious Runoff Depth=4.96"
Flow Length=526' Tc=6.0 min CN=91 Runoff=2.11 cfs 0.108 af

Subcatchment 14C: BUILDING Runoff Area=25,251 sf 76.67% Impervious Runoff Depth=5.07"
Flow Length=127' Tc=6.8 min CN=92 Runoff=4.60 cfs 0.245 af

Subcatchment 15S: Main Road Runoff Area=15,144 sf 62.60% Impervious Runoff Depth=4.74"
Flow Length=494' Slope=0.0290 '/' Tc=6.0 min CN=89 Runoff=2.72 cfs 0.137 af

Subcatchment 16a: Main Road Runoff Area=7,317 sf 93.81% Impervious Runoff Depth=5.64"
Flow Length=306' Slope=0.0750 '/' Tc=6.0 min CN=97 Runoff=1.43 cfs 0.079 af

Subcatchment 17a: Main Road Runoff Area=4,370 sf 69.57% Impervious Runoff Depth=4.96"
Flow Length=292' Slope=0.0790 '/' Tc=6.0 min CN=91 Runoff=0.81 cfs 0.041 af

Subcatchment 18a: Main Road Runoff Area=30,338 sf 90.27% Impervious Runoff Depth=5.53"
Flow Length=276' Tc=6.0 min CN=96 Runoff=5.90 cfs 0.321 af

Subcatchment 19a: Main Road Runoff Area=3,974 sf 73.48% Impervious Runoff Depth=5.07"
Flow Length=239' Slope=0.0400 '/' Tc=6.0 min CN=92 Runoff=0.74 cfs 0.039 af

Subcatchment 20a: BEHIND 1 Runoff Area=27,573 sf 3.30% Impervious Runoff Depth=3.28"
Flow Length=395' Slope=0.0380 '/' Tc=6.0 min CN=75 Runoff=3.69 cfs 0.173 af

Subcatchment 20b: BEHIND 1 Runoff Area=27,573 sf 0.00% Impervious Runoff Depth=3.09"
Flow Length=236' Tc=6.0 min CN=73 Runoff=3.49 cfs 0.163 af

Subcatchment 21S: Main Road Runoff Area=4,574 sf 72.80% Impervious Runoff Depth=4.96"
Flow Length=269' Slope=0.0610 '/' Tc=6.0 min CN=91 Runoff=0.85 cfs 0.043 af

Subcatchment 22S: Main Road Runoff Area=18,606 sf 71.34% Impervious Runoff Depth=4.96"
Flow Length=261' Tc=6.0 min CN=91 Runoff=3.44 cfs 0.176 af

Subcatchment 23S: 18 fairway Runoff Area=31,919 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=287' Tc=6.8 min CN=74 Runoff=4.04 cfs 0.194 af

Subcatchment 24S: Fairway of 10 & 18 Runoff Area=176,265 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=252' Tc=6.0 min CN=74 Runoff=22.94 cfs 1.074 af

Subcatchment 25S: E. end Main Road Runoff Area=3,751 sf 73.05% Impervious Runoff Depth=5.07"
Flow Length=227' Slope=0.0700 '/' Tc=6.0 min CN=92 Runoff=0.70 cfs 0.036 af

Subcatchment 26S: E. end Main Road Runoff Area=3,645 sf 75.17% Impervious Runoff Depth=5.07"
Flow Length=226' Slope=0.0700 '/' Tc=6.0 min CN=92 Runoff=0.68 cfs 0.035 af

Subcatchment 27b: E. end Main Road Runoff Area=3,976 sf 73.69% Impervious Runoff Depth=5.07"
Flow Length=240' Slope=0.1250 '/' Tc=6.0 min CN=92 Runoff=0.74 cfs 0.039 af

Subcatchment 28a: E. end Main Road Runoff Area=4,060 sf 76.11% Impervious Runoff Depth=5.07"
Flow Length=256' Slope=0.1170 '/' Tc=6.0 min CN=92 Runoff=0.76 cfs 0.039 af

Subcatchment 30S: E. end Main Road Runoff Area=2,719 sf 73.92% Impervious Runoff Depth=5.07"
Flow Length=163' Slope=0.1290 '/' Tc=6.0 min CN=92 Runoff=0.51 cfs 0.026 af

Subcatchment 31S: E. end Main Road Runoff Area=2,909 sf 74.25% Impervious Runoff Depth=5.07"
Flow Length=177' Slope=0.1190 '/' Tc=6.0 min CN=92 Runoff=0.54 cfs 0.028 af

Subcatchment 32S: E. end Main Road Runoff Area=3,581 sf 73.72% Impervious Runoff Depth=5.07"
Flow Length=212' Slope=0.1270 '/' Tc=6.0 min CN=92 Runoff=0.67 cfs 0.035 af

Subcatchment 33S: E. end Main Road Runoff Area=3,736 sf 74.41% Impervious Runoff Depth=5.07"
Flow Length=230' Slope=0.1170 '/' Tc=6.0 min CN=92 Runoff=0.70 cfs 0.036 af

Subcatchment 35a: E. end Main Road Runoff Area=3,308 sf 72.55% Impervious Runoff Depth=4.96"
Flow Length=196' Slope=0.1220 '/' Tc=6.0 min CN=91 Runoff=0.61 cfs 0.031 af

Subcatchment 35S: Subcatchment 35 Runoff Area=532,041 sf 2.97% Impervious Runoff Depth=2.90"
Flow Length=3,110' Tc=22.0 min CN=71 Runoff=37.18 cfs 2.950 af

Subcatchment 36S: E. end Main Road Runoff Area=3,204 sf 74.91% Impervious Runoff Depth=5.07"
Flow Length=198' Slope=0.1210 '/' Tc=6.0 min CN=92 Runoff=0.60 cfs 0.031 af

Subcatchment 37S: E. end Main Road Runoff Area=4,447 sf 71.96% Impervious Runoff Depth=4.96"
Flow Length=243' Slope=0.0620 '/' Tc=6.0 min CN=91 Runoff=0.82 cfs 0.042 af

Subcatchment 38S: E. end Main Road Runoff Area=3,569 sf 76.49% Impervious Runoff Depth=5.07"
Flow Length=207' Slope=0.0720 '/' Tc=6.0 min CN=92 Runoff=0.67 cfs 0.035 af

Subcatchment 41S: W. end of Main Road Runoff Area=7,632 sf 100.00% Impervious Runoff Depth=5.76"
Flow Length=290' Tc=6.0 min CN=98 Runoff=1.50 cfs 0.084 af

Subcatchment 42S: W. end of Main Road Runoff Area=7,012 sf 100.00% Impervious Runoff Depth=5.76"
Flow Length=283' Tc=6.0 min CN=98 Runoff=1.38 cfs 0.077 af

Subcatchment 43S: W. end of Main Road Runoff Area=3,858 sf 77.76% Impervious Runoff Depth=5.18"
Flow Length=244' Tc=6.0 min CN=93 Runoff=0.73 cfs 0.038 af

Subcatchment 44S: W. end of Main Road Runoff Area=3,652 sf 82.15% Impervious Runoff Depth=5.30"
Flow Length=239' Tc=6.0 min CN=94 Runoff=0.70 cfs 0.037 af

Subcatchment 45S: Hole 1 Runoff Area=423,327 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=1,196' Tc=8.7 min CN=74 Runoff=49.96 cfs 2.579 af

Subcatchment 50S: W. end of Main Rd. Runoff Area=3,930 sf 100.00% Impervious Runoff Depth=5.76"
Flow Length=293' Slope=0.1140 '/' Tc=6.0 min CN=98 Runoff=0.77 cfs 0.043 af

Subcatchment 51S: W. end of Main Rd. Runoff Area=17,667 sf 20.38% Impervious Runoff Depth=3.68"
Flow Length=361' Tc=6.0 min CN=79 Runoff=2.62 cfs 0.124 af

Subcatchment 52S: W. end of Main Rd. Runoff Area=9,545 sf 16.09% Impervious Runoff Depth=3.58"
Flow Length=320' Tc=6.0 min CN=78 Runoff=1.38 cfs 0.065 af

Subcatchment 53S: W. end of Main Rd. Runoff Area=19,250 sf 18.13% Impervious Runoff Depth=3.58"
Flow Length=336' Tc=6.0 min CN=78 Runoff=2.78 cfs 0.132 af

Subcatchment 54S: Golf Course Parking Runoff Area=95,833 sf 18.37% Impervious Runoff Depth=3.58"
Flow Length=722' Tc=8.2 min CN=78 Runoff=12.83 cfs 0.656 af

Subcatchment 55S: Golf Course Parking Runoff Area=15,270 sf 74.82% Impervious Runoff Depth=5.07"
Flow Length=259' Tc=6.0 min CN=92 Runoff=2.86 cfs 0.148 af

Subcatchment 56S: Main Rd. to 6 & 7 Runoff Area=18,020 sf 17.54% Impervious Runoff Depth=3.58"
Flow Length=245' Tc=6.0 min CN=78 Runoff=2.61 cfs 0.123 af

Subcatchment 57S: Main Rd. 6 & 7 Runoff Area=4,880 sf 82.97% Impervious Runoff Depth=5.30"
Flow Length=237' Tc=6.0 min CN=94 Runoff=0.93 cfs 0.049 af

Subcatchment 59S: Club House Runoff Area=7,222 sf 100.00% Impervious Runoff Depth=5.76"
Tc=6.0 min CN=98 Runoff=1.42 cfs 0.080 af

Subcatchment 60S: Roof Terraces Runoff Area=42,950 sf 86.08% Impervious Runoff Depth=5.41"
Tc=6.0 min CN=95 Runoff=8.28 cfs 0.445 af

Subcatchment 62S: Green of 18 Runoff Area=64,444 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=433' Tc=8.1 min CN=74 Runoff=7.77 cfs 0.393 af

Subcatchment 63S: Front end of Driving Range Runoff Area=230,281 sf 0.42% Impervious Runoff Depth=3.28"
Flow Length=893' Tc=14.4 min CN=75 Runoff=22.92 cfs 1.446 af

Subcatchment 65S: Driveway to Golf House Runoff Area=17,261 sf 50.63% Impervious Runoff Depth=4.41"
Flow Length=299' Tc=6.0 min CN=86 Runoff=2.96 cfs 0.146 af

Subcatchment 80S: existing woods Runoff Area=123,600 sf 0.00% Impervious Runoff Depth=3.09"
Flow Length=600' Tc=6.0 min CN=73 Runoff=15.63 cfs 0.730 af

Subcatchment 137S: BEHIND GARAGE Runoff Area=31,485 sf 0.00% Impervious Runoff Depth=2.90"
Flow Length=377' Tc=7.8 min CN=71 Runoff=3.51 cfs 0.175 af

Subcatchment 200S: Subcatchment 200 Runoff Area=3,328,419 sf 0.43% Impervious Runoff Depth=2.81"
Flow Length=3,545' Tc=23.5 min CN=70 Runoff=214.98 cfs 17.862 af

Subcatchment 201S: Tees of 18 & Greens of 10 Runoff Area=178,777 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=425' Tc=6.0 min CN=74 Runoff=23.27 cfs 1.089 af

Subcatchment 211S: Back End of the Driving Runoff Area=208,648 sf 2.76% Impervious Runoff Depth=3.28"
Flow Length=905' Tc=6.0 min CN=75 Runoff=27.92 cfs 1.310 af

Subcatchment 212S: Green of 13 Runoff Area=68,310 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=219' Tc=6.0 min CN=74 Runoff=8.89 cfs 0.416 af

Subcatchment 213S: Hole 16 Runoff Area=194,980 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=690' Tc=11.7 min CN=76 Runoff=21.88 cfs 1.261 af

Subcatchment 214S: Tees of 13 Runoff Area=158,070 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=757' Tc=6.4 min CN=74 Runoff=20.28 cfs 0.963 af

Subcatchment 218S: Green of 12, Tee of 13 Runoff Area=96,418 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=467' Tc=6.9 min CN=74 Runoff=12.14 cfs 0.587 af

Subcatchment 219S: Green of 11 Runoff Area=78,985 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=406' Tc=6.0 min CN=74 Runoff=10.28 cfs 0.481 af

Subcatchment 220S: Fairway of 11 Runoff Area=282,188 sf 2.76% Impervious Runoff Depth=3.18"
Flow Length=869' Tc=12.2 min CN=74 Runoff=29.39 cfs 1.719 af

Subcatchment 223S: Golf Hole 15 and Runoff Area=192,957 sf 12.42% Impervious Runoff Depth=3.48"
Flow Length=401' Tc=6.0 min CN=77 Runoff=27.22 cfs 1.284 af

Subcatchment 225S: Fairway 14 Runoff Area=187,018 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=531' Tc=6.0 min CN=74 Runoff=24.34 cfs 1.139 af

Subcatchment 226S: Fairway & Green of 14 Runoff Area=108,684 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=468' Tc=6.0 min CN=74 Runoff=14.15 cfs 0.662 af

Subcatchment 300S: Subcatchment 300 Runoff Area=712,598 sf 0.46% Impervious Runoff Depth=2.81"
Flow Length=2,040' Tc=21.0 min CN=70 Runoff=49.32 cfs 3.824 af

Subcatchment 301S: Ex Stream Runoff Area=91,384 sf 0.00% Impervious Runoff Depth=2.99"
Flow Length=497' Tc=6.0 min CN=72 Runoff=11.22 cfs 0.523 af

Subcatchment 302a: New Subcatch Runoff Area=155,197 sf 0.00% Impervious Runoff Depth=2.90"
Flow Length=418' Slope=0.3800 '/' Tc=7.6 min CN=71 Runoff=17.41 cfs 0.861 af

Subcatchment 302b: New Subcatch Runoff Area=157,518 sf 0.00% Impervious Runoff Depth=2.99"
Flow Length=985' Tc=8.9 min CN=72 Runoff=17.38 cfs 0.902 af

Subcatchment 302S: (new Subcat) Runoff Area=186,835 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=1,014' Tc=6.0 min CN=70 Runoff=21.55 cfs 1.003 af

Subcatchment 303S: Subcatchment 303 Runoff Area=251,048 sf 0.00% Impervious Runoff Depth=2.99"
Flow Length=1,450' Tc=9.0 min CN=72 Runoff=27.61 cfs 1.438 af

Subcatchment 304: (new Subcat) Runoff Area=212,622 sf 0.00% Impervious Runoff Depth=2.90"
Flow Length=863' Tc=22.7 min CN=71 Runoff=14.53 cfs 1.179 af

Subcatchment 305s: Land W. side of hotel Runoff Area=150,290 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=965' Tc=7.9 min CN=74 Runoff=18.26 cfs 0.916 af

Subcatchment 306S: 12 tee Runoff Area=207,204 sf 0.00% Impervious Runoff Depth=2.90"
Flow Length=1,072' Tc=7.6 min CN=71 Runoff=23.24 cfs 1.149 af

Subcatchment 307S: (new Subcat) Runoff Area=122,324 sf 0.00% Impervious Runoff Depth=2.99"
Flow Length=1,098' Tc=7.8 min CN=72 Runoff=14.06 cfs 0.700 af

Subcatchment 308S: (new Subcat) Runoff Area=346,246 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=936' Tc=20.7 min CN=70 Runoff=24.15 cfs 1.858 af

Subcatchment 309S: (new Subcat) Runoff Area=316,725 sf 4.30% Impervious Runoff Depth=3.09"
Flow Length=649' Tc=13.3 min CN=73 Runoff=30.81 cfs 1.871 af

Subcatchment 310S: Existing Wooded Area Runoff Area=157,211 sf 4.68% Impervious Runoff Depth=2.99"
Flow Length=474' Tc=6.0 min CN=72 Runoff=19.30 cfs 0.900 af

Subcatchment 311S: Existing Wooded Area Runoff Area=312,389 sf 0.67% Impervious Runoff Depth=2.99"
Flow Length=1,779' Tc=14.7 min CN=72 Runoff=28.14 cfs 1.789 af

Subcatchment 315S: Subcatchment 315 Runoff Area=363,440 sf 0.00% Impervious Runoff Depth=2.90"
Flow Length=582' Tc=10.3 min CN=71 Runoff=36.91 cfs 2.015 af

Subcatchment 316A: Existing By Maintenance Runoff Area=25,135 sf 11.61% Impervious Runoff Depth=3.09"
Flow Length=370' Tc=6.2 min CN=73 Runoff=3.16 cfs 0.149 af

Subcatchment 316S: existing Runoff Area=423,713 sf 1.26% Impervious Runoff Depth=2.90"
Flow Length=944' Tc=7.4 min CN=71 Runoff=47.88 cfs 2.350 af

Reach 1R: overland flow Avg. Flow Depth=1.35' Max Vel=11.18 fps Inflow=65.37 cfs 3.343 af
n=0.050 L=75.0' S=0.1733 '/' Capacity=136.22 cfs Outflow=65.36 cfs 3.343 af

Reach 3: Rip Rap Channel Avg. Flow Depth=1.20' Max Vel=14.55 fps Inflow=400.45 cfs 36.972 af
n=0.050 L=51.0' S=0.3922 '/' Capacity=672.04 cfs Outflow=400.45 cfs 36.972 af

Reach 3R: Swale along RR Tracks Avg. Flow Depth=1.43' Max Vel=5.27 fps Inflow=40.28 cfs 1.913 af
n=0.040 L=1,045.0' S=0.0258 '/' Capacity=126.24 cfs Outflow=36.82 cfs 1.913 af

Reach 5: Stream Channel Avg. Flow Depth=1.14' Max Vel=13.90 fps Inflow=99.98 cfs 8.747 af
n=0.050 L=160.0' S=0.3000 '/' Capacity=1,318.86 cfs Outflow=99.97 cfs 8.747 af

Reach 5A: Stream Channel Avg. Flow Depth=1.24' Max Vel=12.45 fps Inflow=100.39 cfs 11.055 af
n=0.050 L=340.0' S=0.2206 '/' Capacity=1,130.92 cfs Outflow=100.31 cfs 11.055 af

Reach 5B: Stream Channel Avg. Flow Depth=1.42' Max Vel=11.63 fps Inflow=112.87 cfs 12.058 af
n=0.050 L=120.0' S=0.1667 '/' Capacity=983.02 cfs Outflow=112.86 cfs 12.058 af

Reach 5C: Stream Channel Avg. Flow Depth=1.46' Max Vel=11.18 fps Inflow=112.86 cfs 12.058 af
n=0.050 L=277.0' S=0.1498 '/' Capacity=932.02 cfs Outflow=112.75 cfs 12.058 af

Reach 5D: Stream Channel Avg. Flow Depth=1.59' Max Vel=16.02 fps Inflow=145.15 cfs 13.669 af
n=0.040 L=300.0' S=0.2017 '/' Capacity=385.96 cfs Outflow=145.06 cfs 13.669 af

Reach 5R: roadside swale Avg. Flow Depth=1.30' Max Vel=6.17 fps Inflow=27.29 cfs 1.216 af
n=0.050 L=607.0' S=0.0626 '/' Capacity=61.25 cfs Outflow=26.56 cfs 1.216 af

Reach 6: (new Reach) Avg. Flow Depth=0.95' Max Vel=9.08 fps Inflow=50.64 cfs 5.439 af
n=0.050 L=175.0' S=0.1571 '/' Capacity=217.11 cfs Outflow=50.63 cfs 5.439 af

Reach 6R: Clean Swale Avg. Flow Depth=1.41' Max Vel=7.82 fps Inflow=52.98 cfs 6.265 af
n=0.030 L=245.0' S=0.0327 '/' Capacity=114.21 cfs Outflow=52.93 cfs 6.265 af

Reach 7B: Existing Ditch Avg. Flow Depth=0.28' Max Vel=4.96 fps Inflow=3.16 cfs 0.149 af
n=0.040 L=125.0' S=0.1280 '/' Capacity=172.60 cfs Outflow=3.15 cfs 0.149 af

Reach 7C: Existing Ditch Avg. Flow Depth=1.53' Max Vel=9.52 fps Inflow=51.95 cfs 2.984 af
n=0.050 L=530.0' S=0.1264 '/' Capacity=137.22 cfs Outflow=51.63 cfs 2.984 af

Reach 8: Stream Channel Avg. Flow Depth=0.67' Max Vel=8.42 fps Inflow=210.46 cfs 17.554 af
n=0.050 L=245.0' S=0.2816 '/' Capacity=532.84 cfs Outflow=210.11 cfs 17.554 af

Reach 9R: swale Avg. Flow Depth=0.47' Max Vel=3.26 fps Inflow=3.51 cfs 0.175 af
n=0.030 L=280.0' S=0.0179 '/' Capacity=11.64 cfs Outflow=3.44 cfs 0.175 af

Reach 11R: Overland Flow Avg. Flow Depth=0.21' Max Vel=2.72 fps Inflow=49.69 cfs 5.721 af
n=0.080 L=760.0' S=0.1776 '/' Capacity=635.50 cfs Outflow=45.24 cfs 5.721 af

Reach 12R: Overland Flow Avg. Flow Depth=0.12' Max Vel=2.03 fps Inflow=8.78 cfs 0.544 af
n=0.080 L=588.0' S=0.2058 '/' Capacity=312.77 cfs Outflow=8.05 cfs 0.544 af

Reach 13: Channel at tracks Avg. Flow Depth=2.02' Max Vel=10.00 fps Inflow=245.12 cfs 19.466 af
n=0.035 L=450.0' S=0.0444 '/' Capacity=604.81 cfs Outflow=244.13 cfs 19.466 af

Reach 14R: Swale Avg. Flow Depth=0.14' Max Vel=4.37 fps Inflow=1.53 cfs 0.390 af
n=0.030 L=665.0' S=0.1323 '/' Capacity=305.76 cfs Outflow=1.51 cfs 0.390 af

Reach 15R: Cobble Stream Avg. Flow Depth=1.28' Max Vel=11.18 fps Inflow=94.40 cfs 9.306 af
n=0.050 L=245.0' S=0.1714 '/' Capacity=226.76 cfs Outflow=94.37 cfs 9.306 af

Reach 40R: Swale Avg. Flow Depth=1.35' Max Vel=6.60 fps Inflow=46.17 cfs 5.511 af
n=0.040 L=95.0' S=0.0411 '/' Capacity=106.53 cfs Outflow=46.16 cfs 5.511 af

Reach 51R: Swale Avg. Flow Depth=0.88' Max Vel=6.36 fps Inflow=26.57 cfs 1.732 af
n=0.030 L=535.0' S=0.0374 '/' Capacity=162.52 cfs Outflow=26.04 cfs 1.732 af

Reach 58a: Swale along RR Tracks Avg. Flow Depth=1.94' Max Vel=7.56 fps Inflow=94.37 cfs 9.306 af
n=0.035 L=543.0' S=0.0276 '/' Capacity=163.26 cfs Outflow=93.85 cfs 9.306 af

Reach 63R: OVERLAND Avg. Flow Depth=0.37' Max Vel=8.43 fps Inflow=16.55 cfs 0.863 af
n=0.050 L=126.0' S=0.3595 '/' Capacity=448.14 cfs Outflow=16.54 cfs 0.863 af

Reach 64R: Swale Avg. Flow Depth=1.36' Max Vel=2.14 fps Inflow=14.13 cfs 2.308 af
n=0.040 L=222.0' S=0.0045 '/' Capacity=52.71 cfs Outflow=13.70 cfs 2.308 af

Reach 69R: Wetland Flow Avg. Flow Depth=0.13' Max Vel=1.29 fps Inflow=18.26 cfs 0.916 af
n=0.070 L=487.0' S=0.0657 '/' Capacity=172.83 cfs Outflow=15.15 cfs 0.916 af

Reach 197: Stream Channel Avg. Flow Depth=1.17' Max Vel=14.12 fps Inflow=382.87 cfs 34.957 af
n=0.050 L=599.0' S=0.2763 '/' Capacity=12,139.60 cfs Outflow=382.59 cfs 34.957 af

Reach 197A: Stream Channel Avg. Flow Depth=2.14' Max Vel=12.12 fps Inflow=325.00 cfs 27.923 af
n=0.050 L=601.0' S=0.1248 '/' Capacity=3,783.36 cfs Outflow=324.49 cfs 27.923 af

Reach 197B: Stream Channel Avg. Flow Depth=2.17' Max Vel=11.42 fps Inflow=313.43 cfs 25.924 af
n=0.050 L=252.0' S=0.1091 '/' Capacity=3,537.94 cfs Outflow=313.29 cfs 25.924 af

Reach 197C: Stream Channel Avg. Flow Depth=1.87' Max Vel=12.60 fps Inflow=270.71 cfs 22.684 af
n=0.050 L=426.0' S=0.1573 '/' Capacity=4,247.34 cfs Outflow=270.52 cfs 22.684 af

Reach 198: Stream Channel Avg. Flow Depth=1.70' Max Vel=13.71 fps Inflow=251.95 cfs 20.813 af
n=0.050 L=417.0' S=0.2074 '/' Capacity=4,877.81 cfs Outflow=251.67 cfs 20.813 af

Reach 199: Overland Flow Avg. Flow Depth=0.13' Max Vel=4.34 fps Inflow=37.18 cfs 2.950 af
n=0.040 L=250.0' S=0.2560 '/' Capacity=451.81 cfs Outflow=37.03 cfs 2.950 af

Reach 295: Roadside Channel Avg. Flow Depth=1.87' Max Vel=7.29 fps Inflow=71.61 cfs 6.394 af
n=0.050 L=280.0' S=0.0607 '/' Capacity=140.40 cfs Outflow=71.55 cfs 6.394 af

Reach 296: Wetland Flow Avg. Flow Depth=1.01' Max Vel=3.08 fps Inflow=63.88 cfs 5.178 af
n=0.070 L=427.0' S=0.0328 '/' Capacity=251.85 cfs Outflow=62.86 cfs 5.178 af

Reach 297: Overland Flow Avg. Flow Depth=0.18' Max Vel=7.26 fps Inflow=49.43 cfs 3.999 af
n=0.030 L=195.0' S=0.2872 '/' Capacity=358.18 cfs Outflow=49.40 cfs 3.999 af

Reach 298: Wetland Flow Avg. Flow Depth=0.21' Max Vel=2.15 fps Inflow=50.60 cfs 3.999 af
n=0.070 L=408.0' S=0.0931 '/' Capacity=802.14 cfs Outflow=49.43 cfs 3.999 af

Reach 299: Overland Flow Avg. Flow Depth=0.32' Max Vel=5.81 fps Inflow=49.32 cfs 3.824 af
n=0.050 L=135.0' S=0.3259 '/' Capacity=130.57 cfs Outflow=49.31 cfs 3.824 af

Reach O3: Overland Flow Avg. Flow Depth=0.07' Max Vel=2.86 fps Inflow=7.88 cfs 0.085 af
n=0.030 L=178.0' S=0.1404 '/' Capacity=78.90 cfs Outflow=7.72 cfs 0.085 af

Reach O4: Swale Avg. Flow Depth=0.53' Max Vel=4.58 fps Inflow=7.72 cfs 0.085 af
n=0.033 L=286.0' S=0.0385 '/' Capacity=59.96 cfs Outflow=7.53 cfs 0.085 af

Reach X1: Swale Avg. Flow Depth=0.62' Max Vel=6.74 fps Inflow=13.49 cfs 0.487 af
n=0.040 L=200.0' S=0.1050 '/' Capacity=153.60 cfs Outflow=13.45 cfs 0.487 af

Pond 1P: Catch Basin/Culvert Peak Elev=1,981.11' Inflow=8.48 cfs 0.478 af
Outflow=8.48 cfs 0.478 af

Pond 2P: Catch Basin Peak Elev=2,000.35' Inflow=57.43 cfs 2.865 af
Outflow=57.43 cfs 2.865 af

Pond 2R: 48" CMP Culvert Peak Elev=1,747.03' Inflow=400.45 cfs 36.972 af
Outflow=400.45 cfs 36.972 af

Pond 3P: Catch Basin Peak Elev=2,009.88' Inflow=2.25 cfs 0.118 af
Outflow=2.25 cfs 0.118 af

Pond 4P: Catch Basin Peak Elev=2,010.17' Inflow=0.88 cfs 0.050 af
Outflow=0.88 cfs 0.050 af

Pond 4R: 38" Arch Culv. Peak Elev=2,068.57' Inflow=99.98 cfs 8.747 af
Outflow=99.98 cfs 8.747 af

Pond 7A: CULVERT Peak Elev=1,900.84' Inflow=3.16 cfs 0.149 af
18.0" Round Culvert n=0.013 L=115.0' S=0.0174 '/' Outflow=3.16 cfs 0.149 af

Pond 7P: Catch Basin Peak Elev=2,069.25' Inflow=2.11 cfs 0.108 af
Outflow=2.11 cfs 0.108 af

Pond 7R: (2) 43" Arch Culverts Peak Elev=1,815.36' Inflow=210.46 cfs 17.554 af
Outflow=210.46 cfs 17.554 af

Pond 8R: 36" hdpe Peak Elev=0.00'
36.0" Round Culvert n=0.013 L=245.0' S=0.1714 '/' Primary=0.00 cfs 0.000 af

Pond 9P: Catch Basin Peak Elev=2,036.95' Inflow=1.39 cfs 0.074 af
Outflow=1.39 cfs 0.074 af

Pond 10P: Catch Basin Peak Elev=2,036.97' Inflow=0.75 cfs 0.042 af
Outflow=0.75 cfs 0.042 af

Pond 10R: 14" and 16" HDPE Culverts Peak Elev=1,977.42' Inflow=49.69 cfs 5.721 af
Outflow=49.69 cfs 5.721 af

Pond 11P: Catch Basin Peak Elev=2,053.76' Inflow=51.12 cfs 2.533 af
Outflow=51.12 cfs 2.533 af

Pond 12P: Catch Basin Peak Elev=2,055.38' Inflow=0.57 cfs 0.030 af
Outflow=0.57 cfs 0.030 af

Pond 13P: Manhole Peak Elev=2,067.33' Inflow=47.58 cfs 2.350 af
Outflow=47.58 cfs 2.350 af

Pond 13R: 16" CMP Culvert Peak Elev=1,963.20' Inflow=8.78 cfs 0.544 af
16.0" Round Culvert n=0.025 L=40.0' S=0.0250 '/' Outflow=8.78 cfs 0.544 af

Pond 15P: Catch Basin Peak Elev=2,068.97' Inflow=4.83 cfs 0.245 af
Outflow=4.83 cfs 0.245 af

Pond 16P: Catch Basin Peak Elev=2,082.62' Inflow=1.43 cfs 0.079 af
Outflow=1.43 cfs 0.079 af

Pond 17P: Catch Basin Peak Elev=2,082.47' Inflow=41.46 cfs 2.040 af
Outflow=41.46 cfs 2.040 af

Pond 18P: Catch Basin Peak Elev=2,096.00' Inflow=5.90 cfs 0.321 af
Outflow=5.90 cfs 0.321 af

Pond 19P: Catch Basin Peak Elev=2,093.57' Inflow=35.23 cfs 1.725 af
Outflow=35.23 cfs 1.725 af

Pond 20: CB20 Peak Elev=2,109.35' Inflow=18.26 cfs 0.916 af
Outflow=18.26 cfs 0.916 af

Pond 20P: Manhole Peak Elev=2,097.11' Inflow=28.60 cfs 1.366 af
30.0" Round Culvert n=0.013 L=107.0' S=0.0318 '/' Outflow=28.60 cfs 1.366 af

Pond 21P: Catch Basin Peak Elev=2,114.16' Inflow=5.67 cfs 0.292 af
Outflow=5.67 cfs 0.292 af

Pond 22P: Catch Basin Peak Elev=2,115.64' Inflow=3.44 cfs 0.176 af
Outflow=3.44 cfs 0.176 af

Pond 23A: Catch Basin Peak Elev=2,093.56' Inflow=4.04 cfs 0.194 af
Outflow=4.04 cfs 0.194 af

Pond 23B: Catch Basin Peak Elev=2,084.04' Inflow=4.04 cfs 0.194 af
Outflow=4.04 cfs 0.194 af

Pond 24A: Catch Basin Peak Elev=2,100.19' Inflow=22.94 cfs 1.074 af
Outflow=22.94 cfs 1.074 af

Pond 24B: Catch Basin Peak Elev=2,098.06' Inflow=22.94 cfs 1.074 af
Outflow=22.94 cfs 1.074 af

Pond 25P: Catch Basin Peak Elev=2,123.36' Inflow=1.38 cfs 0.072 af
Outflow=1.38 cfs 0.072 af

Pond 26P: Catch Basin Peak Elev=2,131.51' Inflow=0.68 cfs 0.035 af
Outflow=0.68 cfs 0.035 af

Pond 27P: Catch Basin Peak Elev=2,148.96' Inflow=6.63 cfs 0.343 af
Outflow=6.63 cfs 0.343 af

Pond 28P: Catch Basin Peak Elev=2,149.00' Inflow=0.76 cfs 0.039 af
Outflow=0.76 cfs 0.039 af

Pond 29P: Manhole Peak Elev=2,163.03' Inflow=5.12 cfs 0.265 af
21.0" Round Culvert n=0.013 L=125.0' S=0.1140 '/' Outflow=5.12 cfs 0.265 af

Pond 30P: Catch Basin Peak Elev=2,175.19' Inflow=5.12 cfs 0.265 af
Outflow=5.12 cfs 0.265 af

Pond 31P: Catch Basin Peak Elev=2,177.58' Inflow=0.54 cfs 0.028 af
Outflow=0.54 cfs 0.028 af

Pond 32P: Catch Basin Peak Elev=2,196.35' Inflow=4.07 cfs 0.210 af
Outflow=4.07 cfs 0.210 af

Pond 33P: Catch Basin Peak Elev=2,198.42' Inflow=0.70 cfs 0.036 af
Outflow=0.70 cfs 0.036 af

Pond 34P: Manhole Peak Elev=2,209.77' Inflow=2.70 cfs 0.139 af
18.0" Round Culvert n=0.013 L=90.3' S=0.1449 '/' Outflow=2.70 cfs 0.139 af

Pond 35P: Catch Basin Peak Elev=2,225.77' Inflow=2.70 cfs 0.139 af
Outflow=2.70 cfs 0.139 af

Pond 36P: Catch Basin Peak Elev=2,225.97' Inflow=0.60 cfs 0.031 af
Outflow=0.60 cfs 0.031 af

Pond 37P: Catch Basin Peak Elev=2,249.05' Inflow=1.49 cfs 0.077 af
Outflow=1.49 cfs 0.077 af

Pond 38P: Catch Basin Peak Elev=2,249.42' Inflow=0.67 cfs 0.035 af
Outflow=0.67 cfs 0.035 af

Pond 43P: 12" HDPE Pipe Peak Elev=1,998.16' Inflow=0.73 cfs 0.038 af
Outflow=0.73 cfs 0.038 af

Pond 44P: 12" HDPE Pipe Peak Elev=1,998.04' Inflow=1.43 cfs 0.075 af
Outflow=1.43 cfs 0.075 af

Pond 50P: 30" HDPE Pipe Peak Elev=2,026.50' Inflow=26.43 cfs 1.342 af
Outflow=26.43 cfs 1.342 af

Pond 51P: 18" HDPE Pipe Peak Elev=2,026.87' Inflow=2.62 cfs 0.124 af
Outflow=2.62 cfs 0.124 af

Pond 52P: 30" HDPE Pipe Peak Elev=2,060.70' Inflow=23.08 cfs 1.174 af
Outflow=23.08 cfs 1.174 af

Pond 53P: 18" HDPE Pipe Peak Elev=2,061.28' Inflow=2.78 cfs 0.132 af
Outflow=2.78 cfs 0.132 af

Pond 54P: 24" HDPE Pipe Peak Elev=2,103.05' Inflow=15.52 cfs 0.804 af
Outflow=15.52 cfs 0.804 af

Pond 55P: 18" HDPE Pipe Peak Elev=2,103.25' Inflow=2.86 cfs 0.148 af
Outflow=2.86 cfs 0.148 af

Pond 56P: 18" HDPE Pipe Peak Elev=2,082.39' Inflow=3.54 cfs 0.173 af
Outflow=3.54 cfs 0.173 af

Pond 57P: 18" HDPE Pipe Peak Elev=2,082.56' Inflow=0.93 cfs 0.049 af
Outflow=0.93 cfs 0.049 af

Pond 62P: Catch Basin Peak Elev=2,084.58' Inflow=7.77 cfs 0.393 af
Outflow=7.77 cfs 0.393 af

Pond 65A: Manhole Peak Elev=2,080.84' Inflow=11.96 cfs 0.618 af
30.0" Round Culvert n=0.013 L=125.0' S=0.0752 '/' Outflow=11.96 cfs 0.618 af

Pond 65P: Catch Basin Peak Elev=2,081.78' Inflow=11.96 cfs 0.618 af
Outflow=11.96 cfs 0.618 af

Pond 66R: (2) 24" culvert Peak Elev=1,990.66' Inflow=4.99 cfs 0.072 af
Outflow=4.99 cfs 0.072 af

Pond 81: 24" culvert Peak Elev=2,015.07' Inflow=15.63 cfs 0.730 af
Outflow=15.63 cfs 0.730 af

Pond 200: 36" Steel Culvert Peak Elev=2,239.09' Inflow=214.98 cfs 17.862 af
Outflow=214.98 cfs 17.862 af

Pond 201: 36" Steel Culvert Peak Elev=2,236.77' Inflow=37.18 cfs 2.950 af
Outflow=37.18 cfs 2.950 af

Pond 297A: culvert Peak Elev=2,116.16' Inflow=63.88 cfs 5.178 af
Outflow=63.88 cfs 5.178 af

Pond 300R: 18" Steel Culvert Peak Elev=2,259.26' Inflow=49.32 cfs 3.824 af
Outflow=49.32 cfs 3.824 af

Pond B4: bioretention Peak Elev=2,144.61' Storage=12,518 cf Inflow=29.88 cfs 1.432 af
Discarded=0.11 cfs 0.216 af Primary=27.29 cfs 1.216 af Outflow=27.40 cfs 1.432 af

Pond DP 7: Design Point 7 Inflow=401.23 cfs 37.095 af
Primary=401.23 cfs 37.095 af

Pond DP 8: Design Point 8 Inflow=282.34 cfs 21.816 af
Primary=282.34 cfs 21.816 af

Pond DP 9: Design Point 9 Inflow=129.96 cfs 12.024 af
Primary=129.96 cfs 12.024 af

Pond H: Pond H Peak Elev=2,001.58' Storage=67,845 cf Inflow=75.95 cfs 4.311 af
Outflow=30.56 cfs 4.308 af

Pond J: OPEN SWALE Peak Elev=1,991.97' Storage=7,486 cf Inflow=11.47 cfs 0.573 af
Discarded=0.09 cfs 0.100 af Primary=1.94 cfs 0.400 af Secondary=4.99 cfs 0.072 af Outflow=7.02 cfs 0.573 af

Pond K: P1 Peak Elev=2,024.07' Storage=49,051 cf Inflow=36.36 cfs 2.309 af
Outflow=14.13 cfs 2.308 af

Pond L: Pond L - P1 Peak Elev=1,949.10' Storage=108,329 cf Inflow=101.60 cfs 5.464 af
Outflow=50.64 cfs 5.439 af

Pond M: OPEN SWALE Peak Elev=1,889.92' Storage=14,156 cf Inflow=27.92 cfs 1.310 af
Discarded=0.10 cfs 0.263 af Primary=23.20 cfs 1.047 af Outflow=23.30 cfs 1.310 af

Pond MH8: Manhole Peak Elev=2,036.93' Inflow=52.50 cfs 2.607 af
42.0" Round Culvert n=0.013 L=158.0' S=0.2335 '/' Outflow=52.50 cfs 2.607 af

Pond N: OPEN SWALE Peak Elev=1,875.69' Storage=3,758 cf Inflow=8.89 cfs 0.416 af
Discarded=0.03 cfs 0.078 af Primary=7.95 cfs 0.339 af Outflow=7.98 cfs 0.416 af

Pond O: Open Swale Peak Elev=1,839.78' Storage=12,022 cf Inflow=27.22 cfs 1.284 af
Discarded=0.10 cfs 0.238 af Primary=16.98 cfs 0.961 af Secondary=7.88 cfs 0.085 af Outflow=24.96 cfs 1.284 af

Pond Q: OPEN SWALE Peak Elev=1,879.74' Storage=10,149 cf Inflow=20.28 cfs 0.963 af
Discarded=0.07 cfs 0.214 af Primary=17.90 cfs 0.749 af Outflow=17.96 cfs 0.963 af

Pond S: Open Swale Peak Elev=1,919.45' Storage=4,921 cf Inflow=12.14 cfs 0.587 af
Discarded=0.04 cfs 0.142 af Primary=12.00 cfs 0.445 af Outflow=12.04 cfs 0.587 af

Pond sp1: Storm Planters Peak Elev=2,151.24' Storage=11,161 cf Inflow=8.28 cfs 0.445 af
Outflow=1.53 cfs 0.390 af

Pond T: Open Swale Peak Elev=1,991.18' Storage=2,792 cf Inflow=10.28 cfs 0.481 af
Discarded=0.03 cfs 0.085 af Primary=10.19 cfs 0.396 af Outflow=10.22 cfs 0.481 af

Pond U: Open Swale Peak Elev=2,015.86' Storage=13,035 cf Inflow=29.39 cfs 1.719 af
Discarded=0.08 cfs 0.337 af Primary=28.95 cfs 1.382 af Outflow=29.04 cfs 1.719 af

Pond W: Open Swale Peak Elev=1,790.43' Storage=15,124 cf Inflow=29.67 cfs 1.225 af
Discarded=0.10 cfs 0.274 af Primary=23.66 cfs 0.951 af Outflow=23.76 cfs 1.225 af

Pond X: Open Swale Peak Elev=1,799.49' Storage=5,910 cf Inflow=14.15 cfs 0.662 af
Discarded=0.07 cfs 0.175 af Primary=13.49 cfs 0.487 af Outflow=13.57 cfs 0.662 af

Total Runoff Area = 288.212 ac Runoff Volume = 73.139 af Average Runoff Depth = 3.05"
96.12% Pervious = 277.025 ac 3.88% Impervious = 11.187 ac

Summary for Subcatchment 1S: Road

Runoff = 8.48 cfs @ 12.01 hrs, Volume= 0.478 af, Depth= 4.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	30,818	98	Roof
	23,162	74	>75% Grass cover, Good, HSG C
	53,980	88	Weighted Average
	23,162		42.91% Pervious Area
	30,818		57.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0200	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.8	130	0.0350	2.81		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.6	230	Total			

Summary for Subcatchment 2a: Road

Runoff = 2.68 cfs @ 11.97 hrs, Volume= 0.140 af, Depth= 5.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	10,932	98	Paved
	3,222	74	>75% Grass cover, Good, HSG C
	14,154	93	Weighted Average
	3,222		22.76% Pervious Area
	10,932		77.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0200	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.9	219	0.0380	3.96		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	319	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S: Subcatchment 2

Runoff = 2.44 cfs @ 11.99 hrs, Volume= 0.123 af, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	4,400	98	Roadway
	5,009	71	Meadow, non-grazed, HSG C
	9,060	70	Woods, Good, HSG C
	18,469	77	Weighted Average
	14,069		76.18% Pervious Area
	4,400		23.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	90	0.2290	0.23		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	70	0.2550	1.51		**Shallow Concentrated Flow, SC Flow through Woods** Kv= 3.0 fps
0.3	215	0.0547	13.12	137.80	**Trap/Vee/Rect Channel Flow, Vegetated Swale along RR Tracks** Bot.W=2.00' D=3.00' Z= 0.5 '/' Top.W=5.00' n= 0.030
7.8	375	Total			

Summary for Subcatchment 3S: Road

Runoff = 1.37 cfs @ 11.97 hrs, Volume= 0.068 af, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	4,120	98	Paved
	3,743	74	>75% Grass cover, Good, HSG C
	7,863	87	Weighted Average
	3,743		47.60% Pervious Area
	4,120		52.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1100	3.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	172	0.1100	6.73		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	272	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Road

Runoff = 0.88 cfs @ 11.97 hrs, Volume= 0.050 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	4,505	98	Paved
	4,505		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0500	2.22		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	174	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	274	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 5S: Subcatchment 5

Runoff = 8.78 cfs @ 12.06 hrs, Volume= 0.544 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	39,399	71	Meadow, non-grazed, HSG C
*	1,338	98	Roof Area
	45,785	70	Woods, Good, HSG C
	5,498	98	Paved parking, HSG C
	92,020	73	Weighted Average
	85,184		92.57% Pervious Area
	6,836		7.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.1300	0.18		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	390	0.0920	1.52		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	225	0.0346	7.48	29.91	**Trap/Vee/Rect Channel Flow, Flow in Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
13.9	715	Total			

Summary for Subcatchment 6aS: subcatch 6a

Runoff = 41.95 cfs @ 12.12 hrs, Volume= 3.041 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	7,130	74	Porous Paving
*	2,840	98	Roof
	334,295	70	Woods, Good, HSG C
	27,046	74	>75% Grass cover, Good, HSG C
*	18,735	98	Paved
*	9,300	74	Fairway/Tee/Green, Good, HSG C
	131,702	71	Meadow, non-grazed, HSG C
	531,048	72	Weighted Average
	509,473		95.94% Pervious Area
	21,575		4.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
9.2	915	0.1100	1.66		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	240	0.0950	18.86	150.91	**Trap/Vee/Rect Channel Flow, swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.025 Earth, clean & winding
18.8	1,255	Total			

Summary for Subcatchment 6S: subcatch 6

Runoff = 30.57 cfs @ 12.12 hrs, Volume= 2.231 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	7,240	98	Roof
	293,063	70	Woods, Good, HSG C
	78,387	74	>75% Grass cover, Good, HSG C
*	10,890	98	Paved
	389,580	72	Weighted Average
	371,450		95.35% Pervious Area
	18,130		4.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.7	1,015	0.1950	2.21		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.7	1,060	0.0750	10.48	83.81	**Trap/Vee/Rect Channel Flow, RR Swale w/ Gravel and Leaves** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.040 Earth, cobble bottom, clean sides
19.1	2,175	Total			

Summary for Subcatchment 7S: subcatch 7

Runoff = 4.37 cfs @ 11.97 hrs, Volume= 0.210 af, Depth= 3.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
9,700	98	Paved parking & roofs
5,730	70	Woods, Good, HSG C
12,143	74	>75% Grass cover, Good, HSG C
27,573	82	Weighted Average
17,873		64.82% Pervious Area
9,700		35.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	20	0.3000	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.1	225	0.1250	1.77		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	245	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 9a: Road

Runoff = 0.63 cfs @ 11.97 hrs, Volume= 0.032 af, Depth= 4.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	2,405	98	Paved
	1,022	74	>75% Grass cover, Good, HSG C
	3,427	91	Weighted Average
	1,022		29.82% Pervious Area
	2,405		70.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0790	2.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	138	0.0790	5.71		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	238	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 10a: Road

Runoff = 0.75 cfs @ 11.97 hrs, Volume= 0.042 af, Depth= 5.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	3,650	98	Paved
	200	74	>75% Grass cover, Good, HSG C
	3,850	97	Weighted Average
	200		5.19% Pervious Area
	3,650		94.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0940	2.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.5	171	0.0940	6.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	271	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 11c: Road

Runoff = 2.97 cfs @ 11.97 hrs, Volume= 0.152 af, Depth= 4.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	7,010	98	Paved
	4,732	74	>75% Grass cover, Good, HSG C
*	4,335	98	Roofs
	16,077	91	Weighted Average
	4,732		29.43% Pervious Area
	11,345		70.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0920	2.83		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.1	31	0.0920	6.16		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
0.7	131	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 12S: Road

Runoff = 0.57 cfs @ 11.97 hrs, Volume= 0.030 af, Depth= 5.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	2,610	98	Paved
	330	74	>75% Grass cover, Good, HSG C
	2,940	95	Weighted Average
	330		11.22% Pervious Area
	2,610		88.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0810	2.69		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.1	49	0.0810	5.78		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
0.7	149	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 14a: Main Road

Runoff = 1.30 cfs @ 11.97 hrs, Volume= 0.065 af, Depth= 4.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	4,265	98	Paved
	3,075	74	>75% Grass cover, Good, HSG C
	7,340	88	Weighted Average
	3,075		41.89% Pervious Area
	4,265		58.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0280	1.76		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.0	411	0.0280	3.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.9	511	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 14B: Road

Runoff = 2.11 cfs @ 11.97 hrs, Volume= 0.108 af, Depth= 4.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
8,075	98	Paved parking, HSG C
3,326	74	>75% Grass cover, Good, HSG C
11,401	91	Weighted Average
3,326		29.17% Pervious Area
8,075		70.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0200	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.3	426	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	526	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 14C: BUILDING

Runoff = 4.60 cfs @ 11.98 hrs, Volume= 0.245 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
19,361	98	Paved parking, HSG C
5,890	74	>75% Grass cover, Good, HSG C
25,251	92	Weighted Average
5,890		23.33% Pervious Area
19,361		76.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0400	0.25		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 4.00"
0.2	27	0.0375	2.90		**Shallow Concentrated Flow, shallow concentrated flow** Grassed Waterway Kv= 15.0 fps
6.8	127	Total			

Summary for Subcatchment 15S: Main Road

Runoff = 2.72 cfs @ 11.97 hrs, Volume= 0.137 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	9,480	98	Paved
	5,664	74	>75% Grass cover, Good, HSG C
	15,144	89	Weighted Average
	5,664		37.40% Pervious Area
	9,480		62.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0290	1.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.9	394	0.0290	3.46		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	494	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 16a: Main Road

Runoff = 1.43 cfs @ 11.97 hrs, Volume= 0.079 af, Depth= 5.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	6,864	98	Paved
	453	74	>75% Grass cover, Good, HSG C
	7,317	97	Weighted Average
	453		6.19% Pervious Area
	6,864		93.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0750	2.61		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	206	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	306	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 17a: Main Road

Runoff = 0.81 cfs @ 11.97 hrs, Volume= 0.041 af, Depth= 4.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	3,040	98	Paved
	1,330	74	>75% Grass cover, Good, HSG C
	4,370	91	Weighted Average
	1,330		30.43% Pervious Area
	3,040		69.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0790	2.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	192	0.0790	5.71		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	292	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 18a: Main Road

Runoff = 5.90 cfs @ 11.97 hrs, Volume= 0.321 af, Depth= 5.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	13,586	98	Paved
	2,952	74	>75% Grass cover, Good, HSG C
*	13,800	98	Roof
	30,338	96	Weighted Average
	2,952		9.73% Pervious Area
	27,386		90.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	56	0.0360	1.73		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.9	220	0.0450	4.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	276	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 19a: Main Road

Runoff = 0.74 cfs @ 11.97 hrs, Volume= 0.039 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	2,920	98	Paved
	1,054	74	>75% Grass cover, Good, HSG C
	3,974	92	Weighted Average
	1,054		26.52% Pervious Area
	2,920		73.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0400	2.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	139	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	239	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 20a: BEHIND 1

Runoff = 3.69 cfs @ 11.97 hrs, Volume= 0.173 af, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
26,663	74	>75% Grass cover, Good, HSG C
910	98	Paved parking, HSG C
27,573	75	Weighted Average
26,663		96.70% Pervious Area
910		3.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	395	0.0380	6.65	79.79	**Channel Flow,** Area= 12.0 sf Perim= 21.0' r= 0.57' n= 0.030 Earth, grassed & winding
1.0	395	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 20b: BEHIND 1

Runoff = 3.49 cfs @ 11.97 hrs, Volume= 0.163 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
23,963	74	>75% Grass cover, Good, HSG C
3,610	70	Woods, Good, HSG C
27,573	73	Weighted Average
27,573		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1600	0.44		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.4	136	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	236	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 21S: Main Road

Runoff = 0.85 cfs @ 11.97 hrs, Volume= 0.043 af, Depth= 4.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	3,330	98	Paved
	1,244	74	>75% Grass cover, Good, HSG C
	4,574	91	Weighted Average
	1,244		27.20% Pervious Area
	3,330		72.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0610	2.40		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	169	0.0610	5.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	269	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 22S: Main Road

Runoff = 3.44 cfs @ 11.97 hrs, Volume= 0.176 af, Depth= 4.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	13,274	98	Paved
	5,332	74	>75% Grass cover, Good, HSG C
	18,606	91	Weighted Average
	5,332		28.66% Pervious Area
	13,274		71.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0630	2.43		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.7	161	0.0311	3.58		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
1.4	261	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 23S: 18 fairway

Runoff = 4.04 cfs @ 11.98 hrs, Volume= 0.194 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	1,549	74	>75% Grass cover, Good, HSG C
*	3,090	74	Porous Pavement
*	27,280	74	Fairway/Tee/Green, Good, HSG C
	31,919	74	Weighted Average
	31,919		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0640	0.30		**Sheet Flow,**
					Grass: Short n= 0.150 P2= 4.00"
0.7	73	0.0640	1.77		**Shallow Concentrated Flow,**
					Short Grass Pasture Kv= 7.0 fps
0.6	114	0.0100	3.17	7.92	**Trap/Vee/Rect Channel Flow,**
					Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00'
					n= 0.033 Earth, grassed & winding
6.8	287	Total			

Summary for Subcatchment 24S: Fairway of 10 & 18

Runoff = 22.94 cfs @ 11.97 hrs, Volume= 1.074 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	23,070	74	>75% Grass cover, Good, HSG C
	6,012	70	Woods, Good, HSG C
*	8,530	74	Porous Pavement
*	138,653	74	Fairway/Tee/Green, Good, HSG C
	176,265	74	Weighted Average
	176,265		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0800	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.9	152	0.0054	2.69	13.44	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.00' Z= 1.0 '/' Top.W=6.00' n= 0.033 Earth, grassed & winding
5.9	252	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 25S: E. end Main Road

Runoff = 0.70 cfs @ 11.97 hrs, Volume= 0.036 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	2,740	98	Paved
	1,011	74	>75% Grass cover, Good, HSG C
	3,751	92	Weighted Average
	1,011		26.95% Pervious Area
	2,740		73.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0700	2.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	127	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	227	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 26S: E. end Main Road

Runoff = 0.68 cfs @ 11.97 hrs, Volume= 0.035 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	2,740	98	Paved
	905	74	>75% Grass cover, Good, HSG C
	3,645	92	Weighted Average
	905		24.83% Pervious Area
	2,740		75.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0700	2.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	126	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	226	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 27b: E. end Main Road

Runoff = 0.74 cfs @ 11.97 hrs, Volume= 0.039 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	2,930	98	Paved
	1,046	74	>75% Grass cover, Good, HSG C
	3,976	92	Weighted Average
	1,046		26.31% Pervious Area
	2,930		73.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1250	3.20		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	140	0.1250	7.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	240	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 28a: E. end Main Road

Runoff = 0.76 cfs @ 11.97 hrs, Volume= 0.039 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	3,090	98	Paved
	970	74	>75% Grass cover, Good, HSG C
	4,060	92	Weighted Average
	970		23.89% Pervious Area
	3,090		76.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1170	3.12		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	156	0.1170	6.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	256	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 30S: E. end Main Road

Runoff = 0.51 cfs @ 11.97 hrs, Volume= 0.026 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	2,010	98	Paved
	709	74	>75% Grass cover, Good, HSG C
	2,719	92	Weighted Average
	709		26.08% Pervious Area
	2,010		73.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1290	3.24		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.1	63	0.1290	7.29		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	163	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 31S: E. end Main Road

Runoff = 0.54 cfs @ 11.97 hrs, Volume= 0.028 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	2,160	98	Paved
	749	74	>75% Grass cover, Good, HSG C
	2,909	92	Weighted Average
	749		25.75% Pervious Area
	2,160		74.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1190	3.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.2	77	0.1190	7.00		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	177	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 32S: E. end Main Road

Runoff = 0.67 cfs @ 11.97 hrs, Volume= 0.035 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	2,640	98	Paved
	941	74	>75% Grass cover, Good, HSG C
	3,581	92	Weighted Average
	941		26.28% Pervious Area
	2,640		73.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1270	3.22		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	112	0.1270	7.23		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	212	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 33S: E. end Main Road

Runoff = 0.70 cfs @ 11.97 hrs, Volume= 0.036 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	2,780	98	Paved
	956	74	>75% Grass cover, Good, HSG C
	3,736	92	Weighted Average
	956		25.59% Pervious Area
	2,780		74.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1170	3.12		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	130	0.1170	6.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	230	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 35a: E. end Main Road

Runoff = 0.61 cfs @ 11.97 hrs, Volume= 0.031 af, Depth= 4.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	2,400	98	Paved
	908	74	>75% Grass cover, Good, HSG C
	3,308	91	Weighted Average
	908		27.45% Pervious Area
	2,400		72.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1220	3.17		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.2	96	0.1220	7.09		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	196	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 35S: Subcatchment 35

Runoff = 37.18 cfs @ 12.15 hrs, Volume= 2.950 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	122,752	71	Meadow, non-grazed, HSG C
*	6,708	98	Paved Road
	393,477	70	Woods, Good, HSG C
*	9,104	98	Roof
	532,041	71	Weighted Average
	516,229		97.03% Pervious Area
	15,812		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	120	0.1667	0.52		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.5	230	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	50	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
9.3	1,470	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
22.0	3,110	Total			

Summary for Subcatchment 36S: E. end Main Road

Runoff = 0.60 cfs @ 11.97 hrs, Volume= 0.031 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	2,400	98	Paved
	804	74	>75% Grass cover, Good, HSG C
	3,204	92	Weighted Average
	804		25.09% Pervious Area
	2,400		74.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1210	3.16		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.2	98	0.1210	7.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	198	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 37S: E. end Main Road

Runoff = 0.82 cfs @ 11.97 hrs, Volume= 0.042 af, Depth= 4.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	3,200	98	Paved
	1,247	74	>75% Grass cover, Good, HSG C
	4,447	91	Weighted Average
	1,247		28.04% Pervious Area
	3,200		71.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0620	2.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.5	143	0.0620	5.05		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	243	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 38S: E. end Main Road

Runoff = 0.67 cfs @ 11.97 hrs, Volume= 0.035 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	2,730	98	Paved
	839	74	>75% Grass cover, Good, HSG C
	3,569	92	Weighted Average
	839		23.51% Pervious Area
	2,730		76.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0720	2.57		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	107	0.0720	5.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	207	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 41S: W. end of Main Road

Runoff = 1.50 cfs @ 11.97 hrs, Volume= 0.084 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	7,632	98	Paved
	7,632		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0467	2.16		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.9	190	0.0320	3.63		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
1.7	290	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 42S: W. end of Main Road

Runoff = 1.38 cfs @ 11.97 hrs, Volume= 0.077 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	7,012	98	Paved
	7,012		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0467	2.16		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.9	183	0.0300	3.52		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
1.7	283	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 43S: W. end of Main Road

Runoff = 0.73 cfs @ 11.97 hrs, Volume= 0.038 af, Depth= 5.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	3,000	98	Paved
	858	74	>75% Grass cover, Good, HSG C
	3,858	93	Weighted Average
	858		22.24% Pervious Area
	3,000		77.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1200	3.15		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.4	144	0.1110	6.76		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
0.9	244	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 44S: W. end of Main Road

Runoff = 0.70 cfs @ 11.97 hrs, Volume= 0.037 af, Depth= 5.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	3,000	98	Paved
	652	74	>75% Grass cover, Good, HSG C
	3,652	94	Weighted Average
	652		17.85% Pervious Area
	3,000		82.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1200	3.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	139	0.1150	6.88		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	239	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 45S: Hole 1

Runoff = 49.96 cfs @ 12.00 hrs, Volume= 2.579 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	29,365	70	Woods, Good, HSG C
	168,858	74	>75% Grass cover, Good, HSG C
*	16,666	74	Porous Pavement
*	208,438	74	Fairway/Tee/Green, Good, HSG C
	423,327	74	Weighted Average
	423,327		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0500	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.2	208	0.1830	2.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	888	0.0690	10.54	55.33	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
8.7	1,196	Total			

Summary for Subcatchment 50S: W. end of Main Rd.

Runoff = 0.77 cfs @ 11.97 hrs, Volume= 0.043 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	3,930	98	Paved
	3,930		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1140	3.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.5	193	0.1140	6.85		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	293	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 51S: W. end of Main Rd.

Runoff = 2.62 cfs @ 11.97 hrs, Volume= 0.124 af, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	3,600	98	Paved
	8,603	74	>75% Grass cover, Good, HSG C
*	5,464	74	Fairway/Tee/Green, Good, HSG C
	17,667	79	Weighted Average
	14,067		79.62% Pervious Area
	3,600		20.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	86	0.1400	0.40		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.1	14	0.1140	2.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	261	0.1150	6.88		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3	361	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 52S: W. end of Main Rd.

Runoff = 1.38 cfs @ 11.97 hrs, Volume= 0.065 af, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	7,193	74	>75% Grass cover, Good, HSG C
*	1,536	98	Paved
*	816	74	Porous Pavement
	9,545	78	Weighted Average
	8,009		83.91% Pervious Area
	1,536		16.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	40	0.4000	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.5	60	0.0500	2.00		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	220	0.0820	5.81		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	320	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 53S: W. end of Main Rd.

Runoff = 2.78 cfs @ 11.97 hrs, Volume= 0.132 af, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	6,647	74	>75% Grass cover, Good, HSG C
*	3,490	98	Paved
*	4,753	74	Porous Pavement
*	4,360	74	Fairway/Tee/Green, Good, HSG C
	19,250	78	Weighted Average
	15,760		81.87% Pervious Area
	3,490		18.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	40	0.0750	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.4	60	0.0670	2.25		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.8	236	0.0660	5.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.7	336	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 54S: Golf Course Parking

Runoff = 12.83 cfs @ 12.00 hrs, Volume= 0.656 af, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	17,600	98	Paved
	67,503	74	>75% Grass cover, Good, HSG C
*	10,730	74	Porous Pavement
	95,833	78	Weighted Average
	78,233		81.63% Pervious Area
	17,600		18.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	27	0.0760	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.3	33	0.0450	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.7	40	0.0625	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.7	434	0.1470	2.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	188	0.0430	4.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.2	722	Total			

Summary for Subcatchment 55S: Golf Course Parking

Runoff = 2.86 cfs @ 11.97 hrs, Volume= 0.148 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	3,030	74	>75% Grass cover, Good, HSG C
*	11,425	98	Paved
*	815	74	Porous Pavement
	15,270	92	Weighted Average
	3,845		25.18% Pervious Area
	11,425		74.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0330	1.88		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	159	0.0390	4.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	259	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 56S: Main Rd. to 6 & 7

Runoff = 2.61 cfs @ 11.97 hrs, Volume= 0.123 af, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	13,240	74	>75% Grass cover, Good, HSG C
*	3,160	98	Paved
*	1,620	74	Porous Pavement
	18,020	78	Weighted Average
	14,860		82.46% Pervious Area
	3,160		17.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0170	1.44		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.5	145	0.0480	4.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	245	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 57S: Main Rd. 6 & 7

Runoff = 0.93 cfs @ 11.97 hrs, Volume= 0.049 af, Depth= 5.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	4,049	98	Paved
	831	74	>75% Grass cover, Good, HSG C
	4,880	94	Weighted Average
	831		17.03% Pervious Area
	4,049		82.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0160	1.41		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	137	0.0292	3.47		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	237	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 59S: Club House

Runoff = 1.42 cfs @ 11.97 hrs, Volume= 0.080 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	7,222	98	Roof
	7,222		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 60S: Roof Terraces

Runoff = 8.28 cfs @ 11.97 hrs, Volume= 0.445 af, Depth= 5.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	36,970	98	Roof
*	5,980	74	Fairway/Tee/Green, Good, HSG C
	42,950	95	Weighted Average
	5,980		13.92% Pervious Area
	36,970		86.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 62S: Green of 18

Runoff = 7.77 cfs @ 12.00 hrs, Volume= 0.393 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	2,744	74	>75% Grass cover, Good, HSG C
*	2,600	74	Porous Pavement
*	59,100	74	Fairway/Tee/Green, Good, HSG C
	64,444	74	Weighted Average
	64,444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.0350	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.6	78	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	255	0.0512	9.08	47.66	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
8.1	433	Total			

Summary for Subcatchment 63S: Front end of Driving Range

Runoff = 22.92 cfs @ 12.06 hrs, Volume= 1.446 af, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	75,560	74	>75% Grass cover, Good, HSG C
	16,416	70	Woods, Good, HSG C
	15,620	98	Water Surface, 0% imp, HSG C
*	121,724	74	Fairway/Tee/Green, Good, HSG C
	642	98	Paved parking, HSG C
	319	98	Roofs, HSG C
	230,281	75	Weighted Average
	229,320		99.58% Pervious Area
	961		0.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
5.7	496	0.0430	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	297	0.0330	7.29	38.26	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
14.4	893	Total			

Summary for Subcatchment 65S: Driveway to Golf House

Runoff = 2.96 cfs @ 11.97 hrs, Volume= 0.146 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	5,721	74	>75% Grass cover, Good, HSG C
*	8,740	98	Paved
*	2,800	74	Porous Pavement
	17,261	86	Weighted Average
	8,521		49.37% Pervious Area
	8,740		50.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0350	1.92		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	199	0.0830	4.64		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.6	299	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 80S: existing woods

Runoff = 15.63 cfs @ 11.97 hrs, Volume= 0.730 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	62,404	74	>75% Grass cover, Good, HSG C
	46,340	70	Woods, Good, HSG C
*	3,190	74	Porous Pavement
*	11,666	74	Fairway/Tee/Green, Good, HSG C
	123,600	73	Weighted Average
	123,600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1600	0.44		**Sheet Flow, sheet** Grass: Short n= 0.150 P2= 4.00"
0.3	90	0.1300	5.41		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	410	0.0350	6.38	76.58	**Channel Flow,** Area= 12.0 sf Perim= 21.0' r= 0.57' n= 0.030 Earth, grassed & winding
5.2	600	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 137S: BEHIND GARAGE

Runoff = 3.51 cfs @ 12.00 hrs, Volume= 0.175 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
10,210	74	>75% Grass cover, Good, HSG C
21,275	70	Woods, Good, HSG C
31,485	71	Weighted Average
31,485		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	97	0.2500	0.24		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.0	280	0.0180	4.68	11.69	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00' n= 0.030 Earth, grassed & winding
7.8	377	Total			

Summary for Subcatchment 200S: Subcatchment 200

Runoff = 214.98 cfs @ 12.17 hrs, Volume= 17.862 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	14,331	98	Paved Road
	311,323	71	Meadow, non-grazed, HSG C
	3,002,765	70	Woods, Good, HSG C
	3,328,419	70	Weighted Average
	3,314,088		99.57% Pervious Area
	14,331		0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	100	0.1667	0.50		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.4	215	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	70	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
11.1	1,760	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	160	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
23.5	3,545	Total			

Summary for Subcatchment 201S: Tees of 18 & Greens of 10

Runoff = 23.27 cfs @ 11.97 hrs, Volume= 1.089 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	64,007	74	>75% Grass cover, Good, HSG C
*	12,310	74	Porous Pavement
*	86,820	74	Fairway/Tee/Green, Good, HSG C
	15,640	70	Woods, Good, HSG C
	178,777	74	Weighted Average
	178,777		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1658	0.44		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.5	93	0.1658	2.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	232	0.0948	13.87	114.45	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.033 Earth, grassed & winding
4.6	425	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 211S: Back End of the Driving Range

Runoff = 27.92 cfs @ 11.97 hrs, Volume= 1.310 af, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	61,458	74	>75% Grass cover, Good, HSG C
*	5,760	98	Porous Pavement
*	141,430	74	Fairway/Tee/Green, Good, HSG C
	208,648	75	Weighted Average
	202,888		97.24% Pervious Area
	5,760		2.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.3	40	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	765	0.1390	14.96	78.53	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
5.8	905	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 212S: Green of 13

Runoff = 8.89 cfs @ 11.97 hrs, Volume= 0.416 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	9,320	74	>75% Grass cover, Good, HSG C
*	1,810	74	Porous Pavement
*	57,180	74	Fairway/Tee/Green, Good, HSG C
	68,310	74	Weighted Average
	68,310		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.3	119	0.0336	7.35	38.61	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
4.9	219	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 213S: Hole 16

Runoff = 21.88 cfs @ 12.03 hrs, Volume= 1.261 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	45,442	74	>75% Grass cover, Good, HSG C
*	8,230	74	Porous Pavement
*	127,890	74	Fairway/Tee/Green, Good, HSG C
	13,418	98	Water Surface, 0% imp, HSG C
	194,980	76	Weighted Average
	194,980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0118	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.9	590	0.0576	10.81	89.21	**Trap/Vee/Rect Channel Flow, Turf Reinforcement Mat** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.033 Earth, grassed & winding
11.7	690	Total			

Summary for Subcatchment 214S: Tees of 13

Runoff = 20.28 cfs @ 11.98 hrs, Volume= 0.963 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	36,885	74	>75% Grass cover, Good, HSG C
*	9,000	74	Porous Pavement
*	112,185	74	Fairway/Tee/Green, Good, HSG C
	158,070	74	Weighted Average
	158,070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0600	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.7	527	0.0700	11.92	98.35	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.033 Earth, grassed & winding
0.0	20	0.0200	13.34	94.33	**Pipe Channel,** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
0.1	110	0.1500	17.45	143.97	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00'

n= 0.033 Earth, grassed & winding		
6.4	757	Total

Summary for Subcatchment 218S: Green of 12, Tee of 13

Runoff = 12.14 cfs @ 11.98 hrs, Volume= 0.587 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	40,598	74	>75% Grass cover, Good, HSG C
*	4,120	74	Porous Pavement
*	51,700	74	Fairway/Tee/Green, Good, HSG C
	96,418	74	Weighted Average
	96,418		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0800	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.7	200	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	167	0.1205	17.20	141.94	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.030 Earth, grassed & winding
6.9	467	Total			

Summary for Subcatchment 219S: Green of 11

Runoff = 10.28 cfs @ 11.97 hrs, Volume= 0.481 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	37,165	74	>75% Grass cover, Good, HSG C
*	6,050	74	Porous Pavement
*	35,770	74	Fairway/Tee/Green, Good, HSG C
	78,985	74	Weighted Average
	78,985		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0130	1.29		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	108	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	198	0.0550	10.57	87.18	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.033 Earth, grassed & winding
2.0	406	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 220S: Fairway of 11

Runoff = 29.39 cfs @ 12.04 hrs, Volume= 1.719 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	76,630	74	>75% Grass cover, Good, HSG C
	34,383	70	Woods, Good, HSG C
*	16,925	74	porous paving
*	146,470	74	Fairway/Tee/Green, Good, HSG C
	7,780	98	Water Surface, HSG C
	282,188	74	Weighted Average
	274,408		97.24% Pervious Area
	7,780		2.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.1200	0.39		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 4.00"
7.7	627	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	142	0.1270	15.73	82.57	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.030 Earth, grassed & winding
12.2	869	Total			

Summary for Subcatchment 223S: Golf Hole 15 and Maintenance Bldg.

Runoff = 27.22 cfs @ 11.97 hrs, Volume= 1.284 af, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	16,393	70	Woods, Good, HSG C
	84,076	74	>75% Grass cover, Good, HSG C
*	7,663	98	Roof
*	62,572	74	Fairway/Tee/Green, Good, HSG C
*	5,950	74	Porous Pavement
	16,303	98	Paved parking, HSG C
	192,957	77	Weighted Average
	168,991		87.58% Pervious Area
	23,966		12.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	30	0.1000	2.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.2	70	0.3000	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.5	233	0.1460	2.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	68	0.0200	5.67	29.79	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
4.1	401	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 225S: Fairway 14

Runoff = 24.34 cfs @ 11.97 hrs, Volume= 1.139 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	55,496	74	>75% Grass cover, Good, HSG C
*	7,480	74	Porous Pavement
*	124,042	74	Fairway/Tee/Green, Good, HSG C
	187,018	74	Weighted Average
	187,018		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.1800	0.46		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.1	147	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	284	0.0560	9.49	49.84	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
5.2	531	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 226S: Fairway & Green of 14

Runoff = 14.15 cfs @ 11.97 hrs, Volume= 0.662 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	28,724	74	>75% Grass cover, Good, HSG C
*	7,290	74	Porous Pavement
*	72,670	74	Fairway/Tee/Green, Good, HSG C
	108,684	74	Weighted Average
	108,684		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	100	0.3100	0.57		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.8	225	0.0840	2.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	100	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	43	0.0470	1.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	468	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 300S: Subcatchment 300

Runoff = 49.32 cfs @ 12.14 hrs, Volume= 3.824 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	3,267	98	Paved Road
	6,447	71	Meadow, non-grazed, HSG C
	702,884	70	Woods, Good, HSG C
	712,598	70	Weighted Average
	709,331		99.54% Pervious Area
	3,267		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	120	0.2500	0.25		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.7	1,810	0.2257	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	110	0.0910	12.13	48.50	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030

21.0	2,040	Total

Summary for Subcatchment 301S: Ex Stream

Runoff = 11.22 cfs @ 11.97 hrs, Volume= 0.523 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	46,362	70	Woods, Good, HSG C
	43,672	74	>75% Grass cover, Good, HSG C
*	1,350	74	Porous Pavement
	91,384	72	Weighted Average
	91,384		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	100	0.2100	0.49		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.4	51	0.0988	2.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	118	0.1610	2.01		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	228	0.1140	10.19	50.95	**Trap/Vee/Rect Channel Flow, Ex Stream** Bot.W=4.00' D=1.00' Z= 1.0 '/' Top.W=6.00' n= 0.040 Mountain streams
5.2	497	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 302a: New Subcatch

Runoff = 17.41 cfs @ 11.99 hrs, Volume= 0.861 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
67,296	71	Meadow, non-grazed, HSG C
65,469	70	Woods, Good, HSG C
22,432	74	>75% Grass cover, Good, HSG C
155,197	71	Weighted Average
155,197		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.3800	0.28		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.7	318	0.3800	3.08		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.6	418	Total			

Summary for Subcatchment 302b: New Subcatch

Runoff = 17.38 cfs @ 12.01 hrs, Volume= 0.902 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
61,357	71	Meadow, non-grazed, HSG C
45,086	70	Woods, Good, HSG C
51,075	74	>75% Grass cover, Good, HSG C
157,518	72	Weighted Average
157,518		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0400	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.2	285	0.3400	4.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	600	0.0820	9.48	49.76	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.040 Earth, cobble bottom, clean sides
8.9	985	Total			

Summary for Subcatchment 302S: (new Subcat)

Runoff = 21.55 cfs @ 11.98 hrs, Volume= 1.003 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	46,647	71	Meadow, non-grazed, HSG C
	139,008	70	Woods, Good, HSG C
*	1,180	74	Paved (porous)
	186,835	70	Weighted Average
	186,835		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1600	0.44		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.2	43	0.1860	3.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	871	0.0600	9.83	51.59	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
5.5	1,014	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 303S: Subcatchment 303

Runoff = 27.61 cfs @ 12.01 hrs, Volume= 1.438 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	145,514	70	Woods, Good, HSG C
*	9,520	74	Porous Pavement
	72,299	74	>75% Grass cover, Good, HSG C
*	23,715	74	Fairway/Tee/Green, Good, HSG C
	251,048	72	Weighted Average
	251,048		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	20	0.0800	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.2	86	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	670	0.0850	12.87	67.55	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.030 Earth, grassed & winding
4.9	358	0.0170	1.22	21.30	**Trap/Vee/Rect Channel Flow, ex wetland flow** Bot.W=10.00' D=0.50' Z= 50.0 '/' Top.W=60.00' n= 0.070 Sluggish weedy reaches w/pools
0.6	316	0.0450	9.45	132.34	**Trap/Vee/Rect Channel Flow, ex wetland ditch** Bot.W=5.00' D=2.00' Z= 1.0 '/' Top.W=9.00' n= 0.040 Earth, cobble bottom, clean sides
9.0	1,450	Total			

Summary for Subcatchment 304: (new Subcat)

Runoff = 14.53 cfs @ 12.16 hrs, Volume= 1.179 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	1,900	74	Porous Pavement
	136,810	70	Woods, Good, HSG C
	73,912	74	>75% Grass cover, Good, HSG C
	212,622	71	Weighted Average
	212,622		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.3300	0.27		**Sheet Flow,**
					Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	112	0.3300	2.87		**Shallow Concentrated Flow,**
					Woodland Kv= 5.0 fps
1.2	70	0.0400	1.00		**Shallow Concentrated Flow,**
					Woodland Kv= 5.0 fps
14.5	436	0.0400	0.50		**Shallow Concentrated Flow,**
					Forest w/Heavy Litter Kv= 2.5 fps
0.1	145	0.2500	17.04	1,294.48	**Trap/Vee/Rect Channel Flow, overland**
					Bot.W=50.00' D=0.83' Z= 50.0 '/' Top.W=133.00'
					n= 0.030 Earth, grassed & winding
22.7	863	Total			

Summary for Subcatchment 305s: Land W. side of hotel

Runoff = 18.26 cfs @ 12.00 hrs, Volume= 0.916 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	125,900	74	>75% Grass cover, Good, HSG C
*	7,690	74	Porous Pavement
*	16,700	74	Fairway/Tee/Green, Good, HSG C
	150,290	74	Weighted Average
	150,290		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	100	0.3000	0.56		**Sheet Flow,**
					Grass: Short n= 0.150 P2= 4.00"
4.0	650	0.1500	2.71		**Shallow Concentrated Flow,**
					Short Grass Pasture Kv= 7.0 fps
0.9	215	0.0100	4.01	21.06	**Trap/Vee/Rect Channel Flow,**
					Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00'
					n= 0.033 Earth, grassed & winding
7.9	965	Total			

Summary for Subcatchment 306S: 12 tee

Runoff = 23.24 cfs @ 11.99 hrs, Volume= 1.149 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	75,600	70	Woods, Good, HSG C
*	2,810	74	Porous Pavement
	20,790	74	>75% Grass cover, Good, HSG C
	108,004	71	Meadow, non-grazed, HSG C
	207,204	71	Weighted Average
	207,204		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0700	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.9	182	0.2200	3.28		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	550	0.0650	9.20	27.59	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=2.00' D=1.00' Z= 1.0 '/' Top.W=4.00' n= 0.030 Earth, grassed & winding
0.4	240	0.1600	11.19	72.20	**Trap/Vee/Rect Channel Flow, Ex Wetlnd channel** Bot.W=4.00' D=1.50' Z= 0.2 '/' Top.W=4.60' n= 0.050 Mountain streams w/large boulders
7.6	1,072	Total			

Summary for Subcatchment 307S: (new Subcat)

Runoff = 14.06 cfs @ 11.99 hrs, Volume= 0.700 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	13,050	74	Fairway/Tee/Green, Good, HSG C
*	10,840	74	Paved (Porous)
	24,084	74	>75% Grass cover, Good, HSG C
	74,350	70	Woods, Good, HSG C
	122,324	72	Weighted Average
	122,324		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	66	0.2000	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.1	130	0.0760	1.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	72	0.0350	4.77	14.31	**Trap/Vee/Rect Channel Flow, Grassed Swale** Bot.W=4.00' D=0.50' Z= 4.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
0.9	830	0.1100	14.87	111.53	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=2.00' D=1.50' Z= 2.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
7.8	1,098	Total			

Summary for Subcatchment 308S: (new Subcat)

Runoff = 24.15 cfs @ 12.14 hrs, Volume= 1.858 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
36,866	74	>75% Grass cover, Good, HSG C
309,380	70	Woods, Good, HSG C
346,246	70	Weighted Average
346,246		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0200	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.0	186	0.3800	1.54		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
2.6	220	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	150	0.0500	0.56		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
0.7	96	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	75	0.0600	0.61		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
0.1	109	0.1800	13.41	160.89	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.050 Mountain streams w/large boulders
20.7	936	Total			

Summary for Subcatchment 309S: (new Subcat)

Runoff = 30.81 cfs @ 12.05 hrs, Volume= 1.871 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	180,807	70	Woods, Good, HSG C
	103,518	74	>75% Grass cover, Good, HSG C
*	13,610	98	Paved
*	7,390	74	Porous Pavement
*	11,400	74	Fairway/Tee/Green, Good, HSG C
	316,725	73	Weighted Average
	303,115		95.70% Pervious Area
	13,610		4.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	72	0.0278	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
4.2	28	0.0714	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.2	549	0.3320	2.88		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.3	649	Total			

Summary for Subcatchment 310S: Existing Wooded Area

Runoff = 19.30 cfs @ 11.97 hrs, Volume= 0.900 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	107,476	70	Woods, Good, HSG C
*	7,355	98	Paved
	39,560	74	>75% Grass cover, Good, HSG C
*	2,820	74	Porous Pavement
	157,211	72	Weighted Average
	149,856		95.32% Pervious Area
	7,355		4.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.2500	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	434	0.1240	10.89	32.66	**Trap/Vee/Rect Channel Flow, ex. vegetated ditch** Bot.W=2.00' D=1.00' Z= 1.0 '/' Top.W=4.00' n= 0.035 Earth, dense weeds
4.1	474	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 311S: Existing Wooded Area

Runoff = 28.14 cfs @ 12.07 hrs, Volume= 1.789 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	103,137	74	>75% Grass cover, Good, HSG C
*	2,085	98	Paved
	205,167	70	Woods, Good, HSG C
*	2,000	74	Porous Pavement
	312,389	72	Weighted Average
	310,304		99.33% Pervious Area
	2,085		0.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0500	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.1	12	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.8	737	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	930	0.1180	9.10	47.75	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.050 Earth, cobble bottom, clean sides
14.7	1,779	Total			

Summary for Subcatchment 315S: Subcatchment 315

Runoff = 36.91 cfs @ 12.02 hrs, Volume= 2.015 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

Area (sf)	CN	Description
315,930	70	Woods, Good, HSG C
47,510	74	>75% Grass cover, Good, HSG C
363,440	71	Weighted Average
363,440		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.2200	0.23		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
2.9	482	0.3150	2.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.3	582	Total			

Summary for Subcatchment 316A: Existing By Maintenance Bldg.

Runoff = 3.16 cfs @ 11.98 hrs, Volume= 0.149 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
	17,032	70	Woods, Good, HSG C
*	2,919	98	Paved parking
	5,184	71	Meadow, non-grazed, HSG C
	25,135	73	Weighted Average
	22,216		88.39% Pervious Area
	2,919		11.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	100	0.4000	0.29		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	270	0.0800	11.83	29.57	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00' n= 0.025 Earth, clean & winding
6.2	370	Total			

Summary for Subcatchment 316S: existing

Runoff = 47.88 cfs @ 11.99 hrs, Volume= 2.350 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 Year Rainfall=6.00"

	Area (sf)	CN	Description
*	5,340	98	Paved
	361,425	70	Woods, Good, HSG C
	33,106	74	>75% Grass cover, Good, HSG C
*	5,210	74	Porous Pavement
*	18,632	74	Fairway/Tee/Green, Good, HSG C
	423,713	71	Weighted Average
	418,373		98.74% Pervious Area
	5,340		1.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	77	0.3120	0.25		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
2.2	867	0.0280	6.71	35.25	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
7.4	944	Total			

Summary for Reach 1R: overland flow

Inflow Area = 9.767 ac, 36.32% Impervious, Inflow Depth = 4.11" for 10 Year event
Inflow = 65.37 cfs @ 11.97 hrs, Volume= 3.343 af
Outflow = 65.36 cfs @ 11.98 hrs, Volume= 3.343 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.18 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.57 fps, Avg. Travel Time= 0.5 min

Peak Storage= 438 cf @ 11.98 hrs
Average Depth at Peak Storage= 1.35'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 136.22 cfs

3.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 75.0' Slope= 0.1733 '/'
Inlet Invert= 1,963.00', Outlet Invert= 1,950.00'

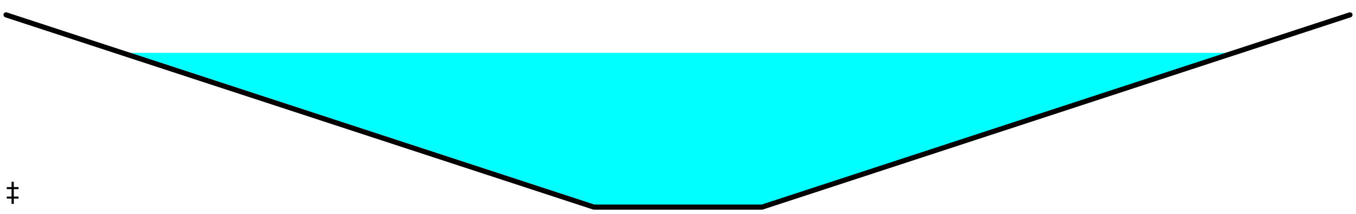
Summary for Reach 3: Rip Rap Channel

Inflow Area = 151.679 ac, 3.12% Impervious, Inflow Depth = 2.93" for 10 Year event
Inflow = 400.45 cfs @ 12.13 hrs, Volume= 36.972 af
Outflow = 400.45 cfs @ 12.13 hrs, Volume= 36.972 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 14.55 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.98 fps, Avg. Travel Time= 0.4 min

Peak Storage= 1,403 cf @ 12.13 hrs
Average Depth at Peak Storage= 1.20'
Bank-Full Depth= 1.50' Flow Area= 40.5 sf, Capacity= 672.04 cfs

6.00' x 1.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 14.0 '/' Top Width= 48.00'
Length= 51.0' Slope= 0.3922 '/'
Inlet Invert= 1,740.00', Outlet Invert= 1,720.00'



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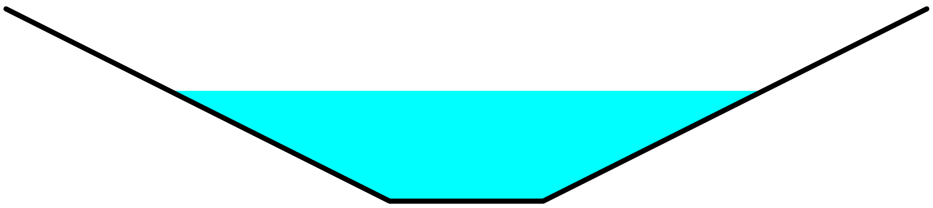
Summary for Reach 3R: Swale along RR Tracks

Inflow Area = 8.723 ac, 6.31% Impervious, Inflow Depth = 2.63" for 10 Year event
Inflow = 40.28 cfs @ 12.03 hrs, Volume= 1.913 af
Outflow = 36.82 cfs @ 12.07 hrs, Volume= 1.913 af, Atten= 9%, Lag= 2.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.27 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 1.54 fps, Avg. Travel Time= 11.3 min

Peak Storage= 7,296 cf @ 12.07 hrs
Average Depth at Peak Storage= 1.43'
Bank-Full Depth= 2.50' Flow Area= 17.5 sf, Capacity= 126.24 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 1,045.0' Slope= 0.0258 '/'
Inlet Invert= 1,768.00', Outlet Invert= 1,741.00'



Summary for Reach 5: Stream Channel

Inflow Area = 36.096 ac, 1.88% Impervious, Inflow Depth = 2.91" for 10 Year event
Inflow = 99.98 cfs @ 12.06 hrs, Volume= 8.747 af
Outflow = 99.97 cfs @ 12.06 hrs, Volume= 8.747 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 13.90 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.03 fps, Avg. Travel Time= 0.7 min

Peak Storage= 1,151 cf @ 12.06 hrs
Average Depth at Peak Storage= 1.14'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 1,318.86 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 160.0' Slope= 0.3000 '/'
Inlet Invert= 2,060.00', Outlet Invert= 2,012.00'

Summary for Reach 5A: Stream Channel

Inflow Area = 44.003 ac, 3.44% Impervious, Inflow Depth = 3.01" for 10 Year event
Inflow = 100.39 cfs @ 12.06 hrs, Volume= 11.055 af
Outflow = 100.31 cfs @ 12.06 hrs, Volume= 11.055 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.45 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.05 fps, Avg. Travel Time= 2.8 min

Peak Storage= 2,738 cf @ 12.06 hrs
Average Depth at Peak Storage= 1.24'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 1,130.92 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 340.0' Slope= 0.2206 '/'
Inlet Invert= 2,012.00', Outlet Invert= 1,937.00'

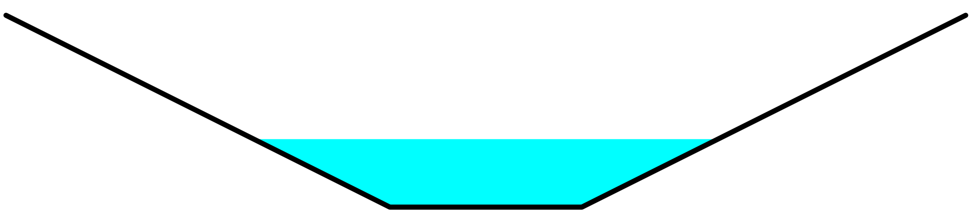
Summary for Reach 5B: Stream Channel

Inflow Area = 48.293 ac, 3.13% Impervious, Inflow Depth = 3.00" for 10 Year event
Inflow = 112.87 cfs @ 12.04 hrs, Volume= 12.058 af
Outflow = 112.86 cfs @ 12.04 hrs, Volume= 12.058 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.63 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.84 fps, Avg. Travel Time= 1.1 min

Peak Storage= 1,165 cf @ 12.04 hrs
Average Depth at Peak Storage= 1.42'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 983.02 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 120.0' Slope= 0.1667 '/'
Inlet Invert= 1,936.00', Outlet Invert= 1,916.00'



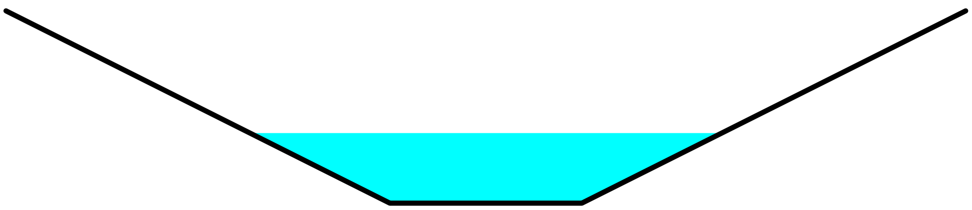
Summary for Reach 5C: Stream Channel

Inflow Area = 48.293 ac, 3.13% Impervious, Inflow Depth = 3.00" for 10 Year event
Inflow = 112.86 cfs @ 12.04 hrs, Volume= 12.058 af
Outflow = 112.75 cfs @ 12.05 hrs, Volume= 12.058 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.18 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.76 fps, Avg. Travel Time= 2.6 min

Peak Storage= 2,793 cf @ 12.05 hrs
Average Depth at Peak Storage= 1.46'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 932.02 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 277.0' Slope= 0.1498 '/'
Inlet Invert= 1,915.50', Outlet Invert= 1,874.00'



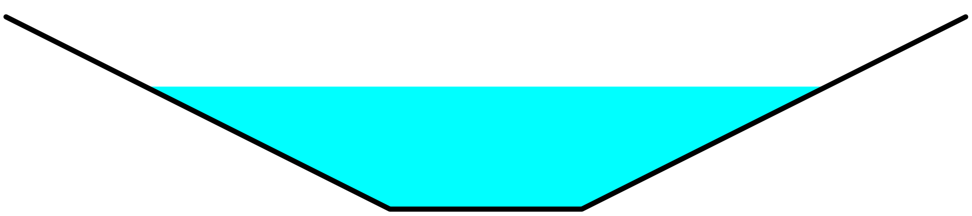
Summary for Reach 5D: Stream Channel

Inflow Area = 55.587 ac, 2.72% Impervious, Inflow Depth = 2.95" for 10 Year event
Inflow = 145.15 cfs @ 12.03 hrs, Volume= 13.669 af
Outflow = 145.06 cfs @ 12.03 hrs, Volume= 13.669 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 16.02 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.23 fps, Avg. Travel Time= 2.2 min

Peak Storage= 2,716 cf @ 12.03 hrs
Average Depth at Peak Storage= 1.59'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 385.96 cfs

2.50' x 2.50' deep channel, n= 0.040
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 300.0' Slope= 0.2017 '/'
Inlet Invert= 1,873.50', Outlet Invert= 1,813.00'



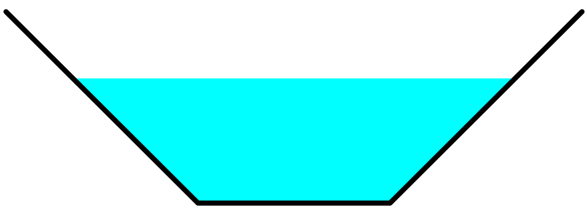
Summary for Reach 5R: roadside swale

Inflow Area = 4.919 ac, 12.29% Impervious, Inflow Depth = 2.97" for 10 Year event
Inflow = 27.29 cfs @ 12.00 hrs, Volume= 1.216 af
Outflow = 26.56 cfs @ 12.02 hrs, Volume= 1.216 af, Atten= 3%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.17 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.69 fps, Avg. Travel Time= 6.0 min

Peak Storage= 2,611 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.30'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 61.25 cfs

2.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 607.0' Slope= 0.0626 '/'
Inlet Invert= 2,122.00', Outlet Invert= 2,084.00'



Summary for Reach 6: (new Reach)

Inflow Area = 17.806 ac, 19.92% Impervious, Inflow Depth > 3.67" for 10 Year event
Inflow = 50.64 cfs @ 12.09 hrs, Volume= 5.439 af
Outflow = 50.63 cfs @ 12.10 hrs, Volume= 5.439 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.08 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 2.0 min

Peak Storage= 975 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.95'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 217.11 cfs

4.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 175.0' Slope= 0.1571 '/'
Inlet Invert= 1,937.50', Outlet Invert= 1,910.00'

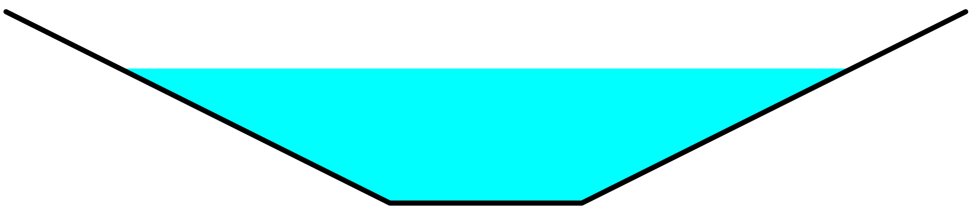
Summary for Reach 6R: Clean Swale

Inflow Area = 22.295 ac, 12.75% Impervious, Inflow Depth = 3.37" for 10 Year event
Inflow = 52.98 cfs @ 12.08 hrs, Volume= 6.265 af
Outflow = 52.93 cfs @ 12.08 hrs, Volume= 6.265 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.82 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.31 fps, Avg. Travel Time= 3.1 min

Peak Storage= 1,658 cf @ 12.08 hrs
Average Depth at Peak Storage= 1.41'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 114.21 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 245.0' Slope= 0.0327 '/'
Inlet Invert= 1,838.00', Outlet Invert= 1,830.00'



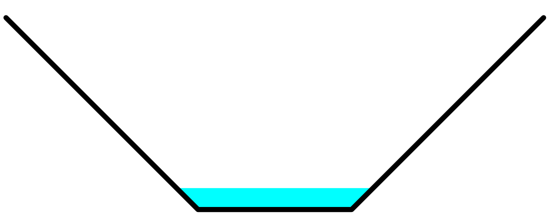
Summary for Reach 7B: Existing Ditch

Inflow Area = 0.577 ac, 11.61% Impervious, Inflow Depth = 3.09" for 10 Year event
Inflow = 3.16 cfs @ 11.98 hrs, Volume= 0.149 af
Outflow = 3.15 cfs @ 11.98 hrs, Volume= 0.149 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.96 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 1.6 min

Peak Storage= 79 cf @ 11.98 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 2.50' Flow Area= 11.3 sf, Capacity= 172.60 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 125.0' Slope= 0.1280 '/'
Inlet Invert= 1,896.00', Outlet Invert= 1,880.00'



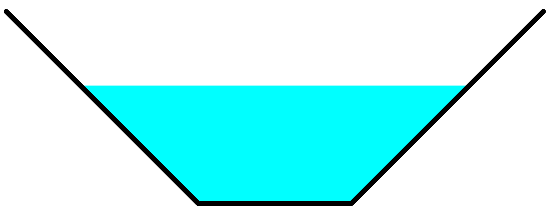
Summary for Reach 7C: Existing Ditch

Inflow Area = 12.538 ac, 1.97% Impervious, Inflow Depth = 2.86" for 10 Year event
Inflow = 51.95 cfs @ 12.03 hrs, Volume= 2.984 af
Outflow = 51.63 cfs @ 12.05 hrs, Volume= 2.984 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.52 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.85 fps, Avg. Travel Time= 3.1 min

Peak Storage= 2,874 cf @ 12.05 hrs
Average Depth at Peak Storage= 1.53'
Bank-Full Depth= 2.50' Flow Area= 11.3 sf, Capacity= 137.22 cfs

2.00' x 2.50' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 530.0' Slope= 0.1264 '/'
Inlet Invert= 1,880.00', Outlet Invert= 1,813.00'



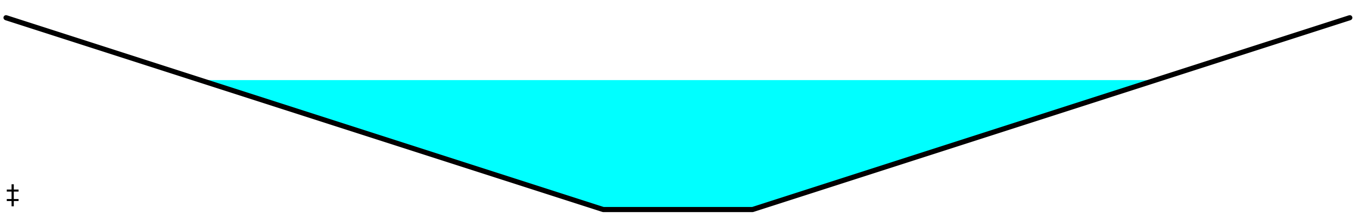
Summary for Reach 8: Stream Channel

Inflow Area = 71.735 ac, 2.69% Impervious, Inflow Depth = 2.94" for 10 Year event
Inflow = 210.46 cfs @ 12.03 hrs, Volume= 17.554 af
Outflow = 210.11 cfs @ 12.03 hrs, Volume= 17.554 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.42 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.19 fps, Avg. Travel Time= 3.4 min

Peak Storage= 6,114 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.67'
Bank-Full Depth= 1.00' Flow Area= 50.0 sf, Capacity= 532.84 cfs

10.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 40.0 '/' Top Width= 90.00'
Length= 245.0' Slope= 0.2816 '/'
Inlet Invert= 1,810.00', Outlet Invert= 1,741.00'



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Summary for Reach 9R: swale

Inflow Area = 0.723 ac, 0.00% Impervious, Inflow Depth = 2.90" for 10 Year event
Inflow = 3.51 cfs @ 12.00 hrs, Volume= 0.175 af
Outflow = 3.44 cfs @ 12.01 hrs, Volume= 0.175 af, Atten= 2%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.26 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.79 fps, Avg. Travel Time= 5.9 min

Peak Storage= 296 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 1.00' Flow Area= 2.5 sf, Capacity= 11.64 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.5 '/' Top Width= 3.00'
Length= 280.0' Slope= 0.0179 '/'
Inlet Invert= 2,225.00', Outlet Invert= 2,220.00'

Summary for Reach 11R: Overland Flow

Inflow Area = 20.182 ac, 13.31% Impervious, Inflow Depth = 3.40" for 10 Year event
Inflow = 49.69 cfs @ 12.02 hrs, Volume= 5.721 af
Outflow = 45.24 cfs @ 12.07 hrs, Volume= 5.721 af, Atten= 9%, Lag= 3.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.72 fps, Min. Travel Time= 4.7 min
Avg. Velocity = 0.43 fps, Avg. Travel Time= 29.5 min

Peak Storage= 12,651 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 90.0 sf, Capacity= 635.50 cfs

75.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 105.00'
Length= 760.0' Slope= 0.1776 '/'
Inlet Invert= 1,973.00', Outlet Invert= 1,838.00'

‡

Summary for Reach 12R: Overland Flow

Inflow Area = 2.112 ac, 7.43% Impervious, Inflow Depth = 3.09" for 10 Year event
Inflow = 8.78 cfs @ 12.06 hrs, Volume= 0.544 af
Outflow = 8.05 cfs @ 12.11 hrs, Volume= 0.544 af, Atten= 8%, Lag= 2.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.03 fps, Min. Travel Time= 4.8 min
Avg. Velocity = 0.52 fps, Avg. Travel Time= 18.8 min

Peak Storage= 2,336 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 312.77 cfs

30.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 60.00'
Length= 588.0' Slope= 0.2058 '/'
Inlet Invert= 1,959.00', Outlet Invert= 1,838.00'

‡

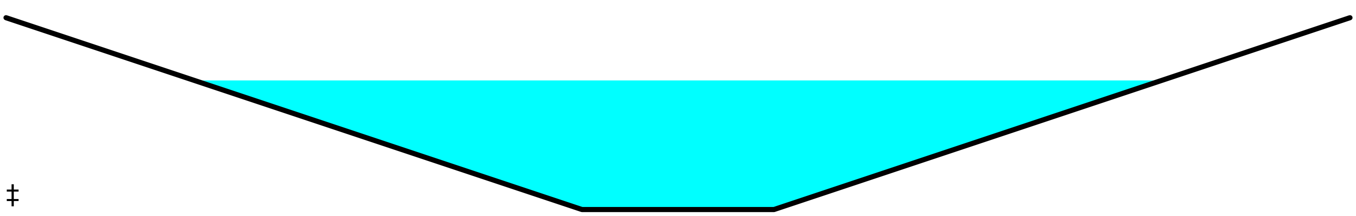
Summary for Reach 13: Channel at tracks

Inflow Area = 80.458 ac, 3.08% Impervious, Inflow Depth = 2.90" for 10 Year event
Inflow = 245.12 cfs @ 12.04 hrs, Volume= 19.466 af
Outflow = 244.13 cfs @ 12.05 hrs, Volume= 19.466 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.00 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 5.6 min

Peak Storage= 10,983 cf @ 12.05 hrs
Average Depth at Peak Storage= 2.02'
Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 604.81 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 4.0 '/' Top Width= 28.00'
Length= 450.0' Slope= 0.0444 '/'
Inlet Invert= 1,740.00', Outlet Invert= 1,720.00'



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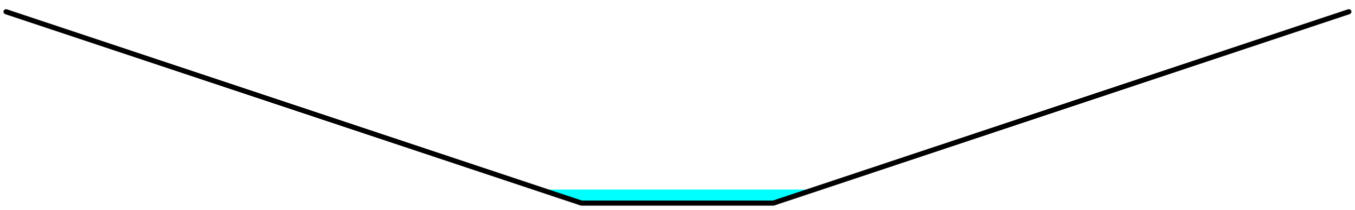
Summary for Reach 14R: Swale

Inflow Area = 0.986 ac, 86.08% Impervious, Inflow Depth = 4.74" for 10 Year event
Inflow = 1.53 cfs @ 12.14 hrs, Volume= 0.390 af
Outflow = 1.51 cfs @ 12.19 hrs, Volume= 0.390 af, Atten= 1%, Lag= 3.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.37 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 1.90 fps, Avg. Travel Time= 5.8 min

Peak Storage= 230 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 305.76 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 665.0' Slope= 0.1323 '/'
Inlet Invert= 2,108.00', Outlet Invert= 2,020.00'



Summary for Reach 15R: Cobble Stream

Inflow Area = 34.486 ac, 9.68% Impervious, Inflow Depth = 3.24" for 10 Year event
Inflow = 94.40 cfs @ 12.10 hrs, Volume= 9.306 af
Outflow = 94.37 cfs @ 12.10 hrs, Volume= 9.306 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.18 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.47 fps, Avg. Travel Time= 2.8 min

Peak Storage= 2,068 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.28'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 226.76 cfs

4.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 245.0' Slope= 0.1714 '/'
Inlet Invert= 1,830.00', Outlet Invert= 1,788.00'

Summary for Reach 40R: Swale

Inflow Area = 19.549 ac, 12.60% Impervious, Inflow Depth = 3.38" for 10 Year event
Inflow = 46.17 cfs @ 12.02 hrs, Volume= 5.511 af
Outflow = 46.16 cfs @ 12.02 hrs, Volume= 5.511 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.60 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 1.5 min

Peak Storage= 665 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.35'
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 106.53 cfs

2.50' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 10.50'
Length= 95.0' Slope= 0.0411 '/'
Inlet Invert= 1,983.90', Outlet Invert= 1,980.00'

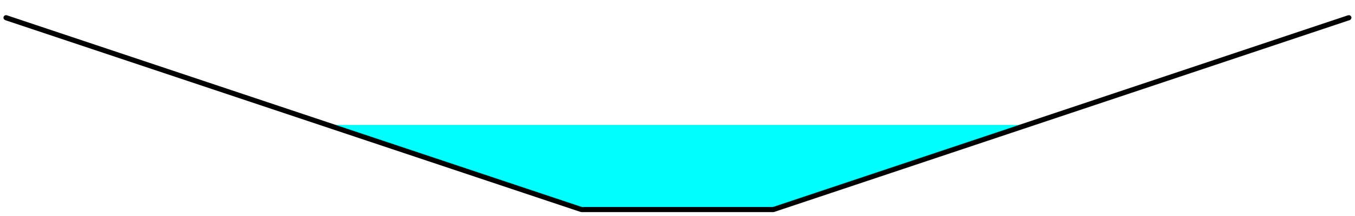
Summary for Reach 51R: Swale

Inflow Area = 5.219 ac, 37.72% Impervious, Inflow Depth = 3.98" for 10 Year event
Inflow = 26.57 cfs @ 11.98 hrs, Volume= 1.732 af
Outflow = 26.04 cfs @ 12.00 hrs, Volume= 1.732 af, Atten= 2%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.36 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.50 fps, Avg. Travel Time= 5.9 min

Peak Storage= 2,192 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.88'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 162.52 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 535.0' Slope= 0.0374 '/'
Inlet Invert= 2,020.00', Outlet Invert= 2,000.00'



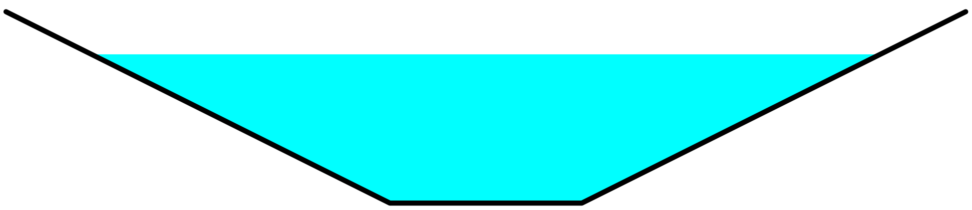
Summary for Reach 58a: Swale along RR Tracks

Inflow Area = 34.486 ac, 9.68% Impervious, Inflow Depth = 3.24" for 10 Year event
Inflow = 94.37 cfs @ 12.10 hrs, Volume= 9.306 af
Outflow = 93.85 cfs @ 12.12 hrs, Volume= 9.306 af, Atten= 1%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.56 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.13 fps, Avg. Travel Time= 8.0 min

Peak Storage= 6,740 cf @ 12.12 hrs
Average Depth at Peak Storage= 1.94'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 163.26 cfs

2.50' x 2.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 543.0' Slope= 0.0276 '/'
Inlet Invert= 1,788.00', Outlet Invert= 1,773.00'



Summary for Reach 63R: OVERLAND

Inflow Area = 2.621 ac, 30.94% Impervious, Inflow Depth = 3.95" for 10 Year event
Inflow = 16.55 cfs @ 11.98 hrs, Volume= 0.863 af
Outflow = 16.54 cfs @ 11.99 hrs, Volume= 0.863 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.43 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.88 fps, Avg. Travel Time= 1.1 min

Peak Storage= 247 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 448.14 cfs

5.00' x 2.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 1.0 '/' Top Width= 10.00'
Length= 126.0' Slope= 0.3595 '/'
Inlet Invert= 2,069.90', Outlet Invert= 2,024.60'

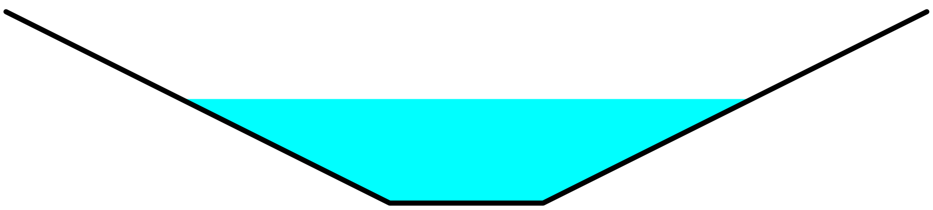
Summary for Reach 64R: Swale

Inflow Area = 7.908 ac, 10.53% Impervious, Inflow Depth = 3.50" for 10 Year event
Inflow = 14.13 cfs @ 12.22 hrs, Volume= 2.308 af
Outflow = 13.70 cfs @ 12.25 hrs, Volume= 2.308 af, Atten= 3%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.14 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.48 fps, Avg. Travel Time= 7.7 min

Peak Storage= 1,423 cf @ 12.25 hrs
Average Depth at Peak Storage= 1.36'
Bank-Full Depth= 2.50' Flow Area= 17.5 sf, Capacity= 52.71 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 222.0' Slope= 0.0045 '/'
Inlet Invert= 2,016.50', Outlet Invert= 2,015.50'



Summary for Reach 69R: Wetland Flow

Inflow Area = 3.450 ac, 0.00% Impervious, Inflow Depth = 3.18" for 10 Year event
Inflow = 18.26 cfs @ 12.00 hrs, Volume= 0.916 af
Outflow = 15.15 cfs @ 12.04 hrs, Volume= 0.916 af, Atten= 17%, Lag= 3.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.29 fps, Min. Travel Time= 6.3 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 29.1 min

Peak Storage= 5,733 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.50' Flow Area= 63.0 sf, Capacity= 172.83 cfs

76.00' x 0.50' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 100.0 '/' Top Width= 176.00'
Length= 487.0' Slope= 0.0657 '/'
Inlet Invert= 2,098.00', Outlet Invert= 2,066.00'

‡

Summary for Reach 197: Stream Channel

Inflow Area = 143.335 ac, 3.30% Impervious, Inflow Depth = 2.93" for 10 Year event
Inflow = 382.87 cfs @ 12.15 hrs, Volume= 34.957 af
Outflow = 382.59 cfs @ 12.16 hrs, Volume= 34.957 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 14.12 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.69 fps, Avg. Travel Time= 3.7 min

Peak Storage= 16,226 cf @ 12.16 hrs
Average Depth at Peak Storage= 1.17'
Bank-Full Depth= 6.00' Flow Area= 342.0 sf, Capacity= 12,139.60 cfs

15.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 7.0 '/' Top Width= 99.00'
Length= 599.0' Slope= 0.2763 '/'
Inlet Invert= 1,909.50', Outlet Invert= 1,744.00'

‡

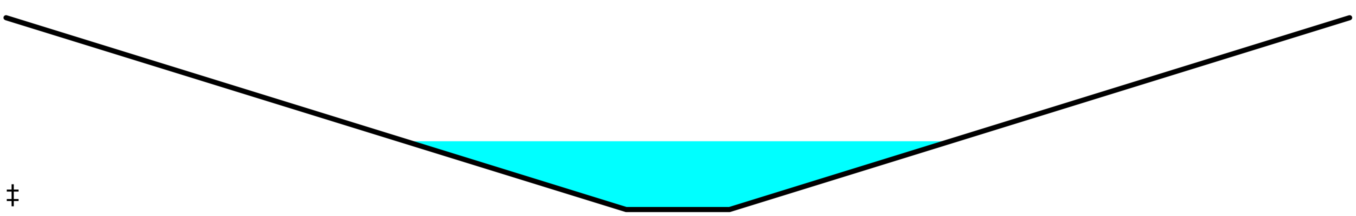
Summary for Reach 197A: Stream Channel

Inflow Area = 118.559 ac, 1.00% Impervious, Inflow Depth = 2.83" for 10 Year event
Inflow = 325.00 cfs @ 12.15 hrs, Volume= 27.923 af
Outflow = 324.49 cfs @ 12.16 hrs, Volume= 27.923 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.12 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 4.48 fps, Avg. Travel Time= 2.2 min

Peak Storage= 16,097 cf @ 12.16 hrs
Average Depth at Peak Storage= 2.14'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 3,783.36 cfs

4.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 601.0' Slope= 0.1248 '/'
Inlet Invert= 1,985.00', Outlet Invert= 1,910.00'



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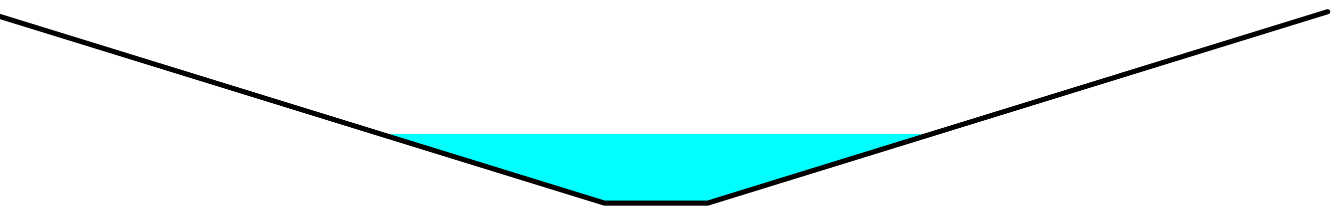
Summary for Reach 197B: Stream Channel

Inflow Area = 110.322 ac, 1.07% Impervious, Inflow Depth = 2.82" for 10 Year event
Inflow = 313.43 cfs @ 12.15 hrs, Volume= 25.924 af
Outflow = 313.29 cfs @ 12.16 hrs, Volume= 25.924 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.42 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 4.21 fps, Avg. Travel Time= 1.0 min

Peak Storage= 6,912 cf @ 12.16 hrs
Average Depth at Peak Storage= 2.17'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 3,537.94 cfs

4.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 252.0' Slope= 0.1091 '/'
Inlet Invert= 2,013.00', Outlet Invert= 1,985.50'



‡

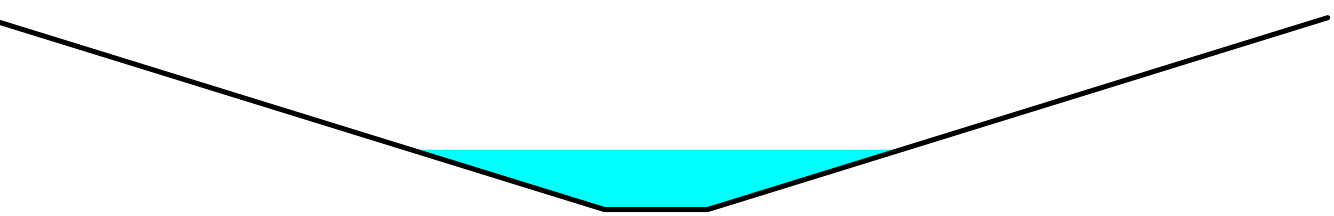
Summary for Reach 197C: Stream Channel

Inflow Area = 95.895 ac, 1.05% Impervious, Inflow Depth = 2.84" for 10 Year event
Inflow = 270.71 cfs @ 12.16 hrs, Volume= 22.684 af
Outflow = 270.52 cfs @ 12.17 hrs, Volume= 22.684 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.60 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.64 fps, Avg. Travel Time= 1.5 min

Peak Storage= 9,145 cf @ 12.17 hrs
Average Depth at Peak Storage= 1.87'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 4,247.34 cfs

4.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 426.0' Slope= 0.1573 '/'
Inlet Invert= 2,080.00', Outlet Invert= 2,013.00'



‡

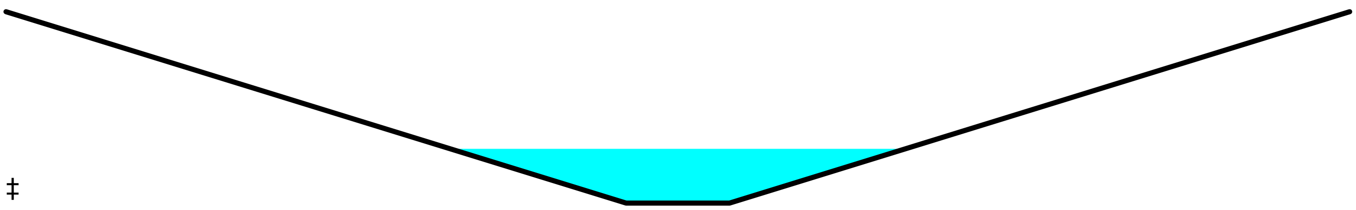
Summary for Reach 198: Stream Channel

Inflow Area = 88.624 ac, 0.78% Impervious, Inflow Depth = 2.82" for 10 Year event
Inflow = 251.95 cfs @ 12.17 hrs, Volume= 20.813 af
Outflow = 251.67 cfs @ 12.18 hrs, Volume= 20.813 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 13.71 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 5.11 fps, Avg. Travel Time= 1.4 min

Peak Storage= 7,656 cf @ 12.18 hrs
Average Depth at Peak Storage= 1.70'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 4,877.81 cfs

4.00' x 6.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 417.0' Slope= 0.2074 '/'
Inlet Invert= 2,168.00', Outlet Invert= 2,081.50'



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Summary for Reach 199: Overland Flow

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 2.90" for 10 Year event
Inflow = 37.18 cfs @ 12.15 hrs, Volume= 2.950 af
Outflow = 37.03 cfs @ 12.16 hrs, Volume= 2.950 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.34 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.27 fps, Avg. Travel Time= 3.3 min

Peak Storage= 2,133 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.50' Flow Area= 50.0 sf, Capacity= 451.81 cfs

50.00' x 0.50' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 100.0 '/' Top Width= 150.00'
Length= 250.0' Slope= 0.2560 '/'
Inlet Invert= 2,232.00', Outlet Invert= 2,168.00'

‡

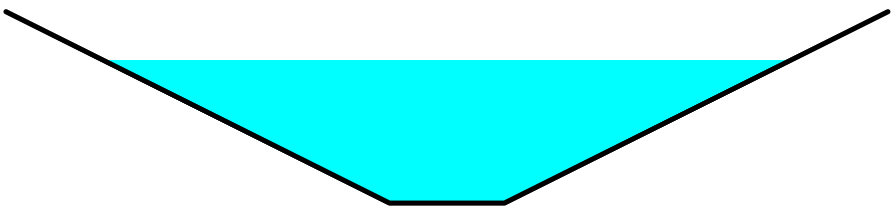
Summary for Reach 295: Roadside Channel

Inflow Area = 26.882 ac, 2.53% Impervious, Inflow Depth = 2.85" for 10 Year event
Inflow = 71.61 cfs @ 12.18 hrs, Volume= 6.394 af
Outflow = 71.55 cfs @ 12.18 hrs, Volume= 6.394 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.29 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.48 fps, Avg. Travel Time= 1.9 min

Peak Storage= 2,747 cf @ 12.18 hrs
Average Depth at Peak Storage= 1.87'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 140.40 cfs

1.50' x 2.50' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 11.50'
Length= 280.0' Slope= 0.0607 '/'
Inlet Invert= 2,083.00', Outlet Invert= 2,066.00'



Summary for Reach 296: Wetland Flow

Inflow Area = 21.963 ac, 0.34% Impervious, Inflow Depth = 2.83" for 10 Year event
Inflow = 63.88 cfs @ 12.18 hrs, Volume= 5.178 af
Outflow = 62.86 cfs @ 12.21 hrs, Volume= 5.178 af, Atten= 2%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.08 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 0.87 fps, Avg. Travel Time= 8.2 min

Peak Storage= 8,700 cf @ 12.21 hrs
Average Depth at Peak Storage= 1.01'
Bank-Full Depth= 2.00' Flow Area= 56.0 sf, Capacity= 251.85 cfs

12.00' x 2.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 8.0 '/' Top Width= 44.00'
Length= 427.0' Slope= 0.0328 '/'
Inlet Invert= 2,098.00', Outlet Invert= 2,084.00'

‡

Summary for Reach 297: Overland Flow

Inflow Area = 17.082 ac, 0.44% Impervious, Inflow Depth = 2.81" for 10 Year event
Inflow = 49.43 cfs @ 12.18 hrs, Volume= 3.999 af
Outflow = 49.40 cfs @ 12.18 hrs, Volume= 3.999 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.26 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.99 fps, Avg. Travel Time= 1.6 min

Peak Storage= 1,327 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 0.50' Flow Area= 27.5 sf, Capacity= 358.18 cfs

30.00' x 0.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 50.0 '/' Top Width= 80.00'
Length= 195.0' Slope= 0.2872 '/'
Inlet Invert= 2,170.00', Outlet Invert= 2,114.00'

‡

Summary for Reach 298: Wetland Flow

Inflow Area = 17.082 ac, 0.44% Impervious, Inflow Depth = 2.81" for 10 Year event
Inflow = 50.60 cfs @ 12.14 hrs, Volume= 3.999 af
Outflow = 49.43 cfs @ 12.18 hrs, Volume= 3.999 af, Atten= 2%, Lag= 2.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.15 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.56 fps, Avg. Travel Time= 12.1 min

Peak Storage= 9,398 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 150.0 sf, Capacity= 802.14 cfs

100.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 50.0 '/' Top Width= 200.00'
Length= 408.0' Slope= 0.0931 '/'
Inlet Invert= 2,208.00', Outlet Invert= 2,170.00'

‡

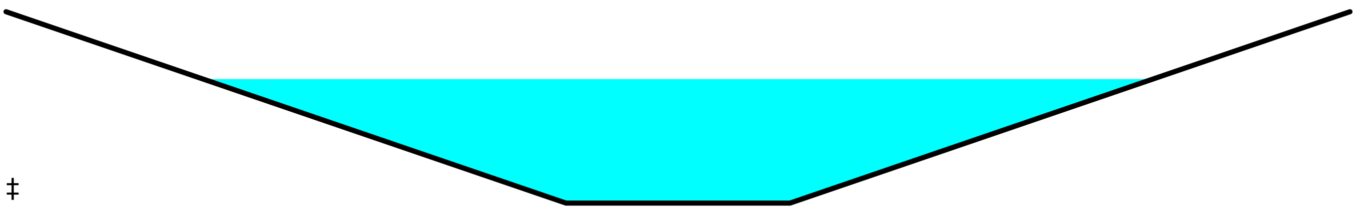
Summary for Reach 299: Overland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 2.81" for 10 Year event
Inflow = 49.32 cfs @ 12.14 hrs, Volume= 3.824 af
Outflow = 49.31 cfs @ 12.15 hrs, Volume= 3.824 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.81 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.10 fps, Avg. Travel Time= 1.1 min

Peak Storage= 1,146 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 130.57 cfs

10.00' x 0.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 50.0 '/' Top Width= 60.00'
Length= 135.0' Slope= 0.3259 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,208.00'



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Summary for Reach O3: Overland Flow

Inflow = 7.88 cfs @ 12.00 hrs, Volume= 0.085 af
Outflow = 7.72 cfs @ 12.01 hrs, Volume= 0.085 af, Atten= 2%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.86 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.69 fps, Avg. Travel Time= 4.3 min

Peak Storage= 480 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 0.25' Flow Area= 13.8 sf, Capacity= 78.90 cfs

30.00' x 0.25' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 100.0 '/' Top Width= 80.00'
Length= 178.0' Slope= 0.1404 '/'
Inlet Invert= 1,838.00', Outlet Invert= 1,813.00'

‡

Summary for Reach O4: Swale

Inflow = 7.72 cfs @ 12.01 hrs, Volume= 0.085 af
Outflow = 7.53 cfs @ 12.03 hrs, Volume= 0.085 af, Atten= 2%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.58 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.08 fps, Avg. Travel Time= 4.4 min

Peak Storage= 470 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 59.96 cfs

2.00' x 1.50' deep channel, n= 0.033 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 286.0' Slope= 0.0385 '/'
Inlet Invert= 1,810.00', Outlet Invert= 1,799.00'

Summary for Reach X1: Swale

Inflow Area = 2.495 ac, 0.00% Impervious, Inflow Depth = 2.34" for 10 Year event
Inflow = 13.49 cfs @ 11.99 hrs, Volume= 0.487 af
Outflow = 13.45 cfs @ 12.00 hrs, Volume= 0.487 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.74 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.79 fps, Avg. Travel Time= 1.9 min

Peak Storage= 399 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 153.60 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 200.0' Slope= 0.1050 '/'
Inlet Invert= 1,794.00', Outlet Invert= 1,773.00'

Summary for Pond 1P: Catch Basin/Culvert

Inflow Area = 1.239 ac, 57.09% Impervious, Inflow Depth = 4.63" for 10 Year event
Inflow = 8.48 cfs @ 12.01 hrs, Volume= 0.478 af
Outflow = 8.48 cfs @ 12.01 hrs, Volume= 0.478 af, Atten= 0%, Lag= 0.0 min
Primary = 8.48 cfs @ 12.01 hrs, Volume= 0.478 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,981.11' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,980.00'	**36.0" Round Culvert** L= 200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,980.00' / 1,964.00' S= 0.0800 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.47 cfs @ 12.01 hrs HW=1,981.11' TW=1,964.28' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 8.47 cfs @ 3.58 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 2P: Catch Basin

Inflow Area = 8.528 ac, 33.30% Impervious, Inflow Depth = 4.03" for 10 Year event
Inflow = 57.43 cfs @ 11.97 hrs, Volume= 2.865 af
Outflow = 57.43 cfs @ 11.97 hrs, Volume= 2.865 af, Atten= 0%, Lag= 0.0 min
Primary = 57.43 cfs @ 11.97 hrs, Volume= 2.865 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,000.35' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,996.00'	**36.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,996.00' / 1,995.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=57.38 cfs @ 11.97 hrs HW=2,000.34' TW=1,964.34' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 57.38 cfs @ 8.12 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 2R: 48" CMP Culvert

Inflow Area = 151.679 ac, 3.12% Impervious, Inflow Depth = 2.93" for 10 Year event
Inflow = 400.45 cfs @ 12.13 hrs, Volume= 36.972 af
Outflow = 400.45 cfs @ 12.13 hrs, Volume= 36.972 af, Atten= 0%, Lag= 0.0 min
Primary = 400.45 cfs @ 12.13 hrs, Volume= 36.972 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 1,747.03' @ 12.13 hrs
Flood Elev= 1,749.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,741.00'	**48.0" Round Culvert** L= 30.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,741.00' / 1,740.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 12.57 sf
#2	Primary	1,746.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=400.38 cfs @ 12.13 hrs HW=1,747.03' TW=1,741.20' (Dynamic Tailwater)
1=Culvert (Inlet Controls 121.42 cfs @ 9.66 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 278.96 cfs @ 2.72 fps)

Summary for Pond 3P: Catch Basin

Inflow Area = 0.284 ac, 69.74% Impervious, Inflow Depth = 4.97" for 10 Year event
Inflow = 2.25 cfs @ 11.97 hrs, Volume= 0.118 af
Outflow = 2.25 cfs @ 11.97 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.0 min
Primary = 2.25 cfs @ 11.97 hrs, Volume= 0.118 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,009.88' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,009.19'	**18.0" Round Culvert** L= 304.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,009.19' / 1,997.21' S= 0.0394 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,014.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.25 cfs @ 11.97 hrs HW=2,009.88' TW=2,000.34' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.25 cfs @ 2.83 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 4P: Catch Basin

Inflow Area = 0.103 ac,100.00% Impervious, Inflow Depth = 5.76" for 10 Year event
Inflow = 0.88 cfs @ 11.97 hrs, Volume= 0.050 af
Outflow = 0.88 cfs @ 11.97 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Primary = 0.88 cfs @ 11.97 hrs, Volume= 0.050 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,010.17' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,009.71'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,009.71' / 2,009.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

#2	Primary	2,014.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.88 cfs @ 11.97 hrs HW=2,010.17' TW=2,009.88' (Dynamic Tailwater)
1=**Culvert** (Outlet Controls 0.88 cfs @ 2.88 fps)
2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 4R: 38" Arch Culv.

Inflow Area = 36.096 ac, 1.88% Impervious, Inflow Depth = 2.91" for 10 Year event
Inflow = 99.98 cfs @ 12.06 hrs, Volume= 8.747 af
Outflow = 99.98 cfs @ 12.06 hrs, Volume= 8.747 af, Atten= 0%, Lag= 0.0 min
Primary = 99.98 cfs @ 12.06 hrs, Volume= 8.747 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,068.57' @ 12.06 hrs
Flood Elev= 2,071.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,064.00'	**57.0" W x 38.0" H, R=28.9"/88.3" Arch CMP_Arch_1/2 57x38** L= 70.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,064.00' / 2,063.00' S= 0.0143 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 11.89 sf
#2	Primary	2,070.00'	**100.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=99.92 cfs @ 12.06 hrs HW=2,068.56' TW=2,061.14' (Dynamic Tailwater)
1=**CMP_Arch_1/2 57x38** (Inlet Controls 99.92 cfs @ 8.40 fps)
2=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7A: CULVERT

Inflow Area = 0.577 ac, 11.61% Impervious, Inflow Depth = 3.09" for 10 Year event
Inflow = 3.16 cfs @ 11.98 hrs, Volume= 0.149 af
Outflow = 3.16 cfs @ 11.98 hrs, Volume= 0.149 af, Atten= 0%, Lag= 0.0 min
Primary = 3.16 cfs @ 11.98 hrs, Volume= 0.149 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,900.84' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,900.00'	**18.0" Round Culvert** L= 115.0' Ke= 0.500 Inlet / Outlet Invert= 1,900.00' / 1,898.00' S= 0.0174 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.15 cfs @ 11.98 hrs HW=1,900.84' TW=1,896.28' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 3.15 cfs @ 3.11 fps)

Summary for Pond 7P: Catch Basin

Inflow Area = 0.262 ac, 70.83% Impervious, Inflow Depth = 4.96" for 10 Year event
Inflow = 2.11 cfs @ 11.97 hrs, Volume= 0.108 af
Outflow = 2.11 cfs @ 11.97 hrs, Volume= 0.108 af, Atten= 0%, Lag= 0.0 min
Primary = 2.11 cfs @ 11.97 hrs, Volume= 0.108 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,069.25' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,065.43'	**12.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,065.43' / 2,065.25' S= 0.0164 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,070.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.91 cfs @ 11.97 hrs HW=2,069.21' TW=2,068.95' (Dynamic Tailwater)
↑1=**Culvert** (Inlet Controls 1.91 cfs @ 2.43 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 7R: (2) 43" Arch Culverts

Inflow Area = 71.735 ac, 2.69% Impervious, Inflow Depth = 2.94" for 10 Year event
Inflow = 210.46 cfs @ 12.03 hrs, Volume= 17.554 af
Outflow = 210.46 cfs @ 12.03 hrs, Volume= 17.554 af, Atten= 0%, Lag= 0.0 min
Primary = 210.46 cfs @ 12.03 hrs, Volume= 17.554 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,815.36' @ 12.03 hrs
Flood Elev= 1,818.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,811.50'	**64.0" W x 43.0" H, R=32.5"/99.3" Arch CMP_Arch_1/2 64x43 X 2.00** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,811.50' / 1,810.50' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 15.13 sf
#2	Primary	1,816.50'	**100.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=210.35 cfs @ 12.03 hrs HW=1,815.35' TW=1,810.67' (Dynamic Tailwater)
↑1=**CMP_Arch_1/2 64x43** (Inlet Controls 210.35 cfs @ 6.95 fps)
└2=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 8R: 36" hdpe

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 0.00' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,830.00'	**36.0" Round Culvert** L= 245.0' Ke= 0.500 Inlet / Outlet Invert= 1,830.00' / 1,788.00' S= 0.1714 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' TW=1,788.00' (Dynamic Tailwater)
└**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 9P: Catch Basin

Inflow Area = 0.167 ac, 83.21% Impervious, Inflow Depth = 5.32" for 10 Year event
Inflow = 1.39 cfs @ 11.97 hrs, Volume= 0.074 af
Outflow = 1.39 cfs @ 11.97 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min
Primary = 1.39 cfs @ 11.97 hrs, Volume= 0.074 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,036.95' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.40'	**24.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.40' / 2,034.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,039.40'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.38 cfs @ 11.97 hrs HW=2,036.95' TW=2,036.93' (Dynamic Tailwater)
├**1=Culvert** (Outlet Controls 1.38 cfs @ 0.73 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 10P: Catch Basin

Inflow Area = 0.088 ac, 94.81% Impervious, Inflow Depth = 5.64" for 10 Year event
Inflow = 0.75 cfs @ 11.97 hrs, Volume= 0.042 af
Outflow = 0.75 cfs @ 11.97 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min
Primary = 0.75 cfs @ 11.97 hrs, Volume= 0.042 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,036.97' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,036.00'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,036.00' / 2,035.50' S= 0.0278 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,040.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 11.97 hrs HW=2,036.94' TW=2,036.95' (Dynamic Tailwater)
├─**1=Culvert** (Controls 0.00 cfs)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 10R: 14" and 16" HDPE Culverts

Inflow Area =	20.182 ac, 13.31% Impervious, Inflow Depth = 3.40" for 10 Year event			
Inflow =	49.69 cfs @	12.02 hrs, Volume=	5.721 af	
Outflow =	49.69 cfs @	12.02 hrs, Volume=	5.721 af,	Atten= 0%, Lag= 0.0 min
Primary =	49.69 cfs @	12.02 hrs, Volume=	5.721 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,977.42' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,975.00'	**14.0" Round 14" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.07 sf
#2	Primary	1,975.00'	**16.0" Round 16" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.40 sf
#3	Primary	1,977.00'	**50.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=49.63 cfs @ 12.02 hrs HW=1,977.42' TW=1,973.20' (Dynamic Tailwater)
├─**1=14" Culvert** (Inlet Controls 5.51 cfs @ 5.16 fps)
├─**2=16" Culvert** (Inlet Controls 7.03 cfs @ 5.04 fps)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 37.09 cfs @ 1.76 fps)

Summary for Pond 11P: Catch Basin

Inflow Area =	7.752 ac, 29.04% Impervious, Inflow Depth = 3.92" for 10 Year event			
Inflow =	51.12 cfs @	11.97 hrs, Volume=	2.533 af	
Outflow =	51.12 cfs @	11.97 hrs, Volume=	2.533 af,	Atten= 0%, Lag= 0.0 min
Primary =	51.12 cfs @	11.97 hrs, Volume=	2.533 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,053.76' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,050.00'	**36.0" Round Culvert** L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,050.00' / 2,040.74' S= 0.1029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,060.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=51.06 cfs @ 11.97 hrs HW=2,053.75' TW=2,036.93' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 51.06 cfs @ 7.22 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 12P: Catch Basin

Inflow Area = 0.067 ac, 88.78% Impervious, Inflow Depth = 5.41" for 10 Year event
Inflow = 0.57 cfs @ 11.97 hrs, Volume= 0.030 af
Outflow = 0.57 cfs @ 11.97 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min
Primary = 0.57 cfs @ 11.97 hrs, Volume= 0.030 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,055.38' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,055.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,055.00' / 2,054.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,060.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.57 cfs @ 11.97 hrs HW=2,055.38' TW=2,053.74' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 0.57 cfs @ 2.09 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 13P: Manhole

Inflow Area = 7.315 ac, 26.40% Impervious, Inflow Depth = 3.86" for 10 Year event
Inflow = 47.58 cfs @ 11.97 hrs, Volume= 2.350 af
Outflow = 47.58 cfs @ 11.97 hrs, Volume= 2.350 af, Atten= 0%, Lag= 0.0 min
Primary = 47.58 cfs @ 11.97 hrs, Volume= 2.350 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,067.33' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,063.88'	**36.0" Round Culvert** L= 137.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,063.88' / 2,055.10' S= 0.0641 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,072.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=47.52 cfs @ 11.97 hrs HW=2,067.33' TW=2,053.75' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 47.52 cfs @ 6.72 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 13R: 16" CMP Culvert

Inflow Area = 2.112 ac, 7.43% Impervious, Inflow Depth = 3.09" for 10 Year event
Inflow = 8.78 cfs @ 12.06 hrs, Volume= 0.544 af
Outflow = 8.78 cfs @ 12.06 hrs, Volume= 0.544 af, Atten= 0%, Lag= 0.0 min
Primary = 8.78 cfs @ 12.06 hrs, Volume= 0.544 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,963.20' @ 12.06 hrs
Flood Elev= 1,972.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,960.00'	**16.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 1,960.00' / 1,959.00' S= 0.0250 '/' Cc= 0.900 n= 0.025, Flow Area= 1.40 sf

Primary OutFlow Max=8.78 cfs @ 12.06 hrs HW=1,963.20' TW=1,959.12' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 8.78 cfs @ 6.29 fps)

Summary for Pond 15P: Catch Basin

Inflow Area = 0.609 ac, 66.13% Impervious, Inflow Depth = 4.83" for 10 Year event
Inflow = 4.83 cfs @ 11.97 hrs, Volume= 0.245 af
Outflow = 4.83 cfs @ 11.97 hrs, Volume= 0.245 af, Atten= 0%, Lag= 0.0 min
Primary = 4.83 cfs @ 11.97 hrs, Volume= 0.245 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,068.97' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,065.43'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,065.43' / 2,065.25' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,070.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.83 cfs @ 11.97 hrs HW=2,068.96' TW=2,067.33' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 4.83 cfs @ 6.15 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 16P: Catch Basin

Inflow Area = 0.168 ac, 93.81% Impervious, Inflow Depth = 5.64" for 10 Year event
Inflow = 1.43 cfs @ 11.97 hrs, Volume= 0.079 af
Outflow = 1.43 cfs @ 11.97 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min
Primary = 1.43 cfs @ 11.97 hrs, Volume= 0.079 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,082.62' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,080.59'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,080.59' / 2,080.41' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,084.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.43 cfs @ 11.97 hrs HW=2,082.60' TW=2,082.46' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.43 cfs @ 1.82 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 17P: Catch Basin

Inflow Area = 6.537 ac, 21.88% Impervious, Inflow Depth = 3.74" for 10 Year event
Inflow = 41.46 cfs @ 11.97 hrs, Volume= 2.040 af
Outflow = 41.46 cfs @ 11.97 hrs, Volume= 2.040 af, Atten= 0%, Lag= 0.0 min
Primary = 41.46 cfs @ 11.97 hrs, Volume= 2.040 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,082.47' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,079.50'	**36.0" Round Culvert** L= 213.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,079.50' / 2,067.47' S= 0.0565 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,084.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=41.40 cfs @ 11.97 hrs HW=2,082.47' TW=2,067.33' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 41.40 cfs @ 5.87 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 18P: Catch Basin

Inflow Area = 0.696 ac, 90.27% Impervious, Inflow Depth = 5.53" for 10 Year event
Inflow = 5.90 cfs @ 11.97 hrs, Volume= 0.321 af
Outflow = 5.90 cfs @ 11.97 hrs, Volume= 0.321 af, Atten= 0%, Lag= 0.0 min
Primary = 5.90 cfs @ 11.97 hrs, Volume= 0.321 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,096.00' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,092.21'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,092.21' / 2,092.03' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,096.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=5.89 cfs @ 11.97 hrs HW=2,095.99' TW=2,093.57' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 5.89 cfs @ 7.49 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 19P: Catch Basin

Inflow Area = 5.536 ac, 21.72% Impervious, Inflow Depth = 3.74" for 10 Year event
Inflow = 35.23 cfs @ 11.97 hrs, Volume= 1.725 af
Outflow = 35.23 cfs @ 11.97 hrs, Volume= 1.725 af, Atten= 0%, Lag= 0.0 min
Primary = 35.23 cfs @ 11.97 hrs, Volume= 1.725 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,093.57' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,091.00'	**36.0" Round Culvert** L= 250.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,091.00' / 2,077.47' S= 0.0541 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,096.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=35.19 cfs @ 11.97 hrs HW=2,093.57' TW=2,082.47' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 35.19 cfs @ 5.46 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 20: CB20

Inflow Area = 3.450 ac, 0.00% Impervious, Inflow Depth = 3.18" for 10 Year event
Inflow = 18.26 cfs @ 12.00 hrs, Volume= 0.916 af
Outflow = 18.26 cfs @ 12.00 hrs, Volume= 0.916 af, Atten= 0%, Lag= 0.0 min
Primary = 18.26 cfs @ 12.00 hrs, Volume= 0.916 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,109.35' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,104.00'	**18.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,104.00' / 2,094.00' S= 0.1538 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,112.00'	**75.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=18.22 cfs @ 12.00 hrs HW=2,109.34' TW=2,098.12' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 18.22 cfs @ 10.31 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 20P: Manhole

Inflow Area = 4.748 ac, 10.68% Impervious, Inflow Depth = 3.45" for 10 Year event
Inflow = 28.60 cfs @ 11.97 hrs, Volume= 1.366 af
Outflow = 28.60 cfs @ 11.97 hrs, Volume= 1.366 af, Atten= 0%, Lag= 0.0 min
Primary = 28.60 cfs @ 11.97 hrs, Volume= 1.366 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,097.11' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,094.40'	**30.0" Round Culvert** L= 107.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,094.40' / 2,091.00' S= 0.0318 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=28.55 cfs @ 11.97 hrs HW=2,097.11' TW=2,093.57' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 28.55 cfs @ 5.82 fps)

Summary for Pond 21P: Catch Basin

Inflow Area = 0.702 ac, 72.23% Impervious, Inflow Depth = 4.98" for 10 Year event
Inflow = 5.67 cfs @ 11.97 hrs, Volume= 0.292 af
Outflow = 5.67 cfs @ 11.97 hrs, Volume= 0.292 af, Atten= 0%, Lag= 0.0 min
Primary = 5.67 cfs @ 11.97 hrs, Volume= 0.292 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,114.16' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,113.21'	**30.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,113.21' / 2,098.84' S= 0.1041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,118.50'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=5.66 cfs @ 11.97 hrs HW=2,114.16' TW=2,097.11' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 5.66 cfs @ 3.32 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 22P: Catch Basin

Inflow Area = 0.427 ac, 71.34% Impervious, Inflow Depth = 4.96" for 10 Year event
Inflow = 3.44 cfs @ 11.97 hrs, Volume= 0.176 af
Outflow = 3.44 cfs @ 11.97 hrs, Volume= 0.176 af, Atten= 0%, Lag= 0.0 min
Primary = 3.44 cfs @ 11.97 hrs, Volume= 0.176 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,115.64' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,114.64'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,114.64' / 2,114.46' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,118.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.44 cfs @ 11.97 hrs HW=2,115.64' TW=2,114.16' (Dynamic Tailwater)
├─**1=Culvert** (Barrel Controls 3.44 cfs @ 3.89 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 23A: Catch Basin

Inflow Area = 0.733 ac, 0.00% Impervious, Inflow Depth = 3.18" for 10 Year event
Inflow = 4.04 cfs @ 11.98 hrs, Volume= 0.194 af
Outflow = 4.04 cfs @ 11.98 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min
Primary = 4.04 cfs @ 11.98 hrs, Volume= 0.194 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,093.56' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,092.59'	**18.0" Round Culvert** L= 198.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,092.59' / 2,083.20' S= 0.0474 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,097.50'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=4.03 cfs @ 11.98 hrs HW=2,093.56' TW=2,084.04' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 4.03 cfs @ 3.35 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 23B: Catch Basin

Inflow Area = 0.733 ac, 0.00% Impervious, Inflow Depth = 3.18" for 10 Year event
Inflow = 4.04 cfs @ 11.98 hrs, Volume= 0.194 af
Outflow = 4.04 cfs @ 11.98 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min
Primary = 4.04 cfs @ 11.98 hrs, Volume= 0.194 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,084.04' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,083.07'	**18.0" Round Culvert** L= 51.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,083.07' / 2,079.50' S= 0.0700 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,096.50'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=4.03 cfs @ 11.98 hrs HW=2,084.04' TW=2,082.44' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 4.03 cfs @ 3.35 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 24A: Catch Basin

Inflow Area = 4.046 ac, 0.00% Impervious, Inflow Depth = 3.18" for 10 Year event
Inflow = 22.94 cfs @ 11.97 hrs, Volume= 1.074 af
Outflow = 22.94 cfs @ 11.97 hrs, Volume= 1.074 af, Atten= 0%, Lag= 0.0 min
Primary = 22.94 cfs @ 11.97 hrs, Volume= 1.074 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,100.19' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,098.00'	**30.0" Round Culvert** L= 149.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,098.00' / 2,096.51' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,102.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=22.89 cfs @ 11.97 hrs HW=2,100.18' TW=2,098.05' (Dynamic Tailwater)
1=Culvert (Inlet Controls 22.89 cfs @ 5.03 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 24B: Catch Basin

Inflow Area = 4.046 ac, 0.00% Impervious, Inflow Depth = 3.18" for 10 Year event
Inflow = 22.94 cfs @ 11.97 hrs, Volume= 1.074 af
Outflow = 22.94 cfs @ 11.97 hrs, Volume= 1.074 af, Atten= 0%, Lag= 0.0 min
Primary = 22.94 cfs @ 11.97 hrs, Volume= 1.074 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,098.06' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,095.00'	**30.0" Round Culvert** L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,095.00' / 2,094.51' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,100.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=22.89 cfs @ 11.97 hrs HW=2,098.05' TW=2,097.11' (Dynamic Tailwater)
1=Culvert (Inlet Controls 22.89 cfs @ 4.66 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 25P: Catch Basin

Inflow Area = 0.170 ac, 74.09% Impervious, Inflow Depth = 5.07" for 10 Year event
Inflow = 1.38 cfs @ 11.97 hrs, Volume= 0.072 af
Outflow = 1.38 cfs @ 11.97 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min
Primary = 1.38 cfs @ 11.97 hrs, Volume= 0.072 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,123.36' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,122.88'	**24.0" Round Culvert** L= 270.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,122.88' / 2,113.50' S= 0.0347 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,135.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.38 cfs @ 11.97 hrs HW=2,123.36' TW=2,114.16' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.38 cfs @ 2.37 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 26P: Catch Basin

Inflow Area = 0.084 ac, 75.17% Impervious, Inflow Depth = 5.07" for 10 Year event
Inflow = 0.68 cfs @ 11.97 hrs, Volume= 0.035 af
Outflow = 0.68 cfs @ 11.97 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Primary = 0.68 cfs @ 11.97 hrs, Volume= 0.035 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,131.51' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,131.05'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,131.05' / 2,130.87' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,135.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.68 cfs @ 11.97 hrs HW=2,131.51' TW=2,123.36' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.68 cfs @ 2.86 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 27P: Catch Basin

Inflow Area = 0.815 ac, 74.18% Impervious, Inflow Depth = 5.04" for 10 Year event
Inflow = 6.63 cfs @ 11.97 hrs, Volume= 0.343 af
Outflow = 6.63 cfs @ 11.97 hrs, Volume= 0.343 af, Atten= 0%, Lag= 0.0 min
Primary = 6.63 cfs @ 11.97 hrs, Volume= 0.343 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,148.96' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,147.75'	**21.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,147.75' / 2,145.50' S= 0.0450 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf
#2	Primary	2,152.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.62 cfs @ 11.97 hrs HW=2,148.96' TW=2,144.57' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 6.62 cfs @ 3.74 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 28P: Catch Basin

Inflow Area = 0.093 ac, 76.11% Impervious, Inflow Depth = 5.07" for 10 Year event
Inflow = 0.76 cfs @ 11.97 hrs, Volume= 0.039 af
Outflow = 0.76 cfs @ 11.97 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 11.97 hrs, Volume= 0.039 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,149.00' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,148.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,148.00' / 2,147.75' S= 0.0139 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,152.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.76 cfs @ 11.97 hrs HW=2,149.00' TW=2,148.96' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.76 cfs @ 1.20 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 29P: Manhole

Inflow Area = 0.631 ac, 73.96% Impervious, Inflow Depth = 5.04" for 10 Year event
Inflow = 5.12 cfs @ 11.97 hrs, Volume= 0.265 af
Outflow = 5.12 cfs @ 11.97 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min
Primary = 5.12 cfs @ 11.97 hrs, Volume= 0.265 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,163.03' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,162.00'	**21.0" Round Culvert** L= 125.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,162.00' / 2,147.75' S= 0.1140 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

Primary OutFlow Max=5.12 cfs @ 11.97 hrs HW=2,163.03' TW=2,148.96' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.12 cfs @ 3.46 fps)

Summary for Pond 30P: Catch Basin

Inflow Area = 0.631 ac, 73.96% Impervious, Inflow Depth = 5.04" for 10 Year event
Inflow = 5.12 cfs @ 11.97 hrs, Volume= 0.265 af
Outflow = 5.12 cfs @ 11.97 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min
Primary = 5.12 cfs @ 11.97 hrs, Volume= 0.265 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,175.19' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,174.16'	**21.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,174.16' / 2,162.64' S= 0.1239 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf
#2	Primary	2,181.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.12 cfs @ 11.97 hrs HW=2,175.19' TW=2,163.03' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.12 cfs @ 3.46 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 31P: Catch Basin

Inflow Area = 0.067 ac, 74.25% Impervious, Inflow Depth = 5.07" for 10 Year event
Inflow = 0.54 cfs @ 11.97 hrs, Volume= 0.028 af
Outflow = 0.54 cfs @ 11.97 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 11.97 hrs, Volume= 0.028 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,177.58' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,177.18'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,177.18' / 2,177.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,181.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.54 cfs @ 11.97 hrs HW=2,177.58' TW=2,175.19' (Dynamic Tailwater)
└1=**Culvert** (Barrel Controls 0.54 cfs @ 2.72 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 32P: Catch Basin

Inflow Area = 0.501 ac, 73.93% Impervious, Inflow Depth = 5.03" for 10 Year event
Inflow = 4.07 cfs @ 11.97 hrs, Volume= 0.210 af
Outflow = 4.07 cfs @ 11.97 hrs, Volume= 0.210 af, Atten= 0%, Lag= 0.0 min
Primary = 4.07 cfs @ 11.97 hrs, Volume= 0.210 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,196.35' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,195.44'	**21.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,195.44' / 2,174.62' S= 0.1190 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf
#2	Primary	2,202.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.07 cfs @ 11.97 hrs HW=2,196.35' TW=2,175.19' (Dynamic Tailwater)
└1=**Culvert** (Inlet Controls 4.07 cfs @ 3.24 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 33P: Catch Basin

Inflow Area = 0.086 ac, 74.41% Impervious, Inflow Depth = 5.07" for 10 Year event
Inflow = 0.70 cfs @ 11.97 hrs, Volume= 0.036 af
Outflow = 0.70 cfs @ 11.97 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min
Primary = 0.70 cfs @ 11.97 hrs, Volume= 0.036 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,198.42' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,198.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,198.00' / 2,197.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,202.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.70 cfs @ 11.97 hrs HW=2,198.42' TW=2,196.35' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.70 cfs @ 2.21 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 34P: Manhole

Inflow Area = 0.334 ac, 73.86% Impervious, Inflow Depth = 5.01" for 10 Year event
Inflow = 2.70 cfs @ 11.97 hrs, Volume= 0.139 af
Outflow = 2.70 cfs @ 11.97 hrs, Volume= 0.139 af, Atten= 0%, Lag= 0.0 min
Primary = 2.70 cfs @ 11.97 hrs, Volume= 0.139 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,209.77' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,209.00'	**18.0" Round Culvert** L= 90.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,209.00' / 2,195.92' S= 0.1449 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.70 cfs @ 11.97 hrs HW=2,209.76' TW=2,196.35' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.70 cfs @ 2.98 fps)

Summary for Pond 35P: Catch Basin

Inflow Area = 0.334 ac, 73.86% Impervious, Inflow Depth = 5.01" for 10 Year event
Inflow = 2.70 cfs @ 11.97 hrs, Volume= 0.139 af
Outflow = 2.70 cfs @ 11.97 hrs, Volume= 0.139 af, Atten= 0%, Lag= 0.0 min
Primary = 2.70 cfs @ 11.97 hrs, Volume= 0.139 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,225.77' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,225.00'	**18.0" Round Culvert** L= 121.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,225.00' / 2,209.50' S= 0.1277 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,229.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.70 cfs @ 11.97 hrs HW=2,225.76' TW=2,209.76' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.70 cfs @ 2.98 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 36P: Catch Basin

Inflow Area = 0.074 ac, 74.91% Impervious, Inflow Depth = 5.07" for 10 Year event
Inflow = 0.60 cfs @ 11.97 hrs, Volume= 0.031 af
Outflow = 0.60 cfs @ 11.97 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min
Primary = 0.60 cfs @ 11.97 hrs, Volume= 0.031 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,225.97' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,225.50'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,225.50' / 2,225.14' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,229.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.60 cfs @ 11.97 hrs HW=2,225.97' TW=2,225.76' (Dynamic Tailwater)
└1=**Culvert** (Outlet Controls 0.60 cfs @ 2.41 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 37P: Catch Basin

Inflow Area = 0.184 ac, 73.98% Impervious, Inflow Depth = 5.01" for 10 Year event
Inflow = 1.49 cfs @ 11.97 hrs, Volume= 0.077 af
Outflow = 1.49 cfs @ 11.97 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min
Primary = 1.49 cfs @ 11.97 hrs, Volume= 0.077 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,249.05' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,248.50'	**18.0" Round Culvert** L= 200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,248.50' / 2,225.10' S= 0.1170 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,253.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.49 cfs @ 11.97 hrs HW=2,249.05' TW=2,225.76' (Dynamic Tailwater)
└1=**Culvert** (Inlet Controls 1.49 cfs @ 2.53 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 38P: Catch Basin

Inflow Area = 0.082 ac, 76.49% Impervious, Inflow Depth = 5.07" for 10 Year event
Inflow = 0.67 cfs @ 11.97 hrs, Volume= 0.035 af
Outflow = 0.67 cfs @ 11.97 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Primary = 0.67 cfs @ 11.97 hrs, Volume= 0.035 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,249.42' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,249.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,249.00' / 2,248.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,253.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.67 cfs @ 11.97 hrs HW=2,249.42' TW=2,249.05' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.67 cfs @ 3.15 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 43P: 12" HDPE Pipe

Inflow Area = 0.089 ac, 77.76% Impervious, Inflow Depth = 5.18" for 10 Year event
Inflow = 0.73 cfs @ 11.97 hrs, Volume= 0.038 af
Outflow = 0.73 cfs @ 11.97 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 11.97 hrs, Volume= 0.038 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,998.16' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,997.50'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,997.50' / 1,997.40' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.73 cfs @ 11.97 hrs HW=1,998.16' TW=1,998.04' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.73 cfs @ 1.89 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 44P: 12" HDPE Pipe

Inflow Area = 0.172 ac, 79.89% Impervious, Inflow Depth = 5.24" for 10 Year event
Inflow = 1.43 cfs @ 11.97 hrs, Volume= 0.075 af
Outflow = 1.43 cfs @ 11.97 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min
Primary = 1.43 cfs @ 11.97 hrs, Volume= 0.075 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,998.04' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,997.40'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,997.40' / 1,997.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.43 cfs @ 11.97 hrs HW=1,998.04' TW=1,991.67' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.43 cfs @ 3.82 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 50P: 30" HDPE Pipe

Inflow Area = 4.233 ac, 26.46% Impervious, Inflow Depth = 3.80" for 10 Year event
Inflow = 26.43 cfs @ 11.98 hrs, Volume= 1.342 af
Outflow = 26.43 cfs @ 11.98 hrs, Volume= 1.342 af, Atten= 0%, Lag= 0.0 min
Primary = 26.43 cfs @ 11.98 hrs, Volume= 1.342 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,026.50' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,024.00'	**30.0" Round Culvert** L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,024.00' / 2,020.00' S= 0.0769 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,030.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=26.41 cfs @ 11.98 hrs HW=2,026.50' TW=2,020.87' (Dynamic Tailwater)
1=Culvert (Inlet Controls 26.41 cfs @ 5.38 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 51P: 18" HDPE Pipe

Inflow Area = 0.406 ac, 20.38% Impervious, Inflow Depth = 3.68" for 10 Year event
Inflow = 2.62 cfs @ 11.97 hrs, Volume= 0.124 af
Outflow = 2.62 cfs @ 11.97 hrs, Volume= 0.124 af, Atten= 0%, Lag= 0.0 min
Primary = 2.62 cfs @ 11.97 hrs, Volume= 0.124 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,026.87' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,026.00'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,026.00' / 2,025.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,030.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.61 cfs @ 11.97 hrs HW=2,026.86' TW=2,026.47' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.61 cfs @ 3.62 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 52P: 30" HDPE Pipe

Inflow Area = 3.737 ac, 25.34% Impervious, Inflow Depth = 3.77" for 10 Year event
Inflow = 23.08 cfs @ 11.98 hrs, Volume= 1.174 af
Outflow = 23.08 cfs @ 11.98 hrs, Volume= 1.174 af, Atten= 0%, Lag= 0.0 min
Primary = 23.08 cfs @ 11.98 hrs, Volume= 1.174 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,060.70' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,058.50'	**30.0" Round Culvert** L= 301.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,058.50' / 2,026.00' S= 0.1080 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,064.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=23.04 cfs @ 11.98 hrs HW=2,060.70' TW=2,026.49' (Dynamic Tailwater)
1=Culvert (Inlet Controls 23.04 cfs @ 5.04 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 53P: 18" HDPE Pipe

Inflow Area = 0.442 ac, 18.13% Impervious, Inflow Depth = 3.58" for 10 Year event
Inflow = 2.78 cfs @ 11.97 hrs, Volume= 0.132 af
Outflow = 2.78 cfs @ 11.97 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.0 min
Primary = 2.78 cfs @ 11.97 hrs, Volume= 0.132 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,061.28' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,060.50'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,060.50' / 2,060.14' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,064.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.78 cfs @ 11.97 hrs HW=2,061.28' TW=2,060.68' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.78 cfs @ 4.33 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 54P: 24" HDPE Pipe

Inflow Area = 2.551 ac, 26.12% Impervious, Inflow Depth = 3.78" for 10 Year event
Inflow = 15.52 cfs @ 11.99 hrs, Volume= 0.804 af
Outflow = 15.52 cfs @ 11.99 hrs, Volume= 0.804 af, Atten= 0%, Lag= 0.0 min
Primary = 15.52 cfs @ 11.99 hrs, Volume= 0.804 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,103.05' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,101.00'	**24.0" Round Culvert** L= 201.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,101.00' / 2,059.50' S= 0.2065 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,106.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=15.51 cfs @ 11.99 hrs HW=2,103.05' TW=2,060.69' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 15.51 cfs @ 4.94 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 55P: 18" HDPE Pipe

Inflow Area = 0.351 ac, 74.82% Impervious, Inflow Depth = 5.07" for 10 Year event
Inflow = 2.86 cfs @ 11.97 hrs, Volume= 0.148 af
Outflow = 2.86 cfs @ 11.97 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.0 min
Primary = 2.86 cfs @ 11.97 hrs, Volume= 0.148 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,103.25' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,102.00'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,102.00' / 2,101.00' S= 0.0208 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,106.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.86 cfs @ 11.97 hrs HW=2,103.21' TW=2,102.98' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.86 cfs @ 2.56 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 56P: 18" HDPE Pipe

Inflow Area = 0.526 ac, 31.48% Impervious, Inflow Depth = 3.94" for 10 Year event
Inflow = 3.54 cfs @ 11.97 hrs, Volume= 0.173 af
Outflow = 3.54 cfs @ 11.97 hrs, Volume= 0.173 af, Atten= 0%, Lag= 0.0 min
Primary = 3.54 cfs @ 11.97 hrs, Volume= 0.173 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,082.39' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,081.50'	**18.0" Round Culvert** L= 299.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,081.50' / 2,060.00' S= 0.0719 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,086.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.54 cfs @ 11.97 hrs HW=2,082.39' TW=2,060.68' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.54 cfs @ 3.22 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 57P: 18" HDPE Pipe

Inflow Area = 0.112 ac, 82.97% Impervious, Inflow Depth = 5.30" for 10 Year event
Inflow = 0.93 cfs @ 11.97 hrs, Volume= 0.049 af
Outflow = 0.93 cfs @ 11.97 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min
Primary = 0.93 cfs @ 11.97 hrs, Volume= 0.049 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,082.56' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,082.00'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,082.00' / 2,081.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,086.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.93 cfs @ 11.97 hrs HW=2,082.56' TW=2,082.39' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.93 cfs @ 2.29 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 62P: Catch Basin

Inflow Area = 1.479 ac, 0.00% Impervious, Inflow Depth = 3.18" for 10 Year event
Inflow = 7.77 cfs @ 12.00 hrs, Volume= 0.393 af
Outflow = 7.77 cfs @ 12.00 hrs, Volume= 0.393 af, Atten= 0%, Lag= 0.0 min
Primary = 7.77 cfs @ 12.00 hrs, Volume= 0.393 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,084.58' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,087.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	2,083.00'	**18.0" Round Culvert** L= 207.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,083.00' / 2,080.00' S= 0.0145 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.76 cfs @ 12.00 hrs HW=2,084.58' TW=2,081.76' (Dynamic Tailwater)
1=Orifice/Grate (Controls 0.00 cfs)
2=Culvert (Inlet Controls 7.76 cfs @ 4.39 fps)

Summary for Pond 65A: Manhole

Inflow Area = 2.041 ac, 17.95% Impervious, Inflow Depth = 3.63" for 10 Year event
Inflow = 11.96 cfs @ 11.99 hrs, Volume= 0.618 af
Outflow = 11.96 cfs @ 11.99 hrs, Volume= 0.618 af, Atten= 0%, Lag= 0.0 min
Primary = 11.96 cfs @ 11.99 hrs, Volume= 0.618 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,080.84' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,079.40'	**30.0" Round Culvert** L= 125.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,079.40' / 2,070.00' S= 0.0752 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=11.94 cfs @ 11.99 hrs HW=2,080.84' TW=2,070.27' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 11.94 cfs @ 4.08 fps)

Summary for Pond 65P: Catch Basin

Inflow Area = 2.041 ac, 17.95% Impervious, Inflow Depth = 3.63" for 10 Year event
Inflow = 11.96 cfs @ 11.99 hrs, Volume= 0.618 af
Outflow = 11.96 cfs @ 11.99 hrs, Volume= 0.618 af, Atten= 0%, Lag= 0.0 min
Primary = 11.96 cfs @ 11.99 hrs, Volume= 0.618 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,081.78' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,079.95'	**24.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,079.95' / 2,079.50' S= 0.0069 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,096.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=11.94 cfs @ 11.99 hrs HW=2,081.78' TW=2,080.84' (Dynamic Tailwater)
├─**1=Culvert** (Barrel Controls 11.94 cfs @ 5.21 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 66R: (2) 24" culvert

Inflow = 4.99 cfs @ 12.05 hrs, Volume= 0.072 af
Outflow = 4.99 cfs @ 12.05 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min
Primary = 4.99 cfs @ 12.05 hrs, Volume= 0.072 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,990.66' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,990.00'	**24.0" Round Culvert X 2.00** L= 75.0' CPP, end-section conforming to fill, Ke= 0.500

			Inlet / Outlet Invert= 1,990.00' / 1,984.00' S= 0.0800 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	1,992.50'	**40.0' long x 25.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.98 cfs @ 12.05 hrs HW=1,990.66' TW=1,985.24' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.98 cfs @ 2.76 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 81: 24" culvert

Inflow Area = 2.837 ac, 0.00% Impervious, Inflow Depth = 3.09" for 10 Year event
Inflow = 15.63 cfs @ 11.97 hrs, Volume= 0.730 af
Outflow = 15.63 cfs @ 11.97 hrs, Volume= 0.730 af, Atten= 0%, Lag= 0.0 min
Primary = 15.63 cfs @ 11.97 hrs, Volume= 0.730 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,015.07' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,013.00'	**24.0" Round Culvert**
			L= 350.0' CPP, end-section conforming to fill, Ke= 0.500
			Inlet / Outlet Invert= 2,013.00' / 1,983.90' S= 0.0831 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,016.00'	**40.0' long x 2.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50
			Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=15.60 cfs @ 11.97 hrs HW=2,015.06' TW=1,985.17' (Dynamic Tailwater)
1=Culvert (Inlet Controls 15.60 cfs @ 4.97 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 200: 36" Steel Culvert

Inflow Area = 76.410 ac, 0.43% Impervious, Inflow Depth = 2.81" for 10 Year event
Inflow = 214.98 cfs @ 12.17 hrs, Volume= 17.862 af
Outflow = 214.98 cfs @ 12.17 hrs, Volume= 17.862 af, Atten= 0%, Lag= 0.0 min
Primary = 214.98 cfs @ 12.17 hrs, Volume= 17.862 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,239.09' @ 12.17 hrs
Flood Elev= 2,248.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert**
			L= 50.0' CMP, end-section conforming to fill, Ke= 0.500
			Inlet / Outlet Invert= 2,234.00' / 2,230.00' S= 0.0800 '/' Cc= 0.900
			n= 0.025 Corrugated metal, Flow Area= 7.07 sf

Device	Routing	Invert	Outlet Devices
#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=214.93 cfs @ 12.17 hrs HW=2,239.09' TW=2,169.70' (Dynamic Tailwater)
└1=**Culvert** (Inlet Controls 64.51 cfs @ 9.13 fps)
└2=**Broad-Crested Rectangular Weir** (Weir Controls 150.42 cfs @ 2.75 fps)

Summary for Pond 201: 36" Steel Culvert

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 2.90" for 10 Year event
Inflow = 37.18 cfs @ 12.15 hrs, Volume= 2.950 af
Outflow = 37.18 cfs @ 12.15 hrs, Volume= 2.950 af, Atten= 0%, Lag= 0.0 min
Primary = 37.18 cfs @ 12.15 hrs, Volume= 2.950 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,236.77' @ 12.15 hrs
Flood Elev= 2,239.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert** L= 30.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,234.00' / 2,233.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=37.17 cfs @ 12.15 hrs HW=2,236.77' TW=2,232.13' (Dynamic Tailwater)
└1=**Culvert** (Barrel Controls 37.17 cfs @ 7.13 fps)
└2=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 297A: culvert

Inflow Area = 21.963 ac, 0.34% Impervious, Inflow Depth = 2.83" for 10 Year event
Inflow = 63.88 cfs @ 12.18 hrs, Volume= 5.178 af
Outflow = 63.88 cfs @ 12.18 hrs, Volume= 5.178 af, Atten= 0%, Lag= 0.0 min
Primary = 63.88 cfs @ 12.18 hrs, Volume= 5.178 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,116.16' @ 12.18 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,112.00'	**36.0" Round Culvert** L= 93.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,112.00' / 2,099.00' S= 0.1398 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,116.00'	**85.0' long x 70.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=63.85 cfs @ 12.18 hrs HW=2,116.16' TW=2,099.01' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 49.00 cfs @ 6.93 fps)
2=**Broad-Crested Rectangular Weir** (Weir Controls 14.85 cfs @ 1.08 fps)

Summary for Pond 300R: 18" Steel Culvert

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 2.81" for 10 Year event
Inflow = 49.32 cfs @ 12.14 hrs, Volume= 3.824 af
Outflow = 49.32 cfs @ 12.14 hrs, Volume= 3.824 af, Atten= 0%, Lag= 0.0 min
Primary = 49.32 cfs @ 12.14 hrs, Volume= 3.824 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,259.26' @ 12.14 hrs
Flood Elev= 2,261.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,254.00'	**18.0" Round 18" Steel Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,254.00' / 2,253.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Primary	2,259.00'	**100.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=49.31 cfs @ 12.14 hrs HW=2,259.26' TW=2,252.32' (Dynamic Tailwater)
1=**18" Steel Culvert** (Inlet Controls 14.26 cfs @ 8.07 fps)
2=**Broad-Crested Rectangular Weir** (Weir Controls 35.04 cfs @ 1.36 fps)

Summary for Pond B4: bioretention

Inflow Area = 4.919 ac, 12.29% Impervious, Inflow Depth = 3.49" for 10 Year event
Inflow = 29.88 cfs @ 11.97 hrs, Volume= 1.432 af
Outflow = 27.40 cfs @ 12.00 hrs, Volume= 1.432 af, Atten= 8%, Lag= 1.8 min
Discarded = 0.11 cfs @ 12.00 hrs, Volume= 0.216 af
Primary = 27.29 cfs @ 12.00 hrs, Volume= 1.216 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,144.61' @ 12.00 hrs Surf.Area= 9,213 sf Storage= 12,518 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 91.3 min (904.8 - 813.4)

Volume	Invert	Avail.Storage	Storage Description
#1	2,143.00'	16,265 cf	**surface storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,143.00	6,377	0	0
2,144.00	8,116	7,247	7,247
2,145.00	9,920	9,018	16,265

Device	Routing	Invert	Outlet Devices
#1	Primary	2,139.00'	**8.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,139.00' / 2,137.00' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Discarded	2,143.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	2,143.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	2,144.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.11 cfs @ 12.00 hrs HW=2,144.61' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=27.25 cfs @ 12.00 hrs HW=2,144.61' TW=2,123.28' (Dynamic Tailwater)
├─**1=Culvert** (Passes 1.77 cfs of 3.41 cfs potential flow)
│ └─**3=Orifice/Grate** (Orifice Controls 1.77 cfs @ 5.07 fps)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 25.48 cfs @ 2.10 fps)

Summary for Pond DP 7: Design Point 7

Inflow Area = 152.103 ac, 3.18% Impervious, Inflow Depth = 2.93" for 10 Year event
Inflow = 401.23 cfs @ 12.13 hrs, Volume= 37.095 af
Primary = 401.23 cfs @ 12.13 hrs, Volume= 37.095 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 8: Design Point 8

Inflow Area = 90.185 ac, 2.88% Impervious, Inflow Depth = 2.90" for 10 Year event
Inflow = 282.34 cfs @ 12.04 hrs, Volume= 21.816 af
Primary = 282.34 cfs @ 12.04 hrs, Volume= 21.816 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 9: Design Point 9

Inflow Area = 45.925 ac, 8.18% Impervious, Inflow Depth = 3.14" for 10 Year event
Inflow = 129.96 cfs @ 12.11 hrs, Volume= 12.024 af
Primary = 129.96 cfs @ 12.11 hrs, Volume= 12.024 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond H: Pond H

Inflow Area = 14.937 ac, 13.18% Impervious, Inflow Depth = 3.46" for 10 Year event
Inflow = 75.95 cfs @ 12.00 hrs, Volume= 4.311 af
Outflow = 30.56 cfs @ 12.13 hrs, Volume= 4.308 af, Atten= 60%, Lag= 7.9 min
Primary = 30.56 cfs @ 12.13 hrs, Volume= 4.308 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 1,996.00' Surf.Area= 4,665 sf Storage= 6,646 cf
Peak Elev= 2,001.58' @ 12.13 hrs Surf.Area= 17,325 sf Storage= 67,845 cf (61,199 cf above start)

Plug-Flow detention time= 443.2 min calculated for 4.156 af (96% of inflow)
Center-of-Mass det. time= 388.3 min (1,249.8 - 861.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,993.00'	95,049 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,993.00	385	0	0
1,994.00	1,192	789	789
1,996.00	4,665	5,857	6,646
1,997.00	6,868	5,767	12,412
1,998.00	9,300	8,084	20,496
2,000.00	13,640	22,940	43,436
2,002.00	18,315	31,955	75,391
2,003.00	21,000	19,658	95,049

Device	Routing	Invert	Outlet Devices
#1	Primary	1,995.00'	**24.0" Round Culvert** L= 335.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,995.00' / 1,983.90' S= 0.0331 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,996.00'	**2.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	1,999.10'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	2,002.00'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=30.55 cfs @ 12.13 hrs HW=2,001.58' TW=1,985.14' (Dynamic Tailwater)
1=**Culvert** (Passes 30.55 cfs of 35.72 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 0.25 cfs @ 11.28 fps)
3=**Orifice/Grate** (Orifice Controls 30.31 cfs @ 7.58 fps)
4=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond J: OPEN SWALE

Inflow Area = 1.775 ac, 27.88% Impervious, Inflow Depth = 3.87" for 10 Year event
Inflow = 11.47 cfs @ 11.97 hrs, Volume= 0.573 af
Outflow = 7.02 cfs @ 12.05 hrs, Volume= 0.573 af, Atten= 39%, Lag= 4.4 min
Discarded = 0.09 cfs @ 12.05 hrs, Volume= 0.100 af
Primary = 1.94 cfs @ 12.05 hrs, Volume= 0.400 af
Secondary = 4.99 cfs @ 12.05 hrs, Volume= 0.072 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,991.97' @ 12.05 hrs Surf.Area= 7,831 sf Storage= 7,486 cf

Plug-Flow detention time= 80.2 min calculated for 0.573 af (100% of inflow)
Center-of-Mass det. time= 80.3 min (874.4 - 794.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,986.50'	720 cf	**Stone Underdrain (Prismatic)** Listed below (Recalc) 1,800 cf Overall x 40.0% Voids
#2	1,987.50'	675 cf	**Filter Media (Prismatic)** Listed below (Recalc) 4,500 cf Overall x 15.0% Voids
#3	1,990.00'	8,500 cf	**Surface Storage (Prismatic)** Listed below (Recalc)
		9,895 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,986.50	1,800	0	0
1,987.50	1,800	1,800	1,800

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,987.50	1,800	0	0
1,990.00	1,800	4,500	4,500

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,990.00	1,800	0	0
1,991.00	3,200	2,500	2,500
1,992.50	4,800	6,000	8,500

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,986.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,989.50'	**8.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,989.50' / 1,984.00' S= 0.0786 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Secondary	1,991.50'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#4	Primary	1,992.00'	**10.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.09 cfs @ 12.05 hrs HW=1,991.97' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=1.94 cfs @ 12.05 hrs HW=1,991.97' TW=1,985.24' (Dynamic Tailwater)
├**2=Culvert** (Inlet Controls 1.94 cfs @ 5.55 fps)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=4.98 cfs @ 12.05 hrs HW=1,991.97' TW=1,990.66' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 4.98 cfs @ 1.78 fps)

Summary for Pond K: P1

Inflow Area = 7.908 ac, 10.53% Impervious, Inflow Depth = 3.50" for 10 Year event
Inflow = 36.36 cfs @ 12.02 hrs, Volume= 2.309 af
Outflow = 14.13 cfs @ 12.22 hrs, Volume= 2.308 af, Atten= 61%, Lag= 12.2 min
Primary = 14.13 cfs @ 12.22 hrs, Volume= 2.308 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 2,018.00' Surf.Area= 2,252 sf Storage= 4,088 cf
Peak Elev= 2,024.07' @ 12.22 hrs Surf.Area= 15,508 sf Storage= 49,051 cf (44,963 cf above start)

Plug-Flow detention time= 766.2 min calculated for 2.214 af (96% of inflow)
Center-of-Mass det. time= 707.0 min (1,526.3 - 819.3)

Volume	Invert	Avail.Storage	Storage Description
#1	2,014.00'	56,425 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,014.00	117	0	0
2,016.00	896	1,013	1,013
2,016.50	1,162	515	1,528
2,018.00	2,252	2,561	4,088
2,020.00	4,326	6,578	10,666
2,022.00	9,000	13,326	23,992
2,024.00	15,031	24,031	48,023
2,024.50	18,575	8,402	56,425

Device	Routing	Invert	Outlet Devices
#1	Primary	2,017.50'	**24.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,017.50' / 2,016.50' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,018.00'	**1.7" Vert. Orifice/Grate** C= 0.600
#3	Device 1	2,021.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	2,023.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	2,024.00'	**51.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00

Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=14.12 cfs @ 12.22 hrs HW=2,024.07' TW=2,017.83' (Dynamic Tailwater)
1=**Culvert** (Passes 11.73 cfs of 35.69 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 0.19 cfs @ 11.79 fps)
3=**Orifice/Grate** (Orifice Controls 0.37 cfs @ 7.52 fps)
4=**Orifice/Grate** (Weir Controls 11.17 cfs @ 2.46 fps)
5=**Broad-Crested Rectangular Weir** (Weir Controls 2.39 cfs @ 0.70 fps)

Summary for Pond L: Pond L - P1

Inflow Area = 17.806 ac, 19.92% Impervious, Inflow Depth = 3.68" for 10 Year event
Inflow = 101.60 cfs @ 11.99 hrs, Volume= 5.464 af
Outflow = 50.64 cfs @ 12.09 hrs, Volume= 5.439 af, Atten= 50%, Lag= 6.5 min
Primary = 50.64 cfs @ 12.09 hrs, Volume= 5.439 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 1,944.75' Surf.Area= 10,475 sf Storage= 14,819 cf
Peak Elev= 1,949.10' @ 12.09 hrs Surf.Area= 28,887 sf Storage= 108,329 cf (93,510 cf above start)

Plug-Flow detention time= 798.9 min calculated for 5.099 af (93% of inflow)
Center-of-Mass det. time= 707.6 min (1,515.7 - 808.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,941.50'	168,156 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,941.50	1,964	0	0
1,942.00	2,435	1,100	1,100
1,944.00	5,350	7,785	8,885
1,946.00	19,017	24,367	33,252
1,948.00	25,967	44,984	78,236
1,950.00	31,290	57,257	135,493
1,951.00	34,037	32,664	168,156

Device	Routing	Invert	Outlet Devices
#1	Primary	1,943.00'	**36.0" Round Culvert** L= 370.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,943.00' / 1,938.00' S= 0.0135 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	1,944.75'	**2.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	1,947.75'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	1,950.00'	**20.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=50.62 cfs @ 12.09 hrs HW=1,949.10' TW=1,938.45' (Dynamic Tailwater)
└1=**Culvert** (Passes 50.62 cfs of 72.97 cfs potential flow)
  └2=**Orifice/Grate** (Orifice Controls 0.34 cfs @ 9.92 fps)
  └3=**Orifice/Grate** (Orifice Controls 50.28 cfs @ 5.59 fps)
└4=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond M: OPEN SWALE

Inflow Area =	4.790 ac,	2.76% Impervious,	Inflow Depth =	3.28"	for 10 Year event
Inflow =	27.92 cfs @	11.97 hrs,	Volume=	1.310 af	
Outflow =	23.30 cfs @	12.02 hrs,	Volume=	1.310 af,	Atten= 17%, Lag= 2.7 min
Discarded =	0.10 cfs @	12.02 hrs,	Volume=	0.263 af	
Primary =	23.20 cfs @	12.02 hrs,	Volume=	1.047 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,889.92' @ 12.02 hrs Surf.Area= 8,400 sf Storage= 14,156 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 234.5 min (1,057.8 - 823.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,887.50'	19,290 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,887.50	2,995	0	0
1,888.00	4,500	1,874	1,874
1,889.00	6,437	5,469	7,342
1,890.00	8,574	7,506	14,848
1,890.50	9,195	4,442	19,290

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,887.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,889.00'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.10 cfs @ 12.02 hrs HW=1,889.92' (Free Discharge)
└1=**Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=23.17 cfs @ 12.02 hrs HW=1,889.92' TW=1,881.50' (Dynamic Tailwater)
└2=**Broad-Crested Rectangular Weir** (Weir Controls 23.17 cfs @ 2.52 fps)

Summary for Pond MH8: Manhole

Inflow Area = 7.919 ac, 30.19% Impervious, Inflow Depth = 3.95" for 10 Year event
Inflow = 52.50 cfs @ 11.97 hrs, Volume= 2.607 af
Outflow = 52.50 cfs @ 11.97 hrs, Volume= 2.607 af, Atten= 0%, Lag= 0.0 min
Primary = 52.50 cfs @ 11.97 hrs, Volume= 2.607 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,036.93' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,033.90'	**42.0" Round Culvert** L= 158.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,033.90' / 1,997.00' S= 0.2335 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=52.45 cfs @ 11.97 hrs HW=2,036.93' TW=2,000.34' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 52.45 cfs @ 5.93 fps)

Summary for Pond N: OPEN SWALE

Inflow Area = 1.568 ac, 0.00% Impervious, Inflow Depth = 3.18" for 10 Year event
Inflow = 8.89 cfs @ 11.97 hrs, Volume= 0.416 af
Outflow = 7.98 cfs @ 12.00 hrs, Volume= 0.416 af, Atten= 10%, Lag= 1.8 min
Discarded = 0.03 cfs @ 12.01 hrs, Volume= 0.078 af
Primary = 7.95 cfs @ 12.00 hrs, Volume= 0.339 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,875.69' @ 12.01 hrs Surf.Area= 2,703 sf Storage= 3,758 cf

Plug-Flow detention time= 205.0 min calculated for 0.416 af (100% of inflow)
Center-of-Mass det. time= 205.1 min (1,030.8 - 825.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,873.50'	5,529 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,873.50	644	0	0
1,874.00	1,260	476	476
1,875.00	2,031	1,646	2,122
1,876.00	3,003	2,517	4,639
1,876.25	4,124	891	5,529

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,873.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,875.00'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.01 hrs HW=1,875.69' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=7.94 cfs @ 12.00 hrs HW=1,875.69' TW=1,875.06' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 7.94 cfs @ 2.30 fps)

Summary for Pond O: Open Swale

Inflow Area =	4.430 ac,	12.42% Impervious,	Inflow Depth = 3.48"	for 10 Year event	
Inflow =	27.22 cfs @	11.97 hrs,	Volume=	1.284 af	
Outflow =	24.96 cfs @	12.00 hrs,	Volume=	1.284 af,	Atten= 8%, Lag= 1.8 min
Discarded =	0.10 cfs @	12.00 hrs,	Volume=	0.238 af	
Primary =	16.98 cfs @	12.00 hrs,	Volume=	0.961 af	
Secondary =	7.88 cfs @	12.00 hrs,	Volume=	0.085 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,839.78' @ 12.00 hrs Surf.Area= 8,443 sf Storage= 12,022 cf

Plug-Flow detention time= 196.5 min calculated for 1.284 af (100% of inflow)
Center-of-Mass det. time= 196.6 min (1,015.2 - 818.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,837.50'	13,965 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,837.50	2,035	0	0
1,838.00	3,275	1,328	1,328
1,839.00	6,500	4,888	6,215
1,840.00	9,000	7,750	13,965

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,837.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,830.00'	**24.0" Round Culvert** L= 400.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,830.00' / 1,768.00' S= 0.1550 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#3	Device 2	1,839.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	1,839.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.10 cfs @ 12.00 hrs HW=1,839.78' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=16.97 cfs @ 12.00 hrs HW=1,839.78' TW=1,769.28' (Dynamic Tailwater)
└─**2=Culvert** (Passes 16.97 cfs of 44.81 cfs potential flow)
  └─**3=Orifice/Grate** (Orifice Controls 16.97 cfs @ 4.24 fps)

Secondary OutFlow Max=7.86 cfs @ 12.00 hrs HW=1,839.78' TW=1,838.07' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 7.86 cfs @ 1.42 fps)

Summary for Pond Q: OPEN SWALE

Inflow Area = 3.629 ac, 0.00% Impervious, Inflow Depth = 3.18" for 10 Year event
Inflow = 20.28 cfs @ 11.98 hrs, Volume= 0.963 af
Outflow = 17.96 cfs @ 12.02 hrs, Volume= 0.963 af, Atten= 11%, Lag= 2.2 min
Discarded = 0.07 cfs @ 12.02 hrs, Volume= 0.214 af
Primary = 17.90 cfs @ 12.02 hrs, Volume= 0.749 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,879.74' @ 12.02 hrs Surf.Area= 5,872 sf Storage= 10,149 cf

Plug-Flow detention time= 270.3 min calculated for 0.963 af (100% of inflow)
Center-of-Mass det. time= 270.5 min (1,096.5 - 826.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,877.50'	11,728 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,877.50	3,319	0	0
1,878.00	3,840	1,790	1,790
1,879.00	4,913	4,377	6,166
1,880.00	6,211	5,562	11,728

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,877.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,879.00'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.07 cfs @ 12.02 hrs HW=1,879.74' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=17.86 cfs @ 12.02 hrs HW=1,879.74' TW=1,875.08' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 17.86 cfs @ 2.42 fps)

Summary for Pond S: Open Swale

Inflow Area = 2.213 ac, 0.00% Impervious, Inflow Depth = 3.18" for 10 Year event
Inflow = 12.14 cfs @ 11.98 hrs, Volume= 0.587 af
Outflow = 12.04 cfs @ 11.99 hrs, Volume= 0.587 af, Atten= 1%, Lag= 0.6 min
Discarded = 0.04 cfs @ 11.99 hrs, Volume= 0.142 af
Primary = 12.00 cfs @ 11.99 hrs, Volume= 0.445 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,919.45' @ 11.99 hrs Surf.Area= 3,370 sf Storage= 4,921 cf

Plug-Flow detention time= 314.5 min calculated for 0.587 af (100% of inflow)
Center-of-Mass det. time= 314.7 min (1,141.2 - 826.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,917.50'	6,899 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,917.50	1,372	0	0
1,918.00	2,190	891	891
1,920.00	3,818	6,008	6,899

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,917.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,919.25'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.04 cfs @ 11.99 hrs HW=1,919.45' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=11.98 cfs @ 11.99 hrs HW=1,919.45' TW=1,910.44' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 11.98 cfs @ 1.20 fps)

Summary for Pond sp1: Storm Planters

Inflow Area = 0.986 ac, 86.08% Impervious, Inflow Depth = 5.41" for 10 Year event
Inflow = 8.28 cfs @ 11.97 hrs, Volume= 0.445 af
Outflow = 1.53 cfs @ 12.14 hrs, Volume= 0.390 af, Atten= 82%, Lag= 10.3 min
Primary = 1.53 cfs @ 12.14 hrs, Volume= 0.390 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,151.24' @ 12.14 hrs Surf.Area= 11,960 sf Storage= 11,161 cf

Plug-Flow detention time= 547.3 min calculated for 0.390 af (88% of inflow)
Center-of-Mass det. time= 487.2 min (1,247.1 - 759.9)

Volume	Invert	Avail.Storage	Storage Description
#1	2,147.50'	2,392 cf	**stone underdrain (Prismatic)** Listed below (Recalc) -Impervious 5,980 cf Overall x 40.0% Voids
#2	2,148.50'	1,346 cf	**filter media (Prismatic)** Listed below (Recalc) 8,970 cf Overall x 15.0% Voids
#3	2,150.00'	11,960 cf	**surface storage (Prismatic)** Listed below (Recalc)
		15,698 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,147.50	5,980	0	0
2,148.50	5,980	5,980	5,980

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,148.50	5,980	0	0
2,150.00	5,980	8,970	8,970

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,150.00	5,980	0	0
2,151.00	5,980	5,980	5,980
2,152.00	5,980	5,980	11,960

Device	Routing	Invert	Outlet Devices
#1	Primary	2,110.00'	**24.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,110.00' / 2,108.00' S= 0.0057 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,148.50'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	2,151.00'	**6.0" Horiz. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.53 cfs @ 12.14 hrs HW=2,151.24' TW=2,108.14' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.53 cfs of 66.87 cfs potential flow)
 ├─**2=Exfiltration** (Exfiltration Controls 0.14 cfs)
 └─**3=Orifice/Grate** (Orifice Controls 1.39 cfs @ 2.37 fps)

Summary for Pond T: Open Swale

Inflow Area = 1.813 ac, 0.00% Impervious, Inflow Depth = 3.18" for 10 Year event
Inflow = 10.28 cfs @ 11.97 hrs, Volume= 0.481 af
Outflow = 10.22 cfs @ 11.98 hrs, Volume= 0.481 af, Atten= 1%, Lag= 0.5 min
Discarded = 0.03 cfs @ 11.98 hrs, Volume= 0.085 af
Primary = 10.19 cfs @ 11.98 hrs, Volume= 0.396 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,991.18' @ 11.98 hrs Surf.Area= 2,500 sf Storage= 2,792 cf

Plug-Flow detention time= 194.7 min calculated for 0.481 af (100% of inflow)
Center-of-Mass det. time= 194.9 min (1,020.6 - 825.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,989.50'	5,389 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,989.50	935	0	0
1,990.00	1,375	578	578
1,991.00	2,211	1,793	2,371
1,992.00	3,826	3,019	5,389

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,989.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,991.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 11.98 hrs HW=1,991.18' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=10.18 cfs @ 11.98 hrs HW=1,991.18' TW=1,986.67' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 10.18 cfs @ 1.14 fps)

Summary for Pond U: Open Swale

Inflow Area = 6.478 ac, 2.76% Impervious, Inflow Depth = 3.18" for 10 Year event
Inflow = 29.39 cfs @ 12.04 hrs, Volume= 1.719 af
Outflow = 29.04 cfs @ 12.06 hrs, Volume= 1.719 af, Atten= 1%, Lag= 0.9 min
Discarded = 0.08 cfs @ 12.06 hrs, Volume= 0.337 af
Primary = 28.95 cfs @ 12.06 hrs, Volume= 1.382 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,015.86' @ 12.06 hrs Surf.Area= 7,196 sf Storage= 13,035 cf

Plug-Flow detention time= 288.7 min calculated for 1.719 af (100% of inflow)
Center-of-Mass det. time= 288.9 min (1,120.3 - 831.4)

Volume	Invert	Avail.Storage	Storage Description
#1	2,013.50'	18,120 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,013.50	2,584	0	0
2,014.00	4,540	1,781	1,781
2,015.00	6,354	5,447	7,228
2,016.00	7,336	6,845	14,073
2,016.50	8,850	4,047	18,120

Device	Routing	Invert	Outlet Devices
#1	Discarded	2,013.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	2,015.50'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.08 cfs @ 12.06 hrs HW=2,015.86' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=28.92 cfs @ 12.06 hrs HW=2,015.86' TW=2,014.98' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 28.92 cfs @ 1.62 fps)

Summary for Pond W: Open Swale

Inflow Area = 4.293 ac, 0.00% Impervious, Inflow Depth = 3.42" for 10 Year event
Inflow = 29.67 cfs @ 11.99 hrs, Volume= 1.225 af
Outflow = 23.76 cfs @ 12.04 hrs, Volume= 1.225 af, Atten= 20%, Lag= 2.9 min
Discarded = 0.10 cfs @ 12.04 hrs, Volume= 0.274 af
Primary = 23.66 cfs @ 12.04 hrs, Volume= 0.951 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,790.43' @ 12.04 hrs Surf.Area= 8,573 sf Storage= 15,124 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 310.0 min (1,128.5 - 818.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,787.50'	25,064 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,787.50	2,399	0	0
1,788.00	3,136	1,384	1,384
1,789.00	4,612	3,874	5,258
1,790.00	8,000	6,306	11,564
1,791.50	10,000	13,500	25,064

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,787.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,789.50'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.10 cfs @ 12.04 hrs HW=1,790.43' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=23.64 cfs @ 12.04 hrs HW=1,790.43' TW=1,769.40' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 23.64 cfs @ 2.54 fps)

Summary for Pond X: Open Swale

Inflow Area = 2.495 ac, 0.00% Impervious, Inflow Depth = 3.18" for 10 Year event
Inflow = 14.15 cfs @ 11.97 hrs, Volume= 0.662 af
Outflow = 13.57 cfs @ 11.99 hrs, Volume= 0.662 af, Atten= 4%, Lag= 1.3 min
Discarded = 0.07 cfs @ 11.99 hrs, Volume= 0.175 af
Primary = 13.49 cfs @ 11.99 hrs, Volume= 0.487 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,799.49' @ 11.99 hrs Surf.Area= 6,290 sf Storage= 5,910 cf

Plug-Flow detention time= 216.9 min calculated for 0.662 af (100% of inflow)
Center-of-Mass det. time= 217.1 min (1,042.7 - 825.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,794.00'	556 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,391 cf Overall x 40.0% Voids
#2	1,795.00'	522 cf	**Filter Media (Prismatic)** Listed below (Recalc) 3,478 cf Overall x 15.0% Voids
#3	1,797.50'	9,040 cf	**Surface Storage (Prismatic)** Listed below (Recalc)
		10,118 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,794.00	1,391	0	0
1,795.00	1,391	1,391	1,391

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,795.00	1,391	0	0
1,797.50	1,391	3,478	3,478

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,797.50	1,391	0	0
1,798.00	1,916	827	827
1,799.00	2,930	2,423	3,250
1,800.00	4,105	3,518	6,767
1,800.50	4,984	2,272	9,040

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,794.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,799.00'	**15.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50

3.00 3.50
Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07
3.20 3.32

Discarded OutFlow Max=0.07 cfs @ 11.99 hrs HW=1,799.49' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=13.47 cfs @ 11.99 hrs HW=1,799.49' TW=1,794.62' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 13.47 cfs @ 1.83 fps)

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Road Runoff Area=53,980 sf 57.09% Impervious Runoff Depth=5.11"
Flow Length=230' Tc=9.6 min CN=88 Runoff=9.31 cfs 0.528 af

Subcatchment 2a: Road Runoff Area=14,154 sf 77.24% Impervious Runoff Depth=5.68"
Flow Length=319' Tc=6.0 min CN=93 Runoff=2.92 cfs 0.154 af

Subcatchment 2S: Subcatchment 2 Runoff Area=18,469 sf 23.82% Impervious Runoff Depth=3.92"
Flow Length=375' Tc=7.8 min CN=77 Runoff=2.74 cfs 0.138 af

Subcatchment 3S: Road Runoff Area=7,863 sf 52.40% Impervious Runoff Depth=5.00"
Flow Length=272' Slope=0.1100 '/' Tc=6.0 min CN=87 Runoff=1.51 cfs 0.075 af

Subcatchment 4S: Road Runoff Area=4,505 sf 100.00% Impervious Runoff Depth=6.26"
Flow Length=274' Tc=6.0 min CN=98 Runoff=0.96 cfs 0.054 af

Subcatchment 5S: Subcatchment 5 Runoff Area=92,020 sf 7.43% Impervious Runoff Depth=3.51"
Flow Length=715' Tc=13.9 min CN=73 Runoff=9.97 cfs 0.618 af

Subcatchment 6aS: subcatch 6a Runoff Area=531,048 sf 4.06% Impervious Runoff Depth=3.41"
Flow Length=1,255' Tc=18.8 min CN=72 Runoff=47.81 cfs 3.461 af

Subcatchment 6S: subcatch 6 Runoff Area=389,580 sf 4.65% Impervious Runoff Depth=3.41"
Flow Length=2,175' Tc=19.1 min CN=72 Runoff=34.84 cfs 2.539 af

Subcatchment 7S: subcatch 7 Runoff Area=27,573 sf 35.18% Impervious Runoff Depth=4.45"
Flow Length=245' Tc=6.0 min CN=82 Runoff=4.85 cfs 0.235 af

Subcatchment 9a: Road Runoff Area=3,427 sf 70.18% Impervious Runoff Depth=5.45"
Flow Length=238' Slope=0.0790 '/' Tc=6.0 min CN=91 Runoff=0.69 cfs 0.036 af

Subcatchment 10a: Road Runoff Area=3,850 sf 94.81% Impervious Runoff Depth=6.14"
Flow Length=271' Slope=0.0940 '/' Tc=6.0 min CN=97 Runoff=0.82 cfs 0.045 af

Subcatchment 11c: Road Runoff Area=16,077 sf 70.57% Impervious Runoff Depth=5.45"
Flow Length=131' Slope=0.0920 '/' Tc=6.0 min CN=91 Runoff=3.25 cfs 0.168 af

Subcatchment 12S: Road Runoff Area=2,940 sf 88.78% Impervious Runoff Depth=5.91"
Flow Length=149' Slope=0.0810 '/' Tc=6.0 min CN=95 Runoff=0.62 cfs 0.033 af

Subcatchment 14a: Main Road Runoff Area=7,340 sf 58.11% Impervious Runoff Depth=5.11"
Flow Length=511' Slope=0.0280 '/' Tc=6.0 min CN=88 Runoff=1.43 cfs 0.072 af

Subcatchment 14B: Road Runoff Area=11,401 sf 70.83% Impervious Runoff Depth=5.45"
Flow Length=526' Tc=6.0 min CN=91 Runoff=2.30 cfs 0.119 af

Subcatchment 14C: BUILDING Runoff Area=25,251 sf 76.67% Impervious Runoff Depth=5.56"
Flow Length=127' Tc=6.8 min CN=92 Runoff=5.02 cfs 0.269 af

Subcatchment 15S: Main Road Runoff Area=15,144 sf 62.60% Impervious Runoff Depth=5.22"
Flow Length=494' Slope=0.0290 '/' Tc=6.0 min CN=89 Runoff=2.98 cfs 0.151 af

Subcatchment 16a: Main Road Runoff Area=7,317 sf 93.81% Impervious Runoff Depth=6.14"
Flow Length=306' Slope=0.0750 '/' Tc=6.0 min CN=97 Runoff=1.55 cfs 0.086 af

Subcatchment 17a: Main Road Runoff Area=4,370 sf 69.57% Impervious Runoff Depth=5.45"
Flow Length=292' Slope=0.0790 '/' Tc=6.0 min CN=91 Runoff=0.88 cfs 0.046 af

Subcatchment 18a: Main Road Runoff Area=30,338 sf 90.27% Impervious Runoff Depth=6.03"
Flow Length=276' Tc=6.0 min CN=96 Runoff=6.40 cfs 0.350 af

Subcatchment 19a: Main Road Runoff Area=3,974 sf 73.48% Impervious Runoff Depth=5.56"
Flow Length=239' Slope=0.0400 '/' Tc=6.0 min CN=92 Runoff=0.81 cfs 0.042 af

Subcatchment 20a: BEHIND 1 Runoff Area=27,573 sf 3.30% Impervious Runoff Depth=3.71"
Flow Length=395' Slope=0.0380 '/' Tc=6.0 min CN=75 Runoff=4.16 cfs 0.196 af

Subcatchment 20b: BEHIND 1 Runoff Area=27,573 sf 0.00% Impervious Runoff Depth=3.51"
Flow Length=236' Tc=6.0 min CN=73 Runoff=3.95 cfs 0.185 af

Subcatchment 21S: Main Road Runoff Area=4,574 sf 72.80% Impervious Runoff Depth=5.45"
Flow Length=269' Slope=0.0610 '/' Tc=6.0 min CN=91 Runoff=0.92 cfs 0.048 af

Subcatchment 22S: Main Road Runoff Area=18,606 sf 71.34% Impervious Runoff Depth=5.45"
Flow Length=261' Tc=6.0 min CN=91 Runoff=3.76 cfs 0.194 af

Subcatchment 23S: 18 fairway Runoff Area=31,919 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=287' Tc=6.8 min CN=74 Runoff=4.56 cfs 0.220 af

Subcatchment 24S: Fairway of 10 & 18 Runoff Area=176,265 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=252' Tc=6.0 min CN=74 Runoff=25.91 cfs 1.217 af

Subcatchment 25S: E. end Main Road Runoff Area=3,751 sf 73.05% Impervious Runoff Depth=5.56"
Flow Length=227' Slope=0.0700 '/' Tc=6.0 min CN=92 Runoff=0.77 cfs 0.040 af

Subcatchment 26S: E. end Main Road Runoff Area=3,645 sf 75.17% Impervious Runoff Depth=5.56"
Flow Length=226' Slope=0.0700 '/' Tc=6.0 min CN=92 Runoff=0.74 cfs 0.039 af

Subcatchment 27b: E. end Main Road Runoff Area=3,976 sf 73.69% Impervious Runoff Depth=5.56"
Flow Length=240' Slope=0.1250 '/' Tc=6.0 min CN=92 Runoff=0.81 cfs 0.042 af

Subcatchment 28a: E. end Main Road Runoff Area=4,060 sf 76.11% Impervious Runoff Depth=5.56"
Flow Length=256' Slope=0.1170 '/' Tc=6.0 min CN=92 Runoff=0.83 cfs 0.043 af

Subcatchment 30S: E. end Main Road Runoff Area=2,719 sf 73.92% Impervious Runoff Depth=5.56"
Flow Length=163' Slope=0.1290 '/' Tc=6.0 min CN=92 Runoff=0.55 cfs 0.029 af

Subcatchment 31S: E. end Main Road Runoff Area=2,909 sf 74.25% Impervious Runoff Depth=5.56"
Flow Length=177' Slope=0.1190 '/' Tc=6.0 min CN=92 Runoff=0.59 cfs 0.031 af

Subcatchment 32S: E. end Main Road Runoff Area=3,581 sf 73.72% Impervious Runoff Depth=5.56"
Flow Length=212' Slope=0.1270 '/' Tc=6.0 min CN=92 Runoff=0.73 cfs 0.038 af

Subcatchment 33S: E. end Main Road Runoff Area=3,736 sf 74.41% Impervious Runoff Depth=5.56"
Flow Length=230' Slope=0.1170 '/' Tc=6.0 min CN=92 Runoff=0.76 cfs 0.040 af

Subcatchment 35a: E. end Main Road Runoff Area=3,308 sf 72.55% Impervious Runoff Depth=5.45"
Flow Length=196' Slope=0.1220 '/' Tc=6.0 min CN=91 Runoff=0.67 cfs 0.034 af

Subcatchment 35S: Subcatchment 35 Runoff Area=532,041 sf 2.97% Impervious Runoff Depth=3.31"
Flow Length=3,110' Tc=22.0 min CN=71 Runoff=42.53 cfs 3.366 af

Subcatchment 36S: E. end Main Road Runoff Area=3,204 sf 74.91% Impervious Runoff Depth=5.56"
Flow Length=198' Slope=0.1210 '/' Tc=6.0 min CN=92 Runoff=0.65 cfs 0.034 af

Subcatchment 37S: E. end Main Road Runoff Area=4,447 sf 71.96% Impervious Runoff Depth=5.45"
Flow Length=243' Slope=0.0620 '/' Tc=6.0 min CN=91 Runoff=0.90 cfs 0.046 af

Subcatchment 38S: E. end Main Road Runoff Area=3,569 sf 76.49% Impervious Runoff Depth=5.56"
Flow Length=207' Slope=0.0720 '/' Tc=6.0 min CN=92 Runoff=0.73 cfs 0.038 af

Subcatchment 41S: W. end of Main Road Runoff Area=7,632 sf 100.00% Impervious Runoff Depth=6.26"
Flow Length=290' Tc=6.0 min CN=98 Runoff=1.62 cfs 0.091 af

Subcatchment 42S: W. end of Main Road Runoff Area=7,012 sf 100.00% Impervious Runoff Depth=6.26"
Flow Length=283' Tc=6.0 min CN=98 Runoff=1.49 cfs 0.084 af

Subcatchment 43S: W. end of Main Road Runoff Area=3,858 sf 77.76% Impervious Runoff Depth=5.68"
Flow Length=244' Tc=6.0 min CN=93 Runoff=0.80 cfs 0.042 af

Subcatchment 44S: W. end of Main Road Runoff Area=3,652 sf 82.15% Impervious Runoff Depth=5.79"
Flow Length=239' Tc=6.0 min CN=94 Runoff=0.76 cfs 0.040 af

Subcatchment 45S: Hole 1 Runoff Area=423,327 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=1,196' Tc=8.7 min CN=74 Runoff=56.47 cfs 2.923 af

Subcatchment 50S: W. end of Main Rd. Runoff Area=3,930 sf 100.00% Impervious Runoff Depth=6.26"
Flow Length=293' Slope=0.1140 '/' Tc=6.0 min CN=98 Runoff=0.84 cfs 0.047 af

Subcatchment 51S: W. end of Main Rd. Runoff Area=17,667 sf 20.38% Impervious Runoff Depth=4.13"
Flow Length=361' Tc=6.0 min CN=79 Runoff=2.92 cfs 0.140 af

Subcatchment 52S: W. end of Main Rd. Runoff Area=9,545 sf 16.09% Impervious Runoff Depth=4.02"
Flow Length=320' Tc=6.0 min CN=78 Runoff=1.54 cfs 0.073 af

Subcatchment 53S: W. end of Main Rd. Runoff Area=19,250 sf 18.13% Impervious Runoff Depth=4.02"
Flow Length=336' Tc=6.0 min CN=78 Runoff=3.11 cfs 0.148 af

Subcatchment 54S: Golf Course Parking Runoff Area=95,833 sf 18.37% Impervious Runoff Depth=4.02"
Flow Length=722' Tc=8.2 min CN=78 Runoff=14.36 cfs 0.738 af

Subcatchment 55S: Golf Course Parking Runoff Area=15,270 sf 74.82% Impervious Runoff Depth=5.56"
Flow Length=259' Tc=6.0 min CN=92 Runoff=3.12 cfs 0.162 af

Subcatchment 56S: Main Rd. to 6 & 7 Runoff Area=18,020 sf 17.54% Impervious Runoff Depth=4.02"
Flow Length=245' Tc=6.0 min CN=78 Runoff=2.92 cfs 0.139 af

Subcatchment 57S: Main Rd. 6 & 7 Runoff Area=4,880 sf 82.97% Impervious Runoff Depth=5.79"
Flow Length=237' Tc=6.0 min CN=94 Runoff=1.01 cfs 0.054 af

Subcatchment 59S: Club House Runoff Area=7,222 sf 100.00% Impervious Runoff Depth=6.26"
Tc=6.0 min CN=98 Runoff=1.54 cfs 0.087 af

Subcatchment 60S: Roof Terraces Runoff Area=42,950 sf 86.08% Impervious Runoff Depth=5.91"
Tc=6.0 min CN=95 Runoff=9.00 cfs 0.485 af

Subcatchment 62S: Green of 18 Runoff Area=64,444 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=433' Tc=8.1 min CN=74 Runoff=8.78 cfs 0.445 af

Subcatchment 63S: Front end of Driving Range Runoff Area=230,281 sf 0.42% Impervious Runoff Depth=3.71"
Flow Length=893' Tc=14.4 min CN=75 Runoff=25.89 cfs 1.635 af

Subcatchment 65S: Driveway to Golf House Runoff Area=17,261 sf 50.63% Impervious Runoff Depth=4.89"
Flow Length=299' Tc=6.0 min CN=86 Runoff=3.25 cfs 0.161 af

Subcatchment 80S: existing woods Runoff Area=123,600 sf 0.00% Impervious Runoff Depth=3.51"
Flow Length=600' Tc=6.0 min CN=73 Runoff=17.70 cfs 0.829 af

Subcatchment 137S: BEHIND GARAGE Runoff Area=31,485 sf 0.00% Impervious Runoff Depth=3.31"
Flow Length=377' Tc=7.8 min CN=71 Runoff=3.99 cfs 0.199 af

Subcatchment 200S: Subcatchment 200 Runoff Area=3,328,419 sf 0.43% Impervious Runoff Depth=3.21"
Flow Length=3,545' Tc=23.5 min CN=70 Runoff=246.71 cfs 20.421 af

Subcatchment 201S: Tees of 18 & Greens of 10 Runoff Area=178,777 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=425' Tc=6.0 min CN=74 Runoff=26.28 cfs 1.235 af

Subcatchment 211S: Back End of the Driving Runoff Area=208,648 sf 2.76% Impervious Runoff Depth=3.71"
Flow Length=905' Tc=6.0 min CN=75 Runoff=31.45 cfs 1.482 af

Subcatchment 212S: Green of 13 Runoff Area=68,310 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=219' Tc=6.0 min CN=74 Runoff=10.04 cfs 0.472 af

Subcatchment 213S: Hole 16 Runoff Area=194,980 sf 0.00% Impervious Runoff Depth=3.82"
Flow Length=690' Tc=11.7 min CN=76 Runoff=24.64 cfs 1.423 af

Subcatchment 214S: Tees of 13 Runoff Area=158,070 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=757' Tc=6.4 min CN=74 Runoff=22.90 cfs 1.092 af

Subcatchment 218S: Green of 12, Tee of 13 Runoff Area=96,418 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=467' Tc=6.9 min CN=74 Runoff=13.72 cfs 0.666 af

Subcatchment 219S: Green of 11 Runoff Area=78,985 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=406' Tc=6.0 min CN=74 Runoff=11.61 cfs 0.545 af

Subcatchment 220S: Fairway of 11 Runoff Area=282,188 sf 2.76% Impervious Runoff Depth=3.61"
Flow Length=869' Tc=12.2 min CN=74 Runoff=33.26 cfs 1.949 af

Subcatchment 223S: Golf Hole 15 and Runoff Area=192,957 sf 12.42% Impervious Runoff Depth=3.92"
Flow Length=401' Tc=6.0 min CN=77 Runoff=30.52 cfs 1.447 af

Subcatchment 225S: Fairway 14 Runoff Area=187,018 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=531' Tc=6.0 min CN=74 Runoff=27.49 cfs 1.291 af

Subcatchment 226S: Fairway & Green of 14 Runoff Area=108,684 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=468' Tc=6.0 min CN=74 Runoff=15.97 cfs 0.751 af

Subcatchment 300S: Subcatchment 300 Runoff Area=712,598 sf 0.46% Impervious Runoff Depth=3.21"
Flow Length=2,040' Tc=21.0 min CN=70 Runoff=56.57 cfs 4.372 af

Subcatchment 301S: Ex Stream Runoff Area=91,384 sf 0.00% Impervious Runoff Depth=3.41"
Flow Length=497' Tc=6.0 min CN=72 Runoff=12.73 cfs 0.596 af

Subcatchment 302a: New Subcatch Runoff Area=155,197 sf 0.00% Impervious Runoff Depth=3.31"
Flow Length=418' Slope=0.3800 '/' Tc=7.6 min CN=71 Runoff=19.82 cfs 0.982 af

Subcatchment 302b: New Subcatch Runoff Area=157,518 sf 0.00% Impervious Runoff Depth=3.41"
Flow Length=985' Tc=8.9 min CN=72 Runoff=19.75 cfs 1.027 af

Subcatchment 302S: (new Subcat) Runoff Area=186,835 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=1,014' Tc=6.0 min CN=70 Runoff=24.59 cfs 1.146 af

Subcatchment 303S: Subcatchment 303 Runoff Area=251,048 sf 0.00% Impervious Runoff Depth=3.41"
Flow Length=1,450' Tc=9.0 min CN=72 Runoff=31.38 cfs 1.636 af

Subcatchment 304: (new Subcat) Runoff Area=212,622 sf 0.00% Impervious Runoff Depth=3.31"
Flow Length=863' Tc=22.7 min CN=71 Runoff=16.63 cfs 1.345 af

Subcatchment 305s: Land W. side of hotel Runoff Area=150,290 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=965' Tc=7.9 min CN=74 Runoff=20.62 cfs 1.038 af

Subcatchment 306S: 12 tee Runoff Area=207,204 sf 0.00% Impervious Runoff Depth=3.31"
Flow Length=1,072' Tc=7.6 min CN=71 Runoff=26.46 cfs 1.311 af

Subcatchment 307S: (new Subcat) Runoff Area=122,324 sf 0.00% Impervious Runoff Depth=3.41"
Flow Length=1,098' Tc=7.8 min CN=72 Runoff=15.96 cfs 0.797 af

Subcatchment 308S: (new Subcat) Runoff Area=346,246 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=936' Tc=20.7 min CN=70 Runoff=27.70 cfs 2.124 af

Subcatchment 309S: (new Subcat) Runoff Area=316,725 sf 4.30% Impervious Runoff Depth=3.51"
Flow Length=649' Tc=13.3 min CN=73 Runoff=34.98 cfs 2.125 af

Subcatchment 310S: Existing Wooded Area Runoff Area=157,211 sf 4.68% Impervious Runoff Depth=3.41"
Flow Length=474' Tc=6.0 min CN=72 Runoff=21.91 cfs 1.025 af

Subcatchment 311S: Existing Wooded Area Runoff Area=312,389 sf 0.67% Impervious Runoff Depth=3.41"
Flow Length=1,779' Tc=14.7 min CN=72 Runoff=32.04 cfs 2.036 af

Subcatchment 315S: Subcatchment 315 Runoff Area=363,440 sf 0.00% Impervious Runoff Depth=3.31"
Flow Length=582' Tc=10.3 min CN=71 Runoff=42.07 cfs 2.299 af

Subcatchment 316A: Existing By Maintenance Runoff Area=25,135 sf 11.61% Impervious Runoff Depth=3.51"
Flow Length=370' Tc=6.2 min CN=73 Runoff=3.57 cfs 0.169 af

Subcatchment 316S: existing Runoff Area=423,713 sf 1.26% Impervious Runoff Depth=3.31"
Flow Length=944' Tc=7.4 min CN=71 Runoff=54.52 cfs 2.680 af

Reach 1R: overland flow Avg. Flow Depth=1.42' Max Vel=11.49 fps Inflow=72.39 cfs 3.715 af
n=0.050 L=75.0' S=0.1733 '/' Capacity=136.22 cfs Outflow=72.38 cfs 3.715 af

Reach 3: Rip Rap Channel Avg. Flow Depth=1.27' Max Vel=15.05 fps Inflow=457.64 cfs 42.157 af
n=0.050 L=51.0' S=0.3922 '/' Capacity=672.04 cfs Outflow=457.64 cfs 42.157 af

Reach 3R: Swale along RR Tracks Avg. Flow Depth=1.55' Max Vel=5.49 fps Inflow=46.40 cfs 2.223 af
n=0.040 L=1,045.0' S=0.0258 '/' Capacity=126.24 cfs Outflow=43.24 cfs 2.223 af

Reach 5: Stream Channel Avg. Flow Depth=1.23' Max Vel=14.47 fps Inflow=115.41 cfs 9.982 af
n=0.050 L=160.0' S=0.3000 '/' Capacity=1,318.86 cfs Outflow=115.37 cfs 9.982 af

Reach 5A: Stream Channel Avg. Flow Depth=1.39' Max Vel=13.22 fps Inflow=124.30 cfs 12.578 af
n=0.050 L=340.0' S=0.2206 '/' Capacity=1,130.92 cfs Outflow=124.23 cfs 12.578 af

Reach 5B: Stream Channel Avg. Flow Depth=1.53' Max Vel=12.09 fps Inflow=130.30 cfs 13.724 af
n=0.050 L=120.0' S=0.1667 '/' Capacity=983.02 cfs Outflow=130.30 cfs 13.724 af

Reach 5C: Stream Channel Avg. Flow Depth=1.57' Max Vel=11.63 fps Inflow=130.30 cfs 13.724 af
n=0.050 L=277.0' S=0.1498 '/' Capacity=932.02 cfs Outflow=130.20 cfs 13.724 af

Reach 5D: Stream Channel Avg. Flow Depth=1.70' Max Vel=16.62 fps Inflow=167.25 cfs 15.589 af
n=0.040 L=300.0' S=0.2017 '/' Capacity=385.96 cfs Outflow=167.17 cfs 15.589 af

Reach 5R: roadside swale Avg. Flow Depth=1.39' Max Vel=6.37 fps Inflow=30.70 cfs 1.391 af
n=0.050 L=607.0' S=0.0626 '/' Capacity=61.25 cfs Outflow=29.97 cfs 1.391 af

Reach 6: (new Reach) Avg. Flow Depth=1.00' Max Vel=9.35 fps Inflow=55.95 cfs 6.095 af
n=0.050 L=175.0' S=0.1571 '/' Capacity=217.11 cfs Outflow=55.94 cfs 6.095 af

Reach 6R: Clean Swale Avg. Flow Depth=1.50' Max Vel=8.10 fps Inflow=60.65 cfs 7.071 af
n=0.030 L=245.0' S=0.0327 '/' Capacity=114.21 cfs Outflow=60.59 cfs 7.071 af

Reach 7B: Existing Ditch Avg. Flow Depth=0.30' Max Vel=5.17 fps Inflow=3.57 cfs 0.169 af
n=0.040 L=125.0' S=0.1280 '/' Capacity=172.60 cfs Outflow=3.57 cfs 0.169 af

Reach 7C: Existing Ditch Avg. Flow Depth=1.64' Max Vel=9.86 fps Inflow=59.38 cfs 3.421 af
n=0.050 L=530.0' S=0.1264 '/' Capacity=137.22 cfs Outflow=59.04 cfs 3.421 af

Reach 8: Stream Channel Avg. Flow Depth=0.72' Max Vel=8.73 fps Inflow=242.21 cfs 20.034 af
n=0.050 L=245.0' S=0.2816 '/' Capacity=532.84 cfs Outflow=241.85 cfs 20.034 af

Reach 9R: swale Avg. Flow Depth=0.51' Max Vel=3.40 fps Inflow=3.99 cfs 0.199 af
n=0.030 L=280.0' S=0.0179 '/' Capacity=11.64 cfs Outflow=3.93 cfs 0.199 af

Reach 11R: Overland Flow Avg. Flow Depth=0.23' Max Vel=2.87 fps Inflow=56.48 cfs 6.453 af
n=0.080 L=760.0' S=0.1776 '/' Capacity=635.50 cfs Outflow=52.02 cfs 6.453 af

Reach 12R: Overland Flow Avg. Flow Depth=0.13' Max Vel=2.13 fps Inflow=9.97 cfs 0.618 af
n=0.080 L=588.0' S=0.2058 '/' Capacity=312.77 cfs Outflow=9.21 cfs 0.618 af

Reach 13: Channel at tracks Avg. Flow Depth=2.15' Max Vel=10.38 fps Inflow=283.06 cfs 22.257 af
n=0.035 L=450.0' S=0.0444 '/' Capacity=604.81 cfs Outflow=282.05 cfs 22.257 af

Reach 14R: Swale Avg. Flow Depth=0.16' Max Vel=4.66 fps Inflow=1.86 cfs 0.431 af
n=0.030 L=665.0' S=0.1323 '/' Capacity=305.76 cfs Outflow=1.84 cfs 0.431 af

Reach 15R: Cobble Stream Avg. Flow Depth=1.37' Max Vel=11.58 fps Inflow=107.32 cfs 10.532 af
n=0.050 L=245.0' S=0.1714 '/' Capacity=226.76 cfs Outflow=107.26 cfs 10.532 af

Reach 40R: Swale Avg. Flow Depth=1.43' Max Vel=6.82 fps Inflow=52.49 cfs 6.219 af
n=0.040 L=95.0' S=0.0411 '/' Capacity=106.53 cfs Outflow=52.47 cfs 6.219 af

Reach 51R: Swale Avg. Flow Depth=0.93' Max Vel=6.54 fps Inflow=29.61 cfs 1.932 af
n=0.030 L=535.0' S=0.0374 '/' Capacity=162.52 cfs Outflow=29.09 cfs 1.932 af

Reach 58a: Swale along RR Tracks Avg. Flow Depth=2.06' Max Vel=7.81 fps Inflow=107.26 cfs 10.532 af
n=0.035 L=543.0' S=0.0276 '/' Capacity=163.26 cfs Outflow=106.72 cfs 10.532 af

Reach 63R: OVERLAND Avg. Flow Depth=0.39' Max Vel=8.75 fps Inflow=18.38 cfs 0.962 af
n=0.050 L=126.0' S=0.3595 '/' Capacity=448.14 cfs Outflow=18.37 cfs 0.962 af

Reach 64R: Swale Avg. Flow Depth=1.71' Max Vel=2.43 fps Inflow=23.42 cfs 2.596 af
n=0.040 L=222.0' S=0.0045 '/' Capacity=52.71 cfs Outflow=22.59 cfs 2.596 af

Reach 69R: Wetland Flow Avg. Flow Depth=0.14' Max Vel=1.35 fps Inflow=20.62 cfs 1.038 af
n=0.070 L=487.0' S=0.0657 '/' Capacity=172.83 cfs Outflow=17.34 cfs 1.038 af

Reach 197: Stream Channel Avg. Flow Depth=1.25' Max Vel=14.67 fps Inflow=437.21 cfs 39.859 af
n=0.050 L=599.0' S=0.2763 '/' Capacity=12,139.60 cfs Outflow=436.91 cfs 39.858 af

Reach 197A: Stream Channel Avg. Flow Depth=2.27' Max Vel=12.55 fps Inflow=372.56 cfs 31.930 af
n=0.050 L=601.0' S=0.1248 '/' Capacity=3,783.36 cfs Outflow=372.02 cfs 31.930 af

Reach 197B: Stream Channel Avg. Flow Depth=2.30' Max Vel=11.83 fps Inflow=359.30 cfs 29.646 af
n=0.050 L=252.0' S=0.1091 '/' Capacity=3,537.94 cfs Outflow=359.15 cfs 29.646 af

Reach 197C: Stream Channel Avg. Flow Depth=1.99' Max Vel=13.05 fps Inflow=310.50 cfs 25.912 af
n=0.050 L=426.0' S=0.1573 '/' Capacity=4,247.34 cfs Outflow=310.28 cfs 25.912 af

Reach 198: Stream Channel Avg. Flow Depth=1.81' Max Vel=14.20 fps Inflow=289.00 cfs 23.787 af
n=0.050 L=417.0' S=0.2074 '/' Capacity=4,877.81 cfs Outflow=288.72 cfs 23.787 af

Reach 199: Overland Flow Avg. Flow Depth=0.14' Max Vel=4.53 fps Inflow=42.53 cfs 3.366 af
n=0.040 L=250.0' S=0.2560 '/' Capacity=451.81 cfs Outflow=42.37 cfs 3.366 af

Reach 295: Roadside Channel Avg. Flow Depth=1.99' Max Vel=7.55 fps Inflow=82.10 cfs 7.307 af
n=0.050 L=280.0' S=0.0607 '/' Capacity=140.40 cfs Outflow=82.05 cfs 7.307 af

Reach 296: Wetland Flow Avg. Flow Depth=1.09' Max Vel=3.21 fps Inflow=73.36 cfs 5.916 af
n=0.070 L=427.0' S=0.0328 '/' Capacity=251.85 cfs Outflow=72.29 cfs 5.916 af

Reach 297: Overland Flow Avg. Flow Depth=0.19' Max Vel=7.59 fps Inflow=56.83 cfs 4.571 af
n=0.030 L=195.0' S=0.2872 '/' Capacity=358.18 cfs Outflow=56.79 cfs 4.571 af

Reach 298: Wetland Flow Avg. Flow Depth=0.23' Max Vel=2.26 fps Inflow=58.03 cfs 4.571 af
n=0.070 L=408.0' S=0.0931 '/' Capacity=802.14 cfs Outflow=56.83 cfs 4.571 af

Reach 299: Overland Flow Avg. Flow Depth=0.34' Max Vel=6.02 fps Inflow=56.57 cfs 4.372 af
n=0.050 L=135.0' S=0.3259 '/' Capacity=130.57 cfs Outflow=56.55 cfs 4.372 af

Reach O3: Overland Flow Avg. Flow Depth=0.08' Max Vel=3.13 fps Inflow=10.35 cfs 0.122 af
n=0.030 L=178.0' S=0.1404 '/' Capacity=78.90 cfs Outflow=10.18 cfs 0.122 af

Reach O4: Swale Avg. Flow Depth=0.62' Max Vel=4.96 fps Inflow=10.18 cfs 0.122 af
n=0.033 L=286.0' S=0.0385 '/' Capacity=59.96 cfs Outflow=9.99 cfs 0.122 af

Reach X1: Swale Avg. Flow Depth=0.66' Max Vel=6.98 fps Inflow=15.30 cfs 0.574 af
n=0.040 L=200.0' S=0.1050 '/' Capacity=153.60 cfs Outflow=15.26 cfs 0.574 af

Pond 1P: Catch Basin/Culvert Peak Elev=1,981.16' Inflow=9.31 cfs 0.528 af
Outflow=9.31 cfs 0.528 af

Pond 2P: Catch Basin Peak Elev=2,001.00' Inflow=63.68 cfs 3.188 af
Outflow=63.68 cfs 3.188 af

Pond 2R: 48" CMP Culvert Peak Elev=1,747.16' Inflow=457.64 cfs 42.157 af
Outflow=457.64 cfs 42.157 af

Pond 3P: Catch Basin Peak Elev=2,009.92' Inflow=2.46 cfs 0.129 af
Outflow=2.46 cfs 0.129 af

Pond 4P: Catch Basin Peak Elev=2,010.20' Inflow=0.96 cfs 0.054 af
Outflow=0.96 cfs 0.054 af

Pond 4R: 38" Arch Culv. Peak Elev=2,069.56' Inflow=115.41 cfs 9.982 af
Outflow=115.41 cfs 9.982 af

Pond 7A: CULVERT Peak Elev=1,900.90' Inflow=3.57 cfs 0.169 af
18.0" Round Culvert n=0.013 L=115.0' S=0.0174 '/' Outflow=3.57 cfs 0.169 af

Pond 7P: Catch Basin Peak Elev=2,070.04' Inflow=2.30 cfs 0.119 af
Outflow=2.30 cfs 0.119 af

Pond 7R: (2) 43" Arch Culverts Peak Elev=1,816.00' Inflow=242.21 cfs 20.034 af
Outflow=242.21 cfs 20.034 af

Pond 8R: 36" hdpe Peak Elev=0.00'
36.0" Round Culvert n=0.013 L=245.0' S=0.1714 '/' Primary=0.00 cfs 0.000 af

Pond 9P: Catch Basin Peak Elev=2,037.22' Inflow=1.51 cfs 0.081 af
Outflow=1.51 cfs 0.081 af

Pond 10P: Catch Basin Peak Elev=2,037.24' Inflow=0.82 cfs 0.045 af
Outflow=0.82 cfs 0.045 af

Pond 10R: 14" and 16" HDPE Culverts Peak Elev=1,977.47' Inflow=56.48 cfs 6.453 af
Outflow=56.48 cfs 6.453 af

Pond 11P: Catch Basin Peak Elev=2,054.28' Inflow=56.79 cfs 2.824 af
Outflow=56.79 cfs 2.824 af

Pond 12P: Catch Basin Peak Elev=2,055.39' Inflow=0.62 cfs 0.033 af
Outflow=0.62 cfs 0.033 af

Pond 13P: Manhole Peak Elev=2,067.80' Inflow=52.94 cfs 2.623 af
Outflow=52.94 cfs 2.623 af

Pond 13R: 16" CMP Culvert Peak Elev=1,964.03' Inflow=9.97 cfs 0.618 af
16.0" Round Culvert n=0.025 L=40.0' S=0.0250 '/' Outflow=9.97 cfs 0.618 af

Pond 15P: Catch Basin Peak Elev=2,069.75' Inflow=5.28 cfs 0.270 af
Outflow=5.28 cfs 0.270 af

Pond 16P: Catch Basin Peak Elev=2,083.01' Inflow=1.55 cfs 0.086 af
Outflow=1.55 cfs 0.086 af

Pond 17P: Catch Basin Peak Elev=2,082.85' Inflow=46.23 cfs 2.281 af
Outflow=46.23 cfs 2.281 af

Pond 18P: Catch Basin Peak Elev=2,096.20' Inflow=6.40 cfs 0.350 af
Outflow=6.40 cfs 0.350 af

Pond 19P: Catch Basin Peak Elev=2,093.81' Inflow=39.28 cfs 1.929 af
Outflow=39.28 cfs 1.929 af

Pond 20: CB20 Peak Elev=2,110.62' Inflow=20.62 cfs 1.038 af
Outflow=20.62 cfs 1.038 af

Pond 20P: Manhole Peak Elev=2,097.49' Inflow=32.09 cfs 1.537 af
30.0" Round Culvert n=0.013 L=107.0' S=0.0318 '/' Outflow=32.09 cfs 1.537 af

Pond 21P: Catch Basin Peak Elev=2,114.21' Inflow=6.19 cfs 0.320 af
Outflow=6.19 cfs 0.320 af

Pond 22P: Catch Basin Peak Elev=2,115.70' Inflow=3.76 cfs 0.194 af
Outflow=3.76 cfs 0.194 af

Pond 23A: Catch Basin Peak Elev=2,093.63' Inflow=4.56 cfs 0.220 af
Outflow=4.56 cfs 0.220 af

Pond 23B: Catch Basin Peak Elev=2,084.11' Inflow=4.56 cfs 0.220 af
Outflow=4.56 cfs 0.220 af

Pond 24A: Catch Basin Peak Elev=2,100.46' Inflow=25.91 cfs 1.217 af
Outflow=25.91 cfs 1.217 af

Pond 24B: Catch Basin Peak Elev=2,098.69' Inflow=25.91 cfs 1.217 af
Outflow=25.91 cfs 1.217 af

Pond 25P: Catch Basin Peak Elev=2,123.39' Inflow=1.51 cfs 0.079 af
Outflow=1.51 cfs 0.079 af

Pond 26P: Catch Basin Peak Elev=2,131.53' Inflow=0.74 cfs 0.039 af
Outflow=0.74 cfs 0.039 af

Pond 27P: Catch Basin Peak Elev=2,149.03' Inflow=7.23 cfs 0.376 af
Outflow=7.23 cfs 0.376 af

Pond 28P: Catch Basin Peak Elev=2,149.07' Inflow=0.83 cfs 0.043 af
Outflow=0.83 cfs 0.043 af

Pond 29P: Manhole Peak Elev=2,163.09' Inflow=5.59 cfs 0.291 af
21.0" Round Culvert n=0.013 L=125.0' S=0.1140 '/' Outflow=5.59 cfs 0.291 af

Pond 30P: Catch Basin Peak Elev=2,175.25' Inflow=5.59 cfs 0.291 af
Outflow=5.59 cfs 0.291 af

Pond 31P: Catch Basin Peak Elev=2,177.60' Inflow=0.59 cfs 0.031 af
Outflow=0.59 cfs 0.031 af

Pond 32P: Catch Basin Peak Elev=2,196.39' Inflow=4.44 cfs 0.231 af
Outflow=4.44 cfs 0.231 af

Pond 33P: Catch Basin Peak Elev=2,198.44' Inflow=0.76 cfs 0.040 af
Outflow=0.76 cfs 0.040 af

Pond 34P: Manhole Peak Elev=2,209.80' Inflow=2.95 cfs 0.153 af
18.0" Round Culvert n=0.013 L=90.3' S=0.1449 '/' Outflow=2.95 cfs 0.153 af

Pond 35P: Catch Basin Peak Elev=2,225.80' Inflow=2.95 cfs 0.153 af
Outflow=2.95 cfs 0.153 af

Pond 36P: Catch Basin Peak Elev=2,226.00' Inflow=0.65 cfs 0.034 af
Outflow=0.65 cfs 0.034 af

Pond 37P: Catch Basin Peak Elev=2,249.08' Inflow=1.63 cfs 0.084 af
Outflow=1.63 cfs 0.084 af

Pond 38P: Catch Basin Peak Elev=2,249.44' Inflow=0.73 cfs 0.038 af
Outflow=0.73 cfs 0.038 af

Pond 43P: 12" HDPE Pipe Peak Elev=1,998.20' Inflow=0.80 cfs 0.042 af
Outflow=0.80 cfs 0.042 af

Pond 44P: 12" HDPE Pipe Peak Elev=1,998.08' Inflow=1.55 cfs 0.082 af
Outflow=1.55 cfs 0.082 af

Pond 50P: 30" HDPE Pipe Peak Elev=2,026.80' Inflow=29.45 cfs 1.501 af
Outflow=29.45 cfs 1.501 af

Pond 51P: 18" HDPE Pipe Peak Elev=2,027.06' Inflow=2.92 cfs 0.140 af
Outflow=2.92 cfs 0.140 af

Pond 52P: 30" HDPE Pipe Peak Elev=2,060.92' Inflow=25.73 cfs 1.315 af
Outflow=25.73 cfs 1.315 af

Pond 53P: 18" HDPE Pipe Peak Elev=2,061.39' Inflow=3.11 cfs 0.148 af
Outflow=3.11 cfs 0.148 af

Pond 54P: 24" HDPE Pipe Peak Elev=2,103.31' Inflow=17.30 cfs 0.900 af
Outflow=17.30 cfs 0.900 af

Pond 55P: 18" HDPE Pipe Peak Elev=2,103.47' Inflow=3.12 cfs 0.162 af
Outflow=3.12 cfs 0.162 af

Pond 56P: 18" HDPE Pipe Peak Elev=2,082.45' Inflow=3.93 cfs 0.193 af
Outflow=3.93 cfs 0.193 af

Pond 57P: 18" HDPE Pipe Peak Elev=2,082.61' Inflow=1.01 cfs 0.054 af
Outflow=1.01 cfs 0.054 af

Pond 62P: Catch Basin Peak Elev=2,084.82' Inflow=8.78 cfs 0.445 af
Outflow=8.78 cfs 0.445 af

Pond 65A: Manhole Peak Elev=2,080.94' Inflow=13.38 cfs 0.693 af
30.0" Round Culvert n=0.013 L=125.0' S=0.0752 '/' Outflow=13.38 cfs 0.693 af

Pond 65P: Catch Basin Peak Elev=2,081.93' Inflow=13.38 cfs 0.693 af
Outflow=13.38 cfs 0.693 af

Pond 66R: (2) 24" culvert Peak Elev=1,990.76' Inflow=6.49 cfs 0.100 af
Outflow=6.49 cfs 0.100 af

Pond 81: 24" culvert Peak Elev=2,015.37' Inflow=17.70 cfs 0.829 af
Outflow=17.70 cfs 0.829 af

Pond 200: 36" Steel Culvert Peak Elev=2,239.23' Inflow=246.71 cfs 20.421 af
Outflow=246.71 cfs 20.421 af

Pond 201: 36" Steel Culvert Peak Elev=2,237.07' Inflow=42.53 cfs 3.366 af
Outflow=42.53 cfs 3.366 af

Pond 297A: culvert Peak Elev=2,116.22' Inflow=73.36 cfs 5.916 af
Outflow=73.36 cfs 5.916 af

Pond 300R: 18" Steel Culvert Peak Elev=2,259.29' Inflow=56.57 cfs 4.372 af
Outflow=56.57 cfs 4.372 af

Pond B4: bioretention Peak Elev=2,144.66' Storage=13,007 cf Inflow=33.49 cfs 1.611 af
Discarded=0.11 cfs 0.219 af Primary=30.70 cfs 1.391 af Outflow=30.81 cfs 1.611 af

Pond DP 7: Design Point 7 Inflow=458.54 cfs 42.296 af
Primary=458.54 cfs 42.296 af

Pond DP 8: Design Point 8 Inflow=326.65 cfs 24.938 af
Primary=326.65 cfs 24.938 af

Pond DP 9: Design Point 9 Inflow=148.17 cfs 13.645 af
Primary=148.17 cfs 13.645 af

Pond H: Pond H Peak Elev=2,002.03' Storage=75,878 cf Inflow=85.53 cfs 4.855 af
Outflow=33.31 cfs 4.853 af

Pond J: OPEN SWALE Peak Elev=1,992.06' Storage=7,868 cf Inflow=12.77 cfs 0.639 af
Discarded=0.09 cfs 0.102 af Primary=2.33 cfs 0.437 af Secondary=6.49 cfs 0.100 af Outflow=8.91 cfs 0.639 af

Pond K: P1 Peak Elev=2,024.16' Storage=50,526 cf Inflow=40.85 cfs 2.597 af
Outflow=23.42 cfs 2.596 af

Pond L: Pond L - P1 Peak Elev=1,949.40' Storage=117,082 cf Inflow=113.50 cfs 6.120 af
Outflow=55.95 cfs 6.095 af

Pond M: OPEN SWALE Peak Elev=1,890.00' Storage=14,885 cf Inflow=31.45 cfs 1.482 af
Discarded=0.10 cfs 0.266 af Primary=26.78 cfs 1.216 af Outflow=26.88 cfs 1.482 af

Pond MH8: Manhole Peak Elev=2,037.21' Inflow=58.30 cfs 2.905 af
42.0" Round Culvert n=0.013 L=158.0' S=0.2335 '/' Outflow=58.30 cfs 2.905 af

Pond N: OPEN SWALE Peak Elev=1,875.76' Storage=3,941 cf Inflow=10.04 cfs 0.472 af
Discarded=0.03 cfs 0.078 af Primary=8.91 cfs 0.393 af Outflow=8.94 cfs 0.472 af

Pond O: Open Swale Peak Elev=1,839.83' Storage=12,486 cf Inflow=30.52 cfs 1.447 af
Discarded=0.10 cfs 0.240 af Primary=17.56 cfs 1.085 af Secondary=10.35 cfs 0.122 af Outflow=28.02 cfs 1.447 af

Pond Q: OPEN SWALE Peak Elev=1,879.81' Storage=10,554 cf Inflow=22.90 cfs 1.092 af
Discarded=0.07 cfs 0.216 af Primary=20.70 cfs 0.876 af Outflow=20.76 cfs 1.092 af

Pond S: Open Swale Peak Elev=1,919.47' Storage=4,978 cf Inflow=13.72 cfs 0.666 af
Discarded=0.04 cfs 0.143 af Primary=13.57 cfs 0.523 af Outflow=13.61 cfs 0.666 af

Pond sp1: Storm Planters Peak Elev=2,151.37' Storage=11,913 cf Inflow=9.00 cfs 0.485 af
Outflow=1.86 cfs 0.431 af

Pond T: Open Swale Peak Elev=1,991.19' Storage=2,830 cf Inflow=11.61 cfs 0.545 af
Discarded=0.03 cfs 0.086 af Primary=11.52 cfs 0.460 af Outflow=11.55 cfs 0.545 af

Pond U: Open Swale Peak Elev=2,015.89' Storage=13,256 cf Inflow=33.26 cfs 1.949 af
Discarded=0.08 cfs 0.339 af Primary=32.82 cfs 1.609 af Outflow=32.90 cfs 1.949 af

Pond W: Open Swale Peak Elev=1,790.56' Storage=16,249 cf Inflow=35.14 cfs 1.413 af
Discarded=0.10 cfs 0.275 af Primary=29.14 cfs 1.137 af Outflow=29.24 cfs 1.413 af

Pond X: Open Swale Peak Elev=1,799.53' Storage=6,062 cf Inflow=15.97 cfs 0.751 af
Discarded=0.07 cfs 0.177 af Primary=15.30 cfs 0.574 af Outflow=15.38 cfs 0.751 af

Total Runoff Area = 288.212 ac Runoff Volume = 83.103 af Average Runoff Depth = 3.46"
96.12% Pervious = 277.025 ac 3.88% Impervious = 11.187 ac

Summary for Subcatchment 1S: Road

Runoff = 9.31 cfs @ 12.01 hrs, Volume= 0.528 af, Depth= 5.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	30,818	98	Roof
	23,162	74	>75% Grass cover, Good, HSG C
	53,980	88	Weighted Average
	23,162		42.91% Pervious Area
	30,818		57.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0200	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.8	130	0.0350	2.81		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.6	230	Total			

Summary for Subcatchment 2a: Road

Runoff = 2.92 cfs @ 11.97 hrs, Volume= 0.154 af, Depth= 5.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	10,932	98	Paved
	3,222	74	>75% Grass cover, Good, HSG C
	14,154	93	Weighted Average
	3,222		22.76% Pervious Area
	10,932		77.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0200	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.9	219	0.0380	3.96		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	319	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S: Subcatchment 2

Runoff = 2.74 cfs @ 11.99 hrs, Volume= 0.138 af, Depth= 3.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	4,400	98	Roadway
	5,009	71	Meadow, non-grazed, HSG C
	9,060	70	Woods, Good, HSG C
	18,469	77	Weighted Average
	14,069		76.18% Pervious Area
	4,400		23.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	90	0.2290	0.23		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	70	0.2550	1.51		**Shallow Concentrated Flow, SC Flow through Woods** Kv= 3.0 fps
0.3	215	0.0547	13.12	137.80	**Trap/Vee/Rect Channel Flow, Vegetated Swale along RR Tracks** Bot.W=2.00' D=3.00' Z= 0.5 '/' Top.W=5.00' n= 0.030
7.8	375	Total			

Summary for Subcatchment 3S: Road

Runoff = 1.51 cfs @ 11.97 hrs, Volume= 0.075 af, Depth= 5.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	4,120	98	Paved
	3,743	74	>75% Grass cover, Good, HSG C
	7,863	87	Weighted Average
	3,743		47.60% Pervious Area
	4,120		52.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1100	3.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	172	0.1100	6.73		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	272	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Road

Runoff = 0.96 cfs @ 11.97 hrs, Volume= 0.054 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	4,505	98	Paved
	4,505		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0500	2.22		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	174	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	274	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 5S: Subcatchment 5

Runoff = 9.97 cfs @ 12.06 hrs, Volume= 0.618 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	39,399	71	Meadow, non-grazed, HSG C
*	1,338	98	Roof Area
	45,785	70	Woods, Good, HSG C
	5,498	98	Paved parking, HSG C
	92,020	73	Weighted Average
	85,184		92.57% Pervious Area
	6,836		7.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.1300	0.18		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	390	0.0920	1.52		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	225	0.0346	7.48	29.91	**Trap/Vee/Rect Channel Flow, Flow in Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
13.9	715	Total			

Summary for Subcatchment 6aS: subcatch 6a

Runoff = 47.81 cfs @ 12.11 hrs, Volume= 3.461 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	7,130	74	Porous Paving
*	2,840	98	Roof
	334,295	70	Woods, Good, HSG C
	27,046	74	>75% Grass cover, Good, HSG C
*	18,735	98	Paved
*	9,300	74	Fairway/Tee/Green, Good, HSG C
	131,702	71	Meadow, non-grazed, HSG C
	531,048	72	Weighted Average
	509,473		95.94% Pervious Area
	21,575		4.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
9.2	915	0.1100	1.66		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	240	0.0950	18.86	150.91	**Trap/Vee/Rect Channel Flow, swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.025 Earth, clean & winding
18.8	1,255	Total			

Summary for Subcatchment 6S: subcatch 6

Runoff = 34.84 cfs @ 12.12 hrs, Volume= 2.539 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	7,240	98	Roof
	293,063	70	Woods, Good, HSG C
	78,387	74	>75% Grass cover, Good, HSG C
*	10,890	98	Paved
	389,580	72	Weighted Average
	371,450		95.35% Pervious Area
	18,130		4.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.7	1,015	0.1950	2.21		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.7	1,060	0.0750	10.48	83.81	**Trap/Vee/Rect Channel Flow, RR Swale w/ Gravel and Leaves** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.040 Earth, cobble bottom, clean sides
19.1	2,175	Total			

Summary for Subcatchment 7S: subcatch 7

Runoff = 4.85 cfs @ 11.97 hrs, Volume= 0.235 af, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
9,700	98	Paved parking & roofs
5,730	70	Woods, Good, HSG C
12,143	74	>75% Grass cover, Good, HSG C
27,573	82	Weighted Average
17,873		64.82% Pervious Area
9,700		35.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	20	0.3000	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.1	225	0.1250	1.77		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	245	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 9a: Road

Runoff = 0.69 cfs @ 11.97 hrs, Volume= 0.036 af, Depth= 5.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	2,405	98	Paved
	1,022	74	>75% Grass cover, Good, HSG C
	3,427	91	Weighted Average
	1,022		29.82% Pervious Area
	2,405		70.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0790	2.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	138	0.0790	5.71		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	238	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 10a: Road

Runoff = 0.82 cfs @ 11.97 hrs, Volume= 0.045 af, Depth= 6.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	3,650	98	Paved
	200	74	>75% Grass cover, Good, HSG C
	3,850	97	Weighted Average
	200		5.19% Pervious Area
	3,650		94.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0940	2.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.5	171	0.0940	6.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	271	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 11c: Road

Runoff = 3.25 cfs @ 11.97 hrs, Volume= 0.168 af, Depth= 5.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	7,010	98	Paved
	4,732	74	>75% Grass cover, Good, HSG C
*	4,335	98	Roofs
	16,077	91	Weighted Average
	4,732		29.43% Pervious Area
	11,345		70.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0920	2.83		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.1	31	0.0920	6.16		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	131	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 12S: Road

Runoff = 0.62 cfs @ 11.97 hrs, Volume= 0.033 af, Depth= 5.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	2,610	98	Paved
	330	74	>75% Grass cover, Good, HSG C
	2,940	95	Weighted Average
	330		11.22% Pervious Area
	2,610		88.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0810	2.69		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.1	49	0.0810	5.78		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	149	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 14a: Main Road

Runoff = 1.43 cfs @ 11.97 hrs, Volume= 0.072 af, Depth= 5.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	4,265	98	Paved
	3,075	74	>75% Grass cover, Good, HSG C
	7,340	88	Weighted Average
	3,075		41.89% Pervious Area
	4,265		58.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0280	1.76		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.0	411	0.0280	3.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.9	511	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 14B: Road

Runoff = 2.30 cfs @ 11.97 hrs, Volume= 0.119 af, Depth= 5.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
8,075	98	Paved parking, HSG C
3,326	74	>75% Grass cover, Good, HSG C
11,401	91	Weighted Average
3,326		29.17% Pervious Area
8,075		70.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0200	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.3	426	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	526	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 14C: BUILDING

Runoff = 5.02 cfs @ 11.98 hrs, Volume= 0.269 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
19,361	98	Paved parking, HSG C
5,890	74	>75% Grass cover, Good, HSG C
25,251	92	Weighted Average
5,890		23.33% Pervious Area
19,361		76.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0400	0.25		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 4.00"
0.2	27	0.0375	2.90		**Shallow Concentrated Flow, shallow concentrated flow** Grassed Waterway Kv= 15.0 fps
6.8	127	Total			

Summary for Subcatchment 15S: Main Road

Runoff = 2.98 cfs @ 11.97 hrs, Volume= 0.151 af, Depth= 5.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	9,480	98	Paved
	5,664	74	>75% Grass cover, Good, HSG C
	15,144	89	Weighted Average
	5,664		37.40% Pervious Area
	9,480		62.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0290	1.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.9	394	0.0290	3.46		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	494	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 16a: Main Road

Runoff = 1.55 cfs @ 11.97 hrs, Volume= 0.086 af, Depth= 6.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	6,864	98	Paved
	453	74	>75% Grass cover, Good, HSG C
	7,317	97	Weighted Average
	453		6.19% Pervious Area
	6,864		93.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0750	2.61		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	206	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	306	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 17a: Main Road

Runoff = 0.88 cfs @ 11.97 hrs, Volume= 0.046 af, Depth= 5.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	3,040	98	Paved
	1,330	74	>75% Grass cover, Good, HSG C
	4,370	91	Weighted Average
	1,330		30.43% Pervious Area
	3,040		69.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0790	2.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	192	0.0790	5.71		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	292	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 18a: Main Road

Runoff = 6.40 cfs @ 11.97 hrs, Volume= 0.350 af, Depth= 6.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	13,586	98	Paved
	2,952	74	>75% Grass cover, Good, HSG C
*	13,800	98	Roof
	30,338	96	Weighted Average
	2,952		9.73% Pervious Area
	27,386		90.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	56	0.0360	1.73		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.9	220	0.0450	4.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	276	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 19a: Main Road

Runoff = 0.81 cfs @ 11.97 hrs, Volume= 0.042 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	2,920	98	Paved
	1,054	74	>75% Grass cover, Good, HSG C
	3,974	92	Weighted Average
	1,054		26.52% Pervious Area
	2,920		73.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0400	2.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	139	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	239	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 20a: BEHIND 1

Runoff = 4.16 cfs @ 11.97 hrs, Volume= 0.196 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
26,663	74	>75% Grass cover, Good, HSG C
910	98	Paved parking, HSG C
27,573	75	Weighted Average
26,663		96.70% Pervious Area
910		3.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	395	0.0380	6.65	79.79	**Channel Flow,** Area= 12.0 sf Perim= 21.0' r= 0.57' n= 0.030 Earth, grassed & winding
1.0	395	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 20b: BEHIND 1

Runoff = 3.95 cfs @ 11.97 hrs, Volume= 0.185 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	23,963	74	>75% Grass cover, Good, HSG C
	3,610	70	Woods, Good, HSG C
	27,573	73	Weighted Average
	27,573		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1600	0.44		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.4	136	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	236	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 21S: Main Road

Runoff = 0.92 cfs @ 11.97 hrs, Volume= 0.048 af, Depth= 5.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	3,330	98	Paved
	1,244	74	>75% Grass cover, Good, HSG C
	4,574	91	Weighted Average
	1,244		27.20% Pervious Area
	3,330		72.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0610	2.40		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	169	0.0610	5.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	269	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 22S: Main Road

Runoff = 3.76 cfs @ 11.97 hrs, Volume= 0.194 af, Depth= 5.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	13,274	98	Paved
	5,332	74	>75% Grass cover, Good, HSG C
	18,606	91	Weighted Average
	5,332		28.66% Pervious Area
	13,274		71.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0630	2.43		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	161	0.0311	3.58		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	261	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 23S: 18 fairway

Runoff = 4.56 cfs @ 11.98 hrs, Volume= 0.220 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	1,549	74	>75% Grass cover, Good, HSG C
*	3,090	74	Porous Pavement
*	27,280	74	Fairway/Tee/Green, Good, HSG C
	31,919	74	Weighted Average
	31,919		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0640	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.7	73	0.0640	1.77		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	114	0.0100	3.17	7.92	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00' n= 0.033 Earth, grassed & winding
6.8	287	Total			

Summary for Subcatchment 24S: Fairway of 10 & 18

Runoff = 25.91 cfs @ 11.97 hrs, Volume= 1.217 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	23,070	74	>75% Grass cover, Good, HSG C
	6,012	70	Woods, Good, HSG C
*	8,530	74	Porous Pavement
*	138,653	74	Fairway/Tee/Green, Good, HSG C
	176,265	74	Weighted Average
	176,265		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0800	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.9	152	0.0054	2.69	13.44	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.00' Z= 1.0 '/' Top.W=6.00' n= 0.033 Earth, grassed & winding
5.9	252	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 25S: E. end Main Road

Runoff = 0.77 cfs @ 11.97 hrs, Volume= 0.040 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	2,740	98	Paved
	1,011	74	>75% Grass cover, Good, HSG C
	3,751	92	Weighted Average
	1,011		26.95% Pervious Area
	2,740		73.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0700	2.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	127	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	227	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 26S: E. end Main Road

Runoff = 0.74 cfs @ 11.97 hrs, Volume= 0.039 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	2,740	98	Paved
	905	74	>75% Grass cover, Good, HSG C
	3,645	92	Weighted Average
	905		24.83% Pervious Area
	2,740		75.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0700	2.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	126	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	226	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 27b: E. end Main Road

Runoff = 0.81 cfs @ 11.97 hrs, Volume= 0.042 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	2,930	98	Paved
	1,046	74	>75% Grass cover, Good, HSG C
	3,976	92	Weighted Average
	1,046		26.31% Pervious Area
	2,930		73.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1250	3.20		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	140	0.1250	7.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	240	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 28a: E. end Main Road

Runoff = 0.83 cfs @ 11.97 hrs, Volume= 0.043 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	3,090	98	Paved
	970	74	>75% Grass cover, Good, HSG C
	4,060	92	Weighted Average
	970		23.89% Pervious Area
	3,090		76.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1170	3.12		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	156	0.1170	6.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	256	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 30S: E. end Main Road

Runoff = 0.55 cfs @ 11.97 hrs, Volume= 0.029 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	2,010	98	Paved
	709	74	>75% Grass cover, Good, HSG C
	2,719	92	Weighted Average
	709		26.08% Pervious Area
	2,010		73.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1290	3.24		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.1	63	0.1290	7.29		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	163	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 31S: E. end Main Road

Runoff = 0.59 cfs @ 11.97 hrs, Volume= 0.031 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	2,160	98	Paved
	749	74	>75% Grass cover, Good, HSG C
	2,909	92	Weighted Average
	749		25.75% Pervious Area
	2,160		74.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1190	3.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.2	77	0.1190	7.00		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	177	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 32S: E. end Main Road

Runoff = 0.73 cfs @ 11.97 hrs, Volume= 0.038 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	2,640	98	Paved
	941	74	>75% Grass cover, Good, HSG C
	3,581	92	Weighted Average
	941		26.28% Pervious Area
	2,640		73.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1270	3.22		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	112	0.1270	7.23		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	212	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 33S: E. end Main Road

Runoff = 0.76 cfs @ 11.97 hrs, Volume= 0.040 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	2,780	98	Paved
	956	74	>75% Grass cover, Good, HSG C
	3,736	92	Weighted Average
	956		25.59% Pervious Area
	2,780		74.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1170	3.12		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.3	130	0.1170	6.94		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
0.8	230	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 35a: E. end Main Road

Runoff = 0.67 cfs @ 11.97 hrs, Volume= 0.034 af, Depth= 5.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	2,400	98	Paved
	908	74	>75% Grass cover, Good, HSG C
	3,308	91	Weighted Average
	908		27.45% Pervious Area
	2,400		72.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1220	3.17		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.2	96	0.1220	7.09		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
0.7	196	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 35S: Subcatchment 35

Runoff = 42.53 cfs @ 12.15 hrs, Volume= 3.366 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	122,752	71	Meadow, non-grazed, HSG C
*	6,708	98	Paved Road
	393,477	70	Woods, Good, HSG C
*	9,104	98	Roof
	532,041	71	Weighted Average
	516,229		97.03% Pervious Area
	15,812		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	120	0.1667	0.52		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.5	230	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	50	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
9.3	1,470	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
22.0	3,110	Total			

Summary for Subcatchment 36S: E. end Main Road

Runoff = 0.65 cfs @ 11.97 hrs, Volume= 0.034 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	2,400	98	Paved
	804	74	>75% Grass cover, Good, HSG C
	3,204	92	Weighted Average
	804		25.09% Pervious Area
	2,400		74.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1210	3.16		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.2	98	0.1210	7.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	198	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 37S: E. end Main Road

Runoff = 0.90 cfs @ 11.97 hrs, Volume= 0.046 af, Depth= 5.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	3,200	98	Paved
	1,247	74	>75% Grass cover, Good, HSG C
	4,447	91	Weighted Average
	1,247		28.04% Pervious Area
	3,200		71.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0620	2.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.5	143	0.0620	5.05		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	243	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 38S: E. end Main Road

Runoff = 0.73 cfs @ 11.97 hrs, Volume= 0.038 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	2,730	98	Paved
	839	74	>75% Grass cover, Good, HSG C
	3,569	92	Weighted Average
	839		23.51% Pervious Area
	2,730		76.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0720	2.57		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	107	0.0720	5.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	207	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 41S: W. end of Main Road

Runoff = 1.62 cfs @ 11.97 hrs, Volume= 0.091 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	7,632	98	Paved
	7,632		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0467	2.16		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.9	190	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	290	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 42S: W. end of Main Road

Runoff = 1.49 cfs @ 11.97 hrs, Volume= 0.084 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	7,012	98	Paved
	7,012		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0467	2.16		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.9	183	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	283	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 43S: W. end of Main Road

Runoff = 0.80 cfs @ 11.97 hrs, Volume= 0.042 af, Depth= 5.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	3,000	98	Paved
	858	74	>75% Grass cover, Good, HSG C
	3,858	93	Weighted Average
	858		22.24% Pervious Area
	3,000		77.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1200	3.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	144	0.1110	6.76		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	244	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 44S: W. end of Main Road

Runoff = 0.76 cfs @ 11.97 hrs, Volume= 0.040 af, Depth= 5.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	3,000	98	Paved
	652	74	>75% Grass cover, Good, HSG C
	3,652	94	Weighted Average
	652		17.85% Pervious Area
	3,000		82.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1200	3.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	139	0.1150	6.88		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	239	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 45S: Hole 1

Runoff = 56.47 cfs @ 12.00 hrs, Volume= 2.923 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	29,365	70	Woods, Good, HSG C
	168,858	74	>75% Grass cover, Good, HSG C
*	16,666	74	Porous Pavement
*	208,438	74	Fairway/Tee/Green, Good, HSG C
	423,327	74	Weighted Average
	423,327		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0500	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.2	208	0.1830	2.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	888	0.0690	10.54	55.33	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
8.7	1,196	Total			

Summary for Subcatchment 50S: W. end of Main Rd.

Runoff = 0.84 cfs @ 11.97 hrs, Volume= 0.047 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	3,930	98	Paved
	3,930		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1140	3.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.5	193	0.1140	6.85		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	293	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 51S: W. end of Main Rd.

Runoff = 2.92 cfs @ 11.97 hrs, Volume= 0.140 af, Depth= 4.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	3,600	98	Paved
	8,603	74	>75% Grass cover, Good, HSG C
*	5,464	74	Fairway/Tee/Green, Good, HSG C
	17,667	79	Weighted Average
	14,067		79.62% Pervious Area
	3,600		20.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	86	0.1400	0.40		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.1	14	0.1140	2.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	261	0.1150	6.88		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3	361	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 52S: W. end of Main Rd.

Runoff = 1.54 cfs @ 11.97 hrs, Volume= 0.073 af, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	7,193	74	>75% Grass cover, Good, HSG C
*	1,536	98	Paved
*	816	74	Porous Pavement
	9,545	78	Weighted Average
	8,009		83.91% Pervious Area
	1,536		16.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	40	0.4000	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.5	60	0.0500	2.00		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	220	0.0820	5.81		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	320	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 53S: W. end of Main Rd.

Runoff = 3.11 cfs @ 11.97 hrs, Volume= 0.148 af, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	6,647	74	>75% Grass cover, Good, HSG C
*	3,490	98	Paved
*	4,753	74	Porous Pavement
*	4,360	74	Fairway/Tee/Green, Good, HSG C
	19,250	78	Weighted Average
	15,760		81.87% Pervious Area
	3,490		18.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	40	0.0750	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.4	60	0.0670	2.25		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.8	236	0.0660	5.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.7	336	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 54S: Golf Course Parking

Runoff = 14.36 cfs @ 12.00 hrs, Volume= 0.738 af, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	17,600	98	Paved
	67,503	74	>75% Grass cover, Good, HSG C
*	10,730	74	Porous Pavement
	95,833	78	Weighted Average
	78,233		81.63% Pervious Area
	17,600		18.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	27	0.0760	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.3	33	0.0450	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.7	40	0.0625	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.7	434	0.1470	2.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	188	0.0430	4.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.2	722	Total			

Summary for Subcatchment 55S: Golf Course Parking

Runoff = 3.12 cfs @ 11.97 hrs, Volume= 0.162 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	3,030	74	>75% Grass cover, Good, HSG C
*	11,425	98	Paved
*	815	74	Porous Pavement
	15,270	92	Weighted Average
	3,845		25.18% Pervious Area
	11,425		74.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0330	1.88		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.7	159	0.0390	4.01		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
1.6	259	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 56S: Main Rd. to 6 & 7

Runoff = 2.92 cfs @ 11.97 hrs, Volume= 0.139 af, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	13,240	74	>75% Grass cover, Good, HSG C
*	3,160	98	Paved
*	1,620	74	Porous Pavement
	18,020	78	Weighted Average
	14,860		82.46% Pervious Area
	3,160		17.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0170	1.44		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.5	145	0.0480	4.45		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
1.7	245	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 57S: Main Rd. 6 & 7

Runoff = 1.01 cfs @ 11.97 hrs, Volume= 0.054 af, Depth= 5.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	4,049	98	Paved
	831	74	>75% Grass cover, Good, HSG C
	4,880	94	Weighted Average
	831		17.03% Pervious Area
	4,049		82.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0160	1.41		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	137	0.0292	3.47		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	237	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 59S: Club House

Runoff = 1.54 cfs @ 11.97 hrs, Volume= 0.087 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	7,222	98	Roof
	7,222		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 60S: Roof Terraces

Runoff = 9.00 cfs @ 11.97 hrs, Volume= 0.485 af, Depth= 5.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	36,970	98	Roof
*	5,980	74	Fairway/Tee/Green, Good, HSG C
	42,950	95	Weighted Average
	5,980		13.92% Pervious Area
	36,970		86.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 62S: Green of 18

Runoff = 8.78 cfs @ 12.00 hrs, Volume= 0.445 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	2,744	74	>75% Grass cover, Good, HSG C
*	2,600	74	Porous Pavement
*	59,100	74	Fairway/Tee/Green, Good, HSG C
	64,444	74	Weighted Average
	64,444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.0350	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.6	78	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	255	0.0512	9.08	47.66	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
8.1	433	Total			

Summary for Subcatchment 63S: Front end of Driving Range

Runoff = 25.89 cfs @ 12.06 hrs, Volume= 1.635 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	75,560	74	>75% Grass cover, Good, HSG C
	16,416	70	Woods, Good, HSG C
	15,620	98	Water Surface, 0% imp, HSG C
*	121,724	74	Fairway/Tee/Green, Good, HSG C
	642	98	Paved parking, HSG C
	319	98	Roofs, HSG C
	230,281	75	Weighted Average
	229,320		99.58% Pervious Area
	961		0.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
5.7	496	0.0430	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	297	0.0330	7.29	38.26	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
14.4	893	Total			

Summary for Subcatchment 65S: Driveway to Golf House

Runoff = 3.25 cfs @ 11.97 hrs, Volume= 0.161 af, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	5,721	74	>75% Grass cover, Good, HSG C
*	8,740	98	Paved
*	2,800	74	Porous Pavement
	17,261	86	Weighted Average
	8,521		49.37% Pervious Area
	8,740		50.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0350	1.92		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	199	0.0830	4.64		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.6	299	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 80S: existing woods

Runoff = 17.70 cfs @ 11.97 hrs, Volume= 0.829 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	62,404	74	>75% Grass cover, Good, HSG C
	46,340	70	Woods, Good, HSG C
*	3,190	74	Porous Pavement
*	11,666	74	Fairway/Tee/Green, Good, HSG C
	123,600	73	Weighted Average
	123,600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1600	0.44		**Sheet Flow, sheet** Grass: Short n= 0.150 P2= 4.00"
0.3	90	0.1300	5.41		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	410	0.0350	6.38	76.58	**Channel Flow,** Area= 12.0 sf Perim= 21.0' r= 0.57' n= 0.030 Earth, grassed & winding
5.2	600	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 137S: BEHIND GARAGE

Runoff = 3.99 cfs @ 11.99 hrs, Volume= 0.199 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
10,210	74	>75% Grass cover, Good, HSG C
21,275	70	Woods, Good, HSG C
31,485	71	Weighted Average
31,485		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	97	0.2500	0.24		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.0	280	0.0180	4.68	11.69	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00' n= 0.030 Earth, grassed & winding
7.8	377	Total			

Summary for Subcatchment 200S: Subcatchment 200

Runoff = 246.71 cfs @ 12.17 hrs, Volume= 20.421 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	14,331	98	Paved Road
	311,323	71	Meadow, non-grazed, HSG C
	3,002,765	70	Woods, Good, HSG C
	3,328,419	70	Weighted Average
	3,314,088		99.57% Pervious Area
	14,331		0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	100	0.1667	0.50		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.4	215	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	70	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
11.1	1,760	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	160	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
23.5	3,545	Total			

Summary for Subcatchment 201S: Tees of 18 & Greens of 10

Runoff = 26.28 cfs @ 11.97 hrs, Volume= 1.235 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	64,007	74	>75% Grass cover, Good, HSG C
*	12,310	74	Porous Pavement
*	86,820	74	Fairway/Tee/Green, Good, HSG C
	15,640	70	Woods, Good, HSG C
	178,777	74	Weighted Average
	178,777		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1658	0.44		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.5	93	0.1658	2.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	232	0.0948	13.87	114.45	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.033 Earth, grassed & winding
4.6	425	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 211S: Back End of the Driving Range

Runoff = 31.45 cfs @ 11.97 hrs, Volume= 1.482 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	61,458	74	>75% Grass cover, Good, HSG C
*	5,760	98	Porous Pavement
*	141,430	74	Fairway/Tee/Green, Good, HSG C
	208,648	75	Weighted Average
	202,888		97.24% Pervious Area
	5,760		2.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.3	40	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	765	0.1390	14.96	78.53	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
5.8	905	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 212S: Green of 13

Runoff = 10.04 cfs @ 11.97 hrs, Volume= 0.472 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	9,320	74	>75% Grass cover, Good, HSG C
*	1,810	74	Porous Pavement
*	57,180	74	Fairway/Tee/Green, Good, HSG C
	68,310	74	Weighted Average
	68,310		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.3	119	0.0336	7.35	38.61	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
4.9	219	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 213S: Hole 16

Runoff = 24.64 cfs @ 12.03 hrs, Volume= 1.423 af, Depth= 3.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	45,442	74	>75% Grass cover, Good, HSG C
*	8,230	74	Porous Pavement
*	127,890	74	Fairway/Tee/Green, Good, HSG C
	13,418	98	Water Surface, 0% imp, HSG C
	194,980	76	Weighted Average
	194,980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0118	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.9	590	0.0576	10.81	89.21	**Trap/Vee/Rect Channel Flow, Turf Reinforcement Mat** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.033 Earth, grassed & winding
11.7	690	Total			

Summary for Subcatchment 214S: Tees of 13

Runoff = 22.90 cfs @ 11.98 hrs, Volume= 1.092 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	36,885	74	>75% Grass cover, Good, HSG C
*	9,000	74	Porous Pavement
*	112,185	74	Fairway/Tee/Green, Good, HSG C
	158,070	74	Weighted Average
	158,070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0600	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.7	527	0.0700	11.92	98.35	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.033 Earth, grassed & winding
0.0	20	0.0200	13.34	94.33	**Pipe Channel,** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
0.1	110	0.1500	17.45	143.97	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00'

					n= 0.033 Earth, grassed & winding
6.4	757	Total			

Summary for Subcatchment 218S: Green of 12, Tee of 13

Runoff = 13.72 cfs @ 11.98 hrs, Volume= 0.666 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	40,598	74	>75% Grass cover, Good, HSG C
*	4,120	74	Porous Pavement
*	51,700	74	Fairway/Tee/Green, Good, HSG C
	96,418	74	Weighted Average
	96,418		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0800	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.7	200	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	167	0.1205	17.20	141.94	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.030 Earth, grassed & winding
6.9	467	Total			

Summary for Subcatchment 219S: Green of 11

Runoff = 11.61 cfs @ 11.97 hrs, Volume= 0.545 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	37,165	74	>75% Grass cover, Good, HSG C
*	6,050	74	Porous Pavement
*	35,770	74	Fairway/Tee/Green, Good, HSG C
	78,985	74	Weighted Average
	78,985		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0130	1.29		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.4	108	0.0600	4.97		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
0.3	198	0.0550	10.57	87.18	**Trap/Vee/Rect Channel Flow,**
					Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00'
					n= 0.033 Earth, grassed & winding
2.0	406	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 220S: Fairway of 11

Runoff = 33.26 cfs @ 12.04 hrs, Volume= 1.949 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	76,630	74	>75% Grass cover, Good, HSG C
	34,383	70	Woods, Good, HSG C
*	16,925	74	porous paving
*	146,470	74	Fairway/Tee/Green, Good, HSG C
	7,780	98	Water Surface, HSG C
	282,188	74	Weighted Average
	274,408		97.24% Pervious Area
	7,780		2.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.1200	0.39		**Sheet Flow, sheet flow**
					Grass: Short n= 0.150 P2= 4.00"
7.7	627	0.0730	1.35		**Shallow Concentrated Flow,**
					Woodland Kv= 5.0 fps
0.2	142	0.1270	15.73	82.57	**Trap/Vee/Rect Channel Flow, TRM Swale**
					Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00'
					n= 0.030 Earth, grassed & winding
12.2	869	Total			

Summary for Subcatchment 223S: Golf Hole 15 and Maintenance Bldg.

Runoff = 30.52 cfs @ 11.97 hrs, Volume= 1.447 af, Depth= 3.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	16,393	70	Woods, Good, HSG C
	84,076	74	>75% Grass cover, Good, HSG C
*	7,663	98	Roof
*	62,572	74	Fairway/Tee/Green, Good, HSG C
*	5,950	74	Porous Pavement
	16,303	98	Paved parking, HSG C
	192,957	77	Weighted Average
	168,991		87.58% Pervious Area
	23,966		12.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	30	0.1000	2.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.2	70	0.3000	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.5	233	0.1460	2.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	68	0.0200	5.67	29.79	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
4.1	401	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 225S: Fairway 14

Runoff = 27.49 cfs @ 11.97 hrs, Volume= 1.291 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	55,496	74	>75% Grass cover, Good, HSG C
*	7,480	74	Porous Pavement
*	124,042	74	Fairway/Tee/Green, Good, HSG C
	187,018	74	Weighted Average
	187,018		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.1800	0.46		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.1	147	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	284	0.0560	9.49	49.84	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
5.2	531	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 226S: Fairway & Green of 14

Runoff = 15.97 cfs @ 11.97 hrs, Volume= 0.751 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	28,724	74	>75% Grass cover, Good, HSG C
*	7,290	74	Porous Pavement
*	72,670	74	Fairway/Tee/Green, Good, HSG C
	108,684	74	Weighted Average
	108,684		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	100	0.3100	0.57		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.8	225	0.0840	2.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	100	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	43	0.0470	1.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	468	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 300S: Subcatchment 300

Runoff = 56.57 cfs @ 12.14 hrs, Volume= 4.372 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	3,267	98	Paved Road
	6,447	71	Meadow, non-grazed, HSG C
	702,884	70	Woods, Good, HSG C
	712,598	70	Weighted Average
	709,331		99.54% Pervious Area
	3,267		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	120	0.2500	0.25		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.7	1,810	0.2257	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	110	0.0910	12.13	48.50	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030

21.0	2,040	Total

Summary for Subcatchment 301S: Ex Stream

Runoff = 12.73 cfs @ 11.97 hrs, Volume= 0.596 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	46,362	70	Woods, Good, HSG C
	43,672	74	>75% Grass cover, Good, HSG C
*	1,350	74	Porous Pavement
	91,384	72	Weighted Average
	91,384		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	100	0.2100	0.49		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.4	51	0.0988	2.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	118	0.1610	2.01		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	228	0.1140	10.19	50.95	**Trap/Vee/Rect Channel Flow, Ex Stream** Bot.W=4.00' D=1.00' Z= 1.0 '/' Top.W=6.00' n= 0.040 Mountain streams
5.2	497	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 302a: New Subcatch

Runoff = 19.82 cfs @ 11.99 hrs, Volume= 0.982 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
67,296	71	Meadow, non-grazed, HSG C
65,469	70	Woods, Good, HSG C
22,432	74	>75% Grass cover, Good, HSG C
155,197	71	Weighted Average
155,197		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.3800	0.28		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.7	318	0.3800	3.08		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.6	418	Total			

Summary for Subcatchment 302b: New Subcatch

Runoff = 19.75 cfs @ 12.01 hrs, Volume= 1.027 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
61,357	71	Meadow, non-grazed, HSG C
45,086	70	Woods, Good, HSG C
51,075	74	>75% Grass cover, Good, HSG C
157,518	72	Weighted Average
157,518		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0400	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.2	285	0.3400	4.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	600	0.0820	9.48	49.76	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.040 Earth, cobble bottom, clean sides
8.9	985	Total			

Summary for Subcatchment 302S: (new Subcat)

Runoff = 24.59 cfs @ 11.97 hrs, Volume= 1.146 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	46,647	71	Meadow, non-grazed, HSG C
	139,008	70	Woods, Good, HSG C
*	1,180	74	Paved (porous)
	186,835	70	Weighted Average
	186,835		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1600	0.44		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.2	43	0.1860	3.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	871	0.0600	9.83	51.59	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
5.5	1,014	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 303S: Subcatchment 303

Runoff = 31.38 cfs @ 12.01 hrs, Volume= 1.636 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	145,514	70	Woods, Good, HSG C
*	9,520	74	Porous Pavement
	72,299	74	>75% Grass cover, Good, HSG C
*	23,715	74	Fairway/Tee/Green, Good, HSG C
	251,048	72	Weighted Average
	251,048		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	20	0.0800	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.2	86	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	670	0.0850	12.87	67.55	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.030 Earth, grassed & winding
4.9	358	0.0170	1.22	21.30	**Trap/Vee/Rect Channel Flow, ex wetland flow** Bot.W=10.00' D=0.50' Z= 50.0 '/' Top.W=60.00' n= 0.070 Sluggish weedy reaches w/pools
0.6	316	0.0450	9.45	132.34	**Trap/Vee/Rect Channel Flow, ex wetland ditch** Bot.W=5.00' D=2.00' Z= 1.0 '/' Top.W=9.00' n= 0.040 Earth, cobble bottom, clean sides
9.0	1,450	Total			

Summary for Subcatchment 304: (new Subcat)

Runoff = 16.63 cfs @ 12.16 hrs, Volume= 1.345 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	1,900	74	Porous Pavement
	136,810	70	Woods, Good, HSG C
	73,912	74	>75% Grass cover, Good, HSG C
	212,622	71	Weighted Average
	212,622		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.3300	0.27		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	112	0.3300	2.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	70	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.5	436	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
0.1	145	0.2500	17.04	1,294.48	**Trap/Vee/Rect Channel Flow, overland** Bot.W=50.00' D=0.83' Z= 50.0 '/' Top.W=133.00' n= 0.030 Earth, grassed & winding
22.7	863	Total			

Summary for Subcatchment 305s: Land W. side of hotel

Runoff = 20.62 cfs @ 11.99 hrs, Volume= 1.038 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	125,900	74	>75% Grass cover, Good, HSG C
*	7,690	74	Porous Pavement
*	16,700	74	Fairway/Tee/Green, Good, HSG C
	150,290	74	Weighted Average
	150,290		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	100	0.3000	0.56		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
4.0	650	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	215	0.0100	4.01	21.06	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
7.9	965	Total			

Summary for Subcatchment 306S: 12 tee

Runoff = 26.46 cfs @ 11.99 hrs, Volume= 1.311 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	75,600	70	Woods, Good, HSG C
*	2,810	74	Porous Pavement
	20,790	74	>75% Grass cover, Good, HSG C
	108,004	71	Meadow, non-grazed, HSG C
	207,204	71	Weighted Average
	207,204		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0700	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.9	182	0.2200	3.28		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	550	0.0650	9.20	27.59	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=2.00' D=1.00' Z= 1.0 '/' Top.W=4.00' n= 0.030 Earth, grassed & winding
0.4	240	0.1600	11.19	72.20	**Trap/Vee/Rect Channel Flow, Ex Wetlnd channel** Bot.W=4.00' D=1.50' Z= 0.2 '/' Top.W=4.60' n= 0.050 Mountain streams w/large boulders
7.6	1,072	Total			

Summary for Subcatchment 307S: (new Subcat)

Runoff = 15.96 cfs @ 11.99 hrs, Volume= 0.797 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	13,050	74	Fairway/Tee/Green, Good, HSG C
*	10,840	74	Paved (Porous)
	24,084	74	>75% Grass cover, Good, HSG C
	74,350	70	Woods, Good, HSG C
	122,324	72	Weighted Average
	122,324		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	66	0.2000	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.1	130	0.0760	1.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	72	0.0350	4.77	14.31	**Trap/Vee/Rect Channel Flow, Grassed Swale** Bot.W=4.00' D=0.50' Z= 4.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
0.9	830	0.1100	14.87	111.53	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=2.00' D=1.50' Z= 2.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
7.8	1,098	Total			

Summary for Subcatchment 308S: (new Subcat)

Runoff = 27.70 cfs @ 12.14 hrs, Volume= 2.124 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
36,866	74	>75% Grass cover, Good, HSG C
309,380	70	Woods, Good, HSG C
346,246	70	Weighted Average
346,246		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0200	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.0	186	0.3800	1.54		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
2.6	220	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	150	0.0500	0.56		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
0.7	96	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	75	0.0600	0.61		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
0.1	109	0.1800	13.41	160.89	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.050 Mountain streams w/large boulders
20.7	936	Total			

Summary for Subcatchment 309S: (new Subcat)

Runoff = 34.98 cfs @ 12.05 hrs, Volume= 2.125 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	180,807	70	Woods, Good, HSG C
	103,518	74	>75% Grass cover, Good, HSG C
*	13,610	98	Paved
*	7,390	74	Porous Pavement
*	11,400	74	Fairway/Tee/Green, Good, HSG C
	316,725	73	Weighted Average
	303,115		95.70% Pervious Area
	13,610		4.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	72	0.0278	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
4.2	28	0.0714	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.2	549	0.3320	2.88		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.3	649	Total			

Summary for Subcatchment 310S: Existing Wooded Area

Runoff = 21.91 cfs @ 11.97 hrs, Volume= 1.025 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	107,476	70	Woods, Good, HSG C
*	7,355	98	Paved
	39,560	74	>75% Grass cover, Good, HSG C
*	2,820	74	Porous Pavement
	157,211	72	Weighted Average
	149,856		95.32% Pervious Area
	7,355		4.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.2500	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	434	0.1240	10.89	32.66	**Trap/Vee/Rect Channel Flow, ex. vegetated ditch** Bot.W=2.00' D=1.00' Z= 1.0 '/' Top.W=4.00' n= 0.035 Earth, dense weeds
4.1	474	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 311S: Existing Wooded Area

Runoff = 32.04 cfs @ 12.07 hrs, Volume= 2.036 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	103,137	74	>75% Grass cover, Good, HSG C
*	2,085	98	Paved
	205,167	70	Woods, Good, HSG C
*	2,000	74	Porous Pavement
	312,389	72	Weighted Average
	310,304		99.33% Pervious Area
	2,085		0.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0500	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.1	12	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.8	737	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	930	0.1180	9.10	47.75	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.050 Earth, cobble bottom, clean sides
14.7	1,779	Total			

Summary for Subcatchment 315S: Subcatchment 315

Runoff = 42.07 cfs @ 12.02 hrs, Volume= 2.299 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

Area (sf)	CN	Description
315,930	70	Woods, Good, HSG C
47,510	74	>75% Grass cover, Good, HSG C
363,440	71	Weighted Average
363,440		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.2200	0.23		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
2.9	482	0.3150	2.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.3	582	Total			

Summary for Subcatchment 316A: Existing By Maintenance Bldg.

Runoff = 3.57 cfs @ 11.98 hrs, Volume= 0.169 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
	17,032	70	Woods, Good, HSG C
*	2,919	98	Paved parking
	5,184	71	Meadow, non-grazed, HSG C
	25,135	73	Weighted Average
	22,216		88.39% Pervious Area
	2,919		11.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	100	0.4000	0.29		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	270	0.0800	11.83	29.57	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00' n= 0.025 Earth, clean & winding
6.2	370	Total			

Summary for Subcatchment 316S: existing

Runoff = 54.52 cfs @ 11.99 hrs, Volume= 2.680 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 Year Rainfall=6.50"

	Area (sf)	CN	Description
*	5,340	98	Paved
	361,425	70	Woods, Good, HSG C
	33,106	74	>75% Grass cover, Good, HSG C
*	5,210	74	Porous Pavement
*	18,632	74	Fairway/Tee/Green, Good, HSG C
	423,713	71	Weighted Average
	418,373		98.74% Pervious Area
	5,340		1.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	77	0.3120	0.25		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
2.2	867	0.0280	6.71	35.25	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
7.4	944	Total			

Summary for Reach 1R: overland flow

Inflow Area = 9.767 ac, 36.32% Impervious, Inflow Depth = 4.56" for 25 Year event
Inflow = 72.39 cfs @ 11.97 hrs, Volume= 3.715 af
Outflow = 72.38 cfs @ 11.98 hrs, Volume= 3.715 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.49 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.67 fps, Avg. Travel Time= 0.5 min

Peak Storage= 472 cf @ 11.98 hrs
Average Depth at Peak Storage= 1.42'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 136.22 cfs

3.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 75.0' Slope= 0.1733 '/'
Inlet Invert= 1,963.00', Outlet Invert= 1,950.00'

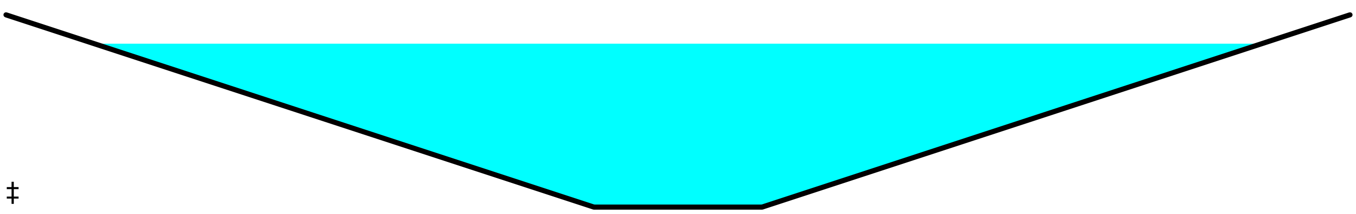
Summary for Reach 3: Rip Rap Channel

Inflow Area = 151.679 ac, 3.12% Impervious, Inflow Depth = 3.34" for 25 Year event
Inflow = 457.64 cfs @ 12.13 hrs, Volume= 42.157 af
Outflow = 457.64 cfs @ 12.13 hrs, Volume= 42.157 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 15.05 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.01 fps, Avg. Travel Time= 0.4 min

Peak Storage= 1,550 cf @ 12.13 hrs
Average Depth at Peak Storage= 1.27'
Bank-Full Depth= 1.50' Flow Area= 40.5 sf, Capacity= 672.04 cfs

6.00' x 1.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 14.0 '/' Top Width= 48.00'
Length= 51.0' Slope= 0.3922 '/'
Inlet Invert= 1,740.00', Outlet Invert= 1,720.00'



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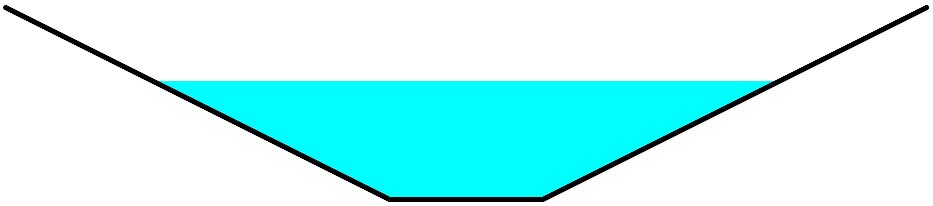
Summary for Reach 3R: Swale along RR Tracks

Inflow Area = 8.723 ac, 6.31% Impervious, Inflow Depth = 3.06" for 25 Year event
Inflow = 46.40 cfs @ 12.03 hrs, Volume= 2.223 af
Outflow = 43.24 cfs @ 12.06 hrs, Volume= 2.223 af, Atten= 7%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.49 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 1.59 fps, Avg. Travel Time= 10.9 min

Peak Storage= 8,221 cf @ 12.06 hrs
Average Depth at Peak Storage= 1.55'
Bank-Full Depth= 2.50' Flow Area= 17.5 sf, Capacity= 126.24 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 1,045.0' Slope= 0.0258 '/'
Inlet Invert= 1,768.00', Outlet Invert= 1,741.00'



Summary for Reach 5: Stream Channel

Inflow Area = 36.096 ac, 1.88% Impervious, Inflow Depth = 3.32" for 25 Year event
Inflow = 115.41 cfs @ 12.05 hrs, Volume= 9.982 af
Outflow = 115.37 cfs @ 12.06 hrs, Volume= 9.982 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 14.47 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.15 fps, Avg. Travel Time= 0.6 min

Peak Storage= 1,276 cf @ 12.06 hrs
Average Depth at Peak Storage= 1.23'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 1,318.86 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 160.0' Slope= 0.3000 '/'
Inlet Invert= 2,060.00', Outlet Invert= 2,012.00'

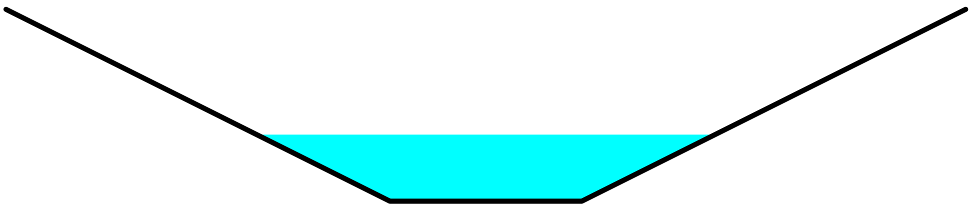
Summary for Reach 5A: Stream Channel

Inflow Area = 44.003 ac, 3.44% Impervious, Inflow Depth = 3.43" for 25 Year event
Inflow = 124.30 cfs @ 12.16 hrs, Volume= 12.578 af
Outflow = 124.23 cfs @ 12.16 hrs, Volume= 12.578 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 13.22 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.08 fps, Avg. Travel Time= 2.7 min

Peak Storage= 3,196 cf @ 12.16 hrs
Average Depth at Peak Storage= 1.39'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 1,130.92 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 340.0' Slope= 0.2206 '/'
Inlet Invert= 2,012.00', Outlet Invert= 1,937.00'



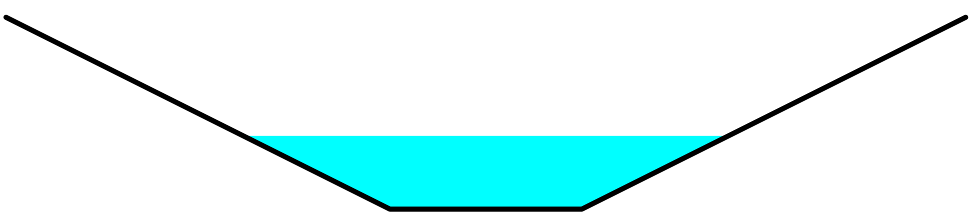
Summary for Reach 5B: Stream Channel

Inflow Area = 48.293 ac, 3.13% Impervious, Inflow Depth = 3.41" for 25 Year event
Inflow = 130.30 cfs @ 12.04 hrs, Volume= 13.724 af
Outflow = 130.30 cfs @ 12.04 hrs, Volume= 13.724 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.09 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.87 fps, Avg. Travel Time= 1.1 min

Peak Storage= 1,293 cf @ 12.04 hrs
Average Depth at Peak Storage= 1.53'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 983.02 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 120.0' Slope= 0.1667 '/'
Inlet Invert= 1,936.00', Outlet Invert= 1,916.00'



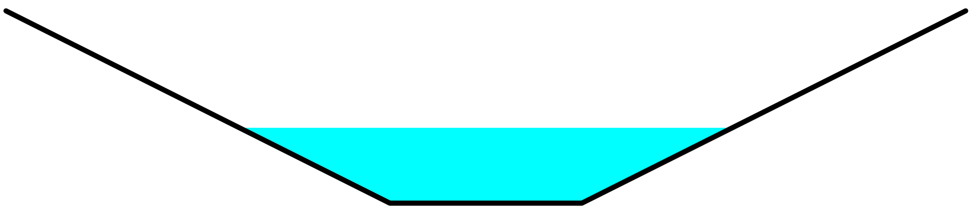
Summary for Reach 5C: Stream Channel

Inflow Area = 48.293 ac, 3.13% Impervious, Inflow Depth = 3.41" for 25 Year event
Inflow = 130.30 cfs @ 12.04 hrs, Volume= 13.724 af
Outflow = 130.20 cfs @ 12.05 hrs, Volume= 13.724 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.63 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.79 fps, Avg. Travel Time= 2.6 min

Peak Storage= 3,101 cf @ 12.05 hrs
Average Depth at Peak Storage= 1.57'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 932.02 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 277.0' Slope= 0.1498 '/'
Inlet Invert= 1,915.50', Outlet Invert= 1,874.00'



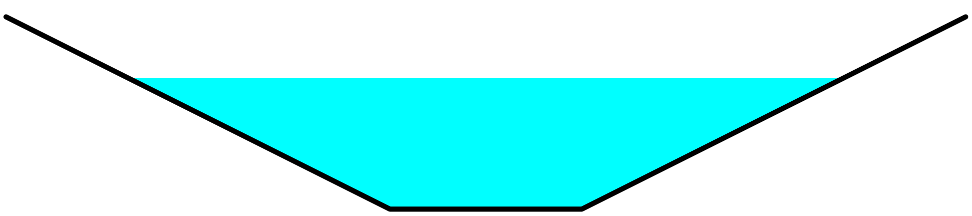
Summary for Reach 5D: Stream Channel

Inflow Area = 55.587 ac, 2.72% Impervious, Inflow Depth = 3.37" for 25 Year event
Inflow = 167.25 cfs @ 12.03 hrs, Volume= 15.589 af
Outflow = 167.17 cfs @ 12.03 hrs, Volume= 15.589 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 16.62 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.27 fps, Avg. Travel Time= 2.2 min

Peak Storage= 3,018 cf @ 12.03 hrs
Average Depth at Peak Storage= 1.70'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 385.96 cfs

2.50' x 2.50' deep channel, n= 0.040
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 300.0' Slope= 0.2017 '/'
Inlet Invert= 1,873.50', Outlet Invert= 1,813.00'



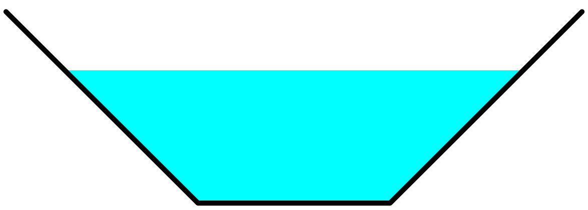
Summary for Reach 5R: roadside swale

Inflow Area = 4.919 ac, 12.29% Impervious, Inflow Depth = 3.39" for 25 Year event
Inflow = 30.70 cfs @ 12.00 hrs, Volume= 1.391 af
Outflow = 29.97 cfs @ 12.02 hrs, Volume= 1.391 af, Atten= 2%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.37 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.75 fps, Avg. Travel Time= 5.8 min

Peak Storage= 2,854 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.39'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 61.25 cfs

2.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 607.0' Slope= 0.0626 '/'
Inlet Invert= 2,122.00', Outlet Invert= 2,084.00'



Summary for Reach 6: (new Reach)

Inflow Area = 17.806 ac, 19.92% Impervious, Inflow Depth > 4.11" for 25 Year event
Inflow = 55.95 cfs @ 12.10 hrs, Volume= 6.095 af
Outflow = 55.94 cfs @ 12.10 hrs, Volume= 6.095 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.35 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.44 fps, Avg. Travel Time= 2.0 min

Peak Storage= 1,047 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 217.11 cfs

4.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 175.0' Slope= 0.1571 '/'
Inlet Invert= 1,937.50', Outlet Invert= 1,910.00'

Summary for Reach 6R: Clean Swale

Inflow Area = 22.295 ac, 12.75% Impervious, Inflow Depth = 3.81" for 25 Year event
Inflow = 60.65 cfs @ 12.07 hrs, Volume= 7.071 af
Outflow = 60.59 cfs @ 12.07 hrs, Volume= 7.071 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.10 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 3.1 min

Peak Storage= 1,833 cf @ 12.07 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 114.21 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 245.0' Slope= 0.0327 '/'
Inlet Invert= 1,838.00', Outlet Invert= 1,830.00'

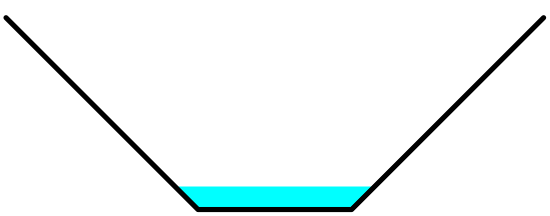
Summary for Reach 7B: Existing Ditch

Inflow Area = 0.577 ac, 11.61% Impervious, Inflow Depth = 3.51" for 25 Year event
Inflow = 3.57 cfs @ 11.98 hrs, Volume= 0.169 af
Outflow = 3.57 cfs @ 11.98 hrs, Volume= 0.169 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.17 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.36 fps, Avg. Travel Time= 1.5 min

Peak Storage= 86 cf @ 11.98 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 2.50' Flow Area= 11.3 sf, Capacity= 172.60 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 125.0' Slope= 0.1280 '/'
Inlet Invert= 1,896.00', Outlet Invert= 1,880.00'



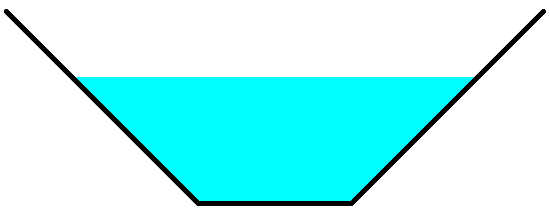
Summary for Reach 7C: Existing Ditch

Inflow Area = 12.538 ac, 1.97% Impervious, Inflow Depth = 3.27" for 25 Year event
Inflow = 59.38 cfs @ 12.03 hrs, Volume= 3.421 af
Outflow = 59.04 cfs @ 12.04 hrs, Volume= 3.421 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.86 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.94 fps, Avg. Travel Time= 3.0 min

Peak Storage= 3,175 cf @ 12.04 hrs
Average Depth at Peak Storage= 1.64'
Bank-Full Depth= 2.50' Flow Area= 11.3 sf, Capacity= 137.22 cfs

2.00' x 2.50' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 530.0' Slope= 0.1264 '/'
Inlet Invert= 1,880.00', Outlet Invert= 1,813.00'



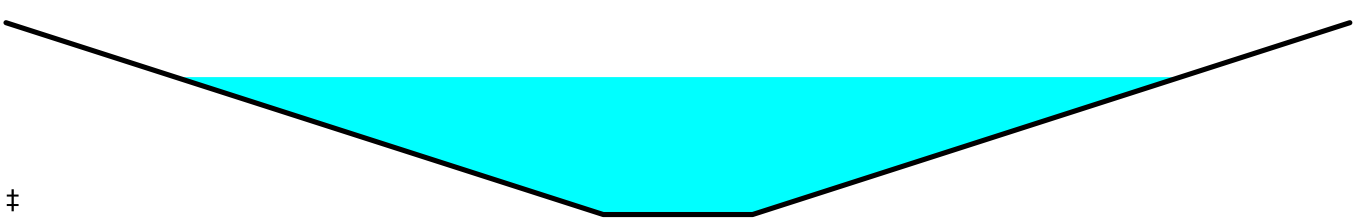
Summary for Reach 8: Stream Channel

Inflow Area = 71.735 ac, 2.69% Impervious, Inflow Depth = 3.35" for 25 Year event
Inflow = 242.21 cfs @ 12.03 hrs, Volume= 20.034 af
Outflow = 241.85 cfs @ 12.03 hrs, Volume= 20.034 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.73 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.21 fps, Avg. Travel Time= 3.4 min

Peak Storage= 6,791 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.72'
Bank-Full Depth= 1.00' Flow Area= 50.0 sf, Capacity= 532.84 cfs

10.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 40.0 '/' Top Width= 90.00'
Length= 245.0' Slope= 0.2816 '/'
Inlet Invert= 1,810.00', Outlet Invert= 1,741.00'



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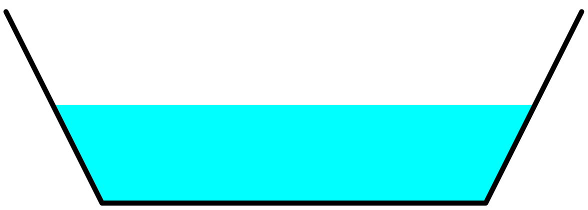
Summary for Reach 9R: swale

Inflow Area = 0.723 ac, 0.00% Impervious, Inflow Depth = 3.31" for 25 Year event
Inflow = 3.99 cfs @ 11.99 hrs, Volume= 0.199 af
Outflow = 3.93 cfs @ 12.01 hrs, Volume= 0.199 af, Atten= 2%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.40 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.82 fps, Avg. Travel Time= 5.7 min

Peak Storage= 324 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.51'
Bank-Full Depth= 1.00' Flow Area= 2.5 sf, Capacity= 11.64 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.5 '/' Top Width= 3.00'
Length= 280.0' Slope= 0.0179 '/'
Inlet Invert= 2,225.00', Outlet Invert= 2,220.00'



Summary for Reach 11R: Overland Flow

Inflow Area = 20.182 ac, 13.31% Impervious, Inflow Depth = 3.84" for 25 Year event
Inflow = 56.48 cfs @ 12.01 hrs, Volume= 6.453 af
Outflow = 52.02 cfs @ 12.06 hrs, Volume= 6.453 af, Atten= 8%, Lag= 2.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.87 fps, Min. Travel Time= 4.4 min
Avg. Velocity = 0.44 fps, Avg. Travel Time= 29.1 min

Peak Storage= 13,794 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 90.0 sf, Capacity= 635.50 cfs

75.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 105.00'
Length= 760.0' Slope= 0.1776 '/'
Inlet Invert= 1,973.00', Outlet Invert= 1,838.00'

‡


Summary for Reach 12R: Overland Flow

Inflow Area = 2.112 ac, 7.43% Impervious, Inflow Depth = 3.51" for 25 Year event
Inflow = 9.97 cfs @ 12.06 hrs, Volume= 0.618 af
Outflow = 9.21 cfs @ 12.10 hrs, Volume= 0.618 af, Atten= 8%, Lag= 2.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.13 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 0.54 fps, Avg. Travel Time= 18.3 min

Peak Storage= 2,542 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 312.77 cfs

30.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 60.00'
Length= 588.0' Slope= 0.2058 '/'
Inlet Invert= 1,959.00', Outlet Invert= 1,838.00'

‡

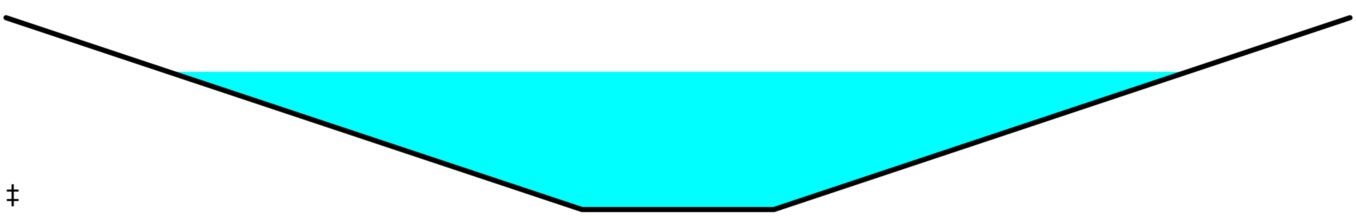
Summary for Reach 13: Channel at tracks

Inflow Area = 80.458 ac, 3.08% Impervious, Inflow Depth = 3.32" for 25 Year event
Inflow = 283.06 cfs @ 12.04 hrs, Volume= 22.257 af
Outflow = 282.05 cfs @ 12.05 hrs, Volume= 22.257 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.38 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 5.5 min

Peak Storage= 12,228 cf @ 12.05 hrs
Average Depth at Peak Storage= 2.15'
Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 604.81 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 4.0 '/' Top Width= 28.00'
Length= 450.0' Slope= 0.0444 '/'
Inlet Invert= 1,740.00', Outlet Invert= 1,720.00'



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Summary for Reach 14R: Swale

Inflow Area = 0.986 ac, 86.08% Impervious, Inflow Depth = 5.24" for 25 Year event
Inflow = 1.86 cfs @ 12.13 hrs, Volume= 0.431 af
Outflow = 1.84 cfs @ 12.17 hrs, Volume= 0.431 af, Atten= 1%, Lag= 2.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.66 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 1.92 fps, Avg. Travel Time= 5.8 min

Peak Storage= 263 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 305.76 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 665.0' Slope= 0.1323 '/'
Inlet Invert= 2,108.00', Outlet Invert= 2,020.00'

Summary for Reach 15R: Cobble Stream

Inflow Area = 34.486 ac, 9.68% Impervious, Inflow Depth = 3.66" for 25 Year event
Inflow = 107.32 cfs @ 12.09 hrs, Volume= 10.532 af
Outflow = 107.26 cfs @ 12.10 hrs, Volume= 10.532 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.58 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.50 fps, Avg. Travel Time= 2.7 min

Peak Storage= 2,269 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.37'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 226.76 cfs

4.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 245.0' Slope= 0.1714 '/'
Inlet Invert= 1,830.00', Outlet Invert= 1,788.00'

Summary for Reach 40R: Swale

Inflow Area = 19.549 ac, 12.60% Impervious, Inflow Depth = 3.82" for 25 Year event
Inflow = 52.49 cfs @ 12.02 hrs, Volume= 6.219 af
Outflow = 52.47 cfs @ 12.02 hrs, Volume= 6.219 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.82 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.09 fps, Avg. Travel Time= 1.5 min

Peak Storage= 730 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.43'
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 106.53 cfs

2.50' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 10.50'
Length= 95.0' Slope= 0.0411 '/'
Inlet Invert= 1,983.90', Outlet Invert= 1,980.00'

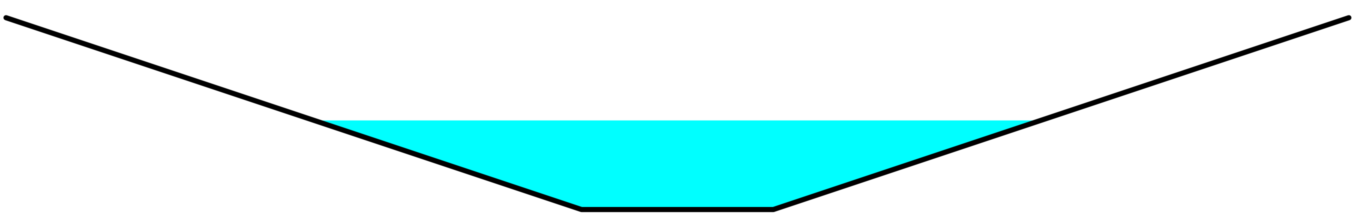
Summary for Reach 51R: Swale

Inflow Area = 5.219 ac, 37.72% Impervious, Inflow Depth = 4.44" for 25 Year event
Inflow = 29.61 cfs @ 11.98 hrs, Volume= 1.932 af
Outflow = 29.09 cfs @ 12.00 hrs, Volume= 1.932 af, Atten= 2%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.54 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.54 fps, Avg. Travel Time= 5.8 min

Peak Storage= 2,378 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.93'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 162.52 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 535.0' Slope= 0.0374 '/'
Inlet Invert= 2,020.00', Outlet Invert= 2,000.00'



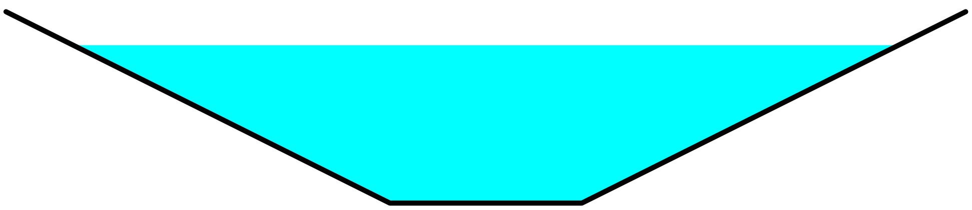
Summary for Reach 58a: Swale along RR Tracks

Inflow Area = 34.486 ac, 9.68% Impervious, Inflow Depth = 3.66" for 25 Year event
Inflow = 107.26 cfs @ 12.10 hrs, Volume= 10.532 af
Outflow = 106.72 cfs @ 12.11 hrs, Volume= 10.532 af, Atten= 1%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.81 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.15 fps, Avg. Travel Time= 7.9 min

Peak Storage= 7,416 cf @ 12.11 hrs
Average Depth at Peak Storage= 2.06'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 163.26 cfs

2.50' x 2.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 543.0' Slope= 0.0276 '/'
Inlet Invert= 1,788.00', Outlet Invert= 1,773.00'



Summary for Reach 63R: OVERLAND

Inflow Area = 2.621 ac, 30.94% Impervious, Inflow Depth = 4.40" for 25 Year event
Inflow = 18.38 cfs @ 11.98 hrs, Volume= 0.962 af
Outflow = 18.37 cfs @ 11.99 hrs, Volume= 0.962 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.75 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.93 fps, Avg. Travel Time= 1.1 min

Peak Storage= 264 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 448.14 cfs

5.00' x 2.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 1.0 '/' Top Width= 10.00'
Length= 126.0' Slope= 0.3595 '/'
Inlet Invert= 2,069.90', Outlet Invert= 2,024.60'

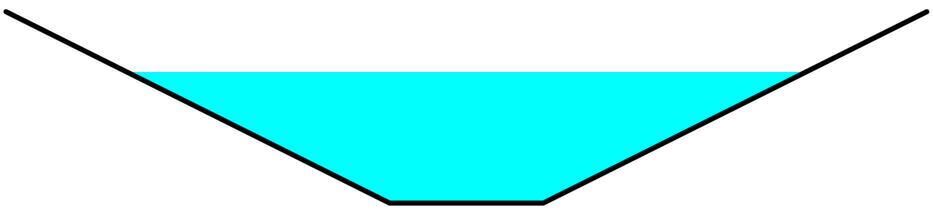
Summary for Reach 64R: Swale

Inflow Area = 7.908 ac, 10.53% Impervious, Inflow Depth = 3.94" for 25 Year event
Inflow = 23.42 cfs @ 12.16 hrs, Volume= 2.596 af
Outflow = 22.59 cfs @ 12.18 hrs, Volume= 2.596 af, Atten= 4%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.43 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 0.48 fps, Avg. Travel Time= 7.6 min

Peak Storage= 2,063 cf @ 12.18 hrs
Average Depth at Peak Storage= 1.71'
Bank-Full Depth= 2.50' Flow Area= 17.5 sf, Capacity= 52.71 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 222.0' Slope= 0.0045 '/'
Inlet Invert= 2,016.50', Outlet Invert= 2,015.50'



Summary for Reach 69R: Wetland Flow

Inflow Area = 3.450 ac, 0.00% Impervious, Inflow Depth = 3.61" for 25 Year event
Inflow = 20.62 cfs @ 11.99 hrs, Volume= 1.038 af
Outflow = 17.34 cfs @ 12.04 hrs, Volume= 1.038 af, Atten= 16%, Lag= 2.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.35 fps, Min. Travel Time= 6.0 min
Avg. Velocity = 0.29 fps, Avg. Travel Time= 28.2 min

Peak Storage= 6,268 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 0.50' Flow Area= 63.0 sf, Capacity= 172.83 cfs

76.00' x 0.50' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 100.0 '/' Top Width= 176.00'
Length= 487.0' Slope= 0.0657 '/'
Inlet Invert= 2,098.00', Outlet Invert= 2,066.00'

‡

Summary for Reach 197: Stream Channel

Inflow Area = 143.335 ac, 3.30% Impervious, Inflow Depth = 3.34" for 25 Year event
Inflow = 437.21 cfs @ 12.14 hrs, Volume= 39.859 af
Outflow = 436.91 cfs @ 12.15 hrs, Volume= 39.858 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 14.67 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.72 fps, Avg. Travel Time= 3.7 min

Peak Storage= 17,836 cf @ 12.15 hrs
Average Depth at Peak Storage= 1.25'
Bank-Full Depth= 6.00' Flow Area= 342.0 sf, Capacity= 12,139.60 cfs

15.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 7.0 '/' Top Width= 99.00'
Length= 599.0' Slope= 0.2763 '/'
Inlet Invert= 1,909.50', Outlet Invert= 1,744.00'

‡

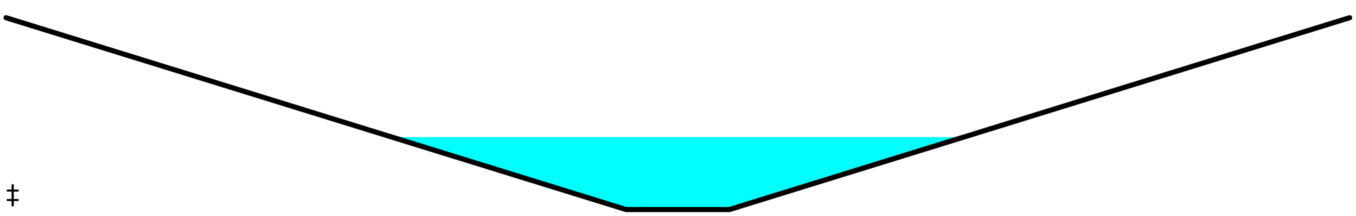
Summary for Reach 197A: Stream Channel

Inflow Area = 118.559 ac, 1.00% Impervious, Inflow Depth = 3.23" for 25 Year event
Inflow = 372.56 cfs @ 12.15 hrs, Volume= 31.930 af
Outflow = 372.02 cfs @ 12.16 hrs, Volume= 31.930 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.55 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 4.60 fps, Avg. Travel Time= 2.2 min

Peak Storage= 17,822 cf @ 12.16 hrs
Average Depth at Peak Storage= 2.27'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 3,783.36 cfs

4.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 601.0' Slope= 0.1248 '/'
Inlet Invert= 1,985.00', Outlet Invert= 1,910.00'



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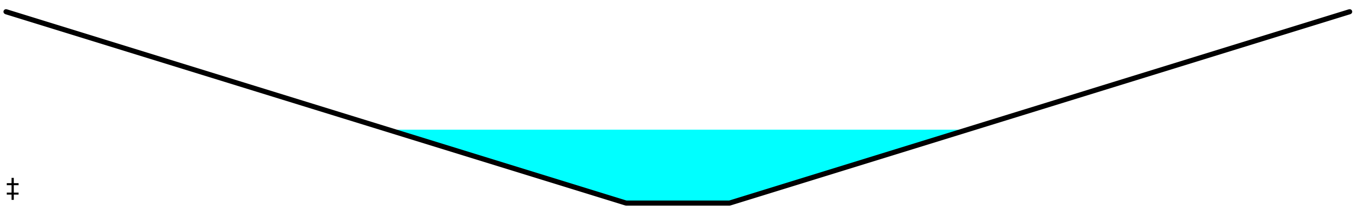
Summary for Reach 197B: Stream Channel

Inflow Area = 110.322 ac, 1.07% Impervious, Inflow Depth = 3.22" for 25 Year event
Inflow = 359.30 cfs @ 12.15 hrs, Volume= 29.646 af
Outflow = 359.15 cfs @ 12.16 hrs, Volume= 29.646 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.83 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 4.32 fps, Avg. Travel Time= 1.0 min

Peak Storage= 7,652 cf @ 12.16 hrs
Average Depth at Peak Storage= 2.30'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 3,537.94 cfs

4.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 252.0' Slope= 0.1091 '/'
Inlet Invert= 2,013.00', Outlet Invert= 1,985.50'



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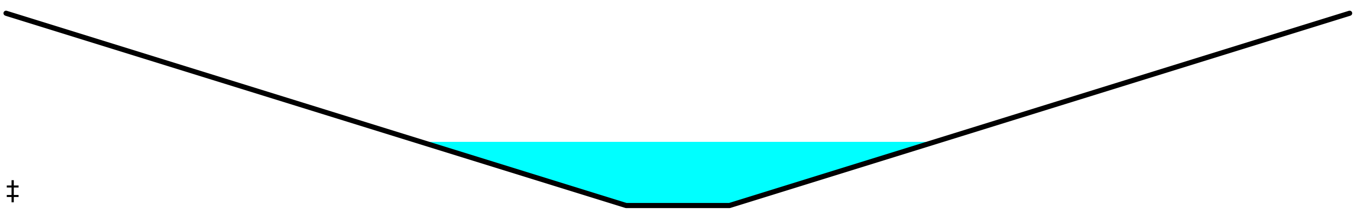
Summary for Reach 197C: Stream Channel

Inflow Area = 95.895 ac, 1.05% Impervious, Inflow Depth = 3.24" for 25 Year event
Inflow = 310.50 cfs @ 12.16 hrs, Volume= 25.912 af
Outflow = 310.28 cfs @ 12.17 hrs, Volume= 25.912 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 13.05 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 4.76 fps, Avg. Travel Time= 1.5 min

Peak Storage= 10,126 cf @ 12.17 hrs
Average Depth at Peak Storage= 1.99'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 4,247.34 cfs

4.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 426.0' Slope= 0.1573 '/'
Inlet Invert= 2,080.00', Outlet Invert= 2,013.00'



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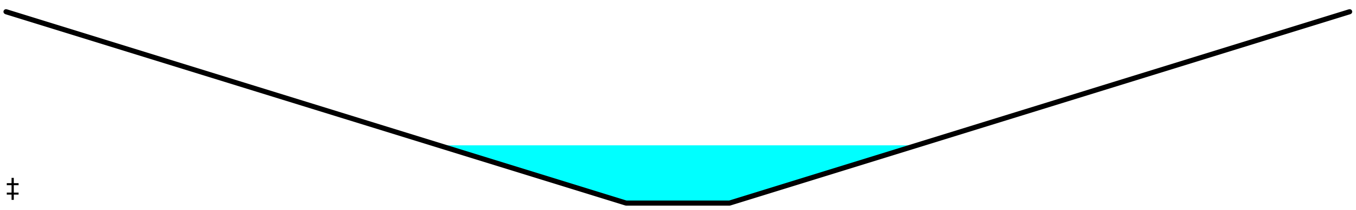
Summary for Reach 198: Stream Channel

Inflow Area = 88.624 ac, 0.78% Impervious, Inflow Depth = 3.22" for 25 Year event
Inflow = 289.00 cfs @ 12.17 hrs, Volume= 23.787 af
Outflow = 288.72 cfs @ 12.17 hrs, Volume= 23.787 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 14.20 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 5.26 fps, Avg. Travel Time= 1.3 min

Peak Storage= 8,478 cf @ 12.17 hrs
Average Depth at Peak Storage= 1.81'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 4,877.81 cfs

4.00' x 6.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 417.0' Slope= 0.2074 '/'
Inlet Invert= 2,168.00', Outlet Invert= 2,081.50'



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Summary for Reach 199: Overland Flow

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 3.31" for 25 Year event
Inflow = 42.53 cfs @ 12.15 hrs, Volume= 3.366 af
Outflow = 42.37 cfs @ 12.16 hrs, Volume= 3.366 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.53 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.31 fps, Avg. Travel Time= 3.2 min

Peak Storage= 2,338 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 0.50' Flow Area= 50.0 sf, Capacity= 451.81 cfs

50.00' x 0.50' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 100.0 '/' Top Width= 150.00'
Length= 250.0' Slope= 0.2560 '/'
Inlet Invert= 2,232.00', Outlet Invert= 2,168.00'

‡

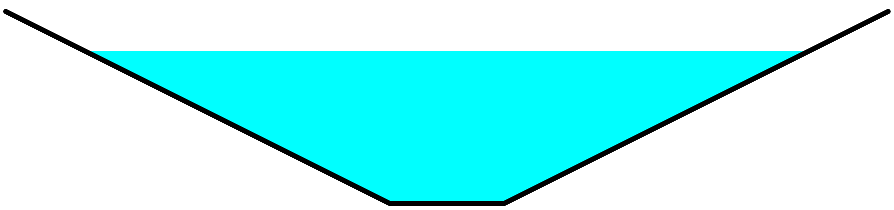
Summary for Reach 295: Roadside Channel

Inflow Area = 26.882 ac, 2.53% Impervious, Inflow Depth = 3.26" for 25 Year event
Inflow = 82.10 cfs @ 12.17 hrs, Volume= 7.307 af
Outflow = 82.05 cfs @ 12.18 hrs, Volume= 7.307 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.55 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.55 fps, Avg. Travel Time= 1.8 min

Peak Storage= 3,043 cf @ 12.18 hrs
Average Depth at Peak Storage= 1.99'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 140.40 cfs

1.50' x 2.50' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 11.50'
Length= 280.0' Slope= 0.0607 '/'
Inlet Invert= 2,083.00', Outlet Invert= 2,066.00'



Summary for Reach 296: Wetland Flow

Inflow Area = 21.963 ac, 0.34% Impervious, Inflow Depth = 3.23" for 25 Year event
Inflow = 73.36 cfs @ 12.18 hrs, Volume= 5.916 af
Outflow = 72.29 cfs @ 12.20 hrs, Volume= 5.916 af, Atten= 1%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.21 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 0.90 fps, Avg. Travel Time= 7.9 min

Peak Storage= 9,620 cf @ 12.20 hrs
Average Depth at Peak Storage= 1.09'
Bank-Full Depth= 2.00' Flow Area= 56.0 sf, Capacity= 251.85 cfs

12.00' x 2.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 8.0 '/' Top Width= 44.00'
Length= 427.0' Slope= 0.0328 '/'
Inlet Invert= 2,098.00', Outlet Invert= 2,084.00'

‡

Summary for Reach 297: Overland Flow

Inflow Area = 17.082 ac, 0.44% Impervious, Inflow Depth = 3.21" for 25 Year event
Inflow = 56.83 cfs @ 12.17 hrs, Volume= 4.571 af
Outflow = 56.79 cfs @ 12.18 hrs, Volume= 4.571 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.59 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.06 fps, Avg. Travel Time= 1.6 min

Peak Storage= 1,459 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 0.50' Flow Area= 27.5 sf, Capacity= 358.18 cfs

30.00' x 0.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 50.0 '/' Top Width= 80.00'
Length= 195.0' Slope= 0.2872 '/'
Inlet Invert= 2,170.00', Outlet Invert= 2,114.00'

‡

Summary for Reach 298: Wetland Flow

Inflow Area = 17.082 ac, 0.44% Impervious, Inflow Depth = 3.21" for 25 Year event
Inflow = 58.03 cfs @ 12.14 hrs, Volume= 4.571 af
Outflow = 56.83 cfs @ 12.17 hrs, Volume= 4.571 af, Atten= 2%, Lag= 1.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.26 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 11.7 min

Peak Storage= 10,277 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 150.0 sf, Capacity= 802.14 cfs

100.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 50.0 '/' Top Width= 200.00'
Length= 408.0' Slope= 0.0931 '/'
Inlet Invert= 2,208.00', Outlet Invert= 2,170.00'

‡

Summary for Reach 299: Overland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 3.21" for 25 Year event
Inflow = 56.57 cfs @ 12.14 hrs, Volume= 4.372 af
Outflow = 56.55 cfs @ 12.15 hrs, Volume= 4.372 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.02 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.16 fps, Avg. Travel Time= 1.0 min

Peak Storage= 1,269 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 130.57 cfs

10.00' x 0.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 50.0 '/' Top Width= 60.00'
Length= 135.0' Slope= 0.3259 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,208.00'

‡

Summary for Reach O3: Overland Flow

Inflow = 10.35 cfs @ 12.00 hrs, Volume= 0.122 af
Outflow = 10.18 cfs @ 12.01 hrs, Volume= 0.122 af, Atten= 2%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.13 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.76 fps, Avg. Travel Time= 3.9 min

Peak Storage= 579 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.25' Flow Area= 13.8 sf, Capacity= 78.90 cfs

30.00' x 0.25' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 100.0 '/' Top Width= 80.00'
Length= 178.0' Slope= 0.1404 '/'
Inlet Invert= 1,838.00', Outlet Invert= 1,813.00'

‡

Summary for Reach O4: Swale

Inflow = 10.18 cfs @ 12.01 hrs, Volume= 0.122 af
Outflow = 9.99 cfs @ 12.02 hrs, Volume= 0.122 af, Atten= 2%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.96 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.17 fps, Avg. Travel Time= 4.1 min

Peak Storage= 575 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 59.96 cfs

2.00' x 1.50' deep channel, n= 0.033 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 286.0' Slope= 0.0385 '/'
Inlet Invert= 1,810.00', Outlet Invert= 1,799.00'

Summary for Reach X1: Swale

Inflow Area = 2.495 ac, 0.00% Impervious, Inflow Depth = 2.76" for 25 Year event
Inflow = 15.30 cfs @ 11.99 hrs, Volume= 0.574 af
Outflow = 15.26 cfs @ 12.00 hrs, Volume= 0.574 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.98 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.88 fps, Avg. Travel Time= 1.8 min

Peak Storage= 437 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.66'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 153.60 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 200.0' Slope= 0.1050 '/'
Inlet Invert= 1,794.00', Outlet Invert= 1,773.00'

Summary for Pond 1P: Catch Basin/Culvert

Inflow Area = 1.239 ac, 57.09% Impervious, Inflow Depth = 5.11" for 25 Year event
Inflow = 9.31 cfs @ 12.01 hrs, Volume= 0.528 af
Outflow = 9.31 cfs @ 12.01 hrs, Volume= 0.528 af, Atten= 0%, Lag= 0.0 min
Primary = 9.31 cfs @ 12.01 hrs, Volume= 0.528 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,981.16' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,980.00'	**36.0" Round Culvert** L= 200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,980.00' / 1,964.00' S= 0.0800 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.30 cfs @ 12.01 hrs HW=1,981.16' TW=1,964.36' (Dynamic Tailwater)
1=Culvert (Inlet Controls 9.30 cfs @ 3.67 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 2P: Catch Basin

Inflow Area = 8.528 ac, 33.30% Impervious, Inflow Depth = 4.49" for 25 Year event
Inflow = 63.68 cfs @ 11.97 hrs, Volume= 3.188 af
Outflow = 63.68 cfs @ 11.97 hrs, Volume= 3.188 af, Atten= 0%, Lag= 0.0 min
Primary = 63.68 cfs @ 11.97 hrs, Volume= 3.188 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,001.00' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,996.00'	**36.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,996.00' / 1,995.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=63.63 cfs @ 11.97 hrs HW=2,001.00' TW=1,964.42' (Dynamic Tailwater)
1=Culvert (Inlet Controls 63.63 cfs @ 9.00 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 2R: 48" CMP Culvert

Inflow Area = 151.679 ac, 3.12% Impervious, Inflow Depth = 3.34" for 25 Year event
Inflow = 457.64 cfs @ 12.13 hrs, Volume= 42.157 af
Outflow = 457.64 cfs @ 12.13 hrs, Volume= 42.157 af, Atten= 0%, Lag= 0.0 min
Primary = 457.64 cfs @ 12.13 hrs, Volume= 42.157 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 1,747.16' @ 12.13 hrs
Flood Elev= 1,749.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,741.00'	**48.0" Round Culvert** L= 30.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,741.00' / 1,740.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 12.57 sf
#2	Primary	1,746.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=457.64 cfs @ 12.13 hrs HW=1,747.16' TW=1,741.27' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 123.36 cfs @ 9.82 fps)
2=**Broad-Crested Rectangular Weir** (Weir Controls 334.28 cfs @ 2.89 fps)

Summary for Pond 3P: Catch Basin

Inflow Area =	0.284 ac, 69.74% Impervious, Inflow Depth = 5.46" for 25 Year event		
Inflow =	2.46 cfs @ 11.97 hrs, Volume=	0.129 af	
Outflow =	2.46 cfs @ 11.97 hrs, Volume=	0.129 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.46 cfs @ 11.97 hrs, Volume=	0.129 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,009.92' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,009.19'	**18.0" Round Culvert** L= 304.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,009.19' / 1,997.21' S= 0.0394 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,014.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.46 cfs @ 11.97 hrs HW=2,009.92' TW=2,000.99' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 2.46 cfs @ 2.90 fps)
2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 4P: Catch Basin

Inflow Area =	0.103 ac,100.00% Impervious, Inflow Depth = 6.26" for 25 Year event		
Inflow =	0.96 cfs @ 11.97 hrs, Volume=	0.054 af	
Outflow =	0.96 cfs @ 11.97 hrs, Volume=	0.054 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.96 cfs @ 11.97 hrs, Volume=	0.054 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,010.20' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,009.71'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,009.71' / 2,009.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

#2	Primary	2,014.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.96 cfs @ 11.97 hrs HW=2,010.20' TW=2,009.92' (Dynamic Tailwater)
1=**Culvert** (Outlet Controls 0.96 cfs @ 2.87 fps)
2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 4R: 38" Arch Culv.

Inflow Area = 36.096 ac, 1.88% Impervious, Inflow Depth = 3.32" for 25 Year event
Inflow = 115.41 cfs @ 12.05 hrs, Volume= 9.982 af
Outflow = 115.41 cfs @ 12.05 hrs, Volume= 9.982 af, Atten= 0%, Lag= 0.0 min
Primary = 115.41 cfs @ 12.05 hrs, Volume= 9.982 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,069.56' @ 12.05 hrs
Flood Elev= 2,071.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,064.00'	**57.0" W x 38.0" H, R=28.9"/88.3" Arch CMP_Arch_1/2 57x38** L= 70.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,064.00' / 2,063.00' S= 0.0143 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 11.89 sf
#2	Primary	2,070.00'	**100.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=115.31 cfs @ 12.05 hrs HW=2,069.56' TW=2,061.23' (Dynamic Tailwater)
1=**CMP_Arch_1/2 57x38** (Inlet Controls 115.31 cfs @ 9.69 fps)
2=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7A: CULVERT

Inflow Area = 0.577 ac, 11.61% Impervious, Inflow Depth = 3.51" for 25 Year event
Inflow = 3.57 cfs @ 11.98 hrs, Volume= 0.169 af
Outflow = 3.57 cfs @ 11.98 hrs, Volume= 0.169 af, Atten= 0%, Lag= 0.0 min
Primary = 3.57 cfs @ 11.98 hrs, Volume= 0.169 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,900.90' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,900.00'	**18.0" Round Culvert** L= 115.0' Ke= 0.500 Inlet / Outlet Invert= 1,900.00' / 1,898.00' S= 0.0174 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.57 cfs @ 11.98 hrs HW=1,900.90' TW=1,896.30' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 3.57 cfs @ 3.23 fps)

Summary for Pond 7P: Catch Basin

Inflow Area = 0.262 ac, 70.83% Impervious, Inflow Depth = 5.45" for 25 Year event
Inflow = 2.30 cfs @ 11.97 hrs, Volume= 0.119 af
Outflow = 2.30 cfs @ 11.97 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.0 min
Primary = 2.30 cfs @ 11.97 hrs, Volume= 0.119 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,070.04' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,065.43'	**12.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,065.43' / 2,065.25' S= 0.0164 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,070.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.98 cfs @ 11.97 hrs HW=2,070.01' TW=2,069.74' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.97 cfs @ 2.51 fps)
└—**2=Orifice/Grate** (Weir Controls 0.01 cfs @ 0.27 fps)

Summary for Pond 7R: (2) 43" Arch Culverts

Inflow Area = 71.735 ac, 2.69% Impervious, Inflow Depth = 3.35" for 25 Year event
Inflow = 242.21 cfs @ 12.03 hrs, Volume= 20.034 af
Outflow = 242.21 cfs @ 12.03 hrs, Volume= 20.034 af, Atten= 0%, Lag= 0.0 min
Primary = 242.21 cfs @ 12.03 hrs, Volume= 20.034 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,816.00' @ 12.03 hrs
Flood Elev= 1,818.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,811.50'	**64.0" W x 43.0" H, R=32.5"/99.3" Arch CMP_Arch_1/2 64x43 X 2.00** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,811.50' / 1,810.50' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 15.13 sf
#2	Primary	1,816.50'	**100.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=241.96 cfs @ 12.03 hrs HW=1,816.00' TW=1,810.72' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 64x43** (Inlet Controls 241.96 cfs @ 8.00 fps)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 8R: 36" hdpe

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 0.00' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,830.00'	**36.0" Round Culvert** L= 245.0' Ke= 0.500 Inlet / Outlet Invert= 1,830.00' / 1,788.00' S= 0.1714 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' TW=1,788.00' (Dynamic Tailwater)
└**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 9P: Catch Basin

Inflow Area = 0.167 ac, 83.21% Impervious, Inflow Depth = 5.82" for 25 Year event
Inflow = 1.51 cfs @ 11.97 hrs, Volume= 0.081 af
Outflow = 1.51 cfs @ 11.97 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min
Primary = 1.51 cfs @ 11.97 hrs, Volume= 0.081 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,037.22' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.40'	**24.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.40' / 2,034.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,039.40'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.51 cfs @ 11.97 hrs HW=2,037.22' TW=2,037.20' (Dynamic Tailwater)
├**1=Culvert** (Outlet Controls 1.51 cfs @ 0.66 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 10P: Catch Basin

Inflow Area = 0.088 ac, 94.81% Impervious, Inflow Depth = 6.14" for 25 Year event
Inflow = 0.82 cfs @ 11.97 hrs, Volume= 0.045 af
Outflow = 0.82 cfs @ 11.97 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min
Primary = 0.82 cfs @ 11.97 hrs, Volume= 0.045 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,037.24' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,036.00'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,036.00' / 2,035.50' S= 0.0278 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,040.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 11.97 hrs HW=2,037.19' TW=2,037.22' (Dynamic Tailwater)
—**1=Culvert** (Controls 0.00 cfs)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 10R: 14" and 16" HDPE Culverts

Inflow Area = 20.182 ac, 13.31% Impervious, Inflow Depth = 3.84" for 25 Year event
Inflow = 56.48 cfs @ 12.01 hrs, Volume= 6.453 af
Outflow = 56.48 cfs @ 12.01 hrs, Volume= 6.453 af, Atten= 0%, Lag= 0.0 min
Primary = 56.48 cfs @ 12.01 hrs, Volume= 6.453 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,977.47' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,975.00'	**14.0" Round 14" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.07 sf
#2	Primary	1,975.00'	**16.0" Round 16" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.40 sf
#3	Primary	1,977.00'	**50.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=56.43 cfs @ 12.01 hrs HW=1,977.47' TW=1,973.22' (Dynamic Tailwater)
—**1=14" Culvert** (Inlet Controls 5.58 cfs @ 5.22 fps)
—**2=16" Culvert** (Inlet Controls 7.13 cfs @ 5.11 fps)
—**3=Broad-Crested Rectangular Weir** (Weir Controls 43.71 cfs @ 1.85 fps)

Summary for Pond 11P: Catch Basin

Inflow Area = 7.752 ac, 29.04% Impervious, Inflow Depth = 4.37" for 25 Year event
Inflow = 56.79 cfs @ 11.97 hrs, Volume= 2.824 af
Outflow = 56.79 cfs @ 11.97 hrs, Volume= 2.824 af, Atten= 0%, Lag= 0.0 min
Primary = 56.79 cfs @ 11.97 hrs, Volume= 2.824 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,054.28' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,050.00'	**36.0" Round Culvert** L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,050.00' / 2,040.74' S= 0.1029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,060.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=56.74 cfs @ 11.97 hrs HW=2,054.28' TW=2,037.20' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 56.74 cfs @ 8.03 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 12P: Catch Basin

Inflow Area = 0.067 ac, 88.78% Impervious, Inflow Depth = 5.91" for 25 Year event
Inflow = 0.62 cfs @ 11.97 hrs, Volume= 0.033 af
Outflow = 0.62 cfs @ 11.97 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min
Primary = 0.62 cfs @ 11.97 hrs, Volume= 0.033 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,055.39' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,055.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,055.00' / 2,054.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,060.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.62 cfs @ 11.97 hrs HW=2,055.39' TW=2,054.27' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 0.62 cfs @ 2.14 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 13P: Manhole

Inflow Area = 7.315 ac, 26.40% Impervious, Inflow Depth = 4.30" for 25 Year event
Inflow = 52.94 cfs @ 11.97 hrs, Volume= 2.623 af
Outflow = 52.94 cfs @ 11.97 hrs, Volume= 2.623 af, Atten= 0%, Lag= 0.0 min
Primary = 52.94 cfs @ 11.97 hrs, Volume= 2.623 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,067.80' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,063.88'	**36.0" Round Culvert** L= 137.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,063.88' / 2,055.10' S= 0.0641 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,072.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=52.88 cfs @ 11.97 hrs HW=2,067.79' TW=2,054.28' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 52.88 cfs @ 7.48 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 13R: 16" CMP Culvert

Inflow Area = 2.112 ac, 7.43% Impervious, Inflow Depth = 3.51" for 25 Year event
Inflow = 9.97 cfs @ 12.06 hrs, Volume= 0.618 af
Outflow = 9.97 cfs @ 12.06 hrs, Volume= 0.618 af, Atten= 0%, Lag= 0.0 min
Primary = 9.97 cfs @ 12.06 hrs, Volume= 0.618 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,964.03' @ 12.06 hrs
Flood Elev= 1,972.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,960.00'	**16.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 1,960.00' / 1,959.00' S= 0.0250 '/' Cc= 0.900 n= 0.025, Flow Area= 1.40 sf

Primary OutFlow Max=9.97 cfs @ 12.06 hrs HW=1,964.03' TW=1,959.13' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 9.97 cfs @ 7.14 fps)

Summary for Pond 15P: Catch Basin

Inflow Area = 0.609 ac, 66.13% Impervious, Inflow Depth = 5.32" for 25 Year event
Inflow = 5.28 cfs @ 11.97 hrs, Volume= 0.270 af
Outflow = 5.28 cfs @ 11.97 hrs, Volume= 0.270 af, Atten= 0%, Lag= 0.0 min
Primary = 5.28 cfs @ 11.97 hrs, Volume= 0.270 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,069.75' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,065.43'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,065.43' / 2,065.25' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,070.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.28 cfs @ 11.97 hrs HW=2,069.74' TW=2,067.79' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 5.28 cfs @ 6.72 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 16P: Catch Basin

Inflow Area = 0.168 ac, 93.81% Impervious, Inflow Depth = 6.14" for 25 Year event
Inflow = 1.55 cfs @ 11.97 hrs, Volume= 0.086 af
Outflow = 1.55 cfs @ 11.97 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.0 min
Primary = 1.55 cfs @ 11.97 hrs, Volume= 0.086 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,083.01' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,080.59'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,080.59' / 2,080.41' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,084.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.55 cfs @ 11.97 hrs HW=2,083.00' TW=2,082.83' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 1.55 cfs @ 1.97 fps)
2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 17P: Catch Basin

Inflow Area = 6.537 ac, 21.88% Impervious, Inflow Depth = 4.19" for 25 Year event
Inflow = 46.23 cfs @ 11.97 hrs, Volume= 2.281 af
Outflow = 46.23 cfs @ 11.97 hrs, Volume= 2.281 af, Atten= 0%, Lag= 0.0 min
Primary = 46.23 cfs @ 11.97 hrs, Volume= 2.281 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,082.85' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,079.50'	**36.0" Round Culvert** L= 213.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,079.50' / 2,067.47' S= 0.0565 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,084.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=46.17 cfs @ 11.97 hrs HW=2,082.84' TW=2,067.79' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 46.17 cfs @ 6.53 fps)
2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 18P: Catch Basin

Inflow Area = 0.696 ac, 90.27% Impervious, Inflow Depth = 6.03" for 25 Year event
Inflow = 6.40 cfs @ 11.97 hrs, Volume= 0.350 af
Outflow = 6.40 cfs @ 11.97 hrs, Volume= 0.350 af, Atten= 0%, Lag= 0.0 min
Primary = 6.40 cfs @ 11.97 hrs, Volume= 0.350 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,096.20' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,092.21'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,092.21' / 2,092.03' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,096.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=6.39 cfs @ 11.97 hrs HW=2,096.19' TW=2,093.80' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 5.85 cfs @ 7.44 fps)
2=**Orifice/Grate** (Orifice Controls 0.54 cfs @ 1.41 fps)

Summary for Pond 19P: Catch Basin

Inflow Area = 5.536 ac, 21.72% Impervious, Inflow Depth = 4.18" for 25 Year event
Inflow = 39.28 cfs @ 11.97 hrs, Volume= 1.929 af
Outflow = 39.28 cfs @ 11.97 hrs, Volume= 1.929 af, Atten= 0%, Lag= 0.0 min
Primary = 39.28 cfs @ 11.97 hrs, Volume= 1.929 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,093.81' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,091.00'	**36.0" Round Culvert** L= 250.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,091.00' / 2,077.47' S= 0.0541 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,096.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=39.25 cfs @ 11.97 hrs HW=2,093.81' TW=2,082.84' (Dynamic Tailwater)
1=Culvert (Inlet Controls 39.25 cfs @ 5.71 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 20: CB20

Inflow Area = 3.450 ac, 0.00% Impervious, Inflow Depth = 3.61" for 25 Year event
Inflow = 20.62 cfs @ 11.99 hrs, Volume= 1.038 af
Outflow = 20.62 cfs @ 11.99 hrs, Volume= 1.038 af, Atten= 0%, Lag= 0.0 min
Primary = 20.62 cfs @ 11.99 hrs, Volume= 1.038 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,110.62' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,104.00'	**18.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,104.00' / 2,094.00' S= 0.1538 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,112.00'	**75.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=20.59 cfs @ 11.99 hrs HW=2,110.61' TW=2,098.13' (Dynamic Tailwater)
1=Culvert (Inlet Controls 20.59 cfs @ 11.65 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 20P: Manhole

Inflow Area = 4.748 ac, 10.68% Impervious, Inflow Depth = 3.89" for 25 Year event
Inflow = 32.09 cfs @ 11.97 hrs, Volume= 1.537 af
Outflow = 32.09 cfs @ 11.97 hrs, Volume= 1.537 af, Atten= 0%, Lag= 0.0 min
Primary = 32.09 cfs @ 11.97 hrs, Volume= 1.537 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,097.49' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,094.40'	**30.0" Round Culvert** L= 107.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,094.40' / 2,091.00' S= 0.0318 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=32.04 cfs @ 11.97 hrs HW=2,097.49' TW=2,093.81' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 32.04 cfs @ 6.53 fps)

Summary for Pond 21P: Catch Basin

Inflow Area = 0.702 ac, 72.23% Impervious, Inflow Depth = 5.47" for 25 Year event
Inflow = 6.19 cfs @ 11.97 hrs, Volume= 0.320 af
Outflow = 6.19 cfs @ 11.97 hrs, Volume= 0.320 af, Atten= 0%, Lag= 0.0 min
Primary = 6.19 cfs @ 11.97 hrs, Volume= 0.320 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,114.21' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,113.21'	**30.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,113.21' / 2,098.84' S= 0.1041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,118.50'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=6.18 cfs @ 11.97 hrs HW=2,114.20' TW=2,097.48' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 6.18 cfs @ 3.40 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 22P: Catch Basin

Inflow Area = 0.427 ac, 71.34% Impervious, Inflow Depth = 5.45" for 25 Year event
Inflow = 3.76 cfs @ 11.97 hrs, Volume= 0.194 af
Outflow = 3.76 cfs @ 11.97 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min
Primary = 3.76 cfs @ 11.97 hrs, Volume= 0.194 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,115.70' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,114.64'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,114.64' / 2,114.46' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,118.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.75 cfs @ 11.97 hrs HW=2,115.70' TW=2,114.20' (Dynamic Tailwater)
├─**1=Culvert** (Barrel Controls 3.75 cfs @ 3.97 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 23A: Catch Basin

Inflow Area = 0.733 ac, 0.00% Impervious, Inflow Depth = 3.61" for 25 Year event
Inflow = 4.56 cfs @ 11.98 hrs, Volume= 0.220 af
Outflow = 4.56 cfs @ 11.98 hrs, Volume= 0.220 af, Atten= 0%, Lag= 0.0 min
Primary = 4.56 cfs @ 11.98 hrs, Volume= 0.220 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,093.63' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,092.59'	**18.0" Round Culvert** L= 198.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,092.59' / 2,083.20' S= 0.0474 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,097.50'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=4.55 cfs @ 11.98 hrs HW=2,093.63' TW=2,084.11' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 4.55 cfs @ 3.48 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 23B: Catch Basin

Inflow Area = 0.733 ac, 0.00% Impervious, Inflow Depth = 3.61" for 25 Year event
Inflow = 4.56 cfs @ 11.98 hrs, Volume= 0.220 af
Outflow = 4.56 cfs @ 11.98 hrs, Volume= 0.220 af, Atten= 0%, Lag= 0.0 min
Primary = 4.56 cfs @ 11.98 hrs, Volume= 0.220 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,084.11' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,083.07'	**18.0" Round Culvert** L= 51.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,083.07' / 2,079.50' S= 0.0700 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,096.50'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=4.55 cfs @ 11.98 hrs HW=2,084.11' TW=2,082.81' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 4.55 cfs @ 3.48 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 24A: Catch Basin

Inflow Area = 4.046 ac, 0.00% Impervious, Inflow Depth = 3.61" for 25 Year event
Inflow = 25.91 cfs @ 11.97 hrs, Volume= 1.217 af
Outflow = 25.91 cfs @ 11.97 hrs, Volume= 1.217 af, Atten= 0%, Lag= 0.0 min
Primary = 25.91 cfs @ 11.97 hrs, Volume= 1.217 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,100.46' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,098.00'	**30.0" Round Culvert** L= 149.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,098.00' / 2,096.51' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,102.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=25.67 cfs @ 11.97 hrs HW=2,100.45' TW=2,098.68' (Dynamic Tailwater)
—**1=Culvert** (Outlet Controls 25.67 cfs @ 6.64 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 24B: Catch Basin

Inflow Area = 4.046 ac, 0.00% Impervious, Inflow Depth = 3.61" for 25 Year event
Inflow = 25.91 cfs @ 11.97 hrs, Volume= 1.217 af
Outflow = 25.91 cfs @ 11.97 hrs, Volume= 1.217 af, Atten= 0%, Lag= 0.0 min
Primary = 25.91 cfs @ 11.97 hrs, Volume= 1.217 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,098.69' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,095.00'	**30.0" Round Culvert** L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,095.00' / 2,094.51' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,100.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=25.86 cfs @ 11.97 hrs HW=2,098.68' TW=2,097.49' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 25.86 cfs @ 5.27 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 25P: Catch Basin

Inflow Area = 0.170 ac, 74.09% Impervious, Inflow Depth = 5.56" for 25 Year event
Inflow = 1.51 cfs @ 11.97 hrs, Volume= 0.079 af
Outflow = 1.51 cfs @ 11.97 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min
Primary = 1.51 cfs @ 11.97 hrs, Volume= 0.079 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,123.39' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,122.88'	**24.0" Round Culvert** L= 270.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,122.88' / 2,113.50' S= 0.0347 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,135.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.51 cfs @ 11.97 hrs HW=2,123.39' TW=2,114.20' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 1.51 cfs @ 2.42 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 26P: Catch Basin

Inflow Area = 0.084 ac, 75.17% Impervious, Inflow Depth = 5.56" for 25 Year event
Inflow = 0.74 cfs @ 11.97 hrs, Volume= 0.039 af
Outflow = 0.74 cfs @ 11.97 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min
Primary = 0.74 cfs @ 11.97 hrs, Volume= 0.039 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,131.53' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,131.05'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,131.05' / 2,130.87' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,135.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.74 cfs @ 11.97 hrs HW=2,131.53' TW=2,123.39' (Dynamic Tailwater)
↑1=**Culvert** (Barrel Controls 0.74 cfs @ 2.92 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 27P: Catch Basin

Inflow Area = 0.815 ac, 74.18% Impervious, Inflow Depth = 5.54" for 25 Year event
Inflow = 7.23 cfs @ 11.97 hrs, Volume= 0.376 af
Outflow = 7.23 cfs @ 11.97 hrs, Volume= 0.376 af, Atten= 0%, Lag= 0.0 min
Primary = 7.23 cfs @ 11.97 hrs, Volume= 0.376 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,149.03' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,147.75'	**21.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,147.75' / 2,145.50' S= 0.0450 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf
#2	Primary	2,152.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.22 cfs @ 11.97 hrs HW=2,149.03' TW=2,144.63' (Dynamic Tailwater)
↑1=**Culvert** (Inlet Controls 7.22 cfs @ 3.84 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 28P: Catch Basin

Inflow Area = 0.093 ac, 76.11% Impervious, Inflow Depth = 5.56" for 25 Year event
Inflow = 0.83 cfs @ 11.97 hrs, Volume= 0.043 af
Outflow = 0.83 cfs @ 11.97 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min
Primary = 0.83 cfs @ 11.97 hrs, Volume= 0.043 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,149.07' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,148.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,148.00' / 2,147.75' S= 0.0139 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,152.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.83 cfs @ 11.97 hrs HW=2,149.07' TW=2,149.03' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.83 cfs @ 1.05 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 29P: Manhole

Inflow Area = 0.631 ac, 73.96% Impervious, Inflow Depth = 5.53" for 25 Year event
Inflow = 5.59 cfs @ 11.97 hrs, Volume= 0.291 af
Outflow = 5.59 cfs @ 11.97 hrs, Volume= 0.291 af, Atten= 0%, Lag= 0.0 min
Primary = 5.59 cfs @ 11.97 hrs, Volume= 0.291 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,163.09' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,162.00'	**21.0" Round Culvert** L= 125.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,162.00' / 2,147.75' S= 0.1140 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

Primary OutFlow Max=5.58 cfs @ 11.97 hrs HW=2,163.09' TW=2,149.03' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.58 cfs @ 3.55 fps)

Summary for Pond 30P: Catch Basin

Inflow Area = 0.631 ac, 73.96% Impervious, Inflow Depth = 5.53" for 25 Year event
Inflow = 5.59 cfs @ 11.97 hrs, Volume= 0.291 af
Outflow = 5.59 cfs @ 11.97 hrs, Volume= 0.291 af, Atten= 0%, Lag= 0.0 min
Primary = 5.59 cfs @ 11.97 hrs, Volume= 0.291 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,175.25' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,174.16'	**21.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,174.16' / 2,162.64' S= 0.1239 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf
#2	Primary	2,181.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.58 cfs @ 11.97 hrs HW=2,175.25' TW=2,163.09' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.58 cfs @ 3.55 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 31P: Catch Basin

Inflow Area = 0.067 ac, 74.25% Impervious, Inflow Depth = 5.56" for 25 Year event
Inflow = 0.59 cfs @ 11.97 hrs, Volume= 0.031 af
Outflow = 0.59 cfs @ 11.97 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min
Primary = 0.59 cfs @ 11.97 hrs, Volume= 0.031 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,177.60' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,177.18'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,177.18' / 2,177.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,181.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.59 cfs @ 11.97 hrs HW=2,177.60' TW=2,175.25' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.59 cfs @ 2.78 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 32P: Catch Basin

Inflow Area = 0.501 ac, 73.93% Impervious, Inflow Depth = 5.52" for 25 Year event
Inflow = 4.44 cfs @ 11.97 hrs, Volume= 0.231 af
Outflow = 4.44 cfs @ 11.97 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.0 min
Primary = 4.44 cfs @ 11.97 hrs, Volume= 0.231 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,196.39' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,195.44'	**21.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,195.44' / 2,174.62' S= 0.1190 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf
#2	Primary	2,202.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.44 cfs @ 11.97 hrs HW=2,196.39' TW=2,175.25' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.44 cfs @ 3.32 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 33P: Catch Basin

Inflow Area = 0.086 ac, 74.41% Impervious, Inflow Depth = 5.56" for 25 Year event
Inflow = 0.76 cfs @ 11.97 hrs, Volume= 0.040 af
Outflow = 0.76 cfs @ 11.97 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 11.97 hrs, Volume= 0.040 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,198.44' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,198.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,198.00' / 2,197.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,202.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.76 cfs @ 11.97 hrs HW=2,198.44' TW=2,196.39' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.76 cfs @ 2.27 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 34P: Manhole

Inflow Area = 0.334 ac, 73.86% Impervious, Inflow Depth = 5.50" for 25 Year event
Inflow = 2.95 cfs @ 11.97 hrs, Volume= 0.153 af
Outflow = 2.95 cfs @ 11.97 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.0 min
Primary = 2.95 cfs @ 11.97 hrs, Volume= 0.153 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,209.80' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,209.00'	**18.0" Round Culvert** L= 90.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,209.00' / 2,195.92' S= 0.1449 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.94 cfs @ 11.97 hrs HW=2,209.80' TW=2,196.39' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.94 cfs @ 3.05 fps)

Summary for Pond 35P: Catch Basin

Inflow Area = 0.334 ac, 73.86% Impervious, Inflow Depth = 5.50" for 25 Year event
Inflow = 2.95 cfs @ 11.97 hrs, Volume= 0.153 af
Outflow = 2.95 cfs @ 11.97 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.0 min
Primary = 2.95 cfs @ 11.97 hrs, Volume= 0.153 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,225.80' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,225.00'	**18.0" Round Culvert** L= 121.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,225.00' / 2,209.50' S= 0.1277 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,229.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.94 cfs @ 11.97 hrs HW=2,225.80' TW=2,209.80' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.94 cfs @ 3.05 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 36P: Catch Basin

Inflow Area = 0.074 ac, 74.91% Impervious, Inflow Depth = 5.56" for 25 Year event
Inflow = 0.65 cfs @ 11.97 hrs, Volume= 0.034 af
Outflow = 0.65 cfs @ 11.97 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
Primary = 0.65 cfs @ 11.97 hrs, Volume= 0.034 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,226.00' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,225.50'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,225.50' / 2,225.14' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,229.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.65 cfs @ 11.97 hrs HW=2,226.00' TW=2,225.80' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.65 cfs @ 2.40 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 37P: Catch Basin

Inflow Area = 0.184 ac, 73.98% Impervious, Inflow Depth = 5.50" for 25 Year event
Inflow = 1.63 cfs @ 11.97 hrs, Volume= 0.084 af
Outflow = 1.63 cfs @ 11.97 hrs, Volume= 0.084 af, Atten= 0%, Lag= 0.0 min
Primary = 1.63 cfs @ 11.97 hrs, Volume= 0.084 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,249.08' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,248.50'	**18.0" Round Culvert** L= 200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,248.50' / 2,225.10' S= 0.1170 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,253.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.62 cfs @ 11.97 hrs HW=2,249.08' TW=2,225.80' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.62 cfs @ 2.59 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 38P: Catch Basin

Inflow Area = 0.082 ac, 76.49% Impervious, Inflow Depth = 5.56" for 25 Year event
Inflow = 0.73 cfs @ 11.97 hrs, Volume= 0.038 af
Outflow = 0.73 cfs @ 11.97 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 11.97 hrs, Volume= 0.038 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,249.44' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,249.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,249.00' / 2,248.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,253.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.73 cfs @ 11.97 hrs HW=2,249.44' TW=2,249.08' (Dynamic Tailwater)
↑1=**Culvert** (Outlet Controls 0.73 cfs @ 3.18 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 43P: 12" HDPE Pipe

Inflow Area = 0.089 ac, 77.76% Impervious, Inflow Depth = 5.68" for 25 Year event
Inflow = 0.80 cfs @ 11.97 hrs, Volume= 0.042 af
Outflow = 0.80 cfs @ 11.97 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min
Primary = 0.80 cfs @ 11.97 hrs, Volume= 0.042 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,998.20' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,997.50'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,997.50' / 1,997.40' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.79 cfs @ 11.97 hrs HW=1,998.20' TW=1,998.08' (Dynamic Tailwater)
↑1=**Culvert** (Outlet Controls 0.79 cfs @ 1.91 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 44P: 12" HDPE Pipe

Inflow Area = 0.172 ac, 79.89% Impervious, Inflow Depth = 5.73" for 25 Year event
Inflow = 1.55 cfs @ 11.97 hrs, Volume= 0.082 af
Outflow = 1.55 cfs @ 11.97 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min
Primary = 1.55 cfs @ 11.97 hrs, Volume= 0.082 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,998.08' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,997.40'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,997.40' / 1,997.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.55 cfs @ 11.97 hrs HW=1,998.08' TW=1,991.82' (Dynamic Tailwater)
—**1=Culvert** (Barrel Controls 1.55 cfs @ 3.88 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 50P: 30" HDPE Pipe

Inflow Area = 4.233 ac, 26.46% Impervious, Inflow Depth = 4.26" for 25 Year event
Inflow = 29.45 cfs @ 11.98 hrs, Volume= 1.501 af
Outflow = 29.45 cfs @ 11.98 hrs, Volume= 1.501 af, Atten= 0%, Lag= 0.0 min
Primary = 29.45 cfs @ 11.98 hrs, Volume= 1.501 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,026.80' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,024.00'	**30.0" Round Culvert** L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,024.00' / 2,020.00' S= 0.0769 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,030.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=29.43 cfs @ 11.98 hrs HW=2,026.80' TW=2,020.92' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 29.43 cfs @ 6.00 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 51P: 18" HDPE Pipe

Inflow Area = 0.406 ac, 20.38% Impervious, Inflow Depth = 4.13" for 25 Year event
Inflow = 2.92 cfs @ 11.97 hrs, Volume= 0.140 af
Outflow = 2.92 cfs @ 11.97 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min
Primary = 2.92 cfs @ 11.97 hrs, Volume= 0.140 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,027.06' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,026.00'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,026.00' / 2,025.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,030.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.92 cfs @ 11.97 hrs HW=2,027.05' TW=2,026.78' (Dynamic Tailwater)
—**1=Culvert** (Outlet Controls 2.92 cfs @ 3.11 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 52P: 30" HDPE Pipe

Inflow Area = 3.737 ac, 25.34% Impervious, Inflow Depth = 4.22" for 25 Year event
Inflow = 25.73 cfs @ 11.98 hrs, Volume= 1.315 af
Outflow = 25.73 cfs @ 11.98 hrs, Volume= 1.315 af, Atten= 0%, Lag= 0.0 min
Primary = 25.73 cfs @ 11.98 hrs, Volume= 1.315 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,060.92' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,058.50'	**30.0" Round Culvert** L= 301.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,058.50' / 2,026.00' S= 0.1080 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,064.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=25.69 cfs @ 11.98 hrs HW=2,060.91' TW=2,026.80' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 25.69 cfs @ 5.29 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 53P: 18" HDPE Pipe

Inflow Area = 0.442 ac, 18.13% Impervious, Inflow Depth = 4.02" for 25 Year event
Inflow = 3.11 cfs @ 11.97 hrs, Volume= 0.148 af
Outflow = 3.11 cfs @ 11.97 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.0 min
Primary = 3.11 cfs @ 11.97 hrs, Volume= 0.148 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,061.39' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,060.50'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,060.50' / 2,060.14' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,064.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.11 cfs @ 11.97 hrs HW=2,061.39' TW=2,060.89' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 3.11 cfs @ 4.12 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 54P: 24" HDPE Pipe

Inflow Area = 2.551 ac, 26.12% Impervious, Inflow Depth = 4.24" for 25 Year event
Inflow = 17.30 cfs @ 11.99 hrs, Volume= 0.900 af
Outflow = 17.30 cfs @ 11.99 hrs, Volume= 0.900 af, Atten= 0%, Lag= 0.0 min
Primary = 17.30 cfs @ 11.99 hrs, Volume= 0.900 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,103.31' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,101.00'	**24.0" Round Culvert** L= 201.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,101.00' / 2,059.50' S= 0.2065 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,106.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=17.30 cfs @ 11.99 hrs HW=2,103.31' TW=2,060.91' (Dynamic Tailwater)
1=Culvert (Inlet Controls 17.30 cfs @ 5.51 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 55P: 18" HDPE Pipe

Inflow Area =	0.351 ac, 74.82% Impervious, Inflow Depth = 5.56" for 25 Year event		
Inflow =	3.12 cfs @ 11.97 hrs, Volume=	0.162 af	
Outflow =	3.12 cfs @ 11.97 hrs, Volume=	0.162 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.12 cfs @ 11.97 hrs, Volume=	0.162 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,103.47' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,102.00'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,102.00' / 2,101.00' S= 0.0208 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,106.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.11 cfs @ 11.97 hrs HW=2,103.41' TW=2,103.22' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.11 cfs @ 2.34 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 56P: 18" HDPE Pipe

Inflow Area =	0.526 ac, 31.48% Impervious, Inflow Depth = 4.40" for 25 Year event		
Inflow =	3.93 cfs @ 11.97 hrs, Volume=	0.193 af	
Outflow =	3.93 cfs @ 11.97 hrs, Volume=	0.193 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.93 cfs @ 11.97 hrs, Volume=	0.193 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,082.45' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,081.50'	**18.0" Round Culvert** L= 299.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,081.50' / 2,060.00' S= 0.0719 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,086.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.93 cfs @ 11.97 hrs HW=2,082.45' TW=2,060.89' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 3.93 cfs @ 3.32 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 57P: 18" HDPE Pipe

Inflow Area =	0.112 ac, 82.97% Impervious, Inflow Depth = 5.79"	for 25 Year event	
Inflow =	1.01 cfs @ 11.97 hrs, Volume=	0.054 af	
Outflow =	1.01 cfs @ 11.97 hrs, Volume=	0.054 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.01 cfs @ 11.97 hrs, Volume=	0.054 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,082.61' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,082.00'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,082.00' / 2,081.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,086.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.01 cfs @ 11.97 hrs HW=2,082.61' TW=2,082.45' (Dynamic Tailwater)
—**1=Culvert** (Outlet Controls 1.01 cfs @ 2.23 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 62P: Catch Basin

Inflow Area =	1.479 ac, 0.00% Impervious, Inflow Depth = 3.61"	for 25 Year event	
Inflow =	8.78 cfs @ 12.00 hrs, Volume=	0.445 af	
Outflow =	8.78 cfs @ 12.00 hrs, Volume=	0.445 af,	Atten= 0%, Lag= 0.0 min
Primary =	8.78 cfs @ 12.00 hrs, Volume=	0.445 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,084.82' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,087.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	2,083.00'	**18.0" Round Culvert** L= 207.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,083.00' / 2,080.00' S= 0.0145 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.77 cfs @ 12.00 hrs HW=2,084.81' TW=2,081.92' (Dynamic Tailwater)
—**1=Orifice/Grate** (Controls 0.00 cfs)
—**2=Culvert** (Inlet Controls 8.77 cfs @ 4.96 fps)

Summary for Pond 65A: Manhole

Inflow Area = 2.041 ac, 17.95% Impervious, Inflow Depth = 4.07" for 25 Year event
Inflow = 13.38 cfs @ 11.98 hrs, Volume= 0.693 af
Outflow = 13.38 cfs @ 11.98 hrs, Volume= 0.693 af, Atten= 0%, Lag= 0.0 min
Primary = 13.38 cfs @ 11.98 hrs, Volume= 0.693 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,080.94' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,079.40'	**30.0" Round Culvert** L= 125.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,079.40' / 2,070.00' S= 0.0752 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=13.36 cfs @ 11.98 hrs HW=2,080.94' TW=2,070.29' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 13.36 cfs @ 4.22 fps)

Summary for Pond 65P: Catch Basin

Inflow Area = 2.041 ac, 17.95% Impervious, Inflow Depth = 4.07" for 25 Year event
Inflow = 13.38 cfs @ 11.98 hrs, Volume= 0.693 af
Outflow = 13.38 cfs @ 11.98 hrs, Volume= 0.693 af, Atten= 0%, Lag= 0.0 min
Primary = 13.38 cfs @ 11.98 hrs, Volume= 0.693 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,081.93' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,079.95'	**24.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,079.95' / 2,079.50' S= 0.0069 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,096.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=13.36 cfs @ 11.98 hrs HW=2,081.93' TW=2,080.94' (Dynamic Tailwater)
├─**1=Culvert** (Barrel Controls 13.36 cfs @ 5.34 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 66R: (2) 24" culvert

Inflow = 6.49 cfs @ 12.03 hrs, Volume= 0.100 af
Outflow = 6.49 cfs @ 12.03 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min
Primary = 6.49 cfs @ 12.03 hrs, Volume= 0.100 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,990.76' @ 12.03 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,990.00'	**24.0" Round Culvert X 2.00** L= 75.0' CPP, end-section conforming to fill, Ke= 0.500

			Inlet / Outlet Invert= 1,990.00' / 1,984.00' S= 0.0800 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	1,992.50'	**40.0' long x 25.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.47 cfs @ 12.03 hrs HW=1,990.76' TW=1,985.33' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.47 cfs @ 2.96 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 81: 24" culvert

Inflow Area = 2.837 ac, 0.00% Impervious, Inflow Depth = 3.51" for 25 Year event
Inflow = 17.70 cfs @ 11.97 hrs, Volume= 0.829 af
Outflow = 17.70 cfs @ 11.97 hrs, Volume= 0.829 af, Atten= 0%, Lag= 0.0 min
Primary = 17.70 cfs @ 11.97 hrs, Volume= 0.829 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,015.37' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,013.00'	**24.0" Round Culvert**
			L= 350.0' CPP, end-section conforming to fill, Ke= 0.500
			Inlet / Outlet Invert= 2,013.00' / 1,983.90' S= 0.0831 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,016.00'	**40.0' long x 2.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50
			Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=17.66 cfs @ 11.97 hrs HW=2,015.36' TW=1,985.27' (Dynamic Tailwater)
1=Culvert (Inlet Controls 17.66 cfs @ 5.62 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 200: 36" Steel Culvert

Inflow Area = 76.410 ac, 0.43% Impervious, Inflow Depth = 3.21" for 25 Year event
Inflow = 246.71 cfs @ 12.17 hrs, Volume= 20.421 af
Outflow = 246.71 cfs @ 12.17 hrs, Volume= 20.421 af, Atten= 0%, Lag= 0.0 min
Primary = 246.71 cfs @ 12.17 hrs, Volume= 20.421 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,239.23' @ 12.17 hrs
Flood Elev= 2,248.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert**
			L= 50.0' CMP, end-section conforming to fill, Ke= 0.500
			Inlet / Outlet Invert= 2,234.00' / 2,230.00' S= 0.0800 '/' Cc= 0.900
			n= 0.025 Corrugated metal, Flow Area= 7.07 sf

#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=246.71 cfs @ 12.17 hrs HW=2,239.23' TW=2,169.81' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 65.77 cfs @ 9.30 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 180.94 cfs @ 2.93 fps)

Summary for Pond 201: 36" Steel Culvert

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 3.31" for 25 Year event
Inflow = 42.53 cfs @ 12.15 hrs, Volume= 3.366 af
Outflow = 42.53 cfs @ 12.15 hrs, Volume= 3.366 af, Atten= 0%, Lag= 0.0 min
Primary = 42.53 cfs @ 12.15 hrs, Volume= 3.366 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,237.07' @ 12.15 hrs
Flood Elev= 2,239.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert** L= 30.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,234.00' / 2,233.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=42.53 cfs @ 12.15 hrs HW=2,237.06' TW=2,232.14' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 42.53 cfs @ 7.32 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 297A: culvert

Inflow Area = 21.963 ac, 0.34% Impervious, Inflow Depth = 3.23" for 25 Year event
Inflow = 73.36 cfs @ 12.18 hrs, Volume= 5.916 af
Outflow = 73.36 cfs @ 12.18 hrs, Volume= 5.916 af, Atten= 0%, Lag= 0.0 min
Primary = 73.36 cfs @ 12.18 hrs, Volume= 5.916 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,116.22' @ 12.18 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,112.00'	**36.0" Round Culvert** L= 93.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,112.00' / 2,099.00' S= 0.1398 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,116.00'	**85.0' long x 70.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=73.32 cfs @ 12.18 hrs HW=2,116.22' TW=2,099.08' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 49.54 cfs @ 7.01 fps)
└—**2=Broad-Crested Rectangular Weir** (Weir Controls 23.77 cfs @ 1.26 fps)

Summary for Pond 300R: 18" Steel Culvert

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 3.21" for 25 Year event
Inflow = 56.57 cfs @ 12.14 hrs, Volume= 4.372 af
Outflow = 56.57 cfs @ 12.14 hrs, Volume= 4.372 af, Atten= 0%, Lag= 0.0 min
Primary = 56.57 cfs @ 12.14 hrs, Volume= 4.372 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,259.29' @ 12.14 hrs
Flood Elev= 2,261.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,254.00'	**18.0" Round 18" Steel Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,254.00' / 2,253.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Primary	2,259.00'	**100.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=56.55 cfs @ 12.14 hrs HW=2,259.29' TW=2,252.34' (Dynamic Tailwater)
↑—**1=18" Steel Culvert** (Inlet Controls 14.31 cfs @ 8.10 fps)
└—**2=Broad-Crested Rectangular Weir** (Weir Controls 42.24 cfs @ 1.45 fps)

Summary for Pond B4: bioretention

Inflow Area = 4.919 ac, 12.29% Impervious, Inflow Depth = 3.93" for 25 Year event
Inflow = 33.49 cfs @ 11.97 hrs, Volume= 1.611 af
Outflow = 30.81 cfs @ 12.00 hrs, Volume= 1.611 af, Atten= 8%, Lag= 1.8 min
Discarded = 0.11 cfs @ 12.00 hrs, Volume= 0.219 af
Primary = 30.70 cfs @ 12.00 hrs, Volume= 1.391 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,144.66' @ 12.00 hrs Surf.Area= 9,309 sf Storage= 13,007 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 84.1 min (894.5 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1	2,143.00'	16,265 cf	**surface storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,143.00	6,377	0	0
2,144.00	8,116	7,247	7,247
2,145.00	9,920	9,018	16,265

Device	Routing	Invert	Outlet Devices
#1	Primary	2,139.00'	**8.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,139.00' / 2,137.00' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Discarded	2,143.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	2,143.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	2,144.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.11 cfs @ 12.00 hrs HW=2,144.66' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=30.67 cfs @ 12.00 hrs HW=2,144.66' TW=2,123.37' (Dynamic Tailwater)
├─**1=Culvert** (Passes 1.81 cfs of 3.42 cfs potential flow)
│ └─**3=Orifice/Grate** (Orifice Controls 1.81 cfs @ 5.19 fps)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 28.86 cfs @ 2.18 fps)

Summary for Pond DP 7: Design Point 7

Inflow Area = 152.103 ac, 3.18% Impervious, Inflow Depth = 3.34" for 25 Year event
Inflow = 458.54 cfs @ 12.13 hrs, Volume= 42.296 af
Primary = 458.54 cfs @ 12.13 hrs, Volume= 42.296 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 8: Design Point 8

Inflow Area = 90.185 ac, 2.88% Impervious, Inflow Depth = 3.32" for 25 Year event
Inflow = 326.65 cfs @ 12.03 hrs, Volume= 24.938 af
Primary = 326.65 cfs @ 12.03 hrs, Volume= 24.938 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 9: Design Point 9

Inflow Area = 45.925 ac, 8.18% Impervious, Inflow Depth = 3.57" for 25 Year event
Inflow = 148.17 cfs @ 12.10 hrs, Volume= 13.645 af
Primary = 148.17 cfs @ 12.10 hrs, Volume= 13.645 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond H: Pond H

Inflow Area = 14.937 ac, 13.18% Impervious, Inflow Depth = 3.90" for 25 Year event
Inflow = 85.53 cfs @ 12.00 hrs, Volume= 4.855 af
Outflow = 33.31 cfs @ 12.14 hrs, Volume= 4.853 af, Atten= 61%, Lag= 8.1 min
Primary = 33.31 cfs @ 12.14 hrs, Volume= 4.853 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 1,996.00' Surf.Area= 4,665 sf Storage= 6,646 cf
Peak Elev= 2,002.03' @ 12.14 hrs Surf.Area= 18,386 sf Storage= 75,878 cf (69,232 cf above start)

Plug-Flow detention time= 398.8 min calculated for 4.700 af (97% of inflow)
Center-of-Mass det. time= 350.5 min (1,205.5 - 854.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,993.00'	95,049 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,993.00	385	0	0
1,994.00	1,192	789	789
1,996.00	4,665	5,857	6,646
1,997.00	6,868	5,767	12,412
1,998.00	9,300	8,084	20,496
2,000.00	13,640	22,940	43,436
2,002.00	18,315	31,955	75,391
2,003.00	21,000	19,658	95,049

Device	Routing	Invert	Outlet Devices
#1	Primary	1,995.00'	**24.0" Round Culvert** L= 335.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,995.00' / 1,983.90' S= 0.0331 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,996.00'	**2.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	1,999.10'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	2,002.00'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=33.31 cfs @ 12.14 hrs HW=2,002.03' TW=1,985.19' (Dynamic Tailwater)
1=**Culvert** (Passes 33.20 cfs of 37.13 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 0.26 cfs @ 11.74 fps)
3=**Orifice/Grate** (Orifice Controls 32.94 cfs @ 8.24 fps)
4=**Broad-Crested Rectangular Weir** (Weir Controls 0.11 cfs @ 0.41 fps)

Summary for Pond J: OPEN SWALE

Inflow Area = 1.775 ac, 27.88% Impervious, Inflow Depth = 4.32" for 25 Year event
Inflow = 12.77 cfs @ 11.97 hrs, Volume= 0.639 af
Outflow = 8.91 cfs @ 12.03 hrs, Volume= 0.639 af, Atten= 30%, Lag= 3.8 min
Discarded = 0.09 cfs @ 12.03 hrs, Volume= 0.102 af
Primary = 2.33 cfs @ 12.03 hrs, Volume= 0.437 af
Secondary = 6.49 cfs @ 12.03 hrs, Volume= 0.100 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,992.06' @ 12.03 hrs Surf.Area= 7,926 sf Storage= 7,868 cf

Plug-Flow detention time= 74.4 min calculated for 0.639 af (100% of inflow)
Center-of-Mass det. time= 74.4 min (866.5 - 792.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,986.50'	720 cf	**Stone Underdrain (Prismatic)** Listed below (Recalc) 1,800 cf Overall x 40.0% Voids
#2	1,987.50'	675 cf	**Filter Media (Prismatic)** Listed below (Recalc) 4,500 cf Overall x 15.0% Voids
#3	1,990.00'	8,500 cf	**Surface Storage (Prismatic)** Listed below (Recalc)
		9,895 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,986.50	1,800	0	0
1,987.50	1,800	1,800	1,800

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,987.50	1,800	0	0
1,990.00	1,800	4,500	4,500

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,990.00	1,800	0	0
1,991.00	3,200	2,500	2,500
1,992.50	4,800	6,000	8,500

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,986.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,989.50'	**8.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,989.50' / 1,984.00' S= 0.0786 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Secondary	1,991.50'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#4	Primary	1,992.00'	**10.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.09 cfs @ 12.03 hrs HW=1,992.05' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=2.32 cfs @ 12.03 hrs HW=1,992.05' TW=1,985.33' (Dynamic Tailwater)
├─**2=Culvert** (Inlet Controls 1.98 cfs @ 5.67 fps)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 0.34 cfs @ 0.63 fps)

Secondary OutFlow Max=6.47 cfs @ 12.03 hrs HW=1,992.05' TW=1,990.76' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 6.47 cfs @ 1.94 fps)

Summary for Pond K: P1

Inflow Area = 7.908 ac, 10.53% Impervious, Inflow Depth = 3.94" for 25 Year event
Inflow = 40.85 cfs @ 12.02 hrs, Volume= 2.597 af
Outflow = 23.42 cfs @ 12.16 hrs, Volume= 2.596 af, Atten= 43%, Lag= 8.4 min
Primary = 23.42 cfs @ 12.16 hrs, Volume= 2.596 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 2,018.00' Surf.Area= 2,252 sf Storage= 4,088 cf
Peak Elev= 2,024.16' @ 12.16 hrs Surf.Area= 16,168 sf Storage= 50,526 cf (46,438 cf above start)

Plug-Flow detention time= 684.4 min calculated for 2.502 af (96% of inflow)
Center-of-Mass det. time= 634.2 min (1,450.6 - 816.3)

Volume	Invert	Avail.Storage	Storage Description
#1	2,014.00'	56,425 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,014.00	117	0	0
2,016.00	896	1,013	1,013
2,016.50	1,162	515	1,528
2,018.00	2,252	2,561	4,088
2,020.00	4,326	6,578	10,666
2,022.00	9,000	13,326	23,992
2,024.00	15,031	24,031	48,023
2,024.50	18,575	8,402	56,425

Device	Routing	Invert	Outlet Devices
#1	Primary	2,017.50'	**24.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,017.50' / 2,016.50' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,018.00'	**1.7" Vert. Orifice/Grate** C= 0.600
#3	Device 1	2,021.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	2,023.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	2,024.00'	**51.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00

Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=23.40 cfs @ 12.16 hrs HW=2,024.16' TW=2,018.17' (Dynamic Tailwater)
1=**Culvert** (Passes 14.60 cfs of 35.99 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 0.19 cfs @ 11.78 fps)
3=**Orifice/Grate** (Orifice Controls 0.38 cfs @ 7.67 fps)
4=**Orifice/Grate** (Weir Controls 14.03 cfs @ 2.66 fps)
5=**Broad-Crested Rectangular Weir** (Weir Controls 8.80 cfs @ 1.08 fps)

Summary for Pond L: Pond L - P1

Inflow Area = 17.806 ac, 19.92% Impervious, Inflow Depth = 4.12" for 25 Year event
Inflow = 113.50 cfs @ 11.98 hrs, Volume= 6.120 af
Outflow = 55.95 cfs @ 12.10 hrs, Volume= 6.095 af, Atten= 51%, Lag= 6.6 min
Primary = 55.95 cfs @ 12.10 hrs, Volume= 6.095 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 1,944.75' Surf.Area= 10,475 sf Storage= 14,819 cf
Peak Elev= 1,949.40' @ 12.10 hrs Surf.Area= 29,683 sf Storage= 117,082 cf (102,263 cf above start)

Plug-Flow detention time= 713.8 min calculated for 5.755 af (94% of inflow)
Center-of-Mass det. time= 635.8 min (1,441.1 - 805.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,941.50'	168,156 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,941.50	1,964	0	0
1,942.00	2,435	1,100	1,100
1,944.00	5,350	7,785	8,885
1,946.00	19,017	24,367	33,252
1,948.00	25,967	44,984	78,236
1,950.00	31,290	57,257	135,493
1,951.00	34,037	32,664	168,156

Device	Routing	Invert	Outlet Devices
#1	Primary	1,943.00'	**36.0" Round Culvert** L= 370.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,943.00' / 1,938.00' S= 0.0135 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	1,944.75'	**2.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	1,947.75'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	1,950.00'	**20.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=55.94 cfs @ 12.10 hrs HW=1,949.40' TW=1,938.50' (Dynamic Tailwater)
└─**1=Culvert** (Passes 55.94 cfs of 75.30 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.35 cfs @ 10.26 fps)
  └─**3=Orifice/Grate** (Orifice Controls 55.59 cfs @ 6.18 fps)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond M: OPEN SWALE

Inflow Area =	4.790 ac,	2.76% Impervious,	Inflow Depth = 3.71"	for 25 Year event
Inflow =	31.45 cfs @	11.97 hrs, Volume=	1.482 af	
Outflow =	26.88 cfs @	12.01 hrs, Volume=	1.482 af, Atten= 15%, Lag= 2.5 min	
Discarded =	0.10 cfs @	12.01 hrs, Volume=	0.266 af	
Primary =	26.78 cfs @	12.01 hrs, Volume=	1.216 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,890.00' @ 12.01 hrs Surf.Area= 8,579 sf Storage= 14,885 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 209.5 min (1,029.3 - 819.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,887.50'	19,290 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,887.50	2,995	0	0
1,888.00	4,500	1,874	1,874
1,889.00	6,437	5,469	7,342
1,890.00	8,574	7,506	14,848
1,890.50	9,195	4,442	19,290

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,887.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,889.00'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.10 cfs @ 12.01 hrs HW=1,890.00' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=26.74 cfs @ 12.01 hrs HW=1,890.00' TW=1,881.61' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 26.74 cfs @ 2.67 fps)

Summary for Pond MH8: Manhole

Inflow Area = 7.919 ac, 30.19% Impervious, Inflow Depth = 4.40" for 25 Year event
Inflow = 58.30 cfs @ 11.97 hrs, Volume= 2.905 af
Outflow = 58.30 cfs @ 11.97 hrs, Volume= 2.905 af, Atten= 0%, Lag= 0.0 min
Primary = 58.30 cfs @ 11.97 hrs, Volume= 2.905 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,037.21' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,033.90'	**42.0" Round Culvert** L= 158.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,033.90' / 1,997.00' S= 0.2335 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=58.25 cfs @ 11.97 hrs HW=2,037.21' TW=2,000.99' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 58.25 cfs @ 6.19 fps)

Summary for Pond N: OPEN SWALE

Inflow Area = 1.568 ac, 0.00% Impervious, Inflow Depth = 3.61" for 25 Year event
Inflow = 10.04 cfs @ 11.97 hrs, Volume= 0.472 af
Outflow = 8.94 cfs @ 12.00 hrs, Volume= 0.472 af, Atten= 11%, Lag= 1.8 min
Discarded = 0.03 cfs @ 12.01 hrs, Volume= 0.078 af
Primary = 8.91 cfs @ 12.00 hrs, Volume= 0.393 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,875.76' @ 12.01 hrs Surf.Area= 2,768 sf Storage= 3,941 cf

Plug-Flow detention time= 182.7 min calculated for 0.472 af (100% of inflow)
Center-of-Mass det. time= 182.8 min (1,004.9 - 822.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,873.50'	5,529 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,873.50	644	0	0
1,874.00	1,260	476	476
1,875.00	2,031	1,646	2,122
1,876.00	3,003	2,517	4,639
1,876.25	4,124	891	5,529

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,873.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,875.00'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.01 hrs HW=1,875.76' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=8.90 cfs @ 12.00 hrs HW=1,875.76' TW=1,875.17' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 8.90 cfs @ 2.35 fps)

Summary for Pond O: Open Swale

Inflow Area =	4.430 ac, 12.42% Impervious,	Inflow Depth = 3.92"	for 25 Year event	
Inflow =	30.52 cfs @	11.97 hrs, Volume=	1.447 af	
Outflow =	28.02 cfs @	12.00 hrs, Volume=	1.447 af,	Atten= 8%, Lag= 1.8 min
Discarded =	0.10 cfs @	12.00 hrs, Volume=	0.240 af	
Primary =	17.56 cfs @	12.00 hrs, Volume=	1.085 af	
Secondary =	10.35 cfs @	12.00 hrs, Volume=	0.122 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,839.83' @ 12.00 hrs Surf.Area= 8,579 sf Storage= 12,486 cf

Plug-Flow detention time= 176.6 min calculated for 1.447 af (100% of inflow)
Center-of-Mass det. time= 176.7 min (991.8 - 815.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,837.50'	13,965 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,837.50	2,035	0	0
1,838.00	3,275	1,328	1,328
1,839.00	6,500	4,888	6,215
1,840.00	9,000	7,750	13,965

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,837.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,830.00'	**24.0" Round Culvert** L= 400.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,830.00' / 1,768.00' S= 0.1550 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#3	Device 2	1,839.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	1,839.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.10 cfs @ 12.00 hrs HW=1,839.83' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=17.56 cfs @ 12.00 hrs HW=1,839.83' TW=1,769.41' (Dynamic Tailwater)
└─**2=Culvert** (Passes 17.56 cfs of 44.95 cfs potential flow)
  └─**3=Orifice/Grate** (Orifice Controls 17.56 cfs @ 4.39 fps)

Secondary OutFlow Max=10.32 cfs @ 12.00 hrs HW=1,839.83' TW=1,838.08' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 10.32 cfs @ 1.56 fps)

Summary for Pond Q: OPEN SWALE

Inflow Area = 3.629 ac, 0.00% Impervious, Inflow Depth = 3.61" for 25 Year event
Inflow = 22.90 cfs @ 11.98 hrs, Volume= 1.092 af
Outflow = 20.76 cfs @ 12.01 hrs, Volume= 1.092 af, Atten= 9%, Lag= 2.0 min
Discarded = 0.07 cfs @ 12.01 hrs, Volume= 0.216 af
Primary = 20.70 cfs @ 12.01 hrs, Volume= 0.876 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,879.81' @ 12.01 hrs Surf.Area= 5,961 sf Storage= 10,554 cf

Plug-Flow detention time= 240.4 min calculated for 1.091 af (100% of inflow)
Center-of-Mass det. time= 240.5 min (1,063.0 - 822.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,877.50'	11,728 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,877.50	3,319	0	0
1,878.00	3,840	1,790	1,790
1,879.00	4,913	4,377	6,166
1,880.00	6,211	5,562	11,728

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,877.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,879.00'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.07 cfs @ 12.01 hrs HW=1,879.81' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=20.68 cfs @ 12.01 hrs HW=1,879.81' TW=1,875.19' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 20.68 cfs @ 2.56 fps)

Summary for Pond S: Open Swale

Inflow Area = 2.213 ac, 0.00% Impervious, Inflow Depth = 3.61" for 25 Year event
Inflow = 13.72 cfs @ 11.98 hrs, Volume= 0.666 af
Outflow = 13.61 cfs @ 11.99 hrs, Volume= 0.666 af, Atten= 1%, Lag= 0.6 min
Discarded = 0.04 cfs @ 11.99 hrs, Volume= 0.143 af
Primary = 13.57 cfs @ 11.99 hrs, Volume= 0.523 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,919.47' @ 11.99 hrs Surf.Area= 3,384 sf Storage= 4,978 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 279.1 min (1,102.1 - 822.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,917.50'	6,899 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,917.50	1,372	0	0
1,918.00	2,190	891	891
1,920.00	3,818	6,008	6,899

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,917.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,919.25'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.04 cfs @ 11.99 hrs HW=1,919.47' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=13.55 cfs @ 11.99 hrs HW=1,919.47' TW=1,910.54' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 13.55 cfs @ 1.25 fps)

Summary for Pond sp1: Storm Planters

Inflow Area = 0.986 ac, 86.08% Impervious, Inflow Depth = 5.91" for 25 Year event
Inflow = 9.00 cfs @ 11.97 hrs, Volume= 0.485 af
Outflow = 1.86 cfs @ 12.13 hrs, Volume= 0.431 af, Atten= 79%, Lag= 9.5 min
Primary = 1.86 cfs @ 12.13 hrs, Volume= 0.431 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,151.37' @ 12.13 hrs Surf.Area= 11,960 sf Storage= 11,913 cf

Plug-Flow detention time= 514.4 min calculated for 0.431 af (89% of inflow)
Center-of-Mass det. time= 457.7 min (1,215.6 - 757.9)

Volume	Invert	Avail.Storage	Storage Description
#1	2,147.50'	2,392 cf	**stone underdrain (Prismatic)** Listed below (Recalc) -Impervious 5,980 cf Overall x 40.0% Voids
#2	2,148.50'	1,346 cf	**filter media (Prismatic)** Listed below (Recalc) 8,970 cf Overall x 15.0% Voids
#3	2,150.00'	11,960 cf	**surface storage (Prismatic)** Listed below (Recalc)
		15,698 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,147.50	5,980	0	0
2,148.50	5,980	5,980	5,980

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,148.50	5,980	0	0
2,150.00	5,980	8,970	8,970

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,150.00	5,980	0	0
2,151.00	5,980	5,980	5,980
2,152.00	5,980	5,980	11,960

Device	Routing	Invert	Outlet Devices
#1	Primary	2,110.00'	**24.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,110.00' / 2,108.00' S= 0.0057 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,148.50'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	2,151.00'	**6.0" Horiz. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.86 cfs @ 12.13 hrs HW=2,151.37' TW=2,108.16' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.86 cfs of 66.97 cfs potential flow)
 ├─**2=Exfiltration** (Exfiltration Controls 0.14 cfs)
 └─**3=Orifice/Grate** (Orifice Controls 1.72 cfs @ 2.92 fps)

Summary for Pond T: Open Swale

Inflow Area = 1.813 ac, 0.00% Impervious, Inflow Depth = 3.61" for 25 Year event
Inflow = 11.61 cfs @ 11.97 hrs, Volume= 0.545 af
Outflow = 11.55 cfs @ 11.98 hrs, Volume= 0.545 af, Atten= 1%, Lag= 0.5 min
Discarded = 0.03 cfs @ 11.98 hrs, Volume= 0.086 af
Primary = 11.52 cfs @ 11.98 hrs, Volume= 0.460 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,991.19' @ 11.98 hrs Surf.Area= 2,525 sf Storage= 2,830 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 173.3 min (995.3 - 822.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,989.50'	5,389 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,989.50	935	0	0
1,990.00	1,375	578	578
1,991.00	2,211	1,793	2,371
1,992.00	3,826	3,019	5,389

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,989.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,991.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 11.98 hrs HW=1,991.19' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=11.51 cfs @ 11.98 hrs HW=1,991.19' TW=1,986.80' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 11.51 cfs @ 1.19 fps)

Summary for Pond U: Open Swale

Inflow Area = 6.478 ac, 2.76% Impervious, Inflow Depth = 3.61" for 25 Year event
Inflow = 33.26 cfs @ 12.04 hrs, Volume= 1.949 af
Outflow = 32.90 cfs @ 12.06 hrs, Volume= 1.949 af, Atten= 1%, Lag= 0.9 min
Discarded = 0.08 cfs @ 12.06 hrs, Volume= 0.339 af
Primary = 32.82 cfs @ 12.06 hrs, Volume= 1.609 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,015.89' @ 12.06 hrs Surf.Area= 7,226 sf Storage= 13,256 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 256.4 min (1,084.3 - 827.8)

Volume	Invert	Avail.Storage	Storage Description
#1	2,013.50'	18,120 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,013.50	2,584	0	0
2,014.00	4,540	1,781	1,781
2,015.00	6,354	5,447	7,228
2,016.00	7,336	6,845	14,073
2,016.50	8,850	4,047	18,120

Device	Routing	Invert	Outlet Devices
#1	Discarded	2,013.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	2,015.50'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.08 cfs @ 12.06 hrs HW=2,015.89' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=32.78 cfs @ 12.06 hrs HW=2,015.89' TW=2,015.10' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 32.78 cfs @ 1.69 fps)

Summary for Pond W: Open Swale

Inflow Area = 4.293 ac, 0.00% Impervious, Inflow Depth = 3.95" for 25 Year event
Inflow = 35.14 cfs @ 11.99 hrs, Volume= 1.413 af
Outflow = 29.24 cfs @ 12.03 hrs, Volume= 1.413 af, Atten= 17%, Lag= 2.7 min
Discarded = 0.10 cfs @ 12.03 hrs, Volume= 0.275 af
Primary = 29.14 cfs @ 12.03 hrs, Volume= 1.137 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,790.56' @ 12.03 hrs Surf.Area= 8,746 sf Storage= 16,249 cf

Plug-Flow detention time= 270.7 min calculated for 1.413 af (100% of inflow)
Center-of-Mass det. time= 270.9 min (1,084.4 - 813.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,787.50'	25,064 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,787.50	2,399	0	0
1,788.00	3,136	1,384	1,384
1,789.00	4,612	3,874	5,258
1,790.00	8,000	6,306	11,564
1,791.50	10,000	13,500	25,064

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,787.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,789.50'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.10 cfs @ 12.03 hrs HW=1,790.56' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=29.08 cfs @ 12.03 hrs HW=1,790.56' TW=1,769.51' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 29.08 cfs @ 2.75 fps)

Summary for Pond X: Open Swale

Inflow Area = 2.495 ac, 0.00% Impervious, Inflow Depth = 3.61" for 25 Year event
Inflow = 15.97 cfs @ 11.97 hrs, Volume= 0.751 af
Outflow = 15.38 cfs @ 11.99 hrs, Volume= 0.751 af, Atten= 4%, Lag= 1.2 min
Discarded = 0.07 cfs @ 11.99 hrs, Volume= 0.177 af
Primary = 15.30 cfs @ 11.99 hrs, Volume= 0.574 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,799.53' @ 11.99 hrs Surf.Area= 6,340 sf Storage= 6,062 cf

Plug-Flow detention time= 193.0 min calculated for 0.750 af (100% of inflow)
Center-of-Mass det. time= 193.1 min (1,015.2 - 822.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,794.00'	556 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,391 cf Overall x 40.0% Voids
#2	1,795.00'	522 cf	**Filter Media (Prismatic)** Listed below (Recalc) 3,478 cf Overall x 15.0% Voids
#3	1,797.50'	9,040 cf	**Surface Storage (Prismatic)** Listed below (Recalc)
		10,118 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,794.00	1,391	0	0
1,795.00	1,391	1,391	1,391

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,795.00	1,391	0	0
1,797.50	1,391	3,478	3,478

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,797.50	1,391	0	0
1,798.00	1,916	827	827
1,799.00	2,930	2,423	3,250
1,800.00	4,105	3,518	6,767
1,800.50	4,984	2,272	9,040

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,794.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,799.00'	**15.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50

3.00 3.50
Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.07 cfs @ 11.99 hrs HW=1,799.53' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=15.28 cfs @ 11.99 hrs HW=1,799.53' TW=1,794.66' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 15.28 cfs @ 1.91 fps)

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Road Runoff Area=53,980 sf 57.09% Impervious Runoff Depth=6.57"
Flow Length=230' Tc=9.6 min CN=88 Runoff=11.79 cfs 0.678 af

Subcatchment 2a: Road Runoff Area=14,154 sf 77.24% Impervious Runoff Depth=7.16"
Flow Length=319' Tc=6.0 min CN=93 Runoff=3.63 cfs 0.194 af

Subcatchment 2S: Subcatchment 2 Runoff Area=18,469 sf 23.82% Impervious Runoff Depth=5.27"
Flow Length=375' Tc=7.8 min CN=77 Runoff=3.64 cfs 0.186 af

Subcatchment 3S: Road Runoff Area=7,863 sf 52.40% Impervious Runoff Depth=6.45"
Flow Length=272' Slope=0.1100 '/' Tc=6.0 min CN=87 Runoff=1.91 cfs 0.097 af

Subcatchment 4S: Road Runoff Area=4,505 sf 100.00% Impervious Runoff Depth=7.76"
Flow Length=274' Tc=6.0 min CN=98 Runoff=1.18 cfs 0.067 af

Subcatchment 5S: Subcatchment 5 Runoff Area=92,020 sf 7.43% Impervious Runoff Depth=4.81"
Flow Length=715' Tc=13.9 min CN=73 Runoff=13.61 cfs 0.847 af

Subcatchment 6aS: subcatch 6a Runoff Area=531,048 sf 4.06% Impervious Runoff Depth=4.69"
Flow Length=1,255' Tc=18.8 min CN=72 Runoff=65.86 cfs 4.769 af

Subcatchment 6S: subcatch 6 Runoff Area=389,580 sf 4.65% Impervious Runoff Depth=4.69"
Flow Length=2,175' Tc=19.1 min CN=72 Runoff=47.99 cfs 3.499 af

Subcatchment 7S: subcatch 7 Runoff Area=27,573 sf 35.18% Impervious Runoff Depth=5.86"
Flow Length=245' Tc=6.0 min CN=82 Runoff=6.28 cfs 0.309 af

Subcatchment 9a: Road Runoff Area=3,427 sf 70.18% Impervious Runoff Depth=6.92"
Flow Length=238' Slope=0.0790 '/' Tc=6.0 min CN=91 Runoff=0.87 cfs 0.045 af

Subcatchment 10a: Road Runoff Area=3,850 sf 94.81% Impervious Runoff Depth=7.64"
Flow Length=271' Slope=0.0940 '/' Tc=6.0 min CN=97 Runoff=1.01 cfs 0.056 af

Subcatchment 11c: Road Runoff Area=16,077 sf 70.57% Impervious Runoff Depth=6.92"
Flow Length=131' Slope=0.0920 '/' Tc=6.0 min CN=91 Runoff=4.06 cfs 0.213 af

Subcatchment 12S: Road Runoff Area=2,940 sf 88.78% Impervious Runoff Depth=7.40"
Flow Length=149' Slope=0.0810 '/' Tc=6.0 min CN=95 Runoff=0.76 cfs 0.042 af

Subcatchment 14a: Main Road Runoff Area=7,340 sf 58.11% Impervious Runoff Depth=6.57"
Flow Length=511' Slope=0.0280 '/' Tc=6.0 min CN=88 Runoff=1.80 cfs 0.092 af

Subcatchment 14B: Road Runoff Area=11,401 sf 70.83% Impervious Runoff Depth=6.92"
Flow Length=526' Tc=6.0 min CN=91 Runoff=2.88 cfs 0.151 af

Subcatchment 14C: BUILDING Runoff Area=25,251 sf 76.67% Impervious Runoff Depth=7.04"
Flow Length=127' Tc=6.8 min CN=92 Runoff=6.27 cfs 0.340 af

Subcatchment 15S: Main Road Runoff Area=15,144 sf 62.60% Impervious Runoff Depth=6.69"
Flow Length=494' Slope=0.0290 '/' Tc=6.0 min CN=89 Runoff=3.76 cfs 0.194 af

Subcatchment 16a: Main Road Runoff Area=7,317 sf 93.81% Impervious Runoff Depth=7.64"
Flow Length=306' Slope=0.0750 '/' Tc=6.0 min CN=97 Runoff=1.91 cfs 0.107 af

Subcatchment 17a: Main Road Runoff Area=4,370 sf 69.57% Impervious Runoff Depth=6.92"
Flow Length=292' Slope=0.0790 '/' Tc=6.0 min CN=91 Runoff=1.10 cfs 0.058 af

Subcatchment 18a: Main Road Runoff Area=30,338 sf 90.27% Impervious Runoff Depth=7.52"
Flow Length=276' Tc=6.0 min CN=96 Runoff=7.91 cfs 0.436 af

Subcatchment 19a: Main Road Runoff Area=3,974 sf 73.48% Impervious Runoff Depth=7.04"
Flow Length=239' Slope=0.0400 '/' Tc=6.0 min CN=92 Runoff=1.01 cfs 0.054 af

Subcatchment 20a: BEHIND 1 Runoff Area=27,573 sf 3.30% Impervious Runoff Depth=5.04"
Flow Length=395' Slope=0.0380 '/' Tc=6.0 min CN=75 Runoff=5.58 cfs 0.266 af

Subcatchment 20b: BEHIND 1 Runoff Area=27,573 sf 0.00% Impervious Runoff Depth=4.81"
Flow Length=236' Tc=6.0 min CN=73 Runoff=5.35 cfs 0.254 af

Subcatchment 21S: Main Road Runoff Area=4,574 sf 72.80% Impervious Runoff Depth=6.92"
Flow Length=269' Slope=0.0610 '/' Tc=6.0 min CN=91 Runoff=1.16 cfs 0.061 af

Subcatchment 22S: Main Road Runoff Area=18,606 sf 71.34% Impervious Runoff Depth=6.92"
Flow Length=261' Tc=6.0 min CN=91 Runoff=4.70 cfs 0.246 af

Subcatchment 23S: 18 fairway Runoff Area=31,919 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=287' Tc=6.8 min CN=74 Runoff=6.15 cfs 0.301 af

Subcatchment 24S: Fairway of 10 & 18 Runoff Area=176,265 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=252' Tc=6.0 min CN=74 Runoff=34.94 cfs 1.661 af

Subcatchment 25S: E. end Main Road Runoff Area=3,751 sf 73.05% Impervious Runoff Depth=7.04"
Flow Length=227' Slope=0.0700 '/' Tc=6.0 min CN=92 Runoff=0.96 cfs 0.051 af

Subcatchment 26S: E. end Main Road Runoff Area=3,645 sf 75.17% Impervious Runoff Depth=7.04"
Flow Length=226' Slope=0.0700 '/' Tc=6.0 min CN=92 Runoff=0.93 cfs 0.049 af

Subcatchment 27b: E. end Main Road Runoff Area=3,976 sf 73.69% Impervious Runoff Depth=7.04"
Flow Length=240' Slope=0.1250 '/' Tc=6.0 min CN=92 Runoff=1.01 cfs 0.054 af

Subcatchment 28a: E. end Main Road Runoff Area=4,060 sf 76.11% Impervious Runoff Depth=7.04"
Flow Length=256' Slope=0.1170 '/' Tc=6.0 min CN=92 Runoff=1.03 cfs 0.055 af

Subcatchment 30S: E. end Main Road Runoff Area=2,719 sf 73.92% Impervious Runoff Depth=7.04"
Flow Length=163' Slope=0.1290 '/' Tc=6.0 min CN=92 Runoff=0.69 cfs 0.037 af

Subcatchment 31S: E. end Main Road Runoff Area=2,909 sf 74.25% Impervious Runoff Depth=7.04"
Flow Length=177' Slope=0.1190 '/' Tc=6.0 min CN=92 Runoff=0.74 cfs 0.039 af

Subcatchment 32S: E. end Main Road Runoff Area=3,581 sf 73.72% Impervious Runoff Depth=7.04"
Flow Length=212' Slope=0.1270 '/' Tc=6.0 min CN=92 Runoff=0.91 cfs 0.048 af

Subcatchment 33S: E. end Main Road Runoff Area=3,736 sf 74.41% Impervious Runoff Depth=7.04"
Flow Length=230' Slope=0.1170 '/' Tc=6.0 min CN=92 Runoff=0.95 cfs 0.050 af

Subcatchment 35a: E. end Main Road Runoff Area=3,308 sf 72.55% Impervious Runoff Depth=6.92"
Flow Length=196' Slope=0.1220 '/' Tc=6.0 min CN=91 Runoff=0.84 cfs 0.044 af

Subcatchment 35S: Subcatchment 35 Runoff Area=532,041 sf 2.97% Impervious Runoff Depth=4.58"
Flow Length=3,110' Tc=22.0 min CN=71 Runoff=59.05 cfs 4.661 af

Subcatchment 36S: E. end Main Road Runoff Area=3,204 sf 74.91% Impervious Runoff Depth=7.04"
Flow Length=198' Slope=0.1210 '/' Tc=6.0 min CN=92 Runoff=0.82 cfs 0.043 af

Subcatchment 37S: E. end Main Road Runoff Area=4,447 sf 71.96% Impervious Runoff Depth=6.92"
Flow Length=243' Slope=0.0620 '/' Tc=6.0 min CN=91 Runoff=1.12 cfs 0.059 af

Subcatchment 38S: E. end Main Road Runoff Area=3,569 sf 76.49% Impervious Runoff Depth=7.04"
Flow Length=207' Slope=0.0720 '/' Tc=6.0 min CN=92 Runoff=0.91 cfs 0.048 af

Subcatchment 41S: W. end of Main Road Runoff Area=7,632 sf 100.00% Impervious Runoff Depth=7.76"
Flow Length=290' Tc=6.0 min CN=98 Runoff=2.00 cfs 0.113 af

Subcatchment 42S: W. end of Main Road Runoff Area=7,012 sf 100.00% Impervious Runoff Depth=7.76"
Flow Length=283' Tc=6.0 min CN=98 Runoff=1.84 cfs 0.104 af

Subcatchment 43S: W. end of Main Road Runoff Area=3,858 sf 77.76% Impervious Runoff Depth=7.16"
Flow Length=244' Tc=6.0 min CN=93 Runoff=0.99 cfs 0.053 af

Subcatchment 44S: W. end of Main Road Runoff Area=3,652 sf 82.15% Impervious Runoff Depth=7.28"
Flow Length=239' Tc=6.0 min CN=94 Runoff=0.94 cfs 0.051 af

Subcatchment 45S: Hole 1 Runoff Area=423,327 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=1,196' Tc=8.7 min CN=74 Runoff=76.34 cfs 3.989 af

Subcatchment 50S: W. end of Main Rd. Runoff Area=3,930 sf 100.00% Impervious Runoff Depth=7.76"
Flow Length=293' Slope=0.1140 '/' Tc=6.0 min CN=98 Runoff=1.03 cfs 0.058 af

Subcatchment 51S: W. end of Main Rd. Runoff Area=17,667 sf 20.38% Impervious Runoff Depth=5.51"
Flow Length=361' Tc=6.0 min CN=79 Runoff=3.84 cfs 0.186 af

Subcatchment 52S: W. end of Main Rd. Runoff Area=9,545 sf 16.09% Impervious Runoff Depth=5.39"
Flow Length=320' Tc=6.0 min CN=78 Runoff=2.04 cfs 0.098 af

Subcatchment 53S: W. end of Main Rd. Runoff Area=19,250 sf 18.13% Impervious Runoff Depth=5.39"
Flow Length=336' Tc=6.0 min CN=78 Runoff=4.11 cfs 0.199 af

Subcatchment 54S: Golf Course Parking Runoff Area=95,833 sf 18.37% Impervious Runoff Depth=5.39"
Flow Length=722' Tc=8.2 min CN=78 Runoff=18.99 cfs 0.988 af

Subcatchment 55S: Golf Course Parking Runoff Area=15,270 sf 74.82% Impervious Runoff Depth=7.04"
Flow Length=259' Tc=6.0 min CN=92 Runoff=3.89 cfs 0.206 af

Subcatchment 56S: Main Rd. to 6 & 7 Runoff Area=18,020 sf 17.54% Impervious Runoff Depth=5.39"
Flow Length=245' Tc=6.0 min CN=78 Runoff=3.85 cfs 0.186 af

Subcatchment 57S: Main Rd. 6 & 7 Runoff Area=4,880 sf 82.97% Impervious Runoff Depth=7.28"
Flow Length=237' Tc=6.0 min CN=94 Runoff=1.26 cfs 0.068 af

Subcatchment 59S: Club House Runoff Area=7,222 sf 100.00% Impervious Runoff Depth=7.76"
Tc=6.0 min CN=98 Runoff=1.89 cfs 0.107 af

Subcatchment 60S: Roof Terraces Runoff Area=42,950 sf 86.08% Impervious Runoff Depth=7.40"
Tc=6.0 min CN=95 Runoff=11.14 cfs 0.608 af

Subcatchment 62S: Green of 18 Runoff Area=64,444 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=433' Tc=8.1 min CN=74 Runoff=11.87 cfs 0.607 af

Subcatchment 63S: Front end of Driving Range Runoff Area=230,281 sf 0.42% Impervious Runoff Depth=5.04"
Flow Length=893' Tc=14.4 min CN=75 Runoff=34.95 cfs 2.221 af

Subcatchment 65S: Driveway to Golf House Runoff Area=17,261 sf 50.63% Impervious Runoff Depth=6.33"
Flow Length=299' Tc=6.0 min CN=86 Runoff=4.15 cfs 0.209 af

Subcatchment 80S: existing woods Runoff Area=123,600 sf 0.00% Impervious Runoff Depth=4.81"
Flow Length=600' Tc=6.0 min CN=73 Runoff=24.00 cfs 1.137 af

Subcatchment 137S: BEHIND GARAGE Runoff Area=31,485 sf 0.00% Impervious Runoff Depth=4.58"
Flow Length=377' Tc=7.8 min CN=71 Runoff=5.49 cfs 0.276 af

Subcatchment 200S: Subcatchment 200 Runoff Area=3,328,419 sf 0.43% Impervious Runoff Depth=4.46"
Flow Length=3,545' Tc=23.5 min CN=70 Runoff=344.98 cfs 28.426 af

Subcatchment 201S: Tees of 18 & Greens of 10 Runoff Area=178,777 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=425' Tc=6.0 min CN=74 Runoff=35.44 cfs 1.685 af

Subcatchment 211S: Back End of the Driving Runoff Area=208,648 sf 2.76% Impervious Runoff Depth=5.04"
Flow Length=905' Tc=6.0 min CN=75 Runoff=42.19 cfs 2.012 af

Subcatchment 212S: Green of 13 Runoff Area=68,310 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=219' Tc=6.0 min CN=74 Runoff=13.54 cfs 0.644 af

Subcatchment 213S: Hole 16 Runoff Area=194,980 sf 0.00% Impervious Runoff Depth=5.16"
Flow Length=690' Tc=11.7 min CN=76 Runoff=33.02 cfs 1.924 af

Subcatchment 214S: Tees of 13 Runoff Area=158,070 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=757' Tc=6.4 min CN=74 Runoff=30.90 cfs 1.490 af

Subcatchment 218S: Green of 12, Tee of 13 Runoff Area=96,418 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=467' Tc=6.9 min CN=74 Runoff=18.52 cfs 0.909 af

Subcatchment 219S: Green of 11 Runoff Area=78,985 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=406' Tc=6.0 min CN=74 Runoff=15.66 cfs 0.744 af

Subcatchment 220S: Fairway of 11 Runoff Area=282,188 sf 2.76% Impervious Runoff Depth=4.93"
Flow Length=869' Tc=12.2 min CN=74 Runoff=45.08 cfs 2.659 af

Subcatchment 223S: Golf Hole 15 and Runoff Area=192,957 sf 12.42% Impervious Runoff Depth=5.27"
Flow Length=401' Tc=6.0 min CN=77 Runoff=40.51 cfs 1.947 af

Subcatchment 225S: Fairway 14 Runoff Area=187,018 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=531' Tc=6.0 min CN=74 Runoff=37.07 cfs 1.762 af

Subcatchment 226S: Fairway & Green of 14 Runoff Area=108,684 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=468' Tc=6.0 min CN=74 Runoff=21.54 cfs 1.024 af

Subcatchment 300S: Subcatchment 300 Runoff Area=712,598 sf 0.46% Impervious Runoff Depth=4.46"
Flow Length=2,040' Tc=21.0 min CN=70 Runoff=79.00 cfs 6.086 af

Subcatchment 301S: Ex Stream Runoff Area=91,384 sf 0.00% Impervious Runoff Depth=4.69"
Flow Length=497' Tc=6.0 min CN=72 Runoff=17.37 cfs 0.821 af

Subcatchment 302a: New Subcatch Runoff Area=155,197 sf 0.00% Impervious Runoff Depth=4.58"
Flow Length=418' Slope=0.3800 '/' Tc=7.6 min CN=71 Runoff=27.24 cfs 1.360 af

Subcatchment 302b: New Subcatch Runoff Area=157,518 sf 0.00% Impervious Runoff Depth=4.69"
Flow Length=985' Tc=8.9 min CN=72 Runoff=27.01 cfs 1.415 af

Subcatchment 302S: (new Subcat) Runoff Area=186,835 sf 0.00% Impervious Runoff Depth=4.46"
Flow Length=1,014' Tc=6.0 min CN=70 Runoff=33.95 cfs 1.596 af

Subcatchment 303S: Subcatchment 303 Runoff Area=251,048 sf 0.00% Impervious Runoff Depth=4.69"
Flow Length=1,450' Tc=9.0 min CN=72 Runoff=42.91 cfs 2.255 af

Subcatchment 304: (new Subcat) Runoff Area=212,622 sf 0.00% Impervious Runoff Depth=4.58"
Flow Length=863' Tc=22.7 min CN=71 Runoff=23.09 cfs 1.863 af

Subcatchment 305s: Land W. side of hotel Runoff Area=150,290 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=965' Tc=7.9 min CN=74 Runoff=27.85 cfs 1.416 af

Subcatchment 306S: 12 tee Runoff Area=207,204 sf 0.00% Impervious Runoff Depth=4.58"
Flow Length=1,072' Tc=7.6 min CN=71 Runoff=36.36 cfs 1.815 af

Subcatchment 307S: (new Subcat) Runoff Area=122,324 sf 0.00% Impervious Runoff Depth=4.69"
Flow Length=1,098' Tc=7.8 min CN=72 Runoff=21.81 cfs 1.099 af

Subcatchment 308S: (new Subcat) Runoff Area=346,246 sf 0.00% Impervious Runoff Depth=4.46"
Flow Length=936' Tc=20.7 min CN=70 Runoff=38.69 cfs 2.957 af

Subcatchment 309S: (new Subcat) Runoff Area=316,725 sf 4.30% Impervious Runoff Depth=4.81"
Flow Length=649' Tc=13.3 min CN=73 Runoff=47.73 cfs 2.914 af

Subcatchment 310S: Existing Wooded Area Runoff Area=157,211 sf 4.68% Impervious Runoff Depth=4.69"
Flow Length=474' Tc=6.0 min CN=72 Runoff=29.88 cfs 1.412 af

Subcatchment 311S: Existing Wooded Area Runoff Area=312,389 sf 0.67% Impervious Runoff Depth=4.69"
Flow Length=1,779' Tc=14.7 min CN=72 Runoff=44.02 cfs 2.806 af

Subcatchment 315S: Subcatchment 315 Runoff Area=363,440 sf 0.00% Impervious Runoff Depth=4.58"
Flow Length=582' Tc=10.3 min CN=71 Runoff=57.96 cfs 3.184 af

Subcatchment 316A: Existing By Maintenance Runoff Area=25,135 sf 11.61% Impervious Runoff Depth=4.81"
Flow Length=370' Tc=6.2 min CN=73 Runoff=4.85 cfs 0.231 af

Subcatchment 316S: existing Runoff Area=423,713 sf 1.26% Impervious Runoff Depth=4.58"
Flow Length=944' Tc=7.4 min CN=71 Runoff=74.91 cfs 3.712 af

Reach 1R: overland flow Avg. Flow Depth=1.64' Max Vel=12.32 fps Inflow=93.57 cfs 4.853 af
n=0.050 L=75.0' S=0.1733 '/' Capacity=136.22 cfs Outflow=93.55 cfs 4.853 af

Reach 3: Rip Rap Channel Avg. Flow Depth=1.47' Max Vel=16.37 fps Inflow=637.05 cfs 58.316 af
n=0.050 L=51.0' S=0.3922 '/' Capacity=672.04 cfs Outflow=637.04 cfs 58.316 af

Reach 3R: Swale along RR Tracks Avg. Flow Depth=1.81' Max Vel=6.00 fps Inflow=64.52 cfs 3.182 af
n=0.040 L=1,045.0' S=0.0258 '/' Capacity=126.24 cfs Outflow=60.84 cfs 3.182 af

Reach 5: Stream Channel Avg. Flow Depth=1.47' Max Vel=15.91 fps Inflow=162.89 cfs 13.828 af
n=0.050 L=160.0' S=0.3000 '/' Capacity=1,318.86 cfs Outflow=162.85 cfs 13.828 af

Reach 5A: Stream Channel Avg. Flow Depth=1.79' Max Vel=15.14 fps Inflow=205.35 cfs 17.312 af
n=0.050 L=340.0' S=0.2206 '/' Capacity=1,130.92 cfs Outflow=205.23 cfs 17.312 af

Reach 5B: Stream Channel Avg. Flow Depth=1.98' Max Vel=13.90 fps Inflow=219.38 cfs 18.908 af
n=0.050 L=120.0' S=0.1667 '/' Capacity=983.02 cfs Outflow=219.37 cfs 18.908 af

Reach 5C: Stream Channel Avg. Flow Depth=2.03' Max Vel=13.37 fps Inflow=219.37 cfs 18.908 af
n=0.050 L=277.0' S=0.1498 '/' Capacity=932.02 cfs Outflow=219.26 cfs 18.908 af

Reach 5D: Stream Channel Avg. Flow Depth=2.09' Max Vel=18.60 fps Inflow=259.36 cfs 21.561 af
n=0.040 L=300.0' S=0.2017 '/' Capacity=385.96 cfs Outflow=259.21 cfs 21.561 af

Reach 5R: roadside swale Avg. Flow Depth=1.62' Max Vel=6.88 fps Inflow=41.13 cfs 1.933 af
n=0.050 L=607.0' S=0.0626 '/' Capacity=61.25 cfs Outflow=40.28 cfs 1.933 af

Reach 6: (new Reach) Avg. Flow Depth=1.17' Max Vel=10.19 fps Inflow=75.70 cfs 8.111 af
n=0.050 L=175.0' S=0.1571 '/' Capacity=217.11 cfs Outflow=75.67 cfs 8.111 af

Reach 6R: Clean Swale Avg. Flow Depth=1.83' Max Vel=9.04 fps Inflow=93.29 cfs 9.556 af
n=0.030 L=245.0' S=0.0327 '/' Capacity=114.21 cfs Outflow=93.21 cfs 9.556 af

Reach 7B: Existing Ditch Avg. Flow Depth=0.36' Max Vel=5.71 fps Inflow=4.85 cfs 0.231 af
n=0.040 L=125.0' S=0.1280 '/' Capacity=172.60 cfs Outflow=4.84 cfs 0.231 af

Reach 7C: Existing Ditch Avg. Flow Depth=1.93' Max Vel=10.69 fps Inflow=81.56 cfs 4.777 af
n=0.050 L=530.0' S=0.1264 '/' Capacity=137.22 cfs Outflow=81.19 cfs 4.777 af

Reach 8: Stream Channel Avg. Flow Depth=0.85' Max Vel=9.63 fps Inflow=357.03 cfs 27.750 af
n=0.050 L=245.0' S=0.2816 '/' Capacity=532.84 cfs Outflow=356.64 cfs 27.750 af

Reach 9R: swale Avg. Flow Depth=0.62' Max Vel=3.74 fps Inflow=5.49 cfs 0.276 af
n=0.030 L=280.0' S=0.0179 '/' Capacity=11.64 cfs Outflow=5.41 cfs 0.276 af

Reach 11R: Overland Flow Avg. Flow Depth=0.30' Max Vel=3.38 fps Inflow=83.66 cfs 8.710 af
n=0.080 L=760.0' S=0.1776 '/' Capacity=635.50 cfs Outflow=80.55 cfs 8.710 af

Reach 12R: Overland Flow Avg. Flow Depth=0.16' Max Vel=2.40 fps Inflow=13.61 cfs 0.847 af
n=0.080 L=588.0' S=0.2058 '/' Capacity=312.77 cfs Outflow=12.77 cfs 0.847 af

Reach 13: Channel at tracks Avg. Flow Depth=2.55' Max Vel=11.46 fps Inflow=417.37 cfs 30.932 af
n=0.035 L=450.0' S=0.0444 '/' Capacity=604.81 cfs Outflow=416.27 cfs 30.932 af

Reach 14R: Swale Avg. Flow Depth=0.19' Max Vel=5.21 fps Inflow=2.62 cfs 0.553 af
n=0.030 L=665.0' S=0.1323 '/' Capacity=305.76 cfs Outflow=2.60 cfs 0.553 af

Reach 15R: Cobble Stream Avg. Flow Depth=1.68' Max Vel=12.89 fps Inflow=158.92 cfs 14.326 af
n=0.050 L=245.0' S=0.1714 '/' Capacity=226.76 cfs Outflow=158.85 cfs 14.326 af

Reach 40R: Swale Avg. Flow Depth=1.75' Max Vel=7.62 fps Inflow=80.28 cfs 8.401 af
n=0.040 L=95.0' S=0.0411 '/' Capacity=106.53 cfs Outflow=80.28 cfs 8.401 af

Reach 51R: Swale Avg. Flow Depth=1.07' Max Vel=7.07 fps Inflow=39.99 cfs 2.543 af
n=0.030 L=535.0' S=0.0374 '/' Capacity=162.52 cfs Outflow=39.33 cfs 2.543 af

Reach 58a: Swale along RR Tracks Avg. Flow Depth=2.46' Max Vel=8.64 fps Inflow=158.85 cfs 14.326 af
n=0.035 L=543.0' S=0.0276 '/' Capacity=163.26 cfs Outflow=158.17 cfs 14.326 af

Reach 63R: OVERLAND Avg. Flow Depth=0.46' Max Vel=9.60 fps Inflow=23.92 cfs 1.264 af
n=0.050 L=126.0' S=0.3595 '/' Capacity=448.14 cfs Outflow=23.91 cfs 1.264 af

Reach 64R: Swale Avg. Flow Depth=2.36' Max Vel=2.92 fps Inflow=47.19 cfs 3.484 af
n=0.040 L=222.0' S=0.0045 '/' Capacity=52.71 cfs Outflow=46.31 cfs 3.484 af

Reach 69R: Wetland Flow Avg. Flow Depth=0.17' Max Vel=1.50 fps Inflow=27.85 cfs 1.416 af
n=0.070 L=487.0' S=0.0657 '/' Capacity=172.83 cfs Outflow=24.06 cfs 1.416 af

Reach 197: Stream Channel Avg. Flow Depth=1.48' Max Vel=16.10 fps Inflow=605.63 cfs 55.132 af
n=0.050 L=599.0' S=0.2763 '/' Capacity=12,139.60 cfs Outflow=605.29 cfs 55.132 af

Reach 197A: Stream Channel Avg. Flow Depth=2.62' Max Vel=13.65 fps Inflow=519.11 cfs 44.442 af
n=0.050 L=601.0' S=0.1248 '/' Capacity=3,783.36 cfs Outflow=518.53 cfs 44.442 af

Reach 197B: Stream Channel Avg. Flow Depth=2.66' Max Vel=12.87 fps Inflow=500.80 cfs 41.273 af
n=0.050 L=252.0' S=0.1091 '/' Capacity=3,537.94 cfs Outflow=500.62 cfs 41.273 af

Reach 197C: Stream Channel Avg. Flow Depth=2.31' Max Vel=14.22 fps Inflow=433.85 cfs 36.002 af
n=0.050 L=426.0' S=0.1573 '/' Capacity=4,247.34 cfs Outflow=433.46 cfs 36.002 af

Reach 198: Stream Channel Avg. Flow Depth=2.10' Max Vel=15.47 fps Inflow=403.69 cfs 33.087 af
n=0.050 L=417.0' S=0.2074 '/' Capacity=4,877.81 cfs Outflow=403.40 cfs 33.087 af

Reach 199: Overland Flow Avg. Flow Depth=0.17' Max Vel=5.02 fps Inflow=59.05 cfs 4.661 af
n=0.040 L=250.0' S=0.2560 '/' Capacity=451.81 cfs Outflow=58.85 cfs 4.661 af

Reach 295: Roadside Channel Avg. Flow Depth=2.29' Max Vel=8.21 fps Inflow=114.64 cfs 10.157 af
n=0.050 L=280.0' S=0.0607 '/' Capacity=140.40 cfs Outflow=114.58 cfs 10.157 af

Reach 296: Wetland Flow Avg. Flow Depth=1.29' Max Vel=3.52 fps Inflow=102.68 cfs 8.224 af
n=0.070 L=427.0' S=0.0328 '/' Capacity=251.85 cfs Outflow=101.49 cfs 8.224 af

Reach 297: Overland Flow Avg. Flow Depth=0.23' Max Vel=8.43 fps Inflow=79.71 cfs 6.362 af
n=0.030 L=195.0' S=0.2872 '/' Capacity=358.18 cfs Outflow=79.67 cfs 6.362 af

Reach 298: Wetland Flow Avg. Flow Depth=0.28' Max Vel=2.54 fps Inflow=81.02 cfs 6.362 af
n=0.070 L=408.0' S=0.0931 '/' Capacity=802.14 cfs Outflow=79.71 cfs 6.362 af

Reach 299: Overland Flow Avg. Flow Depth=0.40' Max Vel=6.56 fps Inflow=79.00 cfs 6.086 af
n=0.050 L=135.0' S=0.3259 '/' Capacity=130.57 cfs Outflow=79.00 cfs 6.086 af

Reach O3: Overland Flow Avg. Flow Depth=0.12' Max Vel=3.75 fps Inflow=18.33 cfs 0.249 af
n=0.030 L=178.0' S=0.1404 '/' Capacity=78.90 cfs Outflow=18.14 cfs 0.249 af

Reach O4: Swale Avg. Flow Depth=0.84' Max Vel=5.82 fps Inflow=18.14 cfs 0.249 af
n=0.033 L=286.0' S=0.0385 '/' Capacity=59.96 cfs Outflow=17.92 cfs 0.249 af

Reach X1: Swale Avg. Flow Depth=0.77' Max Vel=7.59 fps Inflow=20.76 cfs 0.843 af
n=0.040 L=200.0' S=0.1050 '/' Capacity=153.60 cfs Outflow=20.71 cfs 0.843 af

Pond 1P: Catch Basin/Culvert Peak Elev=1,981.32' Inflow=11.79 cfs 0.678 af
Outflow=11.79 cfs 0.678 af

Pond 2P: Catch Basin Peak Elev=2,002.42' Inflow=82.54 cfs 4.174 af
Outflow=82.54 cfs 4.174 af

Pond 2R: 48" CMP Culvert Peak Elev=1,747.54' Inflow=637.05 cfs 58.316 af
Outflow=637.05 cfs 58.316 af

Pond 3P: Catch Basin Peak Elev=2,010.02' Inflow=3.09 cfs 0.164 af
Outflow=3.09 cfs 0.164 af

Pond 4P: Catch Basin Peak Elev=2,010.28' Inflow=1.18 cfs 0.067 af
Outflow=1.18 cfs 0.067 af

Pond 4R: 38" Arch Culv. Peak Elev=2,070.27' Inflow=162.89 cfs 13.828 af
Outflow=162.89 cfs 13.828 af

Pond 7A: CULVERT Peak Elev=1,901.08' Inflow=4.85 cfs 0.231 af
18.0" Round Culvert n=0.013 L=115.0' S=0.0174 '/' Outflow=4.85 cfs 0.231 af

Pond 7P: Catch Basin Peak Elev=2,070.29' Inflow=2.88 cfs 0.151 af
Outflow=2.88 cfs 0.151 af

Pond 7R: (2) 43" Arch Culverts Peak Elev=1,816.94' Inflow=357.03 cfs 27.750 af
Outflow=357.03 cfs 27.750 af

Pond 8R: 36" hdpe Peak Elev=0.00'
36.0" Round Culvert n=0.013 L=245.0' S=0.1714 '/' Primary=0.00 cfs 0.000 af

Pond 9P: Catch Basin Peak Elev=2,038.34' Inflow=1.87 cfs 0.102 af
Outflow=1.87 cfs 0.102 af

Pond 10P: Catch Basin Peak Elev=2,038.36' Inflow=1.01 cfs 0.056 af
Outflow=1.01 cfs 0.056 af

Pond 10R: 14" and 16" HDPE Culverts Peak Elev=1,977.65' Inflow=83.66 cfs 8.710 af
Outflow=83.66 cfs 8.710 af

Pond 11P: Catch Basin Peak Elev=2,056.22' Inflow=73.95 cfs 3.715 af
Outflow=73.95 cfs 3.715 af

Pond 12P: Catch Basin Peak Elev=2,056.26' Inflow=0.76 cfs 0.042 af
Outflow=0.76 cfs 0.042 af

Pond 13P: Manhole Peak Elev=2,069.51' Inflow=69.13 cfs 3.460 af
Outflow=69.13 cfs 3.460 af

Pond 13R: 16" CMP Culvert Peak Elev=1,967.22' Inflow=13.61 cfs 0.847 af
16.0" Round Culvert n=0.025 L=40.0' S=0.0250 '/' Outflow=13.61 cfs 0.847 af

Pond 15P: Catch Basin Peak Elev=2,070.25' Inflow=6.64 cfs 0.345 af
Outflow=6.64 cfs 0.345 af

Pond 16P: Catch Basin Peak Elev=2,084.44' Inflow=1.91 cfs 0.107 af
Outflow=1.91 cfs 0.107 af

Pond 17P: Catch Basin Peak Elev=2,084.18' Inflow=60.70 cfs 3.023 af
Outflow=60.70 cfs 3.023 af

Pond 18P: Catch Basin Peak Elev=2,096.58' Inflow=7.91 cfs 0.436 af
Outflow=7.91 cfs 0.436 af

Pond 19P: Catch Basin Peak Elev=2,094.80' Inflow=51.58 cfs 2.558 af
Outflow=51.58 cfs 2.558 af

Pond 20: CB20 Peak Elev=2,112.09' Inflow=27.85 cfs 1.416 af
Outflow=27.85 cfs 1.416 af

Pond 20P: Manhole Peak Elev=2,098.91' Inflow=42.67 cfs 2.068 af
30.0" Round Culvert n=0.013 L=107.0' S=0.0318 '/' Outflow=42.67 cfs 2.068 af

Pond 21P: Catch Basin Peak Elev=2,114.34' Inflow=7.74 cfs 0.407 af
Outflow=7.74 cfs 0.407 af

Pond 22P: Catch Basin Peak Elev=2,115.86' Inflow=4.70 cfs 0.246 af
Outflow=4.70 cfs 0.246 af

Pond 23A: Catch Basin Peak Elev=2,093.86' Inflow=6.15 cfs 0.301 af
Outflow=6.15 cfs 0.301 af

Pond 23B: Catch Basin Peak Elev=2,084.71' Inflow=6.15 cfs 0.301 af
Outflow=6.15 cfs 0.301 af

Pond 24A: Catch Basin Peak Elev=2,102.57' Inflow=34.94 cfs 1.661 af
Outflow=34.94 cfs 1.661 af

Pond 24B: Catch Basin Peak Elev=2,100.67' Inflow=34.94 cfs 1.661 af
Outflow=34.94 cfs 1.661 af

Pond 25P: Catch Basin Peak Elev=2,123.45' Inflow=1.88 cfs 0.100 af
Outflow=1.88 cfs 0.100 af

Pond 26P: Catch Basin Peak Elev=2,131.60' Inflow=0.93 cfs 0.049 af
Outflow=0.93 cfs 0.049 af

Pond 27P: Catch Basin Peak Elev=2,149.23' Inflow=9.03 cfs 0.477 af
Outflow=9.03 cfs 0.477 af

Pond 28P: Catch Basin Peak Elev=2,149.31' Inflow=1.03 cfs 0.055 af
Outflow=1.03 cfs 0.055 af

Pond 29P: Manhole Peak Elev=2,163.25' Inflow=6.98 cfs 0.368 af
21.0" Round Culvert n=0.013 L=125.0' S=0.1140 '/' Outflow=6.98 cfs 0.368 af

Pond 30P: Catch Basin Peak Elev=2,175.41' Inflow=6.98 cfs 0.368 af
Outflow=6.98 cfs 0.368 af

Pond 31P: Catch Basin Peak Elev=2,177.66' Inflow=0.74 cfs 0.039 af
Outflow=0.74 cfs 0.039 af

Pond 32P: Catch Basin Peak Elev=2,196.52' Inflow=5.55 cfs 0.293 af
Outflow=5.55 cfs 0.293 af

Pond 33P: Catch Basin Peak Elev=2,198.50' Inflow=0.95 cfs 0.050 af
Outflow=0.95 cfs 0.050 af

Pond 34P: Manhole Peak Elev=2,209.92' Inflow=3.68 cfs 0.194 af
18.0" Round Culvert n=0.013 L=90.3' S=0.1449 '/' Outflow=3.68 cfs 0.194 af

Pond 35P: Catch Basin Peak Elev=2,225.92' Inflow=3.68 cfs 0.194 af
Outflow=3.68 cfs 0.194 af

Pond 36P: Catch Basin Peak Elev=2,226.10' Inflow=0.82 cfs 0.043 af
Outflow=0.82 cfs 0.043 af

Pond 37P: Catch Basin Peak Elev=2,249.15' Inflow=2.03 cfs 0.107 af
Outflow=2.03 cfs 0.107 af

Pond 38P: Catch Basin Peak Elev=2,249.52' Inflow=0.91 cfs 0.048 af
Outflow=0.91 cfs 0.048 af

Pond 43P: 12" HDPE Pipe Peak Elev=1,998.31' Inflow=0.99 cfs 0.053 af
Outflow=0.99 cfs 0.053 af

Pond 44P: 12" HDPE Pipe Peak Elev=1,998.18' Inflow=1.93 cfs 0.104 af
Outflow=1.93 cfs 0.104 af

Pond 50P: 30" HDPE Pipe Peak Elev=2,027.91' Inflow=38.55 cfs 1.989 af
Outflow=38.55 cfs 1.989 af

Pond 51P: 18" HDPE Pipe Peak Elev=2,028.11' Inflow=3.84 cfs 0.186 af
Outflow=3.84 cfs 0.186 af

Pond 52P: 30" HDPE Pipe Peak Elev=2,061.79' Inflow=33.73 cfs 1.745 af
Outflow=33.73 cfs 1.745 af

Pond 53P: 18" HDPE Pipe Peak Elev=2,062.02' Inflow=4.11 cfs 0.199 af
Outflow=4.11 cfs 0.199 af

Pond 54P: 24" HDPE Pipe Peak Elev=2,104.25' Inflow=22.67 cfs 1.194 af
Outflow=22.67 cfs 1.194 af

Pond 55P: 18" HDPE Pipe Peak Elev=2,104.44' Inflow=3.89 cfs 0.206 af
Outflow=3.89 cfs 0.206 af

Pond 56P: 18" HDPE Pipe Peak Elev=2,082.62' Inflow=5.11 cfs 0.254 af
Outflow=5.11 cfs 0.254 af

Pond 57P: 18" HDPE Pipe Peak Elev=2,082.75' Inflow=1.26 cfs 0.068 af
Outflow=1.26 cfs 0.068 af

Pond 62P: Catch Basin Peak Elev=2,086.27' Inflow=11.87 cfs 0.607 af
Outflow=11.87 cfs 0.607 af

Pond 65A: Manhole Peak Elev=2,081.23' Inflow=17.68 cfs 0.924 af
30.0" Round Culvert n=0.013 L=125.0' S=0.0752 '/' Outflow=17.68 cfs 0.924 af

Pond 65P: Catch Basin Peak Elev=2,082.59' Inflow=17.68 cfs 0.924 af
Outflow=17.68 cfs 0.924 af

Pond 66R: (2) 24" culvert Peak Elev=1,990.94' Inflow=9.60 cfs 0.172 af
Outflow=9.60 cfs 0.172 af

Pond 81: 24" culvert Peak Elev=2,016.08' Inflow=24.00 cfs 1.137 af
Outflow=24.00 cfs 1.137 af

Pond 200: 36" Steel Culvert Peak Elev=2,239.64' Inflow=344.98 cfs 28.426 af
Outflow=344.98 cfs 28.426 af

Pond 201: 36" Steel Culvert Peak Elev=2,238.11' Inflow=59.05 cfs 4.661 af
Outflow=59.05 cfs 4.661 af

Pond 297A: culvert Peak Elev=2,116.37' Inflow=102.68 cfs 8.224 af
Outflow=102.68 cfs 8.224 af

Pond 300R: 18" Steel Culvert Peak Elev=2,259.39' Inflow=79.00 cfs 6.086 af
Outflow=79.00 cfs 6.086 af

Pond B4: bioretention Peak Elev=2,144.81' Storage=14,430 cf Inflow=44.45 cfs 2.161 af
Discarded=0.11 cfs 0.229 af Primary=41.13 cfs 1.933 af Outflow=41.24 cfs 2.161 af

Pond DP 7: Design Point 7 Inflow=638.40 cfs 58.502 af
Primary=638.40 cfs 58.502 af

Pond DP 8: Design Point 8 Inflow=471.28 cfs 34.643 af
Primary=471.28 cfs 34.643 af

Pond DP 9: Design Point 9 Inflow=214.18 cfs 18.667 af
Primary=214.18 cfs 18.667 af

Pond H: Pond H Peak Elev=2,002.93' Storage=93,668 cf Inflow=115.65 cfs 6.532 af
Outflow=61.82 cfs 6.529 af

Pond J: OPEN SWALE Peak Elev=1,992.22' Storage=8,606 cf Inflow=16.69 cfs 0.841 af
Discarded=0.09 cfs 0.107 af Primary=4.88 cfs 0.562 af Secondary=9.60 cfs 0.172 af Outflow=14.57 cfs 0.841 af

Pond K: P1 Peak Elev=2,024.35' Storage=53,746 cf Inflow=54.50 cfs 3.485 af
Outflow=47.19 cfs 3.484 af

Pond L: Pond L - P1 Peak Elev=1,950.26' Storage=143,647 cf Inflow=149.56 cfs 8.136 af
Outflow=75.70 cfs 8.111 af

Pond M: OPEN SWALE Peak Elev=1,890.23' Storage=16,866 cf Inflow=42.19 cfs 2.012 af
Discarded=0.10 cfs 0.272 af Primary=37.05 cfs 1.740 af Outflow=37.15 cfs 2.012 af

Pond MH8: Manhole Peak Elev=2,038.33' Inflow=75.82 cfs 3.817 af
42.0" Round Culvert n=0.013 L=158.0' S=0.2335 '/' Outflow=75.82 cfs 3.817 af

Pond N: OPEN SWALE Peak Elev=1,875.97' Storage=4,538 cf Inflow=13.54 cfs 0.644 af
Discarded=0.03 cfs 0.080 af Primary=11.77 cfs 0.563 af Outflow=11.80 cfs 0.644 af

Pond O: Open Swale Peak Elev=1,839.98' Storage=13,810 cf Inflow=40.51 cfs 1.947 af
Discarded=0.10 cfs 0.246 af Primary=19.09 cfs 1.451 af Secondary=18.33 cfs 0.249 af Outflow=37.52 cfs 1.947 af

Pond Q: OPEN SWALE Peak Elev=1,879.98' Storage=11,595 cf Inflow=30.90 cfs 1.490 af
Discarded=0.07 cfs 0.221 af Primary=28.71 cfs 1.269 af Outflow=28.78 cfs 1.490 af

Pond S: Open Swale Peak Elev=1,919.51' Storage=5,141 cf Inflow=18.52 cfs 0.909 af
Discarded=0.04 cfs 0.146 af Primary=18.36 cfs 0.763 af Outflow=18.40 cfs 0.909 af

Pond sp1: Storm Planters Peak Elev=2,151.76' Storage=14,282 cf Inflow=11.14 cfs 0.608 af
Outflow=2.62 cfs 0.553 af

Pond T: Open Swale Peak Elev=1,991.24' Storage=2,940 cf Inflow=15.66 cfs 0.744 af
Discarded=0.03 cfs 0.088 af Primary=15.55 cfs 0.657 af Outflow=15.58 cfs 0.744 af

Pond U: Open Swale Peak Elev=2,015.97' Storage=13,885 cf Inflow=45.08 cfs 2.659 af
Discarded=0.08 cfs 0.345 af Primary=44.60 cfs 2.314 af Outflow=44.69 cfs 2.659 af

Pond W: Open Swale Peak Elev=1,790.90' Storage=19,270 cf Inflow=52.15 cfs 2.012 af
Discarded=0.11 cfs 0.281 af Primary=45.69 cfs 1.730 af Outflow=45.79 cfs 2.012 af

Pond X: Open Swale Peak Elev=1,799.66' Storage=6,501 cf Inflow=21.54 cfs 1.024 af
Discarded=0.08 cfs 0.181 af Primary=20.76 cfs 0.843 af Outflow=20.84 cfs 1.024 af

Total Runoff Area = 288.212 ac Runoff Volume = 114.092 af Average Runoff Depth = 4.75"
96.12% Pervious = 277.025 ac 3.88% Impervious = 11.187 ac

Summary for Subcatchment 1S: Road

Runoff = 11.79 cfs @ 12.01 hrs, Volume= 0.678 af, Depth= 6.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	30,818	98	Roof
	23,162	74	>75% Grass cover, Good, HSG C
	53,980	88	Weighted Average
	23,162		42.91% Pervious Area
	30,818		57.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0200	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.8	130	0.0350	2.81		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.6	230	Total			

Summary for Subcatchment 2a: Road

Runoff = 3.63 cfs @ 11.97 hrs, Volume= 0.194 af, Depth= 7.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	10,932	98	Paved
	3,222	74	>75% Grass cover, Good, HSG C
	14,154	93	Weighted Average
	3,222		22.76% Pervious Area
	10,932		77.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0200	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.9	219	0.0380	3.96		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	319	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S: Subcatchment 2

Runoff = 3.64 cfs @ 11.99 hrs, Volume= 0.186 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	4,400	98	Roadway
	5,009	71	Meadow, non-grazed, HSG C
	9,060	70	Woods, Good, HSG C
	18,469	77	Weighted Average
	14,069		76.18% Pervious Area
	4,400		23.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	90	0.2290	0.23		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
0.8	70	0.2550	1.51		**Shallow Concentrated Flow, SC Flow through Woods** Kv= 3.0 fps
0.3	215	0.0547	13.12	137.80	**Trap/Vee/Rect Channel Flow, Vegetated Swale along RR Tracks** Bot.W=2.00' D=3.00' Z= 0.5 '/' Top.W=5.00' n= 0.030
7.8	375	Total			

Summary for Subcatchment 3S: Road

Runoff = 1.91 cfs @ 11.97 hrs, Volume= 0.097 af, Depth= 6.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	4,120	98	Paved
	3,743	74	>75% Grass cover, Good, HSG C
	7,863	87	Weighted Average
	3,743		47.60% Pervious Area
	4,120		52.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1100	3.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	172	0.1100	6.73		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	272	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Road

Runoff = 1.18 cfs @ 11.97 hrs, Volume= 0.067 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	4,505	98	Paved
	4,505		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0500	2.22		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	174	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	274	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 5S: Subcatchment 5

Runoff = 13.61 cfs @ 12.06 hrs, Volume= 0.847 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	39,399	71	Meadow, non-grazed, HSG C
*	1,338	98	Roof Area
	45,785	70	Woods, Good, HSG C
	5,498	98	Paved parking, HSG C
	92,020	73	Weighted Average
	85,184		92.57% Pervious Area
	6,836		7.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.1300	0.18		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	390	0.0920	1.52		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	225	0.0346	7.48	29.91	**Trap/Vee/Rect Channel Flow, Flow in Vegated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
13.9	715	Total			

Summary for Subcatchment 6aS: subcatch 6a

Runoff = 65.86 cfs @ 12.11 hrs, Volume= 4.769 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	7,130	74	Porous Paving
*	2,840	98	Roof
	334,295	70	Woods, Good, HSG C
	27,046	74	>75% Grass cover, Good, HSG C
*	18,735	98	Paved
*	9,300	74	Fairway/Tee/Green, Good, HSG C
	131,702	71	Meadow, non-grazed, HSG C
	531,048	72	Weighted Average
	509,473		95.94% Pervious Area
	21,575		4.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.1200	0.18		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
9.2	915	0.1100	1.66		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	240	0.0950	18.86	150.91	**Trap/Vee/Rect Channel Flow, swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.025 Earth, clean & winding
18.8	1,255	Total			

Summary for Subcatchment 6S: subcatch 6

Runoff = 47.99 cfs @ 12.12 hrs, Volume= 3.499 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	7,240	98	Roof
	293,063	70	Woods, Good, HSG C
	78,387	74	>75% Grass cover, Good, HSG C
*	10,890	98	Paved
	389,580	72	Weighted Average
	371,450		95.35% Pervious Area
	18,130		4.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.1100	0.17		**Sheet Flow, Sheet Flow through Woods**
					Woods: Light underbrush n= 0.400 P2= 4.00"
7.7	1,015	0.1950	2.21		**Shallow Concentrated Flow, SC Flow through Woods**
					Woodland Kv= 5.0 fps
1.7	1,060	0.0750	10.48	83.81	**Trap/Vee/Rect Channel Flow, RR Swale w/ Gravel and Leaves**
					Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00'
					n= 0.040 Earth, cobble bottom, clean sides
19.1	2,175	Total			

Summary for Subcatchment 7S: subcatch 7

Runoff = 6.28 cfs @ 11.97 hrs, Volume= 0.309 af, Depth= 5.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
9,700	98	Paved parking & roofs
5,730	70	Woods, Good, HSG C
12,143	74	>75% Grass cover, Good, HSG C
27,573	82	Weighted Average
17,873		64.82% Pervious Area
9,700		35.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	20	0.3000	0.41		**Sheet Flow,**
					Grass: Short n= 0.150 P2= 4.00"
2.1	225	0.1250	1.77		**Shallow Concentrated Flow,**
					Woodland Kv= 5.0 fps
2.9	245	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 9a: Road

Runoff = 0.87 cfs @ 11.97 hrs, Volume= 0.045 af, Depth= 6.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	2,405	98	Paved
	1,022	74	>75% Grass cover, Good, HSG C
	3,427	91	Weighted Average
	1,022		29.82% Pervious Area
	2,405		70.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0790	2.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	138	0.0790	5.71		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	238	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 10a: Road

Runoff = 1.01 cfs @ 11.97 hrs, Volume= 0.056 af, Depth= 7.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	3,650	98	Paved
	200	74	>75% Grass cover, Good, HSG C
	3,850	97	Weighted Average
	200		5.19% Pervious Area
	3,650		94.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0940	2.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.5	171	0.0940	6.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	271	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 11c: Road

Runoff = 4.06 cfs @ 11.97 hrs, Volume= 0.213 af, Depth= 6.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	7,010	98	Paved
	4,732	74	>75% Grass cover, Good, HSG C
*	4,335	98	Roofs
	16,077	91	Weighted Average
	4,732		29.43% Pervious Area
	11,345		70.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0920	2.83		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.1	31	0.0920	6.16		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	131	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 12S: Road

Runoff = 0.76 cfs @ 11.97 hrs, Volume= 0.042 af, Depth= 7.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	2,610	98	Paved
	330	74	>75% Grass cover, Good, HSG C
	2,940	95	Weighted Average
	330		11.22% Pervious Area
	2,610		88.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0810	2.69		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.1	49	0.0810	5.78		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	149	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 14a: Main Road

Runoff = 1.80 cfs @ 11.97 hrs, Volume= 0.092 af, Depth= 6.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	4,265	98	Paved
	3,075	74	>75% Grass cover, Good, HSG C
	7,340	88	Weighted Average
	3,075		41.89% Pervious Area
	4,265		58.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0280	1.76		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.0	411	0.0280	3.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.9	511	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 14B: Road

Runoff = 2.88 cfs @ 11.97 hrs, Volume= 0.151 af, Depth= 6.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
8,075	98	Paved parking, HSG C
3,326	74	>75% Grass cover, Good, HSG C
11,401	91	Weighted Average
3,326		29.17% Pervious Area
8,075		70.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0200	1.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.3	426	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	526	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 14C: BUILDING

Runoff = 6.27 cfs @ 11.98 hrs, Volume= 0.340 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
19,361	98	Paved parking, HSG C
5,890	74	>75% Grass cover, Good, HSG C
25,251	92	Weighted Average
5,890		23.33% Pervious Area
19,361		76.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0400	0.25		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 4.00"
0.2	27	0.0375	2.90		**Shallow Concentrated Flow, shallow concentrated flow** Grassed Waterway Kv= 15.0 fps
6.8	127	Total			

Summary for Subcatchment 15S: Main Road

Runoff = 3.76 cfs @ 11.97 hrs, Volume= 0.194 af, Depth= 6.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	9,480	98	Paved
	5,664	74	>75% Grass cover, Good, HSG C
	15,144	89	Weighted Average
	5,664		37.40% Pervious Area
	9,480		62.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0290	1.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.9	394	0.0290	3.46		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	494	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 16a: Main Road

Runoff = 1.91 cfs @ 11.97 hrs, Volume= 0.107 af, Depth= 7.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	6,864	98	Paved
	453	74	>75% Grass cover, Good, HSG C
	7,317	97	Weighted Average
	453		6.19% Pervious Area
	6,864		93.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0750	2.61		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	206	0.0750	5.56		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	306	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 17a: Main Road

Runoff = 1.10 cfs @ 11.97 hrs, Volume= 0.058 af, Depth= 6.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	3,040	98	Paved
	1,330	74	>75% Grass cover, Good, HSG C
	4,370	91	Weighted Average
	1,330		30.43% Pervious Area
	3,040		69.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0790	2.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	192	0.0790	5.71		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	292	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 18a: Main Road

Runoff = 7.91 cfs @ 11.97 hrs, Volume= 0.436 af, Depth= 7.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	13,586	98	Paved
	2,952	74	>75% Grass cover, Good, HSG C
*	13,800	98	Roof
	30,338	96	Weighted Average
	2,952		9.73% Pervious Area
	27,386		90.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	56	0.0360	1.73		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.9	220	0.0450	4.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	276	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 19a: Main Road

Runoff = 1.01 cfs @ 11.97 hrs, Volume= 0.054 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	2,920	98	Paved
	1,054	74	>75% Grass cover, Good, HSG C
	3,974	92	Weighted Average
	1,054		26.52% Pervious Area
	2,920		73.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0400	2.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	139	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	239	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 20a: BEHIND 1

Runoff = 5.58 cfs @ 11.97 hrs, Volume= 0.266 af, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
26,663	74	>75% Grass cover, Good, HSG C
910	98	Paved parking, HSG C
27,573	75	Weighted Average
26,663		96.70% Pervious Area
910		3.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	395	0.0380	6.65	79.79	**Channel Flow,** Area= 12.0 sf Perim= 21.0' r= 0.57' n= 0.030 Earth, grassed & winding
1.0	395	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 20b: BEHIND 1

Runoff = 5.35 cfs @ 11.97 hrs, Volume= 0.254 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
23,963	74	>75% Grass cover, Good, HSG C
3,610	70	Woods, Good, HSG C
27,573	73	Weighted Average
27,573		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1600	0.44		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.4	136	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	236	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 21S: Main Road

Runoff = 1.16 cfs @ 11.97 hrs, Volume= 0.061 af, Depth= 6.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	3,330	98	Paved
	1,244	74	>75% Grass cover, Good, HSG C
	4,574	91	Weighted Average
	1,244		27.20% Pervious Area
	3,330		72.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0610	2.40		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	169	0.0610	5.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	269	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 22S: Main Road

Runoff = 4.70 cfs @ 11.97 hrs, Volume= 0.246 af, Depth= 6.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	13,274	98	Paved
	5,332	74	>75% Grass cover, Good, HSG C
	18,606	91	Weighted Average
	5,332		28.66% Pervious Area
	13,274		71.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0630	2.43		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	161	0.0311	3.58		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	261	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 23S: 18 fairway

Runoff = 6.15 cfs @ 11.98 hrs, Volume= 0.301 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	1,549	74	>75% Grass cover, Good, HSG C
*	3,090	74	Porous Pavement
*	27,280	74	Fairway/Tee/Green, Good, HSG C
	31,919	74	Weighted Average
	31,919		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0640	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.7	73	0.0640	1.77		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	114	0.0100	3.17	7.92	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00' n= 0.033 Earth, grassed & winding
6.8	287	Total			

Summary for Subcatchment 24S: Fairway of 10 & 18

Runoff = 34.94 cfs @ 11.97 hrs, Volume= 1.661 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	23,070	74	>75% Grass cover, Good, HSG C
	6,012	70	Woods, Good, HSG C
*	8,530	74	Porous Pavement
*	138,653	74	Fairway/Tee/Green, Good, HSG C
	176,265	74	Weighted Average
	176,265		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0800	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.9	152	0.0054	2.69	13.44	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.00' Z= 1.0 '/' Top.W=6.00' n= 0.033 Earth, grassed & winding
5.9	252	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 25S: E. end Main Road

Runoff = 0.96 cfs @ 11.97 hrs, Volume= 0.051 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	2,740	98	Paved
	1,011	74	>75% Grass cover, Good, HSG C
	3,751	92	Weighted Average
	1,011		26.95% Pervious Area
	2,740		73.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0700	2.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	127	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	227	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 26S: E. end Main Road

Runoff = 0.93 cfs @ 11.97 hrs, Volume= 0.049 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	2,740	98	Paved
	905	74	>75% Grass cover, Good, HSG C
	3,645	92	Weighted Average
	905		24.83% Pervious Area
	2,740		75.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0700	2.54		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	126	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	226	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 27b: E. end Main Road

Runoff = 1.01 cfs @ 11.97 hrs, Volume= 0.054 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	2,930	98	Paved
	1,046	74	>75% Grass cover, Good, HSG C
	3,976	92	Weighted Average
	1,046		26.31% Pervious Area
	2,930		73.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1250	3.20		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	140	0.1250	7.18		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	240	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 28a: E. end Main Road

Runoff = 1.03 cfs @ 11.97 hrs, Volume= 0.055 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	3,090	98	Paved
	970	74	>75% Grass cover, Good, HSG C
	4,060	92	Weighted Average
	970		23.89% Pervious Area
	3,090		76.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1170	3.12		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.4	156	0.1170	6.94		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
0.9	256	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 30S: E. end Main Road

Runoff = 0.69 cfs @ 11.97 hrs, Volume= 0.037 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	2,010	98	Paved
	709	74	>75% Grass cover, Good, HSG C
	2,719	92	Weighted Average
	709		26.08% Pervious Area
	2,010		73.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1290	3.24		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.1	63	0.1290	7.29		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
0.6	163	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 31S: E. end Main Road

Runoff = 0.74 cfs @ 11.97 hrs, Volume= 0.039 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	2,160	98	Paved
	749	74	>75% Grass cover, Good, HSG C
	2,909	92	Weighted Average
	749		25.75% Pervious Area
	2,160		74.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1190	3.14		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.2	77	0.1190	7.00		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
0.7	177	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 32S: E. end Main Road

Runoff = 0.91 cfs @ 11.97 hrs, Volume= 0.048 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	2,640	98	Paved
	941	74	>75% Grass cover, Good, HSG C
	3,581	92	Weighted Average
	941		26.28% Pervious Area
	2,640		73.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1270	3.22		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.3	112	0.1270	7.23		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
0.8	212	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 33S: E. end Main Road

Runoff = 0.95 cfs @ 11.97 hrs, Volume= 0.050 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	2,780	98	Paved
	956	74	>75% Grass cover, Good, HSG C
	3,736	92	Weighted Average
	956		25.59% Pervious Area
	2,780		74.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1170	3.12		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	130	0.1170	6.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	230	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 35a: E. end Main Road

Runoff = 0.84 cfs @ 11.97 hrs, Volume= 0.044 af, Depth= 6.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	2,400	98	Paved
	908	74	>75% Grass cover, Good, HSG C
	3,308	91	Weighted Average
	908		27.45% Pervious Area
	2,400		72.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1220	3.17		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.2	96	0.1220	7.09		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	196	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 35S: Subcatchment 35

Runoff = 59.05 cfs @ 12.15 hrs, Volume= 4.661 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	122,752	71	Meadow, non-grazed, HSG C
*	6,708	98	Paved Road
	393,477	70	Woods, Good, HSG C
*	9,104	98	Roof
	532,041	71	Weighted Average
	516,229		97.03% Pervious Area
	15,812		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	120	0.1667	0.52		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.5	230	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	50	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
9.3	1,470	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
22.0	3,110	Total			

Summary for Subcatchment 36S: E. end Main Road

Runoff = 0.82 cfs @ 11.97 hrs, Volume= 0.043 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	2,400	98	Paved
	804	74	>75% Grass cover, Good, HSG C
	3,204	92	Weighted Average
	804		25.09% Pervious Area
	2,400		74.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1210	3.16		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.2	98	0.1210	7.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	198	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 37S: E. end Main Road

Runoff = 1.12 cfs @ 11.97 hrs, Volume= 0.059 af, Depth= 6.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	3,200	98	Paved
	1,247	74	>75% Grass cover, Good, HSG C
	4,447	91	Weighted Average
	1,247		28.04% Pervious Area
	3,200		71.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0620	2.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.5	143	0.0620	5.05		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	243	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 38S: E. end Main Road

Runoff = 0.91 cfs @ 11.97 hrs, Volume= 0.048 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	2,730	98	Paved
	839	74	>75% Grass cover, Good, HSG C
	3,569	92	Weighted Average
	839		23.51% Pervious Area
	2,730		76.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0720	2.57		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	107	0.0720	5.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	207	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 41S: W. end of Main Road

Runoff = 2.00 cfs @ 11.97 hrs, Volume= 0.113 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	7,632	98	Paved
	7,632		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0467	2.16		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.9	190	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	290	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 42S: W. end of Main Road

Runoff = 1.84 cfs @ 11.97 hrs, Volume= 0.104 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	7,012	98	Paved
	7,012		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0467	2.16		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.9	183	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	283	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 43S: W. end of Main Road

Runoff = 0.99 cfs @ 11.97 hrs, Volume= 0.053 af, Depth= 7.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	3,000	98	Paved
	858	74	>75% Grass cover, Good, HSG C
	3,858	93	Weighted Average
	858		22.24% Pervious Area
	3,000		77.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1200	3.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	144	0.1110	6.76		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	244	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 44S: W. end of Main Road

Runoff = 0.94 cfs @ 11.97 hrs, Volume= 0.051 af, Depth= 7.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	3,000	98	Paved
	652	74	>75% Grass cover, Good, HSG C
	3,652	94	Weighted Average
	652		17.85% Pervious Area
	3,000		82.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1200	3.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.3	139	0.1150	6.88		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	239	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 45S: Hole 1

Runoff = 76.34 cfs @ 12.00 hrs, Volume= 3.989 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	29,365	70	Woods, Good, HSG C
	168,858	74	>75% Grass cover, Good, HSG C
*	16,666	74	Porous Pavement
*	208,438	74	Fairway/Tee/Green, Good, HSG C
	423,327	74	Weighted Average
	423,327		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0500	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.2	208	0.1830	2.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	888	0.0690	10.54	55.33	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
8.7	1,196	Total			

Summary for Subcatchment 50S: W. end of Main Rd.

Runoff = 1.03 cfs @ 11.97 hrs, Volume= 0.058 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	3,930	98	Paved
	3,930		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1140	3.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.5	193	0.1140	6.85		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	293	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 51S: W. end of Main Rd.

Runoff = 3.84 cfs @ 11.97 hrs, Volume= 0.186 af, Depth= 5.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	3,600	98	Paved
	8,603	74	>75% Grass cover, Good, HSG C
*	5,464	74	Fairway/Tee/Green, Good, HSG C
	17,667	79	Weighted Average
	14,067		79.62% Pervious Area
	3,600		20.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	86	0.1400	0.40		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.1	14	0.1140	2.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	261	0.1150	6.88		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3	361	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 52S: W. end of Main Rd.

Runoff = 2.04 cfs @ 11.97 hrs, Volume= 0.098 af, Depth= 5.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	7,193	74	>75% Grass cover, Good, HSG C
*	1,536	98	Paved
*	816	74	Porous Pavement
	9,545	78	Weighted Average
	8,009		83.91% Pervious Area
	1,536		16.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	40	0.4000	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.5	60	0.0500	2.00		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.6	220	0.0820	5.81		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	320	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 53S: W. end of Main Rd.

Runoff = 4.11 cfs @ 11.97 hrs, Volume= 0.199 af, Depth= 5.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	6,647	74	>75% Grass cover, Good, HSG C
*	3,490	98	Paved
*	4,753	74	Porous Pavement
*	4,360	74	Fairway/Tee/Green, Good, HSG C
	19,250	78	Weighted Average
	15,760		81.87% Pervious Area
	3,490		18.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	40	0.0750	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.4	60	0.0670	2.25		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.8	236	0.0660	5.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.7	336	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 54S: Golf Course Parking

Runoff = 18.99 cfs @ 12.00 hrs, Volume= 0.988 af, Depth= 5.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	17,600	98	Paved
	67,503	74	>75% Grass cover, Good, HSG C
*	10,730	74	Porous Pavement
	95,833	78	Weighted Average
	78,233		81.63% Pervious Area
	17,600		18.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	27	0.0760	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.3	33	0.0450	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.7	40	0.0625	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.7	434	0.1470	2.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	188	0.0430	4.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.2	722	Total			

Summary for Subcatchment 55S: Golf Course Parking

Runoff = 3.89 cfs @ 11.97 hrs, Volume= 0.206 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	3,030	74	>75% Grass cover, Good, HSG C
*	11,425	98	Paved
*	815	74	Porous Pavement
	15,270	92	Weighted Average
	3,845		25.18% Pervious Area
	11,425		74.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0330	1.88		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.7	159	0.0390	4.01		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
1.6	259	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 56S: Main Rd. to 6 & 7

Runoff = 3.85 cfs @ 11.97 hrs, Volume= 0.186 af, Depth= 5.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	13,240	74	>75% Grass cover, Good, HSG C
*	3,160	98	Paved
*	1,620	74	Porous Pavement
	18,020	78	Weighted Average
	14,860		82.46% Pervious Area
	3,160		17.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0170	1.44		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
0.5	145	0.0480	4.45		**Shallow Concentrated Flow,**
					Paved Kv= 20.3 fps
1.7	245	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 57S: Main Rd. 6 & 7

Runoff = 1.26 cfs @ 11.97 hrs, Volume= 0.068 af, Depth= 7.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	4,049	98	Paved
	831	74	>75% Grass cover, Good, HSG C
	4,880	94	Weighted Average
	831		17.03% Pervious Area
	4,049		82.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0160	1.41		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	137	0.0292	3.47		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.9	237	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 59S: Club House

Runoff = 1.89 cfs @ 11.97 hrs, Volume= 0.107 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	7,222	98	Roof
	7,222		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 60S: Roof Terraces

Runoff = 11.14 cfs @ 11.97 hrs, Volume= 0.608 af, Depth= 7.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	36,970	98	Roof
*	5,980	74	Fairway/Tee/Green, Good, HSG C
	42,950	95	Weighted Average
	5,980		13.92% Pervious Area
	36,970		86.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 62S: Green of 18

Runoff = 11.87 cfs @ 12.00 hrs, Volume= 0.607 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	2,744	74	>75% Grass cover, Good, HSG C
*	2,600	74	Porous Pavement
*	59,100	74	Fairway/Tee/Green, Good, HSG C
	64,444	74	Weighted Average
	64,444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.0350	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.6	78	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	255	0.0512	9.08	47.66	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
8.1	433	Total			

Summary for Subcatchment 63S: Front end of Driving Range

Runoff = 34.95 cfs @ 12.06 hrs, Volume= 2.221 af, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	75,560	74	>75% Grass cover, Good, HSG C
	16,416	70	Woods, Good, HSG C
	15,620	98	Water Surface, 0% imp, HSG C
*	121,724	74	Fairway/Tee/Green, Good, HSG C
	642	98	Paved parking, HSG C
	319	98	Roofs, HSG C
	230,281	75	Weighted Average
	229,320		99.58% Pervious Area
	961		0.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
5.7	496	0.0430	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	297	0.0330	7.29	38.26	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
14.4	893	Total			

Summary for Subcatchment 65S: Driveway to Golf House

Runoff = 4.15 cfs @ 11.97 hrs, Volume= 0.209 af, Depth= 6.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	5,721	74	>75% Grass cover, Good, HSG C
*	8,740	98	Paved
*	2,800	74	Porous Pavement
	17,261	86	Weighted Average
	8,521		49.37% Pervious Area
	8,740		50.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0350	1.92		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	199	0.0830	4.64		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.6	299	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 80S: existing woods

Runoff = 24.00 cfs @ 11.97 hrs, Volume= 1.137 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	62,404	74	>75% Grass cover, Good, HSG C
	46,340	70	Woods, Good, HSG C
*	3,190	74	Porous Pavement
*	11,666	74	Fairway/Tee/Green, Good, HSG C
	123,600	73	Weighted Average
	123,600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1600	0.44		**Sheet Flow, sheet** Grass: Short n= 0.150 P2= 4.00"
0.3	90	0.1300	5.41		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	410	0.0350	6.38	76.58	**Channel Flow,** Area= 12.0 sf Perim= 21.0' r= 0.57' n= 0.030 Earth, grassed & winding
5.2	600	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 137S: BEHIND GARAGE

Runoff = 5.49 cfs @ 11.99 hrs, Volume= 0.276 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
10,210	74	>75% Grass cover, Good, HSG C
21,275	70	Woods, Good, HSG C
31,485	71	Weighted Average
31,485		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	97	0.2500	0.24		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.0	280	0.0180	4.68	11.69	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00' n= 0.030 Earth, grassed & winding
7.8	377	Total			

Summary for Subcatchment 200S: Subcatchment 200

Runoff = 344.98 cfs @ 12.17 hrs, Volume= 28.426 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	14,331	98	Paved Road
	311,323	71	Meadow, non-grazed, HSG C
	3,002,765	70	Woods, Good, HSG C
	3,328,419	70	Weighted Average
	3,314,088		99.57% Pervious Area
	14,331		0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	100	0.1667	0.50		**Sheet Flow, Sheet Flow through Ski Trail** Range n= 0.130 P2= 4.00"
3.7	630	0.3170	2.82		**Shallow Concentrated Flow, Sheet Flow through Woods** Woodland Kv= 5.0 fps
1.3	270	0.2590	3.56		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.6	225	0.2220	2.36		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.5	115	0.3478	4.13		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
1.4	215	0.2790	2.64		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	70	0.3150	3.93		**Shallow Concentrated Flow, SC Flow through Ski Trail** Short Grass Pasture Kv= 7.0 fps
11.1	1,760	0.2799	2.65		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	160	0.0500	8.99	35.95	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030
23.5	3,545	Total			

Summary for Subcatchment 201S: Tees of 18 & Greens of 10

Runoff = 35.44 cfs @ 11.97 hrs, Volume= 1.685 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	64,007	74	>75% Grass cover, Good, HSG C
*	12,310	74	Porous Pavement
*	86,820	74	Fairway/Tee/Green, Good, HSG C
	15,640	70	Woods, Good, HSG C
	178,777	74	Weighted Average
	178,777		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1658	0.44		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.5	93	0.1658	2.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	232	0.0948	13.87	114.45	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.033 Earth, grassed & winding
4.6	425	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 211S: Back End of the Driving Range

Runoff = 42.19 cfs @ 11.97 hrs, Volume= 2.012 af, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	61,458	74	>75% Grass cover, Good, HSG C
*	5,760	98	Porous Pavement
*	141,430	74	Fairway/Tee/Green, Good, HSG C
	208,648	75	Weighted Average
	202,888		97.24% Pervious Area
	5,760		2.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.3	40	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	765	0.1390	14.96	78.53	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
5.8	905	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 212S: Green of 13

Runoff = 13.54 cfs @ 11.97 hrs, Volume= 0.644 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	9,320	74	>75% Grass cover, Good, HSG C
*	1,810	74	Porous Pavement
*	57,180	74	Fairway/Tee/Green, Good, HSG C
	68,310	74	Weighted Average
	68,310		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.3	119	0.0336	7.35	38.61	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
4.9	219	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 213S: Hole 16

Runoff = 33.02 cfs @ 12.03 hrs, Volume= 1.924 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	45,442	74	>75% Grass cover, Good, HSG C
*	8,230	74	Porous Pavement
*	127,890	74	Fairway/Tee/Green, Good, HSG C
	13,418	98	Water Surface, 0% imp, HSG C
	194,980	76	Weighted Average
	194,980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0118	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.9	590	0.0576	10.81	89.21	**Trap/Vee/Rect Channel Flow, Turf Reinforcement Mat** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.033 Earth, grassed & winding
11.7	690	Total			

Summary for Subcatchment 214S: Tees of 13

Runoff = 30.90 cfs @ 11.98 hrs, Volume= 1.490 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	36,885	74	>75% Grass cover, Good, HSG C
*	9,000	74	Porous Pavement
*	112,185	74	Fairway/Tee/Green, Good, HSG C
	158,070	74	Weighted Average
	158,070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0600	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.7	527	0.0700	11.92	98.35	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.033 Earth, grassed & winding
0.0	20	0.0200	13.34	94.33	**Pipe Channel,** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
0.1	110	0.1500	17.45	143.97	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00'

n= 0.033 Earth, grassed & winding

6.4	757	Total

Summary for Subcatchment 218S: Green of 12, Tee of 13

Runoff = 18.52 cfs @ 11.98 hrs, Volume= 0.909 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	40,598	74	>75% Grass cover, Good, HSG C
*	4,120	74	Porous Pavement
*	51,700	74	Fairway/Tee/Green, Good, HSG C
	96,418	74	Weighted Average
	96,418		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.0800	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.7	200	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	167	0.1205	17.20	141.94	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.030 Earth, grassed & winding
6.9	467	Total			

Summary for Subcatchment 219S: Green of 11

Runoff = 15.66 cfs @ 11.97 hrs, Volume= 0.744 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	37,165	74	>75% Grass cover, Good, HSG C
*	6,050	74	Porous Pavement
*	35,770	74	Fairway/Tee/Green, Good, HSG C
	78,985	74	Weighted Average
	78,985		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0130	1.29		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.4	108	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	198	0.0550	10.57	87.18	**Trap/Vee/Rect Channel Flow,** Bot.W=4.00' D=1.50' Z= 1.0 '/' Top.W=7.00' n= 0.033 Earth, grassed & winding
2.0	406	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 220S: Fairway of 11

Runoff = 45.08 cfs @ 12.04 hrs, Volume= 2.659 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	76,630	74	>75% Grass cover, Good, HSG C
	34,383	70	Woods, Good, HSG C
*	16,925	74	porous paving
*	146,470	74	Fairway/Tee/Green, Good, HSG C
	7,780	98	Water Surface, HSG C
	282,188	74	Weighted Average
	274,408		97.24% Pervious Area
	7,780		2.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.1200	0.39		**Sheet Flow, sheet flow** Grass: Short n= 0.150 P2= 4.00"
7.7	627	0.0730	1.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	142	0.1270	15.73	82.57	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.030 Earth, grassed & winding
12.2	869	Total			

Summary for Subcatchment 223S: Golf Hole 15 and Maintenance Bldg.

Runoff = 40.51 cfs @ 11.97 hrs, Volume= 1.947 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	16,393	70	Woods, Good, HSG C
	84,076	74	>75% Grass cover, Good, HSG C
*	7,663	98	Roof
*	62,572	74	Fairway/Tee/Green, Good, HSG C
*	5,950	74	Porous Pavement
	16,303	98	Paved parking, HSG C
	192,957	77	Weighted Average
	168,991		87.58% Pervious Area
	23,966		12.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	30	0.1000	2.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.2	70	0.3000	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.5	233	0.1460	2.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	68	0.0200	5.67	29.79	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
4.1	401	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 225S: Fairway 14

Runoff = 37.07 cfs @ 11.97 hrs, Volume= 1.762 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	55,496	74	>75% Grass cover, Good, HSG C
*	7,480	74	Porous Pavement
*	124,042	74	Fairway/Tee/Green, Good, HSG C
	187,018	74	Weighted Average
	187,018		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.1800	0.46		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.1	147	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	284	0.0560	9.49	49.84	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
5.2	531	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 226S: Fairway & Green of 14

Runoff = 21.54 cfs @ 11.97 hrs, Volume= 1.024 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	28,724	74	>75% Grass cover, Good, HSG C
*	7,290	74	Porous Pavement
*	72,670	74	Fairway/Tee/Green, Good, HSG C
	108,684	74	Weighted Average
	108,684		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	100	0.3100	0.57		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.8	225	0.0840	2.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	100	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	43	0.0470	1.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	468	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 300S: Subcatchment 300

Runoff = 79.00 cfs @ 12.14 hrs, Volume= 6.086 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	3,267	98	Paved Road
	6,447	71	Meadow, non-grazed, HSG C
	702,884	70	Woods, Good, HSG C
	712,598	70	Weighted Average
	709,331		99.54% Pervious Area
	3,267		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	120	0.2500	0.25		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.7	1,810	0.2257	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.2	110	0.0910	12.13	48.50	**Trap/Vee/Rect Channel Flow, Vegetated Swale** Bot.W=1.00' D=2.00' Z= 0.5 '/' Top.W=3.00' n= 0.030

21.0	2,040	Total

Summary for Subcatchment 301S: Ex Stream

Runoff = 17.37 cfs @ 11.97 hrs, Volume= 0.821 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	46,362	70	Woods, Good, HSG C
	43,672	74	>75% Grass cover, Good, HSG C
*	1,350	74	Porous Pavement
	91,384	72	Weighted Average
	91,384		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	100	0.2100	0.49		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.4	51	0.0988	2.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	118	0.1610	2.01		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	228	0.1140	10.19	50.95	**Trap/Vee/Rect Channel Flow, Ex Stream** Bot.W=4.00' D=1.00' Z= 1.0 '/' Top.W=6.00' n= 0.040 Mountain streams
5.2	497	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 302a: New Subcatch

Runoff = 27.24 cfs @ 11.99 hrs, Volume= 1.360 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
67,296	71	Meadow, non-grazed, HSG C
65,469	70	Woods, Good, HSG C
22,432	74	>75% Grass cover, Good, HSG C
155,197	71	Weighted Average
155,197		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.3800	0.28		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.7	318	0.3800	3.08		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.6	418	Total			

Summary for Subcatchment 302b: New Subcatch

Runoff = 27.01 cfs @ 12.00 hrs, Volume= 1.415 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	61,357	71	Meadow, non-grazed, HSG C
	45,086	70	Woods, Good, HSG C
	51,075	74	>75% Grass cover, Good, HSG C
	157,518	72	Weighted Average
	157,518		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0400	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.2	285	0.3400	4.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	600	0.0820	9.48	49.76	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.040 Earth, cobble bottom, clean sides
8.9	985	Total			

Summary for Subcatchment 302S: (new Subcat)

Runoff = 33.95 cfs @ 11.97 hrs, Volume= 1.596 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	46,647	71	Meadow, non-grazed, HSG C
	139,008	70	Woods, Good, HSG C
*	1,180	74	Paved (porous)
	186,835	70	Weighted Average
	186,835		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.1600	0.44		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.2	43	0.1860	3.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	871	0.0600	9.83	51.59	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
5.5	1,014	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 303S: Subcatchment 303

Runoff = 42.91 cfs @ 12.01 hrs, Volume= 2.255 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	145,514	70	Woods, Good, HSG C
*	9,520	74	Porous Pavement
	72,299	74	>75% Grass cover, Good, HSG C
*	23,715	74	Fairway/Tee/Green, Good, HSG C
	251,048	72	Weighted Average
	251,048		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	20	0.0800	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.2	86	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	670	0.0850	12.87	67.55	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.030 Earth, grassed & winding
4.9	358	0.0170	1.22	21.30	**Trap/Vee/Rect Channel Flow, ex wetland flow** Bot.W=10.00' D=0.50' Z= 50.0 '/' Top.W=60.00' n= 0.070 Sluggish weedy reaches w/pools
0.6	316	0.0450	9.45	132.34	**Trap/Vee/Rect Channel Flow, ex wetland ditch** Bot.W=5.00' D=2.00' Z= 1.0 '/' Top.W=9.00' n= 0.040 Earth, cobble bottom, clean sides
9.0	1,450	Total			

Summary for Subcatchment 304: (new Subcat)

Runoff = 23.09 cfs @ 12.16 hrs, Volume= 1.863 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	1,900	74	Porous Pavement
	136,810	70	Woods, Good, HSG C
	73,912	74	>75% Grass cover, Good, HSG C
	212,622	71	Weighted Average
	212,622		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.3300	0.27		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.6	112	0.3300	2.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	70	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.5	436	0.0400	0.50		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
0.1	145	0.2500	17.04	1,294.48	**Trap/Vee/Rect Channel Flow, overland** Bot.W=50.00' D=0.83' Z= 50.0 '/' Top.W=133.00' n= 0.030 Earth, grassed & winding
22.7	863	Total			

Summary for Subcatchment 305s: Land W. side of hotel

Runoff = 27.85 cfs @ 11.99 hrs, Volume= 1.416 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	125,900	74	>75% Grass cover, Good, HSG C
*	7,690	74	Porous Pavement
*	16,700	74	Fairway/Tee/Green, Good, HSG C
	150,290	74	Weighted Average
	150,290		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	100	0.3000	0.56		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
4.0	650	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	215	0.0100	4.01	21.06	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
7.9	965	Total			

Summary for Subcatchment 306S: 12 tee

Runoff = 36.36 cfs @ 11.99 hrs, Volume= 1.815 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	75,600	70	Woods, Good, HSG C
*	2,810	74	Porous Pavement
	20,790	74	>75% Grass cover, Good, HSG C
	108,004	71	Meadow, non-grazed, HSG C
	207,204	71	Weighted Average
	207,204		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0700	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.9	182	0.2200	3.28		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	550	0.0650	9.20	27.59	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=2.00' D=1.00' Z= 1.0 '/' Top.W=4.00' n= 0.030 Earth, grassed & winding
0.4	240	0.1600	11.19	72.20	**Trap/Vee/Rect Channel Flow, Ex Wetlnd channel** Bot.W=4.00' D=1.50' Z= 0.2 '/' Top.W=4.60' n= 0.050 Mountain streams w/large boulders
7.6	1,072	Total			

Summary for Subcatchment 307S: (new Subcat)

Runoff = 21.81 cfs @ 11.99 hrs, Volume= 1.099 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	13,050	74	Fairway/Tee/Green, Good, HSG C
*	10,840	74	Paved (Porous)
	24,084	74	>75% Grass cover, Good, HSG C
	74,350	70	Woods, Good, HSG C
	122,324	72	Weighted Average
	122,324		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	66	0.2000	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.1	130	0.0760	1.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	72	0.0350	4.77	14.31	**Trap/Vee/Rect Channel Flow, Grassed Swale** Bot.W=4.00' D=0.50' Z= 4.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
0.9	830	0.1100	14.87	111.53	**Trap/Vee/Rect Channel Flow, TRM Swale** Bot.W=2.00' D=1.50' Z= 2.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
7.8	1,098	Total			

Summary for Subcatchment 308S: (new Subcat)

Runoff = 38.69 cfs @ 12.13 hrs, Volume= 2.957 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
36,866	74	>75% Grass cover, Good, HSG C
309,380	70	Woods, Good, HSG C
346,246	70	Weighted Average
346,246		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0200	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.0	186	0.3800	1.54		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
2.6	220	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	150	0.0500	0.56		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
0.7	96	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	75	0.0600	0.61		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
0.1	109	0.1800	13.41	160.89	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.050 Mountain streams w/large boulders
20.7	936	Total			

Summary for Subcatchment 309S: (new Subcat)

Runoff = 47.73 cfs @ 12.05 hrs, Volume= 2.914 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	180,807	70	Woods, Good, HSG C
	103,518	74	>75% Grass cover, Good, HSG C
*	13,610	98	Paved
*	7,390	74	Porous Pavement
*	11,400	74	Fairway/Tee/Green, Good, HSG C
	316,725	73	Weighted Average
	303,115		95.70% Pervious Area
	13,610		4.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	72	0.0278	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
4.2	28	0.0714	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
3.2	549	0.3320	2.88		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.3	649	Total			

Summary for Subcatchment 310S: Existing Wooded Area

Runoff = 29.88 cfs @ 11.97 hrs, Volume= 1.412 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	107,476	70	Woods, Good, HSG C
*	7,355	98	Paved
	39,560	74	>75% Grass cover, Good, HSG C
*	2,820	74	Porous Pavement
	157,211	72	Weighted Average
	149,856		95.32% Pervious Area
	7,355		4.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.2500	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.7	434	0.1240	10.89	32.66	**Trap/Vee/Rect Channel Flow, ex. vegetated ditch** Bot.W=2.00' D=1.00' Z= 1.0 '/' Top.W=4.00' n= 0.035 Earth, dense weeds
4.1	474	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 311S: Existing Wooded Area

Runoff = 44.02 cfs @ 12.07 hrs, Volume= 2.806 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	103,137	74	>75% Grass cover, Good, HSG C
*	2,085	98	Paved
	205,167	70	Woods, Good, HSG C
*	2,000	74	Porous Pavement
	312,389	72	Weighted Average
	310,304		99.33% Pervious Area
	2,085		0.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0500	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.1	12	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.8	737	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	930	0.1180	9.10	47.75	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.050 Earth, cobble bottom, clean sides
14.7	1,779	Total			

Summary for Subcatchment 315S: Subcatchment 315

Runoff = 57.96 cfs @ 12.02 hrs, Volume= 3.184 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

Area (sf)	CN	Description
315,930	70	Woods, Good, HSG C
47,510	74	>75% Grass cover, Good, HSG C
363,440	71	Weighted Average
363,440		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.2200	0.23		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
2.9	482	0.3150	2.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.3	582	Total			

Summary for Subcatchment 316A: Existing By Maintenance Bldg.

Runoff = 4.85 cfs @ 11.97 hrs, Volume= 0.231 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
	17,032	70	Woods, Good, HSG C
*	2,919	98	Paved parking
	5,184	71	Meadow, non-grazed, HSG C
	25,135	73	Weighted Average
	22,216		88.39% Pervious Area
	2,919		11.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	100	0.4000	0.29		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.4	270	0.0800	11.83	29.57	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 0.5 '/' Top.W=3.00' n= 0.025 Earth, clean & winding
6.2	370	Total			

Summary for Subcatchment 316S: existing

Runoff = 74.91 cfs @ 11.99 hrs, Volume= 3.712 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 Year Rainfall=8.00"

	Area (sf)	CN	Description
*	5,340	98	Paved
	361,425	70	Woods, Good, HSG C
	33,106	74	>75% Grass cover, Good, HSG C
*	5,210	74	Porous Pavement
*	18,632	74	Fairway/Tee/Green, Good, HSG C
	423,713	71	Weighted Average
	418,373		98.74% Pervious Area
	5,340		1.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	77	0.3120	0.25		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
2.2	867	0.0280	6.71	35.25	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
7.4	944	Total			

Summary for Reach 1R: overland flow

Inflow Area = 9.767 ac, 36.32% Impervious, Inflow Depth = 5.96" for 100 Year event
Inflow = 93.57 cfs @ 11.97 hrs, Volume= 4.853 af
Outflow = 93.55 cfs @ 11.97 hrs, Volume= 4.853 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.32 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.94 fps, Avg. Travel Time= 0.4 min

Peak Storage= 569 cf @ 11.97 hrs
Average Depth at Peak Storage= 1.64'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 136.22 cfs

3.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 75.0' Slope= 0.1733 '/'
Inlet Invert= 1,963.00', Outlet Invert= 1,950.00'

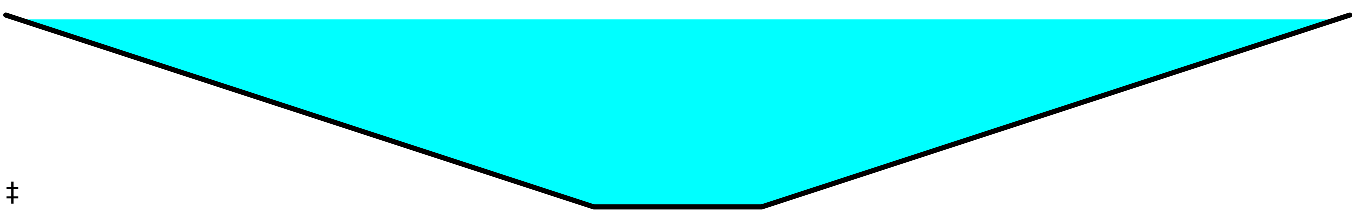
Summary for Reach 3: Rip Rap Channel

Inflow Area = 151.679 ac, 3.12% Impervious, Inflow Depth = 4.61" for 100 Year event
Inflow = 637.05 cfs @ 12.12 hrs, Volume= 58.316 af
Outflow = 637.04 cfs @ 12.12 hrs, Volume= 58.316 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 16.37 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.11 fps, Avg. Travel Time= 0.4 min

Peak Storage= 1,985 cf @ 12.12 hrs
Average Depth at Peak Storage= 1.47'
Bank-Full Depth= 1.50' Flow Area= 40.5 sf, Capacity= 672.04 cfs

6.00' x 1.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 14.0 '/' Top Width= 48.00'
Length= 51.0' Slope= 0.3922 '/'
Inlet Invert= 1,740.00', Outlet Invert= 1,720.00'



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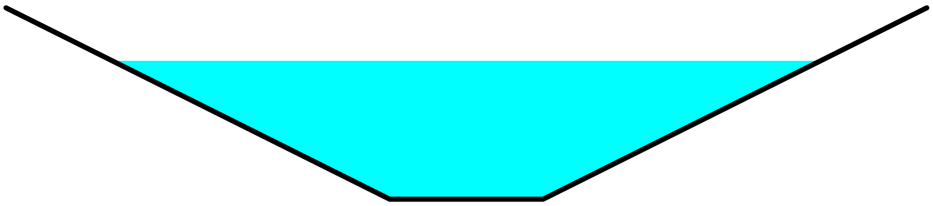
Summary for Reach 3R: Swale along RR Tracks

Inflow Area = 8.723 ac, 6.31% Impervious, Inflow Depth = 4.38" for 100 Year event
Inflow = 64.52 cfs @ 12.02 hrs, Volume= 3.182 af
Outflow = 60.84 cfs @ 12.06 hrs, Volume= 3.182 af, Atten= 6%, Lag= 1.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.00 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 1.74 fps, Avg. Travel Time= 10.0 min

Peak Storage= 10,602 cf @ 12.06 hrs
Average Depth at Peak Storage= 1.81'
Bank-Full Depth= 2.50' Flow Area= 17.5 sf, Capacity= 126.24 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 1,045.0' Slope= 0.0258 '/'
Inlet Invert= 1,768.00', Outlet Invert= 1,741.00'



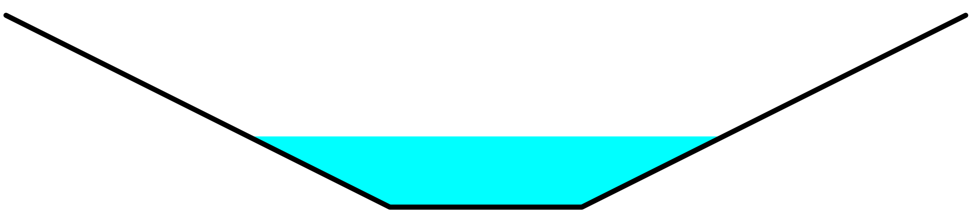
Summary for Reach 5: Stream Channel

Inflow Area = 36.096 ac, 1.88% Impervious, Inflow Depth = 4.60" for 100 Year event
Inflow = 162.89 cfs @ 12.05 hrs, Volume= 13.828 af
Outflow = 162.85 cfs @ 12.05 hrs, Volume= 13.828 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 15.91 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.49 fps, Avg. Travel Time= 0.6 min

Peak Storage= 1,637 cf @ 12.05 hrs
Average Depth at Peak Storage= 1.47'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 1,318.86 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 160.0' Slope= 0.3000 '/'
Inlet Invert= 2,060.00', Outlet Invert= 2,012.00'



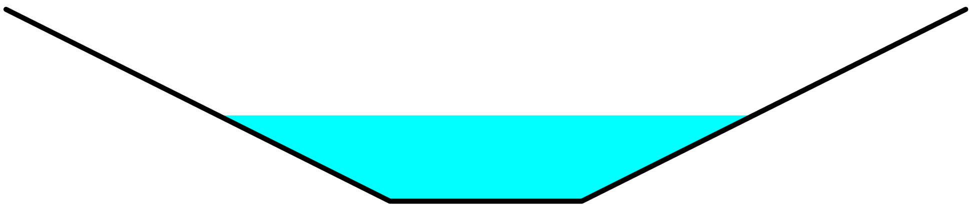
Summary for Reach 5A: Stream Channel

Inflow Area = 44.003 ac, 3.44% Impervious, Inflow Depth = 4.72" for 100 Year event
Inflow = 205.35 cfs @ 12.08 hrs, Volume= 17.312 af
Outflow = 205.23 cfs @ 12.08 hrs, Volume= 17.312 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 15.14 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.16 fps, Avg. Travel Time= 2.6 min

Peak Storage= 4,609 cf @ 12.08 hrs
Average Depth at Peak Storage= 1.79'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 1,130.92 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 340.0' Slope= 0.2206 '/'
Inlet Invert= 2,012.00', Outlet Invert= 1,937.00'



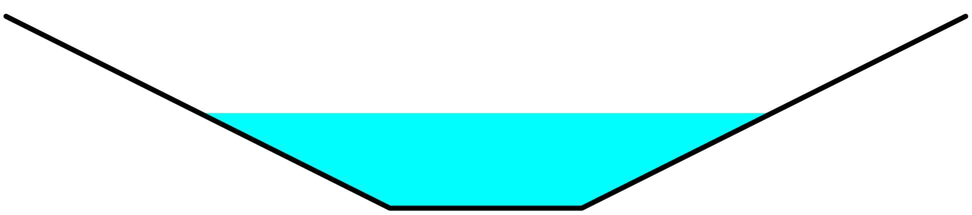
Summary for Reach 5B: Stream Channel

Inflow Area = 48.293 ac, 3.13% Impervious, Inflow Depth = 4.70" for 100 Year event
Inflow = 219.38 cfs @ 12.07 hrs, Volume= 18.908 af
Outflow = 219.37 cfs @ 12.07 hrs, Volume= 18.908 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 13.90 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.94 fps, Avg. Travel Time= 1.0 min

Peak Storage= 1,893 cf @ 12.07 hrs
Average Depth at Peak Storage= 1.98'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 983.02 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 120.0' Slope= 0.1667 '/'
Inlet Invert= 1,936.00', Outlet Invert= 1,916.00'



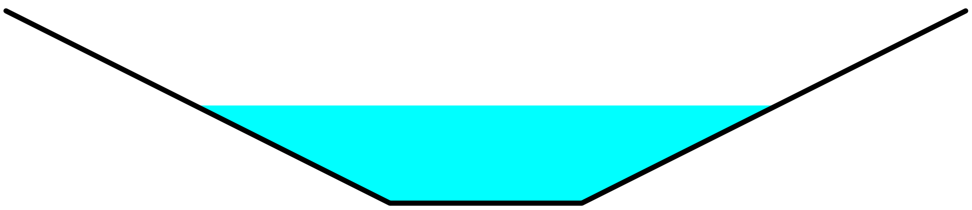
Summary for Reach 5C: Stream Channel

Inflow Area = 48.293 ac, 3.13% Impervious, Inflow Depth = 4.70" for 100 Year event
Inflow = 219.37 cfs @ 12.07 hrs, Volume= 18.908 af
Outflow = 219.26 cfs @ 12.07 hrs, Volume= 18.908 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 13.37 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.86 fps, Avg. Travel Time= 2.5 min

Peak Storage= 4,543 cf @ 12.07 hrs
Average Depth at Peak Storage= 2.03'
Bank-Full Depth= 4.00' Flow Area= 48.0 sf, Capacity= 932.02 cfs

4.00' x 4.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 277.0' Slope= 0.1498 '/'
Inlet Invert= 1,915.50', Outlet Invert= 1,874.00'



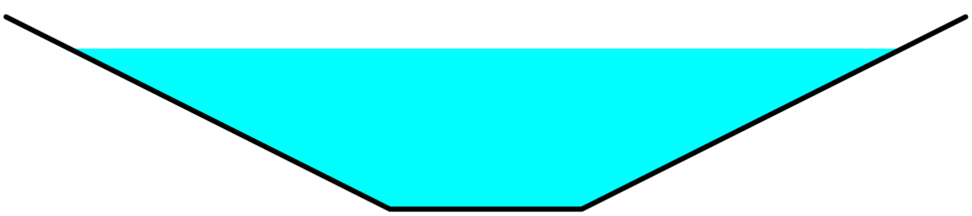
Summary for Reach 5D: Stream Channel

Inflow Area = 55.587 ac, 2.72% Impervious, Inflow Depth = 4.65" for 100 Year event
Inflow = 259.36 cfs @ 12.05 hrs, Volume= 21.561 af
Outflow = 259.21 cfs @ 12.06 hrs, Volume= 21.561 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 18.60 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.38 fps, Avg. Travel Time= 2.1 min

Peak Storage= 4,180 cf @ 12.06 hrs
Average Depth at Peak Storage= 2.09'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 385.96 cfs

2.50' x 2.50' deep channel, n= 0.040
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 300.0' Slope= 0.2017 '/'
Inlet Invert= 1,873.50', Outlet Invert= 1,813.00'



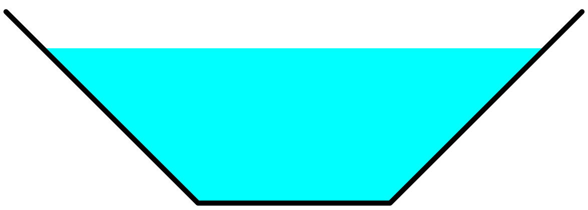
Summary for Reach 5R: roadside swale

Inflow Area = 4.919 ac, 12.29% Impervious, Inflow Depth = 4.71" for 100 Year event
Inflow = 41.13 cfs @ 12.00 hrs, Volume= 1.933 af
Outflow = 40.28 cfs @ 12.02 hrs, Volume= 1.933 af, Atten= 2%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.88 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 1.92 fps, Avg. Travel Time= 5.3 min

Peak Storage= 3,553 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.62'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 61.25 cfs

2.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 607.0' Slope= 0.0626 '/'
Inlet Invert= 2,122.00', Outlet Invert= 2,084.00'



Summary for Reach 6: (new Reach)

Inflow Area = 17.806 ac, 19.92% Impervious, Inflow Depth > 5.47" for 100 Year event
Inflow = 75.70 cfs @ 12.09 hrs, Volume= 8.111 af
Outflow = 75.67 cfs @ 12.10 hrs, Volume= 8.111 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.19 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.49 fps, Avg. Travel Time= 2.0 min

Peak Storage= 1,300 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.17'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 217.11 cfs

4.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 175.0' Slope= 0.1571 '/'
Inlet Invert= 1,937.50', Outlet Invert= 1,910.00'

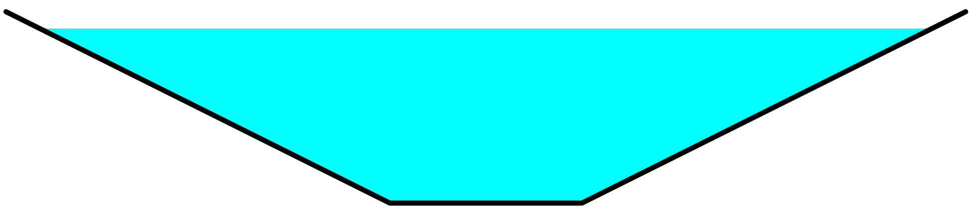
Summary for Reach 6R: Clean Swale

Inflow Area = 22.295 ac, 12.75% Impervious, Inflow Depth = 5.14" for 100 Year event
Inflow = 93.29 cfs @ 12.09 hrs, Volume= 9.556 af
Outflow = 93.21 cfs @ 12.10 hrs, Volume= 9.556 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.04 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.38 fps, Avg. Travel Time= 3.0 min

Peak Storage= 2,527 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.83'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 114.21 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 245.0' Slope= 0.0327 '/'
Inlet Invert= 1,838.00', Outlet Invert= 1,830.00'



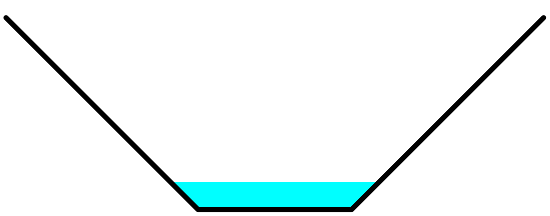
Summary for Reach 7B: Existing Ditch

Inflow Area = 0.577 ac, 11.61% Impervious, Inflow Depth = 4.81" for 100 Year event
Inflow = 4.85 cfs @ 11.97 hrs, Volume= 0.231 af
Outflow = 4.84 cfs @ 11.98 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.71 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.44 fps, Avg. Travel Time= 1.4 min

Peak Storage= 106 cf @ 11.98 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 2.50' Flow Area= 11.3 sf, Capacity= 172.60 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 125.0' Slope= 0.1280 '/'
Inlet Invert= 1,896.00', Outlet Invert= 1,880.00'



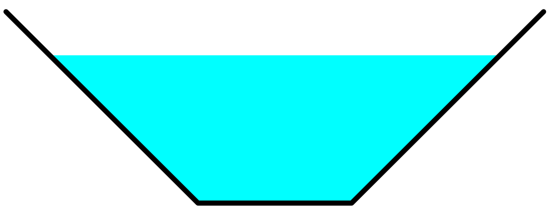
Summary for Reach 7C: Existing Ditch

Inflow Area = 12.538 ac, 1.97% Impervious, Inflow Depth = 4.57" for 100 Year event
Inflow = 81.56 cfs @ 12.03 hrs, Volume= 4.777 af
Outflow = 81.19 cfs @ 12.04 hrs, Volume= 4.777 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.69 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.17 fps, Avg. Travel Time= 2.8 min

Peak Storage= 4,025 cf @ 12.04 hrs
Average Depth at Peak Storage= 1.93'
Bank-Full Depth= 2.50' Flow Area= 11.3 sf, Capacity= 137.22 cfs

2.00' x 2.50' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 7.00'
Length= 530.0' Slope= 0.1264 '/'
Inlet Invert= 1,880.00', Outlet Invert= 1,813.00'



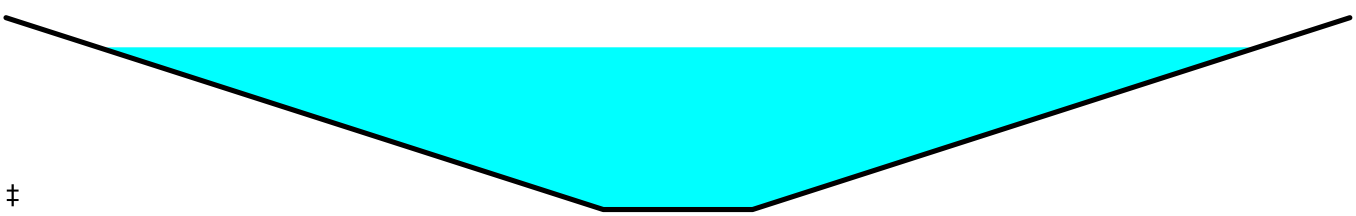
Summary for Reach 8: Stream Channel

Inflow Area = 71.735 ac, 2.69% Impervious, Inflow Depth = 4.64" for 100 Year event
Inflow = 357.03 cfs @ 12.04 hrs, Volume= 27.750 af
Outflow = 356.64 cfs @ 12.05 hrs, Volume= 27.750 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.63 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.26 fps, Avg. Travel Time= 3.2 min

Peak Storage= 9,075 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.85'
Bank-Full Depth= 1.00' Flow Area= 50.0 sf, Capacity= 532.84 cfs

10.00' x 1.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 40.0 '/' Top Width= 90.00'
Length= 245.0' Slope= 0.2816 '/'
Inlet Invert= 1,810.00', Outlet Invert= 1,741.00'



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Summary for Reach 9R: swale

Inflow Area = 0.723 ac, 0.00% Impervious, Inflow Depth = 4.58" for 100 Year event
Inflow = 5.49 cfs @ 11.99 hrs, Volume= 0.276 af
Outflow = 5.41 cfs @ 12.01 hrs, Volume= 0.276 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.74 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.89 fps, Avg. Travel Time= 5.2 min

Peak Storage= 405 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 1.00' Flow Area= 2.5 sf, Capacity= 11.64 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 0.5 '/' Top Width= 3.00'
Length= 280.0' Slope= 0.0179 '/'
Inlet Invert= 2,225.00', Outlet Invert= 2,220.00'

Summary for Reach 11R: Overland Flow

Inflow Area = 20.182 ac, 13.31% Impervious, Inflow Depth = 5.18" for 100 Year event
Inflow = 83.66 cfs @ 12.05 hrs, Volume= 8.710 af
Outflow = 80.55 cfs @ 12.09 hrs, Volume= 8.710 af, Atten= 4%, Lag= 2.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.38 fps, Min. Travel Time= 3.7 min
Avg. Velocity = 0.45 fps, Avg. Travel Time= 28.1 min

Peak Storage= 18,112 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 90.0 sf, Capacity= 635.50 cfs

75.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 105.00'
Length= 760.0' Slope= 0.1776 '/'
Inlet Invert= 1,973.00', Outlet Invert= 1,838.00'

‡

Summary for Reach 12R: Overland Flow

Inflow Area = 2.112 ac, 7.43% Impervious, Inflow Depth = 4.81" for 100 Year event
Inflow = 13.61 cfs @ 12.06 hrs, Volume= 0.847 af
Outflow = 12.77 cfs @ 12.10 hrs, Volume= 0.847 af, Atten= 6%, Lag= 2.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.40 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 16.9 min

Peak Storage= 3,124 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 312.77 cfs

30.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 15.0 '/' Top Width= 60.00'
Length= 588.0' Slope= 0.2058 '/'
Inlet Invert= 1,959.00', Outlet Invert= 1,838.00'

‡

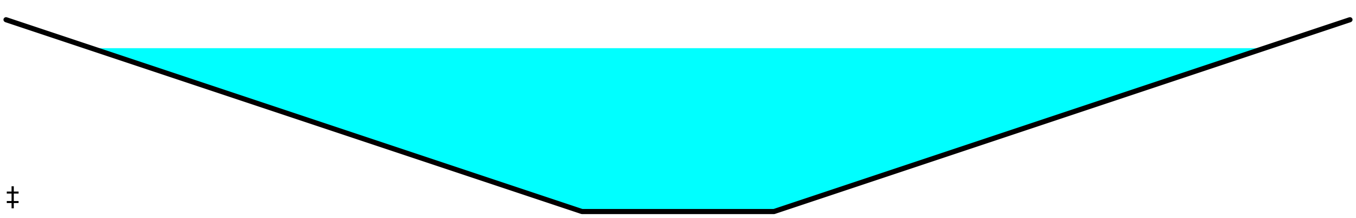
Summary for Reach 13: Channel at tracks

Inflow Area = 80.458 ac, 3.08% Impervious, Inflow Depth = 4.61" for 100 Year event
Inflow = 417.37 cfs @ 12.05 hrs, Volume= 30.932 af
Outflow = 416.27 cfs @ 12.06 hrs, Volume= 30.932 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.46 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.42 fps, Avg. Travel Time= 5.3 min

Peak Storage= 16,343 cf @ 12.06 hrs
Average Depth at Peak Storage= 2.55'
Bank-Full Depth= 3.00' Flow Area= 48.0 sf, Capacity= 604.81 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 4.0 '/' Top Width= 28.00'
Length= 450.0' Slope= 0.0444 '/'
Inlet Invert= 1,740.00', Outlet Invert= 1,720.00'



‡

Summary for Reach 14R: Swale

Inflow Area = 0.986 ac, 86.08% Impervious, Inflow Depth = 6.73" for 100 Year event
Inflow = 2.62 cfs @ 12.11 hrs, Volume= 0.553 af
Outflow = 2.60 cfs @ 12.15 hrs, Volume= 0.553 af, Atten= 0%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.21 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 1.97 fps, Avg. Travel Time= 5.6 min

Peak Storage= 333 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 305.76 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 665.0' Slope= 0.1323 '/'
Inlet Invert= 2,108.00', Outlet Invert= 2,020.00'

Summary for Reach 15R: Cobble Stream

Inflow Area = 34.486 ac, 9.68% Impervious, Inflow Depth = 4.98" for 100 Year event
Inflow = 158.92 cfs @ 12.10 hrs, Volume= 14.326 af
Outflow = 158.85 cfs @ 12.11 hrs, Volume= 14.326 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.89 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 2.6 min

Peak Storage= 3,019 cf @ 12.11 hrs
Average Depth at Peak Storage= 1.68'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 226.76 cfs

4.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 245.0' Slope= 0.1714 '/'
Inlet Invert= 1,830.00', Outlet Invert= 1,788.00'

Summary for Reach 40R: Swale

Inflow Area = 19.549 ac, 12.60% Impervious, Inflow Depth = 5.16" for 100 Year event
Inflow = 80.28 cfs @ 12.06 hrs, Volume= 8.401 af
Outflow = 80.28 cfs @ 12.06 hrs, Volume= 8.401 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.62 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.14 fps, Avg. Travel Time= 1.4 min

Peak Storage= 1,001 cf @ 12.06 hrs
Average Depth at Peak Storage= 1.75'
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 106.53 cfs

2.50' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 10.50'
Length= 95.0' Slope= 0.0411 '/'
Inlet Invert= 1,983.90', Outlet Invert= 1,980.00'

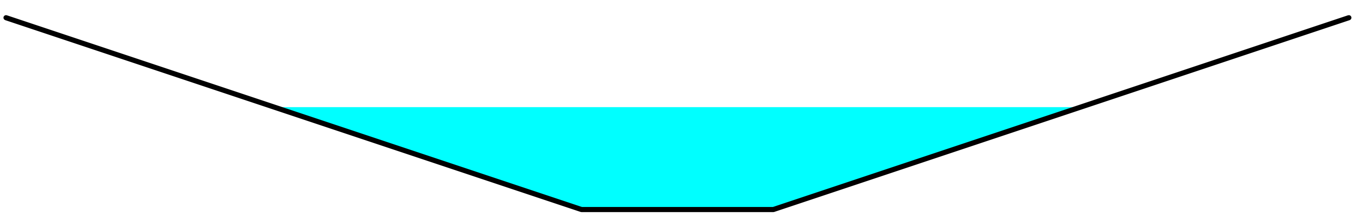
Summary for Reach 51R: Swale

Inflow Area = 5.219 ac, 37.72% Impervious, Inflow Depth = 5.85" for 100 Year event
Inflow = 39.99 cfs @ 11.98 hrs, Volume= 2.543 af
Outflow = 39.33 cfs @ 12.00 hrs, Volume= 2.543 af, Atten= 2%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.07 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 1.63 fps, Avg. Travel Time= 5.5 min

Peak Storage= 2,974 cf @ 12.00 hrs
Average Depth at Peak Storage= 1.07'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 162.52 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 535.0' Slope= 0.0374 '/'
Inlet Invert= 2,020.00', Outlet Invert= 2,000.00'



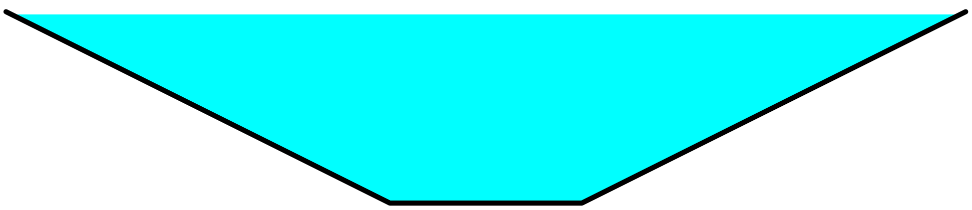
Summary for Reach 58a: Swale along RR Tracks

Inflow Area = 34.486 ac, 9.68% Impervious, Inflow Depth = 4.98" for 100 Year event
Inflow = 158.85 cfs @ 12.11 hrs, Volume= 14.326 af
Outflow = 158.17 cfs @ 12.12 hrs, Volume= 14.326 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.64 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.21 fps, Avg. Travel Time= 7.5 min

Peak Storage= 9,944 cf @ 12.12 hrs
Average Depth at Peak Storage= 2.46'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 163.26 cfs

2.50' x 2.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 2.0 '/' Top Width= 12.50'
Length= 543.0' Slope= 0.0276 '/'
Inlet Invert= 1,788.00', Outlet Invert= 1,773.00'



Summary for Reach 63R: OVERLAND

Inflow Area = 2.621 ac, 30.94% Impervious, Inflow Depth = 5.79" for 100 Year event
Inflow = 23.92 cfs @ 11.98 hrs, Volume= 1.264 af
Outflow = 23.91 cfs @ 11.98 hrs, Volume= 1.264 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.60 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.08 fps, Avg. Travel Time= 1.0 min

Peak Storage= 314 cf @ 11.98 hrs
Average Depth at Peak Storage= 0.46'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 448.14 cfs

5.00' x 2.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 1.0 '/' Top Width= 10.00'
Length= 126.0' Slope= 0.3595 '/'
Inlet Invert= 2,069.90', Outlet Invert= 2,024.60'

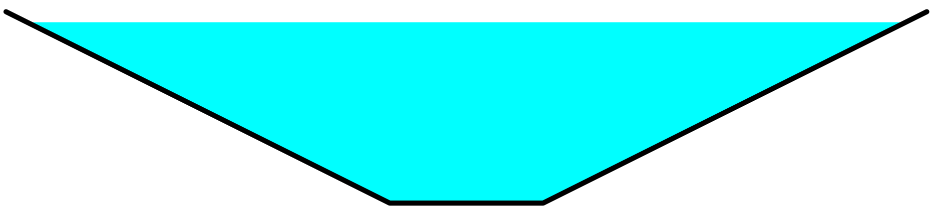
Summary for Reach 64R: Swale

Inflow Area = 7.908 ac, 10.53% Impervious, Inflow Depth = 5.29" for 100 Year event
Inflow = 47.19 cfs @ 12.08 hrs, Volume= 3.484 af
Outflow = 46.31 cfs @ 12.10 hrs, Volume= 3.484 af, Atten= 2%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.92 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.50 fps, Avg. Travel Time= 7.4 min

Peak Storage= 3,527 cf @ 12.10 hrs
Average Depth at Peak Storage= 2.36'
Bank-Full Depth= 2.50' Flow Area= 17.5 sf, Capacity= 52.71 cfs

2.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 222.0' Slope= 0.0045 '/'
Inlet Invert= 2,016.50', Outlet Invert= 2,015.50'



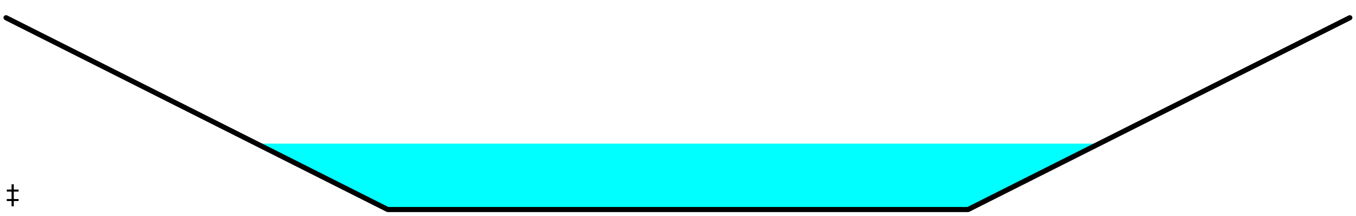
Summary for Reach 69R: Wetland Flow

Inflow Area = 3.450 ac, 0.00% Impervious, Inflow Depth = 4.93" for 100 Year event
Inflow = 27.85 cfs @ 11.99 hrs, Volume= 1.416 af
Outflow = 24.06 cfs @ 12.04 hrs, Volume= 1.416 af, Atten= 14%, Lag= 2.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.50 fps, Min. Travel Time= 5.4 min
Avg. Velocity = 0.31 fps, Avg. Travel Time= 26.1 min

Peak Storage= 7,798 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 0.50' Flow Area= 63.0 sf, Capacity= 172.83 cfs

76.00' x 0.50' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 100.0 '/' Top Width= 176.00'
Length= 487.0' Slope= 0.0657 '/'
Inlet Invert= 2,098.00', Outlet Invert= 2,066.00'



‡

Summary for Reach 197: Stream Channel

Inflow Area = 143.335 ac, 3.30% Impervious, Inflow Depth = 4.62" for 100 Year event
Inflow = 605.63 cfs @ 12.13 hrs, Volume= 55.132 af
Outflow = 605.29 cfs @ 12.14 hrs, Volume= 55.132 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 16.10 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.80 fps, Avg. Travel Time= 3.6 min

Peak Storage= 22,523 cf @ 12.14 hrs
Average Depth at Peak Storage= 1.48'
Bank-Full Depth= 6.00' Flow Area= 342.0 sf, Capacity= 12,139.60 cfs

15.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 7.0 '/' Top Width= 99.00'
Length= 599.0' Slope= 0.2763 '/'
Inlet Invert= 1,909.50', Outlet Invert= 1,744.00'

‡

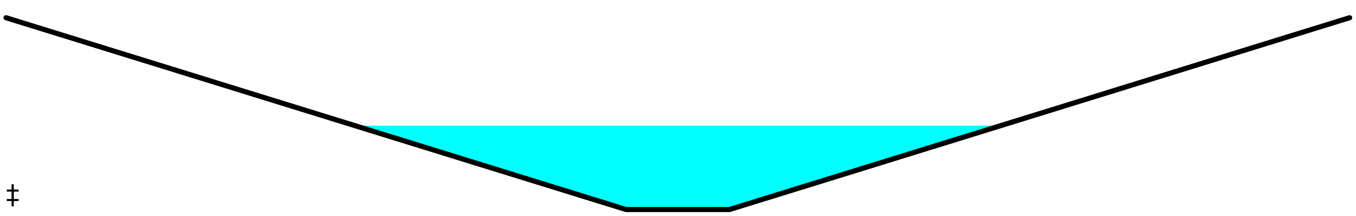
Summary for Reach 197A: Stream Channel

Inflow Area = 118.559 ac, 1.00% Impervious, Inflow Depth = 4.50" for 100 Year event
Inflow = 519.11 cfs @ 12.14 hrs, Volume= 44.442 af
Outflow = 518.53 cfs @ 12.15 hrs, Volume= 44.442 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 13.65 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 4.92 fps, Avg. Travel Time= 2.0 min

Peak Storage= 22,828 cf @ 12.15 hrs
Average Depth at Peak Storage= 2.62'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 3,783.36 cfs

4.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 601.0' Slope= 0.1248 '/'
Inlet Invert= 1,985.00', Outlet Invert= 1,910.00'



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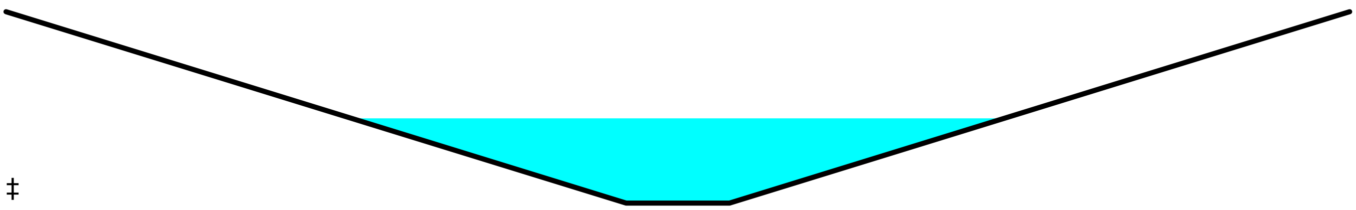
Summary for Reach 197B: Stream Channel

Inflow Area = 110.322 ac, 1.07% Impervious, Inflow Depth = 4.49" for 100 Year event
Inflow = 500.80 cfs @ 12.15 hrs, Volume= 41.273 af
Outflow = 500.62 cfs @ 12.15 hrs, Volume= 41.273 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.87 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.62 fps, Avg. Travel Time= 0.9 min

Peak Storage= 9,802 cf @ 12.15 hrs
Average Depth at Peak Storage= 2.66'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 3,537.94 cfs

4.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 252.0' Slope= 0.1091 '/'
Inlet Invert= 2,013.00', Outlet Invert= 1,985.50'



‡

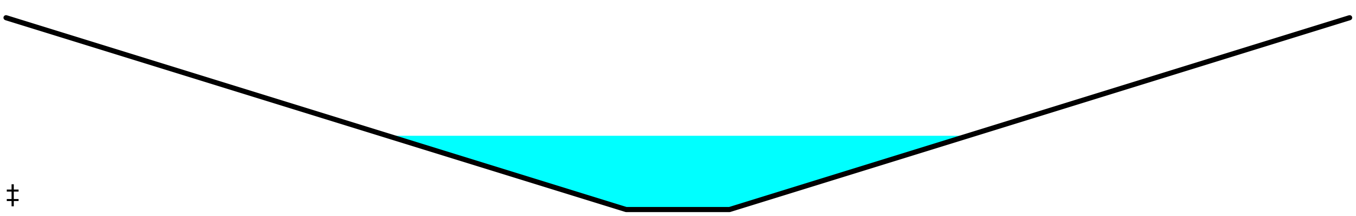
Summary for Reach 197C: Stream Channel

Inflow Area = 95.895 ac, 1.05% Impervious, Inflow Depth = 4.51" for 100 Year event
Inflow = 433.85 cfs @ 12.15 hrs, Volume= 36.002 af
Outflow = 433.46 cfs @ 12.16 hrs, Volume= 36.002 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 14.22 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 5.10 fps, Avg. Travel Time= 1.4 min

Peak Storage= 12,987 cf @ 12.16 hrs
Average Depth at Peak Storage= 2.31'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 4,247.34 cfs

4.00' x 6.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 426.0' Slope= 0.1573 '/'
Inlet Invert= 2,080.00', Outlet Invert= 2,013.00'



‡

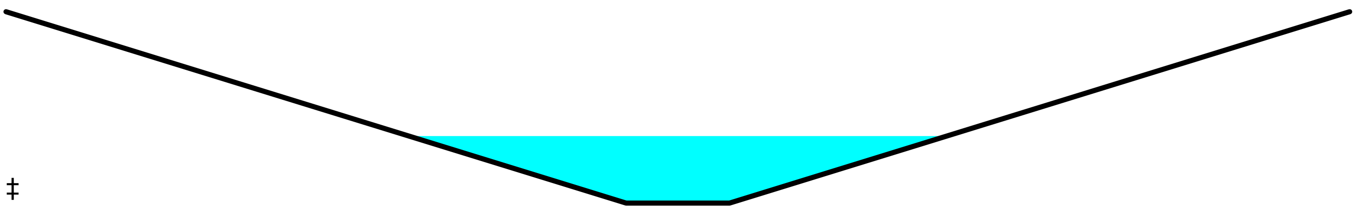
Summary for Reach 198: Stream Channel

Inflow Area = 88.624 ac, 0.78% Impervious, Inflow Depth = 4.48" for 100 Year event
Inflow = 403.69 cfs @ 12.17 hrs, Volume= 33.087 af
Outflow = 403.40 cfs @ 12.17 hrs, Volume= 33.087 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 15.47 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 5.63 fps, Avg. Travel Time= 1.2 min

Peak Storage= 10,871 cf @ 12.17 hrs
Average Depth at Peak Storage= 2.10'
Bank-Full Depth= 6.00' Flow Area= 168.0 sf, Capacity= 4,877.81 cfs

4.00' x 6.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 4.0 '/' Top Width= 52.00'
Length= 417.0' Slope= 0.2074 '/'
Inlet Invert= 2,168.00', Outlet Invert= 2,081.50'



‡

Summary for Reach 199: Overland Flow

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 4.58" for 100 Year event
Inflow = 59.05 cfs @ 12.15 hrs, Volume= 4.661 af
Outflow = 58.85 cfs @ 12.16 hrs, Volume= 4.661 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.02 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 2.9 min

Peak Storage= 2,928 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 0.50' Flow Area= 50.0 sf, Capacity= 451.81 cfs

50.00' x 0.50' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 100.0 '/' Top Width= 150.00'
Length= 250.0' Slope= 0.2560 '/'
Inlet Invert= 2,232.00', Outlet Invert= 2,168.00'

‡

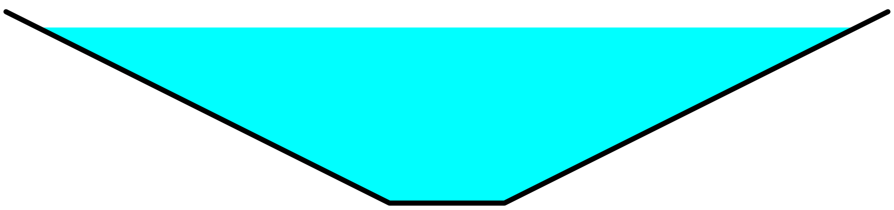
Summary for Reach 295: Roadside Channel

Inflow Area = 26.882 ac, 2.53% Impervious, Inflow Depth = 4.53" for 100 Year event
Inflow = 114.64 cfs @ 12.16 hrs, Volume= 10.157 af
Outflow = 114.58 cfs @ 12.17 hrs, Volume= 10.157 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.21 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.73 fps, Avg. Travel Time= 1.7 min

Peak Storage= 3,907 cf @ 12.17 hrs
Average Depth at Peak Storage= 2.29'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 140.40 cfs

1.50' x 2.50' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 11.50'
Length= 280.0' Slope= 0.0607 '/'
Inlet Invert= 2,083.00', Outlet Invert= 2,066.00'



Summary for Reach 296: Wetland Flow

Inflow Area = 21.963 ac, 0.34% Impervious, Inflow Depth = 4.49" for 100 Year event
Inflow = 102.68 cfs @ 12.17 hrs, Volume= 8.224 af
Outflow = 101.49 cfs @ 12.19 hrs, Volume= 8.224 af, Atten= 1%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.52 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.98 fps, Avg. Travel Time= 7.3 min

Peak Storage= 12,296 cf @ 12.19 hrs
Average Depth at Peak Storage= 1.29'
Bank-Full Depth= 2.00' Flow Area= 56.0 sf, Capacity= 251.85 cfs

12.00' x 2.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 8.0 '/' Top Width= 44.00'
Length= 427.0' Slope= 0.0328 '/'
Inlet Invert= 2,098.00', Outlet Invert= 2,084.00'

‡

Summary for Reach 297: Overland Flow

Inflow Area = 17.082 ac, 0.44% Impervious, Inflow Depth = 4.47" for 100 Year event
Inflow = 79.71 cfs @ 12.17 hrs, Volume= 6.362 af
Outflow = 79.67 cfs @ 12.17 hrs, Volume= 6.362 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.43 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.24 fps, Avg. Travel Time= 1.4 min

Peak Storage= 1,843 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 0.50' Flow Area= 27.5 sf, Capacity= 358.18 cfs

30.00' x 0.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 50.0 '/' Top Width= 80.00'
Length= 195.0' Slope= 0.2872 '/'
Inlet Invert= 2,170.00', Outlet Invert= 2,114.00'

‡

Summary for Reach 298: Wetland Flow

Inflow Area = 17.082 ac, 0.44% Impervious, Inflow Depth = 4.47" for 100 Year event
Inflow = 81.02 cfs @ 12.14 hrs, Volume= 6.362 af
Outflow = 79.71 cfs @ 12.17 hrs, Volume= 6.362 af, Atten= 2%, Lag= 1.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.54 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 0.63 fps, Avg. Travel Time= 10.8 min

Peak Storage= 12,791 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 150.0 sf, Capacity= 802.14 cfs

100.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 50.0 '/' Top Width= 200.00'
Length= 408.0' Slope= 0.0931 '/'
Inlet Invert= 2,208.00', Outlet Invert= 2,170.00'

‡

Summary for Reach 299: Overland Flow

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 4.46" for 100 Year event
Inflow = 79.00 cfs @ 12.14 hrs, Volume= 6.086 af
Outflow = 79.00 cfs @ 12.14 hrs, Volume= 6.086 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.56 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.32 fps, Avg. Travel Time= 1.0 min

Peak Storage= 1,626 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 130.57 cfs

10.00' x 0.50' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 50.0 '/' Top Width= 60.00'
Length= 135.0' Slope= 0.3259 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,208.00'

‡

Summary for Reach O3: Overland Flow

Inflow = 18.33 cfs @ 12.00 hrs, Volume= 0.249 af
Outflow = 18.14 cfs @ 12.01 hrs, Volume= 0.249 af, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.75 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 3.2 min

Peak Storage= 861 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 0.25' Flow Area= 13.8 sf, Capacity= 78.90 cfs

30.00' x 0.25' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 100.0 '/' Top Width= 80.00'
Length= 178.0' Slope= 0.1404 '/'
Inlet Invert= 1,838.00', Outlet Invert= 1,813.00'

‡

Summary for Reach O4: Swale

Inflow = 18.14 cfs @ 12.01 hrs, Volume= 0.249 af
Outflow = 17.92 cfs @ 12.02 hrs, Volume= 0.249 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.82 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.39 fps, Avg. Travel Time= 3.4 min

Peak Storage= 880 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.84'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 59.96 cfs

2.00' x 1.50' deep channel, n= 0.033 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 286.0' Slope= 0.0385 '/'
Inlet Invert= 1,810.00', Outlet Invert= 1,799.00'

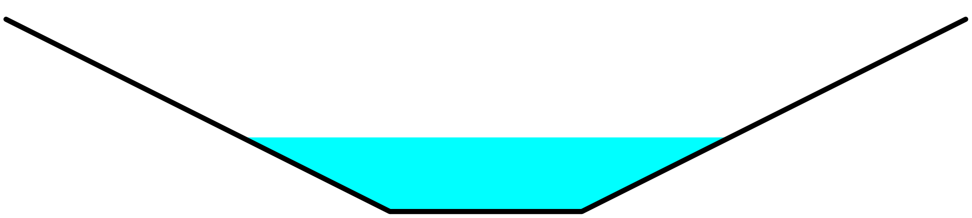
Summary for Reach X1: Swale

Inflow Area = 2.495 ac, 0.00% Impervious, Inflow Depth = 4.05" for 100 Year event
Inflow = 20.76 cfs @ 11.99 hrs, Volume= 0.843 af
Outflow = 20.71 cfs @ 12.00 hrs, Volume= 0.843 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.59 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.14 fps, Avg. Travel Time= 1.6 min

Peak Storage= 546 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.77'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 153.60 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 200.0' Slope= 0.1050 '/'
Inlet Invert= 1,794.00', Outlet Invert= 1,773.00'



Summary for Pond 1P: Catch Basin/Culvert

Inflow Area = 1.239 ac, 57.09% Impervious, Inflow Depth = 6.57" for 100 Year event
Inflow = 11.79 cfs @ 12.01 hrs, Volume= 0.678 af
Outflow = 11.79 cfs @ 12.01 hrs, Volume= 0.678 af, Atten= 0%, Lag= 0.0 min
Primary = 11.79 cfs @ 12.01 hrs, Volume= 0.678 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,981.32' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,980.00'	**36.0" Round Culvert** L= 200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,980.00' / 1,964.00' S= 0.0800 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=11.77 cfs @ 12.01 hrs HW=1,981.32' TW=1,964.56' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 11.77 cfs @ 3.92 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 2P: Catch Basin

Inflow Area = 8.528 ac, 33.30% Impervious, Inflow Depth = 5.87" for 100 Year event
Inflow = 82.54 cfs @ 11.97 hrs, Volume= 4.174 af
Outflow = 82.54 cfs @ 11.97 hrs, Volume= 4.174 af, Atten= 0%, Lag= 0.0 min
Primary = 82.54 cfs @ 11.97 hrs, Volume= 4.174 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,002.42' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,996.00'	**36.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,996.00' / 1,995.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=82.52 cfs @ 11.97 hrs HW=2,002.42' TW=1,964.64' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 75.47 cfs @ 10.68 fps)
—**2=Orifice/Grate** (Weir Controls 7.05 cfs @ 2.11 fps)

Summary for Pond 2R: 48" CMP Culvert

Inflow Area = 151.679 ac, 3.12% Impervious, Inflow Depth = 4.61" for 100 Year event
Inflow = 637.05 cfs @ 12.12 hrs, Volume= 58.316 af
Outflow = 637.05 cfs @ 12.12 hrs, Volume= 58.316 af, Atten= 0%, Lag= 0.0 min
Primary = 637.05 cfs @ 12.12 hrs, Volume= 58.316 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 1,747.54' @ 12.12 hrs
Flood Elev= 1,749.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,741.00'	**48.0" Round Culvert** L= 30.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,741.00' / 1,740.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 12.57 sf
#2	Primary	1,746.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=636.92 cfs @ 12.12 hrs HW=1,747.54' TW=1,741.47' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 128.98 cfs @ 10.26 fps)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 507.94 cfs @ 3.29 fps)

Summary for Pond 3P: Catch Basin

Inflow Area = 0.284 ac, 69.74% Impervious, Inflow Depth = 6.93" for 100 Year event
Inflow = 3.09 cfs @ 11.97 hrs, Volume= 0.164 af
Outflow = 3.09 cfs @ 11.97 hrs, Volume= 0.164 af, Atten= 0%, Lag= 0.0 min
Primary = 3.09 cfs @ 11.97 hrs, Volume= 0.164 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,010.02' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,009.19'	**18.0" Round Culvert** L= 304.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,009.19' / 1,997.21' S= 0.0394 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,014.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.09 cfs @ 11.97 hrs HW=2,010.02' TW=2,002.41' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 3.09 cfs @ 3.09 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 4P: Catch Basin

Inflow Area = 0.103 ac,100.00% Impervious, Inflow Depth = 7.76" for 100 Year event
Inflow = 1.18 cfs @ 11.97 hrs, Volume= 0.067 af
Outflow = 1.18 cfs @ 11.97 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min
Primary = 1.18 cfs @ 11.97 hrs, Volume= 0.067 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,010.28' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,009.71'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,009.71' / 2,009.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

#2	Primary	2,014.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.18 cfs @ 11.97 hrs HW=2,010.28' TW=2,010.02' (Dynamic Tailwater)
—1=**Culvert** (Outlet Controls 1.18 cfs @ 2.85 fps)
—2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 4R: 38" Arch Culv.

Inflow Area = 36.096 ac, 1.88% Impervious, Inflow Depth = 4.60" for 100 Year event
Inflow = 162.89 cfs @ 12.05 hrs, Volume= 13.828 af
Outflow = 162.89 cfs @ 12.05 hrs, Volume= 13.828 af, Atten= 0%, Lag= 0.0 min
Primary = 162.89 cfs @ 12.05 hrs, Volume= 13.828 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,070.27' @ 12.05 hrs
Flood Elev= 2,071.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,064.00'	**57.0" W x 38.0" H, R=28.9"/88.3" Arch CMP_Arch_1/2 57x38** L= 70.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,064.00' / 2,063.00' S= 0.0143 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 11.89 sf
#2	Primary	2,070.00'	**100.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=162.81 cfs @ 12.05 hrs HW=2,070.27' TW=2,061.47' (Dynamic Tailwater)
—1=**CMP_Arch_1/2 57x38** (Inlet Controls 125.11 cfs @ 10.52 fps)
—2=**Broad-Crested Rectangular Weir** (Weir Controls 37.70 cfs @ 1.40 fps)

Summary for Pond 7A: CULVERT

Inflow Area = 0.577 ac, 11.61% Impervious, Inflow Depth = 4.81" for 100 Year event
Inflow = 4.85 cfs @ 11.97 hrs, Volume= 0.231 af
Outflow = 4.85 cfs @ 11.97 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.0 min
Primary = 4.85 cfs @ 11.97 hrs, Volume= 0.231 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,901.08' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,900.00'	**18.0" Round Culvert** L= 115.0' Ke= 0.500 Inlet / Outlet Invert= 1,900.00' / 1,898.00' S= 0.0174 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.84 cfs @ 11.97 hrs HW=1,901.08' TW=1,896.36' (Dynamic Tailwater)
—1=**Culvert** (Inlet Controls 4.84 cfs @ 3.54 fps)

Summary for Pond 7P: Catch Basin

Inflow Area = 0.262 ac, 70.83% Impervious, Inflow Depth = 6.92" for 100 Year event
Inflow = 2.88 cfs @ 11.97 hrs, Volume= 0.151 af
Outflow = 2.88 cfs @ 11.97 hrs, Volume= 0.151 af, Atten= 0%, Lag= 0.0 min
Primary = 2.88 cfs @ 11.97 hrs, Volume= 0.151 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,070.29' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,065.43'	**12.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,065.43' / 2,065.25' S= 0.0164 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,070.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.55 cfs @ 11.97 hrs HW=2,070.28' TW=2,070.25' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 0.65 cfs @ 0.83 fps)
└─**2=Orifice/Grate** (Weir Controls 1.90 cfs @ 0.84 fps)

Summary for Pond 7R: (2) 43" Arch Culverts

Inflow Area = 71.735 ac, 2.69% Impervious, Inflow Depth = 4.64" for 100 Year event
Inflow = 357.03 cfs @ 12.04 hrs, Volume= 27.750 af
Outflow = 357.03 cfs @ 12.04 hrs, Volume= 27.750 af, Atten= 0%, Lag= 0.0 min
Primary = 357.03 cfs @ 12.04 hrs, Volume= 27.750 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,816.94' @ 12.04 hrs
Flood Elev= 1,818.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,811.50'	**64.0" W x 43.0" H, R=32.5"/99.3" Arch CMP_Arch_1/2 64x43 X 2.00** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,811.50' / 1,810.50' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 15.13 sf
#2	Primary	1,816.50'	**100.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=356.69 cfs @ 12.04 hrs HW=1,816.94' TW=1,810.84' (Dynamic Tailwater)
├─**1=CMP_Arch_1/2 64x43** (Inlet Controls 281.20 cfs @ 9.29 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 75.48 cfs @ 1.71 fps)

Summary for Pond 8R: 36" hdpe

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 0.00' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,830.00'	**36.0" Round Culvert** L= 245.0' Ke= 0.500 Inlet / Outlet Invert= 1,830.00' / 1,788.00' S= 0.1714 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' TW=1,788.00' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 9P: Catch Basin

Inflow Area = 0.167 ac, 83.21% Impervious, Inflow Depth = 7.30" for 100 Year event
Inflow = 1.87 cfs @ 11.97 hrs, Volume= 0.102 af
Outflow = 1.87 cfs @ 11.97 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 1.87 cfs @ 11.97 hrs, Volume= 0.102 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,038.34' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,035.40'	**24.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,035.40' / 2,034.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,039.40'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.87 cfs @ 11.97 hrs HW=2,038.33' TW=2,038.32' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 1.87 cfs @ 0.60 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 10P: Catch Basin

Inflow Area = 0.088 ac, 94.81% Impervious, Inflow Depth = 7.64" for 100 Year event
Inflow = 1.01 cfs @ 11.97 hrs, Volume= 0.056 af
Outflow = 1.01 cfs @ 11.97 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Primary = 1.01 cfs @ 11.97 hrs, Volume= 0.056 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,038.36' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,036.00'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,036.00' / 2,035.50' S= 0.0278 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,040.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 11.97 hrs HW=2,038.27' TW=2,038.33' (Dynamic Tailwater)
├─**1=Culvert** (Controls 0.00 cfs)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 10R: 14" and 16" HDPE Culverts

Inflow Area = 20.182 ac, 13.31% Impervious, Inflow Depth = 5.18" for 100 Year event
Inflow = 83.66 cfs @ 12.05 hrs, Volume= 8.710 af
Outflow = 83.66 cfs @ 12.05 hrs, Volume= 8.710 af, Atten= 0%, Lag= 0.0 min
Primary = 83.66 cfs @ 12.05 hrs, Volume= 8.710 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,977.65' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,975.00'	**14.0" Round 14" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.07 sf
#2	Primary	1,975.00'	**16.0" Round 16" Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,975.00' / 1,974.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.40 sf
#3	Primary	1,977.00'	**50.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=83.64 cfs @ 12.05 hrs HW=1,977.65' TW=1,973.29' (Dynamic Tailwater)
├─**1=14" Culvert** (Inlet Controls 5.84 cfs @ 5.46 fps)
├─**2=16" Culvert** (Inlet Controls 7.47 cfs @ 5.35 fps)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 70.32 cfs @ 2.16 fps)

Summary for Pond 11P: Catch Basin

Inflow Area = 7.752 ac, 29.04% Impervious, Inflow Depth = 5.75" for 100 Year event
Inflow = 73.95 cfs @ 11.97 hrs, Volume= 3.715 af
Outflow = 73.95 cfs @ 11.97 hrs, Volume= 3.715 af, Atten= 0%, Lag= 0.0 min
Primary = 73.95 cfs @ 11.97 hrs, Volume= 3.715 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,056.22' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,050.00'	**36.0" Round Culvert** L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,050.00' / 2,040.74' S= 0.1029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,060.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=73.92 cfs @ 11.97 hrs HW=2,056.22' TW=2,038.33' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 73.92 cfs @ 10.46 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 12P: Catch Basin

Inflow Area = 0.067 ac, 88.78% Impervious, Inflow Depth = 7.40" for 100 Year event
Inflow = 0.76 cfs @ 11.97 hrs, Volume= 0.042 af
Outflow = 0.76 cfs @ 11.97 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 11.97 hrs, Volume= 0.042 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,056.26' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,055.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,055.00' / 2,054.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,060.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.76 cfs @ 11.97 hrs HW=2,056.24' TW=2,056.20' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 0.76 cfs @ 0.97 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 13P: Manhole

Inflow Area = 7.315 ac, 26.40% Impervious, Inflow Depth = 5.68" for 100 Year event
Inflow = 69.13 cfs @ 11.97 hrs, Volume= 3.460 af
Outflow = 69.13 cfs @ 11.97 hrs, Volume= 3.460 af, Atten= 0%, Lag= 0.0 min
Primary = 69.13 cfs @ 11.97 hrs, Volume= 3.460 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,069.51' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,063.88'	**36.0" Round Culvert** L= 137.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,063.88' / 2,055.10' S= 0.0641 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,072.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=69.09 cfs @ 11.97 hrs HW=2,069.50' TW=2,056.22' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 69.09 cfs @ 9.77 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 13R: 16" CMP Culvert

Inflow Area = 2.112 ac, 7.43% Impervious, Inflow Depth = 4.81" for 100 Year event
Inflow = 13.61 cfs @ 12.06 hrs, Volume= 0.847 af
Outflow = 13.61 cfs @ 12.06 hrs, Volume= 0.847 af, Atten= 0%, Lag= 0.0 min
Primary = 13.61 cfs @ 12.06 hrs, Volume= 0.847 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,967.22' @ 12.06 hrs
Flood Elev= 1,972.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,960.00'	**16.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 1,960.00' / 1,959.00' S= 0.0250 '/' Cc= 0.900 n= 0.025, Flow Area= 1.40 sf

Primary OutFlow Max=13.60 cfs @ 12.06 hrs HW=1,967.21' TW=1,959.16' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 13.60 cfs @ 9.74 fps)

Summary for Pond 15P: Catch Basin

Inflow Area = 0.609 ac, 66.13% Impervious, Inflow Depth = 6.79" for 100 Year event
Inflow = 6.64 cfs @ 11.97 hrs, Volume= 0.345 af
Outflow = 6.64 cfs @ 11.97 hrs, Volume= 0.345 af, Atten= 0%, Lag= 0.0 min
Primary = 6.64 cfs @ 11.97 hrs, Volume= 0.345 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,070.25' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,065.43'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,065.43' / 2,065.25' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,070.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.63 cfs @ 11.97 hrs HW=2,070.25' TW=2,069.49' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 3.31 cfs @ 4.21 fps)
└─**2=Orifice/Grate** (Weir Controls 3.32 cfs @ 1.64 fps)

Summary for Pond 16P: Catch Basin

Inflow Area = 0.168 ac, 93.81% Impervious, Inflow Depth = 7.64" for 100 Year event
Inflow = 1.91 cfs @ 11.97 hrs, Volume= 0.107 af
Outflow = 1.91 cfs @ 11.97 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.0 min
Primary = 1.91 cfs @ 11.97 hrs, Volume= 0.107 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,084.44' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,080.59'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,080.59' / 2,080.41' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,084.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.91 cfs @ 11.97 hrs HW=2,084.41' TW=2,084.16' (Dynamic Tailwater)
↑1=**Culvert** (Inlet Controls 1.91 cfs @ 2.43 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 17P: Catch Basin

Inflow Area = 6.537 ac, 21.88% Impervious, Inflow Depth = 5.55" for 100 Year event
Inflow = 60.70 cfs @ 11.97 hrs, Volume= 3.023 af
Outflow = 60.70 cfs @ 11.97 hrs, Volume= 3.023 af, Atten= 0%, Lag= 0.0 min
Primary = 60.70 cfs @ 11.97 hrs, Volume= 3.023 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,084.18' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,079.50'	**36.0" Round Culvert** L= 213.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,079.50' / 2,067.47' S= 0.0565 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,084.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=60.64 cfs @ 11.97 hrs HW=2,084.17' TW=2,069.50' (Dynamic Tailwater)
↑1=**Culvert** (Inlet Controls 60.64 cfs @ 8.58 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 18P: Catch Basin

Inflow Area = 0.696 ac, 90.27% Impervious, Inflow Depth = 7.52" for 100 Year event
Inflow = 7.91 cfs @ 11.97 hrs, Volume= 0.436 af
Outflow = 7.91 cfs @ 11.97 hrs, Volume= 0.436 af, Atten= 0%, Lag= 0.0 min
Primary = 7.91 cfs @ 11.97 hrs, Volume= 0.436 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,096.58' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,092.21'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,092.21' / 2,092.03' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,096.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=7.89 cfs @ 11.97 hrs HW=2,096.58' TW=2,094.78' (Dynamic Tailwater)
↑1=**Culvert** (Inlet Controls 5.07 cfs @ 6.45 fps)
└2=**Orifice/Grate** (Orifice Controls 2.83 cfs @ 2.44 fps)

Summary for Pond 19P: Catch Basin

Inflow Area = 5.536 ac, 21.72% Impervious, Inflow Depth = 5.54" for 100 Year event
Inflow = 51.58 cfs @ 11.97 hrs, Volume= 2.558 af
Outflow = 51.58 cfs @ 11.97 hrs, Volume= 2.558 af, Atten= 0%, Lag= 0.0 min
Primary = 51.58 cfs @ 11.97 hrs, Volume= 2.558 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,094.80' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,091.00'	**36.0" Round Culvert** L= 250.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,091.00' / 2,077.47' S= 0.0541 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,096.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=51.56 cfs @ 11.97 hrs HW=2,094.80' TW=2,084.18' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 51.56 cfs @ 7.29 fps)
2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 20: CB20

Inflow Area = 3.450 ac, 0.00% Impervious, Inflow Depth = 4.93" for 100 Year event
Inflow = 27.85 cfs @ 11.99 hrs, Volume= 1.416 af
Outflow = 27.85 cfs @ 11.99 hrs, Volume= 1.416 af, Atten= 0%, Lag= 0.0 min
Primary = 27.85 cfs @ 11.99 hrs, Volume= 1.416 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,112.09' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,104.00'	**18.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,104.00' / 2,094.00' S= 0.1538 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,112.00'	**75.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=27.82 cfs @ 11.99 hrs HW=2,112.09' TW=2,098.16' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 23.05 cfs @ 13.05 fps)
2=**Broad-Crested Rectangular Weir** (Weir Controls 4.76 cfs @ 0.70 fps)

Summary for Pond 20P: Manhole

Inflow Area = 4.748 ac, 10.68% Impervious, Inflow Depth = 5.23" for 100 Year event
Inflow = 42.67 cfs @ 11.97 hrs, Volume= 2.068 af
Outflow = 42.67 cfs @ 11.97 hrs, Volume= 2.068 af, Atten= 0%, Lag= 0.0 min
Primary = 42.67 cfs @ 11.97 hrs, Volume= 2.068 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,098.91' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,094.40'	**30.0" Round Culvert** L= 107.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,094.40' / 2,091.00' S= 0.0318 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=42.64 cfs @ 11.97 hrs HW=2,098.90' TW=2,094.79' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 42.64 cfs @ 8.69 fps)

Summary for Pond 21P: Catch Basin

Inflow Area = 0.702 ac, 72.23% Impervious, Inflow Depth = 6.95" for 100 Year event
Inflow = 7.74 cfs @ 11.97 hrs, Volume= 0.407 af
Outflow = 7.74 cfs @ 11.97 hrs, Volume= 0.407 af, Atten= 0%, Lag= 0.0 min
Primary = 7.74 cfs @ 11.97 hrs, Volume= 0.407 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,114.34' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,113.21'	**30.0" Round Culvert** L= 138.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,113.21' / 2,098.84' S= 0.1041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,118.50'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=7.73 cfs @ 11.97 hrs HW=2,114.33' TW=2,098.89' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 7.73 cfs @ 3.61 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 22P: Catch Basin

Inflow Area = 0.427 ac, 71.34% Impervious, Inflow Depth = 6.92" for 100 Year event
Inflow = 4.70 cfs @ 11.97 hrs, Volume= 0.246 af
Outflow = 4.70 cfs @ 11.97 hrs, Volume= 0.246 af, Atten= 0%, Lag= 0.0 min
Primary = 4.70 cfs @ 11.97 hrs, Volume= 0.246 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,115.86' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,114.64'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,114.64' / 2,114.46' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,118.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.69 cfs @ 11.97 hrs HW=2,115.85' TW=2,114.33' (Dynamic Tailwater)
├─**1=Culvert** (Barrel Controls 4.69 cfs @ 4.18 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 23A: Catch Basin

Inflow Area = 0.733 ac, 0.00% Impervious, Inflow Depth = 4.93" for 100 Year event
Inflow = 6.15 cfs @ 11.98 hrs, Volume= 0.301 af
Outflow = 6.15 cfs @ 11.98 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.0 min
Primary = 6.15 cfs @ 11.98 hrs, Volume= 0.301 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,093.86' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,092.59'	**18.0" Round Culvert** L= 198.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,092.59' / 2,083.20' S= 0.0474 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,097.50'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=6.15 cfs @ 11.98 hrs HW=2,093.86' TW=2,084.68' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.15 cfs @ 3.84 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 23B: Catch Basin

Inflow Area = 0.733 ac, 0.00% Impervious, Inflow Depth = 4.93" for 100 Year event
Inflow = 6.15 cfs @ 11.98 hrs, Volume= 0.301 af
Outflow = 6.15 cfs @ 11.98 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.0 min
Primary = 6.15 cfs @ 11.98 hrs, Volume= 0.301 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,084.71' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,083.07'	**18.0" Round Culvert** L= 51.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,083.07' / 2,079.50' S= 0.0700 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,096.50'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=6.15 cfs @ 11.98 hrs HW=2,084.68' TW=2,084.13' (Dynamic Tailwater)
1=Culvert (Outlet Controls 6.15 cfs @ 4.03 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 24A: Catch Basin

Inflow Area = 4.046 ac, 0.00% Impervious, Inflow Depth = 4.93" for 100 Year event
Inflow = 34.94 cfs @ 11.97 hrs, Volume= 1.661 af
Outflow = 34.94 cfs @ 11.97 hrs, Volume= 1.661 af, Atten= 0%, Lag= 0.0 min
Primary = 34.94 cfs @ 11.97 hrs, Volume= 1.661 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,102.57' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,098.00'	**30.0" Round Culvert** L= 149.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,098.00' / 2,096.51' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,102.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=34.68 cfs @ 11.97 hrs HW=2,102.56' TW=2,100.67' (Dynamic Tailwater)
1=Culvert (Outlet Controls 31.97 cfs @ 6.51 fps)
2=Orifice/Grate (Orifice Controls 2.71 cfs @ 2.41 fps)

Summary for Pond 24B: Catch Basin

Inflow Area = 4.046 ac, 0.00% Impervious, Inflow Depth = 4.93" for 100 Year event
Inflow = 34.94 cfs @ 11.97 hrs, Volume= 1.661 af
Outflow = 34.94 cfs @ 11.97 hrs, Volume= 1.661 af, Atten= 0%, Lag= 0.0 min
Primary = 34.94 cfs @ 11.97 hrs, Volume= 1.661 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,100.67' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,095.00'	**30.0" Round Culvert** L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,095.00' / 2,094.51' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,100.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=34.89 cfs @ 11.97 hrs HW=2,100.67' TW=2,098.90' (Dynamic Tailwater)
1=Culvert (Inlet Controls 31.40 cfs @ 6.40 fps)
2=Orifice/Grate (Orifice Controls 3.49 cfs @ 2.62 fps)

Summary for Pond 25P: Catch Basin

Inflow Area = 0.170 ac, 74.09% Impervious, Inflow Depth = 7.04" for 100 Year event
Inflow = 1.88 cfs @ 11.97 hrs, Volume= 0.100 af
Outflow = 1.88 cfs @ 11.97 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min
Primary = 1.88 cfs @ 11.97 hrs, Volume= 0.100 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,123.45' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,122.88'	**24.0" Round Culvert** L= 270.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,122.88' / 2,113.50' S= 0.0347 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,135.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.88 cfs @ 11.97 hrs HW=2,123.45' TW=2,114.33' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.88 cfs @ 2.56 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 26P: Catch Basin

Inflow Area =	0.084 ac,	75.17% Impervious,	Inflow Depth = 7.04"	for 100 Year event
Inflow =	0.93 cfs @	11.97 hrs, Volume=	0.049 af	
Outflow =	0.93 cfs @	11.97 hrs, Volume=	0.049 af, Atten= 0%, Lag= 0.0 min	
Primary =	0.93 cfs @	11.97 hrs, Volume=	0.049 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,131.60' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,131.05'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,131.05' / 2,130.87' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,135.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.93 cfs @ 11.97 hrs HW=2,131.60' TW=2,123.45' (Dynamic Tailwater)
—**1=Culvert** (Barrel Controls 0.93 cfs @ 3.06 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 27P: Catch Basin

Inflow Area =	0.815 ac,	74.18% Impervious,	Inflow Depth = 7.02"	for 100 Year event
Inflow =	9.03 cfs @	11.97 hrs, Volume=	0.477 af	
Outflow =	9.03 cfs @	11.97 hrs, Volume=	0.477 af, Atten= 0%, Lag= 0.0 min	
Primary =	9.03 cfs @	11.97 hrs, Volume=	0.477 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,149.23' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,147.75'	**21.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,147.75' / 2,145.50' S= 0.0450 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf
#2	Primary	2,152.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.01 cfs @ 11.97 hrs HW=2,149.23' TW=2,144.77' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 9.01 cfs @ 4.15 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 28P: Catch Basin

Inflow Area =	0.093 ac,	76.11% Impervious,	Inflow Depth = 7.04"	for 100 Year event
Inflow =	1.03 cfs @	11.97 hrs, Volume=	0.055 af	
Outflow =	1.03 cfs @	11.97 hrs, Volume=	0.055 af, Atten= 0%, Lag= 0.0 min	
Primary =	1.03 cfs @	11.97 hrs, Volume=	0.055 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,149.31' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,148.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,148.00' / 2,147.75' S= 0.0139 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,152.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.03 cfs @ 11.97 hrs HW=2,149.31' TW=2,149.23' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.03 cfs @ 1.31 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 29P: Manhole

Inflow Area = 0.631 ac, 73.96% Impervious, Inflow Depth = 7.01" for 100 Year event
Inflow = 6.98 cfs @ 11.97 hrs, Volume= 0.368 af
Outflow = 6.98 cfs @ 11.97 hrs, Volume= 0.368 af, Atten= 0%, Lag= 0.0 min
Primary = 6.98 cfs @ 11.97 hrs, Volume= 0.368 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,163.25' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,162.00'	**21.0" Round Culvert** L= 125.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,162.00' / 2,147.75' S= 0.1140 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

Primary OutFlow Max=6.97 cfs @ 11.97 hrs HW=2,163.25' TW=2,149.23' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.97 cfs @ 3.80 fps)

Summary for Pond 30P: Catch Basin

Inflow Area = 0.631 ac, 73.96% Impervious, Inflow Depth = 7.01" for 100 Year event
Inflow = 6.98 cfs @ 11.97 hrs, Volume= 0.368 af
Outflow = 6.98 cfs @ 11.97 hrs, Volume= 0.368 af, Atten= 0%, Lag= 0.0 min
Primary = 6.98 cfs @ 11.97 hrs, Volume= 0.368 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,175.41' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,174.16'	**21.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,174.16' / 2,162.64' S= 0.1239 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf
#2	Primary	2,181.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.97 cfs @ 11.97 hrs HW=2,175.41' TW=2,163.25' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.97 cfs @ 3.80 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 31P: Catch Basin

Inflow Area = 0.067 ac, 74.25% Impervious, Inflow Depth = 7.04" for 100 Year event
Inflow = 0.74 cfs @ 11.97 hrs, Volume= 0.039 af
Outflow = 0.74 cfs @ 11.97 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min
Primary = 0.74 cfs @ 11.97 hrs, Volume= 0.039 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,177.66' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,177.18'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,177.18' / 2,177.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,181.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.74 cfs @ 11.97 hrs HW=2,177.66' TW=2,175.41' (Dynamic Tailwater)
├**1=Culvert** (Barrel Controls 0.74 cfs @ 2.91 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 32P: Catch Basin

Inflow Area = 0.501 ac, 73.93% Impervious, Inflow Depth = 7.00" for 100 Year event
Inflow = 5.55 cfs @ 11.97 hrs, Volume= 0.293 af
Outflow = 5.55 cfs @ 11.97 hrs, Volume= 0.293 af, Atten= 0%, Lag= 0.0 min
Primary = 5.55 cfs @ 11.97 hrs, Volume= 0.293 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,196.52' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,195.44'	**21.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,195.44' / 2,174.62' S= 0.1190 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf
#2	Primary	2,202.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.54 cfs @ 11.97 hrs HW=2,196.52' TW=2,175.41' (Dynamic Tailwater)
├**1=Culvert** (Inlet Controls 5.54 cfs @ 3.54 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 33P: Catch Basin

Inflow Area = 0.086 ac, 74.41% Impervious, Inflow Depth = 7.04" for 100 Year event
Inflow = 0.95 cfs @ 11.97 hrs, Volume= 0.050 af
Outflow = 0.95 cfs @ 11.97 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Primary = 0.95 cfs @ 11.97 hrs, Volume= 0.050 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,198.50' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,198.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,198.00' / 2,197.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,202.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.95 cfs @ 11.97 hrs HW=2,198.50' TW=2,196.52' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.95 cfs @ 2.41 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 34P: Manhole

Inflow Area = 0.334 ac, 73.86% Impervious, Inflow Depth = 6.98" for 100 Year event
Inflow = 3.68 cfs @ 11.97 hrs, Volume= 0.194 af
Outflow = 3.68 cfs @ 11.97 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min
Primary = 3.68 cfs @ 11.97 hrs, Volume= 0.194 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,209.92' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,209.00'	**18.0" Round Culvert** L= 90.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,209.00' / 2,195.92' S= 0.1449 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.68 cfs @ 11.97 hrs HW=2,209.92' TW=2,196.52' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.68 cfs @ 3.26 fps)

Summary for Pond 35P: Catch Basin

Inflow Area = 0.334 ac, 73.86% Impervious, Inflow Depth = 6.98" for 100 Year event
Inflow = 3.68 cfs @ 11.97 hrs, Volume= 0.194 af
Outflow = 3.68 cfs @ 11.97 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min
Primary = 3.68 cfs @ 11.97 hrs, Volume= 0.194 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,225.92' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,225.00'	**18.0" Round Culvert** L= 121.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,225.00' / 2,209.50' S= 0.1277 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,229.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.68 cfs @ 11.97 hrs HW=2,225.92' TW=2,209.92' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.68 cfs @ 3.26 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 36P: Catch Basin

Inflow Area = 0.074 ac, 74.91% Impervious, Inflow Depth = 7.04" for 100 Year event
Inflow = 0.82 cfs @ 11.97 hrs, Volume= 0.043 af
Outflow = 0.82 cfs @ 11.97 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min
Primary = 0.82 cfs @ 11.97 hrs, Volume= 0.043 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,226.10' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,225.50'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,225.50' / 2,225.14' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,229.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.81 cfs @ 11.97 hrs HW=2,226.10' TW=2,225.92' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.81 cfs @ 2.37 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 37P: Catch Basin

Inflow Area = 0.184 ac, 73.98% Impervious, Inflow Depth = 6.98" for 100 Year event
Inflow = 2.03 cfs @ 11.97 hrs, Volume= 0.107 af
Outflow = 2.03 cfs @ 11.97 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.0 min
Primary = 2.03 cfs @ 11.97 hrs, Volume= 0.107 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,249.15' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,248.50'	**18.0" Round Culvert** L= 200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,248.50' / 2,225.10' S= 0.1170 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,253.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.03 cfs @ 11.97 hrs HW=2,249.15' TW=2,225.92' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.03 cfs @ 2.75 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 38P: Catch Basin

Inflow Area = 0.082 ac, 76.49% Impervious, Inflow Depth = 7.04" for 100 Year event
Inflow = 0.91 cfs @ 11.97 hrs, Volume= 0.048 af
Outflow = 0.91 cfs @ 11.97 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min
Primary = 0.91 cfs @ 11.97 hrs, Volume= 0.048 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,249.52' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,249.00'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,249.00' / 2,248.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,253.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.91 cfs @ 11.97 hrs HW=2,249.51' TW=2,249.15' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.91 cfs @ 3.24 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 43P: 12" HDPE Pipe

Inflow Area = 0.089 ac, 77.76% Impervious, Inflow Depth = 7.16" for 100 Year event
Inflow = 0.99 cfs @ 11.97 hrs, Volume= 0.053 af
Outflow = 0.99 cfs @ 11.97 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.0 min
Primary = 0.99 cfs @ 11.97 hrs, Volume= 0.053 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,998.31' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,997.50'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,997.50' / 1,997.40' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.99 cfs @ 11.97 hrs HW=1,998.30' TW=1,998.18' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.99 cfs @ 1.99 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 44P: 12" HDPE Pipe

Inflow Area = 0.172 ac, 79.89% Impervious, Inflow Depth = 7.22" for 100 Year event
Inflow = 1.93 cfs @ 11.97 hrs, Volume= 0.104 af
Outflow = 1.93 cfs @ 11.97 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min
Primary = 1.93 cfs @ 11.97 hrs, Volume= 0.104 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,998.18' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,997.40'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,997.40' / 1,997.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	2,002.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.93 cfs @ 11.97 hrs HW=1,998.18' TW=1,992.14' (Dynamic Tailwater)
—**1=Culvert** (Barrel Controls 1.93 cfs @ 4.05 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 50P: 30" HDPE Pipe

Inflow Area = 4.233 ac, 26.46% Impervious, Inflow Depth = 5.64" for 100 Year event
Inflow = 38.55 cfs @ 11.98 hrs, Volume= 1.989 af
Outflow = 38.55 cfs @ 11.98 hrs, Volume= 1.989 af, Atten= 0%, Lag= 0.0 min
Primary = 38.55 cfs @ 11.98 hrs, Volume= 1.989 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,027.91' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,024.00'	**30.0" Round Culvert** L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,024.00' / 2,020.00' S= 0.0769 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,030.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=38.54 cfs @ 11.98 hrs HW=2,027.91' TW=2,021.06' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 38.54 cfs @ 7.85 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 51P: 18" HDPE Pipe

Inflow Area = 0.406 ac, 20.38% Impervious, Inflow Depth = 5.51" for 100 Year event
Inflow = 3.84 cfs @ 11.97 hrs, Volume= 0.186 af
Outflow = 3.84 cfs @ 11.97 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.0 min
Primary = 3.84 cfs @ 11.97 hrs, Volume= 0.186 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,028.11' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,026.00'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,026.00' / 2,025.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,030.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.84 cfs @ 11.97 hrs HW=2,028.07' TW=2,027.87' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 3.84 cfs @ 2.17 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 52P: 30" HDPE Pipe

Inflow Area = 3.737 ac, 25.34% Impervious, Inflow Depth = 5.60" for 100 Year event
Inflow = 33.73 cfs @ 11.98 hrs, Volume= 1.745 af
Outflow = 33.73 cfs @ 11.98 hrs, Volume= 1.745 af, Atten= 0%, Lag= 0.0 min
Primary = 33.73 cfs @ 11.98 hrs, Volume= 1.745 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,061.79' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,058.50'	**30.0" Round Culvert** L= 301.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,058.50' / 2,026.00' S= 0.1080 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,064.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=33.69 cfs @ 11.98 hrs HW=2,061.78' TW=2,027.90' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 33.69 cfs @ 6.86 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 53P: 18" HDPE Pipe

Inflow Area = 0.442 ac, 18.13% Impervious, Inflow Depth = 5.39" for 100 Year event
Inflow = 4.11 cfs @ 11.97 hrs, Volume= 0.199 af
Outflow = 4.11 cfs @ 11.97 hrs, Volume= 0.199 af, Atten= 0%, Lag= 0.0 min
Primary = 4.11 cfs @ 11.97 hrs, Volume= 0.199 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,062.02' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,060.50'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,060.50' / 2,060.14' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,064.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.11 cfs @ 11.97 hrs HW=2,061.98' TW=2,061.75' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 4.11 cfs @ 2.33 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 54P: 24" HDPE Pipe

Inflow Area = 2.551 ac, 26.12% Impervious, Inflow Depth = 5.62" for 100 Year event
Inflow = 22.67 cfs @ 11.99 hrs, Volume= 1.194 af
Outflow = 22.67 cfs @ 11.99 hrs, Volume= 1.194 af, Atten= 0%, Lag= 0.0 min
Primary = 22.67 cfs @ 11.99 hrs, Volume= 1.194 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,104.25' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,101.00'	**24.0" Round Culvert** L= 201.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,101.00' / 2,059.50' S= 0.2065 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,106.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=22.66 cfs @ 11.99 hrs HW=2,104.24' TW=2,061.77' (Dynamic Tailwater)
1=Culvert (Inlet Controls 22.66 cfs @ 7.21 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 55P: 18" HDPE Pipe

Inflow Area = 0.351 ac, 74.82% Impervious, Inflow Depth = 7.04" for 100 Year event
Inflow = 3.89 cfs @ 11.97 hrs, Volume= 0.206 af
Outflow = 3.89 cfs @ 11.97 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.0 min
Primary = 3.89 cfs @ 11.97 hrs, Volume= 0.206 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,104.44' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,102.00'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,102.00' / 2,101.00' S= 0.0208 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,106.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.88 cfs @ 11.97 hrs HW=2,104.32' TW=2,104.11' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.88 cfs @ 2.20 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 56P: 18" HDPE Pipe

Inflow Area = 0.526 ac, 31.48% Impervious, Inflow Depth = 5.79" for 100 Year event
Inflow = 5.11 cfs @ 11.97 hrs, Volume= 0.254 af
Outflow = 5.11 cfs @ 11.97 hrs, Volume= 0.254 af, Atten= 0%, Lag= 0.0 min
Primary = 5.11 cfs @ 11.97 hrs, Volume= 0.254 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,082.62' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,081.50'	**18.0" Round Culvert** L= 299.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,081.50' / 2,060.00' S= 0.0719 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,086.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.11 cfs @ 11.97 hrs HW=2,082.62' TW=2,061.74' (Dynamic Tailwater)
↑1=**Culvert** (Inlet Controls 5.11 cfs @ 3.61 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 57P: 18" HDPE Pipe

Inflow Area = 0.112 ac, 82.97% Impervious, Inflow Depth = 7.28" for 100 Year event
Inflow = 1.26 cfs @ 11.97 hrs, Volume= 0.068 af
Outflow = 1.26 cfs @ 11.97 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min
Primary = 1.26 cfs @ 11.97 hrs, Volume= 0.068 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,082.75' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,082.00'	**18.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,082.00' / 2,081.64' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	2,086.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.26 cfs @ 11.97 hrs HW=2,082.75' TW=2,082.62' (Dynamic Tailwater)
↑1=**Culvert** (Outlet Controls 1.26 cfs @ 2.08 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 62P: Catch Basin

Inflow Area = 1.479 ac, 0.00% Impervious, Inflow Depth = 4.93" for 100 Year event
Inflow = 11.87 cfs @ 12.00 hrs, Volume= 0.607 af
Outflow = 11.87 cfs @ 12.00 hrs, Volume= 0.607 af, Atten= 0%, Lag= 0.0 min
Primary = 11.87 cfs @ 12.00 hrs, Volume= 0.607 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,086.27' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,087.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	2,083.00'	**18.0" Round Culvert** L= 207.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,083.00' / 2,080.00' S= 0.0145 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=11.86 cfs @ 12.00 hrs HW=2,086.25' TW=2,082.55' (Dynamic Tailwater)
↑1=**Orifice/Grate** (Controls 0.00 cfs)
└2=**Culvert** (Outlet Controls 11.86 cfs @ 6.71 fps)

Summary for Pond 65A: Manhole

Inflow Area = 2.041 ac, 17.95% Impervious, Inflow Depth = 5.43" for 100 Year event
Inflow = 17.68 cfs @ 11.98 hrs, Volume= 0.924 af
Outflow = 17.68 cfs @ 11.98 hrs, Volume= 0.924 af, Atten= 0%, Lag= 0.0 min
Primary = 17.68 cfs @ 11.98 hrs, Volume= 0.924 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,081.23' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,079.40'	**30.0" Round Culvert** L= 125.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,079.40' / 2,070.00' S= 0.0752 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=17.64 cfs @ 11.98 hrs HW=2,081.22' TW=2,070.36' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 17.64 cfs @ 4.60 fps)

Summary for Pond 65P: Catch Basin

Inflow Area = 2.041 ac, 17.95% Impervious, Inflow Depth = 5.43" for 100 Year event
Inflow = 17.68 cfs @ 11.98 hrs, Volume= 0.924 af
Outflow = 17.68 cfs @ 11.98 hrs, Volume= 0.924 af, Atten= 0%, Lag= 0.0 min
Primary = 17.68 cfs @ 11.98 hrs, Volume= 0.924 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,082.59' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,079.95'	**24.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,079.95' / 2,079.50' S= 0.0069 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,096.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=17.64 cfs @ 11.98 hrs HW=2,082.58' TW=2,081.22' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 17.64 cfs @ 5.62 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 66R: (2) 24" culvert

Inflow = 9.60 cfs @ 12.01 hrs, Volume= 0.172 af
Outflow = 9.60 cfs @ 12.01 hrs, Volume= 0.172 af, Atten= 0%, Lag= 0.0 min
Primary = 9.60 cfs @ 12.01 hrs, Volume= 0.172 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,990.94' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,990.00'	**24.0" Round Culvert X 2.00** L= 75.0' CPP, end-section conforming to fill, Ke= 0.500

			Inlet / Outlet Invert= 1,990.00' / 1,984.00' S= 0.0800 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	1,992.50'	**40.0' long x 25.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.60 cfs @ 12.01 hrs HW=1,990.94' TW=1,985.59' (Dynamic Tailwater)
1=Culvert (Inlet Controls 9.60 cfs @ 3.30 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 81: 24" culvert

Inflow Area = 2.837 ac, 0.00% Impervious, Inflow Depth = 4.81" for 100 Year event
Inflow = 24.00 cfs @ 11.97 hrs, Volume= 1.137 af
Outflow = 24.00 cfs @ 11.97 hrs, Volume= 1.137 af, Atten= 0%, Lag= 0.0 min
Primary = 24.00 cfs @ 11.97 hrs, Volume= 1.137 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,016.08' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,013.00'	**24.0" Round Culvert**
			L= 350.0' CPP, end-section conforming to fill, Ke= 0.500
			Inlet / Outlet Invert= 2,013.00' / 1,983.90' S= 0.0831 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,016.00'	**40.0' long x 2.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50
			Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=23.97 cfs @ 11.97 hrs HW=2,016.08' TW=1,985.51' (Dynamic Tailwater)
1=Culvert (Inlet Controls 21.80 cfs @ 6.94 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 2.17 cfs @ 0.70 fps)

Summary for Pond 200: 36" Steel Culvert

Inflow Area = 76.410 ac, 0.43% Impervious, Inflow Depth = 4.46" for 100 Year event
Inflow = 344.98 cfs @ 12.17 hrs, Volume= 28.426 af
Outflow = 344.98 cfs @ 12.17 hrs, Volume= 28.426 af, Atten= 0%, Lag= 0.0 min
Primary = 344.98 cfs @ 12.17 hrs, Volume= 28.426 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,239.64' @ 12.17 hrs
Flood Elev= 2,248.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert**
			L= 50.0' CMP, end-section conforming to fill, Ke= 0.500
			Inlet / Outlet Invert= 2,234.00' / 2,230.00' S= 0.0800 '/' Cc= 0.900
			n= 0.025 Corrugated metal, Flow Area= 7.07 sf

Device	Routing	Invert	Outlet Devices
#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=344.81 cfs @ 12.17 hrs HW=2,239.64' TW=2,170.10' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 69.23 cfs @ 9.79 fps)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 275.58 cfs @ 3.37 fps)

Summary for Pond 201: 36" Steel Culvert

Inflow Area = 12.214 ac, 2.97% Impervious, Inflow Depth = 4.58" for 100 Year event
Inflow = 59.05 cfs @ 12.15 hrs, Volume= 4.661 af
Outflow = 59.05 cfs @ 12.15 hrs, Volume= 4.661 af, Atten= 0%, Lag= 0.0 min
Primary = 59.05 cfs @ 12.15 hrs, Volume= 4.661 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,238.11' @ 12.15 hrs
Flood Elev= 2,239.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,234.00'	**36.0" Round Culvert** L= 30.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 2,234.00' / 2,233.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Primary	2,238.00'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=59.02 cfs @ 12.15 hrs HW=2,238.11' TW=2,232.17' (Dynamic Tailwater)
—**1=Culvert** (Barrel Controls 54.25 cfs @ 7.67 fps)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 4.78 cfs @ 0.88 fps)

Summary for Pond 297A: culvert

Inflow Area = 21.963 ac, 0.34% Impervious, Inflow Depth = 4.49" for 100 Year event
Inflow = 102.68 cfs @ 12.17 hrs, Volume= 8.224 af
Outflow = 102.68 cfs @ 12.17 hrs, Volume= 8.224 af, Atten= 0%, Lag= 0.0 min
Primary = 102.68 cfs @ 12.17 hrs, Volume= 8.224 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,116.37' @ 12.17 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,112.00'	**36.0" Round Culvert** L= 93.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,112.00' / 2,099.00' S= 0.1398 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	2,116.00'	**85.0' long x 70.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=102.65 cfs @ 12.17 hrs HW=2,116.37' TW=2,099.28' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 50.88 cfs @ 7.20 fps)
└—**2=Broad-Crested Rectangular Weir** (Weir Controls 51.77 cfs @ 1.64 fps)

Summary for Pond 300R: 18" Steel Culvert

Inflow Area = 16.359 ac, 0.46% Impervious, Inflow Depth = 4.46" for 100 Year event
Inflow = 79.00 cfs @ 12.14 hrs, Volume= 6.086 af
Outflow = 79.00 cfs @ 12.14 hrs, Volume= 6.086 af, Atten= 0%, Lag= 0.0 min
Primary = 79.00 cfs @ 12.14 hrs, Volume= 6.086 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,259.39' @ 12.14 hrs
Flood Elev= 2,261.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,254.00'	**18.0" Round 18" Steel Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,254.00' / 2,253.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Primary	2,259.00'	**100.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=78.99 cfs @ 12.14 hrs HW=2,259.39' TW=2,252.40' (Dynamic Tailwater)
↑—**1=18" Steel Culvert** (Inlet Controls 14.46 cfs @ 8.18 fps)
└—**2=Broad-Crested Rectangular Weir** (Weir Controls 64.52 cfs @ 1.67 fps)

Summary for Pond B4: bioretention

Inflow Area = 4.919 ac, 12.29% Impervious, Inflow Depth = 5.27" for 100 Year event
Inflow = 44.45 cfs @ 11.97 hrs, Volume= 2.161 af
Outflow = 41.24 cfs @ 12.00 hrs, Volume= 2.161 af, Atten= 7%, Lag= 1.7 min
Discarded = 0.11 cfs @ 12.00 hrs, Volume= 0.229 af
Primary = 41.13 cfs @ 12.00 hrs, Volume= 1.933 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,144.81' @ 12.00 hrs Surf.Area= 9,581 sf Storage= 14,430 cf

Plug-Flow detention time= 69.2 min calculated for 2.161 af (100% of inflow)
Center-of-Mass det. time= 69.2 min (872.1 - 802.9)

Volume	Invert	Avail.Storage	Storage Description
#1	2,143.00'	16,265 cf	**surface storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,143.00	6,377	0	0
2,144.00	8,116	7,247	7,247
2,145.00	9,920	9,018	16,265

Device	Routing	Invert	Outlet Devices
#1	Primary	2,139.00'	**8.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,139.00' / 2,137.00' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Discarded	2,143.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	2,143.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	2,144.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.11 cfs @ 12.00 hrs HW=2,144.81' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=41.12 cfs @ 12.00 hrs HW=2,144.81' TW=2,123.60' (Dynamic Tailwater)
├─**1=Culvert** (Passes 1.92 cfs of 3.46 cfs potential flow)
│ └─**3=Orifice/Grate** (Orifice Controls 1.92 cfs @ 5.51 fps)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 39.19 cfs @ 2.41 fps)

Summary for Pond DP 7: Design Point 7

Inflow Area = 152.103 ac, 3.18% Impervious, Inflow Depth = 4.62" for 100 Year event
Inflow = 638.40 cfs @ 12.12 hrs, Volume= 58.502 af
Primary = 638.40 cfs @ 12.12 hrs, Volume= 58.502 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 8: Design Point 8

Inflow Area = 90.185 ac, 2.88% Impervious, Inflow Depth = 4.61" for 100 Year event
Inflow = 471.28 cfs @ 12.04 hrs, Volume= 34.643 af
Primary = 471.28 cfs @ 12.04 hrs, Volume= 34.643 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 9: Design Point 9

Inflow Area = 45.925 ac, 8.18% Impervious, Inflow Depth = 4.88" for 100 Year event
Inflow = 214.18 cfs @ 12.11 hrs, Volume= 18.667 af
Primary = 214.18 cfs @ 12.11 hrs, Volume= 18.667 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond H: Pond H

Inflow Area = 14.937 ac, 13.18% Impervious, Inflow Depth = 5.25" for 100 Year event
Inflow = 115.65 cfs @ 12.00 hrs, Volume= 6.532 af
Outflow = 61.82 cfs @ 12.10 hrs, Volume= 6.529 af, Atten= 47%, Lag= 6.1 min
Primary = 61.82 cfs @ 12.10 hrs, Volume= 6.529 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 1,996.00' Surf.Area= 4,665 sf Storage= 6,646 cf
Peak Elev= 2,002.93' @ 12.10 hrs Surf.Area= 20,823 sf Storage= 93,668 cf (87,022 cf above start)

Plug-Flow detention time= 307.5 min calculated for 6.377 af (98% of inflow)
Center-of-Mass det. time= 272.0 min (1,111.6 - 839.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,993.00'	95,049 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,993.00	385	0	0
1,994.00	1,192	789	789
1,996.00	4,665	5,857	6,646
1,997.00	6,868	5,767	12,412
1,998.00	9,300	8,084	20,496
2,000.00	13,640	22,940	43,436
2,002.00	18,315	31,955	75,391
2,003.00	21,000	19,658	95,049

Device	Routing	Invert	Outlet Devices
#1	Primary	1,995.00'	**24.0" Round Culvert** L= 335.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,995.00' / 1,983.90' S= 0.0331 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,996.00'	**2.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	1,999.10'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	2,002.00'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=61.78 cfs @ 12.10 hrs HW=2,002.93' TW=1,985.62' (Dynamic Tailwater)
1=**Culvert** (Passes 37.98 cfs of 39.83 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 0.27 cfs @ 12.60 fps)
3=**Orifice/Grate** (Orifice Controls 37.71 cfs @ 9.43 fps)
4=**Broad-Crested Rectangular Weir** (Weir Controls 23.80 cfs @ 2.55 fps)

Summary for Pond J: OPEN SWALE

Inflow Area = 1.775 ac, 27.88% Impervious, Inflow Depth = 5.69" for 100 Year event
Inflow = 16.69 cfs @ 11.97 hrs, Volume= 0.841 af
Outflow = 14.57 cfs @ 12.01 hrs, Volume= 0.841 af, Atten= 13%, Lag= 2.4 min
Discarded = 0.09 cfs @ 12.01 hrs, Volume= 0.107 af
Primary = 4.88 cfs @ 12.01 hrs, Volume= 0.562 af
Secondary = 9.60 cfs @ 12.01 hrs, Volume= 0.172 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,992.22' @ 12.01 hrs Surf.Area= 8,105 sf Storage= 8,606 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 61.6 min (848.5 - 786.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,986.50'	720 cf	**Stone Underdrain (Prismatic)** Listed below (Recalc) 1,800 cf Overall x 40.0% Voids
#2	1,987.50'	675 cf	**Filter Media (Prismatic)** Listed below (Recalc) 4,500 cf Overall x 15.0% Voids
#3	1,990.00'	8,500 cf	**Surface Storage (Prismatic)** Listed below (Recalc)
		9,895 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,986.50	1,800	0	0
1,987.50	1,800	1,800	1,800

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,987.50	1,800	0	0
1,990.00	1,800	4,500	4,500

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,990.00	1,800	0	0
1,991.00	3,200	2,500	2,500
1,992.50	4,800	6,000	8,500

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,986.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,989.50'	**8.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,989.50' / 1,984.00' S= 0.0786 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Secondary	1,991.50'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#4	Primary	1,992.00'	**10.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.09 cfs @ 12.01 hrs HW=1,992.22' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=4.87 cfs @ 12.01 hrs HW=1,992.22' TW=1,985.59' (Dynamic Tailwater)
├─**2=Culvert** (Inlet Controls 2.05 cfs @ 5.88 fps)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 2.82 cfs @ 1.27 fps)

Secondary OutFlow Max=9.60 cfs @ 12.01 hrs HW=1,992.22' TW=1,990.94' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 9.60 cfs @ 2.21 fps)

Summary for Pond K: P1

Inflow Area = 7.908 ac, 10.53% Impervious, Inflow Depth = 5.29" for 100 Year event
Inflow = 54.50 cfs @ 12.02 hrs, Volume= 3.485 af
Outflow = 47.19 cfs @ 12.08 hrs, Volume= 3.484 af, Atten= 13%, Lag= 3.8 min
Primary = 47.19 cfs @ 12.08 hrs, Volume= 3.484 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 2,018.00' Surf.Area= 2,252 sf Storage= 4,088 cf
Peak Elev= 2,024.35' @ 12.08 hrs Surf.Area= 17,523 sf Storage= 53,746 cf (49,658 cf above start)

Plug-Flow detention time= 516.2 min calculated for 3.390 af (97% of inflow)
Center-of-Mass det. time= 482.3 min (1,291.0 - 808.7)

Volume	Invert	Avail.Storage	Storage Description
#1	2,014.00'	56,425 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,014.00	117	0	0
2,016.00	896	1,013	1,013
2,016.50	1,162	515	1,528
2,018.00	2,252	2,561	4,088
2,020.00	4,326	6,578	10,666
2,022.00	9,000	13,326	23,992
2,024.00	15,031	24,031	48,023
2,024.50	18,575	8,402	56,425

Device	Routing	Invert	Outlet Devices
#1	Primary	2,017.50'	**24.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,017.50' / 2,016.50' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,018.00'	**1.7" Vert. Orifice/Grate** C= 0.600
#3	Device 1	2,021.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	2,023.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	2,024.00'	**51.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00

Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=47.18 cfs @ 12.08 hrs HW=2,024.35' TW=2,018.84' (Dynamic Tailwater)
1=**Culvert** (Passes 18.34 cfs of 35.52 cfs potential flow)
2=**Orifice/Grate** (Orifice Controls 0.18 cfs @ 11.31 fps)
3=**Orifice/Grate** (Orifice Controls 0.39 cfs @ 7.95 fps)
4=**Orifice/Grate** (Orifice Controls 17.77 cfs @ 4.44 fps)
5=**Broad-Crested Rectangular Weir** (Weir Controls 28.84 cfs @ 1.61 fps)

Summary for Pond L: Pond L - P1

Inflow Area = 17.806 ac, 19.92% Impervious, Inflow Depth = 5.48" for 100 Year event
Inflow = 149.56 cfs @ 11.98 hrs, Volume= 8.136 af
Outflow = 75.70 cfs @ 12.09 hrs, Volume= 8.111 af, Atten= 49%, Lag= 6.5 min
Primary = 75.70 cfs @ 12.09 hrs, Volume= 8.111 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 1,944.75' Surf.Area= 10,475 sf Storage= 14,819 cf
Peak Elev= 1,950.26' @ 12.09 hrs Surf.Area= 31,998 sf Storage= 143,647 cf (128,827 cf above start)

Plug-Flow detention time= 540.8 min calculated for 7.770 af (96% of inflow)
Center-of-Mass det. time= 488.2 min (1,286.7 - 798.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,941.50'	168,156 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,941.50	1,964	0	0
1,942.00	2,435	1,100	1,100
1,944.00	5,350	7,785	8,885
1,946.00	19,017	24,367	33,252
1,948.00	25,967	44,984	78,236
1,950.00	31,290	57,257	135,493
1,951.00	34,037	32,664	168,156

Device	Routing	Invert	Outlet Devices
#1	Primary	1,943.00'	**36.0" Round Culvert** L= 370.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,943.00' / 1,938.00' S= 0.0135 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	1,944.75'	**2.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	1,947.75'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	1,950.00'	**20.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=75.66 cfs @ 12.09 hrs HW=1,950.26' TW=1,938.67' (Dynamic Tailwater)
—**1=Culvert** (Passes 68.99 cfs of 81.66 cfs potential flow)
—**2=Orifice/Grate** (Orifice Controls 0.38 cfs @ 11.19 fps)
—**3=Orifice/Grate** (Orifice Controls 68.61 cfs @ 7.62 fps)
—**4=Broad-Crested Rectangular Weir** (Weir Controls 6.67 cfs @ 1.30 fps)

Summary for Pond M: OPEN SWALE

Inflow Area = 4.790 ac, 2.76% Impervious, Inflow Depth = 5.04" for 100 Year event
Inflow = 42.19 cfs @ 11.97 hrs, Volume= 2.012 af
Outflow = 37.15 cfs @ 12.01 hrs, Volume= 2.012 af, Atten= 12%, Lag= 2.2 min
Discarded = 0.10 cfs @ 12.01 hrs, Volume= 0.272 af
Primary = 37.05 cfs @ 12.01 hrs, Volume= 1.740 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,890.23' @ 12.01 hrs Surf.Area= 8,862 sf Storage= 16,866 cf

Plug-Flow detention time= 159.2 min calculated for 2.012 af (100% of inflow)
Center-of-Mass det. time= 159.4 min (970.5 - 811.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,887.50'	19,290 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,887.50	2,995	0	0
1,888.00	4,500	1,874	1,874
1,889.00	6,437	5,469	7,342
1,890.00	8,574	7,506	14,848
1,890.50	9,195	4,442	19,290

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,887.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,889.00'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.10 cfs @ 12.01 hrs HW=1,890.23' (Free Discharge)
—**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=37.02 cfs @ 12.01 hrs HW=1,890.23' TW=1,881.89' (Dynamic Tailwater)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 37.02 cfs @ 3.01 fps)

Summary for Pond MH8: Manhole

Inflow Area = 7.919 ac, 30.19% Impervious, Inflow Depth = 5.78" for 100 Year event
Inflow = 75.82 cfs @ 11.97 hrs, Volume= 3.817 af
Outflow = 75.82 cfs @ 11.97 hrs, Volume= 3.817 af, Atten= 0%, Lag= 0.0 min
Primary = 75.82 cfs @ 11.97 hrs, Volume= 3.817 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,038.33' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,033.90'	**42.0" Round Culvert** L= 158.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,033.90' / 1,997.00' S= 0.2335 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=75.79 cfs @ 11.97 hrs HW=2,038.33' TW=2,002.42' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 75.79 cfs @ 7.88 fps)

Summary for Pond N: OPEN SWALE

Inflow Area = 1.568 ac, 0.00% Impervious, Inflow Depth = 4.93" for 100 Year event
Inflow = 13.54 cfs @ 11.97 hrs, Volume= 0.644 af
Outflow = 11.80 cfs @ 12.00 hrs, Volume= 0.644 af, Atten= 13%, Lag= 1.7 min
Discarded = 0.03 cfs @ 12.01 hrs, Volume= 0.080 af
Primary = 11.77 cfs @ 12.00 hrs, Volume= 0.563 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,875.97' @ 12.01 hrs Surf.Area= 2,970 sf Storage= 4,538 cf

Plug-Flow detention time= 138.4 min calculated for 0.644 af (100% of inflow)
Center-of-Mass det. time= 138.6 min (951.8 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,873.50'	5,529 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,873.50	644	0	0
1,874.00	1,260	476	476
1,875.00	2,031	1,646	2,122
1,876.00	3,003	2,517	4,639
1,876.25	4,124	891	5,529

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,873.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,875.00'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.01 hrs HW=1,875.97' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=11.77 cfs @ 12.00 hrs HW=1,875.96' TW=1,875.48' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 11.77 cfs @ 2.45 fps)

Summary for Pond O: Open Swale

Inflow Area = 4.430 ac, 12.42% Impervious, Inflow Depth = 5.27" for 100 Year event
Inflow = 40.51 cfs @ 11.97 hrs, Volume= 1.947 af
Outflow = 37.52 cfs @ 12.00 hrs, Volume= 1.947 af, Atten= 7%, Lag= 1.7 min
Discarded = 0.10 cfs @ 12.00 hrs, Volume= 0.246 af
Primary = 19.09 cfs @ 12.00 hrs, Volume= 1.451 af
Secondary = 18.33 cfs @ 12.00 hrs, Volume= 0.249 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,839.98' @ 12.00 hrs Surf.Area= 8,957 sf Storage= 13,810 cf

Plug-Flow detention time= 136.3 min calculated for 1.947 af (100% of inflow)
Center-of-Mass det. time= 136.5 min (943.2 - 806.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,837.50'	13,965 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,837.50	2,035	0	0
1,838.00	3,275	1,328	1,328
1,839.00	6,500	4,888	6,215
1,840.00	9,000	7,750	13,965

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,837.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,830.00'	**24.0" Round Culvert** L= 400.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,830.00' / 1,768.00' S= 0.1550 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#3	Device 2	1,839.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	1,839.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.10 cfs @ 12.00 hrs HW=1,839.98' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=19.09 cfs @ 12.00 hrs HW=1,839.98' TW=1,769.68' (Dynamic Tailwater)
└─**2=Culvert** (Passes 19.09 cfs of 45.34 cfs potential flow)
  └─**3=Orifice/Grate** (Orifice Controls 19.09 cfs @ 4.77 fps)

Secondary OutFlow Max=18.33 cfs @ 12.00 hrs HW=1,839.98' TW=1,838.12' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 18.33 cfs @ 1.90 fps)

Summary for Pond Q: OPEN SWALE

Inflow Area = 3.629 ac, 0.00% Impervious, Inflow Depth = 4.93" for 100 Year event
Inflow = 30.90 cfs @ 11.98 hrs, Volume= 1.490 af
Outflow = 28.78 cfs @ 12.00 hrs, Volume= 1.490 af, Atten= 7%, Lag= 1.7 min
Discarded = 0.07 cfs @ 12.00 hrs, Volume= 0.221 af
Primary = 28.71 cfs @ 12.00 hrs, Volume= 1.269 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,879.98' @ 12.00 hrs Surf.Area= 6,183 sf Storage= 11,595 cf

Plug-Flow detention time= 180.7 min calculated for 1.489 af (100% of inflow)
Center-of-Mass det. time= 180.9 min (994.5 - 813.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,877.50'	11,728 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,877.50	3,319	0	0
1,878.00	3,840	1,790	1,790
1,879.00	4,913	4,377	6,166
1,880.00	6,211	5,562	11,728

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,877.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,879.00'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.07 cfs @ 12.00 hrs HW=1,879.98' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=28.66 cfs @ 12.00 hrs HW=1,879.98' TW=1,875.49' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 28.66 cfs @ 2.93 fps)

Summary for Pond S: Open Swale

Inflow Area = 2.213 ac, 0.00% Impervious, Inflow Depth = 4.93" for 100 Year event
Inflow = 18.52 cfs @ 11.98 hrs, Volume= 0.909 af
Outflow = 18.40 cfs @ 11.99 hrs, Volume= 0.909 af, Atten= 1%, Lag= 0.5 min
Discarded = 0.04 cfs @ 11.99 hrs, Volume= 0.146 af
Primary = 18.36 cfs @ 11.99 hrs, Volume= 0.763 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,919.51' @ 11.99 hrs Surf.Area= 3,423 sf Storage= 5,141 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 208.3 min (1,022.4 - 814.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,917.50'	6,899 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,917.50	1,372	0	0
1,918.00	2,190	891	891
1,920.00	3,818	6,008	6,899

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,917.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,919.25'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.04 cfs @ 11.99 hrs HW=1,919.51' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=18.35 cfs @ 11.99 hrs HW=1,919.51' TW=1,910.75' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 18.35 cfs @ 1.39 fps)

Summary for Pond sp1: Storm Planters

Inflow Area = 0.986 ac, 86.08% Impervious, Inflow Depth = 7.40" for 100 Year event
Inflow = 11.14 cfs @ 11.97 hrs, Volume= 0.608 af
Outflow = 2.62 cfs @ 12.11 hrs, Volume= 0.553 af, Atten= 77%, Lag= 8.7 min
Primary = 2.62 cfs @ 12.11 hrs, Volume= 0.553 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,151.76' @ 12.11 hrs Surf.Area= 11,960 sf Storage= 14,282 cf

Plug-Flow detention time= 439.8 min calculated for 0.553 af (91% of inflow)
Center-of-Mass det. time= 391.8 min (1,144.9 - 753.2)

Volume	Invert	Avail.Storage	Storage Description
#1	2,147.50'	2,392 cf	**stone underdrain (Prismatic)** Listed below (Recalc) -Impervious 5,980 cf Overall x 40.0% Voids
#2	2,148.50'	1,346 cf	**filter media (Prismatic)** Listed below (Recalc) 8,970 cf Overall x 15.0% Voids
#3	2,150.00'	11,960 cf	**surface storage (Prismatic)** Listed below (Recalc)
		15,698 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,147.50	5,980	0	0
2,148.50	5,980	5,980	5,980

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,148.50	5,980	0	0
2,150.00	5,980	8,970	8,970

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,150.00	5,980	0	0
2,151.00	5,980	5,980	5,980
2,152.00	5,980	5,980	11,960

Device	Routing	Invert	Outlet Devices
#1	Primary	2,110.00'	**24.0" Round Culvert** L= 350.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,110.00' / 2,108.00' S= 0.0057 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	2,148.50'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	2,151.00'	**6.0" Horiz. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.62 cfs @ 12.11 hrs HW=2,151.76' TW=2,108.19' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.62 cfs of 67.29 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.14 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 2.48 cfs @ 4.21 fps)

Summary for Pond T: Open Swale

Inflow Area = 1.813 ac, 0.00% Impervious, Inflow Depth = 4.93" for 100 Year event
Inflow = 15.66 cfs @ 11.97 hrs, Volume= 0.744 af
Outflow = 15.58 cfs @ 11.98 hrs, Volume= 0.744 af, Atten= 0%, Lag= 0.4 min
Discarded = 0.03 cfs @ 11.98 hrs, Volume= 0.088 af
Primary = 15.55 cfs @ 11.98 hrs, Volume= 0.657 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,991.24' @ 11.98 hrs Surf.Area= 2,594 sf Storage= 2,940 cf

Plug-Flow detention time= 130.1 min calculated for 0.744 af (100% of inflow)
Center-of-Mass det. time= 130.2 min (943.5 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,989.50'	5,389 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,989.50	935	0	0
1,990.00	1,375	578	578
1,991.00	2,211	1,793	2,371
1,992.00	3,826	3,019	5,389

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,989.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,991.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 11.98 hrs HW=1,991.24' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=15.54 cfs @ 11.98 hrs HW=1,991.24' TW=1,987.12' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 15.54 cfs @ 1.31 fps)

Summary for Pond U: Open Swale

Inflow Area	=	6.478 ac,	2.76% Impervious,	Inflow Depth = 4.93"	for 100 Year event
Inflow	=	45.08 cfs @	12.04 hrs, Volume=	2.659 af	
Outflow	=	44.69 cfs @	12.05 hrs, Volume=	2.659 af,	Atten= 1%, Lag= 0.8 min
Discarded	=	0.08 cfs @	12.05 hrs, Volume=	0.345 af	
Primary	=	44.60 cfs @	12.05 hrs, Volume=	2.314 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,015.97' @ 12.05 hrs Surf.Area= 7,311 sf Storage= 13,885 cf

Plug-Flow detention time= 191.6 min calculated for 2.659 af (100% of inflow)
Center-of-Mass det. time= 191.8 min (1,010.8 - 819.0)

Volume	Invert	Avail.Storage	Storage Description
#1	2,013.50'	18,120 cf	**Surface Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
2,013.50	2,584	0	0
2,014.00	4,540	1,781	1,781
2,015.00	6,354	5,447	7,228
2,016.00	7,336	6,845	14,073
2,016.50	8,850	4,047	18,120

Device	Routing	Invert	Outlet Devices
#1	Discarded	2,013.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	2,015.50'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.08 cfs @ 12.05 hrs HW=2,015.97' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=44.56 cfs @ 12.05 hrs HW=2,015.97' TW=2,015.44' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 44.56 cfs @ 1.88 fps)

Summary for Pond W: Open Swale

Inflow Area = 4.293 ac, 0.00% Impervious, Inflow Depth = 5.62" for 100 Year event
Inflow = 52.15 cfs @ 11.99 hrs, Volume= 2.012 af
Outflow = 45.79 cfs @ 12.03 hrs, Volume= 2.012 af, Atten= 12%, Lag= 2.3 min
Discarded = 0.11 cfs @ 12.03 hrs, Volume= 0.281 af
Primary = 45.69 cfs @ 12.03 hrs, Volume= 1.730 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,790.90' @ 12.03 hrs Surf.Area= 9,195 sf Storage= 19,270 cf

Plug-Flow detention time= 195.0 min calculated for 2.011 af (100% of inflow)
Center-of-Mass det. time= 195.2 min (997.1 - 801.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,787.50'	25,064 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,787.50	2,399	0	0
1,788.00	3,136	1,384	1,384
1,789.00	4,612	3,874	5,258
1,790.00	8,000	6,306	11,564
1,791.50	10,000	13,500	25,064

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,787.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,789.50'	**10.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.11 cfs @ 12.03 hrs HW=1,790.90' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=45.62 cfs @ 12.03 hrs HW=1,790.90' TW=1,769.77' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 45.62 cfs @ 3.27 fps)

Summary for Pond X: Open Swale

Inflow Area = 2.495 ac, 0.00% Impervious, Inflow Depth = 4.93" for 100 Year event
Inflow = 21.54 cfs @ 11.97 hrs, Volume= 1.024 af
Outflow = 20.84 cfs @ 11.99 hrs, Volume= 1.024 af, Atten= 3%, Lag= 1.1 min
Discarded = 0.08 cfs @ 11.99 hrs, Volume= 0.181 af
Primary = 20.76 cfs @ 11.99 hrs, Volume= 0.843 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,799.66' @ 11.99 hrs Surf.Area= 6,482 sf Storage= 6,501 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 145.5 min (958.8 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,794.00'	556 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
			1,391 cf Overall x 40.0% Voids
#2	1,795.00'	522 cf	**Filter Media (Prismatic)** Listed below (Recalc)
			3,478 cf Overall x 15.0% Voids
#3	1,797.50'	9,040 cf	**Surface Storage (Prismatic)** Listed below (Recalc)
		10,118 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,794.00	1,391	0	0
1,795.00	1,391	1,391	1,391

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,795.00	1,391	0	0
1,797.50	1,391	3,478	3,478

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,797.50	1,391	0	0
1,798.00	1,916	827	827
1,799.00	2,930	2,423	3,250
1,800.00	4,105	3,518	6,767
1,800.50	4,984	2,272	9,040

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,794.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,799.00'	**15.0' long x 2.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50

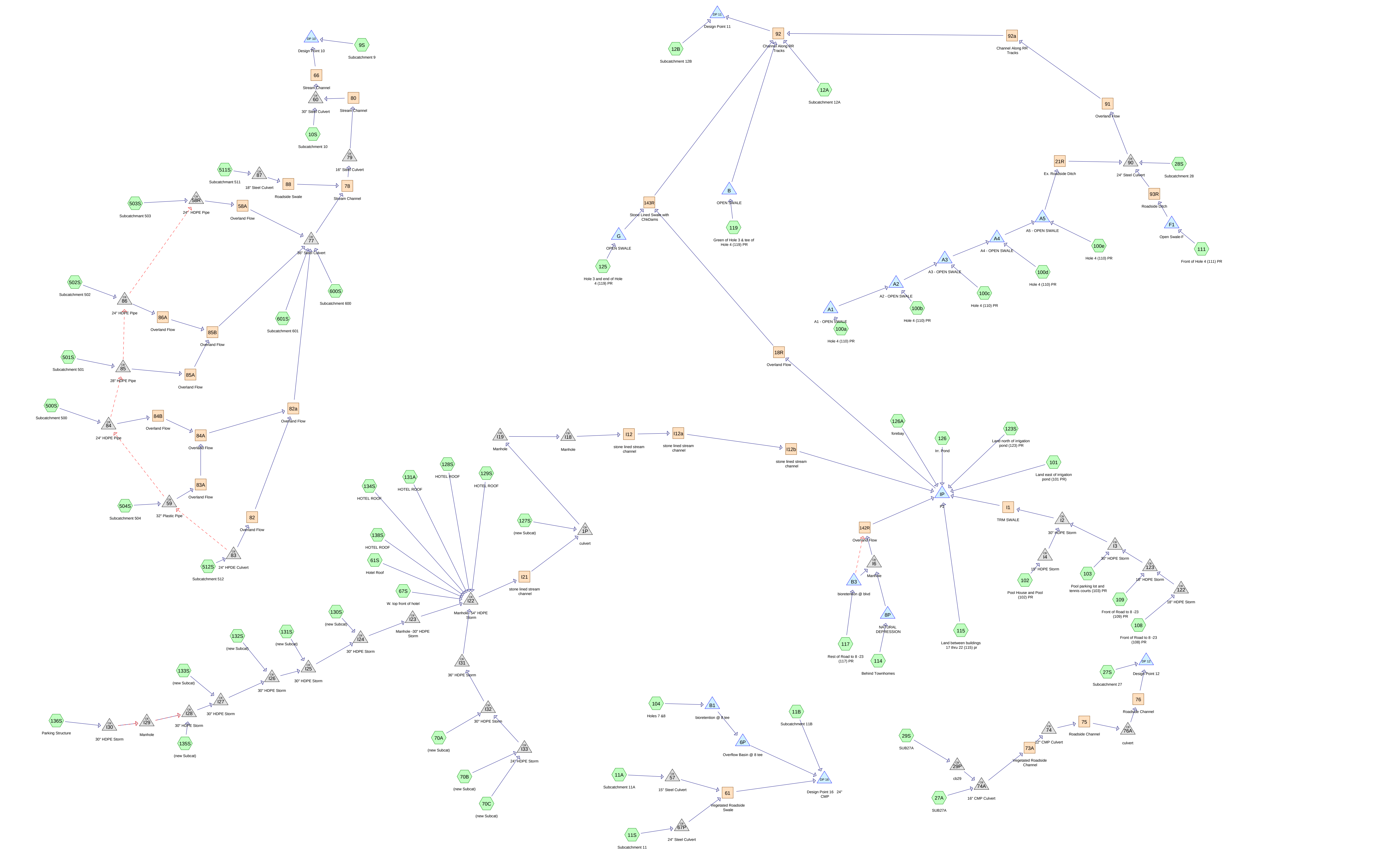
3.00 3.50
Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07
3.20 3.32

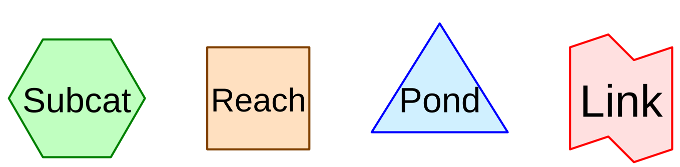
Discarded OutFlow Max=0.08 cfs @ 11.99 hrs HW=1,799.66' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=20.75 cfs @ 11.99 hrs HW=1,799.66' TW=1,794.77' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 20.75 cfs @ 2.11 fps)

APPENDIX G

HydroCAD Data – Proposed Model – Wildacres East





Routing Diagram for 07074_Pro-WildacresEast
Prepared by The LA group, Printed 2/21/2014

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
36.847	74	>75% Grass cover, Good, HSG C (9S, 10S, 11B, 12A, 12B, 27A, 27S, 29S, 70A, 70B, 70C, 100a, 100b, 100c, 100d, 100e, 101, 103, 104, 108, 109, 111, 114, 115, 117, 119, 125, 126, 127S, 130S, 131S, 132S, 133S, 135S, 504S)
23.268	74	Fairway/Tee/Green, Good, HSG C (9S, 11B, 12A, 100a, 100b, 100c, 100d, 100e, 104, 111, 114, 115, 119, 123S, 125, 127S)
11.860	71	Meadow, non-grazed, HSG C (9S, 10S, 28S, 500S, 501S, 502S)
1.061	98	Paved (27A, 29S, 61S, 108)
9.960	98	Paved parking & roofs (11A, 11B, 11S, 12A, 70A, 70B, 70C, 102, 103, 109, 115, 117, 130S, 131A, 131S, 132S, 134S, 136S)
0.393	98	Paved parking, HSG C (9S, 135S)
0.294	98	Pavement (27S)
1.292	98	Pond (126)
2.269	74	Porous Pavement (11B, 12A, 100a, 100b, 100c, 100d, 100e, 104, 111, 119, 125, 127S)
0.066	98	Porous Pavement (70A, 70B)
0.268	74	Porus Pavement (115)
0.783	98	Road (504S, 600S, 601S)
0.729	98	Road/Drive (10S)
0.726	98	Roadway (500S, 501S, 502S)
1.374	98	Roof (27A, 27S, 67S, 128S, 129S, 138S)
0.195	98	Roof Area (9S)
1.862	98	Roofs (10S, 12A, 101, 102, 115)
0.184	98	Water Surface, 0% imp, HSG C (126A)
0.539	73	Woods, Fair, HSG C (115)
176.575	70	Woods, Good, HSG C (9S, 10S, 11A, 11B, 11S, 12A, 12B, 27A, 27S, 28S, 100a, 100b, 104, 114, 117, 119, 125, 127S, 135S, 500S, 501S, 502S, 503S, 504S, 511S, 512S, 600S, 601S)
0.217	74	porous paving (9S)
270.763	**73**	**TOTAL AREA**

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 9S: Subcatchment 9 Runoff Area=1,465,881 sf 1.47% Impervious Runoff Depth=0.61"
Flow Length=2,033' Tc=21.6 min CN=70 Runoff=18.18 cfs 1.700 af

Subcatchment 10S: Subcatchment 10 Runoff Area=1,371,524 sf 2.87% Impervious Runoff Depth=0.65"
Flow Length=2,845' Tc=25.8 min CN=71 Runoff=16.51 cfs 1.701 af

Subcatchment 11A: Subcatchment 11A Runoff Area=57,739 sf 4.72% Impervious Runoff Depth=0.65"
Flow Length=480' Tc=15.3 min CN=71 Runoff=0.98 cfs 0.072 af

Subcatchment 11B: Subcatchment 11B Runoff Area=104,152 sf 18.70% Impervious Runoff Depth=0.93"
Flow Length=486' Tc=17.9 min CN=77 Runoff=2.54 cfs 0.186 af

Subcatchment 11S: Subcatchment 11 Runoff Area=182,734 sf 7.34% Impervious Runoff Depth=0.69"
Flow Length=984' Tc=11.5 min CN=72 Runoff=3.92 cfs 0.242 af

Subcatchment 12A: Subcatchment 12A Runoff Area=550,450 sf 11.44% Impervious Runoff Depth=0.83"
Flow Length=2,110' Tc=6.4 min CN=75 Runoff=18.20 cfs 0.877 af

Subcatchment 12B: Subcatchment 12B Runoff Area=655,932 sf 0.00% Impervious Runoff Depth=0.61"
Flow Length=1,700' Tc=58.7 min CN=70 Runoff=3.97 cfs 0.760 af

Subcatchment 27A: SUB27A Runoff Area=131,978 sf 10.22% Impervious Runoff Depth=0.83"
Flow Length=1,114' Tc=7.3 min CN=75 Runoff=4.20 cfs 0.210 af

Subcatchment 27S: Subcatchment 27 Runoff Area=78,054 sf 25.27% Impervious Runoff Depth=1.04"
Flow Length=400' Tc=12.9 min CN=79 Runoff=2.56 cfs 0.156 af

Subcatchment 28S: Subcatchment 28 Runoff Area=141,352 sf 0.00% Impervious Runoff Depth=0.61"
Flow Length=818' Tc=36.8 min CN=70 Runoff=1.20 cfs 0.164 af

Subcatchment 29S: SUB27A Runoff Area=25,355 sf 15.87% Impervious Runoff Depth=0.99"
Flow Length=248' Tc=6.0 min CN=78 Runoff=1.03 cfs 0.048 af

Subcatchment 61S: Hotel Roof Runoff Area=15,005 sf 100.00% Impervious Runoff Depth=2.57"
Tc=6.0 min CN=98 Runoff=1.36 cfs 0.074 af

Subcatchment 67S: W. top front of hotel Runoff Area=15,005 sf 100.00% Impervious Runoff Depth=2.57"
Tc=6.0 min CN=98 Runoff=1.36 cfs 0.074 af

Subcatchment 70A: (new Subcat) Runoff Area=20,212 sf 40.57% Impervious Runoff Depth=1.35"
Flow Length=207' Tc=6.0 min CN=84 Runoff=1.12 cfs 0.052 af

Subcatchment 70B: (new Subcat) Runoff Area=29,474 sf 30.81% Impervious Runoff Depth=1.16"
Flow Length=235' Tc=6.0 min CN=81 Runoff=1.41 cfs 0.066 af

Subcatchment 70C: (new Subcat) Runoff Area=57,593 sf 43.60% Impervious Runoff Depth=1.35"
Tc=6.0 min CN=84 Runoff=3.20 cfs 0.149 af

Subcatchment 100a: Hole 4 (110) PR Runoff Area=50,494 sf 0.00% Impervious Runoff Depth=0.74"
Flow Length=419' Tc=10.5 min CN=73 Runoff=1.22 cfs 0.071 af

Subcatchment 100b: Hole 4 (110) PR Runoff Area=20,138 sf 0.00% Impervious Runoff Depth=0.74"
Flow Length=419' Tc=10.5 min CN=73 Runoff=0.49 cfs 0.028 af

Subcatchment 100c: Hole 4 (110) PR Runoff Area=33,000 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=419' Tc=10.5 min CN=74 Runoff=0.86 cfs 0.049 af

Subcatchment 100d: Hole 4 (110) PR Runoff Area=23,704 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=419' Tc=10.5 min CN=74 Runoff=0.62 cfs 0.036 af

Subcatchment 100e: Hole 4 (110) PR Runoff Area=64,786 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=419' Tc=10.5 min CN=74 Runoff=1.69 cfs 0.097 af

Subcatchment 101: Land east of irrigation pond Runoff Area=38,708 sf 19.62% Impervious Runoff Depth=1.04"
Flow Length=294' Tc=6.0 min CN=79 Runoff=1.66 cfs 0.077 af

Subcatchment 102: Pool House and Pool (102) Runoff Area=16,073 sf 100.00% Impervious Runoff Depth=2.57"
Tc=6.0 min CN=98 Runoff=1.46 cfs 0.079 af

Subcatchment 103: Pool parking lot and tennis Runoff Area=115,694 sf 46.21% Impervious Runoff Depth=1.42"
Flow Length=602' Tc=8.8 min CN=85 Runoff=6.08 cfs 0.315 af

Subcatchment 104: Holes 7 &8 Runoff Area=455,573 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=1,031' Tc=23.7 min CN=74 Runoff=7.50 cfs 0.683 af

Subcatchment 108: Front of Road to 8 -23 (108) Runoff Area=20,760 sf 83.18% Impervious Runoff Depth=2.16"
Flow Length=482' Tc=6.0 min CN=94 Runoff=1.71 cfs 0.086 af

Subcatchment 109: Front of Road to 8 -23 (109) Runoff Area=8,280 sf 74.58% Impervious Runoff Depth=1.97"
Flow Length=358' Tc=6.0 min CN=92 Runoff=0.64 cfs 0.031 af

Subcatchment 111: Front of Hole 4 (111) PR Runoff Area=89,380 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=393' Tc=7.7 min CN=74 Runoff=2.62 cfs 0.134 af

Subcatchment 114: Behind Townhomes Runoff Area=150,301 sf 0.00% Impervious Runoff Depth=0.74"
Flow Length=930' Tc=15.7 min CN=73 Runoff=2.96 cfs 0.212 af

Subcatchment 115: Land between buildings 17 Runoff Area=460,843 sf 9.33% Impervious Runoff Depth=0.88"
Flow Length=809' Tc=12.9 min CN=76 Runoff=12.52 cfs 0.778 af

Subcatchment 117: Rest of Road to 8 -23 (117) Runoff Area=237,198 sf 46.85% Impervious Runoff Depth=1.42"
Flow Length=930' Slope=0.0600 '/' Tc=16.3 min CN=85 Runoff=9.63 cfs 0.645 af

Subcatchment 119: Green of Hole 3 & tee of Hole Runoff Area=146,387 sf 0.00% Impervious Runoff Depth=0.74"
Flow Length=727' Tc=12.4 min CN=73 Runoff=3.27 cfs 0.206 af

Subcatchment 123S: Land north of irrigation pond Runoff Area=43,890 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=146' Tc=8.6 min CN=74 Runoff=1.24 cfs 0.066 af

Subcatchment 125: Hole 3 and end of Hole 4 Runoff Area=161,159 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=1,131' Tc=9.2 min CN=74 Runoff=4.42 cfs 0.242 af

Subcatchment 126: Irr. Pond Runoff Area=74,991 sf 75.06% Impervious Runoff Depth=1.97"
Tc=6.0 min CN=92 Runoff=5.81 cfs 0.283 af

Subcatchment 126A: forebay Runoff Area=8,000 sf 0.00% Impervious Runoff Depth=2.57"
Tc=6.0 min CN=98 Runoff=0.72 cfs 0.039 af

Subcatchment 127S: (new Subcat) Runoff Area=448,894 sf 0.00% Impervious Runoff Depth=0.74"
Flow Length=1,944' Tc=11.6 min CN=73 Runoff=10.37 cfs 0.633 af

Subcatchment 128S: HOTEL ROOF Runoff Area=6,878 sf 100.00% Impervious Runoff Depth=2.57"
Tc=6.0 min CN=98 Runoff=0.62 cfs 0.034 af

Subcatchment 129S: HOTEL ROOF Runoff Area=13,760 sf 100.00% Impervious Runoff Depth=2.57"
Tc=6.0 min CN=98 Runoff=1.25 cfs 0.068 af

Subcatchment 130S: (new Subcat) Runoff Area=39,147 sf 23.55% Impervious Runoff Depth=1.10"
Flow Length=21' Slope=0.0200 '/' Tc=6.0 min CN=80 Runoff=1.77 cfs 0.083 af

Subcatchment 131A: HOTEL ROOF Runoff Area=51,300 sf 100.00% Impervious Runoff Depth=2.57"
Tc=6.0 min CN=98 Runoff=4.65 cfs 0.252 af

Subcatchment 131S: (new Subcat) Runoff Area=28,363 sf 61.70% Impervious Runoff Depth=1.72"
Flow Length=64' Slope=0.0310 '/' Tc=10.1 min CN=89 Runoff=1.70 cfs 0.093 af

Subcatchment 132S: (new Subcat) Runoff Area=12,145 sf 13.59% Impervious Runoff Depth=0.93"
Flow Length=103' Tc=6.0 min CN=77 Runoff=0.46 cfs 0.022 af

Subcatchment 133S: (new Subcat) Runoff Area=29,164 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=50' Tc=6.0 min CN=74 Runoff=0.92 cfs 0.044 af

Subcatchment 134S: HOTEL ROOF Runoff Area=6,878 sf 100.00% Impervious Runoff Depth=2.57"
Tc=6.0 min CN=98 Runoff=0.62 cfs 0.034 af

Subcatchment 135S: (new Subcat) Runoff Area=18,297 sf 21.86% Impervious Runoff Depth=1.04"
Flow Length=246' Tc=6.0 min CN=79 Runoff=0.78 cfs 0.037 af

Subcatchment 136S: Parking Structure Runoff Area=45,262 sf 100.00% Impervious Runoff Depth=2.57"
Flow Length=306' Slope=0.0100 '/' Tc=6.0 min CN=98 Runoff=4.10 cfs 0.222 af

Subcatchment 138S: HOTEL ROOF Runoff Area=13,760 sf 100.00% Impervious Runoff Depth=2.57"
Tc=6.0 min CN=98 Runoff=1.25 cfs 0.068 af

Subcatchment 500S: Subcatchment 500 Runoff Area=1,350,926 sf 2.16% Impervious Runoff Depth=0.65"
Flow Length=3,875' Tc=32.0 min CN=71 Runoff=13.91 cfs 1.675 af

Subcatchment 501S: Subcatchment 501 Runoff Area=186,481 sf 0.54% Impervious Runoff Depth=0.61"
Flow Length=2,030' Tc=19.3 min CN=70 Runoff=2.49 cfs 0.216 af

Subcatchment 502S: Subcatchment 502 Runoff Area=189,050 sf 0.76% Impervious Runoff Depth=0.61"
Flow Length=1,300' Tc=13.0 min CN=70 Runoff=3.21 cfs 0.219 af

Subcatchment 503S: Subcatchmant 503 Runoff Area=130,680 sf 0.00% Impervious Runoff Depth=0.61"
Flow Length=1,010' Tc=16.6 min CN=70 Runoff=1.92 cfs 0.152 af

Subcatchment 504S: Subcatchment 504 Runoff Area=1,320,521 sf 1.06% Impervious Runoff Depth=0.61"
Flow Length=3,280' Tc=25.0 min CN=70 Runoff=14.76 cfs 1.531 af

Subcatchment 511S: Subcatchmant 511 Runoff Area=87,120 sf 0.00% Impervious Runoff Depth=0.61"
Flow Length=680' Tc=15.6 min CN=70 Runoff=1.33 cfs 0.101 af

Subcatchment 512S: Subcatchment 512 Runoff Area=56,628 sf 0.00% Impervious Runoff Depth=0.61"
Flow Length=600' Tc=14.0 min CN=70 Runoff=0.92 cfs 0.066 af

Subcatchment 600S: Subcatchment 600 Runoff Area=369,868 sf 2.61% Impervious Runoff Depth=0.65"
Flow Length=1,610' Tc=19.3 min CN=71 Runoff=5.41 cfs 0.459 af

Subcatchment 601S: Subcatchment 601 Runoff Area=267,502 sf 3.92% Impervious Runoff Depth=0.65"
Flow Length=1,070' Tc=15.0 min CN=71 Runoff=4.58 cfs 0.332 af

Reach 18R: Overland Flow Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=535.0' S=0.0748 '/' Capacity=214.48 cfs Outflow=0.00 cfs 0.000 af

Reach 21R: Ex. Roadside Ditch Avg. Flow Depth=0.05' Max Vel=1.01 fps Inflow=0.10 cfs 0.023 af
n=0.030 L=120.0' S=0.0250 '/' Capacity=36.63 cfs Outflow=0.10 cfs 0.023 af

Reach 58A: Overland Flow Avg. Flow Depth=0.02' Max Vel=0.91 fps Inflow=1.92 cfs 0.152 af
n=0.035 L=478.0' S=0.1004 '/' Capacity=1,456.48 cfs Outflow=1.48 cfs 0.152 af

Reach 61: Vegetated Roadside Swale Avg. Flow Depth=0.34' Max Vel=4.00 fps Inflow=4.82 cfs 0.313 af
n=0.040 L=751.0' S=0.0613 '/' Capacity=59.21 cfs Outflow=4.54 cfs 0.313 af

Reach 66: Stream Channel Avg. Flow Depth=0.42' Max Vel=5.15 fps Inflow=27.78 cfs 6.451 af
n=0.050 L=1,884.0' S=0.1152 '/' Capacity=445.48 cfs Outflow=25.29 cfs 6.451 af

Reach 73A: Vegetated Roadside Channel Avg. Flow Depth=0.54' Max Vel=3.76 fps Inflow=5.21 cfs 0.258 af
n=0.050 L=60.0' S=0.0560 '/' Capacity=32.90 cfs Outflow=5.20 cfs 0.258 af

Reach 75: Roadside Channel Avg. Flow Depth=0.48' Max Vel=4.34 fps Inflow=5.20 cfs 0.258 af
n=0.040 L=166.0' S=0.0542 '/' Capacity=71.25 cfs Outflow=5.18 cfs 0.258 af

Reach 76: Roadside Channel Avg. Flow Depth=0.49' Max Vel=4.22 fps Inflow=5.18 cfs 0.258 af
n=0.040 L=20.0' S=0.0500 '/' Capacity=68.43 cfs Outflow=5.18 cfs 0.258 af

Reach 78: Stream Channel Avg. Flow Depth=0.36' Max Vel=5.48 fps Inflow=18.41 cfs 4.750 af
n=0.050 L=685.0' S=0.1646 '/' Capacity=258.41 cfs Outflow=18.38 cfs 4.750 af

Reach 80: Stream Channel Avg. Flow Depth=0.51' Max Vel=3.61 fps Inflow=18.38 cfs 4.750 af
n=0.050 L=740.0' S=0.0473 '/' Capacity=247.19 cfs Outflow=18.30 cfs 4.750 af

Reach 82: Overland Flow Avg. Flow Depth=0.01' Max Vel=0.07 fps Inflow=0.92 cfs 0.066 af
n=0.400 L=938.0' S=0.1354 '/' Capacity=53.31 cfs Outflow=0.09 cfs 0.066 af

Reach 82a: Overland Flow Avg. Flow Depth=0.29' Max Vel=0.41 fps Inflow=19.39 cfs 3.272 af
n=0.400 L=473.0' S=0.0846 '/' Capacity=164.89 cfs Outflow=15.02 cfs 3.272 af

Reach 83A: Overland Flow Avg. Flow Depth=0.19' Max Vel=0.46 fps Inflow=14.76 cfs 1.531 af
n=0.400 L=441.0' S=0.1678 '/' Capacity=232.26 cfs Outflow=10.30 cfs 1.531 af

Reach 84A: Overland Flow Avg. Flow Depth=0.30' Max Vel=0.49 fps Inflow=21.37 cfs 3.206 af
n=0.400 L=277.0' S=0.1155 '/' Capacity=192.72 cfs Outflow=19.31 cfs 3.206 af

Reach 84B: Overland Flow Avg. Flow Depth=0.20' Max Vel=0.46 fps Inflow=13.91 cfs 1.675 af
n=0.400 L=370.0' S=0.1622 '/' Capacity=228.33 cfs Outflow=11.32 cfs 1.675 af

Reach 85A: Overland Flow Avg. Flow Depth=0.05' Max Vel=0.18 fps Inflow=2.49 cfs 0.216 af
n=0.400 L=505.0' S=0.1525 '/' Capacity=221.40 cfs Outflow=0.86 cfs 0.216 af

Reach 85B: Overland Flow Avg. Flow Depth=0.07' Max Vel=0.17 fps Inflow=2.39 cfs 0.435 af
n=0.400 L=453.0' S=0.0773 '/' Capacity=157.60 cfs Outflow=1.25 cfs 0.435 af

Reach 86A: Overland Flow Avg. Flow Depth=0.08' Max Vel=0.22 fps Inflow=3.21 cfs 0.219 af
n=0.400 L=195.0' S=0.1128 '/' Capacity=190.45 cfs Outflow=1.85 cfs 0.219 af

Reach 88: Roadside Swale Avg. Flow Depth=0.18' Max Vel=3.42 fps Inflow=1.33 cfs 0.101 af
n=0.035 L=472.0' S=0.0763 '/' Capacity=66.89 cfs Outflow=1.30 cfs 0.101 af

Reach 91: Overland Flow Avg. Flow Depth=0.06' Max Vel=0.88 fps Inflow=1.20 cfs 0.186 af
n=0.035 L=198.0' S=0.0172 '/' Capacity=137.55 cfs Outflow=1.18 cfs 0.186 af

Reach 92: Channel Along RR Tracks Avg. Flow Depth=0.94' Max Vel=4.60 fps Inflow=18.20 cfs 1.063 af
n=0.035 L=770.0' S=0.0239 '/' Capacity=211.58 cfs Outflow=16.77 cfs 1.063 af

Reach 92a: Channel Along RR Tracks Avg. Flow Depth=0.20' Max Vel=2.31 fps Inflow=1.18 cfs 0.186 af
n=0.035 L=1,137.0' S=0.0329 '/' Capacity=248.24 cfs Outflow=1.09 cfs 0.186 af

Reach 93R: Roadside Ditch Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=135.0' S=0.0259 '/' Capacity=54.15 cfs Outflow=0.00 cfs 0.000 af

Reach 142R: Overland Flow Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=280.0' S=0.0299 '/' Capacity=31.71 cfs Outflow=0.00 cfs 0.000 af

Reach 143R: Stone Lined Swale with Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.050 L=335.0' S=0.1403 '/' Capacity=142.04 cfs Outflow=0.00 cfs 0.000 af

Reach I1: TRM SWALE Avg. Flow Depth=0.97' Max Vel=2.51 fps Inflow=9.65 cfs 0.511 af
n=0.035 L=145.0' S=0.0069 '/' Capacity=74.54 cfs Outflow=9.56 cfs 0.511 af

Reach I12: stone lined stream channel Avg. Flow Depth=1.00' Max Vel=6.64 fps Inflow=33.16 cfs 2.003 af
n=0.040 L=142.0' S=0.0486 '/' Capacity=171.87 cfs Outflow=33.13 cfs 2.003 af

Reach I12a: stone lined stream channel Avg. Flow Depth=0.79' Max Vel=8.68 fps Inflow=33.13 cfs 2.003 af
n=0.040 L=160.0' S=0.1056 '/' Capacity=253.40 cfs Outflow=33.10 cfs 2.003 af

Reach I12b: stone lined stream channel Avg. Flow Depth=0.85' Max Vel=7.93 fps Inflow=33.10 cfs 2.003 af
n=0.040 L=440.0' S=0.0816 '/' Capacity=222.71 cfs Outflow=32.88 cfs 2.003 af

Reach I21: stone lined stream channel Avg. Flow Depth=0.75' Max Vel=6.10 fps Inflow=26.35 cfs 1.370 af
n=0.050 L=1,585.0' S=0.0886 '/' Capacity=143.65 cfs Outflow=23.40 cfs 1.370 af

Pond 1P: culvert Peak Elev=2,022.01' Inflow=33.16 cfs 2.003 af
54.0" Round Culvert n=0.013 L=60.0' S=0.0500 '/' Outflow=33.16 cfs 2.003 af

Pond 6P: Overflow Basin @ 8 tee Peak Elev=1,962.77' Storage=8,336 cf Inflow=4.90 cfs 0.357 af
Outflow=0.57 cfs 0.201 af

Pond 8P: NATURAL DEPRESSION Peak Elev=1,968.74' Storage=5,561 cf Inflow=2.96 cfs 0.212 af
Discarded=0.10 cfs 0.212 af Primary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.212 af

Pond 29P: cb29 Peak Elev=1,924.49' Inflow=1.03 cfs 0.048 af
Outflow=1.03 cfs 0.048 af

Pond 57: 15" Steel Culvert Peak Elev=2,004.53' Inflow=0.98 cfs 0.072 af
Outflow=0.98 cfs 0.072 af

Pond 58R: 24" HDPE Pipe Peak Elev=2,222.57' Inflow=1.92 cfs 0.152 af
Outflow=1.92 cfs 0.152 af

Pond 59: 32" Plastic Pipe Peak Elev=2,328.82' Inflow=14.76 cfs 1.531 af
Primary=14.76 cfs 1.531 af Secondary=0.00 cfs 0.000 af Outflow=14.76 cfs 1.531 af

Pond 60: 30" Steel Culvert Peak Elev=2,022.24' Inflow=27.78 cfs 6.451 af
Outflow=27.78 cfs 6.451 af

Pond 67P: 24" Steel Culvert Peak Elev=2,003.96' Inflow=3.92 cfs 0.242 af
Outflow=3.92 cfs 0.242 af

Pond 74: 12" CMP Culvert Peak Elev=1,916.95' Inflow=5.20 cfs 0.258 af
Outflow=5.20 cfs 0.258 af

Pond 74A: 16" CMP Culvert Peak Elev=1,922.76' Inflow=5.21 cfs 0.258 af
Outflow=5.21 cfs 0.258 af

Pond 76A: culvert Peak Elev=1,904.42' Inflow=5.18 cfs 0.258 af
Outflow=5.18 cfs 0.258 af

Pond 77: 36" Steel Culvert Peak Elev=2,173.69' Inflow=18.21 cfs 4.649 af
Outflow=18.21 cfs 4.649 af

Pond 79: 16" Steel Culvert Peak Elev=2,058.12' Inflow=18.38 cfs 4.750 af
Outflow=18.38 cfs 4.750 af

Pond 83: 24" HPDE Culvert Peak Elev=2,360.44' Inflow=0.92 cfs 0.066 af
Primary=0.92 cfs 0.066 af Secondary=0.00 cfs 0.000 af Outflow=0.92 cfs 0.066 af

Pond 84: 24" HDPE Pipe Peak Elev=2,316.66' Inflow=13.91 cfs 1.675 af
Primary=13.91 cfs 1.675 af Secondary=0.00 cfs 0.000 af Outflow=13.91 cfs 1.675 af

Pond 85: 28" HDPE Pipe Peak Elev=2,295.69' Inflow=2.49 cfs 0.216 af
Primary=2.49 cfs 0.216 af Secondary=0.00 cfs 0.000 af Outflow=2.49 cfs 0.216 af

Pond 86: 24" HDPE Pipe Peak Elev=2,240.86' Inflow=3.21 cfs 0.219 af
Primary=3.21 cfs 0.219 af Secondary=0.00 cfs 0.000 af Outflow=3.21 cfs 0.219 af

Pond 87: 18" Steel Culvert Peak Elev=2,208.59' Inflow=1.33 cfs 0.101 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0167 '/' Outflow=1.33 cfs 0.101 af

Pond 90: 24" Steel Culvert Peak Elev=1,890.34' Inflow=1.20 cfs 0.186 af
Outflow=1.20 cfs 0.186 af

Pond 122: 18" HDPE Storm Peak Elev=1,947.01' Inflow=1.71 cfs 0.086 af
Outflow=1.71 cfs 0.086 af

Pond 123: 18" HDPE Storm Peak Elev=1,946.91' Inflow=2.36 cfs 0.117 af
Outflow=2.36 cfs 0.117 af

Pond A1: A1 - OPEN SWALE Peak Elev=1,909.70' Storage=2,072 cf Inflow=1.22 cfs 0.071 af
Discarded=0.02 cfs 0.071 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.071 af

Pond A2: A2 - OPEN SWALE Peak Elev=1,906.54' Storage=703 cf Inflow=0.49 cfs 0.028 af
Discarded=0.01 cfs 0.028 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.028 af

Pond A3: A3 - OPEN SWALE Peak Elev=1,904.87' Storage=1,300 cf Inflow=0.86 cfs 0.049 af
Discarded=0.02 cfs 0.049 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.049 af

Pond A4: A4 - OPEN SWALE Peak Elev=1,902.93' Storage=943 cf Inflow=0.62 cfs 0.036 af
Discarded=0.02 cfs 0.036 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.036 af

Pond A5: A5 - OPEN SWALE Peak Elev=1,901.76' Storage=2,196 cf Inflow=1.69 cfs 0.097 af
Discarded=0.02 cfs 0.075 af Primary=0.10 cfs 0.023 af Outflow=0.12 cfs 0.097 af

Pond B: OPEN SWALE Peak Elev=1,867.74' Storage=5,718 cf Inflow=3.27 cfs 0.206 af
Discarded=0.08 cfs 0.206 af Primary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.206 af

Pond B1: bioretention @ 8 tee Peak Elev=1,965.68' Storage=7,820 cf Inflow=7.50 cfs 0.683 af
Discarded=0.16 cfs 0.327 af Primary=4.90 cfs 0.357 af Outflow=5.06 cfs 0.683 af

Pond B3: bioretention @ blvd Peak Elev=1,959.35' Storage=15,883 cf Inflow=9.63 cfs 0.645 af
Discarded=0.41 cfs 0.645 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.41 cfs 0.645 af

Pond DP 10: Design Point 10 Inflow=40.55 cfs 8.150 af
Primary=40.55 cfs 8.150 af

Pond DP 11: Design Point 11 Inflow=16.97 cfs 1.824 af
Primary=16.97 cfs 1.824 af

Pond DP 12: Design Point 12 Inflow=7.50 cfs 0.414 af
Primary=7.50 cfs 0.414 af

Pond DP 16: Design Point 16 24" CMP Inflow=7.03 cfs 0.700 af
Primary=7.03 cfs 0.700 af

Pond F1: Open Swale-F Peak Elev=1,895.31' Storage=3,839 cf Inflow=2.62 cfs 0.134 af
Discarded=0.05 cfs 0.134 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.134 af

Pond G: OPEN SWALE Peak Elev=1,903.05' Storage=6,064 cf Inflow=4.42 cfs 0.242 af
Discarded=0.12 cfs 0.242 af Primary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.242 af

Pond I18: Manhole Peak Elev=2,007.91' Inflow=33.16 cfs 2.003 af
54.0" Round Culvert n=0.013 L=304.0' S=0.0194 '/' Outflow=33.16 cfs 2.003 af

Pond I19: Manhole Peak Elev=2,018.91' Inflow=33.16 cfs 2.003 af
54.0" Round Culvert n=0.013 L=348.0' S=0.0313 '/' Outflow=33.16 cfs 2.003 af

Pond I2: 30" HDPE Storm Peak Elev=1,945.30' Inflow=9.65 cfs 0.511 af
30.0" Round Culvert n=0.013 L=170.0' S=0.0053 '/' Outflow=9.65 cfs 0.511 af

Pond I22: Manhole- 54" HDPE Storm Peak Elev=2,172.17' Inflow=26.35 cfs 1.370 af
Outflow=26.35 cfs 1.370 af

Pond I23: Manhole -30" HDPE Storm Peak Elev=2,184.99' Inflow=9.57 cfs 0.500 af
Outflow=9.57 cfs 0.500 af

Pond I24: 30" HDPE Storm Peak Elev=2,190.30' Inflow=9.57 cfs 0.500 af
Outflow=9.57 cfs 0.500 af

Pond I25: 30" HDPE Storm Peak Elev=2,192.63' Inflow=7.79 cfs 0.418 af
Outflow=7.79 cfs 0.418 af

Pond I26: 30" HDPE Storm Peak Elev=2,193.22' Inflow=6.24 cfs 0.324 af
Outflow=6.24 cfs 0.324 af

Pond I27: 30" HDPE Storm Peak Elev=2,193.50' Inflow=5.78 cfs 0.303 af
Outflow=5.78 cfs 0.303 af

Pond I28: 30" HDPE Storm Peak Elev=2,193.81' Inflow=4.88 cfs 0.259 af
Outflow=4.88 cfs 0.259 af

Pond I29: Manhole Peak Elev=2,193.96' Inflow=4.10 cfs 0.222 af
30.0" Round Culvert n=0.013 L=98.0' S=0.0010 '/' Outflow=4.10 cfs 0.222 af

Pond I3: 30" HDPE Storm Peak Elev=1,946.53' Inflow=8.26 cfs 0.432 af
Outflow=8.26 cfs 0.432 af

Pond I30: 30" HDPE Storm Peak Elev=2,195.17' Inflow=4.10 cfs 0.222 af
Outflow=4.10 cfs 0.222 af

Pond I31: 36" HDPE Storm Peak Elev=2,172.28' Inflow=5.73 cfs 0.267 af
36.0" Round Culvert n=0.013 L=55.0' S=0.0027 '/' Outflow=5.73 cfs 0.267 af

Pond I32: 30" HDPE Storm Peak Elev=2,172.55' Inflow=5.73 cfs 0.267 af
Outflow=5.73 cfs 0.267 af

Pond I33: 24" HDPE Storm Peak Elev=2,173.13' Inflow=4.61 cfs 0.215 af
Outflow=4.61 cfs 0.215 af

Pond I4: 15" HDPE Storm Peak Elev=1,952.08' Inflow=1.46 cfs 0.079 af
15.0" Round Culvert n=0.013 L=140.0' S=0.0107 '/' Outflow=1.46 cfs 0.079 af

Pond I6: Manhole Peak Elev=1,952.90' Inflow=0.00 cfs 0.000 af
36.0" Round Culvert n=0.013 L=186.0' S=0.0050 '/' Outflow=0.00 cfs 0.000 af

Pond IP: P2 Peak Elev=1,939.67' Storage=607,956 cf Inflow=61.07 cfs 3.757 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 270.763 ac Runoff Volume = 17.026 af Average Runoff Depth = 0.75"
93.08% Pervious = 252.026 ac 6.92% Impervious = 18.737 ac

Summary for Subcatchment 9S: Subcatchment 9

Runoff = 18.18 cfs @ 12.17 hrs, Volume= 1.700 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	8,494	98	Roof Area
	31,175	71	Meadow, non-grazed, HSG C
	1,389,855	70	Woods, Good, HSG C
	13,112	98	Paved parking, HSG C
*	9,470	74	porous paving
*	7,000	74	Fairway/Tee/Green, Good, HSG C
	6,775	74	>75% Grass cover, Good, HSG C
	1,465,881	70	Weighted Average
	1,444,275		98.53% Pervious Area
	21,606		1.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0200	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	10	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.3	1,923	0.1100	13.81	662.89	**Trap/Vee/Rect Channel Flow, Flow through Rock Channel** Bot.W=20.00' D=2.00' Z= 2.0 '/' Top.W=28.00' n= 0.050 Mountain streams w/large boulders
21.6	2,033	Total			

Summary for Subcatchment 10S: Subcatchment 10

Runoff = 16.51 cfs @ 12.24 hrs, Volume= 1.701 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	890,933	70	Woods, Good, HSG C
	424,449	71	Meadow, non-grazed, HSG C
	16,742	74	>75% Grass cover, Good, HSG C
*	31,777	98	Road/Drive
*	7,623	98	Roofs
	1,371,524	71	Weighted Average
	1,332,124		97.13% Pervious Area
	39,400		2.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.2	600	0.0780	1.40		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
2.7	455	0.1600	2.80		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
2.8	330	0.1570	1.98		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.6	685	0.0945	7.35	33.08	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=4.00' D=1.00' Z= 0.5 '/' Top.W=5.00' n= 0.050
0.0	30	0.0500	13.31	18.59	**Pipe Channel, 16" Steel Culvert** 16.0" Round Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.012 Steel, smooth
1.4	645	0.0483	7.65	91.77	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=5.00' D=2.00' Z= 0.5 '/' Top.W=7.00' n= 0.050
25.8	2,845	Total			

Summary for Subcatchment 11A: Subcatchment 11A

Runoff = 0.98 cfs @ 12.09 hrs, Volume= 0.072 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
55,013	70	Woods, Good, HSG C
2,726	98	Paved parking & roofs
57,739	71	Weighted Average
55,013		95.28% Pervious Area
2,726		4.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0800	0.15		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	380	0.0875	1.48		**Shallow Concentrated Flow, SC flow through Woods** Woodland Kv= 5.0 fps
15.3	480	Total			

Summary for Subcatchment 11B: Subcatchment 11B

Runoff = 2.54 cfs @ 12.11 hrs, Volume= 0.186 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	50,820	70	Woods, Good, HSG C
	19,475	98	Paved parking & roofs
	27,337	74	>75% Grass cover, Good, HSG C
*	2,120	74	Porous Pavement
*	4,400	74	Fairway/Tee/Green, Good, HSG C
	104,152	77	Weighted Average
	84,677		81.30% Pervious Area
	19,475		18.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0200	0.08		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.9	436	0.0440	1.05		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.9	486	Total			

Summary for Subcatchment 11S: Subcatchment 11

Runoff = 3.92 cfs @ 12.05 hrs, Volume= 0.242 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
169,318	70	Woods, Good, HSG C
13,416	98	Paved parking & roofs
182,734	72	Weighted Average
169,318		92.66% Pervious Area
13,416		7.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.0800	2.03		**Sheet Flow, Sheet Flow off Roof** Smooth surfaces n= 0.011 P2= 4.00"
4.4	75	0.0625	0.28		**Sheet Flow, Sheet flow over meadow** Grass: Short n= 0.150 P2= 4.00"
2.9	330	0.0750	1.92		**Shallow Concentrated Flow, Sheet Flow through Meadow** Short Grass Pasture Kv= 7.0 fps
3.4	300	0.0875	1.48		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.6	254	0.0500	7.39	16.25	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=2.00' D=1.00' Z= 0.2 '/' Top.W=2.40' n= 0.030
11.5	984	Total			

Summary for Subcatchment 12A: Subcatchment 12A

Runoff = 18.20 cfs @ 11.99 hrs, Volume= 0.877 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	172,175	74	>75% Grass cover, Good, HSG C
	265,310	70	Woods, Good, HSG C
	43,737	98	Paved parking & roofs
*	4,020	74	Porous Pavement
*	19,225	98	Roofs
*	45,983	74	Fairway/Tee/Green, Good, HSG C
	550,450	75	Weighted Average
	487,488		88.56% Pervious Area
	62,962		11.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	33	0.0300	1.45		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.6	264	0.0300	2.79		**Shallow Concentrated Flow, SC Flow through Developed area** Unpaved Kv= 16.1 fps
4.4	1,813	0.0200	6.80	71.42	**Trap/Vee/Rect Channel Flow, roadside ditch** Bot.W=2.00' D=3.00' Z= 0.5 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
6.4	2,110	Total			

Summary for Subcatchment 12B: Subcatchment 12B

Runoff = 3.97 cfs @ 12.72 hrs, Volume= 0.760 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
630,510	70	Woods, Good, HSG C
25,422	74	>75% Grass cover, Good, HSG C
655,932	70	Weighted Average
655,932		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0800	0.09		**Sheet Flow, sheet through woods** Woods: Dense underbrush n= 0.800 P2= 4.00"
39.5	1,600	0.0730	0.68		**Shallow Concentrated Flow, SC Flow through Woods** Forest w/Heavy Litter Kv= 2.5 fps
58.7	1,700	Total			

Summary for Subcatchment 27A: SUB27A

Runoff = 4.20 cfs @ 12.00 hrs, Volume= 0.210 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	55,888	70	Woods, Good, HSG C
*	9,934	98	Paved
*	3,556	98	Roof
	62,600	74	>75% Grass cover, Good, HSG C
	131,978	75	Weighted Average
	118,488		89.78% Pervious Area
	13,490		10.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	100	0.0900	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.1	264	0.0700	3.97		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.4	750	0.0640	8.97	60.53	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.50' Z= 1.0 '/' Top.W=6.00' n= 0.040 Earth, dense weeds
7.3	1,114	Total			

Summary for Subcatchment 27S: Subcatchment 27

Runoff = 2.56 cfs @ 12.05 hrs, Volume= 0.156 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	6,900	98	Roof
*	12,822	98	Pavement
	45,912	74	>75% Grass cover, Good, HSG C
	12,420	70	Woods, Good, HSG C
	78,054	79	Weighted Average
	58,332		74.73% Pervious Area
	19,722		25.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	100	0.0760	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.5	40	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	20	0.0430	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	220	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	20	0.0620	9.52	76.20	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.040 Earth, dense weeds
12.9	400	Total			

Summary for Subcatchment 28S: Subcatchment 28

Runoff = 1.20 cfs @ 12.39 hrs, Volume= 0.164 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
33,932	71	Meadow, non-grazed, HSG C
107,420	70	Woods, Good, HSG C
141,352	70	Weighted Average
141,352		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.2	326	0.0680	1.30		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	392	0.0130	0.34	0.51	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.300
36.8	818	Total			

Summary for Subcatchment 29S: SUB27A

Runoff = 1.03 cfs @ 11.98 hrs, Volume= 0.048 af, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	4,025	98	Paved
	21,330	74	>75% Grass cover, Good, HSG C
	25,355	78	Weighted Average
	21,330		84.13% Pervious Area
	4,025		15.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0300	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	218	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	248	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 61S: Hotel Roof

Runoff = 1.36 cfs @ 11.97 hrs, Volume= 0.074 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	15,005	98	Paved
	15,005		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 67S: W. top front of hotel

Runoff = 1.36 cfs @ 11.97 hrs, Volume= 0.074 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	15,005	98	Roof
	15,005		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 70A: (new Subcat)

Runoff = 1.12 cfs @ 11.97 hrs, Volume= 0.052 af, Depth= 1.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	12,012	74	>75% Grass cover, Good, HSG C
	7,200	98	Paved parking & roofs
*	1,000	98	Porous Pavement
	20,212	84	Weighted Average
	12,012		59.43% Pervious Area
	8,200		40.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	34	0.0588	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.6	66	0.0450	1.96		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.2	21	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	8	0.1110	6.76		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	11	0.1110	2.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	67	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.7	207	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 70B: (new Subcat)

Runoff = 1.41 cfs @ 11.98 hrs, Volume= 0.066 af, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	7,200	98	Paved parking & roofs
	20,394	74	>75% Grass cover, Good, HSG C
*	1,880	98	Porous Pavement
	29,474	81	Weighted Average
	20,394		69.19% Pervious Area
	9,080		30.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.2	37	0.2160	3.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	61	0.0660	5.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	37	0.1176	2.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.3	235	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 70C: (new Subcat)

Runoff = 3.20 cfs @ 11.97 hrs, Volume= 0.149 af, Depth= 1.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
25,112	98	Paved parking & roofs
32,481	74	>75% Grass cover, Good, HSG C
57,593	84	Weighted Average
32,481		56.40% Pervious Area
25,112		43.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 100a: Hole 4 (110) PR

Runoff = 1.22 cfs @ 12.03 hrs, Volume= 0.071 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	25,572	74	>75% Grass cover, Good, HSG C
	9,715	70	Woods, Good, HSG C
*	3,940	74	Porous Pavement
*	11,267	74	Fairway/Tee/Green, Good, HSG C
	50,494	73	Weighted Average
	50,494		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100b: Hole 4 (110) PR

Runoff = 0.49 cfs @ 12.03 hrs, Volume= 0.028 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	5,558	74	>75% Grass cover, Good, HSG C
	2,890	70	Woods, Good, HSG C
*	11,040	74	Fairway/Tee/Green, Good, HSG C
*	650	74	Porous Pavement
	20,138	73	Weighted Average
	20,138		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100c: Hole 4 (110) PR

Runoff = 0.86 cfs @ 12.03 hrs, Volume= 0.049 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	6,495	74	>75% Grass cover, Good, HSG C
*	2,610	74	Porous Pavement
*	23,895	74	Fairway/Tee/Green, Good, HSG C
	33,000	74	Weighted Average
	33,000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course**
					Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course**
					Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100d: Hole 4 (110) PR

Runoff = 0.62 cfs @ 12.03 hrs, Volume= 0.036 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	2,916	74	>75% Grass cover, Good, HSG C
*	1,300	74	Porous Pavement
*	19,488	74	Fairway/Tee/Green, Good, HSG C
	23,704	74	Weighted Average
	23,704		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course**
					Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course**
					Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100e: Hole 4 (110) PR

Runoff = 1.69 cfs @ 12.03 hrs, Volume= 0.097 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	27,442	74	>75% Grass cover, Good, HSG C
*	3,930	74	Porous Pavement
*	33,414	74	Fairway/Tee/Green, Good, HSG C
	64,786	74	Weighted Average
	64,786		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 101: Land east of irrigation pond (101 PR)

Runoff = 1.66 cfs @ 11.98 hrs, Volume= 0.077 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	31,112	74	>75% Grass cover, Good, HSG C
*	7,596	98	Roofs
	38,708	79	Weighted Average
	31,112		80.38% Pervious Area
	7,596		19.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	68	0.0144	1.25		**Sheet Flow, Sheet Flow Across Roof** Smooth surfaces n= 0.011 P2= 4.00"
1.4	191	0.0990	2.20		**Shallow Concentrated Flow, SC Flow** Short Grass Pasture Kv= 7.0 fps
0.1	35	0.0570	8.39	12.58	**Channel Flow, Roadside Ditch** Area= 1.5 sf Perim= 4.0' r= 0.38' n= 0.022 Earth, clean & straight
2.4	294	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 102: Pool House and Pool (102) PR

Runoff = 1.46 cfs @ 11.97 hrs, Volume= 0.079 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	11,423	98	Paved parking & roofs
*	4,650	98	Roofs
	16,073	98	Weighted Average
	16,073		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 103: Pool parking lot and tennis courts (103) PR

Runoff = 6.08 cfs @ 12.00 hrs, Volume= 0.315 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
62,227	74	>75% Grass cover, Good, HSG C
53,467	98	Paved parking & roofs
115,694	85	Weighted Average
62,227		53.79% Pervious Area
53,467		46.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	100	0.0900	0.35		**Sheet Flow, Sheet Flow Along Steep Hill** Grass: Short n= 0.150 P2= 4.00"
2.1	150	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.9	352	0.0227	3.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.8	602	Total			

Summary for Subcatchment 104: Holes 7 &8

Runoff = 7.50 cfs @ 12.19 hrs, Volume= 0.683 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	25,420	74	Porous Pavement
	104,543	74	>75% Grass cover, Good, HSG C
	45,415	70	Woods, Good, HSG C
*	280,195	74	Fairway/Tee/Green, Good, HSG C
	455,573	74	Weighted Average
	455,573		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	39	0.0510	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
12.0	61	0.0240	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.8	133	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.6	167	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	300	0.0570	1.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	122	0.0820	2.00		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	209	0.0670	10.38	54.52	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
23.7	1,031	Total			

Summary for Subcatchment 108: Front of Road to 8 -23 (108) PR

Runoff = 1.71 cfs @ 11.97 hrs, Volume= 0.086 af, Depth= 2.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
3,491	74	>75% Grass cover, Good, HSG C
17,269	98	Paved
20,760	94	Weighted Average
3,491		16.82% Pervious Area
17,269		83.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0200	1.54		**Sheet Flow, Sheet Flow Roof** Smooth surfaces n= 0.011 P2= 4.00"
0.2	13	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	369	0.0600	4.97		**Shallow Concentrated Flow, Flow in Concrete Curb** Paved Kv= 20.3 fps
2.5	482	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 109: Front of Road to 8 -23 (109) PR

Runoff = 0.64 cfs @ 11.97 hrs, Volume= 0.031 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
2,105	74	>75% Grass cover, Good, HSG C
6,175	98	Paved parking & roofs
8,280	92	Weighted Average
2,105		25.42% Pervious Area
6,175		74.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0310	1.83		**Sheet Flow, Sheet Flow on Pavement** Smooth surfaces n= 0.011 P2= 4.00"
0.8	258	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	358	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 111: Front of Hole 4 (111) PR

Runoff = 2.62 cfs @ 12.00 hrs, Volume= 0.134 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	33,460	74	>75% Grass cover, Good, HSG C
*	6,880	74	Porous Pavement
*	49,040	74	Fairway/Tee/Green, Good, HSG C
	89,380	74	Weighted Average
	89,380		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.1400	0.28		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
1.8	293	0.1500	2.71		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
7.7	393	Total			

Summary for Subcatchment 114: Behind Townhomes

Runoff = 2.96 cfs @ 12.09 hrs, Volume= 0.212 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	88,388	74	>75% Grass cover, Good, HSG C
	21,938	70	Woods, Good, HSG C
*	39,975	74	Fairway/Tee/Green, Good, HSG C
	150,301	73	Weighted Average
	150,301		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0750	0.22		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
8.2	830	0.0580	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.7	930	Total			

Summary for Subcatchment 115: Land between buildings 17 thru 22 (115) pr

Runoff = 12.52 cfs @ 12.06 hrs, Volume= 0.778 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	1,000	98	Paved parking & roofs
*	42,019	98	Roofs
	304,107	74	>75% Grass cover, Good, HSG C
*	78,570	74	Fairway/Tee/Green, Good, HSG C
	23,492	73	Woods, Fair, HSG C
*	11,655	74	Porus Pavement
	460,843	76	Weighted Average
	417,824		90.67% Pervious Area
	43,019		9.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	100	0.0800	0.23		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 4.00"
5.6	709	0.0900	2.10		**Shallow Concentrated Flow, SC Flow in Swale** Short Grass Pasture Kv= 7.0 fps
12.9	809	Total			

Summary for Subcatchment 117: Rest of Road to 8 -23 (117) PR

Runoff = 9.63 cfs @ 12.08 hrs, Volume= 0.645 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	108,508	74	>75% Grass cover, Good, HSG C
	111,127	98	Paved parking & roofs
	5,863	70	Woods, Good, HSG C
	11,700	74	>75% Grass cover, Good, HSG C
	237,198	85	Weighted Average
	126,071		53.15% Pervious Area
	111,127		46.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow in Side Yard** Grass: Dense n= 0.240 P2= 4.00"
8.1	830	0.0600	1.71		**Shallow Concentrated Flow, SC Flow in Swale** Short Grass Pasture Kv= 7.0 fps
16.3	930	Total			

Summary for Subcatchment 119: Green of Hole 3 & tee of Hole 4 (119) PR

Runoff = 3.27 cfs @ 12.06 hrs, Volume= 0.206 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	49,282	74	>75% Grass cover, Good, HSG C
	18,600	70	Woods, Good, HSG C
*	70,125	74	Fairway/Tee/Green, Good, HSG C
*	8,380	74	Porous Pavement
	146,387	73	Weighted Average
	146,387		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0700	0.22		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
0.5	54	0.0740	1.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	176	0.1110	1.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.4	397	0.0910	2.71		**Shallow Concentrated Flow, SC Flow on golf course** Cultivated Straight Rows Kv= 9.0 fps
12.4	727	Total			

Summary for Subcatchment 123S: Land north of irrigation pond (123) PR

Runoff = 1.24 cfs @ 12.01 hrs, Volume= 0.066 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	43,890	74	Fairway/Tee/Green, Good, HSG C
	43,890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Through Golf Course** Grass: Dense n= 0.240 P2= 4.00"
0.4	46	0.0430	1.87		**Shallow Concentrated Flow, SC Flow in Swale** Cultivated Straight Rows Kv= 9.0 fps
8.6	146	Total			

Summary for Subcatchment 125: Hole 3 and end of Hole 4 (119) PR

Runoff = 4.42 cfs @ 12.02 hrs, Volume= 0.242 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	17,968	74	>75% Grass cover, Good, HSG C
	8,956	70	Woods, Good, HSG C
*	11,910	74	Porous Pavement
*	122,325	74	Fairway/Tee/Green, Good, HSG C
	161,159	74	Weighted Average
	161,159		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0600	0.30		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Short n= 0.150 P2= 4.00"
3.6	1,031	0.1040	4.84		**Shallow Concentrated Flow, SC Flow on golf course** Grassed Waterway Kv= 15.0 fps
9.2	1,131	Total			

Summary for Subcatchment 126: Irr. Pond

Runoff = 5.81 cfs @ 11.97 hrs, Volume= 0.283 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	56,286	98	Pond
	18,705	74	>75% Grass cover, Good, HSG C
	74,991	92	Weighted Average
	18,705		24.94% Pervious Area
	56,286		75.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 126A: forebay

Runoff = 0.72 cfs @ 11.97 hrs, Volume= 0.039 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
8,000	98	Water Surface, 0% imp, HSG C
8,000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 127S: (new Subcat)

Runoff = 10.37 cfs @ 12.05 hrs, Volume= 0.633 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	27,670	74	Porous Pavement
	151,709	74	>75% Grass cover, Good, HSG C
	96,570	70	Woods, Good, HSG C
*	172,945	74	Fairway/Tee/Green, Good, HSG C
	448,894	73	Weighted Average
	448,894		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0400	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.1	260	0.0850	2.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.9	1,584	0.0820	9.05	108.59	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.050 Earth, cobble bottom, clean sides
11.6	1,944	Total			

Summary for Subcatchment 128S: HOTEL ROOF

Runoff = 0.62 cfs @ 11.97 hrs, Volume= 0.034 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	6,878	98	Roof
	6,878		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 129S: HOTEL ROOF

Runoff = 1.25 cfs @ 11.97 hrs, Volume= 0.068 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	13,760	98	Roof
	13,760		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 130S: (new Subcat)

Runoff = 1.77 cfs @ 11.98 hrs, Volume= 0.083 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
9,220	98	Paved parking & roofs
29,927	74	>75% Grass cover, Good, HSG C
39,147	80	Weighted Average
29,927		76.45% Pervious Area
9,220		23.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
0.3	21	0.0200	1.13		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
5.3	21	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 131A: HOTEL ROOF

Runoff = 4.65 cfs @ 11.97 hrs, Volume= 0.252 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
51,300	98	Paved parking & roofs
51,300		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 131S: (new Subcat)

Runoff = 1.70 cfs @ 12.02 hrs, Volume= 0.093 af, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
10,863	74	>75% Grass cover, Good, HSG C
17,500	98	Paved parking & roofs
28,363	89	Weighted Average
10,863		38.30% Pervious Area
17,500		61.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.1	64	0.0310	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
10.1	64	Total			

Summary for Subcatchment 132S: (new Subcat)

Runoff = 0.46 cfs @ 11.98 hrs, Volume= 0.022 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
1,650	98	Paved parking & roofs
10,495	74	>75% Grass cover, Good, HSG C
12,145	77	Weighted Average
10,495		86.41% Pervious Area
1,650		13.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	92	0.2600	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.1	11	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	103	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 133S: (new Subcat)

Runoff = 0.92 cfs @ 11.98 hrs, Volume= 0.044 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
29,164	74	>75% Grass cover, Good, HSG C
29,164		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0100	0.84		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.1	30	0.0670	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.5	50	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 134S: HOTEL ROOF

Runoff = 0.62 cfs @ 11.97 hrs, Volume= 0.034 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
6,878	98	Paved parking & roofs
6,878		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 135S: (new Subcat)

Runoff = 0.78 cfs @ 11.98 hrs, Volume= 0.037 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
4,000	98	Paved parking, HSG C
12,105	74	>75% Grass cover, Good, HSG C
2,192	70	Woods, Good, HSG C
18,297	79	Weighted Average
14,297		78.14% Pervious Area
4,000		21.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.2000	0.48		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.2	71	0.4790	4.84		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	75	0.0267	3.32		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1	246	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 136S: Parking Structure

Runoff = 4.10 cfs @ 11.97 hrs, Volume= 0.222 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
45,262	98	Paved parking & roofs
45,262		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0100	1.17		**Sheet Flow, Pavement of parking structure** Smooth surfaces n= 0.011 P2= 4.00"
1.7	206	0.0100	2.03		**Shallow Concentrated Flow, Pavement of parking structure** Paved Kv= 20.3 fps
3.1	306	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 138S: HOTEL ROOF

Runoff = 1.25 cfs @ 11.97 hrs, Volume= 0.068 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	13,760	98	Roof
	13,760		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 500S: Subcatchment 500

Runoff = 13.91 cfs @ 12.31 hrs, Volume= 1.675 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	29,185	98	Roadway
	1,312,724	70	Woods, Good, HSG C
	1,350,926	71	Weighted Average
	1,321,741		97.84% Pervious Area
	29,185		2.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
25.7	3,665	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.1	110	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
32.0	3,875	Total			

Summary for Subcatchment 501S: Subcatchment 501

Runoff = 2.49 cfs @ 12.15 hrs, Volume= 0.216 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,002	98	Roadway
	176,462	70	Woods, Good, HSG C
	186,481	70	Weighted Average
	185,479		99.46% Pervious Area
	1,002		0.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
13.1	1,930	0.2410	2.45		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	2,030	Total			

Summary for Subcatchment 502S: Subcatchment 502

Runoff = 3.21 cfs @ 12.07 hrs, Volume= 0.219 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,437	98	Roadway
	178,596	70	Woods, Good, HSG C
	189,050	70	Weighted Average
	187,613		99.24% Pervious Area
	1,437		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.5	935	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	265	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
13.0	1,300	Total			

Summary for Subcatchment 503S: Subcatchmant 503

Runoff = 1.92 cfs @ 12.11 hrs, Volume= 0.152 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
130,680	70	Woods, Good, HSG C
130,680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.2	655	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	255	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
16.6	1,010	Total			

Summary for Subcatchment 504S: Subcatchment 504

Runoff = 14.76 cfs @ 12.22 hrs, Volume= 1.531 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
	1,292,556	70	Woods, Good, HSG C
*	13,939	98	Road
	14,026	74	>75% Grass cover, Good, HSG C
	1,320,521	70	Weighted Average
	1,306,582		98.94% Pervious Area
	13,939		1.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.4375	0.30		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
19.1	2,860	0.2500	2.50		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	320	0.1910	15.31	321.48	**Trap/Vee/Rect Channel Flow, Mountain Stream** Bot.W=4.00' D=3.00' Z= 1.0 '/' Top.W=10.00' n= 0.060
25.0	3,280	Total			

Summary for Subcatchment 511S: Subcatchmant 511

Runoff = 1.33 cfs @ 12.10 hrs, Volume= 0.101 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
87,120	70	Woods, Good, HSG C
87,120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.5	580	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.6	680	Total			

Summary for Subcatchment 512S: Subcatchment 512

Runoff = 0.92 cfs @ 12.08 hrs, Volume= 0.066 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

Area (sf)	CN	Description
56,628	70	Woods, Good, HSG C
56,628		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.3125	0.15		**Sheet Flow, Sheet Flow through Woods** Woods: Dense underbrush n= 0.800 P2= 4.00"
2.6	345	0.1900	2.18		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	155	0.1000	8.43	10.12	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.2 '/' Top.W=1.40' n= 0.030 Earth, grassed & winding

14.0	600	Total

Summary for Subcatchment 600S: Subcatchment 600

Runoff = 5.41 cfs @ 12.14 hrs, Volume= 0.459 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	9,670	98	Road
	360,198	70	Woods, Good, HSG C
	369,868	71	Weighted Average
	360,198		97.39% Pervious Area
	9,670		2.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.0	1,510	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	1,610	Total			

Summary for Subcatchment 601S: Subcatchment 601

Runoff = 4.58 cfs @ 12.09 hrs, Volume= 0.332 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YEAR Rainfall=2.80"

	Area (sf)	CN	Description
*	10,498	98	Road
	257,004	70	Woods, Good, HSG C
	267,502	71	Weighted Average
	257,004		96.08% Pervious Area
	10,498		3.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.7	970	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.0	1,070	Total			

Summary for Reach 18R: Overland Flow

Inflow Area = 46.508 ac, 27.33% Impervious, Inflow Depth = 0.00" for 1-YEAR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.50' Flow Area= 33.8 sf, Capacity= 214.48 cfs

30.00' x 0.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 75.0 '/' Top Width= 105.00'
Length= 535.0' Slope= 0.0748 '/'
Inlet Invert= 1,937.00', Outlet Invert= 1,897.00'

‡

Summary for Reach 21R: Ex. Roadside Ditch

Inflow Area = 4.411 ac, 0.00% Impervious, Inflow Depth = 0.06" for 1-YEAR event
Inflow = 0.10 cfs @ 13.26 hrs, Volume= 0.023 af
Outflow = 0.10 cfs @ 13.29 hrs, Volume= 0.023 af, Atten= 1%, Lag= 1.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.01 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.59 fps, Avg. Travel Time= 3.4 min

Peak Storage= 12 cf @ 13.29 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 1.50' Flow Area= 5.3 sf, Capacity= 36.63 cfs

2.00' x 1.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.0 '/' Top Width= 5.00'
Length= 120.0' Slope= 0.0250 '/'
Inlet Invert= 1,897.00', Outlet Invert= 1,894.00'

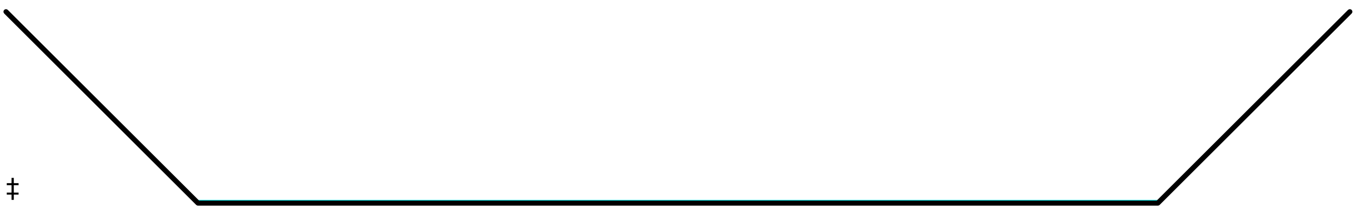
Summary for Reach 58A: Overland Flow

Inflow Area = 3.000 ac, 0.00% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 1.92 cfs @ 12.11 hrs, Volume= 0.152 af
Outflow = 1.48 cfs @ 12.21 hrs, Volume= 0.152 af, Atten= 23%, Lag= 5.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.91 fps, Min. Travel Time= 8.8 min
Avg. Velocity = 0.63 fps, Avg. Travel Time= 12.7 min

Peak Storage= 782 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 120.0 sf, Capacity= 1,456.48 cfs

100.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 140.00'
Length= 478.0' Slope= 0.1004 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,172.00'



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Summary for Reach 61: Vegetated Roadside Swale

Inflow Area = 5.521 ac, 6.71% Impervious, Inflow Depth = 0.68" for 1-YEAR event
Inflow = 4.82 cfs @ 12.05 hrs, Volume= 0.313 af
Outflow = 4.54 cfs @ 12.09 hrs, Volume= 0.313 af, Atten= 6%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.00 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 1.16 fps, Avg. Travel Time= 10.8 min

Peak Storage= 852 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 59.21 cfs

3.00' x 1.50' deep channel, n= 0.040
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 751.0' Slope= 0.0613 '/'
Inlet Invert= 2,000.00', Outlet Invert= 1,954.00'

Summary for Reach 66: Stream Channel

Inflow Area = 122.367 ac, 1.97% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 27.78 cfs @ 12.22 hrs, Volume= 6.451 af
Outflow = 25.29 cfs @ 12.30 hrs, Volume= 6.451 af, Atten= 9%, Lag= 5.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.15 fps, Min. Travel Time= 6.1 min
Avg. Velocity = 1.26 fps, Avg. Travel Time= 24.9 min

Peak Storage= 9,254 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 445.48 cfs

10.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 26.00'
Length= 1,884.0' Slope= 0.1152 '/'
Inlet Invert= 2,017.00', Outlet Invert= 1,800.00'

‡

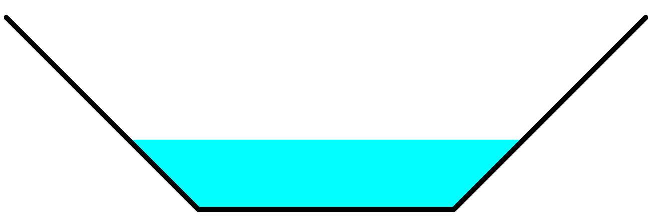
Summary for Reach 73A: Vegetated Roadside Channel

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 0.86" for 1-YEAR event
Inflow = 5.21 cfs @ 11.99 hrs, Volume= 0.258 af
Outflow = 5.20 cfs @ 12.00 hrs, Volume= 0.258 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.76 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 0.9 min

Peak Storage= 83 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 1.50' Flow Area= 5.3 sf, Capacity= 32.90 cfs

2.00' x 1.50' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 5.00'
Length= 60.0' Slope= 0.0560 '/'
Inlet Invert= 1,920.00', Outlet Invert= 1,916.64'



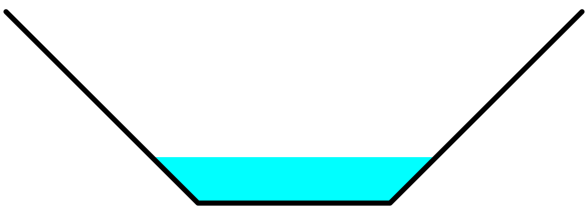
Summary for Reach 75: Roadside Channel

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 0.86" for 1-YEAR event
Inflow = 5.20 cfs @ 12.00 hrs, Volume= 0.258 af
Outflow = 5.18 cfs @ 12.00 hrs, Volume= 0.258 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.34 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 2.3 min

Peak Storage= 198 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 71.25 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 166.0' Slope= 0.0542 '/'
Inlet Invert= 1,911.00', Outlet Invert= 1,902.00'



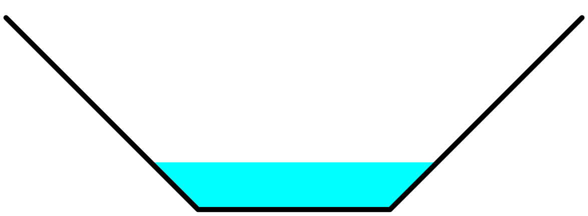
Summary for Reach 76: Roadside Channel

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 0.86" for 1-YEAR event
Inflow = 5.18 cfs @ 12.00 hrs, Volume= 0.258 af
Outflow = 5.18 cfs @ 12.00 hrs, Volume= 0.258 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.22 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 0.3 min

Peak Storage= 25 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 68.43 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 20.0' Slope= 0.0500 '/'
Inlet Invert= 1,901.00', Outlet Invert= 1,900.00'



Summary for Reach 78: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 18.41 cfs @ 12.83 hrs, Volume= 4.750 af
Outflow = 18.38 cfs @ 12.86 hrs, Volume= 4.750 af, Atten= 0%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.48 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 8.6 min

Peak Storage= 2,296 cf @ 12.86 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.50' Flow Area= 21.0 sf, Capacity= 258.41 cfs

8.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 20.00'
Length= 685.0' Slope= 0.1646 '/'
Inlet Invert= 2,170.75', Outlet Invert= 2,058.00'

‡

Summary for Reach 80: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 18.38 cfs @ 12.86 hrs, Volume= 4.750 af
Outflow = 18.30 cfs @ 12.90 hrs, Volume= 4.750 af, Atten= 0%, Lag= 2.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.61 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 14.3 min

Peak Storage= 3,754 cf @ 12.90 hrs
Average Depth at Peak Storage= 0.51'
Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 247.19 cfs

8.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 24.00'
Length= 740.0' Slope= 0.0473 '/'
Inlet Invert= 2,055.00', Outlet Invert= 2,020.00'

‡

Summary for Reach 82: Overland Flow

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 0.92 cfs @ 12.08 hrs, Volume= 0.066 af
Outflow = 0.09 cfs @ 13.35 hrs, Volume= 0.066 af, Atten= 90%, Lag= 76.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.07 fps, Min. Travel Time= 215.5 min
Avg. Velocity = 0.04 fps, Avg. Travel Time= 361.8 min

Peak Storage= 1,136 cf @ 13.35 hrs
Average Depth at Peak Storage= 0.01'
Bank-Full Depth= 0.50' Flow Area= 75.0 sf, Capacity= 53.31 cfs

100.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 200.00'
Length= 938.0' Slope= 0.1354 '/'
Inlet Invert= 2,347.00', Outlet Invert= 2,220.00'

‡

Summary for Reach 82a: Overland Flow

Inflow Area = 62.628 ac, 1.58% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 19.39 cfs @ 12.58 hrs, Volume= 3.272 af
Outflow = 15.02 cfs @ 12.86 hrs, Volume= 3.272 af, Atten= 23%, Lag= 16.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.41 fps, Min. Travel Time= 19.2 min
Avg. Velocity = 0.08 fps, Avg. Travel Time= 95.1 min

Peak Storage= 17,342 cf @ 12.86 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 164.89 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 473.0' Slope= 0.0846 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,180.00'

‡

Summary for Reach 83A: Overland Flow

Inflow Area = 30.315 ac, 1.06% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 14.76 cfs @ 12.22 hrs, Volume= 1.531 af
Outflow = 10.30 cfs @ 12.40 hrs, Volume= 1.531 af, Atten= 30%, Lag= 10.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.46 fps, Min. Travel Time= 16.1 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 57.8 min

Peak Storage= 9,971 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 232.26 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 441.0' Slope= 0.1678 '/'
Inlet Invert= 2,326.00', Outlet Invert= 2,252.00'

‡

Summary for Reach 84A: Overland Flow

Inflow Area = 61.328 ac, 1.61% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 21.37 cfs @ 12.44 hrs, Volume= 3.206 af
Outflow = 19.31 cfs @ 12.58 hrs, Volume= 3.206 af, Atten= 10%, Lag= 8.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.49 fps, Min. Travel Time= 9.4 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 35.6 min

Peak Storage= 10,840 cf @ 12.58 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 192.72 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 277.0' Slope= 0.1155 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,220.00'

‡

Summary for Reach 84B: Overland Flow

Inflow Area = 31.013 ac, 2.16% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 13.91 cfs @ 12.31 hrs, Volume= 1.675 af
Outflow = 11.32 cfs @ 12.47 hrs, Volume= 1.675 af, Atten= 19%, Lag= 9.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.46 fps, Min. Travel Time= 13.3 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 46.4 min

Peak Storage= 9,006 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 228.33 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 370.0' Slope= 0.1622 '/'
Inlet Invert= 2,312.00', Outlet Invert= 2,252.00'

‡

Summary for Reach 85A: Overland Flow

Inflow Area = 4.281 ac, 0.54% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 2.49 cfs @ 12.15 hrs, Volume= 0.216 af
Outflow = 0.86 cfs @ 12.49 hrs, Volume= 0.216 af, Atten= 65%, Lag= 20.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.18 fps, Min. Travel Time= 46.5 min
Avg. Velocity = 0.08 fps, Avg. Travel Time= 107.2 min

Peak Storage= 2,406 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 221.40 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 505.0' Slope= 0.1525 '/'
Inlet Invert= 2,292.00', Outlet Invert= 2,215.00'

‡

Summary for Reach 85B: Overland Flow

Inflow Area = 8.621 ac, 0.65% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 2.39 cfs @ 12.24 hrs, Volume= 0.435 af
Outflow = 1.25 cfs @ 12.88 hrs, Volume= 0.435 af, Atten= 47%, Lag= 38.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.17 fps, Min. Travel Time= 45.0 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 116.7 min

Peak Storage= 3,382 cf @ 12.88 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 157.60 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 453.0' Slope= 0.0773 '/'
Inlet Invert= 2,215.00', Outlet Invert= 2,180.00'

‡

Summary for Reach 86A: Overland Flow

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 3.21 cfs @ 12.07 hrs, Volume= 0.219 af
Outflow = 1.85 cfs @ 12.19 hrs, Volume= 0.219 af, Atten= 42%, Lag= 7.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.22 fps, Min. Travel Time= 14.9 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 43.4 min

Peak Storage= 1,653 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 190.45 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 195.0' Slope= 0.1128 '/'
Inlet Invert= 2,237.00', Outlet Invert= 2,215.00'

‡

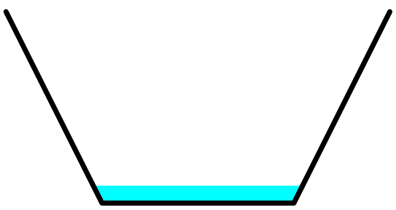
Summary for Reach 88: Roadside Swale

Inflow Area = 2.000 ac, 0.00% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 1.33 cfs @ 12.10 hrs, Volume= 0.101 af
Outflow = 1.30 cfs @ 12.13 hrs, Volume= 0.101 af, Atten= 2%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.42 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 1.13 fps, Avg. Travel Time= 7.0 min

Peak Storage= 179 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 2.00' Flow Area= 6.0 sf, Capacity= 66.89 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 0.5 '/' Top Width= 4.00'
Length= 472.0' Slope= 0.0763 '/'
Inlet Invert= 2,207.00', Outlet Invert= 2,171.00'



Summary for Reach 91: Overland Flow

Inflow Area = 9.707 ac, 0.00% Impervious, Inflow Depth = 0.23" for 1-YEAR event
Inflow = 1.20 cfs @ 12.39 hrs, Volume= 0.186 af
Outflow = 1.18 cfs @ 12.42 hrs, Volume= 0.186 af, Atten= 2%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.88 fps, Min. Travel Time= 3.7 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 8.9 min

Peak Storage= 265 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 137.55 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 198.0' Slope= 0.0172 '/'
Inlet Invert= 1,889.40', Outlet Invert= 1,886.00'

‡

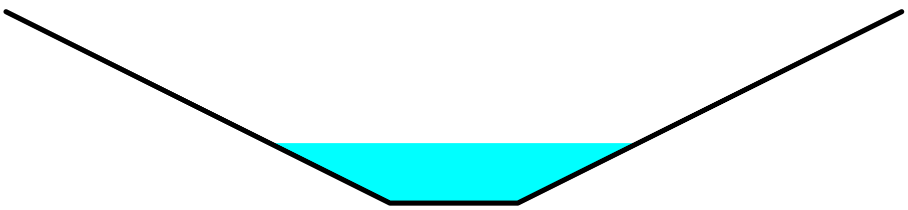
Summary for Reach 92: Channel Along RR Tracks

Inflow Area = 75.912 ac, 18.65% Impervious, Inflow Depth = 0.17" for 1-YEAR event
Inflow = 18.20 cfs @ 11.99 hrs, Volume= 1.063 af
Outflow = 16.77 cfs @ 12.02 hrs, Volume= 1.063 af, Atten= 8%, Lag= 1.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.60 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 1.47 fps, Avg. Travel Time= 8.7 min

Peak Storage= 2,804 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.94'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 211.58 cfs

2.00' x 3.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 770.0' Slope= 0.0239 '/'
Inlet Invert= 1,848.40', Outlet Invert= 1,830.00'



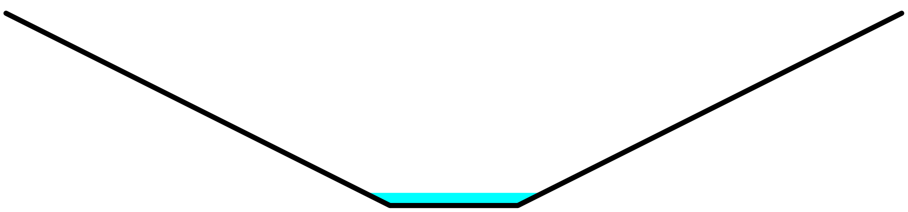
Summary for Reach 92a: Channel Along RR Tracks

Inflow Area = 9.707 ac, 0.00% Impervious, Inflow Depth = 0.23" for 1-YEAR event
Inflow = 1.18 cfs @ 12.42 hrs, Volume= 0.186 af
Outflow = 1.09 cfs @ 12.54 hrs, Volume= 0.186 af, Atten= 8%, Lag= 6.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.31 fps, Min. Travel Time= 8.2 min
Avg. Velocity = 1.04 fps, Avg. Travel Time= 18.2 min

Peak Storage= 537 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 248.24 cfs

2.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 1,137.0' Slope= 0.0329 '/'
Inlet Invert= 1,885.90', Outlet Invert= 1,848.50'



Summary for Reach 93R: Roadside Ditch

Inflow Area = 2.052 ac, 0.00% Impervious, Inflow Depth = 0.00" for 1-YEAR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 54.15 cfs

2.00' x 1.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 135.0' Slope= 0.0259 '/'
Inlet Invert= 1,894.50', Outlet Invert= 1,891.00'

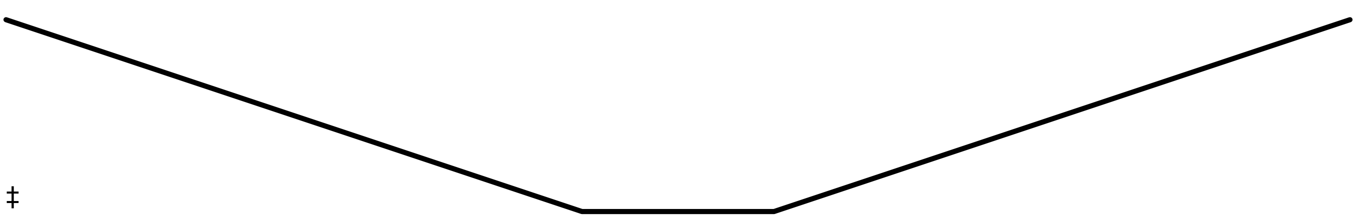
Summary for Reach 142R: Overland Flow

Inflow Area = 8.896 ac, 28.68% Impervious, Inflow Depth = 0.00" for 1-YEAR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.30' Flow Area= 12.0 sf, Capacity= 31.71 cfs

10.00' x 0.30' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 280.0' Slope= 0.0299 '/'
Inlet Invert= 1,951.87', Outlet Invert= 1,943.50'



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Summary for Reach 143R: Stone Lined Swale with ChkDams

Inflow Area = 50.207 ac, 25.31% Impervious, Inflow Depth = 0.00" for 1-YEAR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 142.04 cfs

2.00' x 2.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 335.0' Slope= 0.1403 '/'
Inlet Invert= 1,897.00', Outlet Invert= 1,850.00'

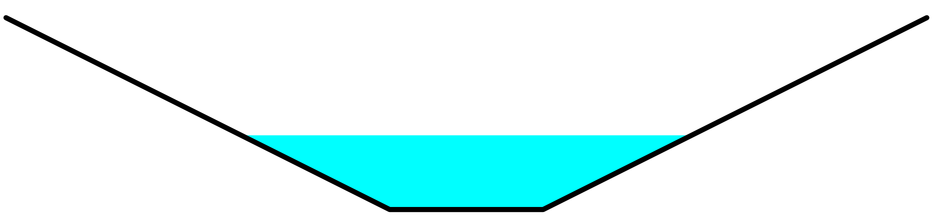
Summary for Reach I1: TRM SWALE

Inflow Area = 3.692 ac, 57.82% Impervious, Inflow Depth = 1.66" for 1-YEAR event
Inflow = 9.65 cfs @ 11.99 hrs, Volume= 0.511 af
Outflow = 9.56 cfs @ 12.00 hrs, Volume= 0.511 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.51 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.64 fps, Avg. Travel Time= 3.8 min

Peak Storage= 552 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.97'
Bank-Full Depth= 2.50' Flow Area= 17.5 sf, Capacity= 74.54 cfs

2.00' x 2.50' deep channel, n= 0.035 TRM
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 145.0' Slope= 0.0069 '/'
Inlet Invert= 1,943.00', Outlet Invert= 1,942.00'



Summary for Reach I12: stone lined stream channel

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 1.23" for 1-YEAR event
Inflow = 33.16 cfs @ 12.02 hrs, Volume= 2.003 af
Outflow = 33.13 cfs @ 12.02 hrs, Volume= 2.003 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.64 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.42 fps, Avg. Travel Time= 1.7 min

Peak Storage= 708 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 171.87 cfs

4.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 9.00'
Length= 142.0' Slope= 0.0486 '/'
Inlet Invert= 1,999.90', Outlet Invert= 1,993.00'

Summary for Reach I12a: stone lined stream channel

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 1.23" for 1-YEAR event
Inflow = 33.13 cfs @ 12.02 hrs, Volume= 2.003 af
Outflow = 33.10 cfs @ 12.03 hrs, Volume= 2.003 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.68 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.86 fps, Avg. Travel Time= 1.4 min

Peak Storage= 610 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.79'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 253.40 cfs

4.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 9.00'
Length= 160.0' Slope= 0.1056 '/'
Inlet Invert= 1,992.90', Outlet Invert= 1,976.00'

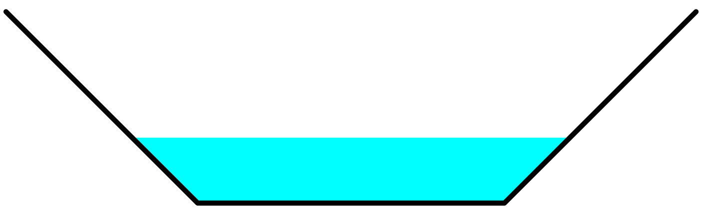
Summary for Reach I12b: stone lined stream channel

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 1.23" for 1-YEAR event
Inflow = 33.10 cfs @ 12.03 hrs, Volume= 2.003 af
Outflow = 32.88 cfs @ 12.04 hrs, Volume= 2.003 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.93 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.70 fps, Avg. Travel Time= 4.3 min

Peak Storage= 1,824 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.85'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 222.71 cfs

4.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 9.00'
Length= 440.0' Slope= 0.0816 '/'
Inlet Invert= 1,975.90', Outlet Invert= 1,940.00'



Summary for Reach I21: stone lined stream channel

Inflow Area = 9.234 ac, 60.31% Impervious, Inflow Depth = 1.78" for 1-YEAR event
Inflow = 26.35 cfs @ 11.97 hrs, Volume= 1.370 af
Outflow = 23.40 cfs @ 12.01 hrs, Volume= 1.370 af, Atten= 11%, Lag= 2.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.10 fps, Min. Travel Time= 4.3 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 20.4 min

Peak Storage= 6,079 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 143.65 cfs

4.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.5 '/' Top Width= 10.00'
Length= 1,585.0' Slope= 0.0886 '/'
Inlet Invert= 2,169.00', Outlet Invert= 2,028.50'

Summary for Pond 1P: culvert

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 1.23" for 1-YEAR event
Inflow = 33.16 cfs @ 12.02 hrs, Volume= 2.003 af
Outflow = 33.16 cfs @ 12.02 hrs, Volume= 2.003 af, Atten= 0%, Lag= 0.0 min
Primary = 33.16 cfs @ 12.02 hrs, Volume= 2.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,022.01' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,020.00'	**54.0" Round CMP_Round 54"** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,020.00' / 2,017.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf

Primary OutFlow Max=33.16 cfs @ 12.02 hrs HW=2,022.01' TW=2,018.91' (Dynamic Tailwater)
└─**1=CMP_Round 54"** (Inlet Controls 33.16 cfs @ 4.83 fps)

Summary for Pond 6P: Overflow Basin @ 8 tee

Inflow Area = 10.459 ac, 0.00% Impervious, Inflow Depth = 0.41" for 1-YEAR event
Inflow = 4.90 cfs @ 12.36 hrs, Volume= 0.357 af
Outflow = 0.57 cfs @ 13.92 hrs, Volume= 0.201 af, Atten= 88%, Lag= 93.4 min
Primary = 0.57 cfs @ 13.92 hrs, Volume= 0.201 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,962.77' @ 13.92 hrs Surf.Area= 5,872 sf Storage= 8,336 cf

Plug-Flow detention time= 271.5 min calculated for 0.201 af (56% of inflow)
Center-of-Mass det. time= 171.2 min (1,033.6 - 862.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,961.00'	25,500 cf	**surface storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,961.00	3,100	0	0
1,962.00	5,100	4,100	4,100
1,963.00	6,100	5,600	9,700
1,964.00	8,250	7,175	16,875
1,965.00	9,000	8,625	25,500

Device	Routing	Invert	Outlet Devices
#1	Primary	1,962.50'	**36.0" Round Culvert** L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,962.50' / 1,958.00' S= 0.0310 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	1,964.50'	**25.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67

2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.57 cfs @ 13.92 hrs HW=1,962.77' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.57 cfs @ 1.78 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 8P: NATURAL DEPRESSION

Inflow Area = 3.450 ac, 0.00% Impervious, Inflow Depth = 0.74" for 1-YEAR event
Inflow = 2.96 cfs @ 12.09 hrs, Volume= 0.212 af
Outflow = 0.10 cfs @ 18.17 hrs, Volume= 0.212 af, Atten= 97%, Lag= 364.3 min
Discarded = 0.10 cfs @ 18.17 hrs, Volume= 0.212 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,968.74' @ 18.17 hrs Surf.Area= 8,474 sf Storage= 5,561 cf

Plug-Flow detention time= 771.7 min calculated for 0.212 af (100% of inflow)
Center-of-Mass det. time= 771.8 min (1,652.4 - 880.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,967.50'	91,482 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,967.50	2,433	0	0
1,968.00	2,887	1,330	1,330
1,970.00	17,890	20,777	22,107
1,972.00	33,985	51,875	73,982
1,972.50	36,015	17,500	91,482

Device	Routing	Invert	Outlet Devices
#1	Primary	1,970.00'	**18.0" Round Culvert** L= 250.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,970.00' / 1,953.00' S= 0.0680 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Discarded	1,967.50'	**0.500 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.10 cfs @ 18.17 hrs HW=1,968.74' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,967.50' TW=1,952.90' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond 29P: cb29

Inflow Area = 0.582 ac, 15.87% Impervious, Inflow Depth = 0.99" for 1-YEAR event
Inflow = 1.03 cfs @ 11.98 hrs, Volume= 0.048 af
Outflow = 1.03 cfs @ 11.98 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min
Primary = 1.03 cfs @ 11.98 hrs, Volume= 0.048 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,924.49' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,924.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,924.00' / 1,923.75' S= 0.0083 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,928.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.03 cfs @ 11.98 hrs HW=1,924.49' TW=1,922.74' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.03 cfs @ 3.02 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 57: 15" Steel Culvert

Inflow Area = 1.326 ac, 4.72% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 0.98 cfs @ 12.09 hrs, Volume= 0.072 af
Outflow = 0.98 cfs @ 12.09 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min
Primary = 0.98 cfs @ 12.09 hrs, Volume= 0.072 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,004.53' @ 12.09 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,004.00'	**15.0" Round 15" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,004.00' / 2,000.00' S= 0.0667 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.98 cfs @ 12.09 hrs HW=2,004.53' TW=2,000.34' (Dynamic Tailwater)
└─**1=15" Smooth Steel Culvert (old)** (Inlet Controls 0.98 cfs @ 1.96 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 58R: 24" HDPE Pipe

Inflow Area = 3.000 ac, 0.00% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 1.92 cfs @ 12.11 hrs, Volume= 0.152 af
Outflow = 1.92 cfs @ 12.11 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min
Primary = 1.92 cfs @ 12.11 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,222.57' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,222.00'	**24.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,222.00' / 2,221.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,225.00'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=1.92 cfs @ 12.11 hrs HW=2,222.57' TW=2,220.01' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 1.92 cfs @ 2.58 fps)
—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 59: 32" Plastic Pipe

Inflow Area = 30.315 ac, 1.06% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 14.76 cfs @ 12.22 hrs, Volume= 1.531 af
Outflow = 14.76 cfs @ 12.22 hrs, Volume= 1.531 af, Atten= 0%, Lag= 0.0 min
Primary = 14.76 cfs @ 12.22 hrs, Volume= 1.531 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,328.82' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,327.00'	**32.0" Round 32" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,327.00' / 2,324.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 5.59 sf
#2	Secondary	2,331.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=14.76 cfs @ 12.22 hrs HW=2,328.82' TW=2,326.15' (Dynamic Tailwater)
—**1=32" Plastic Culvert** (Inlet Controls 14.76 cfs @ 3.63 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,327.00' TW=2,315.00' (Dynamic Tailwater)
—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 60: 30" Steel Culvert

Inflow Area = 122.367 ac, 1.97% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 27.78 cfs @ 12.22 hrs, Volume= 6.451 af
Outflow = 27.78 cfs @ 12.22 hrs, Volume= 6.451 af, Atten= 0%, Lag= 0.0 min
Primary = 27.78 cfs @ 12.22 hrs, Volume= 6.451 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,022.24' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,020.00'	**30.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,020.00' / 2,019.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Primary	2,021.00'	**15.0" Round Culvert** L= 20.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,021.00' / 2,020.00' S= 0.0500 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 1.23 sf
#3	Primary	2,024.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=27.78 cfs @ 12.22 hrs HW=2,022.24' TW=2,017.39' (Dynamic Tailwater)
1=Culvert (Inlet Controls 23.67 cfs @ 5.10 fps)
2=Culvert (Inlet Controls 4.11 cfs @ 3.35 fps)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 67P: 24" Steel Culvert

Inflow Area = 4.195 ac, 7.34% Impervious, Inflow Depth = 0.69" for 1-YEAR event
Inflow = 3.92 cfs @ 12.05 hrs, Volume= 0.242 af
Outflow = 3.92 cfs @ 12.05 hrs, Volume= 0.242 af, Atten= 0%, Lag= 0.0 min
Primary = 3.92 cfs @ 12.05 hrs, Volume= 0.242 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,003.96' @ 12.05 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,003.00'	**24.0" Round 24" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,003.00' / 2,000.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=3.92 cfs @ 12.05 hrs HW=2,003.96' TW=2,000.32' (Dynamic Tailwater)
1=24" Smooth Steel Culvert (old) (Inlet Controls 3.92 cfs @ 2.63 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 74: 12" CMP Culvert

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 0.86" for 1-YEAR event
Inflow = 5.20 cfs @ 12.00 hrs, Volume= 0.258 af
Outflow = 5.20 cfs @ 12.00 hrs, Volume= 0.258 af, Atten= 0%, Lag= 0.0 min
Primary = 5.20 cfs @ 12.00 hrs, Volume= 0.258 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,916.95' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,914.00'	**12.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 1,914.00' / 1,911.76' S= 0.0560 '/' Cc= 0.900 n= 0.025, Flow Area= 0.79 sf
#2	Primary	1,917.00'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=5.19 cfs @ 12.00 hrs HW=1,916.93' TW=1,911.48' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 5.19 cfs @ 6.61 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 74A: 16" CMP Culvert

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 0.86" for 1-YEAR event
Inflow = 5.21 cfs @ 11.99 hrs, Volume= 0.258 af
Outflow = 5.21 cfs @ 11.99 hrs, Volume= 0.258 af, Atten= 0%, Lag= 0.0 min
Primary = 5.21 cfs @ 11.99 hrs, Volume= 0.258 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,922.76' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,921.50'	**16.0" Round Culvert** L= 35.0' Ke= 0.500 Inlet / Outlet Invert= 1,921.50' / 1,920.00' S= 0.0429 '/' Cc= 0.900 n= 0.025, Flow Area= 1.40 sf
#2	Primary	1,924.50'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=5.20 cfs @ 11.99 hrs HW=1,922.75' TW=1,920.54' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.20 cfs @ 3.81 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 76A: culvert

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 0.86" for 1-YEAR event
Inflow = 5.18 cfs @ 12.00 hrs, Volume= 0.258 af
Outflow = 5.18 cfs @ 12.00 hrs, Volume= 0.258 af, Atten= 0%, Lag= 0.0 min
Primary = 5.18 cfs @ 12.00 hrs, Volume= 0.258 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 1,904.42' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,902.00'	**12.0" Round Culvert** L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,902.00' / 1,898.00' S= 0.0667 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf
#2	Primary	1,904.00'	**2.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=5.17 cfs @ 12.00 hrs HW=1,904.42' TW=1,901.49' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.70 cfs @ 4.72 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 1.46 cfs @ 1.76 fps)

Summary for Pond 77: 36" Steel Culvert

Inflow Area = 88.881 ac, 1.70% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 18.21 cfs @ 12.84 hrs, Volume= 4.649 af
Outflow = 18.21 cfs @ 12.84 hrs, Volume= 4.649 af, Atten= 0%, Lag= 0.0 min
Primary = 18.21 cfs @ 12.84 hrs, Volume= 4.649 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,173.69' @ 12.84 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,172.00'	**36.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 2,172.00' / 2,171.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	2,176.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=18.21 cfs @ 12.84 hrs HW=2,173.69' TW=2,171.11' (Dynamic Tailwater)
1=Culvert (Inlet Controls 18.21 cfs @ 4.43 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 79: 16" Steel Culvert

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 18.38 cfs @ 12.86 hrs, Volume= 4.750 af
Outflow = 18.38 cfs @ 12.86 hrs, Volume= 4.750 af, Atten= 0%, Lag= 0.0 min
Primary = 18.38 cfs @ 12.86 hrs, Volume= 4.750 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,058.12' @ 12.86 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,056.00'	**16.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,056.00' / 2,055.00' S= 0.0500 '/' Cc= 0.900

			n= 0.012, Flow Area= 1.40 sf
#2	Primary	2,058.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=18.38 cfs @ 12.86 hrs HW=2,058.12' TW=2,055.50' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.10 cfs @ 5.80 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 10.28 cfs @ 0.86 fps)

Summary for Pond 83: 24" HPDE Culvert

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 0.92 cfs @ 12.08 hrs, Volume= 0.066 af
Outflow = 0.92 cfs @ 12.08 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min
Primary = 0.92 cfs @ 12.08 hrs, Volume= 0.066 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,360.44' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,360.00'	**24.0" Round 24" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,360.00' / 2,357.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,364.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.92 cfs @ 12.08 hrs HW=2,360.44' TW=2,347.00' (Dynamic Tailwater)
1=24" Plastic Culvert (Inlet Controls 0.92 cfs @ 1.79 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,360.00' TW=2,327.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 84: 24" HDPE Pipe

Inflow Area = 31.013 ac, 2.16% Impervious, Inflow Depth = 0.65" for 1-YEAR event
Inflow = 13.91 cfs @ 12.31 hrs, Volume= 1.675 af
Outflow = 13.91 cfs @ 12.31 hrs, Volume= 1.675 af, Atten= 0%, Lag= 0.0 min
Primary = 13.91 cfs @ 12.31 hrs, Volume= 1.675 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,316.66' @ 12.31 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,315.00'	**36.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,315.00' / 2,312.00' S= 0.0500 '/' Cc= 0.900

			n= 0.011, Flow Area= 7.07 sf
#2	Secondary	2,320.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=13.91 cfs @ 12.31 hrs HW=2,316.66' TW=2,312.17' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 13.91 cfs @ 3.46 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,315.00' TW=2,295.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 85: 28" HDPE Pipe

Inflow Area = 4.281 ac, 0.54% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 2.49 cfs @ 12.15 hrs, Volume= 0.216 af
Outflow = 2.49 cfs @ 12.15 hrs, Volume= 0.216 af, Atten= 0%, Lag= 0.0 min
Primary = 2.49 cfs @ 12.15 hrs, Volume= 0.216 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,295.69' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,295.00'	**30.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,295.00' / 2,292.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 4.91 sf
#2	Secondary	2,300.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=2.49 cfs @ 12.15 hrs HW=2,295.69' TW=2,292.02' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.49 cfs @ 2.24 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,295.00' TW=2,240.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 86: 24" HDPE Pipe

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 0.61" for 1-YEAR event
Inflow = 3.21 cfs @ 12.07 hrs, Volume= 0.219 af
Outflow = 3.21 cfs @ 12.07 hrs, Volume= 0.219 af, Atten= 0%, Lag= 0.0 min
Primary = 3.21 cfs @ 12.07 hrs, Volume= 0.219 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,240.86' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**24.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,240.00' / 2,237.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,245.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=3.20 cfs @ 12.07 hrs HW=2,240.86' TW=2,237.06' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.20 cfs @ 2.49 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,240.00' TW=2,222.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 87: 18" Steel Culvert

Inflow Area =	2.000 ac,	0.00% Impervious, Inflow Depth = 0.61"	for 1-YEAR event
Inflow =	1.33 cfs @	12.10 hrs, Volume=	0.101 af
Outflow =	1.33 cfs @	12.10 hrs, Volume=	0.101 af, Atten= 0%, Lag= 0.0 min
Primary =	1.33 cfs @	12.10 hrs, Volume=	0.101 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,208.59' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,208.00'	**18.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,208.00' / 2,207.00' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.33 cfs @ 12.10 hrs HW=2,208.59' TW=2,207.18' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.33 cfs @ 2.06 fps)

Summary for Pond 90: 24" Steel Culvert

Inflow Area =	9.707 ac,	0.00% Impervious, Inflow Depth = 0.23"	for 1-YEAR event
Inflow =	1.20 cfs @	12.39 hrs, Volume=	0.186 af
Outflow =	1.20 cfs @	12.39 hrs, Volume=	0.186 af, Atten= 0%, Lag= 0.0 min
Primary =	1.20 cfs @	12.39 hrs, Volume=	0.186 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,890.34' @ 12.39 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,890.00'	**35.0" W x 24.0" H, R=17.9"/55.1" Arch CMP_Arch_1/2 35x24** L= 25.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,890.00' / 1,889.50' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 4.63 sf

#2	Primary	1,895.00'	**50.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.20 cfs @ 12.39 hrs HW=1,890.34' TW=1,889.46' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 35x24** (Inlet Controls 1.20 cfs @ 1.72 fps)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 122: 18" HDPE Storm

Inflow Area = 0.477 ac, 83.18% Impervious, Inflow Depth = 2.16" for 1-YEAR event
Inflow = 1.71 cfs @ 11.97 hrs, Volume= 0.086 af
Outflow = 1.71 cfs @ 11.97 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.0 min
Primary = 1.71 cfs @ 11.97 hrs, Volume= 0.086 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,947.01' @ 11.98 hrs
Flood Elev= 1,961.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,946.00'	**18.0" Round Culvert** L= 22.0' Ke= 0.500 Inlet / Outlet Invert= 1,946.00' / 1,945.89' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,949.33'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.64 cfs @ 11.97 hrs HW=1,947.00' TW=1,946.90' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.64 cfs @ 1.85 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 123: 18" HDPE Storm

Inflow Area = 0.667 ac, 80.73% Impervious, Inflow Depth = 2.10" for 1-YEAR event
Inflow = 2.36 cfs @ 11.97 hrs, Volume= 0.117 af
Outflow = 2.36 cfs @ 11.97 hrs, Volume= 0.117 af, Atten= 0%, Lag= 0.0 min
Primary = 2.36 cfs @ 11.97 hrs, Volume= 0.117 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,946.91' @ 11.98 hrs
Flood Elev= 1,961.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,945.89'	**18.0" Round Culvert** L= 124.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,945.89' / 1,945.27' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,949.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.34 cfs @ 11.97 hrs HW=1,946.90' TW=1,946.50' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.34 cfs @ 2.62 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond A1: A1 - OPEN SWALE

Inflow Area = 1.159 ac, 0.00% Impervious, Inflow Depth = 0.74" for 1-YEAR event
Inflow = 1.22 cfs @ 12.03 hrs, Volume= 0.071 af
Outflow = 0.02 cfs @ 20.10 hrs, Volume= 0.071 af, Atten= 98%, Lag= 484.1 min
Discarded = 0.02 cfs @ 20.10 hrs, Volume= 0.071 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,909.70' @ 20.10 hrs Surf.Area= 2,111 sf Storage= 2,072 cf

Plug-Flow detention time= 1,000.0 min calculated for 0.071 af (100% of inflow)
Center-of-Mass det. time= 1,000.1 min (1,875.8 - 875.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,904.50'	186 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 464 cf Overall x 40.0% Voids
#2	1,905.50'	139 cf	**FILTER MEDIA (Prismatic)** Listed below (Recalc) 928 cf Overall x 15.0% Voids
#3	1,907.50'	2,803 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		3,128 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,904.50	464	0	0
1,905.50	464	464	464

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,905.50	464	0	0
1,907.50	464	928	928

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,907.50	464	0	0
1,908.00	567	258	258
1,910.00	1,291	1,858	2,116
1,910.50	1,457	687	2,803

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,904.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,910.00'	**15.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.02 cfs @ 20.10 hrs HW=1,909.70' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,904.50' TW=1,902.50' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond A2: A2 - OPEN SWALE

Inflow Area = 1.621 ac, 0.00% Impervious, Inflow Depth = 0.21" for 1-YEAR event
Inflow = 0.49 cfs @ 12.03 hrs, Volume= 0.028 af
Outflow = 0.01 cfs @ 17.05 hrs, Volume= 0.028 af, Atten= 97%, Lag= 300.8 min
Discarded = 0.01 cfs @ 17.05 hrs, Volume= 0.028 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,906.54' @ 17.05 hrs Surf.Area= 1,275 sf Storage= 703 cf

Plug-Flow detention time= 607.0 min calculated for 0.028 af (100% of inflow)
Center-of-Mass det. time= 607.0 min (1,482.8 - 875.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,902.50'	134 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 336 cf Overall x 40.0% Voids
#2	1,903.50'	101 cf	**FILTER BED (Prismatic)** Listed below (Recalc) 672 cf Overall x 15.0% Voids
#3	1,905.50'	2,316 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		2,551 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,902.50	336	0	0
1,903.50	336	336	336

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,903.50	336	0	0
1,905.50	336	672	672

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,905.50	336	0	0
1,906.00	428	191	191
1,908.00	1,080	1,508	1,699
1,908.50	1,386	617	2,316

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,902.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,907.00'	**15.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00

Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.01 cfs @ 17.05 hrs HW=1,906.54' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,902.50' TW=1,900.50' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond A3: A3 - OPEN SWALE

Inflow Area = 2.379 ac, 0.00% Impervious, Inflow Depth = 0.25" for 1-YEAR event
Inflow = 0.86 cfs @ 12.03 hrs, Volume= 0.049 af
Outflow = 0.02 cfs @ 18.08 hrs, Volume= 0.049 af, Atten= 97%, Lag= 363.0 min
Discarded = 0.02 cfs @ 18.08 hrs, Volume= 0.049 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,904.87' @ 18.08 hrs Surf.Area= 1,932 sf Storage= 1,300 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 711.1 min (1,583.0 - 871.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,900.50'	206 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 514 cf Overall x 40.0% Voids
#2	1,901.50'	154 cf	**FILTER MEDIA (Prismatic)** Listed below (Recalc) 1,028 cf Overall x 15.0% Voids
#3	1,903.50'	2,895 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		3,255 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,900.50	514	0	0
1,901.50	514	514	514

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.50	514	0	0
1,903.50	514	1,028	1,028

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,903.50	514	0	0
1,904.00	613	282	282
1,906.00	1,283	1,896	2,178
1,906.50	1,585	717	2,895

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,900.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,905.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.02 cfs @ 18.08 hrs HW=1,904.87' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,900.50' TW=1,898.50' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond A4: A4 - OPEN SWALE

Inflow Area = 2.923 ac, 0.00% Impervious, Inflow Depth = 0.15" for 1-YEAR event
Inflow = 0.62 cfs @ 12.03 hrs, Volume= 0.036 af
Outflow = 0.02 cfs @ 18.27 hrs, Volume= 0.036 af, Atten= 97%, Lag= 374.1 min
Discarded = 0.02 cfs @ 18.27 hrs, Volume= 0.036 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,902.93' @ 18.27 hrs Surf.Area= 1,356 sf Storage= 943 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 736.0 min (1,607.9 - 871.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,898.50'	137 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 343 cf Overall x 40.0% Voids
#2	1,899.50'	103 cf	**FILTER MEDIA (Prismatic)** Listed below (Recalc) 686 cf Overall x 15.0% Voids
#3	1,901.50'	2,105 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		2,345 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,898.50	343	0	0
1,899.50	343	343	343

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,899.50	343	0	0
1,901.50	343	686	686

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.50	343	0	0
1,902.00	425	192	192
1,904.00	949	1,374	1,566
1,904.50	1,207	539	2,105

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,898.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,903.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.02 cfs @ 18.27 hrs HW=1,902.93' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,898.50' TW=1,896.50' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond A5: A5 - OPEN SWALE

Inflow Area = 4.411 ac, 0.00% Impervious, Inflow Depth = 0.26" for 1-YEAR event
Inflow = 1.69 cfs @ 12.03 hrs, Volume= 0.097 af
Outflow = 0.12 cfs @ 13.26 hrs, Volume= 0.097 af, Atten= 93%, Lag= 73.7 min
Discarded = 0.02 cfs @ 13.26 hrs, Volume= 0.075 af
Primary = 0.10 cfs @ 13.26 hrs, Volume= 0.023 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,901.76' @ 13.26 hrs Surf.Area= 2,104 sf Storage= 2,196 cf

Plug-Flow detention time= 843.6 min calculated for 0.097 af (100% of inflow)
Center-of-Mass det. time= 843.8 min (1,715.7 - 871.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,896.50'	138 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 346 cf Overall x 40.0% Voids
#2	1,897.50'	104 cf	**FILTER BED (Prismatic)** Listed below (Recalc) 692 cf Overall x 15.0% Voids
#3	1,899.50'	3,125 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		3,367 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,896.50	346	0	0
1,897.50	346	346	346

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,897.50	346	0	0
1,899.50	346	692	692

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,899.50	346	0	0
1,900.00	550	224	224
1,902.00	1,528	2,078	2,302
1,902.50	1,764	823	3,125

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,896.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,901.75'	**25.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.02 cfs @ 13.26 hrs HW=1,901.76' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.10 cfs @ 13.26 hrs HW=1,901.76' TW=1,897.05' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.10 cfs @ 0.29 fps)

Summary for Pond B: OPEN SWALE

Inflow Area = 3.361 ac, 0.00% Impervious, Inflow Depth = 0.74" for 1-YEAR event
Inflow = 3.27 cfs @ 12.06 hrs, Volume= 0.206 af
Outflow = 0.08 cfs @ 19.29 hrs, Volume= 0.206 af, Atten= 98%, Lag= 433.7 min
Discarded = 0.08 cfs @ 19.29 hrs, Volume= 0.206 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,867.74' @ 19.29 hrs Surf.Area= 7,032 sf Storage= 5,718 cf

Plug-Flow detention time= 857.2 min calculated for 0.206 af (100% of inflow)
Center-of-Mass det. time= 857.3 min (1,734.8 - 877.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,863.00'	595 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 1,488 cf Overall x 40.0% Voids
#2	1,864.00'	446 cf	**filter media (Prismatic)** Listed below (Recalc) 2,976 cf Overall x 15.0% Voids
#3	1,866.00'	8,167 cf	**surface storage (Prismatic)** Listed below (Recalc)
		9,209 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,863.00	1,488	0	0
1,864.00	1,488	1,488	1,488

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,864.00	1,488	0	0
1,866.00	1,488	2,976	2,976

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,866.00	1,488	0	0
1,867.00	2,798	2,143	2,143
1,868.00	4,500	3,649	5,792
1,868.50	5,000	2,375	8,167

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,863.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,868.00'	**30.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.08 cfs @ 19.29 hrs HW=1,867.74' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,863.00' TW=1,848.40' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond B1: bioretention @ 8 tee

Inflow Area = 10.459 ac, 0.00% Impervious, Inflow Depth = 0.78" for 1-YEAR event
Inflow = 7.50 cfs @ 12.19 hrs, Volume= 0.683 af
Outflow = 5.06 cfs @ 12.36 hrs, Volume= 0.683 af, Atten= 33%, Lag= 10.4 min
Discarded = 0.16 cfs @ 12.36 hrs, Volume= 0.327 af
Primary = 4.90 cfs @ 12.36 hrs, Volume= 0.357 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,965.68' @ 12.36 hrs Surf.Area= 14,249 sf Storage= 7,820 cf

Plug-Flow detention time= 285.3 min calculated for 0.683 af (100% of inflow)
Center-of-Mass det. time= 285.3 min (1,169.5 - 884.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,960.00'	1,800 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 4,500 cf Overall x 40.0% Voids
#2	1,961.00'	2,700 cf	**filter media (Prismatic)** Listed below (Recalc) 18,000 cf Overall x 15.0% Voids
#3	1,965.00'	12,150 cf	**surface storage (Prismatic)** Listed below (Recalc)
		16,650 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,960.00	4,500	0	0
1,961.00	4,500	4,500	4,500

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,961.00	4,500	0	0
1,965.00	4,500	18,000	18,000

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,965.00	4,500	0	0
1,966.00	5,600	5,050	5,050
1,967.00	8,600	7,100	12,150

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,960.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,965.50'	**25.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.16 cfs @ 12.36 hrs HW=1,965.68' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=4.89 cfs @ 12.36 hrs HW=1,965.68' TW=1,961.34' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 4.89 cfs @ 1.08 fps)

Summary for Pond B3: bioretention @ blvd

Inflow Area = 5.445 ac, 46.85% Impervious, Inflow Depth = 1.42" for 1-YEAR event
Inflow = 9.63 cfs @ 12.08 hrs, Volume= 0.645 af
Outflow = 0.41 cfs @ 14.61 hrs, Volume= 0.645 af, Atten= 96%, Lag= 151.7 min
Discarded = 0.41 cfs @ 14.61 hrs, Volume= 0.645 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,959.35' @ 14.61 hrs Surf.Area= 35,645 sf Storage= 15,883 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 500.3 min (1,338.9 - 838.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,954.00'	4,700 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 11,750 cf Overall x 40.0% Voids
#2	1,955.00'	7,050 cf	**filter media (Prismatic)** Listed below (Recalc) 47,000 cf Overall x 15.0% Voids
#3	1,959.00'	26,092 cf	**surface storage (Prismatic)** Listed below (Recalc)
		37,842 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,954.00	11,750	0	0
1,955.00	11,750	11,750	11,750

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,955.00	11,750	0	0
1,959.00	11,750	47,000	47,000

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,959.00	11,750	0	0
1,960.00	12,892	12,321	12,321
1,961.00	14,650	13,771	26,092

Device	Routing	Invert	Outlet Devices
#1	Primary	1,954.00'	**21.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,954.00' / 1,953.00' S= 0.0118 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Discarded	1,954.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	1,959.50'	**12.0" Horiz. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#4	Secondary	1,960.50'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.41 cfs @ 14.61 hrs HW=1,959.35' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.41 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,954.00' TW=1,952.90' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,954.00' TW=1,951.87' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond DP 10: Design Point 10

Inflow Area = 156.019 ac, 1.86% Impervious, Inflow Depth = 0.63" for 1-YEAR event
Inflow = 40.55 cfs @ 12.25 hrs, Volume= 8.150 af
Primary = 40.55 cfs @ 12.25 hrs, Volume= 8.150 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 11: Design Point 11

Inflow Area = 90.970 ac, 15.56% Impervious, Inflow Depth = 0.24" for 1-YEAR event
Inflow = 16.97 cfs @ 12.02 hrs, Volume= 1.824 af
Primary = 16.97 cfs @ 12.02 hrs, Volume= 1.824 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 12: Design Point 12

Inflow Area = 5.404 ac, 15.82% Impervious, Inflow Depth = 0.92" for 1-YEAR event
Inflow = 7.50 cfs @ 12.01 hrs, Volume= 0.414 af
Primary = 7.50 cfs @ 12.01 hrs, Volume= 0.414 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 16: Design Point 16 24" CMP

Inflow Area = 18.370 ac, 4.45% Impervious, Inflow Depth = 0.46" for 1-YEAR event
Inflow = 7.03 cfs @ 12.10 hrs, Volume= 0.700 af
Primary = 7.03 cfs @ 12.10 hrs, Volume= 0.700 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond F1: Open Swale-F

Inflow Area = 2.052 ac, 0.00% Impervious, Inflow Depth = 0.78" for 1-YEAR event
Inflow = 2.62 cfs @ 12.00 hrs, Volume= 0.134 af
Outflow = 0.05 cfs @ 19.60 hrs, Volume= 0.134 af, Atten= 98%, Lag= 455.9 min
Discarded = 0.05 cfs @ 19.60 hrs, Volume= 0.134 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,895.31' @ 19.60 hrs Surf.Area= 4,190 sf Storage= 3,839 cf

Plug-Flow detention time= 939.0 min calculated for 0.134 af (100% of inflow)
Center-of-Mass det. time= 939.1 min (1,808.5 - 869.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,890.50'	317 cf	**Stone Underdrain (Prismatic)** Listed below (Recalc) 792 cf Overall x 40.0% Voids
#2	1,891.50'	238 cf	**Filter Bed (Prismatic)** Listed below 1,584 cf Overall x 15.0% Voids
#3	1,893.50'	6,962 cf	**surface storage (Prismatic)** Listed below (Recalc)
		7,516 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,890.50	792	0	0
1,891.50	792	792	792

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,891.50	792	0	0
1,893.50	792	1,584	1,584

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,893.50	792	0	0
1,894.00	1,526	580	580
1,896.00	3,175	4,701	5,281
1,896.50	3,550	1,681	6,962

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,890.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,895.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.05 cfs @ 19.60 hrs HW=1,895.31' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,890.50' TW=1,894.50' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond G: OPEN SWALE

Inflow Area = 3.700 ac, 0.00% Impervious, Inflow Depth = 0.78" for 1-YEAR event
Inflow = 4.42 cfs @ 12.02 hrs, Volume= 0.242 af
Outflow = 0.12 cfs @ 17.05 hrs, Volume= 0.242 af, Atten= 97%, Lag= 301.9 min
Discarded = 0.12 cfs @ 17.05 hrs, Volume= 0.242 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,903.05' @ 17.05 hrs Surf.Area= 10,580 sf Storage= 6,064 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 617.6 min (1,488.4 - 870.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,899.00'	1,146 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 2,865 cf Overall x 40.0% Voids
#2	1,900.00'	860 cf	**filter media (Prismatic)** Listed below (Recalc) 5,730 cf Overall x 15.0% Voids
#3	1,902.00'	12,721 cf	**surface storage (Prismatic)** Listed below (Recalc)
		14,726 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,899.00	2,865	0	0
1,900.00	2,865	2,865	2,865

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,900.00	2,865	0	0
1,902.00	2,865	5,730	5,730

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,902.00	2,865	0	0
1,903.00	4,783	3,824	3,824
1,904.00	6,154	5,469	9,293
1,904.50	7,558	3,428	12,721

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,899.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,903.50'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.12 cfs @ 17.05 hrs HW=1,903.05' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,899.00' TW=1,897.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond I18: Manhole

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 1.23" for 1-YEAR event
Inflow = 33.16 cfs @ 12.02 hrs, Volume= 2.003 af
Outflow = 33.16 cfs @ 12.02 hrs, Volume= 2.003 af, Atten= 0%, Lag= 0.0 min
Primary = 33.16 cfs @ 12.02 hrs, Volume= 2.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,007.91' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,005.90'	**54.0" Round Culvert** L= 304.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,005.90' / 2,000.00' S= 0.0194 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf

Primary OutFlow Max=33.16 cfs @ 12.02 hrs HW=2,007.91' TW=2,000.90' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 33.16 cfs @ 4.83 fps)

Summary for Pond I19: Manhole

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 1.23" for 1-YEAR event
Inflow = 33.16 cfs @ 12.02 hrs, Volume= 2.003 af
Outflow = 33.16 cfs @ 12.02 hrs, Volume= 2.003 af, Atten= 0%, Lag= 0.0 min
Primary = 33.16 cfs @ 12.02 hrs, Volume= 2.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,018.91' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,016.90'	**54.0" Round Culvert** L= 348.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,016.90' / 2,006.00' S= 0.0313 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf

Primary OutFlow Max=33.16 cfs @ 12.02 hrs HW=2,018.91' TW=2,007.91' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 33.16 cfs @ 4.83 fps)

Summary for Pond I2: 30" HDPE Storm

Inflow Area = 3.692 ac, 57.82% Impervious, Inflow Depth = 1.66" for 1-YEAR event
Inflow = 9.65 cfs @ 11.99 hrs, Volume= 0.511 af
Outflow = 9.65 cfs @ 11.99 hrs, Volume= 0.511 af, Atten= 0%, Lag= 0.0 min
Primary = 9.65 cfs @ 11.99 hrs, Volume= 0.511 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,945.30' @ 11.99 hrs
Flood Elev= 1,955.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,943.90'	**30.0" Round Culvert** L= 170.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,943.90' / 1,943.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=9.64 cfs @ 11.99 hrs HW=1,945.30' TW=1,943.96' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 9.64 cfs @ 4.91 fps)

Summary for Pond I22: Manhole- 54" HDPE Storm

Inflow Area = 9.234 ac, 60.31% Impervious, Inflow Depth = 1.78" for 1-YEAR event
Inflow = 26.35 cfs @ 11.97 hrs, Volume= 1.370 af
Outflow = 26.35 cfs @ 11.97 hrs, Volume= 1.370 af, Atten= 0%, Lag= 0.0 min
Primary = 26.35 cfs @ 11.97 hrs, Volume= 1.370 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,172.17' @ 11.97 hrs
Flood Elev= 2,182.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,170.00'	**54.0" Round CMP_Round 54"** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,170.00' / 2,169.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf
#2	Primary	2,182.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=26.31 cfs @ 11.97 hrs HW=2,172.17' TW=2,169.71' (Dynamic Tailwater)
└1=**CMP_Round 54"** (Barrel Controls 26.31 cfs @ 5.06 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I23: Manhole -30" HDPE Storm

Inflow Area = 3.957 ac, 45.04% Impervious, Inflow Depth = 1.52" for 1-YEAR event
Inflow = 9.57 cfs @ 11.98 hrs, Volume= 0.500 af
Outflow = 9.57 cfs @ 11.98 hrs, Volume= 0.500 af, Atten= 0%, Lag= 0.0 min
Primary = 9.57 cfs @ 11.98 hrs, Volume= 0.500 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,184.99' @ 11.98 hrs
Flood Elev= 2,189.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,183.72'	**30.0" Round Culvert** L= 171.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,183.72' / 2,176.64' S= 0.0414 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,189.19'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=9.55 cfs @ 11.98 hrs HW=2,184.99' TW=2,172.17' (Dynamic Tailwater)
└1=**Culvert** (Inlet Controls 9.55 cfs @ 3.83 fps)
└2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I24: 30" HDPE Storm

Inflow Area = 3.957 ac, 45.04% Impervious, Inflow Depth = 1.52" for 1-YEAR event
Inflow = 9.57 cfs @ 11.98 hrs, Volume= 0.500 af
Outflow = 9.57 cfs @ 11.98 hrs, Volume= 0.500 af, Atten= 0%, Lag= 0.0 min
Primary = 9.57 cfs @ 11.98 hrs, Volume= 0.500 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,190.30' @ 11.98 hrs
Flood Elev= 2,194.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,189.03'	**30.0" Round Culvert** L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,189.03' / 2,183.82' S= 0.0827 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,194.48'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.55 cfs @ 11.98 hrs HW=2,190.30' TW=2,184.99' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 9.55 cfs @ 3.83 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I25: 30" HDPE Storm

Inflow Area = 3.059 ac, 51.35% Impervious, Inflow Depth = 1.64" for 1-YEAR event
Inflow = 7.79 cfs @ 11.98 hrs, Volume= 0.418 af
Outflow = 7.79 cfs @ 11.98 hrs, Volume= 0.418 af, Atten= 0%, Lag= 0.0 min
Primary = 7.79 cfs @ 11.98 hrs, Volume= 0.418 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,192.63' @ 11.98 hrs
Flood Elev= 2,205.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,191.50'	**30.0" Round Culvert** L= 253.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,191.50' / 2,189.13' S= 0.0094 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,205.80'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.78 cfs @ 11.98 hrs HW=2,192.63' TW=2,190.30' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 7.78 cfs @ 3.62 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I26: 30" HDPE Storm

Inflow Area = 2.407 ac, 48.55% Impervious, Inflow Depth = 1.62" for 1-YEAR event
Inflow = 6.24 cfs @ 11.97 hrs, Volume= 0.324 af
Outflow = 6.24 cfs @ 11.97 hrs, Volume= 0.324 af, Atten= 0%, Lag= 0.0 min
Primary = 6.24 cfs @ 11.97 hrs, Volume= 0.324 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,193.22' @ 11.97 hrs
Flood Elev= 2,208.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,191.80'	**30.0" Round Culvert** L= 201.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,191.80' / 2,191.60' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

#2	Primary	2,195.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.23 cfs @ 11.97 hrs HW=2,193.22' TW=2,192.63' (Dynamic Tailwater)
├─**1=Culvert** (Barrel Controls 6.23 cfs @ 3.13 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I27: 30" HDPE Storm

Inflow Area = 2.129 ac, 53.13% Impervious, Inflow Depth = 1.71" for 1-YEAR event
Inflow = 5.78 cfs @ 11.97 hrs, Volume= 0.303 af
Outflow = 5.78 cfs @ 11.97 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.0 min
Primary = 5.78 cfs @ 11.97 hrs, Volume= 0.303 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,193.50' @ 11.97 hrs
Flood Elev= 2,208.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,192.00'	**30.0" Round Culvert** L= 98.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,192.00' / 2,191.90' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,208.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.78 cfs @ 11.97 hrs HW=2,193.50' TW=2,193.22' (Dynamic Tailwater)
├─**1=Culvert** (Outlet Controls 5.78 cfs @ 2.69 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I28: 30" HDPE Storm

Inflow Area = 1.459 ac, 77.51% Impervious, Inflow Depth = 2.13" for 1-YEAR event
Inflow = 4.88 cfs @ 11.97 hrs, Volume= 0.259 af
Outflow = 4.88 cfs @ 11.97 hrs, Volume= 0.259 af, Atten= 0%, Lag= 0.0 min
Primary = 4.88 cfs @ 11.97 hrs, Volume= 0.259 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,193.81' @ 11.97 hrs
Flood Elev= 2,197.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,192.30'	**30.0" Round Culvert** L= 236.0' Ke= 0.500 Inlet / Outlet Invert= 2,192.30' / 2,192.07' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,197.80'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.82 cfs @ 11.97 hrs HW=2,193.80' TW=2,193.50' (Dynamic Tailwater)
├─**1=Culvert** (Outlet Controls 4.82 cfs @ 2.24 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I29: Manhole

Inflow Area = 1.039 ac,100.00% Impervious, Inflow Depth = 2.57" for 1-YEAR event
Inflow = 4.10 cfs @ 11.97 hrs, Volume= 0.222 af
Outflow = 4.10 cfs @ 11.97 hrs, Volume= 0.222 af, Atten= 0%, Lag= 0.0 min
Primary = 4.10 cfs @ 11.97 hrs, Volume= 0.222 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,193.96' @ 11.97 hrs
Flood Elev= 2,208.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,192.50'	**30.0" Round Culvert** L= 98.0' Ke= 0.500 Inlet / Outlet Invert= 2,192.50' / 2,192.40' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=4.05 cfs @ 11.97 hrs HW=2,193.95' TW=2,193.80' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 4.05 cfs @ 1.97 fps)

Summary for Pond I3: 30" HDPE Storm

Inflow Area = 3.323 ac, 53.14% Impervious, Inflow Depth = 1.56" for 1-YEAR event
Inflow = 8.26 cfs @ 11.99 hrs, Volume= 0.432 af
Outflow = 8.26 cfs @ 11.99 hrs, Volume= 0.432 af, Atten= 0%, Lag= 0.0 min
Primary = 8.26 cfs @ 11.99 hrs, Volume= 0.432 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,946.53' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,945.17'	**30.0" Round Culvert** L= 231.0' Ke= 0.500 Inlet / Outlet Invert= 1,945.17' / 1,944.02' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	1,949.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.25 cfs @ 11.99 hrs HW=1,946.53' TW=1,945.30' (Dynamic Tailwater)
├─**1=Culvert** (Outlet Controls 8.25 cfs @ 4.40 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I30: 30" HDPE Storm

Inflow Area = 1.039 ac,100.00% Impervious, Inflow Depth = 2.57" for 1-YEAR event
Inflow = 4.10 cfs @ 11.97 hrs, Volume= 0.222 af
Outflow = 4.10 cfs @ 11.97 hrs, Volume= 0.222 af, Atten= 0%, Lag= 0.0 min
Primary = 4.10 cfs @ 11.97 hrs, Volume= 0.222 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,195.17' @ 11.97 hrs
Flood Elev= 2,204.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,194.08'	**30.0" Round Culvert** L= 79.0' Ke= 0.500 Inlet / Outlet Invert= 2,194.08' / 2,194.00' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,199.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.09 cfs @ 11.97 hrs HW=2,195.17' TW=2,193.95' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.09 cfs @ 2.95 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond I31: 36" HDPE Storm

Inflow Area = 2.463 ac, 39.52% Impervious, Inflow Depth = 1.30" for 1-YEAR event
Inflow = 5.73 cfs @ 11.98 hrs, Volume= 0.267 af
Outflow = 5.73 cfs @ 11.98 hrs, Volume= 0.267 af, Atten= 0%, Lag= 0.0 min
Primary = 5.73 cfs @ 11.98 hrs, Volume= 0.267 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,172.28' @ 11.97 hrs
Flood Elev= 2,180.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,170.50'	**36.0" Round Culvert** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,170.50' / 2,170.35' S= 0.0027 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=5.72 cfs @ 11.98 hrs HW=2,172.28' TW=2,172.17' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.72 cfs @ 1.88 fps)

Summary for Pond I32: 30" HDPE Storm

Inflow Area = 2.463 ac, 39.52% Impervious, Inflow Depth = 1.30" for 1-YEAR event
Inflow = 5.73 cfs @ 11.98 hrs, Volume= 0.267 af
Outflow = 5.73 cfs @ 11.98 hrs, Volume= 0.267 af, Atten= 0%, Lag= 0.0 min
Primary = 5.73 cfs @ 11.98 hrs, Volume= 0.267 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,172.55' @ 11.98 hrs
Flood Elev= 2,180.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,171.00'	**30.0" Round Culvert** L= 119.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,171.00' / 2,170.41' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,180.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=5.68 cfs @ 11.98 hrs HW=2,172.55' TW=2,172.28' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.68 cfs @ 2.54 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond I33: 24" HDPE Storm

Inflow Area = 1.999 ac, 39.27% Impervious, Inflow Depth = 1.29" for 1-YEAR event
Inflow = 4.61 cfs @ 11.98 hrs, Volume= 0.215 af
Outflow = 4.61 cfs @ 11.98 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.0 min
Primary = 4.61 cfs @ 11.98 hrs, Volume= 0.215 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,173.13' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,172.00'	**30.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,172.00' / 2,171.13' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,176.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.60 cfs @ 11.98 hrs HW=2,173.13' TW=2,172.55' (Dynamic Tailwater)
—**1=Culvert** (Outlet Controls 4.60 cfs @ 3.13 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I4: 15" HDPE Storm

Inflow Area = 0.369 ac,100.00% Impervious, Inflow Depth = 2.57" for 1-YEAR event
Inflow = 1.46 cfs @ 11.97 hrs, Volume= 0.079 af
Outflow = 1.46 cfs @ 11.97 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min
Primary = 1.46 cfs @ 11.97 hrs, Volume= 0.079 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,952.08' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,951.50'	**15.0" Round Culvert** L= 140.0' Ke= 0.500 Inlet / Outlet Invert= 1,951.50' / 1,950.00' S= 0.0107 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.45 cfs @ 11.97 hrs HW=1,952.08' TW=1,945.28' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 1.45 cfs @ 2.60 fps)

Summary for Pond I6: Manhole

Inflow Area = 8.896 ac, 28.68% Impervious, Inflow Depth = 0.00" for 1-YEAR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,952.90' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,952.90'	**36.0" Round Culvert** L= 186.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 1,952.90' / 1,951.97' S= 0.0050 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,952.90' TW=1,951.87' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Summary for Pond IP: P2

Inflow Area = 46.508 ac, 27.33% Impervious, Inflow Depth = 0.97" for 1-YEAR event
Inflow = 61.07 cfs @ 12.02 hrs, Volume= 3.757 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 1,937.00' Surf.Area= 47,921 sf Storage= 444,293 cf
Peak Elev= 1,939.67' @ 41.17 hrs Surf.Area= 73,502 sf Storage= 607,956 cf (163,663 cf above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	1,910.00'	959,989 cf	**Storage above Perm Pool (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,910.00	685	100.0	0	0	685
1,912.00	1,221	150.0	1,880	1,880	1,711
1,914.00	2,042	190.0	3,228	5,108	2,845
1,916.00	3,114	250.0	5,118	10,227	4,991
1,918.00	5,151	450.0	8,180	18,407	16,154
1,920.00	8,098	627.0	13,138	31,545	31,362
1,922.00	10,863	680.0	18,893	50,439	37,027
1,924.00	14,370	830.0	25,151	75,590	55,115
1,926.00	18,615	1,000.0	32,894	108,484	79,939
1,928.00	22,653	1,022.0	41,202	149,686	84,016
1,930.00	26,948	1,062.0	49,539	199,224	90,969
1,932.00	31,296	1,090.0	58,190	257,414	96,225
1,934.00	35,715	1,115.0	66,962	324,377	101,134
1,936.00	40,228	1,140.0	75,898	400,275	106,156
1,938.00	56,286	1,229.0	96,066	496,341	123,100
1,939.00	70,553	1,304.0	63,285	559,626	138,271
1,940.00	74,969	1,432.0	72,750	632,376	166,173
1,942.00	93,060	2,050.0	167,703	800,079	337,449
1,942.25	97,168	2,034.0	23,777	823,856	342,674
1,943.00	111,843	1,898.0	78,315	902,170	385,254
1,943.50	119,472	1,918.0	57,818	959,989	391,402

Device	Routing	Invert	Outlet Devices
#1	Primary	1,940.40'	**18.0" Round Culvert** L= 130.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,940.40' / 1,937.00' S= 0.0262 '/' Cc= 0.900

			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,943.00'	**25.0' long x 20.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,937.00' TW=1,937.00' (Dynamic Tailwater)
├─**1=Culvert** (Controls 0.00 cfs)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 9S: Subcatchment 9 Runoff Area=1,465,881 sf 1.47% Impervious Runoff Depth=2.81"
Flow Length=2,033' Tc=21.6 min CN=70 Runoff=99.71 cfs 7.867 af

Subcatchment 10S: Subcatchment 10 Runoff Area=1,371,524 sf 2.87% Impervious Runoff Depth=2.90"
Flow Length=2,845' Tc=25.8 min CN=71 Runoff=86.68 cfs 7.606 af

Subcatchment 11A: Subcatchment 11A Runoff Area=57,739 sf 4.72% Impervious Runoff Depth=2.90"
Flow Length=480' Tc=15.3 min CN=71 Runoff=4.92 cfs 0.320 af

Subcatchment 11B: Subcatchment 11B Runoff Area=104,152 sf 18.70% Impervious Runoff Depth=3.48"
Flow Length=486' Tc=17.9 min CN=77 Runoff=9.84 cfs 0.693 af

Subcatchment 11S: Subcatchment 11 Runoff Area=182,734 sf 7.34% Impervious Runoff Depth=2.99"
Flow Length=984' Tc=11.5 min CN=72 Runoff=18.34 cfs 1.046 af

Subcatchment 12A: Subcatchment 12A Runoff Area=550,450 sf 11.44% Impervious Runoff Depth=3.28"
Flow Length=2,110' Tc=6.4 min CN=75 Runoff=72.61 cfs 3.456 af

Subcatchment 12B: Subcatchment 12B Runoff Area=655,932 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=1,700' Tc=58.7 min CN=70 Runoff=22.55 cfs 3.520 af

Subcatchment 27A: SUB27A Runoff Area=131,978 sf 10.22% Impervious Runoff Depth=3.28"
Flow Length=1,114' Tc=7.3 min CN=75 Runoff=16.85 cfs 0.829 af

Subcatchment 27S: Subcatchment 27 Runoff Area=78,054 sf 25.27% Impervious Runoff Depth=3.68"
Flow Length=400' Tc=12.9 min CN=79 Runoff=9.11 cfs 0.549 af

Subcatchment 28S: Subcatchment 28 Runoff Area=141,352 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=818' Tc=36.8 min CN=70 Runoff=6.78 cfs 0.759 af

Subcatchment 29S: SUB27A Runoff Area=25,355 sf 15.87% Impervious Runoff Depth=3.58"
Flow Length=248' Tc=6.0 min CN=78 Runoff=3.67 cfs 0.174 af

Subcatchment 61S: Hotel Roof Runoff Area=15,005 sf 100.00% Impervious Runoff Depth=5.76"
Tc=6.0 min CN=98 Runoff=2.95 cfs 0.165 af

Subcatchment 67S: W. top front of hotel Runoff Area=15,005 sf 100.00% Impervious Runoff Depth=5.76"
Tc=6.0 min CN=98 Runoff=2.95 cfs 0.165 af

Subcatchment 70A: (new Subcat) Runoff Area=20,212 sf 40.57% Impervious Runoff Depth=4.20"
Flow Length=207' Tc=6.0 min CN=84 Runoff=3.34 cfs 0.162 af

Subcatchment 70B: (new Subcat) Runoff Area=29,474 sf 30.81% Impervious Runoff Depth=3.88"
Flow Length=235' Tc=6.0 min CN=81 Runoff=4.57 cfs 0.219 af

Subcatchment 70C: (new Subcat) Runoff Area=57,593 sf 43.60% Impervious Runoff Depth=4.20"
Tc=6.0 min CN=84 Runoff=9.50 cfs 0.462 af

Subcatchment 100a: Hole 4 (110) PR Runoff Area=50,494 sf 0.00% Impervious Runoff Depth=3.09"
Flow Length=419' Tc=10.5 min CN=73 Runoff=5.42 cfs 0.298 af

Subcatchment 100b: Hole 4 (110) PR Runoff Area=20,138 sf 0.00% Impervious Runoff Depth=3.09"
Flow Length=419' Tc=10.5 min CN=73 Runoff=2.16 cfs 0.119 af

Subcatchment 100c: Hole 4 (110) PR Runoff Area=33,000 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=419' Tc=10.5 min CN=74 Runoff=3.65 cfs 0.201 af

Subcatchment 100d: Hole 4 (110) PR Runoff Area=23,704 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=419' Tc=10.5 min CN=74 Runoff=2.62 cfs 0.144 af

Subcatchment 100e: Hole 4 (110) PR Runoff Area=64,786 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=419' Tc=10.5 min CN=74 Runoff=7.16 cfs 0.395 af

Subcatchment 101: Land east of irrigation pond Runoff Area=38,708 sf 19.62% Impervious Runoff Depth=3.68"
Flow Length=294' Tc=6.0 min CN=79 Runoff=5.73 cfs 0.272 af

Subcatchment 102: Pool House and Pool (102) Runoff Area=16,073 sf 100.00% Impervious Runoff Depth=5.76"
Tc=6.0 min CN=98 Runoff=3.16 cfs 0.177 af

Subcatchment 103: Pool parking lot and tennis Runoff Area=115,694 sf 46.21% Impervious Runoff Depth=4.30"
Flow Length=602' Tc=8.8 min CN=85 Runoff=17.71 cfs 0.952 af

Subcatchment 104: Holes 7 &8 Runoff Area=455,573 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=1,031' Tc=23.7 min CN=74 Runoff=33.47 cfs 2.776 af

Subcatchment 108: Front of Road to 8 -23 (108) Runoff Area=20,760 sf 83.18% Impervious Runoff Depth=5.30"
Flow Length=482' Tc=6.0 min CN=94 Runoff=3.97 cfs 0.210 af

Subcatchment 109: Front of Road to 8 -23 (109) Runoff Area=8,280 sf 74.58% Impervious Runoff Depth=5.07"
Flow Length=358' Tc=6.0 min CN=92 Runoff=1.55 cfs 0.080 af

Subcatchment 111: Front of Hole 4 (111) PR Runoff Area=89,380 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=393' Tc=7.7 min CN=74 Runoff=10.94 cfs 0.545 af

Subcatchment 114: Behind Townhomes Runoff Area=150,301 sf 0.00% Impervious Runoff Depth=3.09"
Flow Length=930' Tc=15.7 min CN=73 Runoff=13.50 cfs 0.888 af

Subcatchment 115: Land between buildings 17 Runoff Area=460,843 sf 9.33% Impervious Runoff Depth=3.38"
Flow Length=809' Tc=12.9 min CN=76 Runoff=49.67 cfs 2.980 af

Subcatchment 117: Rest of Road to 8 -23 (117) Runoff Area=237,198 sf 46.85% Impervious Runoff Depth=4.30"
Flow Length=930' Slope=0.0600 '/' Tc=16.3 min CN=85 Runoff=28.56 cfs 1.952 af

Subcatchment 119: Green of Hole 3 & tee of Hole Runoff Area=146,387 sf 0.00% Impervious Runoff Depth=3.09"
Flow Length=727' Tc=12.4 min CN=73 Runoff=14.69 cfs 0.865 af

Subcatchment 123S: Land north of irrigation pond Runoff Area=43,890 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=146' Tc=8.6 min CN=74 Runoff=5.20 cfs 0.267 af

Subcatchment 125: Hole 3 and end of Hole 4 Runoff Area=161,159 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=1,131' Tc=9.2 min CN=74 Runoff=18.68 cfs 0.982 af

Subcatchment 126: Irr. Pond Runoff Area=74,991 sf 75.06% Impervious Runoff Depth=5.07"
Tc=6.0 min CN=92 Runoff=14.04 cfs 0.727 af

Subcatchment 126A: forebay Runoff Area=8,000 sf 0.00% Impervious Runoff Depth=5.76"
Tc=6.0 min CN=98 Runoff=1.57 cfs 0.088 af

Subcatchment 127S: (new Subcat) Runoff Area=448,894 sf 0.00% Impervious Runoff Depth=3.09"
Flow Length=1,944' Tc=11.6 min CN=73 Runoff=46.34 cfs 2.652 af

Subcatchment 128S: HOTEL ROOF Runoff Area=6,878 sf 100.00% Impervious Runoff Depth=5.76"
Tc=6.0 min CN=98 Runoff=1.35 cfs 0.076 af

Subcatchment 129S: HOTEL ROOF Runoff Area=13,760 sf 100.00% Impervious Runoff Depth=5.76"
Tc=6.0 min CN=98 Runoff=2.70 cfs 0.152 af

Subcatchment 130S: (new Subcat) Runoff Area=39,147 sf 23.55% Impervious Runoff Depth=3.78"
Flow Length=21' Slope=0.0200 '/' Tc=6.0 min CN=80 Runoff=5.94 cfs 0.283 af

Subcatchment 131A: HOTEL ROOF Runoff Area=51,300 sf 100.00% Impervious Runoff Depth=5.76"
Tc=6.0 min CN=98 Runoff=10.07 cfs 0.565 af

Subcatchment 131S: (new Subcat) Runoff Area=28,363 sf 61.70% Impervious Runoff Depth=4.74"
Flow Length=64' Slope=0.0310 '/' Tc=10.1 min CN=89 Runoff=4.46 cfs 0.257 af

Subcatchment 132S: (new Subcat) Runoff Area=12,145 sf 13.59% Impervious Runoff Depth=3.48"
Flow Length=103' Tc=6.0 min CN=77 Runoff=1.71 cfs 0.081 af

Subcatchment 133S: (new Subcat) Runoff Area=29,164 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=50' Tc=6.0 min CN=74 Runoff=3.80 cfs 0.178 af

Subcatchment 134S: HOTEL ROOF Runoff Area=6,878 sf 100.00% Impervious Runoff Depth=5.76"
Tc=6.0 min CN=98 Runoff=1.35 cfs 0.076 af

Subcatchment 135S: (new Subcat) Runoff Area=18,297 sf 21.86% Impervious Runoff Depth=3.68"
Flow Length=246' Tc=6.0 min CN=79 Runoff=2.71 cfs 0.129 af

Subcatchment 136S: Parking Structure Runoff Area=45,262 sf 100.00% Impervious Runoff Depth=5.76"
Flow Length=306' Slope=0.0100 '/' Tc=6.0 min CN=98 Runoff=8.89 cfs 0.499 af

Subcatchment 138S: HOTEL ROOF Runoff Area=13,760 sf 100.00% Impervious Runoff Depth=5.76"
Tc=6.0 min CN=98 Runoff=2.70 cfs 0.152 af

Subcatchment 500S: Subcatchment 500 Runoff Area=1,350,926 sf 2.16% Impervious Runoff Depth=2.90"
Flow Length=3,875' Tc=32.0 min CN=71 Runoff=74.17 cfs 7.492 af

Subcatchment 501S: Subcatchment 501 Runoff Area=186,481 sf 0.54% Impervious Runoff Depth=2.81"
Flow Length=2,030' Tc=19.3 min CN=70 Runoff=13.58 cfs 1.001 af

Subcatchment 502S: Subcatchment 502 Runoff Area=189,050 sf 0.76% Impervious Runoff Depth=2.81"
Flow Length=1,300' Tc=13.0 min CN=70 Runoff=16.86 cfs 1.015 af

Subcatchment 503S: Subcatchmant 503 Runoff Area=130,680 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=1,010' Tc=16.6 min CN=70 Runoff=10.33 cfs 0.701 af

Subcatchment 504S: Subcatchment 504 Runoff Area=1,320,521 sf 1.06% Impervious Runoff Depth=2.81"
Flow Length=3,280' Tc=25.0 min CN=70 Runoff=82.26 cfs 7.087 af

Subcatchment 511S: Subcatchmant 511 Runoff Area=87,120 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=680' Tc=15.6 min CN=70 Runoff=7.13 cfs 0.468 af

Subcatchment 512S: Subcatchment 512 Runoff Area=56,628 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=600' Tc=14.0 min CN=70 Runoff=4.88 cfs 0.304 af

Subcatchment 600S: Subcatchment 600 Runoff Area=369,868 sf 2.61% Impervious Runoff Depth=2.90"
Flow Length=1,610' Tc=19.3 min CN=71 Runoff=27.88 cfs 2.051 af

Subcatchment 601S: Subcatchment 601 Runoff Area=267,502 sf 3.92% Impervious Runoff Depth=2.90"
Flow Length=1,070' Tc=15.0 min CN=71 Runoff=23.06 cfs 1.483 af

Reach 18R: Overland Flow Avg. Flow Depth=0.09' Max Vel=2.50 fps Inflow=8.78 cfs 8.111 af
n=0.030 L=535.0' S=0.0748 '/' Capacity=214.48 cfs Outflow=8.78 cfs 8.110 af

Reach 21R: Ex. Roadside Ditch Avg. Flow Depth=1.10' Max Vel=5.99 fps Inflow=20.51 cfs 0.829 af
n=0.030 L=120.0' S=0.0250 '/' Capacity=36.63 cfs Outflow=20.49 cfs 0.829 af

Reach 58A: Overland Flow Avg. Flow Depth=0.05' Max Vel=1.86 fps Inflow=10.33 cfs 0.701 af
n=0.035 L=478.0' S=0.1004 '/' Capacity=1,456.48 cfs Outflow=9.76 cfs 0.701 af

Reach 61: Vegetated Roadside Swale Avg. Flow Depth=0.87' Max Vel=6.67 fps Inflow=23.00 cfs 1.367 af
n=0.040 L=751.0' S=0.0613 '/' Capacity=59.21 cfs Outflow=22.52 cfs 1.367 af

Reach 66: Stream Channel Avg. Flow Depth=1.26' Max Vel=9.62 fps Inflow=184.08 cfs 29.207 af
n=0.050 L=1,884.0' S=0.1152 '/' Capacity=445.48 cfs Outflow=182.93 cfs 29.207 af

Reach 73A: Vegetated Roadside Channel Avg. Flow Depth=1.17' Max Vel=5.53 fps Inflow=20.45 cfs 1.002 af
n=0.050 L=60.0' S=0.0560 '/' Capacity=32.90 cfs Outflow=20.44 cfs 1.002 af

Reach 75: Roadside Channel Avg. Flow Depth=1.04' Max Vel=6.43 fps Inflow=20.44 cfs 1.002 af
n=0.040 L=166.0' S=0.0542 '/' Capacity=71.25 cfs Outflow=20.40 cfs 1.002 af

Reach 76: Roadside Channel Avg. Flow Depth=1.07' Max Vel=6.24 fps Inflow=20.40 cfs 1.002 af
n=0.040 L=20.0' S=0.0500 '/' Capacity=68.43 cfs Outflow=20.40 cfs 1.002 af

Reach 78: Stream Channel Avg. Flow Depth=1.08' Max Vel=10.30 fps Inflow=137.67 cfs 21.601 af
n=0.050 L=685.0' S=0.1646 '/' Capacity=258.41 cfs Outflow=137.56 cfs 21.601 af

Reach 80: Stream Channel Avg. Flow Depth=1.49' Max Vel=6.58 fps Inflow=137.56 cfs 21.601 af
n=0.050 L=740.0' S=0.0473 '/' Capacity=247.19 cfs Outflow=137.24 cfs 21.601 af

Reach 82: Overland Flow Avg. Flow Depth=0.05' Max Vel=0.19 fps Inflow=4.88 cfs 0.304 af
n=0.400 L=938.0' S=0.1354 '/' Capacity=53.31 cfs Outflow=1.08 cfs 0.304 af

Reach 82a: Overland Flow Avg. Flow Depth=0.76' Max Vel=0.71 fps Inflow=102.73 cfs 13.990 af
n=0.400 L=473.0' S=0.0846 '/' Capacity=164.89 cfs Outflow=93.75 cfs 13.990 af

Reach 83A: Overland Flow Avg. Flow Depth=0.42' Max Vel=0.72 fps Inflow=46.44 cfs 6.251 af
n=0.400 L=441.0' S=0.1678 '/' Capacity=232.26 cfs Outflow=42.99 cfs 6.251 af

Reach 84A: Overland Flow Avg. Flow Depth=0.73' Max Vel=0.81 fps Inflow=104.26 cfs 13.686 af
n=0.400 L=277.0' S=0.1155 '/' Capacity=192.72 cfs Outflow=101.65 cfs 13.686 af

Reach 84B: Overland Flow Avg. Flow Depth=0.51' Max Vel=0.79 fps Inflow=64.71 cfs 7.435 af
n=0.400 L=370.0' S=0.1622 '/' Capacity=228.33 cfs Outflow=61.29 cfs 7.435 af

Reach 85A: Overland Flow Avg. Flow Depth=0.36' Max Vel=0.63 fps Inflow=40.94 cfs 1.763 af
n=0.400 L=505.0' S=0.1525 '/' Capacity=221.40 cfs Outflow=30.88 cfs 1.763 af

Reach 85B: Overland Flow Avg. Flow Depth=0.44' Max Vel=0.50 fps Inflow=43.94 cfs 2.907 af
n=0.400 L=453.0' S=0.0773 '/' Capacity=157.60 cfs Outflow=32.13 cfs 2.907 af

Reach 86A: Overland Flow Avg. Flow Depth=0.29' Max Vel=0.47 fps Inflow=19.91 cfs 1.144 af
n=0.400 L=195.0' S=0.1128 '/' Capacity=190.45 cfs Outflow=17.51 cfs 1.144 af

Reach 88: Roadside Swale Avg. Flow Depth=0.52' Max Vel=6.04 fps Inflow=7.13 cfs 0.468 af
n=0.035 L=472.0' S=0.0763 '/' Capacity=66.89 cfs Outflow=7.06 cfs 0.468 af

Reach 91: Overland Flow Avg. Flow Depth=0.46' Max Vel=2.94 fps Inflow=33.33 cfs 1.975 af
n=0.035 L=198.0' S=0.0172 '/' Capacity=137.55 cfs Outflow=32.87 cfs 1.975 af

Reach 92: Channel Along RR Tracks Avg. Flow Depth=2.20' Max Vel=7.37 fps Inflow=107.13 cfs 14.796 af
n=0.035 L=770.0' S=0.0239 '/' Capacity=211.58 cfs Outflow=103.86 cfs 14.796 af

Reach 92a: Channel Along RR Tracks Avg. Flow Depth=1.14' Max Vel=6.00 fps Inflow=32.87 cfs 1.975 af
n=0.035 L=1,137.0' S=0.0329 '/' Capacity=248.24 cfs Outflow=29.28 cfs 1.975 af

Reach 93R: Roadside Ditch Avg. Flow Depth=0.67' Max Vel=4.69 fps Inflow=10.63 cfs 0.388 af
n=0.030 L=135.0' S=0.0259 '/' Capacity=54.15 cfs Outflow=10.60 cfs 0.388 af

Reach 142R: Overland Flow Avg. Flow Depth=0.24' Max Vel=2.32 fps Inflow=19.06 cfs 1.177 af
n=0.030 L=280.0' S=0.0299 '/' Capacity=31.71 cfs Outflow=18.92 cfs 1.177 af

Reach 143R: Stone Lined Swale with Avg. Flow Depth=0.75' Max Vel=6.91 fps Inflow=18.18 cfs 8.754 af
n=0.050 L=335.0' S=0.1403 '/' Capacity=142.04 cfs Outflow=18.04 cfs 8.754 af

Reach I1: TRM SWALE Avg. Flow Depth=1.55' Max Vel=3.25 fps Inflow=25.89 cfs 1.420 af
n=0.035 L=145.0' S=0.0069 '/' Capacity=74.54 cfs Outflow=25.76 cfs 1.420 af

Reach I12: stone lined stream channel Avg. Flow Depth=1.94' Max Vel=9.33 fps Inflow=107.99 cfs 6.274 af
n=0.040 L=142.0' S=0.0486 '/' Capacity=171.87 cfs Outflow=107.94 cfs 6.274 af

Reach I12a: stone lined stream channel Avg. Flow Depth=1.57' Max Vel=12.36 fps Inflow=107.94 cfs 6.274 af
n=0.040 L=160.0' S=0.1056 '/' Capacity=253.40 cfs Outflow=107.90 cfs 6.274 af

Reach I12b: stone lined stream channel Avg. Flow Depth=1.68' Max Vel=11.25 fps Inflow=107.90 cfs 6.274 af
n=0.040 L=440.0' S=0.0816 '/' Capacity=222.71 cfs Outflow=107.52 cfs 6.274 af

Reach I21: stone lined stream channel Avg. Flow Depth=1.30' Max Vel=8.19 fps Inflow=68.56 cfs 3.621 af
n=0.050 L=1,585.0' S=0.0886 '/' Capacity=143.65 cfs Outflow=63.46 cfs 3.621 af

Pond 1P: culvert Peak Elev=2,024.21' Inflow=107.99 cfs 6.274 af
54.0" Round Culvert n=0.013 L=60.0' S=0.0500 '/' Outflow=107.99 cfs 6.274 af

Pond 6P: Overflow Basin @ 8 tee Peak Elev=1,964.58' Storage=21,816 cf Inflow=33.03 cfs 2.423 af
Outflow=27.16 cfs 2.267 af

Pond 8P: NATURAL DEPRESSION Peak Elev=1,970.20' Storage=25,850 cf Inflow=13.50 cfs 0.888 af
Discarded=0.23 cfs 0.770 af Primary=0.21 cfs 0.118 af Outflow=0.44 cfs 0.888 af

Pond 29P: cb29 Peak Elev=1,925.48' Inflow=3.67 cfs 0.174 af
Outflow=3.67 cfs 0.174 af

Pond 57: 15" Steel Culvert Peak Elev=2,005.74' Inflow=4.92 cfs 0.320 af
Outflow=4.92 cfs 0.320 af

Pond 58R: 24" HDPE Pipe Peak Elev=2,223.48' Inflow=10.33 cfs 0.701 af
Outflow=10.33 cfs 0.701 af

Pond 59: 32" Plastic Pipe Peak Elev=2,333.12' Inflow=82.26 cfs 7.087 af
Primary=46.44 cfs 6.251 af Secondary=35.81 cfs 0.835 af Outflow=82.26 cfs 7.087 af

Pond 60: 30" Steel Culvert Peak Elev=2,024.62' Inflow=184.08 cfs 29.207 af
Outflow=184.08 cfs 29.207 af

Pond 67P: 24" Steel Culvert Peak Elev=2,006.04' Inflow=18.34 cfs 1.046 af
Outflow=18.34 cfs 1.046 af

Pond 74: 12" CMP Culvert Peak Elev=1,917.99' Inflow=20.44 cfs 1.002 af
Outflow=20.44 cfs 1.002 af

Pond 74A: 16" CMP Culvert Peak Elev=1,925.28' Inflow=20.45 cfs 1.002 af
Outflow=20.45 cfs 1.002 af

Pond 76A: culvert Peak Elev=1,905.82' Inflow=20.40 cfs 1.002 af
Outflow=20.40 cfs 1.002 af

Pond 77: 36" Steel Culvert Peak Elev=2,176.45' Inflow=136.21 cfs 21.133 af
Outflow=136.21 cfs 21.133 af

Pond 79: 16" Steel Culvert Peak Elev=2,058.61' Inflow=137.56 cfs 21.601 af
Outflow=137.56 cfs 21.601 af

Pond 83: 24" HPDE Culvert Peak Elev=2,361.09' Inflow=4.88 cfs 0.304 af
Primary=4.88 cfs 0.304 af Secondary=0.00 cfs 0.000 af Outflow=4.88 cfs 0.304 af

Pond 84: 24" HDPE Pipe Peak Elev=2,322.30' Inflow=106.32 cfs 8.327 af
Primary=64.71 cfs 7.435 af Secondary=41.61 cfs 0.892 af Outflow=106.32 cfs 8.327 af

Pond 85: 28" HDPE Pipe Peak Elev=2,301.06' Inflow=52.67 cfs 1.893 af
Primary=40.94 cfs 1.763 af Secondary=11.73 cfs 0.129 af Outflow=52.67 cfs 1.893 af

Pond 86: 24" HDPE Pipe Peak Elev=2,243.78' Inflow=19.91 cfs 1.144 af
Primary=19.91 cfs 1.144 af Secondary=0.00 cfs 0.000 af Outflow=19.91 cfs 1.144 af

Pond 87: 18" Steel Culvert Peak Elev=2,209.88' Inflow=7.13 cfs 0.468 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0167 '/' Outflow=7.13 cfs 0.468 af

Pond 90: 24" Steel Culvert Peak Elev=1,893.19' Inflow=33.33 cfs 1.975 af
Outflow=33.33 cfs 1.975 af

Pond 122: 18" HDPE Storm Peak Elev=1,948.65' Inflow=3.97 cfs 0.210 af
Outflow=3.97 cfs 0.210 af

Pond 123: 18" HDPE Storm Peak Elev=1,948.46' Inflow=5.52 cfs 0.291 af
Outflow=5.52 cfs 0.291 af

Pond A1: A1 - OPEN SWALE Peak Elev=1,910.26' Storage=2,786 cf Inflow=5.42 cfs 0.298 af
Discarded=0.03 cfs 0.085 af Primary=5.35 cfs 0.213 af Outflow=5.37 cfs 0.298 af

Pond A2: A2 - OPEN SWALE Peak Elev=1,907.32' Storage=1,278 cf Inflow=7.49 cfs 0.332 af
Discarded=0.02 cfs 0.042 af Primary=7.45 cfs 0.291 af Outflow=7.47 cfs 0.332 af

Pond A3: A3 - OPEN SWALE Peak Elev=1,905.85' Storage=2,343 cf Inflow=11.07 cfs 0.492 af
Discarded=0.03 cfs 0.073 af Primary=11.01 cfs 0.419 af Outflow=11.03 cfs 0.492 af

Pond A4: A4 - OPEN SWALE Peak Elev=1,903.90' Storage=1,709 cf Inflow=13.58 cfs 0.564 af
Discarded=0.02 cfs 0.051 af Primary=13.55 cfs 0.513 af Outflow=13.57 cfs 0.564 af

Pond A5: A5 - OPEN SWALE Peak Elev=1,902.21' Storage=2,879 cf Inflow=20.60 cfs 0.907 af
Discarded=0.03 cfs 0.078 af Primary=20.51 cfs 0.829 af Outflow=20.54 cfs 0.907 af

Pond B: OPEN SWALE Peak Elev=1,868.32' Storage=8,339 cf Inflow=14.69 cfs 0.865 af
Discarded=0.09 cfs 0.254 af Primary=14.23 cfs 0.611 af Outflow=14.32 cfs 0.865 af

Pond B1: bioretention @ 8 tee Peak Elev=1,966.14' Storage=10,336 cf Inflow=33.47 cfs 2.776 af
Discarded=0.17 cfs 0.353 af Primary=33.03 cfs 2.423 af Outflow=33.21 cfs 2.776 af

Pond B3: bioretention @ blvd Peak Elev=1,960.21' Storage=26,756 cf Inflow=28.56 cfs 1.952 af
Discarded=0.43 cfs 0.893 af Primary=19.06 cfs 1.059 af Secondary=0.00 cfs 0.000 af Outflow=19.48 cfs 1.952 af

Pond DP 10: Design Point 10 Inflow=266.51 cfs 37.073 af
Primary=266.51 cfs 37.073 af

Pond DP 11: Design Point 11 Inflow=108.57 cfs 18.316 af
Primary=108.57 cfs 18.316 af

Pond DP 12: Design Point 12 Inflow=28.62 cfs 1.552 af
Primary=28.62 cfs 1.552 af

Pond DP 16: Design Point 16 24" CMP Inflow=40.29 cfs 4.327 af
Primary=40.29 cfs 4.327 af

Pond F1: Open Swale-F Peak Elev=1,895.84' Storage=5,330 cf Inflow=10.94 cfs 0.545 af
Discarded=0.05 cfs 0.157 af Primary=10.63 cfs 0.388 af Outflow=10.68 cfs 0.545 af

Pond G: OPEN SWALE Peak Elev=1,903.77' Storage=9,930 cf Inflow=18.68 cfs 0.982 af
Discarded=0.13 cfs 0.338 af Primary=18.18 cfs 0.643 af Outflow=18.31 cfs 0.982 af

Pond I18: Manhole Peak Elev=2,010.11' Inflow=107.99 cfs 6.274 af
54.0" Round Culvert n=0.013 L=304.0' S=0.0194 '/' Outflow=107.99 cfs 6.274 af

Pond I19: Manhole Peak Elev=2,021.11' Inflow=107.99 cfs 6.274 af
54.0" Round Culvert n=0.013 L=348.0' S=0.0313 '/' Outflow=107.99 cfs 6.274 af

Pond I2: 30" HDPE Storm Peak Elev=1,946.59' Inflow=25.89 cfs 1.420 af
30.0" Round Culvert n=0.013 L=170.0' S=0.0053 '/' Outflow=25.89 cfs 1.420 af

Pond I22: Manhole- 54" HDPE Storm Peak Elev=2,173.76' Inflow=68.56 cfs 3.621 af
Outflow=68.56 cfs 3.621 af

Pond I23: Manhole -30" HDPE Storm Peak Elev=2,186.29' Inflow=27.13 cfs 1.426 af
Outflow=27.13 cfs 1.426 af

Pond I24: 30" HDPE Storm Peak Elev=2,191.60' Inflow=27.13 cfs 1.426 af
Outflow=27.13 cfs 1.426 af

Pond I25: 30" HDPE Storm Peak Elev=2,193.68' Inflow=21.20 cfs 1.143 af
Outflow=21.20 cfs 1.143 af

Pond I26: 30" HDPE Storm Peak Elev=2,194.44' Inflow=17.09 cfs 0.886 af
Outflow=17.09 cfs 0.886 af

Pond I27: 30" HDPE Storm Peak Elev=2,194.85' Inflow=15.38 cfs 0.805 af
Outflow=15.38 cfs 0.805 af

Pond I28: 30" HDPE Storm Peak Elev=2,195.17' Inflow=11.59 cfs 0.628 af
Outflow=11.59 cfs 0.628 af

Pond I29: Manhole Peak Elev=2,195.30' Inflow=8.89 cfs 0.499 af
30.0" Round Culvert n=0.013 L=98.0' S=0.0010 '/' Outflow=8.89 cfs 0.499 af

Pond I3: 30" HDPE Storm Peak Elev=1,947.93' Inflow=22.86 cfs 1.243 af
Outflow=22.86 cfs 1.243 af

Pond I30: 30" HDPE Storm Peak Elev=2,195.74' Inflow=8.89 cfs 0.499 af
Outflow=8.89 cfs 0.499 af

Pond I31: 36" HDPE Storm Peak Elev=2,174.02' Inflow=17.41 cfs 0.844 af
36.0" Round Culvert n=0.013 L=55.0' S=0.0027 '/' Outflow=17.41 cfs 0.844 af

Pond I32: 30" HDPE Storm Peak Elev=2,174.56' Inflow=17.41 cfs 0.844 af
Outflow=17.41 cfs 0.844 af

Pond I33: 24" HDPE Storm Peak Elev=2,174.96' Inflow=14.08 cfs 0.681 af
Outflow=14.08 cfs 0.681 af

Pond I4: 15" HDPE Storm Peak Elev=1,952.42' Inflow=3.16 cfs 0.177 af
15.0" Round Culvert n=0.013 L=140.0' S=0.0107 '/' Outflow=3.16 cfs 0.177 af

Pond I6: Manhole Peak Elev=1,954.84' Inflow=19.06 cfs 1.177 af
36.0" Round Culvert n=0.013 L=186.0' S=0.0050 '/' Outflow=19.06 cfs 1.177 af

Pond IP: P2 Peak Elev=1,942.22' Storage=820,544 cf Inflow=204.30 cfs 13.206 af
Outflow=8.78 cfs 8.111 af

Total Runoff Area = 270.763 ac Runoff Volume = 69.614 af Average Runoff Depth = 3.09"
93.08% Pervious = 252.026 ac 6.92% Impervious = 18.737 ac

Summary for Subcatchment 9S: Subcatchment 9

Runoff = 99.71 cfs @ 12.15 hrs, Volume= 7.867 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	8,494	98	Roof Area
	31,175	71	Meadow, non-grazed, HSG C
	1,389,855	70	Woods, Good, HSG C
	13,112	98	Paved parking, HSG C
*	9,470	74	porous paving
*	7,000	74	Fairway/Tee/Green, Good, HSG C
	6,775	74	>75% Grass cover, Good, HSG C
	1,465,881	70	Weighted Average
	1,444,275		98.53% Pervious Area
	21,606		1.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0200	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	10	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.3	1,923	0.1100	13.81	662.89	**Trap/Vee/Rect Channel Flow, Flow through Rock Channel** Bot.W=20.00' D=2.00' Z= 2.0 '/' Top.W=28.00' n= 0.050 Mountain streams w/large boulders
21.6	2,033	Total			

Summary for Subcatchment 10S: Subcatchment 10

Runoff = 86.68 cfs @ 12.19 hrs, Volume= 7.606 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	890,933	70	Woods, Good, HSG C
	424,449	71	Meadow, non-grazed, HSG C
	16,742	74	>75% Grass cover, Good, HSG C
*	31,777	98	Road/Drive
*	7,623	98	Roofs
	1,371,524	71	Weighted Average
	1,332,124		97.13% Pervious Area
	39,400		2.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.2	600	0.0780	1.40		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
2.7	455	0.1600	2.80		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
2.8	330	0.1570	1.98		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.6	685	0.0945	7.35	33.08	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=4.00' D=1.00' Z= 0.5 '/' Top.W=5.00' n= 0.050
0.0	30	0.0500	13.31	18.59	**Pipe Channel, 16" Steel Culvert** 16.0" Round Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.012 Steel, smooth
1.4	645	0.0483	7.65	91.77	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=5.00' D=2.00' Z= 0.5 '/' Top.W=7.00' n= 0.050
25.8	2,845	Total			

Summary for Subcatchment 11A: Subcatchment 11A

Runoff = 4.92 cfs @ 12.08 hrs, Volume= 0.320 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
55,013	70	Woods, Good, HSG C
2,726	98	Paved parking & roofs
57,739	71	Weighted Average
55,013		95.28% Pervious Area
2,726		4.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0800	0.15		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	380	0.0875	1.48		**Shallow Concentrated Flow, SC flow through Woods** Woodland Kv= 5.0 fps
15.3	480	Total			

Summary for Subcatchment 11B: Subcatchment 11B

Runoff = 9.84 cfs @ 12.11 hrs, Volume= 0.693 af, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	50,820	70	Woods, Good, HSG C
	19,475	98	Paved parking & roofs
	27,337	74	>75% Grass cover, Good, HSG C
*	2,120	74	Porous Pavement
*	4,400	74	Fairway/Tee/Green, Good, HSG C
	104,152	77	Weighted Average
	84,677		81.30% Pervious Area
	19,475		18.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0200	0.08		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.9	436	0.0440	1.05		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.9	486	Total			

Summary for Subcatchment 11S: Subcatchment 11

Runoff = 18.34 cfs @ 12.03 hrs, Volume= 1.046 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
169,318	70	Woods, Good, HSG C
13,416	98	Paved parking & roofs
182,734	72	Weighted Average
169,318		92.66% Pervious Area
13,416		7.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.0800	2.03		**Sheet Flow, Sheet Flow off Roof** Smooth surfaces n= 0.011 P2= 4.00"
4.4	75	0.0625	0.28		**Sheet Flow, Sheet flow over meadow** Grass: Short n= 0.150 P2= 4.00"
2.9	330	0.0750	1.92		**Shallow Concentrated Flow, Sheet Flow through Meadow** Short Grass Pasture Kv= 7.0 fps
3.4	300	0.0875	1.48		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.6	254	0.0500	7.39	16.25	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=2.00' D=1.00' Z= 0.2 '/' Top.W=2.40' n= 0.030
11.5	984	Total			

Summary for Subcatchment 12A: Subcatchment 12A

Runoff = 72.61 cfs @ 11.98 hrs, Volume= 3.456 af, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	172,175	74	>75% Grass cover, Good, HSG C
	265,310	70	Woods, Good, HSG C
	43,737	98	Paved parking & roofs
*	4,020	74	Porous Pavement
*	19,225	98	Roofs
*	45,983	74	Fairway/Tee/Green, Good, HSG C
	550,450	75	Weighted Average
	487,488		88.56% Pervious Area
	62,962		11.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	33	0.0300	1.45		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.6	264	0.0300	2.79		**Shallow Concentrated Flow, SC Flow through Developed area** Unpaved Kv= 16.1 fps
4.4	1,813	0.0200	6.80	71.42	**Trap/Vee/Rect Channel Flow, roadside ditch** Bot.W=2.00' D=3.00' Z= 0.5 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
6.4	2,110	Total			

Summary for Subcatchment 12B: Subcatchment 12B

Runoff = 22.55 cfs @ 12.59 hrs, Volume= 3.520 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
630,510	70	Woods, Good, HSG C
25,422	74	>75% Grass cover, Good, HSG C
655,932	70	Weighted Average
655,932		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0800	0.09		**Sheet Flow, sheet through woods** Woods: Dense underbrush n= 0.800 P2= 4.00"
39.5	1,600	0.0730	0.68		**Shallow Concentrated Flow, SC Flow through Woods** Forest w/Heavy Litter Kv= 2.5 fps
58.7	1,700	Total			

Summary for Subcatchment 27A: SUB27A

Runoff = 16.85 cfs @ 11.99 hrs, Volume= 0.829 af, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	55,888	70	Woods, Good, HSG C
*	9,934	98	Paved
*	3,556	98	Roof
	62,600	74	>75% Grass cover, Good, HSG C
	131,978	75	Weighted Average
	118,488		89.78% Pervious Area
	13,490		10.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	100	0.0900	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.1	264	0.0700	3.97		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.4	750	0.0640	8.97	60.53	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.50' Z= 1.0 '/' Top.W=6.00' n= 0.040 Earth, dense weeds
7.3	1,114	Total			

Summary for Subcatchment 27S: Subcatchment 27

Runoff = 9.11 cfs @ 12.05 hrs, Volume= 0.549 af, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	6,900	98	Roof
*	12,822	98	Pavement
	45,912	74	>75% Grass cover, Good, HSG C
	12,420	70	Woods, Good, HSG C
	78,054	79	Weighted Average
	58,332		74.73% Pervious Area
	19,722		25.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	100	0.0760	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.5	40	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	20	0.0430	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	220	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	20	0.0620	9.52	76.20	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.040 Earth, dense weeds
12.9	400	Total			

Summary for Subcatchment 28S: Subcatchment 28

Runoff = 6.78 cfs @ 12.32 hrs, Volume= 0.759 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
33,932	71	Meadow, non-grazed, HSG C
107,420	70	Woods, Good, HSG C
141,352	70	Weighted Average
141,352		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.2	326	0.0680	1.30		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	392	0.0130	0.34	0.51	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.300
36.8	818	Total			

Summary for Subcatchment 29S: SUB27A

Runoff = 3.67 cfs @ 11.97 hrs, Volume= 0.174 af, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	4,025	98	Paved
	21,330	74	>75% Grass cover, Good, HSG C
	25,355	78	Weighted Average
	21,330		84.13% Pervious Area
	4,025		15.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0300	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	218	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	248	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 61S: Hotel Roof

Runoff = 2.95 cfs @ 11.97 hrs, Volume= 0.165 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	15,005	98	Paved
	15,005		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 67S: W. top front of hotel

Runoff = 2.95 cfs @ 11.97 hrs, Volume= 0.165 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	15,005	98	Roof
	15,005		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 70A: (new Subcat)

Runoff = 3.34 cfs @ 11.97 hrs, Volume= 0.162 af, Depth= 4.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	12,012	74	>75% Grass cover, Good, HSG C
	7,200	98	Paved parking & roofs
*	1,000	98	Porous Pavement
	20,212	84	Weighted Average
	12,012		59.43% Pervious Area
	8,200		40.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	34	0.0588	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.6	66	0.0450	1.96		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.2	21	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	8	0.1110	6.76		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	11	0.1110	2.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	67	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.7	207	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 70B: (new Subcat)

Runoff = 4.57 cfs @ 11.97 hrs, Volume= 0.219 af, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	7,200	98	Paved parking & roofs
	20,394	74	>75% Grass cover, Good, HSG C
*	1,880	98	Porous Pavement
	29,474	81	Weighted Average
	20,394		69.19% Pervious Area
	9,080		30.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.2	37	0.2160	3.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	61	0.0660	5.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	37	0.1176	2.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.3	235	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 70C: (new Subcat)

Runoff = 9.50 cfs @ 11.97 hrs, Volume= 0.462 af, Depth= 4.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
25,112	98	Paved parking & roofs
32,481	74	>75% Grass cover, Good, HSG C
57,593	84	Weighted Average
32,481		56.40% Pervious Area
25,112		43.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 100a: Hole 4 (110) PR

Runoff = 5.42 cfs @ 12.02 hrs, Volume= 0.298 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	25,572	74	>75% Grass cover, Good, HSG C
	9,715	70	Woods, Good, HSG C
*	3,940	74	Porous Pavement
*	11,267	74	Fairway/Tee/Green, Good, HSG C
	50,494	73	Weighted Average
	50,494		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100b: Hole 4 (110) PR

Runoff = 2.16 cfs @ 12.02 hrs, Volume= 0.119 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	5,558	74	>75% Grass cover, Good, HSG C
	2,890	70	Woods, Good, HSG C
*	11,040	74	Fairway/Tee/Green, Good, HSG C
*	650	74	Porous Pavement
	20,138	73	Weighted Average
	20,138		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100c: Hole 4 (110) PR

Runoff = 3.65 cfs @ 12.02 hrs, Volume= 0.201 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	6,495	74	>75% Grass cover, Good, HSG C
*	2,610	74	Porous Pavement
*	23,895	74	Fairway/Tee/Green, Good, HSG C
	33,000	74	Weighted Average
	33,000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100d: Hole 4 (110) PR

Runoff = 2.62 cfs @ 12.02 hrs, Volume= 0.144 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	2,916	74	>75% Grass cover, Good, HSG C
*	1,300	74	Porous Pavement
*	19,488	74	Fairway/Tee/Green, Good, HSG C
	23,704	74	Weighted Average
	23,704		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100e: Hole 4 (110) PR

Runoff = 7.16 cfs @ 12.02 hrs, Volume= 0.395 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	27,442	74	>75% Grass cover, Good, HSG C
*	3,930	74	Porous Pavement
*	33,414	74	Fairway/Tee/Green, Good, HSG C
	64,786	74	Weighted Average
	64,786		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 101: Land east of irrigation pond (101 PR)

Runoff = 5.73 cfs @ 11.97 hrs, Volume= 0.272 af, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	31,112	74	>75% Grass cover, Good, HSG C
*	7,596	98	Roofs
	38,708	79	Weighted Average
	31,112		80.38% Pervious Area
	7,596		19.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	68	0.0144	1.25		**Sheet Flow, Sheet Flow Across Roof** Smooth surfaces n= 0.011 P2= 4.00"
1.4	191	0.0990	2.20		**Shallow Concentrated Flow, SC Flow** Short Grass Pasture Kv= 7.0 fps
0.1	35	0.0570	8.39	12.58	**Channel Flow, Roadside Ditch** Area= 1.5 sf Perim= 4.0' r= 0.38' n= 0.022 Earth, clean & straight
2.4	294	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 102: Pool House and Pool (102) PR

Runoff = 3.16 cfs @ 11.97 hrs, Volume= 0.177 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	11,423	98	Paved parking & roofs
*	4,650	98	Roofs
	16,073	98	Weighted Average
	16,073		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 103: Pool parking lot and tennis courts (103) PR

Runoff = 17.71 cfs @ 12.00 hrs, Volume= 0.952 af, Depth= 4.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
62,227	74	>75% Grass cover, Good, HSG C
53,467	98	Paved parking & roofs
115,694	85	Weighted Average
62,227		53.79% Pervious Area
53,467		46.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	100	0.0900	0.35		**Sheet Flow, Sheet Flow Along Steep Hill** Grass: Short n= 0.150 P2= 4.00"
2.1	150	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.9	352	0.0227	3.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.8	602	Total			

Summary for Subcatchment 104: Holes 7 &8

Runoff = 33.47 cfs @ 12.17 hrs, Volume= 2.776 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	25,420	74	Porous Pavement
	104,543	74	>75% Grass cover, Good, HSG C
	45,415	70	Woods, Good, HSG C
*	280,195	74	Fairway/Tee/Green, Good, HSG C
	455,573	74	Weighted Average
	455,573		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	39	0.0510	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
12.0	61	0.0240	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.8	133	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.6	167	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	300	0.0570	1.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	122	0.0820	2.00		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	209	0.0670	10.38	54.52	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
23.7	1,031	Total			

Summary for Subcatchment 108: Front of Road to 8 -23 (108) PR

Runoff = 3.97 cfs @ 11.97 hrs, Volume= 0.210 af, Depth= 5.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
3,491	74	>75% Grass cover, Good, HSG C
17,269	98	Paved
20,760	94	Weighted Average
3,491		16.82% Pervious Area
17,269		83.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0200	1.54		**Sheet Flow, Sheet Flow Roof** Smooth surfaces n= 0.011 P2= 4.00"
0.2	13	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	369	0.0600	4.97		**Shallow Concentrated Flow, Flow in Concrete Curb** Paved Kv= 20.3 fps
2.5	482	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 109: Front of Road to 8 -23 (109) PR

Runoff = 1.55 cfs @ 11.97 hrs, Volume= 0.080 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
2,105	74	>75% Grass cover, Good, HSG C
6,175	98	Paved parking & roofs
8,280	92	Weighted Average
2,105		25.42% Pervious Area
6,175		74.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0310	1.83		**Sheet Flow, Sheet Flow on Pavement** Smooth surfaces n= 0.011 P2= 4.00"
0.8	258	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	358	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 111: Front of Hole 4 (111) PR

Runoff = 10.94 cfs @ 11.99 hrs, Volume= 0.545 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	33,460	74	>75% Grass cover, Good, HSG C
*	6,880	74	Porous Pavement
*	49,040	74	Fairway/Tee/Green, Good, HSG C
	89,380	74	Weighted Average
	89,380		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.1400	0.28		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
1.8	293	0.1500	2.71		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
7.7	393	Total			

Summary for Subcatchment 114: Behind Townhomes

Runoff = 13.50 cfs @ 12.08 hrs, Volume= 0.888 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	88,388	74	>75% Grass cover, Good, HSG C
	21,938	70	Woods, Good, HSG C
*	39,975	74	Fairway/Tee/Green, Good, HSG C
	150,301	73	Weighted Average
	150,301		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0750	0.22		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
8.2	830	0.0580	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.7	930	Total			

Summary for Subcatchment 115: Land between buildings 17 thru 22 (115) pr

Runoff = 49.67 cfs @ 12.05 hrs, Volume= 2.980 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	1,000	98	Paved parking & roofs
*	42,019	98	Roofs
	304,107	74	>75% Grass cover, Good, HSG C
*	78,570	74	Fairway/Tee/Green, Good, HSG C
	23,492	73	Woods, Fair, HSG C
*	11,655	74	Porus Pavement
	460,843	76	Weighted Average
	417,824		90.67% Pervious Area
	43,019		9.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	100	0.0800	0.23		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 4.00"
5.6	709	0.0900	2.10		**Shallow Concentrated Flow, SC Flow in Swale** Short Grass Pasture Kv= 7.0 fps
12.9	809	Total			

Summary for Subcatchment 117: Rest of Road to 8 -23 (117) PR

Runoff = 28.56 cfs @ 12.08 hrs, Volume= 1.952 af, Depth= 4.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
108,508	74	>75% Grass cover, Good, HSG C
111,127	98	Paved parking & roofs
5,863	70	Woods, Good, HSG C
11,700	74	>75% Grass cover, Good, HSG C
237,198	85	Weighted Average
126,071		53.15% Pervious Area
111,127		46.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow in Side Yard** Grass: Dense n= 0.240 P2= 4.00"
8.1	830	0.0600	1.71		**Shallow Concentrated Flow, SC Flow in Swale** Short Grass Pasture Kv= 7.0 fps
16.3	930	Total			

Summary for Subcatchment 119: Green of Hole 3 & tee of Hole 4 (119) PR

Runoff = 14.69 cfs @ 12.04 hrs, Volume= 0.865 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	49,282	74	>75% Grass cover, Good, HSG C
	18,600	70	Woods, Good, HSG C
*	70,125	74	Fairway/Tee/Green, Good, HSG C
*	8,380	74	Porous Pavement
	146,387	73	Weighted Average
	146,387		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0700	0.22		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
0.5	54	0.0740	1.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	176	0.1110	1.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.4	397	0.0910	2.71		**Shallow Concentrated Flow, SC Flow on golf course** Cultivated Straight Rows Kv= 9.0 fps
12.4	727	Total			

Summary for Subcatchment 123S: Land north of irrigation pond (123) PR

Runoff = 5.20 cfs @ 12.00 hrs, Volume= 0.267 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	43,890	74	Fairway/Tee/Green, Good, HSG C
	43,890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Through Golf Course** Grass: Dense n= 0.240 P2= 4.00"
0.4	46	0.0430	1.87		**Shallow Concentrated Flow, SC Flow in Swale** Cultivated Straight Rows Kv= 9.0 fps
8.6	146	Total			

Summary for Subcatchment 125: Hole 3 and end of Hole 4 (119) PR

Runoff = 18.68 cfs @ 12.01 hrs, Volume= 0.982 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	17,968	74	>75% Grass cover, Good, HSG C
	8,956	70	Woods, Good, HSG C
*	11,910	74	Porous Pavement
*	122,325	74	Fairway/Tee/Green, Good, HSG C
	161,159	74	Weighted Average
	161,159		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0600	0.30		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Short n= 0.150 P2= 4.00"
3.6	1,031	0.1040	4.84		**Shallow Concentrated Flow, SC Flow on golf course** Grassed Waterway Kv= 15.0 fps
9.2	1,131	Total			

Summary for Subcatchment 126: Irr. Pond

Runoff = 14.04 cfs @ 11.97 hrs, Volume= 0.727 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	56,286	98	Pond
	18,705	74	>75% Grass cover, Good, HSG C
	74,991	92	Weighted Average
	18,705		24.94% Pervious Area
	56,286		75.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 126A: forebay

Runoff = 1.57 cfs @ 11.97 hrs, Volume= 0.088 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
8,000	98	Water Surface, 0% imp, HSG C
8,000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 127S: (new Subcat)

Runoff = 46.34 cfs @ 12.03 hrs, Volume= 2.652 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	27,670	74	Porous Pavement
	151,709	74	>75% Grass cover, Good, HSG C
	96,570	70	Woods, Good, HSG C
*	172,945	74	Fairway/Tee/Green, Good, HSG C
	448,894	73	Weighted Average
	448,894		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0400	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.1	260	0.0850	2.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.9	1,584	0.0820	9.05	108.59	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.050 Earth, cobble bottom, clean sides
11.6	1,944	Total			

Summary for Subcatchment 128S: HOTEL ROOF

Runoff = 1.35 cfs @ 11.97 hrs, Volume= 0.076 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	6,878	98	Roof
	6,878		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 129S: HOTEL ROOF

Runoff = 2.70 cfs @ 11.97 hrs, Volume= 0.152 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	13,760	98	Roof
	13,760		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 130S: (new Subcat)

Runoff = 5.94 cfs @ 11.97 hrs, Volume= 0.283 af, Depth= 3.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
9,220	98	Paved parking & roofs
29,927	74	>75% Grass cover, Good, HSG C
39,147	80	Weighted Average
29,927		76.45% Pervious Area
9,220		23.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
0.3	21	0.0200	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
5.3	21	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 131A: HOTEL ROOF

Runoff = 10.07 cfs @ 11.97 hrs, Volume= 0.565 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
51,300	98	Paved parking & roofs
51,300		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 131S: (new Subcat)

Runoff = 4.46 cfs @ 12.01 hrs, Volume= 0.257 af, Depth= 4.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
10,863	74	>75% Grass cover, Good, HSG C
17,500	98	Paved parking & roofs
28,363	89	Weighted Average
10,863		38.30% Pervious Area
17,500		61.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.1	64	0.0310	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
10.1	64	Total			

Summary for Subcatchment 132S: (new Subcat)

Runoff = 1.71 cfs @ 11.97 hrs, Volume= 0.081 af, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
1,650	98	Paved parking & roofs
10,495	74	>75% Grass cover, Good, HSG C
12,145	77	Weighted Average
10,495		86.41% Pervious Area
1,650		13.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	92	0.2600	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.1	11	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	103	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 133S: (new Subcat)

Runoff = 3.80 cfs @ 11.97 hrs, Volume= 0.178 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
29,164	74	>75% Grass cover, Good, HSG C
29,164		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0100	0.84		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.1	30	0.0670	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.5	50	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 134S: HOTEL ROOF

Runoff = 1.35 cfs @ 11.97 hrs, Volume= 0.076 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
6,878	98	Paved parking & roofs
6,878		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 135S: (new Subcat)

Runoff = 2.71 cfs @ 11.97 hrs, Volume= 0.129 af, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
4,000	98	Paved parking, HSG C
12,105	74	>75% Grass cover, Good, HSG C
2,192	70	Woods, Good, HSG C
18,297	79	Weighted Average
14,297		78.14% Pervious Area
4,000		21.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.2000	0.48		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.2	71	0.4790	4.84		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	75	0.0267	3.32		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1	246	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 136S: Parking Structure

Runoff = 8.89 cfs @ 11.97 hrs, Volume= 0.499 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	45,262	98	Paved parking & roofs
	45,262		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0100	1.17		**Sheet Flow, Pavement of parking structure** Smooth surfaces n= 0.011 P2= 4.00"
1.7	206	0.0100	2.03		**Shallow Concentrated Flow, Pavement of parking structure** Paved Kv= 20.3 fps
3.1	306	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 138S: HOTEL ROOF

Runoff = 2.70 cfs @ 11.97 hrs, Volume= 0.152 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	13,760	98	Roof
	13,760		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 500S: Subcatchment 500

Runoff = 74.17 cfs @ 12.27 hrs, Volume= 7.492 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	29,185	98	Roadway
	1,312,724	70	Woods, Good, HSG C
	1,350,926	71	Weighted Average
	1,321,741		97.84% Pervious Area
	29,185		2.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
25.7	3,665	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.1	110	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
32.0	3,875	Total			

Summary for Subcatchment 501S: Subcatchment 501

Runoff = 13.58 cfs @ 12.12 hrs, Volume= 1.001 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,002	98	Roadway
	176,462	70	Woods, Good, HSG C
	186,481	70	Weighted Average
	185,479		99.46% Pervious Area
	1,002		0.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
13.1	1,930	0.2410	2.45		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	2,030	Total			

Summary for Subcatchment 502S: Subcatchment 502

Runoff = 16.86 cfs @ 12.05 hrs, Volume= 1.015 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,437	98	Roadway
	178,596	70	Woods, Good, HSG C
	189,050	70	Weighted Average
	187,613		99.24% Pervious Area
	1,437		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.5	935	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	265	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
13.0	1,300	Total			

Summary for Subcatchment 503S: Subcatchmant 503

Runoff = 10.33 cfs @ 12.09 hrs, Volume= 0.701 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
130,680	70	Woods, Good, HSG C
130,680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.2	655	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	255	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
16.6	1,010	Total			

Summary for Subcatchment 504S: Subcatchment 504

Runoff = 82.26 cfs @ 12.19 hrs, Volume= 7.087 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	1,292,556	70	Woods, Good, HSG C
*	13,939	98	Road
	14,026	74	>75% Grass cover, Good, HSG C
	1,320,521	70	Weighted Average
	1,306,582		98.94% Pervious Area
	13,939		1.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.4375	0.30		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
19.1	2,860	0.2500	2.50		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	320	0.1910	15.31	321.48	**Trap/Vee/Rect Channel Flow, Mountain Stream** Bot.W=4.00' D=3.00' Z= 1.0 '/' Top.W=10.00' n= 0.060
25.0	3,280	Total			

Summary for Subcatchment 511S: Subcatchmant 511

Runoff = 7.13 cfs @ 12.08 hrs, Volume= 0.468 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
87,120	70	Woods, Good, HSG C
87,120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.5	580	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.6	680	Total			

Summary for Subcatchment 512S: Subcatchment 512

Runoff = 4.88 cfs @ 12.06 hrs, Volume= 0.304 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

Area (sf)	CN	Description
56,628	70	Woods, Good, HSG C
56,628		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.3125	0.15		**Sheet Flow, Sheet Flow through Woods** Woods: Dense underbrush n= 0.800 P2= 4.00"
2.6	345	0.1900	2.18		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	155	0.1000	8.43	10.12	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.2 '/' Top.W=1.40' n= 0.030 Earth, grassed & winding

14.0	600	Total

Summary for Subcatchment 600S: Subcatchment 600

Runoff = 27.88 cfs @ 12.12 hrs, Volume= 2.051 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	9,670	98	Road
	360,198	70	Woods, Good, HSG C
	369,868	71	Weighted Average
	360,198		97.39% Pervious Area
	9,670		2.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.0	1,510	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	1,610	Total			

Summary for Subcatchment 601S: Subcatchment 601

Runoff = 23.06 cfs @ 12.08 hrs, Volume= 1.483 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	10,498	98	Road
	257,004	70	Woods, Good, HSG C
	267,502	71	Weighted Average
	257,004		96.08% Pervious Area
	10,498		3.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.7	970	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.0	1,070	Total			

Summary for Reach 18R: Overland Flow

Inflow Area = 46.508 ac, 27.33% Impervious, Inflow Depth > 2.09" for 10-YEAR event
Inflow = 8.78 cfs @ 14.07 hrs, Volume= 8.111 af
Outflow = 8.78 cfs @ 14.11 hrs, Volume= 8.110 af, Atten= 0%, Lag= 2.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.50 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 12.3 min

Peak Storage= 1,878 cf @ 14.11 hrs
Average Depth at Peak Storage= 0.09'
Bank-Full Depth= 0.50' Flow Area= 33.8 sf, Capacity= 214.48 cfs

30.00' x 0.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 75.0 '/' Top Width= 105.00'
Length= 535.0' Slope= 0.0748 '/'
Inlet Invert= 1,937.00', Outlet Invert= 1,897.00'

‡

Summary for Reach 21R: Ex. Roadside Ditch

Inflow Area = 4.411 ac, 0.00% Impervious, Inflow Depth = 2.26" for 10-YEAR event
Inflow = 20.51 cfs @ 12.04 hrs, Volume= 0.829 af
Outflow = 20.49 cfs @ 12.05 hrs, Volume= 0.829 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.99 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.70 fps, Avg. Travel Time= 1.2 min

Peak Storage= 411 cf @ 12.05 hrs
Average Depth at Peak Storage= 1.10'
Bank-Full Depth= 1.50' Flow Area= 5.3 sf, Capacity= 36.63 cfs

2.00' x 1.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.0 '/' Top Width= 5.00'
Length= 120.0' Slope= 0.0250 '/'
Inlet Invert= 1,897.00', Outlet Invert= 1,894.00'

Summary for Reach 58A: Overland Flow

Inflow Area = 3.000 ac, 0.00% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 10.33 cfs @ 12.09 hrs, Volume= 0.701 af
Outflow = 9.76 cfs @ 12.13 hrs, Volume= 0.701 af, Atten= 6%, Lag= 2.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.86 fps, Min. Travel Time= 4.3 min
Avg. Velocity = 0.67 fps, Avg. Travel Time= 11.9 min

Peak Storage= 2,503 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 1.00' Flow Area= 120.0 sf, Capacity= 1,456.48 cfs

100.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 140.00'
Length= 478.0' Slope= 0.1004 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,172.00'

‡

Summary for Reach 61: Vegetated Roadside Swale

Inflow Area = 5.521 ac, 6.71% Impervious, Inflow Depth = 2.97" for 10-YEAR event
Inflow = 23.00 cfs @ 12.04 hrs, Volume= 1.367 af
Outflow = 22.52 cfs @ 12.06 hrs, Volume= 1.367 af, Atten= 2%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.67 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.72 fps, Avg. Travel Time= 7.3 min

Peak Storage= 2,536 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.87'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 59.21 cfs

3.00' x 1.50' deep channel, n= 0.040
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 751.0' Slope= 0.0613 '/'
Inlet Invert= 2,000.00', Outlet Invert= 1,954.00'

Summary for Reach 66: Stream Channel

Inflow Area = 122.367 ac, 1.97% Impervious, Inflow Depth = 2.86" for 10-YEAR event
Inflow = 184.08 cfs @ 12.24 hrs, Volume= 29.207 af
Outflow = 182.93 cfs @ 12.33 hrs, Volume= 29.207 af, Atten= 1%, Lag= 4.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.62 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 1.64 fps, Avg. Travel Time= 19.1 min

Peak Storage= 35,827 cf @ 12.33 hrs
Average Depth at Peak Storage= 1.26'
Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 445.48 cfs

10.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 26.00'
Length= 1,884.0' Slope= 0.1152 '/'
Inlet Invert= 2,017.00', Outlet Invert= 1,800.00'

‡

Summary for Reach 73A: Vegetated Roadside Channel

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 3.33" for 10-YEAR event
Inflow = 20.45 cfs @ 11.98 hrs, Volume= 1.002 af
Outflow = 20.44 cfs @ 11.99 hrs, Volume= 1.002 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.53 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.50 fps, Avg. Travel Time= 0.7 min

Peak Storage= 222 cf @ 11.99 hrs
Average Depth at Peak Storage= 1.17'
Bank-Full Depth= 1.50' Flow Area= 5.3 sf, Capacity= 32.90 cfs

2.00' x 1.50' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 5.00'
Length= 60.0' Slope= 0.0560 '/'
Inlet Invert= 1,920.00', Outlet Invert= 1,916.64'

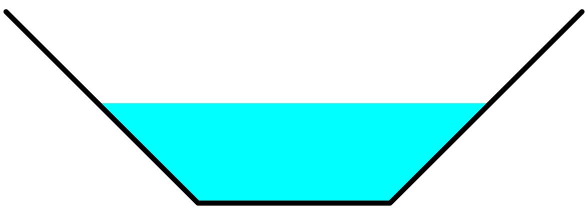
Summary for Reach 75: Roadside Channel

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 3.33" for 10-YEAR event
Inflow = 20.44 cfs @ 11.99 hrs, Volume= 1.002 af
Outflow = 20.40 cfs @ 11.99 hrs, Volume= 1.002 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.43 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.72 fps, Avg. Travel Time= 1.6 min

Peak Storage= 527 cf @ 11.99 hrs
Average Depth at Peak Storage= 1.04'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 71.25 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 166.0' Slope= 0.0542 '/'
Inlet Invert= 1,911.00', Outlet Invert= 1,902.00'



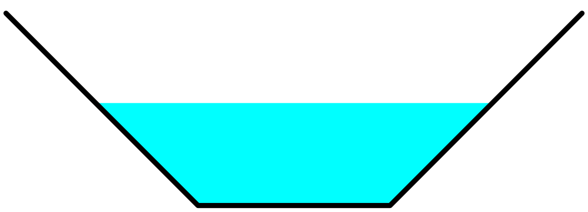
Summary for Reach 76: Roadside Channel

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 3.33" for 10-YEAR event
Inflow = 20.40 cfs @ 11.99 hrs, Volume= 1.002 af
Outflow = 20.40 cfs @ 11.99 hrs, Volume= 1.002 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.24 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.68 fps, Avg. Travel Time= 0.2 min

Peak Storage= 65 cf @ 11.99 hrs
Average Depth at Peak Storage= 1.07'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 68.43 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 20.0' Slope= 0.0500 '/'
Inlet Invert= 1,901.00', Outlet Invert= 1,900.00'



Summary for Reach 78: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 2.85" for 10-YEAR event
Inflow = 137.67 cfs @ 12.50 hrs, Volume= 21.601 af
Outflow = 137.56 cfs @ 12.51 hrs, Volume= 21.601 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.30 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.74 fps, Avg. Travel Time= 6.6 min

Peak Storage= 9,152 cf @ 12.51 hrs
Average Depth at Peak Storage= 1.08'
Bank-Full Depth= 1.50' Flow Area= 21.0 sf, Capacity= 258.41 cfs

8.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 20.00'
Length= 685.0' Slope= 0.1646 '/'
Inlet Invert= 2,170.75', Outlet Invert= 2,058.00'

‡

Summary for Reach 80: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 2.85" for 10-YEAR event
Inflow = 137.56 cfs @ 12.51 hrs, Volume= 21.601 af
Outflow = 137.24 cfs @ 12.53 hrs, Volume= 21.601 af, Atten= 0%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.58 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.11 fps, Avg. Travel Time= 11.1 min

Peak Storage= 15,436 cf @ 12.53 hrs
Average Depth at Peak Storage= 1.49'
Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 247.19 cfs

8.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 24.00'
Length= 740.0' Slope= 0.0473 '/'
Inlet Invert= 2,055.00', Outlet Invert= 2,020.00'

‡

Summary for Reach 82: Overland Flow

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 4.88 cfs @ 12.06 hrs, Volume= 0.304 af
Outflow = 1.08 cfs @ 12.39 hrs, Volume= 0.304 af, Atten= 78%, Lag= 19.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.19 fps, Min. Travel Time= 82.5 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 306.4 min

Peak Storage= 5,367 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 0.50' Flow Area= 75.0 sf, Capacity= 53.31 cfs

100.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 200.00'
Length= 938.0' Slope= 0.1354 '/'
Inlet Invert= 2,347.00', Outlet Invert= 2,220.00'

‡

Summary for Reach 82a: Overland Flow

Inflow Area = 62.628 ac, 1.58% Impervious, Inflow Depth = 2.68" for 10-YEAR event
Inflow = 102.73 cfs @ 12.43 hrs, Volume= 13.990 af
Outflow = 93.75 cfs @ 12.58 hrs, Volume= 13.990 af, Atten= 9%, Lag= 9.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.71 fps, Min. Travel Time= 11.2 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 75.1 min

Peak Storage= 62,793 cf @ 12.58 hrs
Average Depth at Peak Storage= 0.76'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 164.89 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 473.0' Slope= 0.0846 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,180.00'

‡

Summary for Reach 83A: Overland Flow

Inflow Area = 30.315 ac, 1.06% Impervious, Inflow Depth = 2.47" for 10-YEAR event
Inflow = 46.44 cfs @ 12.19 hrs, Volume= 6.251 af
Outflow = 42.99 cfs @ 12.34 hrs, Volume= 6.251 af, Atten= 7%, Lag= 8.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.72 fps, Min. Travel Time= 10.2 min
Avg. Velocity = 0.18 fps, Avg. Travel Time= 41.7 min

Peak Storage= 26,371 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 232.26 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 441.0' Slope= 0.1678 '/'
Inlet Invert= 2,326.00', Outlet Invert= 2,252.00'

‡

Summary for Reach 84A: Overland Flow

Inflow Area = 61.328 ac, 1.61% Impervious, Inflow Depth = 2.68" for 10-YEAR event
Inflow = 104.26 cfs @ 12.35 hrs, Volume= 13.686 af
Outflow = 101.65 cfs @ 12.43 hrs, Volume= 13.686 af, Atten= 3%, Lag= 5.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.81 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 0.18 fps, Avg. Travel Time= 25.6 min

Peak Storage= 34,837 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 192.72 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 277.0' Slope= 0.1155 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,220.00'

‡

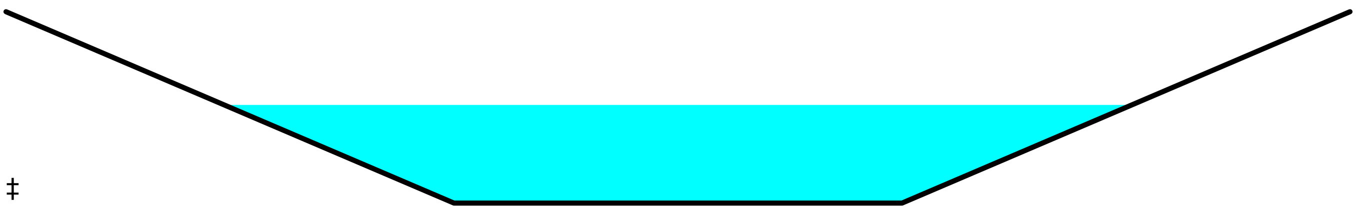
Summary for Reach 84B: Overland Flow

Inflow Area = 31.013 ac, 2.16% Impervious, Inflow Depth = 2.88" for 10-YEAR event
Inflow = 64.71 cfs @ 12.23 hrs, Volume= 7.435 af
Outflow = 61.29 cfs @ 12.35 hrs, Volume= 7.435 af, Atten= 5%, Lag= 7.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.79 fps, Min. Travel Time= 7.8 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 33.0 min

Peak Storage= 28,732 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.51'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 228.33 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 370.0' Slope= 0.1622 '/'
Inlet Invert= 2,312.00', Outlet Invert= 2,252.00'



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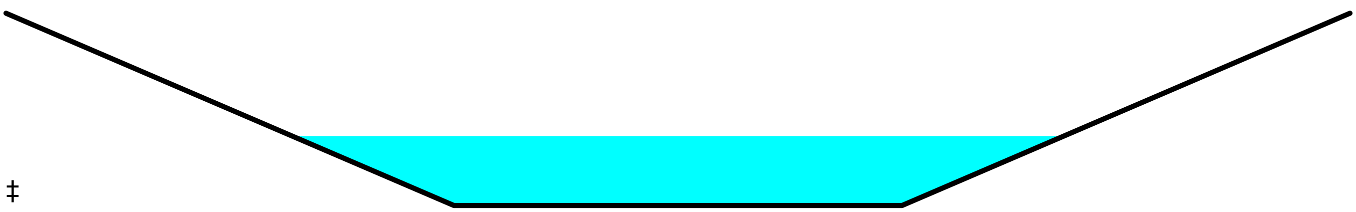
Summary for Reach 85A: Overland Flow

Inflow Area = 4.281 ac, 0.54% Impervious, Inflow Depth = 4.94" for 10-YEAR event
Inflow = 40.94 cfs @ 12.20 hrs, Volume= 1.763 af
Outflow = 30.88 cfs @ 12.35 hrs, Volume= 1.763 af, Atten= 25%, Lag= 9.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.63 fps, Min. Travel Time= 13.4 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 80.5 min

Peak Storage= 24,805 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 221.40 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 505.0' Slope= 0.1525 '/'
Inlet Invert= 2,292.00', Outlet Invert= 2,215.00'



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Summary for Reach 85B: Overland Flow

Inflow Area = 8.621 ac, 0.65% Impervious, Inflow Depth = 4.05" for 10-YEAR event
Inflow = 43.94 cfs @ 12.29 hrs, Volume= 2.907 af
Outflow = 32.13 cfs @ 12.44 hrs, Volume= 2.907 af, Atten= 27%, Lag= 9.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.50 fps, Min. Travel Time= 15.0 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 87.7 min

Peak Storage= 28,986 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 157.60 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 453.0' Slope= 0.0773 '/'
Inlet Invert= 2,215.00', Outlet Invert= 2,180.00'

‡

Summary for Reach 86A: Overland Flow

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 3.16" for 10-YEAR event
Inflow = 19.91 cfs @ 12.19 hrs, Volume= 1.144 af
Outflow = 17.51 cfs @ 12.24 hrs, Volume= 1.144 af, Atten= 12%, Lag= 2.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.47 fps, Min. Travel Time= 6.9 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 31.1 min

Peak Storage= 7,194 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 190.45 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 195.0' Slope= 0.1128 '/'
Inlet Invert= 2,237.00', Outlet Invert= 2,215.00'

‡

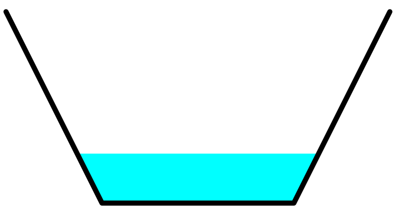
Summary for Reach 88: Roadside Swale

Inflow Area = 2.000 ac, 0.00% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 7.13 cfs @ 12.08 hrs, Volume= 0.468 af
Outflow = 7.06 cfs @ 12.10 hrs, Volume= 0.468 af, Atten= 1%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.04 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 1.71 fps, Avg. Travel Time= 4.6 min

Peak Storage= 551 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 2.00' Flow Area= 6.0 sf, Capacity= 66.89 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 0.5 '/' Top Width= 4.00'
Length= 472.0' Slope= 0.0763 '/'
Inlet Invert= 2,207.00', Outlet Invert= 2,171.00'



Summary for Reach 91: Overland Flow

Inflow Area = 9.707 ac, 0.00% Impervious, Inflow Depth = 2.44" for 10-YEAR event
Inflow = 33.33 cfs @ 12.04 hrs, Volume= 1.975 af
Outflow = 32.87 cfs @ 12.06 hrs, Volume= 1.975 af, Atten= 1%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.94 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.70 fps, Avg. Travel Time= 4.7 min

Peak Storage= 2,215 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.46'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 137.55 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 198.0' Slope= 0.0172 '/'
Inlet Invert= 1,889.40', Outlet Invert= 1,886.00'

‡

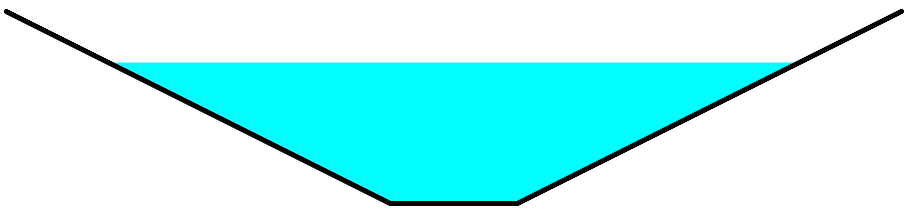
Summary for Reach 92: Channel Along RR Tracks

Inflow Area = 75.912 ac, 18.65% Impervious, Inflow Depth = 2.34" for 10-YEAR event
Inflow = 107.13 cfs @ 12.02 hrs, Volume= 14.796 af
Outflow = 103.86 cfs @ 12.04 hrs, Volume= 14.796 af, Atten= 3%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.37 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 1.28 fps, Avg. Travel Time= 10.0 min

Peak Storage= 10,851 cf @ 12.04 hrs
Average Depth at Peak Storage= 2.20'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 211.58 cfs

2.00' x 3.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 770.0' Slope= 0.0239 '/'
Inlet Invert= 1,848.40', Outlet Invert= 1,830.00'



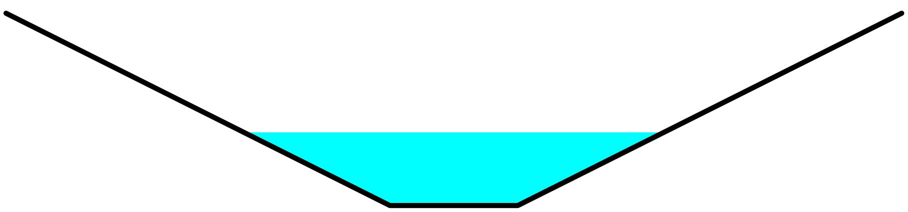
Summary for Reach 92a: Channel Along RR Tracks

Inflow Area = 9.707 ac, 0.00% Impervious, Inflow Depth = 2.44" for 10-YEAR event
Inflow = 32.87 cfs @ 12.06 hrs, Volume= 1.975 af
Outflow = 29.28 cfs @ 12.10 hrs, Volume= 1.975 af, Atten= 11%, Lag= 2.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.00 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 1.80 fps, Avg. Travel Time= 10.5 min

Peak Storage= 5,551 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.14'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 248.24 cfs

2.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 1,137.0' Slope= 0.0329 '/'
Inlet Invert= 1,885.90', Outlet Invert= 1,848.50'



Summary for Reach 93R: Roadside Ditch

Inflow Area = 2.052 ac, 0.00% Impervious, Inflow Depth = 2.27" for 10-YEAR event
Inflow = 10.63 cfs @ 12.01 hrs, Volume= 0.388 af
Outflow = 10.60 cfs @ 12.02 hrs, Volume= 0.388 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.69 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.27 fps, Avg. Travel Time= 1.8 min

Peak Storage= 305 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.67'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 54.15 cfs

2.00' x 1.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 135.0' Slope= 0.0259 '/'
Inlet Invert= 1,894.50', Outlet Invert= 1,891.00'

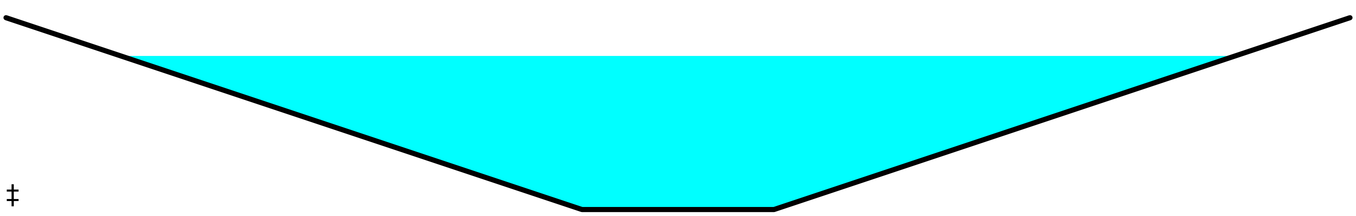
Summary for Reach 142R: Overland Flow

Inflow Area = 8.896 ac, 28.68% Impervious, Inflow Depth = 1.59" for 10-YEAR event
Inflow = 19.06 cfs @ 12.20 hrs, Volume= 1.177 af
Outflow = 18.92 cfs @ 12.23 hrs, Volume= 1.177 af, Atten= 1%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.32 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.67 fps, Avg. Travel Time= 7.0 min

Peak Storage= 2,286 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 0.30' Flow Area= 12.0 sf, Capacity= 31.71 cfs

10.00' x 0.30' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 280.0' Slope= 0.0299 '/'
Inlet Invert= 1,951.87', Outlet Invert= 1,943.50'



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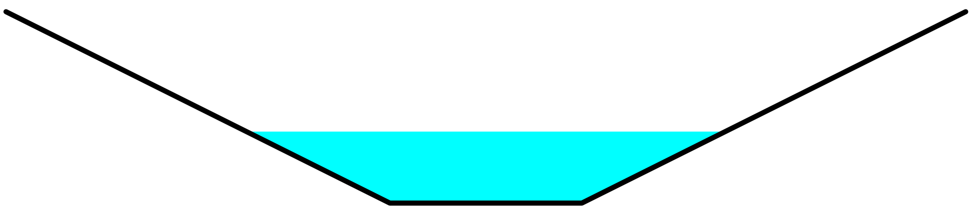
Summary for Reach 143R: Stone Lined Swale with ChkDams

Inflow Area = 50.207 ac, 25.31% Impervious, Inflow Depth > 2.09" for 10-YEAR event
Inflow = 18.18 cfs @ 12.03 hrs, Volume= 8.754 af
Outflow = 18.04 cfs @ 12.04 hrs, Volume= 8.754 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.91 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.70 fps, Avg. Travel Time= 3.3 min

Peak Storage= 875 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 142.04 cfs

2.00' x 2.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 335.0' Slope= 0.1403 '/'
Inlet Invert= 1,897.00', Outlet Invert= 1,850.00'



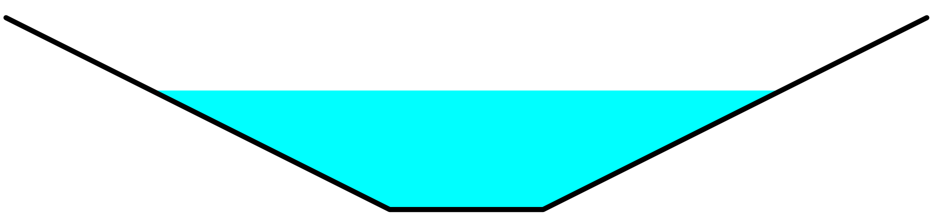
Summary for Reach I1: TRM SWALE

Inflow Area = 3.692 ac, 57.82% Impervious, Inflow Depth = 4.62" for 10-YEAR event
Inflow = 25.89 cfs @ 11.99 hrs, Volume= 1.420 af
Outflow = 25.76 cfs @ 12.00 hrs, Volume= 1.420 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.25 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.89 fps, Avg. Travel Time= 2.7 min

Peak Storage= 1,148 cf @ 12.00 hrs
Average Depth at Peak Storage= 1.55'
Bank-Full Depth= 2.50' Flow Area= 17.5 sf, Capacity= 74.54 cfs

2.00' x 2.50' deep channel, n= 0.035 TRM
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 145.0' Slope= 0.0069 '/'
Inlet Invert= 1,943.00', Outlet Invert= 1,942.00'



Summary for Reach I12: stone lined stream channel

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 3.85" for 10-YEAR event
Inflow = 107.99 cfs @ 12.01 hrs, Volume= 6.274 af
Outflow = 107.94 cfs @ 12.02 hrs, Volume= 6.274 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.33 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.02 fps, Avg. Travel Time= 1.2 min

Peak Storage= 1,642 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.94'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 171.87 cfs

4.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 9.00'
Length= 142.0' Slope= 0.0486 '/'
Inlet Invert= 1,999.90', Outlet Invert= 1,993.00'

Summary for Reach I12a: stone lined stream channel

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 3.85" for 10-YEAR event
Inflow = 107.94 cfs @ 12.02 hrs, Volume= 6.274 af
Outflow = 107.90 cfs @ 12.02 hrs, Volume= 6.274 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.36 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.63 fps, Avg. Travel Time= 1.0 min

Peak Storage= 1,397 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.57'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 253.40 cfs

4.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 9.00'
Length= 160.0' Slope= 0.1056 '/'
Inlet Invert= 1,992.90', Outlet Invert= 1,976.00'

Summary for Reach I12b: stone lined stream channel

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 3.85" for 10-YEAR event
Inflow = 107.90 cfs @ 12.02 hrs, Volume= 6.274 af
Outflow = 107.52 cfs @ 12.03 hrs, Volume= 6.274 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.25 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.40 fps, Avg. Travel Time= 3.0 min

Peak Storage= 4,206 cf @ 12.03 hrs
Average Depth at Peak Storage= 1.68'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 222.71 cfs

4.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 9.00'
Length= 440.0' Slope= 0.0816 '/'
Inlet Invert= 1,975.90', Outlet Invert= 1,940.00'

Summary for Reach I21: stone lined stream channel

Inflow Area = 9.234 ac, 60.31% Impervious, Inflow Depth = 4.71" for 10-YEAR event
Inflow = 68.56 cfs @ 11.97 hrs, Volume= 3.621 af
Outflow = 63.46 cfs @ 12.00 hrs, Volume= 3.621 af, Atten= 7%, Lag= 1.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.19 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 1.78 fps, Avg. Travel Time= 14.9 min

Peak Storage= 12,275 cf @ 12.00 hrs
Average Depth at Peak Storage= 1.30'
Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 143.65 cfs

4.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.5 '/' Top Width= 10.00'
Length= 1,585.0' Slope= 0.0886 '/'
Inlet Invert= 2,169.00', Outlet Invert= 2,028.50'

Summary for Pond 1P: culvert

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 3.85" for 10-YEAR event
Inflow = 107.99 cfs @ 12.01 hrs, Volume= 6.274 af
Outflow = 107.99 cfs @ 12.01 hrs, Volume= 6.274 af, Atten= 0%, Lag= 0.0 min
Primary = 107.99 cfs @ 12.01 hrs, Volume= 6.274 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,024.21' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,020.00'	**54.0" Round CMP_Round 54"** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,020.00' / 2,017.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf

Primary OutFlow Max=107.86 cfs @ 12.01 hrs HW=2,024.20' TW=2,021.10' (Dynamic Tailwater)
└─**1=CMP_Round 54"** (Inlet Controls 107.86 cfs @ 6.98 fps)

Summary for Pond 6P: Overflow Basin @ 8 tee

Inflow Area = 10.459 ac, 0.00% Impervious, Inflow Depth = 2.78" for 10-YEAR event
Inflow = 33.03 cfs @ 12.19 hrs, Volume= 2.423 af
Outflow = 27.16 cfs @ 12.31 hrs, Volume= 2.267 af, Atten= 18%, Lag= 6.9 min
Primary = 27.16 cfs @ 12.31 hrs, Volume= 2.267 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,964.58' @ 12.31 hrs Surf.Area= 8,688 sf Storage= 21,816 cf

Plug-Flow detention time= 65.3 min calculated for 2.267 af (94% of inflow)
Center-of-Mass det. time= 31.4 min (872.2 - 840.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,961.00'	25,500 cf	**surface storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,961.00	3,100	0	0
1,962.00	5,100	4,100	4,100
1,963.00	6,100	5,600	9,700
1,964.00	8,250	7,175	16,875
1,965.00	9,000	8,625	25,500

Device	Routing	Invert	Outlet Devices
#1	Primary	1,962.50'	**36.0" Round Culvert** L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,962.50' / 1,958.00' S= 0.0310 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	1,964.50'	**25.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67

2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=27.15 cfs @ 12.31 hrs HW=1,964.58' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 25.74 cfs @ 4.91 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 1.40 cfs @ 0.67 fps)

Summary for Pond 8P: NATURAL DEPRESSION

Inflow Area = 3.450 ac, 0.00% Impervious, Inflow Depth = 3.09" for 10-YEAR event
Inflow = 13.50 cfs @ 12.08 hrs, Volume= 0.888 af
Outflow = 0.44 cfs @ 15.75 hrs, Volume= 0.888 af, Atten= 97%, Lag= 219.8 min
Discarded = 0.23 cfs @ 15.75 hrs, Volume= 0.770 af
Primary = 0.21 cfs @ 15.75 hrs, Volume= 0.118 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,970.20' @ 15.75 hrs Surf.Area= 19,501 sf Storage= 25,850 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,229.9 min (2,066.9 - 837.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,967.50'	91,482 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,967.50	2,433	0	0
1,968.00	2,887	1,330	1,330
1,970.00	17,890	20,777	22,107
1,972.00	33,985	51,875	73,982
1,972.50	36,015	17,500	91,482

Device	Routing	Invert	Outlet Devices
#1	Primary	1,970.00'	**18.0" Round Culvert** L= 250.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,970.00' / 1,953.00' S= 0.0680 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Discarded	1,967.50'	**0.500 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.23 cfs @ 15.75 hrs HW=1,970.20' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.21 cfs @ 15.75 hrs HW=1,970.20' TW=1,953.23' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.21 cfs @ 1.52 fps)

Summary for Pond 29P: cb29

Inflow Area = 0.582 ac, 15.87% Impervious, Inflow Depth = 3.58" for 10-YEAR event
Inflow = 3.67 cfs @ 11.97 hrs, Volume= 0.174 af
Outflow = 3.67 cfs @ 11.97 hrs, Volume= 0.174 af, Atten= 0%, Lag= 0.0 min
Primary = 3.67 cfs @ 11.97 hrs, Volume= 0.174 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,925.48' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,924.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,924.00' / 1,923.75' S= 0.0083 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,928.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.66 cfs @ 11.97 hrs HW=1,925.47' TW=1,925.26' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.66 cfs @ 2.63 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 57: 15" Steel Culvert

Inflow Area = 1.326 ac, 4.72% Impervious, Inflow Depth = 2.90" for 10-YEAR event
Inflow = 4.92 cfs @ 12.08 hrs, Volume= 0.320 af
Outflow = 4.92 cfs @ 12.08 hrs, Volume= 0.320 af, Atten= 0%, Lag= 0.0 min
Primary = 4.92 cfs @ 12.08 hrs, Volume= 0.320 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,005.74' @ 12.08 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,004.00'	**15.0" Round 15" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,004.00' / 2,000.00' S= 0.0667 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=4.92 cfs @ 12.08 hrs HW=2,005.74' TW=2,000.87' (Dynamic Tailwater)
1=15" Smooth Steel Culvert (old) (Inlet Controls 4.92 cfs @ 4.01 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 58R: 24" HDPE Pipe

Inflow Area = 3.000 ac, 0.00% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 10.33 cfs @ 12.09 hrs, Volume= 0.701 af
Outflow = 10.33 cfs @ 12.09 hrs, Volume= 0.701 af, Atten= 0%, Lag= 0.0 min
Primary = 10.33 cfs @ 12.09 hrs, Volume= 0.701 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,223.48' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,222.00'	**24.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,222.00' / 2,221.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,225.00'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=10.32 cfs @ 12.09 hrs HW=2,223.48' TW=2,220.05' (Dynamic Tailwater)
1=Culvert (Inlet Controls 10.32 cfs @ 4.14 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 59: 32" Plastic Pipe

Inflow Area = 30.315 ac, 1.06% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 82.26 cfs @ 12.19 hrs, Volume= 7.087 af
Outflow = 82.26 cfs @ 12.19 hrs, Volume= 7.087 af, Atten= 0%, Lag= 0.0 min
Primary = 46.44 cfs @ 12.19 hrs, Volume= 6.251 af
Secondary = 35.81 cfs @ 12.19 hrs, Volume= 0.835 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,333.12' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,327.00'	**32.0" Round 32" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,327.00' / 2,324.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 5.59 sf
#2	Secondary	2,331.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=46.44 cfs @ 12.19 hrs HW=2,333.12' TW=2,326.40' (Dynamic Tailwater)
1=32" Plastic Culvert (Inlet Controls 46.44 cfs @ 8.32 fps)

Secondary OutFlow Max=35.79 cfs @ 12.19 hrs HW=2,333.12' TW=2,322.25' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 35.79 cfs @ 4.22 fps)

Summary for Pond 60: 30" Steel Culvert

Inflow Area = 122.367 ac, 1.97% Impervious, Inflow Depth = 2.86" for 10-YEAR event
Inflow = 184.08 cfs @ 12.24 hrs, Volume= 29.207 af
Outflow = 184.08 cfs @ 12.24 hrs, Volume= 29.207 af, Atten= 0%, Lag= 0.0 min
Primary = 184.08 cfs @ 12.24 hrs, Volume= 29.207 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,024.62' @ 12.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,020.00'	**30.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,020.00' / 2,019.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Primary	2,021.00'	**15.0" Round Culvert** L= 20.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,021.00' / 2,020.00' S= 0.0500 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 1.23 sf
#3	Primary	2,024.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=184.02 cfs @ 12.24 hrs HW=2,024.62' TW=2,018.25' (Dynamic Tailwater)
- **1=Culvert** (Inlet Controls 43.39 cfs @ 8.84 fps)
- **2=Culvert** (Inlet Controls 9.02 cfs @ 7.35 fps)
- **3=Broad-Crested Rectangular Weir** (Weir Controls 131.61 cfs @ 2.12 fps)

Summary for Pond 67P: 24" Steel Culvert

Inflow Area = 4.195 ac, 7.34% Impervious, Inflow Depth = 2.99" for 10-YEAR event
Inflow = 18.34 cfs @ 12.03 hrs, Volume= 1.046 af
Outflow = 18.34 cfs @ 12.03 hrs, Volume= 1.046 af, Atten= 0%, Lag= 0.0 min
Primary = 18.34 cfs @ 12.03 hrs, Volume= 1.046 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,006.04' @ 12.03 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,003.00'	**24.0" Round 24" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,003.00' / 2,000.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=18.32 cfs @ 12.03 hrs HW=2,006.04' TW=2,000.85' (Dynamic Tailwater)
- **1=24" Smooth Steel Culvert (old)** (Inlet Controls 17.07 cfs @ 5.43 fps)
- **2=Broad-Crested Rectangular Weir** (Weir Controls 1.25 cfs @ 0.57 fps)

Summary for Pond 74: 12" CMP Culvert

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 3.33" for 10-YEAR event
Inflow = 20.44 cfs @ 11.99 hrs, Volume= 1.002 af
Outflow = 20.44 cfs @ 11.99 hrs, Volume= 1.002 af, Atten= 0%, Lag= 0.0 min
Primary = 20.44 cfs @ 11.99 hrs, Volume= 1.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,917.99' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,914.00'	**12.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 1,914.00' / 1,911.76' S= 0.0560 '/' Cc= 0.900 n= 0.025, Flow Area= 0.79 sf
#2	Primary	1,917.00'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=20.41 cfs @ 11.99 hrs HW=1,917.99' TW=1,912.04' (Dynamic Tailwater)
1=Culvert (Barrel Controls 5.81 cfs @ 7.40 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 14.59 cfs @ 2.95 fps)

Summary for Pond 74A: 16" CMP Culvert

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 3.33" for 10-YEAR event
Inflow = 20.45 cfs @ 11.98 hrs, Volume= 1.002 af
Outflow = 20.45 cfs @ 11.98 hrs, Volume= 1.002 af, Atten= 0%, Lag= 0.0 min
Primary = 20.45 cfs @ 11.98 hrs, Volume= 1.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,925.28' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,921.50'	**16.0" Round Culvert** L= 35.0' Ke= 0.500 Inlet / Outlet Invert= 1,921.50' / 1,920.00' S= 0.0429 '/' Cc= 0.900 n= 0.025, Flow Area= 1.40 sf
#2	Primary	1,924.50'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=20.41 cfs @ 11.98 hrs HW=1,925.27' TW=1,921.17' (Dynamic Tailwater)
1=Culvert (Barrel Controls 10.76 cfs @ 7.71 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 9.65 cfs @ 2.49 fps)

Summary for Pond 76A: culvert

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 3.33" for 10-YEAR event
Inflow = 20.40 cfs @ 11.99 hrs, Volume= 1.002 af
Outflow = 20.40 cfs @ 11.99 hrs, Volume= 1.002 af, Atten= 0%, Lag= 0.0 min
Primary = 20.40 cfs @ 11.99 hrs, Volume= 1.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 1,905.82' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,902.00'	**12.0" Round Culvert** L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,902.00' / 1,898.00' S= 0.0667 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf
#2	Primary	1,904.00'	**2.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=20.37 cfs @ 11.99 hrs HW=1,905.81' TW=1,902.06' (Dynamic Tailwater)
1=Culvert (Outlet Controls 4.19 cfs @ 5.34 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 16.18 cfs @ 4.46 fps)

Summary for Pond 77: 36" Steel Culvert

Inflow Area = 88.881 ac, 1.70% Impervious, Inflow Depth = 2.85" for 10-YEAR event
Inflow = 136.21 cfs @ 12.50 hrs, Volume= 21.133 af
Outflow = 136.21 cfs @ 12.50 hrs, Volume= 21.133 af, Atten= 0%, Lag= 0.0 min
Primary = 136.21 cfs @ 12.50 hrs, Volume= 21.133 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,176.45' @ 12.50 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,172.00'	**36.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 2,172.00' / 2,171.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	2,176.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=136.21 cfs @ 12.50 hrs HW=2,176.45' TW=2,171.83' (Dynamic Tailwater)
1=Culvert (Inlet Controls 58.44 cfs @ 8.27 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 77.77 cfs @ 1.74 fps)

Summary for Pond 79: 16" Steel Culvert

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 2.85" for 10-YEAR event
Inflow = 137.56 cfs @ 12.51 hrs, Volume= 21.601 af
Outflow = 137.56 cfs @ 12.51 hrs, Volume= 21.601 af, Atten= 0%, Lag= 0.0 min
Primary = 137.56 cfs @ 12.51 hrs, Volume= 21.601 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,058.61' @ 12.51 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,056.00'	**16.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,056.00' / 2,055.00' S= 0.0500 '/' Cc= 0.900

Device	Routing	Invert	Outlet Devices
			n= 0.012, Flow Area= 1.40 sf
#2	Primary	2,058.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=137.56 cfs @ 12.51 hrs HW=2,058.61' TW=2,056.49' (Dynamic Tailwater)
1=Culvert (Inlet Controls 9.37 cfs @ 6.71 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 128.19 cfs @ 2.11 fps)

Summary for Pond 83: 24" HPDE Culvert

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 4.88 cfs @ 12.06 hrs, Volume= 0.304 af
Outflow = 4.88 cfs @ 12.06 hrs, Volume= 0.304 af, Atten= 0%, Lag= 0.0 min
Primary = 4.88 cfs @ 12.06 hrs, Volume= 0.304 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,361.09' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,360.00'	**24.0" Round 24" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,360.00' / 2,357.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,364.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=4.88 cfs @ 12.06 hrs HW=2,361.09' TW=2,347.03' (Dynamic Tailwater)
1=24" Plastic Culvert (Inlet Controls 4.88 cfs @ 2.80 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,360.00' TW=2,327.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 84: 24" HDPE Pipe

Inflow Area = 31.013 ac, 2.16% Impervious, Inflow Depth = 3.22" for 10-YEAR event
Inflow = 106.32 cfs @ 12.23 hrs, Volume= 8.327 af
Outflow = 106.32 cfs @ 12.23 hrs, Volume= 8.327 af, Atten= 0%, Lag= 0.0 min
Primary = 64.71 cfs @ 12.23 hrs, Volume= 7.435 af
Secondary = 41.61 cfs @ 12.23 hrs, Volume= 0.892 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,322.30' @ 12.23 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,315.00'	**36.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,315.00' / 2,312.00' S= 0.0500 '/' Cc= 0.900

			n= 0.011, Flow Area= 7.07 sf
#2	Secondary	2,320.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=64.71 cfs @ 12.23 hrs HW=2,322.30' TW=2,312.49' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 64.71 cfs @ 9.15 fps)

Secondary OutFlow Max=41.58 cfs @ 12.23 hrs HW=2,322.30' TW=2,301.04' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 41.58 cfs @ 4.52 fps)

Summary for Pond 85: 28" HDPE Pipe

Inflow Area = 4.281 ac, 0.54% Impervious, Inflow Depth = 5.31" for 10-YEAR event
Inflow = 52.67 cfs @ 12.20 hrs, Volume= 1.893 af
Outflow = 52.67 cfs @ 12.20 hrs, Volume= 1.893 af, Atten= 0%, Lag= 0.0 min
Primary = 40.94 cfs @ 12.20 hrs, Volume= 1.763 af
Secondary = 11.73 cfs @ 12.20 hrs, Volume= 0.129 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,301.06' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,295.00'	**30.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,295.00' / 2,292.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 4.91 sf
#2	Secondary	2,300.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=40.92 cfs @ 12.20 hrs HW=2,301.06' TW=2,292.28' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 40.92 cfs @ 8.34 fps)

Secondary OutFlow Max=11.66 cfs @ 12.20 hrs HW=2,301.06' TW=2,243.69' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 11.66 cfs @ 2.75 fps)

Summary for Pond 86: 24" HDPE Pipe

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 3.16" for 10-YEAR event
Inflow = 19.91 cfs @ 12.19 hrs, Volume= 1.144 af
Outflow = 19.91 cfs @ 12.19 hrs, Volume= 1.144 af, Atten= 0%, Lag= 0.0 min
Primary = 19.91 cfs @ 12.19 hrs, Volume= 1.144 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,243.78' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**24.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,240.00' / 2,237.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,245.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=19.86 cfs @ 12.19 hrs HW=2,243.77' TW=2,237.28' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 19.86 cfs @ 6.32 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,240.00' TW=2,222.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 87: 18" Steel Culvert

Inflow Area = 2.000 ac, 0.00% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 7.13 cfs @ 12.08 hrs, Volume= 0.468 af
Outflow = 7.13 cfs @ 12.08 hrs, Volume= 0.468 af, Atten= 0%, Lag= 0.0 min
Primary = 7.13 cfs @ 12.08 hrs, Volume= 0.468 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,209.88' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,208.00'	**18.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,208.00' / 2,207.00' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=7.12 cfs @ 12.08 hrs HW=2,209.87' TW=2,207.51' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 7.12 cfs @ 4.03 fps)

Summary for Pond 90: 24" Steel Culvert

Inflow Area = 9.707 ac, 0.00% Impervious, Inflow Depth = 2.44" for 10-YEAR event
Inflow = 33.33 cfs @ 12.04 hrs, Volume= 1.975 af
Outflow = 33.33 cfs @ 12.04 hrs, Volume= 1.975 af, Atten= 0%, Lag= 0.0 min
Primary = 33.33 cfs @ 12.04 hrs, Volume= 1.975 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,893.19' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,890.00'	**35.0" W x 24.0" H, R=17.9"/55.1" Arch CMP_Arch_1/2 35x24** L= 25.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,890.00' / 1,889.50' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 4.63 sf

#2	Primary	1,895.00'	**50.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=33.31 cfs @ 12.04 hrs HW=1,893.19' TW=1,889.85' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 35x24** (Inlet Controls 33.31 cfs @ 7.19 fps)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 122: 18" HDPE Storm

Inflow Area = 0.477 ac, 83.18% Impervious, Inflow Depth = 5.30" for 10-YEAR event
Inflow = 3.97 cfs @ 11.97 hrs, Volume= 0.210 af
Outflow = 3.97 cfs @ 11.97 hrs, Volume= 0.210 af, Atten= 0%, Lag= 0.0 min
Primary = 3.97 cfs @ 11.97 hrs, Volume= 0.210 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,948.65' @ 11.99 hrs
Flood Elev= 1,961.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,946.00'	**18.0" Round Culvert** L= 22.0' Ke= 0.500 Inlet / Outlet Invert= 1,946.00' / 1,945.89' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,949.33'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.54 cfs @ 11.97 hrs HW=1,948.57' TW=1,948.39' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.54 cfs @ 2.00 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 123: 18" HDPE Storm

Inflow Area = 0.667 ac, 80.73% Impervious, Inflow Depth = 5.23" for 10-YEAR event
Inflow = 5.52 cfs @ 11.97 hrs, Volume= 0.291 af
Outflow = 5.52 cfs @ 11.97 hrs, Volume= 0.291 af, Atten= 0%, Lag= 0.0 min
Primary = 5.52 cfs @ 11.97 hrs, Volume= 0.291 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,948.46' @ 11.98 hrs
Flood Elev= 1,961.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,945.89'	**18.0" Round Culvert** L= 124.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,945.89' / 1,945.27' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,949.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.36 cfs @ 11.97 hrs HW=1,948.40' TW=1,947.86' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 5.36 cfs @ 3.03 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond A1: A1 - OPEN SWALE

Inflow Area = 1.159 ac, 0.00% Impervious, Inflow Depth = 3.09" for 10-YEAR event
Inflow = 5.42 cfs @ 12.02 hrs, Volume= 0.298 af
Outflow = 5.37 cfs @ 12.04 hrs, Volume= 0.298 af, Atten= 1%, Lag= 0.7 min
Discarded = 0.03 cfs @ 12.04 hrs, Volume= 0.085 af
Primary = 5.35 cfs @ 12.04 hrs, Volume= 0.213 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,910.26' @ 12.04 hrs Surf.Area= 2,305 sf Storage= 2,786 cf

Plug-Flow detention time= 321.1 min calculated for 0.298 af (100% of inflow)
Center-of-Mass det. time= 321.3 min (1,153.4 - 832.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,904.50'	186 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 464 cf Overall x 40.0% Voids
#2	1,905.50'	139 cf	**FILTER MEDIA (Prismatic)** Listed below (Recalc) 928 cf Overall x 15.0% Voids
#3	1,907.50'	2,803 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		3,128 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,904.50	464	0	0
1,905.50	464	464	464

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,905.50	464	0	0
1,907.50	464	928	928

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,907.50	464	0	0
1,908.00	567	258	258
1,910.00	1,291	1,858	2,116
1,910.50	1,457	687	2,803

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,904.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,910.00'	**15.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.04 hrs HW=1,910.26' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=5.34 cfs @ 12.04 hrs HW=1,910.26' TW=1,907.32' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 5.34 cfs @ 1.37 fps)

Summary for Pond A2: A2 - OPEN SWALE

Inflow Area = 1.621 ac, 0.00% Impervious, Inflow Depth = 2.46" for 10-YEAR event
Inflow = 7.49 cfs @ 12.03 hrs, Volume= 0.332 af
Outflow = 7.47 cfs @ 12.04 hrs, Volume= 0.332 af, Atten= 0%, Lag= 0.4 min
Discarded = 0.02 cfs @ 12.04 hrs, Volume= 0.042 af
Primary = 7.45 cfs @ 12.04 hrs, Volume= 0.291 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,907.32' @ 12.04 hrs Surf.Area= 1,531 sf Storage= 1,278 cf

Plug-Flow detention time= 98.6 min calculated for 0.332 af (100% of inflow)
Center-of-Mass det. time= 98.7 min (937.0 - 838.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,902.50'	134 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 336 cf Overall x 40.0% Voids
#2	1,903.50'	101 cf	**FILTER BED (Prismatic)** Listed below (Recalc) 672 cf Overall x 15.0% Voids
#3	1,905.50'	2,316 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		2,551 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,902.50	336	0	0
1,903.50	336	336	336

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,903.50	336	0	0
1,905.50	336	672	672

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,905.50	336	0	0
1,906.00	428	191	191
1,908.00	1,080	1,508	1,699
1,908.50	1,386	617	2,316

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,902.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,907.00'	**15.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00

Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.02 cfs @ 12.04 hrs HW=1,907.32' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=7.45 cfs @ 12.04 hrs HW=1,907.32' TW=1,905.85' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 7.45 cfs @ 1.54 fps)

Summary for Pond A3: A3 - OPEN SWALE

Inflow Area = 2.379 ac, 0.00% Impervious, Inflow Depth = 2.48" for 10-YEAR event
Inflow = 11.07 cfs @ 12.03 hrs, Volume= 0.492 af
Outflow = 11.03 cfs @ 12.04 hrs, Volume= 0.492 af, Atten= 0%, Lag= 0.5 min
Discarded = 0.03 cfs @ 12.04 hrs, Volume= 0.073 af
Primary = 11.01 cfs @ 12.04 hrs, Volume= 0.419 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,905.85' @ 12.04 hrs Surf.Area= 2,259 sf Storage= 2,343 cf

Plug-Flow detention time= 139.1 min calculated for 0.492 af (100% of inflow)
Center-of-Mass det. time= 139.2 min (973.6 - 834.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,900.50'	206 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 514 cf Overall x 40.0% Voids
#2	1,901.50'	154 cf	**FILTER MEDIA (Prismatic)** Listed below (Recalc) 1,028 cf Overall x 15.0% Voids
#3	1,903.50'	2,895 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		3,255 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,900.50	514	0	0
1,901.50	514	514	514

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.50	514	0	0
1,903.50	514	1,028	1,028

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,903.50	514	0	0
1,904.00	613	282	282
1,906.00	1,283	1,896	2,178
1,906.50	1,585	717	2,895

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,900.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,905.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.04 hrs HW=1,905.85' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=11.00 cfs @ 12.04 hrs HW=1,905.85' TW=1,903.90' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 11.00 cfs @ 1.59 fps)

Summary for Pond A4: A4 - OPEN SWALE

Inflow Area = 2.923 ac, 0.00% Impervious, Inflow Depth = 2.31" for 10-YEAR event
Inflow = 13.58 cfs @ 12.04 hrs, Volume= 0.564 af
Outflow = 13.57 cfs @ 12.04 hrs, Volume= 0.564 af, Atten= 0%, Lag= 0.3 min
Discarded = 0.02 cfs @ 12.04 hrs, Volume= 0.051 af
Primary = 13.55 cfs @ 12.04 hrs, Volume= 0.513 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,903.90' @ 12.04 hrs Surf.Area= 1,608 sf Storage= 1,709 cf

Plug-Flow detention time= 86.1 min calculated for 0.563 af (100% of inflow)
Center-of-Mass det. time= 86.3 min (920.9 - 834.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,898.50'	137 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 343 cf Overall x 40.0% Voids
#2	1,899.50'	103 cf	**FILTER MEDIA (Prismatic)** Listed below (Recalc) 686 cf Overall x 15.0% Voids
#3	1,901.50'	2,105 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		2,345 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,898.50	343	0	0
1,899.50	343	343	343

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,899.50	343	0	0
1,901.50	343	686	686

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.50	343	0	0
1,902.00	425	192	192
1,904.00	949	1,374	1,566
1,904.50	1,207	539	2,105

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,898.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,903.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.02 cfs @ 12.04 hrs HW=1,903.90' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=13.53 cfs @ 12.04 hrs HW=1,903.90' TW=1,902.21' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 13.53 cfs @ 1.71 fps)

Summary for Pond A5: A5 - OPEN SWALE

Inflow Area = 4.411 ac, 0.00% Impervious, Inflow Depth = 2.47" for 10-YEAR event
Inflow = 20.60 cfs @ 12.04 hrs, Volume= 0.907 af
Outflow = 20.54 cfs @ 12.04 hrs, Volume= 0.907 af, Atten= 0%, Lag= 0.4 min
Discarded = 0.03 cfs @ 12.04 hrs, Volume= 0.078 af
Primary = 20.51 cfs @ 12.04 hrs, Volume= 0.829 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,902.21' @ 12.04 hrs Surf.Area= 2,320 sf Storage= 2,879 cf

Plug-Flow detention time= 94.5 min calculated for 0.907 af (100% of inflow)
Center-of-Mass det. time= 94.7 min (927.9 - 833.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,896.50'	138 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 346 cf Overall x 40.0% Voids
#2	1,897.50'	104 cf	**FILTER BED (Prismatic)** Listed below (Recalc) 692 cf Overall x 15.0% Voids
#3	1,899.50'	3,125 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		3,367 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,896.50	346	0	0
1,897.50	346	346	346

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,897.50	346	0	0
1,899.50	346	692	692

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,899.50	346	0	0
1,900.00	550	224	224
1,902.00	1,528	2,078	2,302
1,902.50	1,764	823	3,125

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,896.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,901.75'	**25.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.03 cfs @ 12.04 hrs HW=1,902.21' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=20.48 cfs @ 12.04 hrs HW=1,902.21' TW=1,898.10' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 20.48 cfs @ 1.77 fps)

Summary for Pond B: OPEN SWALE

Inflow Area = 3.361 ac, 0.00% Impervious, Inflow Depth = 3.09" for 10-YEAR event
Inflow = 14.69 cfs @ 12.04 hrs, Volume= 0.865 af
Outflow = 14.32 cfs @ 12.07 hrs, Volume= 0.865 af, Atten= 3%, Lag= 1.4 min
Discarded = 0.09 cfs @ 12.07 hrs, Volume= 0.254 af
Primary = 14.23 cfs @ 12.07 hrs, Volume= 0.611 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,868.32' @ 12.07 hrs Surf.Area= 7,799 sf Storage= 8,339 cf

Plug-Flow detention time= 286.9 min calculated for 0.865 af (100% of inflow)
Center-of-Mass det. time= 287.0 min (1,121.0 - 833.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,863.00'	595 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 1,488 cf Overall x 40.0% Voids
#2	1,864.00'	446 cf	**filter media (Prismatic)** Listed below (Recalc) 2,976 cf Overall x 15.0% Voids
#3	1,866.00'	8,167 cf	**surface storage (Prismatic)** Listed below (Recalc)
		9,209 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,863.00	1,488	0	0
1,864.00	1,488	1,488	1,488

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,864.00	1,488	0	0
1,866.00	1,488	2,976	2,976

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,866.00	1,488	0	0
1,867.00	2,798	2,143	2,143
1,868.00	4,500	3,649	5,792
1,868.50	5,000	2,375	8,167

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,863.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,868.00'	**30.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.09 cfs @ 12.07 hrs HW=1,868.32' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=14.21 cfs @ 12.07 hrs HW=1,868.32' TW=1,850.57' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 14.21 cfs @ 1.47 fps)

Summary for Pond B1: bioretention @ 8 tee

Inflow Area = 10.459 ac, 0.00% Impervious, Inflow Depth = 3.18" for 10-YEAR event
Inflow = 33.47 cfs @ 12.17 hrs, Volume= 2.776 af
Outflow = 33.21 cfs @ 12.19 hrs, Volume= 2.776 af, Atten= 1%, Lag= 1.4 min
Discarded = 0.17 cfs @ 12.19 hrs, Volume= 0.353 af
Primary = 33.03 cfs @ 12.19 hrs, Volume= 2.423 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,966.14' @ 12.19 hrs Surf.Area= 15,006 sf Storage= 10,336 cf

Plug-Flow detention time= 76.6 min calculated for 2.776 af (100% of inflow)
Center-of-Mass det. time= 76.7 min (918.8 - 842.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,960.00'	1,800 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 4,500 cf Overall x 40.0% Voids
#2	1,961.00'	2,700 cf	**filter media (Prismatic)** Listed below (Recalc) 18,000 cf Overall x 15.0% Voids
#3	1,965.00'	12,150 cf	**surface storage (Prismatic)** Listed below (Recalc)
		16,650 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,960.00	4,500	0	0
1,961.00	4,500	4,500	4,500

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,961.00	4,500	0	0
1,965.00	4,500	18,000	18,000

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,965.00	4,500	0	0
1,966.00	5,600	5,050	5,050
1,967.00	8,600	7,100	12,150

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,960.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,965.50'	**25.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.17 cfs @ 12.19 hrs HW=1,966.14' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=33.02 cfs @ 12.19 hrs HW=1,966.14' TW=1,964.26' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 33.02 cfs @ 2.08 fps)

Summary for Pond B3: bioretention @ blvd

Inflow Area = 5.445 ac, 46.85% Impervious, Inflow Depth = 4.30" for 10-YEAR event
Inflow = 28.56 cfs @ 12.08 hrs, Volume= 1.952 af
Outflow = 19.48 cfs @ 12.20 hrs, Volume= 1.952 af, Atten= 32%, Lag= 7.1 min
Discarded = 0.43 cfs @ 12.20 hrs, Volume= 0.893 af
Primary = 19.06 cfs @ 12.20 hrs, Volume= 1.059 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,960.21' @ 12.20 hrs Surf.Area= 36,753 sf Storage= 26,756 cf

Plug-Flow detention time= 261.9 min calculated for 1.952 af (100% of inflow)
Center-of-Mass det. time= 262.0 min (1,069.1 - 807.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,954.00'	4,700 cf	**stone underdrain (Prismatic)** Listed below (Recalc)
			11,750 cf Overall x 40.0% Voids
#2	1,955.00'	7,050 cf	**filter media (Prismatic)** Listed below (Recalc)
			47,000 cf Overall x 15.0% Voids
#3	1,959.00'	26,092 cf	**surface storage (Prismatic)** Listed below (Recalc)
		37,842 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,954.00	11,750	0	0
1,955.00	11,750	11,750	11,750

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,955.00	11,750	0	0
1,959.00	11,750	47,000	47,000

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,959.00	11,750	0	0
1,960.00	12,892	12,321	12,321
1,961.00	14,650	13,771	26,092

Device	Routing	Invert	Outlet Devices
#1	Primary	1,954.00'	**21.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 1,954.00' / 1,953.00' S= 0.0118 '/' Cc= 0.900
			n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Discarded	1,954.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	1,959.50'	**12.0" Horiz. Orifice/Grate X 6.00** C= 0.600
			Limited to weir flow at low heads
#4	Secondary	1,960.50'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.43 cfs @ 12.20 hrs HW=1,960.21' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.43 cfs)

Primary OutFlow Max=19.06 cfs @ 12.20 hrs HW=1,960.21' TW=1,954.84' (Dynamic Tailwater)
└─**1=Culvert** (Passes 19.06 cfs of 26.74 cfs potential flow)
  └─**3=Orifice/Grate** (Orifice Controls 19.06 cfs @ 4.04 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,954.00' TW=1,951.87' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond DP 10: Design Point 10

Inflow Area = 156.019 ac, 1.86% Impervious, Inflow Depth = 2.85" for 10-YEAR event
Inflow = 266.51 cfs @ 12.21 hrs, Volume= 37.073 af
Primary = 266.51 cfs @ 12.21 hrs, Volume= 37.073 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 11: Design Point 11

Inflow Area = 90.970 ac, 15.56% Impervious, Inflow Depth = 2.42" for 10-YEAR event
Inflow = 108.57 cfs @ 12.04 hrs, Volume= 18.316 af
Primary = 108.57 cfs @ 12.04 hrs, Volume= 18.316 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 12: Design Point 12

Inflow Area = 5.404 ac, 15.82% Impervious, Inflow Depth = 3.45" for 10-YEAR event
Inflow = 28.62 cfs @ 12.00 hrs, Volume= 1.552 af
Primary = 28.62 cfs @ 12.00 hrs, Volume= 1.552 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 16: Design Point 16 24" CMP

Inflow Area = 18.370 ac, 4.45% Impervious, Inflow Depth = 2.83" for 10-YEAR event
Inflow = 40.29 cfs @ 12.17 hrs, Volume= 4.327 af
Primary = 40.29 cfs @ 12.17 hrs, Volume= 4.327 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond F1: Open Swale-F

Inflow Area = 2.052 ac, 0.00% Impervious, Inflow Depth = 3.18" for 10-YEAR event
Inflow = 10.94 cfs @ 11.99 hrs, Volume= 0.545 af
Outflow = 10.68 cfs @ 12.01 hrs, Volume= 0.545 af, Atten= 2%, Lag= 1.1 min
Discarded = 0.05 cfs @ 12.01 hrs, Volume= 0.157 af
Primary = 10.63 cfs @ 12.01 hrs, Volume= 0.388 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,895.84' @ 12.01 hrs Surf.Area= 4,625 sf Storage= 5,330 cf

Plug-Flow detention time= 299.3 min calculated for 0.545 af (100% of inflow)
Center-of-Mass det. time= 299.4 min (1,126.7 - 827.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,890.50'	317 cf	**Stone Underdrain (Prismatic)** Listed below (Recalc)
			792 cf Overall x 40.0% Voids
#2	1,891.50'	238 cf	**Filter Bed (Prismatic)** Listed below
			1,584 cf Overall x 15.0% Voids
#3	1,893.50'	6,962 cf	**surface storage (Prismatic)** Listed below (Recalc)
		7,516 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,890.50	792	0	0
1,891.50	792	792	792

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,891.50	792	0	0
1,893.50	792	1,584	1,584

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,893.50	792	0	0
1,894.00	1,526	580	580
1,896.00	3,175	4,701	5,281
1,896.50	3,550	1,681	6,962

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,890.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,895.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00
			Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.05 cfs @ 12.01 hrs HW=1,895.84' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=10.62 cfs @ 12.01 hrs HW=1,895.84' TW=1,895.17' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 10.62 cfs @ 1.57 fps)

Summary for Pond G: OPEN SWALE

Inflow Area = 3.700 ac, 0.00% Impervious, Inflow Depth = 3.18" for 10-YEAR event
Inflow = 18.68 cfs @ 12.01 hrs, Volume= 0.982 af
Outflow = 18.31 cfs @ 12.03 hrs, Volume= 0.982 af, Atten= 2%, Lag= 1.0 min
Discarded = 0.13 cfs @ 12.03 hrs, Volume= 0.338 af
Primary = 18.18 cfs @ 12.03 hrs, Volume= 0.643 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,903.77' @ 12.03 hrs Surf.Area= 11,571 sf Storage= 9,930 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 274.9 min (1,103.5 - 828.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,899.00'	1,146 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 2,865 cf Overall x 40.0% Voids
#2	1,900.00'	860 cf	**filter media (Prismatic)** Listed below (Recalc) 5,730 cf Overall x 15.0% Voids
#3	1,902.00'	12,721 cf	**surface storage (Prismatic)** Listed below (Recalc)
		14,726 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,899.00	2,865	0	0
1,900.00	2,865	2,865	2,865

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,900.00	2,865	0	0
1,902.00	2,865	5,730	5,730

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,902.00	2,865	0	0
1,903.00	4,783	3,824	3,824
1,904.00	6,154	5,469	9,293
1,904.50	7,558	3,428	12,721

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,899.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,903.50'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.13 cfs @ 12.03 hrs HW=1,903.77' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=18.15 cfs @ 12.03 hrs HW=1,903.77' TW=1,897.74' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 18.15 cfs @ 1.34 fps)

Summary for Pond I18: Manhole

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 3.85" for 10-YEAR event
Inflow = 107.99 cfs @ 12.01 hrs, Volume= 6.274 af
Outflow = 107.99 cfs @ 12.01 hrs, Volume= 6.274 af, Atten= 0%, Lag= 0.0 min
Primary = 107.99 cfs @ 12.01 hrs, Volume= 6.274 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,010.11' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,005.90'	**54.0" Round Culvert** L= 304.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,005.90' / 2,000.00' S= 0.0194 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf

Primary OutFlow Max=107.86 cfs @ 12.01 hrs HW=2,010.10' TW=2,001.84' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 107.86 cfs @ 6.98 fps)

Summary for Pond I19: Manhole

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 3.85" for 10-YEAR event
Inflow = 107.99 cfs @ 12.01 hrs, Volume= 6.274 af
Outflow = 107.99 cfs @ 12.01 hrs, Volume= 6.274 af, Atten= 0%, Lag= 0.0 min
Primary = 107.99 cfs @ 12.01 hrs, Volume= 6.274 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,021.11' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,016.90'	**54.0" Round Culvert** L= 348.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,016.90' / 2,006.00' S= 0.0313 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf

Primary OutFlow Max=107.86 cfs @ 12.01 hrs HW=2,021.10' TW=2,010.10' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 107.86 cfs @ 6.98 fps)

Summary for Pond I2: 30" HDPE Storm

Inflow Area = 3.692 ac, 57.82% Impervious, Inflow Depth = 4.62" for 10-YEAR event
Inflow = 25.89 cfs @ 11.99 hrs, Volume= 1.420 af
Outflow = 25.89 cfs @ 11.99 hrs, Volume= 1.420 af, Atten= 0%, Lag= 0.0 min
Primary = 25.89 cfs @ 11.99 hrs, Volume= 1.420 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,946.59' @ 11.99 hrs
Flood Elev= 1,955.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,943.90'	**30.0" Round Culvert** L= 170.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,943.90' / 1,943.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=25.86 cfs @ 11.99 hrs HW=1,946.58' TW=1,944.55' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 25.86 cfs @ 6.11 fps)

Summary for Pond I22: Manhole- 54" HDPE Storm

Inflow Area = 9.234 ac, 60.31% Impervious, Inflow Depth = 4.71" for 10-YEAR event
Inflow = 68.56 cfs @ 11.97 hrs, Volume= 3.621 af
Outflow = 68.56 cfs @ 11.97 hrs, Volume= 3.621 af, Atten= 0%, Lag= 0.0 min
Primary = 68.56 cfs @ 11.97 hrs, Volume= 3.621 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,173.76' @ 11.97 hrs
Flood Elev= 2,182.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,170.00'	**54.0" Round CMP_Round 54"** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,170.00' / 2,169.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf
#2	Primary	2,182.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=68.53 cfs @ 11.97 hrs HW=2,173.76' TW=2,170.26' (Dynamic Tailwater)
1=**CMP_Round 54"** (Barrel Controls 68.53 cfs @ 6.53 fps)
2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I23: Manhole -30" HDPE Storm

Inflow Area = 3.957 ac, 45.04% Impervious, Inflow Depth = 4.33" for 10-YEAR event
Inflow = 27.13 cfs @ 11.97 hrs, Volume= 1.426 af
Outflow = 27.13 cfs @ 11.97 hrs, Volume= 1.426 af, Atten= 0%, Lag= 0.0 min
Primary = 27.13 cfs @ 11.97 hrs, Volume= 1.426 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,186.29' @ 11.97 hrs
Flood Elev= 2,189.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,183.72'	**30.0" Round Culvert** L= 171.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,183.72' / 2,176.64' S= 0.0414 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,189.19'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=27.08 cfs @ 11.97 hrs HW=2,186.28' TW=2,173.76' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 27.08 cfs @ 5.52 fps)
2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I24: 30" HDPE Storm

Inflow Area = 3.957 ac, 45.04% Impervious, Inflow Depth = 4.33" for 10-YEAR event
Inflow = 27.13 cfs @ 11.97 hrs, Volume= 1.426 af
Outflow = 27.13 cfs @ 11.97 hrs, Volume= 1.426 af, Atten= 0%, Lag= 0.0 min
Primary = 27.13 cfs @ 11.97 hrs, Volume= 1.426 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,191.60' @ 11.97 hrs
Flood Elev= 2,194.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,189.03'	**30.0" Round Culvert** L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,189.03' / 2,183.82' S= 0.0827 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,194.48'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=27.08 cfs @ 11.97 hrs HW=2,191.59' TW=2,186.28' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 27.08 cfs @ 5.52 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I25: 30" HDPE Storm

Inflow Area = 3.059 ac, 51.35% Impervious, Inflow Depth = 4.49" for 10-YEAR event
Inflow = 21.20 cfs @ 11.97 hrs, Volume= 1.143 af
Outflow = 21.20 cfs @ 11.97 hrs, Volume= 1.143 af, Atten= 0%, Lag= 0.0 min
Primary = 21.20 cfs @ 11.97 hrs, Volume= 1.143 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,193.68' @ 11.97 hrs
Flood Elev= 2,205.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,191.50'	**30.0" Round Culvert** L= 253.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,191.50' / 2,189.13' S= 0.0094 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,205.80'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=21.15 cfs @ 11.97 hrs HW=2,193.67' TW=2,191.59' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 21.15 cfs @ 6.24 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I26: 30" HDPE Storm

Inflow Area = 2.407 ac, 48.55% Impervious, Inflow Depth = 4.42" for 10-YEAR event
Inflow = 17.09 cfs @ 11.97 hrs, Volume= 0.886 af
Outflow = 17.09 cfs @ 11.97 hrs, Volume= 0.886 af, Atten= 0%, Lag= 0.0 min
Primary = 17.09 cfs @ 11.97 hrs, Volume= 0.886 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,194.44' @ 11.97 hrs
Flood Elev= 2,208.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,191.80'	**30.0" Round Culvert** L= 201.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,191.80' / 2,191.60' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

#2	Primary	2,195.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.97 cfs @ 11.97 hrs HW=2,194.43' TW=2,193.67' (Dynamic Tailwater)
1=Culvert (Outlet Controls 16.97 cfs @ 4.08 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond I27: 30" HDPE Storm

Inflow Area = 2.129 ac, 53.13% Impervious, Inflow Depth = 4.54" for 10-YEAR event
Inflow = 15.38 cfs @ 11.97 hrs, Volume= 0.805 af
Outflow = 15.38 cfs @ 11.97 hrs, Volume= 0.805 af, Atten= 0%, Lag= 0.0 min
Primary = 15.38 cfs @ 11.97 hrs, Volume= 0.805 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,194.85' @ 11.98 hrs
Flood Elev= 2,208.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,192.00'	**30.0" Round Culvert** L= 98.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,192.00' / 2,191.90' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,208.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=15.16 cfs @ 11.97 hrs HW=2,194.84' TW=2,194.43' (Dynamic Tailwater)
1=Culvert (Inlet Controls 15.16 cfs @ 3.09 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond I28: 30" HDPE Storm

Inflow Area = 1.459 ac, 77.51% Impervious, Inflow Depth = 5.16" for 10-YEAR event
Inflow = 11.59 cfs @ 11.97 hrs, Volume= 0.628 af
Outflow = 11.59 cfs @ 11.97 hrs, Volume= 0.628 af, Atten= 0%, Lag= 0.0 min
Primary = 11.59 cfs @ 11.97 hrs, Volume= 0.628 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,195.17' @ 11.98 hrs
Flood Elev= 2,197.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,192.30'	**30.0" Round Culvert** L= 236.0' Ke= 0.500 Inlet / Outlet Invert= 2,192.30' / 2,192.07' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,197.80'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=11.14 cfs @ 11.97 hrs HW=2,195.14' TW=2,194.84' (Dynamic Tailwater)
1=Culvert (Outlet Controls 11.14 cfs @ 2.50 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond I29: Manhole

Inflow Area = 1.039 ac,100.00% Impervious, Inflow Depth = 5.76" for 10-YEAR event
Inflow = 8.89 cfs @ 11.97 hrs, Volume= 0.499 af
Outflow = 8.89 cfs @ 11.97 hrs, Volume= 0.499 af, Atten= 0%, Lag= 0.0 min
Primary = 8.89 cfs @ 11.97 hrs, Volume= 0.499 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,195.30' @ 11.98 hrs
Flood Elev= 2,208.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,192.50'	**30.0" Round Culvert** L= 98.0' Ke= 0.500 Inlet / Outlet Invert= 2,192.50' / 2,192.40' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=8.06 cfs @ 11.97 hrs HW=2,195.26' TW=2,195.14' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 8.06 cfs @ 1.86 fps)

Summary for Pond I3: 30" HDPE Storm

Inflow Area = 3.323 ac, 53.14% Impervious, Inflow Depth = 4.49" for 10-YEAR event
Inflow = 22.86 cfs @ 11.99 hrs, Volume= 1.243 af
Outflow = 22.86 cfs @ 11.99 hrs, Volume= 1.243 af, Atten= 0%, Lag= 0.0 min
Primary = 22.86 cfs @ 11.99 hrs, Volume= 1.243 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,947.93' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,945.17'	**30.0" Round Culvert** L= 231.0' Ke= 0.500 Inlet / Outlet Invert= 1,945.17' / 1,944.02' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	1,949.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=22.86 cfs @ 11.99 hrs HW=1,947.93' TW=1,946.58' (Dynamic Tailwater)
├**1=Culvert** (Outlet Controls 22.86 cfs @ 5.26 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I30: 30" HDPE Storm

Inflow Area = 1.039 ac,100.00% Impervious, Inflow Depth = 5.76" for 10-YEAR event
Inflow = 8.89 cfs @ 11.97 hrs, Volume= 0.499 af
Outflow = 8.89 cfs @ 11.97 hrs, Volume= 0.499 af, Atten= 0%, Lag= 0.0 min
Primary = 8.89 cfs @ 11.97 hrs, Volume= 0.499 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,195.74' @ 11.98 hrs
Flood Elev= 2,204.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,194.08'	**30.0" Round Culvert** L= 79.0' Ke= 0.500 Inlet / Outlet Invert= 2,194.08' / 2,194.00' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,199.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.69 cfs @ 11.97 hrs HW=2,195.71' TW=2,195.26' (Dynamic Tailwater)
1=Culvert (Outlet Controls 8.69 cfs @ 3.63 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond I31: 36" HDPE Storm

Inflow Area = 2.463 ac, 39.52% Impervious, Inflow Depth = 4.11" for 10-YEAR event
Inflow = 17.41 cfs @ 11.97 hrs, Volume= 0.844 af
Outflow = 17.41 cfs @ 11.97 hrs, Volume= 0.844 af, Atten= 0%, Lag= 0.0 min
Primary = 17.41 cfs @ 11.97 hrs, Volume= 0.844 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,174.02' @ 11.97 hrs
Flood Elev= 2,180.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,170.50'	**36.0" Round Culvert** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,170.50' / 2,170.35' S= 0.0027 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=17.40 cfs @ 11.97 hrs HW=2,174.02' TW=2,173.76' (Dynamic Tailwater)
1=Culvert (Inlet Controls 17.40 cfs @ 2.46 fps)

Summary for Pond I32: 30" HDPE Storm

Inflow Area = 2.463 ac, 39.52% Impervious, Inflow Depth = 4.11" for 10-YEAR event
Inflow = 17.41 cfs @ 11.97 hrs, Volume= 0.844 af
Outflow = 17.41 cfs @ 11.97 hrs, Volume= 0.844 af, Atten= 0%, Lag= 0.0 min
Primary = 17.41 cfs @ 11.97 hrs, Volume= 0.844 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,174.56' @ 11.98 hrs
Flood Elev= 2,180.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,171.00'	**30.0" Round Culvert** L= 119.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,171.00' / 2,170.41' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,180.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=17.09 cfs @ 11.97 hrs HW=2,174.55' TW=2,174.02' (Dynamic Tailwater)
1=Culvert (Inlet Controls 17.09 cfs @ 3.48 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond I33: 24" HDPE Storm

Inflow Area = 1.999 ac, 39.27% Impervious, Inflow Depth = 4.09" for 10-YEAR event
Inflow = 14.08 cfs @ 11.97 hrs, Volume= 0.681 af
Outflow = 14.08 cfs @ 11.97 hrs, Volume= 0.681 af, Atten= 0%, Lag= 0.0 min
Primary = 14.08 cfs @ 11.97 hrs, Volume= 0.681 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,174.96' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,172.00'	**30.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,172.00' / 2,171.13' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,176.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=13.99 cfs @ 11.97 hrs HW=2,174.95' TW=2,174.55' (Dynamic Tailwater)
├─**1=Culvert** (Outlet Controls 13.99 cfs @ 3.05 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I4: 15" HDPE Storm

Inflow Area = 0.369 ac,100.00% Impervious, Inflow Depth = 5.76" for 10-YEAR event
Inflow = 3.16 cfs @ 11.97 hrs, Volume= 0.177 af
Outflow = 3.16 cfs @ 11.97 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.0 min
Primary = 3.16 cfs @ 11.97 hrs, Volume= 0.177 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,952.42' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,951.50'	**15.0" Round Culvert** L= 140.0' Ke= 0.500 Inlet / Outlet Invert= 1,951.50' / 1,950.00' S= 0.0107 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.15 cfs @ 11.97 hrs HW=1,952.42' TW=1,946.53' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.15 cfs @ 3.26 fps)

Summary for Pond I6: Manhole

Inflow Area = 8.896 ac, 28.68% Impervious, Inflow Depth = 1.59" for 10-YEAR event
Inflow = 19.06 cfs @ 12.20 hrs, Volume= 1.177 af
Outflow = 19.06 cfs @ 12.20 hrs, Volume= 1.177 af, Atten= 0%, Lag= 0.0 min
Primary = 19.06 cfs @ 12.20 hrs, Volume= 1.177 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,954.84' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,952.90'	**36.0" Round Culvert** L= 186.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 1,952.90' / 1,951.97' S= 0.0050 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=19.06 cfs @ 12.20 hrs HW=1,954.84' TW=1,952.11' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 19.06 cfs @ 5.62 fps)

Summary for Pond IP: P2

Inflow Area = 46.508 ac, 27.33% Impervious, Inflow Depth = 3.41" for 10-YEAR event
Inflow = 204.30 cfs @ 12.02 hrs, Volume= 13.206 af
Outflow = 8.78 cfs @ 14.07 hrs, Volume= 8.111 af, Atten= 96%, Lag= 122.6 min
Primary = 8.78 cfs @ 14.07 hrs, Volume= 8.111 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 1,937.00' Surf.Area= 47,921 sf Storage= 444,293 cf
Peak Elev= 1,942.22' @ 14.07 hrs Surf.Area= 96,601 sf Storage= 820,544 cf (376,251 cf above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= 442.7 min (1,250.3 - 807.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,910.00'	959,989 cf	**Storage above Perm Pool (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,910.00	685	100.0	0	0	685
1,912.00	1,221	150.0	1,880	1,880	1,711
1,914.00	2,042	190.0	3,228	5,108	2,845
1,916.00	3,114	250.0	5,118	10,227	4,991
1,918.00	5,151	450.0	8,180	18,407	16,154
1,920.00	8,098	627.0	13,138	31,545	31,362
1,922.00	10,863	680.0	18,893	50,439	37,027
1,924.00	14,370	830.0	25,151	75,590	55,115
1,926.00	18,615	1,000.0	32,894	108,484	79,939
1,928.00	22,653	1,022.0	41,202	149,686	84,016
1,930.00	26,948	1,062.0	49,539	199,224	90,969
1,932.00	31,296	1,090.0	58,190	257,414	96,225
1,934.00	35,715	1,115.0	66,962	324,377	101,134
1,936.00	40,228	1,140.0	75,898	400,275	106,156
1,938.00	56,286	1,229.0	96,066	496,341	123,100
1,939.00	70,553	1,304.0	63,285	559,626	138,271
1,940.00	74,969	1,432.0	72,750	632,376	166,173
1,942.00	93,060	2,050.0	167,703	800,079	337,449
1,942.25	97,168	2,034.0	23,777	823,856	342,674
1,943.00	111,843	1,898.0	78,315	902,170	385,254
1,943.50	119,472	1,918.0	57,818	959,989	391,402

Device	Routing	Invert	Outlet Devices
#1	Primary	1,940.40'	**18.0" Round Culvert** L= 130.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,940.40' / 1,937.00' S= 0.0262 '/' Cc= 0.900

			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,943.00'	**25.0' long x 20.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=8.78 cfs @ 14.07 hrs HW=1,942.22' TW=1,937.09' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 8.78 cfs @ 4.97 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 9S: Subcatchment 9 Runoff Area=1,465,881 sf 1.47% Impervious Runoff Depth=3.21"
Flow Length=2,033' Tc=21.6 min CN=70 Runoff=114.38 cfs 8.994 af

Subcatchment 10S: Subcatchment 10 Runoff Area=1,371,524 sf 2.87% Impervious Runoff Depth=3.31"
Flow Length=2,845' Tc=25.8 min CN=71 Runoff=99.24 cfs 8.676 af

Subcatchment 11A: Subcatchment 11A Runoff Area=57,739 sf 4.72% Impervious Runoff Depth=3.31"
Flow Length=480' Tc=15.3 min CN=71 Runoff=5.62 cfs 0.365 af

Subcatchment 11B: Subcatchment 11B Runoff Area=104,152 sf 18.70% Impervious Runoff Depth=3.92"
Flow Length=486' Tc=17.9 min CN=77 Runoff=11.07 cfs 0.781 af

Subcatchment 11S: Subcatchment 11 Runoff Area=182,734 sf 7.34% Impervious Runoff Depth=3.41"
Flow Length=984' Tc=11.5 min CN=72 Runoff=20.87 cfs 1.191 af

Subcatchment 12A: Subcatchment 12A Runoff Area=550,450 sf 11.44% Impervious Runoff Depth=3.71"
Flow Length=2,110' Tc=6.4 min CN=75 Runoff=81.81 cfs 3.909 af

Subcatchment 12B: Subcatchment 12B Runoff Area=655,932 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=1,700' Tc=58.7 min CN=70 Runoff=25.95 cfs 4.024 af

Subcatchment 27A: SUB27A Runoff Area=131,978 sf 10.22% Impervious Runoff Depth=3.71"
Flow Length=1,114' Tc=7.3 min CN=75 Runoff=18.99 cfs 0.937 af

Subcatchment 27S: Subcatchment 27 Runoff Area=78,054 sf 25.27% Impervious Runoff Depth=4.13"
Flow Length=400' Tc=12.9 min CN=79 Runoff=10.19 cfs 0.617 af

Subcatchment 28S: Subcatchment 28 Runoff Area=141,352 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=818' Tc=36.8 min CN=70 Runoff=7.79 cfs 0.867 af

Subcatchment 29S: SUB27A Runoff Area=25,355 sf 15.87% Impervious Runoff Depth=4.02"
Flow Length=248' Tc=6.0 min CN=78 Runoff=4.10 cfs 0.195 af

Subcatchment 61S: Hotel Roof Runoff Area=15,005 sf 100.00% Impervious Runoff Depth=6.26"
Tc=6.0 min CN=98 Runoff=3.19 cfs 0.180 af

Subcatchment 67S: W. top front of hotel Runoff Area=15,005 sf 100.00% Impervious Runoff Depth=6.26"
Tc=6.0 min CN=98 Runoff=3.19 cfs 0.180 af

Subcatchment 70A: (new Subcat) Runoff Area=20,212 sf 40.57% Impervious Runoff Depth=4.67"
Flow Length=207' Tc=6.0 min CN=84 Runoff=3.69 cfs 0.180 af

Subcatchment 70B: (new Subcat) Runoff Area=29,474 sf 30.81% Impervious Runoff Depth=4.34"
Flow Length=235' Tc=6.0 min CN=81 Runoff=5.08 cfs 0.245 af

Subcatchment 70C: (new Subcat) Runoff Area=57,593 sf 43.60% Impervious Runoff Depth=4.67"
Tc=6.0 min CN=84 Runoff=10.50 cfs 0.514 af

Subcatchment 100a: Hole 4 (110) PR Runoff Area=50,494 sf 0.00% Impervious Runoff Depth=3.51"
Flow Length=419' Tc=10.5 min CN=73 Runoff=6.15 cfs 0.339 af

Subcatchment 100b: Hole 4 (110) PR Runoff Area=20,138 sf 0.00% Impervious Runoff Depth=3.51"
Flow Length=419' Tc=10.5 min CN=73 Runoff=2.45 cfs 0.135 af

Subcatchment 100c: Hole 4 (110) PR Runoff Area=33,000 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=419' Tc=10.5 min CN=74 Runoff=4.13 cfs 0.228 af

Subcatchment 100d: Hole 4 (110) PR Runoff Area=23,704 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=419' Tc=10.5 min CN=74 Runoff=2.96 cfs 0.164 af

Subcatchment 100e: Hole 4 (110) PR Runoff Area=64,786 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=419' Tc=10.5 min CN=74 Runoff=8.10 cfs 0.447 af

Subcatchment 101: Land east of irrigation pond Runoff Area=38,708 sf 19.62% Impervious Runoff Depth=4.13"
Flow Length=294' Tc=6.0 min CN=79 Runoff=6.40 cfs 0.306 af

Subcatchment 102: Pool House and Pool (102) Runoff Area=16,073 sf 100.00% Impervious Runoff Depth=6.26"
Tc=6.0 min CN=98 Runoff=3.42 cfs 0.193 af

Subcatchment 103: Pool parking lot and tennis Runoff Area=115,694 sf 46.21% Impervious Runoff Depth=4.78"
Flow Length=602' Tc=8.8 min CN=85 Runoff=19.54 cfs 1.057 af

Subcatchment 104: Holes 7 &8 Runoff Area=455,573 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=1,031' Tc=23.7 min CN=74 Runoff=37.98 cfs 3.146 af

Subcatchment 108: Front of Road to 8 -23 (108) Runoff Area=20,760 sf 83.18% Impervious Runoff Depth=5.79"
Flow Length=482' Tc=6.0 min CN=94 Runoff=4.32 cfs 0.230 af

Subcatchment 109: Front of Road to 8 -23 (109) Runoff Area=8,280 sf 74.58% Impervious Runoff Depth=5.56"
Flow Length=358' Tc=6.0 min CN=92 Runoff=1.69 cfs 0.088 af

Subcatchment 111: Front of Hole 4 (111) PR Runoff Area=89,380 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=393' Tc=7.7 min CN=74 Runoff=12.36 cfs 0.617 af

Subcatchment 114: Behind Townhomes Runoff Area=150,301 sf 0.00% Impervious Runoff Depth=3.51"
Flow Length=930' Tc=15.7 min CN=73 Runoff=15.33 cfs 1.009 af

Subcatchment 115: Land between buildings 17 Runoff Area=460,843 sf 9.33% Impervious Runoff Depth=3.82"
Flow Length=809' Tc=12.9 min CN=76 Runoff=55.94 cfs 3.364 af

Subcatchment 117: Rest of Road to 8 -23 (117) Runoff Area=237,198 sf 46.85% Impervious Runoff Depth=4.78"
Flow Length=930' Slope=0.0600 '/' Tc=16.3 min CN=85 Runoff=31.56 cfs 2.167 af

Subcatchment 119: Green of Hole 3 & tee of Hole Runoff Area=146,387 sf 0.00% Impervious Runoff Depth=3.51"
Flow Length=727' Tc=12.4 min CN=73 Runoff=16.67 cfs 0.982 af

Subcatchment 123S: Land north of irrigation pond Runoff Area=43,890 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=146' Tc=8.6 min CN=74 Runoff=5.87 cfs 0.303 af

Subcatchment 125: Hole 3 and end of Hole 4 Runoff Area=161,159 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=1,131' Tc=9.2 min CN=74 Runoff=21.12 cfs 1.113 af

Subcatchment 126: Irr. Pond Runoff Area=74,991 sf 75.06% Impervious Runoff Depth=5.56"
Tc=6.0 min CN=92 Runoff=15.31 cfs 0.798 af

Subcatchment 126A: forebay Runoff Area=8,000 sf 0.00% Impervious Runoff Depth=6.26"
Tc=6.0 min CN=98 Runoff=1.70 cfs 0.096 af

Subcatchment 127S: (new Subcat) Runoff Area=448,894 sf 0.00% Impervious Runoff Depth=3.51"
Flow Length=1,944' Tc=11.6 min CN=73 Runoff=52.57 cfs 3.012 af

Subcatchment 128S: HOTEL ROOF Runoff Area=6,878 sf 100.00% Impervious Runoff Depth=6.26"
Tc=6.0 min CN=98 Runoff=1.46 cfs 0.082 af

Subcatchment 129S: HOTEL ROOF Runoff Area=13,760 sf 100.00% Impervious Runoff Depth=6.26"
Tc=6.0 min CN=98 Runoff=2.93 cfs 0.165 af

Subcatchment 130S: (new Subcat) Runoff Area=39,147 sf 23.55% Impervious Runoff Depth=4.24"
Flow Length=21' Slope=0.0200 '/' Tc=6.0 min CN=80 Runoff=6.61 cfs 0.317 af

Subcatchment 131A: HOTEL ROOF Runoff Area=51,300 sf 100.00% Impervious Runoff Depth=6.26"
Tc=6.0 min CN=98 Runoff=10.92 cfs 0.614 af

Subcatchment 131S: (new Subcat) Runoff Area=28,363 sf 61.70% Impervious Runoff Depth=5.22"
Flow Length=64' Slope=0.0310 '/' Tc=10.1 min CN=89 Runoff=4.88 cfs 0.283 af

Subcatchment 132S: (new Subcat) Runoff Area=12,145 sf 13.59% Impervious Runoff Depth=3.92"
Flow Length=103' Tc=6.0 min CN=77 Runoff=1.92 cfs 0.091 af

Subcatchment 133S: (new Subcat) Runoff Area=29,164 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=50' Tc=6.0 min CN=74 Runoff=4.29 cfs 0.201 af

Subcatchment 134S: HOTEL ROOF Runoff Area=6,878 sf 100.00% Impervious Runoff Depth=6.26"
Tc=6.0 min CN=98 Runoff=1.46 cfs 0.082 af

Subcatchment 135S: (new Subcat) Runoff Area=18,297 sf 21.86% Impervious Runoff Depth=4.13"
Flow Length=246' Tc=6.0 min CN=79 Runoff=3.03 cfs 0.145 af

Subcatchment 136S: Parking Structure Runoff Area=45,262 sf 100.00% Impervious Runoff Depth=6.26"
Flow Length=306' Slope=0.0100 '/' Tc=6.0 min CN=98 Runoff=9.63 cfs 0.542 af

Subcatchment 138S: HOTEL ROOF Runoff Area=13,760 sf 100.00% Impervious Runoff Depth=6.26"
Tc=6.0 min CN=98 Runoff=2.93 cfs 0.165 af

Subcatchment 500S: Subcatchment 500 Runoff Area=1,350,926 sf 2.16% Impervious Runoff Depth=3.31"
Flow Length=3,875' Tc=32.0 min CN=71 Runoff=84.97 cfs 8.546 af

Subcatchment 501S: Subcatchment 501 Runoff Area=186,481 sf 0.54% Impervious Runoff Depth=3.21"
Flow Length=2,030' Tc=19.3 min CN=70 Runoff=15.57 cfs 1.144 af

Subcatchment 502S: Subcatchment 502 Runoff Area=189,050 sf 0.76% Impervious Runoff Depth=3.21"
Flow Length=1,300' Tc=13.0 min CN=70 Runoff=19.29 cfs 1.160 af

Subcatchment 503S: Subcatchmant 503 Runoff Area=130,680 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=1,010' Tc=16.6 min CN=70 Runoff=11.83 cfs 0.802 af

Subcatchment 504S: Subcatchment 504 Runoff Area=1,320,521 sf 1.06% Impervious Runoff Depth=3.21"
Flow Length=3,280' Tc=25.0 min CN=70 Runoff=94.41 cfs 8.102 af

Subcatchment 511S: Subcatchmant 511 Runoff Area=87,120 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=680' Tc=15.6 min CN=70 Runoff=8.16 cfs 0.535 af

Subcatchment 512S: Subcatchment 512 Runoff Area=56,628 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=600' Tc=14.0 min CN=70 Runoff=5.59 cfs 0.347 af

Subcatchment 600S: Subcatchment 600 Runoff Area=369,868 sf 2.61% Impervious Runoff Depth=3.31"
Flow Length=1,610' Tc=19.3 min CN=71 Runoff=31.88 cfs 2.340 af

Subcatchment 601S: Subcatchment 601 Runoff Area=267,502 sf 3.92% Impervious Runoff Depth=3.31"
Flow Length=1,070' Tc=15.0 min CN=71 Runoff=26.32 cfs 1.692 af

Reach 18R: Overland Flow Avg. Flow Depth=0.10' Max Vel=2.64 fps Inflow=10.39 cfs 9.818 af
n=0.030 L=535.0' S=0.0748 '/' Capacity=214.48 cfs Outflow=10.39 cfs 9.818 af

Reach 21R: Ex. Roadside Ditch Avg. Flow Depth=1.18' Max Vel=6.19 fps Inflow=23.31 cfs 0.982 af
n=0.030 L=120.0' S=0.0250 '/' Capacity=36.63 cfs Outflow=23.29 cfs 0.982 af

Reach 58A: Overland Flow Avg. Flow Depth=0.08' Max Vel=2.41 fps Inflow=19.95 cfs 0.913 af
n=0.035 L=478.0' S=0.1004 '/' Capacity=1,456.48 cfs Outflow=18.74 cfs 0.913 af

Reach 61: Vegetated Roadside Swale Avg. Flow Depth=0.94' Max Vel=6.93 fps Inflow=26.19 cfs 1.556 af
n=0.040 L=751.0' S=0.0613 '/' Capacity=59.21 cfs Outflow=25.68 cfs 1.556 af

Reach 66: Stream Channel Avg. Flow Depth=1.40' Max Vel=10.19 fps Inflow=225.66 cfs 33.343 af
n=0.050 L=1,884.0' S=0.1152 '/' Capacity=445.48 cfs Outflow=223.22 cfs 33.343 af

Reach 73A: Vegetated Roadside Channel Avg. Flow Depth=1.24' Max Vel=5.71 fps Inflow=23.02 cfs 1.132 af
n=0.050 L=60.0' S=0.0560 '/' Capacity=32.90 cfs Outflow=23.01 cfs 1.132 af

Reach 75: Roadside Channel Avg. Flow Depth=1.11' Max Vel=6.64 fps Inflow=23.01 cfs 1.132 af
n=0.040 L=166.0' S=0.0542 '/' Capacity=71.25 cfs Outflow=22.97 cfs 1.132 af

Reach 76: Roadside Channel Avg. Flow Depth=1.14' Max Vel=6.44 fps Inflow=22.97 cfs 1.132 af
n=0.040 L=20.0' S=0.0500 '/' Capacity=68.43 cfs Outflow=22.97 cfs 1.132 af

Reach 78: Stream Channel Avg. Flow Depth=1.17' Max Vel=10.72 fps Inflow=158.19 cfs 24.667 af
n=0.050 L=685.0' S=0.1646 '/' Capacity=258.41 cfs Outflow=158.08 cfs 24.667 af

Reach 80: Stream Channel Avg. Flow Depth=1.60' Max Vel=6.84 fps Inflow=158.08 cfs 24.667 af
n=0.050 L=740.0' S=0.0473 '/' Capacity=247.19 cfs Outflow=157.76 cfs 24.667 af

Reach 82: Overland Flow Avg. Flow Depth=0.06' Max Vel=0.21 fps Inflow=5.59 cfs 0.347 af
n=0.400 L=938.0' S=0.1354 '/' Capacity=53.31 cfs Outflow=1.34 cfs 0.347 af

Reach 82a: Overland Flow Avg. Flow Depth=0.78' Max Vel=0.72 fps Inflow=108.18 cfs 15.567 af
n=0.400 L=473.0' S=0.0846 '/' Capacity=164.89 cfs Outflow=99.92 cfs 15.567 af

Reach 83A: Overland Flow Avg. Flow Depth=0.43' Max Vel=0.73 fps Inflow=47.98 cfs 6.935 af
n=0.400 L=441.0' S=0.1678 '/' Capacity=232.26 cfs Outflow=44.85 cfs 6.935 af

Reach 84A: Overland Flow Avg. Flow Depth=0.75' Max Vel=0.82 fps Inflow=109.24 cfs 15.220 af
n=0.400 L=277.0' S=0.1155 '/' Capacity=192.72 cfs Outflow=106.85 cfs 15.220 af

Reach 84B: Overland Flow Avg. Flow Depth=0.53' Max Vel=0.80 fps Inflow=67.54 cfs 8.284 af
n=0.400 L=370.0' S=0.1622 '/' Capacity=228.33 cfs Outflow=64.43 cfs 8.284 af

Reach 85A: Overland Flow Avg. Flow Depth=0.39' Max Vel=0.66 fps Inflow=44.06 cfs 2.133 af
n=0.400 L=505.0' S=0.1525 '/' Capacity=221.40 cfs Outflow=36.00 cfs 2.133 af

Reach 85B: Overland Flow Avg. Flow Depth=0.53' Max Vel=0.55 fps Inflow=58.39 cfs 3.621 af
n=0.400 L=453.0' S=0.0773 '/' Capacity=157.60 cfs Outflow=44.18 cfs 3.621 af

Reach 86A: Overland Flow Avg. Flow Depth=0.35' Max Vel=0.53 fps Inflow=26.75 cfs 1.488 af
n=0.400 L=195.0' S=0.1128 '/' Capacity=190.45 cfs Outflow=25.31 cfs 1.488 af

Reach 88: Roadside Swale Avg. Flow Depth=0.56' Max Vel=6.30 fps Inflow=8.16 cfs 0.535 af
n=0.035 L=472.0' S=0.0763 '/' Capacity=66.89 cfs Outflow=8.09 cfs 0.535 af

Reach 91: Overland Flow Avg. Flow Depth=0.49' Max Vel=3.07 fps Inflow=37.99 cfs 2.309 af
n=0.035 L=198.0' S=0.0172 '/' Capacity=137.55 cfs Outflow=37.68 cfs 2.309 af

Reach 92: Channel Along RR Tracks Avg. Flow Depth=2.40' Max Vel=7.75 fps Inflow=130.01 cfs 17.533 af
n=0.035 L=770.0' S=0.0239 '/' Capacity=211.58 cfs Outflow=126.51 cfs 17.533 af

Reach 92a: Channel Along RR Tracks Avg. Flow Depth=1.24' Max Vel=6.27 fps Inflow=37.68 cfs 2.309 af
n=0.035 L=1,137.0' S=0.0329 '/' Capacity=248.24 cfs Outflow=34.66 cfs 2.309 af

Reach 93R: Roadside Ditch Avg. Flow Depth=0.72' Max Vel=4.85 fps Inflow=12.06 cfs 0.459 af
n=0.030 L=135.0' S=0.0259 '/' Capacity=54.15 cfs Outflow=12.03 cfs 0.459 af

Reach 142R: Overland Flow Avg. Flow Depth=0.25' Max Vel=2.38 fps Inflow=20.97 cfs 1.480 af
n=0.030 L=280.0' S=0.0299 '/' Capacity=31.71 cfs Outflow=20.84 cfs 1.480 af

Reach 143R: Stone Lined Swale with Avg. Flow Depth=0.80' Max Vel=7.16 fps Inflow=20.68 cfs 10.590 af
n=0.050 L=335.0' S=0.1403 '/' Capacity=142.04 cfs Outflow=20.56 cfs 10.589 af

Reach I1: TRM SWALE Avg. Flow Depth=1.62' Max Vel=3.33 fps Inflow=28.45 cfs 1.568 af
n=0.035 L=145.0' S=0.0069 '/' Capacity=74.54 cfs Outflow=28.30 cfs 1.568 af

Reach I12: stone lined stream channel Avg. Flow Depth=2.06' Max Vel=9.61 fps Inflow=120.43 cfs 7.000 af
n=0.040 L=142.0' S=0.0486 '/' Capacity=171.87 cfs Outflow=120.38 cfs 7.000 af

Reach I12a: stone lined stream channel Avg. Flow Depth=1.67' Max Vel=12.74 fps Inflow=120.38 cfs 7.000 af
n=0.040 L=160.0' S=0.1056 '/' Capacity=253.40 cfs Outflow=120.34 cfs 7.000 af

Reach I12b: stone lined stream channel Avg. Flow Depth=1.79' Max Vel=11.59 fps Inflow=120.34 cfs 7.000 af
n=0.040 L=440.0' S=0.0816 '/' Capacity=222.71 cfs Outflow=119.94 cfs 7.000 af

Reach I21: stone lined stream channel Avg. Flow Depth=1.37' Max Vel=8.42 fps Inflow=75.27 cfs 3.987 af
n=0.050 L=1,585.0' S=0.0886 '/' Capacity=143.65 cfs Outflow=69.88 cfs 3.987 af

Pond 1P: culvert Peak Elev=2,024.72' Inflow=120.43 cfs 7.000 af
54.0" Round Culvert n=0.013 L=60.0' S=0.0500 '/' Outflow=120.43 cfs 7.000 af

Pond 6P: Overflow Basin @ 8 tee Peak Elev=1,964.71' Storage=22,903 cf Inflow=37.51 cfs 2.788 af
Outflow=33.77 cfs 2.633 af

Pond 8P: NATURAL DEPRESSION Peak Elev=1,970.29' Storage=27,607 cf Inflow=15.33 cfs 1.009 af
Discarded=0.23 cfs 0.785 af Primary=0.44 cfs 0.224 af Outflow=0.67 cfs 1.009 af

Pond 29P: cb29 Peak Elev=1,925.61' Inflow=4.10 cfs 0.195 af
Outflow=4.10 cfs 0.195 af

Pond 57: 15" Steel Culvert Peak Elev=2,006.01' Inflow=5.62 cfs 0.365 af
Outflow=5.62 cfs 0.365 af

Pond 58R: 24" HDPE Pipe Peak Elev=2,224.74' Inflow=19.95 cfs 0.913 af
Outflow=19.95 cfs 0.913 af

Pond 59: 32" Plastic Pipe Peak Elev=2,333.44' Inflow=94.41 cfs 8.102 af
Primary=47.98 cfs 6.935 af Secondary=46.43 cfs 1.166 af Outflow=94.41 cfs 8.102 af

Pond 60: 30" Steel Culvert Peak Elev=2,024.74' Inflow=225.66 cfs 33.343 af
Outflow=225.66 cfs 33.343 af

Pond 67P: 24" Steel Culvert Peak Elev=2,006.09' Inflow=20.87 cfs 1.191 af
Outflow=20.87 cfs 1.191 af

Pond 74: 12" CMP Culvert Peak Elev=1,918.09' Inflow=23.01 cfs 1.132 af
Outflow=23.01 cfs 1.132 af

Pond 74A: 16" CMP Culvert Peak Elev=1,925.39' Inflow=23.02 cfs 1.132 af
Outflow=23.02 cfs 1.132 af

Pond 76A: culvert Peak Elev=1,906.00' Inflow=22.97 cfs 1.132 af
Outflow=22.97 cfs 1.132 af

Pond 77: 36" Steel Culvert Peak Elev=2,176.51' Inflow=156.43 cfs 24.133 af
Outflow=156.43 cfs 24.133 af

Pond 79: 16" Steel Culvert Peak Elev=2,058.67' Inflow=158.08 cfs 24.667 af
Outflow=158.08 cfs 24.667 af

Pond 83: 24" HPDE Culvert Peak Elev=2,361.17' Inflow=5.59 cfs 0.347 af
Primary=5.59 cfs 0.347 af Secondary=0.00 cfs 0.000 af Outflow=5.59 cfs 0.347 af

Pond 84: 24" HDPE Pipe Peak Elev=2,322.82' Inflow=127.17 cfs 9.712 af
Primary=67.54 cfs 8.284 af Secondary=59.63 cfs 1.428 af Outflow=127.17 cfs 9.712 af

Pond 85: 28" HDPE Pipe Peak Elev=2,301.83' Inflow=72.44 cfs 2.572 af
Primary=44.06 cfs 2.133 af Secondary=28.38 cfs 0.439 af Outflow=72.44 cfs 2.572 af

Pond 86: 24" HDPE Pipe Peak Elev=2,246.02' Inflow=37.71 cfs 1.599 af
Primary=26.75 cfs 1.488 af Secondary=10.96 cfs 0.111 af Outflow=37.71 cfs 1.599 af

Pond 87: 18" Steel Culvert Peak Elev=2,210.23' Inflow=8.16 cfs 0.535 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0167 '/' Outflow=8.16 cfs 0.535 af

Pond 90: 24" Steel Culvert Peak Elev=1,893.85' Inflow=37.99 cfs 2.309 af
Outflow=37.99 cfs 2.309 af

Pond 122: 18" HDPE Storm Peak Elev=1,949.09' Inflow=4.32 cfs 0.230 af
Outflow=4.32 cfs 0.230 af

Pond 123: 18" HDPE Storm Peak Elev=1,948.87' Inflow=6.01 cfs 0.318 af
Outflow=6.01 cfs 0.318 af

Pond A1: A1 - OPEN SWALE Peak Elev=1,910.28' Storage=2,818 cf Inflow=6.15 cfs 0.339 af
Discarded=0.03 cfs 0.086 af Primary=6.07 cfs 0.253 af Outflow=6.10 cfs 0.339 af

Pond A2: A2 - OPEN SWALE Peak Elev=1,907.35' Storage=1,302 cf Inflow=8.51 cfs 0.388 af
Discarded=0.02 cfs 0.042 af Primary=8.47 cfs 0.346 af Outflow=8.49 cfs 0.388 af

Pond A3: A3 - OPEN SWALE Peak Elev=1,905.88' Storage=2,381 cf Inflow=12.57 cfs 0.574 af
Discarded=0.03 cfs 0.073 af Primary=12.51 cfs 0.501 af Outflow=12.53 cfs 0.574 af

Pond A4: A4 - OPEN SWALE Peak Elev=1,903.93' Storage=1,741 cf Inflow=15.43 cfs 0.665 af
Discarded=0.02 cfs 0.051 af Primary=15.39 cfs 0.614 af Outflow=15.41 cfs 0.665 af

Pond A5: A5 - OPEN SWALE Peak Elev=1,902.25' Storage=2,947 cf Inflow=23.40 cfs 1.061 af
Discarded=0.03 cfs 0.079 af Primary=23.31 cfs 0.982 af Outflow=23.34 cfs 1.061 af

Pond B: OPEN SWALE Peak Elev=1,868.35' Storage=8,483 cf Inflow=16.67 cfs 0.982 af
Discarded=0.09 cfs 0.256 af Primary=16.30 cfs 0.726 af Outflow=16.39 cfs 0.982 af

Pond B1: bioretention @ 8 tee Peak Elev=1,966.19' Storage=10,681 cf Inflow=37.98 cfs 3.146 af
Discarded=0.18 cfs 0.358 af Primary=37.51 cfs 2.788 af Outflow=37.68 cfs 3.146 af

Pond B3: bioretention @ blvd Peak Elev=1,960.35' Storage=28,745 cf Inflow=31.56 cfs 2.167 af
Discarded=0.43 cfs 0.911 af Primary=20.97 cfs 1.256 af Secondary=0.00 cfs 0.000 af Outflow=21.40 cfs 2.167 af

Pond DP 10: Design Point 10 Inflow=315.80 cfs 42.337 af
Primary=315.80 cfs 42.337 af

Pond DP 11: Design Point 11 Inflow=131.90 cfs 21.558 af
Primary=131.90 cfs 21.558 af

Pond DP 12: Design Point 12 Inflow=32.17 cfs 1.749 af
Primary=32.17 cfs 1.749 af

Pond DP 16: Design Point 16 24" CMP Inflow=50.38 cfs 4.970 af
Primary=50.38 cfs 4.970 af

Pond F1: Open Swale-F Peak Elev=1,895.87' Storage=5,419 cf Inflow=12.36 cfs 0.617 af
Discarded=0.05 cfs 0.158 af Primary=12.06 cfs 0.459 af Outflow=12.12 cfs 0.617 af

Pond G: OPEN SWALE Peak Elev=1,903.80' Storage=10,069 cf Inflow=21.12 cfs 1.113 af
Discarded=0.13 cfs 0.341 af Primary=20.68 cfs 0.772 af Outflow=20.81 cfs 1.113 af

Pond I18: Manhole Peak Elev=2,010.62' Inflow=120.43 cfs 7.000 af
54.0" Round Culvert n=0.013 L=304.0' S=0.0194 '/' Outflow=120.43 cfs 7.000 af

Pond I19: Manhole Peak Elev=2,021.62' Inflow=120.43 cfs 7.000 af
54.0" Round Culvert n=0.013 L=348.0' S=0.0313 '/' Outflow=120.43 cfs 7.000 af

Pond I2: 30" HDPE Storm Peak Elev=1,946.84' Inflow=28.45 cfs 1.568 af
30.0" Round Culvert n=0.013 L=170.0' S=0.0053 '/' Outflow=28.45 cfs 1.568 af

Pond I22: Manhole- 54" HDPE Storm Peak Elev=2,173.99' Inflow=75.27 cfs 3.987 af
Outflow=75.27 cfs 3.987 af

Pond I23: Manhole -30" HDPE Storm Peak Elev=2,186.58' Inflow=29.96 cfs 1.580 af
Outflow=29.96 cfs 1.580 af

Pond I24: 30" HDPE Storm Peak Elev=2,191.89' Inflow=29.96 cfs 1.580 af
Outflow=29.96 cfs 1.580 af

Pond I25: 30" HDPE Storm Peak Elev=2,193.89' Inflow=23.35 cfs 1.262 af
Outflow=23.35 cfs 1.262 af

Pond I26: 30" HDPE Storm Peak Elev=2,194.68' Inflow=18.85 cfs 0.979 af
Outflow=18.85 cfs 0.979 af

Pond I27: 30" HDPE Storm Peak Elev=2,195.18' Inflow=16.94 cfs 0.888 af
Outflow=16.94 cfs 0.888 af

Pond I28: 30" HDPE Storm Peak Elev=2,195.52' Inflow=12.66 cfs 0.687 af
Outflow=12.66 cfs 0.687 af

Pond I29: Manhole Peak Elev=2,195.68' Inflow=9.63 cfs 0.542 af
30.0" Round Culvert n=0.013 L=98.0' S=0.0010 '/' Outflow=9.63 cfs 0.542 af

Pond I3: 30" HDPE Storm Peak Elev=1,948.25' Inflow=25.16 cfs 1.375 af
Outflow=25.16 cfs 1.375 af

Pond I30: 30" HDPE Storm Peak Elev=2,196.01' Inflow=9.63 cfs 0.542 af
Outflow=9.63 cfs 0.542 af

Pond I31: 36" HDPE Storm Peak Elev=2,174.31' Inflow=19.27 cfs 0.939 af
36.0" Round Culvert n=0.013 L=55.0' S=0.0027 '/' Outflow=19.27 cfs 0.939 af

Pond I32: 30" HDPE Storm Peak Elev=2,174.96' Inflow=19.27 cfs 0.939 af
Outflow=19.27 cfs 0.939 af

Pond I33: 24" HDPE Storm Peak Elev=2,175.45' Inflow=15.58 cfs 0.759 af
Outflow=15.58 cfs 0.759 af

Pond I4: 15" HDPE Storm Peak Elev=1,952.47' Inflow=3.42 cfs 0.193 af
15.0" Round Culvert n=0.013 L=140.0' S=0.0107 '/' Outflow=3.42 cfs 0.193 af

Pond I6: Manhole Peak Elev=1,954.95' Inflow=20.97 cfs 1.480 af
36.0" Round Culvert n=0.013 L=186.0' S=0.0050 '/' Outflow=20.97 cfs 1.480 af

Pond IP: P2 Peak Elev=1,942.64' Storage=863,457 cf Inflow=233.75 cfs 14.914 af
Outflow=10.39 cfs 9.818 af

Total Runoff Area = 270.763 ac Runoff Volume = 79.005 af Average Runoff Depth = 3.50"
93.08% Pervious = 252.026 ac 6.92% Impervious = 18.737 ac

Summary for Subcatchment 9S: Subcatchment 9

Runoff = 114.38 cfs @ 12.15 hrs, Volume= 8.994 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	8,494	98	Roof Area
	31,175	71	Meadow, non-grazed, HSG C
	1,389,855	70	Woods, Good, HSG C
	13,112	98	Paved parking, HSG C
*	9,470	74	porous paving
*	7,000	74	Fairway/Tee/Green, Good, HSG C
	6,775	74	>75% Grass cover, Good, HSG C
	1,465,881	70	Weighted Average
	1,444,275		98.53% Pervious Area
	21,606		1.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0200	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	10	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.3	1,923	0.1100	13.81	662.89	**Trap/Vee/Rect Channel Flow, Flow through Rock Channel** Bot.W=20.00' D=2.00' Z= 2.0 '/' Top.W=28.00' n= 0.050 Mountain streams w/large boulders
21.6	2,033	Total			

Summary for Subcatchment 10S: Subcatchment 10

Runoff = 99.24 cfs @ 12.19 hrs, Volume= 8.676 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	890,933	70	Woods, Good, HSG C
	424,449	71	Meadow, non-grazed, HSG C
	16,742	74	>75% Grass cover, Good, HSG C
*	31,777	98	Road/Drive
*	7,623	98	Roofs
	1,371,524	71	Weighted Average
	1,332,124		97.13% Pervious Area
	39,400		2.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.2	600	0.0780	1.40		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
2.7	455	0.1600	2.80		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
2.8	330	0.1570	1.98		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.6	685	0.0945	7.35	33.08	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=4.00' D=1.00' Z= 0.5 '/' Top.W=5.00' n= 0.050
0.0	30	0.0500	13.31	18.59	**Pipe Channel, 16" Steel Culvert** 16.0" Round Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.012 Steel, smooth
1.4	645	0.0483	7.65	91.77	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=5.00' D=2.00' Z= 0.5 '/' Top.W=7.00' n= 0.050
25.8	2,845	Total			

Summary for Subcatchment 11A: Subcatchment 11A

Runoff = 5.62 cfs @ 12.08 hrs, Volume= 0.365 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
55,013	70	Woods, Good, HSG C
2,726	98	Paved parking & roofs
57,739	71	Weighted Average
55,013		95.28% Pervious Area
2,726		4.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0800	0.15		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	380	0.0875	1.48		**Shallow Concentrated Flow, SC flow through Woods** Woodland Kv= 5.0 fps
15.3	480	Total			

Summary for Subcatchment 11B: Subcatchment 11B

Runoff = 11.07 cfs @ 12.11 hrs, Volume= 0.781 af, Depth= 3.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	50,820	70	Woods, Good, HSG C
	19,475	98	Paved parking & roofs
	27,337	74	>75% Grass cover, Good, HSG C
*	2,120	74	Porous Pavement
*	4,400	74	Fairway/Tee/Green, Good, HSG C
	104,152	77	Weighted Average
	84,677		81.30% Pervious Area
	19,475		18.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0200	0.08		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.9	436	0.0440	1.05		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.9	486	Total			

Summary for Subcatchment 11S: Subcatchment 11

Runoff = 20.87 cfs @ 12.03 hrs, Volume= 1.191 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
169,318	70	Woods, Good, HSG C
13,416	98	Paved parking & roofs
182,734	72	Weighted Average
169,318		92.66% Pervious Area
13,416		7.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.0800	2.03		**Sheet Flow, Sheet Flow off Roof** Smooth surfaces n= 0.011 P2= 4.00"
4.4	75	0.0625	0.28		**Sheet Flow, Sheet flow over meadow** Grass: Short n= 0.150 P2= 4.00"
2.9	330	0.0750	1.92		**Shallow Concentrated Flow, Sheet Flow through Meadow** Short Grass Pasture Kv= 7.0 fps
3.4	300	0.0875	1.48		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.6	254	0.0500	7.39	16.25	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=2.00' D=1.00' Z= 0.2 '/' Top.W=2.40' n= 0.030
11.5	984	Total			

Summary for Subcatchment 12A: Subcatchment 12A

Runoff = 81.81 cfs @ 11.98 hrs, Volume= 3.909 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	172,175	74	>75% Grass cover, Good, HSG C
	265,310	70	Woods, Good, HSG C
	43,737	98	Paved parking & roofs
*	4,020	74	Porous Pavement
*	19,225	98	Roofs
*	45,983	74	Fairway/Tee/Green, Good, HSG C
	550,450	75	Weighted Average
	487,488		88.56% Pervious Area
	62,962		11.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	33	0.0300	1.45		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.6	264	0.0300	2.79		**Shallow Concentrated Flow, SC Flow through Developed area** Unpaved Kv= 16.1 fps
4.4	1,813	0.0200	6.80	71.42	**Trap/Vee/Rect Channel Flow, roadside ditch** Bot.W=2.00' D=3.00' Z= 0.5 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
6.4	2,110	Total			

Summary for Subcatchment 12B: Subcatchment 12B

Runoff = 25.95 cfs @ 12.59 hrs, Volume= 4.024 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
630,510	70	Woods, Good, HSG C
25,422	74	>75% Grass cover, Good, HSG C
655,932	70	Weighted Average
655,932		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0800	0.09		**Sheet Flow, sheet through woods** Woods: Dense underbrush n= 0.800 P2= 4.00"
39.5	1,600	0.0730	0.68		**Shallow Concentrated Flow, SC Flow through Woods** Forest w/Heavy Litter Kv= 2.5 fps
58.7	1,700	Total			

Summary for Subcatchment 27A: SUB27A

Runoff = 18.99 cfs @ 11.99 hrs, Volume= 0.937 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	55,888	70	Woods, Good, HSG C
*	9,934	98	Paved
*	3,556	98	Roof
	62,600	74	>75% Grass cover, Good, HSG C
	131,978	75	Weighted Average
	118,488		89.78% Pervious Area
	13,490		10.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	100	0.0900	0.35		**Sheet Flow,**
					Grass: Short n= 0.150 P2= 4.00"
1.1	264	0.0700	3.97		**Shallow Concentrated Flow,**
					Grassed Waterway Kv= 15.0 fps
1.4	750	0.0640	8.97	60.53	**Trap/Vee/Rect Channel Flow,**
					Bot.W=3.00' D=1.50' Z= 1.0 '/' Top.W=6.00'
					n= 0.040 Earth, dense weeds
7.3	1,114	Total			

Summary for Subcatchment 27S: Subcatchment 27

Runoff = 10.19 cfs @ 12.05 hrs, Volume= 0.617 af, Depth= 4.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	6,900	98	Roof
*	12,822	98	Pavement
	45,912	74	>75% Grass cover, Good, HSG C
	12,420	70	Woods, Good, HSG C
	78,054	79	Weighted Average
	58,332		74.73% Pervious Area
	19,722		25.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	100	0.0760	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.5	40	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	20	0.0430	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	220	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	20	0.0620	9.52	76.20	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.040 Earth, dense weeds
12.9	400	Total			

Summary for Subcatchment 28S: Subcatchment 28

Runoff = 7.79 cfs @ 12.31 hrs, Volume= 0.867 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
33,932	71	Meadow, non-grazed, HSG C
107,420	70	Woods, Good, HSG C
141,352	70	Weighted Average
141,352		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.2	326	0.0680	1.30		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	392	0.0130	0.34	0.51	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.300
36.8	818	Total			

Summary for Subcatchment 29S: SUB27A

Runoff = 4.10 cfs @ 11.97 hrs, Volume= 0.195 af, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	4,025	98	Paved
	21,330	74	>75% Grass cover, Good, HSG C
	25,355	78	Weighted Average
	21,330		84.13% Pervious Area
	4,025		15.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0300	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	218	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	248	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 61S: Hotel Roof

Runoff = 3.19 cfs @ 11.97 hrs, Volume= 0.180 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	15,005	98	Paved
	15,005		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 67S: W. top front of hotel

Runoff = 3.19 cfs @ 11.97 hrs, Volume= 0.180 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	15,005	98	Roof
	15,005		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 70A: (new Subcat)

Runoff = 3.69 cfs @ 11.97 hrs, Volume= 0.180 af, Depth= 4.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	12,012	74	>75% Grass cover, Good, HSG C
	7,200	98	Paved parking & roofs
*	1,000	98	Porous Pavement
	20,212	84	Weighted Average
	12,012		59.43% Pervious Area
	8,200		40.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	34	0.0588	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.6	66	0.0450	1.96		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.2	21	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	8	0.1110	6.76		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	11	0.1110	2.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	67	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.7	207	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 70B: (new Subcat)

Runoff = 5.08 cfs @ 11.97 hrs, Volume= 0.245 af, Depth= 4.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	7,200	98	Paved parking & roofs
	20,394	74	>75% Grass cover, Good, HSG C
*	1,880	98	Porous Pavement
	29,474	81	Weighted Average
	20,394		69.19% Pervious Area
	9,080		30.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.2	37	0.2160	3.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	61	0.0660	5.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	37	0.1176	2.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.3	235	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 70C: (new Subcat)

Runoff = 10.50 cfs @ 11.97 hrs, Volume= 0.514 af, Depth= 4.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
25,112	98	Paved parking & roofs
32,481	74	>75% Grass cover, Good, HSG C
57,593	84	Weighted Average
32,481		56.40% Pervious Area
25,112		43.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 100a: Hole 4 (110) PR

Runoff = 6.15 cfs @ 12.02 hrs, Volume= 0.339 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	25,572	74	>75% Grass cover, Good, HSG C
	9,715	70	Woods, Good, HSG C
*	3,940	74	Porous Pavement
*	11,267	74	Fairway/Tee/Green, Good, HSG C
	50,494	73	Weighted Average
	50,494		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100b: Hole 4 (110) PR

Runoff = 2.45 cfs @ 12.02 hrs, Volume= 0.135 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	5,558	74	>75% Grass cover, Good, HSG C
	2,890	70	Woods, Good, HSG C
*	11,040	74	Fairway/Tee/Green, Good, HSG C
*	650	74	Porous Pavement
	20,138	73	Weighted Average
	20,138		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100c: Hole 4 (110) PR

Runoff = 4.13 cfs @ 12.02 hrs, Volume= 0.228 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	6,495	74	>75% Grass cover, Good, HSG C
*	2,610	74	Porous Pavement
*	23,895	74	Fairway/Tee/Green, Good, HSG C
	33,000	74	Weighted Average
	33,000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100d: Hole 4 (110) PR

Runoff = 2.96 cfs @ 12.02 hrs, Volume= 0.164 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	2,916	74	>75% Grass cover, Good, HSG C
*	1,300	74	Porous Pavement
*	19,488	74	Fairway/Tee/Green, Good, HSG C
	23,704	74	Weighted Average
	23,704		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100e: Hole 4 (110) PR

Runoff = 8.10 cfs @ 12.02 hrs, Volume= 0.447 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	27,442	74	>75% Grass cover, Good, HSG C
*	3,930	74	Porous Pavement
*	33,414	74	Fairway/Tee/Green, Good, HSG C
	64,786	74	Weighted Average
	64,786		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course**
					Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course**
					Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 101: Land east of irrigation pond (101 PR)

Runoff = 6.40 cfs @ 11.97 hrs, Volume= 0.306 af, Depth= 4.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	31,112	74	>75% Grass cover, Good, HSG C
*	7,596	98	Roofs
	38,708	79	Weighted Average
	31,112		80.38% Pervious Area
	7,596		19.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	68	0.0144	1.25		**Sheet Flow, Sheet Flow Across Roof**
					Smooth surfaces n= 0.011 P2= 4.00"
1.4	191	0.0990	2.20		**Shallow Concentrated Flow, SC Flow**
					Short Grass Pasture Kv= 7.0 fps
0.1	35	0.0570	8.39	12.58	**Channel Flow, Roadside Ditch**
					Area= 1.5 sf Perim= 4.0' r= 0.38'
					n= 0.022 Earth, clean & straight
2.4	294	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 102: Pool House and Pool (102) PR

Runoff = 3.42 cfs @ 11.97 hrs, Volume= 0.193 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	11,423	98	Paved parking & roofs
*	4,650	98	Roofs
	16,073	98	Weighted Average
	16,073		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 103: Pool parking lot and tennis courts (103) PR

Runoff = 19.54 cfs @ 12.00 hrs, Volume= 1.057 af, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
62,227	74	>75% Grass cover, Good, HSG C
53,467	98	Paved parking & roofs
115,694	85	Weighted Average
62,227		53.79% Pervious Area
53,467		46.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	100	0.0900	0.35		**Sheet Flow, Sheet Flow Along Steep Hill** Grass: Short n= 0.150 P2= 4.00"
2.1	150	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.9	352	0.0227	3.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.8	602	Total			

Summary for Subcatchment 104: Holes 7 &8

Runoff = 37.98 cfs @ 12.17 hrs, Volume= 3.146 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	25,420	74	Porous Pavement
	104,543	74	>75% Grass cover, Good, HSG C
	45,415	70	Woods, Good, HSG C
*	280,195	74	Fairway/Tee/Green, Good, HSG C
	455,573	74	Weighted Average
	455,573		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	39	0.0510	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
12.0	61	0.0240	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.8	133	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.6	167	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	300	0.0570	1.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	122	0.0820	2.00		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	209	0.0670	10.38	54.52	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
23.7	1,031	Total			

Summary for Subcatchment 108: Front of Road to 8 -23 (108) PR

Runoff = 4.32 cfs @ 11.97 hrs, Volume= 0.230 af, Depth= 5.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
3,491	74	>75% Grass cover, Good, HSG C
17,269	98	Paved
20,760	94	Weighted Average
3,491		16.82% Pervious Area
17,269		83.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0200	1.54		**Sheet Flow, Sheet Flow Roof** Smooth surfaces n= 0.011 P2= 4.00"
0.2	13	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	369	0.0600	4.97		**Shallow Concentrated Flow, Flow in Concrete Curb** Paved Kv= 20.3 fps
2.5	482	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 109: Front of Road to 8 -23 (109) PR

Runoff = 1.69 cfs @ 11.97 hrs, Volume= 0.088 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
2,105	74	>75% Grass cover, Good, HSG C
6,175	98	Paved parking & roofs
8,280	92	Weighted Average
2,105		25.42% Pervious Area
6,175		74.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0310	1.83		**Sheet Flow, Sheet Flow on Pavement** Smooth surfaces n= 0.011 P2= 4.00"
0.8	258	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	358	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 111: Front of Hole 4 (111) PR

Runoff = 12.36 cfs @ 11.99 hrs, Volume= 0.617 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	33,460	74	>75% Grass cover, Good, HSG C
*	6,880	74	Porous Pavement
*	49,040	74	Fairway/Tee/Green, Good, HSG C
	89,380	74	Weighted Average
	89,380		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.1400	0.28		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
1.8	293	0.1500	2.71		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
7.7	393	Total			

Summary for Subcatchment 114: Behind Townhomes

Runoff = 15.33 cfs @ 12.08 hrs, Volume= 1.009 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	88,388	74	>75% Grass cover, Good, HSG C
	21,938	70	Woods, Good, HSG C
*	39,975	74	Fairway/Tee/Green, Good, HSG C
	150,301	73	Weighted Average
	150,301		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0750	0.22		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
8.2	830	0.0580	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.7	930	Total			

Summary for Subcatchment 115: Land between buildings 17 thru 22 (115) pr

Runoff = 55.94 cfs @ 12.05 hrs, Volume= 3.364 af, Depth= 3.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	1,000	98	Paved parking & roofs
*	42,019	98	Roofs
	304,107	74	>75% Grass cover, Good, HSG C
*	78,570	74	Fairway/Tee/Green, Good, HSG C
	23,492	73	Woods, Fair, HSG C
*	11,655	74	Porus Pavement
	460,843	76	Weighted Average
	417,824		90.67% Pervious Area
	43,019		9.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	100	0.0800	0.23		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 4.00"
5.6	709	0.0900	2.10		**Shallow Concentrated Flow, SC Flow in Swale** Short Grass Pasture Kv= 7.0 fps
12.9	809	Total			

Summary for Subcatchment 117: Rest of Road to 8 -23 (117) PR

Runoff = 31.56 cfs @ 12.08 hrs, Volume= 2.167 af, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	108,508	74	>75% Grass cover, Good, HSG C
	111,127	98	Paved parking & roofs
	5,863	70	Woods, Good, HSG C
	11,700	74	>75% Grass cover, Good, HSG C
	237,198	85	Weighted Average
	126,071		53.15% Pervious Area
	111,127		46.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow in Side Yard** Grass: Dense n= 0.240 P2= 4.00"
8.1	830	0.0600	1.71		**Shallow Concentrated Flow, SC Flow in Swale** Short Grass Pasture Kv= 7.0 fps
16.3	930	Total			

Summary for Subcatchment 119: Green of Hole 3 & tee of Hole 4 (119) PR

Runoff = 16.67 cfs @ 12.04 hrs, Volume= 0.982 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	49,282	74	>75% Grass cover, Good, HSG C
	18,600	70	Woods, Good, HSG C
*	70,125	74	Fairway/Tee/Green, Good, HSG C
*	8,380	74	Porous Pavement
	146,387	73	Weighted Average
	146,387		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0700	0.22		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
0.5	54	0.0740	1.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	176	0.1110	1.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.4	397	0.0910	2.71		**Shallow Concentrated Flow, SC Flow on golf course** Cultivated Straight Rows Kv= 9.0 fps
12.4	727	Total			

Summary for Subcatchment 123S: Land north of irrigation pond (123) PR

Runoff = 5.87 cfs @ 12.00 hrs, Volume= 0.303 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	43,890	74	Fairway/Tee/Green, Good, HSG C
	43,890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Through Golf Course** Grass: Dense n= 0.240 P2= 4.00"
0.4	46	0.0430	1.87		**Shallow Concentrated Flow, SC Flow in Swale** Cultivated Straight Rows Kv= 9.0 fps
8.6	146	Total			

Summary for Subcatchment 125: Hole 3 and end of Hole 4 (119) PR

Runoff = 21.12 cfs @ 12.01 hrs, Volume= 1.113 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	17,968	74	>75% Grass cover, Good, HSG C
	8,956	70	Woods, Good, HSG C
*	11,910	74	Porous Pavement
*	122,325	74	Fairway/Tee/Green, Good, HSG C
	161,159	74	Weighted Average
	161,159		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0600	0.30		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Short n= 0.150 P2= 4.00"
3.6	1,031	0.1040	4.84		**Shallow Concentrated Flow, SC Flow on golf course** Grassed Waterway Kv= 15.0 fps
9.2	1,131	Total			

Summary for Subcatchment 126: Irr. Pond

Runoff = 15.31 cfs @ 11.97 hrs, Volume= 0.798 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	56,286	98	Pond
	18,705	74	>75% Grass cover, Good, HSG C
	74,991	92	Weighted Average
	18,705		24.94% Pervious Area
	56,286		75.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 126A: forebay

Runoff = 1.70 cfs @ 11.97 hrs, Volume= 0.096 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
8,000	98	Water Surface, 0% imp, HSG C
8,000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 127S: (new Subcat)

Runoff = 52.57 cfs @ 12.03 hrs, Volume= 3.012 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	27,670	74	Porous Pavement
	151,709	74	>75% Grass cover, Good, HSG C
	96,570	70	Woods, Good, HSG C
*	172,945	74	Fairway/Tee/Green, Good, HSG C
	448,894	73	Weighted Average
	448,894		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0400	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.1	260	0.0850	2.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.9	1,584	0.0820	9.05	108.59	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.050 Earth, cobble bottom, clean sides
11.6	1,944	Total			

Summary for Subcatchment 128S: HOTEL ROOF

Runoff = 1.46 cfs @ 11.97 hrs, Volume= 0.082 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	6,878	98	Roof
	6,878		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 129S: HOTEL ROOF

Runoff = 2.93 cfs @ 11.97 hrs, Volume= 0.165 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	13,760	98	Roof
	13,760		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 130S: (new Subcat)

Runoff = 6.61 cfs @ 11.97 hrs, Volume= 0.317 af, Depth= 4.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
9,220	98	Paved parking & roofs
29,927	74	>75% Grass cover, Good, HSG C
39,147	80	Weighted Average
29,927		76.45% Pervious Area
9,220		23.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
0.3	21	0.0200	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
5.3	21	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 131A: HOTEL ROOF

Runoff = 10.92 cfs @ 11.97 hrs, Volume= 0.614 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
51,300	98	Paved parking & roofs
51,300		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 131S: (new Subcat)

Runoff = 4.88 cfs @ 12.01 hrs, Volume= 0.283 af, Depth= 5.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
10,863	74	>75% Grass cover, Good, HSG C
17,500	98	Paved parking & roofs
28,363	89	Weighted Average
10,863		38.30% Pervious Area
17,500		61.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.1	64	0.0310	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
10.1	64	Total			

Summary for Subcatchment 132S: (new Subcat)

Runoff = 1.92 cfs @ 11.97 hrs, Volume= 0.091 af, Depth= 3.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
1,650	98	Paved parking & roofs
10,495	74	>75% Grass cover, Good, HSG C
12,145	77	Weighted Average
10,495		86.41% Pervious Area
1,650		13.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	92	0.2600	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.1	11	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	103	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 133S: (new Subcat)

Runoff = 4.29 cfs @ 11.97 hrs, Volume= 0.201 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
29,164	74	>75% Grass cover, Good, HSG C
29,164		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0100	0.84		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.1	30	0.0670	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.5	50	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 134S: HOTEL ROOF

Runoff = 1.46 cfs @ 11.97 hrs, Volume= 0.082 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
6,878	98	Paved parking & roofs
6,878		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 135S: (new Subcat)

Runoff = 3.03 cfs @ 11.97 hrs, Volume= 0.145 af, Depth= 4.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
4,000	98	Paved parking, HSG C
12,105	74	>75% Grass cover, Good, HSG C
2,192	70	Woods, Good, HSG C
18,297	79	Weighted Average
14,297		78.14% Pervious Area
4,000		21.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.2000	0.48		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.2	71	0.4790	4.84		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	75	0.0267	3.32		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1	246	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 136S: Parking Structure

Runoff = 9.63 cfs @ 11.97 hrs, Volume= 0.542 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	45,262	98	Paved parking & roofs
	45,262		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0100	1.17		**Sheet Flow, Pavement of parking structure** Smooth surfaces n= 0.011 P2= 4.00"
1.7	206	0.0100	2.03		**Shallow Concentrated Flow, Pavement of parking structure** Paved Kv= 20.3 fps
3.1	306	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 138S: HOTEL ROOF

Runoff = 2.93 cfs @ 11.97 hrs, Volume= 0.165 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	13,760	98	Roof
	13,760		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 500S: Subcatchment 500

Runoff = 84.97 cfs @ 12.27 hrs, Volume= 8.546 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	29,185	98	Roadway
	1,312,724	70	Woods, Good, HSG C
	1,350,926	71	Weighted Average
	1,321,741		97.84% Pervious Area
	29,185		2.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
25.7	3,665	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.1	110	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
32.0	3,875	Total			

Summary for Subcatchment 501S: Subcatchment 501

Runoff = 15.57 cfs @ 12.12 hrs, Volume= 1.144 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,002	98	Roadway
	176,462	70	Woods, Good, HSG C
	186,481	70	Weighted Average
	185,479		99.46% Pervious Area
	1,002		0.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
13.1	1,930	0.2410	2.45		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	2,030	Total			

Summary for Subcatchment 502S: Subcatchment 502

Runoff = 19.29 cfs @ 12.05 hrs, Volume= 1.160 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,437	98	Roadway
	178,596	70	Woods, Good, HSG C
	189,050	70	Weighted Average
	187,613		99.24% Pervious Area
	1,437		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.5	935	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	265	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
13.0	1,300	Total			

Summary for Subcatchment 503S: Subcatchmant 503

Runoff = 11.83 cfs @ 12.09 hrs, Volume= 0.802 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
130,680	70	Woods, Good, HSG C
130,680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.2	655	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	255	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
16.6	1,010	Total			

Summary for Subcatchment 504S: Subcatchment 504

Runoff = 94.41 cfs @ 12.19 hrs, Volume= 8.102 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
	1,292,556	70	Woods, Good, HSG C
*	13,939	98	Road
	14,026	74	>75% Grass cover, Good, HSG C
	1,320,521	70	Weighted Average
	1,306,582		98.94% Pervious Area
	13,939		1.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.4375	0.30		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
19.1	2,860	0.2500	2.50		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	320	0.1910	15.31	321.48	**Trap/Vee/Rect Channel Flow, Mountain Stream** Bot.W=4.00' D=3.00' Z= 1.0 '/' Top.W=10.00' n= 0.060
25.0	3,280	Total			

Summary for Subcatchment 511S: Subcatchmant 511

Runoff = 8.16 cfs @ 12.08 hrs, Volume= 0.535 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
87,120	70	Woods, Good, HSG C
87,120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.5	580	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.6	680	Total			

Summary for Subcatchment 512S: Subcatchment 512

Runoff = 5.59 cfs @ 12.06 hrs, Volume= 0.347 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

Area (sf)	CN	Description
56,628	70	Woods, Good, HSG C
56,628		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.3125	0.15		**Sheet Flow, Sheet Flow through Woods** Woods: Dense underbrush n= 0.800 P2= 4.00"
2.6	345	0.1900	2.18		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	155	0.1000	8.43	10.12	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.2 '/' Top.W=1.40' n= 0.030 Earth, grassed & winding

14.0	600	Total

Summary for Subcatchment 600S: Subcatchment 600

Runoff = 31.88 cfs @ 12.12 hrs, Volume= 2.340 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	9,670	98	Road
	360,198	70	Woods, Good, HSG C
	369,868	71	Weighted Average
	360,198		97.39% Pervious Area
	9,670		2.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.0	1,510	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	1,610	Total			

Summary for Subcatchment 601S: Subcatchment 601

Runoff = 26.32 cfs @ 12.07 hrs, Volume= 1.692 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YEAR Rainfall=6.50"

	Area (sf)	CN	Description
*	10,498	98	Road
	257,004	70	Woods, Good, HSG C
	267,502	71	Weighted Average
	257,004		96.08% Pervious Area
	10,498		3.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.7	970	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.0	1,070	Total			

Summary for Reach 18R: Overland Flow

Inflow Area = 46.508 ac, 27.33% Impervious, Inflow Depth > 2.53" for 25-YEAR event
Inflow = 10.39 cfs @ 13.98 hrs, Volume= 9.818 af
Outflow = 10.39 cfs @ 14.02 hrs, Volume= 9.818 af, Atten= 0%, Lag= 2.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.64 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 0.75 fps, Avg. Travel Time= 11.8 min

Peak Storage= 2,103 cf @ 14.02 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 0.50' Flow Area= 33.8 sf, Capacity= 214.48 cfs

30.00' x 0.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 75.0 '/' Top Width= 105.00'
Length= 535.0' Slope= 0.0748 '/'
Inlet Invert= 1,937.00', Outlet Invert= 1,897.00'

‡

Summary for Reach 21R: Ex. Roadside Ditch

Inflow Area = 4.411 ac, 0.00% Impervious, Inflow Depth = 2.67" for 25-YEAR event
Inflow = 23.31 cfs @ 12.04 hrs, Volume= 0.982 af
Outflow = 23.29 cfs @ 12.04 hrs, Volume= 0.982 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.19 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.79 fps, Avg. Travel Time= 1.1 min

Peak Storage= 451 cf @ 12.04 hrs
Average Depth at Peak Storage= 1.18'
Bank-Full Depth= 1.50' Flow Area= 5.3 sf, Capacity= 36.63 cfs

2.00' x 1.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.0 '/' Top Width= 5.00'
Length= 120.0' Slope= 0.0250 '/'
Inlet Invert= 1,897.00', Outlet Invert= 1,894.00'

Summary for Reach 58A: Overland Flow

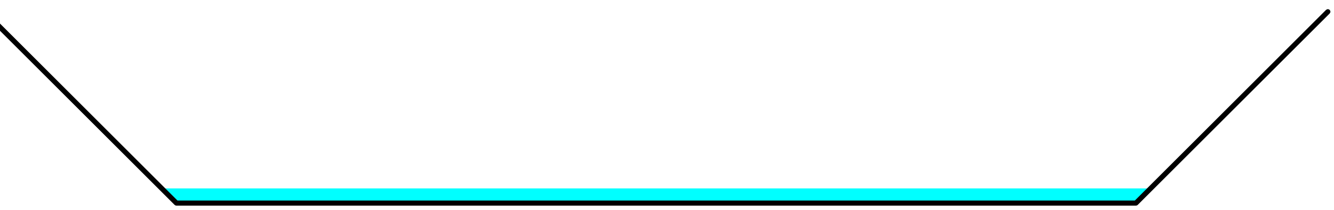
Inflow Area = 3.000 ac, 0.00% Impervious, Inflow Depth = 3.65" for 25-YEAR event
Inflow = 19.95 cfs @ 12.17 hrs, Volume= 0.913 af
Outflow = 18.74 cfs @ 12.21 hrs, Volume= 0.913 af, Atten= 6%, Lag= 2.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.41 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 0.68 fps, Avg. Travel Time= 11.7 min

Peak Storage= 3,720 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 1.00' Flow Area= 120.0 sf, Capacity= 1,456.48 cfs

100.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 140.00'
Length= 478.0' Slope= 0.1004 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,172.00'

‡



Summary for Reach 61: Vegetated Roadside Swale

Inflow Area = 5.521 ac, 6.71% Impervious, Inflow Depth = 3.38" for 25-YEAR event
Inflow = 26.19 cfs @ 12.04 hrs, Volume= 1.556 af
Outflow = 25.68 cfs @ 12.06 hrs, Volume= 1.556 af, Atten= 2%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.93 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.77 fps, Avg. Travel Time= 7.1 min

Peak Storage= 2,782 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.94'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 59.21 cfs

3.00' x 1.50' deep channel, n= 0.040
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 751.0' Slope= 0.0613 '/'
Inlet Invert= 2,000.00', Outlet Invert= 1,954.00'

Summary for Reach 66: Stream Channel

Inflow Area = 122.367 ac, 1.97% Impervious, Inflow Depth = 3.27" for 25-YEAR event
Inflow = 225.66 cfs @ 12.25 hrs, Volume= 33.343 af
Outflow = 223.22 cfs @ 12.30 hrs, Volume= 33.343 af, Atten= 1%, Lag= 2.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.19 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 1.69 fps, Avg. Travel Time= 18.6 min

Peak Storage= 41,268 cf @ 12.30 hrs
Average Depth at Peak Storage= 1.40'
Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 445.48 cfs

10.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 26.00'
Length= 1,884.0' Slope= 0.1152 '/'
Inlet Invert= 2,017.00', Outlet Invert= 1,800.00'

‡

Summary for Reach 73A: Vegetated Roadside Channel

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 3.76" for 25-YEAR event
Inflow = 23.02 cfs @ 11.98 hrs, Volume= 1.132 af
Outflow = 23.01 cfs @ 11.99 hrs, Volume= 1.132 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.71 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.55 fps, Avg. Travel Time= 0.6 min

Peak Storage= 242 cf @ 11.99 hrs
Average Depth at Peak Storage= 1.24'
Bank-Full Depth= 1.50' Flow Area= 5.3 sf, Capacity= 32.90 cfs

2.00' x 1.50' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 5.00'
Length= 60.0' Slope= 0.0560 '/'
Inlet Invert= 1,920.00', Outlet Invert= 1,916.64'

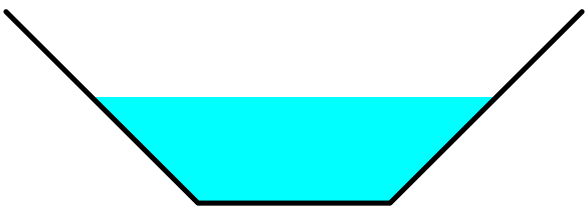
Summary for Reach 75: Roadside Channel

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 3.76" for 25-YEAR event
Inflow = 23.01 cfs @ 11.99 hrs, Volume= 1.132 af
Outflow = 22.97 cfs @ 11.99 hrs, Volume= 1.132 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.64 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.78 fps, Avg. Travel Time= 1.6 min

Peak Storage= 574 cf @ 11.99 hrs
Average Depth at Peak Storage= 1.11'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 71.25 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 166.0' Slope= 0.0542 '/'
Inlet Invert= 1,911.00', Outlet Invert= 1,902.00'



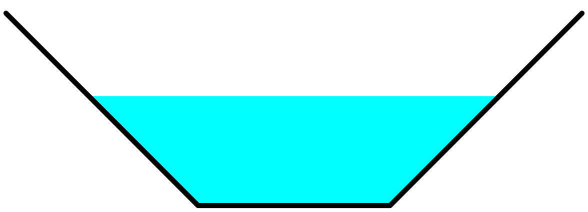
Summary for Reach 76: Roadside Channel

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 3.76" for 25-YEAR event
Inflow = 22.97 cfs @ 11.99 hrs, Volume= 1.132 af
Outflow = 22.97 cfs @ 11.99 hrs, Volume= 1.132 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.44 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.73 fps, Avg. Travel Time= 0.2 min

Peak Storage= 71 cf @ 11.99 hrs
Average Depth at Peak Storage= 1.14'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 68.43 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 20.0' Slope= 0.0500 '/'
Inlet Invert= 1,901.00', Outlet Invert= 1,900.00'



Summary for Reach 78: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 3.26" for 25-YEAR event
Inflow = 158.19 cfs @ 12.47 hrs, Volume= 24.667 af
Outflow = 158.08 cfs @ 12.49 hrs, Volume= 24.667 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.72 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.79 fps, Avg. Travel Time= 6.4 min

Peak Storage= 10,105 cf @ 12.49 hrs
Average Depth at Peak Storage= 1.17'
Bank-Full Depth= 1.50' Flow Area= 21.0 sf, Capacity= 258.41 cfs

8.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 20.00'
Length= 685.0' Slope= 0.1646 '/'
Inlet Invert= 2,170.75', Outlet Invert= 2,058.00'

‡

Summary for Reach 80: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 3.26" for 25-YEAR event
Inflow = 158.08 cfs @ 12.49 hrs, Volume= 24.667 af
Outflow = 157.76 cfs @ 12.51 hrs, Volume= 24.667 af, Atten= 0%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.84 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.14 fps, Avg. Travel Time= 10.8 min

Peak Storage= 17,074 cf @ 12.51 hrs
Average Depth at Peak Storage= 1.60'
Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 247.19 cfs

8.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 24.00'
Length= 740.0' Slope= 0.0473 '/'
Inlet Invert= 2,055.00', Outlet Invert= 2,020.00'

‡

Summary for Reach 82: Overland Flow

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 5.59 cfs @ 12.06 hrs, Volume= 0.347 af
Outflow = 1.34 cfs @ 12.36 hrs, Volume= 0.347 af, Atten= 76%, Lag= 18.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.21 fps, Min. Travel Time= 76.2 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 301.4 min

Peak Storage= 6,116 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 0.50' Flow Area= 75.0 sf, Capacity= 53.31 cfs

100.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 200.00'
Length= 938.0' Slope= 0.1354 '/'
Inlet Invert= 2,347.00', Outlet Invert= 2,220.00'

‡

Summary for Reach 82a: Overland Flow

Inflow Area = 62.628 ac, 1.58% Impervious, Inflow Depth = 2.98" for 25-YEAR event
Inflow = 108.18 cfs @ 12.42 hrs, Volume= 15.567 af
Outflow = 99.92 cfs @ 12.58 hrs, Volume= 15.567 af, Atten= 8%, Lag= 9.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.72 fps, Min. Travel Time= 11.0 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 73.3 min

Peak Storage= 65,751 cf @ 12.58 hrs
Average Depth at Peak Storage= 0.78'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 164.89 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 473.0' Slope= 0.0846 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,180.00'

‡

Summary for Reach 83A: Overland Flow

Inflow Area = 30.315 ac, 1.06% Impervious, Inflow Depth = 2.75" for 25-YEAR event
Inflow = 47.98 cfs @ 12.19 hrs, Volume= 6.935 af
Outflow = 44.85 cfs @ 12.33 hrs, Volume= 6.935 af, Atten= 7%, Lag= 8.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.73 fps, Min. Travel Time= 10.1 min
Avg. Velocity = 0.18 fps, Avg. Travel Time= 40.4 min

Peak Storage= 27,165 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.43'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 232.26 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 441.0' Slope= 0.1678 '/'
Inlet Invert= 2,326.00', Outlet Invert= 2,252.00'

‡

Summary for Reach 84A: Overland Flow

Inflow Area = 61.328 ac, 1.61% Impervious, Inflow Depth = 2.98" for 25-YEAR event
Inflow = 109.24 cfs @ 12.34 hrs, Volume= 15.220 af
Outflow = 106.85 cfs @ 12.42 hrs, Volume= 15.220 af, Atten= 2%, Lag= 4.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.82 fps, Min. Travel Time= 5.6 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 24.8 min

Peak Storage= 36,111 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 192.72 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 277.0' Slope= 0.1155 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,220.00'

‡

Summary for Reach 84B: Overland Flow

Inflow Area = 31.013 ac, 2.16% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 67.54 cfs @ 12.23 hrs, Volume= 8.284 af
Outflow = 64.43 cfs @ 12.35 hrs, Volume= 8.284 af, Atten= 5%, Lag= 7.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.80 fps, Min. Travel Time= 7.7 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 31.9 min

Peak Storage= 29,764 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 228.33 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 370.0' Slope= 0.1622 '/'
Inlet Invert= 2,312.00', Outlet Invert= 2,252.00'

‡

Summary for Reach 85A: Overland Flow

Inflow Area = 4.281 ac, 0.54% Impervious, Inflow Depth = 5.98" for 25-YEAR event
Inflow = 44.06 cfs @ 12.20 hrs, Volume= 2.133 af
Outflow = 36.00 cfs @ 12.38 hrs, Volume= 2.133 af, Atten= 18%, Lag= 10.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.66 fps, Min. Travel Time= 12.8 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 78.2 min

Peak Storage= 27,589 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 221.40 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 505.0' Slope= 0.1525 '/'
Inlet Invert= 2,292.00', Outlet Invert= 2,215.00'

‡

Summary for Reach 85B: Overland Flow

Inflow Area = 8.621 ac, 0.65% Impervious, Inflow Depth = 5.04" for 25-YEAR event
Inflow = 58.39 cfs @ 12.31 hrs, Volume= 3.621 af
Outflow = 44.18 cfs @ 12.44 hrs, Volume= 3.621 af, Atten= 24%, Lag= 7.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.55 fps, Min. Travel Time= 13.7 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 85.1 min

Peak Storage= 36,274 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 157.60 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 453.0' Slope= 0.0773 '/'
Inlet Invert= 2,215.00', Outlet Invert= 2,180.00'

‡

Summary for Reach 86A: Overland Flow

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 4.11" for 25-YEAR event
Inflow = 26.75 cfs @ 12.19 hrs, Volume= 1.488 af
Outflow = 25.31 cfs @ 12.27 hrs, Volume= 1.488 af, Atten= 5%, Lag= 4.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.53 fps, Min. Travel Time= 6.1 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 29.9 min

Peak Storage= 9,263 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 190.45 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 195.0' Slope= 0.1128 '/'
Inlet Invert= 2,237.00', Outlet Invert= 2,215.00'

‡

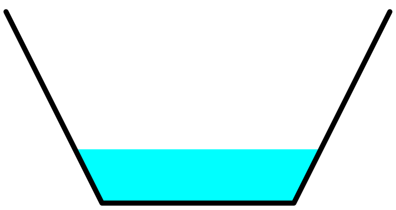
Summary for Reach 88: Roadside Swale

Inflow Area = 2.000 ac, 0.00% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 8.16 cfs @ 12.08 hrs, Volume= 0.535 af
Outflow = 8.09 cfs @ 12.09 hrs, Volume= 0.535 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.30 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.77 fps, Avg. Travel Time= 4.4 min

Peak Storage= 606 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.56'
Bank-Full Depth= 2.00' Flow Area= 6.0 sf, Capacity= 66.89 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 0.5 '/' Top Width= 4.00'
Length= 472.0' Slope= 0.0763 '/'
Inlet Invert= 2,207.00', Outlet Invert= 2,171.00'



Summary for Reach 91: Overland Flow

Inflow Area = 9.707 ac, 0.00% Impervious, Inflow Depth = 2.85" for 25-YEAR event
Inflow = 37.99 cfs @ 12.04 hrs, Volume= 2.309 af
Outflow = 37.68 cfs @ 12.05 hrs, Volume= 2.309 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.07 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 4.5 min

Peak Storage= 2,429 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 137.55 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 198.0' Slope= 0.0172 '/'
Inlet Invert= 1,889.40', Outlet Invert= 1,886.00'

‡

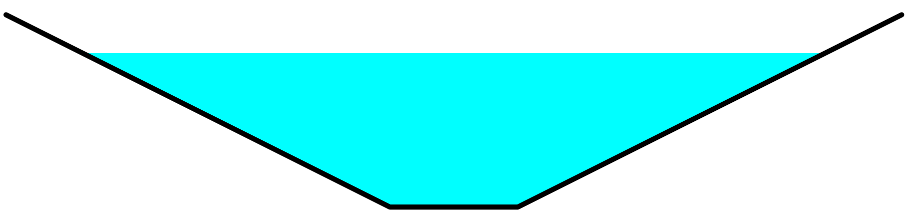
Summary for Reach 92: Channel Along RR Tracks

Inflow Area = 75.912 ac, 18.65% Impervious, Inflow Depth = 2.77" for 25-YEAR event
Inflow = 130.01 cfs @ 12.01 hrs, Volume= 17.533 af
Outflow = 126.51 cfs @ 12.03 hrs, Volume= 17.533 af, Atten= 3%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.75 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 9.7 min

Peak Storage= 12,576 cf @ 12.03 hrs
Average Depth at Peak Storage= 2.40'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 211.58 cfs

2.00' x 3.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 770.0' Slope= 0.0239 '/'
Inlet Invert= 1,848.40', Outlet Invert= 1,830.00'



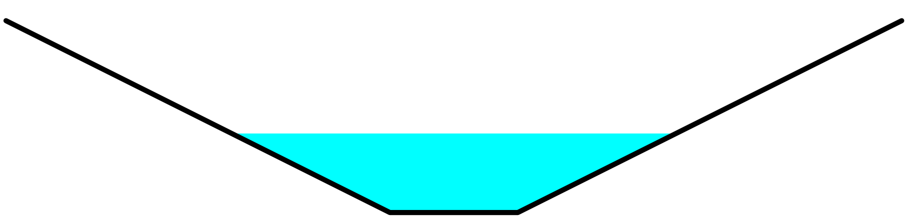
Summary for Reach 92a: Channel Along RR Tracks

Inflow Area = 9.707 ac, 0.00% Impervious, Inflow Depth = 2.85" for 25-YEAR event
Inflow = 37.68 cfs @ 12.05 hrs, Volume= 2.309 af
Outflow = 34.66 cfs @ 12.09 hrs, Volume= 2.309 af, Atten= 8%, Lag= 2.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.27 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 1.86 fps, Avg. Travel Time= 10.2 min

Peak Storage= 6,287 cf @ 12.09 hrs
Average Depth at Peak Storage= 1.24'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 248.24 cfs

2.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 1,137.0' Slope= 0.0329 '/'
Inlet Invert= 1,885.90', Outlet Invert= 1,848.50'



Summary for Reach 93R: Roadside Ditch

Inflow Area = 2.052 ac, 0.00% Impervious, Inflow Depth = 2.68" for 25-YEAR event
Inflow = 12.06 cfs @ 12.01 hrs, Volume= 0.459 af
Outflow = 12.03 cfs @ 12.01 hrs, Volume= 0.459 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.85 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.34 fps, Avg. Travel Time= 1.7 min

Peak Storage= 335 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.72'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 54.15 cfs

2.00' x 1.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 135.0' Slope= 0.0259 '/'
Inlet Invert= 1,894.50', Outlet Invert= 1,891.00'

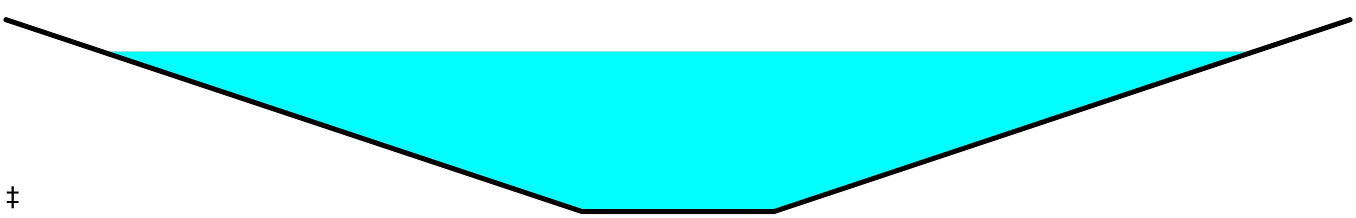
Summary for Reach 142R: Overland Flow

Inflow Area = 8.896 ac, 28.68% Impervious, Inflow Depth = 2.00" for 25-YEAR event
Inflow = 20.97 cfs @ 12.20 hrs, Volume= 1.480 af
Outflow = 20.84 cfs @ 12.23 hrs, Volume= 1.480 af, Atten= 1%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.38 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.72 fps, Avg. Travel Time= 6.5 min

Peak Storage= 2,457 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 0.30' Flow Area= 12.0 sf, Capacity= 31.71 cfs

10.00' x 0.30' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 280.0' Slope= 0.0299 '/'
Inlet Invert= 1,951.87', Outlet Invert= 1,943.50'



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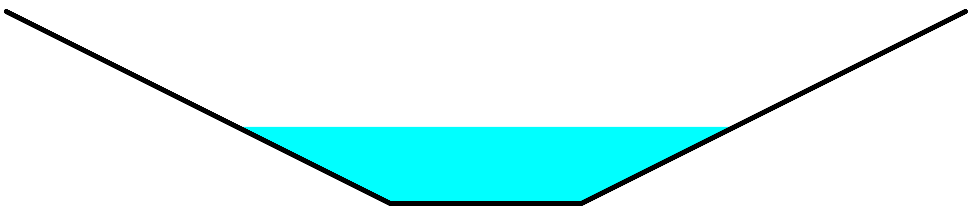
Summary for Reach 143R: Stone Lined Swale with ChkDams

Inflow Area = 50.207 ac, 25.31% Impervious, Inflow Depth > 2.53" for 25-YEAR event
Inflow = 20.68 cfs @ 12.02 hrs, Volume= 10.590 af
Outflow = 20.56 cfs @ 12.03 hrs, Volume= 10.589 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.16 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.76 fps, Avg. Travel Time= 3.2 min

Peak Storage= 962 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.80'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 142.04 cfs

2.00' x 2.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 335.0' Slope= 0.1403 '/'
Inlet Invert= 1,897.00', Outlet Invert= 1,850.00'



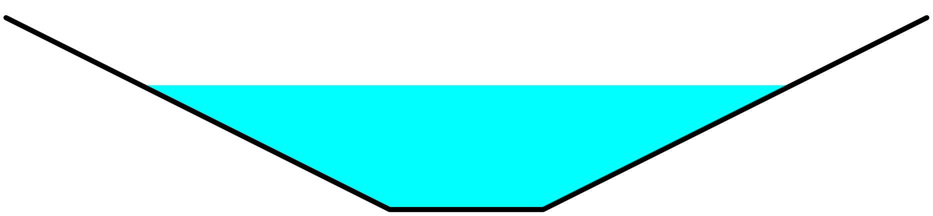
Summary for Reach I1: TRM SWALE

Inflow Area = 3.692 ac, 57.82% Impervious, Inflow Depth = 5.10" for 25-YEAR event
Inflow = 28.45 cfs @ 11.99 hrs, Volume= 1.568 af
Outflow = 28.30 cfs @ 12.00 hrs, Volume= 1.568 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.33 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 2.6 min

Peak Storage= 1,232 cf @ 12.00 hrs
Average Depth at Peak Storage= 1.62'
Bank-Full Depth= 2.50' Flow Area= 17.5 sf, Capacity= 74.54 cfs

2.00' x 2.50' deep channel, n= 0.035 TRM
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 145.0' Slope= 0.0069 '/'
Inlet Invert= 1,943.00', Outlet Invert= 1,942.00'



Summary for Reach I12: stone lined stream channel

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 4.30" for 25-YEAR event
Inflow = 120.43 cfs @ 12.01 hrs, Volume= 7.000 af
Outflow = 120.38 cfs @ 12.02 hrs, Volume= 7.000 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.61 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.10 fps, Avg. Travel Time= 1.1 min

Peak Storage= 1,778 cf @ 12.02 hrs
Average Depth at Peak Storage= 2.06'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 171.87 cfs

4.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 9.00'
Length= 142.0' Slope= 0.0486 '/'
Inlet Invert= 1,999.90', Outlet Invert= 1,993.00'

Summary for Reach I12a: stone lined stream channel

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 4.30" for 25-YEAR event
Inflow = 120.38 cfs @ 12.02 hrs, Volume= 7.000 af
Outflow = 120.34 cfs @ 12.02 hrs, Volume= 7.000 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.74 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.73 fps, Avg. Travel Time= 1.0 min

Peak Storage= 1,511 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.67'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 253.40 cfs

4.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 9.00'
Length= 160.0' Slope= 0.1056 '/'
Inlet Invert= 1,992.90', Outlet Invert= 1,976.00'

Summary for Reach I12b: stone lined stream channel

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 4.30" for 25-YEAR event
Inflow = 120.34 cfs @ 12.02 hrs, Volume= 7.000 af
Outflow = 119.94 cfs @ 12.03 hrs, Volume= 7.000 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.59 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.49 fps, Avg. Travel Time= 2.9 min

Peak Storage= 4,551 cf @ 12.03 hrs
Average Depth at Peak Storage= 1.79'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 222.71 cfs

4.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 9.00'
Length= 440.0' Slope= 0.0816 '/'
Inlet Invert= 1,975.90', Outlet Invert= 1,940.00'

Summary for Reach I21: stone lined stream channel

Inflow Area = 9.234 ac, 60.31% Impervious, Inflow Depth = 5.18" for 25-YEAR event
Inflow = 75.27 cfs @ 11.97 hrs, Volume= 3.987 af
Outflow = 69.88 cfs @ 12.00 hrs, Volume= 3.987 af, Atten= 7%, Lag= 1.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.42 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 1.84 fps, Avg. Travel Time= 14.4 min

Peak Storage= 13,155 cf @ 12.00 hrs
Average Depth at Peak Storage= 1.37'
Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 143.65 cfs

4.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.5 '/' Top Width= 10.00'
Length= 1,585.0' Slope= 0.0886 '/'
Inlet Invert= 2,169.00', Outlet Invert= 2,028.50'

Summary for Pond 1P: culvert

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 4.30" for 25-YEAR event
Inflow = 120.43 cfs @ 12.01 hrs, Volume= 7.000 af
Outflow = 120.43 cfs @ 12.01 hrs, Volume= 7.000 af, Atten= 0%, Lag= 0.0 min
Primary = 120.43 cfs @ 12.01 hrs, Volume= 7.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,024.72' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,020.00'	**54.0" Round CMP_Round 54"** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,020.00' / 2,017.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf

Primary OutFlow Max=120.31 cfs @ 12.01 hrs HW=2,024.72' TW=2,021.62' (Dynamic Tailwater)
↑—**1=CMP_Round 54"** (Inlet Controls 120.31 cfs @ 7.56 fps)

Summary for Pond 6P: Overflow Basin @ 8 tee

Inflow Area = 10.459 ac, 0.00% Impervious, Inflow Depth = 3.20" for 25-YEAR event
Inflow = 37.51 cfs @ 12.19 hrs, Volume= 2.788 af
Outflow = 33.77 cfs @ 12.27 hrs, Volume= 2.633 af, Atten= 10%, Lag= 4.9 min
Primary = 33.77 cfs @ 12.27 hrs, Volume= 2.633 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,964.71' @ 12.27 hrs Surf.Area= 8,781 sf Storage= 22,903 cf

Plug-Flow detention time= 58.8 min calculated for 2.632 af (94% of inflow)
Center-of-Mass det. time= 28.7 min (867.2 - 838.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,961.00'	25,500 cf	**surface storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,961.00	3,100	0	0
1,962.00	5,100	4,100	4,100
1,963.00	6,100	5,600	9,700
1,964.00	8,250	7,175	16,875
1,965.00	9,000	8,625	25,500

Device	Routing	Invert	Outlet Devices
#1	Primary	1,962.50'	**36.0" Round Culvert** L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,962.50' / 1,958.00' S= 0.0310 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	1,964.50'	**25.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67

2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=33.75 cfs @ 12.27 hrs HW=1,964.71' TW=0.00' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 28.20 cfs @ 5.06 fps)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 5.55 cfs @ 1.07 fps)

Summary for Pond 8P: NATURAL DEPRESSION

Inflow Area = 3.450 ac, 0.00% Impervious, Inflow Depth = 3.51" for 25-YEAR event
Inflow = 15.33 cfs @ 12.08 hrs, Volume= 1.009 af
Outflow = 0.67 cfs @ 14.30 hrs, Volume= 1.009 af, Atten= 96%, Lag= 133.0 min
Discarded = 0.23 cfs @ 14.30 hrs, Volume= 0.785 af
Primary = 0.44 cfs @ 14.30 hrs, Volume= 0.224 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,970.29' @ 14.30 hrs Surf.Area= 20,213 sf Storage= 27,607 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,116.5 min (1,949.9 - 833.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,967.50'	91,482 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,967.50	2,433	0	0
1,968.00	2,887	1,330	1,330
1,970.00	17,890	20,777	22,107
1,972.00	33,985	51,875	73,982
1,972.50	36,015	17,500	91,482

Device	Routing	Invert	Outlet Devices
#1	Primary	1,970.00'	**18.0" Round Culvert** L= 250.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,970.00' / 1,953.00' S= 0.0680 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Discarded	1,967.50'	**0.500 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.23 cfs @ 14.30 hrs HW=1,970.29' (Free Discharge)
—**2=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.44 cfs @ 14.30 hrs HW=1,970.29' TW=1,953.37' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 0.44 cfs @ 1.83 fps)

Summary for Pond 29P: cb29

Inflow Area = 0.582 ac, 15.87% Impervious, Inflow Depth = 4.02" for 25-YEAR event
Inflow = 4.10 cfs @ 11.97 hrs, Volume= 0.195 af
Outflow = 4.10 cfs @ 11.97 hrs, Volume= 0.195 af, Atten= 0%, Lag= 0.0 min
Primary = 4.10 cfs @ 11.97 hrs, Volume= 0.195 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,925.61' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,924.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,924.00' / 1,923.75' S= 0.0083 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,928.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.10 cfs @ 11.97 hrs HW=1,925.61' TW=1,925.37' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.10 cfs @ 2.32 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 57: 15" Steel Culvert

Inflow Area =	1.326 ac,	4.72% Impervious, Inflow Depth = 3.31"	for 25-YEAR event
Inflow =	5.62 cfs @	12.08 hrs, Volume=	0.365 af
Outflow =	5.62 cfs @	12.08 hrs, Volume=	0.365 af, Atten= 0%, Lag= 0.0 min
Primary =	5.62 cfs @	12.08 hrs, Volume=	0.365 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,006.01' @ 12.08 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,004.00'	**15.0" Round 15" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,004.00' / 2,000.00' S= 0.0667 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=5.62 cfs @ 12.08 hrs HW=2,006.01' TW=2,000.93' (Dynamic Tailwater)
↑—**1=15" Smooth Steel Culvert (old)** (Inlet Controls 5.49 cfs @ 4.47 fps)
└—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.13 cfs @ 0.27 fps)

Summary for Pond 58R: 24" HDPE Pipe

Inflow Area =	3.000 ac,	0.00% Impervious, Inflow Depth = 3.65"	for 25-YEAR event
Inflow =	19.95 cfs @	12.17 hrs, Volume=	0.913 af
Outflow =	19.95 cfs @	12.17 hrs, Volume=	0.913 af, Atten= 0%, Lag= 0.0 min
Primary =	19.95 cfs @	12.17 hrs, Volume=	0.913 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,224.74' @ 12.17 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,222.00'	**24.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,222.00' / 2,221.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,225.00'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=19.95 cfs @ 12.17 hrs HW=2,224.74' TW=2,220.07' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 19.95 cfs @ 6.35 fps)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 59: 32" Plastic Pipe

Inflow Area = 30.315 ac, 1.06% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 94.41 cfs @ 12.19 hrs, Volume= 8.102 af
Outflow = 94.41 cfs @ 12.19 hrs, Volume= 8.102 af, Atten= 0%, Lag= 0.0 min
Primary = 47.98 cfs @ 12.19 hrs, Volume= 6.935 af
Secondary = 46.43 cfs @ 12.19 hrs, Volume= 1.166 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,333.44' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,327.00'	**32.0" Round 32" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,327.00' / 2,324.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 5.59 sf
#2	Secondary	2,331.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=47.98 cfs @ 12.19 hrs HW=2,333.44' TW=2,326.41' (Dynamic Tailwater)
↑—**1=32" Plastic Culvert** (Inlet Controls 47.98 cfs @ 8.59 fps)

Secondary OutFlow Max=46.42 cfs @ 12.19 hrs HW=2,333.44' TW=2,322.77' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 46.42 cfs @ 4.75 fps)

Summary for Pond 60: 30" Steel Culvert

Inflow Area = 122.367 ac, 1.97% Impervious, Inflow Depth = 3.27" for 25-YEAR event
Inflow = 225.66 cfs @ 12.25 hrs, Volume= 33.343 af
Outflow = 225.66 cfs @ 12.25 hrs, Volume= 33.343 af, Atten= 0%, Lag= 0.0 min
Primary = 225.66 cfs @ 12.25 hrs, Volume= 33.343 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,024.74' @ 12.25 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,020.00'	**30.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,020.00' / 2,019.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Primary	2,021.00'	**15.0" Round Culvert** L= 20.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,021.00' / 2,020.00' S= 0.0500 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 1.23 sf
#3	Primary	2,024.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=225.63 cfs @ 12.25 hrs HW=2,024.74' TW=2,018.39' (Dynamic Tailwater)
- **1=Culvert** (Inlet Controls 44.17 cfs @ 9.00 fps)
- **2=Culvert** (Inlet Controls 9.21 cfs @ 7.50 fps)
- **3=Broad-Crested Rectangular Weir** (Weir Controls 172.26 cfs @ 2.32 fps)

Summary for Pond 67P: 24" Steel Culvert

Inflow Area = 4.195 ac, 7.34% Impervious, Inflow Depth = 3.41" for 25-YEAR event
Inflow = 20.87 cfs @ 12.03 hrs, Volume= 1.191 af
Outflow = 20.87 cfs @ 12.03 hrs, Volume= 1.191 af, Atten= 0%, Lag= 0.0 min
Primary = 20.87 cfs @ 12.03 hrs, Volume= 1.191 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,006.09' @ 12.03 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,003.00'	**24.0" Round 24" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,003.00' / 2,000.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=20.84 cfs @ 12.03 hrs HW=2,006.09' TW=2,000.92' (Dynamic Tailwater)
- **1=24" Smooth Steel Culvert (old)** (Inlet Controls 17.26 cfs @ 5.49 fps)
- **2=Broad-Crested Rectangular Weir** (Weir Controls 3.58 cfs @ 0.80 fps)

Summary for Pond 74: 12" CMP Culvert

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 3.76" for 25-YEAR event
Inflow = 23.01 cfs @ 11.99 hrs, Volume= 1.132 af
Outflow = 23.01 cfs @ 11.99 hrs, Volume= 1.132 af, Atten= 0%, Lag= 0.0 min
Primary = 23.01 cfs @ 11.99 hrs, Volume= 1.132 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,918.09' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,914.00'	**12.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 1,914.00' / 1,911.76' S= 0.0560 '/' Cc= 0.900 n= 0.025, Flow Area= 0.79 sf
#2	Primary	1,917.00'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=22.97 cfs @ 11.99 hrs HW=1,918.09' TW=1,912.11' (Dynamic Tailwater)
—**1=Culvert** (Barrel Controls 5.87 cfs @ 7.47 fps)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 17.10 cfs @ 3.15 fps)

Summary for Pond 74A: 16" CMP Culvert

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 3.76" for 25-YEAR event
Inflow = 23.02 cfs @ 11.98 hrs, Volume= 1.132 af
Outflow = 23.02 cfs @ 11.98 hrs, Volume= 1.132 af, Atten= 0%, Lag= 0.0 min
Primary = 23.02 cfs @ 11.98 hrs, Volume= 1.132 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,925.39' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,921.50'	**16.0" Round Culvert** L= 35.0' Ke= 0.500 Inlet / Outlet Invert= 1,921.50' / 1,920.00' S= 0.0429 '/' Cc= 0.900 n= 0.025, Flow Area= 1.40 sf
#2	Primary	1,924.50'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=22.98 cfs @ 11.98 hrs HW=1,925.38' TW=1,921.24' (Dynamic Tailwater)
—**1=Culvert** (Barrel Controls 10.91 cfs @ 7.82 fps)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 12.07 cfs @ 2.73 fps)

Summary for Pond 76A: culvert

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 3.76" for 25-YEAR event
Inflow = 22.97 cfs @ 11.99 hrs, Volume= 1.132 af
Outflow = 22.97 cfs @ 11.99 hrs, Volume= 1.132 af, Atten= 0%, Lag= 0.0 min
Primary = 22.97 cfs @ 11.99 hrs, Volume= 1.132 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 1,906.00' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,902.00'	**12.0" Round Culvert** L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,902.00' / 1,898.00' S= 0.0667 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf
#2	Primary	1,904.00'	**2.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=22.95 cfs @ 11.99 hrs HW=1,906.00' TW=1,902.14' (Dynamic Tailwater)
├─**1=Culvert** (Outlet Controls 4.26 cfs @ 5.42 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 18.69 cfs @ 4.67 fps)

Summary for Pond 77: 36" Steel Culvert

Inflow Area = 88.881 ac, 1.70% Impervious, Inflow Depth = 3.26" for 25-YEAR event
Inflow = 156.43 cfs @ 12.48 hrs, Volume= 24.133 af
Outflow = 156.43 cfs @ 12.48 hrs, Volume= 24.133 af, Atten= 0%, Lag= 0.0 min
Primary = 156.43 cfs @ 12.48 hrs, Volume= 24.133 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,176.51' @ 12.48 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,172.00'	**36.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 2,172.00' / 2,171.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	2,176.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=156.42 cfs @ 12.48 hrs HW=2,176.51' TW=2,171.91' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 59.09 cfs @ 8.36 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 97.33 cfs @ 1.89 fps)

Summary for Pond 79: 16" Steel Culvert

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 3.26" for 25-YEAR event
Inflow = 158.08 cfs @ 12.49 hrs, Volume= 24.667 af
Outflow = 158.08 cfs @ 12.49 hrs, Volume= 24.667 af, Atten= 0%, Lag= 0.0 min
Primary = 158.08 cfs @ 12.49 hrs, Volume= 24.667 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,058.67' @ 12.49 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,056.00'	**16.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,056.00' / 2,055.00' S= 0.0500 '/' Cc= 0.900

			n= 0.012, Flow Area= 1.40 sf
#2	Primary	2,058.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=158.06 cfs @ 12.49 hrs HW=2,058.67' TW=2,056.60' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 9.52 cfs @ 6.82 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 148.54 cfs @ 2.21 fps)

Summary for Pond 83: 24" HPDE Culvert

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 5.59 cfs @ 12.06 hrs, Volume= 0.347 af
Outflow = 5.59 cfs @ 12.06 hrs, Volume= 0.347 af, Atten= 0%, Lag= 0.0 min
Primary = 5.59 cfs @ 12.06 hrs, Volume= 0.347 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,361.17' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,360.00'	**24.0" Round 24" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,360.00' / 2,357.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,364.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=5.58 cfs @ 12.06 hrs HW=2,361.17' TW=2,347.04' (Dynamic Tailwater)
└─**1=24" Plastic Culvert** (Inlet Controls 5.58 cfs @ 2.91 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,360.00' TW=2,327.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 84: 24" HDPE Pipe

Inflow Area = 31.013 ac, 2.16% Impervious, Inflow Depth = 3.76" for 25-YEAR event
Inflow = 127.17 cfs @ 12.23 hrs, Volume= 9.712 af
Outflow = 127.17 cfs @ 12.23 hrs, Volume= 9.712 af, Atten= 0%, Lag= 0.0 min
Primary = 67.54 cfs @ 12.23 hrs, Volume= 8.284 af
Secondary = 59.63 cfs @ 12.23 hrs, Volume= 1.428 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,322.82' @ 12.23 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,315.00'	**36.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,315.00' / 2,312.00' S= 0.0500 '/' Cc= 0.900

			n= 0.011, Flow Area= 7.07 sf
#2	Secondary	2,320.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=67.53 cfs @ 12.23 hrs HW=2,322.82' TW=2,312.51' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 67.53 cfs @ 9.55 fps)

Secondary OutFlow Max=59.58 cfs @ 12.23 hrs HW=2,322.82' TW=2,301.80' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 59.58 cfs @ 5.29 fps)

Summary for Pond 85: 28" HDPE Pipe

Inflow Area = 4.281 ac, 0.54% Impervious, Inflow Depth = 7.21" for 25-YEAR event
Inflow = 72.44 cfs @ 12.20 hrs, Volume= 2.572 af
Outflow = 72.44 cfs @ 12.20 hrs, Volume= 2.572 af, Atten= 0%, Lag= 0.0 min
Primary = 44.06 cfs @ 12.20 hrs, Volume= 2.133 af
Secondary = 28.38 cfs @ 12.20 hrs, Volume= 0.439 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,301.83' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,295.00'	**30.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,295.00' / 2,292.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 4.91 sf
#2	Secondary	2,300.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=44.05 cfs @ 12.20 hrs HW=2,301.82' TW=2,292.32' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 44.05 cfs @ 8.97 fps)

Secondary OutFlow Max=28.30 cfs @ 12.20 hrs HW=2,301.82' TW=2,246.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 28.30 cfs @ 3.88 fps)

Summary for Pond 86: 24" HDPE Pipe

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 4.42" for 25-YEAR event
Inflow = 37.71 cfs @ 12.19 hrs, Volume= 1.599 af
Outflow = 37.71 cfs @ 12.19 hrs, Volume= 1.599 af, Atten= 0%, Lag= 0.0 min
Primary = 26.75 cfs @ 12.19 hrs, Volume= 1.488 af
Secondary = 10.96 cfs @ 12.19 hrs, Volume= 0.111 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,246.02' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**24.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,240.00' / 2,237.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,245.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=26.74 cfs @ 12.19 hrs HW=2,246.02' TW=2,237.34' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 26.74 cfs @ 8.51 fps)

Secondary OutFlow Max=10.90 cfs @ 12.19 hrs HW=2,246.02' TW=2,224.71' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 10.90 cfs @ 2.68 fps)

Summary for Pond 87: 18" Steel Culvert

Inflow Area = 2.000 ac, 0.00% Impervious, Inflow Depth = 3.21" for 25-YEAR event
Inflow = 8.16 cfs @ 12.08 hrs, Volume= 0.535 af
Outflow = 8.16 cfs @ 12.08 hrs, Volume= 0.535 af, Atten= 0%, Lag= 0.0 min
Primary = 8.16 cfs @ 12.08 hrs, Volume= 0.535 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,210.23' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,208.00'	**18.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,208.00' / 2,207.00' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=8.16 cfs @ 12.08 hrs HW=2,210.23' TW=2,207.56' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 8.16 cfs @ 4.62 fps)

Summary for Pond 90: 24" Steel Culvert

Inflow Area = 9.707 ac, 0.00% Impervious, Inflow Depth = 2.85" for 25-YEAR event
Inflow = 37.99 cfs @ 12.04 hrs, Volume= 2.309 af
Outflow = 37.99 cfs @ 12.04 hrs, Volume= 2.309 af, Atten= 0%, Lag= 0.0 min
Primary = 37.99 cfs @ 12.04 hrs, Volume= 2.309 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,893.85' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,890.00'	**35.0" W x 24.0" H, R=17.9"/55.1" Arch CMP_Arch_1/2 35x24** L= 25.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,890.00' / 1,889.50' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 4.63 sf

#2	Primary	1,895.00'	**50.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=37.95 cfs @ 12.04 hrs HW=1,893.85' TW=1,889.89' (Dynamic Tailwater)
↑—**1=CMP_Arch_1/2 35x24** (Inlet Controls 37.95 cfs @ 8.19 fps)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 122: 18" HDPE Storm

Inflow Area = 0.477 ac, 83.18% Impervious, Inflow Depth = 5.79" for 25-YEAR event
Inflow = 4.32 cfs @ 11.97 hrs, Volume= 0.230 af
Outflow = 4.32 cfs @ 11.97 hrs, Volume= 0.230 af, Atten= 0%, Lag= 0.0 min
Primary = 4.32 cfs @ 11.97 hrs, Volume= 0.230 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,949.09' @ 11.99 hrs
Flood Elev= 1,961.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,946.00'	**18.0" Round Culvert** L= 22.0' Ke= 0.500 Inlet / Outlet Invert= 1,946.00' / 1,945.89' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,949.33'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.84 cfs @ 11.97 hrs HW=1,948.97' TW=1,948.76' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.84 cfs @ 2.17 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 123: 18" HDPE Storm

Inflow Area = 0.667 ac, 80.73% Impervious, Inflow Depth = 5.73" for 25-YEAR event
Inflow = 6.01 cfs @ 11.97 hrs, Volume= 0.318 af
Outflow = 6.01 cfs @ 11.97 hrs, Volume= 0.318 af, Atten= 0%, Lag= 0.0 min
Primary = 6.01 cfs @ 11.97 hrs, Volume= 0.318 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,948.87' @ 11.99 hrs
Flood Elev= 1,961.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,945.89'	**18.0" Round Culvert** L= 124.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,945.89' / 1,945.27' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,949.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.77 cfs @ 11.97 hrs HW=1,948.76' TW=1,948.14' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 5.77 cfs @ 3.27 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond A1: A1 - OPEN SWALE

Inflow Area = 1.159 ac, 0.00% Impervious, Inflow Depth = 3.51" for 25-YEAR event
Inflow = 6.15 cfs @ 12.02 hrs, Volume= 0.339 af
Outflow = 6.10 cfs @ 12.03 hrs, Volume= 0.339 af, Atten= 1%, Lag= 0.7 min
Discarded = 0.03 cfs @ 12.03 hrs, Volume= 0.086 af
Primary = 6.07 cfs @ 12.03 hrs, Volume= 0.253 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,910.28' @ 12.03 hrs Surf.Area= 2,313 sf Storage= 2,818 cf

Plug-Flow detention time= 284.2 min calculated for 0.339 af (100% of inflow)
Center-of-Mass det. time= 284.3 min (1,112.9 - 828.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,904.50'	186 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 464 cf Overall x 40.0% Voids
#2	1,905.50'	139 cf	**FILTER MEDIA (Prismatic)** Listed below (Recalc) 928 cf Overall x 15.0% Voids
#3	1,907.50'	2,803 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		3,128 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,904.50	464	0	0
1,905.50	464	464	464

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,905.50	464	0	0
1,907.50	464	928	928

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,907.50	464	0	0
1,908.00	567	258	258
1,910.00	1,291	1,858	2,116
1,910.50	1,457	687	2,803

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,904.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,910.00'	**15.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.03 hrs HW=1,910.28' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=6.06 cfs @ 12.03 hrs HW=1,910.28' TW=1,907.35' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 6.06 cfs @ 1.43 fps)

Summary for Pond A2: A2 - OPEN SWALE

Inflow Area = 1.621 ac, 0.00% Impervious, Inflow Depth = 2.87" for 25-YEAR event
Inflow = 8.51 cfs @ 12.03 hrs, Volume= 0.388 af
Outflow = 8.49 cfs @ 12.04 hrs, Volume= 0.388 af, Atten= 0%, Lag= 0.4 min
Discarded = 0.02 cfs @ 12.04 hrs, Volume= 0.042 af
Primary = 8.47 cfs @ 12.04 hrs, Volume= 0.346 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,907.35' @ 12.04 hrs Surf.Area= 1,541 sf Storage= 1,302 cf

Plug-Flow detention time= 84.9 min calculated for 0.388 af (100% of inflow)
Center-of-Mass det. time= 85.0 min (919.5 - 834.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,902.50'	134 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 336 cf Overall x 40.0% Voids
#2	1,903.50'	101 cf	**FILTER BED (Prismatic)** Listed below (Recalc) 672 cf Overall x 15.0% Voids
#3	1,905.50'	2,316 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		2,551 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,902.50	336	0	0
1,903.50	336	336	336

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,903.50	336	0	0
1,905.50	336	672	672

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,905.50	336	0	0
1,906.00	428	191	191
1,908.00	1,080	1,508	1,699
1,908.50	1,386	617	2,316

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,902.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,907.00'	**15.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00

Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.02 cfs @ 12.04 hrs HW=1,907.35' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=8.46 cfs @ 12.04 hrs HW=1,907.35' TW=1,905.88' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 8.46 cfs @ 1.61 fps)

Summary for Pond A3: A3 - OPEN SWALE

Inflow Area = 2.379 ac, 0.00% Impervious, Inflow Depth = 2.90" for 25-YEAR event
Inflow = 12.57 cfs @ 12.03 hrs, Volume= 0.574 af
Outflow = 12.53 cfs @ 12.04 hrs, Volume= 0.574 af, Atten= 0%, Lag= 0.4 min
Discarded = 0.03 cfs @ 12.04 hrs, Volume= 0.073 af
Primary = 12.51 cfs @ 12.04 hrs, Volume= 0.501 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,905.88' @ 12.04 hrs Surf.Area= 2,269 sf Storage= 2,381 cf

Plug-Flow detention time= 119.7 min calculated for 0.574 af (100% of inflow)
Center-of-Mass det. time= 119.9 min (950.9 - 831.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,900.50'	206 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 514 cf Overall x 40.0% Voids
#2	1,901.50'	154 cf	**FILTER MEDIA (Prismatic)** Listed below (Recalc) 1,028 cf Overall x 15.0% Voids
#3	1,903.50'	2,895 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		3,255 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,900.50	514	0	0
1,901.50	514	514	514

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.50	514	0	0
1,903.50	514	1,028	1,028

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,903.50	514	0	0
1,904.00	613	282	282
1,906.00	1,283	1,896	2,178
1,906.50	1,585	717	2,895

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,900.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,905.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.04 hrs HW=1,905.88' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=12.50 cfs @ 12.04 hrs HW=1,905.88' TW=1,903.93' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 12.50 cfs @ 1.66 fps)

Summary for Pond A4: A4 - OPEN SWALE

Inflow Area = 2.923 ac, 0.00% Impervious, Inflow Depth = 2.73" for 25-YEAR event
Inflow = 15.43 cfs @ 12.04 hrs, Volume= 0.665 af
Outflow = 15.41 cfs @ 12.04 hrs, Volume= 0.665 af, Atten= 0%, Lag= 0.3 min
Discarded = 0.02 cfs @ 12.04 hrs, Volume= 0.051 af
Primary = 15.39 cfs @ 12.04 hrs, Volume= 0.614 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,903.93' @ 12.04 hrs Surf.Area= 1,617 sf Storage= 1,741 cf

Plug-Flow detention time= 73.6 min calculated for 0.665 af (100% of inflow)
Center-of-Mass det. time= 73.6 min (904.9 - 831.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,898.50'	137 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 343 cf Overall x 40.0% Voids
#2	1,899.50'	103 cf	**FILTER MEDIA (Prismatic)** Listed below (Recalc) 686 cf Overall x 15.0% Voids
#3	1,901.50'	2,105 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		2,345 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,898.50	343	0	0
1,899.50	343	343	343

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,899.50	343	0	0
1,901.50	343	686	686

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.50	343	0	0
1,902.00	425	192	192
1,904.00	949	1,374	1,566
1,904.50	1,207	539	2,105

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,898.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,903.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.02 cfs @ 12.04 hrs HW=1,903.93' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=15.39 cfs @ 12.04 hrs HW=1,903.93' TW=1,902.25' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 15.39 cfs @ 1.79 fps)

Summary for Pond A5: A5 - OPEN SWALE

Inflow Area = 4.411 ac, 0.00% Impervious, Inflow Depth = 2.89" for 25-YEAR event
Inflow = 23.40 cfs @ 12.03 hrs, Volume= 1.061 af
Outflow = 23.34 cfs @ 12.04 hrs, Volume= 1.061 af, Atten= 0%, Lag= 0.4 min
Discarded = 0.03 cfs @ 12.04 hrs, Volume= 0.079 af
Primary = 23.31 cfs @ 12.04 hrs, Volume= 0.982 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,902.25' @ 12.04 hrs Surf.Area= 2,340 sf Storage= 2,947 cf

Plug-Flow detention time= 81.4 min calculated for 1.061 af (100% of inflow)
Center-of-Mass det. time= 81.6 min (911.6 - 830.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,896.50'	138 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 346 cf Overall x 40.0% Voids
#2	1,897.50'	104 cf	**FILTER BED (Prismatic)** Listed below (Recalc) 692 cf Overall x 15.0% Voids
#3	1,899.50'	3,125 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		3,367 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,896.50	346	0	0
1,897.50	346	346	346

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,897.50	346	0	0
1,899.50	346	692	692

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,899.50	346	0	0
1,900.00	550	224	224
1,902.00	1,528	2,078	2,302
1,902.50	1,764	823	3,125

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,896.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,901.75'	**25.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.03 cfs @ 12.04 hrs HW=1,902.25' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=23.30 cfs @ 12.04 hrs HW=1,902.25' TW=1,898.18' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 23.30 cfs @ 1.85 fps)

Summary for Pond B: OPEN SWALE

Inflow Area = 3.361 ac, 0.00% Impervious, Inflow Depth = 3.51" for 25-YEAR event
Inflow = 16.67 cfs @ 12.04 hrs, Volume= 0.982 af
Outflow = 16.39 cfs @ 12.06 hrs, Volume= 0.982 af, Atten= 2%, Lag= 1.1 min
Discarded = 0.09 cfs @ 12.06 hrs, Volume= 0.256 af
Primary = 16.30 cfs @ 12.06 hrs, Volume= 0.726 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,868.35' @ 12.06 hrs Surf.Area= 7,829 sf Storage= 8,483 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 254.3 min (1,084.6 - 830.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,863.00'	595 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 1,488 cf Overall x 40.0% Voids
#2	1,864.00'	446 cf	**filter media (Prismatic)** Listed below (Recalc) 2,976 cf Overall x 15.0% Voids
#3	1,866.00'	8,167 cf	**surface storage (Prismatic)** Listed below (Recalc)
		9,209 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,863.00	1,488	0	0
1,864.00	1,488	1,488	1,488

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,864.00	1,488	0	0
1,866.00	1,488	2,976	2,976

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,866.00	1,488	0	0
1,867.00	2,798	2,143	2,143
1,868.00	4,500	3,649	5,792
1,868.50	5,000	2,375	8,167

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,863.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,868.00'	**30.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.09 cfs @ 12.06 hrs HW=1,868.35' (Free Discharge)
↑1=**Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=16.28 cfs @ 12.06 hrs HW=1,868.35' TW=1,850.75' (Dynamic Tailwater)
↑2=**Broad-Crested Rectangular Weir** (Weir Controls 16.28 cfs @ 1.54 fps)

Summary for Pond B1: bioretention @ 8 tee

Inflow Area = 10.459 ac, 0.00% Impervious, Inflow Depth = 3.61" for 25-YEAR event
Inflow = 37.98 cfs @ 12.17 hrs, Volume= 3.146 af
Outflow = 37.68 cfs @ 12.19 hrs, Volume= 3.146 af, Atten= 1%, Lag= 1.4 min
Discarded = 0.18 cfs @ 12.19 hrs, Volume= 0.358 af
Primary = 37.51 cfs @ 12.19 hrs, Volume= 2.788 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,966.19' @ 12.19 hrs Surf.Area= 15,176 sf Storage= 10,681 cf

Plug-Flow detention time= 68.7 min calculated for 3.146 af (100% of inflow)
Center-of-Mass det. time= 68.8 min (907.3 - 838.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,960.00'	1,800 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 4,500 cf Overall x 40.0% Voids
#2	1,961.00'	2,700 cf	**filter media (Prismatic)** Listed below (Recalc) 18,000 cf Overall x 15.0% Voids
#3	1,965.00'	12,150 cf	**surface storage (Prismatic)** Listed below (Recalc)
		16,650 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,960.00	4,500	0	0
1,961.00	4,500	4,500	4,500

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,961.00	4,500	0	0
1,965.00	4,500	18,000	18,000

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,965.00	4,500	0	0
1,966.00	5,600	5,050	5,050
1,967.00	8,600	7,100	12,150

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,960.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,965.50'	**25.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.18 cfs @ 12.19 hrs HW=1,966.19' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=37.50 cfs @ 12.19 hrs HW=1,966.19' TW=1,964.53' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 37.50 cfs @ 2.17 fps)

Summary for Pond B3: bioretention @ blvd

Inflow Area = 5.445 ac, 46.85% Impervious, Inflow Depth = 4.78" for 25-YEAR event
Inflow = 31.56 cfs @ 12.08 hrs, Volume= 2.167 af
Outflow = 21.40 cfs @ 12.20 hrs, Volume= 2.167 af, Atten= 32%, Lag= 7.2 min
Discarded = 0.43 cfs @ 12.20 hrs, Volume= 0.911 af
Primary = 20.97 cfs @ 12.20 hrs, Volume= 1.256 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,960.35' @ 12.20 hrs Surf.Area= 37,014 sf Storage= 28,745 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 242.4 min (1,046.5 - 804.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,954.00'	4,700 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 11,750 cf Overall x 40.0% Voids
#2	1,955.00'	7,050 cf	**filter media (Prismatic)** Listed below (Recalc) 47,000 cf Overall x 15.0% Voids
#3	1,959.00'	26,092 cf	**surface storage (Prismatic)** Listed below (Recalc)
		37,842 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,954.00	11,750	0	0
1,955.00	11,750	11,750	11,750

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,955.00	11,750	0	0
1,959.00	11,750	47,000	47,000

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,959.00	11,750	0	0
1,960.00	12,892	12,321	12,321
1,961.00	14,650	13,771	26,092

Device	Routing	Invert	Outlet Devices
#1	Primary	1,954.00'	**21.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,954.00' / 1,953.00' S= 0.0118 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Discarded	1,954.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	1,959.50'	**12.0" Horiz. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#4	Secondary	1,960.50'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.43 cfs @ 12.20 hrs HW=1,960.35' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.43 cfs)

Primary OutFlow Max=20.97 cfs @ 12.20 hrs HW=1,960.35' TW=1,954.95' (Dynamic Tailwater)
└─**1=Culvert** (Passes 20.97 cfs of 26.92 cfs potential flow)
  └─**3=Orifice/Grate** (Orifice Controls 20.97 cfs @ 4.45 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,954.00' TW=1,951.87' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond DP 10: Design Point 10

Inflow Area = 156.019 ac, 1.86% Impervious, Inflow Depth = 3.26" for 25-YEAR event
Inflow = 315.80 cfs @ 12.22 hrs, Volume= 42.337 af
Primary = 315.80 cfs @ 12.22 hrs, Volume= 42.337 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 11: Design Point 11

Inflow Area = 90.970 ac, 15.56% Impervious, Inflow Depth = 2.84" for 25-YEAR event
Inflow = 131.90 cfs @ 12.03 hrs, Volume= 21.558 af
Primary = 131.90 cfs @ 12.03 hrs, Volume= 21.558 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 12: Design Point 12

Inflow Area = 5.404 ac, 15.82% Impervious, Inflow Depth = 3.88" for 25-YEAR event
Inflow = 32.17 cfs @ 12.00 hrs, Volume= 1.749 af
Primary = 32.17 cfs @ 12.00 hrs, Volume= 1.749 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 16: Design Point 16 24" CMP

Inflow Area = 18.370 ac, 4.45% Impervious, Inflow Depth = 3.25" for 25-YEAR event
Inflow = 50.38 cfs @ 12.23 hrs, Volume= 4.970 af
Primary = 50.38 cfs @ 12.23 hrs, Volume= 4.970 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond F1: Open Swale-F

Inflow Area = 2.052 ac, 0.00% Impervious, Inflow Depth = 3.61" for 25-YEAR event
Inflow = 12.36 cfs @ 11.99 hrs, Volume= 0.617 af
Outflow = 12.12 cfs @ 12.01 hrs, Volume= 0.617 af, Atten= 2%, Lag= 1.0 min
Discarded = 0.05 cfs @ 12.01 hrs, Volume= 0.158 af
Primary = 12.06 cfs @ 12.01 hrs, Volume= 0.459 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,895.87' @ 12.01 hrs Surf.Area= 4,649 sf Storage= 5,419 cf

Plug-Flow detention time= 265.7 min calculated for 0.617 af (100% of inflow)
Center-of-Mass det. time= 265.8 min (1,089.5 - 823.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,890.50'	317 cf	**Stone Underdrain (Prismatic)** Listed below (Recalc) 792 cf Overall x 40.0% Voids
#2	1,891.50'	238 cf	**Filter Bed (Prismatic)** Listed below 1,584 cf Overall x 15.0% Voids
#3	1,893.50'	6,962 cf	**surface storage (Prismatic)** Listed below (Recalc)
		7,516 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,890.50	792	0	0
1,891.50	792	792	792

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,891.50	792	0	0
1,893.50	792	1,584	1,584

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,893.50	792	0	0
1,894.00	1,526	580	580
1,896.00	3,175	4,701	5,281
1,896.50	3,550	1,681	6,962

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,890.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,895.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.05 cfs @ 12.01 hrs HW=1,895.87' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=12.05 cfs @ 12.01 hrs HW=1,895.87' TW=1,895.22' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 12.05 cfs @ 1.64 fps)

Summary for Pond G: OPEN SWALE

Inflow Area = 3.700 ac, 0.00% Impervious, Inflow Depth = 3.61" for 25-YEAR event
Inflow = 21.12 cfs @ 12.01 hrs, Volume= 1.113 af
Outflow = 20.81 cfs @ 12.02 hrs, Volume= 1.113 af, Atten= 1%, Lag= 0.9 min
Discarded = 0.13 cfs @ 12.02 hrs, Volume= 0.341 af
Primary = 20.68 cfs @ 12.02 hrs, Volume= 0.772 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,903.80' @ 12.02 hrs Surf.Area= 11,604 sf Storage= 10,069 cf

Plug-Flow detention time= 244.0 min calculated for 1.113 af (100% of inflow)

Center-of-Mass det. time= 244.1 min (1,069.2 - 825.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,899.00'	1,146 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 2,865 cf Overall x 40.0% Voids
#2	1,900.00'	860 cf	**filter media (Prismatic)** Listed below (Recalc) 5,730 cf Overall x 15.0% Voids
#3	1,902.00'	12,721 cf	**surface storage (Prismatic)** Listed below (Recalc)
		14,726 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,899.00	2,865	0	0
1,900.00	2,865	2,865	2,865

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,900.00	2,865	0	0
1,902.00	2,865	5,730	5,730

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,902.00	2,865	0	0
1,903.00	4,783	3,824	3,824
1,904.00	6,154	5,469	9,293
1,904.50	7,558	3,428	12,721

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,899.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,903.50'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.13 cfs @ 12.02 hrs HW=1,903.80' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=20.65 cfs @ 12.02 hrs HW=1,903.80' TW=1,897.80' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 20.65 cfs @ 1.40 fps)

Summary for Pond I18: Manhole

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 4.30" for 25-YEAR event
Inflow = 120.43 cfs @ 12.01 hrs, Volume= 7.000 af
Outflow = 120.43 cfs @ 12.01 hrs, Volume= 7.000 af, Atten= 0%, Lag= 0.0 min
Primary = 120.43 cfs @ 12.01 hrs, Volume= 7.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,010.62' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,005.90'	**54.0" Round Culvert** L= 304.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,005.90' / 2,000.00' S= 0.0194 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf

Primary OutFlow Max=120.31 cfs @ 12.01 hrs HW=2,010.62' TW=2,001.96' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 120.31 cfs @ 7.56 fps)

Summary for Pond I19: Manhole

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 4.30" for 25-YEAR event
Inflow = 120.43 cfs @ 12.01 hrs, Volume= 7.000 af
Outflow = 120.43 cfs @ 12.01 hrs, Volume= 7.000 af, Atten= 0%, Lag= 0.0 min
Primary = 120.43 cfs @ 12.01 hrs, Volume= 7.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,021.62' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,016.90'	**54.0" Round Culvert** L= 348.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,016.90' / 2,006.00' S= 0.0313 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf

Primary OutFlow Max=120.31 cfs @ 12.01 hrs HW=2,021.62' TW=2,010.62' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 120.31 cfs @ 7.56 fps)

Summary for Pond I2: 30" HDPE Storm

Inflow Area = 3.692 ac, 57.82% Impervious, Inflow Depth = 5.10" for 25-YEAR event
Inflow = 28.45 cfs @ 11.99 hrs, Volume= 1.568 af
Outflow = 28.45 cfs @ 11.99 hrs, Volume= 1.568 af, Atten= 0%, Lag= 0.0 min
Primary = 28.45 cfs @ 11.99 hrs, Volume= 1.568 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,946.84' @ 11.99 hrs
Flood Elev= 1,955.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,943.90'	**30.0" Round Culvert** L= 170.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,943.90' / 1,943.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=28.41 cfs @ 11.99 hrs HW=1,946.83' TW=1,944.62' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 28.41 cfs @ 6.21 fps)

Summary for Pond I22: Manhole- 54" HDPE Storm

Inflow Area = 9.234 ac, 60.31% Impervious, Inflow Depth = 5.18" for 25-YEAR event
Inflow = 75.27 cfs @ 11.97 hrs, Volume= 3.987 af
Outflow = 75.27 cfs @ 11.97 hrs, Volume= 3.987 af, Atten= 0%, Lag= 0.0 min
Primary = 75.27 cfs @ 11.97 hrs, Volume= 3.987 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,173.99' @ 11.97 hrs
Flood Elev= 2,182.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,170.00'	**54.0" Round CMP_Round 54"** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,170.00' / 2,169.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf
#2	Primary	2,182.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=75.24 cfs @ 11.97 hrs HW=2,173.99' TW=2,170.33' (Dynamic Tailwater)
└─**1=CMP_Round 54"** (Barrel Controls 75.24 cfs @ 6.71 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I23: Manhole -30" HDPE Storm

Inflow Area = 3.957 ac, 45.04% Impervious, Inflow Depth = 4.79" for 25-YEAR event
Inflow = 29.96 cfs @ 11.97 hrs, Volume= 1.580 af
Outflow = 29.96 cfs @ 11.97 hrs, Volume= 1.580 af, Atten= 0%, Lag= 0.0 min
Primary = 29.96 cfs @ 11.97 hrs, Volume= 1.580 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,186.58' @ 11.97 hrs
Flood Elev= 2,189.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,183.72'	**30.0" Round Culvert** L= 171.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,183.72' / 2,176.64' S= 0.0414 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,189.19'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=29.90 cfs @ 11.97 hrs HW=2,186.57' TW=2,173.98' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 29.90 cfs @ 6.09 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I24: 30" HDPE Storm

Inflow Area = 3.957 ac, 45.04% Impervious, Inflow Depth = 4.79" for 25-YEAR event
Inflow = 29.96 cfs @ 11.97 hrs, Volume= 1.580 af
Outflow = 29.96 cfs @ 11.97 hrs, Volume= 1.580 af, Atten= 0%, Lag= 0.0 min
Primary = 29.96 cfs @ 11.97 hrs, Volume= 1.580 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,191.89' @ 11.97 hrs
Flood Elev= 2,194.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,189.03'	**30.0" Round Culvert** L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,189.03' / 2,183.82' S= 0.0827 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,194.48'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=29.90 cfs @ 11.97 hrs HW=2,191.88' TW=2,186.57' (Dynamic Tailwater)
1=Culvert (Inlet Controls 29.90 cfs @ 6.09 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond I25: 30" HDPE Storm

Inflow Area = 3.059 ac, 51.35% Impervious, Inflow Depth = 4.95" for 25-YEAR event
Inflow = 23.35 cfs @ 11.97 hrs, Volume= 1.262 af
Outflow = 23.35 cfs @ 11.97 hrs, Volume= 1.262 af, Atten= 0%, Lag= 0.0 min
Primary = 23.35 cfs @ 11.97 hrs, Volume= 1.262 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,193.89' @ 11.97 hrs
Flood Elev= 2,205.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,191.50'	**30.0" Round Culvert** L= 253.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,191.50' / 2,189.13' S= 0.0094 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,205.80'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=23.31 cfs @ 11.97 hrs HW=2,193.88' TW=2,191.88' (Dynamic Tailwater)
1=Culvert (Outlet Controls 23.31 cfs @ 6.20 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond I26: 30" HDPE Storm

Inflow Area = 2.407 ac, 48.55% Impervious, Inflow Depth = 4.88" for 25-YEAR event
Inflow = 18.85 cfs @ 11.97 hrs, Volume= 0.979 af
Outflow = 18.85 cfs @ 11.97 hrs, Volume= 0.979 af, Atten= 0%, Lag= 0.0 min
Primary = 18.85 cfs @ 11.97 hrs, Volume= 0.979 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,194.68' @ 11.97 hrs
Flood Elev= 2,208.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,191.80'	**30.0" Round Culvert** L= 201.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,191.80' / 2,191.60' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

#2	Primary	2,195.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=18.67 cfs @ 11.97 hrs HW=2,194.67' TW=2,193.88' (Dynamic Tailwater)
1=**Culvert** (Outlet Controls 18.67 cfs @ 4.15 fps)
2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I27: 30" HDPE Storm

Inflow Area = 2.129 ac, 53.13% Impervious, Inflow Depth = 5.01" for 25-YEAR event
Inflow = 16.94 cfs @ 11.97 hrs, Volume= 0.888 af
Outflow = 16.94 cfs @ 11.97 hrs, Volume= 0.888 af, Atten= 0%, Lag= 0.0 min
Primary = 16.94 cfs @ 11.97 hrs, Volume= 0.888 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,195.18' @ 11.98 hrs
Flood Elev= 2,208.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,192.00'	**30.0" Round Culvert** L= 98.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,192.00' / 2,191.90' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,208.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.69 cfs @ 11.97 hrs HW=2,195.17' TW=2,194.67' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 16.69 cfs @ 3.40 fps)
2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I28: 30" HDPE Storm

Inflow Area = 1.459 ac, 77.51% Impervious, Inflow Depth = 5.65" for 25-YEAR event
Inflow = 12.66 cfs @ 11.97 hrs, Volume= 0.687 af
Outflow = 12.66 cfs @ 11.97 hrs, Volume= 0.687 af, Atten= 0%, Lag= 0.0 min
Primary = 12.66 cfs @ 11.97 hrs, Volume= 0.687 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,195.52' @ 11.98 hrs
Flood Elev= 2,197.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,192.30'	**30.0" Round Culvert** L= 236.0' Ke= 0.500 Inlet / Outlet Invert= 2,192.30' / 2,192.07' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,197.80'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.07 cfs @ 11.97 hrs HW=2,195.48' TW=2,195.16' (Dynamic Tailwater)
1=**Culvert** (Outlet Controls 12.07 cfs @ 2.50 fps)
2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I29: Manhole

Inflow Area =	1.039 ac,100.00% Impervious,	Inflow Depth = 6.26"	for 25-YEAR event	
Inflow =	9.63 cfs @	11.97 hrs, Volume=	0.542 af	
Outflow =	9.63 cfs @	11.97 hrs, Volume=	0.542 af,	Atten= 0%, Lag= 0.0 min
Primary =	9.63 cfs @	11.97 hrs, Volume=	0.542 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,195.68' @ 11.98 hrs
Flood Elev= 2,208.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,192.50'	**30.0" Round Culvert** L= 98.0' Ke= 0.500 Inlet / Outlet Invert= 2,192.50' / 2,192.40' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=8.46 cfs @ 11.97 hrs HW=2,195.60' TW=2,195.48' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 8.46 cfs @ 1.72 fps)

Summary for Pond I3: 30" HDPE Storm

Inflow Area =	3.323 ac, 53.14% Impervious,	Inflow Depth = 4.97"	for 25-YEAR event	
Inflow =	25.16 cfs @	11.99 hrs, Volume=	1.375 af	
Outflow =	25.16 cfs @	11.99 hrs, Volume=	1.375 af,	Atten= 0%, Lag= 0.0 min
Primary =	25.16 cfs @	11.99 hrs, Volume=	1.375 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,948.25' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,945.17'	**30.0" Round Culvert** L= 231.0' Ke= 0.500 Inlet / Outlet Invert= 1,945.17' / 1,944.02' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	1,949.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=25.15 cfs @ 11.99 hrs HW=1,948.25' TW=1,946.84' (Dynamic Tailwater)
├─**1=Culvert** (Outlet Controls 25.15 cfs @ 5.31 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I30: 30" HDPE Storm

Inflow Area =	1.039 ac,100.00% Impervious,	Inflow Depth = 6.26"	for 25-YEAR event	
Inflow =	9.63 cfs @	11.97 hrs, Volume=	0.542 af	
Outflow =	9.63 cfs @	11.97 hrs, Volume=	0.542 af,	Atten= 0%, Lag= 0.0 min
Primary =	9.63 cfs @	11.97 hrs, Volume=	0.542 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,196.01' @ 11.98 hrs
Flood Elev= 2,204.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,194.08'	**30.0" Round Culvert** L= 79.0' Ke= 0.500 Inlet / Outlet Invert= 2,194.08' / 2,194.00' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,199.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.92 cfs @ 11.97 hrs HW=2,195.94' TW=2,195.60' (Dynamic Tailwater)
1=Culvert (Outlet Controls 8.92 cfs @ 3.16 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond I31: 36" HDPE Storm

Inflow Area = 2.463 ac, 39.52% Impervious, Inflow Depth = 4.58" for 25-YEAR event
Inflow = 19.27 cfs @ 11.97 hrs, Volume= 0.939 af
Outflow = 19.27 cfs @ 11.97 hrs, Volume= 0.939 af, Atten= 0%, Lag= 0.0 min
Primary = 19.27 cfs @ 11.97 hrs, Volume= 0.939 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,174.31' @ 11.97 hrs
Flood Elev= 2,180.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,170.50'	**36.0" Round Culvert** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,170.50' / 2,170.35' S= 0.0027 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=19.27 cfs @ 11.97 hrs HW=2,174.31' TW=2,173.99' (Dynamic Tailwater)
1=Culvert (Inlet Controls 19.27 cfs @ 2.73 fps)

Summary for Pond I32: 30" HDPE Storm

Inflow Area = 2.463 ac, 39.52% Impervious, Inflow Depth = 4.58" for 25-YEAR event
Inflow = 19.27 cfs @ 11.97 hrs, Volume= 0.939 af
Outflow = 19.27 cfs @ 11.97 hrs, Volume= 0.939 af, Atten= 0%, Lag= 0.0 min
Primary = 19.27 cfs @ 11.97 hrs, Volume= 0.939 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,174.96' @ 11.98 hrs
Flood Elev= 2,180.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,171.00'	**30.0" Round Culvert** L= 119.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,171.00' / 2,170.41' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,180.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=18.95 cfs @ 11.97 hrs HW=2,174.95' TW=2,174.31' (Dynamic Tailwater)
1=Culvert (Inlet Controls 18.95 cfs @ 3.86 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond I33: 24" HDPE Storm

Inflow Area = 1.999 ac, 39.27% Impervious, Inflow Depth = 4.56" for 25-YEAR event
Inflow = 15.58 cfs @ 11.97 hrs, Volume= 0.759 af
Outflow = 15.58 cfs @ 11.97 hrs, Volume= 0.759 af, Atten= 0%, Lag= 0.0 min
Primary = 15.58 cfs @ 11.97 hrs, Volume= 0.759 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,175.45' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,172.00'	**30.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,172.00' / 2,171.13' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,176.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=15.49 cfs @ 11.97 hrs HW=2,175.43' TW=2,174.95' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 15.49 cfs @ 3.16 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I4: 15" HDPE Storm

Inflow Area = 0.369 ac,100.00% Impervious, Inflow Depth = 6.26" for 25-YEAR event
Inflow = 3.42 cfs @ 11.97 hrs, Volume= 0.193 af
Outflow = 3.42 cfs @ 11.97 hrs, Volume= 0.193 af, Atten= 0%, Lag= 0.0 min
Primary = 3.42 cfs @ 11.97 hrs, Volume= 0.193 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,952.47' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,951.50'	**15.0" Round Culvert** L= 140.0' Ke= 0.500 Inlet / Outlet Invert= 1,951.50' / 1,950.00' S= 0.0107 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.41 cfs @ 11.97 hrs HW=1,952.47' TW=1,946.76' (Dynamic Tailwater)
└—**1=Culvert** (Inlet Controls 3.41 cfs @ 3.35 fps)

Summary for Pond I6: Manhole

Inflow Area = 8.896 ac, 28.68% Impervious, Inflow Depth = 2.00" for 25-YEAR event
Inflow = 20.97 cfs @ 12.20 hrs, Volume= 1.480 af
Outflow = 20.97 cfs @ 12.20 hrs, Volume= 1.480 af, Atten= 0%, Lag= 0.0 min
Primary = 20.97 cfs @ 12.20 hrs, Volume= 1.480 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,954.95' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,952.90'	**36.0" Round Culvert** L= 186.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 1,952.90' / 1,951.97' S= 0.0050 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=20.97 cfs @ 12.20 hrs HW=1,954.95' TW=1,952.12' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 20.97 cfs @ 5.74 fps)

Summary for Pond IP: P2

Inflow Area = 46.508 ac, 27.33% Impervious, Inflow Depth = 3.85" for 25-YEAR event
Inflow = 233.75 cfs @ 12.02 hrs, Volume= 14.914 af
Outflow = 10.39 cfs @ 13.98 hrs, Volume= 9.818 af, Atten= 96%, Lag= 117.4 min
Primary = 10.39 cfs @ 13.98 hrs, Volume= 9.818 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 1,937.00' Surf.Area= 47,921 sf Storage= 444,293 cf
Peak Elev= 1,942.64' @ 13.98 hrs Surf.Area= 104,717 sf Storage= 863,457 cf (419,164 cf above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= 425.9 min (1,232.1 - 806.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,910.00'	959,989 cf	**Storage above Perm Pool (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,910.00	685	100.0	0	0	685
1,912.00	1,221	150.0	1,880	1,880	1,711
1,914.00	2,042	190.0	3,228	5,108	2,845
1,916.00	3,114	250.0	5,118	10,227	4,991
1,918.00	5,151	450.0	8,180	18,407	16,154
1,920.00	8,098	627.0	13,138	31,545	31,362
1,922.00	10,863	680.0	18,893	50,439	37,027
1,924.00	14,370	830.0	25,151	75,590	55,115
1,926.00	18,615	1,000.0	32,894	108,484	79,939
1,928.00	22,653	1,022.0	41,202	149,686	84,016
1,930.00	26,948	1,062.0	49,539	199,224	90,969
1,932.00	31,296	1,090.0	58,190	257,414	96,225
1,934.00	35,715	1,115.0	66,962	324,377	101,134
1,936.00	40,228	1,140.0	75,898	400,275	106,156
1,938.00	56,286	1,229.0	96,066	496,341	123,100
1,939.00	70,553	1,304.0	63,285	559,626	138,271
1,940.00	74,969	1,432.0	72,750	632,376	166,173
1,942.00	93,060	2,050.0	167,703	800,079	337,449
1,942.25	97,168	2,034.0	23,777	823,856	342,674
1,943.00	111,843	1,898.0	78,315	902,170	385,254
1,943.50	119,472	1,918.0	57,818	959,989	391,402

Device	Routing	Invert	Outlet Devices
#1	Primary	1,940.40'	**18.0" Round Culvert** L= 130.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,940.40' / 1,937.00' S= 0.0262 '/' Cc= 0.900

			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,943.00'	**25.0' long x 20.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.39 cfs @ 13.98 hrs HW=1,942.64' TW=1,937.10' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 10.39 cfs @ 5.88 fps)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points x 2
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 9S: Subcatchment 9 Runoff Area=1,465,881 sf 1.47% Impervious Runoff Depth=4.46"
Flow Length=2,033' Tc=21.6 min CN=70 Runoff=159.85 cfs 12.519 af

Subcatchment 10S: Subcatchment 10 Runoff Area=1,371,524 sf 2.87% Impervious Runoff Depth=4.58"
Flow Length=2,845' Tc=25.8 min CN=71 Runoff=138.06 cfs 12.015 af

Subcatchment 11A: Subcatchment 11A Runoff Area=57,739 sf 4.72% Impervious Runoff Depth=4.58"
Flow Length=480' Tc=15.3 min CN=71 Runoff=7.78 cfs 0.506 af

Subcatchment 11B: Subcatchment 11B Runoff Area=104,152 sf 18.70% Impervious Runoff Depth=5.27"
Flow Length=486' Tc=17.9 min CN=77 Runoff=14.79 cfs 1.051 af

Subcatchment 11S: Subcatchment 11 Runoff Area=182,734 sf 7.34% Impervious Runoff Depth=4.69"
Flow Length=984' Tc=11.5 min CN=72 Runoff=28.61 cfs 1.641 af

Subcatchment 12A: Subcatchment 12A Runoff Area=550,450 sf 11.44% Impervious Runoff Depth=5.04"
Flow Length=2,110' Tc=6.4 min CN=75 Runoff=109.78 cfs 5.309 af

Subcatchment 12B: Subcatchment 12B Runoff Area=655,932 sf 0.00% Impervious Runoff Depth=4.46"
Flow Length=1,700' Tc=58.7 min CN=70 Runoff=36.53 cfs 5.602 af

Subcatchment 27A: SUB27A Runoff Area=131,978 sf 10.22% Impervious Runoff Depth=5.04"
Flow Length=1,114' Tc=7.3 min CN=75 Runoff=25.49 cfs 1.273 af

Subcatchment 27S: Subcatchment 27 Runoff Area=78,054 sf 25.27% Impervious Runoff Depth=5.51"
Flow Length=400' Tc=12.9 min CN=79 Runoff=13.45 cfs 0.822 af

Subcatchment 28S: Subcatchment 28 Runoff Area=141,352 sf 0.00% Impervious Runoff Depth=4.46"
Flow Length=818' Tc=36.8 min CN=70 Runoff=10.96 cfs 1.207 af

Subcatchment 29S: SUB27A Runoff Area=25,355 sf 15.87% Impervious Runoff Depth=5.39"
Flow Length=248' Tc=6.0 min CN=78 Runoff=5.42 cfs 0.261 af

Subcatchment 61S: Hotel Roof Runoff Area=15,005 sf 100.00% Impervious Runoff Depth=7.76"
Tc=6.0 min CN=98 Runoff=3.93 cfs 0.223 af

Subcatchment 67S: W. top front of hotel Runoff Area=15,005 sf 100.00% Impervious Runoff Depth=7.76"
Tc=6.0 min CN=98 Runoff=3.93 cfs 0.223 af

Subcatchment 70A: (new Subcat) Runoff Area=20,212 sf 40.57% Impervious Runoff Depth=6.10"
Flow Length=207' Tc=6.0 min CN=84 Runoff=4.73 cfs 0.236 af

Subcatchment 70B: (new Subcat) Runoff Area=29,474 sf 30.81% Impervious Runoff Depth=5.74"
Flow Length=235' Tc=6.0 min CN=81 Runoff=6.61 cfs 0.324 af

Subcatchment 70C: (new Subcat) Runoff Area=57,593 sf 43.60% Impervious Runoff Depth=6.10"
Tc=6.0 min CN=84 Runoff=13.49 cfs 0.672 af

Subcatchment 100a: Hole 4 (110) PR Runoff Area=50,494 sf 0.00% Impervious Runoff Depth=4.81"
Flow Length=419' Tc=10.5 min CN=73 Runoff=8.37 cfs 0.465 af

Subcatchment 100b: Hole 4 (110) PR Runoff Area=20,138 sf 0.00% Impervious Runoff Depth=4.81"
Flow Length=419' Tc=10.5 min CN=73 Runoff=3.34 cfs 0.185 af

Subcatchment 100c: Hole 4 (110) PR Runoff Area=33,000 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=419' Tc=10.5 min CN=74 Runoff=5.59 cfs 0.311 af

Subcatchment 100d: Hole 4 (110) PR Runoff Area=23,704 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=419' Tc=10.5 min CN=74 Runoff=4.01 cfs 0.223 af

Subcatchment 100e: Hole 4 (110) PR Runoff Area=64,786 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=419' Tc=10.5 min CN=74 Runoff=10.97 cfs 0.610 af

Subcatchment 101: Land east of irrigation pond Runoff Area=38,708 sf 19.62% Impervious Runoff Depth=5.51"
Flow Length=294' Tc=6.0 min CN=79 Runoff=8.41 cfs 0.408 af

Subcatchment 102: Pool House and Pool (102) Runoff Area=16,073 sf 100.00% Impervious Runoff Depth=7.76"
Tc=6.0 min CN=98 Runoff=4.21 cfs 0.239 af

Subcatchment 103: Pool parking lot and tennis Runoff Area=115,694 sf 46.21% Impervious Runoff Depth=6.21"
Flow Length=602' Tc=8.8 min CN=85 Runoff=25.03 cfs 1.375 af

Subcatchment 104: Holes 7 &8 Runoff Area=455,573 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=1,031' Tc=23.7 min CN=74 Runoff=51.77 cfs 4.293 af

Subcatchment 108: Front of Road to 8 -23 (108) Runoff Area=20,760 sf 83.18% Impervious Runoff Depth=7.28"
Flow Length=482' Tc=6.0 min CN=94 Runoff=5.36 cfs 0.289 af

Subcatchment 109: Front of Road to 8 -23 (109) Runoff Area=8,280 sf 74.58% Impervious Runoff Depth=7.04"
Flow Length=358' Tc=6.0 min CN=92 Runoff=2.11 cfs 0.112 af

Subcatchment 111: Front of Hole 4 (111) PR Runoff Area=89,380 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=393' Tc=7.7 min CN=74 Runoff=16.69 cfs 0.842 af

Subcatchment 114: Behind Townhomes Runoff Area=150,301 sf 0.00% Impervious Runoff Depth=4.81"
Flow Length=930' Tc=15.7 min CN=73 Runoff=20.95 cfs 1.383 af

Subcatchment 115: Land between buildings 17 Runoff Area=460,843 sf 9.33% Impervious Runoff Depth=5.16"
Flow Length=809' Tc=12.9 min CN=76 Runoff=75.01 cfs 4.547 af

Subcatchment 117: Rest of Road to 8 -23 (117) Runoff Area=237,198 sf 46.85% Impervious Runoff Depth=6.21"
Flow Length=930' Slope=0.0600 '/' Tc=16.3 min CN=85 Runoff=40.53 cfs 2.819 af

Subcatchment 119: Green of Hole 3 & tee of Hole Runoff Area=146,387 sf 0.00% Impervious Runoff Depth=4.81"
Flow Length=727' Tc=12.4 min CN=73 Runoff=22.73 cfs 1.347 af

Subcatchment 123S: Land north of irrigation pond Runoff Area=43,890 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=146' Tc=8.6 min CN=74 Runoff=7.94 cfs 0.414 af

Subcatchment 125: Hole 3 and end of Hole 4 Runoff Area=161,159 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=1,131' Tc=9.2 min CN=74 Runoff=28.57 cfs 1.519 af

Subcatchment 126: Irr. Pond Runoff Area=74,991 sf 75.06% Impervious Runoff Depth=7.04"
Tc=6.0 min CN=92 Runoff=19.10 cfs 1.010 af

Subcatchment 126A: forebay Runoff Area=8,000 sf 0.00% Impervious Runoff Depth=7.76"
Tc=6.0 min CN=98 Runoff=2.10 cfs 0.119 af

Subcatchment 127S: (new Subcat) Runoff Area=448,894 sf 0.00% Impervious Runoff Depth=4.81"
Flow Length=1,944' Tc=11.6 min CN=73 Runoff=71.65 cfs 4.131 af

Subcatchment 128S: HOTEL ROOF Runoff Area=6,878 sf 100.00% Impervious Runoff Depth=7.76"
Tc=6.0 min CN=98 Runoff=1.80 cfs 0.102 af

Subcatchment 129S: HOTEL ROOF Runoff Area=13,760 sf 100.00% Impervious Runoff Depth=7.76"
Tc=6.0 min CN=98 Runoff=3.61 cfs 0.204 af

Subcatchment 130S: (new Subcat) Runoff Area=39,147 sf 23.55% Impervious Runoff Depth=5.63"
Flow Length=21' Slope=0.0200 '/' Tc=6.0 min CN=80 Runoff=8.65 cfs 0.421 af

Subcatchment 131A: HOTEL ROOF Runoff Area=51,300 sf 100.00% Impervious Runoff Depth=7.76"
Tc=6.0 min CN=98 Runoff=13.45 cfs 0.762 af

Subcatchment 131S: (new Subcat) Runoff Area=28,363 sf 61.70% Impervious Runoff Depth=6.69"
Flow Length=64' Slope=0.0310 '/' Tc=10.1 min CN=89 Runoff=6.16 cfs 0.363 af

Subcatchment 132S: (new Subcat) Runoff Area=12,145 sf 13.59% Impervious Runoff Depth=5.27"
Flow Length=103' Tc=6.0 min CN=77 Runoff=2.55 cfs 0.123 af

Subcatchment 133S: (new Subcat) Runoff Area=29,164 sf 0.00% Impervious Runoff Depth=4.93"
Flow Length=50' Tc=6.0 min CN=74 Runoff=5.78 cfs 0.275 af

Subcatchment 134S: HOTEL ROOF Runoff Area=6,878 sf 100.00% Impervious Runoff Depth=7.76"
Tc=6.0 min CN=98 Runoff=1.80 cfs 0.102 af

Subcatchment 135S: (new Subcat) Runoff Area=18,297 sf 21.86% Impervious Runoff Depth=5.51"
Flow Length=246' Tc=6.0 min CN=79 Runoff=3.98 cfs 0.193 af

Subcatchment 136S: Parking Structure Runoff Area=45,262 sf 100.00% Impervious Runoff Depth=7.76"
Flow Length=306' Slope=0.0100 '/' Tc=6.0 min CN=98 Runoff=11.87 cfs 0.672 af

Subcatchment 138S: HOTEL ROOF Runoff Area=13,760 sf 100.00% Impervious Runoff Depth=7.76"
Tc=6.0 min CN=98 Runoff=3.61 cfs 0.204 af

Subcatchment 500S: Subcatchment 500 Runoff Area=1,350,926 sf 2.16% Impervious Runoff Depth=4.58"
Flow Length=3,875' Tc=32.0 min CN=71 Runoff=118.33 cfs 11.835 af

Subcatchment 501S: Subcatchment 501 Runoff Area=186,481 sf 0.54% Impervious Runoff Depth=4.46"
Flow Length=2,030' Tc=19.3 min CN=70 Runoff=21.73 cfs 1.593 af

Subcatchment 502S: Subcatchment 502 Runoff Area=189,050 sf 0.76% Impervious Runoff Depth=4.46"
Flow Length=1,300' Tc=13.0 min CN=70 Runoff=26.81 cfs 1.615 af

Subcatchment 503S: Subcatchmant 503 Runoff Area=130,680 sf 0.00% Impervious Runoff Depth=4.46"
Flow Length=1,010' Tc=16.6 min CN=70 Runoff=16.51 cfs 1.116 af

Subcatchment 504S: Subcatchment 504 Runoff Area=1,320,521 sf 1.06% Impervious Runoff Depth=4.46"
Flow Length=3,280' Tc=25.0 min CN=70 Runoff=132.03 cfs 11.278 af

Subcatchment 511S: Subcatchmant 511 Runoff Area=87,120 sf 0.00% Impervious Runoff Depth=4.46"
Flow Length=680' Tc=15.6 min CN=70 Runoff=11.37 cfs 0.744 af

Subcatchment 512S: Subcatchment 512 Runoff Area=56,628 sf 0.00% Impervious Runoff Depth=4.46"
Flow Length=600' Tc=14.0 min CN=70 Runoff=7.77 cfs 0.484 af

Subcatchment 600S: Subcatchment 600 Runoff Area=369,868 sf 2.61% Impervious Runoff Depth=4.58"
Flow Length=1,610' Tc=19.3 min CN=71 Runoff=44.20 cfs 3.240 af

Subcatchment 601S: Subcatchment 601 Runoff Area=267,502 sf 3.92% Impervious Runoff Depth=4.58"
Flow Length=1,070' Tc=15.0 min CN=71 Runoff=36.39 cfs 2.343 af

Reach 18R: Overland Flow Avg. Flow Depth=0.20' Max Vel=3.84 fps Inflow=34.91 cfs 15.088 af
n=0.030 L=535.0' S=0.0748 '/' Capacity=214.48 cfs Outflow=34.84 cfs 15.088 af

Reach 21R: Ex. Roadside Ditch Avg. Flow Depth=1.39' Max Vel=6.72 fps Inflow=31.75 cfs 1.457 af
n=0.030 L=120.0' S=0.0250 '/' Capacity=36.63 cfs Outflow=31.73 cfs 1.457 af

Reach 58A: Overland Flow Avg. Flow Depth=0.18' Max Vel=4.20 fps Inflow=79.29 cfs 2.494 af
n=0.035 L=478.0' S=0.1004 '/' Capacity=1,456.48 cfs Outflow=78.46 cfs 2.494 af

Reach 61: Vegetated Roadside Swale Avg. Flow Depth=1.13' Max Vel=7.60 fps Inflow=35.98 cfs 2.147 af
n=0.040 L=751.0' S=0.0613 '/' Capacity=59.21 cfs Outflow=35.40 cfs 2.147 af

Reach 66: Stream Channel Avg. Flow Depth=1.82' Max Vel=11.75 fps Inflow=374.59 cfs 46.262 af
n=0.050 L=1,884.0' S=0.1152 '/' Capacity=445.48 cfs Outflow=369.38 cfs 46.262 af

Reach 73A: Vegetated Roadside Channel Avg. Flow Depth=1.45' Max Vel=6.16 fps Inflow=30.83 cfs 1.534 af
n=0.050 L=60.0' S=0.0560 '/' Capacity=32.90 cfs Outflow=30.82 cfs 1.534 af

Reach 75: Roadside Channel Avg. Flow Depth=1.30' Max Vel=7.18 fps Inflow=30.82 cfs 1.534 af
n=0.040 L=166.0' S=0.0542 '/' Capacity=71.25 cfs Outflow=30.76 cfs 1.534 af

Reach 76: Roadside Channel Avg. Flow Depth=1.33' Max Vel=6.96 fps Inflow=30.76 cfs 1.534 af
n=0.040 L=20.0' S=0.0500 '/' Capacity=68.43 cfs Outflow=30.76 cfs 1.534 af

Reach 78: Stream Channel Avg. Flow Depth=1.45' Max Vel=12.09 fps Inflow=242.71 cfs 34.247 af
n=0.050 L=685.0' S=0.1646 '/' Capacity=258.41 cfs Outflow=242.49 cfs 34.247 af

Reach 80: Stream Channel Avg. Flow Depth=1.98' Max Vel=7.68 fps Inflow=242.49 cfs 34.247 af
n=0.050 L=740.0' S=0.0473 '/' Capacity=247.19 cfs Outflow=241.70 cfs 34.247 af

Reach 82: Overland Flow Avg. Flow Depth=0.08' Max Vel=0.25 fps Inflow=7.77 cfs 0.484 af
n=0.400 L=938.0' S=0.1354 '/' Capacity=53.31 cfs Outflow=2.20 cfs 0.484 af

Reach 82a: Overland Flow Avg. Flow Depth=0.83' Max Vel=0.75 fps Inflow=121.34 cfs 20.149 af
n=0.400 L=473.0' S=0.0846 '/' Capacity=164.89 cfs Outflow=113.94 cfs 20.149 af

Reach 83A: Overland Flow Avg. Flow Depth=0.45' Max Vel=0.75 fps Inflow=52.02 cfs 8.937 af
n=0.400 L=441.0' S=0.1678 '/' Capacity=232.26 cfs Outflow=49.23 cfs 8.937 af

Reach 84A: Overland Flow Avg. Flow Depth=0.79' Max Vel=0.84 fps Inflow=121.36 cfs 19.665 af
n=0.400 L=277.0' S=0.1155 '/' Capacity=192.72 cfs Outflow=119.18 cfs 19.665 af

Reach 84B: Overland Flow Avg. Flow Depth=0.56' Max Vel=0.83 fps Inflow=74.94 cfs 10.728 af
n=0.400 L=370.0' S=0.1622 '/' Capacity=228.33 cfs Outflow=72.13 cfs 10.728 af

Reach 85A: Overland Flow Avg. Flow Depth=0.44' Max Vel=0.70 fps Inflow=50.13 cfs 3.078 af
n=0.400 L=505.0' S=0.1525 '/' Capacity=221.40 cfs Outflow=44.08 cfs 3.078 af

Reach 85B: Overland Flow Avg. Flow Depth=0.64' Max Vel=0.61 fps Inflow=73.47 cfs 5.276 af
n=0.400 L=453.0' S=0.0773 '/' Capacity=157.60 cfs Outflow=64.31 cfs 5.276 af

Reach 86A: Overland Flow Avg. Flow Depth=0.39' Max Vel=0.57 fps Inflow=31.62 cfs 2.199 af
n=0.400 L=195.0' S=0.1128 '/' Capacity=190.45 cfs Outflow=30.77 cfs 2.199 af

Reach 88: Roadside Swale Avg. Flow Depth=0.69' Max Vel=6.96 fps Inflow=11.37 cfs 0.744 af
n=0.035 L=472.0' S=0.0763 '/' Capacity=66.89 cfs Outflow=11.28 cfs 0.744 af

Reach 91: Overland Flow Avg. Flow Depth=0.59' Max Vel=3.40 fps Inflow=51.99 cfs 3.345 af
n=0.035 L=198.0' S=0.0172 '/' Capacity=137.55 cfs Outflow=51.67 cfs 3.345 af

Reach 92: Channel Along RR Tracks Avg. Flow Depth=2.83' Max Vel=8.52 fps Inflow=187.86 cfs 25.996 af
n=0.035 L=770.0' S=0.0239 '/' Capacity=211.58 cfs Outflow=184.42 cfs 25.996 af

Reach 92a: Channel Along RR Tracks Avg. Flow Depth=1.46' Max Vel=6.86 fps Inflow=51.67 cfs 3.345 af
n=0.035 L=1,137.0' S=0.0329 '/' Capacity=248.24 cfs Outflow=49.11 cfs 3.345 af

Reach 93R: Roadside Ditch Avg. Flow Depth=0.84' Max Vel=5.27 fps Inflow=16.37 cfs 0.681 af
n=0.030 L=135.0' S=0.0259 '/' Capacity=54.15 cfs Outflow=16.34 cfs 0.681 af

Reach 142R: Overland Flow Avg. Flow Depth=0.29' Max Vel=2.62 fps Inflow=30.94 cfs 2.445 af
n=0.030 L=280.0' S=0.0299 '/' Capacity=31.71 cfs Outflow=30.43 cfs 2.445 af

Reach 143R: Stone Lined Swale with Avg. Flow Depth=1.07' Max Vel=8.37 fps Inflow=36.96 cfs 16.257 af
n=0.050 L=335.0' S=0.1403 '/' Capacity=142.04 cfs Outflow=36.95 cfs 16.257 af

Reach I1: TRM SWALE Avg. Flow Depth=1.81' Max Vel=3.54 fps Inflow=36.08 cfs 2.015 af
n=0.035 L=145.0' S=0.0069 '/' Capacity=74.54 cfs Outflow=35.92 cfs 2.015 af

Reach I12: stone lined stream channel Avg. Flow Depth=2.39' Max Vel=10.34 fps Inflow=158.20 cfs 9.228 af
n=0.040 L=142.0' S=0.0486 '/' Capacity=171.87 cfs Outflow=158.15 cfs 9.228 af

Reach I12a: stone lined stream channel Avg. Flow Depth=1.94' Max Vel=13.73 fps Inflow=158.15 cfs 9.228 af
n=0.040 L=160.0' S=0.1056 '/' Capacity=253.40 cfs Outflow=158.09 cfs 9.228 af

Reach I12b: stone lined stream channel Avg. Flow Depth=2.08' Max Vel=12.49 fps Inflow=158.09 cfs 9.228 af
n=0.040 L=440.0' S=0.0816 '/' Capacity=222.71 cfs Outflow=157.64 cfs 9.228 af

Reach I21: stone lined stream channel Avg. Flow Depth=1.56' Max Vel=9.01 fps Inflow=95.41 cfs 5.097 af
n=0.050 L=1,585.0' S=0.0886 '/' Capacity=143.65 cfs Outflow=89.24 cfs 5.097 af

Pond 1P: culvert Peak Elev=2,027.69' Inflow=158.20 cfs 9.228 af
54.0" Round Culvert n=0.013 L=60.0' S=0.0500 '/' Outflow=158.20 cfs 9.228 af

Pond 6P: Overflow Basin @ 8 tee Peak Elev=1,964.93' Storage=24,843 cf Inflow=51.26 cfs 3.922 af
Outflow=50.10 cfs 3.766 af

Pond 8P: NATURAL DEPRESSION Peak Elev=1,970.57' Storage=33,704 cf Inflow=20.95 cfs 1.383 af
Discarded=0.26 cfs 0.815 af Primary=1.60 cfs 0.568 af Outflow=1.87 cfs 1.383 af

Pond 29P: cb29 Peak Elev=1,926.08' Inflow=5.42 cfs 0.261 af
Outflow=5.42 cfs 0.261 af

Pond 57: 15" Steel Culvert Peak Elev=2,006.06' Inflow=7.78 cfs 0.506 af
Outflow=7.78 cfs 0.506 af

Pond 58R: 24" HDPE Pipe Peak Elev=2,225.56' Inflow=79.29 cfs 2.494 af
Outflow=79.29 cfs 2.494 af

Pond 59: 32" Plastic Pipe Peak Elev=2,334.34' Inflow=132.03 cfs 11.278 af
Primary=52.02 cfs 8.937 af Secondary=80.01 cfs 2.340 af Outflow=132.03 cfs 11.278 af

Pond 60: 30" Steel Culvert Peak Elev=2,025.12' Inflow=374.59 cfs 46.262 af
Outflow=374.59 cfs 46.262 af

Pond 67P: 24" Steel Culvert Peak Elev=2,006.19' Inflow=28.61 cfs 1.641 af
Outflow=28.61 cfs 1.641 af

Pond 74: 12" CMP Culvert Peak Elev=1,918.35' Inflow=30.82 cfs 1.534 af
Outflow=30.82 cfs 1.534 af

Pond 74A: 16" CMP Culvert Peak Elev=1,925.68' Inflow=30.83 cfs 1.534 af
Outflow=30.83 cfs 1.534 af

Pond 76A: culvert Peak Elev=1,906.51' Inflow=30.76 cfs 1.534 af
Outflow=30.76 cfs 1.534 af

Pond 77: 36" Steel Culvert Peak Elev=2,176.75' Inflow=236.10 cfs 33.503 af
Outflow=236.10 cfs 33.503 af

Pond 79: 16" Steel Culvert Peak Elev=2,058.91' Inflow=242.49 cfs 34.247 af
Outflow=242.49 cfs 34.247 af

Pond 83: 24" HPDE Culvert Peak Elev=2,361.44' Inflow=7.77 cfs 0.484 af
Primary=7.77 cfs 0.484 af Secondary=0.00 cfs 0.000 af Outflow=7.77 cfs 0.484 af

Pond 84: 24" HDPE Pipe Peak Elev=2,324.28' Inflow=192.43 cfs 14.175 af
Primary=74.94 cfs 10.728 af Secondary=117.50 cfs 3.447 af Outflow=192.43 cfs 14.175 af

Pond 85: 28" HDPE Pipe Peak Elev=2,303.47' Inflow=135.74 cfs 5.040 af
Primary=50.13 cfs 3.078 af Secondary=85.61 cfs 1.962 af Outflow=135.74 cfs 5.040 af

Pond 86: 24" HDPE Pipe Peak Elev=2,248.01' Inflow=98.51 cfs 3.577 af
Primary=31.62 cfs 2.199 af Secondary=66.89 cfs 1.378 af Outflow=98.51 cfs 3.577 af

Pond 87: 18" Steel Culvert Peak Elev=2,211.61' Inflow=11.37 cfs 0.744 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0167 '/' Outflow=11.37 cfs 0.744 af

Pond 90: 24" Steel Culvert Peak Elev=1,895.14' Inflow=51.99 cfs 3.345 af
Outflow=51.99 cfs 3.345 af

Pond 122: 18" HDPE Storm Peak Elev=1,949.95' Inflow=5.36 cfs 0.289 af
Outflow=5.36 cfs 0.289 af

Pond 123: 18" HDPE Storm Peak Elev=1,949.92' Inflow=7.47 cfs 0.401 af
Outflow=7.47 cfs 0.401 af

Pond A1: A1 - OPEN SWALE Peak Elev=1,910.35' Storage=2,908 cf Inflow=8.37 cfs 0.465 af
Discarded=0.03 cfs 0.087 af Primary=8.29 cfs 0.377 af Outflow=8.32 cfs 0.465 af

Pond A2: A2 - OPEN SWALE Peak Elev=1,907.43' Storage=1,373 cf Inflow=11.62 cfs 0.563 af
Discarded=0.02 cfs 0.043 af Primary=11.57 cfs 0.520 af Outflow=11.59 cfs 0.563 af

Pond A3: A3 - OPEN SWALE Peak Elev=1,905.96' Storage=2,487 cf Inflow=17.12 cfs 0.831 af
Discarded=0.03 cfs 0.075 af Primary=17.06 cfs 0.756 af Outflow=17.08 cfs 0.831 af

Pond A4: A4 - OPEN SWALE Peak Elev=1,904.03' Storage=1,832 cf Inflow=21.03 cfs 0.979 af
Discarded=0.02 cfs 0.052 af Primary=20.99 cfs 0.927 af Outflow=21.01 cfs 0.979 af

Pond A5: A5 - OPEN SWALE Peak Elev=1,902.37' Storage=3,140 cf Inflow=31.85 cfs 1.537 af
Discarded=0.03 cfs 0.080 af Primary=31.75 cfs 1.457 af Outflow=31.78 cfs 1.537 af

Pond B: OPEN SWALE Peak Elev=1,868.43' Storage=8,878 cf Inflow=22.73 cfs 1.347 af
Discarded=0.09 cfs 0.262 af Primary=22.34 cfs 1.085 af Outflow=22.43 cfs 1.347 af

Pond B1: bioretention @ 8 tee Peak Elev=1,966.35' Storage=11,696 cf Inflow=51.77 cfs 4.293 af
Discarded=0.18 cfs 0.371 af Primary=51.26 cfs 3.922 af Outflow=51.44 cfs 4.293 af

Pond B3: bioretention @ blvd Peak Elev=1,960.70' Storage=33,514 cf Inflow=40.53 cfs 2.819 af
Discarded=0.44 cfs 0.942 af Primary=24.85 cfs 1.815 af Secondary=5.96 cfs 0.062 af Outflow=31.24 cfs 2.819 af

Pond DP 10: Design Point 10 Inflow=503.11 cfs 58.782 af
Primary=503.11 cfs 58.782 af

Pond DP 11: Design Point 11 Inflow=192.24 cfs 31.598 af
Primary=192.24 cfs 31.598 af

Pond DP 12: Design Point 12 Inflow=42.91 cfs 2.357 af
Primary=42.91 cfs 2.357 af

Pond DP 16: Design Point 16 24" CMP Inflow=82.02 cfs 6.964 af
Primary=82.02 cfs 6.964 af

Pond F1: Open Swale-F Peak Elev=1,895.95' Storage=5,672 cf Inflow=16.69 cfs 0.842 af
Discarded=0.05 cfs 0.162 af Primary=16.37 cfs 0.681 af Outflow=16.42 cfs 0.842 af

Pond G: OPEN SWALE Peak Elev=1,903.86' Storage=10,453 cf Inflow=28.57 cfs 1.519 af
Discarded=0.14 cfs 0.350 af Primary=28.10 cfs 1.169 af Outflow=28.23 cfs 1.519 af

Pond I18: Manhole Peak Elev=2,012.42' Inflow=158.20 cfs 9.228 af
54.0" Round Culvert n=0.013 L=304.0' S=0.0194 '/' Outflow=158.20 cfs 9.228 af

Pond I19: Manhole Peak Elev=2,023.42' Inflow=158.20 cfs 9.228 af
54.0" Round Culvert n=0.013 L=348.0' S=0.0313 '/' Outflow=158.20 cfs 9.228 af

Pond I2: 30" HDPE Storm Peak Elev=1,948.08' Inflow=36.08 cfs 2.015 af
30.0" Round Culvert n=0.013 L=170.0' S=0.0053 '/' Outflow=36.08 cfs 2.015 af

Pond I22: Manhole- 54" HDPE Storm Peak Elev=2,174.65' Inflow=95.41 cfs 5.097 af
Outflow=95.41 cfs 5.097 af

Pond I23: Manhole -30" HDPE Storm Peak Elev=2,187.62' Inflow=38.48 cfs 2.046 af
Outflow=38.48 cfs 2.046 af

Pond I24: 30" HDPE Storm Peak Elev=2,192.93' Inflow=38.48 cfs 2.046 af
Outflow=38.48 cfs 2.046 af

Pond I25: 30" HDPE Storm Peak Elev=2,195.14' Inflow=29.84 cfs 1.625 af
Outflow=29.84 cfs 1.625 af

Pond I26: 30" HDPE Storm Peak Elev=2,195.54' Inflow=24.17 cfs 1.262 af
Outflow=24.17 cfs 1.262 af

Pond I27: 30" HDPE Storm Peak Elev=2,196.36' Inflow=21.62 cfs 1.140 af
Outflow=21.62 cfs 1.140 af

Pond I28: 30" HDPE Storm Peak Elev=2,196.92' Inflow=15.84 cfs 0.865 af
Outflow=15.84 cfs 0.865 af

Pond I29: Manhole Peak Elev=2,197.17' Inflow=11.87 cfs 0.672 af
30.0" Round Culvert n=0.013 L=98.0' S=0.0010 '/' Outflow=11.87 cfs 0.672 af

Pond I3: 30" HDPE Storm Peak Elev=1,949.82' Inflow=32.02 cfs 1.776 af
Outflow=32.02 cfs 1.776 af

Pond I30: 30" HDPE Storm Peak Elev=2,197.38' Inflow=11.87 cfs 0.672 af
Outflow=11.87 cfs 0.672 af

Pond I31: 36" HDPE Storm Peak Elev=2,175.19' Inflow=24.84 cfs 1.231 af
36.0" Round Culvert n=0.013 L=55.0' S=0.0027 '/' Outflow=24.84 cfs 1.231 af

Pond I32: 30" HDPE Storm Peak Elev=2,176.27' Inflow=24.84 cfs 1.231 af
Outflow=24.84 cfs 1.231 af

Pond I33: 24" HDPE Storm Peak Elev=2,176.54' Inflow=20.11 cfs 0.995 af
Outflow=20.11 cfs 0.995 af

Pond I4: 15" HDPE Storm Peak Elev=1,952.63' Inflow=4.21 cfs 0.239 af
15.0" Round Culvert n=0.013 L=140.0' S=0.0107 '/' Outflow=4.21 cfs 0.239 af

Pond I6: Manhole Peak Elev=1,955.19' Inflow=25.02 cfs 2.383 af
36.0" Round Culvert n=0.013 L=186.0' S=0.0050 '/' Outflow=25.02 cfs 2.383 af

Pond IP: P2 Peak Elev=1,943.47' Storage=956,748 cf Inflow=313.25 cfs 20.185 af
Outflow=34.91 cfs 15.088 af

Total Runoff Area = 270.763 ac Runoff Volume = 108.193 af Average Runoff Depth = 4.80"
93.08% Pervious = 252.026 ac 6.92% Impervious = 18.737 ac

Summary for Subcatchment 9S: Subcatchment 9

Runoff = 159.85 cfs @ 12.14 hrs, Volume= 12.519 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	8,494	98	Roof Area
	31,175	71	Meadow, non-grazed, HSG C
	1,389,855	70	Woods, Good, HSG C
	13,112	98	Paved parking, HSG C
*	9,470	74	porous paving
*	7,000	74	Fairway/Tee/Green, Good, HSG C
	6,775	74	>75% Grass cover, Good, HSG C
	1,465,881	70	Weighted Average
	1,444,275		98.53% Pervious Area
	21,606		1.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0200	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.1	10	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.3	1,923	0.1100	13.81	662.89	**Trap/Vee/Rect Channel Flow, Flow through Rock Channel** Bot.W=20.00' D=2.00' Z= 2.0 '/' Top.W=28.00' n= 0.050 Mountain streams w/large boulders
21.6	2,033	Total			

Summary for Subcatchment 10S: Subcatchment 10

Runoff = 138.06 cfs @ 12.19 hrs, Volume= 12.015 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	890,933	70	Woods, Good, HSG C
	424,449	71	Meadow, non-grazed, HSG C
	16,742	74	>75% Grass cover, Good, HSG C
*	31,777	98	Road/Drive
*	7,623	98	Roofs
	1,371,524	71	Weighted Average
	1,332,124		97.13% Pervious Area
	39,400		2.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.2	600	0.0780	1.40		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
2.7	455	0.1600	2.80		**Shallow Concentrated Flow, SC Flow through Grass** Short Grass Pasture Kv= 7.0 fps
2.8	330	0.1570	1.98		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
1.6	685	0.0945	7.35	33.08	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=4.00' D=1.00' Z= 0.5 '/' Top.W=5.00' n= 0.050
0.0	30	0.0500	13.31	18.59	**Pipe Channel, 16" Steel Culvert** 16.0" Round Area= 1.4 sf Perim= 4.2' r= 0.33' n= 0.012 Steel, smooth
1.4	645	0.0483	7.65	91.77	**Trap/Vee/Rect Channel Flow, Stream Channel** Bot.W=5.00' D=2.00' Z= 0.5 '/' Top.W=7.00' n= 0.050
25.8	2,845	Total			

Summary for Subcatchment 11A: Subcatchment 11A

Runoff = 7.78 cfs @ 12.07 hrs, Volume= 0.506 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
55,013	70	Woods, Good, HSG C
2,726	98	Paved parking & roofs
57,739	71	Weighted Average
55,013		95.28% Pervious Area
2,726		4.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0800	0.15		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.3	380	0.0875	1.48		**Shallow Concentrated Flow, SC flow through Woods** Woodland Kv= 5.0 fps
15.3	480	Total			

Summary for Subcatchment 11B: Subcatchment 11B

Runoff = 14.79 cfs @ 12.10 hrs, Volume= 1.051 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	50,820	70	Woods, Good, HSG C
	19,475	98	Paved parking & roofs
	27,337	74	>75% Grass cover, Good, HSG C
*	2,120	74	Porous Pavement
*	4,400	74	Fairway/Tee/Green, Good, HSG C
	104,152	77	Weighted Average
	84,677		81.30% Pervious Area
	19,475		18.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0200	0.08		**Sheet Flow, Sheet Flow through woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.9	436	0.0440	1.05		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.9	486	Total			

Summary for Subcatchment 11S: Subcatchment 11

Runoff = 28.61 cfs @ 12.03 hrs, Volume= 1.641 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
169,318	70	Woods, Good, HSG C
13,416	98	Paved parking & roofs
182,734	72	Weighted Average
169,318		92.66% Pervious Area
13,416		7.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.0800	2.03		**Sheet Flow, Sheet Flow off Roof** Smooth surfaces n= 0.011 P2= 4.00"
4.4	75	0.0625	0.28		**Sheet Flow, Sheet flow over meadow** Grass: Short n= 0.150 P2= 4.00"
2.9	330	0.0750	1.92		**Shallow Concentrated Flow, Sheet Flow through Meadow** Short Grass Pasture Kv= 7.0 fps
3.4	300	0.0875	1.48		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.6	254	0.0500	7.39	16.25	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=2.00' D=1.00' Z= 0.2 '/' Top.W=2.40' n= 0.030
11.5	984	Total			

Summary for Subcatchment 12A: Subcatchment 12A

Runoff = 109.78 cfs @ 11.98 hrs, Volume= 5.309 af, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	172,175	74	>75% Grass cover, Good, HSG C
	265,310	70	Woods, Good, HSG C
	43,737	98	Paved parking & roofs
*	4,020	74	Porous Pavement
*	19,225	98	Roofs
*	45,983	74	Fairway/Tee/Green, Good, HSG C
	550,450	75	Weighted Average
	487,488		88.56% Pervious Area
	62,962		11.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	33	0.0300	1.45		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
1.6	264	0.0300	2.79		**Shallow Concentrated Flow, SC Flow through Developed area** Unpaved Kv= 16.1 fps
4.4	1,813	0.0200	6.80	71.42	**Trap/Vee/Rect Channel Flow, roadside ditch** Bot.W=2.00' D=3.00' Z= 0.5 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
6.4	2,110	Total			

Summary for Subcatchment 12B: Subcatchment 12B

Runoff = 36.53 cfs @ 12.59 hrs, Volume= 5.602 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
630,510	70	Woods, Good, HSG C
25,422	74	>75% Grass cover, Good, HSG C
655,932	70	Weighted Average
655,932		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0800	0.09		**Sheet Flow, sheet through woods** Woods: Dense underbrush n= 0.800 P2= 4.00"
39.5	1,600	0.0730	0.68		**Shallow Concentrated Flow, SC Flow through Woods** Forest w/Heavy Litter Kv= 2.5 fps
58.7	1,700	Total			

Summary for Subcatchment 27A: SUB27A

Runoff = 25.49 cfs @ 11.99 hrs, Volume= 1.273 af, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	55,888	70	Woods, Good, HSG C
*	9,934	98	Paved
*	3,556	98	Roof
	62,600	74	>75% Grass cover, Good, HSG C
	131,978	75	Weighted Average
	118,488		89.78% Pervious Area
	13,490		10.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	100	0.0900	0.35		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
1.1	264	0.0700	3.97		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.4	750	0.0640	8.97	60.53	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.50' Z= 1.0 '/' Top.W=6.00' n= 0.040 Earth, dense weeds
7.3	1,114	Total			

Summary for Subcatchment 27S: Subcatchment 27

Runoff = 13.45 cfs @ 12.05 hrs, Volume= 0.822 af, Depth= 5.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	6,900	98	Roof
*	12,822	98	Pavement
	45,912	74	>75% Grass cover, Good, HSG C
	12,420	70	Woods, Good, HSG C
	78,054	79	Weighted Average
	58,332		74.73% Pervious Area
	19,722		25.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	100	0.0760	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
0.5	40	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	20	0.0430	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	220	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	20	0.0620	9.52	76.20	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.040 Earth, dense weeds
12.9	400	Total			

Summary for Subcatchment 28S: Subcatchment 28

Runoff = 10.96 cfs @ 12.31 hrs, Volume= 1.207 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
33,932	71	Meadow, non-grazed, HSG C
107,420	70	Woods, Good, HSG C
141,352	70	Weighted Average
141,352		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0500	0.13		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
4.2	326	0.0680	1.30		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	392	0.0130	0.34	0.51	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.5 '/' Top.W=2.00' n= 0.300
36.8	818	Total			

Summary for Subcatchment 29S: SUB27A

Runoff = 5.42 cfs @ 11.97 hrs, Volume= 0.261 af, Depth= 5.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	4,025	98	Paved
	21,330	74	>75% Grass cover, Good, HSG C
	25,355	78	Weighted Average
	21,330		84.13% Pervious Area
	4,025		15.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0300	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.7	218	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	248	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 61S: Hotel Roof

Runoff = 3.93 cfs @ 11.97 hrs, Volume= 0.223 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	15,005	98	Paved
	15,005		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 67S: W. top front of hotel

Runoff = 3.93 cfs @ 11.97 hrs, Volume= 0.223 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	15,005	98	Roof
	15,005		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 70A: (new Subcat)

Runoff = 4.73 cfs @ 11.97 hrs, Volume= 0.236 af, Depth= 6.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	12,012	74	>75% Grass cover, Good, HSG C
	7,200	98	Paved parking & roofs
*	1,000	98	Porous Pavement
	20,212	84	Weighted Average
	12,012		59.43% Pervious Area
	8,200		40.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	34	0.0588	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.6	66	0.0450	1.96		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
0.2	21	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	8	0.1110	6.76		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	11	0.1110	2.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	67	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.7	207	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 70B: (new Subcat)

Runoff = 6.61 cfs @ 11.97 hrs, Volume= 0.324 af, Depth= 5.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	7,200	98	Paved parking & roofs
	20,394	74	>75% Grass cover, Good, HSG C
*	1,880	98	Porous Pavement
	29,474	81	Weighted Average
	20,394		69.19% Pervious Area
	9,080		30.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1000	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.2	37	0.2160	3.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	61	0.0660	5.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	37	0.1176	2.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.3	235	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 70C: (new Subcat)

Runoff = 13.49 cfs @ 11.97 hrs, Volume= 0.672 af, Depth= 6.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
25,112	98	Paved parking & roofs
32,481	74	>75% Grass cover, Good, HSG C
57,593	84	Weighted Average
32,481		56.40% Pervious Area
25,112		43.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 100a: Hole 4 (110) PR

Runoff = 8.37 cfs @ 12.02 hrs, Volume= 0.465 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	25,572	74	>75% Grass cover, Good, HSG C
	9,715	70	Woods, Good, HSG C
*	3,940	74	Porous Pavement
*	11,267	74	Fairway/Tee/Green, Good, HSG C
	50,494	73	Weighted Average
	50,494		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100b: Hole 4 (110) PR

Runoff = 3.34 cfs @ 12.02 hrs, Volume= 0.185 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	5,558	74	>75% Grass cover, Good, HSG C
	2,890	70	Woods, Good, HSG C
*	11,040	74	Fairway/Tee/Green, Good, HSG C
*	650	74	Porous Pavement
	20,138	73	Weighted Average
	20,138		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100c: Hole 4 (110) PR

Runoff = 5.59 cfs @ 12.02 hrs, Volume= 0.311 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	6,495	74	>75% Grass cover, Good, HSG C
*	2,610	74	Porous Pavement
*	23,895	74	Fairway/Tee/Green, Good, HSG C
	33,000	74	Weighted Average
	33,000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course**
					Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course**
					Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100d: Hole 4 (110) PR

Runoff = 4.01 cfs @ 12.02 hrs, Volume= 0.223 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	2,916	74	>75% Grass cover, Good, HSG C
*	1,300	74	Porous Pavement
*	19,488	74	Fairway/Tee/Green, Good, HSG C
	23,704	74	Weighted Average
	23,704		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course**
					Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course**
					Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 100e: Hole 4 (110) PR

Runoff = 10.97 cfs @ 12.02 hrs, Volume= 0.610 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	27,442	74	>75% Grass cover, Good, HSG C
*	3,930	74	Porous Pavement
*	33,414	74	Fairway/Tee/Green, Good, HSG C
	64,786	74	Weighted Average
	64,786		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
2.3	319	0.1070	2.29		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
10.5	419	Total			

Summary for Subcatchment 101: Land east of irrigation pond (101 PR)

Runoff = 8.41 cfs @ 11.97 hrs, Volume= 0.408 af, Depth= 5.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	31,112	74	>75% Grass cover, Good, HSG C
*	7,596	98	Roofs
	38,708	79	Weighted Average
	31,112		80.38% Pervious Area
	7,596		19.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	68	0.0144	1.25		**Sheet Flow, Sheet Flow Across Roof** Smooth surfaces n= 0.011 P2= 4.00"
1.4	191	0.0990	2.20		**Shallow Concentrated Flow, SC Flow** Short Grass Pasture Kv= 7.0 fps
0.1	35	0.0570	8.39	12.58	**Channel Flow, Roadside Ditch** Area= 1.5 sf Perim= 4.0' r= 0.38' n= 0.022 Earth, clean & straight
2.4	294	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 102: Pool House and Pool (102) PR

Runoff = 4.21 cfs @ 11.97 hrs, Volume= 0.239 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	11,423	98	Paved parking & roofs
*	4,650	98	Roofs
	16,073	98	Weighted Average
	16,073		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 103: Pool parking lot and tennis courts (103) PR

Runoff = 25.03 cfs @ 12.00 hrs, Volume= 1.375 af, Depth= 6.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
62,227	74	>75% Grass cover, Good, HSG C
53,467	98	Paved parking & roofs
115,694	85	Weighted Average
62,227		53.79% Pervious Area
53,467		46.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	100	0.0900	0.35		**Sheet Flow, Sheet Flow Along Steep Hill** Grass: Short n= 0.150 P2= 4.00"
2.1	150	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.9	352	0.0227	3.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.8	602	Total			

Summary for Subcatchment 104: Holes 7 &8

Runoff = 51.77 cfs @ 12.17 hrs, Volume= 4.293 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	25,420	74	Porous Pavement
	104,543	74	>75% Grass cover, Good, HSG C
	45,415	70	Woods, Good, HSG C
*	280,195	74	Fairway/Tee/Green, Good, HSG C
	455,573	74	Weighted Average
	455,573		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	39	0.0510	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
12.0	61	0.0240	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.00"
1.8	133	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.6	167	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	300	0.0570	1.19		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	122	0.0820	2.00		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	209	0.0670	10.38	54.52	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.50' Z= 1.0 '/' Top.W=5.00' n= 0.033 Earth, grassed & winding
23.7	1,031	Total			

Summary for Subcatchment 108: Front of Road to 8 -23 (108) PR

Runoff = 5.36 cfs @ 11.97 hrs, Volume= 0.289 af, Depth= 7.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
3,491	74	>75% Grass cover, Good, HSG C
17,269	98	Paved
20,760	94	Weighted Average
3,491		16.82% Pervious Area
17,269		83.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0200	1.54		**Sheet Flow, Sheet Flow Roof** Smooth surfaces n= 0.011 P2= 4.00"
0.2	13	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	369	0.0600	4.97		**Shallow Concentrated Flow, Flow in Concrete Curb** Paved Kv= 20.3 fps
2.5	482	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 109: Front of Road to 8 -23 (109) PR

Runoff = 2.11 cfs @ 11.97 hrs, Volume= 0.112 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	2,105	74	>75% Grass cover, Good, HSG C
	6,175	98	Paved parking & roofs
	8,280	92	Weighted Average
	2,105		25.42% Pervious Area
	6,175		74.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0310	1.83		**Sheet Flow, Sheet Flow on Pavement** Smooth surfaces n= 0.011 P2= 4.00"
0.8	258	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	358	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 111: Front of Hole 4 (111) PR

Runoff = 16.69 cfs @ 11.99 hrs, Volume= 0.842 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	33,460	74	>75% Grass cover, Good, HSG C
*	6,880	74	Porous Pavement
*	49,040	74	Fairway/Tee/Green, Good, HSG C
	89,380	74	Weighted Average
	89,380		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.1400	0.28		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
1.8	293	0.1500	2.71		**Shallow Concentrated Flow, SC Flow on golf course** Short Grass Pasture Kv= 7.0 fps
7.7	393	Total			

Summary for Subcatchment 114: Behind Townhomes

Runoff = 20.95 cfs @ 12.08 hrs, Volume= 1.383 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	88,388	74	>75% Grass cover, Good, HSG C
	21,938	70	Woods, Good, HSG C
*	39,975	74	Fairway/Tee/Green, Good, HSG C
	150,301	73	Weighted Average
	150,301		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0750	0.22		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
8.2	830	0.0580	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.7	930	Total			

Summary for Subcatchment 115: Land between buildings 17 thru 22 (115) pr

Runoff = 75.01 cfs @ 12.05 hrs, Volume= 4.547 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	1,000	98	Paved parking & roofs
*	42,019	98	Roofs
	304,107	74	>75% Grass cover, Good, HSG C
*	78,570	74	Fairway/Tee/Green, Good, HSG C
	23,492	73	Woods, Fair, HSG C
*	11,655	74	Porus Pavement
	460,843	76	Weighted Average
	417,824		90.67% Pervious Area
	43,019		9.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	100	0.0800	0.23		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 4.00"
5.6	709	0.0900	2.10		**Shallow Concentrated Flow, SC Flow in Swale** Short Grass Pasture Kv= 7.0 fps
12.9	809	Total			

Summary for Subcatchment 117: Rest of Road to 8 -23 (117) PR

Runoff = 40.53 cfs @ 12.08 hrs, Volume= 2.819 af, Depth= 6.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
108,508	74	>75% Grass cover, Good, HSG C
111,127	98	Paved parking & roofs
5,863	70	Woods, Good, HSG C
11,700	74	>75% Grass cover, Good, HSG C
237,198	85	Weighted Average
126,071		53.15% Pervious Area
111,127		46.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow in Side Yard** Grass: Dense n= 0.240 P2= 4.00"
8.1	830	0.0600	1.71		**Shallow Concentrated Flow, SC Flow in Swale** Short Grass Pasture Kv= 7.0 fps
16.3	930	Total			

Summary for Subcatchment 119: Green of Hole 3 & tee of Hole 4 (119) PR

Runoff = 22.73 cfs @ 12.04 hrs, Volume= 1.347 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	49,282	74	>75% Grass cover, Good, HSG C
	18,600	70	Woods, Good, HSG C
*	70,125	74	Fairway/Tee/Green, Good, HSG C
*	8,380	74	Porous Pavement
	146,387	73	Weighted Average
	146,387		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0700	0.22		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Dense n= 0.240 P2= 4.00"
0.5	54	0.0740	1.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	176	0.1110	1.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.4	397	0.0910	2.71		**Shallow Concentrated Flow, SC Flow on golf course** Cultivated Straight Rows Kv= 9.0 fps
12.4	727	Total			

Summary for Subcatchment 123S: Land north of irrigation pond (123) PR

Runoff = 7.94 cfs @ 12.00 hrs, Volume= 0.414 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	43,890	74	Fairway/Tee/Green, Good, HSG C
	43,890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.0600	0.20		**Sheet Flow, Sheet Flow Through Golf Course** Grass: Dense n= 0.240 P2= 4.00"
0.4	46	0.0430	1.87		**Shallow Concentrated Flow, SC Flow in Swale** Cultivated Straight Rows Kv= 9.0 fps
8.6	146	Total			

Summary for Subcatchment 125: Hole 3 and end of Hole 4 (119) PR

Runoff = 28.57 cfs @ 12.01 hrs, Volume= 1.519 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	17,968	74	>75% Grass cover, Good, HSG C
	8,956	70	Woods, Good, HSG C
*	11,910	74	Porous Pavement
*	122,325	74	Fairway/Tee/Green, Good, HSG C
	161,159	74	Weighted Average
	161,159		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0600	0.30		**Sheet Flow, Sheet Flow Along Golf Course** Grass: Short n= 0.150 P2= 4.00"
3.6	1,031	0.1040	4.84		**Shallow Concentrated Flow, SC Flow on golf course** Grassed Waterway Kv= 15.0 fps
9.2	1,131	Total			

Summary for Subcatchment 126: Irr. Pond

Runoff = 19.10 cfs @ 11.97 hrs, Volume= 1.010 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	56,286	98	Pond
	18,705	74	>75% Grass cover, Good, HSG C
	74,991	92	Weighted Average
	18,705		24.94% Pervious Area
	56,286		75.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 126A: forebay

Runoff = 2.10 cfs @ 11.97 hrs, Volume= 0.119 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
8,000	98	Water Surface, 0% imp, HSG C
8,000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 127S: (new Subcat)

Runoff = 71.65 cfs @ 12.03 hrs, Volume= 4.131 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	27,670	74	Porous Pavement
	151,709	74	>75% Grass cover, Good, HSG C
	96,570	70	Woods, Good, HSG C
*	172,945	74	Fairway/Tee/Green, Good, HSG C
	448,894	73	Weighted Average
	448,894		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0400	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.1	260	0.0850	2.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.9	1,584	0.0820	9.05	108.59	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.050 Earth, cobble bottom, clean sides
11.6	1,944	Total			

Summary for Subcatchment 128S: HOTEL ROOF

Runoff = 1.80 cfs @ 11.97 hrs, Volume= 0.102 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	6,878	98	Roof
	6,878		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 129S: HOTEL ROOF

Runoff = 3.61 cfs @ 11.97 hrs, Volume= 0.204 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	13,760	98	Roof
	13,760		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 130S: (new Subcat)

Runoff = 8.65 cfs @ 11.97 hrs, Volume= 0.421 af, Depth= 5.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
9,220	98	Paved parking & roofs
29,927	74	>75% Grass cover, Good, HSG C
39,147	80	Weighted Average
29,927		76.45% Pervious Area
9,220		23.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
0.3	21	0.0200	1.13		**Sheet Flow,**
					Smooth surfaces n= 0.011 P2= 4.00"
5.3	21	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 131A: HOTEL ROOF

Runoff = 13.45 cfs @ 11.97 hrs, Volume= 0.762 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
51,300	98	Paved parking & roofs
51,300		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 131S: (new Subcat)

Runoff = 6.16 cfs @ 12.01 hrs, Volume= 0.363 af, Depth= 6.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
10,863	74	>75% Grass cover, Good, HSG C
17,500	98	Paved parking & roofs
28,363	89	Weighted Average
10,863		38.30% Pervious Area
17,500		61.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.1	64	0.0310	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
10.1	64	Total			

Summary for Subcatchment 132S: (new Subcat)

Runoff = 2.55 cfs @ 11.97 hrs, Volume= 0.123 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
1,650	98	Paved parking & roofs
10,495	74	>75% Grass cover, Good, HSG C
12,145	77	Weighted Average
10,495		86.41% Pervious Area
1,650		13.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	92	0.2600	0.52		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.1	11	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	103	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 133S: (new Subcat)

Runoff = 5.78 cfs @ 11.97 hrs, Volume= 0.275 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
29,164	74	>75% Grass cover, Good, HSG C
29,164		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0100	0.84		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.00"
2.1	30	0.0670	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
2.5	50	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 134S: HOTEL ROOF

Runoff = 1.80 cfs @ 11.97 hrs, Volume= 0.102 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
6,878	98	Paved parking & roofs
6,878		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 135S: (new Subcat)

Runoff = 3.98 cfs @ 11.97 hrs, Volume= 0.193 af, Depth= 5.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
4,000	98	Paved parking, HSG C
12,105	74	>75% Grass cover, Good, HSG C
2,192	70	Woods, Good, HSG C
18,297	79	Weighted Average
14,297		78.14% Pervious Area
4,000		21.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.2000	0.48		**Sheet Flow,** Grass: Short n= 0.150 P2= 4.00"
0.2	71	0.4790	4.84		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	75	0.0267	3.32		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1	246	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 136S: Parking Structure

Runoff = 11.87 cfs @ 11.97 hrs, Volume= 0.672 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
45,262	98	Paved parking & roofs
45,262		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0100	1.17		**Sheet Flow, Pavement of parking structure** Smooth surfaces n= 0.011 P2= 4.00"
1.7	206	0.0100	2.03		**Shallow Concentrated Flow, Pavement of parking structure** Paved Kv= 20.3 fps
3.1	306	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 138S: HOTEL ROOF

Runoff = 3.61 cfs @ 11.97 hrs, Volume= 0.204 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	13,760	98	Roof
	13,760		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 500S: Subcatchment 500

Runoff = 118.33 cfs @ 12.27 hrs, Volume= 11.835 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	29,185	98	Roadway
	1,312,724	70	Woods, Good, HSG C
	1,350,926	71	Weighted Average
	1,321,741		97.84% Pervious Area
	29,185		2.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
25.7	3,665	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.1	110	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
32.0	3,875	Total			

Summary for Subcatchment 501S: Subcatchment 501

Runoff = 21.73 cfs @ 12.12 hrs, Volume= 1.593 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,002	98	Roadway
	176,462	70	Woods, Good, HSG C
	186,481	70	Weighted Average
	185,479		99.46% Pervious Area
	1,002		0.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
13.1	1,930	0.2410	2.45		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	2,030	Total			

Summary for Subcatchment 502S: Subcatchment 502

Runoff = 26.81 cfs @ 12.05 hrs, Volume= 1.615 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	9,017	71	Meadow, non-grazed, HSG C
*	1,437	98	Roadway
	178,596	70	Woods, Good, HSG C
	189,050	70	Weighted Average
	187,613		99.24% Pervious Area
	1,437		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.3330	0.27		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.5	935	0.2266	2.38		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	265	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside Swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
13.0	1,300	Total			

Summary for Subcatchment 503S: Subcatchmant 503

Runoff = 16.51 cfs @ 12.08 hrs, Volume= 1.116 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
130,680	70	Woods, Good, HSG C
130,680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
6.2	655	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	255	0.1066	16.65	133.22	**Trap/Vee/Rect Channel Flow, Roadside swale** Bot.W=2.00' D=2.00' Z= 1.0 '/' Top.W=6.00' n= 0.030
16.6	1,010	Total			

Summary for Subcatchment 504S: Subcatchment 504

Runoff = 132.03 cfs @ 12.19 hrs, Volume= 11.278 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
	1,292,556	70	Woods, Good, HSG C
*	13,939	98	Road
	14,026	74	>75% Grass cover, Good, HSG C
	1,320,521	70	Weighted Average
	1,306,582		98.94% Pervious Area
	13,939		1.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.4375	0.30		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
19.1	2,860	0.2500	2.50		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	320	0.1910	15.31	321.48	**Trap/Vee/Rect Channel Flow, Mountain Stream** Bot.W=4.00' D=3.00' Z= 1.0 '/' Top.W=10.00' n= 0.060
25.0	3,280	Total			

Summary for Subcatchment 511S: Subcatchmant 511

Runoff = 11.37 cfs @ 12.08 hrs, Volume= 0.744 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
87,120	70	Woods, Good, HSG C
87,120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1000	0.17		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
5.5	580	0.1250	1.77		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.6	680	Total			

Summary for Subcatchment 512S: Subcatchment 512

Runoff = 7.77 cfs @ 12.06 hrs, Volume= 0.484 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

Area (sf)	CN	Description
56,628	70	Woods, Good, HSG C
56,628		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.3125	0.15		**Sheet Flow, Sheet Flow through Woods** Woods: Dense underbrush n= 0.800 P2= 4.00"
2.6	345	0.1900	2.18		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
0.3	155	0.1000	8.43	10.12	**Trap/Vee/Rect Channel Flow, Roadside Vegated Swale** Bot.W=1.00' D=1.00' Z= 0.2 '/' Top.W=1.40' n= 0.030 Earth, grassed & winding

14.0	600	Total

Summary for Subcatchment 600S: Subcatchment 600

Runoff = 44.20 cfs @ 12.12 hrs, Volume= 3.240 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	9,670	98	Road
	360,198	70	Woods, Good, HSG C
	369,868	71	Weighted Average
	360,198		97.39% Pervious Area
	9,670		2.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
12.0	1,510	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
19.3	1,610	Total			

Summary for Subcatchment 601S: Subcatchment 601

Runoff = 36.39 cfs @ 12.07 hrs, Volume= 2.343 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YEAR Rainfall=8.00"

	Area (sf)	CN	Description
*	10,498	98	Road
	257,004	70	Woods, Good, HSG C
	267,502	71	Weighted Average
	257,004		96.08% Pervious Area
	10,498		3.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	10	0.0500	1.40		**Sheet Flow, Sheet Flow off Road** Smooth surfaces n= 0.011 P2= 4.00"
7.2	90	0.1875	0.21		**Sheet Flow, Sheet Flow through Woods** Woods: Light underbrush n= 0.400 P2= 4.00"
7.7	970	0.1764	2.10		**Shallow Concentrated Flow, SC Flow through Woods** Woodland Kv= 5.0 fps
15.0	1,070	Total			

Summary for Reach 18R: Overland Flow

Inflow Area = 46.508 ac, 27.33% Impervious, Inflow Depth > 3.89" for 100-YEAR event
Inflow = 34.91 cfs @ 12.67 hrs, Volume= 15.088 af
Outflow = 34.84 cfs @ 12.70 hrs, Volume= 15.088 af, Atten= 0%, Lag= 1.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.84 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 0.82 fps, Avg. Travel Time= 10.9 min

Peak Storage= 4,857 cf @ 12.70 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 0.50' Flow Area= 33.8 sf, Capacity= 214.48 cfs

30.00' x 0.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 75.0 '/' Top Width= 105.00'
Length= 535.0' Slope= 0.0748 '/'
Inlet Invert= 1,937.00', Outlet Invert= 1,897.00'

‡

Summary for Reach 21R: Ex. Roadside Ditch

Inflow Area = 4.411 ac, 0.00% Impervious, Inflow Depth = 3.96" for 100-YEAR event
Inflow = 31.75 cfs @ 12.04 hrs, Volume= 1.457 af
Outflow = 31.73 cfs @ 12.04 hrs, Volume= 1.457 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.72 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.02 fps, Avg. Travel Time= 1.0 min

Peak Storage= 566 cf @ 12.04 hrs
Average Depth at Peak Storage= 1.39'
Bank-Full Depth= 1.50' Flow Area= 5.3 sf, Capacity= 36.63 cfs

2.00' x 1.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.0 '/' Top Width= 5.00'
Length= 120.0' Slope= 0.0250 '/'
Inlet Invert= 1,897.00', Outlet Invert= 1,894.00'

Summary for Reach 58A: Overland Flow

Inflow Area = 3.000 ac, 0.00% Impervious, Inflow Depth = 9.98" for 100-YEAR event
Inflow = 79.29 cfs @ 12.19 hrs, Volume= 2.494 af
Outflow = 78.46 cfs @ 12.20 hrs, Volume= 2.494 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.20 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 10.9 min

Peak Storage= 8,933 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.00' Flow Area= 120.0 sf, Capacity= 1,456.48 cfs

100.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 140.00'
Length= 478.0' Slope= 0.1004 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,172.00'

‡

Summary for Reach 61: Vegetated Roadside Swale

Inflow Area = 5.521 ac, 6.71% Impervious, Inflow Depth = 4.67" for 100-YEAR event
Inflow = 35.98 cfs @ 12.04 hrs, Volume= 2.147 af
Outflow = 35.40 cfs @ 12.06 hrs, Volume= 2.147 af, Atten= 2%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.60 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.93 fps, Avg. Travel Time= 6.5 min

Peak Storage= 3,496 cf @ 12.06 hrs
Average Depth at Peak Storage= 1.13'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 59.21 cfs

3.00' x 1.50' deep channel, n= 0.040
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 751.0' Slope= 0.0613 '/'
Inlet Invert= 2,000.00', Outlet Invert= 1,954.00'

Summary for Reach 66: Stream Channel

Inflow Area = 122.367 ac, 1.97% Impervious, Inflow Depth = 4.54" for 100-YEAR event
Inflow = 374.59 cfs @ 12.23 hrs, Volume= 46.262 af
Outflow = 369.38 cfs @ 12.27 hrs, Volume= 46.262 af, Atten= 1%, Lag= 2.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.75 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 1.81 fps, Avg. Travel Time= 17.3 min

Peak Storage= 59,228 cf @ 12.27 hrs
Average Depth at Peak Storage= 1.82'
Bank-Full Depth= 2.00' Flow Area= 36.0 sf, Capacity= 445.48 cfs

10.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 26.00'
Length= 1,884.0' Slope= 0.1152 '/'
Inlet Invert= 2,017.00', Outlet Invert= 1,800.00'

‡

Summary for Reach 73A: Vegetated Roadside Channel

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 5.10" for 100-YEAR event
Inflow = 30.83 cfs @ 11.98 hrs, Volume= 1.534 af
Outflow = 30.82 cfs @ 11.98 hrs, Volume= 1.534 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.16 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.69 fps, Avg. Travel Time= 0.6 min

Peak Storage= 300 cf @ 11.98 hrs
Average Depth at Peak Storage= 1.45'
Bank-Full Depth= 1.50' Flow Area= 5.3 sf, Capacity= 32.90 cfs

2.00' x 1.50' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 5.00'
Length= 60.0' Slope= 0.0560 '/'
Inlet Invert= 1,920.00', Outlet Invert= 1,916.64'

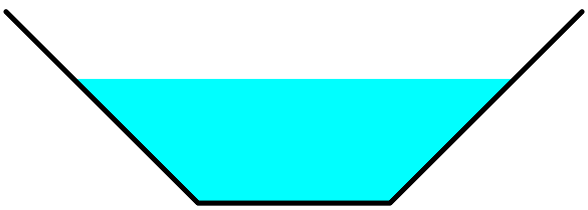
Summary for Reach 75: Roadside Channel

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 5.10" for 100-YEAR event
Inflow = 30.82 cfs @ 11.98 hrs, Volume= 1.534 af
Outflow = 30.76 cfs @ 11.99 hrs, Volume= 1.534 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.18 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.93 fps, Avg. Travel Time= 1.4 min

Peak Storage= 712 cf @ 11.99 hrs
Average Depth at Peak Storage= 1.30'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 71.25 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 166.0' Slope= 0.0542 '/'
Inlet Invert= 1,911.00', Outlet Invert= 1,902.00'



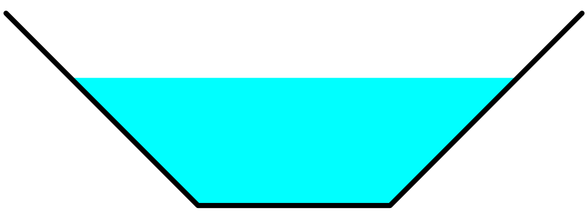
Summary for Reach 76: Roadside Channel

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 5.10" for 100-YEAR event
Inflow = 30.76 cfs @ 11.99 hrs, Volume= 1.534 af
Outflow = 30.76 cfs @ 11.99 hrs, Volume= 1.534 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.96 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.88 fps, Avg. Travel Time= 0.2 min

Peak Storage= 88 cf @ 11.99 hrs
Average Depth at Peak Storage= 1.33'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 68.43 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, dense weeds
Side Slope Z-value= 1.0 '/' Top Width= 6.00'
Length= 20.0' Slope= 0.0500 '/'
Inlet Invert= 1,901.00', Outlet Invert= 1,900.00'



Summary for Reach 78: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 4.52" for 100-YEAR event
Inflow = 242.71 cfs @ 12.23 hrs, Volume= 34.247 af
Outflow = 242.49 cfs @ 12.24 hrs, Volume= 34.247 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.09 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.92 fps, Avg. Travel Time= 5.9 min

Peak Storage= 13,739 cf @ 12.24 hrs
Average Depth at Peak Storage= 1.45'
Bank-Full Depth= 1.50' Flow Area= 21.0 sf, Capacity= 258.41 cfs

8.00' x 1.50' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 20.00'
Length= 685.0' Slope= 0.1646 '/'
Inlet Invert= 2,170.75', Outlet Invert= 2,058.00'

‡

Summary for Reach 80: Stream Channel

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 4.52" for 100-YEAR event
Inflow = 242.49 cfs @ 12.24 hrs, Volume= 34.247 af
Outflow = 241.70 cfs @ 12.26 hrs, Volume= 34.247 af, Atten= 0%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.68 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 10.1 min

Peak Storage= 23,294 cf @ 12.26 hrs
Average Depth at Peak Storage= 1.98'
Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 247.19 cfs

8.00' x 2.00' deep channel, n= 0.050
Side Slope Z-value= 4.0 '/' Top Width= 24.00'
Length= 740.0' Slope= 0.0473 '/'
Inlet Invert= 2,055.00', Outlet Invert= 2,020.00'

‡

Summary for Reach 82: Overland Flow

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 7.77 cfs @ 12.06 hrs, Volume= 0.484 af
Outflow = 2.20 cfs @ 12.31 hrs, Volume= 0.484 af, Atten= 72%, Lag= 15.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.25 fps, Min. Travel Time= 63.3 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 288.8 min

Peak Storage= 8,378 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.50' Flow Area= 75.0 sf, Capacity= 53.31 cfs

100.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 200.00'
Length= 938.0' Slope= 0.1354 '/'
Inlet Invert= 2,347.00', Outlet Invert= 2,220.00'

‡

Summary for Reach 82a: Overland Flow

Inflow Area = 62.628 ac, 1.58% Impervious, Inflow Depth = 3.86" for 100-YEAR event
Inflow = 121.34 cfs @ 12.40 hrs, Volume= 20.149 af
Outflow = 113.94 cfs @ 12.56 hrs, Volume= 20.149 af, Atten= 6%, Lag= 9.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.75 fps, Min. Travel Time= 10.6 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 68.7 min

Peak Storage= 72,305 cf @ 12.56 hrs
Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 164.89 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 473.0' Slope= 0.0846 '/'
Inlet Invert= 2,220.00', Outlet Invert= 2,180.00'

‡

Summary for Reach 83A: Overland Flow

Inflow Area = 30.315 ac, 1.06% Impervious, Inflow Depth = 3.54" for 100-YEAR event
Inflow = 52.02 cfs @ 12.19 hrs, Volume= 8.937 af
Outflow = 49.23 cfs @ 12.31 hrs, Volume= 8.937 af, Atten= 5%, Lag= 7.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.75 fps, Min. Travel Time= 9.8 min
Avg. Velocity = 0.20 fps, Avg. Travel Time= 37.3 min

Peak Storage= 28,997 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 232.26 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 441.0' Slope= 0.1678 '/'
Inlet Invert= 2,326.00', Outlet Invert= 2,252.00'

‡

Summary for Reach 84A: Overland Flow

Inflow Area = 61.328 ac, 1.61% Impervious, Inflow Depth = 3.85" for 100-YEAR event
Inflow = 121.36 cfs @ 12.32 hrs, Volume= 19.665 af
Outflow = 119.18 cfs @ 12.40 hrs, Volume= 19.665 af, Atten= 2%, Lag= 4.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.84 fps, Min. Travel Time= 5.5 min
Avg. Velocity = 0.20 fps, Avg. Travel Time= 22.9 min

Peak Storage= 39,074 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.79'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 192.72 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 277.0' Slope= 0.1155 '/'
Inlet Invert= 2,252.00', Outlet Invert= 2,220.00'

‡

Summary for Reach 84B: Overland Flow

Inflow Area = 31.013 ac, 2.16% Impervious, Inflow Depth = 4.15" for 100-YEAR event
Inflow = 74.94 cfs @ 12.22 hrs, Volume= 10.728 af
Outflow = 72.13 cfs @ 12.33 hrs, Volume= 10.728 af, Atten= 4%, Lag= 6.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.83 fps, Min. Travel Time= 7.5 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 29.5 min

Peak Storage= 32,248 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.56'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 228.33 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 370.0' Slope= 0.1622 '/'
Inlet Invert= 2,312.00', Outlet Invert= 2,252.00'

‡

Summary for Reach 85A: Overland Flow

Inflow Area = 4.281 ac, 0.54% Impervious, Inflow Depth = 8.63" for 100-YEAR event
Inflow = 50.13 cfs @ 12.20 hrs, Volume= 3.078 af
Outflow = 44.08 cfs @ 12.40 hrs, Volume= 3.078 af, Atten= 12%, Lag= 12.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.70 fps, Min. Travel Time= 12.0 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 73.1 min

Peak Storage= 31,778 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 221.40 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 505.0' Slope= 0.1525 '/'
Inlet Invert= 2,292.00', Outlet Invert= 2,215.00'

‡

Summary for Reach 85B: Overland Flow

Inflow Area = 8.621 ac, 0.65% Impervious, Inflow Depth = 7.34" for 100-YEAR event
Inflow = 73.47 cfs @ 12.35 hrs, Volume= 5.276 af
Outflow = 64.31 cfs @ 12.48 hrs, Volume= 5.276 af, Atten= 12%, Lag= 7.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.61 fps, Min. Travel Time= 12.3 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 79.4 min

Peak Storage= 47,384 cf @ 12.48 hrs
Average Depth at Peak Storage= 0.64'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 157.60 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 453.0' Slope= 0.0773 '/'
Inlet Invert= 2,215.00', Outlet Invert= 2,180.00'

‡

Summary for Reach 86A: Overland Flow

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 6.08" for 100-YEAR event
Inflow = 31.62 cfs @ 12.19 hrs, Volume= 2.199 af
Outflow = 30.77 cfs @ 12.27 hrs, Volume= 2.199 af, Atten= 3%, Lag= 4.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.57 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 27.5 min

Peak Storage= 10,607 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 1.00' Flow Area= 200.0 sf, Capacity= 190.45 cfs

100.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 100.0 '/' Top Width= 300.00'
Length= 195.0' Slope= 0.1128 '/'
Inlet Invert= 2,237.00', Outlet Invert= 2,215.00'

‡

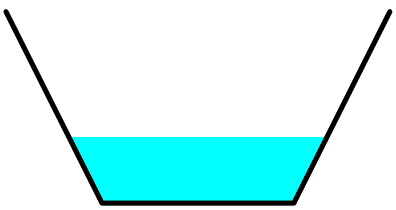
Summary for Reach 88: Roadside Swale

Inflow Area = 2.000 ac, 0.00% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 11.37 cfs @ 12.08 hrs, Volume= 0.744 af
Outflow = 11.28 cfs @ 12.09 hrs, Volume= 0.744 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.96 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.93 fps, Avg. Travel Time= 4.1 min

Peak Storage= 765 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.69'
Bank-Full Depth= 2.00' Flow Area= 6.0 sf, Capacity= 66.89 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 0.5 '/' Top Width= 4.00'
Length= 472.0' Slope= 0.0763 '/'
Inlet Invert= 2,207.00', Outlet Invert= 2,171.00'



Summary for Reach 91: Overland Flow

Inflow Area = 9.707 ac, 0.00% Impervious, Inflow Depth = 4.13" for 100-YEAR event
Inflow = 51.99 cfs @ 12.03 hrs, Volume= 3.345 af
Outflow = 51.67 cfs @ 12.05 hrs, Volume= 3.345 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.40 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.80 fps, Avg. Travel Time= 4.1 min

Peak Storage= 3,009 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.59'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 137.55 cfs

20.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 198.0' Slope= 0.0172 '/'
Inlet Invert= 1,889.40', Outlet Invert= 1,886.00'

‡

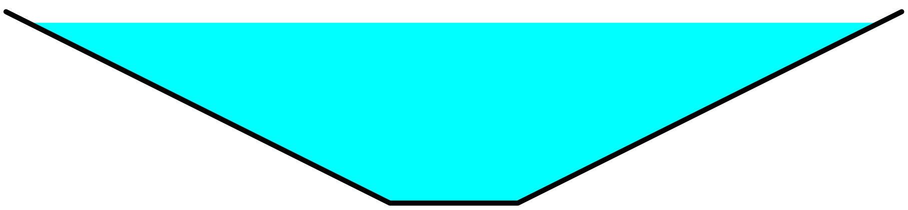
Summary for Reach 92: Channel Along RR Tracks

Inflow Area = 75.912 ac, 18.65% Impervious, Inflow Depth = 4.11" for 100-YEAR event
Inflow = 187.86 cfs @ 12.00 hrs, Volume= 25.996 af
Outflow = 184.42 cfs @ 12.02 hrs, Volume= 25.996 af, Atten= 2%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.52 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 1.42 fps, Avg. Travel Time= 9.0 min

Peak Storage= 16,673 cf @ 12.02 hrs
Average Depth at Peak Storage= 2.83'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 211.58 cfs

2.00' x 3.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 770.0' Slope= 0.0239 '/'
Inlet Invert= 1,848.40', Outlet Invert= 1,830.00'



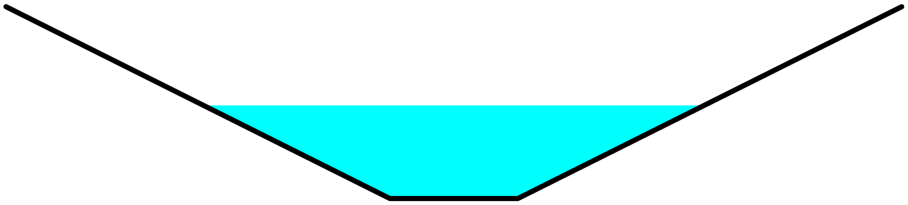
Summary for Reach 92a: Channel Along RR Tracks

Inflow Area = 9.707 ac, 0.00% Impervious, Inflow Depth = 4.13" for 100-YEAR event
Inflow = 51.67 cfs @ 12.05 hrs, Volume= 3.345 af
Outflow = 49.11 cfs @ 12.08 hrs, Volume= 3.345 af, Atten= 5%, Lag= 2.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.86 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 2.01 fps, Avg. Travel Time= 9.5 min

Peak Storage= 8,140 cf @ 12.08 hrs
Average Depth at Peak Storage= 1.46'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 248.24 cfs

2.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 1,137.0' Slope= 0.0329 '/'
Inlet Invert= 1,885.90', Outlet Invert= 1,848.50'



Summary for Reach 93R: Roadside Ditch

Inflow Area = 2.052 ac, 0.00% Impervious, Inflow Depth = 3.98" for 100-YEAR event
Inflow = 16.37 cfs @ 12.01 hrs, Volume= 0.681 af
Outflow = 16.34 cfs @ 12.01 hrs, Volume= 0.681 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.27 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.52 fps, Avg. Travel Time= 1.5 min

Peak Storage= 418 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.84'
Bank-Full Depth= 1.50' Flow Area= 7.5 sf, Capacity= 54.15 cfs

2.00' x 1.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 135.0' Slope= 0.0259 '/'
Inlet Invert= 1,894.50', Outlet Invert= 1,891.00'

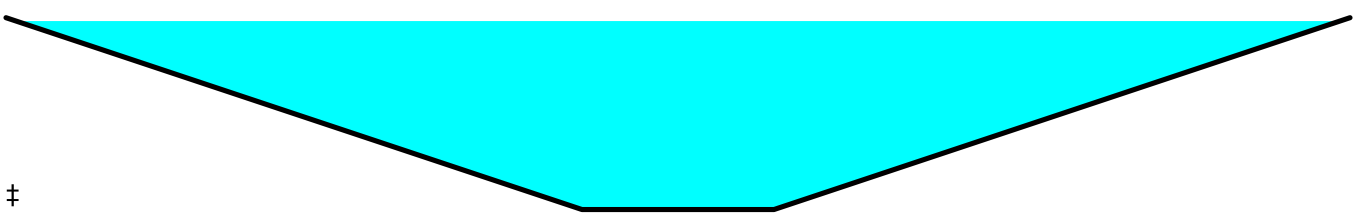
Summary for Reach 142R: Overland Flow

Inflow Area = 8.896 ac, 28.68% Impervious, Inflow Depth = 3.30" for 100-YEAR event
Inflow = 30.94 cfs @ 12.18 hrs, Volume= 2.445 af
Outflow = 30.43 cfs @ 12.20 hrs, Volume= 2.445 af, Atten= 2%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.62 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 5.5 min

Peak Storage= 3,258 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 0.30' Flow Area= 12.0 sf, Capacity= 31.71 cfs

10.00' x 0.30' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 280.0' Slope= 0.0299 '/'
Inlet Invert= 1,951.87', Outlet Invert= 1,943.50'



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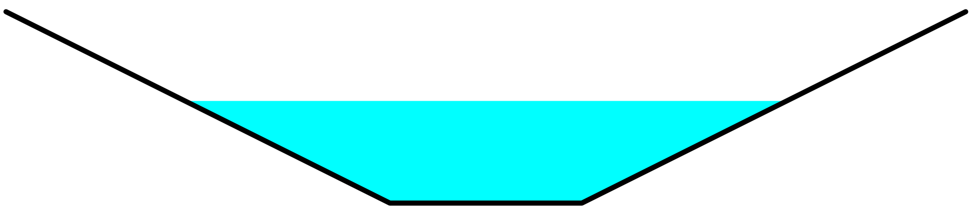
Summary for Reach 143R: Stone Lined Swale with ChkDams

Inflow Area = 50.207 ac, 25.31% Impervious, Inflow Depth > 3.89" for 100-YEAR event
Inflow = 36.96 cfs @ 12.68 hrs, Volume= 16.257 af
Outflow = 36.95 cfs @ 12.69 hrs, Volume= 16.257 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.37 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.89 fps, Avg. Travel Time= 3.0 min

Peak Storage= 1,479 cf @ 12.69 hrs
Average Depth at Peak Storage= 1.07'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 142.04 cfs

2.00' x 2.00' deep channel, n= 0.050 Mountain streams w/large boulders
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 335.0' Slope= 0.1403 '/'
Inlet Invert= 1,897.00', Outlet Invert= 1,850.00'



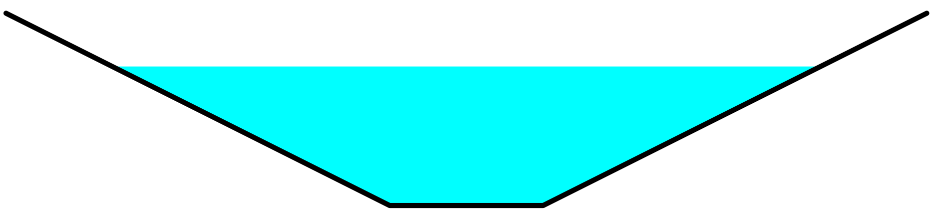
Summary for Reach I1: TRM SWALE

Inflow Area = 3.692 ac, 57.82% Impervious, Inflow Depth = 6.55" for 100-YEAR event
Inflow = 36.08 cfs @ 11.99 hrs, Volume= 2.015 af
Outflow = 35.92 cfs @ 11.99 hrs, Volume= 2.015 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.54 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.00 fps, Avg. Travel Time= 2.4 min

Peak Storage= 1,471 cf @ 11.99 hrs
Average Depth at Peak Storage= 1.81'
Bank-Full Depth= 2.50' Flow Area= 17.5 sf, Capacity= 74.54 cfs

2.00' x 2.50' deep channel, n= 0.035 TRM
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 145.0' Slope= 0.0069 '/'
Inlet Invert= 1,943.00', Outlet Invert= 1,942.00'



Summary for Reach I12: stone lined stream channel

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 5.67" for 100-YEAR event
Inflow = 158.20 cfs @ 12.01 hrs, Volume= 9.228 af
Outflow = 158.15 cfs @ 12.01 hrs, Volume= 9.228 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.34 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.30 fps, Avg. Travel Time= 1.0 min

Peak Storage= 2,171 cf @ 12.01 hrs
Average Depth at Peak Storage= 2.39'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 171.87 cfs

4.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 9.00'
Length= 142.0' Slope= 0.0486 '/'
Inlet Invert= 1,999.90', Outlet Invert= 1,993.00'

Summary for Reach I12a: stone lined stream channel

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 5.67" for 100-YEAR event
Inflow = 158.15 cfs @ 12.01 hrs, Volume= 9.228 af
Outflow = 158.09 cfs @ 12.02 hrs, Volume= 9.228 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 13.73 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.99 fps, Avg. Travel Time= 0.9 min

Peak Storage= 1,841 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.94'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 253.40 cfs

4.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 9.00'
Length= 160.0' Slope= 0.1056 '/'
Inlet Invert= 1,992.90', Outlet Invert= 1,976.00'

Summary for Reach I12b: stone lined stream channel

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 5.67" for 100-YEAR event
Inflow = 158.09 cfs @ 12.02 hrs, Volume= 9.228 af
Outflow = 157.64 cfs @ 12.02 hrs, Volume= 9.228 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 12.49 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.74 fps, Avg. Travel Time= 2.7 min

Peak Storage= 5,551 cf @ 12.02 hrs
Average Depth at Peak Storage= 2.08'
Bank-Full Depth= 2.50' Flow Area= 16.3 sf, Capacity= 222.71 cfs

4.00' x 2.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.0 '/' Top Width= 9.00'
Length= 440.0' Slope= 0.0816 '/'
Inlet Invert= 1,975.90', Outlet Invert= 1,940.00'

Summary for Reach I21: stone lined stream channel

Inflow Area = 9.234 ac, 60.31% Impervious, Inflow Depth = 6.62" for 100-YEAR event
Inflow = 95.41 cfs @ 11.97 hrs, Volume= 5.097 af
Outflow = 89.24 cfs @ 12.00 hrs, Volume= 5.097 af, Atten= 6%, Lag= 1.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.01 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 2.00 fps, Avg. Travel Time= 13.2 min

Peak Storage= 15,691 cf @ 12.00 hrs
Average Depth at Peak Storage= 1.56'
Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 143.65 cfs

4.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.5 '/' Top Width= 10.00'
Length= 1,585.0' Slope= 0.0886 '/'
Inlet Invert= 2,169.00', Outlet Invert= 2,028.50'

Summary for Pond 1P: culvert

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 5.67" for 100-YEAR event
Inflow = 158.20 cfs @ 12.01 hrs, Volume= 9.228 af
Outflow = 158.20 cfs @ 12.01 hrs, Volume= 9.228 af, Atten= 0%, Lag= 0.0 min
Primary = 158.20 cfs @ 12.01 hrs, Volume= 9.228 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,027.69' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,020.00'	**54.0" Round CMP_Round 54"** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,020.00' / 2,017.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf

Primary OutFlow Max=158.14 cfs @ 12.01 hrs HW=2,027.68' TW=2,023.41' (Dynamic Tailwater)
└─**1=CMP_Round 54"** (Inlet Controls 158.14 cfs @ 9.94 fps)

Summary for Pond 6P: Overflow Basin @ 8 tee

Inflow Area = 10.459 ac, 0.00% Impervious, Inflow Depth = 4.50" for 100-YEAR event
Inflow = 51.26 cfs @ 12.19 hrs, Volume= 3.922 af
Outflow = 50.10 cfs @ 12.22 hrs, Volume= 3.766 af, Atten= 2%, Lag= 2.1 min
Primary = 50.10 cfs @ 12.22 hrs, Volume= 3.766 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,964.93' @ 12.22 hrs Surf.Area= 8,945 sf Storage= 24,843 cf

Plug-Flow detention time= 46.4 min calculated for 3.766 af (96% of inflow)
Center-of-Mass det. time= 23.6 min (856.0 - 832.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,961.00'	25,500 cf	**surface storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,961.00	3,100	0	0
1,962.00	5,100	4,100	4,100
1,963.00	6,100	5,600	9,700
1,964.00	8,250	7,175	16,875
1,965.00	9,000	8,625	25,500

Device	Routing	Invert	Outlet Devices
#1	Primary	1,962.50'	**36.0" Round Culvert** L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,962.50' / 1,958.00' S= 0.0310 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	1,964.50'	**25.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67

2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=50.08 cfs @ 12.22 hrs HW=1,964.93' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 32.49 cfs @ 5.30 fps)
└—**2=Broad-Crested Rectangular Weir** (Weir Controls 17.60 cfs @ 1.65 fps)

Summary for Pond 8P: NATURAL DEPRESSION

Inflow Area = 3.450 ac, 0.00% Impervious, Inflow Depth = 4.81" for 100-YEAR event
Inflow = 20.95 cfs @ 12.08 hrs, Volume= 1.383 af
Outflow = 1.87 cfs @ 12.89 hrs, Volume= 1.383 af, Atten= 91%, Lag= 49.0 min
Discarded = 0.26 cfs @ 12.89 hrs, Volume= 0.815 af
Primary = 1.60 cfs @ 12.89 hrs, Volume= 0.568 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,970.57' @ 12.89 hrs Surf.Area= 22,510 sf Storage= 33,704 cf

Plug-Flow detention time= 864.5 min calculated for 1.383 af (100% of inflow)
Center-of-Mass det. time= 864.7 min (1,689.1 - 824.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,967.50'	91,482 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,967.50	2,433	0	0
1,968.00	2,887	1,330	1,330
1,970.00	17,890	20,777	22,107
1,972.00	33,985	51,875	73,982
1,972.50	36,015	17,500	91,482

Device	Routing	Invert	Outlet Devices
#1	Primary	1,970.00'	**18.0" Round Culvert** L= 250.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,970.00' / 1,953.00' S= 0.0680 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Discarded	1,967.50'	**0.500 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.26 cfs @ 12.89 hrs HW=1,970.57' (Free Discharge)
└—**2=Exfiltration** (Exfiltration Controls 0.26 cfs)

Primary OutFlow Max=1.60 cfs @ 12.89 hrs HW=1,970.57' TW=1,953.84' (Dynamic Tailwater)
└—**1=Culvert** (Inlet Controls 1.60 cfs @ 2.58 fps)

Summary for Pond 29P: cb29

Inflow Area = 0.582 ac, 15.87% Impervious, Inflow Depth = 5.39" for 100-YEAR event
Inflow = 5.42 cfs @ 11.97 hrs, Volume= 0.261 af
Outflow = 5.42 cfs @ 11.97 hrs, Volume= 0.261 af, Atten= 0%, Lag= 0.0 min
Primary = 5.42 cfs @ 11.97 hrs, Volume= 0.261 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,926.08' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,924.00'	**18.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,924.00' / 1,923.75' S= 0.0083 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,928.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.41 cfs @ 11.97 hrs HW=1,926.07' TW=1,925.67' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.41 cfs @ 3.06 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 57: 15" Steel Culvert

Inflow Area = 1.326 ac, 4.72% Impervious, Inflow Depth = 4.58" for 100-YEAR event
Inflow = 7.78 cfs @ 12.07 hrs, Volume= 0.506 af
Outflow = 7.78 cfs @ 12.07 hrs, Volume= 0.506 af, Atten= 0%, Lag= 0.0 min
Primary = 7.78 cfs @ 12.07 hrs, Volume= 0.506 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,006.06' @ 12.07 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,004.00'	**15.0" Round 15" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,004.00' / 2,000.00' S= 0.0667 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=7.77 cfs @ 12.07 hrs HW=2,006.06' TW=2,001.12' (Dynamic Tailwater)
1=15" Smooth Steel Culvert (old) (Inlet Controls 5.60 cfs @ 4.56 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 2.18 cfs @ 0.68 fps)

Summary for Pond 58R: 24" HDPE Pipe

Inflow Area = 3.000 ac, 0.00% Impervious, Inflow Depth = 9.98" for 100-YEAR event
Inflow = 79.29 cfs @ 12.19 hrs, Volume= 2.494 af
Outflow = 79.29 cfs @ 12.19 hrs, Volume= 2.494 af, Atten= 0%, Lag= 0.0 min
Primary = 79.29 cfs @ 12.19 hrs, Volume= 2.494 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,225.56' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,222.00'	**24.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,222.00' / 2,221.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	2,225.00'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=79.29 cfs @ 12.19 hrs HW=2,225.56' TW=2,220.18' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 24.22 cfs @ 7.71 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 55.07 cfs @ 1.96 fps)

Summary for Pond 59: 32" Plastic Pipe

Inflow Area = 30.315 ac, 1.06% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 132.03 cfs @ 12.19 hrs, Volume= 11.278 af
Outflow = 132.03 cfs @ 12.19 hrs, Volume= 11.278 af, Atten= 0%, Lag= 0.0 min
Primary = 52.02 cfs @ 12.19 hrs, Volume= 8.937 af
Secondary = 80.01 cfs @ 12.19 hrs, Volume= 2.340 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,334.34' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,327.00'	**32.0" Round 32" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,327.00' / 2,324.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 5.59 sf
#2	Secondary	2,331.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=52.02 cfs @ 12.19 hrs HW=2,334.34' TW=2,326.44' (Dynamic Tailwater)
└─**1=32" Plastic Culvert** (Inlet Controls 52.02 cfs @ 9.31 fps)

Secondary OutFlow Max=79.96 cfs @ 12.19 hrs HW=2,334.34' TW=2,324.23' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 79.96 cfs @ 5.99 fps)

Summary for Pond 60: 30" Steel Culvert

Inflow Area = 122.367 ac, 1.97% Impervious, Inflow Depth = 4.54" for 100-YEAR event
Inflow = 374.59 cfs @ 12.23 hrs, Volume= 46.262 af
Outflow = 374.59 cfs @ 12.23 hrs, Volume= 46.262 af, Atten= 0%, Lag= 0.0 min
Primary = 374.59 cfs @ 12.23 hrs, Volume= 46.262 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,025.12' @ 12.23 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,020.00'	**30.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,020.00' / 2,019.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Primary	2,021.00'	**15.0" Round Culvert** L= 20.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 2,021.00' / 2,020.00' S= 0.0500 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 1.23 sf
#3	Primary	2,024.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=374.52 cfs @ 12.23 hrs HW=2,025.12' TW=2,018.81' (Dynamic Tailwater)
- **1=Culvert** (Inlet Controls 46.50 cfs @ 9.47 fps)
- **2=Culvert** (Inlet Controls 9.75 cfs @ 7.94 fps)
- **3=Broad-Crested Rectangular Weir** (Weir Controls 318.28 cfs @ 2.84 fps)

Summary for Pond 67P: 24" Steel Culvert

Inflow Area = 4.195 ac, 7.34% Impervious, Inflow Depth = 4.69" for 100-YEAR event
Inflow = 28.61 cfs @ 12.03 hrs, Volume= 1.641 af
Outflow = 28.61 cfs @ 12.03 hrs, Volume= 1.641 af, Atten= 0%, Lag= 0.0 min
Primary = 28.61 cfs @ 12.03 hrs, Volume= 1.641 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,006.19' @ 12.03 hrs
Flood Elev= 2,008.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,003.00'	**24.0" Round 24" Smooth Steel Culvert (old)** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,003.00' / 2,000.00' S= 0.0500 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	2,006.00'	**50.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=28.59 cfs @ 12.03 hrs HW=2,006.19' TW=2,001.11' (Dynamic Tailwater)
- **1=24" Smooth Steel Culvert (old)** (Inlet Controls 17.66 cfs @ 5.62 fps)
- **2=Broad-Crested Rectangular Weir** (Weir Controls 10.93 cfs @ 1.16 fps)

Summary for Pond 74: 12" CMP Culvert

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 5.10" for 100-YEAR event
Inflow = 30.82 cfs @ 11.98 hrs, Volume= 1.534 af
Outflow = 30.82 cfs @ 11.98 hrs, Volume= 1.534 af, Atten= 0%, Lag= 0.0 min
Primary = 30.82 cfs @ 11.98 hrs, Volume= 1.534 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,918.35' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,914.00'	**12.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 1,914.00' / 1,911.76' S= 0.0560 '/' Cc= 0.900 n= 0.025, Flow Area= 0.79 sf
#2	Primary	1,917.00'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=30.76 cfs @ 11.98 hrs HW=1,918.35' TW=1,912.30' (Dynamic Tailwater)
1=Culvert (Barrel Controls 6.01 cfs @ 7.65 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 24.75 cfs @ 3.68 fps)

Summary for Pond 74A: 16" CMP Culvert

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 5.10" for 100-YEAR event
Inflow = 30.83 cfs @ 11.98 hrs, Volume= 1.534 af
Outflow = 30.83 cfs @ 11.98 hrs, Volume= 1.534 af, Atten= 0%, Lag= 0.0 min
Primary = 30.83 cfs @ 11.98 hrs, Volume= 1.534 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,925.68' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,921.50'	**16.0" Round Culvert** L= 35.0' Ke= 0.500 Inlet / Outlet Invert= 1,921.50' / 1,920.00' S= 0.0429 '/' Cc= 0.900 n= 0.025, Flow Area= 1.40 sf
#2	Primary	1,924.50'	**5.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=30.78 cfs @ 11.98 hrs HW=1,925.68' TW=1,921.45' (Dynamic Tailwater)
1=Culvert (Outlet Controls 11.15 cfs @ 7.99 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 19.63 cfs @ 3.33 fps)

Summary for Pond 76A: culvert

Inflow Area = 3.612 ac, 11.13% Impervious, Inflow Depth = 5.10" for 100-YEAR event
Inflow = 30.76 cfs @ 11.99 hrs, Volume= 1.534 af
Outflow = 30.76 cfs @ 11.99 hrs, Volume= 1.534 af, Atten= 0%, Lag= 0.0 min
Primary = 30.76 cfs @ 11.99 hrs, Volume= 1.534 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 1,906.51' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,902.00'	**12.0" Round Culvert** L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,902.00' / 1,898.00' S= 0.0667 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf
#2	Primary	1,904.00'	**2.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=30.75 cfs @ 11.99 hrs HW=1,906.51' TW=1,902.33' (Dynamic Tailwater)
—**1=Culvert** (Outlet Controls 4.43 cfs @ 5.64 fps)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 26.32 cfs @ 5.24 fps)

Summary for Pond 77: 36" Steel Culvert

Inflow Area = 88.881 ac, 1.70% Impervious, Inflow Depth = 4.52" for 100-YEAR event
Inflow = 236.10 cfs @ 12.24 hrs, Volume= 33.503 af
Outflow = 236.10 cfs @ 12.24 hrs, Volume= 33.503 af, Atten= 0%, Lag= 0.0 min
Primary = 236.10 cfs @ 12.24 hrs, Volume= 33.503 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,176.75' @ 12.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,172.00'	**36.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 2,172.00' / 2,171.00' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	2,176.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=236.09 cfs @ 12.24 hrs HW=2,176.75' TW=2,172.20' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 61.35 cfs @ 8.68 fps)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 174.74 cfs @ 2.33 fps)

Summary for Pond 79: 16" Steel Culvert

Inflow Area = 90.881 ac, 1.66% Impervious, Inflow Depth = 4.52" for 100-YEAR event
Inflow = 242.49 cfs @ 12.24 hrs, Volume= 34.247 af
Outflow = 242.49 cfs @ 12.24 hrs, Volume= 34.247 af, Atten= 0%, Lag= 0.0 min
Primary = 242.49 cfs @ 12.24 hrs, Volume= 34.247 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,058.91' @ 12.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,056.00'	**16.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 2,056.00' / 2,055.00' S= 0.0500 '/' Cc= 0.900

Device	Routing	Invert	Outlet Devices
			n= 0.012, Flow Area= 1.40 sf
#2	Primary	2,058.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=242.49 cfs @ 12.24 hrs HW=2,058.91' TW=2,056.97' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 9.35 cfs @ 6.70 fps)
2=**Broad-Crested Rectangular Weir** (Weir Controls 233.13 cfs @ 2.56 fps)

Summary for Pond 83: 24" HPDE Culvert

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 7.77 cfs @ 12.06 hrs, Volume= 0.484 af
Outflow = 7.77 cfs @ 12.06 hrs, Volume= 0.484 af, Atten= 0%, Lag= 0.0 min
Primary = 7.77 cfs @ 12.06 hrs, Volume= 0.484 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,361.44' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,360.00'	**24.0" Round 24" Plastic Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,360.00' / 2,357.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,364.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=7.77 cfs @ 12.06 hrs HW=2,361.44' TW=2,347.06' (Dynamic Tailwater)
1=**24" Plastic Culvert** (Inlet Controls 7.77 cfs @ 3.22 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=2,360.00' TW=2,327.00' (Dynamic Tailwater)
2=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 84: 24" HDPE Pipe

Inflow Area = 31.013 ac, 2.16% Impervious, Inflow Depth = 5.48" for 100-YEAR event
Inflow = 192.43 cfs @ 12.22 hrs, Volume= 14.175 af
Outflow = 192.43 cfs @ 12.22 hrs, Volume= 14.175 af, Atten= 0%, Lag= 0.0 min
Primary = 74.94 cfs @ 12.22 hrs, Volume= 10.728 af
Secondary = 117.50 cfs @ 12.22 hrs, Volume= 3.447 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,324.28' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,315.00'	**36.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,315.00' / 2,312.00' S= 0.0500 '/' Cc= 0.900

			n= 0.011, Flow Area= 7.07 sf
#2	Secondary	2,320.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=74.93 cfs @ 12.22 hrs HW=2,324.28' TW=2,312.54' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 74.93 cfs @ 10.60 fps)

Secondary OutFlow Max=117.49 cfs @ 12.22 hrs HW=2,324.28' TW=2,303.45' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 117.49 cfs @ 6.87 fps)

Summary for Pond 85: 28" HDPE Pipe

Inflow Area = 4.281 ac, 0.54% Impervious, Inflow Depth = 14.13" for 100-YEAR event
Inflow = 135.74 cfs @ 12.20 hrs, Volume= 5.040 af
Outflow = 135.74 cfs @ 12.20 hrs, Volume= 5.040 af, Atten= 0%, Lag= 0.0 min
Primary = 50.13 cfs @ 12.20 hrs, Volume= 3.078 af
Secondary = 85.61 cfs @ 12.20 hrs, Volume= 1.962 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,303.47' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,295.00'	**30.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,295.00' / 2,292.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 4.91 sf
#2	Secondary	2,300.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=50.13 cfs @ 12.20 hrs HW=2,303.47' TW=2,292.38' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 50.13 cfs @ 10.21 fps)

Secondary OutFlow Max=85.54 cfs @ 12.20 hrs HW=2,303.47' TW=2,248.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 85.54 cfs @ 6.17 fps)

Summary for Pond 86: 24" HDPE Pipe

Inflow Area = 4.340 ac, 0.76% Impervious, Inflow Depth = 9.89" for 100-YEAR event
Inflow = 98.51 cfs @ 12.19 hrs, Volume= 3.577 af
Outflow = 98.51 cfs @ 12.19 hrs, Volume= 3.577 af, Atten= 0%, Lag= 0.0 min
Primary = 31.62 cfs @ 12.19 hrs, Volume= 2.199 af
Secondary = 66.89 cfs @ 12.19 hrs, Volume= 1.378 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,248.01' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,240.00'	**24.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,240.00' / 2,237.00' S= 0.0500 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Secondary	2,245.00'	**4.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=31.61 cfs @ 12.19 hrs HW=2,248.01' TW=2,237.38' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 31.61 cfs @ 10.06 fps)

Secondary OutFlow Max=66.81 cfs @ 12.19 hrs HW=2,248.01' TW=2,225.56' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 66.81 cfs @ 5.55 fps)

Summary for Pond 87: 18" Steel Culvert

Inflow Area = 2.000 ac, 0.00% Impervious, Inflow Depth = 4.46" for 100-YEAR event
Inflow = 11.37 cfs @ 12.08 hrs, Volume= 0.744 af
Outflow = 11.37 cfs @ 12.08 hrs, Volume= 0.744 af, Atten= 0%, Lag= 0.0 min
Primary = 11.37 cfs @ 12.08 hrs, Volume= 0.744 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,211.61' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,208.00'	**18.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2,208.00' / 2,207.00' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=11.36 cfs @ 12.08 hrs HW=2,211.61' TW=2,207.69' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 11.36 cfs @ 6.43 fps)

Summary for Pond 90: 24" Steel Culvert

Inflow Area = 9.707 ac, 0.00% Impervious, Inflow Depth = 4.13" for 100-YEAR event
Inflow = 51.99 cfs @ 12.03 hrs, Volume= 3.345 af
Outflow = 51.99 cfs @ 12.03 hrs, Volume= 3.345 af, Atten= 0%, Lag= 0.0 min
Primary = 51.99 cfs @ 12.03 hrs, Volume= 3.345 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,895.14' @ 12.03 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,890.00'	**35.0" W x 24.0" H, R=17.9"/55.1" Arch CMP_Arch_1/2 35x24** L= 25.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,890.00' / 1,889.50' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 4.63 sf

#2	Primary	1,895.00'	**50.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=51.92 cfs @ 12.03 hrs HW=1,895.14' TW=1,889.98' (Dynamic Tailwater)
1=**CMP_Arch_1/2 35x24** (Inlet Controls 45.66 cfs @ 9.86 fps)
2=**Broad-Crested Rectangular Weir** (Weir Controls 6.26 cfs @ 0.92 fps)

Summary for Pond 122: 18" HDPE Storm

Inflow Area = 0.477 ac, 83.18% Impervious, Inflow Depth = 7.28" for 100-YEAR event
Inflow = 5.36 cfs @ 11.97 hrs, Volume= 0.289 af
Outflow = 5.36 cfs @ 11.97 hrs, Volume= 0.289 af, Atten= 0%, Lag= 0.0 min
Primary = 5.36 cfs @ 11.97 hrs, Volume= 0.289 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,949.95' @ 11.99 hrs
Flood Elev= 1,961.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,946.00'	**18.0" Round Culvert** L= 22.0' Ke= 0.500 Inlet / Outlet Invert= 1,946.00' / 1,945.89' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,949.33'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.46 cfs @ 11.97 hrs HW=1,949.88' TW=1,949.87' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 1.06 cfs @ 0.60 fps)
2=**Orifice/Grate** (Orifice Controls 2.40 cfs @ 0.60 fps)

Summary for Pond 123: 18" HDPE Storm

Inflow Area = 0.667 ac, 80.73% Impervious, Inflow Depth = 7.21" for 100-YEAR event
Inflow = 7.47 cfs @ 11.97 hrs, Volume= 0.401 af
Outflow = 7.47 cfs @ 11.97 hrs, Volume= 0.401 af, Atten= 0%, Lag= 0.0 min
Primary = 7.47 cfs @ 11.97 hrs, Volume= 0.401 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,949.92' @ 11.99 hrs
Flood Elev= 1,961.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,945.89'	**18.0" Round Culvert** L= 124.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,945.89' / 1,945.27' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,949.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.63 cfs @ 11.97 hrs HW=1,949.87' TW=1,949.75' (Dynamic Tailwater)
1=**Culvert** (Outlet Controls 2.46 cfs @ 1.39 fps)
2=**Orifice/Grate** (Weir Controls 4.17 cfs @ 1.42 fps)

Summary for Pond A1: A1 - OPEN SWALE

Inflow Area = 1.159 ac, 0.00% Impervious, Inflow Depth = 4.81" for 100-YEAR event
Inflow = 8.37 cfs @ 12.02 hrs, Volume= 0.465 af
Outflow = 8.32 cfs @ 12.03 hrs, Volume= 0.465 af, Atten= 1%, Lag= 0.6 min
Discarded = 0.03 cfs @ 12.03 hrs, Volume= 0.087 af
Primary = 8.29 cfs @ 12.03 hrs, Volume= 0.377 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,910.35' @ 12.03 hrs Surf.Area= 2,334 sf Storage= 2,908 cf

Plug-Flow detention time= 210.9 min calculated for 0.465 af (100% of inflow)
Center-of-Mass det. time= 211.1 min (1,030.7 - 819.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,904.50'	186 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 464 cf Overall x 40.0% Voids
#2	1,905.50'	139 cf	**FILTER MEDIA (Prismatic)** Listed below (Recalc) 928 cf Overall x 15.0% Voids
#3	1,907.50'	2,803 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		3,128 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,904.50	464	0	0
1,905.50	464	464	464

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,905.50	464	0	0
1,907.50	464	928	928

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,907.50	464	0	0
1,908.00	567	258	258
1,910.00	1,291	1,858	2,116
1,910.50	1,457	687	2,803

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,904.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,910.00'	**15.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.03 hrs HW=1,910.35' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=8.28 cfs @ 12.03 hrs HW=1,910.35' TW=1,907.43' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 8.28 cfs @ 1.60 fps)

Summary for Pond A2: A2 - OPEN SWALE

```
Inflow Area =      1.621 ac,   0.00% Impervious,  Inflow Depth =   4.16"    for  100-YEAR event
Inflow      =     11.62 cfs @  12.03 hrs,  Volume=          0.563 af
Outflow     =     11.59 cfs @  12.03 hrs,  Volume=          0.563 af,  Atten= 0%,  Lag= 0.4 min
Discarded   =      0.02 cfs @  12.03 hrs,  Volume=          0.043 af
Primary     =     11.57 cfs @  12.03 hrs,  Volume=          0.520 af
```

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,907.43' @ 12.03 hrs Surf.Area= 1,567 sf Storage= 1,373 cf

Plug-Flow detention time= 59.9 min calculated for 0.563 af (100% of inflow)
Center-of-Mass det. time= 60.0 min (885.9 - 825.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,902.50'	134 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 336 cf Overall x 40.0% Voids
#2	1,903.50'	101 cf	**FILTER BED (Prismatic)** Listed below (Recalc) 672 cf Overall x 15.0% Voids
#3	1,905.50'	2,316 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		2,551 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,902.50	336	0	0
1,903.50	336	336	336

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,903.50	336	0	0
1,905.50	336	672	672

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,905.50	336	0	0
1,906.00	428	191	191
1,908.00	1,080	1,508	1,699
1,908.50	1,386	617	2,316

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,902.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,907.00'	**15.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00

Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.02 cfs @ 12.03 hrs HW=1,907.43' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=11.56 cfs @ 12.03 hrs HW=1,907.43' TW=1,905.96' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 11.56 cfs @ 1.79 fps)

Summary for Pond A3: A3 - OPEN SWALE

Inflow Area = 2.379 ac, 0.00% Impervious, Inflow Depth = 4.19" for 100-YEAR event
Inflow = 17.12 cfs @ 12.03 hrs, Volume= 0.831 af
Outflow = 17.08 cfs @ 12.04 hrs, Volume= 0.831 af, Atten= 0%, Lag= 0.4 min
Discarded = 0.03 cfs @ 12.04 hrs, Volume= 0.075 af
Primary = 17.06 cfs @ 12.04 hrs, Volume= 0.756 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,905.96' @ 12.04 hrs Surf.Area= 2,298 sf Storage= 2,487 cf

Plug-Flow detention time= 84.3 min calculated for 0.830 af (100% of inflow)
Center-of-Mass det. time= 84.5 min (907.8 - 823.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,900.50'	206 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 514 cf Overall x 40.0% Voids
#2	1,901.50'	154 cf	**FILTER MEDIA (Prismatic)** Listed below (Recalc) 1,028 cf Overall x 15.0% Voids
#3	1,903.50'	2,895 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		3,255 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,900.50	514	0	0
1,901.50	514	514	514

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.50	514	0	0
1,903.50	514	1,028	1,028

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,903.50	514	0	0
1,904.00	613	282	282
1,906.00	1,283	1,896	2,178
1,906.50	1,585	717	2,895

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,900.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,905.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.04 hrs HW=1,905.96' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=17.04 cfs @ 12.04 hrs HW=1,905.96' TW=1,904.03' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 17.04 cfs @ 1.85 fps)

Summary for Pond A4: A4 - OPEN SWALE

Inflow Area = 2.923 ac, 0.00% Impervious, Inflow Depth = 4.02" for 100-YEAR event
Inflow = 21.03 cfs @ 12.03 hrs, Volume= 0.979 af
Outflow = 21.01 cfs @ 12.04 hrs, Volume= 0.979 af, Atten= 0%, Lag= 0.3 min
Discarded = 0.02 cfs @ 12.04 hrs, Volume= 0.052 af
Primary = 20.99 cfs @ 12.04 hrs, Volume= 0.927 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,904.03' @ 12.04 hrs Surf.Area= 1,649 sf Storage= 1,832 cf

Plug-Flow detention time= 50.8 min calculated for 0.979 af (100% of inflow)
Center-of-Mass det. time= 51.0 min (875.0 - 824.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,898.50'	137 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 343 cf Overall x 40.0% Voids
#2	1,899.50'	103 cf	**FILTER MEDIA (Prismatic)** Listed below (Recalc) 686 cf Overall x 15.0% Voids
#3	1,901.50'	2,105 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		2,345 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,898.50	343	0	0
1,899.50	343	343	343

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,899.50	343	0	0
1,901.50	343	686	686

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.50	343	0	0
1,902.00	425	192	192
1,904.00	949	1,374	1,566
1,904.50	1,207	539	2,105

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,898.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,903.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.02 cfs @ 12.04 hrs HW=1,904.03' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=20.97 cfs @ 12.04 hrs HW=1,904.03' TW=1,902.37' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 20.97 cfs @ 1.99 fps)

Summary for Pond A5: A5 - OPEN SWALE

Inflow Area = 4.411 ac, 0.00% Impervious, Inflow Depth = 4.18" for 100-YEAR event
Inflow = 31.85 cfs @ 12.03 hrs, Volume= 1.537 af
Outflow = 31.78 cfs @ 12.04 hrs, Volume= 1.537 af, Atten= 0%, Lag= 0.4 min
Discarded = 0.03 cfs @ 12.04 hrs, Volume= 0.080 af
Primary = 31.75 cfs @ 12.04 hrs, Volume= 1.457 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,902.37' @ 12.04 hrs Surf.Area= 2,394 sf Storage= 3,140 cf

Plug-Flow detention time= 57.6 min calculated for 1.537 af (100% of inflow)
Center-of-Mass det. time= 57.8 min (880.3 - 822.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,896.50'	138 cf	**STONE UNDERDRAIN (Prismatic)** Listed below (Recalc) 346 cf Overall x 40.0% Voids
#2	1,897.50'	104 cf	**FILTER BED (Prismatic)** Listed below (Recalc) 692 cf Overall x 15.0% Voids
#3	1,899.50'	3,125 cf	**SURFACE STORAGE (Prismatic)** Listed below (Recalc)
		3,367 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,896.50	346	0	0
1,897.50	346	346	346

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,897.50	346	0	0
1,899.50	346	692	692

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,899.50	346	0	0
1,900.00	550	224	224
1,902.00	1,528	2,078	2,302
1,902.50	1,764	823	3,125

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,896.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,901.75'	**25.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.03 cfs @ 12.04 hrs HW=1,902.37' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=31.72 cfs @ 12.04 hrs HW=1,902.37' TW=1,898.39' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 31.72 cfs @ 2.05 fps)

Summary for Pond B: OPEN SWALE

Inflow Area = 3.361 ac, 0.00% Impervious, Inflow Depth = 4.81" for 100-YEAR event
Inflow = 22.73 cfs @ 12.04 hrs, Volume= 1.347 af
Outflow = 22.43 cfs @ 12.06 hrs, Volume= 1.347 af, Atten= 1%, Lag= 1.1 min
Discarded = 0.09 cfs @ 12.06 hrs, Volume= 0.262 af
Primary = 22.34 cfs @ 12.06 hrs, Volume= 1.085 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,868.43' @ 12.06 hrs Surf.Area= 7,909 sf Storage= 8,878 cf

Plug-Flow detention time= 189.3 min calculated for 1.347 af (100% of inflow)
Center-of-Mass det. time= 189.4 min (1,010.7 - 821.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,863.00'	595 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 1,488 cf Overall x 40.0% Voids
#2	1,864.00'	446 cf	**filter media (Prismatic)** Listed below (Recalc) 2,976 cf Overall x 15.0% Voids
#3	1,866.00'	8,167 cf	**surface storage (Prismatic)** Listed below (Recalc)
		9,209 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,863.00	1,488	0	0
1,864.00	1,488	1,488	1,488

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,864.00	1,488	0	0
1,866.00	1,488	2,976	2,976

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,866.00	1,488	0	0
1,867.00	2,798	2,143	2,143
1,868.00	4,500	3,649	5,792
1,868.50	5,000	2,375	8,167

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,863.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,868.00'	**30.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.09 cfs @ 12.06 hrs HW=1,868.43' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=22.32 cfs @ 12.06 hrs HW=1,868.43' TW=1,851.14' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 22.32 cfs @ 1.72 fps)

Summary for Pond B1: bioretention @ 8 tee

Inflow Area = 10.459 ac, 0.00% Impervious, Inflow Depth = 4.93" for 100-YEAR event
Inflow = 51.77 cfs @ 12.17 hrs, Volume= 4.293 af
Outflow = 51.44 cfs @ 12.19 hrs, Volume= 4.293 af, Atten= 1%, Lag= 1.2 min
Discarded = 0.18 cfs @ 12.19 hrs, Volume= 0.371 af
Primary = 51.26 cfs @ 12.19 hrs, Volume= 3.922 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,966.35' @ 12.19 hrs Surf.Area= 15,651 sf Storage= 11,696 cf

Plug-Flow detention time= 52.9 min calculated for 4.293 af (100% of inflow)
Center-of-Mass det. time= 53.0 min (882.6 - 829.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,960.00'	1,800 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 4,500 cf Overall x 40.0% Voids
#2	1,961.00'	2,700 cf	**filter media (Prismatic)** Listed below (Recalc) 18,000 cf Overall x 15.0% Voids
#3	1,965.00'	12,150 cf	**surface storage (Prismatic)** Listed below (Recalc)
		16,650 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,960.00	4,500	0	0
1,961.00	4,500	4,500	4,500

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,961.00	4,500	0	0
1,965.00	4,500	18,000	18,000

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,965.00	4,500	0	0
1,966.00	5,600	5,050	5,050
1,967.00	8,600	7,100	12,150

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,960.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,965.50'	**25.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.18 cfs @ 12.19 hrs HW=1,966.35' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=51.24 cfs @ 12.19 hrs HW=1,966.35' TW=1,964.91' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 51.24 cfs @ 2.41 fps)

Summary for Pond B3: bioretention @ blvd

Inflow Area = 5.445 ac, 46.85% Impervious, Inflow Depth = 6.21" for 100-YEAR event
Inflow = 40.53 cfs @ 12.08 hrs, Volume= 2.819 af
Outflow = 31.24 cfs @ 12.17 hrs, Volume= 2.819 af, Atten= 23%, Lag= 5.7 min
Discarded = 0.44 cfs @ 12.17 hrs, Volume= 0.942 af
Primary = 24.85 cfs @ 12.17 hrs, Volume= 1.815 af
Secondary = 5.96 cfs @ 12.17 hrs, Volume= 0.062 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,960.70' @ 12.17 hrs Surf.Area= 37,621 sf Storage= 33,514 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 195.4 min (992.2 - 796.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,954.00'	4,700 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 11,750 cf Overall x 40.0% Voids
#2	1,955.00'	7,050 cf	**filter media (Prismatic)** Listed below (Recalc) 47,000 cf Overall x 15.0% Voids
#3	1,959.00'	26,092 cf	**surface storage (Prismatic)** Listed below (Recalc)
		37,842 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,954.00	11,750	0	0
1,955.00	11,750	11,750	11,750

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,955.00	11,750	0	0
1,959.00	11,750	47,000	47,000

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,959.00	11,750	0	0
1,960.00	12,892	12,321	12,321
1,961.00	14,650	13,771	26,092

Device	Routing	Invert	Outlet Devices
#1	Primary	1,954.00'	**21.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,954.00' / 1,953.00' S= 0.0118 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Discarded	1,954.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	1,959.50'	**12.0" Horiz. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#4	Secondary	1,960.50'	**25.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.44 cfs @ 12.17 hrs HW=1,960.70' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.44 cfs)

Primary OutFlow Max=24.84 cfs @ 12.17 hrs HW=1,960.70' TW=1,955.19' (Dynamic Tailwater)
└─**1=Culvert** (Passes 24.84 cfs of 27.18 cfs potential flow)
  └─**3=Orifice/Grate** (Orifice Controls 24.84 cfs @ 5.27 fps)

Secondary OutFlow Max=5.93 cfs @ 12.17 hrs HW=1,960.70' TW=1,952.16' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 5.93 cfs @ 1.19 fps)

Summary for Pond DP 10: Design Point 10

Inflow Area = 156.019 ac, 1.86% Impervious, Inflow Depth = 4.52" for 100-YEAR event
Inflow = 503.11 cfs @ 12.22 hrs, Volume= 58.782 af
Primary = 503.11 cfs @ 12.22 hrs, Volume= 58.782 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 11: Design Point 11

Inflow Area = 90.970 ac, 15.56% Impervious, Inflow Depth = 4.17" for 100-YEAR event
Inflow = 192.24 cfs @ 12.02 hrs, Volume= 31.598 af
Primary = 192.24 cfs @ 12.02 hrs, Volume= 31.598 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 12: Design Point 12

Inflow Area = 5.404 ac, 15.82% Impervious, Inflow Depth = 5.23" for 100-YEAR event
Inflow = 42.91 cfs @ 12.00 hrs, Volume= 2.357 af
Primary = 42.91 cfs @ 12.00 hrs, Volume= 2.357 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond DP 16: Design Point 16 24" CMP

Inflow Area = 18.370 ac, 4.45% Impervious, Inflow Depth = 4.55" for 100-YEAR event
Inflow = 82.02 cfs @ 12.16 hrs, Volume= 6.964 af
Primary = 82.02 cfs @ 12.16 hrs, Volume= 6.964 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Summary for Pond F1: Open Swale-F

Inflow Area = 2.052 ac, 0.00% Impervious, Inflow Depth = 4.93" for 100-YEAR event
Inflow = 16.69 cfs @ 11.99 hrs, Volume= 0.842 af
Outflow = 16.42 cfs @ 12.01 hrs, Volume= 0.842 af, Atten= 2%, Lag= 0.9 min
Discarded = 0.05 cfs @ 12.01 hrs, Volume= 0.162 af
Primary = 16.37 cfs @ 12.01 hrs, Volume= 0.681 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,895.95' @ 12.01 hrs Surf.Area= 4,716 sf Storage= 5,672 cf

Plug-Flow detention time= 198.7 min calculated for 0.842 af (100% of inflow)
Center-of-Mass det. time= 198.9 min (1,013.7 - 814.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,890.50'	317 cf	**Stone Underdrain (Prismatic)** Listed below (Recalc) 792 cf Overall x 40.0% Voids
#2	1,891.50'	238 cf	**Filter Bed (Prismatic)** Listed below 1,584 cf Overall x 15.0% Voids
#3	1,893.50'	6,962 cf	**surface storage (Prismatic)** Listed below (Recalc)
		7,516 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,890.50	792	0	0
1,891.50	792	792	792

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,891.50	792	0	0
1,893.50	792	1,584	1,584

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,893.50	792	0	0
1,894.00	1,526	580	580
1,896.00	3,175	4,701	5,281
1,896.50	3,550	1,681	6,962

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,890.50'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,895.50'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.05 cfs @ 12.01 hrs HW=1,895.95' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=16.34 cfs @ 12.01 hrs HW=1,895.95' TW=1,895.34' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 16.34 cfs @ 1.82 fps)

Summary for Pond G: OPEN SWALE

Inflow Area = 3.700 ac, 0.00% Impervious, Inflow Depth = 4.93" for 100-YEAR event
Inflow = 28.57 cfs @ 12.01 hrs, Volume= 1.519 af
Outflow = 28.23 cfs @ 12.02 hrs, Volume= 1.519 af, Atten= 1%, Lag= 0.8 min
Discarded = 0.14 cfs @ 12.02 hrs, Volume= 0.350 af
Primary = 28.10 cfs @ 12.02 hrs, Volume= 1.169 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,903.86' @ 12.02 hrs Surf.Area= 11,693 sf Storage= 10,453 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 182.9 min (999.1 - 816.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,899.00'	1,146 cf	**stone underdrain (Prismatic)** Listed below (Recalc) 2,865 cf Overall x 40.0% Voids
#2	1,900.00'	860 cf	**filter media (Prismatic)** Listed below (Recalc) 5,730 cf Overall x 15.0% Voids
#3	1,902.00'	12,721 cf	**surface storage (Prismatic)** Listed below (Recalc)
		14,726 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,899.00	2,865	0	0
1,900.00	2,865	2,865	2,865

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,900.00	2,865	0	0
1,902.00	2,865	5,730	5,730

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,902.00	2,865	0	0
1,903.00	4,783	3,824	3,824
1,904.00	6,154	5,469	9,293
1,904.50	7,558	3,428	12,721

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,899.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Primary	1,903.50'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.14 cfs @ 12.02 hrs HW=1,903.86' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=28.10 cfs @ 12.02 hrs HW=1,903.86' TW=1,897.94' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 28.10 cfs @ 1.56 fps)

Summary for Pond I18: Manhole

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 5.67" for 100-YEAR event
Inflow = 158.20 cfs @ 12.01 hrs, Volume= 9.228 af
Outflow = 158.20 cfs @ 12.01 hrs, Volume= 9.228 af, Atten= 0%, Lag= 0.0 min
Primary = 158.20 cfs @ 12.01 hrs, Volume= 9.228 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,012.42' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,005.90'	**54.0" Round Culvert** L= 304.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,005.90' / 2,000.00' S= 0.0194 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf

Primary OutFlow Max=158.14 cfs @ 12.01 hrs HW=2,012.41' TW=2,002.29' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 158.14 cfs @ 9.94 fps)

Summary for Pond I19: Manhole

Inflow Area = 19.539 ac, 28.50% Impervious, Inflow Depth = 5.67" for 100-YEAR event
Inflow = 158.20 cfs @ 12.01 hrs, Volume= 9.228 af
Outflow = 158.20 cfs @ 12.01 hrs, Volume= 9.228 af, Atten= 0%, Lag= 0.0 min
Primary = 158.20 cfs @ 12.01 hrs, Volume= 9.228 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,023.42' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,016.90'	**54.0" Round Culvert** L= 348.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,016.90' / 2,006.00' S= 0.0313 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf

Primary OutFlow Max=158.14 cfs @ 12.01 hrs HW=2,023.41' TW=2,012.41' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 158.14 cfs @ 9.94 fps)

Summary for Pond I2: 30" HDPE Storm

Inflow Area = 3.692 ac, 57.82% Impervious, Inflow Depth = 6.55" for 100-YEAR event
Inflow = 36.08 cfs @ 11.99 hrs, Volume= 2.015 af
Outflow = 36.08 cfs @ 11.99 hrs, Volume= 2.015 af, Atten= 0%, Lag= 0.0 min
Primary = 36.08 cfs @ 11.99 hrs, Volume= 2.015 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,948.08' @ 11.99 hrs
Flood Elev= 1,955.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,943.90'	**30.0" Round Culvert** L= 170.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,943.90' / 1,943.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=36.03 cfs @ 11.99 hrs HW=1,948.07' TW=1,944.80' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 36.03 cfs @ 7.34 fps)

Summary for Pond I22: Manhole- 54" HDPE Storm

Inflow Area = 9.234 ac, 60.31% Impervious, Inflow Depth = 6.62" for 100-YEAR event
Inflow = 95.41 cfs @ 11.97 hrs, Volume= 5.097 af
Outflow = 95.41 cfs @ 11.97 hrs, Volume= 5.097 af, Atten= 0%, Lag= 0.0 min
Primary = 95.41 cfs @ 11.97 hrs, Volume= 5.097 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,174.65' @ 11.97 hrs
Flood Elev= 2,182.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,170.00'	**54.0" Round CMP_Round 54"** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,170.00' / 2,169.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 15.90 sf
#2	Primary	2,182.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=95.41 cfs @ 11.97 hrs HW=2,174.65' TW=2,170.52' (Dynamic Tailwater)
↑—**1=CMP_Round 54"** (Barrel Controls 95.41 cfs @ 7.21 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I23: Manhole -30" HDPE Storm

Inflow Area = 3.957 ac, 45.04% Impervious, Inflow Depth = 6.20" for 100-YEAR event
Inflow = 38.48 cfs @ 11.97 hrs, Volume= 2.046 af
Outflow = 38.48 cfs @ 11.97 hrs, Volume= 2.046 af, Atten= 0%, Lag= 0.0 min
Primary = 38.48 cfs @ 11.97 hrs, Volume= 2.046 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,187.62' @ 11.97 hrs
Flood Elev= 2,189.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,183.72'	**30.0" Round Culvert** L= 171.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,183.72' / 2,176.64' S= 0.0414 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,189.19'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=38.42 cfs @ 11.97 hrs HW=2,187.61' TW=2,174.65' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 38.42 cfs @ 7.83 fps)
└—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I24: 30" HDPE Storm

Inflow Area = 3.957 ac, 45.04% Impervious, Inflow Depth = 6.20" for 100-YEAR event
Inflow = 38.48 cfs @ 11.97 hrs, Volume= 2.046 af
Outflow = 38.48 cfs @ 11.97 hrs, Volume= 2.046 af, Atten= 0%, Lag= 0.0 min
Primary = 38.48 cfs @ 11.97 hrs, Volume= 2.046 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 2,192.93' @ 11.97 hrs
Flood Elev= 2,194.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,189.03'	**30.0" Round Culvert** L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,189.03' / 2,183.82' S= 0.0827 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,194.48'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=38.42 cfs @ 11.97 hrs HW=2,192.92' TW=2,187.61' (Dynamic Tailwater)
1=**Culvert** (Inlet Controls 38.42 cfs @ 7.83 fps)
2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I25: 30" HDPE Storm

Inflow Area = 3.059 ac, 51.35% Impervious, Inflow Depth = 6.38" for 100-YEAR event
Inflow = 29.84 cfs @ 11.97 hrs, Volume= 1.625 af
Outflow = 29.84 cfs @ 11.97 hrs, Volume= 1.625 af, Atten= 0%, Lag= 0.0 min
Primary = 29.84 cfs @ 11.97 hrs, Volume= 1.625 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,195.14' @ 11.97 hrs
Flood Elev= 2,205.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,191.50'	**30.0" Round Culvert** L= 253.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,191.50' / 2,189.13' S= 0.0094 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,205.80'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=29.79 cfs @ 11.97 hrs HW=2,195.12' TW=2,192.92' (Dynamic Tailwater)
1=**Culvert** (Outlet Controls 29.79 cfs @ 6.07 fps)
2=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I26: 30" HDPE Storm

Inflow Area = 2.407 ac, 48.55% Impervious, Inflow Depth = 6.29" for 100-YEAR event
Inflow = 24.17 cfs @ 11.97 hrs, Volume= 1.262 af
Outflow = 24.17 cfs @ 11.97 hrs, Volume= 1.262 af, Atten= 0%, Lag= 0.0 min
Primary = 24.17 cfs @ 11.97 hrs, Volume= 1.262 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,195.54' @ 11.98 hrs
Flood Elev= 2,208.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,191.80'	**30.0" Round Culvert** L= 201.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,191.80' / 2,191.60' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

#2	Primary	2,195.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=22.49 cfs @ 11.97 hrs HW=2,195.51' TW=2,195.12' (Dynamic Tailwater)
—**1=Culvert** (Outlet Controls 13.45 cfs @ 2.74 fps)
—**2=Orifice/Grate** (Weir Controls 9.04 cfs @ 2.23 fps)

Summary for Pond I27: 30" HDPE Storm

Inflow Area = 2.129 ac, 53.13% Impervious, Inflow Depth = 6.42" for 100-YEAR event
Inflow = 21.62 cfs @ 11.97 hrs, Volume= 1.140 af
Outflow = 21.62 cfs @ 11.97 hrs, Volume= 1.140 af, Atten= 0%, Lag= 0.0 min
Primary = 21.62 cfs @ 11.97 hrs, Volume= 1.140 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,196.36' @ 11.98 hrs
Flood Elev= 2,208.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,192.00'	**30.0" Round Culvert** L= 98.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,192.00' / 2,191.90' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,208.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=21.26 cfs @ 11.97 hrs HW=2,196.31' TW=2,195.50' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 21.26 cfs @ 4.33 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I28: 30" HDPE Storm

Inflow Area = 1.459 ac, 77.51% Impervious, Inflow Depth = 7.11" for 100-YEAR event
Inflow = 15.84 cfs @ 11.97 hrs, Volume= 0.865 af
Outflow = 15.84 cfs @ 11.97 hrs, Volume= 0.865 af, Atten= 0%, Lag= 0.0 min
Primary = 15.84 cfs @ 11.97 hrs, Volume= 0.865 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,196.92' @ 11.98 hrs
Flood Elev= 2,197.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,192.30'	**30.0" Round Culvert** L= 236.0' Ke= 0.500 Inlet / Outlet Invert= 2,192.30' / 2,192.07' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,197.80'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=14.55 cfs @ 11.97 hrs HW=2,196.80' TW=2,196.30' (Dynamic Tailwater)
—**1=Culvert** (Outlet Controls 14.55 cfs @ 2.96 fps)
—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond I29: Manhole

Inflow Area = 1.039 ac,100.00% Impervious, Inflow Depth = 7.76" for 100-YEAR event
Inflow = 11.87 cfs @ 11.97 hrs, Volume= 0.672 af
Outflow = 11.87 cfs @ 11.97 hrs, Volume= 0.672 af, Atten= 0%, Lag= 0.0 min
Primary = 11.87 cfs @ 11.97 hrs, Volume= 0.672 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,197.17' @ 11.98 hrs
Flood Elev= 2,208.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,192.50'	**30.0" Round Culvert** L= 98.0' Ke= 0.500 Inlet / Outlet Invert= 2,192.50' / 2,192.40' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=10.58 cfs @ 11.97 hrs HW=2,196.99' TW=2,196.79' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 10.58 cfs @ 2.15 fps)

Summary for Pond I3: 30" HDPE Storm

Inflow Area = 3.323 ac, 53.14% Impervious, Inflow Depth = 6.41" for 100-YEAR event
Inflow = 32.02 cfs @ 11.99 hrs, Volume= 1.776 af
Outflow = 32.02 cfs @ 11.99 hrs, Volume= 1.776 af, Atten= 0%, Lag= 0.0 min
Primary = 32.02 cfs @ 11.99 hrs, Volume= 1.776 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,949.82' @ 11.99 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,945.17'	**30.0" Round Culvert** L= 231.0' Ke= 0.500 Inlet / Outlet Invert= 1,945.17' / 1,944.02' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	1,949.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=32.02 cfs @ 11.99 hrs HW=1,949.82' TW=1,948.07' (Dynamic Tailwater)
├─**1=Culvert** (Outlet Controls 27.29 cfs @ 5.56 fps)
└─**2=Orifice/Grate** (Weir Controls 4.73 cfs @ 1.85 fps)

Summary for Pond I30: 30" HDPE Storm

Inflow Area = 1.039 ac,100.00% Impervious, Inflow Depth = 7.76" for 100-YEAR event
Inflow = 11.87 cfs @ 11.97 hrs, Volume= 0.672 af
Outflow = 11.87 cfs @ 11.97 hrs, Volume= 0.672 af, Atten= 0%, Lag= 0.0 min
Primary = 11.87 cfs @ 11.97 hrs, Volume= 0.672 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,197.38' @ 11.99 hrs
Flood Elev= 2,204.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,194.08'	**30.0" Round Culvert** L= 79.0' Ke= 0.500 Inlet / Outlet Invert= 2,194.08' / 2,194.00' S= 0.0010 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,199.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.02 cfs @ 11.97 hrs HW=2,197.17' TW=2,196.99' (Dynamic Tailwater)
1=Culvert (Inlet Controls 10.02 cfs @ 2.04 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond I31: 36" HDPE Storm

Inflow Area = 2.463 ac, 39.52% Impervious, Inflow Depth = 6.00" for 100-YEAR event
Inflow = 24.84 cfs @ 11.97 hrs, Volume= 1.231 af
Outflow = 24.84 cfs @ 11.97 hrs, Volume= 1.231 af, Atten= 0%, Lag= 0.0 min
Primary = 24.84 cfs @ 11.97 hrs, Volume= 1.231 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,175.19' @ 11.97 hrs
Flood Elev= 2,180.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,170.50'	**36.0" Round Culvert** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,170.50' / 2,170.35' S= 0.0027 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=24.83 cfs @ 11.97 hrs HW=2,175.18' TW=2,174.65' (Dynamic Tailwater)
1=Culvert (Inlet Controls 24.83 cfs @ 3.51 fps)

Summary for Pond I32: 30" HDPE Storm

Inflow Area = 2.463 ac, 39.52% Impervious, Inflow Depth = 6.00" for 100-YEAR event
Inflow = 24.84 cfs @ 11.97 hrs, Volume= 1.231 af
Outflow = 24.84 cfs @ 11.97 hrs, Volume= 1.231 af, Atten= 0%, Lag= 0.0 min
Primary = 24.84 cfs @ 11.97 hrs, Volume= 1.231 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,176.27' @ 11.97 hrs
Flood Elev= 2,180.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,171.00'	**30.0" Round Culvert** L= 119.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,171.00' / 2,170.41' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,180.00'	**24.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=24.50 cfs @ 11.97 hrs HW=2,176.26' TW=2,175.18' (Dynamic Tailwater)
1=Culvert (Inlet Controls 24.50 cfs @ 4.99 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond I33: 24" HDPE Storm

Inflow Area = 1.999 ac, 39.27% Impervious, Inflow Depth = 5.98" for 100-YEAR event
Inflow = 20.11 cfs @ 11.97 hrs, Volume= 0.995 af
Outflow = 20.11 cfs @ 11.97 hrs, Volume= 0.995 af, Atten= 0%, Lag= 0.0 min
Primary = 20.11 cfs @ 11.97 hrs, Volume= 0.995 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 2,176.54' @ 11.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2,172.00'	**30.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 2,172.00' / 2,171.13' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Primary	2,176.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=19.82 cfs @ 11.97 hrs HW=2,176.52' TW=2,176.26' (Dynamic Tailwater)
—**1=Culvert** (Outlet Controls 11.45 cfs @ 2.33 fps)
—**2=Orifice/Grate** (Weir Controls 8.37 cfs @ 2.00 fps)

Summary for Pond I4: 15" HDPE Storm

Inflow Area = 0.369 ac,100.00% Impervious, Inflow Depth = 7.76" for 100-YEAR event
Inflow = 4.21 cfs @ 11.97 hrs, Volume= 0.239 af
Outflow = 4.21 cfs @ 11.97 hrs, Volume= 0.239 af, Atten= 0%, Lag= 0.0 min
Primary = 4.21 cfs @ 11.97 hrs, Volume= 0.239 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,952.63' @ 11.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,951.50'	**15.0" Round Culvert** L= 140.0' Ke= 0.500 Inlet / Outlet Invert= 1,951.50' / 1,950.00' S= 0.0107 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.21 cfs @ 11.97 hrs HW=1,952.63' TW=1,947.95' (Dynamic Tailwater)
—**1=Culvert** (Inlet Controls 4.21 cfs @ 3.61 fps)

Summary for Pond I6: Manhole

Inflow Area = 8.896 ac, 28.68% Impervious, Inflow Depth = 3.22" for 100-YEAR event
Inflow = 25.02 cfs @ 12.19 hrs, Volume= 2.383 af
Outflow = 25.02 cfs @ 12.19 hrs, Volume= 2.383 af, Atten= 0%, Lag= 0.0 min
Primary = 25.02 cfs @ 12.19 hrs, Volume= 2.383 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,955.19' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,952.90'	**36.0" Round Culvert** L= 186.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 1,952.90' / 1,951.97' S= 0.0050 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=25.01 cfs @ 12.19 hrs HW=1,955.19' TW=1,952.16' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 25.01 cfs @ 5.97 fps)

Summary for Pond IP: P2

Inflow Area = 46.508 ac, 27.33% Impervious, Inflow Depth = 5.21" for 100-YEAR event
Inflow = 313.25 cfs @ 12.02 hrs, Volume= 20.185 af
Outflow = 34.91 cfs @ 12.67 hrs, Volume= 15.088 af, Atten= 89%, Lag= 39.0 min
Primary = 34.91 cfs @ 12.67 hrs, Volume= 15.088 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Starting Elev= 1,937.00' Surf.Area= 47,921 sf Storage= 444,293 cf
Peak Elev= 1,943.47' @ 12.67 hrs Surf.Area= 119,051 sf Storage= 956,748 cf (512,455 cf above start)

Plug-Flow detention time= 1,009.7 min calculated for 4.889 af (24% of inflow)
Center-of-Mass det. time= 356.4 min (1,158.4 - 802.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,910.00'	959,989 cf	**Storage above Perm Pool (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,910.00	685	100.0	0	0	685
1,912.00	1,221	150.0	1,880	1,880	1,711
1,914.00	2,042	190.0	3,228	5,108	2,845
1,916.00	3,114	250.0	5,118	10,227	4,991
1,918.00	5,151	450.0	8,180	18,407	16,154
1,920.00	8,098	627.0	13,138	31,545	31,362
1,922.00	10,863	680.0	18,893	50,439	37,027
1,924.00	14,370	830.0	25,151	75,590	55,115
1,926.00	18,615	1,000.0	32,894	108,484	79,939
1,928.00	22,653	1,022.0	41,202	149,686	84,016
1,930.00	26,948	1,062.0	49,539	199,224	90,969
1,932.00	31,296	1,090.0	58,190	257,414	96,225
1,934.00	35,715	1,115.0	66,962	324,377	101,134
1,936.00	40,228	1,140.0	75,898	400,275	106,156
1,938.00	56,286	1,229.0	96,066	496,341	123,100
1,939.00	70,553	1,304.0	63,285	559,626	138,271
1,940.00	74,969	1,432.0	72,750	632,376	166,173
1,942.00	93,060	2,050.0	167,703	800,079	337,449
1,942.25	97,168	2,034.0	23,777	823,856	342,674
1,943.00	111,843	1,898.0	78,315	902,170	385,254
1,943.50	119,472	1,918.0	57,818	959,989	391,402

Device	Routing	Invert	Outlet Devices
#1	Primary	1,940.40'	**18.0" Round Culvert** L= 130.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,940.40' / 1,937.00' S= 0.0262 '/' Cc= 0.900

			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	1,943.00'	**25.0' long x 20.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=34.91 cfs @ 12.67 hrs HW=1,943.47' TW=1,937.20' (Dynamic Tailwater)
├─**1=Culvert** (Inlet Controls 12.97 cfs @ 7.34 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 21.94 cfs @ 1.86 fps)

APPENDIX H

Soil Test Pit Logs

40 Long Alley
Saratoga Springs
New York 12866

P 518/587-8100
F 518/587-0180
www.thelagroup.com

The Belleayre Resort at Catskill Park

Soil Test Pit Summary

Deep hole test pits and percolation tests were performed on the site in the Fall of 2000, by certified soil scientist, Roger J. Case of the LA Group. Subsequent deep hole test pits and percolation tests were conducted by Roger in September 2002 at Wildacres, and November, 2007 on the Highmount parcel. The summary below includes only the test pits located on the properties that make up the 'Modified Project', specifically Wildacres and Highmount.

November, 2000

These deep soil test pits observations were made November 2000. Present at the time were Roger Case, soil scientist, cpss, cpsc, LA Group and representatives from the New York City DEP.

Test pit WA119:

Oe horizon: 0 to 2 inches, black (10YR2/1) mucky silt loam duff layer
E horizon: 2 to 3 inches, light gray (10YR7/2) gravelly silt loam
Bw1 horizon: 3 to 10 inches, (5YR4/6) yellowish red channery* silt loam with common small flagstones.
Bw2 horizon: 10 to 16 inches, brown (7.5YR 4/4) very channery silt loam with common flagstones of varying sizes.
Bw3 horizon: 16 to 38 inches, firm, dark yellowish brown (10YR 4/4) very channery silt loam with many flagstones.
Bx horizon**: 38 to 72 inches, very firm, brown (7.5YR 4/4) very channery silt loam, many flagstones.
R horizon: 72+ fractured sandstone and silt stone over hard bedrock.

*channers are elongated thin gravel fragments derived from shale and silt and sandstone, as opposed to typical gravel which is rounded or at least irregularly shaped.
**The Bx horizon designates the beginning of the fragipan.

There are no seeps and no mottles, however the Bx horizon is very firm and essentially impervious. A deep "perc" test exceeded one hour.
Percolation rate @ 26 inches is: 5 minutes 35 seconds (5:35)
Soil Series: Lewbeach

Test pit WA120:

Oe horizon: 0 to 1 inches, black (10YR2/1) mucky silt loam duff layer
E horizon: 1 to 2 inches, light gray (10YR7/2) gravelly silt loam (discontinuous)
Bw1 horizon: 2 to 12 inches, (7.5YR6/8) reddish yellow channery silt loam with common small flagstones.
Bw2 horizon: 12 to 24 inches, dark yellowish brown (10YR 4/4) very channery silt loam with many flagstones of varying sizes.
Bx horizon: 24 to 54 inches, very firm, brown (7.5YR 4/4) very channery silt loam, many flagstones.
R horizon: 54+ fractured sandstone and silt stone over hard bedrock.

There are no seeps and no mottles, however the Bx horizon is very firm and essentially impervious.
Percolation rate @ 22 inches is: 7 minutes 45 seconds (7:45)
Soil Series: Lewbeach

Test pit WA122:

Ap horizon: 0 to 5 inches, dark brown (10YR3/3) very channery silt loam, with common flagstones and boulders.
Bw1 horizon: 5 to 19 inches, brown (7.5YR4/4) very channery silt loam with common flagstones.
Bw2 horizon: 19 to 34 inches, dark yellowish brown (10YR 4/4) very channery silt loam with many flagstones of varying sizes.
Bx horizon: 34 to 58 inches, very firm, brown (7.5YR 4/4) very channery silt loam, many flagstones and boulders.
Cd horizon: 58 to 84 inches, very firm layers of sand and gravel.

There are no seeps and no mottles, however the Bx horizon is very firm and essentially impervious.
Percolation rate @ 18 inches is: 9 minutes 30 seconds (9:30)
Soil Series: Lewbeach

Test pit WA Pond 3:

Oe horizon: 0 to 4 inches, black (10YR2/1) mucky silt loam duff layer
E horizon: 4 to 6 inches, light gray (10YR7/2) gravelly silt loam
Bw1 horizon: 6 to 16 inches, (7.5YR 6/8) reddish yellowish very channery fine sandy loam with common small boulders.
Bw2 horizon: 16 to 26 inches, yellowish brown (10YR 5/4) very channery fine sandy loam with some small boulders.
Bx horizon: 26 to 42 inches, very firm, grayish brown (2.5Y 5/2) very bouldery loam
Cd horizon: 42 to 86+ inches, very firm, brown (2.5Y 5/2) very channery loam.

There are no seeps and no mottles, however the Bx horizon is very firm and essentially impervious. This location was investigated as a future location for pond construction, no percolation test was run. These impervious hardpan soils should make successful ponds.
Soil Series: Lewbeach

Test pit WA117001:

Oe horizon: 0 to 2 inches, black (10YR2/1) mucky silt loam duff layer
Bw1 horizon: 2 to 10 inches, (10YR 6/8) brownish yellowish channery loam.
Bw2 horizon: 10 to 24 inches, brown (7.5YR 6/4) very channery loam.
Bx horizon: 24 to 48 inches, very firm, brown (7.5YR 4/4) very channery silt loam with a few small boulders.
C horizon: 48 to 84 inches, firm, brown (7.5YR 6/4) very gravelly sandy loam.

There are no seeps and no mottles, however the Bx horizon is very firm and essentially impervious. This test pit was excavated to confirm soil mapping. The test pit confirms the map unit for Lewbeach soils which are deep, well drained soils formed in coarse textured glacial till soils. This particular area of Lewbeach is not quite a red as typical Lewbeach soils.

Test pit WA117:

Ap horizon: 0 to 7 inches, dark brown (10YR3/3) silt loam, very stony
Bw1 horizon: 7 to 16 inches, yellowish brown (10YR3/6) very gravelly silt loam.
Bw2 horizon: 16 to 28 inches, brown (7.5YR 5/4) very gravelly silt loam
Bx horizon: 28 to 52 inches, very firm, reddish brown (5YR 5/3) very channery silt loam with many mixed flagstones.
C horizon: 52 to 84 inches, very firm, very flaggy silt loam.

There are no seeps and no mottles, however the Bx horizon is very firm and essentially impervious. No percolation test was run, this area was investigated as a proposed pond site and should be successful.
Soil Series: Lewbeach

Test pit WA117002:

Oe horizon: 0 to 1 inches, black (10YR2/1) mucky silt loam duff layer
E horizon: 1 to 2 inches, light gray (10YR7/2) gravelly silt loam (discontinuous)
Bw1 horizon: 2 to 12 inches, (7.5YR6/8) reddish yellow channery silt loam with common small flag stones.
Bw2 horizon: 12 to 24 inches, dark yellowish brown (10YR 4/4) very channery silt loam with many flagstones of varying sizes.
BC horizon: 24 to 38 inches, firm, brown (7.5YR 4/4) very channery silt loam, many flagstones.
R horizon: 38+ fractured sandstone and silt stone over hard bedrock.

The depth to bedrock varied in the pit from 38 inches at one end to 72 inches at the other end. There are no seeps and no mottles, however there is a very firm Bx horizon at the deeper end of the pit and it is essentially impervious.
Soil Series: Vly (slightly brown phase)

Test pit #WA116:

This test pit was excavated in the lawn, west of the existing motel on the property. The soil consists of old stable fill excavated from the hillside behind the motel.

Ap horizon: 0 to 6 inches, dark reddish brown (5YR 3/2) silt loam.
C horizon: 6 to 84 inches, reddish brown (5YR 5/4) very gravelly/channery silt loam.

This area is intended for construction. No percolation tests were run. There were no seeps or mottles.
Udorthents, smoothed

Test pit WA117003:

Oe horizon: 0 to 25 inches, black (10YR2/1) fibrous organic duff layer mixed in a near pavement of large flagstones and boulders.
Bw1 horizon: 25 to 41 inches, reddish brown (5YR 4/4) very channery silt loam with common mixed flagstones.
Bw2 horizon: 41 to 60 inches, reddish brown (5YR 5/4) very channery loam, slightly firm, with many flagstones of varying sizes.
C horizon: 60 to 72 inches, slightly firm, reddish brown (7.5YR 4/4) very channery silt loam, many flagstones and boulders.

There are no seeps and no mottles. No perc test was run.
Soil Series: Elka

Test pit WA117004:

Ap horizon: 0 to 9 inches, dark brown (10YR3/3) channery silt loam.
Bw1 horizon: 9 to 19 inches, reddish brown(5YR 4/6) channery loam.
Bw2 horizon: 19 to 35 inches, reddish brown (7.5YR 4/3) very channery silt loam.
Bx horizon: 35 to 84 inches, very firm, light reddish brown (5YR 6/3) very channery silt loam with thick beds of flag stone in the lower part.

There are no seeps and no mottles, however the Bx horizon is very firm and essentially impervious. This test pit was excavated to confirm soil mapping. The test pit confirms the map unit for Lewbeach soils which are deep, well drained soils formed in coarse textured glacial till soils.

Test pit WA115:

Oe horizon: 0 to 1 inches, black (10YR2/1) fibrous organic duff layer
A horizon: 1 to 6 inches, dark grayish brown (10YR3/2) gravelly silt loam
Bw1 horizon: 6 to 9 inches, dark brown (10YR 3/3) channery silt loam
Bw2 horizon: 9 to 16 inches, yellowish brown (10YR 5/6) very channery silt loam with many flagstones of varying sizes.
R horizon: 16+ fractured sandstone and silt stone over hard bedrock.

There are no seeps and no mottles. This is an area confirmed as Halcott soils, however there is not the extensive areas of Halcott first predicted.

September, 2002

These deep soil test pits observations were made September 3, 4 & 5, 2002

Test pit DP102: (Wildacres 9-04-02)
Oe horizon: 0 to 1 inches, black (10YR2/1) organic and silt loam duff layer

E horizon: (discontinuous)	1 to 2 inches, light gray (10YR7/2) gravelly silt loam

Bw1 horizon: 2 to 12 inches, (7.5YR6/8) reddish yellow channery silt loam with common small flagstones.

Bw2 horizon: 12 to 30 inches, dark yellowish brown (10YR 4/4) very channery silt loam with many flagstones of varying sizes.

Bx horizon: 30 to 72 inches, very firm, brown (7.5YR 4/4) very channery silt loam, many flagstones. There are no seeps and no mottles, the Bx horizon is very firm and essentially impervious.

Soil Series: Lewbeach

Test pit DP103: (Wildacres 9-04-02)

Oe horizon: 0 to 2 inches, black (10YR2/1) fibrous organic duff layer mixed in a near pavement of large flagstones and boulders.

Bw1 horizon: 2 to 44 inches, reddish brown (5YR 4/4) very channery silt loam with common mixed flagstones.

Bw2 horizon: 44 to 58 inches, reddish brown (5YR 5/4) very channery loam, slightly firm, with many flagstones of varying sizes.

2C horizon: 58 to 60+ inches, flagstones with cobbles and gravel in stratified layers.

There are no seeps and no mottles. Percolation rate @ 60 inches: <2:00 minutes

Soil Series: Elka o/ Tunnkanock

Test pit DP104: (Wildacres 9-4-02)

Oe horizon: 0 to 1 inches, black (10YR2/1) mucky silt loam duff layer

Bw1 horizon: 1 to 6 inches, (7.5YR6/8) reddish yellow channery silt loam with common small flagstones.

Bw2 horizon: 6 to 29 inches, dark yellowish brown (10YR 4/4) very channery silt loam with many flagstones of varying sizes.

Bx horizon: 29 to 72 inches, very firm, brown (7.5YR 4/4) very channery silt loam, many flagstones.

There are no seeps and no mottles, the Bx horizon is very firm and essentially impervious.

Soil Series: Lewbeach

Test pit DP105: (Wildacres 9-4-02)

Oe horizon: 0 to 2 inches, black (10YR2/1) mucky silt loam duff layer

E horizon: 2 to 3 inches, light gray (10YR7/2) gravelly silt loam

Bw1 horizon: 3 to 10 inches, (5YR4/6) yellowish red channery silt loam with common small flagstones.

Bw2 horizon: 10 to 33 inches, firm, dark yellowish brown (10YR 4/4) very channery silt loam with many flagstones, common fine faint mottles in the lower part.

Bx horizon:	33 to 72 inches, very firm, brown (7.5YR 4/4) very channery silt loam, many flagstones..

There are mottles @ 24 to 33 inches. The Bx horizon is very firm and essentially impervious

Percolation rate @
20 inches is: 5 minutes (5:00)

Soil Series: Willowemoc

Test pit DP107: (Wildacres 9-05-02)

Oe horizon:	0 to 10 inches, black (10YR2/1) fibrous organic duff layer mixed in a near pavement of large flagstones and boulders.
Bw1 horizon:	10 to 30 inches, reddish brown (5YR 4/4) very channery silt loam with common mixed flagstones.
Bw2 horizon:	30 to 49 inches, reddish brown (5YR 5/4) very channery loam, slightly firm, with many flagstones of varying sizes.
C horizon:	49 to 60+ inches, slightly firm, reddish brown (7.5YR 4/4) very channery silt loam, many flagstones and boulders.

There are no seeps and no mottles. Percolation rate @ 60 inches: 9:00 minutes

Soil Series: Elka

Test pit DP108: (Wildacres 9-05-02)

Oe horizon:	0 to 10 inches, black (10YR2/1) fibrous organic duff layer mixed in a near pavement of large flagstones and boulders.
Bw1 horizon:	10 to 34 inches, reddish brown (5YR 4/4) very channery silt loam with common mixed flagstones.
Bw2 horizon:	34 to 55 inches, reddish brown (5YR 5/4) very channery loam, slightly firm, with many flagstones of varying sizes.
C horizon:	55 to 60+ inches, reddish brown (7.5YR 4/4) very channery silt loam, many flagstones and mixed gravel.

There are no seeps and no mottles. Percolation rate @ 60 inches: 4:00 minutes

Soil Series: Elka

Test pit DP109: (Wildacres 9-04-02)

Oe horizon:	0 to 5 inches, black (10YR2/1) fibrous organic duff layer mixed in a near pavement of large flagstones and boulders.
Bw1 horizon:	5 to 33 inches, reddish brown (5YR 4/4) very channery silt loam with common mixed flagstones.
Bw2 horizon:	33 to 49 inches, reddish brown (5YR 5/4) very channery loam, few, fine, faint mottles in the lower part, firm, with many flagstones of varying sizes.

C horizon:	49 to 60+ inches, friable, reddish brown (7.5YR 4/4) very channery silt loam, many flagstones and boulders.

There are no seeps and few fine mottles. Percolation rate @ 60 inches: 4:40 minutes

Soil Series:	Lewbeach o/ Elka

Test pit DP110:	(Wildacres 9-4-02)

Oe horizon:	0 to 2 inches, black (10YR2/1) mucky silt loam duff layer
E horizon:	2 to 3 inches, light gray (10YR7/2) gravelly silt loam
Bw1 horizon:	3 to 10 inches, (5YR4/6) yellowish red channery silt loam with common small flagstones.
Bw2 horizon:	10 to 30 inches, firm, dark yellowish brown (10YR 4/4) very channery silt loam with many flagstones, common fine faint mottles in the lower part.
Bx horizon:	30 to 72 inches, very firm, brown (7.5YR 4/4) very channery silt loam, many flagstones.

There are mottles @ 24 to 30 inches. The Bx horizon is very firm and essentially impervious

Soil Series:	Willowemoc

Test pit DP113:	(Wildacres 9-4-02)

Oe horizon:	0 to 1 inches, black (10YR2/1) organic duff layer
Ap horizon:	1 to 5 inches, dark brown (7.5YR3/3) gravelly silt loam.
Bw1 horizon:	5 to 26 inches, (7.5YR6/8) reddish yellow channery silt loam with common small flagstones.
Bx horizon:	26 to 72 inches, very firm, brown (7.5YR 4/4) very channery silt loam, many flagstones. There is a discontinuous seam of gravel at 48 to 62 inches. The seam probably had reasonable permeability but was discontinuous within the pit and could be a reliable outlet for infiltration within the matrix of very firm hardpan.

There are no seeps and no mottles, the Bx horizon is very firm and essentially impervious.

Soil Series:	Lewbeach

Test pit DP116:	(Wildacres 9-03-02)

Oe horizon:	0 to 10 inches, black (10YR2/1) fibrous organic duff layer mixed in a near pavement of large flagstones and boulders.
Bw1 horizon:	10 to 30 inches, reddish brown (5YR 4/4) very channery silt loam with common mixed flagstones.
Bw2 horizon:	30 to 45 inches, reddish brown (5YR 5/4) very channery loam, slightly firm, with many flagstones of varying sizes.

C horizon: 45 to 60+ inches, slightly firm, reddish brown (7.5YR 4/4) very channery silt loam, many flagstones and boulders.

There are no seeps and no mottles. Percolation rate @ 60 inches: 8:00 minutes

Soil Series: Elka

November, 2007

On November 28, 29 & 30, 2007 the following deep soil test pits were observed.

Test pit #11280701: Soil Type: Willowemoc
Strong seeps @ 29 inches
Fractured bedrock @ 42 inches
Hard bedrock @ 60 inches

Test pit #11280702: Soil Type: Lewbeach
Fractured bedrock @ 60 inches
Hard bedrock @ 85 inches

Test pit #11280703: Soil Type: Lewbeach
Fractured bedrock @ 61 inches
Hard bedrock @ 81 inches

Test pit #11280704: Soil Type: Halcott
Hard bedrock @ 17 inches

Test pit #11280705: Soil Type: Vly
Fractured bedrock @ 17 inches
Hard bedrock @ 28 inches

Test pit #11280706: Soil Type: Vly
Seeps @ 12 inches
Fractured bedrock @ 20 inches
Hard bedrock @ 40 inches

Test pit #11280707: Soil Type: Lairdsville
Fractured soft red shale @ 52 inches
Hard red shale bedrock @ 60 inches

Test pit #11280708: Soil Type: Lairdsville
Reddsih brown clay 0 to 81 inches
Hard red shale bedrock @ 81 inches

Test pit #11280709: Soil Type: Lewbeach
Very firm @ 33 inches
Hard bedrock @ 108 inches

Test pit #11280710: Soil Type: Lewbeach
Stong seeps @ 66 inches
Soft reddish brown shale bedrock @ 66 inches

Test pit #11280711: Soil Type: Lewbeach
Very firm @ 35 inches
Fractured bedrock with seeps @ 88 inches
Hard bedrock @ 102 inches

Test pit #11280712: Soil Type: Elka
Fractured bedrock @ 52 inches
Hard bedrock @ 83 inches

Test pit #11280713: Soil Type: Vly
Fractured bedrock @ 25 inches
Hard bedrock @ 35 inches

Test pit #11280714: Soil Type: Halcott
Fractured bedrock @ 2 inches
Hard bedrock @ 15 inches

Test pit #11280715: Soil Type: Vly
Fractured bedrock @ 6 inches
Hard bedrock @ 23 inches

Test pit #11280716: Soil Type: Rubble
Fractured bedrock, flagstones and boulders

Test pit #11280717: Soil Type: Lewbeach
Fractured soft red shale bedrock @ 45 inches
Hard (rippable) red shale bedrock @ 68 inches

Test pit #11280718: Soil Type: Rubble
Fractured bedrock, flagstones and boulders

Test pit #11280719: Soil Type: Lewbeach
Fractured bedrock @ 52 inches
Hard bedrock @ 68 inches

Test pit #11280720: Soil Type: Elka
Fractured bedrock @ 45 inches
Hard bedrock @ 60 inches

Test pit #11280721: Soil Type: Vly
Hard bedrock @ 30 inches

Test pit #11280722: Soil Type: Halcott
Hard bedrock @ 10 inches

Test pit #11280723: Soil Type: Elka
Fractured bedrock @ 40 inches
Hard bedrock @ 61 inches

Test pit #11280724: Soil Type: Vly
Hard bedrock @ 35 inches

Test pit #11290725: Soil Type: Vly
Fractured shale and slate bedrock @ 35 inches
Hard bedrock @ 52 inches

Test pit #11290726: Soil Type: Vly
Fractured bedrock @ 26 inches
Hard bedrock @ 30 inches

Test pit #11290727: Soil Type: Vly
Fractured bedrock @ 30 inches
Hard bedrock @ 40 inches

Test pit #11290728: Soil Type: Vly
Fractured bedrock @ 30 inches
Hard bedrock @ 56 inches

Test pit #11290729: Soil Type: Vly
Hard bedrock @ 31 inches

Test pit #11290730: Soil Type: Vly
Fractured bedrock @ 30 inches
Hard bedrock @ 34 inches

Test pit #11290731: Soil Type: Vly
Fractured bedrock @ 32 inches
Hard bedrock @ 42 inches

Test pit #11290732: Soil Type: Vly
Fractured bedrock @ 26 inches
Hard bedrock @ 32 inches

Test pit #11290733: Soil Type: Vly
Fractured bedrock @ 30 inches
Hard bedrock @ 34 inches

Test pit #11290734: Soil Type: Vly
Fractured bedrock @ 30 inches
Hard bedrock @ 38 inches

Test pit #11290735: Soil Type: Vly
Fractured bedrock @ 16 inches
Hard bedrock @ 31 inches

Test pit #11290736: Soil Type: Willowemoc
Strong seeps @ 24 inches
Fractured bedrock @ 47 inches
Hard bedrock @ 62 inches

Test pit #11290737: Soil Type: Lairdsville
Strong seeps @ 24 inches
Soft red shale bedrock

Test pit #11290738: Soil Type: Rubble
Fractured bedrock, flagstones and boulders
Refusal @ 60 inches

Test pit #11290739: Soil Type: Vly
Fractured bedrock @ 32 inches
Hard bedrock @ 41 inches

Test pit #11290740: Soil Type: Halcott
Fractured bedrock @ 18 inches
Soft red shale bedrock @ 18 inches

Test pit #11290741: Soil Type: Vly
Fractured bedrock @ 27 inches
Soft shale and slate bedrock @ 56 inches
Hard bedrock @ 56 inches

Test pit #11290742: Soil Type: Vly
Fractured bedrock @ 30 inches
Hard bedrock @ 40 inches

Test pit #11290743: Soil Type: Rock outcrop
0 inches, bedrock

Test pit #11290744: Soil Type: Vly
Fractured bedrock @ 25 inches
Hard bedrock @ 48 inches

Test pit #11290745: Soil Type: Vly
Fractured bedrock @ 30 inches

Hard bedrock @ 40 inches

Test pit #11290746: Soil Type: Vly
Fractured bedrock @ 19 inches
Hard bedrock @ 31 inches

Test pit #11290747: Soil Type: Halcott
Fractured bedrock @ 10 inches
Hard bedrock @ 19 inches

Test pit #11290748: Soil Type: Vly
Fractured bedrock @ 28 inches
Hard bedrock @ 31 inches

Test pit #11290749: Soil Type: Halcott
Fractured bedrock @ 0 inches
Hard bedrock @ 10 inches

Test pit #11290750: Soil Type: Vly
Fractured bedrock @ 33 inches
Hard bedrock @ 51 inches

Test pit #11290751: Soil Type: Vly
Fractured bedrock @ 18 inches
Hard bedrock @ 23 inches

Test pit #11290752: Soil Type: Vly
Fractured bedrock @ 30 inches
Hard bedrock @ 38 inches

Test pit #11300768: Soil Type: Vly
Fractured bedrock @ 15 inches
Hard bedrock @ 22 inches

Test pit #11300769: Soil Type: Halcott
Fractured bedrock @ 15 inches
Hard bedrock @ 19 inches

The stabilized soil percolation rate is 0:15:00 (fifteen minutes)

Test pit #11300770: Soil Type: Vly
Fractured bedrock @ 30 inches
Hard bedrock @ 35 inches

Test pit #11300771: Soil Type: Vly
Fractured bedrock @ 19 inches
Hard bedrock @ 25 inches

Test pit #11300772: Soil Type: Halcott

Fractured bedrock @ 10 inches
Hard bedrock @ 15 inches

Test pit #11300773: Soil Type: Vly
Fractured bedrock @ 30 inches
Hard bedrock @ 35 inches

Test pit #11300774: Soil Type: Halcott
Fractured bedrock @ 15 inches
Hard bedrock @ 20 inches

Test pit #11300775: Soil Type: Halcott
Fractured bedrock @ 10 inches
Hard bedrock @ 20 inches

Test pit #11300776: Soil Type: Vly
Gravelly and bouldery native glacial till with some mixed disturbance from the adjacent road just north of the test pit
Fractured bedrock @ 30 inches
Hard bedrock @ 40 inches

Test pit #11300777: Soil Type: Paxton
Very gravelly sandy loam
Very firm, very gravelly sandy loam @ 35 inches

The stabilized soil percolation rate is 0:17:00 (seventeen minutes)

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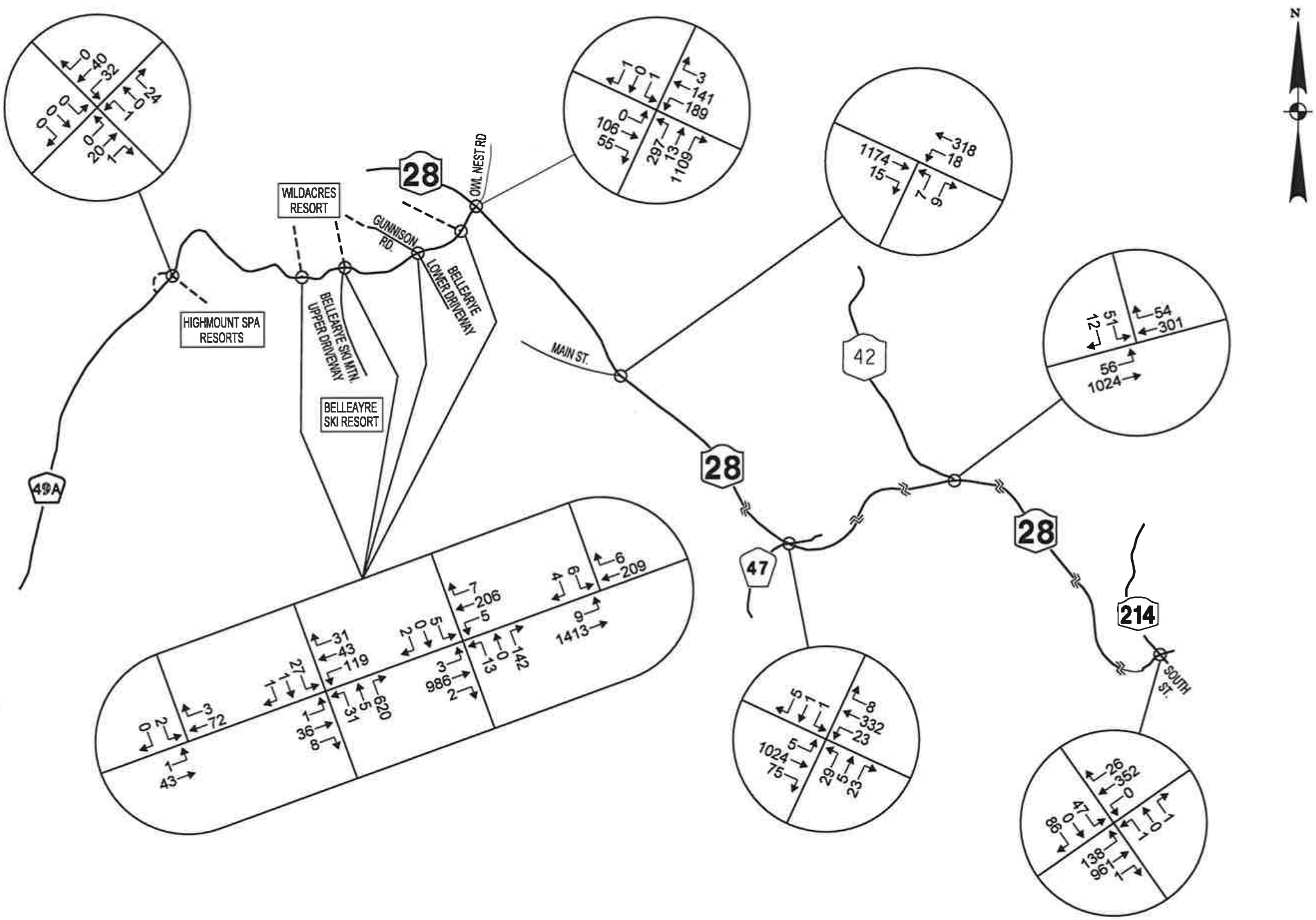


2015 BUILD
TRAFFIC VOLUMES

BELLEAYRE RESORT AT CATSKILL PARK
TOWNS OF SHANDAKEN AND
MIDDLETOWN, NEW YORK

Creighton Manning

PROJECT: 99-057d | DATE: 1/11 | FIGURE: 3.8

Modified Belleayre Resort FEIS
<u>Visual Impact Assessment – Highmount Spa Resort/Galli Curci Mansion</u>

The graphics that follow illustrate that the proposed Highmount Spa Resort (HSR) will not visually impact views from the Galli Curci Mansion (GCM) because views from GCM in the direction of the HSR are blocked by topography and vegetation.

Graphics:

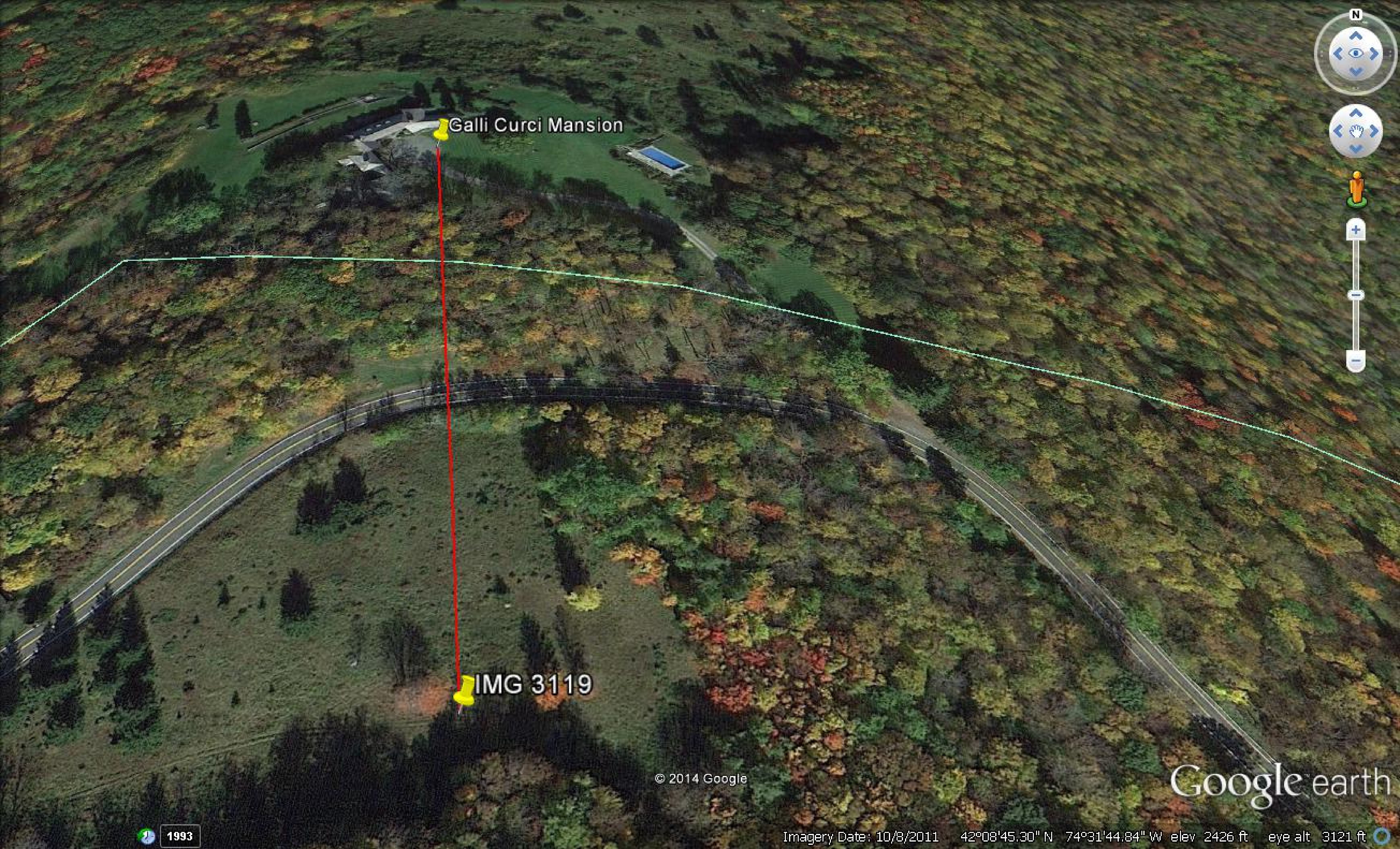
- Google Earth Plan View
- Scaled Section View
- 3 Photographs Looking Towards GCM from HSR

The section view shows that the lowest point, or base, of the HSR is proposed to be located approximately 900 feet from the GCM while the highest point will be approximately 1,300 feet from GCM. The section view also shows the intervening vegetation that blocks the view from GCM to all of HSR. Tree heights in the section view are from field measurements.

The first photo that follows (#3119) was taken from the open field that is between the GCM and the proposed HSR location. The photo location is shown on the Google Earth plan view. In this photo the roof of the CGM is barely discernable through the intervening leaf-off vegetation on the GCM property. No windows on the GCM are visible. The roof is not visible during leaf on conditions.

The next 2 photos that follow (#3123 and #3127) are taken from inside the treeline on the HSR site. Photo #3127 is taken at the location of the base of the hotel. As per project plans (i.e Master Plan L-1.01 and Grading and Drainage Plan L-4.01) some trees will remain on the HSR site in the area that is in the line of sight between the GCM and HSR. This vegetation provides additional screening in the line of sight between GCM and HSR.

GCM is situated to take advantage of the views across the valley through which NYS Route 28 runs (view NNW), which is in the opposite direction of views towards HSR (SSE). Vegetation and topography on the GCM property block views towards HSR in its entirety.



Galli Curci Mansion
IMG 3119
© 2014 Google
Google earth
1993
Imagery Date: 10/8/2011
42°08'45.30" N 74°31'44.84" W elev 2426 ft
eye alt 3121 ft
N

SECTION VIEW - GCM AND HSR

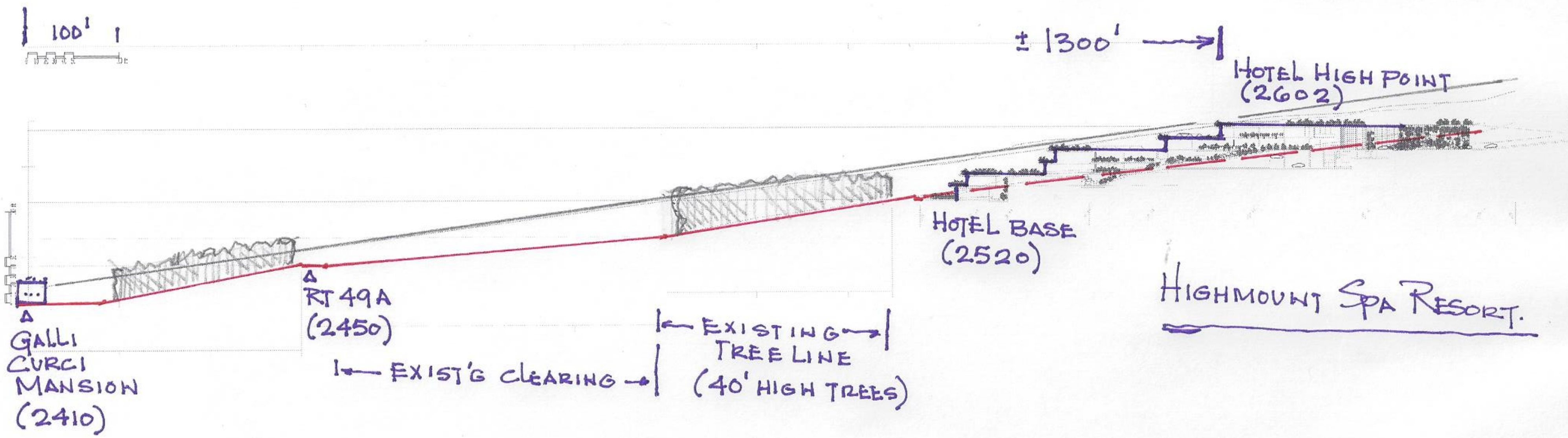



Photo #3119
+/- 650' south of Galli Curci
Mansion looking North
Pump house situated
along CR 49A
Roof line of Mansion
barely visible
through the trees

Photo #3123
+/- 800' south of Galli Curci Mansion looking North

Photo #3127
+/- 900’ south of Galli Curci
Mansion looking North

HVS

FEASIBILITY STUDY AND SENSITIVITY ANALYSIS

Proposed Belleayre Resort at Catskill Park

SUBMITTED TO:

Mr. Daniel Ruzow, Partner
Whiteman Osterman & Hanna LLP
One Commerce Plaza
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November 19, 2013

Mr. Daniel Ruzow, Partner
Whiteman Osterman & Hanna LLP
One Commerce Plaza
Albany, New York 12260

Re: Proposed Belleayre Resort at Catskill Park
Shandaken-Middletown, New York
HVS Reference: 2013010761

Dear Mr. Ruzow:

Pursuant to your request, we herewith submit our feasibility study and sensitivity analysis pertaining to the above-captioned property. The purpose of this report is to provide a summary analysis of the project's current economic prospects and address the impact on the project's feasibility in the event the Highmount component is eliminated. We have projected income and expense under two scenarios – a) full resort and b) Wildacres only – and tested returns under these scenarios versus the projected construction costs for the same.

Our report was prepared in accordance with the Uniform Standards of Professional Appraisal Practice (USPAP), as provided by the Appraisal Foundation.

We hereby certify that we have no undisclosed interest in the property, and our employment and compensation are not contingent upon our findings. This study is subject to the comments made throughout this report and to all assumptions and limiting conditions set forth herein.

Sincerely,
Hotel Appraisals, LLC

Erich Baum, Senior Vice President
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Table of Contents

1. Executive Summary

Subject of the Study

The Belleayre Resort at Catskill Park is envisioned as a world-class resort consisting of two separate resort components (Wildacres and Highmount), each with a distinct market orientation and amenity set. Cumulatively, the facilities will include 328 guestrooms; an 18-hole public championship golf course designed by Davis Love III; two full-service spa operations totaling 45 treatment rooms; ±37,850 square feet of meeting space; extensive food and beverage outlets offering a wide range of dining experiences; and separate communities of vacation ownership units associated with each of the two hotels. The resort will be constructed on ±739 acres of land directly to the west of the existing Belleayre Mountain Ski Center. Highmount guests will have ski-in, ski-out access. Mountain access for Wildacres guests is a short walking distance away. The land is located in both the Town of Shandaken (Ulster County) and the Town of Middletown (Delaware County).

The developers also plan to construct, over time, an additional 206 detached lodging units on the subject site; these units will be marketed and sold as fractional interest entities. An analysis of the financial implications of these fractional interest units is beyond the scope of this study.

The resort's development will be located in two integrated components, detailed in the following table. (The detached units are included in the summary.)

FIGURE 1-1 PROPOSED BELLEAYRE RESORT AT CATSKILL PARK

Wildacres Resort

1. Four-Star Hotel - 208 Rooms

Featured Amenities
- Ski-in, ski-out to existing Belleayre Ski Center
- 18-hole championship golf course

Meeting Space

Ballroom/Auditorium	7,000	sf
Banquet Hall	3,000	
Break-out Rooms	5,400	
Boardrooms	2,350	
Multi-Purpose Room	1,250	
Grand Lobby/Pre-Function Hall	5,850	
Total	24,850	sf

Day Spa of ±25,000 sf on two levels, with 15 treatment rooms, men's and women's salons, lockers, grotto lap pool, and a 7,250-sf fitness center with indoor swimming pool

Food & Beverage Outlets

Multi-purpose three-meal restaurant	300	seats
Specialty restaurant	150	
Lounge/bar	100	
Golf course (clubhouse snack bar)	40	
Community Clubhouse (snack bar)	40	
Total	630	seats

LEED-certified (Leadership in Energy and Environmental Design)

2. Lodging Units (vacation ownership)

42 whole ownership units within hotel structure
163 detached units in 18 buildings
LEED-certified

3. Community Clubhouse

40-seat snack bar (noted above under F&B outlets)
Health club and game room
Outdoor swimming pool
Tennis courts (2)

Highmount Spa Resort

1. Five-Star Hotel and Spa - 120 Rooms

Featured Amenities
- Ski-in, ski-out resort adjacent to new Highmount Ski Center
- Guest-only Spa of ±28,000 sf with 30 treatment rooms, lap pool, café, and event room; 4,800-sf fitness/wellness center; and 2,200-sf physical therapy/recovery center

Meeting Space

Executive Rooms	3,000	sf
Leach Farmhouse & Barn	10,000	
Total	13,000	sf

Food & Beverage Outlets

Main Restaurant	125	seats
Lounge	50	
Spa Café (noted above)	40	
Grab-n-Go Café	0	
Total	215	seats

LEED-certified (Leadership in Energy and Environmental Design)

2. Lodging Units (vacation ownership)

53 fractional ownership lodging units attached to hotel
27 whole-ownership units in one building hotel-adjacent
16 detached whole ownership units in 8 duplex buildings
LEED-certified

3. Resort Wilderness Activity

Café, library, weight room, sauna/steam room, and seasonal activities

The 208-room Wildacres Hotel will be developed in the manner consistent with four-star hotel standards. The property is envisioned as an affiliate of a nationally-recognized first-class hotel brand, such as Hilton, Marriott, Westin, Hyatt, or

Fairmont. The Wildacres portion of the project will be developed in conjunction with a ±25,000-square-foot day spa with 15 treatment rooms, ±24,850 square feet of meeting space, the 18-hole championship golf course, and 590 seats of food and beverage outlets.

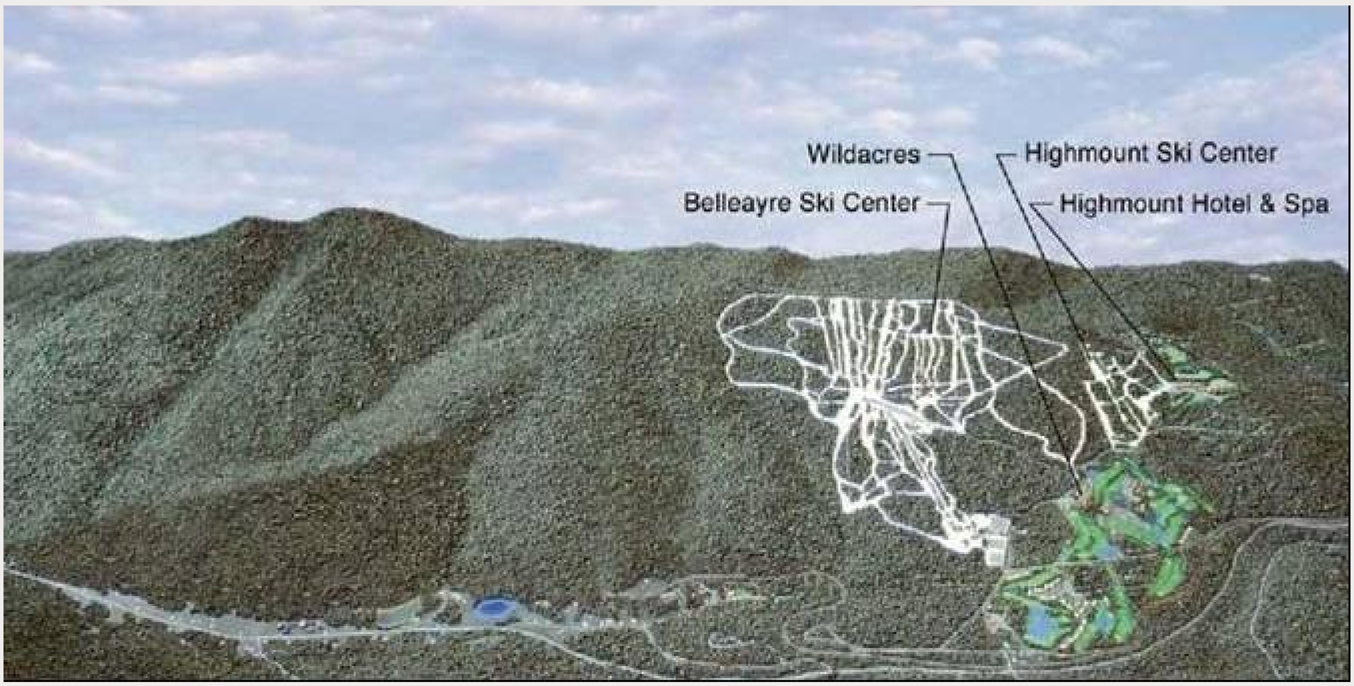
The 120-room Highmount Hotel & Spa will be developed in the manner consistent with five-star hotel standards. The property is envisioned as an affiliate of a nationally-recognized luxury hotel brand, such as Ritz-Carlton or St. Regis. The spa will offer a variety of distinctive dining options and a ±28,000-square-foot spa (for hotel guests only) with 30 treatment rooms. The spa will function as a major amenity and demand generator on the level of a golf course. The property will also contain ±13,000 square feet of meeting space.

The developers of the Belleayre Resort project will work to set a new standard for environmental sensitivity. Its development will proceed in cooperation with the National Resource Defense Council as well as the Department of Environmental Conservation of the State of New York and the Department of Environmental Protection of the City of New York. The project developers intend to meet the standards of, and obtain, a Silver or higher LEED (Leadership in Energy and Environmental Design) rating, and develop new organic regimens for the operation and maintenance of its golf course. All parties are pledged to achieve these new standards.

The resort's construction will reportedly employ an architecturally ambitious design and the broader purpose, according to the developer, is "to provide residential and recreational facilities that will benefit the community, and enhance the tourism attraction of the area as a four-season recreation destination." Hart/Howerton serve as master planners for the project and they and noted environmental architect Emilio Ambasz have provided conceptual designs for the two hotel buildings. The physical and curricular programming will comprise "a beautifully orchestrated resort where education and entertainment opportunities blend seamlessly into the wonderful fabric of the Catskill Mountains; where both young and old leave worries behind and let their imaginations flourish." The Resort is intended "to marry the physical assets of the Belleayre Mountain Ski Center and the Catskill Forest Preserve with new facilities and programs that will enhance these assets for the benefit of both visitors to the Resort and the general public."

HVS

RENDERING OF PROPOSED DEVELOPMENT, LOOKING SOUTH OVER STATE ROUTE 28



In September 2007, Eliot Spitzer, then governor of the State of New York, publicly announced the public/private agreement between the State of New York, the City of New York, seven national environmental groups and the developer (Crossroads Ventures, LLC) which outlines plans for the Belleayre Resort, as well as expansion of the State-owned Belleayre Ski Center and the protection of more than 1,400 acres of land in the Catskill Forest Preserve.

Property Management Assumption

In all likelihood, the franchisor of the subject properties will also serve as the hotel operator. In such cases, where the franchisor is also the operator, the return owed to the franchisor for the use of the brand name is typically accounted for through an incentive management fee. The calculations for incentive management fees are highly variable, and are often subordinate to debt service. Because of these complications, we have accounted for the costs of the brand affiliation through the deduction of a franchise fee that is consistent with current industry standards for top-quality hotels. Management fees have also been accounted for using industry standards for this hotel type.

Scope of the Work

The scope of our market study excludes proceeds from the sale of the timeshare and fractional interest components (the vacation ownership units). Our study focuses on the feasibility of the proposed project's hotel components under a variety of scenarios, as delineated below:

- assuming the construction of the entire proposed program; and
- assuming the construction of the Wildacres component alone, assuming Highmount is not developed.

In each case, the income streams are used to calculate the rate of return on the estimated construction cost. The projected return is then compared to current market standards as a gauge of each scenario's feasibility. Where the construction cost estimates are concerned, note that we are not professional cost estimators; as such, we have relied upon the project developer's internal findings for construction cost estimates.

Treatment of Lodging Units: Attached vs. Detached

As noted above, the term "lodging units" is employed to denote the subject destinations' various hotel-serviced vacation units, marketed in various *intervals* – or *fractional interests*. At both hotel components, the lodging units include a mix of "attached" and "detached" units. The attached units will be integrated into the hotel construction, and are included in this analysis as if they are conventionally operated hotel rooms, which will be the case should the initial market for these ownership units prove insufficiently deep. In the case of Wildacres, there will be 42 attached units, bringing the effective inventory level for the hotel component from 208 to 250. At Highmount, the attached units total 53, bringing the effective room count of the hotel from 120 to 173. Note that these attached units will have an exceptionally large space allocation (ranging from 900 to 1,900 square feet, versus a standard resort guestroom space allocation of approximately 500 square feet) and an elevated décor and design package.

As for the detached lodging units, which total 163 at Wildacres and 43 at Highmount, these have been excluded from our economic analysis. The development of the detached lodging unit communities is not expected to proceed in earnest until the hotel components are open and operational. These communities will not be constructed until the market for the units has been established. Because the ownership profile and risk factors associated with the detached lodging units are distinct from those associated with the hotel components, the rates of return required by the investment market for the two components vary significantly.

Notwithstanding this approach to the economic evaluation, our findings indicate that the detached lodging units could not economically be developed separately from the hotel and country club components. Because of the tremendous infrastructure costs, the economic need for marketing synergies and operational efficiencies, and the necessary provision of access to the numerous hotel and country club facilities for detached lodging unit owners, it is not reasonable to explore the possibility of the detached lodging unit communities standing alone. For similar reasons, the notion of constructing the hotels without the detached lodging unit communities is economically impractical. It is our experience that the potentiality of superior yields associated with the detached lodging units elevate the project's investment market appeal into a particularly desirable realm.

Economic Analysis Summary

The following table summarizes the income and expense projection we developed for both scenarios in the body of the report.

HVS

FIGURE 1-2 FORECAST OF INCOME & EXPENSE – TWO SCENARIOS

	Full Resort				Wildacres Only			
Number of Rooms:	**423**				**250**			
Occupancy:	**68%**				**70%**			
Average Rate:	**$384.00**				**$325.00**			
RevPAR:	**$261**				**$228**			
Days Open:	**365**				**365**			
Occupied Rooms:	**104,989**				**63,875**			
	Total (000s)	**%Gross**	**PAR**	**POR**	**Total (000s)**	**%Gross**	**PAR**	**POR**
REVENUE								
Rooms	$40,316	51.3 %	$95,309	$384.00	$20,759	48.1 %	$83,038	$325.00
Food & Beverage	26,247	33.4	62,050	250.00	15,969	37.0	63,875	250.00
Spa	6,750	8.6	15,957	64.29	3,000	6.9	12,000	46.97
Golf	1,080	1.4	2,553	10.29	900	2.1	3,600	14.09
Other Operated Depts	4,200	5.3	9,928	40.00	2,555	5.9	10,220	40.00
Total Revenues	78,592	100.0	185,797	748.58	43,183	100.0	172,733	676.06
DEPARTMENTAL EXPENSES *								
Rooms	7,257	18.0	17,156	69.12	4,152	20.0	16,608	65.00
Food & Beverage	18,373	70.0	43,435	175.00	11,977	75.0	47,906	187.50
Spa	4,050	60.0	9,574	38.58	1,950	65.0	7,800	30.53
Golf	972	90.0	2,298	9.26	855	95.0	3,420	13.39
Other Operated Depts	2,940	70.0	6,950	28.00	1,916	75.0	7,665	30.00
Total Dept Expenses	33,591	42.7	79,413	319.95	20,850	48.3	83,399	326.41
DEPARTMENTAL INCOME	45,001	57.3	106,385	428.63	22,333	51.7	89,334	349.64
UNDISTRIBUTED OPERATING EXPENSES								
Administrative & General	5,501	7.0	13,006	52.40	3,239	7.5	12,955	50.70
Marketing	3,537	4.5	8,361	33.69	2,159	5.0	8,637	33.80
Franchise Fees**	2,419	3.1	5,719	23.04	1,246	2.9	4,982	19.50
Prop. Operations & Maint.	3,537	4.5	8,361	33.69	2,159	5.0	8,637	33.80
Utilities	2,751	3.5	6,503	26.20	1,727	4.0	6,909	27.04
Total UDOE	17,744	22.6	41,949	169.01	10,530	24.4	42,120	164.85
HOUSE PROFIT	27,256	34.7	64,436	259.61	11,804	27.3	47,214	184.79
Management Fee	2,358	3.0	5,574	22.46	1,295	3.0	5,182	20.28
INCOME BEFORE FIXED CHGS	24,899	31.7	58,862	237.16	10,508	24.3	42,032	164.51
FIXED EXPENSES								
Property Taxes	1,179	1.5	2,787	11.23	648	1.5	2,591	10.14
Insurance	786	1.0	1,858	7.49	518	1.2	2,073	8.11
Reserve for Replacement	3,144	4.0	7,432	29.94	1,727	4.0	6,909	27.04
Total Fixed Charges	5,109	6.5	12,077	48.66	2,893	6.7	11,573	45.30
NET INCOME	$19,790	25.2 %	$46,785	$188.50	$7,615	17.6 %	$30,459	119.21

* Departmental expenses are expressed as a percentage of departmental revenues

** Franchise Fees deducted at: 6.0% of rooms revenue

Based on the construction cost estimates provided by the project developer for the two scenarios, the yield on investment is calculated as follows.

FIGURE 1-3 YIELD CALCULATION

Scenario One - Full Resort	
Net Income	$19,790,000
Construction Cost	240,325,000
Indicated Yield	**8.2%**
Scenario Two - Wildacres Only	
Net Income	$7,615,000
Construction Cost	159,144,200
Indicated Yield	**4.8%**

The following table summarizes current industry standards for capitalization rates currently required by hotel real estate investors, based on the results from three recent investor surveys.

FIGURE 1-4 INVESTOR SURVEYS

Source	Overall Rate
PWC Real Estate Investor Survey - 3rd Quarter 2013	
Luxury/Upper-Upscale Hotels	
Range	4.0% - 10.0%
Average	*7.8%*
Full-Service Hotels	
Range	6.0% - 10.0%
Average	*8.0%*
USRC Hotel Investment Survey - Mid-Year 2013	
Full-Service Hotels	
Range	6.0% - 9.0%
Average	*7.50%*
RERC Real Estate Report - Summer 2013	
1st Tier Hotels	
Range	5.5% - 11.0%
Average	*8.5%*

Only the yield indicated by the Full Resort scenario meets the threshold requirement for investors in hotel real estate the caliber of the proposed subject property. The yield on the Wildacres Only scenario is below the minimum standards indicated above for three of the four surveys, and at the low end of the range indicated by the fourth.

Conclusions

The Belleayre Resort at Catskill Park represents a development with no regional parallel. The resort will offer an exceptional combination of natural features and architectural integrity, convenience to a large population base with high levels of disposable income, and world-class facilities and amenities including extensive meeting space, an 18-hole championship golf course, and two major spa operations. The project developer will seek to affiliate the hotels with separate but complementary brands, which will greatly enhance the marketability of the vacation ownership units. The characteristics and operating advantages detailed here amount to an extraordinary asset that can reasonably be expected to gain recognition as one of the premier destinations and vacation ownership communities in the world, and the top-quality facility of this sort in the Northeastern United States.

Furthermore, we conclude that the only logical and economically feasible approach to the development of the subject property calls for the construction of both resort components. Only the entirety of the subject resort (rather than Wildacres alone) can generate the critical mass in terms of market awareness that is necessary to overcome the limitations associated with the surrounding area. With very few exceptions, the subject property's Catskills location lacks top-quality development. The surrounding area may be characterized as economically stagnant, and, despite its heritage, is not perceived as a major resort destination.

Additional factors concern economies of scale, as they relate to both operating efficiencies and infrastructural development costs. The co-operation of the two components is expected to result in savings in a variety of key expense departments, contributing to the overall feasibility of the project. The project described herein is expected to offer the critical mass, economies of scale, and operating efficiencies necessary to support a successful major resort development in the Catskills, but only if developed in its entirety. More importantly, the substantial cost of constructing roads, utility connections, and other underlying infrastructure for the project must be defrayed among the two proposed resorts in order for the property yields to support a positive feasibility conclusion. Wildacres alone does not provide a sufficient return on investment for the project to attract interest in the debt and equity capital markets.

2. Description of the Real Estate

This section of the narrative provides an overview of the real estate as it pertains to the following categories:

- the land, including its physical characteristics and accessibility;
- the surrounding neighborhood, with an expanded overview of other regional influences at play; and
- the proposed improvements, including a description of each of the key profit centers.

LAND DESCRIPTION

The subject site is located over ±739 acres on the south side of State Route 28. The majority of the development land is located in the Town of Shandaken (Ulster County). Of the total development, only the three following components are located in the Town of Middletown (Delaware County): 1) 12 of the 18 holes of golf, 2) the golf maintenance facilities, and 3) 58 of the Wildacres vacation ownership units.

The subject land has two particularly compelling aspects: 1) its mountain setting; and 2) its convenience to the metropolitan New York area. The site's mountain setting provides unique aesthetic advantages due to its scenic beauty and peaceful surroundings. New York's Catskill Mountains represent one of the largest and most complex natural areas in the Eastern United States, featuring round, forested mountains, and narrow, winding valleys. The Catskills feature 35 mountains that rise over 3,500 feet. The subject land is more specifically located within the 600,000-acre Catskill Park. The park is renowned for its outdoor-recreational opportunities, including skiing, hiking, mountaineering, and fly-fishing.

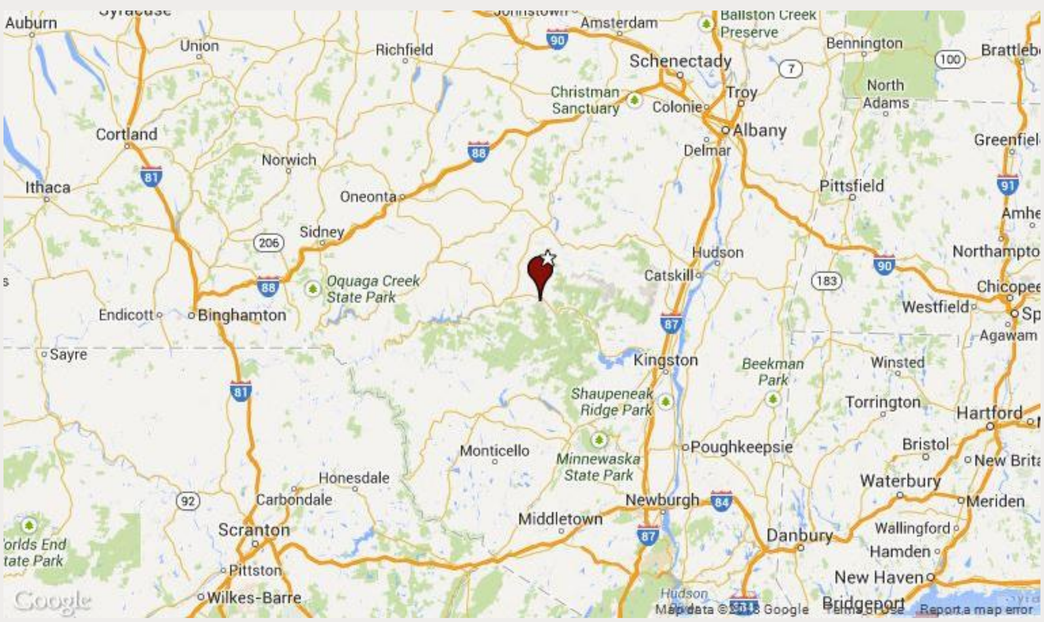
The following maps and rendering identify the location of the land relative to Catskill Park, the surrounding system of highways, and the local roadways in the land's immediate vicinity. Note that the land is located directly to the south of State Route 28, accessed via the system of roadways already providing access to the Belleayre Ski Mountain Center. The new development will be directly north and west of the ski mountain.

LOCATION MAP 1

LOCATION MAP 2

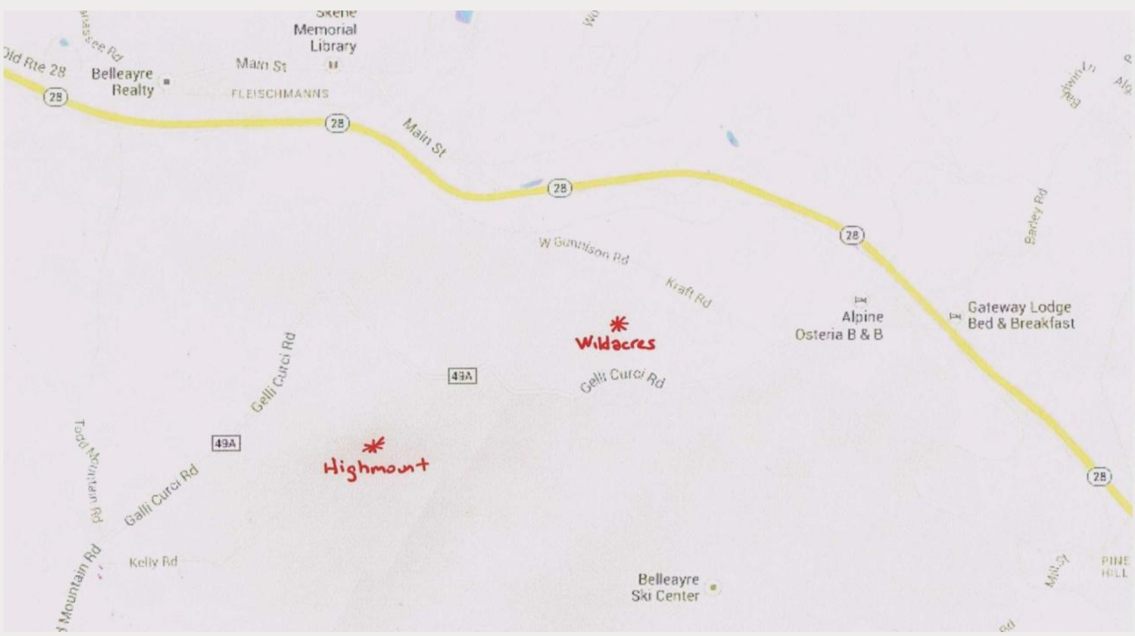
LOCATION MAP 3

LOCATION MAP 4

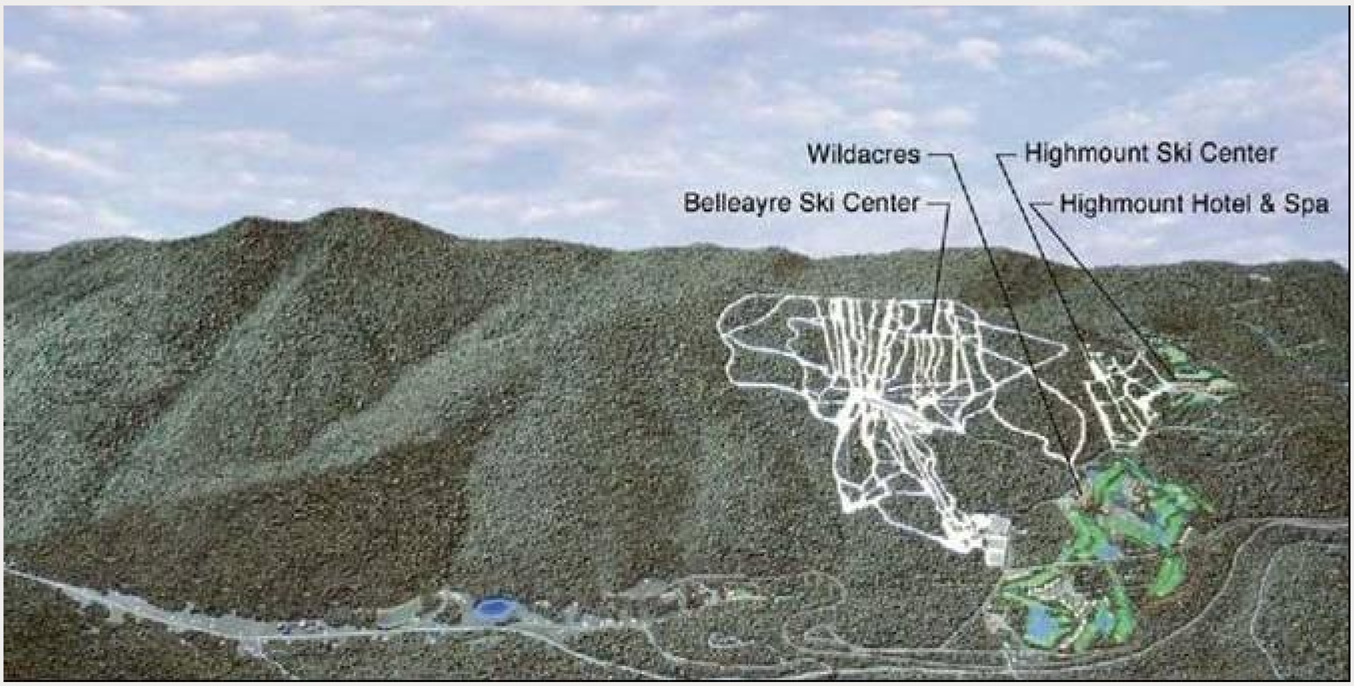


LOCATION MAP 5

LOCATION MAP 6



RENDERING OF PROPOSED DEVELOPMENT, LOOKING SOUTH OVER STATE ROUTE 28



The subject site's proximity to New York City is compelling chiefly due to the economic implications. The presence of strong connections to a region with one of the highest concentrations of wealth in the world is particularly advantageous for the type of resort proposed on the subject land. The site is located along State Route 28, which intersects Interstate 87 approximately 30 miles to the east, at Kingston, New York. Kingston is approximately 90 miles north of Manhattan. Under optimal traffic conditions, the subject site is located within a two- to three-hour drive of the majority of the New York metropolitan area's various points of origin. Interstate 87 provides connections to the well-developed network of highways serving the region, including Interstates 287, 84, 684, 95, 80, and 78. Along with connections to New York City itself, the connections to the suburban communities of Westchester County (NY), Fairfield County (CT), and Northern New Jersey are just as compelling because of the vast population of corporations, institutions, and other employers who commonly hold meetings and retreats at mountain resorts.

POPULATION RINGS AT 50-MILE RADIALS

Airport Access

Along with strong connections to the highway systems, the subject site is within reasonable distance of the various airfields serving the New York area, including Newark, JFK, and LaGuardia International Airports. The nearest airport, Stewart International Airport, situated near Newburgh, approximately 60 minutes to the south, has just been acquired by the Port Authority of New York and New Jersey, which now promotes the facility as the New York metropolitan region's fourth major airport (behind JFK, La Guardia, and Newark). The following table illustrates recent trends in this airport's visitation.

FIGURE 2-1 STEWART INTERNATIONAL AIRPORT

Year	Passenger Traffic	Percent Change
2003	393,530	—
2004	526,745	33.9 %
2005	399,178	(24.2)
2006	310,646	(22.2)
2007	913,927	194.2
2008	789,307	(13.6)
2009	390,065	(50.6)
2010	395,244	1.3
2011	413,654	4.7
2012	364,848	(11.8)
Year-to-date, Jun		
2012	190,687	—
2013	152,322	(20.1) %

Source: Stewart International Airport

Airport volume at Stewart International has been volatile over the past ten years. Usage spiked in 2007 when JetBlue introduced service. JetBlue's service has tapered down in subsequent years, causing the decline in passenger statistics. Along with JetBlue, the airport is currently served by Delta, KLM, NetJets, US Airways, and XOJet.

Local Access

The subject site is located directly off State Route 28, which functions as the primary east-west corridor serving the subject's market area. As noted earlier, the site is located directly to the north and west of the Belleayre Mountain Ski Center. (The site of the hotel component within Wildacres is expected to be directly across from the existing main ski lodge entrance.) Entry to both the Wildacres and Highmount compounds will be provided via the roadway that currently functions as the Ski Center's primary driveway. As such, the point of entry is already distinct and highly conspicuous from State Route 28.

Neighborhood Influences

Due to the scale and nature of the proposed improvements, The Belleayre Resort at Catskill Park is expected to function as an integrated ski, golf and spa experience featuring most of the accommodations and services desired by resort guests. Furthermore, the Belleayre Resort will create a consistent quality level among its hotels, lodging units, restaurants and lounges, country clubs, and other ancillary facilities that will be highly distinct and superior to that of the surrounding area.

Nevertheless, the surrounding area will exert an undeniable influence on the Resort, with a mix of positive and negative considerations at play.

The subject property is located in a highly unique part of the United States. The Catskills evoke a number of impressions in the American imagination. Perhaps the most widely known Catskills image (both celebrated and maligned) is that of the so-called "Borscht Belt," a resort area chiefly concentrated along U.S. Highway 17, in Sullivan County, in the area surrounding Monticello, New York. The Borscht Belt was the famed summer retreat destination for New York City residents, and prior to the advent of the jet age and other significant cultural changes, it thrived. At its peak, it was home to nearly 1,000 lodging facilities. Sullivan County is now home to a number of thriving second-home communities, drawing empty-nesters from throughout the New York-New Jersey-Connecticut area.

The portion of the Catskills known as the Borscht Belt is actually located in the Shawangunk Mountains, approximately 40 miles southwest of the portion of the Catskills in which the subject sites are located. A far more low-key, low-density level of commercial development characterizes the subject's Catskills location. It has been preserved for over a century, under the stewardship of New York State's Department of Environmental Protection as a "forever wild" forest preserve.

The subject site is chiefly located in the Town of Shandaken, with a small portion otherwise located in the Town of Middletown. Shandaken contains a number of notable hamlets (small but distinct concentrations of development with no separate municipal authority), including Mt. Tremper, Phoenicia, Big Indian, Oliverea, Pine Hill, and Highmount. Each hamlet is located off State Route 28, and some feature a small mix of commercial facilities, such as restaurants, bars, and shops. Like the broader influences of the Catskills, the hamlets provide a mix of positive and negative influences. As then-governor Spitzer observed in the development agreement referenced in the prior section of this study, "This project will simultaneously revitalize the region's economy by creating hundreds of new jobs and protect the environment through green buildings, watershed protection and land preservation."

The direction of growth in the area is best illustrated by the cluster of high-end facilities located at Catskill Corners, in nearby Mt. Tremper. The facilities include two lodging facilities, a spa, fine dining restaurants, and retail stores, and were developed by an entity that shares common ownership with the developer of the subject property, Crossroads Ventures, LLC. The lodging facilities include the four-star 26-room Emerson Inn & Spa, opened in 2007, and the 27-unit Lodge at Emerson Resort, opened in 2001. The development at Catskill Corners has exposed the demand for top-quality Catskills development. Photographs of the two hotels follow.

EMERSON INN & SPA

THE LODGE AT EMERSON RESORT

Belleayre Mountain Ski Center

The Belleayre Mountain Ski Center (BMSC) is an important consideration in the resort program, representing the key winter season attraction balancing the Resort's golf facilities, allowing for viable year-round occupancy levels. Constructed in 1949, the BMSC was conceived by the state as a solution to the declining economic conditions of the surrounding market area. Although a degree of functional obsolescence has resulted from the facilities' age, the BMSC has substantial potential due to: 1) the superior quality of the terrain; 2) the fact that the climatic vagaries of its location tend to allow for an especially long season; 3) its proximity to the New York Metropolitan area; and 4) the state government's apparent willingness to fund major capital improvements. The BMSC includes alpine skiing facilities with eight lifts, 39 trails, over 2,000 acres of terrain, and 1,404 vertical feet. There are three base lodges and a summit lodge. The main base lodge, Overlook, has a cafeteria that seats 650 people.

In September 2007, then New York State Governor Eliot Spitzer publicly announced the public/private agreement between the State of New York, the City of New York, seven national environmental groups and the developer (Crossroads Ventures, LLC) which outlines a modified/lower-impact plan for the Belleayre Resort, as well as expansion of the BMSC. Since November 2012, the BMSC operations have been under the authority of New York State Olympic Regional Development Authority (ORDA). ORDA is responsible for developing Olympic-level sports programming in the state. ORDA's management intends to bring and provide four-season programming to BMSC.

A primary purpose of the proposed Belleayre Resort is to provide new hotel accommodations and amenities suited to the modern skier demographic. In the process, the project will transform visitation to the BMSC from a day-use area to a vacation destination, supporting both overnight weekend stays as well as week-long vacations. Representatives for the ski facility reported that there is strong demand for good-quality lodging alternatives associated with the facility.

The Belleayre Resort has been designed to offer a higher-quality and larger-scale lodging experience than is currently available in the region. The increased awareness of the region created by the Resort should allow Belleayre to capture a larger percentage of skiers already traveling north from New York, New Jersey and Connecticut. Currently these potential guests regularly continue past the Catskills' ski centers on the New York State Thruway, intent on spending time and money in the resorts of the Adirondacks, Vermont and New Hampshire.

Key Assumptions

Our analysis assumes that the proposed development of the land can proceed legally and in conformance with local zoning standards. The "Agreement in Principle" would seem to indicate that the project will be permitted to proceed as it is currently imagined, pending favorable SEQRA findings. Furthermore, we assume that the land has the physical utility sufficient to allow for the proposed development, including connections to all necessary utilities. We also assume that the land is not limited by flood zone, seismic risks, or any other extraordinary conditions which might otherwise necessitate elevated insurance premiums or atypical construction and/or operating expenses. Finally, we assume that easements or encumbrances do not bear on the development in any significant or costly manner, and that there are no nuisances or hazards associated with the site. We are not qualified to assess these risks, as well as those associated with soil and subsoil conditions.

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DESCRIPTION OF PROPOSED IMPROVEMENTS

The quality of a lodging facility's physical improvements has a direct influence on marketability, attainable occupancy, and average room rate. The design and functionality of the structure can also affect operating efficiency and overall profitability. This section investigates the subject's proposed physical improvements and personal property in an effort to determine how they are expected to bear on attainable cash flows.

BELLEAYRE RESORT AT CATSKILL PARK – WILDACRES COMPONENT

The Belleayre Resort at Catskill Park is envisioned as a world-class resort consisting of two separate resort components (Wildacres and Highmount), each with a distinct market orientation and amenity set. Cumulatively, the facilities will include 328 guestrooms with ski-in, ski-out access; an 18-hole public championship golf course designed by Davis Love III; two full-service spa operations totaling 45 treatment rooms; ±37,850 square feet of meeting space; extensive food and beverage outlets offering a wide range of dining experiences; and separate communities of vacation ownership units associated with each of the two hotels.

The resort's development plan calls for an architecturally ambitious design; the broader purpose, according to the developer, is "to provide residential and recreational facilities that will benefit the community, and enhance the tourism attraction of the area as a four-season recreation destination." Hart/Howerton serve as master planners for the project and they and noted environmental architect Emilio Ambasz have provided conceptual designs for the two hotel buildings. The physical and curricular programming will comprise "a beautifully

HVS

orchestrated resort where education and entertainment opportunities blend seamlessly into the wonderful fabric of the Catskill Mountains; where both young and old leave worries behind and let their imaginations flourish." The Resort is intended "to marry the physical assets of the Belleayre Mountain Ski Center and the Catskill Forest Preserve with new facilities and programs that will enhance these assets for the benefit of both visitors to the Resort and the general public."

The Belleayre Resort at Catskill Park, as currently proposed, will become the only upscale, four-season resort directly serving the New York metropolitan area. It will also be the most environmentally advanced and responsible large-scale development project the region has ever seen. All of the resort's facilities will be open the public, increasing the number of recreational options available to local residents.

The following table summarizes the proposed facilities, which are oriented around the two distinct hotel compounds, referred to here as Wildacres and Highmount.

FIGURE 2-2 SUMMARY OF PROPOSED FACILITIES

Wildacres Resort

1. Four-Star Hotel - 208 Rooms

Featured Amenities
- Ski-in, ski-out to existing Belleayre Ski Center
- 18-hole championship golf course

Meeting Space

Ballroom/Auditorium	7,000 sf
Banquet Hall	3,000
Break-out Rooms	5,400
Boardrooms	2,350
Multi-Purpose Room	1,250
Grand Lobby/Pre-Function Hall	5,850
Total	24,850 sf

Day Spa of ±25,000 sf on two levels, with 15 treatment rooms, men's and women's salons, lockers, grotto lap pool, and a 7,250-sf fitness center with indoor swimming pool

Food & Beverage Outlets

Multi-purpose three-meal restaurant	300 seats
Specialty restaurant	150
Lounge/bar	100
Golf course (clubhouse snack bar)	40
Community Clubhouse (snack bar)	40
Total	630 seats

LEED-certified (Leadership in Energy and Environmental Design)

2. Lodging Units (vacation ownership)
   42 whole ownership units within hotel structure
   163 detached units in 18 buildings
   LEED-certified

3. Community Clubhouse
   40-seat snack bar (noted above under F&B outlets)
   Health club and game room
   Outdoor swimming pool
   Tennis courts (2)

Highmount Spa Resort

1. Five-Star Hotel and Spa - 120 Rooms

Featured Amenities
- Ski-in, ski-out resort adjacent to new Highmount Ski Center
- Guest-only Spa of ±28,000 sf with 30 treatment rooms, lap pool, café, and event room; 4,800-sf fitness/wellness center; and 2,200-sf physical therapy/recovery center

Meeting Space

Executive Rooms	3,000 sf
Leach Farmhouse & Barn	10,000
Total	13,000 sf

Food & Beverage Outlets

Main Restaurant	125 seats
Lounge	50
Spa Café (noted above)	40
Grab-n-Go Café	0
Total	215 seats

LEED-certified (Leadership in Energy and Environmental Design)

2. Lodging Units (vacation ownership)
   53 fractional ownership lodging units attached to hotel
   27 whole-ownership units in one building hotel-adjacent
   16 detached whole ownership units in 8 duplex buildings
   LEED-certified

3. Resort Wilderness Activity
   Café, library, weight room, sauna/steam room, and seasonal activities

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Wildacres Resort

The 208-room, family-oriented Wildacres Resort will be developed in the manner consistent with four-star hotel standards. The property is envisioned as an affiliate of a nationally-recognized first-class hotel brand, such as Hilton, Marriott, Westin, Hyatt, or Fairmont. The Wildacres portion of the project will be developed in conjunction with a conference center containing ±24,850 square feet of usable meeting space, an 18-hole championship golf course, a ±25,000-square-foot day spa with 15 treatment rooms, and 630 seats (including the 40-seat snack bar referenced in the subsequent paragraph) contained in a variety of food and beverage outlets. The 18-hole championship public championship golf course will be designed by Davis Love III.

Wildacres will also include a community of 205 vacation ownership units, of which 42 units will be integrated into the hotel construction. The vacation ownership component at Wildacres calls for construction of numerous units along the golf course. Other Wildacres facilities related to the vacation ownership units include a private clubhouse containing reception, sales and operational facilities; an outdoor swimming pool; two tennis courts; a game room; a 40-seat snack bar; and a health club.

Highmount Spa Resort

The 120-room Highmount Spa Resort will be developed in the manner consistent with five-star hotel standards. The property is envisioned as an affiliate of a nationally-recognized luxury hotel brand, such as Ritz-Carlton or St. Regis. The spa will offer a variety of distinctive dining options and a ±28,000-square-foot spa (for hotel guests only) with 30 treatment rooms. The spa will function as a major amenity and demand generator on the level of a golf course. The property will also contain ±13,000 square feet of meeting space.

Highmount is located at a higher elevation than Wildacres and will be designed to provide a more exclusive and intimate guest experience, with a higher level of service. The property's featured amenity will be its spa, which will include 30 treatment rooms, a lap pool, a sauna, and a spa café.

Spa facilities are year-round attractions, and spa hotels are one of the fastest growing segments of the hotel industry. The Belleayre Resort will feature a full-service resort and medical spa, making it one of the only combination spas in the northeast. The proximity of the resort to non-spa related activities including golf, skiing, and outdoor adventure activities provide the resort with well-rounded, four-season appeal.

As noted previously, the Highmount hotel component will have the benefit of offering ski-in, ski-out facilities through the State's commitment to acquire and rehabilitate the defunct Highmount Ski Center trails. The State's plan calls for the installation of new lifts and the development of base facilities, including a restaurant and lounge.

The Belleayre Resort at Catskill Park Wilderness Activity Center will be an adaptive reuse of the existing lodge buildings at the base of the former Highmount Ski Center and will feature mountain bike rentals, climbing walls, snowshoeing, cross-country skiing, guided nature trails, and horseback riding.

The vacation ownership component at Highmount calls for construction of a total of 96 vacation ownership units, including 53 fractional ownership units constructed of a piece with the hotel, 27 whole ownership units in one building adjacent to the hotel, and 16 additional mid-range whole ownership units in eight duplexes.

Environmental Sensitivity

The Belleayre Resort project will attempt to set a new standard for environmental sensitivity. Its development will proceed in cooperation with the National Resource Defense Council as well as the Department of Environmental Conservation of the State of New York and the City of New York's Department of Environmental Protection. The project developers intend to meet the standards of, and obtain, a Silver or higher LEED (Leadership in Energy and Environmental Design) rating. The Resort's 18-hole championship golf course will be maintained with a strict organic regimen, meaning that no synthetic fertilizers or pesticides will be used. External lighting will make use of downward-directed lighting fixtures to minimize any impact on the night sky. Windows will be fitted with non-reflective glass to eliminate glare. A host of water saving, energy saving and other programs will result in a resort property that showcases the Catskill surroundings while respecting their fragility.

Conclusion

The Belleayre Resort at Catskill Park represents a development with no regional parallel. The resort will offer an exceptional combination of natural features and architectural integrity, convenience to a large population base with high levels of disposable income, and world-class facilities and amenities including extensive meeting space, an 18-hole championship golf course, and two separate full-service spa operations. The project developer will seek to affiliate the hotels with separate but complementary brands, affiliations that will greatly enhance the marketability of the vacation ownership units. The characteristics and operating advantages detailed here amount to an extraordinary asset that can reasonably be expected to gain recognition as one of the premier destinations and vacation ownership communities in the world, and the top-quality facility of this sort in the Northeastern United States.

A comment on the effective room counts is necessary here. The "attached" units constructed of a piece with each hotel building are included in this analysis as if they are conventionally operated hotel rooms, which will be the case should the market for these ownership units prove insufficiently deep. In the case of Wildacres, there will be 42 attached units, bringing the effective inventory level for the hotel component from 208 to 250. At Highmount, the attached units total 53, bringing the effective room count of the hotel from 120 to 173. Note that these attached units will have an exceptionally large space allocation (ranging from 900 to 1,900 square feet, versus a standard resort guestroom space allocation of approximately 500 square feet) and an elevated décor and design package.

3. Market Area Analysis

The economic vitality of the market area surrounding the subject site is an important consideration in forecasting lodging demand and income potential. Economic and demographic trends that reflect the amount of visitation provide a basis from which to project demand. The purpose of the market area analysis is to review available economic and demographic data to determine whether the local market will undergo economic growth, stabilize, or decline.

In the case of the proposed resort, the economic condition of the surrounding area is of less importance than the health of the economies from which the hotel's demand is expected to originate. As a world-class resort, the market for the proposed subject property's demand is, by definition, the world. However, we have narrowed the focus. After providing a cursory review of the Ulster and Delaware County demographics, we have included a detailed overview of the New York Metropolitan Area's economy, which is expected to serve as the foremost source of the property's lodging demand.

Ulster and Delaware Counties

The subject site is bisected by the border between the towns of Shandaken (Ulster County) and Middletown (Delaware County). The location is depicted in the following map.

COUNTY MAP

Ulster County is largely wooded and rural, dominated by the Catskill State Park, but is also home to two moderately large population centers in Kingston and New Paltz. The county is bounded by the Hudson River to the east, Greene and Delaware counties to the north, Sullivan County to the west, and Orange County to the south. The county's population was recently measured at approximately 180,000.

Delaware County is almost entirely rural and agrarian in orientation, with the largest communities including Delhi and Margaretville. The county is home to over 700 farms occupying ±200,000 acres. The county is bordered by the Delaware River and the Commonwealth of Pennsylvania to the southwest. Its population was recently measured at approximately 50,000.

Key employers in Ulster County include the State University of New York (SUNY) campuses in New Paltz, Kingston, and Stone Ridge; United Health Care; Health Alliance of the Hudson Valley; Ametek Rotron (electronics); Huck Manufacturing (fasteners); The VirTis Company (biotechnology laboratory equipment); Zumtobel (innovative lighting solutions); Hunter Panels (roof-insulating products); and VAW of America (aluminum products).

In Delaware County, large employers include: Amphenol Aerospace (electrical interconnectors); Mead Consumer and Office Products; Audiosears (telecommunications); Catskill Craftsman (domestic hardwood products); Clark Companies (athletic facility builder); DMV Nutritionals International (milk, whey, and protein-based ingredients); Kraft Foods; and Mallinckrodt HealthCare (pharmaceuticals).

The following tables detail recent employment trends in Ulster and Delaware counties, providing an indication of the regional economy's health.

FIGURE 3-1 EMPLOYMENT TRENDS – ULSTER COUNTY

Year	Labor Force	Percent Change	Total Employment	Percent Change	Unemployment Rate
2000	88,599	---	85,453	---	3.6 %
2001	88,918	0.4 %	85,523	0.1 %	3.8
2002	90,717	2.0	86,690	1.4	4.4
2003	91,342	0.7	87,138	0.5	4.6
2004	91,603	0.3	87,143	0.0	4.9
2005	91,906	0.3	87,860	0.8	4.4
2006	92,353	0.5	88,442	0.7	4.2
2007	90,565	(1.9)	86,560	(2.1)	4.4
2008	90,387	(0.2)	85,457	(1.3)	5.5
2009	89,670	(0.8)	82,661	(3.3)	7.8
2010	88,979	(0.8)	81,642	(1.2)	8.2
2011	87,432	(1.7)	80,162	(1.8)	8.3
2012	87,050	(0.4)	79,369	(1.0)	8.8
As of July:					
2012	88,237	---	79,923	---	9.4 %
2013	87,664	(0.6) %	80,902	1.2 %	7.7
Avg. Annual % Change,					
2000-2012:		(0.1) %		(0.6) %	
2000-2007:		0.3		0.2	
2007-2012:		(0.8)		(1.7)	

Source: Bureau of Labor Statistics

HVS

FIGURE 3-2 EMPLOYMENT TRENDS – DELAWARE COUNTY

Year	Labor Force	Percent Change	Total Employment	Percent Change	Unemployment Rate
2000	22,203	---	21,280	---	4.2 %
2001	22,368	0.7 %	21,436	0.7 %	4.2
2002	23,051	3.1	21,946	2.4	4.8
2003	23,000	(0.2)	21,882	(0.3)	4.9
2004	23,218	0.9	22,162	1.3	4.5
2005	23,549	1.4	22,500	1.5	4.5
2006	23,458	(0.4)	22,432	(0.3)	4.4
2007	23,150	(1.3)	22,130	(1.3)	4.4
2008	22,834	(1.4)	21,471	(3.0)	6.0
2009	22,199	(2.8)	20,276	(5.6)	8.7
2010	22,105	(0.4)	20,130	(0.7)	8.9
2011	21,612	(2.2)	19,725	(2.0)	8.7
2012	21,566	(0.2)	19,655	(0.4)	8.9
As of July:					
2012	22,459	---	20,451	---	8.9 %
2013	22,055	(1.8) %	20,376	(0.4) %	7.6
Avg. Annual % Change,					
2000-2012:		(0.2) %		(0.7) %	
2000-2007:		0.6		0.6	
2007-2012:		(1.4)		(2.3)	

Source: Bureau of Labor Statistics

Again, as noted above, from a market perspective, the health of the regional economy is not particularly germane here. We expect that nearly all users of the proposed subject resort will originate from points beyond Ulster and Delaware counties. From the standpoint of the proposed resort, the beauty of the site's rural mountain setting is the foremost consideration as opposed to its economic setting. Rather, the health and status of the New York City Metropolitan Area is expected to be the key economic determinant in this analysis, as this population center is likely to act as the single largest feeder market for the proposed resort.

New York City Metropolitan Area Overview

Renowned for its cultural attractions, entertainment, restaurants, and retail outlets, New York City is one of the most popular tourist destinations in the country and also home to an extremely affluent populace. It is home to the United Nations, the Statue of Liberty, and the Empire State Building. The theaters in the

Broadway district attract international attention. Lincoln Center (the home of the Metropolitan Opera, the New York Philharmonic, the New York City Ballet and Opera, and the Juilliard School) is among the world's most important centers for the performing arts. The Metropolitan Museum of Art, the Museum of Modern Art, the American Museum of Natural History, and a number of the City's other museums and galleries are internationally respected.

As the site of Wall Street, New York is the nation's financial and business capital. Manhattan's central business district contains the greatest concentration of commercial activity in the United States, and generates more than two million jobs. New York is the home of the NASDAQ, American, and New York Stock Exchanges (NYSE), as well as a majority of the nation's investment bankers and brokers and many of the largest commercial banking institutions. Altogether, the NYSE and the NASDAQ represent over 40% of the global market capitalization. Financial services account for more than 35% of the city's employment income. In addition to financial institutions, New York City is a major center for industries such as fashion, textiles and garments, advertising, publishing and communications, jewelry, design, and technology.

The following table details historical and projected employment, households, population and average household income data as provided by REIS, Inc. for the New York City metropolitan area.

FIGURE 3-3 HISTORICAL & PROJECTED EMPLOYMENT, HOUSEHOLDS, POPULATION, AND HOUSEHOLD INCOME STATISTICS

Year	Total Employment	% Chg	Office Employment	% Chg	Industrial Employment	% Chg	Households	% Chg	Population	% Chg	Household Avg. Income	% Chg
2000	3,867,620	—	1,455,449	—	399,751	—	3,156,450	—	8,423,400	—	$99,345	—
2001	3,789,330	(2.0) %	1,412,637	(2.9) %	378,034	(5.4) %	3,166,460	0.3 %	8,457,410	0.4 %	99,434	0.1 %
2002	3,689,330	(2.6)	1,363,342	(3.5)	358,523	(5.2)	3,171,660	0.2	8,466,550	0.1	99,532	0.1
2003	3,672,400	(0.5)	1,352,652	(0.8)	348,889	(2.7)	3,180,290	0.3	8,457,660	(0.1)	103,422	3.9
2004	3,706,760	0.9	1,366,783	1.0	346,196	(0.8)	3,191,840	0.4	8,429,620	(0.3)	110,811	7.1
2005	3,769,710	1.7	1,395,466	2.1	340,329	(1.7)	3,200,440	0.3	8,400,950	(0.3)	119,398	7.7
2006	3,836,430	1.8	1,423,479	2.0	334,462	(1.7)	3,210,980	0.3	8,393,480	(0.1)	130,582	9.4
2007	3,930,980	2.5	1,460,153	2.6	334,190	(0.1)	3,225,680	0.5	8,432,640	0.5	139,218	6.6
2008	3,915,410	(0.4)	1,444,521	(1.1)	320,899	(4.0)	3,232,480	0.2	8,499,090	0.8	136,026	(2.3)
2009	3,813,010	(2.6)	1,387,908	(3.9)	301,223	(6.1)	3,241,710	0.3	8,561,990	0.7	131,601	(3.3)
2010	3,886,510	1.9	1,412,469	1.8	300,534	(0.2)	3,253,180	0.4	8,630,960	0.8	143,995	9.4
2011	3,970,580	2.2	1,438,200	1.8	306,047	1.8	3,269,080	0.5	8,715,480	1.0	147,448	2.4
2012	4,039,960	1.7	1,455,260	1.2	308,594	0.8	3,278,610	0.3	8,773,860	0.7	150,445	2.0
Forecasts												
2013	*4,098,590*	*1.5 %*	*1,478,432*	*1.6 %*	*307,471*	*(0.4) %*	*3,292,340*	*0.4 %*	*8,815,210*	*0.5 %*	*$155,846*	*3.6 %*
2014	*4,173,240*	*1.8*	*1,511,513*	*2.2*	*308,684*	*0.4*	*3,304,780*	*0.4*	*8,849,290*	*0.4*	*165,687*	*6.3*
2015	*4,295,020*	*2.9*	*1,561,407*	*3.3*	*313,551*	*1.6*	*3,326,780*	*0.7*	*8,875,760*	*0.3*	*176,745*	*6.7*
2016	*4,387,900*	*2.2*	*1,598,103*	*2.4*	*317,308*	*1.2*	*3,349,640*	*0.7*	*8,901,310*	*0.3*	*186,207*	*5.4*
2017	*4,435,590*	*1.1*	*1,615,367*	*1.1*	*317,584*	*0.1*	*3,371,790*	*0.7*	*8,927,650*	*0.3*	*193,348*	*3.8*
Average Annual Compound Change												
2000 - 2012		0.4 %		(0.0) %		(2.1) %		0.3 %		0.3 %		3.5 %
2000 - 2007		0.2		0.0		(2.5)		0.3		0.0		4.9
2007 - 2010		(0.4)		(1.1)		(3.5)		0.3		0.8		1.1
2010 - 2012		2.0		1.5		1.3		0.4		0.8		2.2
Forecast 2012 - 2017		*1.9 %*		*2.1 %*		*0.6 %*		*0.6 %*		*0.3 %*		*5.1 %*

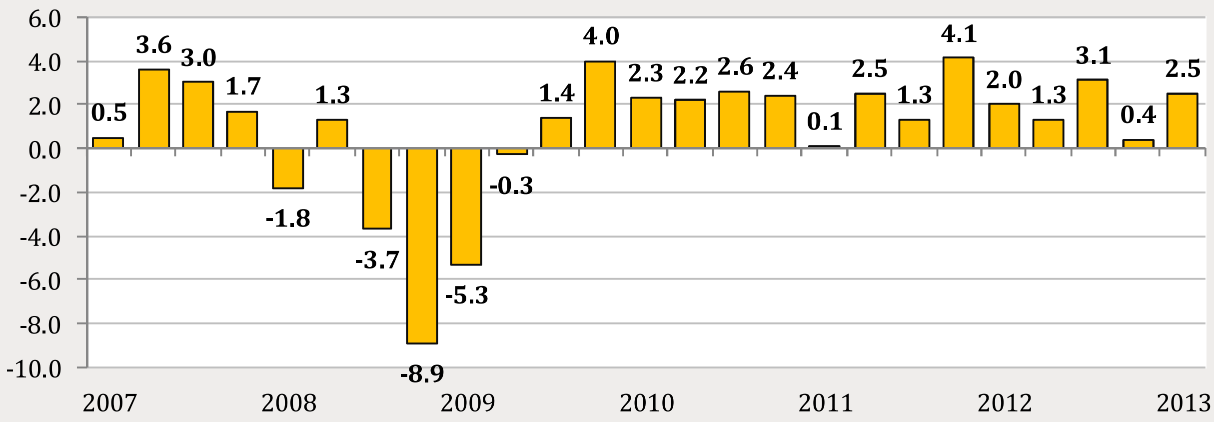
Source: REIS Report, 2nd Quarter, 2013

The preceding data illustrates the impact of the national economic recession, with losses in all employment categories, as well as household income, realized in 2008 and 2009. Apart from another decline in industrial employment through 2010, the economic indicators began to improve in 2010 and have continued to do so through 2012. Total employment grew at an average annual rate of 1.9% between 2010 and 2012, and, in 2012, total employment exceeded 4.0 million for the first time. From 2012 through 2017, the region's total employment is projected to grow at an average annual rate of 1.9%, paced by growth in office employment, where the projected 2.0% growth rate exceeds the 0.6% growth rate projected for the industrial sector. And whereas moderate gains in household and population levels are projected, a healthy 5.0% annual growth rate is projected for the region's average household income between 2012 and 2017. Given that leisure travel represents discretionary spending, the positive outlook for household income is a particularly strong indicator in this analysis.

NATIONAL ECONOMY

Our analysis of the outlook for this specific market also considers the broader context of the national economy. The U.S. economy entered a recession in December of 2007, which worsened in the fall of 2008 when the financial crisis shocked the world economy. The U.S. fell into economic decline for most of 2009, but the nation's gross domestic product (GDP) and corporate profits began to grow again in the third quarter of 2009. In 2010, the economy experienced three consecutive quarters of annualized economic growth in excess of 3%, reflecting a rebound from the recession. Since that time, the U.S. economy has grown at fluctuating rates, as evidenced in the following table.

FIGURE 3-4 UNITED STATES GDP GROWTH RATE



Source: tradingeconomics.com, Bureau of Economic Analysis

Gross domestic product (GDP) increased at a rate of 2.5% in the first quarter of 2013, reflecting a welcome lift in economic activity, following a period of weak growth in the fourth quarter. The acceleration in the first quarter was largely attributed to an increase in private inventory investment, increased personal consumption expenditures, and an increase in goods and services export activity. Motor vehicle output and activity in the services sector also contributed to real GDP growth. These positive trends occurred despite a decrease of 8.4% in real federal government expenditures and investment, coupled with the 11.5% decline in national defense spending. As previously discussed, the national unemployment rate declined to 7.5% in April of 2013, with employers adding 165,000 new jobs. Our forecasts to follow in this report reflect the cautious optimism regarding the U.S. economy that prevails at this time.

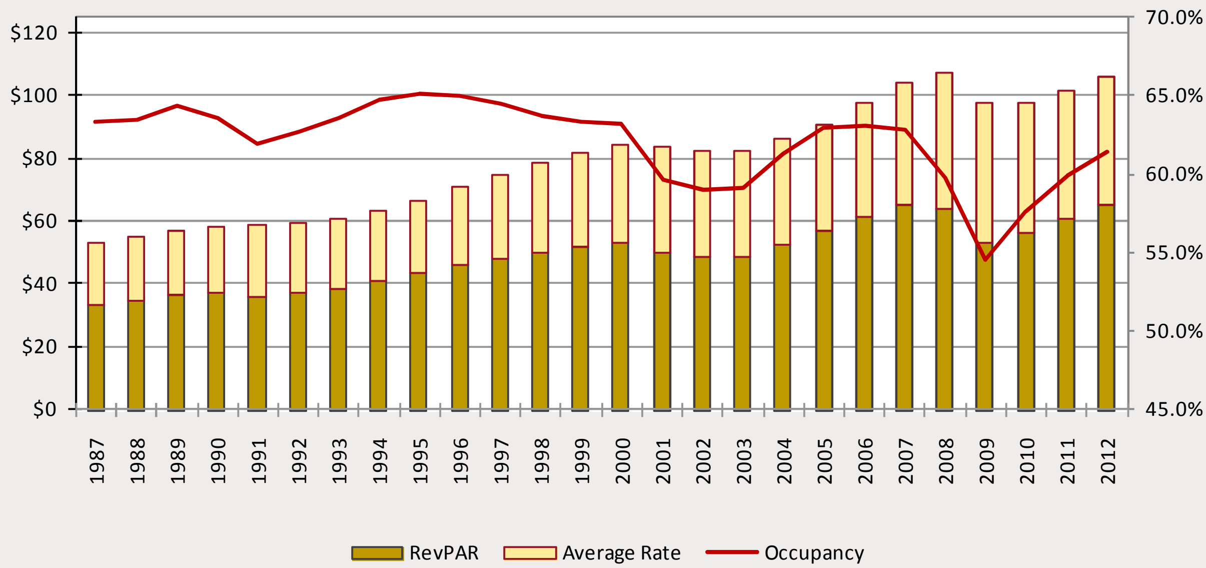
4. Projection of Occupancy and Average Rate

In the lodging industry, price varies directly, but not proportionately, with demand and inversely, but not proportionately, with supply. Supply is measured by the number of guestrooms available, and demand is measured by the number of rooms occupied; the net effect of supply and demand toward equilibrium results in a prevailing price, or average rate. The purpose of this section is to investigate current supply and demand trends, as indicated by the regional competitive market.

National Lodging Trends

We begin this section with a review of national lodging trends, in order to provide a context for our product recommendation. Smith Travel Research (STR) is an independent research firm that compiles data on the lodging industry, and this information is routinely used by typical hotel buyers. Figure 4-1 presents annual hotel occupancy and average rate data since 1987. Figures 4-2 and 4-3 illustrate the more recent trends, categorized by geography, price point, type of location, and chain scale. The statistics include occupancy, average rate, and rooms revenue per available room (RevPAR). RevPAR is calculated by multiplying occupancy by average rate and provides an indication of how well rooms revenue is being maximized.

FIGURE 4-1 NATIONAL OCCUPANCY AND AVERAGE RATE TRENDS



Source: STR

FIGURE 4-2 NATIONAL OCCUPANCY AND AVERAGE RATE TRENDS – YEAR-TO-DATE DATA

	Occupancy - Thru May			Average Rate - Thru May			RevPAR - Thru May		
	2012	2013	% Change	2012	2013	% Change	2012	2013	% Change
United States	59.0 %	60.2 %	2.0 %	$104.67	$109.06	4.2 %	$61.79	$65.66	6.3 %
Region									
New England	54.1 %	55.2 %	2.0 %	$117.01	$120.11	2.7 %	$63.28	$66.29	4.7 %
Middle Atlantic	60.4	61.9	2.5	140.86	146.70	4.1	85.05	90.79	6.7
South Atlantic	61.5	62.6	1.8	107.12	111.31	3.9	65.89	69.73	5.8
East North Central	53.2	54.2	1.8	88.01	90.80	3.2	46.85	49.21	5.0
East South Central	55.1	55.6	1.0	78.80	81.15	3.0	43.38	45.13	4.0
West North Central	52.4	52.5	0.3	81.30	83.45	2.6	42.58	43.82	2.9
West South Central	60.6	62.0	2.3	90.20	94.88	5.2	54.69	58.84	7.6
Mountain	57.7	58.8	2.1	99.94	102.57	2.6	57.62	60.35	4.7
Pacific	64.5	66.3	2.8	121.74	128.95	5.9	78.54	85.53	8.9
Price									
Luxury	69.3 %	70.6 %	1.9 %	$175.17	$181.90	3.8 %	$121.38	$128.47	5.8 %
Upscale	63.1	63.7	1.0	126.41	131.26	3.8	79.73	83.65	4.9
Midprice	59.6	60.8	1.9	99.10	102.94	3.9	59.10	62.58	5.9
Economy	53.4	54.9	2.8	72.93	76.39	4.7	38.96	41.96	7.7
Budget	52.8	53.9	2.1	56.37	59.09	4.8	29.77	31.85	7.0
Location									
Urban	67.2 %	68.8 %	2.4 %	$147.84	$154.91	4.8 %	$99.30	$106.52	7.3 %
Suburban	59.6	61.1	2.4	88.42	91.66	3.7	52.70	55.97	6.2
Airport	67.0	69.4	3.5	94.62	98.06	3.6	63.44	68.05	7.3
Interstate	51.5	51.5	0.0	71.70	73.73	2.8	36.91	37.97	2.9
Resort	63.1	64.3	1.9	148.15	156.36	5.5	93.46	100.47	7.5
Small Metro/Town	49.9	50.5	1.2	80.82	83.26	3.0	40.37	42.09	4.3
Chain Scale									
Luxury	73.0 %	75.0 %	2.7 %	$275.76	$291.11	5.6 %	$201.20	$218.22	8.5 %
Upper Upscale	70.0	71.3	1.9	153.94	160.59	4.3	107.78	114.54	6.3
Upscale	69.7	70.7	1.5	115.52	120.81	4.6	80.49	85.44	6.1
Upper Midscale	60.4	61.3	1.4	94.81	98.01	3.4	57.28	60.05	4.8
Midscale	52.1	53.2	2.2	72.21	74.30	2.9	37.59	39.53	5.2
Economy	51.6	52.6	1.9	50.16	52.05	3.8	25.88	27.36	5.7
Independents	55.1	56.4	2.4	102.39	106.49	4.0	56.41	60.06	6.5

Source: STR - May 2013 Lodging Review

FIGURE 4-3 NATIONAL OCCUPANCY AND AVERAGE RATE TRENDS – CALENDAR YEAR DATA

	Occupancy			Average Rate			RevPAR		
	2011	2012	% Change	2011	2012	% Change	2011	2012	% Change
United States	59.9 %	61.4 %	2.5 %	$101.85	$106.10	4.2 %	$61.02	$65.17	8.2 %
Region									
New England	61.2 %	61.6 %	0.7 %	$120.66	$126.80	5.1 %	$73.84	$78.13	8.6 %
Middle Atlantic	65.4	66.5	1.8	145.05	150.55	3.8	94.80	100.15	8.1
South Atlantic	59.4	60.9	2.5	100.20	103.28	3.1	59.50	62.86	7.0
East North Central	56.5	58.5	3.6	88.20	92.28	4.6	49.82	53.98	8.4
East South Central	55.5	56.4	1.5	77.22	79.47	2.9	42.89	44.78	5.7
West North Central	56.2	57.4	2.2	80.92	83.82	3.6	45.48	48.13	6.5
West South Central	58.1	60.6	4.4	84.80	88.78	4.7	49.23	53.81	8.5
Mountain	59.1	59.2	0.2	93.39	96.57	3.4	55.20	57.20	8.4
Pacific	65.6	67.9	3.5	119.05	125.98	5.8	78.06	85.49	10.3
Price									
Luxury	68.3 %	69.7 %	2.0 %	$167.35	$173.50	3.7 %	$114.26	$120.86	8.2 %
Upscale	63.9	65.5	2.4	124.88	129.09	3.4	79.80	84.51	7.4
Midprice	60.5	62.1	2.6	96.51	100.30	3.9	58.37	62.27	8.0
Economy	53.9	55.6	3.1	72.78	76.12	4.6	39.24	42.30	7.2
Budget	54.9	56.1	2.1	54.54	57.49	5.4	29.97	32.26	7.2
Location									
Urban	67.5 %	69.5 %	2.9 %	$147.44	$153.94	4.4 %	$99.53	$106.91	8.2 %
Suburban	60.1	61.8	2.7	86.18	89.86	4.3	51.81	55.49	8.4
Airport	66.3	68.1	2.7	91.01	94.70	4.1	60.37	64.49	7.1
Interstate	53.3	54.6	2.4	71.66	74.18	3.5	38.22	40.53	6.7
Resort	61.8	63.3	2.3	135.45	141.60	4.5	83.75	89.60	9.8
Small Metro/Town	53.5	54.5	1.9	84.06	86.72	3.2	44.95	47.26	6.3
Chain Scale									
Luxury	71.0 %	73.2 %	3.1 %	$262.64	$274.51	4.5 %	$186.43	$200.98	11.2 %
Upper Upscale	69.3	70.9	2.3	147.99	154.36	4.3	102.60	109.43	6.6
Upscale	69.5	70.9	2.0	111.70	116.88	4.6	77.64	82.87	8.0
Mid-scale w/ F&B	61.3	63.0	2.8	93.93	97.41	3.7	57.58	61.36	8.6
Mid-scale w/o F&B	53.2	54.8	3.0	72.34	74.45	2.9	38.50	40.79	3.0
Economy	53.4	54.3	1.8	50.47	52.50	4.0	26.94	28.52	6.0
Independents	56.8	58.3	2.6	101.24	105.12	3.8	57.49	61.27	6.5

Source: STR - December 2012 Lodging Review

The onset of the recession in December of 2007 first became evident in lodging trends in the spring of 2008 as demand levels decreased from the peak recorded in the previous year. The pace of decline sped up in the fall of 2008, as both corporate and consumer spending fell dramatically in the wake of the financial crisis and in response to intensifying recessionary pressures. Continued increases in lodging supply, which grew by 2.7% in 2008 and 3.2% in 2009, combined with demand decreases, resulted in a national average occupancy of 55.1% in 2009, a historic low. Aggressive price cuts and discounting that were implemented in the face of falling occupancy levels caused average rate to decrease by 8.8% in that same year. The resulting $53.71 RevPAR recorded in 2009 was on par with the level recorded in 2004.

Demand growth resumed in 2010, led by select markets that had recorded positive growth trends in the fourth quarter of 2009. The pace of demand growth accelerated through the year; in 2010, lodging demand in the U.S. increased by 7.7% over that registered in 2009. A return of business travel and some group activity contributed to these positive trends. The resurgence in demand was partly fueled by the significant price discounts that were widely available in the first half of 2010. These discounting policies were largely phased out in the latter half of the year, balancing much of the early rate loss. Average rate decreased by only 0.1% in 2010 when compared to 2009. Strong demand growth continued in 2011 and 2012, at 5.0% and 3.0%, respectively. Demand increased 3.0% in the year-to-date through April 2013 period. Average rate rebounded by respective rates of 3.7% and 4.2%, in 2011 and 2012, followed by a 4.4% increase in the year-to-date through April 2013 period. In 2012, occupancy reached 61.4% (exceeding the ten-year average); moreover, occupancy is on track to gain another point in 2013. Average rate finished the year just over $106 in 2012, with year-to-date trends suggesting that another $4 gain in rate in 2013 is likely. Demand and average rates should continue to strengthen in the near term. These trends, combined with the low levels of supply growth anticipated through 2014, should boost occupancy to just over 63% by year-end 2014. On a national average, strengthening occupancy levels should also permit hotels to increase room rates beyond the 4.2% achieved in 2012. HVS forecasts U.S. average rate growth of 4.5% for 2013 and 5.0% for 2014.

Regional Resort Lodging Trends

The subject resort is expected to primarily compete with other top-quality resorts located throughout the Northeastern United States, specifically those located in the New York and New England regions.

Smith Travel Research (STR) is an independent research firm that compiles and publishes data on the lodging industry, routinely used by typical hotel buyers. HVS has ordered and analyzed an STR Trend Report of historical supply and demand data for a group of hotels considered applicable to this analysis for the proposed subject property. This information is presented in the following table, along with the market-wide occupancy, average rate, and rooms revenue per available room (RevPAR). RevPAR is calculated by multiplying occupancy by average rate and provides an indication of how well rooms revenue is being maximized.

FIGURE 4-4 HISTORICAL SUPPLY AND DEMAND TRENDS

Year	Average Daily Room Count	Available Room Nights Total	Available Room Nights Change	Occupied Room Nights Total	Occupied Room Nights Change	Occupancy	Average Rate Total	Average Rate Change	RevPAR Total	RevPAR Change
2001	1,943	709,265	—	429,489	—	60.6 %	$178.89	—	$108.33	—
2002	1,965	717,225	1.1 %	433,828	1.0 %	60.5	187.67	4.9 %	113.52	4.8 %
2003	2,080	759,232	5.9	435,048	0.3	57.3	222.25	18.4	127.35	12.2
2004	2,147	783,655	3.2	444,556	2.2	56.7	228.41	2.8	129.57	1.7
2005	2,148	783,965	0.0	451,814	1.6	57.6	224.59	(1.7)	129.44	(0.1)
2006	2,165	790,065	0.8	464,346	2.8	58.8	233.80	4.1	137.41	6.2
2007	2,162	789,256	(0.1)	459,313	(1.1)	58.2	241.62	3.3	140.61	2.3
2008	2,129	777,085	(1.5)	414,898	(9.7)	53.4	247.36	2.4	132.07	(6.1)
2009	1,998	729,263	(6.2)	329,941	(20.5)	45.2	232.57	(6.0)	105.22	(20.3)
2010	2,013	734,757	0.8	366,274	11.0	49.8	235.51	1.3	117.40	11.6
2011	1,923	701,888	(4.5)	366,491	0.1	52.2	247.59	5.1	129.28	10.1
2012	1,985	724,628	3.2	394,637	7.7	54.5	243.27	(1.7)	132.49	2.5
Average Annual Compounded Change:										
2001-2012			0.2 %		(0.8) %			2.8 %		1.8 %
Year-to-Date Through August										
2012	1,971	478,868	—	254,177	—	53.1 %	$250.25	—	$132.83	—
2013	1,982	481,618	0.6 %	277,305	9.1 %	57.6	249.54	(0.3) %	143.68	8.2 %

Hotels in Survey	Location	Number of Rooms	Year Opened
The Equinox Golf Resort & Spa	Manchester, VT	150	1769
Cranwell Resort	Lenox, MA	114	1800s
Tarrytown House	Tarrytown, NY	212	1840
Mohonk Mountain House	New Paltz, NY	266	1869
Dolce Seaview Hotel & Golf Club	Galloway, NJ	297	1912
Mirror Lake Inn	Lake Placid, NY	131	1924
The Spa @ Norwich Inn	Norwich, CT	100	1929
The Sagamore	Bolton Landing, NY	386	1930
Topnotch Resort & Spa	Stowe, VT	68	1959
Stoweflake Resort	Stowe, VT	116	1963
Woodstock Inn & Resort	Woodstock, VT	142	1969
Marriott Wentworth-by-the-Sea	New Castle, NH	161	2003
	Total	**2,143**	

Source: STR Global

It is important to note some limitations of the STR data. Hotels are occasionally added to or removed from the sample, and not every property reports data in a consistent and timely manner; these factors can influence the overall quality of the information by skewing the results. These inconsistencies may also cause the STR data to differ from the results of our competitive survey. Nonetheless, STR data provide the best indication of aggregate growth or decline in existing supply and demand; thus, these trends have been considered in our analysis. Opening dates, as available, are presented for each reporting hotel in the previous table.

Between 2001 and 2012, the subject lodging market's occupancy rate ranged from 45% to 61%, with an eleven-year average of 55%. The competitive set's occupancy rate fell to its low point in 2009 due to the adverse impacts of the recent national economic recession, but has consistently rebounded through subsequent years. The market's occupancy rate is on pace to finish 2013 at approximately 59%. Average rate trends have been less volatile. Following a 6.0% decline in 2009, modest recovery was recorded in 2010 and 2011. Pricing trends have been modestly negative in more recent periods. The market's average rate is on pace to remain unchanged in 2013, following a 1.7% decrease in 2012. Overall, the market is on pace to finish 2013 with a RevPAR of approximately $143, exceeding the previous peak realized in 2007.

As noted, the survey pertains to a total of 12 hotels with a current room count of 2,142 rooms. However, the number of rooms available for rental has been below this figure historically, in the range of 2,000 rooms. The destination resorts in the survey are subject to a high degree of demand seasonality, with a radical drop-off in demand noted in late fall and mid spring, i.e., November, March, and April. It is not uncommon for the hotels in this set to either close briefly or reduce their rentable inventory in the off season. In addition, there are often variations in rentable inventory due to the inclusion or exclusion of quasi hotel room products such as on-site town-homes and condominiums. In the broader scheme of this analysis, the variations are not relevant; the overall trends presented above are still highly reliable and representative of broader market trends.

Monthly and Weekly Demand Patterns

Monthly occupancy and average rate trends are presented in the following table.

FIGURE 4-5 MONTHLY OCCUPANCY & ADR TRENDS

	2010		2011		2012		2013	
Month	OCC	ADR	OCC	ADR	OCC	ADR	OCC	ADR
January	37.0 %	$205.82	34.2 %	$218.32	35.2 %	$208.91	44.3 %	$195.88
February	44.8	229.37	50.5	247.16	41.3	234.35	50.6	223.33
March	38.6	167.81	36.8	204.02	38.2	201.90	48.5	188.32
April	36.7	160.56	40.3	163.96	40.9	159.73	43.3	161.67
May	45.9	187.07	46.2	202.01	46.5	208.30	49.4	212.51
June	53.3	224.54	61.2	234.31	63.4	247.37	62.9	244.40
July	69.0	288.25	71.7	301.90	70.6	305.72	74.2	312.69
August	70.6	300.01	75.2	308.39	79.5	312.90	80.7	327.94
September	59.1	248.22	61.9	251.56	67.4	241.11	—	—
October	58.9	244.26	54.6	257.05	61.7	238.79	—	—
November	37.6	196.89	41.2	200.65	49.4	195.96	—	—
December	38.7	256.46	43.0	263.93	48.5	242.49	—	—
Annual Averages	**49.8 %**	**$235.51**	**52.2 %**	**$247.59**	**54.5 %**	**$243.27**	**—**	**—**
YTD August	**50.3 %**	**$234.14**	**53.2 %**	**$249.09**	**53.1 %**	**$250.25**	**57.6 %**	**$249.54**

The subject lodging market's occupancy rate typically peaks between June and October, when leisure and group demand peak. Average rate levels are highly volatile through the year, ranging from a low of $188 in March to a high of $328 in August.

The following table details daily patterns in occupancy and average rate and RevPAR, for the past 12 months, based on data provided by Smith Travel Research.

FIGURE 4-6 OCCUPANCY, AVERAGE RATE AND REVPAR BY DAY OF WEEK

Occupancy (%)	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total Year
Sep 10 - Aug 11	39.9 %	44.1 %	49.2 %	50.4 %	49.9 %	60.5 %	68.3 %	51.8 %
Sep 11 - Aug 12	39.8	44.1	48.8	50.3	50.4	61.6	69.8	52.1
Sep 12 - Aug 13	45.6	50.5	54.0	56.0	55.5	65.4	74.8	57.4
Change (Occupancy Points)								
FY 11 - FY 12	0.0	0.1	-0.4	-0.1	0.5	1.1	1.5	0.4
FY 12 - FY 13	5.8	6.3	5.2	5.6	5.1	3.8	4.9	5.3

ADR ($)	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total Year
Sep 10 - Aug 11	$250.11	$227.43	$221.86	$224.43	$237.95	$268.86	$272.00	$245.48
Sep 11 - Aug 12	246.67	228.81	227.39	226.75	241.51	271.15	276.92	248.42
Sep 12 - Aug 13	238.96	227.26	219.18	222.17	234.93	266.77	274.51	243.18
Change (Dollars)								
FY 11 - FY 12	-$3.44	$1.38	$5.53	$2.32	$3.56	$2.29	$4.92	$2.94
FY 12 - FY 13	-7.71	-1.55	-8.21	-4.58	-6.58	-4.38	-2.42	-5.23
Change (Percent)								
FY 11 - FY 12	-1.4 %	0.6 %	2.5 %	1.0 %	1.5 %	0.9 %	1.8 %	1.2 %
FY 12 - FY 13	-3.1	-0.7	-3.6	-2.0	-2.7	-1.6	-0.9	-2.1

RevPAR ($)	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total Year
Sep 10 - Aug 11	$99.70	$100.23	$109.14	$113.21	$118.75	$162.60	$185.87	$127.05
Sep 11 - Aug 12	98.28	101.01	111.04	114.15	121.63	167.01	193.37	129.53
Sep 12 - Aug 13	109.02	114.72	118.35	124.35	130.38	174.39	205.24	139.67
Change (Dollars)								
FY 11 - FY 12	-$1.42	$0.78	$1.90	$0.94	$2.88	$4.42	$7.49	$2.48
FY 12 - FY 13	10.74	13.71	7.31	10.20	8.75	7.38	11.87	10.14
Change (Percent)								
FY 11 - FY 12	-1.4 %	0.8 %	1.7 %	0.8 %	2.4 %	2.7 %	4.0 %	2.0 %
FY 12 - FY 13	10.9	13.6	6.6	8.9	7.2	4.4	6.1	7.8

Source: STR Global

The subject lodging market's RevPAR peaks on Friday and Saturday nights, when leisure demand is at its peak level. RevPAR levels are otherwise relatively consistent throughout the week, gradually building from Sunday through Thursday.

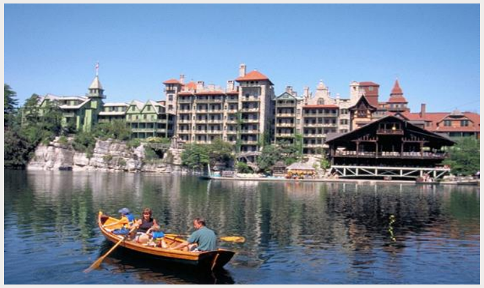
Competitor Analysis

The following table summarizes the important operating characteristics of the hotels in the competitive set. This information was compiled from personal interviews, inspections, lodging directories, and our in-house library of operating data. Where we were able to develop a reliable estimate of occupancy and average rate results, the table also sets forth the properties' penetration factors; penetration is the ratio between a specific hotel's operating results and the corresponding data for the market. If the penetration factor is greater than 100%, the property is performing better than the market as a whole; conversely, if the penetration is less than 100%, the hotel is performing at a level below the market-wide average.

FIGURE 4-7 COMPETITOR OVERVIEW

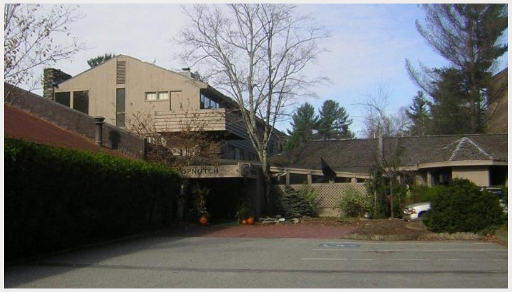
Property	No. of Rooms	Year Opened	Meeting Space Total	Meeting Space Per Room	Meeting Space Largest Room	F&B Outlets	Golf	Spa Facilities Size	Spa Facilities Treatment Rooms	Estimated 2012 OCC	Estimated 2012 ADR	Estimated 2012 RevPAR	Penetration Factors OCC	Penetration Factors ADR	Penetration Factors RevPAR
Marriott Wentworth-by-the-Sea New Castle, NH	161	2003	8,387	52	3,744	2	No	6,300	10	64 %	$270	$173	118 %	111 %	130 %
Mohonk Mountain House New Paltz, NY	266	1869	9,769	37	2,400	3	Yes	30,000	16	<------------- Not Available ------------->					
Equinox Resort & Spa Manchester, VT	150	1769	15,804	105	5,144	3	Yes	13,000	10	65	240	156	119	99	118
Cranwell Resort & Spa Lenox, MA	114	1800s	8,392	74	3,025	4	Yes	35,000	16	64	250	160	118	103	121
Topnotch Resort & Spa Stowe, VT	68	1959	4,647	68	2,951	2	No	35,000	33	<------------- Not Available ------------->					
Stoweflake Resort & Spa Stowe, VT	116	1963	18,902	163	4,464	3	No	50,000	30	<------------- Not Available ------------->					
The Sagamore Resort Bolton Landing, NY	386	1930	18,380	48	10,080	6	Yes	25,000	13	<------------- Not Available ------------->					
Woodstock Inn & Resort Woodstock, VT	142	1969	8,342	59	2,730	4	Yes	5,000	5	55	250	138	101	103	104
Spa at Norwich Inn Norwich, CT	100	1929	6,932	69	2,556	2	Yes	29,000	25	<------------- Not Available ------------->					
Dolce Seaview Hotel & Golf Club Galloway, NJ	297	1912	21,080	71	6,644	3	Yes	12,000	20	<------------- Not Available ------------->					
Tarrytown House Tarrytown, NY	212	1840	23,900	113	5,550	5	No	0	0	40	175	70	73	72	53
Mirror Lake Resort & Spa Lake Placid, NY	131	1924	6,125	47	2,400	3	No	10,000	7	<------------- Not Available ------------->					
Totals/Averages	**2,143**		**150,660**	**70**						**54 %**	**$243**	**$132**	**100 %**	**100 %**	**100 %**

FIGURE 4-8 COMPETITOR OVERVIEW

Property Name	Marriott Wentworth-by-the-Sea	Mohonk Mountain House	Equinox Resort & Spa
Location	New Castle, NH	New Paltz, NY	Manchester, VT
Room Count	161	266	144
Construction	Historic inn structure originally built in 1874 fell into disrepair and remained vacant until renovation and expansion by current owner, Ocean Properties - reopened in May 2003.	Constructed on rocky shores of Lake Mohonk in 1869 in manner of Victorian castle	Landmark structure dating back to 1769. Hotel was redeveloped and renovated to its current status as of 1992. Property is located over 1,300 acres.
Setting	Coastal	Lakefront, mountain setting	Mountain
Dining	Fine-dining restaurant, lounge, oceanfront casual dining room	American Plan - all tariffs include three meals	Three outlets, including Marsh Tavern offering regional cuisine
Rooms	Standard, brand-affiliated hotel facilities with country-style New England design finishes.	Renovated, Victorian influence, luxury caliber, views of lake and mountains, some cottage units, period furnishings, fire places.	Country style elegance, antique furnishings, Audobon prints, richly textured fabrics.
Other	±11,476 sf of meeting space; indoor and outdoor swimming pools; marina; conominiums; full-service spa and wellnesss center.	9 holes of golf, tenning, hiking, 85 miles of trails through Shawangunk Mountains, lake swimming, cross-country skiing, snowshoeing, children's programming. Spa completed in Summer 2005, full-service.	±13,000-sf Avanyu Spa featuring ten treatment rooms, indoor heated lap pool; 18 holes of golf; ±15,804 sf meeting space; falconry school.
Off-Site	Tennis, golf, boating	Hiking, golf, boating, skiing	Skiing
Affiliation	Marriott International	None	The Leading Hotels of the World

FIGURE 4-9 COMPETITOR OVERVIEW


Property Name	Cranwell Resort & Spa	Topnotch Resort & Spa	Stoweflake Resort & Spa
Location	Lenox, MA	Stowe, VT	Stowe, VT
Room Count	114	106	116
Construction	All season resort in the Berkshires. Guestrooms are situated in five buildings: the Carriage House, Founder's Cottage, Olmsted Manor, Beecher's Cottage (formerly Coldbrooke), and the Mansion (formerly Wyndhurst).	Destination resort and spa located on 120 acres, 40 miles from Burlington, VT. The main hotel structure is approximately fifty years old and is in weak physical condition.	The property was originally constructed in 1963 but has been consistently renewed since its inception. The lodging units are operated in conjunction with a community of town homes.
Setting	Berkshire Mountains	120-acres, mountainside, convenient to Stowe skiing	On periphery of downtown Stowe
Dining	Four restaurants	Three outlets, gourmet to informal in style	Winfield's Bistro, offering four-star dining; Charlie B's Pub for casual fare; and a poolside spa café
Rooms	All of the rooms are decorated in the 19th century English arts & crafts style. The rooms and suites also provide views of the surrounding mountains.	European country manor style, luxury caliber. The facility consists of 71 rooms operated in the manner of a conventional hotel, with another 60 condominium town-homes entered into the rental pool. The weighted average room count is reportedly 106.	Most of the rooms include a wet bar, refrigerator, and either a fireplace or a whirlpool. The rooms are otherwise unremarkable.
Other	With 35,000-square foot spa including 16 treatment rooms, the Cranwell features one of the largest spa facilities in the Northeast. The property also features an 18-hole golf course, and indoor swimming pool, and ±8,932 sf of meeting space.	±35,000-square-foot spa with 30 treatment rooms, generally ranked among top ten spa facilities in US. Also, indoor and outdoor pools, and ±4,647 sf of meeting space.	Focal point is its ±50,000-sf spa which includes 30 treatment rooms, a 12-ft-high massaging waterfall, a sports and wellness center; and a ±10,000-sf meditative garden. Other facilities include ±18,902 sf of meeting space, an outdoor swimming pool, and a nine-hole par-three golf course.
Off-Site	Antique shops, hiking, biking, Tanglewood music festival, horseback riding	Hiking, skiing, horseback riding	Hiking, skiing, horseback riding
Affiliation	Historic Hotels of America	Preferred Hotels & Resorts	None

FIGURE 4-10 COMPETITOR OVERVIEW

Property Name	The Sagamore	Woodstock Inn & Resort	The Spa at Norwich Inn
Location	Bolton Landing, NY	Woodstock, VT	Norwich, CT
Room Count	350	142	100
Construction	In 1985, the hotel structure was completely rebuilt; this included the development of the resort's recreational facilities and condominium units.	Constructed by Laurence Rockefeller in 1969, on site of former inn, as part of RockResorts. Clapboard structure located on town green.	In 1999, the Spa at Norwich Inn (formerly the Norwich Inn & Spa) completed a three-year, $13.5-million renovation with luxury facilities.
Setting	Lakefront	Small New England town	Not far from Mohegan Sun Casino
Dining	Four restaurants (including "The Trilium", a AAA Four Diamond Award winner); two lounges; one snack bar	Four outlets, including four-diamond dining room.	Two restaurants
Rooms	The condominium units are typically two-bedroom units with a living area; if desired or if necessary, one bedroom can be locked off and rented as a standard guestroom.	Country style, inconsistent in quality.	CD player, bathroom supplied with amenities from the spa. The telephones include computer modem hook-ups. Four guestrooms are specially designed for men or for women only.
Other	18-hole golf course; a miniature golf course; a challenge course, seven tennis courts; one racquetball court; a full-service spa; an indoor swimming pool; a fitness center; docks for 64 boats; a lakeside beach; ±18,380 sf of meeting space.	Operated in conjunction with Woodstock Health & Fitness Center, Woodstock Country Club (18 holes of golf), and Suicide Six ski mountain (off site). Spa services available at fitness center. Meeting space totals ±8,342 sf. Also offers an outdoor swimming pool.	±29,000-sf spa, ±6,932 sf of meeting space, indoor swimming pool, whirlpool, fitness room and spa/gift shop. The indoor connection from the spa to the hotel was completed in the latest renovation.
Off-Site	Horseback riding, rafting, art galleries, and sightseeing	Cross-country skiing	Casino, golf course, museum, and boating
Affiliation	Preferred Hotels & Resorts	None	Mashantucket Pequot Tribe Hotel Group (Foxwoods Casino)

FIGURE 4-11 COMPETITOR OVERVIEW



Property Name	Dolce Seaview Hotel & Golf Club	Tarrytown House	Mirror Lake Inn Resort and Spa
Location	Galloway, NJ	Tarrytown, NY	Lake Placid, NY
Room Count	297	212	131
Construction	The property features a mix of uses, including hotel, golf course, and vacation ownership units located over 670 acres of oceanfront pinelands. The main hotel building is a historic structure dating to 1912.	The facility includes a mix of classic structures, oriented foremost around a Georgian mansion dating to 1840. Destination Hotels & Resorts acquired the property from Dolce International in 2005 for $267,000 per room, and completed an $11-million renovation thereafter.	The Mirror Lake Inn is a traditional Inn on the lakeshore with modern amenities. Mahogany walls, polished walnut floors, marble and stone fireplaces, antiques create the atmosphere of this luxury boutique hotel.
Setting	Oceanfront - Jersey Shore - Near Atlantic City	New York City Suburb, 24 miles from NYC	Lakefront
Dining	Grille Room (English pub), Main Dining Room (continental cuisine), Lobby Lounge	Five food and beverage outlets	The View (four-diamond restaurant), Taste Bistro & Bar (casual), and The Cottage (pub)
Rooms	Décor includes antique furnishings, marble baths and sinks.	Plush deep bedding, soft cotton towels, 32-inch LCD televisions, and high-speed internet access.	All rooms have oversized bath linens, hair dryers, iron and ironing boards, color cable television, refrigerators, AM/FM clock radios, special soaps and shampoos
Other	The property is foremost a golf resort, operated in conjuction with 36 holes of golf. Facility also features a large full-service spa with 20 treatment rooms, affiliated with Elizabeth Arden Red Door Spa. Also: six tennis courts, volleyball, basketball, health club, sauna, and indoor and outdoor swimming pools.	With IACC-certified meeting space, the subject property is primarily a dedicated conference center, reliant upon high-end group demand. There are no other specific recreational demand drivers such as spa or golf facilities.	Spa, indoor and outdoor swimming pool, whirlpool, sauna, fitness walk, exercice room, 6,125 square feet of meeting rooms,team building packages (personally tailored to meet your company's needs), private beach, tennis, a private outdoor ice skating rink
Off-Site	Atlantic City (10 miles to the north), sailing, deep-sea fishing, horseback riding	Tarrytown attractions (Washington Irving's estate, Lyndhurst Castle)	Golf courses: Craig Wood Golf Course", the "Lake Placid Club Mountain Course" or "Whitface Inn", Skiing and Winter Sports
Affiliation	Marriott International	Destination Hotels & Resorts	Small Luxury Hotels of the World

The following map illustrates the locations of the proposed subject property and its future competitors.

COMPETITION MAP

In the subsequent text, we assess the competitive set and the proposed subject resort based on the following criteria: location, setting, facilities scope, demand segmentation, and brand affiliation.

Location: The proposed subject resort is located approximately 100 miles north of New York City. Only three of the 12 competitors reviewed above offer superior proximity: Tarrytown House, Mohonk Mountain House, and Dolce Seaview. The Marriott Wentworth-by-the-Sea also features a strategic location in its proximity to Boston.

Setting: The proposed subject resort has a mountain setting with exceptional convenience to a ski mountain, including ski-in, ski-out access for Highmount guests. None of the other properties reviewed here have this level of convenience to ski facilities, as the subject land is located within the Catskill Mountain Range. Many of the other resorts are located in the vicinity of a ski mountain and the associated mountain range, but are not within it, including Topnotch, Equinox, Woodstock Inn, and Mirror Lake Resort. Each property's setting offers some resort-caliber aesthetic, with the Marriott Wentworth-by-the-Sea and the Dolce Seaview featuring oceanfront settings. The Sagamore Resort, Mohonk Mountain House, and Mirror Lake Resort are also located on natural bodies of water.

Facilities: The proposed subject resort will feature two distinct hotel campuses (a 208-room four-star hotel and a 120-room five-star hotel), each offering exceptional ski mountain access, including ski-in, ski-out access for Highmount guests; two separate full-service spa operations with a total of 45 treatment rooms; conference facilities totaling ±37,850 square feet of meeting space; and two communities of vacation ownership units totaling 301 units, 95 of which will be constructed of a piece with the associated hotel buildings. Including these units as part of the hotel operation, the subject resort will contain an effective room count of 423. At ±37,850 square feet of meeting space, the subject hotel's allotment will equate to approximately 89 square feet of meeting space per room, slightly above the average indicated by the competitive set. The largest meeting space allocations are found at Stoweflake (163 square feet per room) and Tarrytown House (113 square feet per room). Most of the hotels in the survey offer some level of spa operation, with Topnotch and Stoweflake (also the most remote properties in the survey) featuring the largest such facilities. Finally, properties operated in conjunction with an 18-hole golf course include Equinox, Cranwell, The Sagamore Resort, Woodstock Inn, and Spa at Norwich Inn. Dolce Seaview offers 36 holes of golf and Mohonk Mountain House features 9 holes.

With the exception of the Dolce Seaview Resort, none of the other resorts in this survey have the full range of facilities (golf course, spa, and meeting space) associated with the proposed subject resort. The property will also have the advantage of being all-new construction, whereas the existing resorts in the region were by and large adapted from historic structures. Although historic facilities offer charm, they also tend to be far more expensive to operate, due to inherent inefficiencies.

Finally, the subject resort has a definitive advantage in the scale, quality, and breadth of its spa facilities. Including both a day spa at Wildacres with 15 treatment rooms and a more exclusive hotel-guest-only spa at Highmount with 30 treatment rooms, these facilities will set the Belleayre Resort apart from the other properties in the competitive set.

Demand Segmentation: In the subject lodging market, the two key demand segments are 1) the meeting and group and 2) individual leisure segments. Among the twelve hotels in the competitive set, we estimate the demand segmentation to be roughly evenly divided among the two segments, with the group segment featuring a slightly larger allocation.

Group demand in the subject lodging market can be sub-divided between those originating out of commercial (i.e. corporate) meetings and those originating out of social (i.e. leisure) functions. Commercial-based group demand tends to be strongest mid-week, during the spring and fall, and for those hotels located in the states of New York, New Jersey, Connecticut, and Vermont, is primarily generated by employers located in the New York Metropolitan Area. For the Massachusetts and New Hampshire hotels, Boston is the key feeder market. The purpose of these meetings is variable, but the provision of resort facilities indicates that team-building is at the very least a secondary purpose. Social functions at hotels of this sort are typically held during summer months, weekend, and holidays, and primarily include weddings and family reunions. Among the surveyed competitors, the hotels with the greatest share of group demand include The Sagamore Resort and Tarrytown House. The Sagamore has 350 rooms, an allocation that requires property management to accommodate group volume in order to maintain a viable occupancy rate. Tarrytown House, in turn, is a dedicated conference center with a suburban location, located in Westchester County. Hotels with greater convenience and proximity to major metropolitan areas tend to have a greater propensity to accommodate group demand, all other things held equal.

Leisure demand in the subject lodging market is identified as all other non-volume visitation, consisting of individuals, couples, and families. This demand peaks in summer months and during weekends and holidays throughout the year. The Woodstock Inn has the largest share of leisure segment demand, at 70%, which is a function of its remote location, small allocation of meeting space, and relatively small guestroom inventory. Cranwell and Mirror Lake also have above-average shares of leisure demand segmentation.

Brand Affiliation: Among the hotels in the survey, only the Marriott Wentworth-by-the-Sea is affiliated with a nationally-recognized franchise. Dolce is a recognized name in the destination conference center segment, but all such properties are operated by the brand; it is not a typical franchisor. Tarrytown House was previously affiliated with Dolce, but was sold to Destination Hotels & Resorts in 2005. Others among the surveyed properties are associated with referral systems such as The Leading Hotels of the World, Historic Hotels of America, and Preferred Hotels & Resorts. The question of brand affiliation is often a function of property size and market orientation, and the fact that resort demand in this northern climate is subject to wide seasonal swings. Thus, brand-related costs are often not justified for smaller properties. Hotel brands also have product standards that can be difficult for owners of historic properties to conform to.

As noted previously, the developer of the subject resort intends to affiliate the two subject hotels with nationally-recognized hotel brands featuring four- and five-star cache. The strategy is logical in our opinion, given the size of the subject hotels, their status as new construction, and the scope of the public facilities.

Regional Supply Changes

It is important to consider any new hotels that may have an impact on the proposed subject property's operating performance. At this time, we are aware of a number of other proposed resorts, planned for development throughout the New York and New England areas. However, all such developments are either in preliminary stages and speculative at this time, or of a scale and/or orientation that precludes their inclusion here. Projects of the subject resort's type are commonly rumored and otherwise explored, but are extremely difficult to advance beyond the feasibility stage. Our research suggests that no directly comparable resorts are currently under development. This conclusion extends to include the numerous casino hotel projects that have been studied over the past decade, including sites in Sullivan and Ulster counties currently under consideration.

While we have taken reasonable steps to investigate proposed hotel projects and their status, due to the nature of real estate development, it is impossible to determine with certainty every hotel that will be opened in the future, or what their marketing strategies and effect in the market will be. Depending on the outcome of current and future projects, the subject property may be positively or negatively affected. Future improvement in market conditions will raise the risk of increased competition. Our forthcoming forecast of stabilized occupancy and average rate is intended to reflect such risk.

HVS

Rocky Mountain Resort Lodging Trends

As a luxury destination resort with ski-in, ski-out access, the subject resort's profile is comparable to that of numerous resorts in the Rocky Mountain region, featuring luxury caliber facilities and ski-in, ski-out access. The following table presents historical supply and demand data provided by STR for those Rocky Mountain hotels with some degree of comparability to the proposed resort.

FIGURE 4-12 HISTORICAL SUPPLY AND DEMAND TRENDS – ROCKY MOUNTAIN RESORTS

Year	Average Daily Room Count	Available Room Nights Total	Available Room Nights Change	Occupied Room Nights Total	Occupied Room Nights Change	Occupancy	Average Rate Total	Average Rate Change	RevPAR Total	RevPAR Change
2001	1,102	402,290	—	227,242	—	56.5 %	$294.25	—	$166.21	—
2002	1,189	433,810	7.8 %	232,082	2.1 %	53.5	300.80	2.2 %	160.92	(3.2) %
2003	1,482	541,045	24.7	280,025	20.7	51.8	294.98	(1.9)	152.67	(5.1)
2004	1,534	560,050	3.5	322,723	15.2	57.6	322.36	9.3	185.75	21.7
2005	1,519	554,448	(1.0)	326,062	1.0	58.8	346.77	7.6	203.93	9.8
2006	1,468	535,880	(3.3)	339,739	4.2	63.4	391.03	12.8	247.91	21.6
2007	1,434	523,539	(2.3)	337,750	(0.6)	64.5	436.46	11.6	281.57	13.6
2008	1,545	563,778	7.7	334,667	(0.9)	59.4	458.14	5.0	271.96	(3.4)
2009	1,793	654,523	16.1	299,786	(10.4)	45.8	399.72	(12.8)	183.08	(32.7)
2010	2,043	745,695	13.9	365,338	21.9	49.0	380.48	(4.8)	186.41	1.8
2011	2,239	817,071	9.6	414,925	13.6	50.8	387.76	1.9	196.91	5.6
2012	2,247	819,978	0.4	428,614	3.3	52.3	409.67	5.7	214.14	8.7
Average Annual Compounded Change:										
2001-2012			6.7 %		5.9 %			3.1 %		2.3 %
Year-to-Date Through September										
2012	2,263	617,799	—	347,635	—	56.3 %	$400.46	—	$225.34	—
2013	2,241	611,865	(1.0) %	363,118	4.5 %	59.3	436.44	9.0 %	259.01	14.9 %

Hotels Included in Sample	City, ST	Number of Rooms	Year Opened
Sonnenalp Resort	Vail, CO	127	1979
Marriott Vail Mountain Resort	Vail, CO	344	1980
Stein Eriksen Lodge	Park City, UT	179	1982
The Little Nell	Aspen, CO	92	1989
Park Hyatt Beaver Creek Resort & Spa	Avon, CO	190	1989
St Regis Resort	Aspen, CO	179	1992
Ritz-Carlton Bachelor Gulch	Avon, CO	180	2002
Four Seasons Jackson Hole	Teton Village, WY	156	Dec 2003
Westin The Riverfront Resort & Spa	Avon, CO	215	Sep-2008
Hotel Madeline	Telluride, CO	124	Feb-2009
Viceroy Snowmass	Snowmass, CO	168	Nov-2009
St Regis Deer Valley	Park City, UT	174	Nov-2009
Four Seasons Resort	Vail, CO	133	Dec-2010
Total		**2,261**	

Source: STR Global

The Rocky Mountain competitive set includes 13 hotels with an average of 174 rooms and consists of destination ski resorts located throughout the Mountain States. The market experienced a radical increase in inventory in recent years, with the supply growing from 1,434 rooms in 2007 to 2,239 rooms in 2011, a dramatic 56% gain. In the glutted market, hotel operators have struggled to achieve viable occupancy rates and pricing levels have been slashed. The excessive supply increases occurred in tandem with a dramatic downturn in the economy. The economic downturn was rooted in a speculative investment bubble in the residential real estate market and most of the new hotels were conceived in tandem with residential components, whether in a condominium hotel format or as mixed with whole or fractional ownership units. And although the hotel market posted very healthy gains between 2004 and 2007, the bid-up residential prices associated with the speculative investment bubble also helped form the economic basis for the new resort hotels' underwriting.

The market's recent performance reflects the fall-out from the supply explosion. In 2009, the market's RevPAR fell by 32.7%, far worse than the 16.7% loss posted throughout the industry at large for the same year. The market realized a minimal rebound through 2010, but RevPAR growth rates accelerated in each year since. Based on the year-to-date results, the competitive set is on pace to finish 2013 with a RevPAR of $246, equal to 87% of the peak RevPAR level, $282, realized in 2007.

The following table provides detailed information for each of the hotels in the competitive set.

FIGURE 4-13 ROCKY MOUNTAIN SKI RESORTS

Property	Number of of Rooms	Year Opened	Meeting Space (SF) Total	Per Room	Owner/Operator	Ski-in Ski-out	Estimated 2012 OCC	ADR	RevPAR	Notes
Four Seasons Jackson Hole Teton Village, WY	124	Dec-03	8,000	65	Strategic Hotels / Four Seasons	Yes	60 %	$550	$330	Forbes 2012 Five-Star Award Winner
Four Seasons Resort Vail, CO	131	Dec-10	8,510	65	Lending Group / Four Seasons	Yes	50	575	288	
St. Regis Deer Valley Park City, UT	177	Nov-09	14,000	79	Private Investors / Starwood	Yes	50	525	263	
St. Regis Aspen, CO	179	1992	16,600	93	Starwood / Starwood	No	55	500	275	One of Two Flagship St. Regis Hotels
Ritz-Carlton Bachelor Gulch Avon, CO	180	2002	13,000	72	Gencom / Ritz-Carlton	Yes	55	400	220	
Park Hyatt Beaver Creek Avon, CO	190	1989	20,000	105	Crescent Equities / Hyatt	Yes	60	350	210	
Stein Ericksen Lodge Park City, UT	179	1982	10,000	56	Private Investor	Yes		Not Available		Forbes 2012 Five-Star Award Winner
Sonnenalp Resort Vail, CO	127	1979	4,821	38	Faessler Family	Yes		Not Available		Bavarian stylings, golf course
The Little Nell Aspen, CO	92	1989	5,600	61	Aspen Skiing Co.	No		Not Available		Forbes 2012 Five-Star Award Winner
Viceroy Resort Snowmass, CO	168	Nov-09	8,300	49	Lending Group / Receiver	Yes	45	350	158	
Hotel Madeline Telluride, CO	100	Feb-09	9,000	90	Swedbank / Receiver	Yes		Not Available		
Westin Riverfront Resort Avon, CO	215	Sep-08	4,200	20	East West / Starwood	Yes	50	225	113	Insufficient meeting space
Marriott Resort & Spa Vail, CO	344	1974	21,000	61	DiamondRock / Marriott	Yes	65	230	150	
Totals/Averages	2,206		143,031	65			53 %	$410	$217	

RevPAR levels among the surveyed hotels, where available, ranged from a low of $113 at the Westin Riverfront in Avon, Colorado to a high of $330 at the Four Seasons Jackson Hole, in Teton Village, Wyoming. Recent operating results continue to be impacted by the ill-timed wave of new supply which entered the market between 2008 and 2011.

Five-Star U.S. Hotels – Northern Climates

For further context in this analysis, the following table summarizes recent results for those five-star hotels (as designated by *Forbes* in the 2013 survey) located in the United States, in cold-weather climates.

FIGURE 4-14 FIVE-STAR U.S. HOTELS – NORTHERN CLIMATES

Property	City, ST	No. of Rooms	Period	OCC	ADR	RevPAR
The Broadmoor	Colorado Springs, CO	744	<-------- Not Available -------->			
The Little Nell	Aspen, CO	92	2008	62 %	$710	$440
The Mayflower Inn & Spa	Washington, CT	30	2012	55	646	355
Blantyre	Lenox, MA	25	<-------- Not Available -------->			
Falling Rock at Nemacolin	Farmington, PA	42	<-------- Not Available -------->			
Twin Farms	Barnard, VT	20	2008	60	1,142	685
The Inn at Little Washington	Washington, VA	15	2003/04	73	673	491
The American Club	Kohler, WI	392	<-------- Not Available -------->			
Four Seasons Jackson Hole	Teton Village, WY	124	2012	59	544	321

For those hotels where we were able to gather reasonably reliable estimates of performance, RevPAR levels ranged from $321 to $685, at hotels with room counts ranging from 15 to 124.

Occupancy & ADR Projection

The following table sets forth the bases for the projected occupancy and average rate levels for the proposed subject property, on a stabilized basis, expressed in 2012 dollars. The projections are made for the two scenarios studied herein: 1) assuming the full development of the resort, and 2) assuming Wildacres alone is developed. We have presented the positioned results for Highmount as well, which figures are reflected in the Scenario 1 conclusions, on a weighted average basis.

FIGURE 4-15 STABILIZED OCCUPANCY & ADR – 2012 DOLLARS - TWO SCENARIOS

Property	No. of Rooms	Occupancy	ADR	RevPAR
Scenario One				
Wildacres + Highmount	423	68 %	$384	$261
Scenario Two				
Wildacres Alone	250	70 %	$325	$228
Impact Reflected in Scenario One				
Highmount Alone	173	65 %	$475	$309

Occupancy and average rate must be considered in relation to one another. Hotel operators can manipulate either variable to the other's benefit or detriment. For example, hotel operators may choose to lower rates in an effort to maximize occupancy. Our forecasts reflect an operating strategy that we believe a competent hotel management team would implement in order to achieve an optimal mix of occupancy and average rate.

As noted, we have positioned the subject resort's four-star property, Wildacres, at an average rate of $325, with a stabilized occupancy rate of 70%, resulting in a RevPAR level of $228. The five-star property, Highmount, is positioned at a $475 average rate, with a stabilized occupancy rate of 65%, resulting in a RevPAR level equal to $309. Combined, the full resort's projections equate to 68% occupancy at a $384 average rate, indicating a RevPAR level of $261.

The projections are intended to reflect the unique features of the proposed resort, which will be developed subject to a compelling collection of strategic benefits. The caliber of the development arguably exceeds that of anything existing throughout the Northeastern United States, in terms of quality (new construction), facilities scope, and convenience to the New York metropolitan area. With ski-in, ski-out privileges, a ±37,850 square feet of meeting space, 18 holes of championship golf, and two separate full-service spa operations with a total of 45 treatment rooms, the subject resort features a full array of year-round demand generators. Furthermore, the property will have the benefit of an affiliation with nationally-recognized four- and five-star brands. Finally, the projections reflect the impact of the attached lodging units, which are assumed to be operated as part of the conventional hotel, and which feature exceptional space allocations and appointments. These units will account for 17% of the Wildacres guestroom inventory and 31% of the Highmount guestroom inventory.

Although the Wildacres property is the larger hotel, it is expected to stabilize with a higher occupancy rate due to its more moderate pricing, as well as its orientation toward meeting and group demand. We expect the property to derive approximately 60% of its demand from the group segment, with 40% derived from the leisure segment. Highmount, in turn, is expected to be far more reliant upon individual (i.e., non-group) travelers, with approximately 65% of its demand drawn from this source.

5. Projection of Income and Expense

In this chapter, we develop a forecast of income and expense for the proposed subject property under the two scenarios analyzed in this study: 1) as fully developed, and 2) with only the Wildacres component. The forecast is based on the facilities programs, the occupancy and average rate forecasts developed in the previous section, and comparable industry data. The comparable data represents actual historical operating results from destination resorts with similar locations, product scope, and product quality.

Rooms Department

Rooms department revenue is based on the occupancy and average rate forecasts presented for the two scenarios. Departmental expense ratios for the two scenarios are estimated based on the following comparable data analysis.

FIGURE 5-1 ROOMS DEPARTMENTAL EXPENSE FORECAST

Comparables	Period	# Rooms	Actual	% of Dept. Revenue	POR
1	2012/13	217	$3,502,473	18.4 %	$84
2	2012/13	161	1,871,452	18.0	48
3	2011/12	318	6,479,483	36.3	92
4	2009/10	142	1,889,804	32.7	72
5	2011/12	124	3,948,241	27.3	146
6	2011	180	3,961,817	28.7	110
7	2011/12	512	7,064,391	24.9	56
8	2011/12	244	1,846,822	30.9	48
9	2011/12	205	1,102,391	28.4	39
10	2010	373	3,222,809	26.1	51
HVS-Selected Parameters					
Full Resort		423	$7,257,000	18.0 %	$69
Wildacres Only		250	$4,152,000	20.0 %	$65

The operative variable in this analysis is departmental expense expressed as a ratio to occupied rooms. Because Highmount will have a five-star level of service, this expense is positioned at a higher level for the full resort as compared to Wildacres alone. Because of economies of scale, however, the expense ratio is lower for the full resort, when expressed as a ratio to total revenue.

Food and Beverage Department

The stabilized revenue and expense factors used for our analysis are based on the following comparable data.

FIGURE 5-2 FOOD & BEVERAGE DEPARTMENT FORECAST

Comparables	Period	Total Revenue	Occupied Rooms	Revenue POR	Expense Ratio
1	2012/13	$12,798,380	41,619	$308	63.9 %
2	2012/13	8,123,735	38,719	210	71.5
3	2011/12	18,836,608	70,348	268	72.9
4	2009/10	3,218,487	26,778	120	95.3
5	2011/12	8,380,363	27,034	310	81.5
6	2011	9,500,519	35,949	264	87.5
7	2011/12	25,313,722	126,093	201	69.7
8	2011/12	10,539,088	38,505	274	73.5
9	2011/12	3,384,419	28,496	119	75.3
HVS-Selected Parameters					
Full Resort		$26,247,000	104,989	$250	70.0 %
Wildacres Only		$15,969,000	63,875	$250	75.0 %

The food and beverage facilities for Wildacres and Highmount are comparable in their scale, in terms of the outlets and meeting space allotments relative to the guestroom inventory. As such, we have projected revenue at $250 per occupied room under both scenarios. Reflecting the economies of scale, the departmental expense is positioned at a lower level for the full resort as compared to Wildacres alone.

Spa Department

The stabilized revenue and expense factors used for our analysis are based on the following comparable data.

FIGURE 5-3 SPA DEPARTMENT FORECAST

Comparables	Period	Total Spa Revenue	Number of Treatment Rooms	Revenue per Treatment Room	Departmental Expense
1	2012/13	$1,402,593	10	$140,259	75.9 %
2	2012/13	1,387,359	10	138,736	59.5
3	2011/12	4,971,459	26	191,210	59.2
4	2011/12	2,031,801	16	126,988	75.1
5	2011	2,681,933	19	141,154	82.2
6	2012	2,257,000	8	282,125	73.0
7	2011/12	9,005,562	31	290,502	59.4
8	2010/11	1,819,000	10	181,900	89.0
HVS-Selected Parameters					
Full Resort		$6,750,000	45	$150,000	60.0 %
Wildacres Only		$3,000,000	15	$200,000	65.0 %

Because Highmount contains a total of 30 treatment rooms, the full resort scenario represents a substantially higher allotment of spa facilities as compared to Wildacres alone. Accounting for diminishing returns as the number of treatment rooms increases, we have projected revenue per treatment room at a lower level for the total resort, as compared to the Wildacres only scenario. In contrast, economies of scale will allow for a lower expense ratio for the full resort, as compared to Wildacres alone.

Golf Department

The stabilized revenue and expense factors used for our analysis are based on the following comparable data.

FIGURE 5-4 GOLF DEPARTMENT FORECAST

Comparables	Period	Total Revenue	No. of Holes	Revenue per Hole	Expense Ratio
1	2011/12	$2,215,456	36	$61,540	113.4 %
2	2009/10	1,021,426	18	56,746	93.6
3	2011/12	1,735,354	18	96,409	72.1
4	2011/12	3,817,780	54	70,700	71.8
5	2011/12	1,100,940	18	61,163	96.4
6	2010	1,275,255	18	70,848	94.5
HVS-Selected Parameters					
Full Resort		$1,080,000	18	$60,000	90.0 %
Wildacres Only		$900,000	18	$50,000	95.0 %

The proposed subject property's 18-hole golf course will be constructed as part of the Wildacres resort. Thus, the same facilities allotment holds for both scenarios. We have forecast slightly higher revenue per hole for full resort scenario, anticipating that course usage will increase as a result of the additional visitation generated by the second resort. A slight difference in the departmental expense ratio is anticipated for the same reason, owing to economies of scale.

Other Operated Departments

The stabilized revenue and expense factors used for our analysis are based on the following comparable data.

FIGURE 5-5 OTHER OPERATED DEPARTMENTS FORECAST

Comparables	Period	Total Revenue	Occupied Rooms	Revenue POR	Expense Ratio
1	2012/13	$1,697,044	41,619	$41	83.3 %
2	2012/13	668,795	38,719	17	68.2
3	2011/12	7,718,328	70,348	110	76.3
4	2009/10	386,588	26,278	15	194.7
5	2011	1,440,090	35,949	40	56.7
6	2011/12	3,610,880	126,093	29	94.1
7	2011/12	4,377,755	38,505	114	53.1
8	2011/12	1,025,070	28,496	36	28.0
HVS-Selected Parameters					
Full Resort		$4,200,000	104,989	$40	70.0 %
Wildacres Only		$2,555,000	63,875	$40	75.0 %

The other ancillary public facilities for Wildacres and Highmount are comparable in their scale. As such, we have projected revenue at $40 per occupied room under both scenarios. Reflecting the economies of scale, the departmental expense is positioned at a lower level for the full resort as compared to Wildacres alone.

Administrative & General

The stabilized expense factors used for our analysis are based on the following comparable data.

FIGURE 5-6 ADMINISTRATIVE & GENERAL EXPENSE FORECAST

Comparables	Period	# Rooms	Actual	% of Ttl Revenue	PAR
1	2012/13	217	$2,544,804	7.3 %	$11,727
2	2012/13	161	1,058,132	5.1	6,572
3	2011/12	318	5,913,763	11.5	18,597
4	2009/10	142	1,862,096	16.8	13,113
5	2011/12	124	3,638,035	10.6	29,339
6	2011	180	3,444,496	12.6	19,136
7	2011/12	512	6,485,532	9.3	12,667
8	2011/12	244	2,273,177	8.7	9,316
9	2011/12	205	629,375	6.2	3,070
10	2010	373	2,978,908	8.9	7,986
HVS-Selected Parameters					
Full Resort		423	$5,465,000	7.0 %	$12,920
Wildacres Only		250	$3,239,000	7.5 %	$12,956

Reflecting benefits associated with economies of scale, a lower expense ratio is applied in the case of the full resort, as compared to Wildacres alone.

Marketing Department

The stabilized expense factors used for our analysis are based on the following comparable data.

FIGURE 5-7 MARKETING EXPENSE FORECAST

Comparables	Period	# Rooms	Actual	% of Ttl Revenue	PAR
1	2012/13	217	$1,498,137	4.3 %	$6,904
2	2012/13	161	963,102	4.7	5,982
3	2011/12	318	4,672,859	9.1	14,695
4	2009/10	142	1,317,710	11.9	9,280
5	2011/12	124	1,973,022	5.7	15,911
6	2011	180	2,027,575	7.4	11,264
7	2011/12	512	4,635,307	6.6	9,053
8	2011/12	244	1,555,662	5.9	6,376
9	2011/12	205	736,891	7.3	3,595
10	2010	373	2,208,256	6.6	5,920
HVS-Selected Parameters					
Full Resort		423	$3,513,000	4.5 %	$8,305
Wildacres Only		250	$2,159,000	5.0 %	$8,636

Reflecting benefits associated with economies of scale, a lower expense ratio is applied in the case of the full resort, as compared to Wildacres alone.

Franchise Fees

Our projections assume that the subject hotels will be affiliated with nationally-recognized brands. Specifically, the four-star Wildacres property is envisioned as an affiliate brands such as Fairmont, Hilton, Marriot, Westin, or Hyatt. The five-star Highmount property is envisioned as an affiliate of brands such as Ritz-Carlton or St. Regis. Although many of the above-noted brands are not technically available as franchises, we have, in this study, deducted royalties at 6.0% of rooms revenue in order to account directly for the full cost of the brand, costs that would in a first-tier management contract be accounted for via an incentive management fee. As noted below, we have deducted a base management fee equal to 3.0% of total revenue, while the franchise fee, at 6.0% of rooms revenue, equates to a stabilized level equal to 3.1% of total revenue for the full resort scenario and 2.9% of total revenue under the Wildacres Only scenario. Thus, the total of the two deductions is in the range of 6.0% of total revenue, which represents a reasonable approximation of the return generally required by a first-tier operator.

Property Operations & Maintenance

The stabilized expense factors used for our analysis are based on the following comparable data.

FIGURE 5-8 PROPERTY OPERATIONS & MAINTENANCE EXPENSE FORECAST

Comparables	Period	# Rooms	Actual	% of Ttl Revenue	PAR
1	2012/13	217	$1,872,654	5.4 %	$8,630
2	2012/13	161	842,305	4.1	5,232
3	2011/12	318	4,752,915	9.2	14,946
4	2009/10	142	776,929	7.0	5,471
5	2011/12	124	1,299,395	3.8	10,479
6	2011	180	1,081,276	3.9	6,007
7	2011/12	512	2,259,508	3.2	4,413
8	2011/12	244	1,678,889	6.4	6,881
9	2011/12	205	605,518	6.0	2,954
10	2010	373	1,406,459	4.2	3,771
HVS-Selected Parameters					
Full Resort		423	$3,513,000	4.5 %	$8,305
Wildacres Only		250	$2,159,000	5.0 %	$8,636

Reflecting benefits associated with economies of scale, a lower expense ratio is applied in the case of the full resort, as compared to Wildacres alone.

Utilities

The stabilized expense factors used for our analysis are based on the following comparable data.

FIGURE 5-9 UTILITIES EXPENSE FORECAST

Comparables	Period	# Rooms	Actual	% of Ttl Revenue	PAR
1	2012/13	217	$950,310	2.7 %	$4,379
2	2012/13	161	702,520	3.4	4,363
3	2011/12	318	2,417,444	4.7	7,602
4	2009/10	142	766,226	6.9	5,396
5	2011/12	124	1,450,855	4.2	11,700
6	2011	180	1,020,585	3.7	5,670
7	2011/12	512	2,370,153	3.4	4,629
8	2011/12	244	1,220,224	4.7	5,001
9	2011/12	205	666,769	6.6	3,253
10	2010	373	2,301,477	6.9	6,170
HVS-Selected Parameters					
Full Resort		423	$2,732,000	3.5 %	$6,459
Wildacres Only		250	$1,727,000	4.0 %	$6,908

Reflecting benefits associated with economies of scale, a lower expense ratio is applied in the case of the full resort, as compared to Wildacres alone.

Management Fee

We have deducted a base management fee equal to 3.0% of total revenue, for both scenarios, consistent with industry standards for hotels such as the proposed subject property.

Property Tax

The stabilized expense factors used for our analysis are based on the following comparable data.

FIGURE 5-10 PROPERTY TAX EXPENSE FORECAST

Comparables	Period	# Rooms	Actual	% of Ttl Revenue	PAR
1	2012/13	217	$493,600	1.4 %	$2,275
2	2012/13	161	333,350	1.6	2,070
3	2011/12	318	1,285,566	2.5	4,043
4	2009/10	142	437,104	3.9	3,078
5	2011/12	124	252,442	0.7	2,036
6	2011	180	577,402	2.1	3,208
7	2011/12	512	1,429,597	2.0	2,792
8	2011/12	244	593,845	2.3	2,434
9	2011/12	205	168,685	1.7	823
10	2010	373	2,832,155	8.4	7,593
HVS-Selected Parameters					
Full Resort		423	$1,171,000	1.5 %	$2,768
Wildacres Only		250	$648,000	1.5 %	$2,592

Because of the higher caliber of construction associated with Highmount, the same overall expense ratio is applied for both of the two scenarios, resulting in a higher expense-per-available-room for the full resort scenario.

Insurance

The stabilized expense factors used for our analysis are based on the following comparable data.

FIGURE 5-11 INSURANCE EXPENSE FORECAST

Comparables	Period	# Rooms	Actual	% of Ttl Revenue	PAR
1	2012/13	217	$410,639	1.2 %	$1,892
2	2012/13	161	118,278	0.6	735
3	2011/12	318	412,615	0.8	1,298
4	2009/10	142	168,421	1.5	1,186
5	2011/12	124	191,402	0.6	1,544
6	2011	180	79,668	0.3	443
7	2011/12	512	377,377	0.5	737
8	2011/12	244	306,552	1.2	1,256
9	2011/12	205	130,441	1.3	636
10	2010	373	155,820	0.5	418
HVS-Selected Parameters					
Full Resort		423	$781,000	1.0 %	$1,846
Wildacres Only		250	$518,000	1.2 %	$2,072

Reflecting benefits associated with economies of scale, a lower expense ratio is applied in the case of the full resort, as compared to Wildacres alone.

Reserve for Replacement

Periodic replacement of furniture, fixtures, and equipment is essential to maintain the quality, image, and income-producing potential of a lodging facility. Because capitalized expenditures are not included in the operating statement but nevertheless affect an owner's cash flow, an appraisal should reflect these expenses in the form of an appropriate reserve for replacement. We have used a reserve for replacement equal to 4.0% of total revenue for our forecast, for both scenarios, consistent with industry standards.

Summary of Forecast

The following table summarizes the income and expense forecast for both scenarios.

FIGURE 5-12 FORECAST OF INCOME & EXPENSE

	Full Resort				Wildacres Only			
Number of Rooms:	**423**				**250**			
Occupancy:	**68%**				**70%**			
Average Rate:	**$384.00**				**$325.00**			
RevPAR:	**$261**				**$228**			
Days Open:	**365**				**365**			
Occupied Rooms:	**104,989**				**63,875**			
	Total (000s)	**%Gross**	**PAR**	**POR**	**Total (000s)**	**%Gross**	**PAR**	**POR**
REVENUE								
Rooms	$40,316	51.3 %	$95,309	$384.00	$20,759	48.1 %	$83,038	$325.00
Food & Beverage	26,247	33.4	62,050	250.00	15,969	37.0	63,875	250.00
Spa	6,750	8.6	15,957	64.29	3,000	6.9	12,000	46.97
Golf	1,080	1.4	2,553	10.29	900	2.1	3,600	14.09
Other Operated Depts	4,200	5.3	9,928	40.00	2,555	5.9	10,220	40.00
Total Revenues	78,592	100.0	185,797	748.58	43,183	100.0	172,733	676.06
DEPARTMENTAL EXPENSES *								
Rooms	7,257	18.0	17,156	69.12	4,152	20.0	16,608	65.00
Food & Beverage	18,373	70.0	43,435	175.00	11,977	75.0	47,906	187.50
Spa	4,050	60.0	9,574	38.58	1,950	65.0	7,800	30.53
Golf	972	90.0	2,298	9.26	855	95.0	3,420	13.39
Other Operated Depts	2,940	70.0	6,950	28.00	1,916	75.0	7,665	30.00
Total Dept Expenses	33,591	42.7	79,413	319.95	20,850	48.3	83,399	326.41
DEPARTMENTAL INCOME	45,001	57.3	106,385	428.63	22,333	51.7	89,334	349.64
UNDISTRIBUTED OPERATING EXPENSES								
Administrative & General	5,501	7.0	13,006	52.40	3,239	7.5	12,955	50.70
Marketing	3,537	4.5	8,361	33.69	2,159	5.0	8,637	33.80
Franchise Fees**	2,419	3.1	5,719	23.04	1,246	2.9	4,982	19.50
Prop. Operations & Maint.	3,537	4.5	8,361	33.69	2,159	5.0	8,637	33.80
Utilities	2,751	3.5	6,503	26.20	1,727	4.0	6,909	27.04
Total UDOE	17,744	22.6	41,949	169.01	10,530	24.4	42,120	164.85
HOUSE PROFIT	27,256	34.7	64,436	259.61	11,804	27.3	47,214	184.79
Management Fee	2,358	3.0	5,574	22.46	1,295	3.0	5,182	20.28
INCOME BEFORE FIXED CHGS	24,899	31.7	58,862	237.16	10,508	24.3	42,032	164.51
FIXED EXPENSES								
Property Taxes	1,179	1.5	2,787	11.23	648	1.5	2,591	10.14
Insurance	786	1.0	1,858	7.49	518	1.2	2,073	8.11
Reserve for Replacement	3,144	4.0	7,432	29.94	1,727	4.0	6,909	27.04
Total Fixed Charges	5,109	6.5	12,077	48.66	2,893	6.7	11,573	45.30
NET INCOME	$19,790	25.2 %	$46,785	$188.50	$7,615	17.6 %	$30,459	119.21

* Departmental expenses are expressed as a percentage of departmental revenues

** Franchise Fees deducted at: 6.0% of rooms revenue

Economies of scale are the cost advantages that obtain due to size, with cost per unit decreasing with increasing scale of operation, as fixed costs are spread out and defrayed, creating operational efficiencies. Overall, net income under the Full Resort scenario is projected at a stabilized level equal to 25.2% of total revenue, compared to 17.6% of total revenue under the Wildacres Only scenario. The variation owes to economies of scale.

6. Feasibility Analysis

In this section, we calculate the yield (or rate of return) indicated by the two scenarios, based on the projected income level and the projected construction cost. The yields are compared with current industry standards for resorts of this sort in order to gauge feasibility. The first step is the construction cost estimate.

Construction Cost Estimate

We have relied upon the construction cost estimates for the proposed resort under the two scenarios, as provided by the project developer. The following tables summarize the construction cost estimates for the two scenarios.

FIGURE 6-1 CONSTRUCTION COST – FULL RESORT

Property Component	No. of Units	Construction Cost			
		Total		Per Unit	
HIGHMOUNT					
Hotel Fractionals (Phase 1)	53	$22,450,000		$423,585	
Site Development/Infrastructure		4,490,000		84,717	
Sub-Total			$26,940,000		$508,302
Hotel, Spa, Parking, etc.	120	53,550,000		446,250	
Site Development/Infrastructure		11,135,000		92,792	
Sub-Total			64,685,000		539,042
Land Acquisition			6,250,000		---
COMPONENT TOTAL	**173**		**$97,875,000**		**$565,751**
WILDACRES					
Golf Course			$21,925,000		---
Hotel Fractionals (Phase 1)	42	$14,625,000		$348,214	
Site Development/Infrastructure		1,625,000		38,690	
Sub-Total			16,250,000		386,905
Hotel, Spa, Parking, etc.	208	86,025,000		413,582	
Site Development/Infrastructure		12,000,000		57,692	
Sub-Total			98,025,000		471,274
Land Acquisition			6,250,000		---
COMPONENT TOTAL	**250**		**$142,450,000**		**$569,800**
GRAND TOTAL	**423**		**$240,325,000**		**$568,144**

FIGURE 6-2 CONSTRUCTION COST – WILDACRES ONLY

Property Component	No. of Units	Construction Cost Total		Per Unit	
Golf Course			$23,531,800		---
Hotel Fractionals (Phase 1)	42	$14,625,000		$348,214	
Site Development/Infrastructure		1,625,000		38,690	
Sub-Total			16,250,000		386,905
Hotel, Spa, Parking, etc.	208	86,025,000		413,582	
Site Development/Infrastructure		20,837,400		100,180	
Sub-Total			106,862,400		513,762
Land Acquisition			12,500,000		---
GRAND TOTAL	**250**		**$159,144,200**		**$636,577**

As indicated above, the unit cost of construction is lower for the full resort, which is logical given that there are substantial infrastructural costs associated with the project which will be incurred whether one or both of the hotel components are developed, including land acquisition, roadway construction, utility connections, and all of the fixed costs associated with construction staff and personnel.

Calculated Yields

The yield on investment is calculated by calculating the ratio of the projected stabilized net income to the construction cost estimate. The result is the equivalent of a capitalization rate, which is the lingua franca for evaluating the anticipated and/or historical performance of commercial real estate. The following table contains the calculations for each scenario.

FIGURE 6-3 CALCULATED YIELDS

Scenario One - Full Resort	
Net Income	$19,790,000
Construction Cost	240,325,000
Indicated Yield	**8.2%**
Scenario Two - Wildacres Only	
Net Income	$7,615,000
Construction Cost	159,144,200
Indicated Yield	**4.8%**

Industry Standards

The following table summarizes current industry standards for capitalization rates currently required by hotel real estate investors, based on the results from three recent investor surveys.

HVS

FIGURE 6-4 INVESTOR SURVEYS

Source	Overall Rate
PWC Real Estate Investor Survey - 3rd Quarter 2013	
Luxury/Upper-Upscale Hotels	
Range	4.0% - 10.0%
Average	*7.8%*
Full-Service Hotels	
Range	6.0% - 10.0%
Average	*8.0%*
USRC Hotel Investment Survey - Mid-Year 2013	
Full-Service Hotels	
Range	6.0% - 9.0%
Average	*7.50%*
RERC Real Estate Report - Summer 2013	
1st Tier Hotels	
Range	5.5% - 11.0%
Average	*8.5%*

Conclusion

Only the yield indicated by the Full Resort scenario meets the threshold requirement for investors in hotel real estate the caliber of the proposed subject property. The yield on the Wildacres Only scenario is below the minimum standards indicated above for three of the four surveys, and at the low end of the range indicated by the fourth. Based on our analysis, we conclude that the only economically feasible approach to the development of the subject property calls for the construction of both resort components.

7. Statement of Assumptions and Limiting Conditions

1. This report is set forth as a feasibility study of the proposed subject property; this is not an appraisal report.
1. This report is to be used in whole and not in part.
2. No responsibility is assumed for matters of a legal nature, nor do we render any opinion as to title, which is assumed to be marketable and free of any deed restrictions and easements. The property is evaluated as though free and clear unless otherwise stated.
3. We assume that there are no hidden or unapparent conditions of the sub-soil or structures, such as underground storage tanks, that would impact the property's development potential. No responsibility is assumed for these conditions or for any engineering that may be required to discover them.
4. We have not considered the presence of potentially hazardous materials or any form of toxic waste on the project site. The consultants are not qualified to detect hazardous substances, and we urge the client to retain an expert in this field if desired.
5. The Americans with Disabilities Act (ADA) became effective on January 26, 1992. We have assumed the proposed hotel would be designed and constructed to be in full compliance with the ADA.
6. We have made no survey of the site, and we assume no responsibility in connection with such matters. Sketches, photographs, maps, and other exhibits are included to assist the reader in visualizing the property. It is assumed that the use of the described real estate will be within the boundaries of the property described, and that no encroachment will exist.
7. All information, financial operating statements, estimates, and opinions obtained from parties not employed by Hotel Appraisals, LLC are assumed to be true and correct. We can assume no liability resulting from misinformation.
8. Unless noted, we assume that there are no encroachments, zoning violations, or building violations encumbering the subject property.
9. The property is assumed to be in full compliance with all applicable federal, state, local, and private codes, laws, consents, licenses, and regulations (including a liquor license where appropriate), and that all

licenses, permits, certificates, franchises, and so forth can be freely renewed or transferred to a purchaser.

10. All mortgages, liens, encumbrances, leases, and servitudes have been disregarded unless specified otherwise.

11. None of this material may be reproduced in any form without our written permission, and the report cannot be disseminated to the public through advertising, public relations, news, sales, or other media.

12. We are not required to give testimony or attendance in court by reason of this analysis without previous arrangements, and only when our standard per-diem fees and travel costs are paid prior to the appearance.

13. If the reader is making a fiduciary or individual investment decision and has any questions concerning the material presented in this report, it is recommended that the reader contact us.

14. We take no responsibility for any events or circumstances that take place subsequent to the date of our field inspection.

15. The quality of a lodging facility's on-site management has a direct effect on a property's economic viability. The financial forecasts presented in this analysis assume responsible ownership and competent management. Any departure from this assumption may have a significant impact on the projected operating results.

16. The financial analysis presented in this report is based upon assumptions, estimates, and evaluations of the market conditions in the local and national economy, which may be subject to sharp rises and declines. Over the projection period considered in our analysis, wages and other operating expenses may increase or decrease because of market volatility and economic forces outside the control of the hotel's management. We assume that the price of hotel rooms, food, beverages, and other sources of revenue to the hotel will be adjusted to offset any increases or decreases in related costs. We do not warrant that our estimates will be attained, but they have been developed based upon information obtained during the course of our market research and are intended to reflect the expectations of a typical hotel investor as of the stated date of the report.

17. This analysis assumes continuation of all Internal Revenue Service tax code provisions as stated or interpreted on either the date of value or the date of our field inspection, whichever occurs first.

18. Many of the figures presented in this report were generated using sophisticated computer models that make calculations based on numbers carried out to three or more decimal places. In the interest of simplicity,

most numbers have been rounded to the nearest tenth of a percent. Thus, these figures may be subject to small rounding errors.

19. It is agreed that our liability to the client is limited to the amount of the fee paid as liquidated damages. Our responsibility is limited to the client, and use of this report by third parties shall be solely at the risk of the client and/or third parties. The use of this report is also subject to the terms and conditions set forth in our engagement letter with the client.

20. Evaluating and comprising financial forecasts for hotels is both a science and an art. Although this analysis employs various mathematical calculations to provide value indications, the final forecasts are subjective and may be influenced by our experience and other factors not specifically set forth in this report.

21. This study was prepared by Hotel Appraisals, LLC. All opinions, recommendations, and conclusions expressed during the course of this assignment are rendered by the staff of Hotel Appraisals, LLC as employees, rather than as individuals.

8. Certification

The undersigned hereby certify that, to the best of our knowledge and belief:

1. the statements of fact presented in this report are true and correct;
2. the reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are our personal, impartial, and unbiased professional analyses, opinions, and conclusions;
3. we have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved;
4. we have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment;
5. our engagement in this assignment was not contingent upon developing or reporting predetermined results;
6. our compensation for completing this assignment is not contingent upon the development or reporting of a predetermined result or direction in performance that favors the cause of the client, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this study;
7. our analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice;
8. Erich Baum personally inspected the property described in this report in the course of a prior assignment; Stephen Rushmore, Jr., MAI, CRE participated in the analysis and reviewed the findings, but did not personally inspect the property;
9. Erich Baum provided significant assistance to Stephen Rushmore, Jr., MAI, CRE, and that no one other than those listed above and the undersigned prepared the analyses, conclusions, and opinions concerning the real estate that are set forth in this report;
10. The under-signed have not performed appraisal or consulting work on the subject property within the past three years;

11. the reported analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and the Standards of Professional Appraisal Practice of the Appraisal Institute;

12. the use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives; and

13. as of the date of this report, Stephen Rushmore, Jr., MAI, has completed the Standards and Ethics Education Requirement of the Appraisal Institute for Associate Members; and as of the date of this report, Stephen Rushmore, Jr., MAI, CRE has completed the requirements of the continuing education program of the Appraisal Institute.

Erich Baum
Senior Vice President
Hotel Appraisals, LLC

Stephen Rushmore, Jr., MAI, CRE
President and CEO
Hotel Appraisals, LLC

RAGATZ ASSOCIATES

EXECUTIVE SUMMARY

THE SHARED-OWNERSHIP RESORT REAL ESTATE INDUSTRY IN NORTH AMERICA: 2013

FRACTIONAL INTERESTS
PRIVATE RESIDENCE CLUBS
DESTINATION CLUBS

Introduction

This document is an Executive Summary of a larger survey conducted by Ragatz Associates of the shared-ownership resort real estate industry in North America as of March 2013. Included in this overall sector of the resort real estate industry are three components: fractional interest projects, private residence clubs and destination clubs.

The first two components are similar, in that both typically sell deeded ownership in shares of vacation homes, ranging from a 1/15 share with three weeks of annual use to a 1/4 share with three months of annual use. However, the two components vary in terms of price, quality of product and degree of services and amenities. Ragatz Associates simply assumes that product selling for less than $1,000 per square foot falls into the fractional interest category, and product selling for more than $1,000 per square foot falls into the private residence club category.

A destination club typically sells 30-year memberships on a non-equity basis into a wide network of vacation homes in multiple locations. Some clubs are equity-based, however. The concept is further characterized by a refundability policy when members leave the club.

The survey represents our 13th annual edition. Once again, it is thought to be the most thorough and comprehensive survey conducted of the industry.

Size of the Industry

Some 311 fractional interest (FI) projects and private residence clubs (PRC) were identified in the survey, along with six destination clubs. Of the 311 developments, 80 actually made some sales in 2012, as did all six destination clubs. The 80 FI and PRC projects are the primary focus of the survey.

Included in the 311 developments are 67 percent in the United States, 17 percent in Canada, eight percent in the Caribbean and eight percent in Mexico. The two states of Colorado and California contain 30 percent of all developments. Of the 80 active developments, 65 percent are fractional interest projects and 35 percent are private residence clubs. Most of the 231 inactive developments are older, sold-out fractional interest projects.

In the survey for 2011, there were 98 active projects that made sales that year. Some four new projects started sales in 2012, meaning that 10 of the active projects in 2011 dropped from the list. A few of these may have attained sell-out, but most simply ceased sales due to the country's economic condition. Also, some were actually in sales, but did not make any sales.

It is estimated that total sales volume in the shared-ownership industry in 2012 was about $497 million. This amount includes new closed sales, presales, and in-house resales. When looking at the three individual components, sales volumes were $71 million in fractional interest projects (14 percent), $196 million in private residence clubs (40 percent), and $230 million in destination clubs (46 percent).

Sales volume in the shared-ownership industry decreased in 2012 from 2011, from $552 million to $497 million (10.0 percent). Destination clubs increased by $9 million (four percent), while fractional interest projects decreased by $32 million (-31 percent), and private residence clubs also decreased by $32 million (-14 percent). Sales volume was down by 78 percent (-$1.8 billion) since the peak year of 2007.

Shown below are industry sales volumes for the past years.

year	sales volume (mil.)	year	sales volume (mil.)
2004	$1,544,000	2008	$1,473,000
2005	$1,968,000	2009	$860,000
2006	$2,152,000	2010	$530,000
2007	$2,300,000	2011	$552,000
		2012	$497,000

In 2012, the average annual sales volume in the 80 active projects was $1.4 million for fractional interest projects and $7.0 million for private residence clubs. However, if excluding the top three selling fractional interest projects, that average would decline to $900,000. If excluding the top four private residence clubs, that average would decline to $3.75 million. Of the total 80 active projects, four percent had sales over $10 million, while 44 percent had sales of less than $1 million.

Several critical factors combined in 2012 to once again create the perfect storm for stagnation in the sales performance of the shared-ownership industry. These same factors have negatively impacted the market since the last quarter of 2008.

- uncertainty about the country's long-term economic stability
- almost complete lack of consumer financing
- decrease in primary home equity funds for purchasers who previously paid cash
- concern with making "conspicuous consumption" purchases
- lack of marketing funds
- a glut of whole-ownership vacation homes on the market, with significantly decreasing prices
- increasing competition from vacation home rentals and rental clubs
- consumers waiting for all types of resort real estate prices to drop further

Prices

Prices in the shared-ownership industry range widely. For fractional interest projects, selected average prices include $107,300 per share, $16,100 per week (when dis-aggregating shares to an individual weekly basis), and $490 per square foot. Among private residence clubs, these averages are $293,700 per share, $56,200 per week, and $1,585 per square foot. Per week and per square foot prices tend to decrease as the size of the unit and share increase. In comparison with 2011, average prices decreased by $400 per share (one percent), $1,000 on a per week basis (three percent) and $30 on a per square foot basis (three percent). However, when compared to the peak year of 2007, per share prices have decreased by 35 percent, per week prices by 36 percent, and per square foot prices by 26 percent.

Per square foot prices also vary significantly by country, e.g., from $530 in Canada, to $630 in the Caribbean, to $960 in the U.S., to $1,170 in Mexico. They also are higher in ski communities and at developments offered by branded hotel companies.

Annual maintenance fees average $7,060 per share, ranging from $5,570 among fractional interest projects to $10,050 among private residence clubs. On a per week basis, such averages are $825 and $2,175, respectively.

Operating costs (including marketing, sales and general administration) were about the same in 2012 compared to previous years, at about 15 to 20 percent of the overall sales volume. Product costs were about 50 to 55 percent for both products.

Product Characteristics

Upon completion, the average development will contain 51 units. Some 72 percent of the units are either two-bedrooms (39 percent) or three-bedrooms (33 percent). Among all units, the average size is 1,605 square feet.

There are at least nine different sizes of shares being sold. Most frequent sizes for fractional interest projects are 1/6s or larger (33 percent), 1/8s (22 percent), and 1/12s or less (29 percent). For private residence clubs they are 1/12s or less (39 percent) and 1/10s (36 percent). In efforts to have lower prices in accord with declining market conditions, there was a tendency in 2012 (as in 2011) to have smaller shares, fewer bedrooms and lesser floor areas. On-site amenities and services are extensive in the industry, especially at the private residence club level. However, there was a trend in 2012 (as in 2011) to have fewer on-site services in order to conserve on annual dues. At the same time, there was a trend to provide more owner benefits such as rental and resale programs, and external exchange.

Destination Clubs

The average price for membership in the six destination clubs is $260,000. The average residence in the clubs has a reported value of $2.9 million and contains 3,355 square feet. The average term is 30 years, and the average ratio of members per residence is 8.0. Approximately 7,500 members are in the six clubs.

Future Trends

It is widely felt in the resort real estate industry that the shared-ownership components will strongly rebound in the future. Reasons include being a concept that is based on: (1) personal use rather than speculation; (2) being able to purchase only the amount of time that have vacations to use and discretionary income to spend on; (3) lowering household spending habits and capabilities; (4) being hassle-free, i.e., "show up and enjoy;" and (5) the opportunity for flexibility and variety of use due to the external exchange process.

Based on almost 40 years of experience in the resort real estate industry, we expect the shared-ownership industry to once again be on a significant growth track as the national economy further stabilizes. Our extensive consumer research strongly suggests that the decline in the industry's sales performance from the last quarter of 2008 through 2012 was much more due to external factors such as the economy and lack of financing, and much less due to lack of consumer interest in the concept.

The complete report is available for purchase from Ragatz Associates at www.ragatzassociates.com.

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518-237-8643
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September 19, 2013

Terresa Bakner
Whitman Osterman & Hanna LLP
One Commerce Plaza
Albany, NY 12260
(via e-mail only)

Re: Belleayre Resort-Crossroad Venture Development
Middletown, Delaware County/Shandaken, Ulster County
08PR02035 (99PR04498)

Dear Ms. Bakner:

Thank you for your recent call regarding this project. As you may know our office has been reviewing this action under Section 14.09 (NYSPRHPL) since 1999.

As part of this evaluation several historic resources were identified within the project area. These features included several properties that were determined to be eligible for inclusion in the National Register of Historic Places and the Amelita Galli-Curci Estate, which is listed in the National Register.

On January 6, 2003 and again on December 4, 2009 Ken Markunas of our staff (now retired) determined that the original and then modified project would have No Adverse Impact on the historic resources that were identified as part of the review process. An evaluation of the 2011 plans, found in the SDEIS, would indicate that these previous findings remain valid.

If I can be of any further assistance do not hesitate to contact me at (518) 237-8643, ext. 3263.

Sincerely,

John A. Bonafide
Director,
Technical Preservation Services Bureau

Supplemental Assessment of the No-Highmount Alternative

A number of comments received on the SDEIS for the Modified Belleayre Resort project sought additional information regarding the evaluation of an alternative resort project that does not contain the Highmount Spa Resort project component (the no-Highmount alternative).

The no-Highmount alternative involves that part of the project located on the approximately 136 acres of the Modified Project site that is located adjacent (west) to the former Highmount Ski Area and also includes lands to the north and west of County Route 49A (tax map parcel 3.-1-1 in Shandaken and parcel 309.1-50.1 in Middletown) on either side of the Galli Curci estate.

The table that accompanies this supplemental assessment provides a comparison of the no-Highmount alternative with the SDEIS Modified Project, the AIP Project Alternative, and the DEIS Project.

<u>1. Comparison of Project Elements</u>

The project site for the Modified Project is 739 acres. Under the no-Highmount alternative the project site would be 603 acres.

The addition of lands to the Forest Preserve would be the same for the Modified Project and for the no-Highmount alternative (1,189 acres), as would the lands placed under a Conservation Easement (203 acres). The no-Highmount alternative would not provide additional benefits.

Under the no-Highmount alternative, the Applicant would very likely sell the +/- 136 acre Highmount Spa Resort property, and a buyer would be free to develop the property in a manner that is compatible with pertinent regulations. Also, under the no-Highmount alternative, the historically significant Leach Farm House would not be restored, and the substandard road alignment conditions of County Route 49A, and the existing stormwater issues along it, as noted in many of the comments received on the SDEIS, would not be improved as currently proposed as part the Modified Project. Also, significant and substantial benefits under the Modified Project alternative would be reduced as summarized in the table that accompanies this assessment.

The area to be developed under the Modified Project is 218 acres which is a reduction of 62% when compared to the DEIS Project. A further reduction to 175 acres that would be developed under the no-Highmount alternative is a reduction of 69% when compared to the DEIS project.

The number of lodging structures under the Modified Project is 34 which is a reduction of 72% from the 121 lodging structures in the DEIS Project. Under the no-Highmount alternative the number of lodging structures would be reduced to 24 which is an 80% reduction from the DEIS project

The density of the project, in terms of the number of units per acre would decrease slightly from the 0.85 units per acre for the Modified Project to 0.69 units per acre under the no-Highmount alternative. The density of the development under the Modified Project and the no-Highmount alternative are both very low, less than 1 unit per acre.

This same trend occurs when evaluating the amount of impervious surfaces. The Modified Project has 21 acres of impervious surfaces that is 2.8% of the Modified Project site, while the no-Highmount alternative has 18 acres of impervious surfaces which is 3.0% of the project site. As points of reference, Table 4.2 of the NYS Stormwater Design Manual states that 2% impervious is typical for agricultural areas while the next entry in the table, at 9% impervious, is Open Urban Land (parks, cemeteries, etc.).

The impervious surfaces acreages and percentages provided above include project roads. Under the no-Highmount alternative the amount of roads would be reduced from 1.41 miles in the Modified Project to 1.31 miles. It is important to note that the AIP alternative contained 2.6 miles of road, including 1.1 miles on slopes over 20%. By already eliminating the upper units at Highmount from the AIP Project alternative when developing the Modified Project, the Applicant reduced the road on slopes over 20% to 0.1 mile. This minimal remaining amount would only be reduced to 0.07 miles under the no-Highmount alternative.

2. Comparison of Environmental Impacts

Surface Waters: There are no surface water resources in the area of the Highmount Spa Resort. The number of stream crossings would not be reduced under the no-Highmount alternative. Both the Modified Project and the no-Highmount Alternative would meet the design criteria of the 2010 NYS Stormwater Design Manual and would be permitted under an individual permit instead of under the general permit. Both projects would involve an independent stormwater monitor as per the AIP. The golf course will be organically managed under both alternatives as per the AIP. Under the no-Highmount alternative repair of the existing drainage problems along County Route 49A would not occur as a result of the resort project. Both alternatives would make use of the Pine Hill WWTP which has sufficient capacity to accept the higher flows from the Modified Project. The same sources of potable water that have a demonstrated lack of impacts on surface waters when pumped at the rates necessary to serve the Modified Project, would be used at lesser rates under the no-Highmount alternative. The no-Highmount alternative does not significantly reduce the potential impacts to surface water resources.

Geology and Topography: Earthwork quantities would be reduced from approximately 850,000 cubic yards for the Modified Project to 690,000 cubic yards under the no-Highmount alternative. Since both Wildacres and Highmount have been designed so that earthwork cuts and fills are balanced within each component, eliminating the need for bulk trucking for importing or exporting fill, the decreased total under the no-Highmount does not reduce any related potential impacts. Blasting will be required under both alternatives, although the confines of blasting would be limited to the vicinity of the Wildacres Hotel under the no-Highmount alternative.

Groundwater: The Modified Project peak potable water demand is 145,200 gpd while the no-Highmount alternative would require only 105,300 gpd. The project potable wells have demonstrated the capacity to serve the Modified Project without impacting groundwater resources, so the no-Highmount alternative will not be less impacting. There will be an incremental increase in groundwater recharge under the no-Highmount alternative, but the SDEIS Water Budget Analysis has demonstrated that the Modified Project will not adversely affect groundwater recharge. The golf course would be organically managed under both alternatives. The no-Highmount alternative does not significantly reduce the potential impacts to groundwater resources.

Soils: See the soils-related portions of the Surface Waters and Geology and Topography headings above.

Wetlands: There are no wetlands on the Highmount portion of the project site as verified through the approved jurisdictional determination issued by the US Army Corps of Engineers (SDEIS Appendix 24, including drawing W-2.0). Therefore, wetland impacts cannot be reduced under then no-Highmount alternative. No wetland permit from the USACOE is required for the entire Modified Project based on correspondence from the ACOE included in the SDEIS.

Wildlife: There will be no impacts to any rare, threatened or endangered species under the Modified Project as a whole, including the Highmount portion of the project. The no-Highmount alternative would directly impact 43 acres less than the Modified Project, but most of this is within what others have defined as the Ecological Impact Zone, the area affected by development that currently exists without the project (see FEIS response to comment 3.4.3(3)). This area could still be developed if the lands were sold off under the no-Highmount alternative. With or without the Highmount portion of the project, the project will result in nearly 1,200 acres of wildlife habitat being added to the Forest Preserve and 200+ additional acres of wildlife habitat being place into a Conservation Easement. The no-Highmount alternative does not provide a significant benefit from the standpoint of wildlife resources.

Traffic: The SDEIS Traffic Impact Study (appendix 11, figure 3.1) shows that in 2015, with no resort being built, there will be 62 cars per hour traveling on the section of County Route 49A between the Leach farmhouse and the upper driveway for BMSC during the peak hour. Figure 3.6 in SDEIS appendix 11 shows that the Highmount portion of the Modified Project would then add another 56 cars to this section of County Route 49A during the peak hour. Under the no-Highmount alternative the 62 cars traveling on this section of road under would do so without any corrections to the substandard road conditions (alignment, width, etc.) stated in numerous comments submitted on the SDEIS. Under the Modified Project, the amount of cars traveling this section of road would increase by nearly 50% (47%), but all cars will be traveling over safer road conditions that will be created by the Modified Project.

Visual: The Commissioner’s Interim Decision following the issues conference for the DEIS Project identified potential impacts to Wilderness areas within the Forest Preserve as an area of concern for the DEIS Project because a portion of the Big Indian Plateau component of the DEIS Project was visible from some locations in the nearby Big Indian Wilderness on Balsam Mountain. The AIP reiterated this concern and stated that the AIP project should not be visible from Wilderness and limit its visibility from Wild Forest areas. The SDEIS demonstrates that the Modified Project will not be visible from Wilderness and there is limited visibility from Dry Brook Ridge Wild Forest and Halcott Mountain Wild Forest, with visibility being reduced by the use of green roofs on the hotel and lodge building and by the elimination of the upper units and access road to them. Under the no-Highmount alternative, the limited view of the Highmount hotel from Dry Brook Ridge Wild Forest would be avoided. Under the No-Highmount alternative, screened views into Wildacres will still be possible.

Noise: The SDEIS describes how potential noise impacts associated with the construction and the operation of the Modified Project have been mitigated so that impacts are avoided. This includes avoiding noise impacts on Wilderness lands in proximity to the Highmount Spa Resort portion of the project. The no-Highmount alternative does not materially lessen potential operational noise impacts.

Local Land Use: Both alternatives are compatible with local zoning and would require site plan and special use approvals from Shandaken and Middletown. The no-Highmount alternative does not remove any uses that are not compatible with local land use regulations.

Cultural Resources: The SDEIS contains correspondence from NYS OPRPHP that the Modified Project will not adversely impact historic resources. The no-Highmount alternative does not change this determination of no impact to cultural resources. As stated above, the Modified Project will ensure that the Leach farmhouse is adaptively reused which will ensure its future preservation.

3. Comparison of Socioeconomic Impact

The table that accompanies this assessment provides statistics on how the no-Highmount alternative would reduce socioeconomic benefits across all indices by approximately half the amount that would be provided by the Modified Project. Those statistics are summarized below:

Socioeconomic Benefit	No-Highmount Alternative
1. Construction Jobs	1991 fewer person years
2. Construction Wages	$95 million less
3. Construction Costs	$182 million less invested
4. Total Economic Output	$351 million less
5. Construction Tax Revenue	$8.4 million less
6. New Full Time Jobs	274 fewer
7. New Part Time Jobs	84 fewer
8. Wages	$20 million less
9. Property & School Tax Revenue	$1.8 million less
10. State and County Sales Tax Revenues	$2.5 million less

4. Comparison of Alternatives Summary

The no-Highmount alternative provides no material benefits over the Modified Project for a number of the parameters evaluated above, and provides limited environmental benefit for a few of the parameters summaries above. At the same time, the no-Highmount alternative would result in the substantial reduction of socioeconomic benefits that would result from the Modified

Project alternative. Given the significant loss of socioeconomic benefits that would occur with the no-Highmount alternative as compared with the insignificant environmental impacts arising from the construction and operation of the Highmount Spa Resort, this alternative was rejected by the applicant and the Modified Project remains as the preferred alternative.

Based on the data and analysis detailed in the 2013 HVS feasibility study, the full Resort with the Highmount component is the only economically feasible approach to the development of the property. The 2013 study discerns between the Full Resort and Wildacres Only scenarios, and clearly demonstrates that the yield indicated for Wildacres Only scenario is below the threshold necessary for the project to receive serious investor consideration. For the numerous reasons elucidated in the study (but primarily due to economies of scale associated with the defraying of both construction and ongoing operating costs over the combined resort development), the only economically feasible approach to the development of the subject property calls for the construction of both resort components.

COMPARISON OF ALTERNATIVES INCLUDING THE NO-HIGHMOUNT ALTERNATIVE

Project Component	DEIS Project	SDEIS Modified Project	AIP Project Alternative	No Build Highmount Alternative
Total Project Site Size (Ac.)	1,960	739	739	603
Acreage To Be Developed	573	218	235	175
Acreage Added To Forest Preserve	0	1,189	1,189	1,189
Conservation Easement Lands (Ac.)	0	203	203	203
Number Of Lodging Structures	121	34	58	24
Hotel Lodging Units (#)	400	370	370	250
Detached Lodging Units (#)	351	259	259	163
Overall Density (Units/Acre)	0.38	0.85	0.85	0.69
Total Length Of Roads (Mi.)	8.2	1.41	2.6	1.31
Length Of Roads On >20% (Mi.)	5.1	0.1	1.1	0.07
Impervious Surfaces (Ac.)	85	21	27	18
Stormwater Management	Meets Current Design Manual/Individual NYSDEC SPDES Permit	Meets Current Design Manual/Individual NYSDEC SPDES Permit	Meets Current Design Manual/Individual NYSDEC SPDES Permit	Meets Current Design Manual/Individual NYSDEC SPDES Permit
Golf Courses	2	1	1	1
Golf Course Management	IPM	Organic	Organic	Organic
Water Supply (gpd)	251,000	145,200	145,200	105,300
Wastewater	private	municipal	municipal	municipal
Earthwork (cut/fill cy)	1,958,000	850,000	950,000	690,000
Geology and Topography	Blasting Required	Blasting Required	Blasting Required	Blasting Required
Surface Waters (stream crossings)	10	6	6	6
Groundwater Resources	Sufficient Aquifer Capacity	Sufficient Aquifer Capacity	Sufficient Aquifer Capacity	Sufficient Aquifer Capacity
Federal Wetlands	Nationwide Permit Required	No Impacts/Permit Required	No Impacts/Permit Required	No Impacts/Permit Required
Rare, Threatened & Endangered Species	No Impacts	No Impacts	No Impacts	No Impacts
Traffic (Design Peak Hour Trips)	455	343	343	213
Visual Impact on Forest Preserve	Big Indian Wilderness	Limited Wild Forest	Limited Wild Forest	Limited Wild Forest
Noise Impact on Forest Preserve	Big Indian Wilderness	None	None	None

COMPARISON OF ALTERNATIVES INCLUDING THE NO-HIGHMOUNT ALTERNATIVE

Local Land Use	Site Plan & Special Use Approvals	Site Plan & Special Use Approvals	Site Plan & Special Use Approvals	Site Plan & Special Use Approvals
Cultural Resources	No Adverse Effects	No Adverse Effects	No Adverse Effects	No Adverse Effects
Socioeconomic Benefits				
Construction Jobs (Direct & Indirect person years)	3879 (DEIS App'x 26 Table 3-2)	3988 (SDEIS App'x 3 Table 3.9.3-2)	3988	1997
Construction Wages (Direct & Indirect in millions)	*$145.49 (DEIS App'x 26 Table 3-2)	$191.34 (SDEIS App'x 3 Table 3.9.3-2)	$191.34	$96.33
Construction Cost (millions invested)	*241.0 (DEIS App'x 26 Table 3-1)	$364.72 (SDEIS App'x 3 Table 3.9.3-1)	$364.72	$182.53
Total Economic Output or Demand (Direct & Indirect from construction)	451.08 (DEIS App'x 26 Table 3-2)	$703.07 (SDEIS App'x 3 Table 3.9.3-2)	$703.07	$351.86
Tax Revenues from Construction (Direct & Indirect in millions)	*11.4 (DEIS App'x 26 Table 3-4)	$16.85 (SDEIS App'x 3 Table 3.9.3-2)	$16.85	$8.47
New Jobs Created full-time part-time	542 330 (DEIS App'x 26 Table 4-1)	541 230 (SDEIS App'x 3 Table 3.9.2-18)	541 230	267 146
Wages (Direct & Indirect in millions)	*27.93 (Appendix 26, Table 4-5)	$37.81 (SDEIS App'x 3 Table 3.9.3-5)	$37.81	$17.81
Property & School Tax Revenues (1)	*3.415 (DEIS App'x 26 pg 4-13)	$3.70 (SDEIS App'x 3 Table 3.9.3-11 &12)	$3.70	$1.85
State & County Sales Tax Revenues (2)	*2.167 (DEIS App'x 26 Table 4-7)	$6.10 (SDEIS App'x 3 Table 3.9.3-5)	$6.10	$3.63

1. Based on assessed value 10 years after the beginning of construction
2. Original DEIS Project did not including County Bed Taxes

* based on 2000-2001 dollars

FINAL APPROVAL & ADOPTION OF MAP

We, the undersigned, hereby certify that this map of real property in the Town of Middletown, County of Delaware, is adopted and approved for acquisition by the City of New York, pursuant to Title 5, Chapter 3, Subchapter 3, of the New York City Administrative Code.

Dated ______________ ______________________________
Deputy Mayor
City of New York

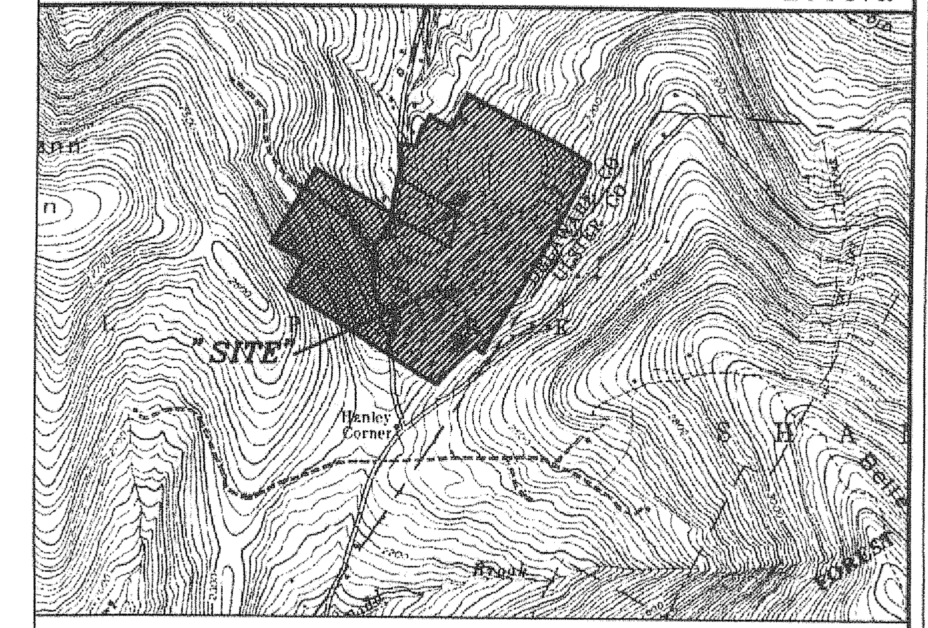
Dated ______________ ______________________________
Acting Commissioner, New York City
Department of Environmental Protection

Property Line Data		
LINE	BEARING	LENGTH
L41	S81°54'30"E	219.62'
L42	S85°45'19"E	14.55'
L43	N15°38'04"E	70.71'
L44	N01°45'32"W	19.69'
L45	N30°52'01"E	14.52'
L46	N22°38'58"E	36.79'
L47	N04°37'52"E	28.22'
L48	N14°08'39"E	19.80'
L49	N13°59'56"E	34.48'
L50	N23°20'12"E	32.89'
L51	N15°43'50"E	33.92'
L52	S69°21'42"E	28.98'
L53	N25°48'26"E	108.90'
L54	N29°01'05"E	57.67'
L55	S47°43'00"E	60.23'
L56	S57°15'42"E	45.32'
L57	S66°40'25"E	23.34'
L58	S59°15'03"E	83.58'
L59	S66°44'15"E	75.40'
L60	S70°45'23"E	44.12'
L61	N23°50'28"E	10.78'
L62	N08°48'20"E	10.06'
L63	N32°56'32"E	29.12'

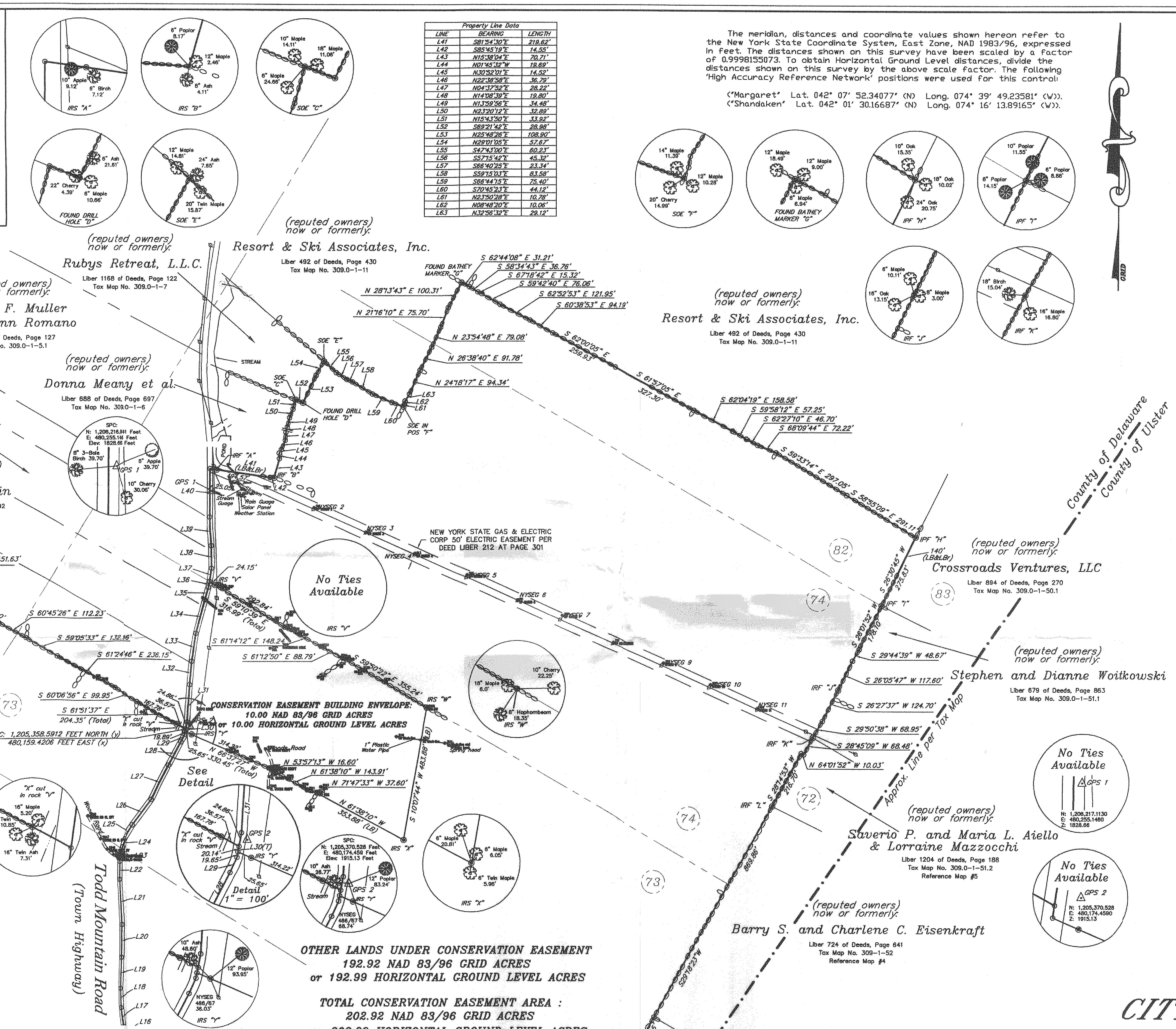
The meridian, distances and coordinate values shown hereon refer to the New York State Coordinate System, East Zone, NAD 1983/96, expressed in feet. The distances shown on this survey have been scaled by a factor of 0.9998155073. To obtain Horizontal Ground Level distances, divide the distances shown on this survey by the above scale factor. The following 'High Accuracy Reference Network' positions were used for this control:

("Margaret" Lat. 042° 07' 52.34077" (N) Long. 074° 39' 49.23581" (W)).
("Shandaken" Lat. 042° 01' 30.16687" (N) Long. 074° 16' 13.89165" (W)).

LOCATION MAP SCALE 1inch=2000ft.



QUADRANGLE NAME: FLEISCHMANNS 7.5 MINUTE SERIES



THIS IS PART 1 OF THE BASELINE DOCUMENTATION REFERRED TO IN THE CONSERVATION EASEMENT

PART 1 SURVEY
PART 2 ORTHOPHOTOGRAPH WITH PLANIMETRIC OVERLAY
PART 3 BASELINE DOCUMENTATION MAP
PART 4 GROUND PHOTOGRAPHS

LEGEND

IRS	5/8" Iron Rod set capped "NYCDEP & RETTEW P.C."
IRF	Iron Rod Found
IPF	Iron Pipe Found
POS	Pile of Stones
SOE	Stone on End
	Utility Pole
	Utility line
	Stone Wall
	Wire Fence
	Fence Post
	Angle Point Property Line
	Drainage Flow
	Sanitary sewer
	Adjoining Property Line
	Right of Way Limits
M/R	Measured/Record Distance
	stream
(LB)	Property Line Blazed
(LBr)	Property Line Brushed
(33)	Lot Number in the Banyar Patent

Center Line Road Data			Center Line Road Data		
LINE	BEARING	LENGTH	LINE	BEARING	LENGTH
L1	N06°23'09"W	38.87'	L21	N03°18'32"W	162.16'
L2	N09°35'14"W	84.18'	L22	N00°25'24"E	64.42'
L3	N03°15'38"W	40.43'	L23	N12°46'03"E	53.16'
L4	N05°04'47"E	70.05'	L24	N23°07'03"E	31.00'
L5	N16°31'24"E	90.77'	L25	N31°45'40"E	59.05'
L6	N21°46'28"E	95.05'	L26	N36°59'51"E	114.92'
L7	N15°35'05"E	53.52'	L27	N28°05'47"E	139.60'
L8	N01°03'38"W	39.76'	L28	N27°34'32"E	95.18'
L9	N16°07'32"W	25.90'	L29	N08°06'59"E	41.17'
L10	N33°03'47"W	37.47'	L30	N08°06'59"E	11.08'
L11	N48°38'39"W	51.14'	L31	N08°06'59"E	156.39'
L12	N54°45'39"W	91.20'	L32	N05°01'31"E	84.05'
L13	N52°43'00"W	66.14'	L33	N09°46'09"E	102.90'
L14	N43°35'47"W	56.58'	L34	N15°47'19"E	125.46'
L15	N29°41'03"W	57.06'	L35	N13°56'28"E	47.36'
L16	N16°45'27"W	50.34'	L36	N08°26'03"E	21.09'
L17	N09°17'51"W	68.26'	L37	N08°26'03"E	48.62'
L18	N02°19'50"W	69.40'	L38	N00°31'01"W	81.54'
L19	N02°26'19"E	111.13'	L39	N03°12'09"W	103.30'
L20	N00°48'20"E	118.46'	L40	N00°30'50"E	172.73'

REVISION DATE:	TYPE	BY:
~~July 22, 2008~~	~~CDFA~~	~~DAF~~

RETTEW
RETTEW Engineering & Surveying, P.C.
Main St., PO Box 808, Margaretville, NY 12455
Phone (845) 586-2400 · Fax (845) 586-3366
Email: rettew@rettew.com
Website: www.rettew.com

Engineers · Planners · Surveyors · Landscape Architects
Environmental Consultants · IT Consultants

Sect. No.	Block No.	Lot No.	Owner	Tax Map Acres	Surveyed Acres (HGL)	Conservation Easement Building Envelope (HGL)	Other Lands Under Conservation Easement (HGL)	Total Conservation Easement	Acquisition Date	ASSESSED VALUATIONS 2006–2007 Land Only	2006–2007 Improved	2007–2008 Land Only	2007–2008 Improved	2008–2009 Land Only	2008–2009 Improved
309.0	1	56	Crossroads Ventures, LLC	203.03	202.99	10.00	192.99	202.99		142,600	142,600	142,600	142,600	142,600	142,600

NOTES:

1. Subject to all legally enforceable covenants, easements, restrictions, conditions and agreements of record.
2. This survey was prepared for the parties and purpose indicated hereon. Any extension of the use beyond the purpose agreed to between the client and the surveyor exceeds the scope of the engagement.
3. Any certification expressed or implied hereon applies only to the individuals, agencies, associations, and/or corporations explicitly listed and is invalid without the signature and embossed seal or original of the inked seal of the licensed land surveyor.
4. Any unauthorized alteration or addition to a survey map bearing the signature and seal of a licensed land surveyor is a violation of Sec. 7209-A, Subdivision 2, of the New York State Education Law.
5. This map may be affected by instruments which have not been made known to these surveyors. Users of this map should verify title with competent title examiners.
6. Subject to any right, title or interest the Town of Middletown or the public may have to the bounds of the existing roadway within the surveyed parcel.
7. Underground improvements, easements and/or encroachments that may exist, but are neither visible during normal field operations nor described in the instruments provided to these surveyors, will not be shown on the survey.
8. Rod set is made of 5/8" dia. iron reinforcing rod with an approximate length of 30" and capped with an aluminum cap inscribed with NYCDEP/RETTEW P.C.
9. Users should be aware that this sheet is one of a multi sheet set. Information on the other sheets is integral to this survey.

REFERENCE MAPS:

1. " Boundary Survey of Lands of Jacab Adelstein & Others", prepared by Rettew Engineering and Surveying, PC, dated September 1, 1999.
2. "Survey Map of Lands to be Conveyed to Belleayre Estate, Inc.", prepared by Robert W. Allison Sr., PC, dated May 6, 1988.
3. Survey Map of Lands of Stanley M. Krebushevski", prepared by Catskill Mountain Surveying Services, dated July 12, 1995.
4. "Map Showing Two Lot Subdivision of Lands of Herman J. Ruhe & Marie A. Ruhe", prepared by David C. Dunham, and filed in the Ulster County Clerks office at #8208.
5. "Map of Lands of Thomas & Pauline Vos", prepared by Bruce A. LaMonda, dated August 5, 1984.

TAX PARCEL NUMBER:

Town of Middletown, Delaware County, New York
Section 309.0, Block 1, Lot 56

DEED REFERENCES:

Jacob Adelstein, Sidney Adelstein, Joel Adelstein and Sylvia Davis
----- to -----
Crossroads Ventures, L.L.C.
Deed: Liber 896 Page 260
Dated: 22, September 1999
Recorded: 05, October 1999

CITY OF NEW YORK

DEPARTMENT OF ENVIRONMENTAL PROTECTION

LAND ACQUISITION SURVEY

IN THE MATTER OF ACQUIRING A CONSERVATION EASEMENT ON LANDS OF
Crossroads Ventures, L.L.C.
REAL PROPERTY LOCATED IN THE
TOWN OF MIDDLETOWN COUNTY OF DELAWARE
NEW YORK

SCALE 1in.= 200ft.

200 0 100 200 400 800

DRAFT

We hereby certify that the survey shown hereon was completed by us on June 29, 2009 and that this map was completed on June 30, 2009 and that this survey has been prepared in accordance with the existing Code of Practice for Land Surveys adopted by The New York State Association of Professional Land Surveyors, Inc.

RETTEW ENGINEERING & SURVEYING, P.C.

by ______________________________

ROBERT W. ALLISON SR.
NEW YORK STATE LICENSED LAND SURVEYOR
LICENSE No. 49711
DANIEL A. FANCHER
NEW YORK STATE LICENSED LAND SURVEYOR
LICENSE No. 50422

JUNE 30, 2009 SHEET 1 OF 2

LAND ACQUISITION I.D. NO. 5522 TAX MAP ID# 309.0-1-56 09-02858-026

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Dated ____________ ______________________
Deputy Mayor
City of New York

Dated ____________ ______________________
Acting Commissioner, New York City
Department of Environmental Protection

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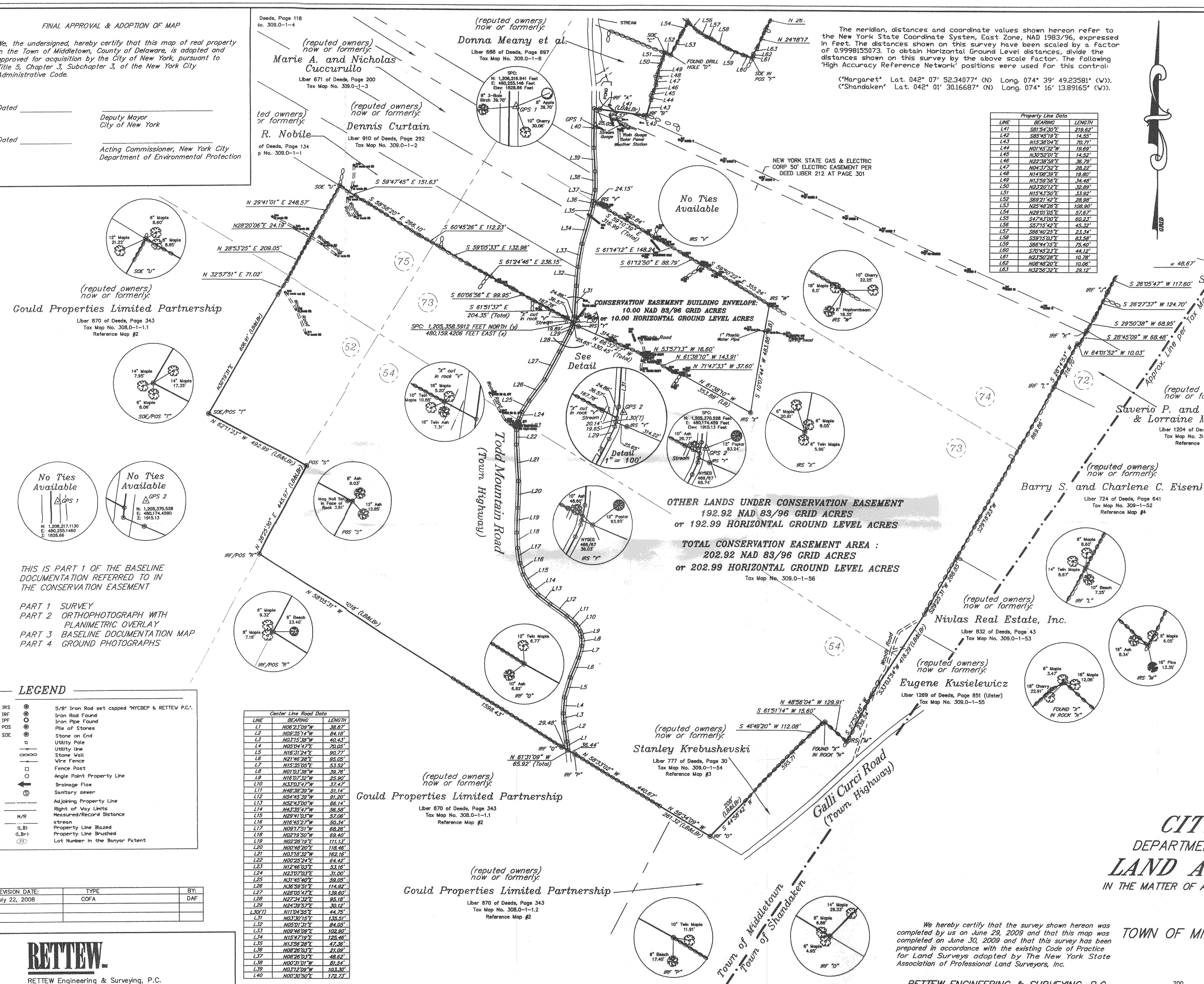

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REVISION DATE:	TYPE	BY:
July 22, 2008	COFA	DAF

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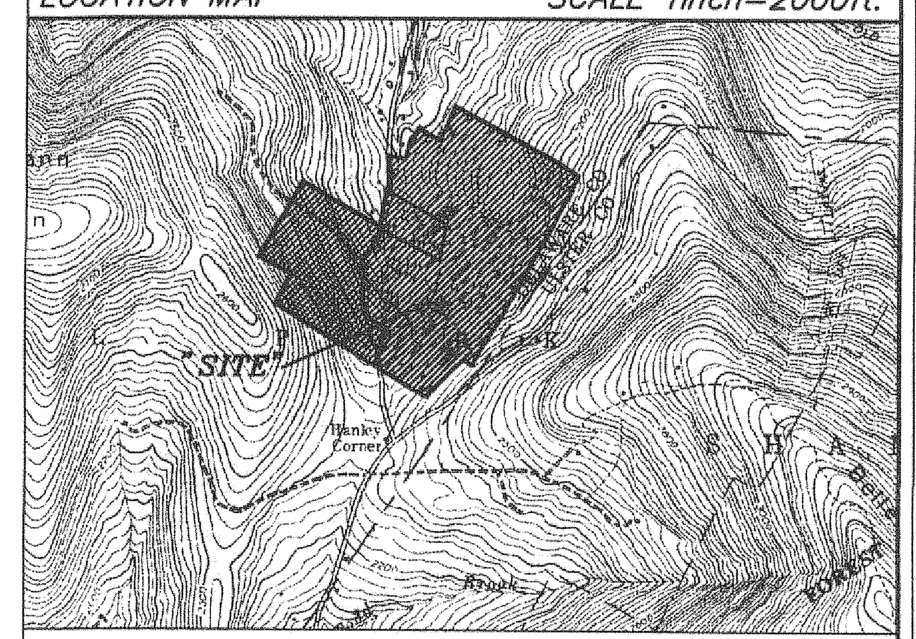
L13	N52°43'00"W	66.14'
L14	N43°35'47"W	56.58'
L15	N29°41'03"W	57.06'
L16	N16°45'27"W	50.34'
L17	N09°17'51"W	68.26'
L18	N02°19'50"W	69.40'
L19	N02°26'19"E	111.13'
L20	N00°48'20"E	118.46'
L21	N03°18'32"W	162.16'
L22	N00°25'24"E	64.42'
L23	N12°46'03"E	53.16'
L24	N23°07'03"E	31.00'
L25	N31°45'40"E	59.05'
L26	N36°59'51"E	114.92'
L27	N28°05'47"E	139.60'
L28	N27°34'32"E	95.18'
L29	N24°39'57"E	30.12'
L30(T)	N11°04'55"E	44.75'
L31	N03°30'15"E	135.51'
L32	N05°01'31"E	84.05'
L33	N09°46'09"E	102.90'
L34	N15°47'19"E	125.46'
L35	N13°56'28"E	47.36'
L36	N08°26'03"E	21.09'
L37	N08°26'03"E	48.62'
L38	N00°31'01"W	81.54'
L39	N03°12'09"W	103.30'
L40	N00°30'50"E	172.73'

Property Line Data

LINE	BEARING	LENGTH
L41	S81°54'30"E	219.62'
L42	S85°45'19"E	14.55'
L43	N15°38'04"E	70.71'
L44	N01°45'32"W	19.69'
L45	N30°52'01"E	14.52'
L46	N22°38'58"E	36.79'
L47	N04°37'52"E	28.22'
L48	N14°08'39"E	19.80'
L49	N13°59'56"E	34.48'
L50	N23°20'12"E	32.89'
L51	N15°43'50"E	33.92'
L52	S69°21'42"E	28.98'
L53	N25°48'26"E	108.90'
L54	N29°01'05"E	57.67'
L55	S47°43'00"E	60.23'
L56	S57°15'42"E	45.32'
L57	S66°40'25"E	23.34'
L58	S59°15'03"E	83.58'
L59	S66°44'15"E	75.40'
L60	S70°45'23"E	44.12'
L61	N23°50'28"E	10.78'
L62	N08°48'20"E	10.06'
L63	N32°56'32"E	29.12'

LOCATION MAP SCALE 1inch=2000ft.



QUADRANGLE NAME: FLEISCHMANNS 7.5 MINUTE SERIES

NOTES:

1. Subject to all legally enforceable covenants, easements, restrictions, conditions and agreements of record.
2. This survey was prepared for the parties and purpose indicated hereon. Any extension of the use beyond the purpose agreed to between the client and the surveyor exceeds the scope of the engagement.
3. Any certification expressed or implied hereon applies only to the individuals, agencies, associations, and/or corporations explicitly listed and is invalid without the signature and embossed seal or original of the inked seal of the licensed land surveyor.
4. Any unauthorized alteration or addition to a survey map bearing the signature and seal of a licensed land surveyor is a violation of Sec. 7209-A, Subdivision 2, of the New York State Education Law.
5. This map may be affected by instruments which have not been made known to these surveyors. Users of this map should verify title with competent title examiners.
6. Subject to any right, title or interest the Town of Middletown or the public may have to the bounds of the existing roadway within the surveyed parcel.
7. Underground improvements, easements and/or encroachments that may exist, but are neither visible during normal field operations nor described in the instruments provided to these surveyors, will not be shown on the survey.
8. Rod set is made of 5/8" dia. iron reinforcing rod with an approximate length of 30" and capped with an aluminum cap inscribed with NYCDEP/RETTEW P.C.
9. Users should be aware that this sheet is one of a multi sheet set. Information on the other sheets is integral to this survey.

REFERENCE MAPS:

1. " Boundary Survey of Lands of Jacab Adelstein & Others", prepared by Rettew Engineering and Surveying, PC, dated September 1, 1999.
2. "Survey Map of Lands to be Conveyed to Belleayre Estate, Inc.", prepared by Robert W. Allison Sr., PC, dated May 6, 1988.
3. Survey Map of Lands of Stanley M. Krebushevski", prepared by Catskill Mountain Surveying Services, dated July 12, 1995.
4. "Map Showing Two Lot Subdivision of Lands of Herman J. Ruhe & Marie A. Ruhe", prepared by David C. Dunham, and filed in the Ulster County Clerks office at #8208.
5. "Map of Lands of Thomas & Pauline Vos", prepared by Bruce A. LaMonda, dated August 5, 1984.

TAX PARCEL NUMBER:

Town of Middletown, Delaware County, New York
Section 309.0, Block 1, Lot 56

DEED REFERENCES:

Jacob Adelstein, Sidney Adelstein, Joel Adelstein and Sylvia Davis
----- to -----
Crossroads Ventures, L.L.C.
Deed: Liber 896 Page 260
Dated: 22, September 1999
Recorded: 05, October 1999

CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
LAND ACQUISITION SURVEY
IN THE MATTER OF ACQUIRING A CONSERVATION EASEMENT ON LANDS OF
Crossroads Ventures, L.L.C.
REAL PROPERTY LOCATED IN THE
TOWN OF MIDDLETOWN COUNTY OF DELAWARE
NEW YORK
SCALE 1in.= 200ft.

200 0 100 200 400 800

We hereby certify that the survey shown hereon was completed by us on June 29, 2009 and that this map was completed on June 30, 2009 and that this survey has been prepared in accordance with the existing Code of Practice for Land Surveys adopted by The New York State Association of Professional Land Surveyors, Inc.

RETTEW ENGINEERING & SURVEYING, P.C.

by ______________________

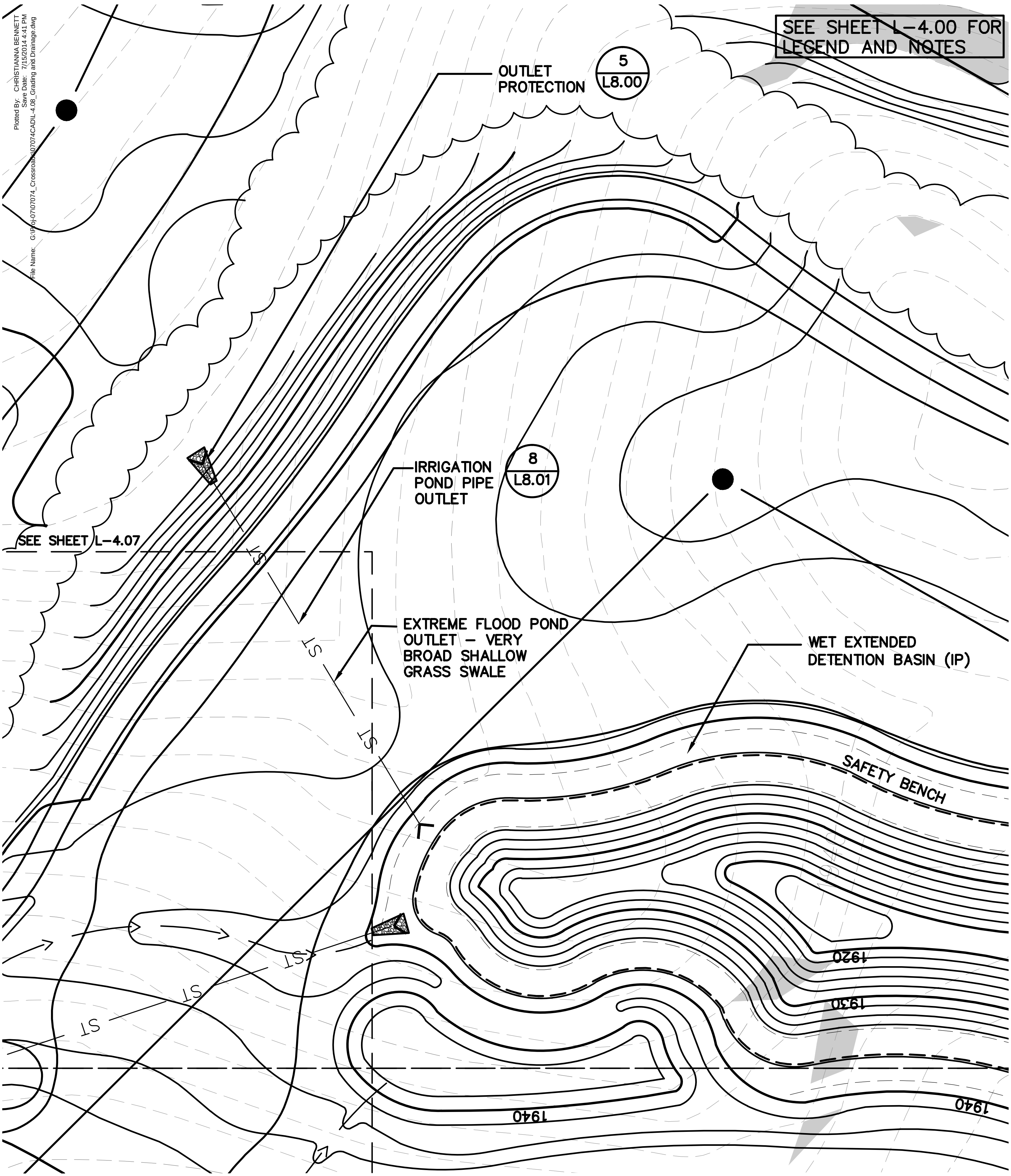
ROBERT W. ALLISON SR.
NEW YORK STATE LICENSED LAND SURVEYOR
LICENSE No. 49711
DANIEL A. FANCHER
NEW YORK STATE LICENSED LAND SURVEYOR
LICENSE No. 50422

Sect. No.	Block No.	Lot No.	Owner	Tax Map Acres	Surveyed Acres (HGL)	Conservation Easement Building Envelope (HGL)	Other Lands Under Conservation Easement (HGL)	Total Conservation Easement	Acquisition Date	ASSESSED VALUATIONS 2006–2007 Land Only	2006–2007 Improved	2007–2008 Land Only	2007–2008 Improved	2008–2009 Land Only	2008–2009 Improved
309.0	1	56	Crossroads Ventures, LLC	203.03	202.99	10.00	192.99	202.99		142,600	142,600	142,600	142,600	142,600	142,600

JUNE 30, 2009 SHEET 2 OF 2

LAND ACQUISITION I.D. NO. 5522 TAX MAP ID# 309.0-1-56 09-02858-026

RETTEW.
RETTEW Engineering & Surveying, P.C.
Main St., PO Box 808, Margaretville, NY 12455
Phone (845) 586-2400 · Fax (845) 586-3366
Email: rettew@rettew.com
Website: www.rettew.com
Engineers · Planners · Surveyors · Landscape Architects
Environmental Consultants · IT Consultants



The Modified Belleayre Resort at Catskill Park

Grading & Drainage Plan

Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

July 2014

SCALE : 1" = 50'
(8.5" x 11")

the LA group
Landscape Architecture and Engineering, PC
www.thelagroup.com

Map Symbol	Series Name	Slope Range(%)	Hydrologic Group	Clay Content (%)	Depth to Bedrock (in.)	Seasonal High Groundwater (ft.)	Erosion Potential (K)
EkB	Elka Silt Loam	0-8	C	7-15	>60	>6	0.24
EkC	Elka Silt Loam	8-15	C	7-15	>60	>6	0.24
EkD	Elka Silt Loam	15-25	C	7-15	>60	>6	0.24
HrB	Halcott _Rock Outcrop	0-8	C/D	7-27	0-20	>6	0.24
HrD	Halcott _Rock Outcrop	15-25	C/D	7-27	0-20	>6	0.24
HrE	Halcott _Rock Outcrop	25-45	C/D	7-27	0-20	>6	0.24
HrF	Halcott _Rock Outcrop	>25	C/D	7-27	0-20	>6	0.24
HuF	Halcott-Udorthents very rocky	>25	C/D	7-27	0-40	>6	0.20-0.24
HvB	Halcott-Vly Complex	0-8	C/D	7-27	0-40	>6	0.20-0.24
HvC	Halcott-Vly Complex	8-15	C/D	7-27	0-40	>6	0.20-0.24
HvD	Halcott-Vly Complex	15-25	C/D	7-27	0-40	>6	0.20-0.24
HvE	Halcott-Vly Complex	25-45	C/D	7-27	0-40	>6	0.20-0.24
HvF	Halcott-Vly Complex	>25	C/D	7-27	0-40	>6	0.20-0.24
LdB	Lairdsville Silty Clay Loam	0-8	D		20-40		
LeB	Lewbeach Channery Silt Loam	0-8	C	1-18	>60	2-4 perced Mar-May	0.24
LeC	Lewbeach Channery Silt Loam	8-15	C	1-18	>60	2-4 perced Mar-May	0.24
LeD	Lewbeach Channery Silt Loam	15-25	C	1-18	>60	2-4 perced Mar-May	0.24
LeF	Lewbeach Channery Silt Loam	>25	C	1-18	>60	2-4 perced Mar-May	0.24
OsB	Onteora-Suny Complex	0-8	C/D	1-18	>60	0-1.5 perced Nov-Apr	0.24-0.28
OsC	Onteora-Suny Complex	8-15	C/D	1-18	>60	0-1.5 perced Nov-Apr	0.24-0.28
RB	Rubble Land	varies	D	0	>60	>6	N/A
TkB	Tunkhannock Very Channery Loam	0-8	A	10-20	>60	>6	0.24
TkC	Tunkhannock Very Channery Loam	8-15	A	10-20	>60	>6	0.24
VeD	Vly-Elka Complex	15-25	C	7-27	20->60	>6	0.20-0.24
VeF	Vly-Elka Complex	>25	C	7-27	20->60	>6	0.20-0.24
VhB	Vly-Halcott Complex	0-8	C/D	7-27	0-40	>6	0.20-0.24
VhC	Vly-Halcott Complex	8-15	C/D	7-27	0-40	>6	0.20-0.24
VhD	Vly-Halcott Complex	15-25	C/D	7-27	0-40	>6	0.20-0.24
VhF	Vly-Halcott Complex	>25	C/D	7-27	0-40	>6	0.20-0.24
VyB	Vly Channery Silt Loam	0-8	C	7-27	20-40	>6	0.2
VyC	Vly Channery Silt Loam	8-15	C	7-27	20-40	>6	0.2
VyD	Vly Channery Silt Loam	15-25	C	7-27	20-40	>6	0.24
VyE	Vly Channery Silt Loam	25-45	C	7-27	20-40	>6	0.24
WlB	Willowemoc Channery Silt Loam	0-8	C	1-18	>60	1.5-2 perced Oct-May	0.24
WlC	Willowemoc Channery Silt Loam	8-15	C	1-18	>60	1.5-2 perced Oct-May	

=TEST PIT LOCATION

0 40 80 160

SCALE: 1"=80'

the LA group
Landscape Architecture and Engineering, PC
40 Long Alley
Saratoga Springs
New York 12866
P 518/587-8100
F 518/587-0180
www.thelagroup.com

Design

Drawn JTS/MRT

Checked KJF/SJA

This drawing is not certified for the purposes of construction, unless it is specifically noted as issued for construction.

Submission:

FOR REGULATORY APPROVALS ONLY

PREPARED FOR:
Crossroads Ventures, L.L.C.
PO Box 267
Mt. Tremper, NY 12457

The Modified Belleayre Resort at Catskill Park

Supplemental Draft Environmental Impact Statement

Title
Test Pit Locations, Front 9 Village, Wildacres

NORTH

Revisions

Project: 07074
Date: 03/30/2011

Drawing
1-5

Soil Test Pit Logs for the Front-9 Section of Wildacres

<u>Test pit WA119:</u>

Oe horizon: 0 to 2 inches, black (10YR2/1) mucky silt loam duff layer
E horizon: 2 to 3 inches, light gray (10YR7/2) gravelly silt loam
Bw1 horizon: 3 to 10 inches, (5YR4/6) yellowish red channery* silt loam with common small flagstones.
Bw2 horizon: 10 to 16 inches, brown (7.5YR 4/4) very channery silt loam with common flagstones of varying sizes.
Bw3 horizon: 16 to 38 inches, firm, dark yellowish brown (10YR 4/4) very channery silt loam with many flagstones.
Bx horizon**: 38 to 72 inches, very firm, brown (7.5YR 4/4) very channery silt loam, many flagstones.
R horizon: 72+ fractured sandstone and silt stone over hard bedrock.

*channers are elongated thin gravel fragments derived from shale and silt and sandstone, as opposed to typical gravel which is rounded or at least irregularly shaped.
**The Bx horizon designates the beginning of the fragipan.

There are no seeps and no mottles, however the Bx horizon is very firm and essentially impervious. A deep "perc" test exceeded one hour.
Percolation rate @ 26 inches is: 5 minutes 35 seconds (5:35)
Soil Series: Lewbeach

<u>Test pit WA122:</u>

Ap horizon: 0 to 5 inches, dark brown (10YR3/3) very channery silt loam, with common flagstones and boulders.
Bw1 horizon: 5 to 19 inches, brown (7.5YR4/4) very channery silt loam with common flagstones.
Bw2 horizon: 19 to 34 inches, dark yellowish brown (10YR 4/4) very channery silt loam with many flagstones of varying sizes.
Bx horizon: 34 to 58 inches, very firm, brown (7.5YR 4/4) very channery silt loam, many flagstones and boulders.
Cd horizon: 58 to 84 inches, very firm layers of sand and gravel.

There are no seeps and no mottles, however the Bx horizon is very firm and essentially impervious.
Percolation rate @ 18 inches is: 9 minutes 30 seconds (9:30)
Soil Series: Lewbeach

<u>Test pit WA Pond 3:</u>

Oe horizon: 0 to 4 inches, black (10YR2/1) mucky silt loam duff layer
E horizon: 4 to 6 inches, light gray (10YR7/2) gravelly silt loam
Bw1 horizon: 6 to 16 inches, (7.5YR 6/8) reddish yellowish very channery fine sandy loam with common small boulders.

Bw2 horizon: 16 to 26 inches, yellowish brown (10YR 5/4) very channery fine sandy loam with some small boulders.
Bx horizon: 26 to 42 inches, very firm, grayish brown (2.5Y 5/2) very bouldery loam Cd horizon: 42 to 86+ inches, very firm, brown (2.5Y 5/2) very channery loam.

There are no seeps and no mottles, however the Bx horizon is very firm and essentially impervious. This location was investigated as a future location for pond construction, no percolation test was run. These impervious hardpan soils should make successful ponds.
Soil Series: Lewbeach

<u>Test pit DP108:</u> (Wildacres 9-05-02)

Oe horizon: 0 to 10 inches, black (10YR2/1) fibrous organic duff layer mixed in a near pavement of large flagstones and boulders.
Bw1 horizon: 10 to 34 inches, reddish brown (5YR 4/4) very channery silt loam with common mixed flagstones.
Bw2 horizon: 34 to 55 inches, reddish brown (5YR 5/4) very channery loam, slightly firm, with many flagstones of varying sizes.
C horizon: 55 to 60+ inches, reddish brown (7.5YR 4/4) very channery silt loam, many flagstones and mixed gravel.

There are no seeps and no mottles. Percolation rate @ 60 inches: 4:00 minutes

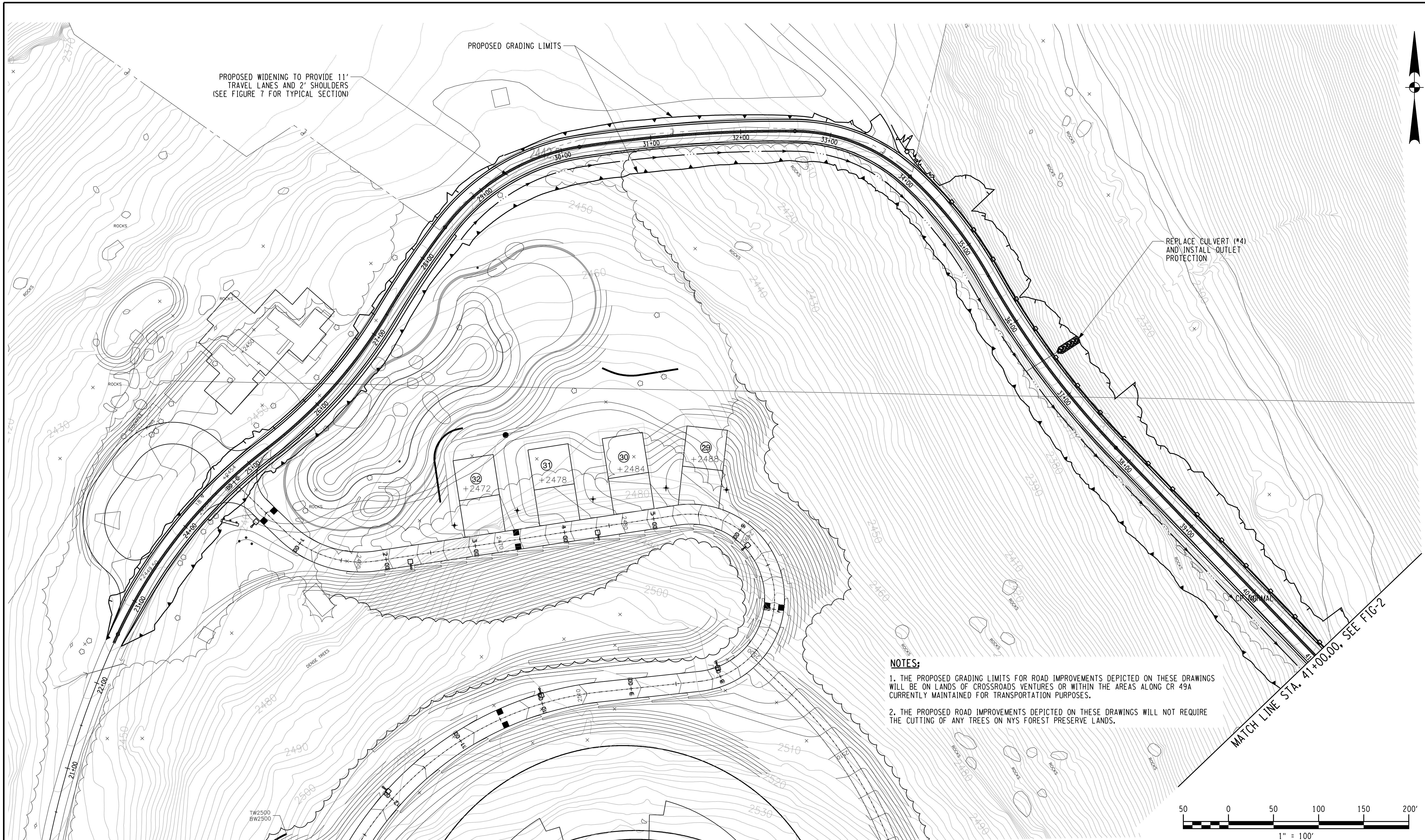
Soil Series: Elka

<u>Test pit DP110:</u> (Wildacres 9-4-02)

Oe horizon: 0 to 2 inches, black (10YR2/1) mucky silt loam duff layer
E horizon: 2 to 3 inches, light gray (10YR7/2) gravelly silt loam
Bw1 horizon: 3 to 10 inches, (5YR4/6) yellowish red channery silt loam with common small flagstones.
Bw2 horizon: 10 to 30 inches, firm, dark yellowish brown (10YR 4/4) very channery silt loam with many flagstones, common fine faint mottles in the lower part.
Bx horizon: 30 to 72 inches, very firm, brown (7.5YR 4/4) very channery silt loam, many flagstones.

There are mottles @ 24 to 30 inches. The Bx horizon is very firm and essentially impervious

Soil Series: Willowemoc



NOTES:

1. THE PROPOSED GRADING LIMITS FOR ROAD IMPROVEMENTS DEPICTED ON THESE DRAWINGS WILL BE ON LANDS OF CROSSROADS VENTURES OR WITHIN THE AREAS ALONG CR 49A CURRENTLY MAINTAINED FOR TRANSPORTATION PURPOSES.

2. THE PROPOSED ROAD IMPROVEMENTS DEPICTED ON THESE DRAWINGS WILL NOT REQUIRE THE CUTTING OF ANY TREES ON NYS FOREST PRESERVE LANDS.

GENERAL PLAN
C.R. 49A IMPROVEMENTS

The Modified Belleayre Resort at Catskill Park
Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

Creighton Manning

PROJECT: 99-057 | DATE: 1/14 | FIGURE: 1

FILE NAME : F:\Projects\1999\99-057\d\2009\cadd\dgn\99_057_grp_01.dgn
DATE/TIME : 1/15/2014
USER : dborjas

NOTES:

1. THE PROPOSED GRADING LIMITS FOR ROAD IMPROVEMENTS DEPICTED ON THESE DRAWINGS WILL BE ON LANDS OF CROSSROADS VENTURES OR WITHIN THE AREAS ALONG CR 49A CURRENTLY MAINTAINED FOR TRANSPORTATION PURPOSES.

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GENERAL PLAN
C.R. 49A IMPROVEMENTS

The Modified Belleayre Resort at Catskill Park
Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

Creighton Manning

PROJECT: 99-057 | DATE: 1/14 | FIGURE: 2

FILE NAME : F:\Projects\1999\99-057d\2009\cadd\dgn\99_057_gnp_02.dgn
DATE/TIME : 1/15/2014
USER : dborjas

NOTES:

1. THE PROPOSED GRADING LIMITS FOR ROAD IMPROVEMENTS DEPICTED ON THESE DRAWINGS WILL BE ON LANDS OF CROSSROADS VENTURES OR WITHIN THE AREAS ALONG CR 49A CURRENTLY MAINTAINED FOR TRANSPORTATION PURPOSES.

2. THE PROPOSED ROAD IMPROVEMENTS DEPICTED ON THESE DRAWINGS WILL NOT REQUIRE THE CUTTING OF ANY TREES ON NYS FOREST PRESERVE LANDS.

GENERAL PLAN
C.R. 49A IMPROVEMENTS

The Modified Belleayre Resort at Catskill Park
Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

Creighton Manning

PROJECT: 99-057	DATE: 1/14	FIGURE: 3

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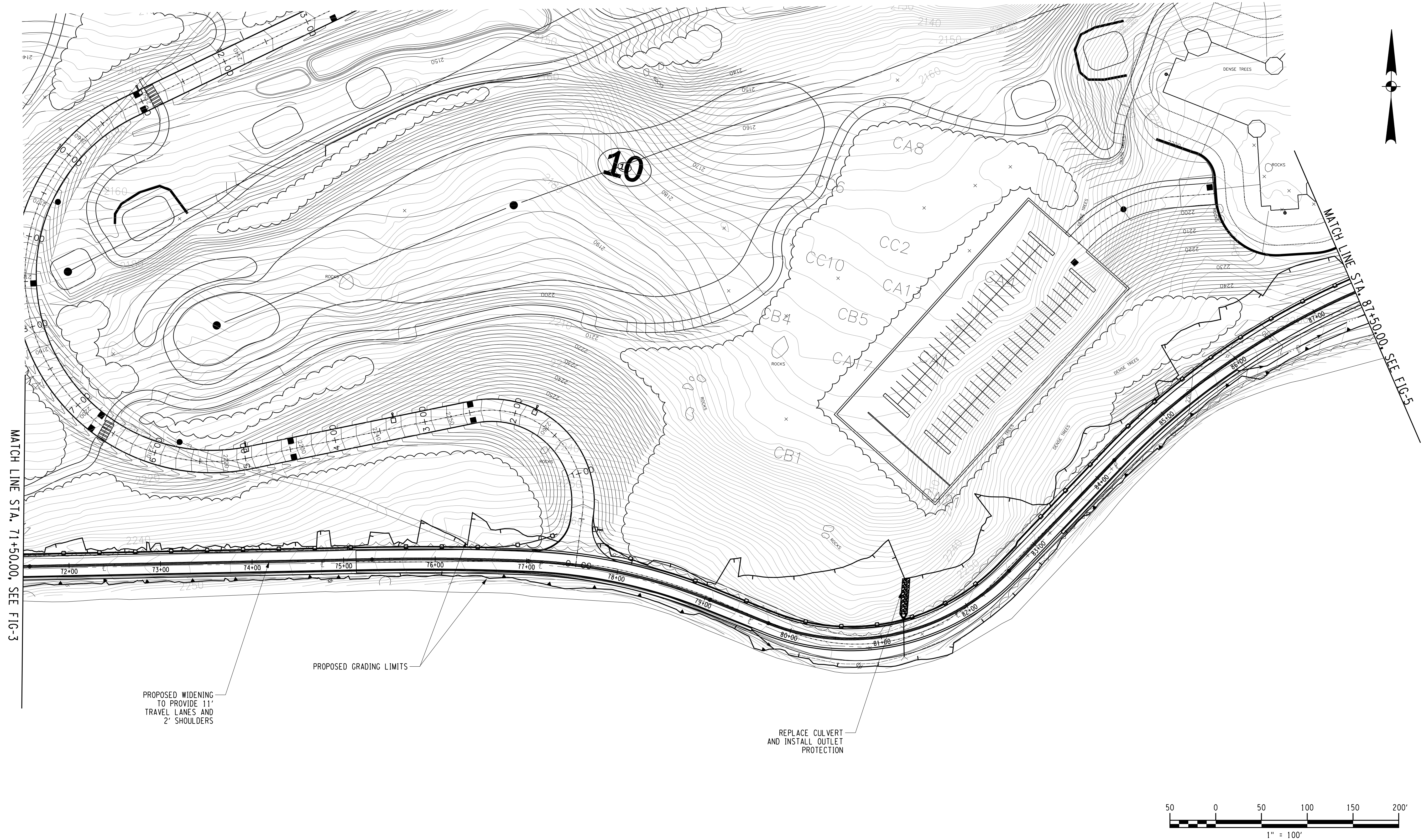
USER : dborjas



NOTES:

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GENERAL PLAN
C.R. 49A IMPROVEMENTS

The Modified Belleayre Resort at Catskill Park
Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

Creighton Manning

PROJECT: 99-057	DATE: 1/14	FIGURE: 4

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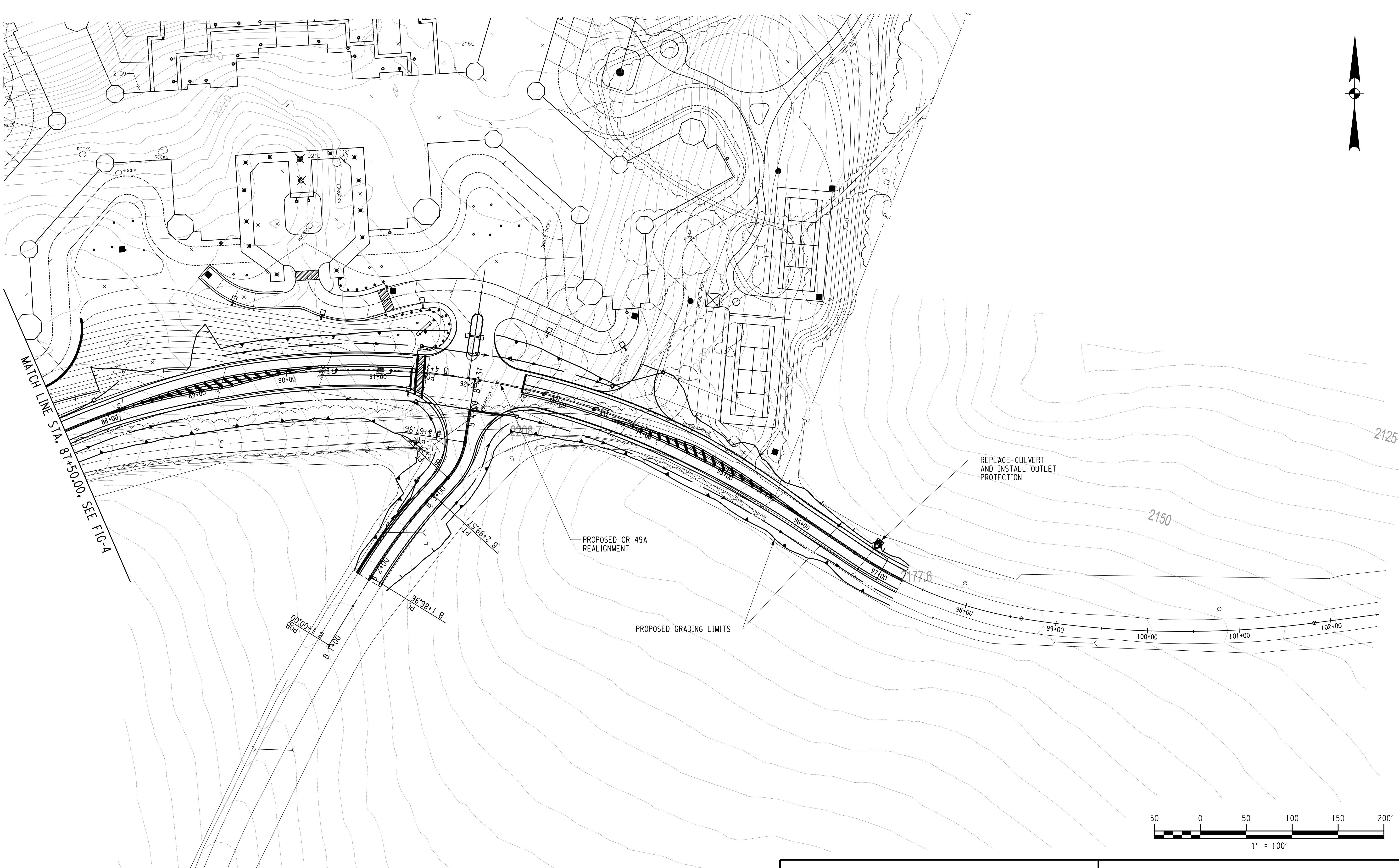
DATE/TIME : 1/15/2014
USER : dborjes



NOTES:

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GENERAL PLAN C.R. 49A IMPROVEMENTS	Creighton Manning
The Modified Belleayre Resort at Catskill Park Wildacres Resort & The Highmount Spa Resort Town of Shandaken & Town of Middletown, New York	PROJECT: 99-057 · DATE: 1/14 · FIGURE: 5

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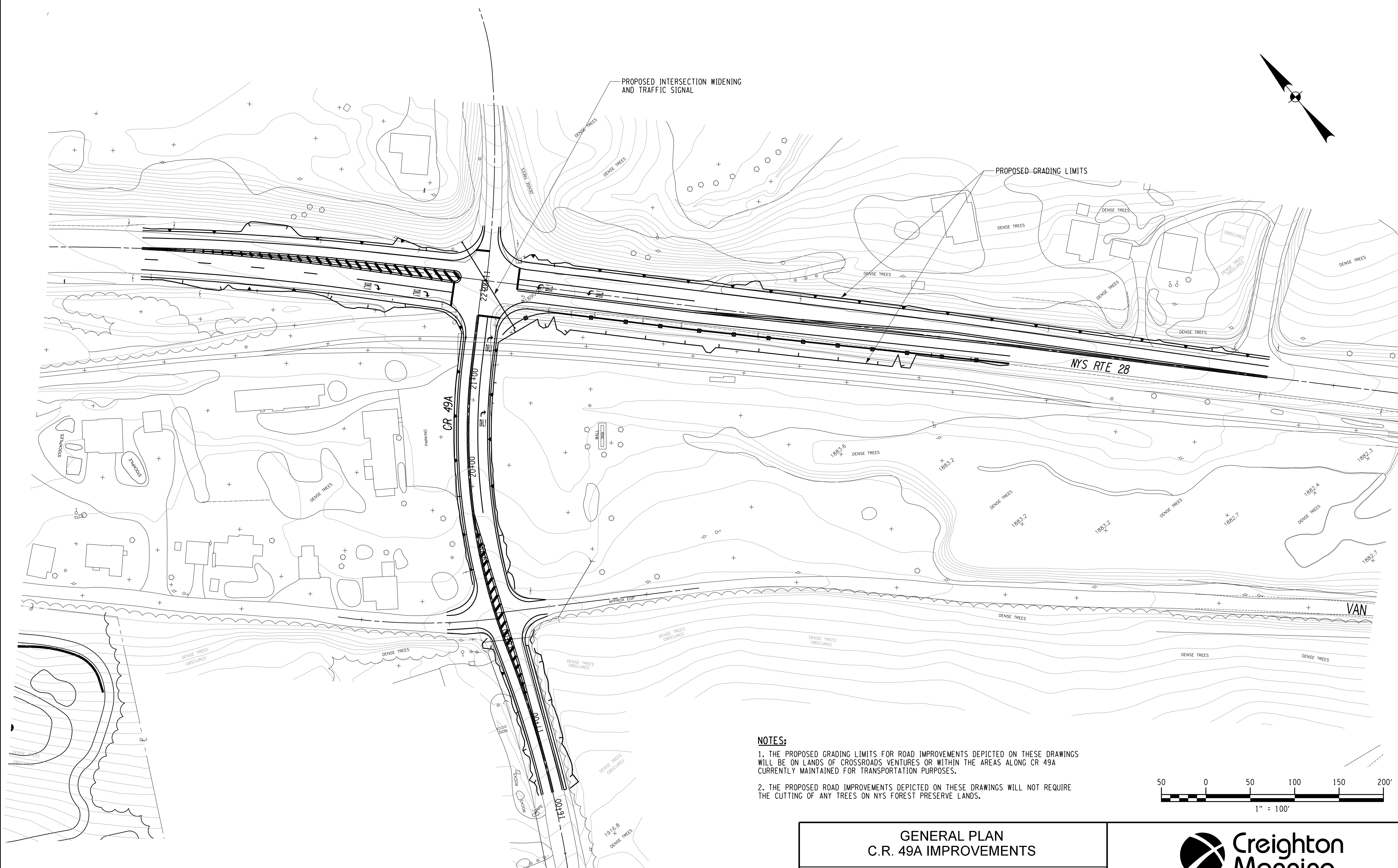
DATE/TIME : 1/15/2014
USER : dborjes



NOTES:

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GENERAL PLAN
C.R. 49A IMPROVEMENTS

The Modified Belleayre Resort at Catskill Park
Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

Creighton Manning

PROJECT: 99-057 | DATE: 1/14 | FIGURE: 6

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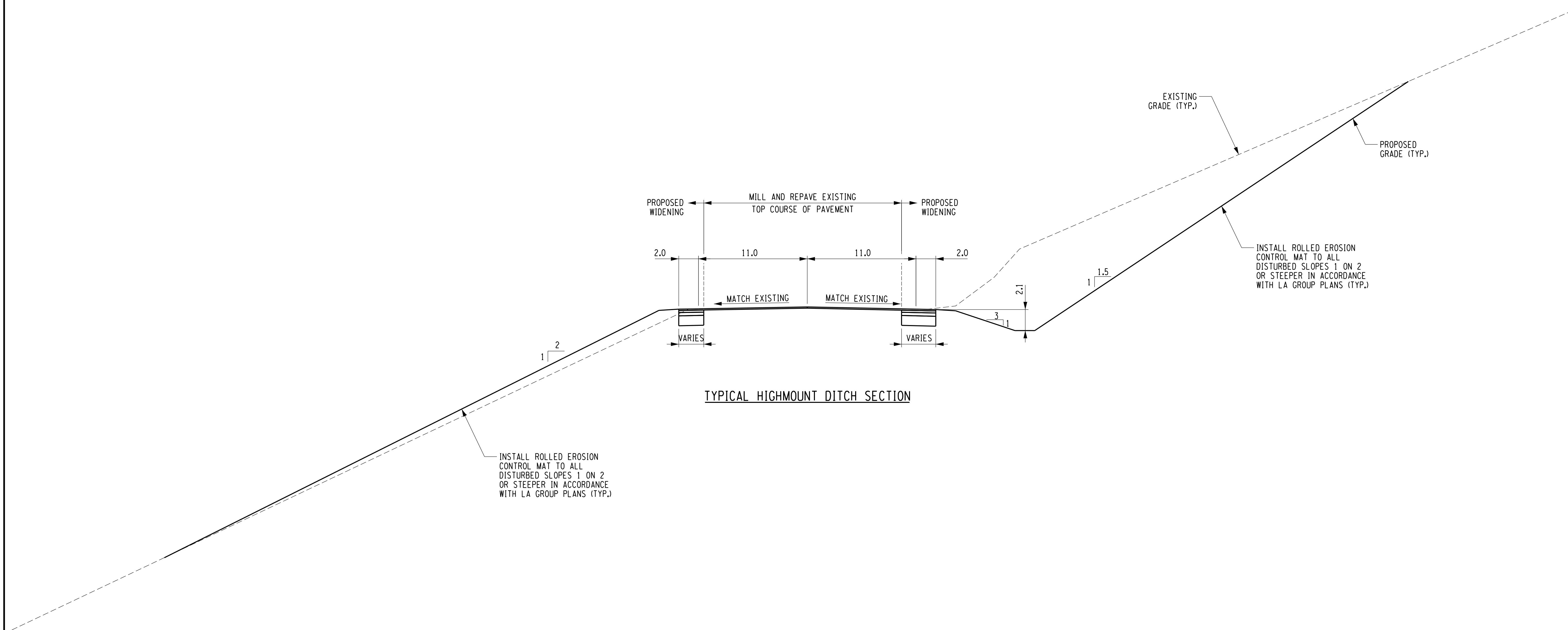

TYPICAL HIGHMOUNT DITCH SECTION

TYPICAL SECTION
C.R. 49A IMPROVEMENTS

The Modified Belleayre Resort at Catskill Park
Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

Creighton Manning

PROJECT: 99-057 | DATE: 1/14 | FIGURE: 7

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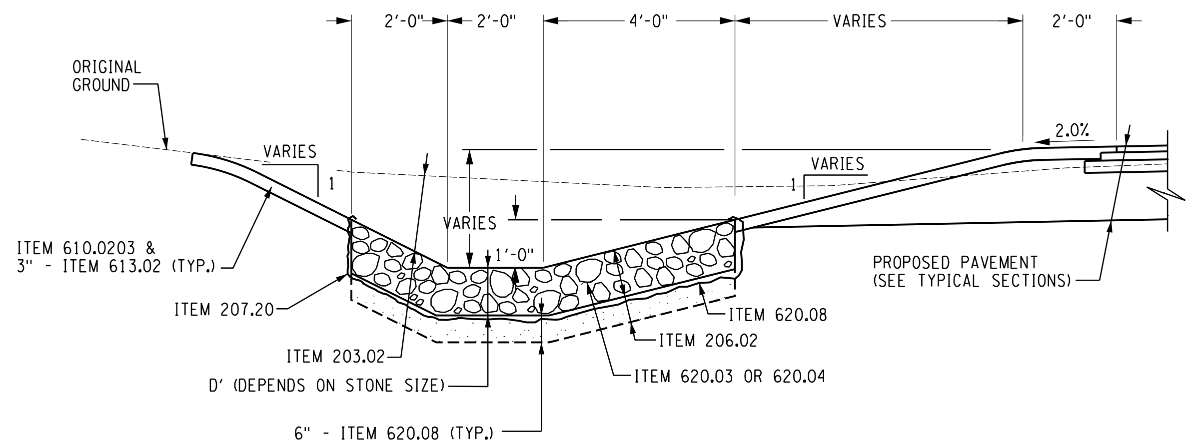
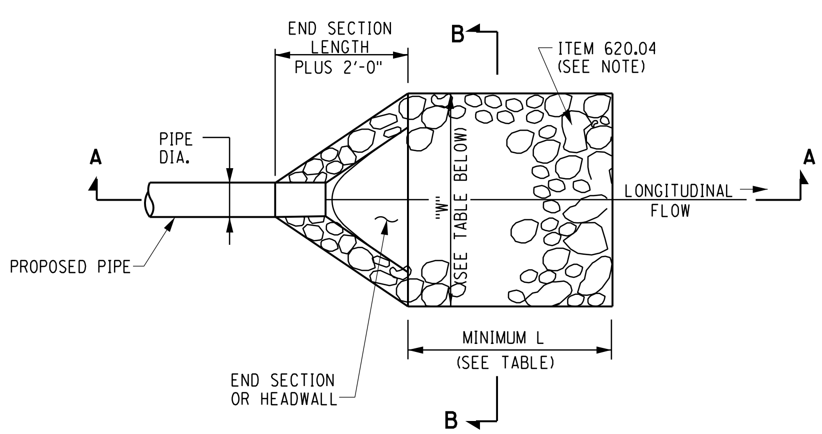
USER : dbor_jas



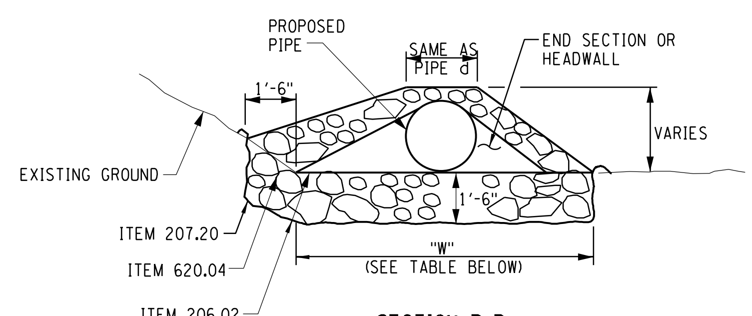
STONE-LINED DITCH DETAIL
NOT TO SCALE



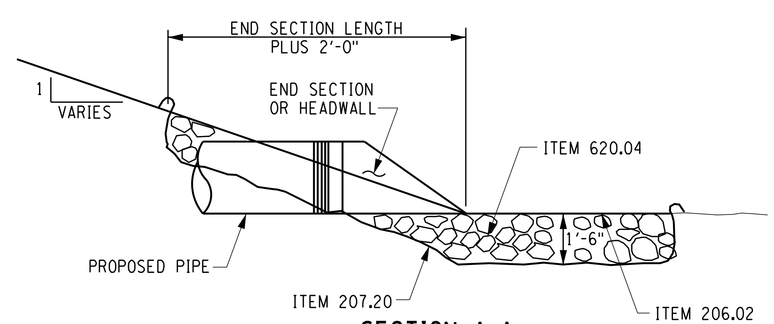
PLAN

STONE-LINED APRON DETAIL
NOT TO SCALE

NOTE:
WHERE GROUTED STONE-LINED APRON IS SPECIFIED USE ITEM 620.07 IN PLACE OF ITEM 620.04



SECTION B-B



SECTION A-A
NOT TO SCALE

STONE APRON WIDTH & LENGTH TABLE

PIPE DIA.	WIDTH "W"	MIN. LENGTH "L" •
12"	7'-0"	4'
15"-18"	8'-0"	6'
24"	9'-0"	8'
30"	10'-0"	10'
36"	12'-0"	12'

• LENGTH SHALL EXTEND TO LIMIT OF DISTURBANCE, EDGE OF ROW, OR LENGTH SHOWN IN TABLE, WHICHEVER IS GREATER

MISCELLANEOUS DETAILS
C.R. 49A IMPROVEMENTS

The Modified Belleayre Resort at Catskill Park
Wildacres Resort & The Highmount Spa Resort
Town of Shandaken & Town of Middletown, New York

Creighton Manning

PROJECT: 99-057 | DATE: 1/14 | FIGURE: 8

FILE NAME : F:\Projects\1999\99-057\d\2009\cadd\dgn\99-057_mat_01.dgn
DATE/TIME : 1/15/2014
USER : dbor_jas

Table 11. Phase 1A and 1B Work Areas and Their Acreages.

Location 1.A Wildacres Main Parcel			Location 1.B Northeast Wildacres			Location 1.C Highmount		
Work Area	Acreage	Discharge Point	Work Area	Acreage	Discharge Point	Work Area	Acreage	Discharge Point
1A.1	5.4	9	1B.1	7.9	11	1C.1	10.0	4, 1a
1A.2	5.3	9, 8	1B.2	4.8	10, 11	1C.2	4.8	5
1A.3	4.6	9, 8	1B.3	5	11	1C.3	11.1	6
1A.4	16.3	10, 9, 8	1B.4	5.1	11	1C.4	1.0	3,4,5
1A.4a*	1.5	9	1B.5	3.8	11	1C.5	1.0	5,5A,6
1A.5*	3.4	9, 8	1B.6	5.1	16, 12	1C.6	1.0	6
1A.6*	2.6	7, 8	1B.7	5.6	16, 11, 12	1C.7	1.0	5,5A
1A.7*	2.9	7, 8	1B.8	6.4	16, 10, 11	1C.8	1.0	6
1A.8*	3.7	7,8				1C.9	1.0	2
1A.9*	3.6	7,8				1C.10	1.0	2
1A.10*	2.4	8				1C.11	0.9	2,5,5A,6
1A.11*	2.8	9				1C.12	1.0	6
1A.12*	2	9				1C.13	1.0	6
						1C.14	1.0	6
						1C.15	1.0	6
						1C.16	1.0	6
						1C.17	0.8	5,5A

*other work areas in 1A that will be opened then closed while Wildacres Hotel (1A.4) is open, total area not to exceed 20 acres at a time

ID	Non Mechanized Tree Clearing Location	Wetland Number	Square Feet		Acres
C1	Hole 11- South	16	780		0.02
C2	Hole 11- Center	16	10,655		0.24
C3	Hole 11- North	16	7,395		0.17
C4	Hole 16- Near Green	16	3,206		0.07
C5	Hole 13- Cart Path	16	1,026		0.02
C6	Hole 13- West	16	12,080		0.28
C7	Hole 13- East	21	1,778		0.04
C8	Hole 16- Near tees	21	3,732		0.09
C9	Hole 18- West	19	12,865		0.30
C10	Hole 18- East	20	32,515		0.75
C11	Hole 3	24	1,665		0.04
C12	Hole 7	24	2,755		0.06
	TOTAL		90,452		2.08
	Wetland Areas Crossed By Elevated Golf Cart Boardwalks & Road Bridges				
	Location	Wetland Number	Square Feet	(LF)	Acres
S1	Hole 7	24	130	13.0	0.003
S2	Hole 11- Center	16	125	12.5	0.003
S3	Hole 11- North	16	305	30.0	0.007
S4	Hole 11- South	16	315	31.5	0.007
S5	Hole 13- Cart Paths	16	360	36.0	0.008
S6	Hole 16- Near Tees	21	250	25.0	0.006
S7	Road B Bridge	21	400	24.0	0.009
	TOTAL		1,885	172.0	0.043
	Wetland Areas Crossed By Subsurface Directional Bore				
	Location	Wetland Number	Square Feet	(LF)	Acres
B1	Off-Site	-	-	16.5	
B2	Off-Site	-	-	16.0	
B3	Off-Site	-	-	15.0	
B4	Off-Site	-	-	13.0	
B5	Off-Site	-	-	72.0	
B6	Hole 11- Tee Box	16	-	20.0	
B7	Hole 11- Tee Box	16	-	20.0	
B8	Hole 16 - Tee Box	21	-	25.0	
B9	Hole 7 - Tee Box	24	-	11.0	
B10	Hole 7 - Tee Box	24	-	11.0	
B11	Hole 7 - Tee Box	24	-	11.0	
B12	Hole 18 - Fairway	20	-	15.0	
B13	Hole 3 - Tee Box	24	-	18.0	
	TOTAL			263.5	

Selective Wetland Tree Removal Protocols

Removal of trees shall be done in such a manner as to minimize soil disturbance to the maximum extent practicable. The wetland tree removal methods, as described below, shall be contained in the Construction Specifications that will be developed for soliciting bids for project construction.

1. All cutting of trees and other vegetation shall be performed by hand, using chain saws or other hand-tools. Stumps shall be left in place. Wetland soil shall not be disturbed by pulling of stumps or mechanical dragging of tree trunks.

2. When construction scheduling allows, activities shall be performed in the winter when there is snow cover and frozen ground conditions. Under frozen ground and snow cover conditions, trees shall be felled, sectioned, and winched out of wetland areas using machinery operating from upland locations. At the discretion of the Contractor, some trees may not be sectioned prior to winching them out of wetlands. These trees will be winched out of the wetland so that the weight of the winched tree is supported and distributed by the crown of the winched tree.

3. During times when the ground is not frozen and there is no snow cover, some felled trees will be removed by lifting them out of wetlands, and some felled trees, or portions thereof, will be left in place.

Wetland Edges
Felled trees or sections of felled trees shall be lifted and removed from the edges of wetland areas using machinery equipped with typical log-loader pincers, chains, or straps. Machinery shall be operated in upland areas, and will lift and boom trees, or sections of trees, out of wetlands and into upland areas. The type of machine that is used will dictate how far into wetland areas this procedure can be implemented. A larger track-hoe excavator will have the capability of reaching trees that are felled within 30 to 40 feet of the wetland edge.

Wetland Interiors
Trees that are felled farther within the wetland shall be limbed and topped. Cut limbs and tops will either be left in place or will be removed by hand from the wetland into upland areas.

The decision to remove felled trees or portions of felled trees in particular areas shall be made by the Golf Course Architect prior to finalization of construction bid documents. In most, if not all instances, portions of some or all felled trees shall be left within wetland areas. Removal of some or all portions of all felled trees will give the Golf Course Architect the flexibility to make sure that the quality of a particular golf hole is not compromised by unusually high numbers of trees or unusually large trees left within affected wetland areas. The wetland play-over areas will develop into a combination of herbaceous and shrub plant communities following selective tree removal.

LEGEND | SYMBOL
PROPERTY BOUNDARY
EXISTING CONTOUR
PROPOSED CONTOUR
EXISTING TREELINE
TREELINE (LIMIT OF CLEARING)
ISOLATED WETLANDS
NON-ISOLATED WETLANDS
NON-MECHANIZED WETLAND CLEARING
BORING LOCATION/UTILITY TRENCHING
SILT FENCE
STORMWATER PIPE
FORCE MAIN
SEWER
WATERLINE

0 25 50 100

the LA group
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P 518/587-8100
F 518/587-0180
www.thelagroup.com

Design MJT/JTS
Drawn JTS
Checked KJF/RPF

This drawing is not certified for the purposes of construction, unless it is specifically noted as issued for construction.

Submission:
FOR REGULATORY APPROVALS ONLY

PREPARED FOR:
Crossroads Ventures, L.L.C.
PO Box 267
Mt. Tremper, NY 12457

The Modified Belleayre Resort at Catskill Park
Supplemental Draft Environmental Impact Statement

Title
Wetland Activities Plan (1 of 5)

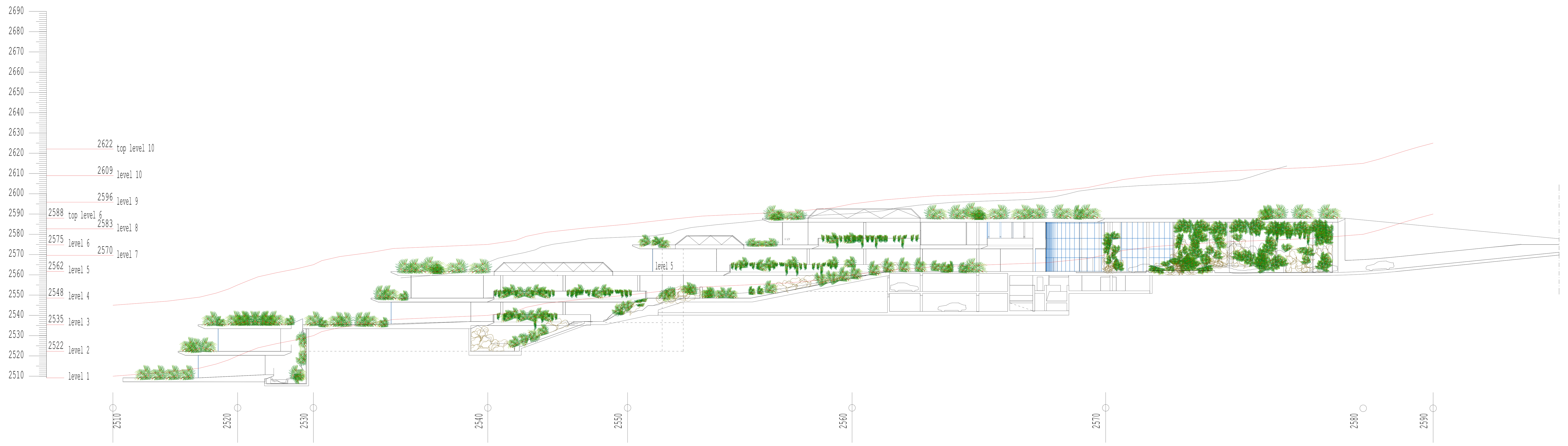
3.9 3.10 3.8

NORTH

Revisions

Project: 07074
Date: 03/02/2012

Drawing
3-8



Emilio Ambasz & Associates, Inc. 200 West 90th Street
Suite 11A, New York, N.Y. 10024 U.S.A.

Highmount Hotel and Spa
Belleayre Resort at Catskill Park

Section C C

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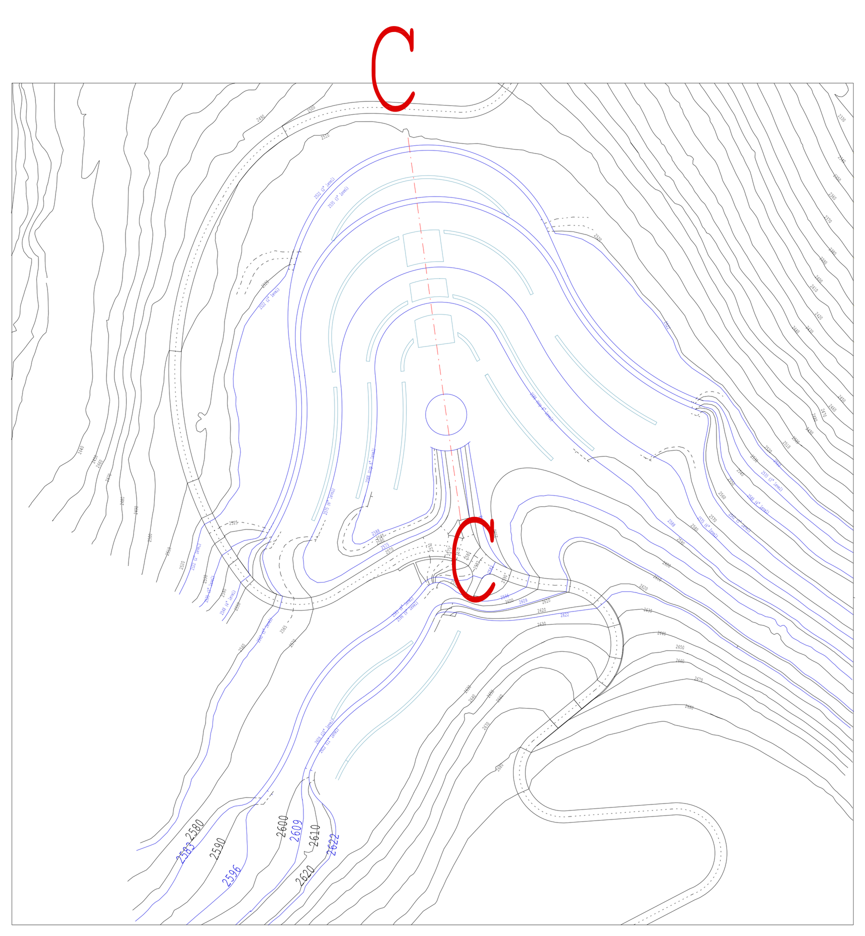
Associate Architects:
Paolo Devescovi, Carlotta Lo Verde



SDEIS Table 3.9.3-11

Highmount Resort – Estimated Future Tax Revenues (Ulster County)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Ulster County General Tax	$47,381	$108,976	$119,720	$130,176	$154,524	$190,348	$214,344	$236,492	$256,741	$289,732	$313,719
Shandaken Town General Tax	$26,175	$60,203	$66,139	$71,915	$85,366	$105,157	$118,413	$130,649	$141,835	$160,061	$173,312
Shandaken Town Highway Tax	$24,802	$57,044	$62,668	$68,141	$80,886	$99,638	$112,199	$123,793	$134,392	$151,661	$164,217
Highmount Fire	$23,013	$50,630	$50,785	$50,785	$57,533	$69,180	$73,917	$77,283	$79,390	$87,475	$90,378
Pine Hill Fire	$1,624	$3,572	$3,583	$3,583	$4,059	$4,881	$5,215	$5,453	$5,601	$6,172	$6,377
Pine Hill Light	$319	$733	$806	$876	$1,040	$1,281	$1,442	$1,591	$1,728	$1,950	$2,111
Pine Hill Water	$357	$822	$903	$982	$1,165	$1,436	$1,617	$1,784	$1,936	$2,185	$2,366
Onteora Library	~~$21~~ $0	~~$49~~ $0	~~$54~~ $0	~~$59~~ $0	~~$70~~ $0	~~$86~~ $0	~~$97~~ $0	~~$107~~ $0	~~$116~~ $0	~~$131~~ $0	~~$142~~ $0
Onteora Central School	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Margaretville School	$235,984	$519,165	$589,960	$589,960	$659,153	$778,581	$827,159	$861,674	$883,279	$966,182	$995,953
Total	~~**$359,677**~~ **$359,655**	~~**$801,194**~~ **$801,145**	~~**$894,618**~~ **$894,564**	~~**$916,477**~~ **$916,418**	~~**$1,043,796**~~ **$1,043,726**	~~**$1,250,588**~~ **$1,250,502**	~~**$1,354,404**~~ **$1,354,307**	~~**$1,438,827**~~ **$1,438,720**	~~**$1,505,020**~~ **$1,504,903**	~~**$1,665,548**~~ **$1,665,417**	~~**$1,748,575**~~ **$1,748,433**

Notes: Estimated tax revenues based on fiscal year 2007 tax bills, reflecting non-escalated (e.g., conservative) tax rates and assessments, and final 2006 equalization rates. All amounts are shown in non-escalated 2008 dollars.

SDEIS Table 3.9.3-11 (continued)
Highmount Resort – Estimated Future Tax Revenues (Ulster County)

	2024	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**
Ulster County General Tax	$327,588	$335,771	$343,923	$352,074	$358,837	$363,201	$366,590	$369,286	$371,548	$372,146
Shandaken Town General Tax	$180,974	$185,495	$189,998	$194,501	$198,237	$200,648	$202,521	$204,010	$205,260	$205,590
Shandaken Town Highway Tax	$171,477	$175,761	$180,028	$184,295	$187,835	$190,119	$191,893	$193,304	$194,489	$194,802
Highmount Fire	$90,378	$90,378	$90,378	$90,378	$90,378	$90,378	$90,378	$90,378	$90,378	$90,378
Pine Hill Fire	$6,377	$6,377	$6,377	$6,377	$6,377	$6,377	$6,377	$6,377	$6,377	$6,377
Pine Hill Light	$2,205	$2,260	$2,314	$2,369	$2,415	$2,444	$2,467	$2,485	$2,500	$2,504
Pine Hill Water	$2,471	$2,532	$2,594	$2,655	$2,706	$2,739	$2,765	$2,785	$2,802	$2,807
Onteora Library	~~$149~~ $0	~~$152~~ $0	~~$156~~ $0	~~$160~~ $0	~~$163~~ $0	~~$165~~ $0	~~$166~~ $0	~~$168~~ $0	~~$169~~ $0	~~$169~~ $0
Onteora Central School	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Margaretville School	$995,953	$995,953	$995,953	$995,953	$995,953	$995,953	$995,953	$995,953	$995,953	$995,953
Total	**~~$1,777,570~~** **$1,777,422**	**~~$1,794,679~~** **$1,794,527**	**~~$1,811,721~~** **$1,811,565**	**~~$1,828,763~~** **$1,828,603**	**~~$1,842,900~~** **$1,842,737**	**~~$1,852,024~~** **$1,851,859**	**~~$1,859,109~~** **$1,858,943**	**~~$1,864,746~~** **$1,864,578**	**~~$1,869,475~~** **$1,869,307**	**~~$1,870,725~~** **$1,870,556**

Notes: see above

SDEIS Table 3.9.3-12
Highmount Resort – Estimated Future Tax Revenues (Delaware County)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Delaware County General	$1,545	$3,554	$24,467	$26,864	$29,261	$31,658	$34,055	$36,453	$38,850	$41,247	$43,644
Middletown Town	$690	$1,587	$10,925	$11,996	$13,066	$14,137	$15,207	$16,278	$17,348	$18,418	$19,489
Highway Outside Village	$429	$987	$6,797	$7,463	$8,129	$8,795	$9,461	$10,127	$10,793	$11,459	$12,125
General Outside Village	$29	$66	$452	$496	$541	$585	$629	$674	$718	$762	$807
Middletown FD #1	$225	$495	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490
Margaretville School	$5,318	$11,699	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295
Total	**$8,236**	**$18,389**	**$59,426**	**$63,604**	**$67,782**	**$71,959**	**$76,137**	**$80,315**	**$84,493**	**$88,671**	**$92,849**
Notes: see above											

SDEIS Table 3.9.3-12 (continued)
Highmount Resort– Estimated Future Tax Revenues (Delaware County)

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Delaware County General	$45,887	$47,944	$47,944	$47,944	$47,944	$47,944	$47,944	$47,944	$47,944	$47,944
Middletown Town	$20,490	$21,409	$21,409	$21,409	$21,409	$21,409	$21,409	$21,409	$21,409	$21,409
Highway Outside Village	$12,748	$13,319	$13,319	$13,319	$13,319	$13,319	$13,319	$13,319	$13,319	$13,319
General Outside Village	$848	$886	$886	$886	$886	$886	$886	$886	$886	$886
Middletown FD #1	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490
Margaretville School	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295
Total	**$96,758**	**$100,343**	**$100,343**	**$100,343**	**$100,343**	**$100,343**	**$100,343**	**$100,343**	**$100,343**	**$100,343**
Notes: see above										

SDEIS Table 3.9.3-13

Wildacres Resort – Estimated Future Tax Revenues (Ulster County)

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Ulster County General Tax	$50,362	$115,832	$155,096	$194,577	$216,572	$237,119	$258,284	$276,998	$294,839
Shandaken Town General Tax	$27,822	$63,990	$85,682	$107,493	$119,644	$130,995	$142,687	$153,026	$162,882
Shandaken Town Highway Tax	$26,362	$60,633	$81,186	$101,852	$113,365	$124,121	$135,200	$144,996	$154,335
Highmount Fire	$24,461	$53,815	$67,504	$73,465	$76,155	$77,873	$79,719	$80,191	$80,191
Pine Hill Fire	$1,726	$3,797	$4,763	$5,183	$5,373	$5,494	$5,625	$5,658	$5,658
Pine Hill Light	$339	$779	$1,044	$1,309	$1,457	$1,596	$1,738	$1,864	$1,984
Pine Hill Water	$380	$874	$1,170	$1,468	$1,633	$1,788	$1,948	$2,089	$2,224
Onteora Library	~~$23~~ $68	~~$53~~ $150	~~$70~~ $201	~~$88~~ $221	~~$98~~ $235	~~$108~~ $241	~~$117~~ $252	~~$126~~ $255	~~$134~~ $255
Onteora Central School	$115,312	$253,685	$339,574	$373,852	$398,017	$408,191	$427,073	$432,356	$432,356
Margaretville School	$145,357	$319,786	$381,603	$411,369	$416,853	$425,163	$426,825	$426,825	$426,825
Total	**~~$392,143~~ $392,188**	**~~$873,243~~ $873,341**	**~~$1,117,691~~ $1,117,821**	**~~$1,270,657~~ $1,270,789**	**~~$1,349,169~~ $1,349,306**	**~~$1,412,448~~ $1,412,582**	**~~$1,479,217~~ $1,479,352**	**~~$1,524,128~~ $1,524,258**	**~~$1,561,427~~ $1,561,549**

Notes: see above

SDEIS Table 3.9.3-13 (continued)
Wildacres Resort – Estimated Future Tax Revenues (Ulster County)

	2022	2023	2024	2025	2026	2027	2028	2029	2030
Ulster County General Tax	$312,680	$330,521	$343,326	$350,087	$354,030	$355,415	$356,246	$356,723	$356,820
Shandaken Town General Tax	$172,738	$182,595	$189,669	$193,404	$195,582	$196,347	$196,806	$197,070	$197,123
Shandaken Town Highway Tax	$163,674	$173,013	$179,716	$183,255	$185,319	$186,044	$186,479	$186,728	$186,779
Highmount Fire	$80,191	$80,191	$80,191	$80,191	$80,191	$80,191	$80,191	$80,191	$80,191
Pine Hill Fire	$5,658	$5,658	$5,658	$5,658	$5,658	$5,658	$5,658	$5,658	$5,658
Pine Hill Light	$2,104	$2,224	$2,310	$2,356	$2,382	$2,392	$2,397	$2,401	$2,401
Pine Hill Water	$2,358	$2,493	$2,589	$2,640	$2,670	$2,681	$2,687	$2,691	$2,691
Onteora Library	~~$142~~ $255	~~$150~~ $255	~~$156~~ $255	~~$159~~ $255	~~$161~~ $255	~~$161~~ $255	~~$162~~ $255	~~$162~~ $255	~~$162~~ $255
Onteora Central School	$432,356	$432,356	$432,356	$432,356	$432,356	$432,356	$432,356	$432,356	$432,356
Margaretville School	$426,825	$426,825	$426,825	$426,825	$426,825	$426,825	$426,825	$426,825	$426,825
Total	**~~$1,598,726~~** **$1,598,839**	**~~$1,636,025~~** **$1,636,130**	**~~$1,662,795~~** **$1,662,895**	**~~$1,676,931~~** **$1,677,027**	**~~$1,685,174~~** **$1,685,269**	**~~$1,688,069~~** **$1,688,163**	**~~$1,689,806~~** **$1,689,900**	**~~$1,690,803~~** **$1,690,897**	**~~$1,691,006~~** **$1,691,100**

Notes: see above

SDEIS Table 3.9.3-14

Wildacres Resort – Estimated Future Tax Revenues (Delaware County)

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Delaware County General	$0	$0	$9,650	$14,616	$21,656	$33,778	$42,218	$46,822	$50,432
Middletown Town	$0	$0	$4,309	$6,527	$9,670	$15,083	$18,852	$20,908	$22,520
Highway Outside Village	$0	$0	$2,681	$4,060	$6,016	$9,384	$11,728	$13,007	$14,010
General Outside Village	$0	$0	$178	$270	$400	$624	$780	$865	$932
Middletown FD #1	$0	$0	$1,405	$1,521	$2,348	$3,831	$4,630	$4,791	$4,791
Margaretville School	$0	$0	$33,208	$35,962	$55,489	$90,554	$109,442	$113,238	$113,238
Total	**$0**	**$0**	**$51,432**	**$62,958**	**$95,579**	**$153,254**	**$187,650**	**$199,631**	**$205,924**
Notes: see above									

SDEIS Table 3.9.3-14 (continued)
Wildacres Resort – Estimated Future Tax Revenues (Delaware County)

	2022	2023	2024	2025	2026	2027	2028	2029	2030
Delaware County General	$54,043	$57,654	$61,264	$64,875	$67,521	$69,766	$71,444	$72,104	$72,214
Middletown Town	$24,132	$25,745	$27,357	$28,969	$30,151	$31,154	$31,903	$32,197	$32,246
Highway Outside Village	$15,013	$16,017	$17,020	$18,023	$18,758	$19,381	$19,848	$20,031	$20,061
General Outside Village	$999	$1,065	$1,132	$1,199	$1,248	$1,289	$1,320	$1,333	$1,335
Middletown FD #1	$4,791	$4,791	$4,791	$4,791	$4,791	$4,791	$4,791	$4,791	$4,791
Margaretville School	$113,238	$113,238	$113,238	$113,238	$113,238	$113,238	$113,238	$113,238	$113,238
Total	**$212,217**	**$218,509**	**$224,802**	**$231,095**	**$235,706**	**$239,620**	**$242,544**	**$243,693**	**$243,886**

Notes: see above

Commenter Coding

A later section of the FEIS contains the comments received during the public comment period and responses to those comments. At the end of each comment there is a bold alphanumeric comment code (i.e. **O3635**) that identifies who made the comment. A list of the comment codes and what person or organization made the comment is contained on the following pages.

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
4/18/2013	Email		I1	Arnoa	Victor
4/18/2013	Email		I3	Thuss	Robert
4/18/2013	Email		S2	Arnoa	Victor
4/19/2013	Email		I4	Bostic	Harvey
4/19/2013	Email		I5	Crump	Walter
4/20/2013	Email		I6	Catasus-Chapma	Eileen
4/22/2013	Email		I7	Gropper	Steve
4/22/2013	Email		I8	Crump	Walter
4/23/2013	Email		O9	Gould	Caleb
4/24/2013	Email		O10	Lancaster	Camilla
4/24/2013	Email		O11	Nolan	Kathy
4/24/2013	Email		O12	Fiedler, Jr.	William
4/25/2013	Email		O13	Millar	Kevin
4/25/2013	Email		O14	Jaffe	Jan
4/25/2013	Email		O16	Brooks	Douglas
4/25/2013	Email		O16	Parker, III	Miles
4/25/2013	Email		O17	Margolis	Susanna
4/25/2013	Email		O18	Bhattacharji	Lee, Somdev
4/25/2013	Email		O19	Gould	Scott
4/25/2013	Email		O20	Herrmann	Mary
4/25/2013	Email		O21	Channon	Dave
4/25/2013	Email		O22	Williams	Anthony
4/25/2013	Email		O23	Phillips-Burke	Mary
4/25/2013	Email		O24	Maguire	John
4/25/2013	Email		O25	Axelrod	Robert
4/25/2013	Email		O26	Vincent	Peter
4/25/2013	Email		O27	Bhattacharji	Lisa
4/25/2013	Email		O28	Bhattacharji	Alexander
4/25/2013	Email		O29	Taylor	Anique
4/25/2013	Email		O30	Dunleavey	F
4/25/2013	Email		O31	Grossman	Harriet
4/25/2013	Email		O32	Linet	Valerie
4/25/2013	Email		O33	Goldstein	Freya
4/25/2013	Email		O34	Gurney	Lana
4/25/2013	Email		O35	Simon	Judith
4/25/2013	Email		O36	Wooton	Michele
4/25/2013	Email		O37	Penick	Virginia
4/25/2013	Email		O38	Castro	Jacquelyn
4/25/2013	Email		O39	Brown	Susan
4/25/2013	Email		O40	Rubin	Gil
4/25/2013	Email		O41	Macy	Mary
4/25/2013	Email		O42	Alba	Nick
4/25/2013	Email		O43	Makara	Robert
4/25/2013	Email		O44	Hardinger	Ruth
4/26/2013	Email		I52	Straut	Hollice
4/26/2013	Email		I58	Fiore	Anthony
4/26/2013	Email		I65	Fiore	Kate
4/26/2013	Email		I68	Baker	Richard
4/26/2013	Email		I69	Ruehle	Stephen

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
4/26/2013	Email		O45	Lightfoot	Nivale
4/26/2013	Email		O46	Lightfoot	Savanna
4/26/2013	Email		O47	Covit	Dana
4/26/2013	Email		O48	Fairbairn	Jerry
4/26/2013	Email		O49	Haines	Julia
4/26/2013	Email		O50	Schaedle	Richard
4/26/2013	Email		O51	Lyons	Robert
4/26/2013	Email		O53	Martin	Meredith
4/26/2013	Email		O54	Walker	Joan
4/26/2013	Email		O55	Lencina	Chandra
4/26/2013	Email		O56	Mansfield	Barbara
4/26/2013	Email		O57	Trzaska	Lindsay
4/26/2013	Email		O59	Schacker	Barbara
4/26/2013	Email		O60	Hegeman	Amelia
4/26/2013	Email		O61	Lightfoot	Tessa
4/26/2013	Email		O62	Cioffi	Cathy
4/26/2013	Email		O63	Montanus	Lisa
4/26/2013	Email		O64	Doremus	Goline
4/26/2013	Email		O66	Dawne-Marie	Sunday
4/26/2013	Email		O67	McKeon	Mary
4/27/2013	Email		I74	Thomas	Steven
4/27/2013	Email		O70	Barbieri	Miriam
4/27/2013	Email		O71	Scanlan	Brian
4/27/2013	Email		O72	Parker	Peter
4/27/2013	Email		O73	Potter-Phillips	Jeanie
4/28/2013	Email		O75	Letunovsky	Dmitry
4/29/2013	Written		I76	Plumb	Michael
4/29/2013	Email		I77	Braman	Jay
4/29/2013	Email		I79	Ferris	Aidan
4/29/2013	Email		O78	Weeks	Michele
4/29/2013	Email		O80	Herman	Elizabeth
4/30/2013	Written		I83	Digna	Margery
4/30/2013	Written		I84	Weyhe	Arthur
4/30/2013	Email		O81	Herz	Glenna
4/30/2013	Email		O82	Herz	Glenna
5/1/2013	Email		I86	Dunleavey/Dorem	Freddi, Goline
5/1/2013	Email		I91	Jalkower/Spinelli	David,Carol
5/1/2013	Email		I93	Perla	Hilarie
5/1/2013	Written		O85	Downs	Roger
5/1/2013	Email		O87	Wright	Calvin
5/1/2013	Email		O88	Saslow	Harry, Barbara
5/1/2013	Email		O89	Spinelli	Carol
5/1/2013	Email		O90	Turillaro	John
5/1/2013	Email		O92	Hill	Charlotte
5/1/2013	Email		O94	Guest	Amanda
5/1/2013	Email		O95	Saul	Jack
5/2/2013	Email		I105	Roberti	Ann
5/2/2013	Email		I108	Marinaccio	John
5/2/2013	Email		I109	O'Neill	Charles

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
5/2/2013	Email		I110	White	Noel
5/2/2013	Email		I111	Sniderman	Adam
5/2/2013	Email		I120	Spiegel	Joyce, Irnest
5/2/2013	Email		I121	Ditchek	Maria
5/2/2013	Email		I122	Mhoon	Mary
5/2/2013	Email		I96	Karam	Larry
5/2/2013	Email		I97	Burns	Alison
5/2/2013	Email		I98	Tsiounis	Yiannis
5/2/2013	Email		I99	Kenney	Anne
5/2/2013	Email		O101	Trad	Joseph
5/2/2013	Email		O102	Trad	Joseph
5/2/2013	Email		O103	Markowitz	Anne
5/2/2013	Email		O104	Walker	Jim
5/2/2013	Email		O106	Nash	Ronald
5/2/2013	Email		O107	Margolin	Deborah
5/2/2013	Email		O112	Fraioli	Larry
5/2/2013	Email		O113	Sergel	Ruth
5/2/2013	Email		O114	Brady	Daniel
5/2/2013	Email		O115	Mitchell	Bonnie
5/2/2013	Email		O116	Delehanty	Thomas
5/2/2013	Email		O117	Browne	Margaret
5/2/2013	Email		O118	Lang-Carini	Aurelie
5/2/2013	Email		O119	Lang-Carini	Aurelie
5/2/2013	Email		O123	Swett	Benjamin
5/3/2013	Email		I126	Karam	Lorrie
5/3/2013	Email		I128	Trimbell	Brent
5/3/2013	Email		I134	Buchina	Bill
5/3/2013	Email		O125	Yoshioka	Airi
5/3/2013	Email		O127	Champanier	Linda
5/3/2013	Email		O129	Selgman	Michal
5/4/2013	Email	H14	I130	Wedemeyer	Eric
5/4/2013	Email		I131	Caiti	Barbara
5/4/2013	Email		I132	Milham	Jeffrey
5/5/2013	Email		I135	Walker	James, Mary
5/5/2013	Email		O133	Greenberg	Joyce
5/5/2013	Email		O134	Greenberg	Joyce
5/5/2013	Email		O136	Russell	Jacquelyn
5/5/2013	Email		O137	Graham	Ross
5/5/2013	Email		O138	Cooper-Volski	Joni
5/6/2013	Written		I140	Ashton	Jeffrey
5/6/2013	Email		I141	McElgun	Lani
5/6/2013	Email		I143	Serse	Angelo
5/6/2013	Email		I144	Metzler	Peter
5/6/2013	Email		I145	Wedemeyer	Jake
5/6/2013	Email		I146	Swick	Sarah
5/6/2013	Email		I147		Joanne
5/6/2013	Email		O142	Goldstein	Eric
5/6/2013	Written		S139	Crouch	Clifford
5/7/2013	Email		I150	Fauerbach	Ellen

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
5/7/2013	Email		I151	Milano	John
5/7/2013	Email		I152	kaufman	Russell
5/7/2013	Email		O148	Wall	Roger
5/7/2013	Email		O149	Wall	Froger
5/8/2013	Written	H51	I154	Michelotti	Ann Carroll
5/8/2013	Email		I155	Stewart	Laura
5/8/2013	Email		I157	Kramarsky	Cynthia
5/8/2013	Email		M156	Adelson	Alex
5/8/2013	Written		O153	Goldstein	Eric
5/8/2013	Email		O158	Mendell	Howard, Roberta
5/8/2013	Email		O159	Mandell	Howard, Roberta
5/9/2013	Email		I162	Nichols	Valerie
5/9/2013	Email		I164	Chimento	John
5/9/2013	Email		I165	Farley	Donald
5/9/2013	Email		I166	Hanson	Elena
5/9/2013	Email		O160	Mark	Peter
5/9/2013	Email		O161	Marbrook	Marily
5/9/2013	Email		O167	Yarbrough	Andrew
5/9/2013	Email		O168	Holdner	Joe
5/9/2013	Email		O169	Holdner	Joe
5/9/2013	Email		S163	Bein	Philip
5/10/2013	Email		I170	Dunleavey,Dorer	Freddi, Goline
5/10/2013	Email		I171	Schulze	Hertha
5/10/2013	Email		I172	Dombroski	Linda,Greg
5/10/2013	Email		I173	Coyne	Joan
5/10/2013	Written		I174	Setchko	Gerald
5/10/2013	Written		I175	Setchko	Gerald
5/10/2013	Written		I176	Franzen	Sofie
5/10/2013	Written		I177	Stone	David
5/10/2013	Written		I179	Sommer	Bernard,Phyllis
5/10/2013	Written		I180	Stone	Muriel
5/10/2013	Written		I183	Stettine	Steve
5/10/2013	Written		M182	Higley	Alfie
5/10/2013	Written		O178	Roell	Harold
5/10/2013	Written		O181	Gailes	Martie
5/10/2013	Email		O184	Goldstein	Eric
5/11/2013	Email		I185	Goodrich	Clark,Joy
5/11/2013	Email		I186	Weiner	Daniel,Diane
5/11/2013	Email		I187	Regante	Genine
5/11/2013	Email		I188	Lidsky	Robert
5/12/2013	Email		I189	Hinkley	Douglas
5/13/2013	Email		I194	Atkin	Barbara
5/13/2013	Written		M192	Miller	Marjorie
5/13/2013	Written		M193	Marshfield	Wayne
5/13/2013	Email		M195	Miller	Marjorie
5/13/2013	Email		O190	Holfeld	William
5/13/2013	Email		O196	Davidson	Lynn
5/13/2013	Written		S191	Bein	Philip
5/14/2013	Fax		I199	Spivack	Deborah

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
5/14/2013	Email		I200	Hinkley	Douglas
5/14/2013	Email		I201	Lubonty	Larry
5/14/2013	Email		I202	Fitzgerald	Todd
5/14/2013	Email		I203	Huhem	Bob
5/14/2013	Email		O197	Hartel	Diana
5/14/2013	Email		O198	Hartel	Diana
5/14/2013	Email		O204	Spark	Michelle
5/15/2013	Email		I205	Skrimm	
5/15/2013	Written		I207	Setchko	Gerald
5/15/2013	Email		I209		Rick
5/15/2013	Email		I212	Litoff	Mel
5/15/2013	Email		I213	Doremus, Dunlea	Goline, Freddi
5/15/2013	Email		I214	Matson	Russell
5/15/2013	Written	H4	M206	Donelly	Martin
5/15/2013	Email		O208	Silver	Laura
5/15/2013	Email		O210	Rebock	Richard
5/15/2013	Email		O211	Andrews	Marnie
5/15/2013	Email		O215	James	Luttrell
5/16/2013	Written		I216	Clark	Scott
5/16/2013	Written		I217	Crump	Walter
5/16/2013	Email		I218	Manning	Jim
5/16/2013	Email		I220	Hinkley	Doug,Cathy
5/16/2013	Email		I221	Ludde	Halina,Ed
5/16/2013	Email		O219	Rebock	Melissa
5/17/2013	Email		I222	Slauson	Jennifer
5/17/2013	Email		I223	Sherwood	Betty
5/17/2013	Email		I224	Keller	Walter
5/17/2013	Email		I225	Barth	Patricia
5/17/2013	Email		O226	Korman	Ittai
5/19/2013	Email		I227	Runyan	Marilyn
5/19/2013	Email		I228	Beyea	Bill, Bernadette
5/20/2013	Email		I234	Parker	Lee
5/20/2013	Written		M229	Flynn	Francis
5/20/2013	Written		O231	Wagner	Carey
5/20/2013	Email		O232	Tallman	Seth
5/20/2013	Email		O233	Suess	George
5/20/2013	Email		O235	Spivack	Deborah
5/20/2013	Email		O236	Spivack	Deborah
5/20/2013	Written		S230	Tenny	Claudia
5/21/2013	Email		I237	Pred Bass	Suzanne
5/21/2013	Email		I238	Keller	Jacqueline
5/21/2013	Email		I239	Davies	Kathy
5/21/2013	Email		O240	Metnick	Dennis
5/22/2013	Email		I241	Robinson, Thomb	George, Mary
5/22/2013	Email		I243	Bramley	Don
5/22/2013	Email		I244	McNamara	Terry
5/22/2013	Email		I252	Cerullo	John
5/22/2013	Written		I257	Charmello	Joseph
5/22/2013	Email		M254	Porter	Michael

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
5/22/2013	Written		M258	Pascarella	Todd
5/22/2013	Email		O242	Knight	Willa
5/22/2013	Email		O245	Halsted, III	W. Douglas
5/22/2013	Email		O246	Greenberg	Joyce
5/22/2013	Email		O247	Weber	Nathan
5/22/2013	Email		O248	Weber	Nathan
5/22/2013	Email		O249	Chase	Judith
5/22/2013	Email		O250	Drummond	Craig
5/22/2013	Email		O251	Visceglia	Brenda
5/22/2013	Email		O253	Bajada	Linda
5/22/2013	Email		O255	Parker	Lee
5/22/2013	Email		O256	McCauley	Richard
5/23/2013	Email		I259	Doremus, Dunlea	Goline, Freddi
5/23/2013	Email		I261	Hamway	Louis,Beverly
5/23/2013	Email		I265	Pucci	Janet
5/23/2013	Written		M266	Tosi	Kimberly
5/23/2013	Written		M267	Slewitt	Catherine
5/23/2013	Written		M268	Mole	Tina
5/23/2013	Written		M269	Flynn	Francis
5/23/2013	Email		O260	203 supporters	
5/23/2013	Email		O262	Brie	Roxanne
5/23/2013	Email		O263	Kirshein	Edward
5/23/2013	Email		O264	Marcus	Irwin
5/24/2013	Email		I270	Caswell	Linda
5/24/2013	Email		I271	Hamway	Louis,Beverly
5/24/2013	Email		O273	Reilly	Larry
5/24/2013	Email		O274	Hall	Joseph
5/24/2013	Email		O275	Haroldson	Nicole
5/24/2013	Email		O275d	Haroldson	Nicole
5/24/2013	Email		O275d	Haroldson	Nicole
5/24/2013	Email		O275d	Haroldson	Nicole
5/24/2013	Email		O276	Roberts	Joan
5/24/2013	Written		S272	Vancko	Candace
5/25/2013	Email		I284	Jordan	Jack
5/25/2013	Email		I285	Peavy	Alfred
5/25/2013	Email		O277	Wedemeyer	Eric
5/25/2013	Email		O277d	Wedemeyer	Eric
5/25/2013	Email		O278	Sharpe	Alex
5/25/2013	Email		O278d	Sharpe	Alex
5/25/2013	Email		O279		David
5/25/2013	Email		O280		David
5/25/2013	Email		O280d		David
5/25/2013	Email		O281	Mann	David
5/25/2013	Email		O282	Tufillaro	John
5/25/2013	Email		O283	Tufillaro	John
5/26/2013	Email		I291	Sosa	Evangelina
5/26/2013	Email		O286	Rauter	James
5/26/2013	Email		O287	Charman	Karen
5/26/2013	Email		O288	Spinelli	Carol

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
5/26/2013	Email		O288d	Spinelli	Carol
5/26/2013	Email		O288d	Spinelli	Carol
5/26/2013	Email		O289	Pucci	Ray
5/26/2013	Email		O290	DeMaria	Barbara
5/27/2013	Email		I293	Batelli	Mike
5/27/2013	Email	H10	I294	Sweeney	Brian
5/27/2013	Email		I295	Milliken	Gary
5/27/2013	Email		I300	O'Dell	Kevin
5/27/2013	Email		I301	Michelotti	John
5/27/2013	Email		O292	Keck-Colliton	Stacy
5/27/2013	Email		O292d	Keck-Colliton	Stacy
5/27/2013	Email		O297	Kuhls	Jackie
5/27/2013	Email		O297d	Kuhls	Jackie
5/27/2013	Email		O297d	Kuhls	Jackie
5/27/2013	Email		O298	Wagner	Susan
5/27/2013	Email		O299	Wedemeyer	Eric
5/28/2013	Email		I302	Channon	Dave
5/28/2013	Written		I303	Eisenbeil	Joseph
5/28/2013	Written		I304	Ryan	Michael
5/28/2013	Written		I305	Boyle	Michael
5/28/2013	Email		I335	Huber	Max
5/28/2013	Email		I338	Kirby	Laurence
5/28/2013	Email		I339	Loughlin/Batista	Sarah/Brian
5/28/2013	Email		I342	KR213	
5/28/2013	Email		I343	Sokasian	Aaron & Giovanna
5/28/2013	Email		I344	Mohr-Gomez	Susan
5/28/2013	Email		I348	de Jong	Esther
5/28/2013	Email		O336	Steiglehner	Ernest
5/28/2013	Email		O337	Steiglehner	Janet
5/28/2013	Email		O340	Madison	James
5/28/2013	Email		O341	M	Greg
5/28/2013	Email		O345	Potent	Jeffrey
5/28/2013	Email		O346	Russo	Bruce
5/28/2013	Email		O347	Gross	David
5/28/2013	Email		O349	Hoyt	Jan
5/28/2013	Email		O350	Hoyt	Jan
5/29/2013	Written		I302d	Channon	Dave
5/29/2013	Written		I303d	Eisenbeil	Joseph
5/29/2013	Written	H17	I307	Hoeko	John
5/29/2013	Written	H65	I308	Fairbairn	Sally
5/29/2013	Written	H62	I309	Gould	Kingdon
5/29/2013	Written	H50	I310	Charman	Karen
5/29/2013	Written		I311	Eagle's Nest	John
5/29/2013	Written		I313	Konefal	Robert
5/29/2013	Written		I315	Tufillaro	John
5/29/2013	Written		I318	Kop	Nick & Kristina
5/29/2013	Written		I319	Gibson	Chris
5/29/2013	Written	H32	I320	Channon	Dave
5/29/2013	Written	H46	I321	Di Modica	Pete

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
5/29/2013	Written		I322	Dey	Susan
5/29/2013	Written	H45	I323	Lencina	Chandra
5/29/2013	Written		I327	Munro	Karen
5/29/2013	Email		I328d	Dreyfus	Matthew
5/29/2013	Email		I351	Treistman	Gary
5/29/2013	Email		I352	Steinberg	Lori
5/29/2013	Email		I356	Morris	Judith Ann
5/29/2013	Email		I362	Thomas	Todd
5/29/2013	Email		I364	Threecrow Purce	Barbara
5/29/2013	Written	H4	M206d	Donnelly	Martin
5/29/2013	Written		M254d	Porter	Michael
5/29/2013	Written		M266d	Tosi	Kimberly
5/29/2013	Written	H12	M306	O'Beirne	Carol
5/29/2013	Written		M314	Todd	Ward
5/29/2013	Written		M325	Eisel	James
5/29/2013	Written		M326	Schafer	Christa
5/29/2013	Written		O312	Diorio	L. Todd
5/29/2013	Written		O316	Gallagher	Marc
5/29/2013	Written		O317	Montana	Rosina
5/29/2013	Written	H43	O324	White	Tom
5/29/2013	Email		O353	Brighton	Heather
5/29/2013	Email		O354	Ballard	Jon
5/29/2013	Email		O355	Day Gray	Nicole
5/29/2013	Email		O357	Perla	Hilarie
5/29/2013	Email		O358	Brockway Henso	Amarae
5/29/2013	Email		O359	Orshan	Perry
5/29/2013	Email		O360	Caswell	Linda
5/29/2013	Email		O361	Warner	Doris
5/29/2013	Email		O363	Gillis	Matt
5/29/2013	Email		O365	Arnao	Victor
5/29/2013	Email		O366	Arnao	Victor
5/29/2013	Email		O367	Hoyt	Dorian
5/29/2013	Email		O368	Callaghan	Kathleen
5/30/2013	Email	H62	I309d	Gould	Kingdon
5/30/2013	Written		I328	Dreyfus	Matthew
5/30/2013	Email		I371	Winkler	Frank
5/30/2013	Email		I372	Walley	Pat
5/30/2013	Email		I373	Steen	Matthew
5/30/2013	Email	H34	I374	Shiner	Allen
5/30/2013	Email		I375	McCann	Amy
5/30/2013	Email		I376	Wilhelm	Kevin
5/30/2013	Email		O312d	Diorio	L. Todd
5/30/2013	Written	H57	O329	Savin	Nicholas
5/30/2013	Email		O369	Litoff	Mel
5/30/2013	Email		O370	Farrell	Kerry
5/30/2013	Email		O377	Levi	Lika
5/30/2013	Email		O378	Purchia	Pat
5/30/2013	Written		S330	Seward	James
5/31/2013	Written		I331	McCoy	Joan

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
5/31/2013	Written		I333	Keenan	Lydia & Daniel
5/31/2013	Email		I379	Flynn	Dorothy
5/31/2013	Email		I380	Van Loan	Annie & Howard
5/31/2013	Email		I382	Parker	Lee
5/31/2013	Written		M332	Thomson	James
5/31/2013	Written		M334	McMurray	Karen
5/31/2013	Email	H56	O381	Albanese	Tony
6/1/2013	Email		I384	Sanford	Corey
6/1/2013	Email		O383	Martello	Arthur
6/1/2013	Email		O385	Saunders	Eleanor
6/1/2013	Email		O386	Saunders	Eleanor
6/2/2013	Email		I387	Torres	Nick
6/2/2013	Email		I388	Kowalski	Charles
6/3/2013	Email		I389	Finocchiaro	Michael & Lory
6/3/2013	Email		I390	May	Deborah
6/3/2013	Written		I391	Threecrow Purce	Barbara
6/4/2013	Written		I392	Marks	Willis
6/4/2013	Written		I393	Axelrod	Robert
6/5/2013	Email		I394	Collins	Thomas
6/5/2013	Written		I395	Ortloff	Tasha
6/5/2013	Written		I396	Mukyu Efal	Rami
6/5/2013	Written		I397	Rubin	Anne
6/5/2013	Written		I398	Clave	Selina
6/5/2013	Written		I399	Tyler	Christopher
6/5/2013	Written		I400	Benton	Joel
6/5/2013	Written		I401	Tyler	Jessica
6/5/2013	Written		I402	Greenwood	Julie
6/5/2013	Written		I403	McCarthy	Robert
6/5/2013	Written		I404	Bissonnette	Susan
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6/5/2013	Written		I406	Dinan	Jude
6/5/2013	Written		I407	Ricci	Robert
6/5/2013	Email		I410	Verona	Dick
6/5/2013	Email		O408	Warren	Elizabeth
6/5/2013	Email		O409	Warren	Liz & Jeff
6/6/2013	Written		O411	Rosa	Alan
6/7/2013	Email		I412	Granito	John
6/7/2013	Email		I413	Gil	Samuel
6/8/2013	Email		I414	Pasternak	Donna
6/8/2013	Email		I435	McGill	Dennis
6/8/2013	Email		O415	Schachter	Cordell
6/9/2013	Email		I416	Korman	Bill
6/10/2013	Written		I417	Linge	Robert
6/10/2013	Written		I418	Storm	Gail
6/10/2013	Email		I419	B	Greg
6/11/2013	Email		I420	Channon	Dave
6/11/2013	Email		I421	Reuter	Yvonne
6/11/2013	Written	H71	I422	Helene	Weissman
6/11/2013	Email		I423	Margolis	Susanna

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6/12/2013	Email		I424	Dunleavey,Doren	Freddi, Goline
6/12/2013	Email		I425	Steiglehner	Ernest
6/12/2013	Email		O426	Bain	George
6/13/2013	Email		I427	Lukin	Mark & Ann
6/13/2013	Written		M428	Rozzelle	Sylvia
6/14/2013	Email		I429	Van Wicklen	Betty
6/15/2013	Email		I430	Yozwiak	Bernard
6/16/2013	Email		I432		Sophia
6/16/2013	Email		O431	Brenman	Andrew
6/17/2013	Email		I433	Channon	Dave
6/17/2013	Email		I434	Mulligan	James
6/18/2013	Email		I436	Tanner	Elizabeth
6/19/2013	Written		I434d	Mulligan	James
6/19/2013	Written		I438	Cohen	Harriet Terry
6/19/2013	Written		O437	Fratto	Sam
6/20/2013	Written		I439	Schulman	Erin
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6/21/2013	Email		O441	Baum	D
6/23/2013	Email		I442	Jordan	Jack
6/23/2013	Email		I443	Jordan	Kathy
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6/23/2013	Email		I445	Haines	Jeff
6/23/2013	Email		I446	Patton	George
6/23/2013	Email		I447	Fishkind	Janet & John
6/23/2013	Email		I448	Bishop	Brian
6/24/2013	Email		I449	Laub	Dr. Agnes
6/24/2013	Email		I450	Barnet	Jack & Sandy
6/24/2013	Email		I451	Dreyfus	Kip
6/24/2013	Email		I452	Adelson	Alex
6/24/2013	Email		I453	Hinkley	Cathy
6/24/2013	Email		I454	Fenton	Paula
6/24/2013	Email		I455	Graff	Steve
6/24/2013	Email		I456	Van Benschoten	Eric
6/24/2013	Email		O409d	Warren	Liz & Jeff
6/25/2013	Email		I457	Mccoy	Edward
6/25/2013	Email		I458	Russo	Bruce
6/27/2013	Email		I459	Weiner	Diane & Danny
6/28/2013	Email		I460	Kresic	Eva & Mark
6/30/2013	Email		I461	C	Pete
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7/1/2013	Email		O473	Weingart	Larry
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7/3/2013	Written		I475	Todaro	Philip
7/3/2013	Written		O476	Spiegel McGill	Phyllis
7/5/2013	Email		O477	Munro	Diane
7/6/2013	Email		I478	Mulder	Brian
7/6/2013	Email		I479	Walsh	Phyllis
7/6/2013	Email		I480	Walsh	Robert
7/8/2013	Email		I482	Metnick	Dennis
7/9/2013	Email		I481	Comando	Frank
7/9/2013	Email		I483	Channon	Dave
7/9/2013	Email		I484	Ramsay	Charles
7/9/2013	Email		I485	Gitter	Lynn
7/10/2013	Email		I486	Fliegel	Alan
7/11/2013	Email		I487	Gill	Barbara
7/11/2013	Email		I488	Kelley	Steven
7/11/2013	Email		I489	Dewkett	Katherine
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7/15/2013	Email		I527	Peters	Edward
7/15/2013	Email		I529	Newmann	Peter
7/15/2013	Email		I530	Rossitz	Jane & John
7/15/2013	Email		O517	Fickert	Mark
7/15/2013	Email		O520	Bunker	Tracie
7/15/2013	Email		O524	Elkins	Sara
7/15/2013	Email		O525	Collier	Jo
7/15/2013	Email		O526	Herbert	Nicole
7/15/2013	Email		O528	Bertram	Harrison
7/15/2013	Email		O531	Perez	Lorraine
7/15/2013	Email		O532	Linder	Becky
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7/16/2013	Email		I536	Choi	Henry
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7/16/2013	Email		I538	Wedemeyer	Eric
7/16/2013	Email		I539	Chamberlain	Edmund
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7/16/2013	Email		I542	Metnick	Amy
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7/17/2013	Email		I1115	Jennings	Dorothy
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7/17/2013	Email		O1013	Jeromos	Andrea
7/17/2013	Email		O1014	Garratt	Liz
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7/17/2013	Email		O1017	Traver	Virginia
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7/17/2013	Email		O1061	Gottlieb	Elizabeth
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7/17/2013	Email		O1067	Berkowitz-Berlin	Jill
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7/17/2013	Email		O1113	Destefano	Linda
7/17/2013	Email		O1114	Spinelli	Carol
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7/17/2013	Email		O1128	Feder	Helga
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7/17/2013	Email		O1959	Mull	Steven
7/17/2013	Email		O1960	Schulz	Carol
7/17/2013	Email		O1961	Niebanck	Joanne
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7/17/2013	Email		O571	Tedeschi	Ronald
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7/17/2013	Email		O618	Fanizzi	Ann
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7/17/2013	Email		O787	Nusbaum	Mailyn
7/17/2013	Email		O788	Aersbeek	M.d.
7/17/2013	Email		O789	Adrian	Marian
7/17/2013	Email		O790	Green	Warren
7/17/2013	Email		O791	Schurr	Arthur
7/17/2013	Email		O792	Eckhardt	Evelyn
7/17/2013	Email		O793	Maltz	Patricia
7/17/2013	Email		O794	Medick	Aaron
7/17/2013	Email		O795	Adamski	Jennifer
7/17/2013	Email		O796	Brooks	Graham
7/17/2013	Email		O797	Korman	Radha
7/17/2013	Email		O798	Knopf	Theresa
7/17/2013	Email		O799	Karibian	Karen
7/17/2013	Email		O800	Weinert	Chris
7/17/2013	Email		O801	Deyoe	Joanne
7/17/2013	Email		O802	Siegel	Lisa
7/17/2013	Email		O803	Hartshorne	Daryl
7/17/2013	Email		O804	Villines	Jarrett

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
7/17/2013	Email		O805	Viskup	Luise
7/17/2013	Email		O806	Kathryn	Fallon
7/17/2013	Email		O807	Packer	Ronnie
7/17/2013	Email		O808	Williams	Christopher
7/17/2013	Email		O809	Handford	Jeffrey
7/17/2013	Email		O810	Walker	Karen
7/17/2013	Email		O811	Clutz	Laura
7/17/2013	Email		O812	Camenzuli	Mary Ann
7/17/2013	Email		O813	Kantor	Marjorie
7/17/2013	Email		O814	Donlon	Marie
7/17/2013	Email		O815	Giblin	Thomas
7/17/2013	Email		O816	Williams	Dennis
7/17/2013	Email		O817	Tarr	Richard
7/17/2013	Email		O818	Ruoff	Eugene
7/17/2013	Email		O819	Sabatini	Lou
7/17/2013	Email		O820	Batterman	Alan
7/17/2013	Email		O821	Beach	Linda
7/17/2013	Email		O822	Kaminsky	Irene
7/17/2013	Email		O823	Koffler-Wise	Alison
7/17/2013	Email		O824	Pi-Sunyer	Penelope
7/17/2013	Email		O825	Ortiz	Nina
7/17/2013	Email		O826	D'Apollonia	James
7/17/2013	Email		O827	Bancroft	Edward
7/17/2013	Email		O828	Davis	Rachelle
7/17/2013	Email		O829	Ellis	Cathy
7/17/2013	Email		O830	Barrows	Fay
7/17/2013	Email		O831	Ruby	Glenda
7/17/2013	Email		O832	Mustacchia	Francesca
7/17/2013	Email		O833	Schwartz	Burton
7/17/2013	Email		O834	Crawford	Chris
7/17/2013	Email		O835	Brown	Dawn
7/17/2013	Email		O836	Wu	Ja-Ying
7/17/2013	Email		O837	O'hara	Colleen
7/17/2013	Email		O838	B	Linda
7/17/2013	Email		O839	Bianca	John
7/17/2013	Email		O840	Niemira	Jan
7/17/2013	Email		O841	Molina	Stephanie
7/17/2013	Email		O842	Berliner	Stan
7/17/2013	Email		O843	Dubow	Thea
7/17/2013	Email		O844	Urban	John
7/17/2013	Email		O845	Benson	Cara
7/17/2013	Email		O846	Lane	Lesley
7/17/2013	Email		O847	Gould	Kevin
7/17/2013	Email		O848	Ditroia	Juliet
7/17/2013	Email		O849	Aldridge	Robert
7/17/2013	Email		O850	Noll	Gregory
7/17/2013	Email		O851	Monroe	Diane
7/17/2013	Email		O852	Nakos	Judith
7/17/2013	Email		O853	Evans	Denise

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
7/17/2013	Email		O854	Howard	Raymond
7/17/2013	Email		O855	Gasparo	Paul
7/17/2013	Email		O856	Smock	Amanda
7/17/2013	Email		O857	Woodruff	Kathryn
7/17/2013	Email		O858	Targon	Elvira
7/17/2013	Email		O859	Valente	Rosalie
7/17/2013	Email		O860	Thiess	Peter
7/17/2013	Email		O861	Deleo	Donna
7/17/2013	Email		O862	Li	Weiwu
7/17/2013	Email		O863	Keir	Gary
7/17/2013	Email		O864	Chapellier	Nancy
7/17/2013	Email		O865	Kerbel	Doris, Sheldon
7/17/2013	Email		O866	Carey	Stephen
7/17/2013	Email		O867	Todd	Carl
7/17/2013	Email		O868	Benz	Danielle
7/17/2013	Email		O869	Matsakis	Diane
7/17/2013	Email		O870	Elliot-Brown	Judith
7/17/2013	Email		O871	Lepore	Phillip
7/17/2013	Email		O872	Massetti	Joan
7/17/2013	Email		O873	Hughes	John
7/17/2013	Email		O874	Kosciuk	Dominick
7/17/2013	Email		O875	Davenport	Leslie
7/17/2013	Email		O876	Kendrick-Bowser	Alan
7/17/2013	Email		O877	Simmons	Stephen
7/17/2013	Email		O878	Nersesian	Lucy
7/17/2013	Email		O879	D	Iryna
7/17/2013	Email		O880	McAlister	Rick
7/17/2013	Email		O881	Rodriguez	Ursula
7/17/2013	Email		O882	Stolte	Joshua
7/17/2013	Email		O883	Meola	Dawn
7/17/2013	Email		O884	Anastasiya	Nozhenko
7/17/2013	Email		O885	Vogel	Lilliana
7/17/2013	Email		O886	Mannion	Michael
7/17/2013	Email		O887	Smoke	Gary
7/17/2013	Email		O888	Crosas	Alec
7/17/2013	Email		O889	Leader	Fay
7/17/2013	Email		O890	Simon	Ruth
7/17/2013	Email		O891	Bergevin	Mary
7/17/2013	Email		O892	Sarabasha	Susan
7/17/2013	Email		O893	Moon	Mary
7/17/2013	Email		O894	Smith	Harry
7/17/2013	Email		O895	Warren	Roxanne
7/17/2013	Email		O896	Garner	Bonnie
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7/17/2013	Email		O901	Nissila-Stone	Idelle
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Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
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7/17/2013	Email		O905	Chazin	Allen
7/17/2013	Email		O906	Levin	Elizabeth Wolder
7/17/2013	Email		O907	Mccarthy	Kori
7/17/2013	Email		O908	Gluckin	Harvey
7/17/2013	Email		O909	B	L
7/17/2013	Email		O910	Stein	Adam
7/17/2013	Email		O911	Bice	Lola
7/17/2013	Email		O912	Marallo	Andrew
7/17/2013	Email		O913	Simon	Samuel
7/17/2013	Email		O914	Elniski	Angela
7/17/2013	Email		O915	Harris	Daniel L.
7/17/2013	Email		O916	Wellen	Mark
7/17/2013	Email		O917	Lowe	David
7/17/2013	Email		O918	Forster	Bruce
7/17/2013	Email		O919	Paravella	Heather
7/17/2013	Email		O920	Talamo	Gerald
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7/17/2013	Email		O935	Bryant	Cornell
7/17/2013	Email		O936	Martorano	Joan
7/17/2013	Email		O938	Jalkower	David
7/17/2013	Email		O939	Alemao	Pola
7/17/2013	Email		O940	Potter	Suzanne
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7/17/2013	Email		O942	Hendricks	Richard
7/17/2013	Email		O943	Nargi	Gina
7/17/2013	Email		O944	Astafan	Sara
7/17/2013	Email		O945	Sailors	Emma Lou
7/17/2013	Email		O946	Gordon	Marie
7/17/2013	Email		O947	Suydam	Harry
7/17/2013	Email		O948	Miller	Jim
7/17/2013	Email		O949	Carr	Beth
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7/17/2013	Email		O951	Rubin	Barbara
7/17/2013	Email		O952	Carson	Cliff
7/17/2013	Email		O953	Price	Elysee
7/17/2013	Email		O954	Stepkin	Frederick
7/17/2013	Email		O955	Timms	Garry
7/17/2013	Email		O956	Rodriguez	Jorge
7/17/2013	Email		O957	Robinson	M
7/17/2013	Email		O958	Price	Elysee
7/17/2013	Email		O959	Costantino	Anthony
7/17/2013	Email		O960	Cohen	Harriet
7/17/2013	Email		O961	Volk	Shelly
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7/17/2013	Email		O963	Beranbaum	Nancy
7/17/2013	Email		O964	Barry	Marina

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
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7/17/2013	Email		O967	Murray	Marold
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7/17/2013	Email		O969	Cudmore	Patrick
7/17/2013	Email		O970	Hooper	Nancy
7/17/2013	Email		O971	Sheffield	Susan
7/17/2013	Email		O972	Brzyski	Jeffrey
7/17/2013	Email		O973	Delgado-Thomps	Kateryn
7/17/2013	Email		O974	Feuchter	Robert
7/17/2013	Email		O975	Lukens	Jonathan
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7/17/2013	Email		O977	Muhammad	Rafeak
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7/17/2013	Email		O979	Slingerland	Richard
7/17/2013	Email		O980	Schoenberg	Robert
7/17/2013	Email		O981	Halpern	Richard
7/17/2013	Email		O982	Carroll	Donn
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7/17/2013	Email		O984	Simon	Joyce
7/17/2013	Email		O985	Berry	Ed
7/17/2013	Email		O986	Goldman	Susan Friess
7/17/2013	Email		O987	Doctor	Margarite
7/17/2013	Email		O988	Braudy	Michael
7/17/2013	Email		O989	Royce	Carol
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7/17/2013	Email		O992	Lee	Brenda
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7/17/2013	Email		O994	Palmer	Jason
7/17/2013	Email		O995	Harlan	Michael
7/17/2013	Email		O996	Giorgi	Michael
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7/17/2013	Email		O999	Rogers	N L
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7/18/2013	Written		I1461	Boyer	Michael
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7/18/2013	Email		I2692	Hinkley	Douglas
7/18/2013	Email		I2762	Robertson	Susan
7/18/2013	Email		I2763	Weissman	Rachel
7/18/2013	Email		I2764	Benton	Joel
7/18/2013	Email		I2787	Fleigel	Alan
7/18/2013	Email		I2817	Hyde	Adelinda
7/18/2013	Email		I2885	Nolan	Kathy
7/18/2013	Email		I2901	Hamway	Louis & Beverly
7/18/2013	Email		I2942	Gitter	Dean
7/18/2013	Email		I3030	Kozuch	Stephen

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7/18/2013	Written		I923	Coloton	Russel, Jr
7/18/2013	Written		I924	Caste	George
7/18/2013	Written		I925	Oppenheimon	S
7/18/2013	Written		I926	Williams	Matthew, Judy, Jen
7/18/2013	Written		I927	Schnack	Alicia
7/18/2013	Written		I928	Richards	Warren
7/18/2013	Written		I929	Schnack	David
7/18/2013	Written		I930	Petlo	Aul
7/18/2013	Written		I931	Lenings	C
7/18/2013	Written		I932	Meneterier	Norbert
7/18/2013	Written		O1351	Norton	Catherine
7/18/2013	Written		O1352	Milanich/Margol	Jerald/Mazine
7/18/2013	Written		O1353	Atkin	
7/18/2013	Written		O1354	Atkin	Barbara
7/18/2013	Written		O1355	Gropper	Stephen
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7/18/2013	Written		O1357	Weaver	Laritta
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7/18/2013	Written		O1359	Taber	Paul
7/18/2013	Written		O1360	Hickey	Patrick
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7/18/2013	Written		O1368	Roberts	Sandra
7/18/2013	Written		O1369	DeSimone	Paula
7/18/2013	Written		O1370	Brookside Hardware	
7/18/2013	Written		O1371	Lewis	Barrington
7/18/2013	Written		O1372	Jordan	Jack & Kathy
7/18/2013	Written		O1373	Peck/Gallarani	Richard/Vincent
7/18/2013	Written		O1374	Blish	Herbert
7/18/2013	Written		O1375	Jacobs	M.B.
7/18/2013	Written		O1376	Monteleone	Loraine
7/18/2013	Written		O1377	Cariot	Russell
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7/18/2013	Written		O1381	Heuey	Anne
7/18/2013	Written		O1382	Noseworthy	Bruce
7/18/2013	Written		O1383	Misner	Ivan
7/18/2013	Written		O1384	Sturm	Edward
7/18/2013	Written		O1385	Bloom	Isabelle
7/18/2013	Written		O1386	Bloom	Benuett
7/18/2013	Written		O1387	Hertler	Klaus & Marian
7/18/2013	Written		O1388	Hulse	Carol

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
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7/18/2013	Written		O1391	Perazone	Edward
7/18/2013	Written		O1392	Dobsa/George	John/Patti
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7/18/2013	Written		O1394	Schwartz	Lenore
7/18/2013	Written		O1395	Desilva	Ronald
7/18/2013	Written		O1396	Tweedie	Ron & Kathleen
7/18/2013	Written		O1397	McLean	Susan
7/18/2013	Written		O1398	Roach	Thomas
7/18/2013	Written		O1399	Leo	Tom
7/18/2013	Written		O1400	Campbell	Brad
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7/18/2013	Written		O1402	DuBeau	Pete
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7/18/2013	Written		O1404	Scofield	Roberta
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7/18/2013	Written		O1406	Pinto	Nancy
7/18/2013	Written		O1407	Meneterier	Jenna
7/18/2013	Written		O1408	Schnack	Lisa
7/18/2013	Written		O1409	Farleigh	Wheldon
7/18/2013	Written		O1410	Van Benschoten	Robert
7/18/2013	Written		O1411	Moore	Rusty
7/18/2013	Written		O1412	Sultzer	Barnet
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7/18/2013	Written		O1414	DeMaille	Darlene
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7/18/2013	Written		O1418	Vahlieck	Leslie
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7/18/2013	Written		O1422	Warner	J
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7/18/2013	Written		O1424	Stevenson	David
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7/18/2013	Written		O1428	Possemato	Anthony
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7/18/2013	Written		O1437	Stevens	Barbara

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
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7/18/2013	Written		O1439	Ford	Wayne
7/18/2013	Written		O1440	Torrillo	Barbara
7/18/2013	Written		O1441	Davidson	Carol & Linda
7/18/2013	Written		O1442	Cobbe	Cynthia
7/18/2013	Written		O1443	Ghoaor	Mary
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7/18/2013	Written		O1445	Destefano	Joseph
7/18/2013	Written		O1446	Gohrig	Marianne
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7/18/2013	Written		O1448	Herbst	George
7/18/2013	Written		O1449	Rossitz	Jane & John
7/18/2013	Written		O1450	Sanford	Willis
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7/18/2013	Written		O1468	Abruzzo	Teresa
7/18/2013	Written		O1469	Herbt	Rita
7/18/2013	Written		O1470	Joulyn	B.E.
7/18/2013	Written		O1471	Travis	Alex
7/18/2013	Written		O1472	Dunham	Lorraine & David
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7/18/2013	Written		O1486	Moses	Barbara & Roy
7/18/2013	Written		O1487	Coscia	Ernest & Wenifred
7/18/2013	Written		O1488	Steiglehner	Janet
7/18/2013	Written		O1489	Hohn	Marion & Hans

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
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7/18/2013	Written		O1494	Michelotti	Ann Carroll
7/18/2013	Written		O1495	Stone	Muriel
7/18/2013	Written		O1496	Walsh	Robert
7/18/2013	Written		O1497	MacDonald	Suzanne
7/18/2013	Written		O1498	Bachler	Frank & Gretel
7/18/2013	Written		O1499	Milazzo	Marie
7/18/2013	Written		O1500	Hait	Herbert & Mary
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7/18/2013	Written		O1505	Fleming	Bonnie
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7/18/2013	Written		O1521	Liddle	Edith
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7/18/2013	Written		O1524	Rose	Margaret
7/18/2013	Written		O1525		
7/18/2013	Written		O1526	Milazzo	Sue
7/18/2013	Written		O1527	Dowds	Joseph
7/18/2013	Written		O1528	Donnelly	Audrey
7/18/2013	Written		O1529	Milazzo	Anthony
7/18/2013	Written		O1530	Huber	Charles
7/18/2013	Written		O1531	McCall	Bonnie
7/18/2013	Written		O1532	Smith	J
7/18/2013	Written		O1533	Michaels	Leo
7/18/2013	Written		O1534	Walsh	Phyllis
7/18/2013	Written		O1535	Gunst	Susan & Mark
7/18/2013	Written		O1536	LaFever	John
7/18/2013	Written		O1537	Abbiate	Joan
7/18/2013	Written		O1538	Wikeus	Mildred

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
7/18/2013	Written		O1539	Brown	Kent
7/18/2013	Written		O1540	Fisher	Steven
7/18/2013	Written		O1541	Caffery	Harold
7/18/2013	Written		O1542	Pantale	Joseph & Janice
7/18/2013	Written		O1543	Andrews	Dorothy
7/18/2013	Written		O1544	Vagh	Louise
7/18/2013	Written		O1545	Nichols	Albert
7/18/2013	Written		O1546	Jeel	Fred
7/18/2013	Written		O1547	De Stefano	Anita
7/18/2013	Written		O1548	Pinto	Maurel
7/18/2013	Written		O1549	Brown	Phyllis
7/18/2013	Written		O1550	Greenfield	Joseph
7/18/2013	Written		O1551	Mead	Iris
7/18/2013	Written		O1552	Glinkin	Fred
7/18/2013	Written		O1553	Archibald	Diane & Fred
7/18/2013	Written		O1554	Giannone	Joseph
7/18/2013	Written		O1555	Kurtzer	Dolores
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7/18/2013	Written		O1557	Sanford	Lorraine
7/18/2013	Written		O1558	Riordan	Dave
7/18/2013	Written		O1720	Bremley	Cindy Lou
7/18/2013	Written		O1721	Shults	Lucia
7/18/2013	Written		O1722	Holtzinger	Joseph
7/18/2013	Written		O1723	Adelson	Margie
7/18/2013	Written		O1724	Kulaski	William
7/18/2013	Written		O1725	Medsker	Joan
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7/18/2013	Written		O1728	McCoy	E
7/18/2013	Written		O1729	Cauys	Reedds
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7/18/2013	Written		O1731	Schaumloffel	Rosemary
7/18/2013	Written		O1732	Adami	Rita
7/18/2013	Written		O1733	VanDusen	Dorothy
7/18/2013	Written		O1734	Brooks	H
7/18/2013	Written		O1735	Randazzo	Ted
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7/18/2013	Written		O1742	Hacknauer	August & Helga
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7/18/2013	Written		O1744	Sully	Sarah
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7/18/2013	Written		O1748	Bunh	Rod

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
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7/18/2013	Written		O1753	Reid	Kennith
7/18/2013	Written		O1754	Schlee	Diane & Louis
7/18/2013	Written		O1755	Laub	Milton
7/18/2013	Written		O1756	Kearney	Margaret
7/18/2013	Written		O1757	Becker	Sindy
7/18/2013	Written		O1758	Pukeal	Heribert
7/18/2013	Written		O1759	Jnoelle	L.M.
7/18/2013	Written		O1760	Trask	Barbara
7/18/2013	Written		O1761	Persons	Sylvia & Ralph
7/18/2013	Written		O1762	Zirinsky	Michael
7/18/2013	Written		O1763	Sieols	Renis
7/18/2013	Written		O1764	Mason	Elizabeth
7/18/2013	Written		O1765	Washington	Thomas
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7/18/2013	Written		O1769	Giannone	Diane
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7/18/2013	Written		O1771	Muller	Nancy
7/18/2013	Written		O1772	Coan	Qurmy
7/18/2013	Written		O1773	Suess	Sharon
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7/18/2013	Written		O1780	Davis	Carol
7/18/2013	Written		O1781	Zwill	Francis
7/18/2013	Written		O1782	Findley	Luana
7/18/2013	Written		O1783	Keller	Robert & Laura
7/18/2013	Written		O1784	Kessler	Leula
7/18/2013	Written		O1785	Cnrkovic	Doris
7/18/2013	Written		O1786	Chamberlain	Carole
7/18/2013	Written		O1787	LaRocca	Lorain
7/18/2013	Written		O1788	Holmes	Stanley
7/18/2013	Written		O1789	Balcom	Laura
7/18/2013	Written		O1790	Belen	J.K.
7/18/2013	Written		O1792	Moeller	Walter
7/18/2013	Written		O1793	(Wipple Rd)	R
7/18/2013	Written		O1794	(Hog Mt Rd)	R
7/18/2013	Written		O1795	Palmatier	Robert
7/18/2013	Written		O1796	Mills	Judy
7/18/2013	Written		O1797	Mochrlu	Rob
7/18/2013	Written		O1798	Rymer	Marcia
7/18/2013	Written		O1799	Montouelli	A.
7/18/2013	Written		O1800	Cangero	Thomas
7/18/2013	Written		O1801	Barney	Teray
7/18/2013	Written		O1802	Barry	J
7/18/2013	Written		O1803	Orshan	James

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
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7/18/2013	Written		O1805	Mahund	Will
7/18/2013	Written		O1806	Carver	Robert
7/18/2013	Written		O1807	Carver	Nina
7/18/2013	Written		O1808	Amberger	Judy
7/18/2013	Written		O1809	Gearhart	Jeffery
7/18/2013	Written		O1810	Zwick	Sarah
7/18/2013	Written		O1811	Steinbuch	Dorothy
7/18/2013	Written		O1812	Thompson	Wanda
7/18/2013	Written		O1813	Barney	Brian
7/18/2013	Written		O1814	Clark	Jim & Jean
7/18/2013	Written		O1815	Pollinger	Roy
7/18/2013	Written		O1816	Meander	Norman
7/18/2013	Written		O1817	Kanogan	Daniel
7/18/2013	Written		O1818	Neif	Wendy
7/18/2013	Written		O1819	Stoner	Linda
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7/18/2013	Email		O20603d	Head	Monroe
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7/18/2013	Written		O2062	Blouin	Don
7/18/2013	Written		O2063	MacDougall	Maureen
7/18/2013	Written		O2064	Kessler	Revit
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7/18/2013	Written		O2069	VanDusen	Preston
7/18/2013	Written		O2073	Muro	Karen
7/18/2013	Written		O2074	Burd	Donald
7/18/2013	Written		O2075	Curon	Laura
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7/18/2013	Written		O2080	Webb	E
7/18/2013	Written		O2081	House	Syenn
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7/18/2013	Written		O2083	Bramley	Jeremy
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7/18/2013	Written		O2093	Donell	Rich
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Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
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7/18/2013	Written		O2097	Whitaker	Rosemary & Glen
7/18/2013	Written		O2098	Turance	Anthony
7/18/2013	Written		O2099	Frisenda	Andrea
7/18/2013	Written		O2100	Gregory	Judith
7/18/2013	Written		O2101	So	Gail
7/18/2013	Written		O2102	Willkie	Jared
7/18/2013	Written		O2103	Turance	Pamela
7/18/2013	Written		O2104	Scott	Charles
7/18/2013	Written		O2105	Harpersfield	Resident
7/18/2013	Written		O2106	Smith	Ann
7/18/2013	Written		O2107	Liskey	Robert
7/18/2013	Written		O2108	Odami	Ruth
7/18/2013	Written		O2109	Travis	Beverly
7/18/2013	Written		O2110	Lesko	Scott
7/18/2013	Written		O2111	Parker	Marilyn & Barry
7/18/2013	Written		O2112	Todd	Jane
7/18/2013	Written		O2113	Funck	Barbara & Richard
7/18/2013	Written		O2114	Kantsowitz	Will
7/18/2013	Written		O2115	Feldman	Michara
7/18/2013	Written		O2116	Arlands	Gilbert
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7/18/2013	Written		O2119	Tierney	John
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7/18/2013	Written		O2124	Dahlberg	Lorraine & Stuart
7/18/2013	Written		O2125	Siliro	Alui
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7/18/2013	Written		O2127	Gearhart	Susan
7/18/2013	Written		O2128	Orn	Pam
7/18/2013	Written		O2129	Gailes	Robert
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7/18/2013	Written		O2134	Kamp	William
7/18/2013	Written		O2135	Liddle	Richard & Jenny
7/18/2013	Written		O2136	Thompson	Jeannette
7/18/2013	Written		O2137	Gladstone	Wayland
7/18/2013	Written		O2138	Gladstone	Suzanne
7/18/2013	Written		O2139	Geuikaid	Ron
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7/18/2013	Written		O2143	Borsellino	Leonardo
7/18/2013	Written		O2144	Clark	Richard
7/18/2013	Written		O2145	Sorkow	Ceorl

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
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7/18/2013	Email		O2152	Wagner	Susan
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7/18/2013	Email		O2155	Berberich	Roy & Gloria Jean
7/18/2013	Email		O2156	Kessler	Richard
7/18/2013	Email		O2158	Schanzer	Beverly
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7/18/2013	Email		O2161	Homanich	George
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7/18/2013	Email		O2607	Rodriguez	Miguelina
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7/18/2013	Email		O2621	Darata	Vincent

Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
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7/18/2013	Email		O2624	Campell	William
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7/18/2013	Email		O2626	Busse	Judith
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7/18/2013	Email		O2628	Ermina	Ayming
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7/18/2013	Email		O2631	Jones	Catherine
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7/18/2013	Email		O2637	Cospito	Dr. Robert
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7/18/2013	Email		O2639	Almeida	Mary
7/18/2013	Email		O2640	Morieira	Blanca
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7/18/2013	Email		O2644	Sadowski	Ellen
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Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
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Date Sent	From	Hearing Code	Written Comment Code	Last Name	First Name
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7/18/2013	Email		O2723	Jaskowiak	David
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7/19/2013	Email		O3149	Stafford	Noreen
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7/19/2013	Email		O3154	Greeson	Brian
7/19/2013	Email		O3155	Coddington	Carol
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7/19/2013	Email		O3157	Cote	Carol
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7/19/2013	Email		O3164	Monteforte	A.T.
7/19/2013	Email		O3165	Rivera	Michael
7/19/2013	Email		O3166	Peck	Francis
7/19/2013	Email		O3167	Dame	Laura
7/19/2013	Email		O3168	Acevedo	Kimberlyn
7/19/2013	Email		O3169	Farrell	Kathleen
7/19/2013	Email		O3170	Zinn	Andrea
7/19/2013	Email		O3171	Kelly	Barbara
7/19/2013	Email		O3172	Silvestri	Marc
7/19/2013	Email		O3173	Walling	Meg
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7/19/2013	Email		O3175	Bartell	Lee
7/19/2013	Email		O3176	Fell	Joseph
7/19/2013	Email		O3177	Memmert-Miller	Zoey
7/19/2013	Email		O3178	Powell	Sara
7/19/2013	Email		O3179	Sterback	Carolyn
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7/19/2013	Email		O3181	Veraguth	Conrad
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7/19/2013	Email		O3183	Hammond	Carol
7/19/2013	Email		O3184	Garnett	Juanita
7/19/2013	Email		O3185	Grishina	Galina
7/19/2013	Email		O3186	Willner	Daniel
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7/19/2013	Email		O3190	Metzger	Judith
7/19/2013	Email		O3191	Micari	Tina
7/19/2013	Email		O3192	Hughes-Smith	Susan
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7/19/2013	Email		O3196	Hartnett	Erik
7/19/2013	Email		O3197	O'Neill	Tara
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7/19/2013	Email		O3203	Scott	Stefani
7/19/2013	Email		O3204	Meyer	Susan
7/19/2013	Email		O3205	Dodd	Richard
7/19/2013	Email		O3206	Caduff	Aloka
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7/19/2013	Email		O3213	Raite	Sarah
7/19/2013	Email		O3214	Rabin	Patricia
7/19/2013	Email		O3215	Fredenthal	Ruth Ann
7/19/2013	Email		O3216	Zervakos	Ashley
7/19/2013	Email		O3217	Jacobs	Sk
7/19/2013	Email		O3218	Debre	Erika
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7/19/2013	Email		O3220	Avendano	Emily
7/19/2013	Email		O3221	Wuensch	Margaret
7/19/2013	Email		O3222	Best	Marta
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7/19/2013	Email		O3225	Merndo	Chris
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7/19/2013	Email		O3264	Musso	Diana
7/19/2013	Email		O3265	Kaslow	Ann
7/19/2013	Email		O3266	Barber	Deborah
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7/19/2013	Email		O3269	Jahn	Bill
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7/19/2013	Email		O3275	Henrie	Loretta
7/19/2013	Email		O3276	Ewing	Peter
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7/20/2013	Written		I1791	Hoeko	John
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7/20/2013	Email		O3327	Roth	Wayne
7/20/2013	Email		O3328	Goldsmith	Silvia
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Responses to Comments

SECTION 1.0 INTRODUCTION

This section of the FEIS contains the comments received during the public comment period and responses to those comments. Comments are grouped by topics that correspond to the different topics (sections) of the DEIS. Comments within each section are numbered. Comments that are similar within each topic are grouped together and a single reply is provided for the grouped similar comments. Similar comments are indicated with alpha-numeric identifiers (i.e. 1.a, 1.b, 1.c, etc.). At the end of each comment there is a bold alphanumeric comment code (i.e. **O3635** for the first comment, (1), below. A list of the comment codes and what person or organization made the comment was provided previously in this FEIS.

General Response: Economic viability and feasibility of the Modified Belleayre Resort project is outside the lawful scope of this SDEIS. DEC's role as lead agency is to build an environmental record that will allow the involved agencies, including DEC, NYC DEP, and the Towns of Shandaken and Middletown, to make findings and, as required by SEQR, weigh and balance the public need and other social, economic and environmental benefits of the project against identified environmental harm. Purely economic arguments have been disallowed by the courts as a basis for agency conclusions when concluding a SEQR review Economic impacts are only relevant to the extent they may impact community character. Response to comments that address the viability of the project have been provided by Crossroads to satisfy concerns raised by the public regarding viability of the proposed resort and are indicated throughout the document with the label "**CR Response**". DEC's staff economist has, however, concluded that the applicant's work comported with generally accepted standards and practices in economics.

(1) The EISs are not consistent with the AIP and the Scoping Document. **O3635**

Response: The lead agency used the final written scope to determine whether to accept the draft SDEIS as adequate with respect to its scope and content for commencing public review. By accepting the SDEIS as adequate for public review on April 27, 2013, NYSDEC, as lead agency, determined that the scope and content of the SDEIS was adequate. The Department believes that its determination was correct. As far as the AIP is concerned, the Department treated it as a project description and the SDEIS covered all of the significant impacts associated with that project as it was modified (and substantially so) in the course of the project review.

1.1 Project Site Location

No substantive comments were submitted on this topic.

1.2 General Project Description

(1) The "compromise" was anything but. It allowed these developers to sell a piece of land at enormous profit to the state - legalized blackmail, and now still allow a resort that is many times too large for anything that should be considered for the area. **I252**

Response: The sale of the Big Indian property was the subject of at least two independent appraisals which established fair market value obtained by NYSDEC which were subsequently reviewed and ultimately approved by the NYS Attorney General's Office and the NYS Comptroller.

The proposed project and its compatibility with approved local land use regulations is discussed in SDEIS section 3.8, and additional information on this compatibility with local land use regulations is provided in section 3.8 of this FEIS.

1.3 Project Purpose, Need and Benefits (CR Response)

(1) Section 1.3 Modified Project General Description - Second paragraph on page v states:

> "The part of the Modified Project site furthest to the west, known as the Adelstein parcel, is approximately 203 acres in size and in accordance with the AIP is under a Conservation Easement to the City of New York. The Conservation Easement allows for passive recreational uses associated with Highmount and Wildacres, such as cross country skiing, snowshoe trails, hiking, horse riding, and accessory structures, and/or an outdoor amphitheater, but provides that there will be no residential, overnight lodging, or industrial uses."

The SDEIS does not include information on the proposed accessory structures, and/or outdoor amphitheater. The SDEIS should include a survey of the Conservation Easement Building Envelope (10 acres) as described in Appendix 2 Adelstein Conservation Easement. Furthermore, the SDEIS should include a site plan that depicts the approximate size and location of the proposed structures and any associated infrastructure, such as utilities, parking, paths and limits of disturbance. **M3637**

Response: The survey mapping of the building envelope that is part of the conservation easement entitled City of New York Department of Environmental Protection Land Acquisition Survey in the Matter of Acquiring a Conservation Easement on Lands of Crossroads Ventures, LLC, prepared by Rettew Engineering and Surveying, P.C., dated June 30, 2009 is included in Errata section of this FEIS.

Crossroads Ventures currently has no plans for development within the building envelope. If and when there are plans developed for the conservation easement building envelope, they will need to meet the terms and conditions of the conservation easement, they will be subject to local site plan review, and they will have to meet the regulatory requirements of NYCDEP as well as other regulatory agencies with permitting jurisdiction.

(2) As set forth in greater detail in the attached report prepared by PEFA. The HVS and the Ragatz studies were prepared in 2008 at the height of the speculative real estate market and just prior to the near collapse of the American economy. Far from constituting data that merely ages over the course or an environmental review process, here, the project sponsors and lend agency relied from the outset on woefully and materially incorrect information to justify the basic purpose and need for the projects as well as their purported public benefits. In terms of real estate

development and investing, today's world i s completely different than when the studies were prepared in 2008 prior to one of this s country's most destructive economic crashes. Crossroads has submitted to DEC three draft supplemental environmental impact statements in 2011, 2012 and 2013. Yet it has failed, in all of these submissions, to provide updated reports, from either HVS or Ragatz, which reflect current market conditions. *(See Response 2.1 below).*

We note that the conclusion that the hotel would only be "marginally feasible" was made at the height of the real estate bubble, just prior to the crash. If projections based on contemporary information were used, the project's feasibility would be seriously questioned. *(See Response 2.2 below).*

A recent study issued by Ragatz in 2013 demonstrates that the 2008 Ragatz conclusions are no longer valid. In its 2013 report, Ragatz states that the market for shared-ownership units had collapsed, perhaps by 80%. Ragatz Assoc., *The Shared-Ownership Resort Real Estate Industry in North America: 2013.* In just the year between 2011 and 2012, sales volume in fractional interest projects decreased by over 30 percent, and sales volume in the shared ownership industry as a whole declined nearly 80 percent between the peak year of 2007 and 2013. *(See Response 2.3 below).*

HVS and the SDEIS used a level of absorption for resort facilities that is well above the level reported for the 1 2 northeastern resorts used as "comparables" in the ten years before 2008 and the onset of the economic downturn. The shared-ownership component of the two Belleayre Resorts (Highmount and Wildacres) would increase the number of northeast existing and under construction units as of 200 by a whopping 42 percent. *(See Response 2.4 below).*

Neither of these reports account for the effects that climate change might have on the economics of a ski-based resort development, and, remarkably, do not even mention the concept of climate change. In fact, the Ragatz report seems willfully ignorant of the effects a warming climate will have on northeastern ski resorts. *(See Response 2.5 below).*

Update the HVS and Ragatz economic analyses of the Resort's viability given current market conditions. This update is a crucial component of the SEQRA analysis which is supposed to balance socio-economic factors against negative environmental impacts that will result from the two projects. *(See Response 2.1 below).*

Crossroads baldly claims that the Highmount portion is essential to the economic viability of the entire project and that the outdated HVS report supports this allegation. However, nowhere in its report does HVS substantiate such claim, and in fact, the HVS report does not even look at a comparison of alternatives. *(See Response 2.6 below).*

Both HVS's and Ragatz' market and feasibility studies found in Appendix 5 are based upon 2007/08 conditions that do not reflect more recent and current market conditions. *(See Response 2.1 below).*

The hotel component of the proposed resort was determined by HVS to be only “marginally feasible” in 2008 based upon peak or near peak of market conditions that no longer exist. *(See Response 2.2 below).*

Ragatz’ feasibility analysis of the proposed resort’s shared-ownership component assumes no long-term deterioration of economic conditions. Shortly thereafter, the U.S. and much of the world’s economics entered an extended economic downturn that saw the collapse of the shared-ownership market. *(See Response 2.3 below).*

Claiming HVS to have concluded “…that the proposed project-namely, full development of all project components-is the only feasible and viable approach,” the resort SDEIS summarily dismisses any alternatives (Resort SDEIS, Vol. 1, p. xxxvii). No such conclusion, however, is found in HVS; contribution to the resort SDEIS. Nor does HVS’ contribution examine, analyze, or evaluate any alternatives to the proposed resort. *(See Response 2.6 below).*

Market conditions, absorption rates for comparable resorts, the ratio of skiers to lodging units, and sub-marginal returns as a result of higher construction costs are all supportive of the conclusion that the proposed resort is over-sized and/or over-capitalized. *(See Response 2.7 below).*

The proposed resort requires a level of absorption that is well above that achieved by twelve comparable northeastern U.S. resorts identified by HVS in the ten-years preceding the onset of the recent economic downturn. *(See Response 2.4 below).*

The shared-ownership component would increase the number of existing and under-construction shared-ownership units in the northeastern U.S. as of 2008 by 42 percent in a market that Ragatz has since documented to have collapsed by 80 percent. *(See Response 2.4 below).*

Under-performance of the resort’s shared-ownership component would cause its hotel component to bear a greater burden for shared infrastructure and development costs while also reducing hotel component cash flows placing further downward pressure on expected returns and feasibility. *(See Response 2.3 below).*

A comparison of the construction cost applied in the decision documents with HVS’s annual 2008 Hotel Development Cost Survey and with two comparable base area ski resort projects in Stowe, VT and Ellicotteville, NY completed in 2007 shows that its cost can be expected to be about 20 percent greater than the $364.7 million figure applied in the resort SDEIS.

A more recent 2012 cost estimate by the developed for the proposed resort’s first phase that includes 75 percent of all proposed lodging units indicates its total development cost could be up to as much as 30 percent greater than the figure applied in the SDEIS ($2007).

Either of these cost figures would cause the resort’s pro-forma returns to fall well below the levels shown in the resort SDEIS. *(See Response 2.8 below).*

For the Route 28 corridor to support its existing inventory of overnight lodging units and those of the proposed resort its ratio of skier visits to lodging units would need to be better (i.e., lower) than that of Killington/Pico, VT, Lake Placid, NY, Vail, CO, and Mammoth Mountain, CA; and, it would need to equal that of the four-mountain Aspen, CO complex.

To the extent it falls short of equaling or bettering these resort's ratios, the proposed resort would divert overnight visitors, spending, and investment from existing communities and businesses in the Route 28 corridor. *(See Response 2.9 below).*

A review of Appendix 5 ("Fiscal and Marketing Information") of the resort SDEIS finds it to be outdated, flawed, and unreliable. *(See Response 2.1 below).*

Much of Appendix 5 is based upon peak or near peak of market conditions that no longer exist. Accordingly, market data and pro-formas in this Appendix have little relevance to current and prospective market conditions.

Ragatz specifically acknowledges the proposed resort's prospects to be dependent upon continuation of then-prevailing market conditions through its assumption of "no long-term major decline in the U.S. and global economies" (SDEIS, Appendix 5, Part 3, p. 303). A few months thereafter, the U.S. and many other world economies entered the most extended and severe economic downturn since the Great Depression.

The market for shared-ownership real estate produces peaked in 2007, and has decreased precipitously through 2012. A subsequent study by Ragatz shows the volume of shared-ownership sales to have decreased by nearly 80 percent from 2004 to 2012-from $2.3 billion to $497 million as shown in Figure 4.

Figure 4
Shared Ownership Real Estate Sales Volume, New Closed, Pre-sales, and In-house Resales, 2004 to 2012.

Year	Sales Volume (billions)	Percent of Peak Year (2007)
2004	$1,544	67.1%
2005	1,968	85.6%
2006	2,152	93.6%
2007 (Peak Year)	2,300	100.0%
2008	1,473	64.0%
2009	0.860	37.4%
2010	0.530	23.0%
2011	0.552	24.0%
2012	0.497	21.6%

Source: Ragatz, "The Shared-Ownership Resort Real Estate Industry in North American," 2013.

[A copy of the executive summary of the Ragatz study is contained in the Errata section of this FEIS]

Ragatz (2013) cites several factors to have contributed to the collapse of the shared-ownership market that have persisted "…since the last quarter of 2008:

- uncertainty about the country's long-term economic stability
- almost complete lack of consumer financing
- decrease in primary home equity funds for purchasers who previously paid cash
- concern with making "conspicuous consumption" purchases
- lack of marketing funds
- a glut of whole-ownership vacation homes on the market, with significantly decreasing prices
- increasing competition from vacation home rentals and rental clubs
- consumers waiting for all types of resort real estate prices to drop further."

(See Response 2.3 below).

Returning to the resort SDEIS, Ragatz inventories a total of 490 existing and under-construction shared-ownership units in the northeast as of 2008 (Appendix 5, Ragatz, p. 165). The proposed resort's shared-ownership units would increase the then-current existing inventory by 42 percent in a market that has since collapsed by 80 percent.

The largest shared-ownership project identified by Ragatz in the resort SDEIS is the Jackson-Gore Inn at Okemo Mountain Resort, VT. The Jackson-Gore Inn had 155 existing (current or under-construction) units and 144 additional planned but unbuilt units at that time. Whiteface Lodge in Lake Placid, NY had the third largest number of units (86 existing, 11 planned).

Okemo, VT has been among the most rapidly growing ski resorts in Vermont over the last three decades. Its skier visits are reported to have increased from 95,000 in the early 1980's to over 600,000 more recently, nearly rivaling the Killington/Pico, VT complex. Adjusted for skier visits, the proposed resort would have about 2.5 times as many existing shared-ownership units than Okemo, and about 1.75 times more than Lake Placid.

The SDEIS forecasts the majority of the proposed resort's shared-ownership units to sell within four to five years (Resort SDEIS, Appendix 5, HVS, p. 5-63). The foregoing discussion indicates the shared-ownership component of the proposed resort would underachieve its sales forecast causing expected cash flows to be lower than forecast in the SDEIS. Significantly, the shared-ownership component represents 41 percent of the proposed resort's total overnight lodging units, as shown earlier in Figure 1. *(See Response 2.4 below).*

Appendix 5 of the resort SDEIS shows the performance of the golf course and the shared-ownership units of the proposed resort to be highly dependent upon each other. Golf course membership cash flows are dependent upon sale of shared-ownership units for which the purchase of a golf membership and ongoing dues is to be mandatory. Likewise, projected cash flows from other membership elements, (e.g., spa, fitness center, tennis, and the ski club membership add-ons) depend upon payment of "base" resort membership fees by purchasers of shared-ownership units (Resort SDEIS, Appendix 5, HVS page 5-67, 70). Failure to meet Ragatz' projected sales forecast would negatively impact all expected resort cash flows, most notably for the golf course.

Cash flows from the shared-ownership component could be further diminished by the need to bundle anticipated initial membership joining fees with purchase of the shared-ownership real estate products. Initial golf membership joining fees are to range from $5,500 (1/12th share) to $25,000 (whole unit share) per shared-ownership unit which will raise the effective price of these units. Annual dues are to be $500 for a 1/12 share unit to $4,750 for whole-share units (Resort SDEIS, Appendix 5, HVS, p. 5-76 to 5-83).

Moreover, the resort SDEIS expresses uncertainty towards the shared-ownership bundled financing plan, describing its legality as something that needs "to be explored" (Resort SDEIS, Appendix 5, HVS, pa. 5-75). Should bundling of purchase and initial membership fees be precluded, initial membership fees would need to be paid out-of-pocket by prospective purchasers. Purchasers might also seed an independent source of financing such as a personal or home equity loan, other means. Either alternative would create an additional hurdle for prospective purchasers. *(See Response 2.3 below).*

HVS' feasibility analysis determines the hotel component to be only "marginally feasible" based upon near or peak of market conditions (Resort SDEIS, HVS, p. 7-8). The marginally feasible determination is found at the end of the final substantive chapter of HVS' hotel component feasibility analysis and does not appear to be found elsewhere in the resort SDEIS, or in DEC's cumulative impact assessment.

As will be demonstrated, HVS' "marginally feasible" determination overstates the proposed resort's prospects. *(See Response 2.2 below).*

The cost of development of the hotel component is a key factor affecting HVS' assessment of its feasibility. Holding other factors constant, higher development costs diminish feasibility. HVS's marginally feasible determination is based upon the omission of tens of millions of dollars of associated development costs from its calculated internal rate of return (IRR). Minimally, costs excluded by HVS include FFE, financing costs, start-up costs, and possibly engineering.

HVS's analysis is based upon a selected "competitive set" of twelve comparable northeastern U.S. resorts it considers to be prospective competitors of the proposed resort. Among the competitive set are resorts that, similar to the proposed resort, offer a range of overnight lodging units, including standard hotel units and various shared-ownership products. HVS acknowledges the competitive set to consist of a mix of unit styles noting, "Destination resorts are notorious for …variations in rentable inventory to the capricious inclusion or exclusion of quasi hotel room products such as on-site townhomes and condominiums." HVS makes the reasonable determination that such variations are "not relevant" in the "broader scheme of this analysis" (Resort SDEIS, Appendix 5, HVS, p. 4-6).

Consistent with HVS's determination, the comparable supply of overnight lodging units at the proposed resort consists of all of its proposed overnight lodging units. As noted earlier, the large majority of these units are to be closely associated with the two hotels. Any or all could be placed into the hotel rental pool at one time or another, or independently leased by one or more of their shared-owners.

Among the competitive set, all but one (the Sagamore at Bolton Landing, NY on Lake George with 350 lodging units) have less than half the number of overnight lodging units of the proposed resort. Among the competitive set are some of the most venerable resort properties in the U.S. All but two are long-established resorts with operating histories dating from before 1959. Some were established in the 1800s and 1700s. The most recent of the proposed resort's competitive set opened 43 years ago. None are located at the base of a major destination ski area, or of any ski area. Only two appear to be located within a few miles thereof. *(See Response 2.8 below).*

HVS documents the absorption of new overnight lodging units among the competitive set between 1997 and 2007. As previously mentioned, the competitive set "rooms" to which HVS refers are not limited to standard hotel rooms. Rather, they include a mix of overnight lodging units reflecting an assortment of standard hotel rooms, in addition to "…quasi-hotel room products such as on-site townhomes and condominiums" which accurately describes the proposed resort. HVS correctly observes that the distinction between standard hotel rooms and other onsite (i.e., shared-ownership) lodging units among the competitive set is not relevant noting their unit mix to be "highly reliable" and "representative of the broader market trends" (Resort SDEIS, Appendix 5, HVS, p. 4-6).

Thus, for purposes of gauging absorption rates it is the total number of overnight lodging units available or potentially available for overnight lodging that is of relevance, irrespective of variations in configuration, size, or ownership status. Like HVS• competitive set, the proposed resort is to include a diverse selection of shared-ownership units under central management that would contribute to the resort's inventory of overnight accommodations.

HVS shows the twelve comparable resorts to have added a total annual average of just 25 lodging units (inclusive of standard hotel rooms and other "quasi-hotel" units) between 1997 and 2007. The resort SDEIS is based upon its adding 2.6 times as many units annually over a similar period. The largest total year-over-year expansion for the competitive set amounted to only 115 units between 2002 and 2003. The proposed resort would add 423 units consisting of 370 standard hotel rooms and 53 shared-ownership units of various sizes and configurations in a single year. This amounts to 3.7 times more than the competitive set combined managed in a single year.

Bearing this in mind, HVS's dismissal of the significance of lntraWest's difficulties is not justified (Resort SDEIS, HVS, p. 4-17). Amounting to 41 percent of its overnight lodging units, the proposed resort would contain a sizable shared-ownership real estate sales component. As discussed elsewhere in this review, the overall resort and the hotel component's feasibility are directly related to the absorption, yield, and cost of the shared-ownership component. Intra West's experience, which reflects the collapse of the shared-ownership market, demonstrate the shared-ownership feasibility analysis in the resort SDEIS to be unrealistic on the basis of post-2008 market conditions. *(See Response 2.4 below).*

The resort SDEIS contains a highly aggregated construction cost estimate that includes "site preparation and hard costs (acn1al construction), and de-sign [sic}, legal and related costs". However, it excludes "other values (such as financing, the value of the land, marketing, etc.) not directly a part of the expenditures for construction" (Resort SDEIS, Appendix 3, p. 36 and 37).

The exclusion (at minimum) of FFE, construction-related financing, pre-opening, and initial costs causes HVS's feasibility analysis to be optimized and to reflect a significant upward bias on forecast returns.

The SDEIS applies a total resort development cost of $364.7 million which amounts to an overall average unit cost of about $580,000. The hotel component is estimated to cost $190 million for an average cost of $ 14,000 per unit (Resort SDEIS, HVS, Appendix 5, p. 7-1).

Elsewhere, however, the resort SDEJS estimates the cost of the Highmount portion at S 182.19 million (Resort SDEIS, p. 5-6). This amounts to an average unit cost of about $843,500. Adding the $182.2 million Highmount portion plus the $190 million cost of the Wildacres hotel and its associated elements (Resort SDEIS, Appendix 5, HVS, p.xxx) yields a development cost of $373 million. This is about $12 million more than the figure applied in the resort SDEIS. The S373 million figure, however, does not include the cost of Wildacre's 163 shared-ownership units (Resort SDEIS, Appendix 5, HVS, p. 7-3) that account for 25 percent of the resort's 629 proposed units. Inclusion of these units could push the proposed resort's total construction cost towards $450 million.

There are other factors that would tend to cause the proposed resort's development cost to exceed that applied in its SDEIS. It is to bear an unspecified amount of the cost of some ski facility improvements (the "Spa Village lift", Resort SDEIS, Volume I, p. 2-15). It is located in a mountainous environment subject to weather conditions that would limit the construction season. It is accessible by a mountainous two-lane road that winds around a reservoir over which most construction materials would travel. Much of the site and infrastructure will require sig11ificant grading and costly blasting. The site requires extensive infrastructure improvements, including a lengthy sewer line -portions of which will require directional drilling -a wastewater pump station, a flow equalization tank, and an on-site water distribution system. One or both hotels are to be recessed into a mountainside, and one is to fean1re an earth-covered roof.

The proposed resort's development cost can be validated utilizing HVS' 2008 "Hotel Development Cost Survey", and the reported development costs of the Spruce Peak resort in Stowe, VT and the Tamarack Club resort in Ellicottville, NY. As shown in Figure 3, these sources do not support the $364.7 million figure applied in the SDEIS. Had a more realistic construction cost been applied, HVS' feasibility analysis would have generated much lower rated sub-par returns. This would have necessitated a re-conceptualization and/or down-sizing of the proposed resort to lower its cost.

As Figure 5 demonstrates, the average unit cost of a luxury resort hotel in 2008 as reported by HVS in its annual survey, and that associated with the Spruce Peak and Tamarack resorts, are in close agrecment.12 Accordingly, the proposed resort can be expected to exceed the costs applied in the res01t SDEIS by about 20 percent, causing the project's IRR to be 20 percent lower than indicated in HVS feasibility analysis.

Information obtained from the developer's website, however, shows the cost of the proposed resort could be greater still. A 2012 document prepared by the developer and linked on its website states the "first phase" of the proposed resort is to be built at an investment of " ...

approximately $400 million".13 This figure is stated to include the cost of the golf course, both hotels, and 95 (37 percent) of the shared-ownership units for a total of 465 lodging units representing about 75 percent of the total units proposed. After adjusting for inflation, this amounts to a first phase cost of $352 million ($2007) -which is nearly the same amount applied in the SDEIS as the total project cost. As Figure 5 shows, were first phase costs of $400 million costs to be reflective of the full project the proposed resort's total development cost could be about 30 percent more than applied in the SDEIS, causing its IRR to be 30 percent lower than HVS's feasibility analysis concludes.

The $364.7 million figure may also exclude engineering fees, as these are not specifically mentioned and are not typically included in "design" (e.g., architecture) costs. It is also unclear whether the $364.7 million figure includes a construction contingency and landscaping.

Belleayre Resort Development Cost Sensitivity, $2007.

	Units	**Per SDEIS**	**Per HVS, 2008 Survey (Avg)**	**Per Spruce Peak, Tamarack**	**Per Belleayreresort.com**
Total Belleayre Development Cost		$364,700,000	$443,759,500	$438,856,000	$476,146,237
As % of SDEIS			121.68%	120.33%	130.56%
Per Unit	629	579,809	705,500	697,704	756,989
5-star (Highmount)	216	Not provided	Not provided	994,000	Not provided
4-star (Wildacres)	413	Not provided	Not provided	504,000	Not provided

Source: PEFA

Notes:
1) Belleayre Resort column based upon first phase cost of $400 million cost for two hotels and 95 shared ownership units (465 total lodging units), adjusted for inflation to $352 million S2007.
2) Cost of golf course is included in Total for Spruce Peak, Tamarack.

The 5-star Spruce Peak resort in Stowe, Vermont has 312 hotel-style slope-side units that share a building envelope with 23 larger condominium-style shared-ownership units. Eleven other nearby luxury shared-ownership units were also part of the development for a total of 346 units. Spruce Peak was completed in 2007 at a reported cost of $400 million. Like the proposed resort, it includes a spa, 18-hole golf course, restaurants, retail, pool, conference and meeting facilities, in addition to a perfom1ance space. Excluding $40 million in reported lift and ski area improvements and $16 million for the golf course from its rep011ed construction cost shows an average cost of $1.04 million per overnight lodging unit for this high-end luxury resort.

The Tamarack Club in Ellicottville, NY is a slope-side, 79-unit, 4-star condominium hotel with a range of hotel-style rooms and suites and 2-and 3-bedroom units. It was built at a reported cost of $40 million, or about $504,000 per unit. *(See Response 2.8 below).*

The resort SDEIS mentions eliminating the Highmount element in the Executive Summary and Chapter 5 (Resort SDEIS, Executive Summary, p. xxxvi and p. 5-8). Its discussion of eliminating

Highmount consists of assertions, surmise, conjecture, and a description of HVS's study (found in Resort SDEIS, Appendix 5) of the full build-out of the proposed resort that is not relevant to a no-Highmount alternative.

The resort SDEIS erroneously claims "the HVS study to conclude that the proposed project namely, full development of all project components -is the only feasible and viable approach" (Resort SDEIS, Executive Summary, p. xxxvii, and p. S-7). This statement is false. HVS' contribution to the SDEIS docs not examine or analyze a no-Highmount alternative, or any other alternative to the full build-out of the proposed resort.21

Without any basis or analysis, the resort SDEIS arbitrarily concludes a no-Highmount alternative "is unlikely" to "ever attract sufficient equity investment or financing or, if built, would be marginally perforn1ing or scaled back to a substantially lower quality development ... " (Resort SDEIS, p. 5-8). Although HVS makes no conclusion about a no-Highmount alterative (since it does not analyze such an alternative), it does conclude the hotel component, inclusive of the Highmount element, to be marginally performing.

As to scale, none of the competitive set resorts identified by HVS have anywhere near the scale of the proposed resort. The Sagamore, in Bolton Landing NY has 350 overnight lodging units. The Marriott Seaview in Galloway, NJ has only 297 lodging units. The nearest of the competitive set, Mohonk, in New Paltz, NY, has only 266 lodging units. Eight of the competitive set have less than 100 lodging units. Each of the three nearest to a major ski area have fewer than 130 lodging units. The competitive set clearly demonstrate that a lower scale does not impose an impediment to success as the resort SDEIS asserts.

Accordingly, there is no basis or validity to the statement that " ... the proposed Resort represents an attractive investment opportunity only when considered collectively, in its entirety" with the Highmount element (Resort SDEIS, p. 5-8). *(See Response 2.6 below).*

The cost of constructing the proposed resort is shown to be 20 to 30 percent greater than the figure utilized in the decision documents which will reduce returns well below the level that caused HVS to determine the prospects for its hotel element to be only marginally feasible. The number overnight lodging units is not supported by absorption rates of other comparable properties documented in Appendix 5 of the resort SDEIS. *(Response 2.8 below).*

The collapse of the shared-ownership resort market and the residual effects of the 2007/08 economic downturn are not accounted for in the decision documents. Most of the key data upon which they rely stops at 2007/08. Even under what were peak-or near-peak-of-market conditions, the hotel element of the proposed resort was determined by the resort SDEIS to be only marginally feasible. Buried deep in the resort SDEIS, this conclusion by the resort developer's consultant is at odds with how its prospects are otherwise pot1rayed therein. *(See Response 2.3 below).* **I2130.**

(2a) The specious reliance on the outdated HVS and Ragatz studies (SDEIS, Appendix 5) to justify the continued consideration of the Highmount Spa Resort should be rejected.

The alleged financial feasibility of the Resort is based on out of date 2008 studies (SDEIS Appendix 5) that were done at the peak of the real estate market, which, over 5 years later, has not recovered from the Great Recession. No new studies have been done since then. *(See Response 2.1 below).*

Even in 2008, Crossroads' consultant HVS Consulting Services found that the hotel component of the Resort was only "marginally feasible". No new analysis of its feasibility has been performed since then. *(See Response 2.1; Response 2.2 below).*

Crossroads' consultant Ragatz has found that as of 2013, the market for shared-ownership units of the type proposed by Crossroads has collapsed by 80%. *(See Response 2.3 below).*

The Resort is over-sized for the market and, rather than grow the local tourism industry, it will divert customers from existing businesses and ski areas. Thus, the projected economic benefits to the community are overstated and local businesses will suffer. *(See Response 2.7; Response 2.9 below).*

The Resort's feasibility is undermined by its underestimation of construction costs by 20% to 30%. As shown elsewhere in these comments and the attached reports, many aspects of the Resort's costs were not even included in those estimates, so that the total underestimation is even greater than the percentages calculated by Siegel. *(See Response 2.8 below).*

The projected increase in skier days at BMSC is the product of wishful thinking and will not be achieved at the projected levels. Therefore, the "full build-out" alternative for BMSC is not warranted.

Increases in skier days over a several year period at BMSC were inflated by DEC's policy of giving away large numbers of lift tickets. When ORDA took over the BMSC and ended this policy, skier days actually dropped significantly. Therefore, data from the years under DEC's management are not a reliable basis for predicting future performance.

The levels of operating and capital expenditures required to sustain the full build-out alternative for the BMSC will drive up lift ticket prices, further depressing skier days.
The DUMP shows that the financial benefits to the community of improving the BMSC are not dependent upon the building of the Resort. *(See Response 2.10 below).*

A more economically feasible Project would eliminate the West side and Highmount aspects of the BMSC expansion and drop the Highmount Spa Resort. An east side expansion of BMSC could be more financially feasible.

Such a smaller alternative Project is far less likely to damage the local economy than the current proposal by Crossroads. *(See Response 2.11 below).* **O3635**

<u>*Response 2.1: Feasibility Based on Stale Information*</u>

The Department understands that Crossroads commissioned an updated market feasibility study and sensitivity analysis for the proposed Belleayre Resort. The Department further understands that the feasibility study was completed in November of 2013 and based on the most current market data available. A copy of the updated analysis can be found in the Errata section of this FEIS.

It is acknowledged that economic conditions for the most part are less positive than prior to 2008. However, according to Crossroads, the fractional market has been studied as recently as 2013 by Ragatz and his findings are detailed in an independent study entitled Real Estate Industry in North America: 2013 (Ragatz Associates [April 2013]). This 2013 study notes the measureable improvements and positive trends since the depth of the country's economy in 2009, including those in: (a) the stock market; (b) the housing market; (c) consumer consumption; (d) unemployment rates; (e) consumer confidence; and (f) manufacturing. The country is on the road to recovery, and there is no longer a "long-term major decline in the U.S. and global economies". High income households once again are spending on high-cost discretionary products, including resort real estate. It also is noted that all components of the resort real estate industry have been rebounding over the past 12 months throughout most of the U.S. There has been a 13 percent gain in time share sales in the past three years with a reported $6.9 billion in sales for 2012 according to the American Resort Development Association. Ragatz Associates believes as much in the success of Belleayre Resort in August 2013 as was stated in May 2008 Ragatz Feasibility Report. This opinion is based on their experience in having conducted over 2,000 feasibility analyses for resort developments throughout the world over the past 39 years.

Response 2.2: Marginal Feasibility

According to Crossroads, the 2008 HVS feasibility study concluded that the project – assuming the construction included both resort components – was feasible, but that the indicated investment yield was at the low end of the feasibility range. The term "marginally" was used to qualify the degree of feasibility, not categorically negate or limit the conclusion. In addition, the analysis excluded the potential yields associated with the sale of all of the vacation ownership units, both "attached" (meaning those units structurally integrated into the hotel buildings) and "detached" (meaning those stand-alone structures whose development will proceed as market conditions dictate). Whereas the 2008 study excluded both the attached and detached units, the 2013 study includes the "attached" vacation ownership units in the analysis, assuming they are part of the standard guestroom rental program. Because of these differing premises, the total number of rooms in the 2008 study was 370 versus 423 in the 2013 study, for the "Full Resort" scenario. The difference in the room count fundamentally changes the two analyses, primarily in terms of the economies of scale (i.e. operating efficiencies) available to the larger operation. Furthermore, these attached units will feature ultra-luxury finishes and exceptional space allocations, as compared to the resort's standard hotel rooms, and when rented as part of the hotel inventory they will generate especially high average rate levels.

There is another significant difference in the 2008 and 2013 feasibility studies, which prevents an apples-to-apples comparison. The 2008 study shorted its calculation of the amount of meeting space as compared to 2013 study. In the 2008 study, HVS reported the meeting space allocations as 15,000 square feet at Wildacres and no meeting space at Highmount. The *exclusion at Highmount was an oversight. In fact, that particular resort will be supported by 13,000 square feet of meeting space. As for Wildacres, the meeting space allocation has been redesigned and now totals 24,850 square feet. As such, the total meeting space allotment for the 2013 study is 37,850 square feet, as compared to only 15,000 square feet in the 2008 study. This difference is highly significant where the marketability of the resort is concerned. Whereas the larger room count allocation associated with the 2013 study might otherwise warrant more conservative occupancy and average rate projections, the meeting space redesign/correction is a more than offsetting consideration.*

In addition, note that the 2013 study includes an evaluation of two scenarios: a) development of the Full Resort, and b) development of Wildacres alone. This analysis was simplified somewhat as compared to the 2008 study, in terms of the type of yield calculated and tested for feasibility. In the 2008 study, HVS calculated what is known in the hotel real estate consulting field as "total property yield" (also known as the discount rate), which measures the return on investment over a ten-year holding period. In the 2013 study, the metric used for testing feasibility was the equivalent of a capitalization rate, which is a more remedial but still relevant measure of investment return. It is calculated simply by dividing the stabilized net income by the estimated construction cost. The total property yield and the capitalization rate are not the same. All other things held equal, investor requirements for "property yields" are higher than those for "capitalization rates" because the property yield factor is calculated over a lengthy holding period and is therefore subject to a higher level of risk. Thus, a comparison of the 2008 and 2013 threshold analyses is not germane.

Finally, according to Crossroads, the 2013 study discerns between the Full Resort and Wildacres Only scenarios, and clearly demonstrates that the yield indicated for Wildacres Only scenario is below the threshold necessary for the project to receive serious investor consideration. For the numerous reasons elucidated in the study (but primarily due to economies of scale associated with the defraying of both construction and ongoing operating costs over the combined resort development), the only economically feasible approach to the development of the subject property calls for the construction of both resort components, according to Crossroads.

Response 2.3 Decline of Fractional Market

Two distinctly different products fall under the rubric of "shared-ownership" sales. These products are (1) resort timeshares, and (2) fractional interest vacation homes. The 2013 Ragatz study performed a market analysis with respect the fractional interest market. The 2013 Ragatz study did find that with respect to the fractional interest market, that sales peaked in 2007 totaling almost $2.3 billion and declined to $500 million in 2012. (See Real Estate Industry in North America: 2013, Fractional Interests, Private Residence Clubs, Destination Clubs, Ragatz Associates [April 2013] at 13-15). However, there is strong evidence that fractional interest sales are actually beginning to improve in prime destinations and in properly planned resorts. The Belleayre Resort is situated in the Catskill Mountains which attracts over 2.5 million visitors each year and is in close proximity to over 20 million people making the resort a prime destination. Furthermore, the time share market has been recovering in the past three years and reports $6.9 billion in sales for 2012, according to the American Resort Development

Association. This represents a 13 percent gain in the past three years with new projects being developed and most upscale hotel companies selling tens of millions of dollars of product.

Response 2.4: Absorption Rate – Fractional Market Flooding

The Belleayre Resort will not increase "shared-ownership" units in the Northeast by any significant margin. The Belleayre Resort proposes to build a total of 629 lodging units, 328 of which will be hotel units and the remaining 301 units as shared ownership. "Shared-ownership" units include resort timeshares and fractional interest vacation homes. Of the 301 shared ownership units, there will be 84 time share units and 217 fractional units. This distribution is merely a suggestion and the final breakdown of timeshares versus fractionals will be dictated by market forces. Units can be constructed such that they may be converted from time share to fractions or vice versa depending on market demand.

The Ragatz Study suggestion of 84 time share units does not affect the time share market in any significant way. Over 2,400 resort timeshares units were identified in the 15 surveyed timeshare projects. (See 2008 Ragatz Report at 245). Additionally, according to the directories of Resort Condominiums International and Interval International, there are another ±125 timeshare projects in the Northeast which generate at least another 7,500 units, for a total of over 10,000 resort timeshares units. The time share market has been recovering in the past three years, being $6.9 billion in 2012, according to the American Resort Development Association. This represents a 13 percent gain in the past three years. While the market did suffer due to the recession, as did all other discretionary products and services in the country, it is rebounding rather than collapsing. New projects continue to be developed and most upscale hotel companies continue to sell tens of millions of dollars of product. The timeshare concept continues to be a valued commodity, with over 2.5 million owners of timeshare in the U.S. The proposed 84 time share units represent less than one tenth of one percent of the overall time share market in the Northeast, and thus will not cause a disturbance in the market.

Similarly, the proposed 217 fractional units will not significantly increase the fractional market. The 490 fractional interest units mentioned in the Ragatz Study only represent those 10 fractional interest projects in the Northeast in active sales in 2008. There are thousands of additional vacation homes in the region owned in fractional shares that have been built and sold over the past decades. Although research data shows that there has been a significant decline in the fractional market since 2007, most experts in the resort real estate industry are optimistic that recovery will occur in the long term. (See Real Estate Industry in North America: 2013, Ragatz Associates [April 2013] at 14-17). There is evidence that fractional interest sales are actually beginning to improve in prime destinations and in properly planned resorts. For example:

- *uncertainty about the country's long term economic stability is definitely improving, as evidenced by most economic indicators, including consumer confidence;*
- *consumer financing is beginning to come back as more funds are available*
- *primary home equity funds for purchasers who previously paid cash is recovering as primary home prices increase and the surplus supply is absorbed*
- *marketing funds becoming more available as lenders perceive market improvements*

- *standing inventory of whole-ownership vacation homes on the market are becoming absorbed due to improvements in the economy*

With respect to market demand, there is strong evidence (as discussed above) that fractional interest sales are improving in prime destinations and in properly planned resorts. The Belleayre Resort is situated in the Catskill Mountains which attracts over 2.5 million visitors each year and is in close proximity to over 20 million people making the resort a prime destination.

Even if the fractional market fails to fully recover in the foreseeable future, the Belleayre Resort's construction over multiple stages gives the project the flexibility to build according to market demand and allocate lodging units as time share or fractionals based on those market forces. The product mix recommended in the 2008 study was always assumed subject to change as Belleayre Resort neared actual implementation and the final product mix will be determined by an updated feasibility analysis and current market forces at time of implementation.

Response 2.5: Effect of Climate Change on Ski Industry

Section 4.9 "Global Climate Change and Carbon Footprint" of the UMP-DEIS the impacts of climate change on the project are discussed. Both "lower" and "higher" greenhouse gas emissions scenarios as presented by the Intergovernmental Panel on Climate Change (IPCC) and the Northeast Climate Impact Assessment (NECIA) Synthesis Report were used to assess the impact of climate change on the proposed project. The range of projected temperature changes contained in CLIMAID are similar to the temperature ranges presented in the NECIA report and used to conduct the assessment on this project. The CLIMAID report was completed to provide a closer look at New York State by various regions. The projections and associated impacts to the Belleayre UMP are in the range of what was used in conducting the assessment that in contained currently in Section 4.9

As discussed in Section 4.9, the UMP-DEIS analyzed the potential temperature changes and the impacts these will have on snowfall, ski seasons, and snowmaking needs and capabilities. The northward facing slopes at Belleayre will help retain snow during warmer temperatures since on sunny days sunlight will not be as direct as it would be on south facing slopes; and increased snowmaking could compensate for a decline in natural snowfall. Ski areas currently in operation as far south as Virginia (four areas) and North Carolina, and the Blue Ridge Mountains receive approximately 50 to 70 inches of natural snowfall on average annually (33% to about 50% less annual natural snowfall than Belleayre Mountain Ski Center). Most areas have 100% snowmaking coverage.

<u>Response 2.6: Lack of Data to Support Highmount as Essential</u>

The Highmount and Wildacres components are analyzed separately in the final chapter of the Ragatz Study entitled, "E. Estimated Financial Performance." Excluded from the pro forma cash flows are costs and revenues generated by the ski facilities, the golf course and the hotels. They are considered as standalone profit centers by themselves, even though: (a) they are partially supported by the various real estate products; and (b) impact their prices.

Contrary to the statement that the full build out is not supported by the HVS report, according to Crossroads, the only economically feasible approach to the development of the property calls for the construction of both the Wildacres and Highmount components as made evident by the November of 2013 HVS feasibility study. The 2013 report calculated the rate of return for two different scenarios: (1) the Resort without the Highmount component and (2) the full Resort with the Highmount component. The 2013 data shows that industry margins for capitalization rates currently required by hotel real estate investors range from 4.0% to 11.0% with an overall average of 7.95% return. The 2013 report shows that the calculated yield for the Resort without the Highmount component only was 4.8% as compared to 8.2% for the full build with the Highmount component.

The study shows that the current industry standard for capitalization rates required by hotel real estate investors is an average return of 7.95%. The calculated yield for the full Resort with the Highmount component is 8.2% as compared to 4.8% without the Highmount component.

The 2013 study discerns between the Full Resort and Wildacres Only scenarios, and clearly demonstrates that the yield indicated for Wildacres Only scenario is below the threshold necessary for the project to receive serious investor consideration. For the numerous reasons elucidated in the study (but primarily due to economies of scale associated with the defraying of both construction and ongoing operating costs over the combined resort development), the only economically feasible approach to the development of the subject property calls for the construction of both resort components

Additionally, only the entirety of the subject resort (rather than Wildacres alone) can generate the critical mass in terms of market awareness that is necessary to overcome the limitations associated with the surrounding area. With very few exceptions, the subject property's Catskills location lacks top quality development. The surrounding area may be characterized as economically stagnant, and, despite its heritage, is not perceived as a major resort destination. Additional factors concern economies of scale, as they relate to both operating efficiencies and infrastructural development costs. The co-operation of the two components is expected to result in savings in a variety of key expense departments, contributing to the overall feasibility of the project. The project described herein is expected to offer the critical mass, economies of scale, and operating efficiencies necessary to support a successful major resort development in the Catskills, but only if developed in its entirety. More importantly, the substantial cost of constructing roads, utility connections, and other underlying *infrastructure for the project must be defrayed among the two proposed resorts in order for the property yields to support a positive feasibility conclusion. Wildacres alone does not provide a sufficient return on investment for the project to attract interest in the debt and equity capital markets. Based on the 2013 report, the data supports that only the yield indicated by the full resort scenario meets industry standard feasibility thresholds.*

<u>Response 2.7: Project is Oversized</u>

Based on the data and analysis detailed in the 2013 HVS feasibility study, the full Resort with the Highmount component is the only economically feasible approach to the development of the property. The study shows that the current industry standard for capitalization rates required by hotel real estate investors is an average return of 7.95%. The calculated yield for the full Resort with the Highmount component is 8.2% as compared to 4.8% without the Highmount component. Based on the 2013 study, the data supports that only the yield indicated by the full resort scenario meets industry standard feasibility thresholds.

Furthermore, the scale of the project is consistent with the projected demand for the resort facilities. Changes in the proposed project have yielded a project that is substantially smaller in size and environmental impact. For example, the Modified Project is only 37% of its originally proposed size. Total acreage to be developed has been reduced by 60%. Total number of hotel and lodging units has been reduced by about 30%. The total acreage of land that will be converted to impervious surface has been reduced by about 70%. Additionally, the 1,189 acres of land that was previously to be developed as Big Indian has been purchased by the State and will be forever protected from future development. Also, the 200+ acre Adelstein parcel is now subject to a Conservation Easement held by the New York City Department of Environmental Protection. The changes to the project, all of which reduce environmental impacts along with the overall size of the project are set forth in detail in the SDEIS Executive Summary as well as the body of the SDEIS. The modified project represents a new, lower impact, alternative which minimizes or avoids the potential for significant adverse environmental impacts identified during the public comment period and Issues Conference, and which the State has determined will provide significant economic benefits to the Central Catskills region. All remaining issues, which were minimal, have been addressed in this SDEIS and the proposed draft permits and conditions.

It should also be noted that the resort, as indicated in the SDEIS, will not be constructing all 629 units at once. Only the two main hotels structures (consisting of 250 and 173 units respectively) would be built during the first phase. The remaining 206 units will only be built if demand warrants. There are a total of 3 phases planned for this project that will take up to 11 years to construct dependent on the selling of the detached lodging units. The first phase has two components, Phases 1A and 1B, which will be constructed separately. The hotel and the golf course were to be completed in the first phase of construction.

<u>Response 2.8: Construction Costs Understated affecting Feasibility</u>

The 2013 HVS feasibility study is based on estimated construction costs that are reasonable and consistent with costs associated with other resorts of the caliber of the proposed subject property. Construction cost estimates have been recently reevaluated and are fully detailed in section 6 of the 2013 HVS report. Contrary to the comment, they are conservative and may ignore savings obtainable from when bids are sought.

<u>Response 2.9: Effect on Local Economy</u>

The SDEIS analysis finds that the proposed project would benefit the local residents and local business owners. In addition to providing opportunities for employment to the local community, the local community would benefit from off-site visitor spending. While the SDEIS analysis assumes that a majority of visitor spending would occur on-site, resort visitors would not limit their spending entirely on-site, it is logical to assume that visitors would be consuming goods and services on their way to and from the resort. Resort visitors would not limit their spending entirely to on-site Resort goods and service; they would travel off-site for spending on a variety of goods and services such as antiques, crafts, restaurant meals, groceries, gas and oil, recreational fees for off-site amenities, and cultural attractions. Assuming that only 25 percent of visitor spending were to occur offsite, visitor consumer spending is projected to be $10.64 million annually throughout the Route 28 corridor, mostly in the village and hamlet centers where existing businesses and shops are concentrated.

<u>Response 2.10: Skier Days is Overstated</u>

Based upon public comments, DEC has updated attendance figures and lift ticket prices through the 2013/2014 ski season in the UMP-FEIS. However, the year to year attendance data for the existing ski center while informative, is not determinative, moreover the historical skier attendance figures were not used for design purposes. The purpose of the project is to provide the public with improved recreational opportunities on Forest Preserve land by constructing and maintaining additional mileage of ski trails at Belleayre, consistent with constitutional limits. The 1986 amendment of the Constitution provided for the expansion of the ski trails at the Ski Center by increasing the ski trail mileage cap up to a total of 25 miles in length. Currently, the Ski Center has just 16.3 miles of ski trails. Accordingly, the Department has developed a plan that provides for the full build out potential of Belleayre Mountain Ski Center under current constitutional limits. That is the basis of the proposed Comfortable Carrying Capacity calculation of 9,000 skiers and the plan for full build out of the facility. The potential 320,000 yearly maximum attendance figure is a conservative estimate used only to evaluate socio economic impacts from the perspective of the ski area and not as a determining factor in the sizing of facility components. Long needed upgrades and modernization of facilities and amenities (lodges and parking lots) will enhance the skier experience and along with improved and varied ski trails likely attract many new visitors. Regarding ticket prices, based on experience operating a ski center, ORDA believes that *it is important that ticket prices are on par with other ski areas in the region.*

<u>*Response 2.11: Project Alternatives*</u>

Comment noted. However, see Section 6.5of the UMP-FEIS regarding the East Alternative.

Section 5 of the SDEIS includes assessments of various alternatives in accordance with the Final Scoping Document for the Modified Belleayre Resort Project. The alternatives include: (1) a comparison with the DEIS project; (2) an alternative design of the Highmount Spa Resort project without the upper detached lodging units; (3) eliminating the Highmount development; (4) alternative golf course layout and management; and (5) a no-action alternative. In evaluating project alternatives, SEQRA requires that the objectives of the project sponsor be taken into account. To establish the need for the proposed size of the Modified Belleayre Resort Project, the project sponsor has included in the DEIS, SDEIS and this FSEIS its expert reports on the feasibility of the project. The Modified Belleayre Resort Project is itself an alternative to the originally proposed project which affected a much greater area of land and land considered by many parties to be of greater environmental sensitivity. The comparison of the Modified Belleayre resort Project to the original project is set forth in the SDEIS. SEQRA does not mandate the number of alternatives to be considered, but limits the applicant's focus to those that are reasonable and can meet the applicant's objectives.

Additionally, SEQRA requires that all draft environmental impact statements contain "a description and evaluation of the range of reasonable alternatives to the action that are feasible, considering the objectives and capabilities of the project sponsor." 6 N.Y.C.R.R. § 617.9 (b)(5)(v) (emphasis supplied). As discussed in the responses to Comment 1, Section 1.3 and Comment 2, Section 5.2, building Wildacres without the Highmount component is not economically feasible and is thus not a reasonable alternative. See Response to Comment 1, Section 1.3; Comment 2, Section 5.2; HVS Feasibility Study (2013).

(3) I adamantly OPPOSE the full build out option which would overpower the surrounding communities and cannibalize local small businesses. There is no demand and no need for hundreds of condos and time shares in this area. Yes, the area does need a hotel, but a moderately-priced family-oriented hotel to bolster Belleayre Mt.'s claim to fame as a family ski center. The development proposed by Crossroads does not at all fit into Belleayre Mt.'s mission. We especially don't need another high-end spa. **I922**

Response: In response to the commenter's concern about the proposed project's effect on local small businesses, from a socioeconomic perspective, the proposed project is not expected to cannibalize or displace sales in a manner that could lead to significant adverse impacts to community character. The proposed project would offer a level of amenities that is not commonly found in the study area, and therefore is expected to attract a new and different consumer base to the socioeconomic study area. The on- and off-site spending of any new consumers would not represent cannibalization of existing consumer dollars within the study area (Please see the response to comment 1 in Section 3.9).

In response to the commenter's concern about the need for condos and time shares, the proposed project was planned based on solid market research that has indicated that there is demand for this type of project.

The SDEIS analysis finds that the proposed project would benefit the local residents and local business owners. In addition to providing opportunities for employment to the local community, the local community would benefit from off-site visitor spending. While the SDEIS analysis assumes that a majority of visitor spending would occur on-site, resort visitors would not limit their spending entirely to on-site Resort goods and service; they would travel off-site for spending on a variety of goods and services such as antiques, crafts, restaurant meals, groceries, gas and oil, recreational fees for off-site amenities, and cultural attractions. Assuming that only 25 percent of visitor spending were to occur offsite, visitor consumer spending is projected to be $10.64 million annually throughout the Route 28 corridor, mostly in the village and hamlet centers where existing businesses and shops are concentrated.

With respect to market demand, there is strong evidence that fractional interest sales are improving in prime destinations and in properly planned resorts. The Belleayre Resort is situated in the Catskill Mountains which attracts over 2.5 million visitors each year and is in close proximity to over 20 million people making the resort a prime destination. Furthermore, the time share market has been recovering in the past three years and reports $6.9 billion in sales for 2012, according to the American Resort Development Association. This represents a 13 percent gain in the past three years with new projects being developed and most upscale hotel companies selling tens of millions of dollars of product. The timeshare concept continues to be a valued commodity, with over 2.5 million owners of timeshare in the U.S. The proposed 84 time share units represent less than one tenth of one percent of the overall time share market in the Northeast, and thus will not cause a disturbance in the market.

(4) I have reservations about the magnitude of Belleayre Resort, but I don't have a problem with the project itself. It's private money that's being put at risk. Route 28 is in desperate need of more quality lodging properties. If that's what they want to build, and they're willing to see it through, let them do it. That's capitalism. **I3647**

Response: The "magnitude of the Belleayre Resort" stated in this comment is assumed to pertain to such things as the numbers and sizes of the project buildings, the amount of land that is proposed to be developed, and other similar types of development characteristics that are regulated by the zoning or land use regulations of the towns of Shandaken and Middletown. The compatibility of the project with these local land use regulations was described in section 3.8 of the SDEIS and additional information on this topic is presented is section 3.8 of this FEIS.

(5) While the report from Mike Siegel of Public and Environmental Finance Associates (submitted with formal comments of the Catskill Heritage Alliance) establishes that the proposed resort is too large for the market to absorb without harming existing businesses in the area, the preliminary findings of an ongoing study, "Sustainable Resort Project," by a team of students in Columbia University's Center for Environmental Sustainability suggests that the proposed resort also does not meet the current standards of environmental sustainability and is therefore not

likely to appeal to the emerging dominant population of travelers searching for exclusive, high-end destination experiences.

The Sustainable Resort Project Team, working with members of the Catskill Heritage Alliance, finds that travelers are moving away from security, luxury, and convenience (the old self-contained destination resort model) and moving toward freedom, independence, and authenticity (the new experiential, green, community-based, and sustainable model). In short, travelers are searching for more authentic experiences that create better places to live in and to visit. This may be especially true for young travelers, who form the base for future tourism.

A 2011 survey by Conde Nast Traveler found that 93% of its readers believed that travel companies should be responsible for protecting the environment, and 58% said their hotel choice is influenced by the support the hotel gives to the local community. A 2012 Four Seasons survey of luxury travel trends observed that "Conscientious spending replaces conspicuous consumption. The affluent put much more thought into their purchasing decisions to determine whether a product or service will intrinsically improve their lives."

Many of the examples that the Columbia Team has identified are small resorts in unique geographic locations with a nearly totally green operation, from building materials to energy generation and consumption, to recycling, to waste management, to local sourcing of foods, to employing local workers, to community engagement, to support for environmental research. Some of these resorts were located outside the United States and had a high-ranking Certification for Sustainable Tourism, which is issued by the Costa Rica Tourism Board and classifies travel companies according to sustainable practices.

Although the proposed Belleayre Resort tries to package itself as green and sustainable, it meets the minimum of the current standards in these areas. It is, essentially, a conventional destination project targeted to the aging baby boomer market and it is questionable whether it will be of interest to the emerging demographic that is driving the market for sustainable environmental tourism.

This misreading of the future of the tourism market is one more factor in the difficulty that the proposed resort will encounter in trying to fill its rooms. **O3633**

Response: U.S. Green Building Council created the LEED (Leadership in Energy and Environmental Design) rating program to spur the development of high-performance, sustainable buildings. Buildings are awarded points toward LEED certification on a scale that emphasizes Sustainable Site, Water Saving, Energy Efficiency, Materials & Resources, and Indoor Environmental Quality.

The Belleayre Resort at Catskill Park has stated its intent to obtain Silver Certification or higher for the Wildacres Resort Hotel, the Highmount Spa Resort Hotel and Highmount Lodge building. The proposed project contains a number of elements that can be considered sustainable; LEED certified buildings, an organically managed golf course, re-use of stormwater runoff for golf course irrigation, among other things.

Two architectural firms (Hart/Howerton and Emilio Ambasz & Associates) have been employed to conceptualize and design those buildings. These designers have and will continue to take into consideration that buildings qualify for LEED Certification':

- *Innovative design;*
- *Low levels of light pollution;*
- *Use of regionally produced construction materials;*
- *Use of recycled materials in the construction process;*
- *Use of paints, carpets, and composite building materials with low levels of chemical emissions;*
- *Recycling of construction debris to keep it out of landfills;*
- *Energy efficiency;*
- *Water Conservation and,*
- *Providing daylight and views for the vast majority of space inside the building.*

The incorporation of green building principles into the Belleayre Resort construction would result in a number of important mitigation measures to lower energy consumption and reduce greenhouse gas emissions. Though findings should only consider present day commitments and requirements of project design, the developers have indicated that alternative energy sources will be considered once the project receives permission from the permitting agencies to move forward and that these energy considerations will be made as the project moves into the Design Development and Construction Documentation phase of the project.

The project's industry advisors differ with the commenter on the nature of the available market.

(6) The following are comments supporting the resort project and the benefits it will provide. No responses are required.

I support the proposed Belleayre Resort in its current form. I think that this latest proposed plan constitutes an appropriate balance of development and conservation. I think that this development is essential to the economy of the area and to injecting some much needed life and capital into the businesses and hamlets near Belleayre. **I8**.

We need the influx of people and money that the project will bring in. **I74.**

We need the steady flow of resort guests whose spending will overflow to businesses outside of the resort. We also want the amenities the resort will provide for our own need and use like golf, spa's, restaurants and entertainment. If done intelligently, as this plan is designed, there should be minimal negative impact on the environment. **I96.**

Now that it has been scaled down considerably, I am in favor of the resort. I believe the local economy needs the boost that this resort will provide. All of our local towns are struggling and the jobs and sales tax the resort will bring in are needed. **I105.**

Please consider the number of jobs it would create and the amount of money it would generate. **I132**.

a viable project that addresses the long term economic and social well-being of this area. This project follows a tradition of tourism that has provided access to healthy and family oriented activities without significant damage or destruction of our natural resources for over 150 years. **I152.**

We see it as an economic stimulus to both Delaware and Ulster counties, as well as the numerous small businesses in the area. We cannot see anything else in this area that could provide so much growth and improvements. **I172**.

This area is in dire need of something to bring back the economy, and the Belleayre project is just the thing, everyone wins, no one loses. **I186**.

We need this resort. With hotel rooms we can attract & accommodate tourists. They will come. The economy will lift. Maybe some of our grown children will stay and work here. All will benefit- region wide. It will turn the economic tide in our favor. **I188**.

It is a rather clean industry for the area that will keep our mountains pristine, our people employed and our taxes lower. **I293**.

It will support our current business and create opportunities for new business that will offer alternatives for our young people. **I291**.

This Resort will be a feather in our cap, a place which will all help us realize our dreams for a stable economy in the Catskills built around Nature and a great respect for the conservation of our environment. We want to share the wonder of this region and the Resort will help do so. **I352**.

I want my children to be able to experience something positive to boost the economy for this area, so that they may be able to make a living and support their family in the long run. **I373.**

It is in keeping with our historic resort image in a modern fashion. Maintaining natural beauty of our environment while at the same time bringing much needed employment and tax base to our community. The "trickle down" effect on the community will provide more business for area merchants and more jobs. **I410.**

Please consider the benefits of jobs to the region and increased tourism as a result of the project. **I434**.

I support this project because I believe the resort will provide the following benefits and for the following reasons:

- Increase access to the Catskill Region for New Yorkers.
- Increase healthy activities such as skiing, hiking, golf, hunting, etc. These activities will help to improve the health of the guests and reduce healthcare costs overall.
- Provide much needed employment in direct and indirect jobs during construction, and forever after from operations.

- Increase real estate values.
- Generate substantial taxes for the various levels of government, thus blunting increases in local property taxes.
- The resort is completely environmentally appropriate, will take advantage of existing sewer treatment over-capacity and is well under historical hotel bed populations for the area.
- The overall layout and look of the facilities are tasteful and blend in very nicely with the environment.
- Hopefully, tourists visiting Belleayre Resort will "discover" Ulster County and return. **I488.**

The project has undergone many changes since its initial Draft Environmental Impact Statement was developed in 2003. The project is now smaller involving fewer acres of disturbance. The project is now more clustered leading to more acres that can be preserved as forever wild. This project is a textbook example for green design practices which planners and engineers have promoted and followed for the past several years. As an engineer I understand that no project can be deemed to have no effect on the environment. However, the negative impacts this project will cause have been greatly reduced from the 2003 plan. In my opinion the positive impacts, such as new jobs and revenues for a part of New York that has suffered longer and far more than the average New York community, outweigh the negatives. The creation of construction and engineering jobs would have a positive economic benefit for my company. The Construction Industry has been one of the hardest hit segments during the current economic downturn and is still waiting to recover fully to 2007 levels. Having this project added to our local economy would be very beneficial and would produce spin off opportunities for new projects. The creation of permanent resort jobs would also help the local economy. **I489.**

No one project will act to catalyze the region's financial setting but an approved Belleayre Resort could be the rallying banner, figuratively and literally, around which a framework of smart development can begin to bring about a better Hudson Region. **I536**.

Now we have another such opportunity to bring into existence a business enterprise that will employ people at such a rate that they will intern be able to support their families and towns. We need such industries to retain the young peoples of our communities lest our communities die and our towns become nothing more than vacation properties. **I539.**

We need the jobs. We need the infusion into our dwindling tax base. We need the year round destination point which is an environmentally sound one. **I543.**

There are so many reasons why this go ahead but at this stage you've heard them all. I'll just leave you with one word JOBS. **I548**.

To know my children will be able to enjoy this area as I have gives me great joy. To hope they may have the choice to live here is a dream come true. We support the resort. **I549**.

Our true heritage has been sharing this spectacular and unique area with others by historically having not hundreds but thousands of lodging units that no longer exist. Far from being massive, this resort of a few hundred units is but a small fraction of what existed and helped these struggling communities to not only survive but prosper. **I583**.

During the past several years I have become familiar with the Belleayre Resort Project. In my mind this environmentally sound project is exactly what the area needs. It is a job creator that will respect the beauty of the Catskills, the engine that will make those jobs possible. **I937**.

I am writing to express my wholehearted support for the proposed Belleayre Resort in Highmount, New York. This is a worthy project for the community that would result in giving the local economy an enormous boost which is sorely needed in the Catskill region. It has been planned with taste and style respectful of the pristine environment, and will be a resort of which the locale can be proud. **I1115.**

The planning process has provided a "best practices" roadmap to avoid and mitigate the risks. As long as the plans are followed, and there is adequate oversight as conditions evolve, the Resort will be a positive impetus to badly needed development in both Ulster and Delaware counties. Managed well, it should also have an acceptable impact on the environment directly and indirectly, in terms of land use, water resources, additional demands for town services, traffic and demographics. Enough time has been invested in study and planning. We cannot afford to have a perfect, riskless roadmap for development. **I2470**.

The area needs a jolt of vitality and I think it could come from the resort. In addition to creating building jobs, it will create jobs servicing the resort and the individuals who patronize it. **I3030**.

The promise of good accommodations will prove to be a boost to the area. **I3306.**

Because of the willingness to work together, multiple stakeholders forged the Agreement In Principle, which in turn, has resulted in a much smarter build-out and process, and additionally it now appears to be a much better fit for the central Catskill Mtn. region. **I3439**.

I think that this latest proposed plan constitutes an appropriate balance of development and conservation. I think that this development is essential to the economy of the area and to injecting some much needed life and capital into the businesses and hamlets near Belleayre. **I3440**.

Frankly only those totally blind to the possibilities of true economic development could take the positions the opposition has to this common sense project. **I3441**.

My husband and I have high hopes that the Resort will bring jobs, tourists, and opportunities for our local economy. There is so much nature surrounding us, we need some economy to keep those who wish to live here afloat. **I3501**.

Allow the project to go through so that we can invigorate the local economy and bring some much needed tax revenue to the area! **I3507**.

As an outdoorsman I truly believe that if the next generation does not learn to be involved in the outdoors, great abuse of the outdoors will occur. I also believe that one of the best ways to educate the public to the Catskills is to have lodging so they can come, enjoy and hopefully learn respect for nature. **I3631**.

I submit that the project in question represents a world class symbiosis of architectural design, site planning and environment sensitivity. It is one which I am convinced will accrue to the honor of all involved in its inception and ultimately to its conclusion. **I3632**.

When we consider the Crossroads Project and the projected employment statistics, it will be a boon to the communities. When young people get jobs and move locally they bring children to the schools, members to community organizations and money to local business. This is a win-win situation for all levels in the community. **M254**.

Think about the jobs created by Belleayre Mountain and then multiply that many times. It will become a mainstay of the economy for our region. The Delaware County Board of Supervisors with 19 towns and a population of 48,000 full time residents, absolutely through all its passed resolutions of support realizes that this is a once in lifetime investment that will become an economic catalyst for the entire region. **M325.**

Our opportunities for economic growth are extremely limited. In my opinion…the 400M dollar investment that Crossroads is committing to this project is literally our “last hope.” **O89**.

This resort is greatly needed if the area is be one that can thrive like it did as early as the 1970's when the villages and business were centers of activities and hundreds of people were walking the streets and buying merchandise and eating out. That is the heritage of this area. **O90.**

The types of uses and the timed development of them over an extended period of time, will not have any adverse environmental impact that cannot be mitigated by paying close attention to the planning details for this project, and building in necessary protections of the area environment. **O112**.

It should be noted this project also is a very environmentally safe project. It has been reduced in size at the request of many. Much of the land proposed for development is now NYS Forest Preserve. The developer has dealt with all sensitive storm water issues, dealt with impacts of views, has eliminated a golf course and the golf course will have an organic golf course management plan, has committed to silver or high rating under “LEED” and has agreed to post bonds or another form of security to ensure that construction storm water and sediment and erosion control are done correctly. **O312**.

The Belleayre Resort at Catskill Park will create the much needed economic spark Ulster and Delaware Counties need. **O312**.

The Belleayre Resort is an important step to positive, well, thought out development that will help the Catskills thrive. I support the plan for the resort! **O477**.

One of the concerns I have as a board member of the Andes Central School is attracting jobs to the area that graduates can come back to. With shrinking local school populations, I believe this project will attract more people to the area and strengthen the local economy by stimulating local business, the real estate and the job market. With a close proximity to NYC I believe it will attract many people to the area and highlight the beauty and uniqueness of the area. **I140.**

In addition to the direct quotes of the commenters cited above the following is a list of additional commenters who submitted individual letters, e-mails and/or spoke at the Public Hearing with similar views, whether in whole or in part, of those reflected above showing support for the Projects Purpose, Needs and Benefits:

I1,S2,I3,I5,I7,I58,I65,I91,O92,I93,I97,I98,,I99,I108,I109,I110,I120,I121,I122,I126,I128,I130,I131,I134,I135,S139,I141,I143,I145,I146,I147,I151,I154,I155,M156,I157,I162,I164,I165,I173 I174,I175,177,I180,O181,M182,I183,I185,I187,I189,M192,M193,I194,M195,I200,I202,I203,I205,M206,I207,I212,I214,I216,I217,I218,I220,I221,I222,I223,I224,I227,M229,S230,O231,O233,I238,I241,I243,I244,I257,M258,I261,I265,M266,M267,M268,M269,I270,I271,S272,I284,I285,I294,I295,I301,I303,I304,M306,I307,I308,I311,M314,I315,O316,I318,I319,I322,O324,M326,I327,O329,S330,I331,M332,I333,M334,I342,I343,I344,I348,I351,I371,I372,I375,I376,I379,I380,O381,I384,I387,I389,I390,I392,O411,I412,I413,I414,I417,I418,I421,I425,I427,M428,O437,I438,I440,I442,I443,I444,I445,I446,I447,I448,I449,I450,I451,I452,I453,,I454,I455,I456,I457,I458,I459,I460,I461,I464,I478,I479,I480,I481,I482,I484,I485,I487,I490,I494,I495,I515,I518,I519,I522,I523,I529,I530,I537,I538,I540,I541,I542,I544,I545,I546,I566,I567,I924,,I925,I926,I927,I928,I929,I930,I931,I932,O1558,M1774,I1778,I1791,I1876,I2692,,I2901,I3031,O3098,I3118,I3119,I3121,I3122,I3125,I3126,I3127,I3302,I3303,I3305,I3308,I3309,I3315,I3317,I3443,I3490,I3493,I3494,I3497,I3500,I3509,,I3525,I3530,I3540,I3545,I3642,H5,,H8,H9,H15,H24,H25,H27,H33,H42,H47,H73,H79,H86

1.4 Environmental Review, Permits and Approvals, Public Grants and Funding Sources

(1) In addition, as an official party in the Belleayre Resort at Catskill Park proceedings Sierra Club Atlantic Chapter requests that all twelve issues initially identified through the adjudication process: water supply and groundwater and surface water impacts, aquatic habitat impacts, stormwater impacts, impacts to the Catskill Forest Preserve, impacts to wildlife, noise impacts, traffic impacts, visual impacts, impacts to community character, secondary and induced growth impacts, cumulative impacts, and alternatives be analyzed and evaluated through a new adjudicatory process. The proposed projects have significantly changed since the last adjudicatory hearings and our own understanding of the effect that climate change will have upon the Catskills has evolved as well. **O3638**

(1a) Moreover, it is clear that the SEQRA process has been woefully inadequate in a number of significant respects, and that neither project should receive any approval until: ………. DEC schedules an adjudicatory hearing on the substantive issues raised by the attached comments, and those of other parties who will be impacted by the projects. **I2130**

Response: Changes in the proposed project have yielded smaller development with a more compact footprint and environmental impact. For example, the Modified Project is only 38% of its originally proposed size. Total acreage to be developed has been reduced by 60%. Total number of hotel and lodging units has been reduced by about 30%. The total acreage of land that will be converted to impervious surface has been reduced by about 70%. Additionally, the 1,189 acres of land that was previously to be developed as Big Indian has been purchased by the State and will be forever protected from future development. Also, the 200+ acre Adelstein parcel is now subject to a Conservation Easement held by the New York City Department of Environmental Protection. The changes to the project, all of which reduce environmental impacts along with the overall size of the project are set forth in detail in the SDEIS Executive Summary as well as the body of the SDEIS. For example, see Table ES-1 in the SDEIS Executive Summary

The only issues identified for adjudication as "substantive and significant" in the Deputy Commissioner's December 29, 2006 Interim Decision were (1) whether the water supply permit application for Big Indian Plateau satisfies the regulatory requirements for such a permit; (2) whether at the pumping rates proposed in the draft water supply permit for Big Indian Plateau the risk exists that dewatering would occur to the detriment of aquatic habitats; (3) stormwater issues related to (a) the adequacy of the HydroCad model and its assumed inputs and design points, (b) the adequacy of the Big Indian SWPPP and the design of its various stormwater management controls, (c) the identification of the stormwater flow paths on the project site, (d) the level of pre- and post-development stormwater flows, and (e) the basis for the waiver of the requirement to have no more than five acres exposed during construction at any one time; (4) a study of operational noise impacts on users of Wilderness and Wild Forest areas of the Catskill Forest Preserve arising from onsite activities at Big Indian Plateau; (5) visual impacts caused by Big Indian Plateau in wintertime conditions and the extent to which the area in the vicinity of Big Indian Plateau would be impacts by visible lights and "night glow," particularly from higher elevations and during winter months; and (6) a supplemental evaluation of a reasonable range of alternative project designs and layouts with sufficient information to undertake a comparative environmental assessment of such alternatives.

Water supply impacts (Issues 1 and 2) related to only Big Indian Plateau and were completely removed by project changes that removed that portion of the project.

Stormwater impacts are discussed in FEIS sections 3.1.1.

Noise impacts to the Catskill Forest Preserve (Issue 4) related to only Big Indian Plateau and were completely removed by project changes that removed that portion of the project.

The only visual impacts identified for adjudication (Issue 5) related to visual impacts caused by Big Indian Plateau in wintertime conditions and the extent to which the area in the vicinity of Big Indian Plateau would be impacted by visible lights and "night glow," particularly from higher elevations during the winter months. The removal of the Big Indian Plateau from the project removed these potential impacts. In addition, the scope for the SDEIS addressed the issue of night pollution from the proposed Modified Resort Project, including visibility at night and the issues of nighttime "sky glow" and direct glare. The required analysis was conducted by the Lighting Research Center (LRC) of Rennsselaer Polytechnic Institute and included in Appendix 25 of the SDEIS and Section 3.6 of the SDEIS and FEIS. The analysis found that impacts from the Modified Resort Project would be minimal, would be controlled within the project site rather than being aimed off it; and that overall light levels are very low—at least one-third lower than the recommended limit for most rural locations. Measures to mitigate potential impacts include limiting the direction of emitted light; reducing glow by reducing the overall light output from fixtures; and reducing the time and amount of light at night. This includes proposed establishment of a curfew time of one hour after sunset for the lighting at the project tennis courts, including the use of an automatic timer to shut off the tennis court lights.

The final issue identified for adjudication related to supplemental evaluation of reasonable alternatives (Issue 6). The Interim Decision determined that supplemental analysis should include a "one golf course and on hotel complex alternative" and an "east resort/west resort alternative." Beyond these two, the Commissioner did not designate a specific number of alternatives required to be included in a supplemental alternatives analysis.

The elimination of the Big Indian Plateau portion of the project through the AIP process addressed the Commissioner's directions for consideration of a "western alternative," a single golf course alternative, and a smaller-scale project alternative, since all of these alternatives became features of the Modified Project following the AIP. In addition, the original proposed development on the Highmount parcels of a 21-unit subdivision drew virtually no comments of environmental concern; thus, relocating the Highmount Hotel and Spa to this site was a logical alternative. The consideration of alternatives in Section 5 of the SDEIS also included a range of possible alternatives, all of which were ultimately concluded to be economically infeasible or less protective of the environment than the Modified Project.

The first alternative considered was the original project as evaluated in the original DEIS. See SDEIS 5-1 to 5-3. Among numerous reduced impacts achieved in the Modified Project as compared to the original project, the SDEIS discussed that the Modified Project resulted in the reduction in total size of the project by 60%, reduction in the number of lodging structures by 70%, elimination of the single-family home component, and reduction of the length or proposed roads and total amount of impervious surfaces by 80%. The discussion noted the host of impacts that were lessened by the elimination of the Big Indian Plateau development, including elimination of all visual impacts to Wilderness Area lands, elimination of one of the golf courses, elimination of the Rosenthal well field, and nearly complete elimination of impacts from *stormwater discharges to the Ashokan Reservoir and Watershed Basin. In sum, the full consideration and comparison of the Modified Project to the project originally evaluated in the DEIS demonstrated the tremendous reduction in environmental impacts to be achieved through the Modified Project. Thus, the original project was rejected as a reasonable alternative in favor of the Modified Project.*

The second alternative was an alternative layout for the Highmount Spa Resort that emerged from the AIP Plan. As the SDEIS discussion noted, however, the Modified Project eliminated an area of potential adverse environmental impacts by removing the highest elevation 24 detached units and an access road at Highmount. See SDEIS 5-4 . Among the numerous potential adverse impacts avoided by adoption of the Modified Project, the SDEIS specifically discussed the decrease in site area disturbed by 17 acres, decreased impervious surfaces area of six acres, and decreased overall visibility of the project from off-site locations. Thus, the AIP Plan alternative was rejected in favor of the Modified Project that eliminated higher elevation development.

The third alternative discussed in the SDEIS was the elimination of the entire Highmount development. See SDEIS 5-5 to 5-8. This alternative was prescribed in the Scoping Document, with the purpose of eliminating physical disturbance on one entire tract of land. The SDEIS noted a modest reduction in acres disturbed and other impacts. However, the discussion in the SDEIS balanced these modest reductions in impact against the infeasibility of the entire project if Highmount were eliminated. Furthermore, the SDEIS comments did not identify any specific significant, adverse environmental effects that would be avoided by eliminating Highmount. Based on the HVS study as updated in the FEIS, without Highmount, the entire project would not be viable; nor would the project achieve the applicant's objectives of covering a wide range of the market and avoiding market segmentation. See SDEIS 5-6 to 5-8; SDEIS Appendix 5; FEIS Errata/Revisions § 2.5.

As the 2006 Interim Decision noted, alternatives that would not achieve the objectives of the project applicant are not required. Moreover, even if the project could become viable without Highmount and could secure financing, the SDEIS also discussed the significant reduction in project economic benefits to the Towns, County, and State from eliminating the Highmount portion: loss of over $182 million in construction, loss of 1,991 person-years of construction employment (nearly 50% of the total), and significant reductions in tax revenue, including estimated loss of over $1.8 million in annual property tax collections after full build out. See SDEIS 5-6. Thus, based on the likely non-viability of the project without the Highmount portion, combined with significant reductions in benefits in exchange for modest avoided impacts, the no-Highmount alternative was rejected in favor of the Modified Project.

The alternatives discussion also included alternatives to certain other components and systems, including an alternative golf course layout, alternative water supply, alternative wastewater disposal, alternative golf course management practices, alternative stormwater practices, alternative construction phasing, and a no-action alternative. See SDEIS 5-8 to 5-15. In each *case, the Modified Project incorporates changes that directly addressed the issues identified for adjudication, or noted that project modifications had eliminated the potential impacts formerly identified. Additionally, a supplemental No Highmount Alternative Additional Analysis is included in this FEIS (Revised Information § 2.8).*

(2) The massive amount of material being moved for commercial purposes reveals that a mining permit is necessary. A project that moves more than 1,000 tons of material (40 to 50 tandem 10 wheeler dump truck loads, 750 cubic yards) requires a mining permit. This would also mean that a special permit from the Town of Shandaken is necessary, as the project is not located in an industrial area, and, therefore, a mine would not be allowed.

There are special considerations that need to be addressed. All construction personnel on the site would need mine safety training, and, especially due to the magnitude of this project, the entire site should be inspected/approved by Mine Safety and Hazards Association (MSHA). As stated earlier, the depth of the mining excavation cannot, by law, go below the seasonal high water table.

A batch plant is a specialized operation that requires the proper handling of hazardous materials and treatment of wastes. There are two such proposed batch plants. A special permit is necessary to deal properly with the concrete and asphalt materials and their related environmental effects. Plants must comply with the Environmental Conservation Law (ECL), Spill Prevention Control and Counter Measures, NYS Navigation Law Article12, Part 1 paragraph 172,6 NYCRR parts 612, l(c), 201,212,225,227, 40 CFR Sub part I, Drainage and Sediment Control Measures. Above ground storage tanks also require special handling and permitting. These considerations are inadequately addressed in the SDEIS.

Permits are required for the proposed mining and batch plant operations.

The demonstrated unmitigated adverse environmental impacts of the Project have not been offset by its social and economic benefits, if any. 6 NYCRR § 617.11(d)(2) and (d)(5); Lane Construction Co. v. Cahill, supra.

The Project does not comply with the applicable SPDES and ECL Article 15 requirements, as shown by the Sterling Report.

The EISs and application materials are significantly defective in numerous areas and require substantial correction and supplementation. Most importantly, ORDA and Crossroads should assess, and then adopt, the alternative projects proposed by CHA. Otherwise, the permit applications by Crossroads should be denied. **O3635**

Response:
(a) Mining Permit
There are no mining activities associated with the project that would require a NYSDEC Mined Land Reclamation Permit. This was confirmed during the Issues Conference held in 2004.

NYSDEC has not changed its policy since 2004. Under the Mined Land Reclamation Law, a "Mine" means any excavation from which a mineral is to be produced for sale or exchange, or for commercial, industrial, or municipal use. A "Mine" includes all haulageways and all equipment above, on or below the surface of the ground used in connection with the excavation, as well as all lands included in the life of the mine as presented to the Department of Environmental Conservation.

Certain activities are exempt from the Mined-Land Reclamation Law including excavation or grading operations which are conducted solely in aid of on-site construction. Operations fall in this exempt category when construction activity will occur at the site concurrently with excavation and grading or immediately after these operations are finished.

The site's cut and fill will be balanced on the site and material will not be trucked off site. The only soil imported to the site will be topsoil and topsoil amendments for the Wildacres golf course. Any excavation on site will be conducted solely in aid of on-site construction and will not be transported off-site, sold or exchanged. Further details on this issue can be found in the SDEIS at § 2.8.8 and § 2.8.9.

Based on the above analysis, ALJ Wissler in his September 15, 2007Ruling on Issues and Party Status, (Ruling number 21) stated that "..no MLRL permit is required since all excavated materials will remain on site, there being no contemplated removal of such materials through sale or exchange, or for commercial, industrial or municipal use." The same situation exists for the modified project.

<u>*(b) Batch Plant Operations*</u>

The feasibility of establishing an on-site mobile batch asphalt plant was also evaluated. Consideration was given to the site's proximity to existing asphalt plants and their ability to provide suitably hot asphalt, as well as an economic feasibility assessment of producing asphalt on site. This analysis determined that an on-site mobile batch asphalt plant was not necessary or economically advantageous. An on-site mobile batch asphalt plant is not proposed as part of the project. A nearby existing asphalt plant is available to meet the project's asphalt needs. Further details on this issue can be found in the SDEIS at § 2.8.8 and § 2.8.9.

Because of the need for concrete for the project and the desire to reduce truck trips, a mobile rock crusher and concrete batch plant may be used on site for the construction of the hotels. These plants are mobile and temporary, NYSDEC issues registrations to the plants, including their own mobile source air permit, to the plants with necessary operational limitations. Overall the use of these mobile facilities on the site will reduce impacts and is consistent with construction practices across New York State. Further details on this issue can be found in the SDEIS at § 2.8.9.

<u>*(c) Bulk Storage*</u>

SDEIS Table 1-1 and section 1.4.4(A) clearly recognize the need for petroleum bulk storage registration for the project. Spill prevention, containment and reporting procedures are included in the draft SWPPPP in SDEIS Appendix 19.

(d) Inadequacy of Mitigation

The comment on the alleged inadequacy of mitigation lacks any specificity that would enable a response. Nevertheless, the modified project has addressed all of the potential environmental impacts. See SDEIS section 3.0 for discussion of specific mitigation measures incorporated into the project design and controls for construction and operation.

(e) Impacts vs. Benefits
The DEIS and the SDEIS sets forth the economic and employment benefits that are expected to result from this project — which, if constructed — would reestablish larger scale resort hotels in this area of the Catskills. The Catskills are synonymous with the resort hotel industry. For decades the Catskills tourism industry attracted users from the surrounding metropolitan markets and provided a sustainable source of local employment for residents who currently commute long distances to locate similar and in some cases less remunerative employment. The character of the Catskills with its acres of preserved lands really only allows for limited types of economic development—tourism is squarely within the community character of the area and, in fact, resort hotels are allowed uses in the zoning code, and are consistent with the Comprehensive Plans of the Towns of Shandaken and Middletown.

(f) SPDES Compliance
The draft permits issued by DEC established that the standards for the permits have been met by the project as the draft permit could not be issued without such a determination. The applications for the stream crossings and the individual SPDES permit demonstrate that the project as designed meets the standards for discharges of stormwater associated with construction and operation of the resort. The project meets the most up to date standards in the DEC manuals for the treatment and discharge of stormwater. In addition to the plans that demonstrate that these standards can be met, the Applicant has agreed to monitoring oversight by NYSDEC and NYCDEP during construction. All of these measures are set forth in the SDEIS at sections 3.1.1, 3.3.1 and appendices 18 and 19.

The particular technical comments by Sterling are addressed separately, primarily in section 3.1 of this FEIS.

(g) EIS Sufficiency
The Department determined that the SDEIS was sufficient. The SDEIS addressed all of the issues required to be addressed in the scope of the SDEIS (which was lengthy). Moreover, the modified project itself represents the new alternative for this project. To ensure that the modified project was subject to a thorough environmental review, the SDEIS was undertaken and subjected to public review. CHA's alternative, does not fulfill the objectives of the project sponsor because it does not facilitate the interconnection of the recreational components and the lodging components on and around BMSC.

(3) I don't believe spending public money to help build a private oversized ski resort for the wealthy on a sensitive ridgetop is in the public interest. **I83, I84**

(3a) Furthermore, I object to having taxpayers foot the bill for improvements on the developers' property that would be needed to connect the private and the public areas. Let the developers pay for it. **I922**

(3b) First of all, I want to make especially clear that I deeply resent the talk of spending huge amounts of tax payer dollars to create ski in/ski out trails for a PRIVATE development. This project is not for free public use so public dollars should not be spent to construct it. **I3502.**

Response: The Applicant represents that no public money is being spent to build the Resort facilities and that the lifts and trails at the Highmount Spa Resort will be built by the Applicant, and not the State.

(4) Taxes? Where are the details of the tax incentive breaks that Crossroads will have? Will we get those millions of tax dollars in 5 years, 10 years, 20, never? **I321**

(4a) I am concerned about the amount of tax breaks this project will be given, and feel that the amount of tax revenue that will be generated, and when, has not been adequately addressed. **I401**

Response: The Applicant indicates that the Ulster County IDA will be approached to utilize their financing and incentive programs such as mortgage recording tax exemptions, sales tax exemption, and real property tax abatement through a PILOT agreement. The effect of any such business investment exemptions are fully discussed in the Socioeconomic and Fiscal Conditions and Effects Report as prepared by AKRF, Inc. and included in Appendix 3, Section 3.9.3 and Tables 3.9.3-11, 3.9.3-12 and 3.9.3-13 of the SDEIS. According to the Applicant's analysis, over $2 million in real property will be annually paid to taxing authorities in Ulster and Delaware Counties by completion of the first phase of the Resort.

The proposed project would, according to the Applicant's analysis, generate future tax revenues for Delaware and Ulster Counties, Onteora and Margaretville Central School Districts, and other taxing districts. The properties on which the proposed project would be located generated about $87,300 in annual tax revenues in 2007. With the proposed project, the properties could, according to the Applicant's analysis, generate over $2.16 million annually, representing a 2,375 percent increase over the fiscal year 2007 tax revenue of approximately $87,300. As noted in Appendix 3 of the SDEIS, the real property tax abatement program, assuming the resort would qualify for it, would diminish over a 10 year period of time following completion of construction.

(5) It is in no one's interest to see a project approved that is not built; worse, to see a project built which proves financially unsuccessful. To avoid both these possibilities the proponents of the Crossroads Project should be required to commit to its financing. **I309**

Response: According to the Applicant, it is not possible to obtain conventional financing for a project until it has received all of its approvals. Crossroads has indicated that it has already committed in excess of $20 million to complete the environmental review of the project and that it will actively seek financing for the project when the necessary permits and approvals to build are secured.

(6) The tax abatements requested by the developers would insure that the town citizens would bear the brunt of the costs for the increase in services and mitigation of problems for years and years to come. **I3502**

(6a) Who makes up the difference of the tax reduction credit that is being afforded to the Crossroads project? **I3506**

(6b) In regards to fulfilling obligations on local taxes: If it is true that a tax abatement scheme for the developer has been offered in which no taxes will be levied on either the builders, or developer for up to a period of ten years, this obviously strains local services, without legal recourse to address lack of fair contracts. This is unfair and binding for a small community to bear. **I511**

Response: According to the Applicant, the project is unlikely to burden either town with any significant increase in town services. All interior roads within the project site will be built and maintained by the developers. Tax revenues are likely to offset additional costs for emergency services. The analysis indicates that according to the Applicant, and as stated at the Issues Conference, resort employees will be incentivized to volunteer to assist local fire and emergency medical service.

The proposed project would generate significant future tax revenues for Delaware and Ulster Counties, Onteora and Margaretville Central School Districts, and other taxing districts even if the project participates in available tax abatement program which is generally available throughout the State. The tax abatement in discussed in SDEIS Appendix 3 is a partial abatement capped at 50% of applicable local taxes and diminishes each year by 5% over a 10 year period. The properties on which the proposed project would be located generated about $87,300 in annual tax revenues in 2007. With the proposed project, the properties could generate over $2.16 million annually, representing a 2,375 percent increase over the fiscal year 2007 tax revenue of approximately $87,300. The effect of future tax generation is fully discussed in the Socioeconomic and Fiscal Conditions and Effects Report as prepared by AKRF, Inc. and included in Appendix 3 of the SDEIS. Moreover, this project will provide construction and permanent jobs which are needed in Ulster and Delaware Counties. This will have an immediate benefit for residents of the area who currently commute far from home to hold similar jobs.

(7) It is my understanding that the principals in the Crossroad Venture Project are involved in obtaining permits only and plan to sell the permits to a developer. I would like to know if this is correct. How closely would a new owner have to adhere to these plans. Is there anything in these documents that outlines the procedure for oversight? Who or what agency is responsible for insuring these plans are followed? What happens if the environmental impact is more destructive than anticipated or acceptable? **I150**

Response: The identity of who holds the permits is irrelevant as they are enforceable notwithstanding whether or not they are transferred.

Any action materially different and significant than that currently proposed for the project site would require a supplemental SEQRA review and modified permits from involved regulatory agencies.

The SDEIS describes oversight for a number of project components including independent stormwater monitors during construction and an organic golf course oversight technical committee.

The draft permits issued for the project clearly state that NYSDEC has the right to enter and inspect the site. See item IV.1 of the draft SPDES permit and general condition 1 of the draft Article 15 permit.

The draft article 15 permit clearly states, "By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit."

The permittee is responsible for meeting the conditions of the permits. Failure to meet permit conditions can result in stop work orders, permit revocation, fines or imprisonment.

(8) Although each project and EIS process is related, decisions for one will condition and inform the decisions for the other projects in succession. The driving forces behind the EIS reviews appear to be the need for public financing or the guarantee for private financing, and the need for public construction of the ski center amenities and infrastructure required for the resort/residential development units.

The Crossroads development EIS process should be completed first, prior to the EIS for state ski center expansion and the location of that expansion which remains a major point of contention. Thereafter, the Unit Management Plan should be considered as the final EIS task.
At this point, it is urged that the DEC initiate a separate review process for each of the pending projects in tandem, and adjourn the July 24, 2013, deadline for public comments on the current review to allow for those separate evaluations to occur. The Agreement In Principle was manufactured to bypass SEQRA and to short-circuit remedies for which SEQRA was enacted.

The AIP, however, has no legal authority to circumvent, violate, or interfere with the mandates of SEQRA. This AIP is not the product of a litigation settlement approved by a court which has such authority. The AIP is not a legal remedy to cure the defects of the 2003 DEIS. Further, it appears that the 2013 evaluations have been predetermined by the AIP, not by the merit and current circumstances of the projects under review. The specter of the current SDEIS process to justify the intrusion of the AIP into SEQRA just compounds and solidifies the defects of the 2003 DEIS.

The entire AIP should be voided, and the SEQRA process should start anew. Otherwise, both the AIP and subsequent, contaminated SEQRA decisions become vulnerable to legal challenge.
The opaque environmental and public financial obligations and consequences regarding each project remain a central concern.

A noted $74 million public purchase and lease-back deal to avoid constitutional prohibitions must be clearly explained and justified. All subsidies from all sources including direct payments,

loans, loan guarantees, below market interest incentives, exemptions/waivers from property-sales-income taxes that are otherwise owed but not collected must be stated.
Future land acquisitions, price and land use decisions are noted to be based on contingencies dependent on the issuance of permits today. All property purchase and use decisions should be made now and not be held hostage by the promise of permits, the issuance of which should be based independently on the merits of the permit application.

NYS appears to have committed to construct and to maintain potable water supply, waste water treatment/disposal, and storm water - drainage infrastructure that directly benefits the private Crossroads development at public expense. What are the total costs to construct and maintain those systems, and what is Crossroads obligation to pay for those services which otherwise would never need to be established? **O2071**

Response: The AIP required that the modified project to be subject to a publicly scoped SDEIS and was in no way enforceable on the Department. This SDEIS took years to prepare and to review and there is no basis to support the commenter's assertion that any process of the law or regulations has been circumvented.

The UMP for the Belleayre Ski Center was evaluated along with the Modified Belleayre Resort Project because the Department believed that it would frustrate the evaluation of cumulative impacts of both projects unless they were evaluated pursuant to SEQRA at one time. This evaluation of the individual and the cumulative impacts of the UMP and the Modified Belleayre Resort Project have now been accomplished.

There is no public purchase and lease-back deal as part of this project.

The Applicant has indicated that no public funds are being used in the development of the Modified Belleayre Resort Project or its infrastructure. Public funds will be used for the implementation of the Final Belleayre Mountain UMP as expenditure of such funds are so authorized and approved by ORDA and the New York State Legislature. The funding, improvement and operation of the BMSC are all subject to public review and comment.

(9) At a minimum, a financial advisory opinion of the projects should be requested from the NYS Comptroller now well in advance of the submission of anticipated contracts. **O2071**

Response: Comment noted.

(10) Intentionally Blank

(11) Intentionally Blank

(12) Crossroads knows that it is unlikely that this resort will ever be built, so their goal now is to push through approvals so they can sell the land back to the state at a much higher value. I am surprised that the State of New York would be this naive not to see this project for what it is. **I3568**

Response: Comment noted. The Department cannot base its environmental review on speculation regarding the motives of the Applicant. Any purchase and sale of such lands would be subject to its own process involving review and approval by the State Comptroller.

(13) The tax breaks proposed for the project, a commercial profit making business, are unacceptable. **I396**

Response: The Applicant has indicated that it anticipates that the Ulster County IDA will be approached to utilize their financing and incentive programs such as mortgage recording tax exemptions, sales tax exemption, and real property tax abatement through a Payment in Lieu of Taxes (PILOT) agreement as are available to all qualifying projects under State law. The economic development programs that are available in New York State are very limited and have been created to overcome the difficulties of undertaking projects in the State's difficult regulatory environment. The proposed project is expected to generate significant future tax revenues for Delaware and Ulster Counties, Onteora and Margaretville school districts, and other taxing districts. The properties on which the proposed project would be located generated about $87,300 in annual tax revenues in 2007. With the proposed project, the properties could generate over $2.16 million annually, representing a 2,375 percent increase over the fiscal year 2007 tax revenue of approximately $87,300. The effect of any such business investment exemptions are fully discussed in the Socioeconomic and Fiscal Conditions and Effects Report as prepared by AKRF, Inc. and included in Appendix 3 of the SDEIS.

(14) Although the DEC is not a regional planning agency, it is, through the permits it grants, indirectly a party in projects that have great regional effect. Similarly, whereas the SEQRA process isn't a substitute for comprehensive town plans, planning board decisions, or zoning laws, cash-strapped towns with layperson planning and zoning boards often use its conclusions to rubber-stamp applications, with the knowledge that a decision counter to the findings of a SEQRA review could result in a lawsuit by the applicant.

Communities in the Catskills, under the guise of independence, home rule, and sometimes personal orneriness, are notoriously resistant to local and regional planning. Because the Catskills are a rural area (less than 50,000 people live in the Catskill Park), county and state agencies tend not to push towns into wider efforts. For example, Ulster County's tourism promotion efforts have focused more on the Hudson Valley where larger population centers are located without seriously engaging the more mountainous, less populated western parts of the county.

With Catskill towns reluctant to engage in regional planning, and distant government agencies content not to force their hands through some kind of incentive to do so, the extent to which planning takes place at all occurs when a large project is before the DEC for environmental permits. Thus, in the case of the proposed Belleayre Resort, the role of regional planner falls de facto to the DEC.

Here is where decisions of the DEC regarding Crossroads' application will have great regional planning effect over time, ranging from measurable increases in traffic and pollution; to lost

habitat from clearing, reshaping, and covering the land with buildings and impermeable surfaces; to population growth at the resort and in the hamlets; to restructuring and redirecting the local economy of small businesses and independent contractors to serve a large corporate undertaking; to changing the diverse nature of local hamlets to places that support the secondary effects of the resort, whether as a base for worker housing or as a satellite for businesses and vacation home owners who hope to take part in the "destination" quality of a major four-season resort.
Over 50% of the home owners in the town of Shandaken are second home owners, with very few of those registered to vote in Shandaken and thus looking to the DEC as though it were an elected official to intercede with its regulatory power and exercise a type of environmental Hippocratic Oath "to do no harm." In this role the DEC has the ability to administer a type of community justice, to insist on an alternative that avoids environmental harms that cannot be mitigated, protects local businesses, and preserves the community character that brought many residents and home owners to the Catskills in the first place. **O3633**

Response: The towns of Shandaken and Middletown are both reviewing project applications for Site Plan and Special Use Permits. Both towns, as involved agencies, will also issue their own independent findings statements under SEQRA. Both of the Towns have retained or have available to them the services of qualified professionals to review these applications and assist them in their decision making processes on the local approval applications before them as well as their independent SEQRA decision making processes. Both Towns will also be seeking planning input from their respective County Planning Departments, and their professional staffs, as required under section 239 of New York State General Municipal Law.

(15) If a major new resort is approved, proposals for on-site casinos or other facilities may follow. Any approvals that may be granted should be specific to the uses proposed by the applicant and it should be made clear that any change of use will constitute a separate action warranting additional review.

Finally, I am also concerned that the public notice for the acceptance of the SDEIS and the complete application for associated DEC permits issued on April 17, 2013 is misleading. It indicates that both the DEC and the OPRHP have determined that the proposed project would have no adverse impact on properties listed or eligible for the State and National Registers of Historic Places. As discussed above, the analysis has failed to adequately assess the project's impact on the Galli-Curci Property. Further, when my representative contacted OPRHP, the agency denied that it had made any such unconditional determination and further noted that it had not been provided requested documents from DEC related to the project's potential impacts on historic properties. In my view, the notice is defective and should be corrected and reissued. **I3535**

Response: See Section 2.0 and response 1 in section 2.1 regarding definitive prohibitions of casino facilities.

The Errata section of this FEIS contains September 13, 2013 correspondence from NYS OPRHP stating that they have reviewed the project as it is currently proposed, and that they have determined that there will be no adverse impact on historic resources, including the Galli-Curci property.

Pursuant to Part 621 of the Uniform Procedures ("UPA"), OPRHP was required to make a determination pursuant to section 14.09 of the Parks, Recreation and Historic Preservation Law (NYS Historic Preservation Act of 1980) whether any architectural, archeological or cultural resources present in the project impact area are significant (listed on or eligible for listing on the State or National Register of Historic Places). DEC staff, as part of the permit application process under UPA Part 621, relied on OPRHP to make these determinations. OPRHP staff have been regularly consulted on the project over many years and many project changes, as evidenced by OPRHP's statement in its September 19, 2013 determination that "our office has been reviewing this action under 14.09 (NYSPRHPL) since 1999." OPRHP has issued three "No Adverse Effect" or "No Adverse Impact" determinations for the project. The September 19, 2013 no adverse impact determination based on the current Modified Belleayre Resort Project plans specifically references the Amelita Galli-Curci Estate as being identified in the project area and listed on the National Register. OPRHP did not qualify its "No Adverse Impact" determination in any way; nor has OPRHP identified any additional documents necessary for assessment of impacts of the project on the Galli-Curci Mansion or any other historic properties.

As part of the FEIS, an additional review of the potential visual impacts on the Galli-Curci Estate was undertaken. That analysis shows that intervening topography and vegetation will provide a visual screen of the project. Views of the modified project from the Galli-Curci Mansion will be limited under both leaf-on and leaf-off conditions (see e.g. draft FEIS Executive Summary § 3.6 [analyses show that proposed hotel "will not visually impact the Galli Curci Mansion"], Errata § 2.4). Of note is a photograph taken from an open field on the northern portion of the project site, directly across CR 49A from the Galli-Curci Mansion, and looking north toward the mansion. This photograph depicts only trees that are located on the Galli-Curci property and, therefore, none of applicant's activities will remove the trees shown. The photograph shows that existing vegetation on the Galli-Curci property provides a significant visual screen (draft FEIS, Errata § 2.4, Photo #3119. Additionally, as noted, the modified project provides for deciduous and evergreen tree plantings along CR 49A that will provide additional visual screening of the project.

(16) How much money has the state of NY already spent on this evaluation over the past 15 years?

Response: This comment is not relevant to the SEQR process. In addition, this information is not readily available.

How much will the state be doling out for the project if the state allows it?

Response: The estimated cost for the Full Build Out is included in Section 4.11 of the UMP-DEIS. As discussed in UMP-FEIS Section 3.1, the Full-Build Out alternative provides the Facility Operator with increased flexibility to implement these projects incrementally, and is dependent upon several factors including funding from the New York State Legislature.

Are there any state, county, town and DEC officials who have or will have a vested interest in this project? If so, please expose and list those who are fiscally involved. **I225**

DEC is not aware of any officials at the local, county or state level that have a vested interest in the project.

1.4.1 Local

(1) The SDEIS should include on the list of required approvals use and area variances from the Town of Shandaken Zoning Board of Appeals and the need to refer the various applications to the County Planning Board. **O3635**

Response: The modified project has applied to the Shandaken Planning Board and to the Middletown Planning Board for Site Plan and Special Use Permit approvals. At this time it is believed that no variances are required for the project. Should the need for a variance be identified during the local review processes, the appropriate application materials will be filed. The project will be referred to both County Planning Boards for their review and their issuance of advisory opinions to the Town Planning Boards under General Municipal Law section 239.

1.4.2 County

No substantive comments were submitted on this topic.

1.4.3 Regional

(1) The region and the state need to protect the city's water supply. **O3547**

Response: At the regional level NYCDEP is the regulatory agency responsible for protecting water quality in the NYC watershed. Permits from NYCDEP will be required to construct the project and NYCDEP is an Involved Agency in the SEQRA review of the project. At the state level NYSDEC is the primary agency responsible for protecting water quality. Permits from NYSDEC will be required to construct the project and NYSDEC is the Lead Agency in charge of the SEQRA review of the project.

1.4.4 State

(1) The greenhouse gas discussions copy the list of possible mitigation measures that are part of NYSDEC's Policy on Assessing Energy Use and Greenhouse Gas Emissions in Environmental Impact Statements. Yet there is no commitment to any measures in the draft permit conditions. How will the measures cited in the Catskill Resort SDEIS and the UMP DEIS actually be implemented? There is currently no funding or implementation identified for the transportation mitigation measures through the transportation planning process. NYSDEC and other state agencies involved in this project should review and approve all construction plans, drawings and specifications, and any proposed modifications thereto, to ensure the maximum feasible greenhouse gas mitigation measures are actually implemented. **O3635**

Response: NYSDEC is responsible for enforcement of its permit conditions. In crafting permit conditions, NYSDEC is vigilant about crafting enforceable conditions and is doing so in this case.

NYSDEC as Lead Agency in the SEQRA review will issue its Findings Statement as part of the SEQRA process. Findings Statements are required to incorporate as conditions to the decision those mitigative measures that were identified as practicable, including such measures relating to greenhouse gas emissions. The same is true for all other involved agencies.

(2) The Draft Stream Disturbance Permit (Permit ID 0-9999-00096/00013) should be amended to reflect Crossroads Ventures LLC's new address PO Box 466 (6 Galli Curci Road), Highmount, New York 12441. The facility location should be changed to Ulster and Delaware Counties. The Applicant has no further comments on the Draft Stream Disturbance Permit.

While the draft SPDES permit does not explicitly authorize the use of the water treatment chemical, chitosan: the draft permit approves and references the Stormwater Pollution Prevention Plan (SWPPP) prepared for the Project which provides for the use of chitosan to assist in control of sediments in the sedimentation basins. See SDEIS Appendix 19, Draft SWPPP, Section 6.1.1. The facility name should be the Belleayre Resort at Catskill Park (see Draft SPDES Permit pages 1 and 2).

Item 3.h on page 7 should be revised to require a description and photos. This would be consistent with the requirements under 3.k on page 8 for practices needing corrective action. Providing photographs will be more accurate and less time consuming than sketches.

Please consider clarifying the language found in IIB.4 Construction Phasing (p. 4) and III.A Notification of Project Completion to insure that the language is referring to each phase covered by the SWPPP rather than the project as a whole. It is our understanding that the III.A language should mimic the II.B.4 language which allows for implementation of temporary stabilization measures before moving onto the next phase (with its approved SWPPP). If III.A applies to the entire project and not just what is covered by the SWPPP for that phase then the language is acceptable.

Please also examine the language under III.B Termination of Permit coverage (pp.8-9), in light of the multiple, sequential SWPPPs being implemented for different phases. Currently, III.B requires that permit coverage remain in place for one year following work being completed. It is our understanding that this is a reference to the very end of the project where no additional construction work will take place. It is our intention to "close" out phases of the SWPPP as work goes forward but the SWPPP clearly provides for more than one phase of the construction to be open at one time. We assume, however, that the one year period referenced in this section will be applied to the last phase of the SWPPP and the construction of the facility. If we are interpreting this incorrectly please revise the language to address this concern. **O1777**

Response: This comment is noted.

(3) The following comment is submitted with regard to the draft Construction SPDES permit for the Belleayre Resort at Catskill Park (SPDES Number: NY- 027 0679; DEC Number: 0-9999-00096/00005):

The final SPDES permit should reference parts 20 and 21 of the Agreement in Principle (AIP) dated September 5, 2007 which describe stormwater protocols necessary for preparation of the resort SWPPP. Specifically, the “Stormwater Quantity and Quality Protocols” developed by AIP signatories dated August 24, 2007 (referred to as AIP Exhibit F) and the role of the Independent Stormwater Monitor were deemed fundamental to proper design and implementation of the SWPPP. The AIP includes specific hydrologic modeling inputs, detailed construction phasing, limits on the extent of concurrent land disturbance, inspection/reporting requirements, and a numeric turbidity limit for stormwater discharges. As such, and in addition to referencing the parts 20 and 21 of the AIP, the final SPDES permit should make clear that the referenced SWPPP report/drawings prepared by the LA Group (latest revision March 2013) comply with the stormwater management requirements of the AIP. **M3539**

Response: This comment is noted.

1.4.5 Federal

No substantive comments were submitted on this topic

SECTION 2.0 DESCRIPTION OF THE MODIFIED PROPOSED ACTION

(1) One of the key requirements of the Agreement in Principle, a deed restriction prohibiting casino gaming on all parcels, has not been completed. It must be in place before permits are issued. **O1776**

Response: Such restrictions are not relevant to the Department’s review of the project. However, Crossroads has indicated that it intends to (as stated in the AIP) “…memorialize, through duly recorded covenants and/or deed restrictions in favor of the owner of the conservation easement on the Adelstein property, its commitment: (a) not to increase total lodging or residential density beyond that represented in the modified project/lower impact alternative, and (b) not to allow the operation of Class III gaming facilities pursuant to the Indian Gaming Regulatory Act of 1988, at the Highmount Spa Resort and Wildacres Resort. The applicant has indicated that these covenants and/or deed restrictions will not be recorded until the final, non-appealable approvals have been issued for the Modified Belleayre Resort Project.” Such restrictions will be enforceable by and through the terms of the deed restrictions rather than through the Department’s permits.

(2) A full SEQRA process is required and it won’t be complete until: Detailed plans are provided for both the significantly revised Belleayre Resort and the newly proposed Belleayre Mountain Expansion. **O3636.**

Response: Detailed plans for the modified resort project are included in the SDEIS. Similar detailed plans are included as part of the UMP/DEIS.

2.1 Overall Project Design and Layout

(1) It is worthy to note that the resort will not allow Class III gaming. Will they pursue Class II gaming? **O3635**

Response: *See response to "2.0" above.* According to the applicant, *Class II gaming, as defined under the Federal Indian Gaming Regulatory Act of 1988, is defined as bingo or games similar to bingo as well as card games that are played exclusively against other players rather than against the house or a player acting as a bank. Because many Not-For-Profit Organizations raise funds for their programs by organized "bingo nights" and other similar games, the Resort will allow Class II gaming so long as such gaming is in accordance with local ordinances.*

(2) The SDEIS describes 21 acres of impervious surfaces. The 2011 SDEIS (pages xv and 2-22) stated 26 acres, and it is not clear how the reduction in housing units and other changes between 2011 and 2013 resulted in a 5-acre reduction in impervious cover. The details are important here, as even a one- acre difference could end up being significant. **O3635**

Response: "The 2011 SDEIS" was not released for public comment because it was still undergoing a completeness review. Plans for the upper part of Highmount were changed by the time the SDEIS was declared complete and released for public comment. The current SDEIS clearly describes how the detached lodging units that were once proposed at the top of the Highmount Ski Area, along with the road that was proposed to access these units, were subsequently removed, and that the units that were removed from the top of Highmount were added on as third-floor units on detached buildings already proposed at Wildacres. Removing these units and roads and placing the units on top of existing impervious footprints resulted in a decrease of 5 acres of impervious area for the project. See pages, v, viii, xxxvi, 2-6 and 5-6 of the SDEIS.

(3) I once thought that Belleayre should incorporate Highmount. But that was when there was a whole Highmount with intermediate/expert skiers above 49A and novice skiers below 49A – what a great place for a bridge to connect the two areas, but Highmount could not afford such. Now I do not believe it is possible to reopen Highmount because three private houses have been built below it and there is no place for stormwater, stored or otherwise. **I3541**

Response: Highmount, if purchased by the State, could be integrated into the overall BMSC which provides novice skiing opportunities at other locations at the facility. Stormwater issues are addresses in Section 3.1 of this FEIS.

2.2 Highmount Spa Resort

(1) Adirondack Wild is very concerned that the Highmount portion of the project would pose undue adverse impacts short and long-term for the environment, critical wildlife habitat, scenic viewsheds and scenic resources, and water quality and quantity challenges (in runoff) if it were approved. **O3639**

(1a) The Highmount portion of the proposed project is of critical concern, due to its negative impacts associated with high ridgetop development. **O3635**

Response: See the response to comment 2.1(2) above. The ridgetop development once proposed for the top of Highmount has been removed and is no longer proposed. The units were relocated to lower elevation locations at Wildacres.

The Highmount portion of the site is former agricultural lands and no critical wildlife habitat was identified here, or at any other location on the project site. See section 3.4.3 and appendix 23 of the SDEIS. A visual impact assessment was performed for the entire project, including the Highmount portion. See section 3.6 and appendix 25 of the SDEIS. Project components in the Highmount portion of the project were visible from a few locations analyzed, and all components visible have landform backdrops. None of the visible components are on a ridgeline with a sky backdrop. No significant visual impacts were identified. See section 3.1of the SDEIS and this FEIS for information regarding water quality and quantity.

(2) The pop-up window of Belleayre Resort at Catskill Park depicts a trail and lift layout that will not work. Lift from beginners area to the top. Trails that cross the access road. No beginners area at High Mount. **I201**

Response: It is not clear what the "pop-up window" in the comment is in reference to. Nor is it clear what the "Lift from beginners area to the top." is in reference to, BMSC or the Highmount Spa Resort. At BMSC the existing Discovery lift goes from the lower mountain area to the top of BMSC. For the proposed BMSC Highmount lift there is no "beginners area" (See the response to comment 2.1(3) above in regards to beginners terrain at Highmount.), likewise for the Highmount Spa Resort, there is no beginners area. As far as "Trails that cross the access road", if this comment is in reference to the Highmount Spa Resort, the upper access road and ski trail crossings thereof, were removed from earlier plans. There are no trail road crossings (bridges or tunnels) at Highmount Spa Resort.

(3) There are no employees listed on the Resorts "Job Creation" page regarding ANY snow sport activity. Who works the lift at High Mount? **I201**

Response: As per page 2-15 of the SDEIS, "The Spa Village lift would be constructed by the Applicant and leased and operated by the BMSC. It would connect the Highmount Hotel/Spa building with the ski trails at the top of Highmount. Trails associated with this lift provide options for resort patrons and the general public to access all of BMSC as well as the resort."

2.3 Revised Wildacres Layout Including Highmount Golf Club

(1) Sierra Club Atlantic Chapter urges that the developers of the Belleayre resort drop the golf course concept in favor of more harmonious land uses within the Catskill Park. **O3638**

Response: Those familiar with the history of the project, and now the modified project, know that golf has always been a key component of this 4-season recreation-oriented resort. The DEIS project contained two courses and even presented an alternative that included three golf *courses (see DEIS section 5.3.6 and DEIS figure 5-9). The current proposal has been scaled back and now includes only one golf course. The proposal is for the golf course to be organically-managed by Highmount Golf Club for a period of at least five years. At the end of the first 5-year period the Technical Advisory Committee will evaluate the success of the organic management program. Should the majority of the Committee decide that they wish to deviate from the organic management program, their basis for doing so will be documented, and the Committee will prepare an integrated pest management plan for the golf course, similar to the one that was included in the DEIS.*

2.4 Wastewater Collection and Treatment & Pine Hills Wastewater Treatment Plant

(1) Wastewater flow numbers calculated for uses such as office space, and the Spa and Sauna, seem inconsistent with each other. Please provide clear explanations of how these numbers were derived from the applicable standards.

Response: Wastewater flows are consistent with New York State Department of Environmental Conservation's Design Standards for Wastewater Treatment Works Intermediate Size Sewerage Facilities, dated 1988.

Section 1.2.2.5: The SDEIS does not demonstrate that there is capacity for the proposed Belleayre Resort flows in the sewer system from the proposed connection point on Academy Street to the WWTP. A specific engineering analysis to assure capacity exists at each manhole and pipe segment should be performed.

Response: The NYCDEP has reviewed the proposed flows and the connection point and did not identify an issue with the capacity of the existing sewers. A detailed manhole to manhole analysis will be performed as part of the development of construction drawings.

Additionally, both DEC and DEP will review/approve the engineering report for the sewer extension.

The proposed project includes discharge of the backwash from the proposed facility's water treatment systems into the sewer system. The SDEIS discusses the levels of arsenic in the water to be treated, and the impacts of arsenic at these levels on the plant, but it does not identify the level of arsenic, or of other pollutants, in this discharge. The constituents in this discharge should be disclosed.

Response: The levels of arsenic and the full laboratory test results are included in the Water System Preliminary Design Report Appendix F. As discussed in the Wastewater Preliminary Design Report, all the parameters, except for arsenic, are within drinking water standards and none of these parameters will impact the wastewater treatment.

Additionally, DEC will review the estimated effluent levels of arsenic to determine if it exceeds the water quality standard in the receiving water and determine if any SPDES modifications are necessary to protect the water quality standards in the stream.

The discharge of backwash must be done in compliance with the 2012 Town of Shandaken Sewer Use Law. If the quality of the discharge would negatively impact the WWTP process, the applicant might instead need to concentrate and remove the backwash off site by truck, in which case, the traffic analysis would have to be updated to reflect this plan**. M3637**

Response: The impacts to the Pine Hill WWTP from the wastewater have been reviewed with NYCDEP and there is no concern over the water treatment plant backwash affecting wastewater treatment, since all the parameters, except for arsenic, are within drinking water standards. Since the arsenic levels are below the levels that impact biological treatment, backwash will not affect the WWTP process.

(2) The proposed gravity sewer system will conduct untreated wastewater from the Highmount Spa Resort to the pump station located north of the intersection of CR-49A and the road to Highmount Spa Resort (sec Drawing PN 17 of SDEIS Appendix 16, "Wastewater Preliminary Design Report"). The pump station will pump through 4,600 linear feet (approximately 0.87 mile) of pressure sewer to the Pine Hill WWTP, but no details are provided regarding installation of the force main along the County road.

Response: As stated in the Wastewater Preliminary Design Report, the force main from the pump station to the connection manhole in Pine Hill will be installed via directional drilling methods.

The final construction plans will have pipe trench details and other installation details as necessary. These final construction plans will be reviewed by DEC to ensure all pipes and pumps were sized in accordance with DEC design standards.

In the event or a power failure or mechanical breakdown of the pump station, the sewage flow into the Highmount pump station from the gravity system will continue. Therefore, the wet well must be sufficiently sized to contain the continued flow from the gravity system until pumping resumes. Once the wet well of the pump station floods, the wet well and gravity sewer system will backup with potential to cause a raw sewage release to the sensitive environment. Based on Drawing No. PN20 of the Preliminary Water and Sewer Design, the pump station wet well provides approximately ½ hour capacity at the average daily flow after the high level alarm triggers until sewage reaches the top of the pump station access hatch.

The New York State Design Standards for Wastewater Treatment Works, Intermediate Sized Sewerage Facilities (1988) states: "*The provision of a wet well overflow should be evaluated and consideration should be given to an adequately sized overflow/detention tank, which shall empty to the wet well when pumping operations resume.*" Given the sensitive nature of the area surrounding the Highmount sewer pump station, sufficient overflow volume should be provided to afford a greater response time than ½ hour or less.

Response: The proposed pump station at Highmount will be equipped with a standby generator and therefore the pumps will be able to continually operate when there is a power outage. Thus, the reference made to providing an overflow volume does not apply

Additionally, the invert of the 6" diameter gravity sewer pipe into the wet well is below the “pump on” elevation. This is an inappropriate design in that the gravity sewer pipe will regularly back up, allowing solids to settle, increasing the risk of clogging.

Response: The concern with the pump-on elevation is noted and will be changed in the final design of the construction level documents.

The pumps at the Highmount Spa Resort are provided with power from the Highmount Spa Resort Hotel (Page 4 of the Wastewater Preliminary Design Report for The Modified Belleayre Resort at Catskill Park including Wildacres Resort & The Highmount Spa Resort found in Appendix 16 of the Modified Belleayre Resort at Catskill Park SDEIS, April 2013) and will be on a circuit that is equipped with emergency electric generators. The similar wastewater pump station at the Wildacres Resort is proposed to have a dedicated generator for emergency power. Maintenance of the emergency electric power generators is crucial to assuring proper system operation during a sustained power outage.

Response: Comment noted.

Additionally, there will be an operation and maintenance program for the stand-by generators which will include ensuring routine maintenance and periodic testing of the generators by manufacturer certified personnel.

The gravity sewer below the Highmount Spa Resort is routed on the north side of the four (4) northernmost Highmount Detached Lodging Units (Nos. 29 -32). A stormwater detention pond is proposed immediately to the northwest of this sewer. The gravity sewer is to be located below the high water level of the stormwater detention pond, providing no horizontal separation between the pond and the gravity sewer. Table 2 in the Design Standards for Wastewater Treatment Works, Intermediate Sized Sewerage Facilities.1988, published and utilized by the NYSDEC states that a sewer line should provide a horizontal separation of 25 feet to surface water. Table B.2 in the Design Standards For Intermediate Sized Wastewater Treatment Systems (Draft -2012) also indicates the 25 foot minimum separation distance of sewer lines from surface water and adds the note that surface water includes stormwater ponds (emphasis provided).
I2130

Response: For this section of sewer, the sewer pipe will be pressure rated to mitigate the separation distances. Sewer pipe rated for 100 psi compared to conventional gravity sewer pipe, which is not pressure rate, provides greater protection from leaks and thus mitigates the separation distances from surface water stated in the design standards.

(3) Per your request, DEP has completed the investigation and evaluation of treating Phoenicia's wastewater flow at the Pine Hill Wastewater Treatment Plant (WWTP) and found that the Pine Hill WWTP lacks sufficient capacity to accept flow from Phoenicia without exceeding the Pine Hill WWTP capacity and regulatory flow limits established in the SPDES permit.

The conclusion that flow from Phoenicia would exceed the capacity at the Pine Hill WWTP was based on not only the existing flow from the sewered area but also the flow capacity that the City is required to reserve for the Pine Hill sewer extension project, Belleayre Mountain, and the Crossroads project. As a supplement to this analysis, DEP also calculated potential I&I reductions that could be achieved at the Pine Hill WWTP. Even with significant projected reductions in I&I, the flow at the Pine Hill WWTP would exceed the SPDES capacity by approximately 20%.

It is for these reasons that the wastewater generated within the Hamlet of Phoenicia could not be treated at the Pine Hill WWTP. **O3635**

Response: Comment noted.

(4) Since raw untreated wastewater will be collected from the project's individual housing units and then is transported to Pine Hills WWTP for treatment and disinfection several questions come to mind.
-what is the distance from the project to the Pine Hills WWTP?
-how many pump stations will be required to pump the raw wastewater from the project to the Pine Hills WWTP?
-if a force main is required to pump the raw wastewater from the project to the pine hills WWTP how many air relief valves will be required for that force main?
-how long can the project hold wastewater flows in the event of a main break or system failure that prevents the projects raw wastewater from reaching the pine hills WWTP?
-how will any odors generated by the long distance pumping process be addressed?

This project must be required to address now and into the future, potential negative impacts from raw wastewater overflows from the various collect system components. The fact that raw wastewater is being pumped for considerable distances to be treated make the conditions for the generation of hydrogen sulfide a real possibility. Hydrogen sulfides are very corrosive and will shorten the life of any wastewater system and related equipment. How are the routine and additional collection system maintenance requirements addressed in any operational or emergency plan(s)? **O3636**

Response: The preliminary plans showing the proposed sewer system are included in the document. The Plant is approximately 11,000 feet from the project site. Pumping wastewater that distance is common in a wastewater conveyance system. One pump station would pump from the project to Pine Hill. Per the AIP, a 420,000 gallon tank is proposed next to the pump station that would hold nearly three days of flow at full buildout.

Odor control for the pump station and force main are proposed in the preliminary design as shown on the preliminary design drawings.

Additionally, there is a stand-by generator for the pump station to prevent overflows during power outages.

(5) The SDEIS proposes horizontal directional drilling for the sewer and some water lines. The "2011 Horizontal Directional Drilling Guide: A Supplement to Trenchless Technologies" indicates that it is necessary to conduct a test hole survey to analyze the soil conditions where the

pipe is going to be installed. This has not been done. The manual also says to avoid any rock ledges. As one drives up Highmount and down the other side towards Fleischmanns, you can observe many rock ledges along the highway in the exact vicinity proposed for this trenchless technology and pipe installation. In addition, no arrangements are shown for a launching and receiving area for the pipe to be drilled and installed.

The "2011 Horizontal Directional Drilling Guide: A Supplement to Trenchless Technologies" also states that a foam surfactant or soap consisting of partially hydrolyzed polyacrylamide and polyanionic cellulose may be used when you encounter tough rock conditions and/or solid rock conditions such as are likely to be encountered in this area. How are these chemicals going to be kept from spilling into the environment if a rain event occurs or other accident? How will the waters be treated that are used in this drilling process? Will they just flow in a ditch down to Pine Hill and its streams? The plan says that horizontal directional drilling will be used throughout the entire project. There are no hazardous waste plans, no drill hole tests, no starting and stopping pits indicated. Potential construction problems that can occur with directional boring include but are not limited to utility strikes, fracs outs (permanent rock fractures spiraling away from the bore hole), lost tooling and drill pipes, poor steering, and broken pipes. Insufficient documentation and analysis of these hazards bas been provided to support any type of horizontal directional drilling in the project area.

Note that no guardrail systems, retaining wall details (very important for safety, runoff, erosion) are provided, and other steep slope issues are not addressed. **O3635**

Response: The methods for directionally drilling by professional contractors are well established and accepted by regulatory agencies and the engineering industry, as the best available practice for avoiding excavation in environmentally sensitive areas including drilling through rock. These methods and protective measures will be incorporated into the project construction drawings.

Additionally, the final design plans will include full details for pipe installations that will be reviewed by DEC and DEP against engineering design standards.

2.5 Substituted Lands Comprising the Project Site

No substantive SDEIS comments were submitted on this topic.

2.6 Disposition of Former Big Indian Plateau Lands

No substantive SDEIS comments were submitted on this topic.

2.7 Relationship to Belleayre Mountain Ski Center

Comments on this topic can be found in other sections of this FEIS based on specific topics of comments received. Part C contains the responses to substantive comments on cumulative impacts.

2.8 Project Details

See the following section 2.8 subsections.

2.8.1 Buildings

(1) The issue of radon intrusion into the subterranean hotel at Highmount has not been addressed, despite past studies that show that excess levels of radon often occur in the Town of Shandaken and Ulster and Delaware Counties.

The SDEIS also fails to assess the potential for harmful mold in the ventilation system of this structure.

Mold will be an issue in the ventilation system for the "Health Spa." Outside air will provide the moisture for fungal growth.

No recognition of radon gas vapor intrusion for the multi-basement Health Spa. The issue of mold.

The proposed "Health Spa" of Highmount is slated to be built several stories below ground in shale. The design does not call for radon mitigation of the foundation or walls up the ground-level. The blasting will create new fractures and increase the dimensions of naturally occurring fractures.

Based on the present data of the NYSDH NZR advocates that New York Department of Environmental Conservation and the New York Department of Health (NYSDH) conduct a ninety (90) day radon test of the existing facilities of Belleayre Mountain Ski Resort. Rock Borings should be installed at the proposed site of the "Health Spa" at Highmount. The borings should go to the lowest depth the bottom of the structure will be. There should be sufficient number of borings to be statistically valid investigation.

There is no plan the addresses mold growth in the sub-terrain "Health Spa." The proponents should create a plan on how the remediate mold. **O3635**

Response: The Codes of New York State, specifically the Building Standards and Codes, Appendix 75A "Selected Reference Standards" contains the Builders Foundation Handbook which addresses the several accepted strategies for Radon Control including: barriers, air management and provisions to simplify retrofit as well as techniques for Waterproofing/damp proofing and ventilation of subterranean construction. At the time the Architect develops the Final Construction Documents necessary for Building Permits, all necessary Codes and Regulations will have to be met and if found necessary, those documents will include Radon Control.

(2) In such an environment, cookie-cutter condos turn the monster into the strip mall on the mountain. This is a lack of architectural integrity that to me signals an indifference to the place

and region, and a drastic change of community character form rural to a heavily commercial area. **I3536**

Response: The Department's review of architectural issues is to avoid a significant visual impact on the environment. The Department is satisfied that the Applicant has achieved this goal through its architectural design and screening. Section 3.8.3 (A) of the SDEIS states", the goal of the architectural design for the Highmount Resort is to have a structure that is fully integrated into the existing landscape, while the goal of the design for the Wildacres Resort is to evoke the historic, large resort buildings that at one time dotted the landscape in Ulster and Delaware counties."

2.8.2 Roads and Parking

(1) Insufficient data is provided to calculate slopes and sight distances.

Note: page xiii of the SDEIS says that there are a total of 7,429 feet (1.4 miles) of road within the project. The table on page v of the SDEIS shows 1.5 miles (7,920 feet) total of road and 0.1 miles (528 feet) of roads greater than 20% slope. The NRCS Web Soil Survey recommends not to build on this type of terrain (greater than 20% slope).

If the Town would eventually take over the roads in the future, are they acceptable to Town standards? How many additional pollutants from icing control material will end up in runoff? **O3635**

Response: Road profiles of all proposed resort roads are shown on drawings L7.00 to L7.06 that accompany the SDEIS. A simple search of the SDEIS for the term "sight distance" shows 20 instances where this term occurs, most of them in SDEIS section 3.5, Traffic. Section 1V.C of the Traffic Impact Study found in appendix 11contains more than 10 pages of text, photos and tables that provide information on sight distances.

Page xiv (not xiii) of the SDEIS provides the lengths of three road segments that total 7,429 feet. This is for <u>Wildacres only</u>. The 1.5 miles listed in the table of page v is for the entire project. The Soil Survey of Ulster County published by USDA SCS was consulted and no recommendation to not build on slopes greater than 20% can be found. Steeper soils can have limitations that range from moderate to severe (Soil Survey Table 8, Building and Site Development), and the Soil Survey describes that, even for soils with ratings of severe, limitations can be overcome through such things as increases in construction effort and special designs, and not that slopes of greater than 20% should not be built on.

The SDEIS states in a number of locations the Applicant's intention that the project roads will remain private.

According to the Town of Shandaken Comprehensive Plan (2005) there are 110.82 miles of road in the Town. The 1.5 miles of project road is slightly more than a 1% (1.3%) increase in roads requiring "icing control material" which will be the responsibility of the developer and not the Town.

2.8.3 Vehicular and Pedestrian Access and Circulation

(1) Sterling also assessed the 15 foot wide turf fire access lane proposed for the downhill side of the Highmount Lodge. *Sterling Report, at 8*. Sterling has concluded that the proposed grading adjacent to the paved driveway is too steep for regular motor vehicles, let alone larger, heavier emergency vehicles.

A 15' wide turf fire access lane is proposed on the west, downhill side of the Highmount Lodge. However, the proposed grading adjacent to the paved driveway is as steep as 20%, which is far too steep for safe passage by any motor vehicle, let alone large, heavy emergency vehicles. Grading must be carefully considered at this location in terms of safety, practicality, and steep slopes. **I2130**

Response: The fire lane shown west of the Highmount Lodge is the best and most practical location to accommodate emergency access vehicles. The grading associated with the access can be adjusted to lessen the grade to meet the needs of motor vehicles. As the project advances, including the ongoing site plan review processes with the towns of Shandaken and Middletown, these final design details will be coordinated closely with the municipalities to ensure the proposed access meets their requirements — reasonable adjustments can and would be made as required by those boards.

(2) Additionally, kindly advise how a turf emergency management road is to be safely maintained in winter for emergency services. Wouldn't the turf surface be destroyed by wintertime plowing; and wouldn't the turf surface be muddy and slick during summertime rains? Shouldn't the emergency services route be the quickest response for health, fire, life and safety? **I2131**

Response: The turf fire lane will be plowed in the winter. Any winter damage to the turf would be repaired as part of the standard grounds maintenance operations. The reinforced turf is a widely recognized and widely used application for emergency access lanes in all seasons. Per detail 17 on sheet L-8.02 that is part of the SDEIS, the access lane will be a grass-pave system underlain by a sand/organic mix then filter fabric, with a stone subbase below. This system will be well drained, and will not by "muddy and slick" during rain events.

2.8.4 Golf Course and Golf Course Management

(1) Section 7, Vegetative Control, states that 50 acres of sod will be used on the project. Drawings L-6.00 to L-6.06 detail the landscaping and the planting plan for the project. However, there are no detailed seeding specifications, seeding mixes or seeding rates shown for the project. It has been noted in the DSEIS that the soils on the site are classified as frigid soils, due to their elevation and short growing season. Therefore, the selection of a successful grass cover and its proper application and maintenance are critical. Appropriate detailed seeding specifications, seeding mixes or seeding rates should be incorporated into the final EIS. **S3592**

Response: SEQRA documents do not typically contain construction specifications. See section 2.2.1.B of the DEIS, Site Suitability for Golf. The construction specifications for the proposed golf course will be prepared by a professional golf course architect who will also have resources available to him for seeding specifications assistance, if needed, including the USGA Green Section, Cornell Cooperative Extension, and turfgrass horticultural specialists at Cornell, Delhi and other universities, all of which have been consulted to date during the preparation of the DEIS and the SDEIS. Given that BMSC is able to establish and maintain grass cover on its ski trails, there is no reason why these professionals cannot develop successful grass/sodding construction specifications for the proposed golf course.

(2) In accordance with the AIP, the SDEIS includes an Organic Golf Course Management Plan (OGMP). DEP appreciates the opportunity to have a representative on the Technical Review Committee once the project commences. However we are concerned that the OGMP does not include criteria or a framework for determining its success or failure. Specifically, a time frame for evaluation of the OGMP, and benchmarks to measure success or failure, should be incorporated in the plan and FEIS. Otherwise, premature (or delayed) implementation of a "back up" Integrated Pest Management Plan (IPM) may result.

The SDEIS refers to the OGMP as a mitigative measure to protect water resources. As there is possibility for an IPM to be employed in the event of failure of the OGMP, there is a potential for pesticide and fertilizer run-off and residual to enter streams and waterbodies within New York City's drinking watershed. The potential adverse impacts of implementing the "back up" IPM have not been evaluated and should be assessed. **M3637.**

Response: The criteria for establishing success or failure of the organic golf course will be established by the Technical Review Committee, including the NYCDEP representative. The potential adverse impacts associated with an IPM program (DEIS appendix 14) were evaluated in the fertilizer and Pesticide Risk Assessment contained in the DEIS (see DEIS appendix 15). Applicant has developed an organic turfgrass management plan pursuant to Section 19 of the AIP. This plan is contained in the 2013 SDEIS (see 2013 SDEIS at 2-22 and 2013 SDEIS Appendix 15 [Organic Golf Course Management Plan]). Applicant has also submitted golf course mitigation conditions to the Department. The AIP, which both applicant and NRDC, among other parties, have signed, provides for the establishment of a Technical Review Committee (which membership includes a representative from DEC, NYC DEP, the golf course superintendent, Crossroads Ventures, LLC, and a non-governmental organization). Applicant has set forth conditions relating to the golf course operation in its April 5, 2013 letter. The Commissioner's July 10, 2015 decision granting staff's motion to cancel the adjudicatory hearing directed staff to include these conditions, as well as to the establishment of the Technical Review Committee, in the SEQRA findings statement and, as appropriate, into any Department permits or other approvals. Furthermore, all updates with respect to the Organic Golf Course Management Plan will be provided, in addition to the Technical Committee, to the DEC Regional Directors in Regions 3 and 4.

(3) On page 2-21 the SDEIS describes the management of an organic golf course, but its construction using organic soil is not discussed nor is the amount of organic soil that the golf

course will require indicated. Will this come from the crushed rock at the crusher/screener plant? Or will other fill/soil/gravel also have to be brought in from off-site? Offsite soils should undergo sterilization to help protect against invasive species and other pathogens. **O3635**

Response: The "organic" in the organic golf course management is not related to the organic content of the golf course soils. Organic management means that synthetic pest controls will not be used. The use of on-site materials and importation of topsoil to construct the golf course were discusses in DEIS section 3.1.2(B). The DEIS describes that topsoil will be brought in from an outside source. It is not practical to sterilize the quantity of topsoil that will be used. Any invasive species that may germinate from the topsoil are not likely to survive the mowing heights that will occur on the golf course. Should any invasives become established they would be removed in accordance with the invasive species control plan in the SDEIS Appendix 21 and the golf course organic management plan in SDEIS Appendix 15.

(4) Likewise for golf. Global warming again. This is historically the rainiest area in NY State. The increasingly wet and stormy warm season makes for bad golfing. **I483**

Response: There are many golf courses that have been in existence for long periods of time in the Catskills. Wet and warm conditions make grass grow and improve the quality of the golf course turf.

(5) Golf is in serious decline, with a rash of bankruptcies and closures. Local golf courses are already starved for customers.

The developers own climate research has shown that the "glorious future" of skiing at Belleayre will only last for a decade or so before the ski business becomes non-viable altogether. This is not a good time to invest huge taxpayer millions into mega-expansion of either golf or skiing. **I3588**

Response: . Unlike the proposed project, most local golf courses are not associated with a resort that would generate much of their customer base. Resort guests will be the source of many golfers that will play the proposed golf course.

Section 4.9 of the UMP-DEIS analyzed the potential temperature changes and the impacts these will have on snowfall, ski seasons, and snowmaking needs and capabilities. The northward facing slopes at Belleayre will help retain snow during warmer temperatures since on sunny days sunlight will not be as direct as it would be on south facing slopes; and increased snowmaking could compensate for a decline in natural snowfall. Ski areas currently in operation as far south as Virginia (four areas) and North Carolina, and the Blue Ridge Mountains receive approximately 50 to 70 inches of natural snowfall on average annually (33% to about 50% less annual natural snowfall than Belleayre Mountain Ski Center). Most areas have 100% snowmaking coverage.

(6) Although Crossroads Ventures plans that the golf course of the proposed resort be managed, at least initially, with an organic regimen, major studies of organic golf course management in New York State suggest that this goal may be elusive.

On page 2 of "Reducing the Risks of Golf Course Management: The Bethpage Project" the author's state that golf greens being managed using a protocol that included no EPA- classified I, II, or III chemical pesticides "eventually became unplayable and died each year from the intense heat and humidity of increasingly warmer Northeastern summers. Three of the greens [out of six] were converted to a more disease-resistant grass species, velvet bent grass, but have also proven to be difficult to manage without chemical pesticides."

The authors conceded that older greens, which had been treated with chemical pesticides for more than 30 years, may not be suitable for nonchemical management, or natural treatments may not be sustainable given the state of current technology and golfer expectations. Whether a new golf course, perhaps one with the less desirable velvet bentgrass, would have better prospects was not determined. The proposed resort seeks to maintain "championship" playing surfaces, a standard that suggests turf that is considered by golfers to be inferior would be unacceptable.

It is unclear, too, whether organic management will work in the climate/soil profile of the Catskills. Most of Cornell's long-term research on golf turf has been done on Long Island.

Citation: Grant, Jennifer A., and Rossi, Frank S.: "Reducing the Risks of Golf Course Management: The Bethpage Project." http://www.nysipm.cornell.edu/publications/red_risk_golf/files/red_risk_golf.pdf.

In another earlier report, "The Impact of Pest Management Systems on Surface and Ground Water Quality," project leaders Petrovic and Easton of the Dept. of Horticulture at Cornell concluded that: "Nutrient analysis indicates that all systems; Organic IPM [integrated pest management] and Preventative have the potential to negatively impact water quality. Establishment was the most dangerous time, with some large concentrations of nutrients, especially nitrate, found in water. Pesticides runoff was greatest for the Preventative PMS [pest management system]. The overall results to date indicate that the PMS selected may not be the most important factor influencing water quality.

What is clear is that environmental and site conditions dictate turfgrass effects on water quality. The soil type, organic matter content, infiltration rate, slope, and water content can and in many cases do influence nutrient and pesticide runoff and leachate. Rainfall rate, intensity and duration play an important role in both pesticide and nutrient retention. Adequate turfgrass density and organic carbon content will minimize and in some cases altogether prevent contaminant movement off site. Pesticide formulation and application timing are important, and should be evaluated as part of any pest management system. Across the board, none of the pest management systems produced consistent significantly lower impacts on water quality."

(Petrovic, A. Martin, and Easton, Zachary M.: "The Impact of Pest Management

Systems on Surface and Ground Water Quality," Final Project Report to the NYS IPM Program, Community IPM 2000-2001: http://nysipm.cornell.edu/grantspgm/projects/proj01/comm/petrovic.asp). **O3633**

Response: Though the goal of organic golf course management may very well be elusive, Crossroads Ventures, as part of the negotiations that resulted in the Agreement in Principle, agreed to attempt to become the first organic course in New York State in response to some strong suggestions made by some of the parties involved in the AIP discussions. Crossroads Ventures will try the organic management approach as indicated by the management plan in Appendix 15 of the SDEIS, while at the same time they realize that the current state of the turfgrass horticultural industry may not yet provide all of the adequate tools for organic management. New tools are becoming available every year. For example, the biological fungicide "Companion" (active ingredient: bacteria Bacillus subtilis GB03) was registered for use in New York State in 2014.

The Applicant was aware of the research being performed by Cornell University at Bethpage and this research was made part of the discussion leading up to the AIP. The comment recognizes that there are differences between the Long Island growing conditions and those at the project site. Overall, the project site will experience cooler and less humid conditions than at Bethpage, which will provide an environment less conducive to fungal pests. Soils at Bethpage are also much better drained than those at the project site. The more well-drained soils have higher potential for inducing drought stress in turf which can lead to greater susceptibility to injury from turf pests.

In terms of the second report referenced (Petrovic & Easton, 2000-2001) , one of the report authors, Dr. Petrovic, was a co-author of the integrated pest management plan contained in the project DEIS, and he also reviewed the organic golf course management plan contained in the SDEIS.

The DEIS contained a full suite of computer modeling of pesticide and nutrient runoff and leaching potential that took into account all of the variables that influence vertical and horizontal transport. See DEIS Appendix 15 Fertilizer and Pesticide Risk Assessment.

2.8.5 Areas of Disturbance, Impervious Areas and Lands to Remain Undeveloped

Responses to substantive comments on this topic can be found in sections of this FEIS that pertain to impacts associated with disturbance and impervious areas, including, but not limited to section 3.1.1, Stormwater Management, and section 3.4, Terrestrial and Aquatic Ecology.

2.8.6 Water Supply, Potable and Irrigation

(1) The water demand calculations were based on irrigation of 65 ac of golf course turf (i.e., greens, tees, and fairways). The irrigation water supply was based on ground water from wells and capture of stormwater runoff into a 3.7 million gallon (Mgal) lined pond. It was proposed that the pond would be filled with captured stormwater runoff supplemented by dedicated ground water supply wells. The water supply from stormwater runoff was based on the average

and the minimum over a 3-yr period. Ground water supply was based on pumping tests of the wells, which determined the volume of water that could be obtained from the wells without affecting the aquifer. The water demand presented (7.8 Mgal; section 2.8.6.C SDEIS) appears to be sufficient for the June through August irrigation period.

However, irrigation in the northeast usually begins in April and continues through October, with the majority of irrigation between May and August (i.e., 67%). There did not appear to be an allowance for irrigation outside of the summer months. If that allowance was made in the water allocation permit, it was not presented in the SDEIS. Irrigation for the months outside of the June through August summer months could be significant, possibly up to the amount proposed for the summer months. A survey from the National Golf Foundation and the Golf Course Superintendents Association of America (GCSAA) indicated that a golf course in the NE irrigates 54 ac, on average, with an annual irrigation of approximately 14 Mgal (GCSAA, 2009). Therefore, the irrigation demand for the proposed 65 ac championship golf course for the summer 7.8 Mgal - - does not represent the full season of turf management. **O3650**

Response: The DEIS recognized that the irrigation system could conceivably be used from May to November depending on annual weather conditions.

The assessment of irrigation system capacity was correctly based on <u>rate</u> and not on volume. It is realized that irrigation demands may extend out beyond the June through August period analyzed. However, ET rates are generally lower and rainfall amounts are generally higher during these other months. Table 2-4 in the SDEIS only included June through August, because these are the only months where there is a net water deficit based on local climate data. During the other months there is a net surplus and much lower demand for irrigation. Demonstrating that supply rates are adequate to meet demand rates during the driest months documents that worst case conditions can be met and that for other months when irrigation demand rates are lower the same rate of water supply will be more than adequate.

(2) Irrigation demands and sources are re-done with more realistic numbers. **O3636**

Response: See the response to the previous comment

(3) One of the proposed sub-catchment areas for the proposed resort (see Sheets L5.07-5.08) for stormwater detention (irrigation pond/dam) appears to be a cut to a depth of over 30 feet. This cut would be into rock and would require blasting and mining. The present contour lines show an elevation of 1945+ feet and a bottom contour of the sub-catchment area below 1910 feet. This would constitute over a 35-foot deep blasted cut in the solid fragipan and bedrock. The finished high water elevation of the sub-catchment area is shown at almost 1940 feet. That would indicate that during a 25-year storm event the depth of the water would be approximately 30 feet. It is stated that this sub-catchment area will hold a volume of 3,725,300 gallons. Based on NYS Dam Permit specifications, any pond holding a quantity of water 3 million gallons or more at a depth of 6 feet or more requires a Dam Permit.

Response: The proposed water level in the pond is 1938 feet and the lowest bottom elevation is 1909 feet for a maximum depth of 29 feet. Test pits excavated in this area did not indicate *bedrock in the top eight to ten feet of the soils profile. Should bedrock be encountered at the deeper depths, then blasting will be used to excavate the pond, employing the same techniques and mitigation measures at other blasting locations. See the response to comment 1.4(2) that explains why there are no mining activities as part of this project. The irrigation pond is a dug pond and there is no impounding structure. Since there is no impounding structure greater than six feet tall, and not more than 1,000, 000 gallons is impounded, no dam permit is needed. An outlet device has been added to the design of the irrigation pond so, in the even the pond fills, that any overflow is conveyed in a controlled manner. See the Figure entitled Irrigation Pond Outlet in the Errata Section.*

For this dam, a low-grade threat to the environment, a Class "A" designation would likely be assigned. The Drawing PN9 from the 201 1 SDEIS shows at least 4 to 6-foot high berms above the water level safety bench; thus, if compromised, this could be a threat to downstream areas and populations. In a northeasterly direction of the dam, the finished grade of the golf course, elevation 1924 feet, (see 2011 SDEIS Sheet P10) is indicated as 14 feet below the safety bench water level. That is at least 18 to 20 feet below the top of the dam berm. The 2011 SDEIS said in one part that there is no weir structure; therefore it is not a dam. Reading the referenced constraints, however, provides a different interpretation.

Response: The commenter is referencing 2011 drawings, specifically PN 9 which is a water and sewer plan, and not a grading and drainage plan. As per the response above, there is no dam. The project grading and drainage plans due show grades dropping to the northeast of the irrigation pond, but the pond is merely excavated in an area at a higher elevation, very similar to what you see in many dug farm ponds

A possible basis for the misconception about the structure not being a dam is that the pond is fed primarily by well water. The contour lines for the finish grade show that runoff and atmospheric deposition from water sources will enter the pond in every storm event. Are there stanchion pipes? Also, there doesn't appear to any emergency plan in place for this structure (dam).

Response: During major storm events the pond will sheet overflow from the northwest corner of the pond and across the fifth fairway and towards the dry swale in the northwest corner of this portion of the Wildacres site.

Further investigation reveals that this deep of a cut appears below the seasonal high water table. The headwaters of the Emory Brook (Delaware) and possibly underground springs are in near proximity to this dam. This would make the pond construction an illicit excavation.

Response: No evidence of a seasonal high water table was found in test pits excavated in the vicinity of the pond.

A high-density polyethylene liner for containing contaminants in the pond is very difficult, if not impossible, to install when the excavation is below the high water table. How will the high water table be impacted? Pumps would need to be employed to de-water the dam in an attempt to seal the liner and pass air tests. A flexible pond liner would also be nearly impossible to install, and in each case an under drain might be necessary to keep ground water/hydraulic pressure from building underneath the membrane. If the pond encroaches on the high water table, an in-ground tank cannot be used because it may float. Obviously, because the pond is an irrigation supply filled by pumping, one does not want the dam to leak.

Response: Installing a liner in the pond will simply be a matter of dewatering the basin if needed, installing the liner, and then weighting the liner (i.e. sandbags) until the pond is full. The water pressure from the filled pond will keep the liner in place.

Other questions about the irrigation pond/dam include the following: If no weir is used, what happens to the water when the pond is full? Will the pond be a big sediment trap of stagnant water? How is algae controlled? When is the sludge cleaned out and how will the sludge be disposed of? Would millions of gallons of water need to be pumped out at that time? Would the pond ever need to be drained? Will waterfowl feces affect the water quality? Is the pond going to be used for recreation: skating, swimming, or boating? Will it be stocked with fish? Plants? Aerated? Will the liner leak, be tested in the future, or need to be replaced?

Response: See the response above about pond discharge during large storm events. As per the project grading and drainage plans in the SDEIS the irrigation pond has been designed with a forebay where captured stormwater runoff is directed into the pond. This forebay will settle out course suspended materials so that they don't accumulate in the pond. At some point the pond may need to be dredged to remove accumulated materials. It is likely that suction dredging would be employed to avoid disrupting the pond liner and that a stabilized dewatering area would be established in close proximity to the pond. Dewatered dredge material would be disposed in an appropriate upland area on the project site and seeded. Based on the water budget derived for the pond and included in the SDEIS, water residence time is expected to be relatively short, which would slow algae growth. It is not anticipated that the pond would need to be drained. It is possible that waterfowl may use the pond. It is possible that the pond might be used for ice skating in the winter, but warmer weather use such as swimming or boating will be prohibited. There are no plans to stock the pond. It is possible that plants may become established naturally, but no planting of the pond is proposed. At this time there is no plan to aerate the pond, but that may occur in the future if it is warranted. It is possible that at some time in the future that the liner may need to be replaced, and a new one installed in the manner described in a previous response.

There were no data for the irrigation pond/dam area and snowmaking pond/dam in relation to the seasonal high water table. If the table is below the pond, does it change direction and flow under the pond liner? (The test pits in the irrigation pond/dam area are not numbered or identified in the legend on Drawings L-2.02 and L.2.03.)

Response: The Figure entitled Test Pit Locations in the Errata section of this FEIS is an excerpt from Sheet L-2.03 that shows this part of the Wildacres site, the five test pits in the area, and followed by the logs of those test pits.

There are references for fire control formulas, but insufficient information is provided to see if the fire control measures are adequate for the protection of the project. Fire truck access and grades should be evaluated, as should spacing and placement of hydrants and pressure of water at these hydrants for length of time. How long will supply tanks last with fire trucks fighting a blaze? Has adequate fire protection been provided for the underground hotel?

Response: Fire flows are discussed in section 2.1 of the Water System Preliminary Design Report (SDEIS appendix 13). Fire flows are provided for 3 hours including at the Wildacres Hotel structure and the Highmount Spa Resort structure. Fire truck access was addressed previously in responses to comments in section 2.8.3.

(4) NZR found that the authors of the EIS did perform pump test of existing and newly installed wells. Consideration without data was given to wells outside the pump test. NZR recommends that pump tests are done over and that data loggers are installed in municipal and private wells that are 1/8 to 1/4 mile away from the tested wells. **O3635**

Response: The pumping tests conducted at the K well field and at Well Q1 followed specific pumping test protocols that were submitted to, and approved by, the NYSDEC, the NYSDOH and the NGOs. The pumping tests methodologies were specifically outlined in Attachment B-1 of the Scoping Outline for the SDEIS. The pumping test protocols for the K wells and well Q1 are contained in Appendices A and K, respectively, of the pumping test report (Appendix 13, Water System Preliminary Design Report). The comment that "consideration without data was given to wells outside the pump test" is completely without merit.

The pumping tests at the K Well Field (K2, K3 and K4) and Well Q1 were conducted in accordance with strict protocols for each test to satisfy the New York State Department of Health (NYSDOH) and New York State Department of Environmental Conservation (NYSDEC) stabilization requirements. The protocols were submitted to, and approved by, the NYSDOH, NYSDEC, and the Non-Governmental Organizations (NGOs). In addition, the pumping tests performed on the irrigation wells conformed with the Test Protocols for Irrigation Wells, that were provided in the Resort SDEIS Attachment B-1 – Potable Water Supply, Section C, of the Final Scoping Document (February 28, 2008).

The 2013 NYSDEC procedures require constant rate pumping tests for durations of 72 hours or more, a period of 6 hours of stabilized drawdown at the end of each test, and no water level fluctuation of more than plus or minus 0.5 feet for each 100 ft of water in the well. These conditions, as well as the others in the 2013 Procedures, were met by the pumping tests on the K wells and well Q1 conducted in 2007 and 2008, respectively. The results were accepted by the NYSDOH and the NYSDEC.

The 2013 procedures call for a "semi-logarithmic plot showing a 180-day projection of the time-drawdown curve", which simulates a 6-month drought with absolutely no precipitation. This is exactly what the analysis shows for the K wells and well Q1.

Additionally, a distance-drawdown graph was not provided for the K well tests, as such a graph was not required in the protocols specifically agreed to for the pumping tests conducted in 2007 and 2008. All the drawdown data was presented and discussed in the report. The data for the *pumping tests are available to anyone interested in gaining a further understanding of the drawdown versus distance. Such a graph was provided for the Q1 well test because it was necessary in order to estimate the long term drawdown at Village well 2 that could occur as a result of continuous pumping at Q1 only (Village well 2 is inaccessible for water level measurements). There was no need to present the same for the K well tests.*

Furthermore, Well Q1, which was tested at 45 gpm, is primarily a backup well that was necessary to meet the NYSDOH requirement that the Resort be able to meet its maximum daily demand with its largest source (K4) offline. Well Q1 does not need to pump at 45 gpm in order to assist in meeting maximum day demand. There is no need to perform a simultaneous test of the K wells and Well Q1, as the maximum day demand would remain the same, regardless of the combination of wells. In addition, there was no impact on Village wells 1A, 3 and 4 during the K well pumping tests; consequently, there would have been no impact on Well Q1, which is further away from the K well field.

Water levels in four, private, residential wells and four municipally owned wells were monitored during the tests at the K well field. All of these wells are more than ⅛-mile from the well field, six of them are located more than ¼-mile away, and two are located more than a mile from the well field. Water levels were measured in these wells for approximately two weeks prior to the K well pumping tests, and for approximately one week after the tests. Water levels during the tests were measured one to three times per day in six of the monitoring wells, while transducers installed in one of the private wells (Mansion) and in one of the municipal wells (1A) recorded water levels at ten-minute intervals during the tests.

During the Q1 pumping test, water levels were measured in three residential/commercial wells, two municipal wells, and three monitoring wells drilled by Crossroads. Seven of the wells were more than ⅛-mile from the pumping well and three of the wells were more than ¼-mile away. Manual water level measurements were collected at similar frequency as in the K well tests.

Well Q1 only needs to be used to help meet the maximum daily demand, which is 182 gpm. The K well field will supply 150 to 157 gpm, depending on which two of the three wells are pumping. This means that Q1 will be pumping between 25 and 32 gpm to meet the maximum daily demand, although it is capable of pumping at 45 gpm if necessary. The total demand of 182 gpm would not be exceeded, regardless of the combination of wells used to meet the demand. The drawdown effect from pumping well Q1 at 45 gpm extended approximately 2000 ft to the west (to Village Well 1A, 1.2 ft of projected drawdown after 6 months) and had no impact at approximately 1800 ft to the east (Moran well). During the K well pumping tests, there was no impact on Village Wells 1A, 3 or 4, or the residential wells Banks and Coombs. All of these wells are located between the K wells and well Q1; consequently, the "cones of depression" associated with the K well field and well Q1 will not intersect.

There is no need to conduct the pump tests again. There is an abundance of data from which pumping test conclusions were based. The NYSDOH stabilization requirements were met and the pumping test protocol followed the NYSDEC's Recommended Pump Test Procedures for Water Supply Applications. Data loggers are not required in pumping tests conducted on New York; rather, they are installed for convenience, or in wells where access is limited (such as at the Mansion Well), or in pumping wells, where rapid water level fluctuations and NYSDOH pumping level stabilization requirements necessitate more frequent water level measurements.

2.8.7 Wastewater

(1) As part of the agreement to accept sewage at the plant, the project will pay its "Fair Share" of an equalization tank, mixer, and other components necessary for the additional sewerage. What is the "fair share," what are the specifics on the amounts, kinds, and types of equipment? Will taxpayers be required to pay for part of these costs?

Note: page 5 of SDEIS Appendix 16, "Wastewater Preliminary Design Report," states, "The agreed-upon sewerage fees are $1.43 per 1,000 gallons." 2012 prices for the sewer charge in the City of Kingston are $5.70/1000 gallons. Saranac Lake, a resort community of similar size in the Adirondacks, pays $4.44/1000 ga11ons. Checking the New York City Water Board Rate Schedule, because the Pine Hill Sewage Treatment Plant is New York City DEP owned, one finds the fiscal year 2012-year rates for sewerage at $5.04/748 gallons, or $6.74/1,000 gallons. The reduced rate for the resort's sewerage reflects a difference of $5.31/1000 gallons, a "gift" to the resort that comes to more than the above-mentioned charges for a similar-sized Adirondack town ($759.43/avg. flow day or about $277,155.45/year).

These huge savings received by the Crossroads project raise questions about taxpayer monies being given away to a private entity.

The sewage collection system includes an 11 ,000-foot 8-inch forced main leading into an "interceptor manhole" on Academy Street in Pine Hill (note that the SDEIS is inconsistent on this basic point: the text on page 2-11 states a 6 inch forced main discharging at a gravity sewer on Academy street). It is standard engineering practice for designs for an interceptor manhole to be included for the purpose of review. The interceptor manhole should meet ASTM C478 criteria, along with other specified criteria, at least. That standard primarily governs the e concrete qualities the manhole is cast of. The apparent reason for an 8-inch, or-6 inch, forced main is that the sewage pipe leading out of the manhole and to the sewage plant is only 8 inches. (Appendix 1 6 refers to the pipe sizing as the 6-inch force main running to the Pine Hill Sewage collection system manhole.) The flow calculations need to be shown to assure environmental safety to handle an overflow at the Interceptor Manhole, especially during peak conditions of a 25-year, and preferably 100-year, storm event.

Some questions: Is the proposed wet well of adequate capacity? Is the flow retained near the resort at the rate of say 6 (six) hours of ultimate sewer flow volume? How are the rights-of-way along Route 28 and the railroad to be acquired? The documentation of this should be made available. Is the right- of-way 20 feet wide? How deep is the pipe along/near the railroad? The proper depth-to-diameter ratio and the relation to the added stresses of train operations must be considered for prevention of environmental damage should a leak become evident. An 8-inch line (or 6-inch) usual1y has areas of access for the not shown in-line flushing connections and possibly venting air quality control measures, inverted sewer siphons (shown in the right-of-way). However, none of this was noted in the SDEIS. Will a slug precipitate a water hammer?

Is it feasible to lay the 11,000-foot wastewater pipe deep enough under Route 49A and the railroad tracks with minimal disturbance to traffic and obtain the 0.0034 slope needed for the 6- or 8-inch pipe in this relatively flat section of terrain? Public safety could be jeopardized through road closures due to excavation and blasting and road resurfacing. Also, directional drilling is difficult over such a long distance. It may not be all together impossible, but surely would be very costly and time consuming.

According to data from the "NYSDEC Birch Creek Biological Assessment 2004," the flow of Birch Creek above the village of Pine Hill is about 15 MG/day and below the village and just below the WWTP, 22.8 MG/day. The report also states the primary reason for the substantial increase in pollutant concentration is due to the effluent from the sewage treatment plant. When the effluent is nearly doubled from the project, as proposed, what will this additional loading do to the headwaters of a cold-water fishery trout stream and water supply for NYC? What is the calculated environmental effect that this waste stream will produce on the water quality? How much of a rise in water temperature will this cause?

L–2.09–This print shows these were on a public right-of-way, with no indication of an existing or planned contract.

There are significant problems with the design, engineering and financial aspects of the proposed wastewater treatment system.

The Project has usurped all of the remaining capacity in the Pine Hill WWTP. As shown by the letter from the New York City Department of Environmental Protection to the Catskill Watershed Corporation, dated April 1, 2011, a copy of which is annexed hereto as Exhibit N, no additional capacity exists in this sewage treatment plant for other potential users because all of its current excess capacity has been reserved for three actions, two of which are the Crossroads project and the expansion of the BMSC.

This situation creates at least two adverse impacts. First, it prevents other users from hooking up to the WWTP and resolving existing environmental impacts due to inadequate wastewater treatment.

Second, it effectively puts a cap on future business and residential development in the existing hamlets in the Route 28 corridor. Without adequate sewage treatment options, existing businesses will not be able to expand, new business cannot be developed, and new residences cannot be built. As shown by the Siegel Report (Exhibit A), the Project will cannibalize the existing businesses in the area. This problem will be compounded by the inability of local businesses and homebuilders to obtain sewage treatment for their own projects. **O3635**

Response: The Agreement In Principle that was agreed to by New York State, New York City, multiple non-governmental organizations and Crossroads established the cost for providing equalization of the wastewater flow and the sewerage fees Also, standard practice is that capital cost of the project is covered by the users of the project and their share of O&M costs.

A 6-inch force main is proposed for connecting the wastewater from the project to the Pine Hill sewer system.

All of the proposed sewer infrastructure meets New York State's engineering standards, which protect the environment and public safety. Additionally, the final design will be reviewed and approved by the appropriate regulatory agencies.

The average flow at the Pine Hill WWTP is approximately 0.13 MGD. This flow is less than 2% of the noted 7.8 MGD increase of flow in the Birch Creek. The discharge from the WWTP is in compliance with its discharge permit, which includes limitations on temperature. The discharge permit includes limits that are protective of Birch Creek.

The Pine Hill WWTP was designed and permitted to discharge 0.50 MGD and the proposed project at full build out will only increase the flow to approximately half of the permitted discharge capacity. Thus, the additional flow is not expected to have any adverse impacts to the Birch Creek.

The Town of Shandaken was offered by the New York City Department of Environmental Protection the opportunity to use grant dollars to build a sewer system in Phoenicia including the Route 28 corridor in 2007 and 2012 and there was insufficient local support for the providing sewer for the area noted. Providing sewer service to Phoenicia is an issue beyond the impacts of this proposed project.

2.8.8 Grading, Drainage and Earthwork

(1) The drainage channel leading from the outfall of the next existing culvert to the east, identified as 18" Steel Culvert No. 300 in the Resort SWPPP, flows directly through a proposed 2-story garage, but no details are provided as to how the drainage channel will be relocated, channelized in a culvert, or otherwise reconfigured.

Response: The overland flow from the existing culvert outfall will not be altered. The parking garage is proposed to be built with the northern end supported by piers, so that the bottom of the garage is above the existing grade rather than resting on it. This will allow the existing drainage patterns to remain in their current condition.

Although CR-49A from Belleayre to Highmount is proposed to be improved in terms of vertical and horizontal curves, the proposed development plans do not show details of the proposed road improvements/realignments nor are any details provided for drainage and conveyance improvements. Most critically, outlet protection and diffusion of concentrated flow is not discussed. **I2130**

Response: SDEIS figures 3-14 through 3-19 show the general plan for improvements to County Route 49A. Updated versions of these plans with supplemental information including typical details relating to the proposed road improvements are provided in the Errata section of this FEIS. This includes a typical road cross section, and typical treatments for the proposed ditch improvements and rock outlet protection for areas of concentrated flow. Drainage and conveyance improvements are discussed in detail in response to comment 3.1.1(4).

(2) It is obvious that the existing stormwater drainage system along CR-49A is inadequate and arguably unsafe, and should be properly engineered and constructed to serve the project and the community. **I2130**

Response: ~~While the existing drainage system along CR-49A may be inadequate in its current condition, the Resort project has been designed so that peak discharges going to the existing culverts under CR-49A will not increase. Nonetheless, as part of this FEIS, the existing drainage system along CR-49A has been redesigned to correct the current inadequate conditions. The ditch on the uphill side of the road has been enlarged to provide adequate capacity for conveyance of stormwater runoff. Culverts under the road have been redesigned as necessary and outfall protection at the culverts has been provided. For additional information refer to the response to similar comment 3.1.1(4).~~
The NYS Route 49A culverts are technically not part of the Modified Belleayre Resort stormwater management system because "upstream stormwater management practices have been designed to treat project-generated stormwater in accordance with NYSDEC and NYSDEP requirements, the development plans call for the reconstruction of the CR-49A corridor and drainage improvements to correct current inadequate conditions along CR-49A". See page 111 of the FEIS. The Resort project has been designed so that peak discharges going to the existing culverts under CR-49A will not increase and include improvements to the conveyance channel along CR-49A to address the issue related to flooding in the existing condition. As part of this FEIS, the existing drainage system along CR-49A has been redesigned to correct the current inadequate conditions. The size of the existing culverts and ditches along CR-49A were field re-verified and found to be consistently accurate with few exceptions. The ditch on the uphill side of the road has been enlarged to provide adequate capacity for conveyance of stormwater runoff. Culverts under the road have been redesigned as necessary and outfall protection at the culverts has been provided. The non-existent ditch immediately downstream of the culvert at DP 4 as an example is actually reflected in the HydroCAD model to be a 10' long by 1' breadth broad crested rectangular weir. The proposed improvements have been modeled in HydroCAD with no increases in rate or volume predicted for DP 6. For additional information refer to the response to similar comment 3.1.1(4).

(3) Blasting, it has been observed, introduces the possibility of pieces of rocks or debris to be propelled as many as 5 miles away from the blast site even with the use of mat blankets. Will Route 49A be closed during blasting? Wells should be pretested for water quality and protected during blasting, and any damage related to a blast should be repaired/replaced. The radius of notification and letter of intention should be expanded. There should be an estimate of the quantity of explosive, number of bores, loads, time frames, ground water table evaluations, and other related information provided in the SDEIS**. O3635**

Response: Per the SDEIS, blasting will be done by a professional licensed in New York State. It is possible that traffic on short sections of Route 49A might be briefly stopped during times of pre-planned blasting activities. Pre-blast well survey and well arbitration procedures are discussed fully in SDEIS (see section 3.2.4). A quarter mile radius for notification is fairly *standard practice. The specifics of the blasting operations such as those requested are not relevant for SEQRA review, these will be developed by the professional blasting contractor such as the one consulted during the preparation of the SDEIS. See SDEIS section 9. The SDEIS identifies the areas where blasting will likely occur. Impacts and mitigation measures related to blasting are discussed in detail section 3.3, and additional discussions of potential blasting impacts and mitigation measures for other topics can be found in the following SDEIS subsections in Section 3.*

- *Nearby Structures and Water Supplies, 3.2*
- *Wildlife, 3.4*
- *Traffic, 3.5*
- *Noise, 3.7*
- *Air Quality, 3.12*

2.8.9 Construction Activities and Phasing

(1) Section 1.0, Project Review, of Appendix 19, Stormwater Pollution Prevention Plan, Individual Stormwater Pollution Prevention Plan, states:

> *There are a total of 3 phases planned for this project that will take up to 11 years to construct dependent on the selling of the detached lodging units. The first phase has two components, Phases 1A and 1B, which will be constructed separately. The hotel and the golf course were to be completed in the first phase of construction.*

Since each phase is dependent on the sale of the previous units there could be a gap between the implementation of each phase. During this gap, which could span years, there could be the potential for unmitigated increase in the volume of storm water runoff. The SWPPP and EIS should address how the areas that are being used as staging, rock crushing and concrete batch plant in Phase 1A will be managed after Phase 1A is complete. Information for this area about interim grading, soil de-compaction techniques, and whether the area will be left gravel or returned to grass, should be provided and reflected in the hydrologic model to confirm that the proposed storm water basins are sized correctly. **M3637**

Response: The staging, rock crushing and concrete batch plant locations are shown on SDEIS drawing L-3.03. With the exception of the western ½ of the batch plant/crusher location all of this area in Phase 1A will be converted into the driving range tee and a detached lodging unit building as soon as these areas are no longer needed as part of Phase 1B. The detached lodging unit at this location will serve as a model unit that will be used for sales purposes. There is no dependency on selling units in relation to Phase 1A and 1B. It is only the Phase 2 build, out that is dependent on unit sales, because Phase 2 is comprised, primarily, of the detached lodging unit buildings in the Front 9 Village and near the hotel. For the western half of the plant/crusher location that is in Phase 2, this area will be established as a lawn area until it is time to build the detached lodging unit building at this location and any stormwater controls proposed for this area will be installed concurrently. There will be no "gaps" in time between when any development occurs and when stormwater management practices serving areas of development are put into place.

(2) Buried in the SDEIS are vague descriptions of two rock crushers and two cement processing areas proposed for the applicants use during the construction phase of the resort infrastructure. These temporary facilities may be located at the high mount lodge site and the wild acres property. Rock crushers and cement processing units present issues of dust, noise, view shed impairments, and compromised air quality. The SEIS must explore these issues with greater depth. **O3638**

Response: The locations of the two rock crushers and single cement batch plant are clearly shown on the drawings that are part of the SDEIS (see drawings L-3.03, 3.04, 3.05, 3.06, 3.08 and 3.09). These facilities were clearly included in the assessment of potential impacts on air quality (SDEIS section 3.12) and noise (SDEIS section 3.7). It was not necessary to evaluate potential visual impacts since these will be temporary facilities that will only be in place for the first year or so of construction.

2.8.10 General Erosion Control Activities

No substantive comments were received on this topic. Responses to comments on erosion control as it relates to surface waters and aquatic habitats can be found in section 3.1 of this FEIS.

2.8.11 Lighting, Landscaping and Signage

(1) Is there enough electrical power and an adequate grid system for the proposed expanded usage, particularly in the event of a natural disaster? If the power company puts in the needed equipment, will the price everyone pays for electricity go up? In supplying this power, where will it be produced and what is the carbon footprint? How many utility poles will be necessary for this project? How many will have to be drilled and set in solid rock? **O3635**

Response: Appendix 22 of the SDEIS contains correspondence from NYSEG stating that they have existing capacity to serve the project. GHG emissions for project construction and operation were presented in Section 3.11and Appendix 28 of the SDEIS. The number of utility poles, if any, has not yet been determined. All on-site electric and communication utilities will be run underground and will typically be installed along the access drives. This is a topic that will be addressed during the ongoing local Site Plan Review processes in Shandaken and in Middletown.

2.8.12 Energy and Materials Management

(1) Similarly, Section 2.8.12 of the SDEIS is vague about which energy conservation measures and approaches will actually be implemented. The Section starts by listing a number of energy codes and indicating the project sponsor will comply with whichever one is more stringent. The most stringent applicable code should be identified and committed to. Throughout the Section, terms such as “will be studied,” “may be implemented”, “wherever possible,” “will take into consideration,” etc. are used when discussing energy efficiency measures and indicate only possible realization of the measures. In order to have these measures actually implemented, they

should be made as permit conditions for the various NYSDEC permits required for this project. **O3635**

Response: The developers have stated their commitment to achieving LEED Silver status or higher for each of the two resort hotel structures. Energy Conservation is a critical measure in obtaining LEED Silver status. The methods and technologies, along with the building codes and regulations are ever changing. Therefore, the specific measures to conserve energy will not be decided upon until the project enters the Design Development and Construction Document phases, after permitting approvals are granted. However, it should be noted that based on the unique conceptual plans for the Highmount Resort & Spa building and the fact that it's roof will be covered by earth is one of the many strategies that will be employed, this building in particular will evidence significant savings in heat loss during cooler months and cooling needs during the warmer months. In addition, as part of its SEQR Findings, the Department has the ability to impose reasonable conditions to reduce greenhouse gas emissions

SECTION 3.0 ENVIRONMENTAL SETTING, IMPACT ANALYSIS AND MITIGATION MEASURES (GENERAL)

The following comments are general in nature and cover multiple topics.

(1) Pollution, damage to the mountain's wildlife, character of the community.

I live here. I know how building contributions to flooding. I have seen the deterioration of casinos on neighborhoods.

I'm concerned about the environmental, community and fiscal impacts of a project that is too large for the area and will not likely bring the economic benefits that are promised for the people of the Catskill region. **O3547**

Response: Water quality is addressed in section 3.1 of the SDEIS and this FEIS. Air quality is addressed in section 3.12 of the SDEIS and this FEIS. Wildlife is addressed in section 3.4 of the SDEIS and this FEIS. Land use and planning is addressed in section 3.8 of the SDEIS and this FEIS. No casinos are proposed as part of the project.

(2) This project continues to haunt the quality and nature of our environs. The construction process involves pollution from vehicle exhaust, damage to local roadways, excavation of the land... **I199**

Response: Air quality is addressed in section 3.12 of the SDEIS and this FEIS. Road conditions and traffic is addressed in section 3.5 of the SDEIS and this FEIS. Grading, drainage and earthwork are addresses in section 2.8.8 of the SDEIS and this FEIS.

(3) Environmental Impact – specifically mountain and forest erosion, declining water quality, increased traffic [effect on current infrastructure] and flooding and storm water concerns. **I406**

Response: Sediment and erosion control is addressed in section 3.1.2 of the SDEIS and this FEIS. Water quality (section 3.1) and storm water/flooding (section 3.1.1) are addressed in the SDEIS and the FEIS. Traffic is addressed in section 3.5 of the SDEIS and this FEIS.

(4) The Belleayre Resort will diminish the value of life aesthetically, environmentally, and economically, and has a design that lacks creativity and originality. **I3536**

Section 3.6 of the SDEIS and this FEIS address visual (aesthetic) resources. Assessment of environmental impacts is addressed in section 3 of the SDEIS and this FEIS. Socioeconomics are addressed in section 3.9 of the SDEIS and this FEIS.

(5) I am deeply concerned that the scope and size of this project will have extremely negative impacts on the watershed, the habitat, wildlife and the quality of life for local residents - both people and animal. **I3318**

Response: Water quality is addressed in section 3.1 of the SDEIS and this FEIS. Habitat and wildlife are addressed in section 3.4 of the SDEIS and this FEIS. Land use and planning are addressed in section 3.8 of the SDEIS and this FEIS.

(6) Subsidize the development and hand another windfall to Crossroads for Highmount Ski Center, the local residents and businesses have to put up with the negatives like more traffic, more flooding, noise, lights, blasting, construction vehicles, road degradation, and more competition, but Crossroads reaps the rewards. **I321**

Response: Traffic and roads are addressed in section 3.5 of the SDEIS and this FEIS. Stormwater management is addressed in section 3.1.1 of the SDEIS and this FEIS. Noise is addressed in section 3.7 of the SDEIS and this FEIS. Socioeconomics are addressed in section 3.9 of the SDEIS and this FEIS. Grading, drainage and earthwork are addresses in section 2.8.8 of the SDEIS and this FEIS.

(8) I am strongly opposed to this project for the following reasons: Air and noise pollution, loss of rural night sky, mountain and forest erosion. **I395**

Response: Air quality is addressed in section 3.12 of the SDEIS and this FEIS. Noise is addressed in section 3.7 of the SDEIS and this FEIS. Night sky is addressed in section 3.6 of the SDEIS and this FEIS. Sediment and erosion control is addressed in section 3.1.2 of the SDEIS and this FEIS.

(9) During construction, the project will have a significant impact on the community. It will create dust, noise and congestion, all to the benefit of the developer with no benefit to the community. **I3645**

Response: Air quality is addressed in section 3.12 of the SDEIS and this FEIS. Noise is addressed in section 3.7 of the SDEIS and this FEIS. Traffic is addressed in section 3.5 of the SDEIS and this FEIS. Substantial benefits to the community are addressed in section 3.9 of the SDEIS and this FEIS.

(10) Crossroads Ventures' proposal would see massive forest-clearing for construction of 2 hotels, 2 spas, an 18-hole golf course, a conference center, new ski slopes, retail shops, restaurants, parking lots, additional resort homes, outbuildings, streets and their lighting. The whole package equates to more than 629 lodging units over 739 acres on steep, erosion prone, high altitude terrain - inside the Catskill Park, within the NYC watershed, and bordering "forever wild" NYS forest preserve - that threatens water quality, traffic flow, biodiversity and community character. **O3455**

Response: Water quality is addressed in section 3.1 of the SDEIS and this FEIS. Traffic is addressed in section 3.5 of the SDEIS and this FEIS. Terrestrial and aquatic ecology are addressed in section 3.4 of the SDEIS and this FEIS. Land use and planning is addressed in section 3.8 of the SDEIS and this FEIS.

(11) The concept of bull dozers, back hoes, blasts, explosions invading our mountain over a ten year period is mind boggling, indeed. **I234**

Response: The vast majority of project construction will happen in the first 1-3 years. The remaining construction for the rest of the project will merely be the buildout of the detached lodging unit buildings which are of a much smaller scale than the hotels.

3.1 Surface Waters Including Aquatic Habitats

(1) The applicant's Stormwater Subcatchment Plan L-5.01, shows that Design Point 7 is located where the Western tributary flows off site. According to Appendix D, of the applicant's March 2012 *Stormwater management Design Report*, the existing imperviousness at Design Point 7 is 0.89%. Appendix F, in this same report, shows impervious area increasing to 1.83% at Design Point 7 with proposed conditions. In other words, the applicant's data shows proposed development will cause Western tributary imperviousness to come very close to the 2.0% threshold for maintaining a healthy brook trout population. However, a more appropriate analysis is how the project will affect impervious area within the applicant's portion of the Western tributary watershed. After all, it is only by ensuring that each project site remains below the 2% threshold that watershed-wide imperviousness can be kept in the tolerable range.

Response: The suggested "more appropriate analysis" is anything but. To limit the assessment to just the project site does not meaningfully address the overall 2% threshold for the stream system. The 2% is for the overall watershed and not a select subset of the watershed. By way of analogy, if a single house was built on a ¼ acre lot in an otherwise undeveloped 100 acre watershed, then the stream could arguably said to be impacted because the ¼ acre lot is more than 2% impervious of the individual lot — when that would logically not be the case.

Existing subcatchments 1, 2 and 35 are located on the applicant's proposed. A fourth Western tributary subcatchment (200) is located offsite and is not included in this analysis.

Impervious area within the applicant's portion of the Western tributary watershed will reach 3.8% if the site is developed as proposed.

Response: Reiterating form the previous response, artificially limiting the assessment to just the lands on the project site rather than the entire drainage system is not a meaningful assessment. Eliminating subcatchment 200 (mostly wooded Forest Preserve lands) from the assessment is not appropriate.

Note that surface runoff from some of the subcatchments will be diverted to the proposed irrigation pond. As a result, surface runoff from a portion of the impervious area will not discharge into the Western tributary. The following factors make it appropriate to include this diverted impervious area in the assessment of impacts to the Western tributary:

- The diverted impervious area will eliminate a portion of the groundwater recharge critical to maintaining dry-weather inflows to the Western tributary, especially during those times when golf course irrigation is not being carried out in a way that maintains natural recharge;
- Special Use pesticides and other contaminants infiltrating within pervious areas will still be carried through the groundwater system from the diverted areas;
- The benefits that could be provided by forest within the diverted area will be lost; and
- The normal flood regime is critical to preventing the accumulation of organic matter and other fine particulates within a stream ecosystem and a portion of these flood flows will be lost due to the diversion.

Response: Capturing stormwater and reusing it for irrigation is a Green Infrastructure/Low Impact Development practice that is promoted by the NYS Stormwater Management Design Manual. None of the water being routed to the irrigation pond is from within the drainage of the western tributary (see the response at the end of this larger comment) The diverted impervious area runoff will be used for irrigation of the golf course particularly during the dry periods contrary to the comment of irrigation not occurring during periods of dry weather inflows. Special use pesticides may only be applied under very limited circumstances including only after approval is granted by the golf course technical committee that includes representatives of NYSDEC, NYCDEP and an NGO. Forest benefit will be lost as a result of the project – this is unavoidable. Thousands of local areas of forest will still remain in the area, including Forest Preserve lands, which were increased by nearly 1,200 acres as a result of the modified resort project. The hydrologic regime during high flows will not be drastically affected due to the amount of undisturbed area that will still be present within the drainage.

The applicant should be directed to shift portions of the proposed impervious surfaces onto portions of the site that do not directly drain to brook trout waters.

Response: From the original project, the Applicant agreed to eliminate that part of the project in the Ashokan Reservoir drainage in order to protect water quality. Those lands are now part of the Forest Preserve.

The Western tributary watershed is 92% forest at Design Point 7 *(where the stream flows offsite)*. Watershed forest will decline to 59% with the proposed development, which is in excess of the 51% minimum to maintain an excellent quality stream ecosystem.

Response: Comment noted

Master Plan Sheet L-1.02, shows the existing and proposed tree line. This sheet indicates that 68% of the Western tributary channel will have a wooded, riparian buffer within the applicant's property. The applicant should be directed to show sufficient additional wooded buffers along the Western tributary to achieve the 77% minimum needed to preserve excellent stream quality.

Response:. From this comment it would appear that for the parameter of wooded buffer, stream quality would be slightly less than excellent, but this is based only on the on-site portion of the stream. Approximately 1/2 of this blue line stream exists above and below the project site in wooded areas. When these areas are included, instead of excluded from consideration , then the amount of wooded buffer will be sufficient to maintain excellent quality.

The following text appears on SDEIS page 2-50:

> *Quality Control; Use alternative surfaces (e.g., vegetated roofs, pervious pavement or grid pavers) and nonstructural techniques (e.g., rain gardens, vegetated swales, disconnection of imperviousness, rainwater recycling) to reduce imperviousness and promote infiltration thereby reducing pollutant loadings. Use sustainable design strategies (e.g., Low Impact Development* [LID], *Environmentally Sensitive Design* [ESD] *to design integrated natural and mechanical treatment systems such as constructed wetlands, vegetated filters, and open channels to treat stormwater runoff.*

Unfortunately the site is poorly suited to the highly-effective stormwater management measures cited above and required to maintain a healthy brook trout population.

As noted in Table 3.5, of the *New York State Stormwater Management Design Manual*, these highly-effective measures work best in Hydrologic Soil Groups A and B. The applicant's Soil Inventory Plans show that the Wildacres portion of the site is dominated by C and D soils. Note that SDEIS Table 3-1, shows only a small area of A soils and no B. In other words, the site is unsuited to the highly-effective LID and ESD measures.

Response: The SDEIS clearly recognize the site's limitations when planning for green infrastructure practices promoted by the NYS Stormwater Management Design Manual. Nonetheless, through the use of the design principles in project stormwater management design, the Runoff Reduction Volume required in the Design Manual was achieved project-wide.

Highly-effective measures, such as the bioretention and dry swale facilities proposed in Appendix 18-Stormwater Management Design Report, must be fitted with an underdrain system when installed in C and D soils. This cuts pollutant removal substantially and eliminates the groundwater recharge essential to maintaining dry-weather inflow to the Western brook trout stream. Without this inflow the trout stream will decrease in volume and become more susceptible to excessive heating, dissolved oxygen deficiencies and loss of critical habitat.

Response: As stated previously in this comment, there is very little impervious area (<1%) that could contribute to increased nutrient loading in this drainage. With C and D soils, there is little existing surface water runoff entering groundwater recharge currently, especially during dry weather. Development within this area is primarily golf course that will be irrigated during dry weather periods.

Text regarding thermal impacts appears on page 3-7, of the SDEIS. The gist of this text is that a micropool pond designed with a 24-hour drawdown does not cause a thermal impact. This simply is not true as shown in a study by Bahr (1996). The water residing in a micropool quickly adjusts to the temperature of the overlying air, even if a pond is designed for just 24-hour retention. Shading will not prevent the thermal impact.

Again, direct sunlight and overlying air temperature are both factors in pond discharge temperature. The air overlying a well-shaded pond can still be in the upper 80ºF on a summer afternoon. If the pond is discharging due to a recent thunderstorm then the receiving stream will be subjected to water in the upper 80ºFs. Therefore, micropool ponds can cause trout streams to exceed the 70ºF NYDEC trout waters standard.

Response: The NYS Stormwater Management Design Manual practice selection criteria were used to select the proposed practices, including which practices should be used in areas that support trout fisheries. For the project's micropool extended detention basins, and as per the Design Manual, 12 hours of WQv storage was provided instead of 24 hours to reduce potential thermal impacts.

Proposed Subcatchment Diagram L-5.06, indicates that the following ponds will discharge to the Western tributary: S, T. and U. Increasing the amount of forest cover while reducing proposed impervious area within the drainage area of each pond may eliminate the need for the pond. The applicant should be directed to consider these and other alternatives.

Response: Impervious area is already less than 1%. The low impervious area and high amount of forest area to remain will maintain excellent quality in the tributary.

The applicant has proposed the diversion of large portions of surface (stormwater) runoff from the Western tributary watershed. A portion will go to the proposed irrigation pond. The rest is diverted to a channel just to the east of the Western tributary.

Surface runoff from about 25% of the existing Western tributary watershed will be diverted to other watersheds. The SDEIS does not appear to address the issue of a reduction in natural flood flows and impacts to the stream ecosystem. Such a dramatic reduction in flood flows alone could result in severe damage to the Western tributary. If the reduction is large then the applicant should be directed to revise storm water plans so the existing Western tributary drainage area does not change. **03650**

Response: None of the western tributary drainage is proposed to be diverted to the irrigation pond. The western tributary and the irrigation pond are on the opposite ends of the Wildacres site, there is an intervening stream between the western tributary and the irrigation pond, and the water that is "diverted" to the irrigation pond is from the area of the Wildacres Hotel, removed from the western tributary, and which drains in the direction of Design Point 11, located below the irrigation pond in the pre-development condition.

(1a) The Modified Resort SDEIS proposes 21 acres of new impervious surfaces in the watershed of Emory Brook and of three tributary streams on site. CEDS expresses concern that such an increase in impervious area could endanger aquatic ecosystems. The SDEIS notes that Emory Brook and the three onsite tributaries support brook trout (*Salvelinus fontinalis*). Brook trout, CEDS remarks, is one of the most sensitive fish species to the effects of watershed land use changes. According to CEDS, the SDEIS does not present a complete analysis of the impact of the proposed impervious area to brook trout populations because it does not consider both existing and proposed impervious surfaces in the watershed of Emory Brook and the onsite tributaries as a whole.

The SDEIS proposes development that will increase the impervious area within the applicant's portion of the watershed for the western unnamed tributary of Emory Brook to 3.8%. According to CEDS, brook trout populations begin to decline when watershed impervious area exceeds 2%. Taking into account the portion of surface runoff to be diverted to a proposed irrigation pond, CEDS concludes that this increase in impervious area can present a threat to brook trout populations unless it is reduced.

The Modified Resort SDEIS proposes that 68% of the western tributary to Emory Brook's channel have a wooded, riparian buffer. CEDS notes that, to maintain the stream quality required by highly-sensitive species such as brook trout, a 100 foot forest buffer must extend from both stream banks along 77% of the stream's channel.

CEDS concludes, however, that micropool ponds designed with a 24-hour drawdown will not prevent a thermal impact. Water residing in a micropool quickly adjusts to the temperature of the overlying air, which on a summer afternoon can reach above 80 degrees. CEDS recommends eliminating these micropools and relying instead on increasing the amount of forest cover while reducing the proposed impervious area to eliminate the need for each pond.

The Modified Resort SDEIS proposes to divert surface runoff from about 25% of the existing western tributary watershed to other watersheds, thereby raising the possibility of disrupting the natural flood regime for that tributary. CEDS concludes that such dramatic reduction in flood flows could result in damage, and recommends that, if the reduction in flood flows is expected to be large, stormwater plans should be revised so that the western tributary drainage area does not change.

The Modified Resort SDEIS recognizes the risks posed and proposes to use Low Impact Development and Environmentally Sensitive Design to treat stormwater runoff. CEDS concludes that, although these techniques are generally considered highly effective, this site is poorly suited to these otherwise useful stormwater management techniques. These techniques are most effective in Hydrologic Soil Groups A and B, while the Wildacres portion of the proposed site is dominated by C and D soils. Changes necessary for C and D soils, such as an underdrain system for bioretention and dry swale facilities, cut pollutant removal substantially and eliminate the groundwater recharge essential to maintaining dry-weather inflow to the western tributary. Without this inflow, the stream will decrease in volume and become more susceptible to excessive heating, dissolved oxygen deficiencies, and loss of critical habitat.

The 739-acre site is proposed to contain 21 acres of impervious surfaces if the project is developed as proposed. Most of the impervious area – 86% - will be in the Wildacres portion of the site. Two of the three brook trout streams drain portions of the proposed Wildacres area. The SDEIS fails to present a complete analysis of the impact of proposed impervious area to the brook trout populations. A complete analysis would include existing and proposed impervious area within the tree brook trout watersheds. But impervious area data is only provided for on-site conditions. **O3650**

Response: Comment 1a is a synopsis of comment 1. See responses to comment 1

(1b) In addition, the East Branch Delaware River and its tributaries, including Bush Kill, impacted by the proposed development, are classified as trout and trout spawning streams. Decreases in water quality from project development, construction and post-construction storm water runoff could impact the sensitive streams with silt laden runoff if appropriate measures are not taken. **I2130**

Response: See the response to comment 1 which has detailed comments regarding potential impacts to trout habitat.

(2) Heritage strains" of brook trout are those that have never mingled with or been crossbred with hatchery trout. Preserving such populations of brook trout is highly desirable (http://wildtroutflyrodders.org/heritage-brook-trout), and they are specially protected in the Adirondacks, Since the brook trout in Emory Brook and its tributaries may possibly be heritage strain fish (because stocking of fish in these streams is not practiced by the Department of Environmental Conservation), I request for myself and for the Catskill Heritage Alliance, that the DEC evaluate the possibility that heritage strains of brook trout exist in streams in and near the drainage area and storm water catchment areas of the Belleayre projects before approving any permits related to the Belleayre projects.

There are probably very few places in the Catskills where heritage strain brook trout can be found. If heritage strains of brook trout exist in Emory Brook and its tributaries, we should take special care to protect them. **O3629**

Response: Heritage populations are wild strains of brook trout that maintain the original genetic characteristics of a specific population. Heritage strains have survived despite widespread introductions of hatchery-reared brook trout varieties, and exist only within waters where genes from outside the original population have never been introduced into the subject lake. Keller (1979) identified ten heritage varieties of wild New York brook trout: Balsam Lake, Dix Pond, Honnedaga Lake, Horn Lake, Little Tupper Lake, Nate Pond, Stink Lake, Tamarack

Pond, Tunis Lake, and Windfall Pond. (Cornell University: http://www2.dnr.cornell.edu/cek7/fish/trout/honnedaga.htm)

For brook trout streams that contain wild fish, their genetic composition is generally uncertain due to brook trout stocking that started with the widespread stocking of fingerling brook trout in the late 1800's. (http://www.easternbrooktrout.net/docs/EBTJV_NewYork_CS.pdf)

Even though no stocking is currently being conducted, widespread stocking throughout the Catskills streams since the 1800's resulted in populations with mixed genetics in all but the most remote and inaccessible waters. Waters where free movement of fish is possible, between tributaries and mainstem rivers, are highly unlikely to have heritage strain brook trout in them. Staff are not aware of genetic testing for heritage strain brook trout being required for other projects near brook trout populations.

(3) How will runoff quality and quantity from the projects change during the projects, including but not limited to the following aspects specifically?

Seasonality of runoff, including by season and long-term impacts from chemical treatment for snowmaking and maintenance of ski slopes and golf course.

Portions of runoff intercepted and contributing to groundwater recharge and the distribution of chemical aspects of surface runoff chemicals to groundwater.

Physical and chemical properties of runoff, including thermal properties and contributions of chemicals from flocculation and snowmaking, as well as maintenance of golf courses and ski slopes (e.g., herbicides, pesticides and fertilizers).

There are significant concerns about the two proposed dams.

The potential for impacts to ground and surface waters, thereby affecting trout habitat.

The failure to analyze impacts to all potentially affected trout streams.

The lack of analysis of impacts to stream biota. **O3635**

(3a) In this case we have WATER and Erosion issues galore. **I422**

Response: For the resort project, seasonality of runoff, including long term impacts, will not be affected by chemical treatment for maintenance of the golf course since chemical maintenance is not proposed. See the Organic Golf Course Management Plan in SDEIS appendix 15.

Movement of water through surface runoff and groundwater recharge, and how these processes will be affected by the resort project are addressed in the updated Water Budget Analysis in appendix 22 of the DEIS. The potential impacts to both aquifer recharge and surface water runoff are minimal with a very slight decrease in aquifer recharge over the project area, and a negligible increase in runoff.

The stormwater management practices proposed at the resort were chosen to minimize potential for thermal impacts based on practice selection criteria in the NYS Stormwater Management Design Manual.

Flocculants are only proposed to be used during construction, and no flocculant treated water will be discharged to streams. This water will be dispersed overland where any remaining free flocculant will bind with organic matter.

Herbicides and pesticides are not proposed to be used. Phosphorus and suspended solids loadings are discussed in section 6 of the draft SWPPP in SDEIS Appendix 19. Phosphorus export will increase slightly and suspended solids loading will decrease. See SDEIS appendix 19.

The resort project does not have a dam.

The hydrology aspect of trout habitat is presented in the Water Budget Analysis in SDEIS appendix 22.

All streams on and near the project site are described in section 3.1 of the SDEIS. Also see section 3.2 of the DEIS. Potential impacts and mitigation measures are presented in both the DEIS and the SDEIS.

(4) Precipitation data for the water budgets are consistent with those for the stormwater management plans.

Response: Because the water budget analysis is a larger scale analysis that assesses overall impact on runoff and groundwater recharge, it utilizes average precipitation data. The analysis in SDEIS appendix 22 utilized monthly average precipitation that was derived from 20 years of daily rainfall data collected at the Belleayre Mountain air monitoring station. The stormwater management plan assesses runoff from discrete storm events and utilizes data for specific storm events as per the NYS Stormwater Management Design Manual.

Extreme conditions are modeled in the water budgets, especially in respect to droughts, Flood conditions, Winter climate change.

Review: Per the response above, water budget analyses are conducted using long term average precipitation data. Such analyses are not intended to assess extreme weather conditions. See SDEIS appendix 22.

Data from the NYS DEC Office of Global Climate Change must be used as part of the water budget analysis. This should be especially focused on drought, storm intensity, snow deposition and coverage, average winter temperature and the effect on snowmaking demands.

Response: See the response to the comment above.
The water budgets and climate effects on these budgets must be peer-reviewed.

Response: The SDEIS Water Budget has been reviewed by staff in NYSDEC and NYCDEP.

Inter-base water transfers must be evaluated with consideration of Clean Water Act implications

Response: All interbasin transfers of water will be reviewed by the Delaware River Basin Commission (DRBC) which must issue a permit for the project. A copy of the permit application prepared for DRBC review was included in the SDEIS as appendix 7. This application has not yet been formally submitted to DRBC.

Ashokan Watershed water moved to the Pepacton Watershed for Snowmaking and potential point source of pollution due to runoff from ski trails.

Response: This comment is not applicable to the resort project since snowmaking water withdrawals are not part of the project.

Ashokan Watershed water moved to the Pepacton Watershed and a potential for point and non-point source of pollution due to irrigation.

Response: All of the water used for irrigation for the project originates in the Pepacton watershed and is applied in the Pepacton watershed, with the exception of a very small amount of the proposed Highmount Golf Club. This very limited amount of transfer will be covered by the DRBC permit application review

Ashokan Watershed water moved to the Pepacton Watershed, and then back to the Ashokan Watershed as untreated sewage.

Response: No such movement of water is proposed as part of the resort project.

Pepacton Watershed water moved to the Ashokan Watershed as untreated sewage. **O3636**

Response: Resort wastewater will consist of water that originated in the Pepacton watershed and then is sent to the Pine Hill WWTP in the Ashokan watershed. This transfer of water will be covered by the DRBC permit application review.

(5) The clear cutting of large amounts of forest will stress our animal life and cause huge amounts of run off. **I228**

Response: Impacts to wildlife as a result of the project were fully evaluated in SDEIS section 3.4.3 and appendix 23. As described in the Stormwater Management Design Report (SDEIS Appendix 18), the analysis of post-construction conditions includes the change in vegetation covertype that will occur as a result of the project.

(6) The Belleayre Resort should not be built for many reasons. Herein are a few. Extensive construction and debasement of land on steep slopes will produce large amounts of turbid run-off during a meaningful rainstorm which will drain into the NYC water supply system. The large

amount of asphalt area in the finished project would continue this problem in the future. And is it written in stone that no chemical fertilizer will EVER be used? Would 8 million people not mind drinking contaminated water? **I1461**

(6a) Resort construction would still occur on slopes exceeding 10 – 15%, and much of the BMSC expansion work would occur on steep slopes. Thus, storm water runoff during construction and operation of BMSC and the Crossroads' projects could contribute to degradation of these streams unless significant storm water management facilities and practices are incorporated into designs and operational protocols at each site. **I3588**

Response: The SDEIS contains extensive documentation, in both report form and plan form, on how sediment and erosion control will occur during project construction and on how stormwater management will occur during project operations. For example, see SDEIS Appendices 18 and 19 and drawing sheets L3.00 through L3.21. NYSDEC and NYCDEP are the two primary regulatory agencies responsible for protecting water quality. Both agencies are involved in the SEQRA review of the project, and both agencies will also need to issue permits for the project. NYSDEC issued its draft SPDES permit for Phase 1 construction for public comment along with the project SDEIS.

(7) On a basic level, building on the very top of a mountain is far more likely to contribute to erosion, increase water run-off, and cause other environmental damages than the development of lower down on the mountain. Increase erosion and changes to the hydrology, both through increased run-off through deforestation and through the diversion of water from the Pepacton watershed to the Ashokan watershed, will increase the likely hood of damaging floods in the future. **I3532**

Response: None of the project components are being built "on the very top of a mountain". Previous designs for the project, which are no longer proposed, had some development located above the ski slopes at the Highmount Ski Area. Runoff volumes may increase some as a result of the project, but the rate will not be increased, and much of the runoff that is captured and later released will be released during "off peak" times not coinciding with higher flows in receiving waters. During periods of high amounts of rainfall, when stream levels rise and when flows going into the Pine Hills wastewater treatment plant increase due to I&I input, wastewater from the Resort will be temporarily stored in an on-site holding tank and then be released after I&I peaks at the treatment plant have passed.

(8) In light of climate change-induced increases in intense precipitation events, I am deeply concerned about flooding and pollution from tree cutting, mountain side construction, road building and replacing forest cover with many acres of impervious surface. Downstream communities have been profoundly impacted in the last several years by historic flooding, even without commercial construction high above them. **I3505**

(8a) The size of the two hotels and the sheer number of the other buildings in the proposed project would dominate Belleayre Mountain and its surroundings and dwarf the hamlets. The mountainside would lose a huge amount of forest and vegetation.

Response: The landform that is Belleayre Mountain extends from Big Indian in the east to Route 28 above Fleischmanns in the west. Along its ridgeline Belleayre Mountain is approximately 6 ½ miles long. The original (DEIS) project occupied a portion of the eastern ridgeline of Belleayre Mountain near Big Indian, but that part of the project is no longer proposed in accordance with the Agreement in Principle. The modified project that is the subject of this FEIS does not occupy any portion of the Belleayre Mountain ridgeline. The modified project site, while totaling 739 acres, only proposes to develop 218 acres, the majority of which is golf course. The number of proposed lodging structures is 29, a reduction of 76% when compared to the original (DEIS) project. The scale of the modified project is compatible with the adjacent BMSC and compliant with local zoning regulations.

The loss of trees, the construction of buildings and roads will greatly increase runoff into Bushkill Creek and the Pepacton Reservoir. The runoff will contain sediments and chemicals (the organic fertilizer to be used on the golf course contains phosphorous which promotes algae growth.) **I3648**

(8b) The impermeable surfaces of this vast project will inevitably send polluted water into streams feeding the Pepacton Reservoir; future generations will be faced with degraded water resources when this reservoir is inevitably impacted. The mountains thin soil will be destabilized; because of many new roads, parking lots, and less forest, homeowners are rightfully concerned that heavy rains will lead to frequent flooding. More frequent and severe storms will exacerbate these problems. **O3489**

(8c) As local full-time residents, we write to express our opinion that the proposed massive building of a spa resort, conference center and timeshares on the steep slopes of the Highmount Ridge is a destructive environmental debacle which will cause long term environmental damage to our local villages.

The upper development will create 27+ acres of impervious surface, thus causing massive storm water runoff flowing into the streams of Fleischmanns, Arkville and Margaretville. As we all know, these areas are still trying to recover from the last flood after Hurricane Irene. **I86**

(8d)Cutting into the forest on top of the mountain can only exacerbate flooding in the event of other huge “100-year” storms like Irene and Lee. **I310**

(8e) In light of climate change-induced increases in intense precipitation events, I am deeply concerned about flooding and pollution from tree cutting, mountain side construction, road building and replacing forest cover with many acres of impervious surface. Downstream communities have been profoundly impacted in the last several years by historic flooding, even without commercial construction high above them. **I3503**

(8f) This watershed area needs all of the forested hillside it has to help absorb future torrential rains. **I213**

(8g) There has been no new studies of the run off problem since Irene and needs to have a second look taken after all the flood damage that was caused. **I228**

(8h) I am deeply concerned about flooding and pollution from tree cutting, mountain side construction, road building and replacing forest cover with many acres of impervious surface. **SCACPET**

(8i) I am deeply concerned that runoff from this project--now entirely on the western side of the mountain--coupled with more intense storms, will cause devastation to the irreplaceable Pepacton Reservoir and the millions that depend upon it for drinking water. **SCACPET** (Sierra Club Atlantic Chapter Petition)

(8j) The potential danger to the environment and wildlife whose habitats will be irreparably disrupted from run off into the Delaware watershed make it essential to limit the size of the development.

(8k) No one can eliminate the VOLUME of runoff!

In light of climate change-induced increases in intense precipitation events, I am deeply concerned about flooding and pollution from tree cutting, mountain side construction, road building and replacing forest cover with many acres of impervious surface. Downstream communities have been profoundly impacted in the last several years by historic flooding, even without commercial construction high above them. **O3547**

(8l) The effect of replacing forest by large areas of blacktop, a golf course, and buildings on runoff and erosion will be severe. In an area that already suffers increasing flooding, this proposal invites worse floods in the valley below. Pollution is also a major concern, particularly from chemicals used on the golf course. **I338**

(8m) As members of Catskill Heritage Alliance we must reiterate our opposition to the "full build" option of BMSC due to the fact that disturbance of the steep slopes of Highmount will remove what absorption of stormwater is afforded by the natural state which exists on the mountain at this time.

(8n) We realize that we don't have to tell you about the devastating effects construction and years of blasting shale and bedrock will have on the ability of the slopes to absorb stormwater nor the polluting and flooding affects this activity will cause to the local villages and the Pepacton Reservoir (which is full over 100% of capacity as of today). **I424**

(8o) Inadequate flood management and decreased water quality in surrounding watersheds. **I401**

Response: See the responses to substantively similar comments 4, 5 and 6 above.

(9) Development and reconstruction is need in the towns of the Catskills and not destroying the country side and beautiful landscape.

The proposed Crossroads scheme is faulty on many levels-it threatens the existing watershed systems; it brings further erosion to an area that’s suffered from substantial flooding; the development of TWO golf courses threatens wildlife and soil as well as the water supply, including the drinking water of New York City. **I3526**

Response: See the responses to substantively similar comments 4, 5 and 6 above. The proposed modified project only includes one golf course and includes numerous stormwater management practices to control stormwater runoff from the golf course.

(10) A crucial headwater creek draining the west side of the proposed project, Emory Brook, is home to a heritage strain of wild, naturally producing brook trout, New York's threatened state fish. It is difficult to see how the Emory Brook could remain non-impacted if it drains the entire west side of the proposed development. Special attention needs to be given storm water management strategies, accurate soil percolation rate maps, the design and placement of culverts and catchment basins, and updated weather predictions. Every one of these issues, as presented in the current proposal, has fallen under criticism by various experts vetting the proposal. **I3640**

Response: *See response 2 above and why these are not considered heritage strain brook trout, even though they are very likely wild. The brook trout does not have threatened species status in New York State. Also see the responses to substantively similar comments 4, 5 and 6 above regarding protection of water quality, including in Emory Brook, both during and after construction.*

(11) Please identify the adverse effects on trout in Esopus Creek when aluminum sulfate is used to treat Ashokan water turbidity. **I2131**

(11a) I am also very concerned that the resort as outlined in the Belleayre Mountain Modified Project will also adversely affect the watershed of the Esopus River. There is no way to "sustainably" build a resort with golf courses on a mountain that does not lead to toxic runoff (natural, organic, or otherwise). **I399**

Response: The modified project does not involve the use of aluminum sulfate in the Ashokan reservoir, or anywhere else for that matter. The modified project, for all intents and purposes, does not drain to Esopus Creek. More than 98% of the site drains to the west in the Pepacton basin. For the 12 acres of the project that are in the Ashokan basin, no impervious area is proposed and all runoff is directed to a bioretention area to treat stormwater runoff.

(12) My other concern is the environmental impact on the Esopus and Delaware watershed **–** the runoff of water into an already fragile water shed area. **I439**

(12a) I believe the environmental impacts to the Esopus and Delaware watersheds will be irreparable in return for a limited economic gain for the region. **I397**

(12b) It seems like there is great potential to pollute the watershed downstream from the project, which will affect the Esopus and the Ashokan Reservoir. It will also bring additional traffic, noise and light pollution, and in general be an eyesore on the mountain. **I402**

(12c) I am also quite concerned about the detrimental effect it will have on NYC drinking water. **I3593**

(12d) As a NYC resident, I am also very concerned about its impact on the NYC watershed. **I2765**

(12e) How will it affect our soil and water, as well as New York City's pristine water, which as you well know, comes from the reservoirs of the Catskill Mountains. **I3591**

(12f) Inadequate flood management and decreased water quality in surrounding watersheds. **I401**

Response: See the responses to substantively similar comments 4, 5, 6 and 11 above.

(13) And the destruction entailed in the project of the mountain forest and the watersheds at the site cannot be justified. The plans to ameliorate the proposed destruction are grossly inadequate and incomplete. **I407**

Response: The project will not adversely impact the identified water bodies. See the responses to substantively similar comments 4, 5, 6 and 11 above.

(14) Fourth, impacts on local water quality are of concern to me. Local water and ground water can definitively be affected by removing a mountain top and moving huge quantities of earth like clay near streams and creeks. Perhaps NYC-DEP is not as concerned by this as water traveling to the city has many more miles to travel, and so is drained by reservoir systems, designed just for that purpose. However, locally communities downstream from construction and concrete buildings, water comes from existing streams and creeks and so local water quality is directly affected by proximity. **I511**

Response: There is no mountaintop removal proposed, the project is subject to an individual SPDES permit that with require extensive stormwater and sediment control that will protect water quality See the response to comment 6 above.

(15) There are several potential impacts that this project affects. Throughout the process of draining of the aquifers, in producing artificial snow (which is essential in order for a ski resort in our area to exist), the water runoff into our local creek (which are already in high risk of flood waters), the balance of this local ecosystem is threatened by the lack of concern for how to manage these problems. **I404**

Response: See the responses to substantively similar comments 4, 5, 6 and 11 above.

3.1.1 Stormwater Management

(1) Paragraph 20.c. of the Agreement in Principle (AIP) dated September 5, 2007 required the project sponsor to meet with AIP signatories and seek to reach agreement concerning the modeling assumptions and inputs, prior to completing stormwater analyses for the SDEIS. With respect to the assumptions regarding the hydrologic soil group (HSG) used in the modeling of

certain golf course areas, DEP met with the project sponsor's technical representatives on July 7, 2011 and expressed doubt about the design technique described below, which was proposed by the project sponsor and subsequently used to support the conclusions in the SDEIS. DEP stated that the concept would be given due consideration if the applicant provided additional supporting information. No additional information has been provided to DEP, nor has this issue been expanded upon in the SDEIS.

Specifically, the SDEIS assumes that the addition of eight inches of sand to upper layer of soil in the tees, greens, and fairways on the golf course will result in a change in the HSG for these areas of the Wildacres Golf Course from a C (pre-development) to a B (post-development). As DEP explained at the meeting in 2011, DEP does not believe that this addition of sand will effectively change the HSG, nor does the literature support such a conclusion. Soil group B generates less runoff than soil group C. Accordingly, if the modeling is predicated on a change in the soil group, the modeled results for the post- development condition will be inaccurate, showing less runoff from those areas than can reasonably be anticipated. Thus, the hydrologic analysis will result in undersized stormwater management facilities incapable of mitigating the water quantity and quality impacts from post-construction stormwater runoff.

In particular, Section 7.0 of the SDEIS titled Stormwater Management Plan and Design Process - Proposed Subcatchment Mapping states that:

Hydrologic Group C soils are anticipated in all areas with the exception of the tees, greens and fairways on the golf course. These areas are anticipated as Hydrologic B soils, based on the high porosity requirements typical of the quality soils necessary to establish golf course quality grass on fairways, tees and greens.

Furthermore, Appendix 22 of the SDEIS titled Water Budget Analysis (pp7) cites this reference to changes to the soil profile from construction and states: "The topsoil that will be used in construction of the Highmount Country Club golf course is assumed to be a sandy loam that will have an average thickness of eight inches." The NYS Stormwater Management Design Manual does not mention, nor does it provide any guidance for, changing the HSG from less infiltrative to more infiltrative post-development. Furthermore, The National Engineering Handbook, Part 360 Hydrology (USDA, NRCS, January 2009) describes limitations on the diagnostic physical characteristics of HSG C as follows:

The saturated hydraulic conductivity in the least transmissive layer between the surface and 50 centimeters [20 inches] is between 1.0 micrometers per second (0.14 inches per hour) and 10.0 micrometers per second (1.42 inches per hour). The depth to any water impermeable layer is greater than 50 centimeters [20 inches]. The depth to the water table is greater than 60 centimeters [24 inches]. Soils that are deeper than 100 centimeters [40 inches] to a restriction and a water table are in group C if the saturated hydraulic conductivity of all soil layers within 100 centimeters [40 inches] of the surface exceeds 0.40 micrometers per second (0.06 inches per hour) but is less than 4.0 micrometers per second (0.57 inches per hour).

Based on the literature, DEP does not believe that adding 8 inches of sand to the upper layer of soil will change the HSG. This defect in the modeling must therefore be corrected before the

Stormwater Pollution Prevention Plan (SWPPP) can be approved, and should be corrected in the FEIS.

Response: The Applicant does not agree that the topsoil layer will not function as a better-drained B soil. Nonetheless, as a conservative measure, the stormwater model has been adjusted to assume hydrologic group C soils in all areas of the golf course. With the adjustment, the project continues to meet NYCDEP and NYSDEC stormwater management design requirements, including the sizing of stormwater management devices.

Section 18-39(c)(6) of the Watershed Regulations describes the "20% Rule" concerning requirements for treatment practices in series based on imperviousness. The applicant appears to have misinterpreted this requirement and, in any event, has not provided the analysis necessary to determine whether this section of the regulations is applicable. Section 7.0 of the SDEIS, titled Stormwater Management Plan and Design Process - Water Quality Volume Calculations, states:

As part of the above calculation, the percent of impervious area within each drainage area is also calculated. This is used not only to determine the WQv, but also to identify additional DEP treatment requirements above and beyond what is required by DEC, in accordance with DEP's April 2010 updated regulations. Section 18-39(c)(6) of the April 2010 DEP regulations states that if impervious surfaces cover from that drainage area shall be treated by two different types of stormwater management practices in series. Based on our analysis of this DEP requirement and its relationship to DEC's SMDM requirements, it is our understanding that the calculation to determine the percentage of impervious area is performed at the design point which defines the contributing drainage area.

The 20% rule applies to the contributing drainage area to the stormwater practice, not the design point. Proper application of Section 18-39(c)(6) may have a significant impact on project layout and overall density of development. Potential impacts associated with this issue must be addressed. **M3637**

<u>Response:</u> *Based on conversations with NYCDEP, the 20% rule applies to 'standard' stormwater management practices, and does not apply to Green Infrastructure (GI) Practices or Standard Practices with RRv capacity. The GI and RRv practices included in this project are Bioretention Areas, Dry Swales, Green Roofs, Cisterns (Pond IP), and Stormwater Planters. All proposed standard stormwater management ponds have less than 20% of impervious area within their contributing watersheds as listed below:*
Pond AC – 12.35% contributing impervious area.
Pond L – 19.92% contributing impervious area.
Pond K – 10.53% contributing impervious area.
Pond H – 13.18% contributing impervious area.

(2) Drawing L-8.01, entitled "Site Details," presents specific information for the proposed stormwater management practices. Although the details for the stormwater ponds are present, there are no details provided for the bioretention areas, stormwater planters, or dry swales. Without specific elevation and sizing details, the use and effectiveness of these stormwater

management practices cannot be evaluated and verified. The final EIS should include a revised SWPPP providing those details.

Response: Construction details for proposed bioretention areas, stormwater planters and dry swales are clearly included on sheet L-8.01 included with the SDEIS. The details adequately demonstrate methods and materials required for proper construction. Each one of these practices has specifically been sized and incorporated into the grading and drainage plans at anticipated elevations to ensure feasibility, functionality and compatibility with the overall plan. Detailed information regarding sizing, outlet elevations, and other design criteria are included within the HydroCAD model data in the Stormwater Management Design Report (SDEIS Appendix 18), which is an Appendix to the project SWPPP (SDEIS Appendix 19). Construction documents will include this same detailed information, along with any other detailed specifications, in a way that clearly conveys to a Contractor the specific construction requirements of each stormwater practice. The draft individual SPDES stormwater permit issued for the project by NYSDEC requires submission of detailed construction drawing for each phase of the development for DEC review and approval prior to beginning construction on each phase (draft permit II.B.3).

The DSEIS contains a detailed analysis of Stormwater Quality in Appendix 19 and pollutant loads were calculated for total phosphorous and total suspended solids. Page 48 of the SWPPP summarizes their results. But missing from the analysis is a discussion or calculations regarding other nutrients such as nitrogen, pesticides, salts (snow management plan), and hydrocarbons. These should be included in a revised SWPPP in the final EIS.

Response: The final scoping document was very specific in its requirement for assessing phosphorus loading (scoping document Attachment B-2(I)(3)). This was based, in large part, by the detailed analysis of phosphorus loading that occurred during the Issues Conference and that was addressed in the Agreement in Principle. In fact the requirements for loading analyses in the final scoping document were taken directly from the Agreement in Principle. The final scoping document also required that loadings be assessed in accordance with 10NYCRR section 128-3.9 (scoping document Attachment B-2(I)(5)). In the SWPPP Requirements section of these regulations the only loading assessment required is for coliform loading when a project is located in a terminal NY City water supply reservoir drainage. This project is not located in a terminal water supply reservoir drainage.

The New York State Stormwater Management Design Manual, which are the Department's design standards for stormwater management, does not require a pollutant load analysis but rather specifies the sizing criteria and allowable treatment practices that are to be used to achieve the water quality treatment objectives of the SPDES permit. The project has selected and sized treatment practices in accordance with the requirements of the New York State Stormwater Management Design Manual such that stormwater is managed effectively with concern for pollutant removals and protection of water quality.

Section 6.2.1 of the SWPPP describes the soil restoration measures that will be performed on site. All disturbed, "compacted", soils in the area of development are required to be de-compacted after construction activities have been completed as per the NYSSWMDM, August

2010, pages 5-20 through 5-24, to restore their water infiltrating characteristics. Table 3 on page 24 of the SWPPP shows the restoration requirements for specific soil disturbances. Soil restoration is critical to the post construction condition of the site. Areas requiring soil restoration should be designated on the drawings as well as in the text of the revised SWPPP as part of the final EIS. Failure to provide soil restoration voids ALL the hydrology analysis and calculations for water quality treatment volume (WQv).

Response: It is not necessary, or practical at this time to identify/designate specific areas on a plan where soil restoration is to be performed. Areas requiring restoration will vary based on the project phasing and the actual sequence and execution of construction. The performance standards included in the SWPPP which explain the soil restoration requirements, (all disturbed compacted areas), are adequate and clearly convey the requirements that must be followed by the contractor. In accordance with the SWPPP and the eventual Individual Permit, both the Owner and the Contractor must certify that they understand and agree to comply with the terms and conditions of the SWPPP along with corrective actions identified/required by a Qualified Inspector/Independent Stormwater Monitor.

The SWPPP describes on site timber clearing operations (Appendix 19, section 6.1.4). These operations include the removal of marketable timber, chipping brush, limb wood, and other woody debris, and potentially burying stumps and debris onsite (page 2-37). However, no mention of burying stumps is made on the drawings and no waste areas are designated to receive this woody material. Due to the forested nature of a large majority of this site, a substantial quantity of woody debris may result. Woody debris storage and disposal areas should be designated and detailed in the revised SWPPP and shown on the detailed drawings L-4.00 thru L-4.09, Grading and Drainage Plan.

Response: Burial of woody debris will not be outside the designated limits of disturbance, which are clearly indicated on the plans, and must not affect or modify the proposed conditions indicated on the plans. Burial of woody material will not result in potential additional environmental impacts.

There are many locations on these drawings where no rock outlet protection (ROP) is shown at the outlets of swales that enter ponds or sediment basins, outlet from these structures and, in some cases, discharge into natural wetlands. These should be shown with rock gradation. Many lengths of conveyance swales are shown on steep to very steep slopes. Swales on slopes steeper than 5% should be lined with a Turf Reinforcement Mat (TRM) if the swale is cut in soil. Swales steeper than 10% should be stone-lined. These locations should be identified on the drawings and a summary table prepared to quantify the work.

All culvert outlets should show an ROP with specific rock gradations.

Response: Rock outlet protection is proposed at all swale, pipe, and basin discharge points where flow rates and the potential for erosion is a concern. Additional clarifying information has been added to the grading and drainage plans and additional performance standards have been added to pertinent details on sheets L-8.00 and L-8.01. Updated versions of these sheets can be found in the errata section of this FEIS.

All slopes excavated or constructed should be labeled on the drawings.

Response: All proposed earthwork is clearly indicated on the Grading and Drainage Plans, which, in accordance with the scoping document, were prepared at a scale of 1 inch equal to 50 feet and using a 2-foot contour interval.

Waste areas should be established for the placement and burial of all stumps from the clearing and grubbing operations. A note should be added to the E&S Plans that states that all stumps should be disposed at these designated waste areas.

Response: See the response to the substantively similar comment regarding woody debris above.

Wetland Barriers should be identified where they will be placed rather than use of just the symbol for silt fence.

Response: A symbol and label for Wetland Protection Fence has been added to the appropriate Erosion and Sediment Control Plans, sheets L-3.08 – L-3.13 and updated sheets are included in the errata section of this FEIS.

Many swales, rock outlets, and all dispersion pipes are shown outside of the designated work areas shown on the E&S Plan drawings. The work limits should include these areas since result in a significant amount of work and, in many cases, soil and vegetative disturbance. Once these limits have been revised, the work area table on sheet L-3.01 and Table 11 of the SWPPP, should be corrected accordingly.

Response: The work limits shown on the plans have been re-verified to ensure all disturbance is accounted for, and any necessary updates to the corresponding work area tables have been included in an updated sheet L-3.01and SWPPP Table 11, both of which are included in the Errata section of this FEIS. Dispersion pipes are not typically included in the disturbance areas since these pipes will be manually laid on existing ground and staked into place with little to no soil disturbance.

Diversions and swales are typically designed for specific flows and lined accordingly. There should be a table on the drawings that summarizes these practices, their dimensions, and specific lining as needed.

Response: Sizing criteria, stabilization criteria and other performance standards have been added to the construction detail for proposed temporary diversion swale. (Detail 7 on Sheet L-8.00 included in the errata section of this FEIS)

Silt fence is shown on many drawings running across contour lines even though the notes on the drawings state that the silt fence shall be installed on the contour. These locations should be corrected.

Response: The silt fence symbol is a graphic representation used to indicate the areas where silt fence is required. As indicated, the notes on the plans require the contractor to install the silt fence parallel to the contours. An additional note has been added to the silt fence construction detail (detail 2 on sheet L-8.00 in the errata section of this FEIS) to further clarify this requirement. Final placement of silt fence will be reviewed and approved by the Qualified Inspector/Independent Stormwater Monitor as part of their regular inspections. As a result, additional modification of the silt fence symbol on the plans is not necessary.

The concrete batch plant and rock crusher site should have a detailed E&S plan prepared for its specific operation. Material that could possibly be washed off this area should be controlled at this location.

Response: Appropriate sediment and erosion controls are proposed for this portion of the site. Should further enhancement or additional practices be warranted during construction the Independent Stormwater Monitor will direct that they be employed and document their use and maintenance as part of the required SWPPP updates and record keeping.

It appears that a few sediment basins have the potential to short circuit due to the site flow entering the basin close to the discharge outlet. This should be corrected with a barrier to re-route the flow to a longer flow path to the outlet.

Response: Sediment basins will be dewatered with a pump with a turbidity meter into a dispersion pipe, and not over a traditional outlet. (See detail 1 on sheet L-8.01in the errata section of this FEIS). Therefore, maximizing flow path within the basin is not a concern and a barrier is not applicable.

It appears that a catch basin will be needed on sheet L-4.04 in order to collect flow from 2 swales and then carry it under the golf fairway. **S3592**

Response: A catch basin is not proposed at this location. The pipe inlet is located at a natural collection area in the existing terrain, and the swales will discharge directly into a flared end section at the end of the pipe.

(2a) While the proposed projects look to follow the AIP's Stormwater Protocols, they fall short. The modified resort plan, the UMP and the Cumulative Impacts Analysis are lacking in a number of areas, including: much-needed details on the specifics of their stormwater pollution prevention plans (SWPPP) such as the source of all pollutants and the pre- and post-development loads; expanded analysis of nutrient loadings, including nitrogen and pesticides; detailed analysis of the snow removal plan; adequate detailing of erosion and sediment control measures, and addressing the cumulative impacts of stormwater. **O3634**

Response: See the responses to the substantively similar comments above.

(2b) I also have concerns about the environmental effects of the resultant stormwater runoff and sources of pollution. **I3498**

Response: See the responses to the substantively similar comments above.

(3). . .at the sole stormwater discharge point to a tributary of Emory Brook (Design Point 10) the pre-development peak discharge is 39.56 cubic feet per second (“cfs”) and the post- development peak discharge is 42.75 cfs for the one-year storm, which is an increase of 3.19 cfs above pre-development peak runoff conditions.

We recommend that the Final SEIS be modified to enhance stormwater controls discharging to Design Point 10 to reduce the post-development peak discharge to 39.56 cfs or less to bring the project into compliance with the provisions of the 2007 conceptual agreement.

Response: ~~The stormwater management plan has been modified to reduce the post-development peak rate at design point 10 to pre-development conditions. See the errata section of this FEIS.~~ The Stormwater Management Report (updated February 2014) indicates that for all design points, the peak discharge rate does not increase from existing conditions. The project meets the requirements of the New York State Stormwater Design Manual (NYSSMDM) requirements such that stormwater is managed effectively with concern for erosion, flooding and impairment of water quality. The stormwater management plan has been modified to reduce the post-development peak rate at design point 10 to pre-development conditions. See the errata section of this FEIS.

a. The basis for the changes in the HydroCAD model within Design Point 10, specifically the increase in impervious area from the SDEIS to the FELS in both the pre and post development conditions was the result of an accounting oversight. There was also a small change to the stormwater design and routing which resulted in a change to the contributing inflow area at the design point.

b. When addressing the issue that was originally raised, (in the SDEIS, at DP 10 post development flows were greater than pre-development in 1-yr event), all accounting of cover types and subcatchment area takeoffs were re-examined, including impervious areas within the watershed of DP-10.

c. During this process, it was discovered that approx. 32,500 sf of impervious area within subcatchment 10, (specifically the section of CR-49a within subcatchment 10), was included as pervious cover when it should have been included as impervious cover.

d. In the FEIS, the accounting was corrected resulting in a greater amount of impervious area in both the pre and post development conditions, and correspondingly a greater % of impervious cover.

e. Additionally, an adjustment was made to the stormwater design in the FEIS to reduce the amount of impervious area draining to DP-10, that resulted in less acreage and less impervious area draining to DP-10 in the post development condition.

f. The area including the intersection of CR-49a and the Belleayre Ski Area Access Road (subcatchment 70c) is proposed to be collected in a catch basin on CR-49a and conveyed through pipes connected to CB#133 and eventually to DP-11.

g. In the FEIS, this design adjustment resulted in a reduction of inflow area to DP-10 of approx. 1.3 acres

The Stormwater Pollution Prevention Plans ("SWPPPs") for the proposed projects fail to include cold climate considerations. Because there are cold climate requirements that are currently unaddressed in project design documents, stormwater impacts could result at both the Belleayre Mountain Ski Center and the Belleayre resort development site.

The 2010 Design Manual addresses special design requirements for cold climate regions of New York State. For each stormwater management practice ("SMP") described, the manual includes a summary of design modifications necessary to address concerns with the use of that SMP in cold climates. Winter conditions in regions of New York State, such as the Catskill Mountains, require adjustments to both water quality and water quantity sizing criteria for stormwater management practices for cold climates. In light of these requirements, CEA concluded that unaddressed cold climate requirements could result in stormwater impacts at the Ski Center and Belleayre Resort sites because of inadequate sizing for bioretention area drainpipes in the Belleayre Ski Center DEIS's SWPPP, because of improper winter maintenance requirements for porous pavement in the Belleayre Ski Center DEIS's SWPPP, because of failure to address cold climate requirements for maintenance of SMPs in both the Belleayre Ski Center DEIS and Modified Resort SDEIS SWPPPs, and because of potential flooding due to freezing of improperly placed inlet pipes in detention ponds in both SWPPPs.

Recommendation # 2: To minimize or avoid these impacts, we recommend that, to insure compliance with the State Environmental Quality Review Act ("SEQRA") and provide information necessary for determining the projects' potential environmental impacts, the SWPPPs should be updated and stormwater management systems designed in accordance with the cold climate requirements in the 2010 Design Manual.

Response: The following Cold Climate considerations are included in the Pond designs:

- *All ponds receive inflow via overland or open swale conveyance, and not via pipe inlets, eliminating freezing potential at pond inlets.*
- *There is a minimum of 12" of storage volume above the permanent pool WQv.*
- *Extended detention is provided at every pond.*
- *Hooded inlets are used at pond outlet structures.*

For bioretention and open swale devices, a minimum ~~6~~8" underdrain within a 12" gravel bed is included to promote drainage and reduce the likelihood of pipe freezing. The underdrain will see very little flow and is generally provided as a redundant measure to ensure the device will drain in a timely fashion. A 4" pipe is more than adequate to facilitate drainage, and therefore upsizing the pipe to a 8~~6~~" to alleviate freezing concerns is appropriate.

With regards to maintenance, the project SWPPP lists specific maintenance activities to be carried out including the removal of sediment from ponds and catch basins, to minimize cumulative sediment deposition from road sanding. It also specifies required maintenance *practices for green infrastructure practices including those necessary to alleviate cold climate concerns.*

The Modified Project fails to meet the requirement contained in the AIP for peak flow attenuation of the 1-year storm from the area of the Modified Project that discharges to Design Point 10. Exhibit F, Section J of the AIP requires that the proposed peak runoff to any individual water body receiving stormwater discharge not exceed the pre-development peak runoff rates for the 1, 10, 25, and 100-year design storms. At Design Point 10, which is the sole stormwater discharge to an unnamed tributary of Emory Brook, the pre-development peak discharge is 39.56 cubic feet per second (cfs) and the post-development peak discharge is 42.75 cfs for the one-year storm. The SDEIS fails to identify the impacts of post development peak flow at this point that is larger than pre- development peak flow for the 1-year storm. The stormwater controls in the area that discharge to Design Point 10 are required to be modified to meet the requirements contained in the AIP.

Response: See the response to the substantively similar comment on page 88 above. The stormwater management plan has been modified to reduce the post-development peak rate at design point 10 to pre-development conditions.

The SDEIS SWPPP and the UMP SWPPP contain a number of inadequacies, listed below, in meeting the cold climate requirements from the 2010 SMDM. The bioretention areas at the Modified Project are designed with only a 6-inch diameter underdrain pipe based on the details in drawing L-8.01. The larger diameter pipes required for cold weather climates help to prevent freezing. Frozen underdrain pipes can lead to overflow from the bioretention areas and a failure to meet water quality requirements and peak flow attenuation, which will result in a decrease in the water quality of receiving waters.

The SDEIS and UMP SWPPPs fail to discuss cold climate maintenance considerations for micro-pool extended detention ponds, dry/vegetated swales, bioretention areas, and wet extended detention ponds. Failure to perform proper maintenance can result in SMPs failing to perform as required.

The drawings provided in both the UMP and the SDEIS SWPPPs are insufficient to determine whether the influent pipes to the detention ponds at the BMSC and the micro-pool extended detention ponds at the Modified Project discharge above the water surface as required for pond designs in cold climates. Submerged inlet pipes can freeze and result in stormwater being unable to enter the ponds and possibly result in flooding. **O3650**

Response: The following Cold Climate considerations are included in the Pond designs:

- *All ponds receive inflow via overland or open swale conveyance, and not via pipe inlets, eliminating freezing potential at pond inlets.*
- *There is a minimum of 12" of storage volume above the permanent pool WQv.*
- *Extended detention is provided at every pond.*
- *Hooded inlets are used at pond outlet structures.*

For bioretention and open swale devices, a minimum 8~~6~~" underdrain within a 12" gravel bed is included to promote drainage and reduce the likelihood of pipe freezing. The underdrain will see very little flow and is generally provided as a redundant measure to ensure the device will drain in a timely fashion. A 4" pipe is more than adequate to facilitate drainage, and therefore upsizing the pipe to a ~~6~~8" to alleviate freezing concerns is appropriate.

With regards to maintenance, the project SWPPP lists specific maintenance activities to be carried out including the removal of sediment from ponds and catch basins, to minimize cumulative sediment deposition from road sanding. It also specifies required maintenance practices for green infrastructure practices including those necessary to alleviate cold climate concerns.

(3a) My second concern is with the lack of data for an evaluation of the storm water issue. I understand that is a major conclusion of CEA, the Sierra Club's engineering consultant. I am told that the professional report states the following, "The UMP, CIA and SDEIS are missing pieces of information that are essential to CEA's review and make a thorough and adequate review of potential stormwater impacts from the projects impossible." Although I am a retired civil engineer and have not reviewed this aspect of the documents myself, finding this sentiment in a professional engineering report is a serious red flag for me. I request that you give careful consideration to their criticism when it is submitted. **I3316**

Response: All substantive comments regarding stormwater have been addressed in this FEIS.

(3b) Design all of the SMPs for the projects in accordance with the cold climate considerations detailed in the 2010 SMDM. The 2010 SMDM greatly expanded the requirements for the use of green technologies in controlling stormwater compared to the 2008 SMDM, and it included a new provision known as the Runoff Reduction Volume (RRV). By not instituting the requirements of the 2010 SMDM in all areas of the BMSC, the UMP SWPPP cannot fully assess the impacts of stormwater on the surrounding ecosystem.

Response: This portion of this comment pertains only to the BMSC SWPPP. For the modified project all areas were designed in accordance with the 2010 Manual.

Design the stormwater controls in the areas draining Point 10 of the Modified Project so that the post-development peak discharge equals the pre-development peak discharge for the one-year storm.

Response: Per the response to the substantively similar comment above, the stormwater management plan has been modified to reduce the post-development peak rate at design point 10 to pre-development conditions.

Describe the intensity or frequency of the flooding that will result from rainfall coupled with snowmelt and fully evaluate the potential impacts, such as increased soil erosion, damage to roads, and property damage from flooding. We are especially concerned with the flooding of Rt.49A that appears to have been inadequately addressed.

Response: Proposed stormwater management devices have been designed in accordance with the 2010 NYSSMDM to address Overbank Flood and Extreme Flood performance criteria. Stormwater devices also include Cold Climate design considerations such as including a minimum of 12" of additional storage volume above the permanent pool WQv and including extended detention storage volume. See the response to comment 4, below, regarding County Route 49A.

Proposed stormwater management devices have been designed in accordance with the 2010 NYSSMDM to address Overbank Flood and Extreme Flood performance criteria. Stormwater devices also include Cold Climate design considerations such as including a minimum of 12" of additional storage volume above the permanent pool WQv and including extended detention storage volume. Refer to the response to similar comment (4) below in regards to CR-49A.

Include climate change modeling of all stormwater related events that take into account presumed increases in rainfall as global weather patterns intensify with a warming planet.

Response: The project stormwater management plan has been designed in accordance with the current (2010) NYSSMDM and NYCDEP requirements.

Better assess, based upon the revised analysis enumerated above, the impact that stormwater from the Belleayre proposals will have on the Pepacton Reservoir, the Ashokan Reservoir, and ultimately the drinking water for 9 million people. The cost of filtration for NYC water supply as a result of contamination would far exceed the economic benefit from an overscaled development. **O3638**

Response: The modified project does not drain to the Ashokan Reservoir. The modified project has been designed to meet NYSDEC and NYCDEP requirements for stormwater quantity and quality.

(4) One key issue identified by Sterling regards the existing drainage system associated with CR-49A. After walking the length of CR-49A, Sterling discovered that the culverts and ditches currently located along CR-49A are not adequate for existing conditions. Before the impacts of the Highmount Resort and new ski terrain and facilities are added to the mix. Sterling found evidence of current excess flow across the roadway in a number of instances. Moreover, Sterling noted that at least one of the major culverts upon which Crossroads was relying for stormwater control was considerably smaller than the size used in Crossroads' models. Such errors completely distort any data produced by the models.

Any further analysis must disclose results with the model inputs correctly sized to actual, existing stormwater infrastructure,

Response: The Modified Project does not increase the flow rates going to existing culverts, nor is the Modified Project relying on existing culverts for stormwater control. All necessary stormwater control is provided on-site in stormwater management devices upstream of the existing culverts.

As agreed upon by NYCDEP, NYSDEC, the Applicant and other involved agencies and NGOs, stormwater flow rates are analyzed at the existing culvert inlets. By analyzing flows at the culvert inlets, and not increasing flows at these inlets, the size of the culvert, whether it is adequate in the current condition or not, is irrelevant and does not impact the results of the stormwater analysis.

The Modified Project includes plans for the reconstruction of the CR-49A corridor as indicated on the 'General Improvement Plans' for CR-49A included in the SDEIS. These plans have been supplemented for the FEIS and provide additional information regarding drainage improvements to correct current inadequate conditions along CR-49A. The updated plans are included in the errata section of this FEIS. In addition to the road improvements, these plans anticipate ditch and culvert improvements along 49A to address any existing inadequate drainage issues. Rock outlet protection has also been added in areas of concentrated flow.

The stormwater model included in SDEIS Appendix 18 has been supplemented to include a more detailed analysis of conditions along CR-49A. This includes modeling the existing ditch along CR-49A and the culverts that convey flow under CR-49A. The size of all existing culverts and ditches were field re-verified for this FEIS and found to be consistently accurate with few exceptions. Revised modeling information can be found in the Stormwater Management Design Report in the errata section of this FEIS.

Crossroads' analysis did not address downstream effects from the Resort. This failure is significant because Sterling found that under certain conditions, Crossroads' stormwater control plan actually concentrates flow which would create major impacts to downstream properties.

Response: The project stormwater management plan has been designed in accordance with the current (2010) NYSSMDM and NYCDEP requirements. This includes meeting Overbank Flood and Extreme Flood performance criteria, which requires post development peak discharge flow rates to be less than or equal to pre-development rates at pre-determined analysis points, prior to reaching downstream properties.

Sterling found misapplications of calculation procedures, incorrect inputs, and a failure to heed key messages that the HydroCAD program uses to provide feedback and notify the user that the calculations might be invalid. Id. As a result, predicted volumes and peak flow rates to the stormwater retention pond are artificially attenuated leading to a proposed pond that is too small to mitigate expected stormwater flows. Id. Expanding that pond however, might be difficult. Sterling estimates that in order to expand the pond horizontally, while maintaining the same depth, the storage volume would need to be increased by approximately 194%. Id. These are serious issues that must be thoroughly evaluated, using proper inputs to the HydroCAD model, running the models correctly, and responding to important messages that arise in the model.

Response: All stormwater conveyance measures and stormwater management ponds have been sized correctly in order to meet NYCDEP/NYSDEC requirements. The HydroCAD model has been re-examined and minor adjustments have been made to address specific messages generated by the modeling software. Specifically, there was one location where a modeling input was inadvertently overlooked, and was not updated to match the current SDEIS plans.

This oversight has been corrected and this correction addressed the 'messages' generated by the software. With these adjustments, the stormwater management pond continues to provide adequate treatment and attenuation without requiring a change in size, and NYCDEP and NYSDEC stormwater management requirements continue to be met. Additional technical information is provided in responses below and in the Modified Stormwater Management Design Report in the errata section of this FEIS.

The analyses conducted by the applicant do not adequately evaluate the culverts under CR-49A. The Resort Storm Water Pollution Prevention Plan (SWPPP) mis-identifies the size and construction of the critical large culvert at design point DP6, below the Highmount Ski Area. The analyses do not consider the potential for storms to occur in close succession, which tends to cause major flooding and erosion. Nor do the analyses evaluate how runoff in excess of the capacity of the recommended stormwater management controls will be handled. Although the applications claim to adequately mitigate adverse stormwater impacts with respect to peak flow rates, flow concentration and volume increases remain potential problems. The likelihood that excessive runoff will cause or contribute to degradation of water quality or cause increased erosion is not evaluated.

Response: The specific locations where existing and proposed stormwater model data would be analyzed were agreed upon by NYCDEP, NYSDEC, the Applicant and other involved agencies and NGOs. Along CR-49A, the chosen locations are at the existing culvert entrances so that the size of the culvert, whether it is adequate in the current condition or not, will not potentially impact the data produced. Since the purpose of the model was to compare conditions at the culvert entrances, the sizes of the culverts were not included.

The project stormwater management plan has been designed in accordance with the current (2010) NYSSMDM and NYCDEP requirements. This includes meeting Overbank Flood and Extreme Flood performance criteria, which requires post development peak discharge flow rates to be less than or equal to pre-development rates at pre-determined analysis points (in this case culvert entrances), prior to reaching downstream properties. The existing field conditions were field re-verified and found to be consistently accurate with few exceptions. The improvements to the conveyance channel along CR-49A will provide additional storage so that runoff will discharge through the road culverts as intended rather than spilling over and overtopping the road. The concrete weirs within the channel improvements will direct the flow from smaller storms to the road culverts without spilling over the channel and onto the road. Higher storms will be allowed to continue in the conveyance channel at controlled rates such that the discharge rates at all design points do not exceed the existing rates. The proposed improvements have been modeled in HydroCAD with no increases in rate or volume predicted for DP 6. With regards to stormwater runoff volume, refer to similar comment addressed immediately following this comment.

NYSDEC and NYCDEP stormwater management criteria are in place to prevent excessive runoff, address potential impacts to water quality and minimize the potential for increased erosion. By meeting these requirements, the project has adequately addressed these issues. The analyses that support this are included in the Stormwater Management Report and the Stormwater Pollution Prevention Plan.

The total area draining to the CR-49A culvert below Highmount will increase by approximately 220%, and with the increased area and impervious cover, the volume of stormwater runoff draining to this culvert is predicted to increase by up to 310%, which conflicts with the Agreement in Principal that states "implementation of the operational phase Stormwater Management Plan will result in no net increase in runoff volume to existing drainageways."

Response: Changes to the contributing drainage areas for each design point along CR-49A has been minimized to the greatest extent practicable. In accordance with the 2010 NYSSMDM, the Modified Project meets the runoff reduction volume criteria by using Green Infrastructure practices, specifically green roofs at Highmount, to minimize and/or reduce the potential increase in runoff volume resulting from proposed construction of impervious areas. The proposed hotel & spa includes a green roof while the activity center and conference center includes bio retention practices. Green infrastructure practices are proposed throughout the project with 12 of the 15 design points reporting the peak rate of runoff as well as the total volume for all storm events to be at or below those for the existing condition. Green infrastructure practices are designed to reduce the volume of runoff associated with impervious surfaces. The project also meets/exceeds the NYSDEC Channel Protection Volume requirements, which are designed to protect stream channels from erosion. Additionally, in the post development condition, project stormwater runoff volume is less than or equal to the pre-development condition during the 1-yr storm event, which is the storm event used to measure channel protection volume requirements. Based on the information above along with HydroCAD model and supporting calculations, there will be no net increase in runoff volume resulting from the proposed project. All of this information is provided in the updated Stormwater Management Report that is in the errata section of this FEIS.

The stormwater calculations contain inaccurate and questionable assumptions and modeling and design errors. For example, the Highmount computer model developed by the applicant actually indicates that, as designed, runoff from a significant portion of the development would overflow a critical culvert, bypassing the stormwater pond intended to mitigate runoff from the site.

Response: All stormwater conveyance measures have been sized appropriately and no stormwater runoff intended to be conveyed to the stormwater management pond at the base of the Highmount development will bypass the pond. ~~Refer to more specific, similar comments addressing modeling below.~~ It is important to keep in mind that there are 15 design points associated with this project. Peak flow rates and volumes are predicted to remain the same or decrease all design points with the exception of the three design points. For those three design points, the peak rate of discharge (the key indicator for downstream flooding) is decreased for all storm events. With regard to the increased volume, the NYSSMDM contains runoff reduction and channel protection requirements to address these concerns. Runoff reduction of the 90th percentile storm[4]. "Site limitations" are defined as site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock and soils with an

[4] This is the calculated volume of runoff that would be generated for the 90th percentile storm. Reduction of the volume associated with these frequent storm events is intended to address the water quality issues due to the increased volume and duration of storms) using green infrastructure practices that infiltrate, evapotranspirate or reuse stormwater runoff is required unless there are site limitations that prevent retention of 100% of the Water Quality Volume (WQv

infiltration rate of less than 0.5 inches per hour. In cases where site limitations are present, the NYSSMDM provides for a minimum volume that must be retained on site based on the soil types present. The NYSSMDM also requires a 24 hour extended detention of the one year storm (the one year storm in the area of the project is approximately 2.8 inches) from developed areas to prevent channel erosion. The project complies with the requirements set forth in the NYSSMDM for both runoff reduction and channel protection at the design points specified. The following is a detailed discussion of each of the design points mentioned above:

> *DP4: Development in the subwatersheds draining to Design Point 4 is approximately 14 acres with 8.52 acres impervious cover created in roads, townhomes and the Highmount hotel. Green infrastructure (in the form of a 6.88 acre green roof on the hotel) will effectively reduce runoff from 80% of the impervious cover created within this watershed. This exceeds the minimum runoff reduction requirements of the NYSSMDM. The remaining runoff is directed to a pond that will provide sufficient storage and outlet controls to reduce the rate of runoff associated with the 1-year storm to 0.44 cfs. This meets the channel protection requirements. The predicted rate of runoff a DP 4 is 4.31 cfs with 90% of the runoff attributed to the undeveloped portion.*
>
> *DP7: Development in the subwatersheds draining to Design Point 7 makes up approximately 28 acres of the 152 acres total acres draining to this design point. Of the 28 acres of developed land runoff from 10.98 acres will be managed in open swales that reduce the 1-year runoff and volume and 1.44 acres is managed with porous pavement. Forty-four percent of the developed area is managed with a green infrastructure practice. This exceeds the minimum runoff reduction requirements. Areas that are not directed to a green infrastructure practice are captured in a pond that contains sufficient storage and outlet controls to meet reduce the rate of discharge to 0.4 cfs to meet the channel protection requirements of the NYSSMDM. The predicted rate of runoff to DP 7 is 58.61 cfs mainly resulting from the undeveloped portion.*
>
> *DP11: Post developed acres draining to design point 11 are 90.970 acres with 14 acres of impervious area. Sixty percent of the watershed draining to this design point will be developed. Controls are provided in the form of an irrigation pond and open channels that will result in zero discharge from these areas during the 1 year event. This far exceeds the requirements for runoff reduction and channel protection required by the NYSSMDM.*

Grading and drainage changes for the Highmount development results in a significant shifting of stormwater runoff to different design points. For example, the total area draining to Design Point DP4 will increase by approximately 220%.

Response: The contributing drainage areas to all design points below the proposed Highmount development along CR-49A, including DP-4, have been adjusted where possible so that changes to the contributing drainage areas for each design point are minimized to the greatest extent practicable. Refer to the updated Stormwater Management Design Report included in the errata section of this FEIS for detailed calculations.

With the increased drainage area and impervious cover resulting from the Highmount development, the volume of stormwater runoff draining to DP4 is predicted to increase by up to 310%. This conflicts with the Agreement in Principal that states *"Implementation of the operational phase Stormwater Management Plan will result in no net increase in runoff volume to existing drainageways."* Accordingly, any storm that exceeds the standard design storm conditions evaluated in the Stormwater Pollution Prevention Plan (SWPPP) will not be mitigated by stormwater BMPs and will result in peak flows above existing conditions downstream.

Response: Changes to the contributing drainage areas for each design point along CR-49A have been minimized to the greatest extent practicable. In accordance with the 2010 NYSSMDM, the Modified Project meets the runoff reduction volume criteria by using Green Infrastructure Practices, specifically green roofs at Highmount, to minimize and/or reduce the potential increase in runoff volume resulting from proposed construction of impervious areas. The project also meets/exceeds the NYSDEC Channel Protection Volume requirements, which are designed to protect stream channels from erosion. Additionally, in the post development condition, project stormwater runoff volume is less than or equal to the pre-development condition during the 1-yr storm event, which is the storm event used to measure channel protection volume requirements. Based on the information above along with HydroCAD model and supporting calculations, there will be no net increase in runoff volume resulting from the proposed project. All of this information is provided in the updated Stormwater Management Report in the errata section of this FEIS.

The stormwater analyses did not address downstream effects of runoff from the proposed development, despite the fact that the stormwater models and field observations indicate that the culverts and ditches along CR-49A are inadequate even for current, existing conditions. Exhibit F, Item J.5., of the Agreement in Principle states that *"The drainage system will be designed so that it will not adversely affect downstream or adjacent properties."* The projects as proposed will exacerbate the unacceptable existing conditions.

Response: The proposed project includes plans for the reconstruction of the CR-49A corridor as indicated on the 'General Improvement Plans' for CR-49A included in the SDEIS. These plans have been supplemented for the FEIS and provide additional information regarding drainage improvements to correct current inadequate conditions along CR-49A. See the errata section of this FEIS. In addition to the road improvements, these plans anticipate ditch and culvert improvements along 49A to address any existing inadequate drainage issues. Refer to comments addressed above for additional information.

The stormwater models predict that storms equivalent to the 1-yr design storm or greater cause culverts along CR-49A to overtop, and that all culverts under CR-49A downstream from High mount (DP2 through DP6a) are predicted to overflow from the 10-year and higher design storms. However, the analyses do not evaluate the magnitude or impact of overflows.

In addition, the models assume that the roadside ditch along CR-49A (4 foot top width x 2 feet deep) is much larger in cross section than it is in reality (actual conditions vary, but upon field inspection, nowhere was it observed to be equivalent to the hydrologic model). This modeling approach does not accurately predict runoff conditions along CR-49A.

Response: The stormwater model included in SDEIS Appendix 18 has been supplemented to include a more detailed analysis of conditions along CR-49A. This includes modeling the existing ditch along CR-49A and the culverts that convey flow under CR-49A. The size of all existing culverts and ditches were field re-verified for this FEIS and found to be consistently accurate with few exceptions. In our professional opinion, the supplemental information provided is the most accurate way to model the existing condition.

The modeling approach and routing was generated to be as accurate as the model will allow, understanding that there are limits to the amount of variables that can be entered. For example, the downhill slope of the roadway and the road cross pitch back towards the road ditch adjacent to DP's 4 through 5A would prevent any flow overtopping culverts at these design points to flow over the road and down the embankment on the other side. Instead, water that overflowed the ditch in this location would flow onto the road and be directed back into the ditch further downhill. The simplest way to model this condition is to create a secondary weir outlet with a reasonable width and an elevation based on the height of the road shoulder in relation to the ditch that allows flow to continue down the ditchline once it reaches a certain elevation. At locations where the slope of the road would be flat enough to allow overflow to get all the way over the road, (DP2 and DP6 and 6A), a secondary weir outlet would direct flow over the road instead of back into the ditch. When modeling the existing condition using field measured ditch dimensions and the weir overflow approach, if the capacity of the reach/ditch is exceeded this establishes the fact that the ditch is undersized. In the model, the specific location where this happens is at Reach 7 between Design points 5A and 6. However in order to get the most accurate results of peak flows at downstream design points, the size of the ditch must be increased until it has adequate capacity. Specifically, HydroCAD states: "For accuracy, you *must* extend the stage-storage data in order to prevent extrapolation".

The results of this supplemental analysis are included in the Modified Stormwater Management Report included with this FEIS. In general, it shows that in the existing condition during the 1-yr storm event most flow is conveyed through the culverts with a very small amount bypassing the culverts and continuing down the ditch. In the 10-yr event the model shows larger flow volumes exceeding the capacity of the existing culverts and continuing down the ditchline. As mentioned in previous comment responses above, reconstruction of the stormwater conveyance system is anticipated as part of the 49A reconstruction even though the project is not increasing peak rates going to the existing culverts.

The general approach is to increase the capacity of the uphill ditch to adequately convey the 10-yr storm event, and equally distribute flow into the culverts that currently cross under CR-49A so that rates are equal to or less than the existing condition in all modeled storm events. At Design Points 4, 5 and 5a, the culverts will be replaced but the size and location of the culverts will not change. At each culvert an engineered structure, such as a concrete weir will distribute flow from smaller storm events through the culverts, (replicating the existing condition), and allow flows that exceed the capacity of the culvert to flow over the weir in a controlled fashion into the ditch downstream without flowing onto the road. According to the model, in the existing condition the culverts at design points 6 and 6A exceed their capacity during the 10-yr event. Even though post-development flow rates are not increased at these locations over pre-

development levels, these culverts are proposed to be replaced with larger culverts. See the revised drawings in the errata section of this FEIS. The model indicates that flow rates will not increase at either of these design points after the new culverts are installed.

The ditch in the proposed condition will be lined with rip rap to provide further energy dissipation, and outlet protection will be provided specifically by lining of the existing outlet channel with rip rap. Since post development peak flow rates at each outlet point will be less than the predevelopment rates, the potential for erosion and flooding will not increase. However as additional mitigation, the existing flow paths the slopes at the culvert outlets will be lined with rip rap to the limits of disturbance from roadway reconstruction, to provide additional energy dissipation. Refer to the updated County Route 49A improvement plans included in the errata section of this FEIS.

This approach and supplemental data has been added to the Stormwater Model and is included in the Modified Stormwater Management Design Report in the errata section of this FEIS. The results of the analysis conclude that NYCDEP and NYSDEC stormwater management requirements have been met.

The UMP and Resort Individual SPDES permits do not require evaluation of design stom1s of greater magnitude than those ordinarily required for coverage under the General SPDES Permit for Construction Activity. Hurricane Irene was classified as a "200 yr., 1-day" storm at the nearest weather station, located at Slide Mountain, New York.

An analysis and recommended mitigation should be provided for stom1s of greater magnitude in order to protect the delicate environ, downstream citizens, and public water supply reservoirs. Further, the management and control of runoff (runoff exceeding the capacity of engineered controls) requires careful planning. An evaluation of how the drainageways and steep slope environments will be protected once runoff exceeds the capacity of control devices and BMPs should be provided.

Response: The design storms evaluated for the stormwater management analysis are in accordance with NYCDEP and NYSDEC requirements. The Stormwater Management Design Report in the errata section of this FEIS includes detailed evaluation of all existing and proposed drainage components. Additionally, the draft stormwater permit for the Modified Belleayre Resort is an individual permit, required due to the construction on steep slopes, and as a result is specific to the project site.

The Modified Belleayre Resort stormwater management system has been designed, in accordance with the Design Manual, such that post-development stormwater would leave the site at the same rate as it does now in the pre-development state (i.e., peak flow attenuation). The project was modified to include improvements to the conveyance channel along CR-49A to address the issue related to flooding in the existing condition. The proposed improvements have been modeled in HydroCAD with no increases in rate or volume predicted for DP 6. The objective of the peak flow attenuation requirement is to maintain the rate at which stormwater would leave the site under the ten year 24 hour storm event (defined as a 24 hour storm event that has a 10% chance of occurring in any one year) and the 100 year 24 hour storm event (defined as a 24 hour storm which has a 1% chance of occurring in any one year). In accordance *with the NYS Stormwater Management Design Manual, which are the Department's design standards for stormwater management, the stormwater management system must attenuate the increased peak rate of flow to the predevelopment flow rate. This is accomplished through the construction of detention, or retention, ponds and by utilizing green infrastructure (e.g.. the use of green roofs at the Highmount Spa) that holds back stormwater runoff thereby allowing water to be discharged at the same rate as it is discharged in the pre-development stage but over a longer period of time to account for the increased volume of stormwater. The system, overall, has been designed to attenuate the post-development peak rate of runoff for the ten and 100 year storm events to pre-development rates thereby ensuring that impacts to waterbodies will be no greater than they are under the existing conditions*

The SWPPP design and permit requirements account for the one, ten, and 100 year 24 hour storm events as a "Type II" storm, which represents the most intense, short duration rainfall of the types of storms that would likely occur in the vicinity of the project. Storms, such as Hurricane Irene and Tropical Storm Lee, which, in some areas, exceeded the 100 year 24 hour storm event, are beyond the scope and authority of the SPDES requirements. There is no regulatory requirement to mitigate for storms that exceed the 100 year storm event, and to attempt to do so would be unreasonable since the probability of storms occurring (that exceed the 100 year storm event) in the project area is so low.

The post-construction detention ponds need to maintain sufficient storage capacity to attenuate a 100 year storm event, which is a requirement of the design manual. In the event of an overflow, water will be safely conveyed from the pond through emergency overflow spillways. This design criteria is intended to prevent catastrophic failure of the pond.

Despite that the computer models appear to be set up to direct culver1 overflows to the next downstream culvert, presumably via the CR-49A roadside ditch, the model is set up in a way that does not separate culvert now from overflow -the model simply reports the total now draining to each design point. As discussed in Section 2.2, the predicted flow from most design storms exceeds the physical capacity of the culverts. Evaluation of flows overtopping the road, overflowing to continue along the roadside ditch, as well as culvert discharge velocities, must be sufficiently evaluated to protect the roadway and the steep sensitive slopes and watersheds downstream.

Response: ~~Refer to substantially similar comments addressed above.~~ Refer to substantially similar comments addressed above. Additionally, the HydroCAD Model dated February 21, 2014 (Appendix 18 of the FEIS) predicts that, in the existing condition, runoff will overtop Route County Route 49A (CR-49A) during the 10 year event. Therefore, the project was modified to include improvements to the conveyance channel along Route CR-49A. These improvements will flatten the side slopes of the conveyance channel and includes concrete weirs at each culvert that will act as a flow splitter to distribute flow from the smaller storm events through the culverts and allow larger flows to continue in the channel without overtopping the road during the 25 year event. The predicted flow rates at each culvert are predicted to be at or below the existing flow rates for each event analyzed. The response to comments portion (stormwater) of the FEIS for the Belleayre Resort at Catskill Park contains a discussion of the CR-49A redesign.

The Resort project SWPPP mis-identifies the size and construction of the critical large culvert at design point DP6, below the Highmount Ski Area, as a 52" diameter concrete culvert, when it actually is a corrugated steel pipe-arch culvert (38" high x 57" wide). The hydrologic models also do not account for an existing 12" diameter culvert between DP6 and DP6a, which discharges to the Rainone property immediately east of the driveway bridge. This 12" diameter culvert appears to receive overflow from the culverts on either side, one of which is the 38" diameter pipe-arch culvert (DP6). Consideration of the actual size and capacity of ditches, culverts and discharge points is critical in any stormwater impact analysis.

Response: Refer to substantially similar comments addressed above. As part of this FEIS all drainage components were re-examined in the field and these conditions are included in the updated Stormwater Management Design Report included in the errata section of this FEIS.

Hydrologic calculations for the Highmount and Wildacres West developments incorporate inappropriate "node" types to simulate culvert flow behavior as stom1water runoff is routed through the computer model. For example, in the Highmount HydroCAD model, node "452R" is used as a "Reach" type node for the 12" diameter culverts underneath the northernmost Duplex Lodging Units. This is inappropriate because HydroCAD "Reach" nodes arc typically used for open channel now, and cannot respond to tailwater conditions, pipe entrance losses, or pressure flow (pipe flowing full under pressure at the inlet). As a consequence, HydroCAD restricts now through a Reach to the non-pressurized, "normal" flow capacity of the structure, artificially detaining the flow and truncating flows higher than that capacity.

Response: The HydroCAD model has been adjusted to incorporate a 'pond/catch basin' node in lieu of a 'reach' node at 452R. The pipe has been sized appropriately and adequately conveys runoff through the system to the stormwater management pond. Additionally, the reach routing method within the model has been adjusted to address varying tailwater conditions.

The 86.88 cubic feet per second (cfs) peak inflow is artificially detained and attenuated by the Reach node, and passed through tl1e culvert at a much reduced rate of 8.73 cfs over a longer period of time. As a result, the hydrograph representing stormwater flow from upstream areas and structures is not properly routed through the culvert to the stormwater pond that is supposed to be designed to mitigate peak flows from the project, resulting in the pond being designed too small. Furthermore, the modeling results for this node indicate that the inlet to the 12" diameter driveway culvert will flood, discharging unmitigated peak stormwater flows toward CR-49A to the north, bypassing the engineered stormwater pond. Sterling estimates that the overflow at this point for the 100-year design storm would be approximately 79 cfs, discharging to an extremely steep embankment slope proposed to be I (V):2(H). or 50% grade. The existing forested slopes beneath that point are nearly 50% grade all the way down to CR-49A.

Through evaluation of Sterling's reconstruction of the Highmount stormwater calculations, Sterling's estimates that the driveway culvert would have to be at least 48" in diameter to pass the 86.88 cfs stormwater flow without overtopping. As discussed above, the pond is too small as currently proposed and must be redesigned once the stormwater models are corrected. Sterling calculates that if the proposed stormwater pond is expanded horizontally, keeping the same depth as originally designed, the storage volume would need to be increased by approximately 194%, resulting in a pond urea approximately 182% greater than currently proposed.

Response: The adjustments noted in the previous response above eliminates the issues raised in the two comments above, and satisfies relevant messages generated by HydroCAD and noted below. With this adjustment, the stormwater management ponds continue to provide adequate treatment and attenuation without a change in size, and NYCDEP and NYSDEC stormwater management requirements continue to be met. Refer to the Modified Stormwater Management Report for supporting information.

Indications of problems with this node should have shown up in HydroCAD's Message window every time the model was run, as the program provides feedback on the model being evaluated to notify the user that the calculations may be invalid, and that certain assumptions and modeling procedures should be examined. Accordingly, the error could have been corrected had the stormwater model designer reviewed and evaluated all the messages reported by HydroCAD. Sterling's reconstruction of the Highmount HydroCAD model indicates the following calculation messages for node "Reach 452R" when evaluating the 100-year design storm, along with the specific details (including advice) provided by HydroCAD's extensive help system (BOLD added for emphasis):

Response: The adjustments noted in the previous responses above eliminate the issues raised and resolves relevant messages generated by HydroCAD and noted below. With this adjustment, the stormwater management ponds continue to provide adequate treatment and attenuation without a change in size, and NYCDEP and NYSDEC stormwater management requirements continue to be met. Refer to the Modified Stormwater Management Report for supporting information.

Message: [52] Hint: Reach 452R Inlet/Outlet conditions not evaluated
Details: Reach routing calculations assume normal flow conditions in the channel or pipe. The software does not evaluate reach inlet conditions or tailwater, although these may often be a controlling factor. If you wish to consider entrance losses, pressure flow, or other conditions for a pipe, It should be modeled as a pond with a culvert outlet. You can automatically convert a pipe reach to a pond with Node! Convert to Pond.

Message: [55] Hint: Reach 452R Peak inflow is 996% of Manning's capacity
Details: The reach is operating above its Manning's normal flow capacity but has not overtopped.

This may be acceptable depending on the design criteria.

Message:
[62] Hint: Reach 452R Exceeded Reach 434C OUTLET depth by 0.71'@ 16.68 hrs.

Details:
At some lime during the routing, the node's water surface elevation has exceeded the flow depth at the reach outlet, but always remained below the inlet depth. The message indicates the maximum amount of exceedance and the time at which it occurred. This message indicates that

part of the reach has been "flooded out" by the downstream node. IMPORTANT: The reach routing calculations are not automatically changed to accommodate this situation, even though it may reduce the actual reach discharge. The routing continues to be performed as if the reach were operating under normal Manning's flow with no tailwater influence. Since these basic routing assumptions may no longer be valid, an alternate routing method or modeling technique may be required. The user is responsible for adjusting the model in any way that is deemed necessary to accommodate this situation.

Message:
[76] Warning: Reach 452R Detained 1.809 af (Pond w/culvert advised)

Details:
A pipe reach has filled with water, causing the flow to be limited and the excess volume to be detained without head. IMPORTANT: Pipe reach calculations assume normal-flow conditions in the pipe. If you wish to consider entrance losses, pressure flow, or other conditions, the pipe should be modeled as a pond with a culvert outlet.

In developing the Highmount stormwater model, the designer did not heed the software messages. As a result, the incorrect use of the Reach node artificially attenuates the predicted volume and peak flow rate of stormwater flowing to the pond, resulting in the pond being designed to be too small to mitigate stormwater 11ows as required by the Agreement in Principal and NYSDEC design requirements.

As the details highlighted above instruct, node 452R should have been modeled as a pond with a culvert outlet, unless justified by an engineering assessment. Sterling strongly recommends that all HydroCAD output reports for both projects include all calculation messages, along with an engineering assessment of the validity of each Hint and Warning.

Response: Refer to response above.

The Time of Concentration (Tc) utilized in the HydroCAD model for the Highmount green roof calculations is greater than the value that appears to be recommended by the manufacturer. Appendix C of the Modified Belleayre Resort Stormwater Management Design Report (Appendix 18 of the SDEIS) contains runoff worksheets from the manufacturer with a Tc value of 6 minute~. The HydroCAD calculations use a Tc value of 9 minutes. STERLING estimates that the peak flow from the 100-ycar design storm flowing from the Highmount Spa green roof would increase by approximately II % if a Tc value of 6 minutes was used.

Response: Runoff data for the proposed green roofs was provided by the manufacturer and included in the stormwater report in SDEIS Appendix 18. In HydroCAD, the green roof is modeled to replicate these conditions so that the outflow data (rate and volume) in the model matches the manufacturer's information. In order to achieve this result, the time of concentration value is set accordingly. The end result is that the model correctly replicates the flow data provided by the manufacturer.

(4A) There are significant problems with the stormwater control analysis. **O3635**

Response: Refer to substantially similar comments addressed above.

(5) None of the SWPPP calculations account for changing hydrologic conditions from reconditioning the former Highmount ski area or the proposed new ski trails between Belleayre and Highmount underneath the proposed "Belleayre West Lift", which is part of the catchment area above the three (3) critical culverts discussed above and the proposed golf course. Clearing and grading of ski trails will result in some degree of change in the runoff characteristics of the stormwater catchment areas, but is not evaluated in the SWPPP. The proposed new ski trails represent a significant portion, almost 13%, of the drainage area (not including the existing Highmount ski trails). Clearing and grading the proposed new ski trails and reconditioning the former Highmount trails will change the hydrologic characteristics of the drainage areas, and should be properly evaluated. **I2130, H82**

Response: The proposed changes to the Highmount Ski Area are documented in Subcatchments 19 and 20 in the Highmount HydroCAD model prepared for the MBRCP SDEIS (Part B) (Appendix 18) and do not result in changes in the predicted runoff when compared to the existing condition. The change in land use associated with the clearing of brush from trails, as well as the grading associated with the replacement of the existing lift and improvements to the existing access road will not result in a change of the hydrologic condition or drainage patterns of the watershed.

According to DEC plans, ski trail grading at Highmount is limited to the 'cross connector trail' which traverses Highmount from the work road back to Belleayre – and here they only show limited information and very little detail (5' topo and basic cross sections) They do not indicate any drainage improvements other than waterbars on the trails, which one would not enter into the model.

Additionally, DEC shows grading improvements at the base of Highmount including retaining walls and a wetland mitigation area. Their improvements impact several wetlands, however there are no drainage improvements indicated. There is a large culvert at the edge of their proposed improvement that currently drains (uphill wetlands) to 49A that (a) should probably be addressed as is and (b) will be impacted by both DEC plans AND CR-49A improvement plans. This culvert drains to one of our design points (6a) that currently, according to the model, overflows Rt. 49A.

The re-establishment of the ski trails and lift at Highmount is consistent with the proposed drainage improvements along CR-49A. As plans are finalized for the replacement of the ski lift and associated wetland mitigation, additional drainage improvements will be investigated to further mitigate the existing condition.

(6) There will be too much Volume from cleared high slopes. There are natural limits to water absorption for soils, especially thin soils here. The velocity of the flow can be controlled with greater expense to the developer... but the Volume cannot. **I2151**

Response: The project meets NYSDEC and DEP requirements. ~~The issue of volume was addressed in response to comment 3.1.1(4) above.~~ The Department recognizes the environmental impacts resulting from the increased rate and volumes associated with new development. While the NYSSMDM has always addressed the peak rate of flow, it was updated in 2010 to include additional requirements to address the environmental concerns associated with the increased volume of runoff by requiring the use of green infrastructure practices that infiltrate, evapotranspirate or reuse stormwater runoff. Among other things, green infrastructure practices are intended to address the erosive potential associated with the increased duration of flow and thermal impacts associated with new development. The project incorporates green infrastructure practices such as green roofs, bioretention, open swales, porous pavement and captures and reuses stormwater for irrigation. The project complies with the requirements contained in the NYSSMDM intended to address the increased volume associated with development.

Concerns relating to thermal loading were considered in the selection of stormwater management practice. "Mircopool Extended Detention Ponds" are primarily used throughout the plan instead of other treatment devices, which could potentially result in increased stream temperatures. Green infrastructure practices such as green roofs, bioretention, dry swales and water reuse reduce the amount of stormwater that would be required to pond, and potentially warm, prior to being discharged. Even though 24 hours of extended detention of the 1 yr. storm event is required, using these practices and the Micropool Extended Detention Ponds minimize the potential for thermal loading. The issue of volume is further addressed in response to comment 3.1.1(4) above.

(7) On the matter of developer expense, there is no maintenance plan post construction for porous pavement, nor for detention ponds, nor for dry swales, nor for the bio-retention area. **I2151**

Response: Post construction maintenance practices for all BMP's are included in SDEIS Appendix 19 (SWPPP), Section 8.2.

(8) SDEIS Drawing PN6 shows the stormwater discharge pipe crossing Ulster County's Ulster & Delaware railroad corridor, without any indication about permitting. Instances such as this have been noted on the drawings throughout the project. Many stormwater detention ponds appear not to match with HydroCAD programming, in terms of detention times, reference flows, discharge weirs, and dewatering times. In the northwest section of the project, stormwater enters and exits detention ponds without the proper detention time: it goes in one pipe and directly out the exit pipe.

Response: Drawing PN6 is a water supply and wastewater conveyance plan, not a stormwater plan. The design points at the railroad are existing crossings.

Stormwater detention ponds have been designed in accordance with the current (2010) NYSSMDM and NYCDEP requirements. Specific information can be found within the HydroCAD data in SDEIS Appendix 18. Construction details for the ponds show typical conditions and include performance standards for meeting criteria presented in the model. Additional specific detail is included where applicable, such as on the Outlet Control Structure Detail, #6 on sheet L8.01, which specifies elevations and dimensions that are generated from the HydroCAD model data.

The SDEIS treats phosphorus as the main chemical of concern, yet other chemical constituents found in stormwater are also of concern. Examples of some typical chemical constituents that could be carcinogenic, mutagenic, or teratogenic include total suspended solids, total phosphorus, soluble phosphorus, total nitrogen, total kjedhal nitrogen, nitrite and nitrate, copper, lead, zinc, BOD, COD, organic carbon, polycyclic aromatic hydrocarbons (PAHs), oil and grease, fecal coliform, fecal strep, and chloride. These pollutants can have an adverse effect on the environment, yet they aren't discussed in the SDEIS, and no standards for their levels on and off-site are referenced relative to National Median Concentrations.

Response: See the response to the substantively similar comment 3.1.1(2) above regarding loading assessments.

Questions of concern: How will pollutants affect water temperature?

Response: Typical "pollutants" do not cause water temperatures to rise. Absorption of light by increased solids in water could potentially cause very slight increases in temperature. Table 9 in the project SWPPP in SDEIS appendix 19 (section 6.3) shows that TSS can be expected to decrease as a result of the project, so water temperature will not be affected.

How much nitrogen will the golf course produce in runoff?

Response: As per DEIS appendix 15 section 4.4, total nitrogen levels in runoff from fertilized golf course turf were projected to rarely be above 1 mg/l.

Given the relationship of impervious surface to runoff, will the phosphorus level exceed state recommended guideline values of 20 micrograms/liter?

Response: Applying the phosphorus export coefficients given in Table 5 of SDEIS Appendix 19, runoff levels will not exceed 20 mg/l. As per Table 5, the USEPA and DEP total phosphorus (TP) export coefficient for impervious surfaces is 0.26 mg/l.

And if the monitoring group finds the guideline will be exceeded, what is the tolerance that should be allowed? What is the plan of action that will be taken should the guideline be exceeded?

Response: As per the previous response, it is essentially impossible for the 20 mg/l guideline to be exceeded. It is unclear what "the monitoring group" in this comment is referring to. Any monitoring requirements for the project will be the responsibility of regulatory agencies to assign and not the responsibility of the applicant.

How will the presence of trace metals, such as arsenic, affect the benthic conditions?

Response: Arsenic is commonly found at naturally elevated levels in groundwater in many locations in the Catskills. In the project area groundwater frequently reaches the ground *surface as springs that then become surface flow that local fauna are exposed to. There are no project components that will result in increased arsenic levels in surface waters.*

While page *vii* of the SDEIS states that "With the exception of a very small portion of the Wildacres site (+/- 12 acres), storm water discharges to the sensitive Ashokan Reservoir and Watershed Basin have been eliminated," stormwater, perhaps in very substantial volumes, does flow down County Route 49A into the Ashokan basin. In addition, new wastewater discharges to the Ashokan Reservoir and Watershed Basin have been added through the transfer of sewage from buildings in the Delaware watershed to the Pine Hill WWTP. Moreover, the Pepacton Reservoir and the Delaware watershed basin are also connected to the New York City water supply, and all storm water discharges must be dealt with according to the NYS storm water manual guidelines.

Response: With the exception of the 12 acres noted in the comment, drainage from the resort project is within the Pepacton watershed. See SDEIS section 2.4 and section 2.4 of this FEIS that discuss discharge of project wastewater to the Pine Hill WWTP. The SDEIS and this FEIS clearly state in a number of locations that the resort project has, in its entirety, been designed in accordance with the 2010 design manual.

Since 2011 EPA has been planning to issue new national stormwater rules ("Shaping EPA's New Stormwater Regulation," by Stephen Elkind and Benjamin Cady, Stormwater, October 2012: http://www.stormh2o.com/SW/Articles/Shaping_EPAs_New_Stormwater_Regulations_J 8848.aspx).How will these new national stormwater regulations be taken into account and what reflection will it have on the permitting process? To the extent possible, design of the resort and ski center should anticipate and comply with the new regulations.

Response: The project has been designed in accordance with current standards that exist today.

Most of the test pits do not indicate a seasonal high water table: why is that? What criteria or method has been used in each instance for determining the seasonal high water table? Incidentally, the map legend title box spells "series" wrong for the soil series. It should also be noted that the date when the seasonal high water table was determined was "11\29." Late fall is the wrong season for the best method practical to perform this test, resulting in erroneous data and conclusions.

Response: No seasonal high water table in a test pit log indicates that characteristics of a seasonal high water table were not observed anywhere in the exposed soil profile. Test pits were typically excavated to a depth of 8 feet unless refusal (typically bedrock) was encountered. Seasonal high water tables can be documented by direct observation as seeps in the test pit wall or indirectly by the presence of reduced chroma soil colors in the exposed soil profile caused by seasonal soil saturation. These low chroma soils indicative of a perched water table are long-term and persistent characteristics that are present throughout the year. Seeps do not need to be present at the seasonal high water table level in order to document where in the soil profile the level occurs (if one is present at the test location).

A related problem involves what curve number was used; for example, were several curve numbers averaged into one subcategory or was each subcategory taken and calculated in and only given one curve number? A single subcategory generally will only have one peak, but if you add multiple subcategories together, you might produce what is called a multi-peak hydrograph.

Response: Appropriate curve numbers were assigned to each specific covertype and input into the HydroCAD modeling software. The software then generates a weighted average for each drainage area. This modeling approach and the HydroCAD software are accepted industry standards, and an acceptable method recognized by reviewing regulatory agencies.

Based on the contradictions in the soil types as shown on the sheets, how was the hydrologic soil group determined?

Response: Section 3.3 of the SDEIS and this FEIS describe the soil mapping procedures used for this project, including input from Ulster and Delaware County NRCS offices and the USDA NRCS NY State Soil Scientist. The Hydrologic soil groups were determined as part of a high intensity soil survey and mapping, performed by Professional Soil Scientist/Soil Classifier based on the characteristics of the soil series' observed through on-site testing and published information.

Was a weighted queue overflow option combination used to produce the total runoff for an entire sub catchment?

Response: Runoff for each subcatchment or drainage area was calculated using HydroCAD stormwater modeling software. HydroCAD combines the most-used capabilities of TR-20 and TR-55, which are runoff calculation procedures developed by the Soils Conservation Service, (now the Natural Resources Conservation Service). Specifically, for this project, runoff is calculated using the SCS/NRCS unit hydrograph procedure, also known as TR-20. This modeling approach and the HydroCAD software are accepted industry standards, and an acceptable method recognized by reviewing Regulatory Agencies.

What was the curve number value used for special conditions, such as the green roof?

Response: The curve number used for the green roof is 72. The curve number for this application was provided by the manufacturer of the green roof based on their calculations, research and testing of their product. Specific Green Roof calculation data is provided in SDEIS Appendix 18.

Where are the pollutant loading calculations shown for the green roofs?
SDEIS Appendix 19, Section 6.3. Tables 6 and 7 provide the pollutant loading calculations for all design points. The green roofs are in design point 4 and are included as being under the "vacant land" category.

Is artificial turf used on any of the golf course areas?

Response: Artificial turf is not used on any portion of the golf course.

How was the curve number determined in any porous pavement areas? Could you provide the curve numbers that were used over the entire project? Could you also provide the time of concentration for each sub catchment? If reach modeling was used, could those details be provided?

Response: The curve number utilized for porous pavement areas is 74, which is the same CN value utilized for Grass cover with a Hydrologic Soil Group 'C'. This is a very conservative approach since water will infiltrate porous pavement almost instantaneously, where on grassy areas it will take a bit longer, thereby generating more runoff. The calculation data, assumptions and methodology used in the stormwater management analysis mentioned in the comment, including curve numbers, hydrological soil groups, rainfall events, green roof runoff, times of concentrations, reach types, etc., is included in SDEIS Appendix 18, Stormwater Management Report.

Was the runoff as a result from snowmaking considered in the equation (model of melting snow, no rainfall effects, incorporated and how)?

Response: NYSDEC considered the potential impacts of snowmaking on stormwater runoff in Section 4.3 of their UMP and concluded that snowmelt would not negatively impact existing conditions. Refer to Section 4.3 of the Belleayre Mountain Ski Center UMP/DEIS for additional information.

In modeling rainfall runoff from a snowpack what was the antecedent moisture condition set to? Where is that data? Was climate change taken into account in the precipitation data and if so, how?

The antecedent moisture condition was set to two. All calculation data can be found in SDEIS Appendix 18, Stormwater Management Report. The project stormwater management plan has been designed in accordance with the current (2010) NYSSMDM and NYCDEP requirements, which includes cold climate design considerations.

Precipitation data used for the stormwater management analysis in the SDEIS is mandated by the New York State Stormwater Management Design Manual (NYSDEC) and by NYCDEP Rules and Regulations.

Was the calculation of "time span" long enough to cover all flows of interest?

Response: Yes. The time span is set at 96 hours, which is enough to cover flows of interest.

Were the dam and pond areas included in your sub catchment, or was a separate subcategory produced?

Response: All pond areas are included either within a larger subcatchment, or as their own subcatchment.

Again, if we really do not understand what soils we have, it is very difficult to calculate a runoff depth, which is a direct function of the precipitation depth and the curve number. We are not able to determine the exact curve number unless we have determined accurately the hydrologic soil group. Were any of the runoff hydrographs generated based on the rational method? If so, please provide the non-volume sensitive routing calculations and indicate why it was calculated in this manner.

Response: As indicated in the response above, runoff for was calculated using HydroCAD stormwater modeling software. HydroCAD combines the most-used capabilities of TR-20 and TR-55, which are runoff calculation procedures developed by the Soils conservation Service, (now the Natural Resources Conservation Service). Specifically for this project, runoff is calculated using the SCS/NRCS unit hydrograph procedure, also known as TR-20. This modeling approach and the HydroCAD software are accepted industry standards, and an acceptable method recognized by reviewing Regulatory Agencies.

Have the urban stormwater loads been calculated using the simple method (Shuler, 1987) to estimate pollutant load from the development site and drainage area? Although this is not the most accurate method to use, *it* gives you some indication; in this case, the simple method indicates that the figures stated in the design plan are underestimated. Were the concrete, gravel, and pavement plants included in this equation?

Response: As per section 6.3 of the SWPPP in SDEIS appendix 19, "To assess the potential for new loadings of total phosphorus and total suspended solids, a calculation method was prepared based on the Washington Metropolitan Council of Governments (Schueler 1987) and NYCDEP Guidance for Phosphorus Offset Pilot Programs (1997).

This calculation protocol was submitted as a part of the issue conference hearing process in 2004 (Crossroads Ventures LLC 2004). Values utilized in the August 2004 submittal were used to prepare the loading estimates for the project"

All permanent project components were included in the loading assessment and used the loading coefficients listed in Table 5 of SDEIS Appendix 19. The rock crushers and concrete batch plants are proposed to be on site temporarily and only during the first few years of construction, and were therefore not included in the operational phase loading calculations.

(9) We find the Rain Event predictions of the SDEIS to be overly optimistic. If anything, history will repeat itself sooner rather than later and with much more environmental destruction. **I213**

Response: The rainfall amounts used in the SDEIS are mandated by the New York State Stormwater Management Design Manual (NYSDEC) and by NYCDEP Rules and Regulations.

(10) We live directly across County Road 49A from the defunct Highmount Ski Center and have oft experienced the adverse effects and damage caused by snowmelt and storm water runoff from that property. We built our house in 1972. In the 70's and 80's we experienced substantial overflows of storm water that washed out our banks on the downhill side of County Road 49A.

One year trees and bushes and earth were moved 60 yards downhill only to be stopped by our tennis court chain link fence. We rebuilt banks, engineered retaining walls, built fences with concrete-based fence posts (cars go off our banks the same as water, and one did in the 8o's before guard rails were installed), filled in dirt and installed drainage pipes capped with a NYC sewer-type plate.

Then came January, 1996's "storm of the century". Highmount had closed in 1993 so there was no snowmaking, only natural snow (and rain). The on-hill drainage system had been compromised when NYNEX dragged a test cell tower module up the hill the summer before, leaving tire tracks where none should be (attracting water like a magnet). Water poured downhill everywhere, taking everything with it that it could. Storm water ditches went over their banks, the tire tracks made new ditches. Culverts clogged, sending all the water over 49A. Our driveway-cut in the snowbank alongside 49A was the low point of the road, so nearly all of Highmount's water went in our driveway, across our bridge and down the hill along the sides of our house. The roaring and abrasive water washed out two ditches, 8 feet deep and 8 feet wide, alongside our house and 100 yards downhill. Trees, shrubs, rock walls, stone paths, extensive perennial plantings and a moss lawn washed away. Our underground phone, electrical and water pipes were left hanging mid-air over one of the ditches.

When everything is normal, water from Highmount is supposed to drain through 2 major and 1 minor culverts into a seasonal stream below 49A and then down to RT 28 and into Emory Brook in Fleishmanns. The two summers after the flood of '96 we had several rainstorms of 2 inches or more. This sent much water (still full of dirt particles, pebbles and rocks from the flood and from the raw slopes of Highmount) down the seasonal stream just below our house. The large volume of Highmount's abrasive water voraciously widened that stream from 2-4 feet to 6-20 feet. It became necessary for us to install rip-rap to stem the tide of seasonal stream erosion...over $10,000 worth of rock (1998 price), plus excavator rental and labor.

Flash forward to the present and future. The drainage is still inadequate at Highmount and Crossroads Ventures has done no maintenance since purchasing it to improve the situation. If Highmount Ski Center is bought by New York State and added to Belleayre Ski Center, adequate drainage must be constructed and installed as part of the trail clearing and lift building and snow making installation. Our overarching concern is the snowmaking, and more precisely, the snowmelt. Highmount Ski Center had very limited water and could make snow for only a day or perhaps part of two, and that was with outdated low capacity guns. Will Belleayre make more snow on Highmount? An educated guess would estimate that Belleayre would make at least twice as much, more likely 3 times as much, or more. WHAT ARE WE, THE RAINONES, GOING TO DO WITH 2-3 TIMES AS MUCH SNOWMELT WATER? What facilities and improvements will be undertaken to control the increased runoff from the snowmelt? Where are the up-to-date engineering analyses and calculations to establish compliance with NYS stormwater regulations, modified to include natural and snowmaking snowmelt, and to assure no adverse impact to person or property?

WE BELIEVE WE MUST HAVE THE ASSURANCE OF NO ADVERSEIMPACT TO US BEFORE ANY TRANSFER OF HIGHMOUNT SKICENTER'S TITLE TO NY STATE. Honestly, we are not sure what can be done? There really is no logical place for an additional large culvert on 49A, nor drainage below. There really is no place for a retaining pond above 49A. Perhaps a sunken silo? But could you sink one deep enough that is big enough? **I2070.**

One of the problems to be denoted here is what curve number was used; for example, were several curve numbers averaged into one subcategory or was each subcategory taken and calculated in and only given one curve number? A single subcategory generally will only have one peak, but if you add multiple subcategories together, you might produce what is called a multi-peak hydrograph. Based on the contradictions in the soil types as shown on the blueprint. how was the hydrologic soil group determined? Was a weighted queue overflow option combination used to produce the total runoff for an entire sub catchment? What was the curve number value used for special conditions, such as the green roof? Where are the pollutant loading calculations located for the green roofs? Is artificial turf used on any of the golf course areas? How was the curve number determined in any porous pavement areas? Could you provide the curve numbers that were used over the entire project? Could you also provide the time of concentration for each sub catchment? If reach modeling was used, could those details be provided? Was the runoff as a result from snowmaking considered in the equation (model of melting snow, no rainfall effects, incorporated and how?)? In modeling rainfall runoff from a snowpack what was the antecedent moisture condition set to? Where is that data? Was climate change taken into account in the precipitation data and if so, how? Was the calculation of "time span" long enough to cover all flows of interest? Were the dam and pond areas included in your sub catchment, or was a separate subcategory produced? Again, if we really do not understand what soils we have, it is very difficult to calculate a runoff depth, which is a direct function of the precipitation depth and the curve number. We really won't be able to determine the exact curve number unless we have determined accurately the hydrologic soil group. Were any of the runoff hydrographs generated based on the rational method? If so, please provide the non-volume sensitive routing calculations and why it was calculated in this manner. **I3506**

Response : While a snowmelt analysis is not required by the current design guidelines, the UMP FEIS has been amended to include the Technical Appendix from the Gore Mountain Ski Center FGEIS (March 1995), which provides a conceptual stormwater and snowmelt analysis. One of the generalized conclusions of this document that can be applied to BMSC is that the amount of rain falling on a snowpack, regardless of the snow depth, does not significantly influence the amount of snow that is melted or the rate of maximum predicted runoff due to snowmelt during the storm events investigated (1-year, 25-year, 50-year and 100-year 24-hour events) was less than 1% of that resulting from the snow-free watershed condition. The 1% increase is further reduced (to the order of 0.2%) when you are dealing with a watershed with little or no impervious area, which is consistent with the re-establishment of the former Highmount Ski Area.

The Proposed stormwater management plan for the Modified Project has been designed in accordance with the 2010 NYSSMDM to address Overbank Flood and Extreme Flood performance criteria. In this case, stormwater flow rates were measured at the inlets, (on the south side), of existing culverts along CR-49A. The stormwater management analysis shows that the Modified Project will not increase flow rates at any of the culvert inlets along CR-49A.

The proposed project also includes plans for the reconstruction of the CR-49A corridor as indicated on the 'General Improvement Plans' for CR-49A included in the errata section of this FEIS. In addition to the road improvements, these plans anticipate ditch and culvert improvements along 49A to address any existing inadequate drainage issues. Refer to similar comments (# 3 and #4) addressed above for additional information.

(11) Has an environmental engineer working for the DEC, part of the policymaker's team, calculated the urban stormwater loads using the simple method (Shuler, 1987) to estimate pollutant load from the development site and drainage area? Although this is not the most accurate method to use, it gives you some indication, and that indication is that the figures stated in the design plan seem to be underestimated. One cannot find where the concrete, gravel, and pavement plants have been included in this equation. Again, one of the many aspects that plague this project, conclusively leading to total rejection of any further consideration of permits.

Another issue that arises is that a new national stormwater rule is going to be issued by the EPA before this project could possibly be considered for permitting. How will this new national stormwater rule be taken into account and what reflection will it have on the permitting process? **I3506.**

Response: Pollutant loadings were recalculated in detail for the modified project using the Modified Simple Method. See SDEIS appendix 19. Each phase of construction will require pre-construction review and individual SPDES permit issuance by NYSDEC who will apply appropriate regulatory standards at those times.

(11a) First, I am very concerned with the lack of research on the effects of the watershed. I live near a non-profit religious organization that recently built a 2,500 sq. ft. common use building. They were held to very high standards as far as water runoff. A large pit was required with a silt filtration system. As far as I could tell, the Belleayre Resort will not be held to any such standards. Is there a double-standard here? Our water should be protected at all costs. Hold the BR to the highest standards! **I400**

Response: The SDEIS contains extensive documentation, in both report form and plan form, on how sediment and erosion control will occur during project construction and on how stormwater management will occur during project operations. For example, see SDEIS Appendices 18 and 19 and drawing sheets L3.00 through L3.21. NYSDEC and NYCDEP are the two primary regulatory agencies responsible for protecting water quality. Both agencies are involved in the SEQRA review of the project, and both agencies will also need to issue permits for the project. NYSDEC issued its draft SPDES permit for Phase 1 construction for public comment along with the project SDEIS.

(12) I am concerned that stormwater management is less stringent for this project than it is for smaller developments. This seems counter-intuitive given the measure scale and potential for environmental impact. **I398**

Response: See the previous response.

(13) Fleischmans, Arkville and Margaretville have already seen heavy damage from runoff events such as Tropical Storm Irene. This would have been much more serious if the resort were already in place. There is less runoff from forest land than there is from grassy surfaces and, worst of all, from impervious surfaces. With the advent of climate change and more frequent severe storms, storm water studies and treatments need to be based on more modern rather than historical data.

Response: Stormwater runoff rates will not increase as a result of the project. Runoff rates are what contribute to flooding.

Although thermal loading is mentioned in the storm water treatment plan, it seems to be associated only with the lowering of the irrigation pond to maintain freeboard. Emory Brook is not only a trout stream, but contains a healthy population of brook trout which are likely a heritage strain. Thermal loading of any run off should be of concern, due to the delicate ecology required by brook trout. **I3538**

Response: See the response to substantively similar comment 3.1(1)

(14) The Galli-Curci Property's proximity to large engineered stormwater retention ponds is an area of specific concern. As the project will direct large volumes of stormwater to the retention ponds, either the inability to contain the stormwater or the failure of the ponds themselves would have severe consequences for the Galli-Curci Property. In fact, the Sterling comments indicate that its analysis shows the possibility that unmitigated peak stormwater flows might bypass the engineered retention pond (Sterling comments at page 12). In such a case, stormwaters could seep through and erode the grounds of the Galli-Curci Property.

(14a) The Galli-Curci Property already suffers from drainage problems and the analysis in the SDEIS does not adequately demonstrate how it would be protected from the new drainage patterns. This is yet another instance where the SDEIS does not separately analyze potential project impacts on property listed on the State and National Registers of Historic Places. **I3535**

Response: The project stormwater management plan and associated detention ponds have been designed in accordance with the current (2010) NYSSMDM and NYCDEP requirements. Additionally in the existing and proposed condition, stormwater from the project site does not discharge to the Galli-Curci Property. In fact the topography in this area directs runoff away from the property. The Sterling comment referenced above is addressed as part of the response to comment 3.1.1(4) above

3.1.2 Sediment and Erosion Control

(1) Significant development is planned on steep slopes and has calculated that, exclusive of skiable terrain, more than 30% of the area to be developed for the Highmount Spa/Resort, consists of slopes steeper than 20%. After construction of Highmount is completed, as proposed, Sterling has estimated that more than 25% of the developed area will consist of slopes greater than 20%, most of which will be very steep slopes built at 1(vertical):2(horizontal), or 50% grade.

Master Plan sheet -1.01 that is part of the SDEIS illustrates how slopes over 20% have, for the most part, been avoided when siting the major project elements, including the Highmount Hotel, the Highmount Lodge and the eight duplex detached lodging unit buildings. Areas of 20% slopes are shaded on sheet L-1.01, and major development component are located in unshaded areas. An earlier design that would have required significant construction on slopes over 20% to build a road to the top of the old Highmount Ski Area was abandoned (see SDEIS section 5.2).

When designing a resort project of this scale in a mountainous region it is an unrealistic expectation that development on some steeper slopes can totally be avoided. On the previously referenced sheet L-1.01 there are areas where slopes greater than 20% are affected. For the most part, these are associated with sections of the access road and the very southeastern portion of the Highmount Hotel. For the most part, disturbance of 20% slopes occurs in multiple, but small areas that can be easily managed during construction to prevent erosion. In accordance with the Agreement in Principle (Item 16), slopes greater than 20% have been avoided to the extent practicable.

Finished grades of 2:1 are not unusual when developing in areas of steeper terrain. Keeping finished grades at 2:1 reduces the foot print of disturbance as compared to finished grades at 3:1 or less. Drawing 3.22 that accompanies the SDEIS provides information on the proposed enhanced sediment and erosion control methods that will be employed to stabilize areas disturbed during construction. Stabilization methods for different slope categories are provided including 2:1-3:1 and 3:1-5:1. Specifications are provided for10+ suitable rolled erosion control products as well as 4+ bonded fiber hydraulic mulches, all of which are designed to provide effective erosion control until vegetation becomes established to provide permanent erosion control.

Excessive erosion is occurring downstream along CR-49A under the current (pre-construction) condition. The applicant's calculations and visible evidence of erosion along the roadway substantiate the fact that culverts under CR-49A are inadequate even for existing conditions. resulting in stormwater runoff overtopping the roadway. Water overtopping the road discharges to the steep erodible slopes downhill of the mad embankment. Numerous locations of erosional damage and washouts of the road shoulders and embankments are evident. The culverts currently have no outlet protection, and none are proposed as part of this project.

Response: See the response to substantively similar comment 3.1.1(4) regarding CR-49A and the drainage improvements that are being proposed. These improvements include enlarging existing ditches so they have adequate capacity, lining them with stone for energy dissipation, and providing rock outlet protection at culvert outlets for additional energy dissipation. *The 2010 NYSDEC Stormwater Management Design Manual provides the option of performing a downstream analysis in order to waive Overbank and Extreme Flood requirementsThe project stormwater management plan has been designed in accordance with the current (2010) NYSSMDM and NYCDEP requirements, including meeting Overbank Flood and Extreme Flood sizing criteria which requires post development peak discharge flow rates to be less than or equal to pre-development rates at agreed upon analysis points prior to reaching downstream properties. For this project, the specific locations where existing and proposed stormwater model data would be analyzed were discussed at* *length, and ultimately agreed upon by NYCDEP, NYSDEC, the Applicant and other involved agencies and NGOs as part of the AIP process and in subsequent technical meetings attended by the same AIP parities.*

Additionally, all existing slopes adjacent to 49A that are disturbed as part of the project will be stabilized with appropriate stabilization measures, such erosion control fabric or other structural controls as specified on SDEIS sheet L-3.26, Final Stabilization Plan. This plan has been supplemented with proposed limits of disturbance/stabilization along CR-49A to illustrate where these practices will be applied, and this supplemented plan is included in the errata section of this FEIS.

Stormwater runoff evaluations in the Resort project indicate that special outfall protection is warranted at the evaluated culvert design points based on permissible design velocities set forth in the New York State Stormwater Design Manual (2010) (NYSSDM) design standards. At a minimum, stabilized vegetation must be established to protect against erosion of drainage channels. The steep forested slopes of the project area with thin cover soils and shallow bedrock provide less than ideal conditions for permanent vegetation in outfall waterways.

Stone or riprap outlet protection, designed in accordance with the New York State Standards and Specifications for Erosion and Sediment Control (2005) (Bluebook), is required where velocities ties resulting from the 10-year design storm exceed permissible velocities of vegetated channels. However, as recognized in the Bluebook.

"Pipe outlet at the top of cuts or on slopes steeper than 10 percent, cannot be protected by rock aprons or riprap sections due to re-concentration of flows and high velocities encountered after the flow leaves the apron."

Accordingly, any culverts discharging stormwater from project areas above slopes steeper than 10% should have engineered energy dissipaters or level spreaders to safely convey stormwater flows in a manner that protects against erosion and resultant damage. This is a common requirement for many development projects within the New York City Watershed. Such measures also help to restore natural drainage patterns downstream from man-made development, which is one of the major goals of the latest revision of the NYSSDM.

However, outfall protection is not proposed at any of the fourteen (14) CR-49A culvert crossings or downstream stormwater evaluation points for the Highmount or Wildacres resorts, even for culverts discharging onto slopes steeper than 10%. With the sensitive soils and steep slopes of the project area and downstream drainageways, outfall protection should be properly evaluated, engineered and constructed for all stormwater conveyance points. Of critical importance, flows concentrated by culverts discharging to steep slopes should be diffused to decrease the erosive power of concentrated runoff and re-establish natural drainage patterns.

Evidence of excess flow across the roadway is obvious at several specific locations along CR-49A, showing soil and gravel on the road, which can impact traffic safety. The downhill road shoulder and embankment has been and will be further eroded in several locations, impacting pavement and soil stability, and decreasing water quality downstream.

All of the CR-49A culverts appear to have discharge velocities in excess of New York State design standards for both existing and proposed conditions, but no outlet protection or flow diffusion/dissipation is proposed to protect the sensitive steep forest slopes. **I2130**

Response: At project design points, (culvert inlets), the stormwater management plan has been designed so that post development peak flow rates at each outlet point will be less than or equal to the predevelopment rates, and therefore the potential for erosion and flooding will not increase as a result of the project. In areas where disturbance will occur at these outfall locations, such as along CR-49A, existing channels at the culvert outlets will be lined with rip rap to the limits of disturbance to provide additional energy dissipation.

Within the project, rock outlet protection is proposed at all swale, pipe, and basin discharge points where flow rates and the potential for erosion is a concern. Additional clarifying information has been added to the grading and drainage plans and additional performance standards have been added to pertinent details on sheets L-8.00 and L-8.01. These amended sheets can be found in the errata section of this FEIS.

Refer to response to comment (1) above, responses to comment 2.8.8(1), and Comments 3.1.1 (2) and (4) for additional information pertinent to outlet protection, slope stabilization and proposed improvements along CR-49A.

(2) This project proposes construction on moderately steep slopes. Regulatory supervision from NYSDEC and NYC DEP to ensure that stormwater mitigation infrastructure is installed correctly and maintained consistently will be critical to preventing significant erosion during and after construction. The Catskill Center calls attention to the independent stormwater monitor required in the Agreement in Principle. **O1776**

Response; See SDEIS 2.8.9(D), Outside Construction Inspection, that includes NYSDEC and NYCDEP. The independent stormwater monitor in relation to the AIP is stated in the Executive Summary (p. xix) and details are provided in SDEIS section 3.1.2 and Appendix 19.

3.1.3 Water Supply

(1) In inspecting the Galli Curci estate area, it is clear that the entire potable water supply system for this historically listed mansion will be greatly impaired and potentially ruined by the construction of the project. The majority of the collection area for the mansion's water supply will be destroyed, with surface and subsurface water destroyed or diverted. The seasonal high water table and the collection system could potentially be obliterated by construction uphill from the mansion. **I3535**

Response: There is no basis to conclude that the water supply sources for the Galli Curci estate will be adversely impacted by the project. Pre and post development runoff will be equal based on the proposed design which will minimize any impact to the surrounding private groundwater water supply wells.

Currently the property is serviced by a spring. Generally speaking springs/surface discharge of groundwater are no longer viewed as a preferred means of supplying potable water to a private residence. To the extent that the spring is dependent upon the groundwater recharge for the area not being significantly affected, the report in the SDEIS by Alpha Geoscience shows that the development will not adversely affect the groundwater regime. All stormwater will be managed in accordance with the requirements of the NYSDEC stormwater design manual. Lastly, according to Crossroads, in the unlikely event that the project has any adverse effect on the spring servicing the mansion, Crossroads Ventures LLC holds title to the adjacent property. That title and the title to the Galli Curci property contain an easement which grants the property holder, Crossroads Ventures LLC an easement onto the Galli Curci property to allow for the drilling of a potable water well to replace the existing spring fed potable water supply for the Galli Curci property. A copy of this title/easement is a public record at the County Clerk's office.

(2) The potential adverse impacts of horizontal directional drilling for the installation of water and sewer lines were not assessed.**O3635**

Response: The methods for directionally drilling by professional contractors are well established and accepted by regulatory agencies and the engineering industry, as the best available practice for avoiding excavation in environmentally sensitive areas including drilling through rock. These methods and measure will be implemented when construction is undertaken.

3.1.4 Wastewater Collection, Treatment and Discharge.

(1) The design flow of 500,000 gpd would be exceeded on a "repeated, sustained basis." Such operation would be in violation of the Pine Hill Waste Water Treatment Plant's ("Pine Hill WWTP") State discharge permit. Moreover, the use of flow equalization tanks would not mitigate this condition.

Several additional issues that require analysis and disclosure, including:

- details regarding installation of the force main along the County road;
- the inappropriate design of the "wet well" which, as proposed, could cause regular backups and clogs;
- the need for a maintenance plan for emergency power operation; and
- the need for proper separation distance of the gravity sewer (located below the Highmount portion of the Resort) and the proposed adjacent stormwater detention pond. **I2130**

Response: There is no evidence that the 500,000 gallon discharge flow will be exceeded. Additionally, the projected flows were determined using the NYSDEC and NYSDEP design standards and reviewed and approved by those regulatory agencies.
The preliminary design drawings show the proposed route for the force main
The final design will be reviewed by the regulatory agencies for conformance with design standards.

The wet well and the pump station will be designed in accordance with State standards which include the Recommended Standards for Wastewater Facilities, Great Lakes – Upper Mississippi

River Board of Provincial Public Health and Environmental Managers, The final design will be reviewed and approved by the appropriate state agencies including New York State Department of Environmental Conservation.

As noted on the preliminary design drawings, all pumping facilities will have back-up power and an O&M plan, which will include preventative maintenance schedule and testing.

When standard separation distances are not feasible, mitigation measures such as providing pressure rated pipe will be used.

(2) Sending all wastewater from the Resort at Belleayre to the Pine Hill Waste Water Treatment Plant may seem to be an easy way out for the resort, but it is not the end of the problem, which is a very complex problem. First of all, this is water that is being removed from the Delaware watershed, transferred and added to the Esopus watershed. Also, this waste water plant is not equipped to treat or remove pharmaceuticals, which will then enter Birch Creek along with the effluent from the plant. Studies have shown these pharmaceuticals to cause anomalies in fish and amphibian reproduction and development, even at extremely low concentrations. Then we come to the problem of effluent temperature and how that will affect the temperature of Birch Creek downstream of the treatment plant. During low flow periods, how will the volume of water in Birch Creek compare to the volume of effluent? During low flow periods the Esopus drainage is already temperature stressed with regard to trout habitat. I see no mention of any of these problems in "Appendix 16 - Preliminary Waste Water Design Report" in the SDEIS from The LA Group. **I3538.**

Response: The Pine Hill WWTP has capacity to accept wastewater from the project and this is preferred over building a separate WWTP to serve the project.

Pharmaceuticals in wastewater is a national issue and the federal and state regulatory agencies have not developed any regulatory or treatment standards. Addressing this national issue is beyond the scope of this project. There is no evidence that pharmaceuticals present in the Pine Hill WWTP effluent poses a threat to trout.

3.1.5 Golf Course Management

(1) The fairway turf selection is questionable. The fairways should be 100% Kentucky bluegrass, not a Kentucky bluegrass/fine fescue mix, and preferably a blend of the newer cultivars tolerant of lower mowing. The Kentucky bluegrass/fine fescue mix would be suitable for primary roughs. Also, chewings fescue is mentioned in the Integrated Turf Management Plan; hard fescues would be a better choice. We suggest that unmowed roughs be seeded with hard fescue.

There is very little discussion of soil specifications and amendments in the Integrated Turf Management Plan. We suggest the addition of compost to tees and fairways if available. The topic of soils and soil amendments during construction should be added to the final EIS.

Response: See the response to earlier comment 2.8.4(1) regarding seeding specifications. This response is also applicable to soil amendment specifications. This is explained in Section 4.1 of SDEIS Appendix 15 entitled Pre-construction Detailed Plans and Specifications.

The cultural practice of rolling should be given a higher priority as it can become an alternative to mowing, and more importantly, allow higher mowing heights on putting green turf while producing similar ball roll and relieving stress. Rolling should be considered as an alternative to mowing greens, perhaps on a rotating basis (every other day) and especially on days when dew is present and shoot growth is minimal.

Response: Management of the golf course will be in accordance with the overall general framework established in the Organic Golf Course Management Plan (OGCMP) in the SDEIS. The specific degree to which various cultural practices, including rolling, will be employed will be the responsibility of the golf course superintendent who will be certified by the Golf Course Superintendents Association of America.

There are several problems with the insecticides listed for use. Two of the products lost EPA registration years ago, ethoprop and bendiocarb.

Response: It is not surprising that some of the insecticides contained in the March 2011 OGCMP may no longer be registered for use on turfgrass in New York State. To reiterate, the OGCMP contained in the SDEIS is intended to be the framework, or the template, for the plan that is implemented and updated annually. The introduction of the OGCMP states,

"This Draft Management Plan has been prepared in accordance with the SEQRA Scoping Document and the Agreement in Principle for the Modified Belleayre Resort at Catskill Park project.

It is intended to serve as a template for the Management Plan to be implemented when the Highmount Golf Club begins operations. The Management Plan will be updated annually.

Prior to the start of operations at the Highmount Golf Club, this Draft Management Plan will be updated to include additional products and technologies that are consistent with the requirements of the Agreement in Principle, and that have become available since the preparation of this Draft Management Plan." *(emphasis added)*

Furthermore, in the very beginning of the OGCMP there is a section entitled "Summary of Current Plan Changes To Previous Year Plan" that must be certified as compliant by the Chairman of the Technical Review Committee. When the plan gets implemented for the first time, it will be the responsibility of the Technical Committee to make sure all components of the plan, including those products that can be considered for use under special use exemptions, are current and up-to-date, and these will be listed in the aforementioned part of the annual plan update. As per the OGCMP in the SDEIS, the majority of the Technical Committee will consists of representatives of NYSDEC, NYCDEP and an NGO.

The portion of the response above regarding being current in regards to insecticide products applies to all types of products including fungicides, herbicides, plant growth regulators, etc.

Two of the products, bifenthrin and lambda cyhalothrin, have similar modes of action. Essentially, there is no difference between the products. Both products control surface insects only, as does the product acephate, which was never widely used on golf courses because of odor problems. Thus, the course operator is left with products with one mode of action and no products for soil-inhabiting insects. The insecticide chlorantraniliprole (Acelepryn ™) should be considered for white grub control. It is listed as a Reduced Risk Pesticide on turf by the Environmental Protection Agency (US EPA, 2010).

There are several very useful fungicide products that are not listed in the Organic Golf Course Management Plan. These include:

- Civitas®
- Zerotol®
- Rhapsody® and Serenade®

In addition, very current research has identified several products that are known to stimulate the turfgrass plants' own defense mechanisms. These products are not considered "organic" controls and how they fit into an organic management plan is unknown, but nevertheless they are worth mentioning. These include:

- Acibenzolar
- Phosphite products

Most of the materials listed as candidate products have systemic modes of action meaning they have to gain entry into the plant before they are effective and are therefore ineffective in combating a sudden turf disease outbreak. There is a need for an effective, fast acting 'contact' fungicide. The most effective and widely used contact fungicide is chlorothalonil with many trade names. Also, combining chlorothalonil with some of the systemic products listed greatly enhances their effectiveness.

There are four products listed for pythium disease control: etridiazole, fosety-Al, mefenoxam, and propamocarb. There is no need for this number of products for a disease that is extremely unlikely to occur and could be controlled with the less risky phosphite products described earlier. Pythium outbreaks occur rapidly in hot, wet weather. The best of these products for rapid action is etridiazole. It is important to note that the use of etridiazole on fairways has been removed from the label (US EPA, 2000). However, pythium does not tend to be as severe on fairways as it is on tees and greens, which are labeled uses for this fungicide.

The applicant may want to consider whether vinclozolin should be kept on the list of conventional pesticide candidates. It has been shown to have antiandrogenic (e.g., Anway et al. 2006) and transgenerational epigenetic sperm effects (Stouder and Paoloni- Giacobino, 2010), albeit at doses significantly higher than would be encountered in the environment. Mefenoxam and trifloxystrobin are both listed as Reduced Risk Pesticides on turf by the EPA (US EPA, 2010). Thus these are preferred candidates if efficacy is not an issue.

Herbicides

Weeds tend to be a major complaint from golfers. The report should reinforce the fact that the best weed control tactic is healthy turfgrass.

Cultural and Organic Controls

One product that should be included is:

- Fiesta®

Candidate Conventional Products

None of the products listed are labeled for use on golf course putting greens. This is not unusual given the sensitive nature of putting green turf, but it should be noted in the management plans. If a broadleaf weed problem is encountered on greens that cannot be mechanically controlled, there is a reduced, low 2,4-D formulation of products on this list called Trimec Bent® that could be used.

The Organic Golf Course Management and Integrated Turf Management plans mention ethofumesate as an herbicide for annual bluegrass control. The product Prograss® is not labeled for use on putting greens. In addition, it is extremely damaging to Kentucky bluegrass. With the high percentage of Kentucky bluegrass on fairways and rough, ethofumesate should not be used anywhere on the course.

There is only one pre-emergent herbicide on the list (dithiopyr) and it is not labeled for putting green use. It would be desirable to add a pre-emergent product such as bensulide to the list. Warm season annual grasses (crabgrass) will probably not be an issue on greens but Poa annua will be encountered.

Plant Growth Regulators

Plant Growth Regulators (PGRs) have become an integral part of golf course turf management. There is no mention of PGRs in the management plans. PGRs provide many benefits, including reduced mowing (reduced carbon footprint). They fit well into an organic management approach.

Response: See the previous response regarding the SDEIS OGCMP being a template that serves as the framework for the plan that will be developed for initial use and updated annually by the Golf Course Technical Review Committee.

The Integrated Turf Management and Organic Golf Course Management Plans state Material Safety Data Sheets (MSDS) of all pesticides used will be readily available on site. However, it does not mention that MSDS sheets for other non-pesticide chemicals stored and/or used at the site will be available. We recommend reviewing OSHA standards to meet MSDS storage and accessibility requirements. **O3650**

Response: MSDS storage and accessibility will meet OSHA requirements. Any pesticides that might be applied will be registered for use in New York State and be applied in accordance with all label directions.

(1a) Consistent with the ETS analysis, we recommend the permit conditions and or/mitigation provisions in the Final SEIS be modified to specify that the fairways use a 100% Kentucky bluegrass blend tolerant of lower mowing, rather than a Kentucky bluegrass/fine fescue mixture, and that the use of chewings fescue be replaced with hard fescue.

Consistent with the ETS analysis, we recommend that the Final SEIS detail the soil specifications expected to be involved, including root zone mixes for tees and any amendments to native soils on fairways. We also recommend that the mitigation provisions in the Final SEIS be modified to specify that compost will be utilized as a soil amendment on tees and fairways.

Consistent with the ETS analysis, we recommend that the mitigation provisions in the Final SEIS be modified to specify that rolling should be used on a rotating basis as an alternative to mowing. We also recommend that the Final SEIS's mitigation provisions be modified so that rolling will not be used to remove dew prior to mowing.

Consistent with the ETS analysis, we recommend that the mitigation provisions in the Final SEIS be modified to remove ethoprop and bendiocarb from the list of proposed insecticides.

Consistent with the ETS analysis, we recommend that the mitigation provisions in the Final SEIS be modified to eliminate the use of either bifenthrin or lambda cyhalothrin.

Consistent with the ETS analysis, we recommend that the Final SEIS be modified to specify that chloroantraniliprole be given a special use exemption to control white grubs.

. . . three additional alternative fungicidal products would help control disease while minimizing environmental impacts: (1) Civitas®, a mineral oil based fungicide with a very wide spectrum of activity including all major turf diseases; (2) Zerotol®, a peroxide-based fungicide, algaecide, and bactericide labeled for many diseases in the SDEIS; and (3) Rhapsody® and Serenade®, both containing the beneficial bacteria *Bacillus subtilis*. ETS also recommends considering two new products which stimulate turfgrass plants' defense mechanisms: (1) Acibenzolar®, available only in combination with the fungicide Daconil® in a product known as Daconil Action, which allows a much lower usage rate of the conventional fungicide; and (2) Phosphite® products, which stimulate plant defenses and are especially effective on Pythium species.

Consistent with the ETS analysis, we recommend that the Final SEIS's mitigation provisions be modified to include an effective contact fungicide such as chlorothalonil.

Consistent with the ETS analysis, we recommend that the mitigation measures in the Final SEIS be modified to specify that Pythium Blight will be controlled by a combination of Phosphite® products and etridiazole.

The SDEIS proposes that vinclozolin be given a special use exemption based on the DEIS ITM Plan. ETS notes that vinclozolin has been shown to have antiandrogenic and transgenerational epigenetic sperm effects at large doses and recommends that the applicant reconsider its use.

ETS recommends including Fiesta®, an iron-based weed control product, to increase the effectiveness of pest control at the course. Fiesta® provides a high level of weed control and encourages darker green turf.

Although the SDEIS provides for several candidate conventional products to control weeds, ETS concludes that none of these products are labeled for use on golf course putting greens. ETS notes that weeds, especially on putting greens, are "detest[ed]" by golfers and are a major source of player complaints. ETS recommends the use of a reduced 2,4-D formulation, Trimec Bent®, for control of any broadleaf weed problem on greens that cannot be contained mechanically.

The SDEIS lists ethofumesate as a candidate product for a special use exemption to control annual bluegrass. ETS cautions that this product is not labeled for use on putting greens and is extremely damaging to Kentucky bluegrass. Given the high percentage of Kentucky bluegrass expected on fairways and rough, its use could severely undermine the establishment of healthy turfgrass, which is foundational to a functional and environmentally sustainable course.

The SDEIS only provides for one pre-emergent herbicide-dithiopyr-and it is not labeled for putting green use. ETS notes that *Poa annua* will present a pest risk to putting greens that is insufficiently addressed without a pre-emergent herbicide for greens. ETS recommends using a product such as bensulide.

ETS recommends the use of Plant Growth Regulators ("PGRs"). ETS notes that PGRs have become an "integral part" of golf course turf management, but the Modified Resort SDEIS makes no mention of them. PGRs reduce shoot growth and promote a dense, darker green turf that requires less mowing and less fertilization. They also help reduce weeds such as annual bluegrass, and generally operate in a way that poses no threat to other flora and fauna.

Consistent with the ETS analysis, we recommend that the Final SEIS be modified as necessary to insure that the storage and accessibility of MSDS meet OSHA requirements for all applicable pesticide and non-pesticide chemicals.

Response: See the responses to comment 1 (above) for responses to these portions of comment 1A.

Consistent with the ETS analysis, we recommend that the Final SEIS clarify what supply of water will be necessary for irrigation during April, May, September, and October, and whether the available supply of water will be sufficient.

Response: See the response to the same comment in 2.8.6(1).

The SDEIS also provides for a high-efficiency irrigation system for the golf course that will minimize water usage, but the specifics of that system have yet to be revealed. ETS has many recommendations for that irrigation system. These recommendations include: using a qualified irrigation designer; taking into account changes in elevation when designing pumps; using telecommunications and remote sensing to improve the system; using variable frequency electric motors to maximize pump efficiency; using HDPE pipe with ductile iron cross fittings; using modern sprinklers with nozzle adjustment features for radius, arc, etc.; and integrating weather monitoring systems and soil moisture sensors to provide real-time information.

Response: The golf course will be the Applicant's major recreational amenity for the resort during the warmer months. The importance of having proper irrigation is enhanced by the organic management regime. Proper watering will be an imperative cultural practice. The Applicant has indicated that golf course construction documents will include an irrigation design and product specifications produced by a qualified designer.

The growing season and time 'window' for seeding on this project is extremely narrow, basically late August and early September. The rapid establishment of healthy turfgrass is extremely important, not only for plant health and vigor, but for site stabilization, erosion control, scheduled opening dates, etc. Late fall and spring plantings will be hampered by cold air and soil temperatures, and summer plantings will be threatened by disease and weed pests.

Response: The seeding window will actually be longer than just August and September since adequate irrigation will be available for successful establishment. The areas to be seed will be fairly limited. As per the SDEIS, it is anticipated that approximately 50 acres of sod will be used instead of seeding.

For the remainder of this comment see the responses to comment 1 (above) that are essentially the same as what follows.

There is very little discussion of soil specifications and amendments in the report. There is mention of using USGA specifications for putting greens but no mention of root zone mixes for tees or any amendments to native soils on fairways. Rock and extreme soil acidity are quite likely to be issues for the native soils on site. If an economical source of compost is available locally, tees and fairways would greatly benefit from their addition.

Grass selection is yet to be clarified. This is understandable. There is mention of creeping bentgrass use on greens, tees, and approaches. Specific cultivars can be selected later. However, the fairway turf selection is questionable. The plan mentions a Kentucky bluegrass/fine fescue mixture. This is a standard lawn grass mixture that is inappropriate for golf course fairways. The two grasses have much different cultural requirements. This combination worked on home lawns because fine fescue would tend to dominate in shady, droughty, low traffic areas of the home lawn while the Kentucky bluegrass preferred almost the exact opposite conditions. A Kentucky bluegrass/fine fescue mix might be appropriate for roughs but it is not a seed mixture for golf course fairways. The fairways should be 100% Kentucky bluegrass, preferably a blend of the newer cultivars tolerant of lower mowing.

Also, there are several fescue species classified as fine fescue. The best of these for golf course roughs are the hard fescues. Chewings fescue is mentioned in the report. Hard fescues would be a much better choice.

Rolling should be given a higher priority as it can become an alternative to mowing, and more importantly, allow higher mowing heights on putting green turf while producing similar ball roll and relieving stress. There is some redundancy in the report, mowing itself removes dew and there is no need for dew removal beforehand. Rolling before mowing, as mentioned, is not only redundant but disrupts the quality of cut on greens. Rolling should be considered as an alternative to mowing greens, perhaps on a rotating basis (every other day) and especially on days when dew is present and shoot growth is minimal. Research has shown significant reduction in Dollar Spot disease with routine rolling.

Two turf diseases, Anthracnose and Yellow Patch, are mentioned casually as 'other diseases' that might possibly occur, but they should be give more consideration. Both diseases have been very severe in the northeastern states in recent years. Also, there is no mention of a disease similar to Yellow Patch, Brown Ring Patch (Waitea circinata), in the report. The cold, often wet spring weather in New York makes these diseases a high priority.

Similarly with insects, Hyperoides is mentioned as a lesser pest but has been a major pest in recent years. Known today as the Annual Bluegrass Weevil (ABW) this insect has become a major pest in the northeast, especially in New York State.

There are several very useful, pesticide alternative products that are not listed in the report:

Civitas® - a mineral oil based fungicide thought to stimulate plant defense mechanisms is in widespread use. It has a very wide spectrum of activity including all the major turf diseases. http://civitasturf.com/pages/labels

Zerotol® - a peroxide based (hydrogen dioxide) Fungicide/Algaecide/Bactericide is labeled for many of the disease problems in the report.

Rhapsody® and Serenade® - both contain the beneficial bacteria Bacillus subtilis. The report mentions EcoGuard fungicide and others containing beneficial bacteria but Bacillus subtilis is not mentioned.

Very current research has identified several products that are known to stimulate the turfgrass plants' own defense mechanisms. How these products fit into an organic management plan is unknown, but these products are worth mentioning:

Acibenzolar® - currently only available in combination with the fungicide Daconil® and known as Daconil Action. This combination product allows much lower rates of the conventional fungicide.

Phosphite® products - similar but different than the nutrient phosphate, these products stimulate plant defenses and are especially effective on Pythium species. There has been interest and research into the fact that several green dyes used in fungicides improve plant defenses and relieve summer stress. The new Syngenta Appear® fungicide is a phosphate/dye product that may fit into organic management programs.

The report mentions ethofumesate as an herbicide for annual bluegrass control. The product Prograss® is not labeled for use on putting greens. In addition, it is extremely damaging to Kentucky bluegrass. With the high percentage of Kentucky bluegrass on fairways and roughs, ethofumesate should not be used anywhere on the course.

One product that should be included is:

Fiesta® - an iron based weed control product from Canada. High levels of weed control with a benefit of darker green turf from the iron micronutrient.

Plant Growth Regulators (PGR's) have become an integral part of golf course turf management. There is no mention of PGR's in the report. Most PGR's are synthetic products but not always considered a 'pesticide.' PGR's provide many benefits and fit well into an organic management approach. Generally, they reduce shoot growth producing a dense, darker green turf with reduced mowing and fertilization. They are a tremendous tool for the reduction of weeds like annual bluegrass which is the highest priority weed in the report. Most PGR's are gibberellin biosynthesis inhibitors, a mode of action which is not threatening to other species. It is difficult to manage quality golf course turf without PGR's today.

Pesticide List

Several candidate products are listed for use under special permission. There are several important issues to consider.

Fungicides:

- Most of the materials listed have systemic modes of action, meaning they have to gain entry into the plant before they are effective. This comes after a 48-hour waiting period, before application rendering many of these fungicides ineffective in combating a sudden turf disease outbreak. There is a need for an effective, fast acting contact fungicide. The use of mancozeb was ruled out in the original ITM plan. The most effective and widely used contact fungicide is chlorothalonil with many trade names. Also, combining chlorothalonil with some of the system products listed greatly enhances their effectiveness.
- There are four products listed for pythium disease control; etridiazole, fosety-Al, mefenoxam, and propamocarb. There is no need for this number of products for a disease that is extremely unlikely to occur and could be controlled with the less risky phosphite products described earlier. Pythium outbreaks occur rapidly in hot, wet weather. The best of these products for rapid action is etridiazole.

- Fortunately, several of the products listed are effective in controlling pink and gray snow mold.

Herbicides:

- None of the products listed are labeled for use on golf course putting greens. This is not unusual given the sensitive nature of putting green turf, but should be noted in this report. If a broadleaf weed problem is encountered on greens that cannot be mechanically controlled, there is a reduced, low 2,4-D formulation of products on this list called Trimec Bent® that could be used.
- There is only one pre-emergent herbicide on the list (dithiopyr) and it is not labeled for putting green use. It would be desirable to add a pre-emergent product such as bensulide to the list. Warm season annual grasses (crabgrass) will probably not be an issue on greens, but Poa annua will be encountered.

Insecticides:

- There are several problems with the insecticides listed for use. First, two of the products lost EPA registration years ago: ethoprop and bendiocarb.
- Two of the products, bifenthrin and lambda cyhalothrin, are in the same chemical grouping (group 3), meaning they have similar modes of action. In practical terms there is no difference between the products.
- All of the products listed are for the control of surface feeding insects. There are no products for soil inhabiting insects such as white grubs.
- The insecticide chlorantraniliprole (Acelepryn™) should be considered for white grub control. **O3650**

Response: See the responses to the same comments in (1) above.

(2) I worked at a local golf course for just over a year and in little more than that year there were 3 major fish kills at all 3 ponds on that course. These kills each involved hundreds, if not thousands, of fish and other creatures. I witnessed 2 of these kills personally and they were not easy to watch. Seeing those fish gasping for air was very difficult for me and a couple of other workers who care deeply about animals. Another worker and I had to go out in a boat to pull the dead and dying fish from that pond. This was not only sickening (in the middle of summer, you can imagine the stench), but very difficult emotionally for both of us.

That same pond supplied water to the maintenance building. Someone notified the officials and when that water was tested, it was required a sign be posted above the sink that employees were not to use the water even to wash their hands! The golf course had to have a well drilled.

The third fish kill was reported to the DEC. They tested the water and found that the chemical which had killed the fish was used according to directions.

The fish kill in which I helped clean up the dead fish, no one knew how that happened. We only speculated about it. That's the scary part: We didn't know. It was not an accidental spill; it was not deliberately done. It just somehow happened. To think that it couldn't happen at the proposed resort is foolish. And the results would be far more devastating. Pesticides and other chemicals could run down the mountainside making their way into residential wells, the Esopus Creek, the Ashokan reservoir. How many fish would be killed? What would that do to the fishing and tourism industry around here? Local residents would have to go through the inconvenience of buying and using bottled water. All for a couple hundred low-paying jobs, assuming the golf resort even survives. Are we to take such a gamble so that a few investors can make money? **I68**

Response: The SDEIS contains the OGCMP that specifies that synthetic pesticides will not be relied upon for managing the golf course. In the event that any pesticide applications are needed, only conventional pesticides registered for use by the Department will be used., When used in accordance with their label directions, such pesticides are not likely to have a significant adverse impact on fish populations.

(3) The creation of two golf courses will require pesticides and fertilizers to maintain, and on the top of a mountain the rain run-off from these will certainly enter the local streams and rivers, contaminating the water supply and endangering the supply of fish that draw for tourists. **I3532**

(3a) Among unhealthy places to live in proximity to are bridges, because of the heavy metals and other pollutants in exhaust and runoff, and golf courses because of the fertilizers, pesticides and herbicides so important to maintaining the greens and the comfort of golfers. Water is precious. Water is life.

What will be done to safeguard the pure Catskill Mountain water we now enjoy? Water found in the Catskills is the best water I ever tasted. Will it be required that any and all products used to maintain Gitter's property be environmentally benign? Or will there be the usual limits and guidelines as to how much and what chemicals can be used? Water runs downhill and with it all that seeps through the soil. Once tainted, purity becomes a thing of the past. **O3547**

(3b) Golf courses depend on the application of high doses of toxic pesticides and fertilizers to maintain their unnatural monocultures of smooth lawn. This is especially so in such an exposed and high-altitude position. Water quality in local communities and creeks will inevitably be adversely affected. **I338**

(3c) The chemicals used will poison the local creeks, kill the fish and end up in the reservoirs that supply the water for 9 million people in the City of New York. **I176**

(3d) Adhering to the vaunted "organic management" practices of the golf course is left entirely up to the applicant -- or whoever will actually build and run the development into the future-with no oversight or penalties for straying from the recommended organic protocols. The language is entirely too vague and herbicides, pesticides, silt and other pollution could well drain into the Pepacton. **O3638**

Response: See the response to substantively similar comment 2, above.

Adhering to the OGCMP is not left to the Applicant, it is left to the Technical Review Committee of which the Applicant has one representative and other representatives include NYSDEC and NYCDEP.

(4) We live in Phoenicia where the water comes out of the Esopus. I am concerned about the unknown combined effects (rather than the known singular effects) of the pesticides and herbicides on the golf course runoff into the Esopus and straight into our drinking and bathing water. I don't like that there is an easy opt-out clause on the organic management of the golf course if it doesn't work out. And even organic chemicals are still not something that I want my young girls bathing and drinking. **I3641**

Response: Less than 2% of the project site is within the Ashokan (Esopus Creek) drainage basin. Runoff from the less than 12 acres that is in the Ashokan drainage is directed to and treated in a bioretention area.

(5) Water quality change could occur in Shandaken. The pledge to (for 10 years, with opt-out clause) have the golf course be maintained with "organic: fertilizers and pesticides, is misleading. Herbicides and pesticides, designed to kill, are harmful whether or not they are labeled organic. There is varying amount of degradable ability and times. It is an open question how long they remain toxic in water sources. These "organics" are not meant to be in drinking and bathing water, and affect stream habitat.

While they may be labeled safe individually, no studies exist about the synergistic effect when multiple substances, albeit organic, are used together, as they would be here. What happens when the 10 years are up? Yes, we can drink bottled water. But those of us that have Shandaken town water bathe in it-- and a shower a day is the equivalent of ingesting gallons of the water. Chemicals go through skin. **I511**

Response: The list of the types of approved organic materials is in section 3.1 of the OGCMP in SDEIS appendix 15. Many of the products are naturally occurring soil organisms that are antagonistic to pests when they are present in high enough levels. Others are derived from natural sources such as fish oil emulsions, kelp extract, etc., and will be used in a manner that will prevent them from impacting the water supplies.

(6) Since operation of the golf course organically is not guaranteed, will golf course and/or ski slope construction or operation require the use of herbicides, pesticides, fertilizers, flocculants (e.g., chitosan), and/or other chemicals or products that are harmful to fish and other aquatic organisms?

Response: Maintenance of the resort golf course and the potential use of pesticides is discussed in SDEIS sections 2.8.4, 3.1.5 and 3.2.3 as well as Appendix 15. Pesticide use was also described in detail in the DEIS, including technical Appendices 14 and 15 that included risk assessments for aquatic organisms. .The organic controls are not toxic to fish or other aquatic organisms. The use of chitosan is described in SDEIS section 3.1.2 and in the SDEIS stormwater pollution prevention plan, appendix 19 of the SDEIS. The use of Chitosan was reviewed by

NYSDEC in great detail during the Issues Conference. Bench toxicity studies of chitosan on trout were specifically done for this project, and dosing rates of Chitosan proposed are based on this testing so that the use of chitosan will not impact fish populations or other aquatic organisms.

Fertilizer use was also described in detail in the DEIS, including technical Appendices 14 and 15 that included risk assessments for aquatic organisms. 15 will be done at rates that provide nutrients in amounts only needed for healthy plant growth. Slow release fertilizers are specified. There are also restrictions on not applying fertilizers prior to forecasted rain events. These and other factors presented in the DEIS will prevent runoff and leaching of fertilizers, prevent fertilizers from reaching surface waters, and avoid impacts to aquatic organisms as a result of oxygen depletion from increased biological production .

Is or will the use of pesticides, herbicides, or flocculants that are deleterious to non-target organisms be permitted?

Response: The DEIS (Appendix 15) contains a very detailed Fertilizer and Pesticide Risk Assessment performed specifically for project site conditions. The potential for non-target toxicity was an integral part of that assessment. Any Special Use Request that could occur under the organic golf course management plan will need to take into the results of that assessment (see SDEIS section 3.1.5).

Chitosan is proposed to be used during project construction. As part of the Issues Conference, results of chitosan toxicity testing using solutions of project site soils demonstrated that chitosan will not be a toxicity threat for non-target aquatic organisms.

If herbicides, pesticides, or flocculants harmful to non-target organisms are permitted for use at either or both projects, will there be follow-up biological sampling in the streams of the watersheds subsequent to use of those products?

Response: The Applicant is not proposing any sampling and the NYSDEC draft permits issued with the SDEIS do not contain any requirements for such sampling.

Have the impacts of pesticides, fertilizers and water additives for snowmaking been described or the construction and operation of both facilities relative to habitat for aquatic and terrestrial biota?

Response: Yes, for the resort project, see DEIS appendix 15.

If follow up biological testing does occur and shows that pesticides, herbicides, flocculants, or snowmaking additives used on the project(s) are deleterious to aquatic organisms, what will be done to rectify that problem? **O3635**

Response: As per the response above, no such biological testing is proposed.

(7) In addition, the 2010 Dishwasher Detergent and Nutrient Runoff Law adds new restrictions on phosphorous (fertilizer) that may affect the proposed golf course. Specific new restrictions mandated by this law should be part of any permits DEC and DEP issue to protect water quality.

In Appendix 15 of the SDEIS (covering the organic golf course), many "Special Use Exemption Parameters" are noted for pests. Some pests are not well treated by organic methods while moderate levels of others are treatable. It seems to some extent to be a matter of the degree of infestation. The golf course manager can ask for an exemption in these cases to preserve the turf and course playability. After 5 years the developer can petition for exemption from organic management if he can show organic management is infeasible. The standard for unfeasibility seems to be failure to maintain a "high quality nationally recognized golf course." This is a subjective standard, unlike a more scientific and environmentally sound standard based on water quality measures. Since the above research shows that both organic and chemical regimens can compromise water quality, it is imperative that DEC require that water quality standards govern golf course management choices, rather than national reputation, and be part of the SPDES permit. The DEP should also require that water quality standards be met in
any permits it issues to regulate chemical (organic and synthetic) runoff from the golf course.
O3633

Response: Because the 2010 Dishwasher Detergent and Nutrient Runoff Law is law that is required to be followed, special permit conditions for this project requiring adherence to this law would seem to be unnecessary. The project will follow the 2010 Dishwasher Detergent and Nutrient Runoff Law

NYSDEC and NYCDEP will be two of the five Technical Review Committee members that will be responsible for the implementation of the OGCMP.

The actual SDEIS language regarding continuance of the OGMP is as follows,

- *Following five years of Wildacres Golf Course* [Highmount Golf Club] *operation pursuant to this Agreement, the operator may seek approval from the NYSDEC to modify the conditions of its SPDES permit relating to organic golf course operation, provided that the State or federal government or an independent certifying entity adopts and implements an organic golf course program substantially similar to the one set forth in this Agreement and that the operator applies for and receives certification of the Wildacres Golf Course as organic under such a program. In this event, the SPDES permit for the Crossroads project will be modified to incorporate the operator's commitment to continued participation in and compliance with the respective new State or federal or independent certifying program.*

- *Following five years of Highmount Golf Club operation pursuant to this Agreement, Crossroads may seek approval from the NYSDEC to discontinue organic golf course operation and to remove such requirement from its SPDES permit. Should such approval be sought, the NYSDEC will solicit the advice of the Organic Golf Course Technical Committee and will approve such request only if it finds that the operator has demonstrated to the NYSDEC's satisfaction that the operation of the Wildacres Golf Course as a high quality nationally recognized golf course through organic management* *is infeasible under this provision and that the concerns raised by the operator cannot be adequately addressed through adjustments or modifications to the Organic Management Plan. In the event that NYSDEC finds that the operator has satisfied the above-described conditions for discontinuance of organic golf course operation under this provision, the NYSDEC will modify its SPDES permit for the Crossroads project and include a requirement that the operator implement a state-of-the-art Integrated Pest Management system for the Wildacres Golf Course* [Highmount Golf Club] *that utilizes the fewest inputs necessary to provide a sustainable, high quality, nationally recognized golf course operation.*

3.2 Groundwater Resources

(1) What portions of the stream flows are currently provided by groundwater and what portion of those flows will be affected during construction and operation of the projects?

What portion of water flow in watershed streams currently watered by project watersheds are groundwater contributions from those watersheds?

How will that groundwater input change relative to changes resulting from the project watersheds: including but not limited to the following changes specifically?

Portion of groundwater in the stream flows

Seasonality of groundwater contributions

Response: The portion of ground water and surface water input to local stream varies throughout the year depending on seasonal conditions. Ground water input to streams during the dry summer months is greater than surface water runoff; for the wet spring months, the opposite is true. The change in these inputs due to project development is dependent upon the change in aquifer recharge (ground water input) and surface water runoff as a result of the project development. A detailed Water Budget Analysis (SDEIS Appendix 22) was conducted for the Modified Belleayre Resort at Catskill Park to evaluate the change in recharge and runoff on an annualized basis. The water budget analysis was not intended to predict runoff or recharge during specific storm events. The analysis indicated that there was a potential for a slight decrease in the aquifer recharge and a negligible increase in runoff. The decrease in aquifer recharge is estimated to be 19.3 gallons per minute (gpm) for the entire 695-acre water budget study area (44 acres on two outlying parcels were not included in the analysis because no development is going to occur on those lands). The slight decrease is primarily due to the lack of infiltration below buildings and paved areas. The negligible increase in runoff to existing drainage features is estimated to be 7.4 gpm; again, this is primarily due to the effects of buildings and paved areas.

The SDEIS indicates that only 12 acres (0.017%) of the study area is within the Birch Creek drainage basin and the rest lies within the Emory Brook/Bush Kill basin. An aquifer recharge reduction of 0.3 gpm (0.017% of 19.3 gpm, which is the total aquifer recharge reduction by the project) and a runoff increase of 0.1 gpm (0.017% of 7.4 gpm, which is the total increase in *runoff by the project) may occur within the Birch Creek drainage basin. Runoff within the 12 acres that lay within the Birch Creek basin will be directed to a bioretention area to treat storm water runoff. The change in ground water contribution and surface runoff to Birch Creek is inconsequential, given the 544,500-acre size (12.5 sq. mi.) of the Birch Creek basin (at Big Indian) and the 13,510 gpm average flow in Birch Creek from 1999-2012 that was recorded at the USGS Big Indian gauging station. Any change to the portion of runoff input and ground water input to streams within the Birch Creek will be immeasurable, given the inconsequential changes in those parameters that will occur as a result of the project development. These changes will be inconsequential regardless of seasonal variation in the proportional inputs. In addition, there are no ground water withdrawals within the Birch Creek basin for the Resort. Sewer discharge from the resort will be sent to the Pine Hill WWTP and could result in an increased flow in Birch Creek of approximately 110 gpm, if it is assumed that the total potable water demand of 158,000 gpd is directly equivalent to the waste water output to the Pine hill WWTP. The Pine Hill WWTP is a permitted facility operated by the NYCDEP, and the total discharge from the facility will remain well below its permitted discharge.*

The majority of the water budget study area (683 acres) lies within the Emory Brook/Bush Kill drainage basin. Emory Brook flows into the Bush Kill, which flows through the village of Fleischmanns and on to the East Branch of the Delaware River. The study area is drained via two unnamed tributaries to Emory Brook and one named tributary (Todd Mountain Brook) that flows directly into the Bush Kill. An aquifer recharge reduction of 19 gpm (0.983% of the 19.3 gpm total aquifer recharge reduction by the project) and a runoff increase of 7.3 gpm (0.983% of the 7.4 gpm total increase in runoff) may occur within the Emory Brook/Bush Kill drainage basin on an annualized basis. These changes in aquifer recharge and runoff are very small when compared to the 47± square mile area of the Bush Kill drainage basin and the 44,838 gpm average flow in the Bush Kill from 1998-2012 at the USGS gaging station one mile east of Arkville. Even if it is assumed that 100% of the potential 19 gpm decrease in aquifer recharge would result in an equivalent and direct loss to local stream flows, the resultant change in stream flow and temperature would be unnoticeable. Similarly, the 7.3 gpm increase in runoff from the project area would be unnoticeable.

The water supply wells and irrigation wells for the resort are all within the Emory Brook/Bush Kill basin, which is part of the Pepacton Reservoir watershed. The total potable water demand for the project is 158,800 gpd (110 gpm) and can be met by the water supply wells proposed for the resort. The wastewater generated from the resort will be transferred to the Pine Hill WWTP in the Ashokan Reservoir watershed. All interbasin transfers of water will be reviewed by the DRBC, which must issue a permit for the project (SDEIS Appendix 7). A portion of the yield from the water supply wells would likely have contributed to stream flow within the Bush Kill, or at least the East Branch of the Delaware River.

Water intercepted by the foundations of the hotels (where the new bedrock face is exposed) will either seep back into bedrock fractures at the first opportunity and re-enter the shallow ground water system, or will be routed to the irrigation pond. Seepage from the new bedrock face that is routed to the irrigation pond will offset the need to use the irrigation wells by an equivalent amount and will not add to the total ground water withdrawal. This water would still be considered an irrigation surcharge to the system as described above.

There are many opportunities for water to re-enter the ground water system. In addition, the Ski Center wells are within the Birch Creek Basin and not in the Emory Brook basin, so that should not factor into the equation at all. It is true that the water used to meet the Resort's potable demand (182 gpm) is being transferred from the Emory Brook Basin to the Birch Creek Basin, but it is also true that the snowmaking water is being transferred from the Birch Creek Basin to the Emory Brook Basin (about 52 million gallons of water over a three month period). The Ski Center's snowmaking practices will continue to take water that would have left the basin as runoff and add it back to the upper slopes as additional snow, which will contribute to ground water recharge as it melts during the spring. New snowmaking will occur on trails that are within the Emory Brook drainage basin, whereas most of the snowmaking previously occurred only within the Birch Creek Drainage basin. The use of snowmaking in the Emory Brook Watershed will offset some of the ground water withdrawals.

Water used for irrigation from bedrock wells will maintain soil moisture during the summer, a time during which ground water recharge typically does not occur because soil moisture is typically depleted through evapotranspiration. Maintenance of soil moisture through irrigation will allow rainfall events to contribute to ground water recharge from the irrigated areas during the summer.

Additionally, the water budget specifically did not account for certain percolation-positive aspects of the project, as discussed in the bullets of the conclusion section of the March 2011 Water Budget Analysis, Modified Belleayre Resort at Catskill Park, Highmount, NY. Some percolation will likely occur. These offsets to the reduction in the recharge rate were not included in the water budget and will offset a portion of the ground water withdrawals.

Chemical and physical (thermal) quality of groundwater

Response: See response to comment 3.2(3) below.

Location of groundwater discharge to flowing stream (outside or inside of bend and including changes caused by pipe to Pine Hill WTP, installation and operation)

Response: The location of ground water discharge to surface waters will remain as they currently are, whether that occurs inside or outside the bend of a stream.

Note that in this review, groundwater watershed refers to both the watershed of the surface contribution to the ground water and the extent of groundwater and its influence subsurface.

Response: So noted. The ground water table follows topography in the project area, as well as for most of New York and the northeastern United States; consequently, the watershed area for surface water is considered the same as the watershed area for ground water in the project area.

Also, Pine Hill treated wastewater must be considered as a watershed contribution to the aquatic community impacted by the projects.

Response: The Pine Hill WWTP is a permitted facility operated by the NYCDEP, and the total flow volume of treated wastewater from this facility will remain well below its permitted discharge.

How will aquifers and wetlands in the project area by affected by increased uses of water for snowmaking and golf course irrigation? **O3635**

Response: The comment about snowmaking is not applicable to the resort project. Snowmaking is addressed in the Unit Management Plan (Part A , Section 3.5.1 and Appendix B). The impact of golf course irrigation in the summer is addressed in the water budget analysis in Appendix 22 of the SDEIS. Ground water chemistry will not be impacted as the golf course will be maintained following the Organic Golf Course Management Plan in the SDEIS appendix 15. See also response to comment 3, which includes a discussion of irrigation well use and how it will not impact wetlands and ponds.

(2) In this regard, the method used to determine the seasonal high water table must be further detailed. Was the seasonal high water table determined when endosaturation occurred, as indicated by redoximorphic features? Or did someone dig a pit in the dry season, when project consultants performed tests, according to the SDEIS, and simply see ponding water? If only ponding water was observed, this indicates soil saturation, not seasonal high water table. Saturation is normally required for stormwater applications, and it must be taken to provide a credible or true and accurate depiction of the depth. It also depends exactly where the test is taken. Obviously, a test taken at the highest elevation of the area of interest will provide a different set of data from a point at a lower elevation, just feet away. When the soils are blasted, stripped, and excavated to the extent proposed for this project, the data must reflect the highest level of the seasonal water table for the area of interest. If the table is interfered with in the course of construction, problems could arise in changing the entire natural subsurface water system.

Response: The methods used to determine seasonal high groundwater levels are described in the response to comment 3.3(2).

Were the piezometric pressures measured in a slotted pipe slotted over an interval? How long were measurements taken? Are there data for mottles (anaerobic layer indicator)? Monitoring? Soil Color? Soil Drainage Class? Soil Evaluation? Depth to root zone? Depth to clay layer (hardpan), or redoximorphic? These findings should be provided.

Response: Detailed soils information is provided in the DEIS (section 3.6 and appendix 12) and the SDEIS (section 3.3.), including soil hydrology, soil colors including any mottling, hydrologic soil groups, deep hole test pit results, percolation test results, textural classifications, etc.

Delineation of the seasonal high water table can be controversial, and results subject to manipulation. For example, one test pit in November would not provide enough data to identify the true seasonal high water table. The wettest season of the year would give a better indication of the true level. A good definition of the seasonal high water table is the elevation to which groundwater or even surface water may rise owing to a normal wet season.

Response: Evidence of seasonal high water is based on soil conditions that develop over time and not instantaneous observations. Low chroma and/or mottled soils indicative of a seasonal high water table are a result of anoxic conditions that occur frequently and often enough to cause the observable conditions of a seasonal high water table.

Using this definition, the data in the SDEIS are flawed/inaccurate. The Environmental Assessment Form gives the high water table as less than 3 feet. This means that construction at normal depths is at high risk of encountering water. **O3635**

Response: The Environmental Assessment Form contained a preliminary evaluation of site conditions prepared in 1999 based on published information prior to the detailed on-site soils investigations conducted for the EIS. Per more detailed, site specific soils information presented in the DEIS and SDEIS, the water table is not less than 3 feet, and in almost all instances was greater than 6 to 8 feet deep.

(3) The water table will suffer from increased total dissolved solids due to the heavy use. This will have an effect on groundwater temperature, amount of water available for flora and fauna, and quality and quantity of potable water available. A study that analyzes flow nets, cones of influence, and effect on Fleischmanns water supply during drought periods must be performed.

Response: The term "total dissolved solids" (TDS), as it pertains to ground water, is a measure of the amount of amount of chemical ions in the ground water. These chemical ions can come naturally from rocks which ground water has been in contact with for a very long time, or from the application of fertilizers, pesticides, or road salt to the ground surface, or from leach fields (primarily from the use of water softeners). "Old water" exists deep within the aquifer, where TDS is very high. The pumping tests were run at rates that were demonstrated to be in equilibrium with recharge; consequently, the inducement of deep water with higher TDS will not occur. Waste water will be transferred to the Pine Hill WWTP, rather than discharged through leach fields. The golf course will follow the Organic Golf Course Management Plan in the SDEIS appendix 15 and not use synthetic herbicides or pesticides.

There is no reason for ground water temperature to increase. Ground water temperatures are naturally controlled by average annual surface temperature and the local geothermal gradient. The natural geothermal gradient can be modified by geothermal systems installed in the water table for heating and cooling purposes. There are no plans to use a geothermal system at the site. The average annual air temperature will not be changed by the project.

The amount of water available for flora and fauna will depend on precipitation patterns in the future. The water budget analysis indicated that the changes to runoff and aquifer recharge were very small, primarily due to the capture of storm water runoff from the impervious surfaces and its reuse as irrigation water.

The impact on water resources during drought conditions was addressed by conducting actual pumping tests. Projections were made from the pumping test data to simulate drought conditions with no precipitation for 6 months. The fact that the wells met the stabilization requirements set by the NYSDOH indicates that the total well yield for the project can be met and remain at equilibrium with the ground water recharge.

It has not been shown what effect the outlying irrigation well's cone of influence will have on the wetlands on and off site. It is possible and perhaps likely that it will cause them to dry up. The cone of influence may interfere with other water sources as well, diminishing them, or drying them up. Ponds also exist on properties adjoining the project. The water supply to the ponds could be impaired, causing the ponds to enter into an advanced eutrophic state.

Response: There is no basis to state that local wetlands and ponds would dry up. The investigations conducted for the project show that this impact will not occur. The wetlands on the site are formed in areas where water emerges onto the surface because clayey soil or the lack of fractures in the rock prevents water from percolating downward to the ground water table. The irrigation wells are not using water that otherwise would have gone to wetlands or ponds. They are drawing upon water deeper within the bedrock and at elevations well below the wetlands. Pumping from the irrigation wells cannot force water to drain downward from the wetlands through the impermeable material on which they owe their very existence. The effect on aquifer recharge that irrigation water on the golf course will have is discussed in the water budget analysis in Appendix 22 of the SDEIS.

Any ponds on properties adjacent to the resort parcels are man-made ponds and can only be maintained through human assistance and dams. The use of irrigation wells will not cause dewatering of these ponds for the same reason as explained in the previous paragraph.

The water budget is not based on past drought conditions.

Response: The water budget was conducted in adherence to the guidelines and methods presented in the February 2008 Final Scoping Document. The results of the water budget analysis, whether using average or drought precipitation values, have no bearing on the amount of water resources available to the project, the local municipalities, or residential wells. The results merely indicate that full project development will have a negligible impact on the ground water resources, whether that is during a drought, or not. It is unreasonable to suggest that the water budgets are not valid because they do not consider drought conditions.

NZR found no estimates of the cone of depression's extent during pumping test.

The water usage calculations should be based on drought conditions. There is historical precipitation available from several sources such as NOAA and other Government sources. The pump test data collected for existing and new wells should be transcribed to a map of the cone of depression for the affected area. This way liability of private wells can be determined in advance.
O3635

Response: Water usage calculations were made using the "Recommended Standards for Water Works, Policies for the Review and Approval of Plans and Specifications for Public Water Supplies" (aka 10-State Standards) as per standard engineering practice and as specified in the project scoping document.

The effect on outlying wells was discussed in the pumping test report. Residential, commercial, or public water supply wells were monitored during each test at varying distances (from 90 ft to over a mile) from the pumping wells. The drawdown data for all monitored wells for all pumping tests were provided in the pumping test report contained in the Water System Preliminary Design Report (SDEIS Appendix 13). NZR can review that data themselves to gain an understanding of the drawdown observed with distance if they so choose. The data show that the use of the wells will not have a detrimental impact on any local water supplies.

(4) Water sources: some drinking water is from backup wells near Pine Hill Lake, water for snow making and watering the golf course is from water diverted from Birch creek, spring water and precipitation. This water is from the Ashokan watershed. However, stormwater runoff and runoff from the golf course, snowmaking etc. is routed to the Pepacton watershed.

Drinking water etc. comes from wells near Fleischmanns (Pepacton watershed) and waste water (sewage) from the resort etc. is piped to the pine hill wastewater treatment plant (WWTP) which is located in the Ashokan watershed. **O3636**

Response: It is assumed that the "backup wells near Pine Hill Lake" in the comment are referring to the wells known as the Rosenthal wells that were discussed in detail in the DEIS. The Rosenthal wells will not be used for the modified project that is the subject of the SDEIS. Golf course irrigation water is not taken from Birch Creek. Irrigation water is from wells located on the project site in the Pepacton drainage as well as from stormwater runoff from project site areas located in the Pepacton drainage. The modified project does not divert stormwater runoff either in or out of the Ashokan or Pepacton drainage. There will be interbasin transfer of water when potable groundwater is taken from the Pepacton drainage and wastewater is sent to the Pine Hill wastewater treatment plant in the Ashokan basin. As per section 1.4 of the SDEIS, this will require a permit from the Delaware River Basin Committee.

(5) Blasting the mountain with dynamite during construction may alter underground water courses and leave people living in the area with a less or debased water source.

Response: Blasting will be done such that the blast energy is not wasted beyond the immediate area where bedrock needs to be removed. Propagation of existing bedrock fractures is not expected beyond the immediate area of the blast. Shallow ground water will be affected within portions of the existing fractured bedrock system by removal of the fracture zones from the footprints of selected structures. Ground water will seep out the fractures where the new bedrock face is exposed (adjacent to a building), then seep back into the bedrock fractures at the first opportunity and re-enter the shallow ground water system. This scenario is already happening all over Belleayre Mountain. Water from contact springs, if not used as a water resource, commonly re-enters the shallow ground water system at some distance downhill where more fractures are exposed or the fractured bedrock is overlain by permeable soils.

Potential impacts associated with blasting and measures that will be taken to mitigate potential impacts are discussed in the SDEIS in section 3.2.4, including descriptions of available pre-blast well surveys for local property owners as well as well arbitration procedures for people who believe that their well may have been impacted.

In addition, much wildlife habitat would be lost and surrounding land be compromised by human occupation. **I1461**

Response: Project impacts to wildlife are discussed in detail in SDEIS sections 3.4.3 and 4.2. The small and localized impacts to wildlife that could result from project development are more than offset by this project resulting in nearly 1,200 acres of private, developable land being added to the Forest Preserve as well as 200 acres being put into a Conservation Easement.

(5a) The extensive rock blasting necessary for the Highmount spa poses unacceptable risk to nearby buildings, wells and aquifers. There is no way to mitigate this risk. **I3588**

Response: See the response to substantively similar comment 5 above in regards to wells and aquifers. The response to comment 3.3(3) addresses blasting and nearby buildings.

(6) With our streams already having very low flows, with the head pressure of private wells dropping such as my own, primarily due to overburdened use of the aquifers currently in the Catskill Park, the addition of development equivalent to a medium-size city, to further drawdown the aquifer, would certainly inflict these catastrophic economic impacts that this article addressed. This is no rocket science here, just basic common sense, a little hydrology, a little science, and a little engineering. Completely disallowing this project is really a no-brainer. **I3506**

Response: The Bush Kill and Birch Creek are the main receiving streams for ground water and runoff from the project area, west and east of the divide, respectively. There is no evidence in the publically available USGS flow data for Birch Creek and the Bush Kill that support the statement that these streams are "already having very low flows". The USGS flow data from the late 1990s through 2012 for these two streams indicate average flow has remained relatively stable, with typical seasonal changes in flow corresponding to wet and dry seasons.

The lack of impact on Todd Mountain Brook and the Bush Kill is discussed in Section 2.3.5 (Ground Water/Surface Water Evaluation) of the pumping test report. The results of microscopic particulate analysis (MPA) on the K Wells (and well Q1) indicate a low risk (EPA risk factors all = 0) of GWUDI. If the wells were readily pulling water from the creeks through direct fracture connection, it is unlikely that the water samples from the wells would have passed the MPA testing.

The method of analysis (180-day projection as required by NYSDEC) does not treat the bedrock aquifer as a porous medium. The method simply uses actual water level drawdown in the well and projects what that drawdown would be 180 days in the future, with no aquifer recharge, and *pumping constantly at maximum demand. There is no assumption of "uniform distribution of permeability throughout the bedrock in the study area". The analysis is valid whether the water is entering the well from one fracture, or from 10 fractures.*

The fact is that the K wells intersect the same major water-bearing, near-horizontal, fracture at an elevation of approximately 1272 ft amsl. This is calculated from the data presented in the pumping test report. The horizontal, or gently dipping, fracture at 1272 ft amsl, if extrapolated beyond the K well field, is at least 190 ft below the Bush Kill at Wadler, and is at least 221 ft below Todd Mt. Brook at the Lower Todd measuring point. It is unlikely that surface water from these streams is feeding this deep fracture as readily as the commentor implies. It would mean that there are abundant, interconnected fractures in the bedrock to convey the surface water from the streams down to that depth.

The depths of all the wells are not known; however, it is known that Village Wells 3 and 4, and Well Q1 all are deep enough to intersect the same fracture (if it is present) that is encountered at the K Wells.

There is no evidence provided by the commenter to support the comment that head pressure in private wells has been dropping; consequently, this cannot be addressed. There are many other reasons, besides a drop in the water table level, for a loss in well pressure. These include pump deterioration, mineral scale in pumps and piping, and lack of pressure tank maintenance to just name a few. The pumping tests indicate that the bedrock aquifer that supports the Village of Fleischmanns wells and the private, residential wells in the area can support the water supply wells of the Resort.

The developed area will be 234.5 acres, with approximately 21.31acres of impervious buildings and roads spread out across a golf course and hillside. By comparison, the village of Fleischmanns is 448 acres of concentrated development directly adjacent to Emory Brook and the Bush Kill, with a population of approximately 343 full time residents. The Village of Fleischmanns in no way could be confused with a "medium-size city". The resort, with approximately half the developed area of Fleischmanns, is not even equivalent to a small village, much less a "medium-size city".

The pumping tests showed that the wells could meet the demands of the resort without adversely impacting the Village of Fleischmanns water supply, or other private water supplies in the area. The data indicate that the criteria of the NYSDOH and NYSDEC were met.

(6a) WATER: How is it that the DEC finds this project acceptable knowing that a resort of this magnitude will lower the reservoir and dry up private wells in a drought year? What will this do to local farmers? Is the DEP involved in the decision? **I225**

Response: There is no evidence to support the statement that the resort will "lower the reservoir and dry up private wells in a drought year". The NYCDEP and the NYSDEC each have the ability to institute various levels of drought warnings, watches and emergencies, and enforce *the associated restrictions in water usage appropriate for each stage. The Resort will have to comply with water usage restrictions during droughts just like everyone else.*

3.2.1 Water Supply

(1) Permits from the Delaware River Basin Commission ("DRBC") are required to (1) withdraw groundwater for water supply, fire supply and irrigation, and (2) transfer water (anticipated to be 52 million gallons a year) to the Delaware River Basin ("DRB"). Although a draft permit for the withdrawal is included in the SEQRA documents, it does not include the proposed transfer of water into the DRB. A call to the DRBC revealed that as of July 3, 2013, there was no record of an application for these water actions. **I2130**

Response: The water withdrawal will occur in the Pepacton (Delaware) drainage, but will be transferred out to the Ashokan drainage. The application to DRBC has not been filed yet.

(2) I am concerned that project blasting and construction might affect our water quality. In the late 1980's when Highmount Ski Center constructed the zig-zag trail (then called The Local) directly above our house, blasting did cause our water to turn brown. Should this project be approved, I would appreciate notification of blasting, first so I may have our water professionally tested prior to blasting and subsequently so I may monitor the effects. **I3543**

Response: See the response to comment 5 in the previous section regarding blasting and lack of impacts on local water sources. The Rainone residence at 316 Galli Curci Road will be included on the blasting notification list.

(3) Water from Ashokan watershed is dumped into Pepacton watershed and crosses Rte. 49A without adequate absorption buffer zone, leading to flooding and erosion of Rte. 49A. Also, water needed for snowmaking and golf course watering is not returned to Pine Hill Lake but lost to Pepacton watershed. Water Supply: The resort development will require approximately 195,000 gallons per day of potable water. The expansion of the ski trail system will require additional water supplies for snow making. Existing groundwater and surface water resources may be affected due to this increased demand. Alternative sources to meet this increased demand should be identified, and the potential impacts on existing water resources and other water supply systems should be compared and evaluated. **I3588**

Response: No water will be transferred from the Ashokan watershed into the Pepacton watershed as part of the resort project. Water needed for golf course irrigation will be obtained from wells in the Pepacton watershed and will be used in the Pepacton watershed. The SDEIS (appendix 13) demonstrates that potable water demands can be met by project wells without impacting groundwater, surface water or any existing water supply sources.

(4) I am concerned about where all the water will come from for the resort and the snow making. **O3547**

Response: Water supply for the resort is described in SDEIS section 2.8.6, Water supply Potable and Irrigation, with technical reports in Appendices 13, 13A and 17. Water supply for snowmaking is addressed in the Unit Management Plan.

(5) Blasting through the rocks (the mountain is made of rocks) will shatter many of the local wells which has been installed at great expense. **I382**

Response: See the response to substantively similar comment 3.2(5).

(6) There is not enough water in the aquifer to supply the Resort needed and the three hamlets of Big Indian, Pine Hill, and Fleischmanns. **I176**

Response: Pine Hill and Big Indian are in the Birch Creek watershed, separated from the Emory Brook/Bush Kill drainage basin by a divide at Highmount. Only 12 acres of the Modified Belleayre Resort lie east of the divide and within the Birch Creek Watershed. No ground water withdrawals for the resort will take place east of the Highmount divide. The pumping tests were conducted under the requirement that the water level drawdown in the pumping wells meet NYSDOH stabilization requirements and that the impacts to community and private water supplies be monitored. The pumping tests demonstrated that the stabilization requirement was met without detrimental impacts to existing water supply wells. See responses to 2.8.6, comment 4, and 3.2, comment 1.

(7) The [Galli Curci] Estate depends on deeded rights to an aquifer on the opposite side of County Route 49A. The very significant draw downs on local aquifers needed to support the project will likely disrupt and/or degrade this water supply. The SDEIS needs to identify an alternative water supply source that is of comparable quality and reliability. If, as it appears, the only such way to provide these assurances is to permit the Estate to connect to the project's water supply, that connection should be made a requirement of any approval.

Response: The project water supply, the K wells, are located nearly a mile away from the Galli Curci Estate and are downhill from the estate. Wells located much closer to the K wells were monitored during the pump testing of the K wells, and these much closer wells were not affected.

Currently the estate is serviced by a spring. Generally speaking springs/surface discharge of groundwater are no longer viewed as a preferred means of supplying potable water to a private residence. To the extent that the spring is dependent upon the groundwater recharge for the area not being significantly affected, the report in the SDEIS by Alpha Geoscience shows that the development will not adversely affect the groundwater regime. In the very unlikely event that the project has any adverse effect on the spring servicing the mansion, Crossroads Ventures LLC holds title to the adjacent property. That title and the title to the Galli Curci property contain an easement which grants the property holder, Crossroads Ventures LLC an easement onto the Galli Curci property to allow for the drilling of a potable water well to replace the existing spring fed potable water supply for the Galli Curci property. A copy of this title/easement is a public record at the County Clerk's office.

In the Highmount Ski Area on the western slope of Belleayre Mountain the road is 700 feet above the valley. Rock cuts along Galli Curci Road near the ski slope are a grayish to brown cross -bedded sandstone. Here rock beds are inclined to normal bedding and truncated at the top and bottom. The rock is coarse-grained and fractures easily along bedding planes. Bedding plane joints and extensive vertical joints allow the surface water to penetrate further and form several springs near the Galli Curci property. On the western side, the permanent water table is at a depth of over 600 feet and yields a significant amount of ground water. Frost action and frost heaving over a period of time widened the near-surface fractures and joints, allowing water to penetrate further down, flow along the slope and produce several springs at the western side of the ski slope.

The SDEIS suggests that blasting may increase water yields in nearby wells by increasing and widening fractures. However, the extensive blasting which will be needed at Highmount for developing a seven floor structure (or a five floor one at Wildacres) may propagate incipient fractures in the rocks which can weaken them. The structures which will be built can be affected in the future by the development and opening of micro-fractures in the rock(s). Overlying load from newly-built structures and vibration from the surface can also enhance the widening of microfractures and joints and weaken the rocks. This could result in seepage of the surface water further down, which can adversely affect the ground water supply for residents of the area. The flow of particulate materials and minerals like hematite and limonite can contaminate the ground water over a period of time. The effect will be increased by heavy precipitation. In addition, large scale structures such as are planned will reduce seepage of water from the surface to groundwater. The ground water in nearby areas may be affected by paving and overuse. As such there is a limited water supply in the perched water table in this area. Much will depend on the recharge of water from surface precipitation (rain and snow). Artificial recharging may be necessary in the future.

Such extensive blasting may have far-reaching and unintended consequences. **I3535**

Response: *The deeded right is for access to a spring on the property across the street from the Galli Curci estate, not an aquifer. The spring on the property across from the Galli Curci estate is there because relatively impermeable material is preventing the ground water from penetrating deeper into the bedrock aquifer. This is called a contact spring and is typical of the springs on Belleayre Mountain and the rest of the Catskills. The impermeable material is typically shale, or a thick layer of locally unfractured sandstone. Ground water, following topography, flows downward via gravity within the open fractures of sandstone layers in the shallow (near surface) bedrock until it encounters a relatively impermeable shale layer, or unfractured sandstone layer, on which it flows outward along this "contact" between permeable, fractured, bedrock and relatively impermeable shale. The pumping tests conducted at the K well field and well Q1 showed that the wells can provide the potable demand for the resort without adversely affecting local water supplies, which include residential water supplies such as that of the Galli Curci estate.*

Blasting will be done such that the blast energy is not wasted beyond the immediate area where bedrock needs to be removed. Propagation of existing bedrock fractures is not expected beyond the immediate area of the blast. Shallow ground water will be affected within portions of the *existing fractured bedrock system by removal of the fracture zones from the footprints of selected structures. Ground water will seep out the fractures where the new bedrock face is exposed (adjacent to a building), then seep back into the bedrock fractures at the first opportunity and re-enter the shallow ground water system. This scenario is already happening all over Belleayre Mountain. Water from contact springs, if not used as a water resource, commonly re-enters the shallow ground water system at some distance downhill where more fractures are exposed or the fractured bedrock is overlain by permeable soils.*

Mitigation measures relating to blasting and groundwater include performing a pre-blast survey of any homeowner's well within ¼ mile who would like to have a survey performed, and establishment of an arbitration process whereby any complaints of well damage that could have arisen as a result of site blasting will be examined by one or more independent professional hydrogeologist and resolved at the Applicant's expense (See SDEIS Section 3.2.4 for details).

3.2.2 Wastewater Collection, Treatment and Disposal

(1) The 2-mile proposed sewer line that is projected to connect the Belleayre Resort with the Pine Hill WWTP will follow Rt.49A, a roadway known for drastic frost heaving in the winter and susceptibility to flooding and erosion. The DEIS must calculate the risks associated with cold climate attrition of the proposed pipeline and the effects of possible leakages of sewage into the Pepacton and Ashokan watersheds.

The DEIS and UMP do not adequately explore water temperature increases in the effluent discharge from the Pine Hill WWTP into Birch Creek, a Class A trout stream. An anticipated rise in water temperature from increased volumes of sewage waste from the development proposals may have a detrimental effect upon dissolved oxygen levels in this cold water creek compromising a valuable recreational fishery and an important ecosystem. **O3638**

Response: The proposed force main would be installed below frost depth per standard engineering practices.

The Pine Hill WWTP discharge has a temperature limit established by NYSDEC. The temperature limits were established at a level that would have no adverse impact to the stream classification.

(2) Please quantify the loss of growth capacity in each respective town should a town's water be used for resort development instead of for the town's own development. How many years of growth capacity will Pine Hill lose should the resort use Pine Hill's sewer infrastructure? What is the cost to increase sewage capacity at the Pine Hill Wastewater Treatment Plant if the resort exceeds its current capacity? And in how many years might this new capacity be available? **I2131**

Response: Town water is not proposed to be used for the project. The project will develop and use its own wells.

The existing Pine Hill WWTP has excess capacity which is being allocated to the project. Even with the full build out of the project the Pine Hill WWTP is expected to have excess capacity, thus there is no cost to increase the capacity of the Pine Hill WWTP. Similarly, the project does not limit the growth potential of the existing Pine Hill service area.

(3) How are private utilities (for example, the sewer running along State Route 28) allowed to be installed on public property? Does this set a precedent for anyone to be able to run utilities on state property or public property because they need to? Is this property going to be leased from the state? Who is responsible for the maintenance? Why can this land be used for a private business? Where are the launching and receiving areas for the so-called "jacking" of the thousands of feet of sewage pipe? Where are the test pits all along the pipe's path that would indicate that jacking would not occur in solid bedrock? If jacking will occur in solid bedrock, how and what science is behind this and how is it to be performed? What effect will this pipe installation have on the storm water ditches alongside of Route 28? Will the ditches still be able to be customarily maintained by the New York State Department of Transportation? If for some reason the DEC decided to set the policy that anyone may use state lands to place utilities on, what process will be necessary to advise the state that one will be installing similar projects on public land? What will happen if these pipes leak into the environment? How will a leak be determined? It does not appear that there are any manholes; therefore, where are the service or inspection areas located? The utilities must also cross Ulster County's property; will this also set the precedent for anyone to incorporate their utilities on county property as well? Will the installation of the pipe have an effect on traffic flow? What method of jacking is used? Will there be large noisy compressors? Has the quantity of global warming gases been figured into this pipe installation for the project? How do you get across to Quarry Hill, for example?

Reading "The 2011 Horizontal Directional Drilling Guide: A Supplement to Trenchless Technologies," one will find it necessary that a test hole survey be done to analyze the soil conditions where the pipe is going to be installed. This has not been done. The manual also says to avoid any rock ledges. As one drives up Highmount and down the other side towards Fleischmanns, you would observe many rock ledges along the highway in the exact vicinity of where this trenchless technology and pipe will be installed. Also, there are definitely no arrangements made for a launching and receiving area for the pipe to be drilled and installed. The manual also states that a foam surfactant or soap consisting of partially hydrolyzed polyacrylamide and Polyanionic cellulose must be used when you encounter tough rock conditions and/or solid rock conditions such as may be encountered or more than likely will be encountered in this area. How are these chemicals going to be kept from spilling into environment if a rain event occurs or other accident? How will the waters be treated that are used in this drilling process? Will they just flow in a ditch down to Pine Hill? The plan says that horizontal directional drilling will be used throughout the entire project. There are no hazardous waste plans, no drill hole tests, no starting and stopping pits, nothing. Are you aware of potential construction problems that could occur with directional boring? They include but are not limited to utility strikes, fracs outs (permanent rock fractures spiraling away the bore hole), lost tooling and drill pipes, poor steering, and broken pipes, to name a few. There is simply nothing to support any preparation for any type of horizontal directional drilling and is simply shown on paper, as similar to this entire project, a mere PIPE DREAM. **I3506**

Response: It is the industry standard to place utilities such as sewer, water, telephone, cable, electric, gas, etc. in the road right-of-way. This includes private and public utilities. NYSDOT has a permitting process that governs placement of utilities in private rights-of-way

The methods for directionally drilling by professional contractors are well established and accepted by regulatory agencies and the engineering industry, as the best available practice for avoiding excavation in environmentally sensitive areas including drilling through rock.

(4) Liquid and solid waste calculations are not based on ratio of highest capacity of the Pine Hill facility and max output of the entire facility after construction of additions are complete. **O3635**

Response: The flow calculations are for the full build out of the project and are consistent with New York State Department of Environmental Conservation's Design Standards for Wastewater Treatment Works Intermediate Size Sewerage Facilities, dated 1988.

(5) As the original plan was moved to the West side of Highmount to avoid the pollution threat to the Ashokan, it does not make any sense to build a small city on Highmount which will still send its sewage effluent into the Ashokan Watershed. **I424**

Response: The "pollution threat" referred to in the comment was potential increase solids loading and turbidity from stormwater, not treated effluent from the NYCDEP-operated WWTP.

(6) How about Sewage? **I422**

Response: Sewage will be collected and discharged to Pine Hill collection and treatment system.

(7) SEWAGE: Will Pine Hill be able to accommodate the 180,000 gallons of sewage predicted to flow from the resort daily? **I225**

Response: Yes, the proposed flow and loadings have been reviewed by NYCDEP which owns and operates the Pine Hill WWTP. NYS DEC also concurs there is excess capacity at Pine Hill to accommodate the flow from the project.

(6) The Jurisdictional Determination (JD) issued by the USACOE on August 15, 2011, does not include waters of the United States within the proposed water and sanitary sewer lines. Due to the overall development, potential impacts to the wetlands/streams within the proposed sanitary sewer and water lines should be considered and addressed by the USACOE. Also, the JD is valid for a period of five (5) years therefore it expires on August 14, 2016. Coordination with the USACOE after the JD expiration would be necessary if the project is not complete. Also, the wetland/stream areas may need to be reevaluated and reviewed by the USACOE after the JD expires.

Response: As per Appendix 14 of the SDEIS, the materials submitted to the USACOE for the issuance of the JD showed the location of the off-site utilities and the few small areas of wetlands along their routes (bore locations B1 through B5). The applicant will continue to keep the

USACOE involved in the project throughout construction, including taking those steps necessary to keep the JD current.

(7) Proposed directional drilling for water and sanitary sewer lines should include a "Frac-Out Plan" or similar contingency plan to minimize the potential inadvertent release of drilling fluids during directional drilling within wetland/stream areas. The Frac-Out Plan should minimize the potential for a frac-out associated with horizontal directional drilling activities, provide for the timely detection or frac-outs, protect wetland/stream areas and other areas that are considered environmentally sensitive (other biological resources, cultural resources), and ensure an organized, timely and minimum impact response in the event a frac-out and release of drilling mud occur.

Response: Comment noted. A "Frac-Out Plan" will be included in the final design.

3.2.3 Golf Course Management

(1) There is only a five year promise of an organic golf course. The golf course must be economically feasible, as is now written into the plan, and if an organic course is not, it can be changed. This is an unacceptable loophole; any mountain golf course must remain organic, whether economically feasible or not! The developer's plans in general must be viewed very cautiously, with a microscope and no escape clauses. If ponds are to be used to water lawns and the golf course, and if the ponds are dried up (likely), how much groundwater will be used for irrigation? Irrigation water is lost to the aquifers through evaporation. **O3489**

The golf course proposed in the SDEIS would be inside Catskill Park, within the NYC watershed, and would share a long border with forest preserve land. Runoff from the golf course will likely carry additional phosphorous to the west, draining into the Pepacton Reservoir, which is already of concern.

Response: See the response to comments 3.1.5(7) regarding the implementation of the OGCMP.

The ability of the dedicated wells to meet the golf course irrigation needs is described in SDEIS section 2.8.6 and Appendix 17. Adequate water exists without impacts to aquifers.

The only Forest Preserve lands near the golf course are the BMSC Intensive Use Area lands across County Route 49A and uphill of the golf course. There is no "long border" shared with Forest Preserve land as claimed in the comment.

The Pepacton is not a phosphorus-restricted basin.

Phosphorus loading from the project is analyzed in great detail in SDEIS Appendix 19. It is predicted that annual phosphorus loading to from the project site will increase from 99.4 kg/yr to 148.8 kg/yr, or 49.4 kg/yr. This represents a 0.1% increase in loading to the Pepacton and is also equivalent to 0.06 of the 70,864 kg/yr (after subtracting out wastewater loading and the 10% margin of safety) TMDL loading under which water quality in the Pepacton would not be affected.

(2) The rock in this region is very hard and will not allow for filtration of the chemicals that run off the proposed golf course. **I176**

Response: The OGCMP in SDEIS appendix 15 describes how synthetic chemicals will not be used for golf course management.

(3) Think of the fertilizer that will drain into the soil and into your well. **I422**

Response: The fertilizer and pesticide risk assessment performed as part of the DEIS demonstrated that golf course fertilization would not result in groundwater contamination.

(4) Does the golf course design consider the need for water/irrigation?

Does golf course design consider impacts of climate change on golf course watering and irrigation?

Have water needs for golf course watering and irrigation been spelled out, after consideration of competing existing needs of biota currently needing that water?

Have limits been established on how much water is allowed for use for golf course watering and irrigation, particularly with regard to existing biota needs? **O3635**

Response: Golf course irrigation was discussed in detail in SDEIS 2.8.6, Water Supply, Potable and Irrigation and Appendix 17 Irrigation Wells Test Report. Three existing wells will be dedicated as irrigation water source and they have the demonstrated capacity to meet demand based on 20 years of local historic weather data without impacting the aquifer. The testing report for the irrigation wells, SDEIS appendix 17, concludes that these wells can provide sufficient water without impacting nearby streams and their biota.

3.3 Soils

(1) Although tests were done on the proposed development by project consultants, the test findings seem to differ from government agency results. Drawings L-2.02 and L-2.03 reveal test pit data that are different from the drawing data, different from the reference table listed, and different again from NRCS Governmental Web Soil Survey reports. Some of the test points (Crossroads soil samples) have omitted data on crucial measurements, such as soil conditions surrounding building foundations and the depth of the high water table in critical areas (see Drawing L-2.03). Tests performed at the project site, where information has not been excluded, seem to correlate well with the NRCS findings that state the bedrock is only inches from the surface, making the project area a poor candidate for this type of development.

Response: Appendix 12 of the DEIS provides correspondence between the project consultants, USDA NRCS' NYS Soil Scientist and the Delaware County Soil and Water Conservation District's Soil and Groundwater Specialist, in which they agree upon the proper soil series classifications for the project site. This agreed upon soil classification was used to prepare L-

2.02 and L2.03. Shallow depth to bedrock is recognized clearly in the SDEIS, locations where rock blasting is anticipated to be needed are identified and mitigation measures for potential impacts associated with blasting are also provided.

The soil test data are severely flawed in that on Drawings L-2.02 and L-2.03 some of the test pits are carefully numbered from 1 to 77 and fully described, whereas half the test pits that are also on the drawings are not sequenced or described. Many of the non-sequenced pits are in crucial areas of the project and necessary to determine the geological conditions of the soils. It is very odd that some areas, including the non-sequenced non-described pit areas depict a specific soil group on the drawings mentioned previously. How were the soil conditions delineated with such precision based on no collected data or missing data collection documentation? Independent soil sampling is necessary to confirm that the missing soil survey data is consistent with data provided by the NRCS and USDA.

Test pits are not shown in or around foundation areas. Similarly, soil series are indicated for the irrigation pond (actually, a dam; see below) but no test pits are indicated. In many instances, test pits do not match the legend; for example, test pit number 54 states "red shale Rocky" but this is identified on the map legend as "LdB Lairdsville silty clay loam." This soil identification differs from the USGS: which one of these soil identifications is correct? The silty clay loam on the map legend indicates greater than 20 to 40 inches to bedrock refusal, yet the test pit sample for pit number 54 shows depth to bedrock to be 59 inches.

Test Pit Logs and descriptions were provided in Appendix H of the 2011 version of the SDEIS. It is not clear bow the test pit logs of Appendix Hare reflected on the 2011 and 2013 drawings. Some appear to be Drawing L-2.03, but the number sequencing from 53 to 68 was left out of Appendix H. DEP representatives accompanied the test pit sampling in November 2000; it is not clear why no DEP representatives were present on September 3, 4, 5, 2002, or in November 2007, as stated on page 2 of SDEIS 2011 Appendix H.

Response: L-2.02 contains Highmount and the described 77 test pits. L-2.03 has been updated with test pit ID #s and descriptions and can be found in the errata section of this FEIS. As described in the DEIS, soils mapping for the entire site was based on on-site soil survey work performed by a Professional Soil Scientist/Professional Soil Classifier and so specific locations descriptions may vary from the USDA NRCS more general information.

Note: On page 2 of "Appendix H, Test Pit WA Pond 3" of the 2011 version of the SDEIS Mr. Roger Case states that the impervious hardpan soils should make successful ponds. This is absolutely correct; however, is this test pit located in a pond area where the depth of the pond (when excavated) exceeds the depth of the soil layers identified as Bx and Cd horizons? Would this mean that the layers of soil that are suitable for a pond will be excavated and removed? Will these materials be stockpiled, further and substantia1ly increasing the footprint of the project during construction and making it subject to more erosion and run off?

Response: The Cd horizon logged in pit WA Pond 3 extends below a depth of 86 inches and it is this horizon that the pond will be excavated into. Materials excavated from the pond will be used in grading adjacent areas to be developed. The SDEIS contains extensive information, both *in narrative and in plans, regarding proposed sediment and erosion control measures to be implemented in all of the areas to be developed.*

Note: Page 6, "Individual Stormwater Pollution Prevention Plan," March 2011, paragraph 3.8, Soils," states, "Deep hole test pits were performed throughout the site to confirm the USDA soil mapping and to define the soil boundaries better...." This paragraph makes it very c1ear that the USDAINRCS Web Soil Surveys were used as a basis for study and then confirmed for local boundary definition by the deep hole pits. Following this methodology and using the data provided, the soil conditions clearly do not allow for this type of construction, based on a broad reading of the WSS for the subject area.

Response: As described fully in the SDEIS, site-specific soil conditions, as opposed to "a broad reading of the WSS" were taken into account when assessing site buildability, designing sediment and erosion control measures, and developing measures to impact potential impacts associated with the identified areas of rock blasting.

Most of the soil appears to be inadequate for golf course subsurface or green roofs. In addition, the test pits dug in November 2007 were not in accordance with standard methods and engineering practices to correctly analyze the seasonal high water table (see below).

Although the "cuts and fills" appear to balance for the most part, the material must be blasted, mined, processed, crushed, screened, washed, transported, stockpiled, sorted, placed, and graded. The SDEIS states that all fill will come from on-site. Based on local soil conditions, onsite fill material will fall hundreds of tons short in suitable topsoil, crucial to tills project in particular because of the "organic" golf course. Will the balance of topsoil need to be trucked in from off site? What about the soils for the "Green Roof'?

Response: As described in the SDEIS, the golf course will be covered with imported topsoil and the green roof will also have specified imported soils in order to produce proper drainage.

Crossroads' soil test results conflict with published data and are incomplete.

Many of the affected soils are not suitable for the development proposed on them, and there is not enough fill available on-site for the required construction. **O3635**

Response: See the responses provided above in this comment.

(2) On most of the test pits, it is indicated that there is no seasonal high water table, why is that? What criteria or method is used for determining the seasonal high water table? Incidentally, the map legend title box spells "series" wrong; if you make these kinds of spelling mistakes how much attention to detail was given to the identification of the soil samples? If acute detail was not given to the soil samples, and these discrepancies which have been found throughout the maps, how were the run off calculations performed using this particular soil sample data? This would obviously imply that all of the storm water runoff data and calculations are not correct.

Response: No seasonal high water table in a text pit log indicates that a seasonal high water table was not encountered anywhere in the exposed soil profile. Test pits were typically excavated to a depth of 8 feet unless refusal (typically bedrock) was encountered. Seasonal high water tables can be documented by direct observation as seeps in the test pit wall or by reduced chroma soil conditions that result from seasonal saturation. A draftsman's spelling error on the plan drawings are hardly a reason to discount the technical accuracy of the data collected by professional soil scientists or the technical accuracy of the stormwater management plans prepared by licensed engineers and landscape architects.

The geotechnical aspects are clearly not accurate; onsite soil samples do not correlate with those identified in the exact area on the project blueprints, and soil designations differ from US geological service findings. In areas where bedrock was encountered very close to the surface, blueprints show sediment ponds, dams, foundations, even horizontally drilled sewage and water pipes, in this solid rock, for not hundreds of feet but in the miles range, and the utilities are drilled on public land! (Can anyone now use state land for our septic systems, since this is the same issue?) **I3506, H53**

Response: See the responses above regarding how soil information was obtained and mapped. The SDEIS clearly identifies where construction in rock will occur, including utility lines. Prior to construction, additional geotechnical information will be collected when finalizing building structural plans. It is not unusual, in fact it is common practice, to install utilities, including water and sewer lines, within road rights-of-way. No septic systems are proposed as part of this project.

(3) The SDEIS identifies the fact that blasting will be required for certain buildings and sections of road. Figure 2-36 of the SDEIS shows blasting on the project site in areas immediately across County Route 49A from the Galli-Curci Property. The Mansion and nine other contributing on-site resources are only a few hundred feet away from the closest blasting sites that have been identified. Other blasting sites needed to expand County Road 49A have not been identified in the SDEIS and may be even closer.

The SDEIS concedes that vibration and noise from blasting has the potential for impacting nearby structures and people (SDEIS at 3-34). The SDEIS offers no analysis of the risk of damage at various distances nor does it offer any specific measures that might lessen that risk except to note that the blasting will be controlled so the vibrations satisfy the particle velocities v. frequency limits recommended by the U.S. Bureau of Mines Report-8507 (November 1980) (SDEIS at 3-34). Whether that standard is adequate to protect a century-old structure or whether other safer standards are available is not discussed. The proposed mitigation for any blasting damage relies upon repairing damage after the fact (assuming such damage can be proven) rather than considering additional measures that might be needed to prevent damage to sensitive receptors.

Blasting techniques that may be adequate in most circumstances to protect modern structures may not necessarily be adequate to provide adequate protection for century-old cultural resources listed on the State and National Registers. Damage must be avoided to the structures as it may not be feasible to repair them consistent with maintaining their historic character and architectural significance.

The SDEIS needs to analyze whether blasting could have an adverse impact structures that are on the Galli-Curci Property. If analysis shows that there is potential for such damage, alternative construction techniques should be required or the development should be modified. **I3535**

Response: Google Earth mapping shows the Galli-Curci house to be approximately 350 feet away from County Route 49A at its closest point, and approximately 500 feet away from the nearest anticipated blasting location shown on SDEIS figure 2-36. The owner of this residence will be invited to participate in the pre-blast survey.

The NYS licensed blaster that will be performing the blasting will do an overall pre-blast assessment of blast locations and nearby areas. Blast sizes will be adjusted to avoid impacts to off-site resources. It is not unusual for modern blasting technologies to be employed even in dense urban areas and in close proximity to older structures without adverse impacts, including historic downtown Saratoga Springs, NY.

3.4 Terrestrial and Aquatic Ecology

(1) Another issue is the use of potable water, in excess of the very conservative stated figure of nearly 8 million gallons, to fill the pond; this water has been proven/tested (Crossroad's certified lab results) to have dangerous levels of heavy metals, arsenic in particular, that exceed the Ten States Standards and will bio-accumulate in the pond and be distributed on the golf course and directly impact the stormwater runoff pollutant levels. The arsenic levels in the ground water are also a good indication that the soils in the project area may have other naturally occurring heavy metals that are known to be "carcinogenic contaminants." Based on soil tests in the surrounding areas, the metals include, but are not limited to, lead, arsenic, and mercury. "Effects of methyl-mercury exposure on wildlife can include mortality (death), reduced fertility, slower growth and development, and abnormal behavior that affects survival, depending on level of exposure. In addition, research indicates that the endocrine system of fish, which plays an important role in fish development and reproduction, may be altered by the levels of methyl-mercury found in the environment" (http://www.epa.gov/mercury/eco.htm). Disturbance of the large project area will certainly increase concentrates of these metals to lower lying areas and to streams that are part of the NYC Water Supply Systems, such as the Esopus and Delaware.

Note that page 5 of Appendix 19: Individual Stormwater Pollution Prevention Plan, Phase 1 of the Belleayre Resort at Catskill Park, states, "Neither of the Emory Brook tributaries were found to support trout during recent investigations. Emory Brook itself does support trout, but is located approximately 1,500 feet from the closest proposed golf hole." One can conclude from this: Trout don't swim! If the Emory Brook has trout, wouldn't they likely swim up the tributary? Moreover, measuring of multiple scaled maps actually reveals a tributary to Emory Brook at about 650 feet away from the closest proposed golf hole. Additional data about trout populations in the tributaries are needed, and may be available but not yet entered in official registries. In addition, many other forms of aquatic life are dependent on this coldwater source. With global warming already exceeding rates the most liberal models have predicted, the fauna in the Catskill high peaks have already been left without water sources (primarily due to dropping water table). Some, such as the snowshoe rabbit, have already perished. The streams in the project area that were inspected for trout, that used to be filled with brook trout in years past, now have dropped down to dangerously low levels, causing some of them to become intermittent. **O3635**

Response: The project will not result in changes in the exposure routes of wildlife to abiotic factors including surface waters and soils. In the project area groundwater frequently reaches the ground surface as springs that become surface flow that local fauna are exposed to. Likewise, the occurrence of metals in the soil is not a recent phenomena in the area and the project is not going to change the routes or degrees to which wildlife have been historically exposed to without adverse effects.

The SDEIS does not say that the tributaries do not support trout at some times during the year. The SDEIS stated that the brooks did not support trout when they were investigated (electroshocking sampling by NYSDEC Region 3 and Region 4 Fisheries staff). There is nothing in the comment to substantiate that local water levels are experiencing a declining trend over time.

(2) The clear cutting of large amounts of forest will stress our animal life and cause huge amounts of run off. **I228**

Response: Project impacts to wildlife are discussed in detail in SDEIS section2 3.4.3 and 4.2. The small and localized impacts to wildlife that could result from project development are more than offset by this project resulting in nearly 1,200 acres of private, developable land being added to the Forest Preserve as well as 200 acres being put into a Conservation Easement.

(3) I am opposed to this project and any destruction of our natural habitat by any gross money making over development scheme. **I2817**

Response: This comment lacks any specifics as to how the current project will adversely affect environmental resources, otherwise the comment is noted.

(3a) The Catskill Park will be denuded of thousands of trees if the mega resort is constructed. I fear for the animal habitats which will be destroyed. **I3646**

Response: Comment is noted. Project impacts to wildlife are discussed in detail in SDEIS section2 3.4.3 and 4.2. The small and localized impacts to wildlife that could result from project development are more than offset by this project resulting in nearly 1,200 acres of private, developable land being added to the Forest Preserve as well as 200 acres being put into a Conservation Easement.

(3b) I am adamantly against the proposed clearing of 101 acres of prime forest to make room for more tourists - additional machinery and traffic the expansion would obviously create.

Response: Comment is noted. Project impacts to wildlife are discussed in detail in SDEIS section2 3.4.3 and 4.2. The small and localized impacts to wildlife that could result from project development are more than offset by this project resulting in nearly 1,200 acres of private, developable land being added to the Forest Preserve as well as 200 acres being put into a Conservation Easement.

The forests and lands belong to all the people of the Hudson Valley and not just a select few and meant for their recreation only. **I364**

Response: This comment lacks any specificity as to how the current project will adversely affect environmental resources, otherwise comment is noted.

(3c) You are an environmental protection agency and you are considering doing exactly the opposite. There is other life on this planet that deserves to be in the equation that are so often left out. In the past couple years since I've returned to the area, bears in the city of Poughkeepsie, really? Why have they been found there? Because they're being displaced from their natural habitat. Which then of course gives some gun toting authority to go on a shooting spree because of the "danger". Going ahead with this project will destroy quite a large amount of land, wildlife, and natural growth for what...so some New York City elite can get away for a weekend? **I362.**

Response: Comment is noted. Project impacts to wildlife are discussed in detail in SDEIS sections 3.4.3 and 4.2. The small and localized impacts to wildlife that could result from project development are more than offset by this project that results in nearly 1,200 acres of private, developable land being added to the Forest Preserve as well as 200 acres being put into a Conservation Easement.

(3d) I am appalled that the DEC would even consider this mega development that would destroy hundreds of acres of prime forest of animal and bird habitat for the benefit and profit of Mr. Dean Gitter. **I391**

Response: See the response to substantively similar comment 2, above. Additionally this "prime forest" referred to in numerous comments was largely in agricultural use in the recent past. Project impacts to wildlife are discussed in detail in SDEIS section2 3.4.3 and 4.2. The small and localized impacts to wildlife that could result from project development are more than offset by this project resulting in nearly 1,200 acres of private, developable land being added to the Forest Preserve as well as 200 acres being put into a Conservation Easement.

(4) How will it affect the regions flora and fauna? **I3591**

Response: Impacts to flora and fauna were thoroughly evaluated in SDEIS sections 3.4.1, 3.4.3, 4.1 and 4.2.

3.4.1 Vegetation

(1) The SDEIS in Appendix 21 uses an incorrect Invasive Species Control Plan to identify harmful exotics likely to be found in the Catskills. While protocols established for the invasive

species found in or near wetlands may have some applicability, the Applicant has an obligation to use the best regional information to protect the State Forest Preserve from the most likely invasive plants and animals that will come with this significant vector of disturbance. **O3638**

Response: As per the title page of SDEIS appendix 21, the Invasive Species control plan was developed in cooperation with NYSDEC as well as the Catskill Regional Invasive Species Partnership (CRISP), who is the regional entity that coordinates invasive species control, in and out of wetlands and in and out of the Forest Preserve. The Applicant believes that CRISP is the best source of information for controlling invasive species in the Catskills.

3.4.2 Wetlands – Waters of the US

(1) The Wetland Activities Plan (Figure 3-8) shows a proposed parking garage directly over Wetland 17. This impact is not disclosed in the text of the SDEIS, presumably because this wetland was not deemed jurisdictional by the ACOE. Proposed activities potentially impacting Wetland 17, and any other non-jurisdictional wetlands, should be assessed, as the scope of the SEQRA review is not limited to federally-regulated wetland impacts. These impacts should be included in cumulative impacts in Section 1.3.1.3 and Table 1.3-1.

The text indicates that all of the proposed vegetation clearing will be done by hand. Sections 1.3.1.2 and 3.4.2 C state that heavy machinery will not be used to conduct the clearing or to pull stumps; however, the notes on Sheet 3-8 indicate that trees may be removed beginning at the wetland edge and that construction matting will be installed to enable equipment operation in the wetland interior. Trees will be cut, topped, and lifted from the wetland using machinery operating on the matting. The SDEIS should clarify whether heavy equipment will enter the wetlands, and assess potential impacts. **M3637**

Response: The proposed parking garage is proposed to be built on piers so there will be no direct impact to the wetland hydrology. The potential alteration of hydrology of this non-jurisdictional wetland will be minimal. This wetland area is a seep formed and maintained primarily by groundwater discharge. Loss of vegetation by shading may have some minor effect on hydrology – less water uptake by plants may result in slightly increased discharge rates.

Figure 3-8 has been corrected so that it is consistent with the statements in the SDEIS that machinery will not operate in wetlands, even on construction mats. A copy of this corrected sheet is included in the errata section of this FEIS.

(2) Onsite wetlands and wetland crossings are identified on site drawings L-4.02, L-4.03, and L-4.07. The proposed parking garage associated with the Wildacres Hotel has been located on top of an isolated wetland (L-4.03). We recommend that the isolated wetland not be disturbed and that the 208 parking spaces associated with this garage be constructed below the Wildacres Hotel adding to the proposed capacity.

Response: Placing the parking garage as suggested disturb slopes >20%, and would displace other project components, forcing them to be located on slopes >20%. The parking garage, as designed provides a direct connection to the Wildacres Hotel building, which would not be *possible if it was to be located below the hotel. The parking garage at this location allows favored design features while minimizing development on steep slopes.*

Specific wetland buffer area designations are missing from many of the site plans. This information is needed to prevent wetland buffer encroachment. For example, a wetland protection detail with both silt fence and orange barrier fence is shown on drawing L-8.00. However, this detail is not displayed on the other plan view drawings. So, instead of viewing a wetland buffer designation on the other site plans, a silt fence without the orange barrier is shown. Fences, delineating wetland buffer areas, need to be clearly and consistently presented on site plans. **S3592**
Response: The comment is correct. In a number of locations, i.e. on Sheet 3.08, there is only a detail call out (8.00/2) and symbols shown for silt fence. Additional orange wetland exclusion fence will be added to the plans in the SWPPP that gets submitted to NYSDEC for Individual Permit review prior to construction.

(3) The current design of the Modified resort project involves the potential for a number of impacts to wetlands and buffer areas. Specific wetland buffer delineations are absent on some of the SWPPP site plan drawings. Without this information, it is impossible to determine whether any proposed development encroaches on buffer areas. In addition, some proposed SMPs discharge into wetlands with no rock outlet protection to minimize sediment loading to the wetland. Finally, a parking garage on the Wildacres site is proposed to be sited on an isolated wetland (Drawing L-4.02), which would eliminate any water quality functions that wetland provides under existing conditions.

Recommendation # 6: To minimize adverse impacts to wetlands and buffers, SWPPP site plan drawings should identify all wetland buffer boundaries, rock outlet protection should be installed at SMP outlets discharging into wetlands, and the proposed parking garage should be relocated to an area where it does not encroach on any wetland or buffer. **O3650**

Response: See the previous response (#2) regarding buffers and adding additional detail callouts in the pre-construction SWPPP that gets submitted to NYSDEC for Individual Permit review. Similarly, additional rock outlet protection will be added to these plans where appropriate. There are no regulatory buffers on the wetlands within the project limits and therefore buffers are not included on plans or other documentation. See the response to comment 2 above regarding justification for placement in this location.

(4) A garage is planned to be built in a wetland (SDEIS: comparison of multiple sheets). "Seepy" areas (e.g., near the Marlowe Mansion) may be wetlands (see 2011 SDEIS, page xvii). When the resort uses water, wetlands may disappear. Delineation of wetlands needs to be further investigated. Will wetlands be drained by construction in the seasonal high water table, stormwater diversions, or excessive water use?

L- 2.06 - wetlands determination: according to the submitted data, the wetlands delineation took place in September and November of 1999. At this time of year, the leaves had fallen off the deciduous species and the land was dry. How were the wetland species determined? It is very difficult to determine the species by looking at the stem with no leaves. Since much of this data is over 14 years old, the delineation should be performed again. On the same page, why is the K-well parcel excluded from jurisdictional determination? Wells of the magnitude of those in the K-well parcel produce an extremely large cone of influence that can ultimately dry up wetlands in the vicinity. **O3635**

Response: See response 1 above regarding the parking garage being built on piers. Surficial hydrology, with the primary exception of direct precipitation input to this seepy area, will not be impacted.

Wells for resort water supply are deep in bedrock and will not affect surface hydrology. The wetland delineation on the site and along the off-site utility (water and sewer lines) route were confirmed as being accurate by the US Army Corps of Engineers. A field visit was conducted with the USACOE on July 14, 2010 that included inspections of the off-site water and sewer line corridors.

Personnel conducting the wetlands delineation work included a PhD Botanist skilled in plant identification, including under leaf-off conditions.

The area on the K-well site in proximity to the wells were part of the Jurisdictional Determination issued by the USACOE.

(5) Wetland determination: according to the submitted data, the wetlands delineation took place in September and November of 1999. At this time of year, the leaves had fallen off the deciduous species and the land was dry. How were the wetland species determined? It is very difficult to determine the species by looking at the stem with no leaves. The fact that this data is over 14 years old strongly suggests that the delineation must be performed again. On the same page, why is the K-well parcel excluded from jurisdictional determination? Science shows that wells of this magnitude will produce an extremely large cone of influence that will ultimately dry up any wetlands in the vicinity. **I3506**

Response: See the response to the previous, substantively similar comment.

(6) The Jurisdictional Determination (JD) issued by the USACOE on August 15, 2011, does not include waters of the United States within the proposed water and sanitary sewer lines. Due to the overall development, potential impacts to the wetlands/streams within the proposed sanitary sewer and water lines should be considered and addressed by the USACOE. Also, the JD is valid for a period of five (5) years therefore it expires on August 14, 2016. Coordination with the USACOE after the JD expiration would be necessary if the project is not complete. Also, the wetland/stream areas may need to be reevaluated and reviewed by the USACOE after the JD expires.

Proposed directional drilling for water and sanitary sewer lines should include a "Frac-Out Plan" or similar contingency plan to minimize the potential inadvertent release of drilling fluids during directional drilling within wetland/stream areas. The Frac-Out Plan should minimize the potential for a frac-out associated with horizontal directional drilling activities, provide for the timely detection or frac-outs, protect wetland/stream areas and other areas that are considered environmentally sensitive (other biological resources, cultural resources), and ensure an organized, timely and minimum impact response in the event a frac-out and release of drilling mud occur.

Response: See the responses to substantively similar comment 3.2.2(6) and 3.2.2(7) above.

3.4.3 Wildlife

(1) And, what about all the wildlife that now inhabits that area? What will happen to them? **I3301, H71**

(1a) The environment and wildlife will be affected drastically. With climate change and the lack of public funds, this is a bad idea. **O3547**

Response: Project impacts to wildlife are discussed in detail in SDEIS sections 3.4.3 and 4.2. The small and localized impacts to wildlife that could result from project development are more than offset by this project resulting in nearly 1,200 acres of private, developable land being added to the Forest Preserve as well as 200 acres being put into a Conservation Easement.

(2) I own what was once the snowmaking pond for Highmount Ski Center, shown on most project maps, about 800 feet northeast of Design Point 5 on 49A. The pond is fed by the seasonal stream that is fed by runoff thru culverts at DP5, DP6 and DP6a on 49A, also fed by below surface springs. This pond accepts nearly all the stormwater from Highmount Ski Center, the Highmount Hotel and Spa and the hillside sloping down to 49A from the Resort, otherwise known as subcatchments 17, 18, 19 and 20.

In the pond are 36” triploid grass carp (licensed), 15-20” large-mouth bass, bass fingerlings, spotted salamanders, more common small brown or green salamanders, frogs and assorted aquatic bugs.

I need your help to protect the life in my pond from fall out from construction and operation of ski trails, ski lifts, roads, maintenance trails, buildings, ponds, water and sewer lines, etc.; from fall-out from blasting; from any chemicals used during and after construction; from siltation, increased turbidity, decreased levels of oxygen, increased warming and increased runoff from snowmaking.

Please notify me when something is happening upstream of the pond so the inlet can be closed off and water diverted. **I3543**

Response: The requested notification will be provided at the appropriate time.

(3) Adirondack Wild believes that the lack of ecological impact zone analysis and the failure of the SDEIS to consider the impacts of roadway and sprawl development on site, or induced by follow-on growth may have on amphibian, mammal and bird pathways to represent one of the most serious flaws in the SDEIS and UMP-DEIS. **O3639**

Response: According to Gleason & Kretser (2005), the ecological impact zone (ecological effect zone) is the area adjacent to a structure or developed area in which wildlife may potentially be impacted. Following the assumptions of Gleason & Kretser, TES added a 200 meter effect zone to a 2009 aerial photograph. This aerial photograph shows that the ecological effect zone surrounding the limits of the project consists of forest, roads, ski trails, open field areas, and some developed areas. The accompanying figure shows that using the ecological effect zone criteria 96.6% of the site is already impacted by development. The majority of the effect zone is forest cover including deciduous forest, coniferous forest, and mixed forest uplands. The adjacent area beyond 200 meters consists of similar cover types (Figures A and B).

The area of proposed development and the surrounding adjacent areas contain existing development including homes, buildings, other structures, and roadways. TES performed an analysis to compare the ecological effect zone of the existing development to the ecological effect zone of the proposed development. The existing developed areas including the corresponding ecological effect zone are shown on Figure B. The majority of the ecological effect zone associated with the proposed development falls within areas that are currently developed or the corresponding ecological effect zone of current development. Therefore, only a minimal amount of undeveloped land (approximately 3.4%) will be added to the existing ecological effect zone (Figure B).

There were no federally or state listed endangered or threatened species identified on the site during field investigations. Three species of special concern were observed on site including red-headed woodpecker, vesper sparrow, and sharp-shinned hawk. The habitat observed within the project site is comparable to the habitat of the 200 meter adjacent area, and therefore similar species composition is likely to occur within both areas. Federally or state listed endangered or threatened species are not expected to be affected. Although the species of special concern and other species found in the ecological effect zone may be affected during and/or after construction, the effect is expected to be minimal. This is due to the fact that a variety of wildlife is currently utilizing the site and surrounding areas despite the fact that an ecological effect zone from developed areas already exists, and the existing effect zone will only be expanded minimally with the proposed development.

The original development plan included the construction of a resort and spa including a golf course, hotel, and detached housing units on 1,200 acres of forest land located southeast of the currently planned development area. This area in its entirety was conveyed to New York State and is now proposed to be set aside permanently as forest preserve land. It will be added to the Catskill Forest Preserve and is planned to be classified as wilderness, wild forest, and intensive use areas (Figures 2-1, 2-28, 2-29, and 2-30). This area will provide an abundance of wildlife habitat. Any potential impact to wildlife populations will be offset by the removal of the 1,200 acres from the development plan, and the transfer of this land to New York State.

Based on an analysis performed by TES, the majority of the ecological effect zone resulting from the proposed site development is already within an effect zone associated with existing development. Additionally, 1,200 acres of land that was originally planned to be developed has been conveyed to New York State and is proposed to be added to the Catskill Forest Preserve.

This forest preserve land will provide an abundance of wildlife habitat. It is the opinion of TES that further analysis of the ecological effect zone is not required.

3.5 Traffic

(1) The Modified Belleayre Resort SDEIS report states that the revised year of completion is 2018. However, all analyses are done for the year 2015. Analysis should be updated to 2018 or an explanation should be provided for why the analysis year of 2015 was selected instead of the completion year.

Response: The build year is the year when the project would be substantially operational, that is, when the full effects of the project are likely to occur. This is desirable because the future impacts can be anticipated, based upon future environmental conditions. Environmental conditions would include any projects that would come on line, including changes in traffic resulting from additional growth. In this instance, growth for the area has proven to be flat to negative, therefore the traffic can be reasonably expected to be the same in 2018 as 2015. The use of a 2015 design year is noted in the full Traffic Impact Study as follows: "It is anticipated that the proposed project will open during the year 2015 and be developed in phases through the year 2025. The updated UMP for the Belleayre Mountain Ski Center has a design year of 2015. A review of the phasing plan for the proposed Belleayre Resort at Catskill Park indicates that almost 75% of the units proposed for the project site will be developed by 2015. Therefore, to be consistent with the UMP design year and evaluation, a 2015 full build-out condition was evaluated assuming full build-out of the resort."

Incorporate Highway Capacity Software tables and figures from Traffic Impact Study in the Appendix into body of analyses for the Belleayre Resort. Figures in Appendix 11 in the SDEIS are not labeled properly and should indicate scenario/year of analysis.

Response: A summary of the intersection level of service reports generate by the Highway Capacity Software (HCS) is included in Table 4.2 of the Traffic Impact Study (TIS) found in Appendix 11 of the SDEIS. It is unclear what figures are referenced as not being labeled properly. The figures included in the TIS indicate that they represent Existing, No-Build, or Build traffic volumes with an appropriate design year.

It should be noted that the Motor Vehicle Emissions Simulator (MOVES) air quality model should be used in the mobile source air quality analysis for both projects and the cumulative analysis, per USEPA. MOVES is USEPA's latest motor vehicle emissions model to estimate VOCs, nitrogen oxides (NOx), particulate matter (PM2.5 and PM10), carbon monoxide (CO) and other precursors from cars, trucks, buses, and motorcycles. MOVES is recommended to be used for new PM and CO analyses for project-level conformity determinations that begin after December 20, 2012. **M3637**

Response: The updates to the Air Quality procedures were initiated for projects beginning after December 20, 2012. The Air Quality Assessment was completed in February 2011 and based on a scoping document that was approved in 2008. According to section 8 "Air Quality Models" in the New York State Department of Transportation's "The Environmental Manual," the Motor

Vehicle Emission Simulator (MOVES) model is only required for all quantitative project level microscale/hot-spot analyses in carbon monoxide and particulate matter nonattainment and maintenance areas that begin on or after December 20, 2012. Prior to December 20, 2012, project staff and consultants may continue to use the MOBILE 6.2 model for all carbon monoxide microscale/hot-spot analyses where all of the following conditions are met:

a) No quantitative particulate matter (PM) hot-spot analysis is required per 40 CFR Part 93.123(b):
b) The CO analysis began prior to 12/20/12; and
c) The final environmental determination for projects processed as an Environmental Assessment (EA) or Environmental Impact Statement (EIS) is made no more than three years after the issuance of the draft environmental document.

Use of the MOBILE 6.2 emission factor model was appropriate because the project is not located in a carbon monoxide or particulate matter nonattainment area and the project level analysis began prior to December 20, 2012. In addition, the Project does not require an quantitative PM hot spot analysis because it is not one of the projects listed in 40 CFR Part 93.123(b), the CO analysis began prior to December 20, 2012, and the final EIS will be made no more than three years after the issuance of the draft environmental document, which was issued April 2013.

(2) The traffic study should evaluate the impact of this Resort on year-round travel and disaggregate the attracted trips by season of the year. The SDEIS identifies the NYC Metropolitan area as the primary source of customers to the Resort.

Response: The traffic impact study followed the approved Final Scoping Document dated February 28, 2008 that required analysis during the worst case peak conditions during the ski season on a holiday weekend. As noted in the traffic impact study during the initial project stages, extensive study of traffic volumes during different seasons was undertaken. In 2000, traffic volume data from summer, fall, and winter was collected in the study corridor with Friday afternoon, Saturday morning, midday, and afternoon, and Sunday afternoon peaks studied. Based on this assessment it was determined that the Saturday afternoon peak with the Belleayre Mountain Ski Center operational best represented the worst case peak conditions in the study area, Traffic Impacts during other seasons or peak periods would be less.

The traffic study should identify the routes used by the customers to reach the Resort and show how that additional traffic will impact volumes, speeds and congestion on those routes, as well as on local roads.

Response: The traffic impact study for the Belleayre Resort at Catskill Park followed an approved scoping document for analysis of traffic impacts. As part of the study, site related traffic was distributed onto the surrounding roadway network at seven off-site intersections. An *assessment of the roadway segment level of service was included in Part C of the Belleayre Mountain Ski Center DEIS, Cumulative Impacts.*

The documents should clearly and explicitly identify the total trips to the area as a result of the project by using appropriate methodologies to estimate the attracted trips and assign and distribute those trips to the regional highway facilities that will experience the increases in traffic.

Response: Figures 3.5, 3.6, and 3.7 in the Traffic Impact Study illustrates the total trips generated by the site at the study area intersections that were identified in the approved Final Scoping Document dated February 28, 2008. The trips were estimated using accepted methodologies in the profession.

In Appendix 5 of the SDEIS (Fiscal and Marketing Information), the 10 year forecast of rounds of golf played to be nearly 15,000 rounds per year. Conservatively estimating that there will be 2 persons occupying each vehicle driving to play golf, 30,000 trips are expected to be generated from the golf course alone. Table 3.9-1of Appendix 3 of the SDEIS identifies that there will be approximately 1.4 million square feet of development on 739 acres with the Highmount Spa and Resort and Wildacres Resort. At Catamount Valley Ski Resort in Colorado, based on studies for the project prior to its development, 1.5 million visitors per year were expected on 3200 acres (http://www.colorado.edu/conflict/full text search/All CRCdocs/94-53.html). Assuming that size of the development is proportional to the number of attracted visitors, then the Belleayre Resort would attract close to 350,000 visitors per year. This does not include the 320,000 annual visitors the UMP DEIS expects with the expansion of the ski center.

Response: Comment noted. The annual visitors to the site does not directly correlate to the peak hour trips at the site nor does it account for the shared trips traveling to the area for the purpose of attending both facilities. The trip generation at the site was developed using accepted methodologies in the profession.

The project sponsor should analyze the effects of the year-round nature of the project on traffic and transportation and disclose them to the public and NYSDEC so that those impacts can be evaluated and considered in the SEQR and permitting processes. It is perplexing to note that the environmental documents can detail rounds of golf to be played, salary and job titles of future employees at the Resort but cannot identify how many visitors will be travelling to the Resort.

Response: The traffic impact study follows the approved Final Scoping Document dated February 28, 2008 that required analysis during the worst case peak conditions during the ski season on a holiday weekend. As noted in the traffic impact study during the initial project stages, extensive study of traffic volumes during different seasons was undertaken. In 2000, traffic volume data from summer, fall, and winter was collected in the study corridor with Friday afternoon, Saturday morning, midday, and afternoon, and Sunday afternoon peaks studied. Based on this assessment it was determined that the Saturday afternoon peak with the Belleayre Mountain Ski Center operational best represented the worst case peak conditions in the study area, Traffic Impacts during other seasons or peak periods would be less.

In order to accurately portray the potential impact on transportation in the project area and in the region and to determine the appropriate methodology to determine those impacts, the project sponsor should consult with the relevant Metropolitan Planning Organizations (MPOs). Since much of the traffic will be coming from the New York City metropolitan area, as indicated in the project documents, the consultation should occur with the New York Metropolitan Transportation Council and the Orange County Transportation Council, as well as the MPO in which this project is located, the Ulster County Transportation Council. It is especially important that the consultation occur with the two downstate MPOs so that their transportation conformity determinations are not adversely affected. Transportation conformity determinations are required under Section 176(c) of the Clean Air Act Amendments and codified under USEPA regulations (49CFR Parts 51and 93). Not accounting for transportation effects and patterns, including those due to significant nearby destinations, such as the Belleayre Resort, could affect these two MPOs' ability to move forward with many transportation projects.

Response: A mesoscale air quality analysis is completed for projects with build alternatives that could have a significant impact on emissions on a regional basis which includes projects with the construction of high occupancy vehicle lanes (HOV), new or significant modification to interchanges, large scale signal coordination projects, projects with significant vehicle miles travelled (VMT), and widening to provide additional travel lanes of more than one mile. A review of the above criteria does not indicate the need for a regional assessment of air quality for the proposed resort. Although it is anticipated that much of the project traffic will travel to and from the site via the New York City Metropolitan area, the magnitude of traffic associated with the resort site will not result in a significant change in the overall vehicle miles travelled based on the following:

-The magnitude of traffic generated by the resort is small, with less than 170 vehicle trips generated during peak conditions. This level of traffic will not significantly impact the overall vehicle miles travelled from the New York City Metropolitan area where traffic volumes are much higher (i.e. daily volumes on I-87 near site 39,000 versus volumes near NYC 125,000).

-It is assumed that a percentage of vehicles traveling to and from the site are travelers that would likely already be traveling north from the City to other recreational/resort facilities if the proposed facility did not exist. If other resort facilities are located further away, the VMT's travelled could actually be reduced.

Based on the above, the project traffic would not impact the conformity determinations in Ulster County or beyond.

The lack of a comprehensive transportation study is not in keeping with the intent of Item 40, Traffic Impacts and Controls, of the Agreement in Principle (AlP). Although Item 40 only discusses County Route 49A, its intent is to make sure that traffic impacts are considered cumulatively and thoroughly. The focus on County Route 49A was likely due to the misdirection caused by the inadequate traffic study which only considered local roads. It can be expected that, had the transportation studies been done properly at the outset, the AlP would have broader concerns than just County Route 49A.

Response: A detailed and comprehensive traffic impact study was prepared for the Belleayre Resort at Catskill Park which was based on an approved scope of review. The analysis included the study five intersections on NY Route 28 in addition to two intersections along CR 49A. Since direct access to the site is provided on CR 49A, this roadway is most impacted by the site development; however, mitigation is also proposed on NY Route 28 at its intersection with CR 49A.

The Scoping Document indicates that that the Ski Center expansion will be considered together with the Resort development. Yet the traffic studies for the Resort assume the expansion of the Ski Center as a given in the No-Build case, thereby understating the impact of the Resort development. For example, the Ski Center expansion will generate 736 trips per hour yet the Resort will only generate 168 trips per hour. A complete analysis should look at the Resort development alone as one of the alternatives.

Response: The Final Scoping Document dated February 28, 2008 identifies that the Impact Analysis for the Belleayre Resort at Catskill Park would include the traffic associated with the expanded ski center; therefore, the analysis presented is consistent with the scope. It is typical for the traffic associated with other planned development projects to be included in the No-Build condition and the traffic volumes associated with the subject site to be included in the Build analysis. The trips associated with the resort take into account shared use between the resort site and the ski center; however, do not understate the impact of the resort as it has always been the intention that the resort patrons would be shared users with the ski center. It is further noted that the ski center does and will continue to have a higher trip generation rate than the resort.

Item 41of the AlP, Public Transportation Improvements, discusses a number of improvements that the State will work to implement to reduce traffic in the area, both by employees and visitors to the area. Yet the SDEIS is silent on this issue (other than repeating potential mitigation measures from DEC's Policy on Assessing Energy Use and Greenhouse Gas Emissions in Environmental Impact Statements}. There is no indication that the described transit improvements will be funded or implemented. It does not appear that there are any plans to fulfill those goals and recommendations. Examination of the current transportation planning documents prepared by the Ulster County Transportation Council shows no indication that funding or plans for these measures exist. The long-range plan (Year 2035 long Range Transportation Plan, adopted August 31, 2010),the current Transportation Improvement Program (TIP)(for Federal Fiscal Years 2014-2018,adopted May 22,2013),or in the Unified Planning Work Program (starting State Fiscal Year 2013,adopted March 22,2013) do not discuss the Belleayre Resort project nor the goals to expand transit services in the project area, provide jitney service for the hamlets in the immediate project area, and provide for hybrid or alternative fuel buses within the project area corridor, as described in Item 41of the AlP. As promulgated under Title 23, Sections 134 and 135 and codified at 23 CRR Part 450 gram (TIP)(for Federal Fiscal Years 2014-2018,adopted May 22,2013),or in the Unified Planning Work Program (starting State Fiscal Year 2013,adopted March 22,2013) do not discuss the Belleayre Resort project nor the goals to expand transit services in the project area, provide jitney service for the hamlets in the immediate project area, and provide for hybrid or alternative fuel buses within the project area corridor, as described in Item 41of the AlP. As promulgated under Title 23, Sections 134 and 135 and codified at 23 CRR Part 450 (and explained on the Federal Highway

Administration (FHWA) website
(http://www.planning.dot.gov/documents/briefingbook/bbook.htm), in order to receive federal transportation assistance, transportation strategies and actions must be discussed in the long-range plan to ensure "an integrated intermodal transportation system that facilitates the efficient movement of people and goods." To receive Federal transportation assistance, transportation projects must be listed on the TIP. State transportation funding is included for informational purposes. Since these transportation planning documents are silent on the AIP Public Transportation Improvements measures, there is no Federal or State funding in place to implement these measures. Without this funding, it is speculative, at best, to assume that these measures will ever be implemented. The project sponsor should commit to providing funding for these services (expanded transit service in the Route 28 corridor, use of hybrid or alternate buses on the Route 28 corridor, and a jitney service to and from the Belleayre Resort and the nearby hamlets), if the Federal and state governments cannot, and this should be a requirement included in any permits issued by NYSDEC for this project.

Response: The Department has treated the AIP as a preferred alternative project description only; therefore any commitments made in the AIP are not binding because the project is subject to modification under the SEQR review process and through the Department's permitting process .The same is true for all involved agencies. Despite the legal status of the AIP, the AIP does indicate that best efforts will be put forward by the State to improve transit services in the County. However, the project sponsor can volunteer such funding independent of this review.

The traffic impact analysis did not take any regional credits associated with transit service to and from the area, therefore, the proposed traffic mitigation will adequately address impacts associated with the development with or without increased transit ridership to the area. No additional improvements would be required if transit service is not extended or expanded in this area. The only shuttle service that will reduce traffic in the area exists between the resorts and the ski center and will be provided by the applicant regardless of regional connections.

In regards to the re-alignment of County Route 49A, installation of a crosswalk, use of ditches, installation of culverts, means of egress/ingress from project, utility installations, right-of-way, and easements, no mention is made of the cost to taxpayers for the surveying, construction oversight, maintenance, replacement, or other items. Ulster County's Commissioner of Public Works has not performed a feasibility study, been consulted to see if the county could invest the needed monies, or been asked to approve such an expensive endeavor. Another important issue is the effect of heavy equipment on reducing prematurely the life expectancy of Route 49A, necessitating early replacement at a cost to the taxpayers.

Response: The realignment of CR 49A would be completed by the project applicant and therefore would not be a cost to taxpayers. An assessment of construction traffic is included in Part C of the Belleayre Mountain Ski Center UMP DEIS and indicates that is not anticipated that construction traffic will affect traffic operations on NY Route 28 or its intersections with local roads. Section 3.5 of the SDEIS includes a detailed assessment of CR 49A and proposed upgrades to this roadway as part of the project.

Route 49A is not designed to bear this type of traffic. When the engineers designed the road to AASHTO Highway Design Manual Specifications, such as "Guidelines for Geometric Design of Very Low-Volume Roads ADT<=400)," they met the general axial loading and life limits for a road standard to the area. The "performance period," the time the pavement structure is expected to perform adequately before needing rehabilitation, of 49A will be decreased due to additional equivalent single axle loads, a huge increase in the "growth factor." Because of the stresses placed on the geological soil conditions that the road was built on, the "effective roadbed soil resilient modulus" could be substantially compromised. Properties of the pavement asphalt mixture, such as stability, durability, flexibility, fatigue resistance, skid resistance, impermeability, and workability, could all be affected by the additional burden of project traffic, both during and after construction.

Response: Section 3.5 of the SDEIS includes a detailed assessment of CR 49A and proposed upgrades to this roadway as part of the project.

Realignment of a county highway is a quite an endeavor in itself, with traffic studies, surveying, line-of-sight determination, drainage plans, right-of-way acquisition, and new roadbed construction. Have all of these aspects of the project been reviewed and approved by the Commissioner's Office? Have all the monies been appropriated by Crossroads (bonds, engineering, material costs)?

Response: The applicant is aware of the commitment associated with the proposed upgrades to CR 49A that have been proposed. The line work that has been provided in the SDEIS was provided to adequately identify the potential environmental impacts associated with the roadway modifications. Additional design details and approvals will be obtained as the project continues to move through the environmental process.

Note: bedrock has been identified above an area that is sited to have pipes placed by a method known as ' jacking." Jacking in solid rock is very arduous. This is important, particularly in areas where a 36-inch sluice pipe will be jacked underneath County Route 49A. Traffic lights are proposed as well; who will install them is not stated. This will further impede traffic and compromise the scenic corridor.

Response: The project sponsor will be responsible for implementation of mitigation identified in the SDEIS.

Note on SDEIS page 2-18: Road widths, although referred to as driveways throughout the SDEIS, are said to be "designed to Town standards." If the SDEIS is referring to the Highway Laws section 194, then the County Public Work's Commissioner, the NYS Commissioner of Transportation, and the Town of Shandaken Planning Board would need to approve all plans and specifications. If these are private roads, the applicant should pay all costs. Care should be taken to determine what roads are at risk of becoming town roads following construction, as the costs of maintaining and repairing town roads falls on the towns.

Response: Comment noted. The project sponsor will be responsible for the cost associated with the driveways proposed for the project.

Using Figure 6, "Existing Traffic Volumes (Daily)" of the Comprehensive Plan as a reference, the Crossroads project would raise the daily vehicle flow from 7,000 to over 9,000 in sections of Route 28, according to project statistics. This figure would exceed the maximum volume-to-capacity (v/c) to 0.8 (point of severe traffic congestion and stoppage), as shown on page 32 of the Town of Shandaken Comprehensive Plan.

Response: A segment level of service capacity summary was prepared and provided in Part C, Cumulative Impacts of the Belleayre Mountain Ski Center UMP DEIS. The discussion refers to the reserve capacity of roadway segments in the study area, which is defined as the space available on a roadway to service additional traffic. The reference above indicates the Town of Shandaken Comprehensive Plan denotes a reserve capacity of 0.8 as the maximum desired condition; however, it is noted that a roadway does not reach its full capacity until the volume to capacity ratio is 1.0. The analysis indicates that the segment with the highest volume on Route 28 (between NY Route 375 and NY Route 212) in the build condition would operate at a level of service E with a volume to capacity (v/c) ratio of 0.74. No improvements were recommended on the roadway segment since capacity is not reached onor is the 0.80 guideline in the Comprehensive Plan reached.

As discussed previously, this amount of traffic would add greatly to the deterioration of the performance life of roadways and may increase carbon dioxide and other toxic emissions beyond greenhouse gas allowance standards.

Response: Section 3.5 of the SDEIS includes a detailed assessment of CR 49A and proposed upgrades to this roadway as part of the project to improve the roadway cross-section. The design of the roadway will also take into account the increase in traffic to be accommodated for. A detailed air quality assessment was included as Appendix 24 of the SDEIS and addresses the increase in emissions with the increase in traffic volumes on the CR 49A corridor.

The traffic study should have been done on a year-round basis, not just for the winter.

Response: The traffic impact study follows the approved Final Scoping Document dated February 28, 2008 that required analysis during the worst case peak conditions during the ski season on a holiday weekend. Extensive study of traffic volumes during different seasons was undertaken during the initial stages of the traffic impact study. In 2000, traffic volume data from summer, fall, and winter was collected in the study corridor with Friday afternoon, Saturday morning, midday, and afternoon and Sunday afternoon peaks studied. Based on this assessment it was determined that the Saturday afternoon peak with the Belleayre Mountain Ski Center operational best represented the worst case peak conditions in the study area, Traffic Impacts during other seasons or peak periods would be less.

The traffic study should have covered the routes that customers will use to reach the Project, not just the local area.

Response: The Traffic Impact Study analyzed the intersections identified in the approved Final Scoping Document dated February 28, 2008 which included intersections located over 12 miles

away from the project site and the trip distribution percentages are shown on Figures 3.2 through 3.4 of Appendix 11 of the SDEIS. It is noted that the total amount of traffic generated by the site during the peak hours will be less than the New York State Department of Transportation (NYSDOT) and Institute of Transportation Engineers (ITE) thresholds of 100 vehicles per hour per approach for requiring a detailed traffic impact analysis of off-site intersections. The thresholds established by these agencies provide guidelines as to the magnitude of traffic that is likely to impact the surrounding roadway network and may require mitigation.
Traffic levels generated by the Project have been underestimated.

Response: The trip generation analysis for the proposed site is based on a review of information provided by the Institute of Transportation Engineers and site specific counts from similar resorts as per industry standards. The traffic study provides details on the site specific count data used in the trip generation analysis from resorts located at Mt. Snow in Vermont and the Sunday river Hotel in Maine.

No responsible party is defined for many of the necessary traffic improvements, and no funding is available to implement them.

Response: The project sponsor will be responsible for implementation of mitigation identified in the SDEIS.

Impacts to County Route 49A were not properly assessed. **O3635, H21**

Response: Section 3.5 of the SDEIS includes a detailed assessment of CR 49A and proposed upgrades to this roadway as part of the project.

(2a) This road 49a will not be able to take the large volume of heavy truck traffic etc. **I228**

Response: Section 3.5 of the SDEIS includes a detailed assessment of CR 49A and proposed upgrades to this roadway as part of the project. A detailed construction evaluation was included in Part C, cumulative Impacts of the Belleayre Mountain Ski Center UMP DEIS and Modified Belleayre Resort at Catskill Park SDEIS.

(2b) No mitigation for congestion and damage to 49A is provided. Entire Rte. 28 corridor will be adversely impacted but only a small portion near the resort was studied. The combined project will generate an increase in vehicular trips per hour at peak operation on a very limited rural road network. Existing road capacity and traffic related impacts should be assessed, and mitigation alternatives should be evaluated. **I3588**

Response: Section 3.5 of the SDEIS includes a detailed assessment of CR 49A and proposed upgrades to this roadway as part of the project. The study area intersections on NY Route 28 were defined in the approved scoping document and includes the assessment of intersections located more than 12-miles away from the project site.

(2c) The increased traffic due to this expansion project on our highway system will prematurely age the roads for the time span that they were designed for. **I3506**

Response: Section 3.5 of the SDEIS includes a detailed assessment of CR 49A and proposed upgrades to this roadway as part of the project.

(2d) We are concerned about the increased traffic on the mountain. **I166**

Response: Comment noted. Adequate reserve capacity is provided on County Road 49A to accommodate traffic associated with the proposed project. Section 3.5 of the SDEIS includes a detailed assessment of CR 49A and proposed upgrades to this roadway as part of the project.

(3) My third concern is that there is almost no mention of the Catskill Mountain Rail Trail that Ulster County Executive Mike Hein is proposing for the county-owned rail line running past the foot of the hill. He has proposed that this become part of an extensive, already partially completed rail trail network in Ulster County linking the Walkway over the Hudson to New Paltz and Kingston, and from there to the Delaware County rail trail and tourist train. (http://www.co.ulster.ny.us/planning/cmrt.html). This trail network is likely to become a major four-season tourist draw for Ulster County. What will be the impact on it of the combined proposed developments? And what will be the impact it will have on the developments? **I3316.**

Response: There is considerable mention of trails in the study area throughout the SDEIS. The supplement of the completion of the Catskill Mountain Rail Trail to the Belleayre Mountain Ski Center will add additional recreation to this area that already attracts such patrons. It is expected that the proposed resort and additional trail connections would complement the study area and provide additional recreation for guests. It is not expected that the new connection would alter the results of the traffic impact study and proposed mitigation for the Belleayre Resort at Catskill Park.

(4) Massively increased traffic-especially during the construction phase – on Rt. 28, a two-lane road that everyone is forced to use. This will bring additional air pollution, noise, congestion, more traffic accidents, and tremendous wear and tear on our roads. I don't believe that the DEC has adequately or accurately addressed this impact. **I310**

(4a) Even now, the traffic on Rt. 28 on Thursday afternoons to Sunday nights is a grave concern. I often have trouble getting out onto Rt. 28 from Rt. 42. If this project is approved, I can predict traffic lights, an expanded highway (residents should think about imminent domain) to 4 lanes. **I475**

Response: The Traffic Impact Study included an evaluation of the NY Route 28/NY Route 42 intersection and did not indicate the need for a traffic signal at this intersection with the development of the site or a widening project on NY Route 28.

(4b) I am writing in opposition to the proposed Belleayre Resort because it will increase traffic on the already over used Route 28 corridor. **I252**

Response: A review of traffic volumes on NY Route 28 after completion of the project indicates that additional space exists on the roadway to service additional vehicles before its capacity is *reached. Therefore, corridor improvements are not recommended on NY Route 28 as part of the project mitigation.*

(4c) Increased air pollution and noise pollution from more traffic on Route 28. **I401**

Response: Comment noted. Detailed air and noise evaluations are included as Appendix 24 and 26 of the SDEIS.

(4d) I live close to Route 28 and am concerned about additional traffic creating more air and noise pollution. **I399**

Response: Comment noted. Detailed air and noise evaluations are included as Appendix 24 and 26 of the SDEIS.

(4e) There will be more traffic on Route 28, more air and noise pollution as people travel to this self-contained resort. **I439**

Response: Comment noted. A review of traffic volumes on NY Route 28 after completion of the project indicates that additional space exists on the roadway to service additional vehicles before its capacity is reached. Therefore, corridor improvements are not recommended on NY Route 28 as part of the project mitigation. Detailed air and noise evaluations are included in Appendix 24 and 26 of the SDEIS.

(4f) I am irritated that is will bring heavy traffic onto Route 28 as well as low paying jobs to the community. **I395**

Response: Comment noted. A review of traffic volumes on NY Route 28 after completion of the project indicates that additional space exists on the roadway to service additional vehicles before its capacity is reached. Therefore, corridor improvements are not recommended on NY Route 28 as part of the project mitigation.

(4h) The increased traffic will negatively impact the roads my family and I travel on daily and support and maintain with my tax dollars. **O3547**

Response: Comment noted. A detailed traffic impact study was prepared based upon an approved scoping document detailing the level of analysis required to assess traffic related impacts associated with the project. Roadway and intersection improvements are recommended as necessary to mitigate the traffic impacts associated with the project.

(4i) Traffic on Route 28 is liable to increase unacceptably. **I338**

Response: A review of traffic volumes on NY Route 28 after completion of the project indicates that additional space exists on the roadway to service additional vehicles before its capacity is reached. Therefore, corridor improvements are not recommended on NY Route 28 as part of the project mitigation.

(4j) Fifth, I am concerned about traffic on local routes. I need not stress this as most people will comment on the obvious, the amount of traffic, speed limits, lack of lights and turnoffs on Route #28. I wonder how Route #28 rates in number of accidents for a state road on a summer weekend? **I511**

Response: The Traffic Impact Study identifies impacts at the primary and secondary intersections (County and State) on NY Route 28 as detailed in the Final Scoping Document dated February 28, 2008. Impacts to local roads will be less than at these locations. An accident summary included in the Traffic Impact Study indicates that the accident rate on NY Route 28 is below or comparable to the Statewide mean rate for a similar facility. The accident assessment indicated that a majority of the accidents occurring on the study area roadways and intersections involved a single vehicle collision with fixed objects or animals due to the rural characteristics of the area and driver error and inattention. The summary of accidents did not identify any prevalent conditions correctable by geometric improvements; therefore, no accident related mitigation was recommended as part of the project development.

(4k) TRAFFIC. It is already very hard to get across Rt. 28, especially on weekends. Rt. 28 will be a parking lot from the Thruway up to Belleayre. **I225**

Response: A review of traffic volumes on NY Route 28 after completion of the project indicates that additional space exists on the roadway to service additional vehicles before its capacity is reached. Therefore, corridor improvements are not recommended on NY Route 28 as part of the project mitigation.

(5) The resort traffic study, without any basis (for example, origin-destination counts), assumes only 5% of resort traffic would move to and from the west toward Margaretville assuming little ski-related traffic impact or any activity would occur west of Highmount).

Response: As described in the traffic Impact Study, the trip distribution patterns were based on the existing traffic patterns observed in the area during the holiday weekend studied, as well as an assessment of the market area for the proposed resort. Based on the assessment, it was determined that the majority of the peak hour traffic traveling to and from the resorts will be coming from or destined to the greater metropolitan New York area with a small percentage traveling west towards Margaretville. The distribution of travel to and from the west may be greater for residents working at the site. Travel by employees is likely to occur outside of the peak period studied in the traffic impact study.

The traffic analysis reports that this resort will generate 168 vehicle trips during one peak hour from 4:30 to 5:30PM, on Martin Luther King Day which are added to 736 new trips generated during a slightly earlier peak hour (4:00-5:00 pm) for the expanded ski area. (See page 9 of the Traffic Impact Study, Belleayre Resort at Catskill Park, Feb. 14, 2011.)

Response: Comment noted. The Consultants conducting the traffic impact studies on both project teams coordinated the existing and future traffic volumes utilized in each of the studies to ensure consistency. In fact, traffic volume data collected by Creighton Manning Engineering for the Belleayre Resort at Catskill Park are included in Appendix AD of the Belleayre Mountain Ski

Center UMP DEIS. The references to peak hours in the studies were general references to peak operating periods in the study area, as the peak hours can vary between intersections based upon variations in flow on both the mainline and side streets. The traffic study prepared for the Belleayre Resort at Catskill Park indicates "The Saturday PM peak hour generally occurred between 4:30 and 5:30 p.m. on NY Route 28." The peak one-hour traffic volumes at the study area intersections were utilized in the analysis.

We do not know what the temporal or seasonal characteristics of the resort travel that may or may not by themselves be worse than for the ski season or are less but longer lasting or affect a wider area. As discussed above, data provided in appendices to the resort traffic analysis show a third more traffic from 4 to 5 pm than for 4:30 to 5:30pm.

Response: As noted in the traffic impact study for the Belleayre Resort at Catskill Park, during the initial project stages, extensive study of traffic volumes during different seasons was undertaken. In 2000, traffic volume data from summer, fall, and winter was collected in the study corridor with Friday afternoon, Saturday morning, midday, and afternoon and Sunday afternoon peaks studied. Based on this assessment it was determined that the Saturday afternoon peak with the Belleayre Mountain Ski Center operational best represented the worst case peak conditions in the study area, The analysis presented is consistent with the Final Scoping Document dated February 28, 2008 which calls for an assessment of the afternoon peak period during a holiday weekend. See response to comment above regarding peak hour volumes.

Why is it assumed that 15% of skiers would be returning to the ski area after 4:30PM a half hour after the ski lifts had been shut down? It is understandable that parents might be entering the ski area to pick up their kids but Belleayre Resort will utilize shuttle bus service or ski in/ski out for travel to and from the ski area. Not a huge impact but a confusing assumption.

Response: The distribution of traffic in and out of the ski center during the peak period studied is consistent with the current travel patterns at the ski center.

Trip distribution assumptions are confusing. In one place it is claimed that the majority of visitors are coming from the south from the NY metro area yet trip assignments account for just 55% of total travel, the rest being disbursed through the Catskill Mountain area. It is not consistent and hard to believe.

Response: The trip distribution percentages for the resort traffic are based on an assessment of existing travel patterns, population centers, and an assessment of the market area for the resort. As noted in the traffic study, it is anticipated that the majority of patrons traveling to and from the site will travel via Interstate 87 as shown by the high trip distribution pattern, with up to 90% on NY Route 28 from the east. A small percentage of traffic generated by the resort will originate from some of the surrounding counties and a small percentage will use secondary County and State roads as shown on the trip distribution figures in the traffic impact study.

Figure 3.8 has a huge typo (1,612; it should be 431), either that or the analysis is missing more than 1,000 auto trips.

Response: The northbound right-turn movement at the County Road 49A/Gunnison Road/Belleayre Lower Driveway intersection should be 142 vehicles and not 1,612 vehicles. The level of service calculations evaluated the correct traffic volume on this approach and the analysis presented in the SDEIS is accurate. Figure 3.8 has been revised to correct this typo and the revised figure can be found in the errata section of this FEIS.

I have a much bigger problem with project impacts. Figure 3.1 for 2015 No-Build conditions shows total peak hour trips processed through the Rt. 28/49A intersection at 1,900; Figure 3-8 shows this figure increased to 1,915, an increase of 15. However, this project will generate 168 vehicle trips during this one hour. Moreover, the northbound right turn actually decreases from 1,141 for No-Build to 1,109 for Build conditions, the loss of 32 trips. Note that this loss carries through to Route 214 i n the eastbound direction. Applying the assignments provided in Figure 3.3 with 70 vehicles exiting and 98 entering produces a total increase at the intersection of Rt.28/49A of approximately 147 vehicle trips. We know that some new trips will simply cross from the Resort to the ski area. However, the assignments show very few. This loss minimizes the resulting impact along Rt. 28. It has to be corrected.

Response: The trip generation summary provided in the TIS indicates that a substantial portion of the resort guests will constitute skiers originally assigned as vehicles for the UMP Update for Belleayre Ski Mountain. Providing local accommodations in close proximity to the ski mountain will reduce the regional distribution of traffic to and from the project area and minimize impacts to the surrounding road network. It is anticipated that a vast majority of the Belleayre Ski Mountain guests that stay at one of the resorts will use the proposed shuttle or take advantage of the ski in/ski out option provided between the mountain and the resorts. This will reduce the number of vehicular trips between each of the land uses and out toward the NY Route 28 study area intersections. These assumptions are detailed in the Trip Generation section of the traffic impact study.

Figures 3.1 etc. do not show entrance/exits for new parking and therefore they are confusing adding 479 trips northbound before and 330 trips northbound after the Lower Driveway. As described above for the ski area more detail is required for parking capacity and how these multiple parking areas will be controlled.

Response: An analysis of the new parking lot driveways is included in the Transportation Impact Study prepared by CHA for the Cumulative Impact Analysis included in Part C of the Belleayre Mountain Ski Center DEIS.

Figure 3.5. The negative figures are not explained in the text. Negative trip assignments are confusing. Perhaps the negatives reflect departing traffic? See Figure 3.2, trip distribution Wildacres Resort. **I1459**

Response: Figure 3.2 and Figure 3.5 do not have negative numbers. The distribution percentages shown in parenthesis represent exiting vehicle percentage while the numbers without parenthesis represents entering vehicle percentages.

(6) Characterizing temporal and seasonal impacts is even more important for the Belleayre Resort traffic analysis than for the ski area analysis. Earlier work had attempted to do that. It is not clear that the ski season would produce the greatest number of project generated trips (especially daily trips). This needs clarification. **I1459**

Response: The traffic impact study follows the approved Final Scoping Document dated February 28, 2008 that required analysis during the worst case peak conditions during the ski season on a holiday weekend. As noted in the traffic impact study during the initial project stages, extensive study of traffic volumes during different seasons was undertaken. In 2000, traffic volume data from summer, fall, and winter was collected in the study corridor with Friday afternoon, Saturday morning, midday, and afternoon and Sunday afternoon peaks studied. Based on this assessment it was determined that the Saturday afternoon peak with the Belleayre Mountain Ski Center operational best represented the worst case peak conditions in the study area, Traffic Impacts during other seasons or peak periods would be less.

(7) Route 28 will be heavily used by non-passenger vehicles, like cement trucks, needed during construction, making travel on that road far less appealing than it currently is or even will be after construction is complete**. I3649**

Response: A detailed construction evaluation was included in Part C, Cumulative Impacts.

(7a) I think about the dump trucks, the bulldozers, the earth movers which all will impact our narrow mountain roads. **I382**

Response: A detailed construction evaluation was included in Part C, Cumulative Impacts.

(8) There is reference in the resort application materials that 49A traffic will not be allowed to turn left onto Rt. 28 but will be directed to turn right (eastbound). Your documents do not address the loss of turning movements and inadequacy of the existing transportation system. Removing the left turn will create an inordinate amount of added vehicle trip miles and a U turn somewhere on Rt. 28 (or off Rt. 28) for visitors, employees, skiers and construction vehicles wanting to tour the region, return home or travel to their places of business located north and northwest of the project (for instance to area communities of Margaretville, Arkville, Roxbury, Andes, Fleischmanns etc.).

Response: Left turns on the northbound County Road 49A approach at the NY Route 28/County Road 49A/Owl Nest Road intersection will not be restricted as part of this project.

What is the cost of design, engineering, NEPA and construction of a grade separated interchange at 49A at Route 28 so that 49A traffic can make an unfettered left turn westbound onto Rt. 28

and so that Route 28 westbound traffic can make an unfettered left turn onto Rt. 49A without queuing and deferring to Rt. 28 Eastbound traffic turning right onto Rt. 49A? As you know there is a steep long uphill grade on Rt. 28 from Pine Hill to Highmount. Just before the top of this grade the 2 Eastbound Rt. 28 lanes merge into 1 and there is now minimal queuing length on Rt. 28 at the intersection of 49A for the left turn from Rt. 28 Eastbound onto Rt. 49A. If the wait time increases due to the proposed ski expansions and resort developments, and countless additional construction traffic, then the queue distance increases which could interfere with thru traffic on Rt. 28 Eastbound. What priority rating would a grade separated interchange at this location have within the State's road system such that this transportation infrastructure would actually be funded and built prior to the project's buildout?

Response: A grade separated interchange is not necessary to provide adequate operations at this intersection based on the amount of traffic generated by the proposed development. The level of service analysis indicates that adequate operations can be provided with the installation of a traffic signal and the construction of a westbound left-turn lane on NY Route 28 and a northbound right-turn lane on County Road 49A. Adequate storage will be provided on the westbound left-turn lane so that vehicles waiting to turn left onto County Road 49A will not block through traffic on NY Route 28. As noted in the traffic evaluation, it is likely that during non-winter seasons, this intersection may operate adequately on flash without the need for a full three color signal operation further clarifying that a grade separated interchange is not a reasonable or cost effective mitigation measure.

Is there adequate public ROW at Rt. 28 and Rt. 49A to accommodate these needed left turn lanes and infrastructure? If not what is this ROW cost?

Response: A review of available parcel data indicates that the proposed improvements at the NY Route 28/County Road 49A/Owl Nest Road intersection would primarily occur within the State and County ROW; however, there is a potential for grading impacts to two private properties located northeast of the intersection. Specific ROW impacts will be addressed during detailed design of the improvements.

The cut off dirt road between 49A/the Galli *Curci* Road and Fleischmanns is not conducive to additional traffic due to its excessive grades, current very slippery gravel surface and wintertime closures. Is there plan for public monies to be expended on this cut off road? If so, kindly describe what improvements are planned, state the $ improvement needed and which entity will be funding same?

Response: There are no plans to improve this road with public or private funds. It is not anticipated that traffic generated by the development will use this road.

(9) Please quantify where transportation system development fees will originate to fund road improvements such as for resurfacing 49A, for improved infrastructure needed at Rt. 28 at 49A, and for upgrades on the cut off road between 49A and Fleischmanns? **I2131**

Response: The project sponsor will be responsible for implementation of mitigation identified in the SDEIS including the improvements to CR 49A.

(10) One key recommendation was to expand the data on which the technical analyses were dependent. However, none of the traffic analyses seem to have been completed. And, as you can see, there are still many deficiencies. A principal problem is the disappearance of Belleayre Resort traffic (see third page), which is critical in the cumulative analysis that has been assured by all parties. If I am right the entire traffic impact analysis may have to be redone for the FEIS. We were not going to go public with this information. We support these projects and do not want to feed opponents with facts that can stop the project. Just the same, the traffic analysis reported in the FEIS must be correct. We had presented these comments privately to project sponsors with the promise that they would follow up to discuss the problems. This did not occur. So, herewith, we are presenting my comments.

Response: Comment noted. Appendix 11 of the SDEIS includes the detailed traffic impact study. Chapter 3 of the study provides detailed information on the development of the trip generation including the interaction of vehicles between the ski center and the resort. This interaction between the sites was part of the reasoning as to why it made sense to assess the projects together as a unified environmental assessment.

Analysis limited to one narrow time period on a single hour on a high traffic day which is different in the two reports based on a Saturday on Martin Luther King Day (MLK), reported to be the worst case condition. More significant is that without explanation the peak hour assumed for the Resort, 4:30 to 5:30pm is different from the ski area (4 to 5 pm). The difference is not trivial as the traffic data provided in the appendices to the Resort analysis show, 4 to 5 pm exhibits a third more background traffic than for the 4:30 to 5:30pm period.

Response: The Consultants conducting the traffic impact studies on both project teams coordinated the existing and future traffic volumes utilized in each of the studies to ensure consistency. In fact, traffic volume data collected by Creighton Manning Engineering for the Belleayre Resort at Catskill Park are included in Appendix AD of the Belleayre Mountain Ski Center UMP DEIS. The references to peak hours in the studies were general references to peak operating periods in the study area, as the peak hours can vary between intersections based upon variations in flow on both the mainline and side streets. The traffic study prepared for the Belleayre Resort at Catskill Park indicates "The Saturday PM peak hour generally occurred between 4:30 and 5:30 p.m. on NY Route 28." The peak hour volumes utilized in the study were based upon the actual peak hour volumes at each intersection shown in the appendices and referenced above; therefore, peak volumes at each of the studied intersections are represented in the study.

The two reports provide no temporal characteristics, i.e., what occurs during the other hours of this worst case day? How the worst case relates to overall daily traffic (worst case and annual average or seasonal impacts)?

Response: As noted in the traffic impact study for the Belleayre Resort at Catskill Park, during the initial project stages, extensive study of traffic volumes during different seasons was undertaken. In 2000, traffic volume data from summer, fall, and winter was collected in the study corridor with Friday afternoon, Saturday morning, midday, and afternoon and Sunday afternoon *peaks studied. Based on this assessment it was determined that the Saturday afternoon peak with the Belleayre Mountain Ski Center operational best represented the worst case peak conditions in the study area, The analysis presented is consistent with the Final Scoping Document dated February 28, 2008 which calls for an assessment of the afternoon peak period during a holiday weekend. Since the peak hour of the peak season was analyzed, the condition during other periods of the worst case day would be less. Similarly, the impacts during other seasons would be less.*

Belleayre will add three new parking lots. Nothing is mentioned about their capacity or how they will be managed.

Response: This comment is not applicable to the traffic impact evaluation prepared for the Belleayre Resort at Catskill Park, it is applicable to the BMSC UMP DEIS (Part A). An analysis of the new parking lot driveways is included in Appendix AD of the Belleayre Mountain Ski Center UMP DEIS.

The traffic analysis for the ski area does not appear to account for the Belleayre Resort traffic under the no-build alternative for the ski area so we do not have an accurate measure of the true effect of ski area traffic on worst case conditions. I suppose the argument could be made that, without the ski area expansion, there would be no resort.

Response: Comment not applicable to the assessment completed for the Belleayre Resort at Catskill Park. The traffic assessment completed for the Belleayre Resort at Catskill Park does include volumes from both developments.

The safety analysis ignores the standard principle that the number of traffic accidents grows in direct proportion to increases in travel, resulting in more accidents, increased injuries, and so forth not accounted for in this analysis Moreover, it does not follow NYSDOT procedures for estimating the growth in traffic accidents with increases in vehicular traffic. Instead, the traffic accident analysis merely reports volumes of raw historical accident data without forecasting the effect of the ski area adding to the baseline conditions specific locations (hot spots) and mitigating those impacts. The EIS recommends very modest measures to be implemented as problems are identified in actual use. That does not comply with SEQRA standards. A safer Route 28, a NYS Scenic Byway all year round, should not have wait for preventing more tragic accidents, especially in an analysis for a winter holiday weekend. **I1459**

Response: Comment not applicable to the assessment completed for the Belleayre Resort at Catskill Park. The traffic assessment completed for the Belleayre Resort at Catskill Park does include volumes from both developments.

(11) Air/Noise Pollution – has a study been completed on similar endeavors that address the air/noise pollution as a result of increased traffic. **I406**

Response: A detailed air quality evaluation is included as Appendix 24 of the SDEIS.

(11a) Increased air pollution and noise pollution from more traffic on Route 28. **I401**

Response: Detailed air and noise evaluations are included as Appendix 24 and 26 of the SDEIS.

(11b) Have any traffic counts been done on Rt. 28? I haven't seen any evidence of any. What are the latest stats from the EPA on the quality of air here. Quite some time ago, I read that it wasn't good.

Response: Turning movement counts were conducted at several intersections on NY Route 28 and are included in the Traffic Impact Study as per the Final Scoping Document dated February 28, 2008. A detailed air quality evaluation is included as Appendix 24 of the SDEIS which includes the latest data from the EPA.

(11c) If a population equivalent to two entire towns of people every day is expected at this new resort, the traffic on Route 28 will inevitably have to be controlled by the addition of traffic lights. Is the exhaust from these vehicles something we want? **I3506**

Response: A detailed air quality evaluation is included as Appendix 24 of the SDEIS.

(12) On page 6 of 30 the report: Removal of the 24 fractional units at the spa location will NOT result in a net decrease in development size (and impact) as the units are to be relocated to the Wildacres resort area. Page 11 of 30, paragraph 4 states: "....the introduction of the spa resort will result in an increase in peak hour volumes of 200% on this stretch of CR49A. ......This worst case increase in traffic volumes ....would be expected on this section of CR49A during other seasons."

The entire "stretch" of CR49A from the bottom at the intersection of Rt. 28 will be affected by this increase in traffic volume. This particular statement itself brings up the increase in traffic "during other seasons" and it does not mention the increase in the noise impact, additional air pollution and vehicle fluid run off on impervious surfaces.

Response: It is unclear where the above references are located. Regardless, the traffic impact study adequately assesses the impacts associated with the current proposal at the site. The detailed traffic impact assessment is included as Appendix 11 to the SDEIS. Detailed air and noise assessments are included as Appendix 24 and 26 of the SDEIS

Page 20 of 30 paragraph 1 addresses operating speeds of increased traffic and mentions new, lower speed limit postings on CR49A. Common sense and longtime experience of traveling in this area has always shown that NO speed limits are followed by drivers of any of the vehicles found on the road. Drivers race up CR49A after exiting Rt. 28 and driving at speeds well over the posted speed limit. Typically a skier drives about 60 MPH between Rt.

Response: As noted in the traffic Impact Study, there is no posted speed limit on CR 49A; therefore, the roadway operates with a statutory speed limit of 55-mph. Automatic traffic recorders installed on CR 49A in the vicinity of the site driveways indicate that the 85th percentile speed varied at each location, ranging between 37 and 54 mph. The New York State Department of Environmental Conservation (NYSDEC) requested that CR 49A be reviewed by *the Town and County for a possible reduction in speeds in the corridor by providing a posted speed limit as part of the Belleayre Mountain Ski Center UMP. This request is based on the collection of a substantial amount of speed data in the corridor indicating that current speeds on CR 49A are lower than the statutory speed of 55 mph and the fact that the character of the area is changing with the expansion of the ski center and the development of the resorts. Both the Town and County have passed resolutions to post CR 49A with a posted speed limit of 40 mph through the entire study area.*

Last year, CR49A was used as a primary route during the rebuilding of the flood damaged bridge on Dry Brook Road. The large trucks associated with the construction came around the turns at top speed and almost every time I met one of them from the opposite direction, they were also driving over the center line. It was a very scary trip up and down that road each and every time.

Response: Section 3.5 of the SDEIS includes a detailed assessment of CR 49A and proposed upgrades to this roadway as part of the project.

Increases in traffic will result in an increase in safety hazards, even if CR49A is "improved" by widening and straightening. Such "improvement" might actually make the speed/safety issue worse as drivers will increase their speed if possible.

Response: The NYSDEC requested that CR 49A be reviewed by the Town and County for a possible reduction in speeds in the corridor by providing a posted speed limit as part of the Belleayre Mountain Ski Center UMP. This request is based on the collection of a substantial amount of speed data in the corridor indicating that current speeds on CR 49A are lower than the statutory speed of 55 mph and the fact that the character of the area is changing with the expansion of the ski center and the development of the resorts. Both the Town and County have passed resolutions to post CR 49A with a posted speed limit of 40 mph through the entire study area.

Page 22 of 30, last paragraph indicates that no noise abatement will be needed as "the project will not create a noise impact". We reside at the end of Kelly Road which is a road that starts just about where Todd Mountain Road meets and becomes CR49A. We can tell you that the noise of trucks and other vehicles reverberates from that roadway and definitely does have an impact on us. Not only will CR49A be affected by increased traffic and noise, but we feel certain that to the west, Todd Mountain Road and Dry Brook Road (which leads down to Rt. 28 in Arkville) will also be affected, especially during the period of construction. **I170**

Response: Section 1.8 of Part C, Cumulative Impacts of the Belleayre Mountain Ski Center DEIS includes an assessment of construction noise. Mitigation measures to reduce the noise levels include measures such as locating stationary equipment away from noise-sensitive receptors, phasing of construction activities to reduce the number of vehicles running simultaneously, laying out of site to reduce the need for construction vehicles to back-up (back up alarms), and providing a sound barrier when construction will take place within 500-feet of a residence.

(13) The Galli-Curci Property abuts County Route 49A, which is known as Galli-Curci Road in that vicinity. It lies beyond the main entrance to the Belleayre Ski Center, i.e. the vast majority of

traffic now destined for the ski center enters prior to passing by the Galli-Curci Property. Under the proposed plan, the portion of Galli-Curci Road passing by the Galli-Curci Property would be widened and the entrance to the entire Highmount complex as well as the Leach Farm Conference Center would be built beyond the entryway to the Mansion. From its present condition as a rural two-lane road with a very low volume of traffic (essentially unaffected by traffic to and from Belleayre Ski Center), that portion of Galli-Curci Road will find itself on the route to one of the main components of the proposed resort.

Whenever I travel to the Mansion, once I pass the entrance to Belleayre Ski Center, it is rare that I encounter other vehicles on Galli-Curci Road. The traffic report in the SDEIS estimates that, once the project is fully operational, the Saturday peak hourly trips on that section of the Galli-Curci Road will jump to 130 (more than 2 cars on average each and every minute).

This change will surely negatively impact the character and quality of the bucolic setting in which the Mansion is located. This setting was a distinguishing feature identified in the documentation supporting its listing on the State and National Registers.

The approved scope of the SDEIS requires analysis of alternative layouts for the Highmount Spa Resort, including alternate routing of the access road for the entire site (DSEIS Scope at 5.2 A). Notwithstanding, the SDEIS does not analyze the rerouting of the access route to a point north of the Galli-Curci Property. If such a rerouting were implemented, virtually all of the traffic to the Highmount complex would avoid the portion of Galli-Curci Road abutting the Mansion. Only the much lower volume of traffic destined for the Leach Farm Conference Center would pass by the part of Galli-Curci Road that abuts the Galli-Curci Property. I would urge DEC to direct the Applicant to analyze this alternative. **I3535**

Response: Comment noted. Geographic constraints, including the horizontal and vertical curvature of CR 49A as well as vertical sideslopes along the edge of the roadway dictate the location of the Highmount Resort access road. Section 3.5 of the SDEIS includes a detailed assessment of CR 49A and proposed upgrades to this roadway as part of the project. County Road 49A can adequately accommodate peak hour trips associated with the development.

In response to concerns about impacts to the setting of the Galli-Curci Mansion, the 2010 listing on the National Register did indeed include scenic views from the estate, but not in the direction of the Modified Resort Project. Rather, the contributing views were of the valley situated below the estate, to the northwest, not scenic views up the mountain, to the south, the proposed location of the Highmount Spa component of the Modified Resort Project.

3.6 Visual Resources

(1) The resort as proposed is very, very ugly and would blight the landscape most unfortunately. **I423**

(1a) The scale of this massive project will forever alter the landscape and leave a footprint that will be visible from elsewhere in the Catskills. **O3547**

(1b) It would also vastly affect the viewshed of the region. **I403**

(1c) A huge, suburban-like development on the mountain will be an eyesore for everyone. **I339**

(1d) The visual impact of a rash of large (up to 3-story) buildings will change the character of the local scenery in a way that detracts from the area's appeal as a place to live and visit. The blight on the landscape will be visible from as far afield as Overlook Mountain in Woodstock.

Response: Comments reflect the personal opinions of the commenters and are noted. The Visual Impact Assessment contained in the SDEIS as appendix 25 demonstrates that only a small portion of the project will be barely visible for only a very short section of Route 28 west of Highmount and will not be visible from any of the hamlet areas, including public areas in the Village of Fleischmanns. The DEIS for the original project included an assessment of visibility for Overlook Mountain. Even the larger original project was not discernible from Overlook.

(2) The Crossroads plans bring bloated structures that detract from the charm and natural beauty, **I3526**

(2a) But *everyone* can see that the size and scope of the proposed resort dwarf its surroundings, and that the structure and its materials are out of sync with the natural environment. We live in two-story structures in small villages and hamlets; in such an environment, a six story structure carved into the mountain is the monster one cannot miss. **I3536, H55**

Response: Comments reflect the personal opinion of the commenters and are noted. The exterior façade of the resort's main structures will employ the use of several natural materials and painted surfaces which will be of earth tones so as to blend into the surrounding landscape. The Highmount Spa Resort building in particular is to be covered by a "green" roof utilizing local plantings and grasses that will virtually blend the building into its surrounding topography. The architects went to great length to work the design of the buildings into the existing contour of their sites such that at any given point the buildings will appear to be no greater than 3 stories above adjacent grade. As discussed in Section 3.6 of the SDEIS and represented in Appendix 25 "Visual Impact Assessment" the project may be large in size but it is not visually intrusive. In fact, with the exception of one very short section of road, the project will not even be visible when driving along the Route 28 corridor and most certainly will not negatively impact the views from any hamlets.

(3) Highmount Spa is very visible from hiking trails. The views from the north looking south need to be analyzed due to the revised layout and the new Highmount Spa Resort. **I3588**

Response: SDEIS Appendix 25 includes a simulation of the view into Highmount from the Dry Brook Ridge Trail. As per figures VP6-MPSIM –ON (and –OFF), Highmount is barely visible from this location. As per Figure 3 in Appendix 25, the VIA assessed views from 27 different locations north of Route 28.

(4) Then go drive down 28 and realize what a gift you have been afforded by nature.

I would respectfully ask you consider the impact of any large developments in the Route 28 area, and how it will look in 20 years. **I335**

Response: As stated previously, there is essentially no view into the project from NY Route 28. See the VIA in SDEIS Appendix 25.

(5) Noise and light pollution are also unavoidable. **I338**

Response: Appendix 20 of the SDEIS was an impact of potential noise impacts during construction of the modified project. The study found that, with the recommended mitigation measures in place, project construction will not adversely impact nearby, off-site noise receptors.

A traffic noise impact assesement analysis was completed for the operational phase of the modified project. See SDEIS Appendix 26. The study included an assessment of 11 receiver locations along County Road 49A. The results of the noise study indicated that the increase in traffic volumes due to the proposed project will not create a noise impact based upon NYSDOT and NYSDEC standards.

Part 2 of Appendix 25 in the SDEIS includes a full evaluation of light pollution and found that impacts from the project would be minimal and included measures to mitigate potential impacts.

(6) DEC's visual impact policy requires that the potential for adverse visual and aesthetic impacts on receptors outside of the proposed project be evaluated. The policy goes on to state that, where a project is in the viewshed of an aesthetic resource, the Department will require a visual assessment of the impact on that resource. The very first aesthetic resource identified in DEC's policy is a property that is on or eligible for the State or National Registry.

Notwithstanding the fact that the proposed Highmount development literally would be across the street and the proposed Leach Farm Conference Center only a few hundred feet away on the same side of the road, the SDEIS provides no visual assessment of the project's potential impact on the Galli-Curci Property. This is particularly troubling as the documentation supporting the listing for both the State and National registers cite the views from the Galli-Curci Property as one of the important bases for its historic significance. It is impossible to understand how a project of such proportions and in such close proximity to the Galli-Curci Property could escape a site-specific visual impact review.

This failure violates both DEC's visual impact policy and the agency's obligations under SHPA and SEQRA. The applicant should be required to provide a visual assessment and such assessment should then be subject to a further public comment period. **I3535**

Response: ~~As per a letter from NYSOPRHP dated September 9, 2013 and included in the Errata section of this FEIS, the project will not have any adverse effect on historic resources, including the Galli-Curci Estate. Additional information regarding the lack of potential visual impact to the Galli-Curci Mansion from the Highmount Spa Resort is included in the Errata section.~~

Please see Response to 3.5 (13), above. In addition, as determined in a letter from NYSOPRHP dated September 9, 2013 and included in the Errata section of this FEIS, the project will not have any adverse effect on historic resources, including the Galli Curci Estate. Additional information regarding the lack of potential visual impact to the Galli Curci Mansion from the Highmount Spa Resort is included in the Errata section. The potential visual impacts on the Galli-Curci Mansion and Estate were evaluated in accordance with the Department's Visual Impact Policy and that no further analysis is warranted. The visual impact assessment responds to these concerns and thus is not subject to further comments and response.

The plan for the Leach Farm Conference Center calls for the structure to be an "adaptive reuse" of some existing buildings as part of the Highmount development (see 2013 SDEIS at 2-3). The plan calls for certain existing buildings to be connected, creating a single building that will be used as the conference center (id.; see also id., figures 2-9, 2-10). There is no indication that the proposed single structure would be significantly more visible from the mansion than the existing structures.

The project as proposed under the 2003 DEIS called for a 21-lot subdivision on the land that is now slated for the Highmount Hotel and detached duplex units. Under the 2003 DEIS plan, the 21 lots were to be developed as sites for single-family homes, with three of the proposed building lots directly bordering the Galli-Curci Mansion property (see 2003 DEIS, Master Plan, Drawing MP-3 [depicting proposed lots 1, 20 and 21 abutting three sides of the Galli-Curci Mansion property]). Notably, the 2003 DEIS plan would have resulted in the construction of single-family homes in and around the area where the four duplexes are to be built under the modified project (see id. [depicting proposed lots 1, 2, 8, 16 to the south of the Galli-Curci Mansion property]; 2013 SDEIS, Project Master Plan L-1.00; Grading and Drainage Plan, Drawing L-4.01 [depicting the four duplexes to the south of the Galli-Curci Mansion property]).

The modified project also includes Highmount Hotel which, although further from the Galli-Curci Mansion than the duplexes, and beyond another stand of trees, may be visible from the mansion during leaf-off conditions. Nonetheless, the Modified Project includes deciduous and evergreen tree plantings along CR 49A, to the north and south of the duplexes, that, in addition to the trees already present, will further screen both the duplexes and the hotel from the mansion (see 2013 SDEIS, Site Layout, Materials and Planting Plan, Drawing L-6.01).

More generally, the Visual Impact analysis for Modified Belleayre Resort Project was conducted in accordance with the Visual Policy and the Final Scoping Document ("the Scope") for the Modified Resort Project. Viewpoints were carefully selected by DEC based on the Visual Policy, the Scope, photographs from 51 locations, and a photo location map (See SDEIS/FEIS Appendix 25, Figure 3). The scope, based on comments received during a two-session public scoping meeting and public comments period, identified that potential receptor locations should be specifically chosen to include viewpoints indicating potential project visibility at an aesthetically significant place, locally significant aesthetic resources when identified in local or regional land use plan, and should also include public roads (e.g., Route 28), hiking trails and public recreation areas.

The Galli-Curci Mansion, a privately owned historic building, was not originally considered as a viewpoint by DEC and its visual consultant in the SDEIS. The viewpoints were selected to provide a representative sampling of impacted viewsheds by different public user groups. Viewpoints are from trail systems, public roads, designated "Wild Forest" areas, public recreation sites, a fire tower, and a National Register property (the Skene Memorial Library).

In addition, the DEIS, SDEIS and FEIS included an inventory of aesthetic resources. The Galli-Curci Estate was first identified as a property eligible for listing on the National Register in OPRHP's June 12, 2000 correspondence from Kenneth Markunas to Kevin Franke. The property was known to OPRHP as the "Sutter Estate" and identified as "an outstanding regional example of early 20th century Tudor Revival style estate house architecture." (See DEIS Appendix 25 Cultural Resources with Addendum). Nothing in this letter referred to visual or aesthetic values associated with views from the property.

The five-mile study area inventory identified a large number of potential aesthetic resources, so 13 were selected as viewpoints from the 51 photos locations, of which 10 had views into the project site. These 10 locations were subsequently analyzed for an evaluation of potential visual impacts using photography and 3-D modeling. In accordance with the Visual Policy, these 10 locations included representative foreground, middle ground and background views.

The Galli-Curci Estate was included in the inventory conducted as part of the Visual Impact Analysis for the Modified Resort Project in Figures 2 and 3 (See SDEIS Appendix 25). The DEC Visual Policy prescribes no particular format for this inventory, but only requires that all potential resources be identified. In this case, DEC's visual consultant used the maps in Figures 2 and 3 to identify and inventory all such resources, an inventory confirmed by OPRHP and verified by DEC, which notified the applicant that within the five-mile study area, there are 13 properties on or eligible for inclusion in the National or State Register of Historic Places (See SDEIS Figure 2).

Only one property on or eligible for inclusion in the National or State Register of Historic Places was included as a viewpoint—the Skene Memorial Library. This structure is a public facility, and there are no views into the project site from it. Although project visibility is a factor in selecting viewpoints for visual impact analysis, simply visibility is not a threshold for additional analysis. This approach is consistent with the Visual Policy where the definition of aesthetic impact provides "[m]ere visibility, even startling visibility of a project proposal, should not be a threshold for decision making. Instead a project, by virtue of its visibility, must clearly interfere with or reduce the public's enjoyment and/or appreciation of the appearance of an inventoried resource." Likewise, Page 5 of the Visual Policy discusses "Significance," explaining that "significant aesthetic impacts are those that may cause a diminishment of the public enjoyment and appreciation of an inventoried resource or one that impairs the character and quality of such a place." Significance is determined at the time of assessment pursuant to SEQR's requirement that only "reasonably predictable" impacts be examined. The lack of significance of the Galli-Curci Estate supported a conclusion that the public's enjoyment and appreciation of it would not be affected.

In addition, as discussed earlier in this response and in Response 3.5 (13), the only views contributing to the "character and quality" of the Estate, as reflected in the National Register listing, are the views away from the Modified Resort Project, down the valley to the northwest. The aim of a visual impact analysis is to determine potential visual impacts. It is not an exhaustive analysis of every resource that falls within one of the 16 categories in the Policy. This is particularly true of properties listed on the National and State Registers, where the reason for listing is based on history, architecture, archeology or culture. For all resources within the inventory, the test of significance focused on the impairment of the aesthetic character or quality associated with the resource for members of the public, not mere presence within a viewshed or simply visibility.

(7) Has the state of NY considered the warmer winters due to global warming and that this project may just be a huge mar in the beauty of Catskill Mts. in years to come? You can still view the scars from the long defunct Mt. Beacon Ski Area and the Incline Railway there. **I225**

Response: See the responses to comments 1 and 2 above regarding the general lack of visibility of the project from the Route 28 corridor and from the hamlet areas.

3.7 Noise

(1) CADNA was used for operational analysis for the UMP DEIS, whereas the simplified distance attenuation equation was used for Belleayre Resort SDEIS. To be consistent, and properly assess cumulative impacts, CADNA should be used for operational impacts for both projects and the cumulative assessment. If construction is estimated to be longer than three years, CADNA should also be used to evaluate cumulative construction impacts from the two projects.

Ambient Noise surveys dated 2008 and 2001 appear to be out-of-date. Please justify the use of these surveys instead of collecting new data.

The construction noise analysis uses noise levels for trucks at a reference speed of 30 mph (Table 4-1, Appendix 20). However, the typical speed on Route CR 49A is from 40 to 50 mph (Page 9, Appendix 26). The construction analysis may result in higher traffic noise impacts when modeled with the higher speed.

The SDEIS uses 3 dBA of insertion loss for every 100 feet of woods, resulting in 18 dBA noise reduction in the analyses (Table 4-6, Appendix 20). It is inconsistent with the NYSDEC Policy which indicates that dense vegetation of at least 100 feet in depth can reduce noise levels by 3 to 7 dBA (NYSDEC, 2001). Applying NYSDEC's guideline, the analysis would overestimate the insertion loss for the vegetation by 11 to 15 dBA, depending on the density of the woods. **M3637**

Response: The first comment suggested the noise analysis for Project operations should use CadnaA prediction software. As indicated in the SDEIS Appendix 20 Noise Assessment Report, noise impacts from Project were assessed using CadnaA software. CadnaA predicts propagation of sound according to ISO 9613 considering the following factors:

- *geometric divergence*

- *atmospheric absorption*
- *ground affects*
- *reflection, and*
- *screening (including reduction to sound due to topographic contours, foliage and barriers)*

A follow-up comment said the Project construction noise analysis should be conducted using CadnaA if construction is over three years long. The noise assessment methodology for Project construction predicted sound using distance attenuation from standard sound propagation algorithms that consider the same factors affecting on sound propagation as CadnaA including reductions in sound from screening. Overall construction project duration, however, does not affect the sound propagation and predicted impact. Therefore, the construction noise assessment methodology is equally as valid as CadnaA for assessing and predicting noise impacts irrespective of the construction project duration.

Another comment asked for justification that the two ambient noise surveys used in the Project noise assessment (conducted in 2001 and 2007) were not outdated. Section 3.7 of the Project Final Scoping Document for the SDEIS specified use of the existing ambient sound data from the DEIS from 2001 and the supplemental ambient sound data collected for the Forest Preserve receptor location in 2007. Over the past 12 years, there have not been major changes in land use or existing sound sources at the Project site that would result in increased ambient noise levels at the receptors. Therefore, the existing ambient sound levels used for the SDEIS are expected to be similar to current levels and not outdated.

Another comment suggested the actual vehicle speed on CR 49A is higher than the modeled vehicle speed. Although the instantaneous sound level of a vehicle may be higher at higher vehicle speeds, the average sound level (L_{50}) used in noise impact analyses from truck pass-bys at 40 to 50 miles per hour is less than at 30 miles per hour due to a shorter vehicle receptor pass-by time and shorter noise exposure[5]. Therefore, the assumption of construction traffic travelling at 30 miles per hour leads to a more conservative (higher) prediction of potential noise impact than traffic travelling at 40 to 50 miles per hour.

The last comment suggested the amount of insertion loss of sound propagating through dense woods should be limited to 3 to 7 dBA. While it is correct the NYSDEC noise assessment guidance document specifies dense vegetation of at least 100 feet will reduce sound levels 3 to 7 dBA[6], the guidance does not discuss attenuation over greater forested distances, nor does it specify the reduction is limited to the reduction over the first 100 feet. Clearly, even NYSDEC's maximum attenuation estimate of 7 dBA in 100 feet of woods does not assume the trees are providing a solid sound barrier (which can provide over 20 dBA of attenuation). Much of the

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[5] Power Plant Construction Noise Guide, Bolt, Beranek and Newman, Inc., May 1977. Figure C.7 specifies the L_{50} of truck traffic to be about 4 to 5 dBA lower at 50 mph than at 30 mph.

[6] Appendix 20 references to the NYSDEC Program Policy Document of 3 to 7 dBA **per** 100 feet of depth should be corrected to read 3 to 7 dBA for woods **at least** 100 feet in depth.

sound passes through the first 100 feet of woods. However, sound passing through the first 100 feet of woods will be further attenuated through scattering and absorption by additional sections of woods. As a result, the total barrier effectiveness of the woods increases as total distance of sound travel through the woods increases[7]*. To account for this additive sound attenuation, the Project construction noise assessment used the minimum reduction referenced by the NYSDEC guidance document (3 dBA for 100 feet of woods) for each 100 foot section of woods to estimate the total woods barrier attenuation of each noise source.*

(2) The SDEIS indicates there will be increased noise during the construction phase due to blasting, rock crushing and the use of heavy equipment. It also acknowledges that there will be an increase in noise during the operational phase of approximately 3 decibels due to increased traffic and the use of snow-making equipment.

With respect to the construction noise, the largest impact in the vicinity of Highmount is projected at receptor W1, which is roughly 500-600 feet from the Mansion. The impacts of the various construction activities at receptor W1 will increase noise to levels between 68 and 75 dBA. These levels would be unacceptable at the Mansion and therefore the applicant should be required to project the impact there in order to determine whether mitigation is necessary.

The analysis with respect to the operational impacts is based on a comparison of the noise levels pre-development with those when the project is operational. The pre-development levels are derived from a survey of certain identified locations.

According to Table 2-1 of Appendix 20, the existing ambient noise levels at the Galli-Curci Mansion (Receptor W-2) were based on measurements at survey location ML-1. Figure 2-1 shows that ML-1 is located at or in close proximity to County Road 49-A. By contrast, the existing ambient noise levels at the Mansion (Receptor W-2) are much lower than at ML-1 because it is set back substantially from the road. The projected operational noise levels of the project as determined at Receptor W-2 should be compared to the existing ambient noise levels at Receptor W-2, not those at ML-1. If that were done, the projected project impact would be much greater and would likely require mitigation.

In my view, this is another instance of the SDEIS' failure to provide site-specific analysis of the project's impact on the Galli-Curci Property; an analysis that is required by the SHPA. Such a site-specific analysis is particularly important with respect to the noise impact analysis because the bucolic setting of the Mansion is an important component of its historic, architectural and cultural significance. **I3535**

Response: The first comment requested construction noise impacts be assessed at the Galli-Curci Mansion. To appropriately address noise, Project construction noise impacts were assessed at the nearest receptor to the proposed noise source. The Galli-Curci Mansion (receptor W-2) was the nearest receptor to construction of the Conference Clubhouse (Old Leach Farm). For many

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[7] Noise Control for Buildings, Manufacturing Plants, Equipment and Products, Hoover and Keith, Inc. 1981 Table 6-6 specifies total sound level reductions increase with woods depth, at a rate of 3 dB per 100 feet (1000 Hz) for medium density woods.

other construction activities including rock crushing, however, receptor W-1 was the nearest receptor. At W-1, which is 360 feet from the proposed rock crusher site, a noise mitigative barrier is proposed to reduce predicted sound levels of 75 dBA by 16 dBA, resulting in predicted sound levels within the Project noise impact criteria. By comparison, W-2 is located approximately 1500 feet from the proposed rock crusher site, and predicted rock crusher sound levels at W-2 would be further reduced by distance, intervening woods and topography to well below the predicted mitigated sound levels at W-1. The noise assessment included in the 2003 DEIS expressly addressed noise impacts on the mansion from construction of the "Highmount Estates Lodging Units" (i.e., the 21-lot residential subdivision) and the associated access road (see 2003 DEIS, Appendix 22 at 52 to 5-4 [identifying "W-2" (the Galli-Curci Mansion) as the nearest receptor to construction on lots 1, 16 and 20]). Similarly, the noise assessment in the 2013 SDEIS, which "supplements the original Project noise assessment conducted for the [2003] DEIS" (2013 SDEIS, Appendix 20 [Construction and Operations Noise Study] at iii) shows that noise impacts on the mansion from both construction and operation were considered and analyzed (see id. at 3 [identifying receptor "W-2" and others as "residences on CR 49A"], figure 2-1 [map depicting location of receptors, including receptor W-2 at the location of the mansion], tables [listing W-2 as a receptor and indicating the relevant noise impacts]). The analysis shows that the noise impacts on the mansion will be minimal (see SDEIS, Appendix 20)

Another comment suggested the measured existing sound level at ML-1 is greater than the actual existing sound level at W-2 due to differing distances from CR 49A (presumably due to differing proximity to CR49A vehicle traffic). However, operational noise impacts were assessed by comparing predicted sound levels to measured existing ambient residual sound levels (L_{90}). The L_{90} is the sound level from near-continuous noise sources occurring at least 90 percent of the measurement period. While vehicle traffic on CR49A was a noise source during the sound survey at ML-1, it was infrequent. Vehicle pass-bys occurred less than 10 percent of the time (average less than 1 vehicle per 5 minutes). Since CR49 traffic sound was not continuous, it did not affect the ambient L_{90} sound level at ML-1. Further, other noise sources at ML-1 other than CR49 traffic, including those that may affect the L_{90}, would be similar at W-2 such as local tree leaf and bird sound, and long distance sound sources at such as Route 28 traffic. Therefore, the existing sound levels measured at ML-1 and used for the Project operation noise analysis are representative of W-2 and any other nearby receptor location either on or set back from CR49A.

For additional response related to impacts to the Galli-Curci Mansion, please see Response 1.4 (15), above.

(3) Another concern is regarding increased traffic on Route 28. Our business is located right on 28, and although we don't often get complaints from people about traffic noise, if 629 units were added in Highmount, we most certainly would. We would enjoy fewer repeat guests, and would risk bad comments on online review websites such as TripAdvisor. We rely on our repeat

customers and our online reviews for the success of our business. Again, the scale of the project is the problem. **I339**

Response: Comment noted. The traffic noise assessment completed for the Belleayre Resort at Catskill Park project was consistent with the scope included in an approved scoping document. The Build condition traffic volumes in the assessment included peak traffic volumes associated with the operation of both sites and did not result in a noise impact. See Part C for an analysis of cumulative traffic noise impacts.

(3a) We live within earshot of route 28 and the increased traffic concerns me in terms of noise pollution. I am concerned about safety on roads that are already considered very dangerous. **I3641**

Response: Comment noted. The traffic noise study completed for the Belleayre Resort at Catskill Park project includes an evaluation of the increase in noise levels anticipated with the development of the site (and increased traffic expected with the ski center expansion). The resulting noise level increases during the peak winter operations is anticipated to the 1 to 3 decibels, a change that is barely perceivable to the human ear.

(4) On page 3 of 30 of the LA Groups report on traffic/noise impact it is written: " However, it is noted that traffic volume associated with the development are expected to be less during the summer months since the peak operations of the resort will be during the winter when Belleayre Ski Center is operational."

No mention of the impact during the actual construction time (many years) is made. Also, no mention of delivery trucks, employee traffic during shift changes (which would probably take place at night as well as during daytime hours) nor is there any effort to address the additional noise in the winter with the lack of leaves, shrubs, etc. Natural growth has a tendency toward noise damping and there will be much removal of such growth plus what isn't removed during landscaping will, during the winter (peak operation), result in much more noise impact due to the lack of sound absorption. **I170**

Response:. The noise study was completed for the winter condition and utilized existing ambient noise data collected in November during leaf off conditions thereby represents a worst case condition.

(4a) I fear the noise which will last for 8 to 10 years, drowning out birdsong. **I382**

Response: The noise studies conducted for project construction (see SDEIS Appendix 20) indicate that there will not be significant noise impacts associated with the peak period of project construction which is anticipated to be the first 3 years. Following the initial construction period, the remaining construction will be for the detached lodging unit buildings as they get sold. Noise from the construction of these building will be similar to the types of noise and levels of noise generated by the construction of single family homes.

(5) The rerouting of the access road to the Highmount complex, as suggested in paragraph 3 above, would certainly be an important measure to mitigate operational noise at the Mansion. Absent such a measure, other mitigation (e.g. noise barriers) should be considered. The decision on any such mitigation should only take place after an appropriate noise survey of existing conditions at the Mansion has occurred. **I3535**

Response: The comment suggested mitigation should be considered to control operational noise at the Mansion (W-2) in the absence of access road re-routing. Potential noise impacts based on the original proposed Project layout using the original access road routing was assessed for both daytime and nighttime Project operations. As indicated in Tables 5-2 through 5-4 of the Project Noise Assessment, noise mitigative controls including, but not limited to, shielding from barriers were proposed to avoid potential noise impacts. Predicted unmitigated sound levels at W-2 from Project operation did not warrant mitigative controls. Nevertheless, proposed noise control of building HVAC systems (lower-noise HVAC units or shielding) reduced predicted Project operation sound levels at W-2 to 1 dBA above ambient. Other mitigation was not necessary.

The effect on potential noise impacts with access road re-routing (as part of the Revised Preferred Alternative Plan) was also evaluated in the SDEIS[8]. Results indicated the Revised Preferred Alternative Plan would not only result in no additional Project noise impacts, but also reduce noise at Highmount.

As indicated in the response to Comment 3.7 (2), ambient sound levels measured at ML-1 are representative and fully characterize the existing ambient residual sound levels of W-2. Therefore, additional ambient sound surveys are not necessary.

(6) Traffic noise should be assessed to determine risks to the wildlife and humans that live in or near the project. The effects of 20 years of construction traffic, noise, dust, pollution, delays, inconvenience, global warming/carbon contribution, and destruction of scenic beauty need to be delineated and addressed. **O3635**

Response: The SDEIS includes the following detailed studies:

Appendix 11-Traffic Impact Study
Appendix 20 Noise Study
Appendix 23 Wildlife Survey Report
Appendix 24 Air Study
Appendix 28 Climate change and Carbon Footprint

Construction noise will not be for a period of 20 years. See the response to comment 4a above.

(7) The analysis of noise impacts to the Forest Preserve is deficient in that, rather than assess impacts to all Forest Preserve lands, the analysis is limited to impacts to Wilderness Areas.

[8] SDEIS Appendix 20, February 24, 2012 letter from Scott Manchester, O'Brien & Gere to Kevin Franke, The LA Group, Re: "SDEIS Noise Impact Assessment Addendum 1; Revised Preferred Alternate Plan – Modified Belleayre Resort at Catskill Park Project"

SDEIS Appendix 20. However, there are large areas within the boundaries of the BMSC Intensive Use Area that are not used for skiing, and which continue to exist in their natural state. See SDEIS Appendix 20, Figure 2-1 & DUMP Sheet G-3. These areas will be impacted by the noise from the Project. In particular, there are hundreds of acres between the Highmount area of the Project and the noise monitoring location (ML-W1 & #FP-1) that was used to calculate potential noise impacts on the Forest Preserve. See SDEIS Appendix 20, Figure 2- 1 & DUMP Sheet G-3.

This has the effect of using constitutionally protected Forever Wild forest lands that are in the BMSC Intensive Use Area, but are outside of the areas actually being used for the BMSC, as a buffer for the Project's noise. The potential noise impacts on these lands should be calculated, assessed, and mitigated.

The CPSLMP (p. 48) provides that Intensive Use Areas will be used for "recreational activities that are appropriate to a wild forest setting", shall be developed in conformity "with the wild character of the Forest Preserve", and shall be used "in a setting and on a scale in harmony with the wild and undeveloped character of the Forest Preserve and Catskill Park." Thus, there is no reason to ignore noise impacts to the Intensive Use Area lands.

The failure to treat all Forest Preserve lands as wild recreational lands, and measure noise impacts only at the Wilderness Area boundary, provides an almost one-mile wooded buffer that, in reality, does not exist. This extra distance resulted in an analysis that significantly understated noise impacts to the Forest Preserve. Noise impacts on the Forest Preserve should be recalculated at the edge of the active ski area.

It appears that the noise impact analysis did not take into account the DEC Noise Impact Policy which, at page 7, requires that 10 dBA be added to all noise levels measured between 10 p.m. and 7 a.m.

The noise impact analysis was apparently based on ambient noise level testing done in the month of May. It is not clear whether that was during leaf-on or leaf-off conditions and how that may affect the results. **O3635**

Response: Comments suggested potential noise impact to the Forest Preserve lands was limited to Wilderness areas and, therefore, not appropriately addressed. However, the proposed design of Project's operations and noise assessment of those operations i n The SDEIS Noise Assessment (appendix 20) included an evaluation of the nearest point of wilderness, located in the Big Indian Wilderness area, approximately 1 mile from the Highmount hotel location. No noise impacts were predicted to occur at this location. The nearest Wild Forest location, within the Dry Brook Ridge Wild Forest, is located approximately 3 miles away and effects of noise will be even less at this location. Per the CPSLMP recreational use in Wilderness areas should be free of unnatural sights and sound, while in Wild Forest some motorized uses are considered appropriate so the expectation for quitter conditions are not as high as they are for Wilderness Areas.

Mitigation of potentially significant adverse operational noise impacts at sensitive receptors for the modified project design was conducted in consideration of the following:

- *(i) Site layout;*
- *(ii) Architectural design considerations, such as the use of construction materials that lessen sound emitted from structures;*
- *(ii) Building layout; and*
- *(iii) Preservation of existing vegetative buffers.*

Further, the Project Noise Assessment was conducted in full accordance with procedures set forth in the Final Scoping Document for the SDEIS including the ambient sound survey siting, survey data usage, and noise assessment methodology. Section 5.3 of the Project Noise Assessment predicted Project noise sources will not increase existing average ambient sound levels in the Wilderness area of the State Forest Preserve. The Project will also be operating within the existing character and use of the adjacent Intensive Use Area which already includes allowance of noise from the existing and future operation of the Belleayre Ski Center.

In regards to the comment on adding 10 dBA to nighttime noise levels, it is accurate that the NYSDEC noise guidance document refers to adding a 10 dBA correction to night sound levels when calculating a 24-hour Day-Night Sound Level (L_{dn}). However, the L_{dn} was not used in the Project noise assessment in favor of a more detailed analysis using the daytime and nighttime equivalent sound levels (L_d and L_n respectively) to individually assess both daytime and nighttime potential noise impacts.

The last comment questioned whether ambient sound level measurements were conducted during leaf-on or leaf-off conditions. Ambient sound level measurements in the Forest Preserve were conducted in May prior to trees leafing out in the spring since when trees are leafed out, ambient sound levels may be higher during periods of moderate or high wind speeds. Even so, winds were calm to very light during the measurements; therefore, even if trees had been leafed out they would not likely have been a major noise source. The major noise source during the ambient sound survey was birds chirping. Further, leaf condition is not factored into the noise prediction calculations. Therefore, since leaves did not increase the ambient sound levels and did not change the sound level prediction itself, the leaf condition did not affect the noise impact assessment results.

3.8 Land Use and Planning

(1) While additional development and modernization at and near the Belleayre Ski Center is desirable, as set forth below and in the attached technical reports, the inappropriately large size and scale of the Crossroads proposal is completely out of character with the area and would result in unacceptable environmental impacts. **I2130**

(1a) It will also alter the character of the small town of Shandaken in negative ways. **I3498**

(1b) I just wanted to voice my opinion against building golf course, buildings, etc. at Belleayre. The project to too big, too obtuse for our neighboring small towns. **I486**

(1c) Irreparable damage to the flavor of the current small towns, what is the intrinsic value placed on the communities' sense of place and character? Has this been addressed or studied in any forum? **I406**

(1d) The scale of this venture would destroy the entire balance of the area and make it a very unpalatable place. **I3593**

(1e) Mega development does not belong in the watershed. Nothing is worth the risk. The size and impact will drastically alter our rural community character. The state should instead be vigilantly safeguarding the water supply and the environment of the Catskill Park, both of which will be severely degraded if the oversized and inappropriate destination resort is built. **I517**

(1f) I have vacationed in the Belleayre area for over 50 years. I do not want to see its rural nature tampered with for a risky venture that is unlikely to succeed. There's no going back after the mountain is torn up and yet the big spenders don't appear. **O3547**

Response: Land use for the project site is governed by local land use regulations including the zoning ordinances for the Town of Shandaken and the Town of Middletown. As discussed in the SDEIS (see section 3.8)) the project is a permitted use requiring special use permit approvals from the Shandaken and Middletown Planning Boards in accordance with the current zoning regulations of both Towns. A special use permit is a type of approval that enables a use of land that is in concept appropriate in light of municipal planning objectives but that might otherwise not be in harmony with the rest of a neighborhood or district. It enables the proposed use of land to achieve such harmony by complying with condition developed in the review process. In the case of Crossroads, resort development is something that is contemplated within the municipal planning objectives. The special use permit, however, enables the municipal planners to impose conditions to address site and development specific issues that would have been difficult to foresee at the legislative zoning stage.

As regards to resort development, It should be noted that the importance of tourism to the Town of Shandaken is demonstrated by the provision in the Zoning law which allows resorts, by special *permit, in any zone in Shandaken.*

The project is currently undergoing Site Plan/Special Use Permit review in both Towns.

(2) In the LA Group study I noted an interesting contention regarding the proposed resort: "The Resort would also be expected to result in other, more qualitative, effects, such as renewing the image of the Catskills as an attractive destination for tourists and visitors."

Implicit in that statement is an opinion that the image of the Catskills as an attractive destination for tourists and visitors is deficient, and in need of the type of renewal that the proposed resort could best provide. What has not been sufficiently acknowledged by planners is the renewal of the image of the Catskills as an attractive destination for tourists and visitors that is already well under way, and how that current renewal might be negatively impacted by the scope of the plans now under review. Let’s start with the Route 28 corridor, which would be one of the two main routes used to access the proposed resort and expanded ski center. Efforts are well underway with the support of all the towns in close proximity to the planned project to designate Route 28 as both a State and National scenic byway. Such a designation would bring increased public attention to all of the noteworthy attractions and scenic beauty in the towns that Route 28 passes through. But such a designation would also be an acknowledgement of the special nature and appeal of the Route 28 thoroughfare itself.

Tourists and visitors who are drawn to scenic byways tend to stop and smell the roses, so to speak. The area itself becomes their destination rather than , for example, a fixed point all inclusive resort which tourists are prone to transit directly to, remain within virtually exclusively during their stay, and then depart from for a direct journey home. Both modes of tourism can coexist nicely to a point, but at a point the latter begins to degrade the appeal of the former, when traffic congestion increases making the journey itself less relaxing and appealing for example. There would also be less obvious corrosive effects on the vitality of small towns situated just off Route 28, like Phoenicia and Pine Hill to name two in my town of Shandaken, if an increasing percentage of motorists on Route 28 conceptualized their use of that road as the shortest way or reaching the Belleayre resort with their actual vacation to commence upon arrival there. **I3649**

Response: The referenced “contention” regarding an attractive destination is an excerpt from the Town of Middletown Comprehensive Plan that is reiterated in the SDEIS. Specifically, the language from the SDEIS is as follows, “Diversify commerce and industries in the area by promoting Middletown as an attractive destination for visitors, home occupations and new businesses.”

Efforts to designate NYS Route 28 as a scenic byway have been ongoing for years, and to date, that designation has not occurred. Regardless of this designation, or lack thereof, the project will not be visible from along the Route 28 corridor (see section 3.6 comment responses 1 and 2 in this FEIS).

Traffic generated by the modified resort project will not be at the level that it will impact travel on NY Route 28 (see SDEIS section 3.5) and the modified project is projected to have beneficial socioeconomic impacts to the local hamlets including Pine Hill and Phoenicia (see SDEIS section 3.9)

(3) I am 100%, whole heartily, opposed to the building of this resort. Growing up in the Catskills I've gotten to experience the wonders those mountains have to hold, but as it continues to be developed and subject to massive amounts of tourism I've began to see an increase in destruction and pollution taking place. The beauty the lies here is the exact reason why I and so many others love to live here, but it is also the very thing that will be destroyed. You'll have to cut down trees create more roads, maybe even expand 28, and my question is, how in a time of rapid human induced climate change would you want to only increase the carbon footprint of the Catskills, when the goal should be to reduce it. I pray every day that this will not pass, because it will

destroy my home, and bring destruction to many animals' homes too. Everything does not have to be subject to urbanization, and not everything is about money. There is so much more to life, and the Catskills show us just that. They give people a sense of the true beauty that the world has to offer. **I79**

Response: Review of this project started in 1999. In the ensuing years there has been very little new development in the area much less the "massive amount of tourism" stated in the comment. As discussed in section 3.8 of the SDEIS the Comprehensive Plans for the Towns of Shandaken and Middletown acknowledge the importance of tourism to the local economy.

(4) From the very beginning, when Dean Gitter first announced his proposed resort at a packed meeting at the Shandaken Town Hall in late 999, this project has been controversial and divisive. In fact, I remember the first thing Mr. Gitter said was something like: "I haven't even opened my mouth, and already half the people in the room are mad at me."

Nearly 15 years later we are being asked for our thoughts about a project that I and many others believe will be devastating for our town, the Catskill Park, and the New York City watershed. **I310**

Response: Comment noted.

(5) I am opposed to public subsidy of a private resort. In my experience development is most cost effective if located inside an existing town instead of building a new town (resort) away from transportation, infrastructure and emergency services. The State of NY must limit its outlays of public monies to serve the public and not to fund a private resort whose goal is simply to flip real estate**. I2131**

Response: The State of NY is not funding the private modified resort project.

(6) The people who live in the area oppose your plans and want things described in the petition to happen because they will be much more sustainable and appropriate for this area of the Catskills. It will certainly change the rural character of our area, the very thing that brings people here.

We own a small vacation home on Galli Curci road and don't want the area to feel over developed. **I166**

Response: Municipalities define community character through their comprehensive plans. Plans are implemented through zoning. In the Town of Shandaken, resorts in all districts are a permitted use subject to a special use permit. Therefore, the use is deemed compatible as described in response to comment 1 above. Note that the project is currently undergoing review at the local level to confirm that the modified project complies with the local land use regulations of Shandaken and Middletown. Both the Towns are involved agencies under SEQR and will be required to make findings on matters within their jurisdiction which are land use and zoning issues.

(6a) To make such dramatic and irreversible change to our community character, environment, and sense of place-and to commit tax dollars to some of that change-seem to me a case of putting private welfare ahead of the public good. I hope that the DEC will stay true to its purpose, which is to conserve our environment. As with preserving the legacy of Amelita Galli-Curci, conservation of community character, of a sense of place, of an economy in which all benefit--adds value to our lives. This proposed resort would diminish our lives. **I3536**

Response: See the response to the previous substantively similar comment.

(7) Finally, this resort would set a bad precedent for local development. We should instead be investing in sustainable projects that fit the scale and character of the local landscape and communities. **I338**

Response: Comment noted.

3.8.1 Current Land Uses

(1) As a steward of this historic property, I am concerned that the construction and operating phases of the project will bring a large number of strangers past the section of County Road 49A immediately adjacent to the Galli-Curci Property and thus create a security problem that could result in vandalism or other degradation of this resource. The SDEIS should evaluate this concern and require reasonable prevention measures (e.g. fencing). **I3535**

Response: There is no reasonable basis to believe that Resort guests would pose a security threat to nearby residential properties.

3.8.2 Land Use, Planning and Zoning

(1) In the Town of Shandaken, the Resort is located entirely within the R5 and R3 Residential zones which require 5 and 3 acres per building, respectively. See Town of Shandaken Code, Chapter 116 Zoning, Attachment 1, District Schedule of Area and Bulk Regulations (hereinafter "Shandaken Bulk Table"). A simple inspection of the Project Master Plan (SDEIS Sheets 1.00-1.02) reveals more than one building per 5 acres or 3 acres, with as many as a dozen buildings per acre in some locations. This appears to exceed the allowable density. See Shandaken Bulk Table. If the density of units and rooms/acre is 0.85 (SDEIS, Table ES-1 Comparison of DEIS and Modified Projects (page vi)), then a rough gauge of overall density projected per 3-acre lot is 0.85 x 3 acres, yielding 2.55 units or rooms proposed on average, instead of the one unit allowed.

Additionally, Crossroads has made no application for a cluster subdivision. Even within the framework of a cluster subdivision, the number of buildings and units violates the Town of Shandaken Code because, in some areas, there would be more than four dwelling units per acre. See Town of Shandaken Code §116-32(M).

Crossroads states that the Resort site contains 739 total acres (SDEIS Table ES-1 Comparison of DEIS and Modified Projects (page vi)), but for purposes of determining density, areas with steep slopes must be subtracted prior to making density calculations. See Town of Shandaken Code § 116-32(A). The SDEIS provides insufficient information to determine the acreage of steep slopes on the 739 acre site. Therefore it is not feasible to calculate a denominator for the required density calculations, exclusive of steep slopes.

Crossroads states that there will be 218 developed acres on 739 total project acres (SDEIS Table ES-1 Comparison of DEIS and Modified Projects (page vi)), yielding a structure coverage ratio possibly as high as 29%, while the maximum structure coverage in R5 and R3 zones is 10%.See Shandaken Bulk Table. Insufficient information is provided to determine the exact acreage that the various types of development (e.g., buildings, golf course, parking areas) contribute to the 218 developed acres. Therefore, it is not feasible to calculate a precise figure for the percentage of coverage.

Some proposed structures appear to be incompatible with the existing residential zoning (e.g., multifamily dwellings, Leach Farm Conference Center, Marlowe Mansion, and Wilderness Activity Center). See Town of Shandaken Code § 116-10.

In addition, the height of some structures is excessive (see elevations from SDEIS Sheet L-4.00). For example, the Highmount Lodge is shown to have a height of 52 feet (2,634' elevation (Roof) B 2,582' elevation (1st Level) = 52 feet), and the Highmount Hotel is shown to extend 78 feet underground (2,602' elevation (Roof) - 2,524 elevation (1st Level) = 78 feet). Elevation figures for the Wildacres Hotel and most other structures are not provided. In the Town of Shandaken, the maximum structure height in any zone is 35 feet. See Shandaken Bulk Table; Town of Shandaken Code § 116-32(J). Therefore, it appears that the proposed structures do not comply with the Shandaken Town Code. **O3635, H16**

Response: According to the applicant, the Project will combine several smaller parcels into two larger, distinct parcels for development. The 255.57-acre Wildacres Parcel will include lands in the Town of Middletown zoned R5 (129.52 acres) and lands in the Town of Shandaken, some zoned R3 (89.61 acres) and others zoned R1.5 (36.44 acres). The 134.36-acre Highmount Spa Parcel will include lands in the Town of Middletown zoned R5 (35.55 acres) and lands in the Town of Shandaken, some zoned R5 (58.12 acres) and others zoned R3 (42.69 acres). Parcel boundaries, Zoning District lines and acreage are taken from the current Site Survey Maps prepared by Catskill Region Surveying Services (CRSS), dated March 27, 2015. All lodging units bisected by the boundary line between Shandaken and Middletown as shown on the Site Survey Map were conservatively included as whole units within Shandaken, thus requiring more total lot area in these density calculations.

According to the applicant, the Town of Shandaken Zoning Code provides applicable density requirements in a "District Schedule of Area and Bulk Regulations," as modified by additional requirements in Zoning Code § 116-40 (O). The two modifications applicable here are that (1) the project will be served by a municipal sewer disposal system, and therefore the "Minimum Lot Area" may be reduced by 50% in R3 and R5 Zoning Districts as indicated in Note "c" of the Schedule, and (2) Zoning Code § 116-40 (O)(1) requires that for "Hotel or motel or lodge development in R5, R3, R 1.5," the "minimum residential lot area shown on the District Schedule of Area and Bulk Regulations for the zoning district in which the hotel or motel is proposed to be located shall be increased by 100% for each eight guest rooms provided." Therefore, the Town of Shandaken Zoning Code requires calculation of the applicable density according to the following method:

1. Based on the District Schedule of Area and Bulk Regulations, as modified:

Minimum lot area in R 1.5	= 1.5 ac
Minimum lot area in R 3	= 1.5 ac (applying 50% municipal sewer reduction)
Minimum lot area in R 5	= 2.5 ac (applying 50% municipal sewer reduction)

2. Number of units on each parcel in Shandaken (including units bisected by Town line)

   a. Wildacres: 383 lodging units total—94 in R1.5 zone and 289 in R3 zone
   b. Highmount Spa: 216 lodging units total—81 in R3 zone and 135 in R5 zone

3. Calculations:

   a. Wildacres Parcel – R 1.5 Zone (all Front 9 Village detached units in Shandaken)

      i. 94 units proposed ÷ 8 = 11.75 [multiplier from § 116-40 (O) (1)].
      ii. Round up 11.75 multiplier to 12.
      iii. Multiply 12 * 1.5 acres = 18 acres of increase.
      iv. Add the 18 acres of increase + original 1.5 acre lot = 19.5 acres minimum required.
      v. Compare 19.5 acres required to 36.44 acres that Crossroads has in R 1.5 in Shandaken at Wildacres.

   b. Wildacres Parcel – R 3 Zone (remainder of units – 250 in hotel and 39 detached at the West Village)

      i. 289 units proposed ÷ 8 = 36.125 [multiplier from § 116-40 (O) (1)].
      ii. Round up 36.125 multiplier to 37.
      iii. Multiply 37 * 1.5 acres = 55.5 acres.
      iv. Add 55.5 acres of increase + original 1.5 acre lot = 57 acres minimum required.
      v. Compare 57 acres required to 89.61 acres that Crossroads has in R 3 in Shandaken at Wildacres.

   c. Highmount Spa – R3 Zone (65 units in hotel and 16 detached units)

      Note: The Zoning District line passes through the 173-unit Hotel at Highmount, with 65 units in R3 and 108 units in R 5. The 16 detached duplex units are in R3, and the 27 Lodge Building units are in R5.

i. 81 units proposed ÷ 8 = 10.125 [multiplier from § 116-40 (O) (1)].
ii. Round up 10.125 multiplier to 11.
iii. Multiply 11 * 1.5 acres =16.5 acres.
iv. Add 16.5 acres of increase + original 1.5 acre lot =18 acres minimum required.
v. Compare 18 acres required to 42.69 acres that Crossroads has in R 3 in Shandaken at Highmount.

d. Highmount Spa – R5 Zone (108 units in hotel and 27 units in the Lodge Building)

i. 135 units proposed ÷ 8 = 16.875 [multiplier from § 116-40 (O) (1)].
ii. Round up 16.875 multiplier to 17.
iii. Multiply 17 * 2.5 acres =42.5 acres.
iv. Add 42.5 acres of increase + the original 2.5 acre lot = 45 acres minimum required.
v. Compare 45 acres required to 58.12 acres that Crossroads has in R 5 in Shandaken at Highmount.

Therefore, as shown by these calculations, the Wildacres Parcel and Highmount Parcels will each contain more than enough acreage to meet the density requirements for the proposed number of lodging units in each of the Town of Shandaken Zoning Districts.

In addition, the comment cites Town of Shandaken Zoning Code § 116-32(A), asserting the need to subtract out steep slopes when calculating allowable density. However, section 116-32(A) is for residential cluster development, a classification that does not apply to the proposed modified project.

For building coverage, pages 2-15 and 2-16 of the SDEIS provide a detailed breakdown of building footprints. A detailed breakdown of impervious areas, including individual buildings, is provided on pages 2-23 to 2-26 of the SDEIS, including tables 2-2 and 2-3. Using the building footprints listed in SDEIS tables 2-2 and 2-3, the total building coverage in Shandaken is 8.5 acres. As per above, there are 328.23 acres of the project site within Shandaken. Thus, the overall building coverage is 2.6%, substantially less than the 15% maximum coverage allowed by Shandaken Zoning Code § 116-40 (O) (6).

The Leach Farm Conference Center, the Marlowe Mansion Clubhouse and the Wilderness Activity Center are accessory uses for the hotel development and thus allowable by Special Use Permit (Shandaken Zoning Code § 116-40 [O] [4]).

Figure 3-18 in the SDEIS shows a profile of the Wildacres Hotel, demonstrating that it complies with the 35- foot height limit. The errata section of this FEIS includes a similar graphic showing a section of the Highmount Hotel and a line showing 35 feet above grade.

If the Town or its zoning officials determine an area variance is required, the Applicant will file an application.

~~CR Response: The project site includes lands that are zoned R5 (161.37 acres), R3 (131.28 acres) and R1.5 (35.58 acres). Zoning code section 116-40(0)(1) states that required lot areas be increased 100% for every 8 guest rooms provided. This means that each 8 hotel lodging units require 10 acres in R5, 6 acres in R3 and 3 acres in R1.5. The zoning area and bulk regulations provide for an allowed doubling of density in R5 and R3 (but not R1.5) when central sewage is provided. The modified project has central sewer. Applying this allowance means 8 units per 5 acres are allowed in R5 and 8 units per 3 acres are allowed in R3. (R1.5 remains 8 units for 3 acres.)~~

~~R5: 161.37 acres @ 8 units/5acres = 258 units~~
~~R3: 131.28 acres @ 8 units/3 acres = 350 units~~
~~R1.5: 35.58 acres @8 units/3 acres = 95 units~~

~~Thus, there are 703 units allowed in Shandaken. For the entire project (Shandaken and Middletown) 629 units are proposed, with 571 of these proposed in Shandaken.~~

~~The comment cites section 116-32(A) of the Shandaken zoning code and the need to subtract out steep slopes when calculating allowable density. Section 116-32(A) is for residential cluster development which is not applicable to the proposed modified project.~~

~~For building coverage, pages 2-15 and 2-16 of the SDEIS provide a detailed breakdown of building footprints. A detailed breakdown of impervious areas, including individual buildings is provided on pages 2-23 to 2-26 of the SDEIS, including tables 2-2 and 2-3. Using the building footprints listed in SDEIS tables 2-2 and 2-3, the total building coverage in Shandaken is 8.5 acres. As per above, there are 328.23 acres of the project site within Shandaken. Thus, the overall building coverage is 2.6%.~~

~~The Leach Farm Conference Center, the Marlowe Mansion Clubhouse and the Wilderness Activity Center are accessory uses for the hotel development and thus allowable by Special Use Permit (116-40(O)(4)).~~

~~Figure 3-18 in the SDEIS shows a profile of the Wildacres hotel as well as how it complies with the 35 feet height limit. A similar graphic showing a section of the Highmount hotel and a line showing 35 feet above grade is provided in the errata section of this FEIS.~~

~~In the event that the Town or Shandaken determines an area variance is required for the height of the Hotels, Crossroads would presumably apply to the Town of Shandaken Zoning Board of Appeals for one together with its applications to the Town of Shandaken Planning Board~~

3.8.3 Compatibility with Land Use Plans and Effects on Future Developments

(1) The Project does not comply with the Town of Shandaken Comprehensive Plan.

CHA and CPC made a significant record on community character impacts during the prior issues conference on the Project. Although the Project has been redesigned, there has been little change in its overall size, and thus little to no reduction in the scale of its impacts to community character. Therefore, despite the changes to the Project since the issues conference, this issue remains important, and the issues conference record remains relevant. That issues conference testimony and related exhibits are incorporated herein as comments on the SDEIS, DUMP and CIA, as if they were more fully set forth herein. DEC already has these records in its possession. **O3635**

Response: The SDEIS (section s 3.8.2(A)(1)(a) & (b), pp 3-70 to 3-72) evaluates the Resort's compatibility with respect to existing community character and the 2005 Town of Shandaken Comprehensive Plan. With respect to the "unmodified project," the Issues Conference submissions by CHA and others as well Crossroads Ventures submissions in response were extensive and exhaustive. The December 29, 2006 Interim Decision issued by DEC Deputy Commissioner Johnson rejected CHA's request to adjudicate community character issues as well as secondary and induced growth impacts finding that the existing administrative record provides sufficient information to evaluate the project's consistency with community character for purposes of the Department's SEQRA review. It must be remembered, however, that SEQR does not change the jurisdiction between or among state and local agencies (local boards). Along these lines, community character and how the proposed resort fulfills or clashes with the comprehensive plans for the two involved towns is largely a matter for the two towns since the ability to define character is a unique prerogative of municipalities through zoning. At this point, the record on community character is more than adequate for the board to make their conclusions.

(2) According to the Comprehensive Plan for the Town of Shandaken, 2005, "Only 4% (3,300 acres) of the available vacant or open space could be developed once adjustments for wetlands, water bodies, floodplain and slopes of greater than 20% are accounted for. This could lead to an increased pressure to develop the sides of mountains, which leads to conflict with environmental goals and regulations." Clearly, the Crossroads project conflicts with the Town of Shandaken's Comprehensive Plan.

The Crossroads project is in Residential 5 acre and Residential 3 acre zoning. This is not zoned for a commercial resort. While hotels and motels are allowed in all zones in Shandaken, the resort's design greatly exceeds density allowances, especially when areas with steep slopes are omitted from available land calculations. Light from the resort would be shed on adjoining properties, which is also not allowed under Shandaken's Comprehensive Plan. **O3635**

Response: The Comprehensive Plan and the analyses contained therein are "broader brush" approaches to land use planning in Shandaken and are not meant to substitute for site-specific land analyses and planning. The project clearly takes into account wetlands (section 3.4.3 in the DEIS, SDEIS and FEIS) with no NYSDEC wetlands present and the USACOE determining that the project does not require permits. Also, in accordance with the AIP, and as described in the SDEIS, the modified project avoids slopes of 20% or greater. There are no floodplains on the project site.

See the responses to comment 3.8.2(1), including the density calculations and to the two previous, substantively similar comments. The project does not exceed the allowable density in Shandaken

Light trespass was addressed in section 3.6 of the SDEIS. Project lighting will not trespass onto adjoining lands.

3.9 Socioeconomics (CR Response)

(1) The size of the projects, based on inflated estimates of future guest/skier visits, will not provide the boon to the local economy as claimed and, instead, will take away business from existing Catskill facilities.

Because the Resort would saturate the market by tripling the number of units from Margretville to Mt. Tremper, it would cause it to cannibalize market share from existing communities, businesses, and proprietors in the Route 28 corridor and elsewhere in the Catskills. More significantly, were the Resort to be approved at its full size, but only partially developed, its large inventory of un-built units would "present an obstacle to investment in the corridor's (Route 28) existing community-based lodging and visitor-related sections."

Response: With respect to the commenter's claim that future guest visits are inflated, the proposed project was planned based on solid market research. The Belleayre Resort is situated in the Catskill Mountains which attracts over 2.5 million visitors each year and is in close proximity to over 20 million people making the resort a prime destination. Furthermore, the time share market has been recovering in the past three years and reports $6.9 billion in sales for 2012, according to the American Resort Development Association. This represents a 13 percent gain in the past three years with new projects being developed and most upscale hotel companies selling tens of millions of dollars of product.

Furthermore, the Belleayre Resort will not increase "shared-ownership" units in the Northeast by any significant margin given that there are approximately 14,960 timeshare units in the Northeast (Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, Pennsylvania, New Jersey and New York) [cite: American Resort Development Association's "State of the Vacation Timeshare Industry. United States Study, 2013 Edition"]. The Belleayre Resort proposes to build a total of 629 lodging units, 328 of which will be hotel units and the remaining 301 units as shared ownership. "Shared-ownership" units include resort timeshares and fractional interest vacation homes. Of the 301 shared ownership units, it is anticipated that 84 units will be time share units and remainder as fractional units, depending on market conditions.

As the Ragatz Study shows, the 84 time share units do not affect the time share market in any significant way, nor do the proposed 217 fractional units significantly increase units in the fractional market. With respect to market demand, there is strong evidence as discussed by Ragatz in his 2013 report that fractional interest sales are improving in prime destinations and in properly planned resorts, such as the Belleayre Resort.
From a socioeconomic perspective, the proposed project is not expected to cannibalize sales in a manner that could lead to significant adverse impacts to community character. The proposed project would offer a level of amenities that is not commonly found in the study area, and therefore is expected to attract a new and different consumer base to the socioeconomic study

area. The on- and off-site spending of any new consumers would not represent cannibalization of existing consumer dollars from within the study area.

While the analysis assumes that the proposed project's guests would spend a majority of their consumer dollars on-site, the guests' off-site spending—combined with the project's local spending on support services and project employees' consumer spending—is projected to be substantial. As stated on page 1 of Appendix 4, "it is expected that the primary economic effects of the Resort within the study area would result from off-site spending generated by visitors to the Resort, and off-site spending from Resort-generated employment (direct and indirect). It is anticipated that these effects would stimulate business activity, and that the bulk of this new economic activity would largely be absorbed within the existing business stock of businesses now operating in the affected area." It is expected that the proposed project "would tend to stimulate additional commerce in existing businesses, especially among gas stations, food and lodging establishments, general merchandise (including local crafts and souvenirs), as well as recreational facilities."

It was estimated that the Route 28 Corridor can be expected to capture a substantial share of the off-site economic activity generated by Resort operations (e.g., purchase of food or office materials). It was estimated that approximately $1.05 million would be spent within the Route 28 Corridor from the operational demands of the proposed project. In addition to this spending, the Route 28 Corridor would also experience an increase in spending due to off-site visitor expenditures ($10.64 million), expenditures from employees of the proposed project ($12.43 million), and expenditures from indirect employment generated from the proposed project ($0.65 million).

The resort SDEIS Appendix 3 delineates two areas of impact. The smaller of the two is the "socioeconomic study area". This area includes the Towns of Middletown, Shandaken, and Olive. The larger (roughly 2.5 times the area of the socioeconomic study area) is the "workforce study area", which in addition to the aforementioned Towns, includes the Towns of Bovina, Andes, Hardenbaugh (to the west and south), and Halcott, Lexington, Hunter, Woodstock and Hurley (to the north and east).

The UMP's bifurcation of the areas of impact is arbitrary. If the resort and the ski center are capable of drawing workforce from the larger area they are just as capable of drawing skier and other seasonal visitors from within the same area.

The effect of bifurcating the impact area is to delimit the area of socioeconomic impacts to exclude consideration of potential or reasonably expected impacts on other Catskills towns and communities that are dependent upon existing ski areas and/or seasonal visitors. Socioeconomic and community impacts in the workforce area are as potentially significant as those in the socioeconomic area, yet they have not been acknowledged, considered, or evaluated by the SDEIS.

The proposed resort and ski center expansion will compete for both workforce and market share (including skiers, second home purchasers, and other visitors) with nearby towns and communities elsewhere in the Catskills region. Windham and Hunter, for example, are located in the SDEIS' workforce area of impact but not the socioeconomic area of impact. These and other communities in the socioeconomic area have sizable skier and seasonal-visitor based economies that could be impacted by the proposed resort and ski center expansion.

Accordingly, the SDEIS's consideration of the full range, size, and scope of potential impacts on socioeconomic and community character within the area of impact (consistent with the workforce area) is incomplete. **I2130**

Response: As described on page 4 of the DSEIS Appendix 3, the analysis of population and households focuses on a "socioeconomic study area," which is the area in which demographic and workforce characteristics are more likely to be affected by the proposed project. Within this immediate area, one would expect that the business activities of the project, and the consumer activities of the employees and guests, would be most concentrated. The project would not be expected to substantively effect population and household patterns outside of the socioeconomic study area. The purpose of the workforce study area is to evaluate whether there is an adequate existing workforce within a reasonable commuting distance of the proposed project, so that the assessment of the socioeconomic study area can more accurately consider potential labor constraints.

The Socioeconomic Conditions analysis adheres to the Final Scope of Work, which states: "The Supplemental DEIS shall provide a demographic and economic profile of the communities comprising the socioeconomic study area, which will be defined generally by the NY Route 28 corridor between Boiceville and Margaretville, and the towns and villages therein…The study area for the workforce and labor analysis will additionally comprise the area from which an estimated 80 percent of the potential Resort employees originate and/or reside."

As per the Final Scope, Section 3.9.1 provides a demographic profile of the communities along NY Route 28 corridor between Boiceville and Margaretville. In addition, this section also provides a demographic profile of the workforce study area.

(1a) Potential impacts on community character could occur in the workforce area of impact as a result of diversion of existing skier and seasonal visitor spending. Diversion of existing visitor spending has the potential to erode the economic base of communities within the larger workforce area of impact. **I2130**

Response: The potential impact on community character due to competition within the broader workforce study area is a speculative impact and beyond the scope of this SEQR analysis.

(1b) Have the economic impacts of the Route 28 projects been considered in light of similar established competing tourist amenities in the Towns of Hunter and Windham in nearby Greene County, New York? **I2130**

Response: The potential impact on community character due to competition within the broader workforce study area is a speculative impact and beyond the scope of this SEQR analysis.

(2) New patrons of the resort will seldom venture down into local villages, as the history of other such developments clearly shows; a small number of new residents will leave their city on the mountain. Demand for new infrastructure and services would increase property taxes; research shows that developments in similar environments require increased taxes for roads, schools, fire, ambulance police and other infrastructure. The price of houses will increase; the spa and the many diversions the resort would offer will ultimately drain economic vitality from surrounding communities. The several restaurants, clothing and other stores, many entertainments offered by the resort, would hurt and not help business from local communities. The resorts developers won't operate the resort, but will sell it to a national chain, so where are the wage guarantees they talk about? New jobs created by the resort would be minimum wage service jobs. Resort planners should allocate significant funds to enrich Pine Hill, Fleischmanns, a Margaretville, as the Finns are successfully doing in Hunter and Tannersville. **O3489**

Response: Resort visitors would not limit their spending solely to on-site Resort goods and services. As stated on page 5 of Appendix 4, "Fractional ownership residents would be expected to stay at the Resort for longer periods of time, and they would view their units as though they were akin to seasonal homes. As a result, Resort patrons would be expected to purchase staples, such as groceries and liquor, for example, and it could be expected that many would make regular purchases of daily necessities, such as clothing, newspapers, and magazines." Timeshare unit owners would also be expected to buy products off-site. As stated on page 5 of Appendix 4, "exploring new regions and shopping for local crafts, artwork, and souvenirs would be an expected activity of timeshare visitors." In total, it was expected off-site spending by visitors would be $10.64 million, which is expected to be spent throughout the Route 28 corridor, most particularly in the village and hamlet centers where existing businesses and shops are concentrated.

All service providers contacted indicated they had the ability to serve the Modified Project, some with mitigation measures in place. Service providers contacted included police, fire, ambulance, hospitals, schools, solid waste, electric and telephone. With the proposed project, the Applicant would provide funding for manpower and/or equipment to the Shandaken Police Department, the Pine Hill Fire Department and the Shandaken Ambulance Squad to mitigate the effects of increased demands for the services of these providers as a result of the proposed project that are not addressed by the significant increase in local tax revenues generated by the proposed project (see Section 3.10 in the SDEIS).

In response to the comment that the price of houses will increase, it is not expected that there would be substantial pressure on housing prices as a result of the proposed project. The majority of the year-round and seasonal jobs created by the proposed project are expected to be filled by local residents or people who already reside within a reasonable commuting radius. As stated on page 33 of Appendix 4, of the 771 jobs that would be introduced by the proposed project, up to 250 jobs (or 32 percent) could be in-migrants or new worker/residents within the workforce study area. These 250 employees include approximately 16 to 20 mid- to upper-management positions that would be imported into the region since filling these positions may not be possible due to the specialty or technical nature of these positions. In addition to these management positions, there could be up to 230 additional workers who would be new *worker/residents within the workforce study area. These workers may choose to relocate for a variety of reasons such as the type of employment or salary offered, how far a worker is willing to travel for employment, and the increasing cost of commuting. The SDEIS finds that it is likely that the existing housing supply could accommodate the new workers/residents. Therefore, it is not expected that there would be substantial pressure on housing prices as a result of the proposed project.*

In response to the commenter's concern about the quality of jobs and wages, the proposed project would provide 90 full-time salaried jobs, 451 full-time hourly jobs, and 230 part-time jobs (see page 31 of Appendix 3). Employment opportunities would be varied, including housekeeping staff as well as managerial positions (such as Food and Beverage Operations Manager and Director of Rooms), valet, chefs, golf manager, sales staff, security, and spa consultants. Full time salaried positions would have wages and salaries ranging from $30,000 to $130,000. The hourly workers would be paid between $10.00 per hour to $30.00 per hour – all above the current minimum wage of $7.25 per hour.

See the response to comment 1.4(7) regarding the operation of the resort
It is assumed that the portion of the comment regarding "the Finns" is in reference to the Hunter Foundation. As a result of the proposed project, the Crossroads Foundation has been established to distribute funds to local charities focused on the arts, youth education and sports programs, civic improvements and care for the elderly. (http://belleayreresort.com/)

(2a) This will be a self-contained resort and will not bring a lot of benefits to our surrounding towns and yet will stress our roads, fire and ambulance services. **I228**

Response: In addition to providing opportunities for employment to the local community, the local community would benefit from off-site visitor spending. While the SDEIS analysis assumes that a majority of visitor spending would occur on-site, resort visitors would not limit their spending entirely to on-site Resort goods and service; they would travel off-site for spending on a variety of goods and services such as antiques, crafts, restaurant meals, groceries, gas and oil, recreational fees for off-site amenities, and cultural attractions. Assuming that only 25 percent of visitor spending were to occur offsite, visitor consumer spending is projected to be $10.64 million annually throughout the Route 28 corridor, mostly in the village and hamlet centers where existing businesses and shops are concentrated.

Local businesses would also benefit from employee spending. As stated on page 42 of Appendix 3, the proposed project is expected to generate 771 direct employees and 264 indirect employees in the tri-county region. Based on a total projected payroll of $24.85 million and the assumption that 50 percent of these direct wages and salaries would accrue to households within the NY Route 28 Corridor Study Area, it was estimated that there would be $12.43 million in new expenditure potential within the NY Route 28 Corridor Study Area from Resort employees' wages and salaries. It was also expected that local businesses would benefit from the spending from the indirect employees generated by the proposed project. Based on total indirect wages and salaries within the tri-county area of $12.96 million, there would be an estimated $650,000 in new expenditure potential within the NY Route 28 Corridor Study Area from indirect employment generated by resort operations.

Finally, local businesses would benefit from the goods and services demands of the proposed project, which would purchase certain goods and services from businesses within the Route 28 Corridor. As shown in Table 3.9.3-5 of Appendix 3, the indirect output that would result from the proposed project was $56.78 million, of which $12.96 million were wages and salaries. To estimate the corridor's share of this activity, the off-site activity was estimated proportionate to the corridor's share of retail sales within the tri-county area. This amount—about 2.4 percent—was applied to the net economic activity after subtracting indirect wages and salaries. Therefore, the SEIS conservatively assumed that businesses along the Route 28 Corridor study area would receive approximately $1.05 million per year.

In response to the commenter's concern about the effect of the proposed project on roads, the traffic analysis indicated that some roadway improvements should be installed to improve traffic movements. Mitigation measures would be introduced with the proposed project (see Appendix 11).

In response to the commenter's concern about the effect on fire and ambulance services, fire and ambulance service providers were contacted and indicated they had the ability to serve the proposed project, some with mitigation measures in place. With the proposed project, the Applicant would provide funding for manpower and/or equipment to the Pine Hill Fire Department and the Shandaken Ambulance Squad to mitigate the effects of increased demands for the services of these providers as a result of the proposed project that are not addressed by the significant increase in local tax revenues generated by the proposed project (Please see response to comment 4 in Section 3.10, community services).

(2b) People who come to similar resorts, stay there and do not avail themselves of local places of business. Most of the jobs at the resort will be menial positions that locals will be in no great hurry to fill, outside workers will have to be recruited and will further stress the economy of the surrounding towns, schools, police forces, etc. **I3426**

Response: In response to the commenter's concern about off-site spending, please see response to comment 2a.

In response to the commenter's concern about the quality of the jobs introduced by the proposed project, employment *opportunities would be varied, including housekeeping staff as well as managerial positions (such as Food and Beverage Operations Manager and Director of Rooms), valet, chefs, golf manager, sales staff, security, and spa consultants. Full time salaried positions would have wages and salaries ranging from $30,000 to $130,000. The hourly workers would be paid between $10.00 per hour to $30.00 per hour – all above the current minimum wage of $7.25 per hour.*

In response to the commenter's concern about new workers/residents within the workforce study area, the majority of the year-round and seasonal jobs created by the proposed project are expected to be filled by local residents or people who already reside within a reasonable commuting radius. As stated on page 33 of Appendix 4, of the 771 jobs that would be introduced by the proposed project, up to 250 jobs (or 32 percent) could be in-migrants or new worker/residents within the workforce study area. These 250 employees include approximately

16 to 20 mid- to upper-management positions that would be imported into the region since filling these positions may not be possible due to the specialty or technical nature of these positions. In addition to these management positions, there could be up to 230 additional workers who would be new worker/residents within the workforce study area. These workers may choose to relocate for a variety of reasons such as the type of employment or salary offered, how far a worker is willing to travel for employment, and the increasing cost of commuting. The SDEIS finds that the existing and planned housing supply could accommodate the new workers/residents. However, it is possible that the new workers would not be satisfied with the existing housing stock. In this case, there could be a limited increase in demand for new construction.

In regards to the commenter's concern about adding further stress to the "schools, police forces, etc." as discussed in the SDEIS, all service providers contacted (police, fire, ambulance, hospitals, schools, solid waste, electric and telephone) indicated they had the ability to serve the project, some with mitigation measures in place. The Applicant will provide funding for manpower and/or equipment to the Shandaken Police Department, the Pine Hill Fire Department and the Shandaken Ambulance Squad to mitigate the effects of increased demands for the services of these providers as a result of the Project that are not addressed by the significant increase in local tax revenues.

(2c) The area definitely needs something to boost the economy but not something of this magnitude. Since it is planned as a destination resort, the people who go there would stay there since they would have everything they needed right there. I do not believe they would contribute much at all to the local economy. In fact, it would end up costing local communities more due to wear and tear on roads, more police coverage, etc. **I3301**

Response: In response to the commenter's concern about off-site spending, please see response to comment 2a.

As stated on page xxvii of the Executive Summary, all service providers contacted indicated they had the ability to serve the project, some with mitigation measures in place. Service providers contacted included police (State, counties and local), fire, ambulance, hospitals, schools, solid waste, electric and telephone. The Applicant would provide funding for manpower and/or equipment to the Shandaken Police Department, the Pine Hill Fire Department and the Shandaken Ambulance Squad to mitigate the effects of increased demands for the services of these providers as a result of the Project that are not addressed by the significant increase in local tax revenues generated by the proposed project. Therefore, it is not expected that taxes would go up with the proposed project (please see the response to comment 4 in section 3.10, Community Services).

(2d) It will be destructive to many downtown small businesses, many of whom are on the bandwagon in support of it, sadly. If the full build resort plan is passed, Crossroads and their investors would flip their property, cash in their chips and make their profits up front. We would be left with higher taxes, heavy traffic and smog for many years. It would be devastating for the tourism around here. **I302**

Response: See the response to comment 1.4(7) regarding the operation of the resort. There is neither supporting evidence to reach the conclusions of this commenter nor any facts to back the assertions regarding future operations of the Resort.

The proposed project is not expected to be destructive to downtown small businesses. The proposed project would offer a level of amenities that is not commonly found in the study area, and therefore is expected to attract a new and different consumer base to the socioeconomic study area. While the analysis assumes that the proposed project's guests would spend a majority of their consumer dollars on-site, the guests' off-site spending—combined with the project's local spending on support services and project employees' consumer spending—is projected to be substantial. Resort visitors would have off-site expenditures on antiques, crafts, restaurant meals, groceries, gas and oil, recreational fees for off-site amenities, and cultural attractions. In total, the SDEIS estimates that visitors would spend an estimated $10.64 million throughout the Route 28 corridor, most particularly in the village and hamlet centers where existing businesses and shops are concentrated.

It was estimated that local businesses would also benefit from employee spending. As stated on page 42 of Appendix 3, the proposed project is expected to generate 771 direct employees and 264 indirect employees in the tri-county region. Based on a total projected payroll of $24.85 million and the assumption that 50 percent of these direct wages and salaries would accrue to households within the NY Route 28 Corridor Study Area, it was estimated that there would be $12.43 million in new expenditure potential within the NY Route 28 Corridor Study Area from Resort employees' wages and salaries. It was also expected that local businesses would benefit from the spending from the indirect employees generated by the proposed project. Based on total indirect wages and salaries within the tri-county area of $12.96 million, there would be an estimated $650,000 in new expenditure potential within the NY Route 28 Corridor Study Area from indirect employment generated by resort operations.

Finally, it was estimated that the Route 28 Corridor could capture a substantial share of off-site economic activity generated by Resort operations. The SDEIS conservatively assumed that businesses along the Route 28 Corridor study area would capture approximately $1.05 million per year from the operational demands of the proposed project.

The SDEIS analyzed potential impacts of the proposed project on traffic and air quality ("smog" from the comment) in sections 3.5 and 3.12, etc. The SDEIS documents how potential impacts to traffic will be adequately mitigated through such thing as a traffic light and turn lane at the Route 28 and 49A intersection. The SDEIS also documents how the proposed modified project will not have any significant adverse impacts on local air quality. Additional information on both of these topics is provided in section 3.5 and 3.12 of this FEIS document.

See the response to comment 1.4(7) regarding the operation of the resort.

(2e) If there is any doubt that tourists drawn to the proposed resort would remain largely insulated from interactive participation with the local community based economy surrounding them one need look no further than the plans for how their cars will be parked, away from any easy access to resort patrons. **I3649**

Response: All resort patrons will have easy access to their cars. The hotels will have valet service as well as direct access to the parking garage levels from the main elevators for those that wish to get their own cars. The detached lodging units will each have a reserved parking space located in the basement of their building with elevator access.

Even still, on-site access to personal vehicles is not expected to deter visitors from traveling outside of the resort. As discussed in the response to comment 2a, resort visitors would not limit their spending entirely to on-site Resort goods and services. While the SDEIS analysis assumes that a majority of visitor spending would occur on site, it is expected that they would travel off-site for a variety of goods such as antiques, crafts, restaurant meals, groceries, gas and oil, recreational fees for off-site amenities, and cultural attractions. Assuming that only 25 percent of visitor spending were to occur offsite, there is projected to be $10.64 million annually in visitor consumer spending throughout the Route 28 corridor, most particularly in the village and hamlet centers where existing businesses and shops are concentrated.

(2f) On an economic level, I have serious doubts about the viability of this project and the money that it will actually generate for this region. I am concerned that visitors will not leave the resort area to spend money in nearby towns and that the resort will out compete the small businesses in this region. **I401**

Response: Please see response to comment 1.

(2g) I am deeply concerned about the economic impact on the neighboring small towns. It will not create that many new jobs and it will have a devastating impact on nearby main street businesses and tax money for schools. **I439**

Response: Please see response to Comment 1 for the economic impact on neighboring small towns.

The proposed project would introduce 90 full time salaried jobs, 451 full time hourly jobs, and 230 part time jobs, increasing the employment in the workforce study area by 5 percent from 14,685 employees based on 2007-2011 American Community Survey Employment opportunities would be varied, including housekeeping staff as well as managerial positions (such as Food and Beverage Operations Manager and Director of Rooms), valet, chefs, golf manager, sales staff, security, and spa consultants. Full time salaried positions would have wages and salaries ranging from $30,000 to $130,000. The hourly workers would be paid between $10.00 per hour to $30.00 per hour – all above the current minimum wage of $7.25 per hour. In addition to the 771 on-site jobs, the proposed project is expected to result in an additional 264 full- and part-time jobs in the tri-county region (see page 43 in Appendix 3).

In response to the commenter's concern tax money for schools, the SDEIS analysis finds that the proposed project would provide significant tax revenues to the Margaretville School district and Onteora Central School district. Based on data from Tables 3.9.3-11 to Table 3.9.3-12 (which are updated below in response to comment 43), the SDEIS finds that property tax revenues from Highmount Resort would provide an estimated $241,300 in 2013 to the Margaretville School

District. Property tax revenues would increase each year as more buildings come online and are valued by the tax assessors. Property tax revenue from Highmount Resort would provide $1.0 million to the Margaretville School District in 2033.

Similarly, property tax revenues from Wildacres Resort are estimated in the SDEIS at $115,300 for the Onteora Central School district and $145,400 for the Margaretville School District in 2013. These are expected to increase each year to $432,400 for the Onteora School District and $540,100 for the Margaretville School District in 2030.

(2h) Local communities will bear the burden of a long term tax credit in lost tax revenues. They will also bear the costs associated with erosion, flooding and impaired water quality in exchange for some low-paying, service sector jobs that often do not include benefits. **I397**

Response: The SDEIS analysis of tax revenues presented in Appendix 3 assumed that the proposed project would benefit from a business investment exemption which shields a percentage of the new assessed value from taxation for a period of 10 years. With the business investment exemption, it is still anticipated that the proposed project would result in a net gain to the municipalities. The SDEIS finds the proposed project would provide $6.1 million annually in non-property tax revenues (see Table 3.9.3-5).In addition, the SDEIS estimated future property taxes from the proposed project. The estimates were updated (please see response to comment 43). In 2013, the assumed first year of construction, the SDEIS finds that Highmount Resort would provide $359,700 in property taxes to Ulster County and $8,200 in property taxes to Delaware County. These taxes would increase each year as more buildings are constructed and valued by tax assessors. By 2033, the SDEIS finds that Highmount Resort would provide $1.9 million in property taxes to Ulster County and $100,300 in property taxes to Delaware County. Property taxes would also be generated by Wildacres Resort. In 2013, the updated SDEIS Table 3.9.3-13 presented in response to comment 43 shoes that Ulster County would receive $392,200 in property taxes from Wildacres Resort. In 2030, the SDEIS finds that Wildacres Resort would result in $1.7 million in property taxes for Ulster County and $243,900 in property taxes for Delaware County.

Section 3.1 The SDEIS analyzed potential impacts of the proposed project on erosion, flooding, and water quality. Also see responses to comments in 3.1 of this FEIS.

See response to comment 2g for a discussion on jobs that would be introduced by the proposed project.

(2i) Impact to the area’s lodging businesses aside, resorts of this nature do tend to be self-promoting in terms of shopping, dining and retail opportunities. We wonder how many Resort visitors are going to venture down into the villages instead of just wandering down the hall to shop and eat. **I339**

Response: See response to comment 2a.

(2j) Any economic benefits will accrue to the developer and not the local communities. Typically, such resorts do their best to insure that their visitors spend their money in the resort. They recruit their staff from outside the area, and provide, at best, only the most menial and low-paying jobs for locals. If we want to revive our high streets we should invest in our high streets and not in a self-contained resort parked like a cruise ship on the mountain. In fact, the developers propose to be effectively subsidized by the State's taxpayers by piggybacking their resort on the State facilities at Belleayre. **I338**

Response: Based on estimates provided by the Applicant and as presented in the SDEIS, the proposed project would introduce 90 full time salaried jobs, 451 full time hourly jobs, and 230 part time jobs. Employment opportunities would be varied, including housekeeping staff as well as managerial positions (such as Food and Beverage Operations Manager and Director of Rooms), valet, chefs, golf manager, sales staff, security, and spa consultants. Full time salaried positions would have wages and salaries ranging from $30,000 to $130,000. The hourly workers would be paid between $10.00 per hour to $30.00 per hour – all above the current minimum wage of $7.25 per hour. In addition to the 771 on-site jobs, the proposed project is expected to result in an additional 264 full- and part-time jobs in the tri-county region (see page 43 in Appendix 3).

Please see response to Comment 2b about the employees of the proposed project.

Please see response to Comment 2a for economic benefits to the local communities.

The intent of the Resort is to attract visitors who may currently to go elsewhere to vacation and recreate as well as to provide overnight lodging and extended stays for people who may only visit the area on day trips. All visitors will be exposed to what the Catskill region has to offer, including its existing businesses.

The redevelopment of the Highmount Ski Center as part of the Belleayre Mountain Ski Center facilities as well as added lifts and trails to facilitate skier movement between the BMSC and the Belleayre Resort is a public –private partnership that will benefit both NYS and the Resort. The BMSC is expected to increase its mid-week skier attendance as well as on weekends.

Public/private partnerships between the State and private, for profit entities exist throughout the State of New York. The nano technology park in the Albany region is one of the many examples. Such partnerships enhance economic development which stands to benefit the State and local municipalities through increased tax revenues resulting from such economic development.

(2k) On an economic level, I have serious doubts about the viability of this project and the money that it will actually generate for this region. I am concerned that visitors will not leave the resort area to spend money in nearby towns and that the resort will outcompete the small businesses in this region. **I401**

Response: Please see response to Comment 1.

(3) Adirondack Wild shares the concerns of many other stakeholder organizations (CHA, Catskill Center, etc.) in that the market analysis for the resort as well as the proposal by NYS-DEC to seek to double the usership for the Belleayre Mountain Ski Center appear weak, unsubstantiated and problematic. Large scale development projects that may have long-term local and regional impacts on character, environment, wildlife habitat, etc. should, by the very nature of their resort base, should be required to demonstrate positive market value long-term without harming local hamlets and businesses so as not to overly burden the Catskill Park with potentially failed, "white elephant" projects that become only half-built, or less, and lead only to new forms of land subdivision and speculation without deep benefits and at great cost. **O3639**

Response: The proposed project was planned based on market research that has indicated that there is demand for this type of project. The Belleayre Resort is situated in the Catskill Mountains which attracts over 2.5 million visitors each year and is in close proximity to over 20 million people making the resort a prime destination. Because of the amenities and types of units offered (i.e. fractional units and timeshare units), the proposed project would attract new visitors to the region and convert current day trippers to overnight or weekend visitors.

Furthermore, the 2013 HVS report shows that the calculated yield for the Resort meets industry standard feasibility thresholds. The 2013 data shows that industry margins for capitalization rates currently required by hotel real estate investors range from 4.0% to 11.0% with an overall average of 7.95% return. As the 2013 report shows, the calculated yield for the full Resort was 8.2%, well within industry standards.

The SDEIS analysis finds that the proposed project would not have significant adverse socioeconomic impacts on local hamlets and businesses. (Please see response to comment 1.)

Portions of the SDEIS socioeconomic impact assessment analyzed potential impacts of the proposed project on the Route 28 corridor between Boiceville and Margaretville within the Catskill Park while other portions of the assessment included areas outside the Route 28 corridor, including areas outside Ulster and Delaware Counties and within the Catskill Park.

(4) Our Consultant's initial review of elements of the SDEIS and Appendices submitted by the Applicant finds the proposed resort to be greatly oversized when skier and lodging facility metrics for other similar New York State ski resorts are applied - something the materials submitted by the Applicant neglected to accomplish. Accordingly, were the resort to be built as proposed, it would fail to meet its operating pro-forma. This would tend to cause it to cannibalize market share from existing communities, businesses, and proprietors in the Route 28 corridor and elsewhere in the Catskills. (**Feasibility Based on Stale Information—see 4.1 below; Effect on Local Economy—see 4.3 below)**

There appears to be an assumption among many that operation of the proposed resort will improve the local and regional economics. However, one of the applicant's own economic studies submitted to DEC, conducted back in 2007, before the eastern half of the project was dropped, and before the economic collapse in 2008, concludes the proposed hotel element (now planned for Highmount) to be only "marginally feasible" under then extant conditions. Although the applicant has submitted two versions of a "Supplemental Draft Environmental Impact

Statement" (one in 2011 and one in 2012), it has not updated either of the two market studies upon which it primarily relies. Those studies were conducted by HVS Consulting Services and Ragatz. The Ragatz report specifically stated that feasibility depended on then-prevailing economic conditions. Such conditions no longer exist, having deteriorated significantly. Thus, the Applicant's own 2010 studies reveal the project to be economically and financially infeasible. (**Feasibility Based on Stale Information—see 4.1 below; Marginal Feasibility—see 4.2 below)**

In any case, the Applicant's market analyses are woefully deficient and lack relevance. For example, both studies are inapplicable to current and prospective financial and market conditions. Furthermore, even though the project is to be linked to a ski resort, the Applicant's analyses do not contain any skier market or ski resort lodging metrics whatsoever. The assumed level of skier visits is asserted with no empirical documentation whatsoever. And, there is no mention of the effect of climate change (as enunciated in the reports referenced above) on the skier or the skier lodging market, which form crucial demand components of the proposed development. (**Skier Days is Overstated—see 4.4 below) O3635**

Response:

4.1: Feasibility Based on Stale Information

Crossroads commissioned HVS Consulting and Valuation Services ("HVS") to perform an updated market feasibility study and sensitivity analysis for the proposed Belleayre Resort. The feasibility study was completed in November of 2013 and based on the most current market data available. A copy of the updated analysis can be found in the FEIS. The shared-ownership market has been studied as recently as 2013 by Ragatz and his findings are detailed in an independent study entitled The Share-ownership Resort Real Estate Industry in North America: 2013 (Ragatz Associates [April 2013]).

4.2: Marginal Feasibility

The 2008 HVS feasibility study concluded that the project – assuming the construction included both resort components – was feasible, but that the indicated investment yield was at the low end of the feasibility range. The term "marginally" was used to qualify the degree of feasibility, not categorically negate or limit the conclusion. In addition, the analysis excluded the potential yields associated with the sale of all of the vacation ownership units, both "attached" (meaning those units structurally integrated into the hotel buildings) and "detached" (meaning those stand-alone structures whose development will proceed as market conditions dictate). Whereas the 2008 study excluded both the attached and detached units, the 2013 study includes the "attached" vacation ownership units in the analysis, assuming they are part of the standard guestroom rental program. Because of these differing premises, the total number of rooms in the 2008 study was 370 versus 423 in the 2013 study, for the "Full Resort" scenario. The difference in the room count fundamentally changes the two analyses, primarily in terms of the economies of scale (i.e. operating efficiencies) available to the larger operation. Furthermore, these attached units will feature ultra-luxury finishes and exceptional space allocations, as compared *to the resort's standard hotel rooms, and when rented as part of the hotel inventory they will generate especially high average rate levels.*

There is another significant difference in the 2008 and 2013 feasibility studies, which prevents an apples-to-apples comparison. The 2008 study shorted its calculation of the amount of meeting space as compared to 2013 study. In the 2008 study, HVS reported the meeting space allocations as 15,000 square feet at Wildacres and no meeting space at Highmount. The exclusion at Highmount was an oversight. In fact, that particular resort will be supported by 13,000 square feet of meeting space. As for Wildacres, the meeting space allocation has been redesigned and now totals 24,850 square feet. As such, the total meeting space allotment for the 2013 study is 37,850 square feet, as compared to only 15,000 square feet in the 2008 study. This difference is highly significant where the marketability of the resort is concerned. Whereas the larger room count allocation associated with the 2013 study might otherwise warrant more conservative occupancy and average rate projections, the meeting space redesign/correction is a more than offsetting consideration.

In addition, note that the 2013 study includes an evaluation of two scenarios: a) development of the Full Resort, and b) development of Wildacres alone. This analysis was simplified somewhat as compared to the 2008 study, in terms of the type of yield calculated and tested for feasibility. In the 2008 study, HVS calculated what is known in the hotel real estate consulting field as "total property yield" (also known as the discount rate), which measures the return on investment over a ten-year holding period. In the 2013 study, the metric used for testing feasibility was the equivalent of a capitalization rate, which is a more remedial but still relevant measure of investment return. It is calculated simply by dividing the stabilized net income by the estimated construction cost. The total property yield and the capitalization rate are not the same. All other things held equal, investor requirements for "property yields" are higher than those for "capitalization rates" because the property yield factor is calculated over a lengthy holding period and is therefore subject to a higher level of risk. Thus, a comparison of the 2008 and 2013 threshold analyses is not germane.

It is furthermore worth noting here that any concerns that the hotel real estate investment market has not recovered from the 2008-2009 recession are unfounded. Current market conditions are now superior to pre-recession conditions, in terms of both underlying economics (i.e., occupancy and average rate) and investment market activity. In particular, investor interest in luxury-caliber destination resorts has returned in full. The hotel real estate investment market is now active and strong, particularly for high end. See Ragatz Report Executive Summary in the Errata section of this DEIS.

4.3: Effect on Local Economy

The analysis contained in the SDEIS indicates that the proposed project would benefit the local residents and business owners. In addition to providing opportunities for employment to the local community, the local community would benefit from off-site visitor spending. While the SEIS analysis assumes that a majority of visitor spending would occur on-site, resort visitors would not limit their spending entirely to on-site Resort goods and service; they would travel off-site for spending on a variety of goods and services such as antiques, crafts, restaurant *meals, groceries, gas and oil, recreational fees for off-site amenities, and cultural attractions. Assuming that only 25 percent of visitor spending were to occur offsite, visitor consumer spending is projected to be $10.64 million annually throughout the Route 28 corridor, mostly in the village and hamlet centers where existing businesses and shops are concentrated.*

4.4: Skier Days is Overstated

According to the project sponsor, the Resort is meant to be a four-season resort that will market itself to the 21+ million people residing within easy driving distance from the greater NYC metropolitan area. The resort is expected to attract more visitors to the area and therefore increase, not decrease, the market for other businesses along the Rt.28 corridor as noted by AKRF in both Section 7 and Appendix 4 of the SDEIS. In addition HVS has provided an updated "Feasibility Study and Sensitivity Analysis" that shows the Resort will offer a combination of natural features and architectural integrity, convenience to a population base with high levels of disposable income, and facilities and amenities that will enhance the marketability of the vacation ownership units. The characteristics and operating advantages detailed therein amount to an extraordinary asset that "can reasonably be expected to gain recognition as one of the premier destinations and vacation ownership communities in the world, and the top-quality facility of this sort in the Northeastern United States."

Based upon public comments, DEC has updated attendance figures and lift ticket prices through the 2013/2014 ski season in the UMP-FEIS. However, the year to year attendance data for the existing ski center while informative, is not determinative, moreover the historical skier attendance figures were not used for design purposes. The purpose of the project is to provide the public with improved recreational opportunities on Forest Preserve land by constructing and maintaining additional mileage of ski trails at Belleayre, consistent with constitutional limits. The 1986 amendment of the Constitution provided for the expansion of the ski trails at the Ski Center by increasing the ski trail mileage cap up to a total of 25 miles in length. Currently, the Ski Center has just 16.3 miles of ski trails. Accordingly, the Department has developed a plan that provides for the full build out potential of Belleayre Mountain Ski Center under current constitutional limits. That is the basis of the proposed Comfortable Carrying Capacity calculation of 9,000 skiers and the plan for full build out of the facility. The potential 320,000 yearly maximum attendance figure is a conservative estimate used only to evaluate socio economic impacts from the perspective of the ski area and not as a determining factor in the sizing of facility components. Long needed upgrades and modernization of facilities and amenities (lodges and parking lots) will enhance the skier experience and along with improved and varied ski trails likely attract new visitors. Regarding ticket prices, based on experience operating a ski center, ORDA believes that it is important that ticket prices are on par with other ski areas in the region.

(5) As above, the financial data being used to assess the viability of the Belleayre Resort is out of date. The HVS Market Study and Feasibility Analysis for the proposed resort was completed more than five years ago prior to the 2008 financial collapse. An updated financial analysis is warranted before the project can be realistically assessed.

As an example, the Highmount Spa is proposed in the first phase, but there is no business plan or market analysis to indicate that the required ski-area expansion will be in place. Moving this construction to a later phase, when the economics justify it would have the additional benefits of reduced stormwater risk and a longer construction phase.

A major concern within the community is the impact of this resort on the viability of local hamlets and villages. The integration between the resort, the ski area and businesses in Pine Hill, Fleischmanns and other communities along the Route 28 corridor is the shared responsibility of all parties. The Catskill Center supports the formation by the state of a task force to develop an integration plan. **O1776, H16**

Response: The resort will be working with local businesses in the hamlets and the tourism business in general to encourage those who visit the resort to look beyond the boundary of the resort to increase the likelihood that the community at large and businesses will benefit from the resort. The resort will also continue to work closely with the Catskill Center in seeking to achieve these goals.

(6) Nor do we have a financial study of the viability of the developer or of the project here. **I2151.**

Response: Viability of the project is addressed in the 2008 and 2013 Project Feasibility reports.

(7) The project claims that it is not obtaining governmental assistance for construction, yet a tax exemption under a Pilot Program is projected until 2031 (SDEIS, page x). Other areas of the document use a date of 2018, which adds confusion. Because the Resort is oversized for the market, and would damage existing local businesses, eliminating the Highmount Spa Resort would actually protect the local economy and the existing community character. **O3635**

Response: The Modified Belleayre Resort Project is not oversized for the market as evidenced by the expert reports contained in the DEIS, SDEIS and the FEIS. Moreover, the size of the project is the minimum necessary to ensure the success of the project and to have the maximum economic benefits for the community. Resort hotels next to ski centers with golf courses and other spa amenities are common in areas such as the Catskills which can benefit from new tourism initiatives. It is consistent with existing zoning and local and regional planning efforts and studies.

It is anticipated that the Ulster County IDA will be approached to utilize their financing and incentive programs such as mortgage recording tax exemptions, sales tax exemption, and real property tax abatement through a PILOT agreement. The effect of any such business investment exemptions are fully discussed in the Socioeconomic and Fiscal Conditions and Effects Report as prepared by AKRF, Inc. and included in SDEIS Appendix 3, §3.9.3 and Tables 3.9.3-11,3.9.3-12 *and 3.9.3-13. The tax abatement discussed in SDEIS Appendix 3 is a partial abatement that is capped at 50% of applicable local taxes and diminishes each year by 5% over a 10 year period. This is a development incentive offered throughout NY State. The analysis demonstrates that by completion of the first phase of the Resorts, well over $2 million in real property taxes will be annually paid to taxing authorities in Ulster and Delaware Counties.*

(8) What would be the true cost to taxpayers for the Belleayre resort? The Town of Shandaken will bear the cost of upgrading and maintaining roads through years of construction, and the State will in effect be subsidizing the developer by installing ski lifts, snowmaking and employees to service a private resort, a resort that will not pay taxes for many years.

Maintaining lifts and trails will be on ongoing, open ended expense to the taxpayers of New York State.

In this topsy turvey world we live in, banks are bailed out while Americans are thrown out of their homes, school budgets are being slashed, hospitals are closing, and our infrastructure is crumbling, yet the state is proposing to spend $74 million of our tax money to build ski lifts and trails from the state-owned Belleayre Mountain Ski Center to accommodate a luxury resort, and incur the cost of maintaining these trails and lifts forever. In addition, the State will be paying overly inflated land prices to Crossroads Enterprises to purchase additional land from the developer. The Catskill Park and the Belleayre Mt. Ski Center were created to serve the people, not a corporate destination resort with no connection or responsibility to our community. The developers of the proposed resort are seeking to acquire approval to build luxury hotels on the mountain, and intend to flip this project to a hospitality industry corporation, maximizing profits for the developer. **I2838, H31**

Response: The project would not burden either town with any significant increase in town services. All interior roads within the project site will be built and maintained by the developers. Resort employees will be incentivized to volunteer to assist local fire and emergency medical services. Only 900 feet of town road in Shandaken will be directly affected by the Resort. The State's expansion plans for Belleayre Mountain Ski Center are designed to serve not just resort guests but the population at large and act as an economic stimulus for towns all along the RT.28 corridor. The Belleayre Mountain Ski Center was built with the consent of all the taxpayers in NY. Just as the State is liable for the operation of public beaches in NY (e.g. Jones Beach), several dozen golf courses, and public parks and campgrounds throughout the state, it remains committed to supporting recreational skiing. Not only does this type of State support add to the general public's welfare but it helps to stimulate economic prosperity in whatever region that state recreation facilities are located. The State is proposing to invest upwards of $74million into the Belleayre Mountain Ski Center spread out over several years. This investment is intended to serve all the people of NY of which resort guests would constitute a small fraction of likely visitors to the Ski Center. The state will only pay Crossroads Ventures whatever it's land appraisers value the land at, which is yet to be determined. The resort will in every way seek to connect itself to its surrounding communities and become a responsible neighbor.

(9) The claims of long term economic benefits to the local communities from the development of the resort are tenuous, at best. The increased demand for community services, including police, fire protection, education, health care and income support for the under-employed and possibly unemployed new residents will be great. Yet the developers receive huge tax subsidies. The self-contained design of the resort will impede recovery in the many small hamlets and villages where the focus should be put. The need to build new publicly financed infrastructure, including the enlargement of SR 28, will be costly and will degrade the experience of entering a wild natural area that is crucial to the long term development of a strong tourism industry in the Catskills. The simple matter is that the resort is still much too large for the sustainability of our natural resources and is placed in a very sensitive location where its effects will be most harmful. **I3524**

Response: In response to the commenter's concern about the increased demand for community services, all service providers contacted indicated they had the ability to serve the project, some with mitigation measures in place. Service providers contacted included police, fire, ambulance, hospitals, schools, solid waste, electric and telephone. (Please see response to Comment 8 in Section 3.10).

It is not expected that the proposed project would impede recovery in the hamlets and villages. To the contrary, as described in the response to Comment 1, it is expected that there would be significant economic benefits to the area around the project site (see response to comment 1). The SDEIS conducted a comprehensive analysis on the potential effects of the proposed project on surface waters, groundwater resources, soils, and terrestrial and aquatic ecology. See Section 3 of the SDEIS. Section 4 further discusses mitigation measures where unavoidable adverse environmental impacts were identified.

There is no evidence that Route 28 would need to be widened nor will the Belleayre Resort degrade the view of any natural area.

(10) The belief that a big resort development will benefit the community is not true. The opposite is true. Look at Hunter. The ski resort development is big, but the village of Hunter doesn't benefit from it, in spite of massive investment by wealthy individuals to fix up Main Street.

Likewise for golf. Real estate based golf courses are going bankrupt all over the country. Many golf courses in this area are nowhere near crowded right now. Less people golf and ski in general.

There is a shortage of entry level workers in this area. I see help wanted signs everywhere. The vast majority of low wage workers would have to come from far away and there are not enough affordable places for them to live. That means greatly increased rush hour traffic on narrow, winding, steep 49A, and a lot more collisions on the high speed route 28, as people try to pass lines of cars stuck behind a slow truck or school bus.

The developer boasts about how much tax the resort would bring in. That would not phase in fully until10 years after the construction is done. We may be dead by then. In fact, NYS predicts it would take 74 years to make back their investment in subsidies for the full build resort. For the next 15 to 20 years, residents will foot the bill for road expansion, police, ambulance service and the school system. **I302D, H32**

Response: In response to the commenter's concern that developments do not benefit the community, the SDEIS evaluates local and regional labor; presents conservative estimates of corridor spending; and presents anticipated future tax revenues from the proposed project. The SDEIS evaluates whether the existing workforce would be able to meet the expected demand for employees directly generated by the proposed project, and found that the majority of workers would be from the workforce study area. Up to approximately 250 workers could be in-migrants or new worker/residents in the workforce study area. The SDEIS analyzed the effects on local housing markets from the potential in-migration from workers from outside the study area, and finds that the existing housing stock could accommodate the employment generated at the proposed project. The SDEIS also presents the economic benefits that would be introduced by the proposed project. As discussed in the response to comment 2a, it is expected that the community will benefit from the proposed project (see response to comment 2a).

Local municipalities would also receive tax revenues from the proposed project (Please see response to comment 2h).

In response to the commenter's concern that less people golf and ski, the proposed project was planned based on solid market research that has indicated that there is demand for this type of project.

In response to the commenter's concern about the adequate labor supply, as discussed in Appendix 3, there are a sufficient number of unemployed and underemployed people who may acquire jobs at the proposed Resort. When the analysis was prepared there were approximately 665 unemployed people in the workforce study area, based on New York State Department of Labor (NYSDOL) data for 2007. The number of unemployed people in the workforce study area has increased. Based on 2007-2011 American Community Survey data, there are 1,089 unemployed people, which is a 64 percent increase from 2007. In response to the commenter's concern about that low wage workers would have to move closer to the site and there are not enough affordable places to live, as discussed in the SDEIS, it is expected that 80 percent of jobs would be filled by workers commuting from a 45-minute drive time of the project site. It is not expected that part-time employees (or low wage earners) would move from one area to another since they would not have a salary that would support moving.

In response to the commenter's concern about traffic conditions on 49A and Route 28, the SDEIS analyzed potential impacts of the proposed project on traffic. Also see responses to comments in Section 3.5, Traffic, which discusses the effect of traffic on County Route 49A and Route 28.

In response to the commenter's concern about taxes generated by the proposed project, the SDEIS analysis presents the tax benefits of the proposed project and assumes that it would receive a business tax exemption. With the business tax exemption, it is anticipated that taxes would incrementally increase each year throughout the construction period as new buildings come on line (see Tables 3.9.3-11 to 3.9.3-14, which are presented below in response to comment 43).

(11) How many people are actively looking for work in a 50 mile radius of the resort and how many folks would commute even 30 miles each way for a low paying job? When this was researched 8 or 9 years ago I believe the number was around 50 according to the tri- county area economic data. I doubt that number has changed much.

Any restaurant, small lodging place or retail shop in the area will have to compete for a small local labor pool, but that's OK because Crossroads DEIS says that they will be competing with local businesses. Indeed, they will keep their carbon footprint lower because, "While at the resort, visitor vehicles would generally remained[sic] parked. Shuttle buses would be used to transport visitors to the Wilderness Activities Center, to BMSC, and to other facilities."

With many shops, restaurants and other facilities why leave the resort? I'm having trouble visualizing the economic spinoff that Crossroads is touting. This tells me that there may be some business for gas stations along the way but not for shops and restaurants in the area between Phoenicia and Margaretville so rather than help we will see a continuing decline in the nearby Main Street business districts. **I321, H46**

Response: The SDEIS considered commuting distances in the region, and evaluated whether there would be an adequate labor pool to draw from within that study area. Table 3.9.2-19 presents travel time to work for workers in the workforce study area. As stated in the SDEIS, it was expected that 80 percent of the proposed project's employees would reside within an approximate 45-minute drive time of the project site. As stated on page 32 of Appendix 3, 433 of the 541 full-time positions at the proposed project would be filled by workers commuting from within the workforce study area.

As discussed on pages 31 and 32 of Appendix 3, part time jobs would mostly be filled by workers in the area that work part-time but are looking for additional work, unemployed persons that are searching for part-time employment, and others in the area that might not technically be in the labor force because they are not actively looking for work, but would be interested in the employment offered at the proposed project. In the SDEIS, the average number of unemployed workers in 2007 was 665 workers in the workforce study area, based on New York State Department of Labor Data (see Table 3.9.2-9). Since 2007, the number of unemployed workers in the study area has increased. As shown in the below table, there are 1,089 unemployed workers in the workforce study area, based on 2007-2011 American Community Survey.

Table 3-1
Labor Force, Employment, and Unemployment in the Workforce Study Area (2007-2011)

	Labor Force	Employed	Unemployed	Unemployment Rate
Andes town	461	441	20	4.3%
Bovina town	235	223	12	5.1%
Middletown town	1,823	1,687	136	7.5%
Halcott town	127	127	0	0.0%
Hunter town	1,165	1,104	61	5.2%
Lexington town	485	435	50	10.3%
Hardenburgh town	106	103	3	2.8%
Hurley town	3,593	3,465	128	3.6%
Olive town	2,785	2,569	216	7.8%
Shandaken town	1,586	1,443	143	9.0%
Woodstock town	3,408	3,088	320	9.4%
Workforce Study Area	**15,774**	**14,685**	**1,089**	**6.9%**

Source: U.S. Census Bureau, 2007-2011 American Community Survey

While the SDEIS analysis assumes that a majority of visitor spending would occur on-site, resort visitors would not limit their spending entirely to on-site resort goods and services; they would travel off-site for spending on a variety of goods and services. As stated on page 8 of Appendix 4, it is expected that Resort visitors would spend an estimated $10.64 million off-site each year, and it is expected to occur throughout the Route 28 corridor, most particularly in the village and hamlet centers where existing businesses and shops are concentrated, and where business expansions are expected to occur. Off-site visitor spending would benefit local businesses. This spending includes spending from fractional ownership residents and timeshare visitors. The fractional ownership residents would stay at the Resort for longer periods of time and would be expected to purchase staples, such as groceries and liquor from local businesses. It could also be expected that these visitors would make regular purchases of daily necessities, such as clothing, newspapers, and magazines at local businesses. Timeshare visitors would be expected to have shorter vacation visits that fractional ownership guests. Timeshare visitors would be expected to dine out at on-site restaurants, with occasional ventures to off-site restaurants, and would be expected to only occasionally prepare meals in their timeshare units. Exploring new regions and shopping for local crafts, artwork, and souvenirs would be an expected activity of timeshare visitors.

In addition to increased spending in the local area by visitors, it was estimated that approximately $1.05 million would be spent within the Route 28 Corridor from the operational demands of the proposed project. In addition to this spending, the Route 28 Corridor would also experience an increase in spending due to expenditures from employees of the proposed project ($12.43 million) and expenditures from indirect employment generated from the proposed project ($0.65 million).

Local businesses, including gas stations, food and lodging establishments, general merchandise (including local crafts and souvenirs), as well as recreational facilities would benefit from increased spending. Another response of existing businesses in the study area would be increased hours and/or days of operation, increased customer traffic, and increased inventory and product turnover. The presence of the Resort as a direct competitor to existing businesses would also stimulate businesses to upgrade their facilities (see page 21 of Appendix 4).

(12) Should the private luxury resort succeed, it will cannibalize existing small businesses, drain all remaining life and activity from our hamlets and villages, and add immensely to our infrastructure costs and therefore our tax bills. It is likely to price most current residents out of their homes; you will wind up with an "Aspen effect"—i.e., rich folks in their time-shares on the hill, while the employees who work for them will need to find cheaper housing elsewhere—i.e., at some distance**.**

Crossroads Ventures, the would-be developer of the proposed Belleayre Resort, has for years promoted its concept of a luxury resort that would, if it is built, change for the worse the nature of the BMSC while serving only a very small portion of the population. This proposal is a real-estate speculation that will pay back its investors upon the "flipping" of any permits to a commercial developer or hospitality corporation – and possibly to a casino operator, despite a range of "covenants" to the contrary. Once the flipping occurs, those inventors will have pocketed their justly deserved yield and will be well satisfied. It is the public the DEC serves that will be the loser.

Second, the local community of homeowners and taxpayers – among whom I count myself – will lose the wherewithal to build back our economy as the global recession wanes. Should the private luxury resort succeed, it will cannibalize existing small businesses, drain all remaining life and activity from our hamlets and villages, and add immensely to our infrastructure costs and therefore out tax bills. It is likely to price most current residents out of their homes; you will wind up with an "Aspen effect" – i.e., rich folks in their time-shares on the hill, while the employees who work for them will need to find cheaper housing elsewhere – i.e., at some distance. In the meantime, the resort will have seized and destroyed the environmental value that is the key to the region's economic future – and will have spent public money to do so, a bad bargain by any measure. In this regard, it is also worth mentioning that the resort as proposed is very, very ugly and would blight the landscape most unfortunately. Should the resort fail – the likely eventuality as even the developer's experts confirm, calling it but "marginally feasible" economically – we will have suffered the loss, be stuck with the costs of infrastructure and rising taxes, and be saddled with a white elephant that has destroyed our economic engine. **I423**

Response: According to the resort developers, they have no intention to "flip" permits.

In response to the commenter's concern of the proposed project's effect on existing small businesses, from a socioeconomic perspective, the proposed project is not expected to cannibalize sales in a manner that could lead to significant adverse impacts to community character. The proposed project would offer a level of amenities that is not commonly found in the study area, and therefore is expected to attract a new and different consumer base to the socioeconomic study area. The on- and off-site spending of any new consumers would not represent cannibalization of existing consumer dollars within the study area.

The proposed project was planned based on solid market research that has indicated that there is demand for this type of project. As discussed in Appendix 5, the proposed project is considered to be feasible (see page 7-1 in Appendix 5).

The 2008 HVS feasibility study concluded that the project – assuming the construction included both resort components – was feasible, but that the indicated investment yield was at the low end of the feasibility range. The term "marginally" was used to qualify the degree of feasibility, not categorically negate or limit the conclusion. In addition, the analysis excluded the potential yields associated with the sale of all of the vacation ownership units, both "attached" (meaning those units structurally integrated into the hotel buildings) and "detached" (meaning those stand-alone structures whose development will proceed as market conditions dictate). Whereas the 2008 study excluded both the attached and detached units, the 2013 study includes the "attached" vacation ownership units in the analysis, assuming they are part of the standard guestroom rental program. Because of these differing premises, the total number of rooms in the 2008 study was 370 versus 423 in the 2013 study, for the "Full Resort" scenario. The difference in the room count fundamentally changes the two analyses, primarily in terms of the economies of scale (i.e. operating efficiencies) available to the larger operation. Furthermore, these attached units will feature ultra-luxury finishes and exceptional space allocations, as compared to the resort's standard hotel rooms, and when rented as part of the hotel inventory they will generate especially high average rate levels.

There is another significant difference in the 2008 and 2013 feasibility studies, which prevents an apples-to-apples comparison. The 2008 study shorted its calculation of the amount of meeting space as compared to 2013 study. In the 2008 study, HVS reported the meeting space allocations as 15,000 square feet at Wildacres and no meeting space at Highmount. The exclusion at Highmount was an oversight. In fact, that particular resort will be supported by 13,000 square feet of meeting space. As for Wildacres, the meeting space allocation has been redesigned and now totals 24,850 square feet. As such, the total meeting space allotment for the 2013 study is 37,850 square feet, as compared to only 15,000 square feet in the 2008 study. This difference is highly significant where the marketability of the resort is concerned. Whereas the larger room count allocation associated with the 2013 study might otherwise warrant more conservative occupancy and average rate projections, the meeting space redesign/correction is a more than offsetting consideration.

Finally, the 2013 HVS report shows that the calculated yield for the Resort meets industry standard feasibility thresholds. The 2013 data shows that industry margins for capitalization rates currently required by hotel real estate investors range from 4.0% to 11.0% with an overall average of 7.95% return. As the 2013 report shows, the calculated yield for the full Resort was 8.2%, well within industry standards.

Also, as stated on page 21 of Appendix 4, "the response of existing businesses in the study area would be seen in increased hours and/or days of operation, increased customer traffic, and increased inventory and product turnover." Appendix 4 also states that the proposed project could stimulate existing businesses to upgrade their facilities.

In response to the commenter's concern of higher infrastructure costs, the SDEIS analyzed the effect of the proposed project on infrastructure. The 2013 HVS feasibility study is based on estimated construction costs that are reasonable and consistent with costs associated with other resorts of the caliber of the proposed subject property. Construction cost estimates have been recently reevaluated and are fully detailed in section 6 of the 2013 HVS report. Contrary to the comment, they are conservative and may ignore savings obtainable from when bids are sought.

In response to the comment that the price of houses will increase, it is not expected that there would be substantial pressure on housing prices as a result of the proposed project. The majority of the year-round and seasonal jobs created by the proposed project are expected to be filled by local residents or people who already reside within a reasonable commuting radius. As stated on page 33 of Appendix 4, of the 771 jobs that would be introduced by the proposed project, up to 250 jobs (or 32 percent) could be in-migrants or new worker/residents within the workforce study area. These 250 employees include approximately 16 to 20 mid- to upper-management positions that would be imported into the region since filling these positions may not be possible due to the specialty or technical nature of these positions. In addition to these management positions, there could be up to 230 additional workers who would be new worker/residents within the workforce study area. These workers may choose to relocate for a variety of reasons such as the type of employment or salary offered, how far a worker is willing to travel for employment, and the increasing cost of commuting. The SDEIS finds that it is likely that the existing housing supply could accommodate the new workers/residents. Therefore, it is not expected that there would be substantial pressure on housing prices as a result of the proposed project.

(13) It seems low paying jobs will be created and then the unemployment rolls will begin to fill up when people are laid off because the hundreds of rooms are unfilled and unsold and their services are no longer needed. **I237**

Response: The proposed project was planned based on market research that has indicated that there is demand for this type of project. With respect to market demand, there is strong evidence that fractional interest sales are improving in prime destinations and in properly planned resorts (See Ragatz Study Executive Summary in the Errata section of this FEIS.). The Belleayre Resort is situated in the Catskill Mountains which attracts over 2.5 million visitors each year and is in close proximity to over 20 million people making the resort a prime destination. Furthermore, the time share market has been recovering in the past three years and reports $6.9 billion in *sales for 2012, according to the American Resort Development Association. This represents a 13 percent gain in the past three years with new projects being developed and most upscale hotel companies selling tens of millions of dollars of product. The timeshare concept continues to be a valued commodity, with over 2.5 million owners of timeshare in the U.S. The proposed 84 time share units represent less than one tenth of one percent of the overall time share market in the Northeast, and thus will not cause a disturbance in the market. Because of the amenities and types of units offered (i.e. fractional units and timeshare units), the proposed project would attract new visitors to the region and convert current day trippers to overnight or weekend visitors.*

Also, please see response to Comment 10, which discusses the labor supply.

(14)A small scale boom/bust cycle will play out as relatively well paid construction workers rent out cottages and motel rooms currently being offered to new visitors now flowing to our region, making accommodations for such tourism scarcer and more difficult to obtain. **I3649**

(14a) This mega-development will cause a "boom" of jobs here while it's being built, and when the inevitable "bust" comes, there will be added pressure for still more mega development to maintain the boom. **I252**

Response: As stated on page 41 of Appendix 3, since construction activity is not permanent, but is temporary, construction workers would not be expected to relocate closer to the site. Therefore, construction of the proposed project would not be expected to induce permanent growth in the construction industry at the state, county, or local levels.

(15) This proposal defies local trends for what is financially viable for the Catskills. **O3455**

Response: The proposed project was planned based on solid market research that indicated that there is demand for this type of project. See responses to comments 12 and 13 above.

(16) Taxpayers have already enriched Crossroads Ventures with the purchase of the Big Indian land. Now Crossroads wants NYS to purchase the 78 acre Highmount property (which they bought in 2000 for $250,000), for a figure bantered about in the neighborhood of Five Million Dollars. I wish I had a client that could get away with a flip deal like that. I can send you lots of proof that land values in Shandaken have not risen in the past seven years; on the contrary, they have plummeted and remain moribund.

The speculators at Crossroads Ventures are hoping you grant approval so they can turn around and offer the deal to a major hotel company at a handsome profit. Approval of the full build out option would benefit only the sharp operators at Crossroads Ventures, not the local residents, business owners and especially not the tax payers of New York State. **I922**

Response: The SDEIS analysis finds that the proposed project would benefit the local residents and local business owners. In addition to providing opportunities for employment to the local community, the local community would benefit from off-site visitor spending. While the SEIS *analysis assumes that a majority of visitor spending would occur on-site, resort visitors would not limit their spending entirely to on-site Resort goods and service; they would travel off-site for spending on a variety of goods and services such as antiques, crafts, restaurant meals, groceries, gas and oil, recreational fees for off-site amenities, and cultural attractions. As set forth in Table 7.2-2 of the FEIS, off-site visitor consumer spending is projected to be $10.64 million annually throughout the Route 28 corridor, mostly in the village and hamlet centers where existing businesses and shops are concentrated.*

Please also see response to Comment 2a.

The State's payment for land acquired is based on an independent appraiser(s) determination of fair market value at the time of the purchase. All such acquisitions are reviewed by both the NYS Attorney General's Office and NYS Comptroller's Office.

(17) Please say no to this corporate giveaway, but do say yes to upgrading the Belleayre Mountain Ski Center and to providing additional lodging which will accommodate tourists and skiers at all economic levels. **I2838**

Response: Comment noted.

(18) There is no justification for undercutting existing businesses with an unwarranted tourist attraction.

As in other and even more dangerous proposals (such as the Keystone pipeline), this project touts unrealistic and exaggerated economic benefits solely to conceal its true ambition--profit for a small handful of developers. **I1461**

Response: In response to the commenter's concern of "undercutting" existing businesses, as described in Appendix 4 of the SDEIS, it is expected that local businesses would benefit from off-site visitor spending, off-site spending from Resort-generated employment (direct and indirect), and off-site economic activity generated by Resort operations. See response to Comment 2a.

In response to the comment that the economic benefits are unrealistic, the economic benefits the analysis relied on the Regional Input-Output Modeling System (RIMS II) model, which was developed by the U.S. Department of Commerce, Bureau of Economic Analysis. Using the model and the projected direct permanent jobs, earnings and other direct spending at the Resort, the total annual, recurring economic effects of Belleayre Resort operations were projected

(19) Has there been any reservations placed regarding pre-sales of this resort? **I201**

Response: No, advance sales of the share-ownership units will not commence until the project has been fully approved.

(20) First and foremost, the project-with its plan to clearcut and bulldoze 25 acres, which includes blasting into the mountain to build two exclusive resorts with a total of 629 units of lodging in 34 lodging buildings; a 24,000 square foot spa and fitness center; a 500-seat conference center; a

200-seat ballroom; retail shops; restaurants; another lounge, pool and spa; plus an 8-hole golf course – on a total of 739 acres – is way too big for the area. And being a destination resort, rather than enhancing the existing communities as the hype promises, it will suck the economic lifeblood out of them in the same way that Walmarts have driven smaller stores out of business in communities all across this country.

If the resort succeeds – and many think that's possible only with a casino – there is a very real possibility that locals will be forced to move because they will be priced out of the market. **I310, H50**

Response: In response to the commenter's concern about the proposed project's effect on the local community, please see response to Comment 1. As stated in the Agreement in Principle, Crossroads will memorialize, through duly recorded covenants and/or deed restrictions in favor of the owner of the conservation easement on the Adelstein property, its commitment not to allow the operation of Class III gaming facilities pursuant to the Indian Gaming Regulatory Act of 1988, at the Highmount Spa Resort and Wildacres Resort.

See the response to comment 2.1(1) regarding prohibition of casino gaming.

(20a) Huge oversize resorts kill small communities like Wall Marts kill local department stores and hardware stores. **I302**

Response: Comment noted. The SDEIS analysis finds that the proposed project would not result in significant adverse impacts to community character within the socioeconomic study area. Please see the response to Comment 1.

(21) The only real jobs that would be created would be low level maintenance and housekeeping staff for a luxury hotel. There have been no guarantees that local residents would even be hired for the jobs that are created, a condition that should be met before any plan is approved. **I3532**

Response: As stated on page 31 of SDEIS Appendix 3, the proposed project would provide 90 full-time salaried jobs, 451 full-time hourly jobs, and 230 part-time jobs. Employment opportunities would be varied, including housekeeping staff as well as managerial positions (such as Food and Beverage Operations Manager and Director of Rooms), valet, chefs, golf manager, sales staff, security, and spa consultants.

Hiring requirements and practices are beyond the scope of SEQRA, however it is the Applicant's intention to seek to tap the local labor market where feasible.

(21a) The economics of the situation are based on outmoded models, both in terms of expected skiers and golf.

There is no guarantee that the jobs it promises will be at anything but the lowest level or will hire local workers. **I3526**

Response: In response to the commenter's concern that outmoded models were used, the proposed project was planned based on solid market research.

In response to the commenter's concern about jobs that would be introduced with the proposed project, please see response to comment 21.

(21b) The resort will create a large number of minimum wage jobs with little to no room for advancement or pay raises. In other words it will create no career worthy jobs. **I403**

Response: Pages 1-16 and 1-17 in Section 1 of the SDEIS present a breakdown of the full-time salaried and hourly positions at the proposed project, based on data provided by the Applicant. Based on this data, all jobs that would be introduced by the proposed project would have wages higher than minimum wage. Full time salaried positions would have wages and salaries ranging from $30,000 to $130,000. The hourly workers would be paid between $10.00 per hour to $30.00 per hour – all above the current minimum wage of $7.25 per hour.

(21c) Economic Impact – I question exactly what types of employment will become available, pay scales, unions? Fair wages? Will the employment opportunities guarantee living wages? What will be the draw of emergency response resources with the increase in traffic and people? Who will cover the cost to repair roads – infrastructure loss due to the increase in traffic? **I406**

Response: As discussed on page 30 of Appendix 3, the proposed project would introduce 90 full-time salaried jobs, 451 full-time hourly jobs, and 230 part-time jobs. Employment opportunities would be varied, including housekeeping staff as well as managerial positions (such as Food and Beverage Operations Manager and Director of Rooms), valet, chefs, golf manager, sales staff, security, and spa consultants. Full time salaried positions would have wages and salaries ranging from $30,000 to $130,000. The hourly workers would be paid between $10.00 per hour to $30.00 per hour – all above the current minimum wage of $7.25 per hour.

In response to the commenter's question about unions and fair wages, wage requirements and practices are beyond the scope of SEQRA.

In response to the commenter's question about the emergency response due to the proposed project, please see the response to comment 4 in Section 3.10, Community Services.

In response to the commenters question about repairing roads, please see the response to comments in Section 3.5 which explain how the Applicant will be responsible for the costs.

(21d) What level of economic input will this project really bring to local communities if a majority of the jobs are menial, low paying ones? Will locals be hired over (in preference) people from long-distance?

I do believe that the cost benefit analysis, once the building materials are purchased and the laborers paid and one hundred or so residents find hourly employment, will shed light on the mistake of having allowed the crossroads development. What part will nepotism play in the hiring of full-time, well-paying jobs with benefits? What proportion of those employed will receive part-time hourly wages that do not come with health benefits? Hindsight is 20/20. **O3547**

Response: In response to the commenter's question about what the project will bring to local communities, please see the response to Comment 2a.

In response to the comment about the quality of jobs introduced by the proposed project, Based on data provided by the applicant and presented in the SDEIS, the proposed project would provide 90 full-time salaried jobs, 451 full-time hourly jobs, and 230 part-time jobs. Full time salaried positions would have wages and salaries ranging from $30,000 to $130,000. Full-time hourly workers would be paid between $10.00 and $30.00 per hour. Part-time workers would be paid between $12.00 per hour to $30.00 per hour. The current minimum wage is $7.25 per hour. If a minimum wage worker is employed full-time (40 hours per week for 52 weeks), that worker would earn $15,080. All salaried and hourly workers at the proposed project would have wages above minimum wage. In addition to the direct jobs that would be introduced by the proposed project, local communities would benefit from visitor spending (see response to comment 2a). Hiring requirements are outside the scope of SEQRA.

(21e) The millions of dollars that would be spent to build this proposed mega resort would not yield the number of jobs to warrant this huge expenditure - minimum wage jobs at that. Very little return on the state's dollars - our dollars! **I3591**

Response: As discussed in Appendix 3, construction of the proposed project would provide a significant number of jobs to New York State. It was estimated that construction of the proposed project would generate demand for 2,176 person-years of direct employment over the 10 year construction period. Wages and salaries associated with direct construction jobs were estimated at $112.70 million. On average, during the construction period, the project would directly support approximately 218 jobs per year with earnings of $11.27 million (or an average wage of $51,697 per job). The current minimum wage is $7.25 per hour. If a minimum wage worker is employed full-time (40 hours per week for 52 weeks), that worker would earn $15,080, which is significantly lower than the average wages for direct construction jobs.

In addition to the direct construction jobs, the SDEIS estimated that construction would indirectly generate 1,812 person years of employment, or an average of 181 jobs annually. Wages and salaries associated with the indirect employment are estimated at $78.63 million or $7.86 million annually. Therefore, the average wage for indirect employees is $43,425 per job.

(21f) Also how many jobs will be over $9.00 an hour. **I422**

Response: Based on information provided by the applicant and presented in the SDEIS, all jobs at the proposed project would have wages above $9.00 an hour.

(22) The argument of area long-term decline is not based on fact. Before the 2008 financial crisis, houses were being built all over this area. To say there is no work is not because of a decline in the area but for the general state of the nation's economy. For years there has been a worldwide migration of people to cities; this is not a local phenomenon. To say there are no jobs and therefore people are leaving this region is not accurate.

The entire region was crowded with people in the 1950's and 60's, mostly elderly Europeans. Because of the explosion of car sales, the expansions of the interstate highway system and airline travel, their children and grandchildren became much more mobile and could travel to much farther destinations in the same time it took to come to the Catskills. Building a huge, ill-conceived resort will not change that trend.
I1461

Response: The Socioeconomic Conditions appendix does not say that "there are no jobs and therefore people are leaving this region." However, the appendix does state the following about the unemployment rate and about the young adult population. First, the SDEIS presents 2000 and September 2008 New York State Department of Labor (NYSDOL) unemployment rates. In the tri-county area, unemployment rates in 2000 were 3.6 percent in Ulster County, 4.2 percent in Delaware County, and 4.5 percent in Greene County. Unemployment rates as of September 2008 were 5.8 percent in Ulster County, 5.9 percent in Delaware County, and 6.2 percent in Greene County. The comparison of 2000 and 2008 unemployment rates show that there was an increase in unemployment in the tri-county region between 2000 and 2008. 2012 NYSDOL annual averages show that unemployment rates continue to increase, with a 8.8 percent unemployment rate in Ulster County, 8.9 percent unemployment rate in Delaware County, and a 9.4 percent unemployment rate in Greene County.

The SDEIS also presents the unemployment rate for the workforce study area. As shown in Table 3.9.2-9 in Appendix 3, the unemployment rate in the workforce study area in 2007 was 4.1 percent. Based on 2007-2011 American Community Survey data, the unemployment rate in the workforce study area has increased to 6.9 percent for the 2007 – 2011 time period.

Second, as shown in Tables 3.9.1-2 and 3.9.1-3, the young adult population (18-34 year olds) decreased in share from 19.6 percent of the population in 1990 to 13.4 percent of the population in 2000 in the workforce study area. Based on 2007-2011 American Community Survey data, 12.9 percent of population was between 18-34 years old, showing a continuing decrease in share of the young adult population in the workforce study area. With this decrease, the SDEIS states "the decreasing share of young adults in the socioeconomic study area could further weaken the supply of available labor in the study area."

(23) How will the Crossroads development impact the cost of water to New York City residents and businesses? Further, all municipalities in Ulster, Sullivan, Orange, Dutchess, Putnam, and Westchester Counties also have legal use of NYC aqueduct water. What economic and health impacts would restricted water supply, reduced quality and increased treatment costs have on those upstate counties?

The various EIS and AIP proposals inexplicably embrace a wish- fulfillment, "Field of Dreams" hope for business success, but remarkably omit any professional, reality-based, independent business plan and market study required of any start-up business, especially one needing public tax dollar and private investor financial support.

The memory of the grand hotels of the Catskills and the wish to restore those memories are presented as reasons enough to support the Crossroads project, but ignore the reasons those earlier hotels and their clientele do not exist anymore. Starting in the 1950's, competition emerged that was facilitated by new interstate highway construction, cheap air fares, cruise ships, full time retirement to Florida and other sunbelt states, and the second-home development right here in the Catskills, all of which changed customer preference and practices.

No market study was conducted to determine price levels needed to support the projects, or the customer attraction to Belleayre based on price and value. **O2071**

Response: See section 3.1 of the SDEIS and this FEIS of how water quality will be protected.

A Market Study and Feasibility Analysis was prepared for the proposed project. It was included with the SDEIS (see Appendix 5). The market study concludes that "the proposed development has all the ingredients to be a very successful year-round destination resort." Updated market analysis is presented in the Ragatz report contained in the errata section of this FEIS.

In response to the commenter's concern that the EIS and AIP proposals "embrace a wish-fulfillment, 'Field of Dreams' hope for business success," the socioeconomic conditions analysis in the SDEIS presents data from trusted sources such as the US Census and New York State Department of Labor. The employment estimates presented in the SDEIS were provided by the Applicant and were based on their professional expertise and their financial feasibility analysis. Their employment estimates were reviewed for their reasonableness against standard employment density ratios. It should be noted that employment density ratios vary based on the characteristics of a facility.

In response to the comment that reasons the earlier hotels and their clientele do not exist anymore, the SDEIS finds that the proposed project would offer a level of amenities that is not commonly found in the study area, and is therefore expected to attract a new and different consumer base to the socioeconomic study area. As described in the SDEIS, the proposed project would offer "an unrivaled upscale, four-season resort directly serving the New York metropolitan area. With ski-in, ski-out privileges, ±15,000-square-foot conference facilities, 18 holes of championship golf, and two separate full-service spa operations, the resort features a full array of year-round demand generators. For example, the conference facilities alone address a core need of the region for space with attached lodging where one can hold conferences, weddings, proms, banquets and the like. This feature in turn would generate an increase in the need for local florists, photographers, entertainers and other ancillary services." Because of the amenities and types of units offered (i.e. fractional units and timeshare units), the proposed project would attract new visitors to the region and convert current day trippers to overnight or weekend visitors.

(24) I was amazed that a question so central to evaluating the economic and environmental impacts for our area of the associated proposed projects relied so heavily on projections provided by a for profit development consortium that has the highest conceivable vested interest in seeing these projects move forward to the maximum degree possible. I refer to this premise:

“Based on employment projections provided by Crossroads Ventures, LLC, it is estimated that the operations of the proposed project would generate approximately 541 full-time jobs and 230 part-time jobs (see Table 3.9.2-18). Employment opportunities at the proposed project would be varied, including front office staff, valet, chefs, golf manager, sales staff, security, housekeeping staff, and spa consultants.”

What penalty would Crossroads Ventures, LLC be subject to if in reality it turns out that these employment projections (and associated pay levels) were highly inflated? I would assume none. Yes no doubt they would like to see these projects prosper but their bottom line remains profitability only. When the time comes they will not employ a work force larger than what is essential to adequately operate the resort because that would unnecessarily increase their expenses and reduce their profits. Yet at this time, when there is every need to build support for this project with the public, the more jobs they can promise that the future offers the better the chances of getting their project approved now. That is simple political reality, and it is profoundly foolish for any evaluation of the future economic impact of the proposed build outs to rely on projections supplied by Crossroads Ventures.

Response: The employment estimates presented in the SDEIS were provided by the Applicant and were based on their professional expertise and their financial feasibility analyses. Their employment estimates were reviewed for their reasonableness against standard employment density ratios. It should be noted that employment density varies based on the characteristics of a facility.

From what I understand their business model does not even foresee their company actually operating the proposed resort, rather they would sell their stake to another company AFTER the project is approved. In other words, they will profit by helping steer this project to approval and then passing it off to others. Their rosy projections about future employment opportunities have to be viewed with suspicion, not simply adopted for independent planning purposes.

Response: This comment is not relevant to the SDEIS.

“Thus, it was determined that there would be an additional demand for as many as 250 employees from within the study area. Based on an online search conducted in June 2008, there were 259 single family homes for sale and 93 rental units available in the study area, indicating that the existing housing stock could accommodate the employment generated at the proposed project.”

For one thing this ignores the most basic rule of supply and demand in a free market. Prices achieve a natural balance based on supply and demand. Perhaps in theory there is enough available housing stock to accommodate the employment generated at the proposed project, but the cost of housing, like all commodities, remains sensitive to any notable increase in demand for that housing stock compared to the current market stasis. The subsequent rise in housing costs can be significant in an area like ours where many people can barely afford current housing costs, especially but not exclusively rentals.

Saying that houses offered for sale can be considered available for full time residential use flies in the face of a pronounced growing trend here in the High Catskills of homes being sold to people residing outside of this area for use as seasonal and weekend recreational purposes, effectively taking those units off of the full time residential market. I worked in this area for the 2010 U.S. Census and I can attest that a substantial portion of available housing in this area is substandard from the perspective of those who can be considered gainfully employed. Many of the available better properties are those now being purchased as second homes.

The report itself states: "The existing supply of for sale single-family homes and rental units in the workforce study area is greater than the number of potential in-migrants. Thus, it is likely that the existing housing supply could accommodate the new workers/residents. However, it is possible that the new workers would not be satisfied with the existing housing stock."

Response: In response to the concern about housing, it is not expected that there would be substantial pressure on the housing supply as a result of the proposed project. The majority of the year-round and seasonal jobs created by the proposed project are expected to be filled by local residents or people who already reside within a reasonable commuting radius. As stated on page 33 of Appendix 4, of the 771 jobs that would be introduced by the proposed project, up to 250 jobs (or 32 percent) could be in-migrants or new worker/residents within the workforce study area. These 250 employees include approximately 16 to 20 mid- to upper-management positions that would be imported into the region since filling these positions may not be possible due to the specialty or technical nature of these positions. The SDEIS finds that it is likely that the existing housing supply could accommodate the new workers/residents. Therefore, it is not expected that there would be substantial pressure on the housing supply as a result of the proposed project.

Additionally there are always examples of people selling their home to either upsize or downsize their current living space, who proceed to move into another suitable available home in or near their current community, resulting in a zero net gain of housing stock for those moving to this area for resort employment.. Other properties listed for sale are always only available at prices well above whatever the current market will bear, perhaps indicating some ambivalence on the part of the seller that may leave that unit unsold for an extended period of time. That is true of every housing market as any realtor can attest to.

Response: Comment noted. This is a comment about general housing market trends, not a comment specific to the SDEIS analysis.

A small scale boom/bust cycle will play out as relatively well paid new visitors now flowing to our region. This would all inhibit the current growth of community based tourism in our region, potentially crippling a growing grass roots economic revival that is now underway which otherwise could be expected to keep growing. By the time the construction workers have exited that window of opportunity may well be closed. **I3649**

Response: See the response to substantively similar comment 14 above.

(25) Prior to the real estate crash of 2007, the condominium market had tanked and the fractional share market had already dropped off. With the new economic paradigm, resort sales of second homes are still working thru the foreclosure and short sale processes and both lot values and home values continue to spiral downwards. Resorts are about house land sales; resorts are a dead end. **I3649**

Response: On the contrary, 2013 market data shows that the time share market has been recovering in the past three years and reports $6.9 billion in sales for 2012, according to the American Resort Development Association. This represents a 13 percent gain in the past three years with new projects being developed and most upscale hotel companies selling tens of millions of dollars of product. While the market did suffer due to the recession, as did all other discretionary products and services in the country, it is rebounding rather than collapsing. Most experts in the resort real estate industry are optimistic that recovery will occur in the long term. There is evidence that fractional interest sales are actually beginning to improve in prime destinations and in properly planned resorts. For example:

- *uncertainty about the country's long term economic stability is definitely improving, as evidenced by most economic indicators, including consumer confidence;*
- *consumer financing is beginning to come back as more funds are available;*
- *primary home equity funds for purchasers who previously paid cash is recovering as primary home prices increase and the surplus supply is absorbed;*
- *marketing funds becoming more available as lenders perceive market improvements;*
- *standing inventory of whole-ownership vacation homes on the market are becoming absorbed due to improvements in the economy*

New projects continue to be developed and most upscale hotel companies continue to sell tens of millions of dollars of product. The timeshare concept continues to be a valued commodity, with over 2.5 million owners of timeshare in the U.S. The proposed 84 time share units represent less than one tenth of one percent of the overall time share market in the Northeast, and thus will not cause a disturbance in the market.

Even if the fractional market fails to fully recover in the foreseeable future, the Belleayre Resort's construction over multiple stages gives the project the flexibility to build according to market demand and allocate lodging units as time share or fractionals based on those market forces. The product mix recommended in the 2008 study was always assumed subject to change as Belleayre Resort neared actual implementation and the final product mix will be determined by an updated feasibility analysis and current market forces at time of implementation.

(26) What happens to a performance bond for needed infrastructure when a portion of the planned resort is sold to a different investor? For instance when the golf course, golf facilities, club house, spa, fractional unit building or hotel are sold to an investor, or to a 2nd or 3rd developer who are unrelated to the current land owner Gitter or Crossroads Ventures LLC, how does a bond get perfected? Will the state be responsible to track the complexities of a several decades buildout? **I2131**

Response: Financial security, such as letters of credit and performance bonds are typically required by municipalities throughout New York State to ensure the completion of improvements *once a construction project is underway. Such financial security only exists until the elements that are the subject of the security have been constructed. Most approvals and permits either "run with the land" or they must be transferred prior to any change in ownership. This is true for any NYSDEC permit. NYSDEC allows transfers permits as a matter of course to new owners. It is not unusual for a project, even a relatively small residential subdivision to take many years to build out. Municipalities and other governmental entities track the progress of the development and ensure that required financial security for public improvements remains in place.*

(27) Ulster County, a statement is made about the population of Ulster County that is aging faster than the state and national averages, as our population growth has slowed. "With such a significant portion of our population potentially retiring in 2026, it is unclear where we will find the number of new workers our businesses will need to keep pace with the global marketplace"; therefore, where will these workers come from that this new project is proposing? It seems in direct contradiction to the Ulster County strategic economic development plan. The following page in the same report states "nearly 1/3 of the County workforce now works outside the county on a daily basis"; therefore, will those one third people now quit their long time career jobs and go to work in a part-time or low-paying position at a seasonal resort center? The answer is obvious, no. Therefore, Ulster County's own planning has again identified a huge roadblock for any further consideration of this project.

Response: As discussed on pages 31 and 32 of Appendix 3, part time jobs would mostly be filled by workers in the area that work part-time but are looking for additional work, unemployed persons that are searching for part-time employment, and others in the area that might not technically be in the labor force because they are not actively looking for work, but would be interested in the employment offered at the proposed project. In the SDEIS, the average number of unemployed workers in 2007 was 665 workers in the workforce study area, based on NYSDOL data (see Table 3.9.2-9). Since 2007, the number of unemployed workers in the study area has increased. Based on 2007-2011 American Community Survey data, there are 1,089 unemployed workers in the workforce study area, which is 64 percent higher than 2007.

With respect to full-time employment, as discussed in Appendix 3, it was expected that 80 percent of the proposed project's employees would reside within an approximate 45-minute drive time of the project site. As stated on page 19, "the commuting patterns indicate that a significant portion—between 29.7 percent in Delaware County and 42.7 percent in Greene County—commute to work outside of the county in which they reside." 2007 to 2011 American Community Survey data reflect similar commuting patterns: 29.3 percent of Delaware County residents worked outside of the county, 32.3 percent of Ulster County residents worked outside of the county, and 42.6 percent of Greene County residents worked outside of the county.

A recent propaganda brochure from the Belleayre resort at Catskill Park stated that the project would pay $3.7 million in annual property taxes to Shandaken's and Middletown's school districts. When do they start paying those property taxes? How did they arrive at that figure? **I3506**

Response: Table 3.9.3-11 to 3.9.3-14 in the SDEIS and updated below in response to comment

43 present property tax projections for the proposed project. Future property taxes were estimated based on current tax rates and assessment practices within each of the affected taxing jurisdictions.

Two primary approaches were used in the SDEIS analysis to establish an estimated full market value for purposes of estimating property taxes. The estimated full market value for most of the resort components, including the build elements, such as the hotels, lodging units, club houses, and conference center, was based on 60 percent of the anticipated cost of construction. The analysis estimates taxes based on the total amount of construction value invested as of January of each year. The estimated of value of the Wildacres golf course was based on a per-hole valuation rate.

The assessed value, which is the basis for a municipality's tax base, was estimated by applying the 2006 equalization rate of the municipality in which a property is located to the full market value of the property. The full market value of the project within Shandaken was multiplied by Shandaken's 2006 equalization rate of 24 percent to arrive at an estimate of the assessed value. Similarly, the full market value of the proposed project in Middletown was multiplied by Middletown's 2006 equalization rate of 62 percent to arrive at an estimate of the assessed value. In cases where a component would fall within both towns, the full market value for the component was divided among the townships in proportion to the percentage of its distribution within each township.

The analysis in the SDEIS assumed that the proposed project would benefit from a business investment exemption which shields a percentage of the new assessed value from taxation for a period of 10 years. The exemption would provide a 50 percent deduction in the assessed value after the first re-assessment, with the deductible amount decreasing by 5 percent each year for 10 years, after which the proposed project would pay property taxes based on the full assessed value. The business investment exemption would apply to all taxing districts within the municipalities with the exception of fire districts and school districts.

It also says over 500 full-time jobs and 200 seasonable and part-time jobs, and where will these 500 people and these 200 seasonable total of 700 people come from? How did they arrive at the economic spinoff proposal that will generate over $10 million annually in off-site spending and a total effect on the regional economy annually of over 165 million? **I3506**

Response: As stated on page 20 in Appendix 4, the vast majority of the year-round (and seasonal) jobs created by the Resort would be filled by local residents or people within an approximate 45-minute drive time from the project site. Please see the response to comment 2b about the workers at the proposed project.

In regards to the commenter's question about how the economic spinoff was calculated, as stated in Appendix 3, the total economic activity that would result from operation of the development is estimated at $167.94 million annually in the tri-county region. This estimate was derived from using the Regional Input-Output Modeling System (RIMS II), which was developed by the U.S. Department of Commerce, Bureau of Economic Analysis. Using the model and the projected *direct permanent jobs, earnings, and other direct spending at the Resort, the total annual, recurring economic effects of Belleayre Resort operations were projected.*

(28) I well understand the current economic problems of the region, but I absolutely oppose the building of the proposed Belleayre Resort pursuant to the Crossroads Proposal. The proposal is a sweet heart deal for real estate developers, primarily Dean Gidder, which comes at an overly high cost both in terms of actual cash and environmental damage to those living in the Catskills and residents of the rest of New York State. **I3526.**

Response: New York State is not funding the private modified resort project. The assessment of environmental impacts of the project have been ongoing since 1999 including the 2003 DEIS, the 2013 SDEIS, and this FEIS.

(29) Frankly, your taxes WILL NEVER go down, and building more 'tax rate-able' buildings WILL NOT help. If that were the case, then New York City, or Kingston for that matter, would have NO property taxes at all. Think about it. Adding buildings and homes increases the need for fire, police, school, water and wastewater treatment, and other 'public works' personnel. That means 'more taxes', and that tax money, it comes from you. **I335**

Response: The SDEIS analyzed the proposed project's effect on water and wastewater treatment in Sections 2.4. 3.2.2, 2.8.6, 3.1.3, and 3.2.1. Please see responses to comments in these same sections in this FEIS.

In regards to the commenter's concern about increasing needs for fire, police, and school districts, all service providers contacted indicated they had the ability to serve the project, some with mitigation measures in place. Service providers contacted included police, fire, ambulance, hospitals, schools, solid waste, electric and telephone. (Please see response to Comment 8 in Section 3.10).

(30) Regarding the SDEIS for Crossroads Ventures: I fully agree that this area of the Catskills is economically struggling and that it would be aided by substantial investment. The proposed hotel and housing to be located at the intersection of Route 49A and the access road to upper Belleayre makes sense and will be beneficial even though it would be better located closer to Route 28 and the lower parking lot. **I309**

Response: Comment noted. The Applicant does not own the lands that are across County Route 49A from the lower BMSC parking lots.

(31) The comments at the public hearing on May 29th were overwhelmingly in favor of the modified plan and the local jobs and tourism it predicts to bring to the area. Everyone who loves this area is in favor of more local jobs and tourism but the modified proposal is still frightfully out of scale. In addition, the SDEIS is a house of cards built on inflated projections and dubious statistics. Even ignoring climatic trends of a diminishing snow season, the target of 9,000 skiers per day seems an unrealistic field of dreams. This isn't a Hollywood script. Just because you can build it does not mean they will come. In fact, the developers really do

not care if they come or not. Once the deals are done the investors and developers will have their profits and some unfortunate resort / hotel chain will have the responsibility of managing this white elephant and making it sustainable. **I419**

Response: The scale of the project is consistent with the projected demand for the resort facilities. Changes in the proposed project have yielded a project that is substantially smaller in size and environmental impact. For example, the Modified Project is only 37% of its originally proposed size. Total acreage to be developed has been reduced by 60%. Total number of hotel and lodging units has been reduced by about 30%. The total acreage of land that will be converted to impervious surface has been reduced by about 70%. Additionally, the 1,189 acres of land that was previously to be developed as Big Indian has been purchased by the State and will be forever protected from future development. Also, the 200+ acre Adelstein parcel is now subject to a Conservation Easement held by the New York City Department of Environmental Protection. The changes to the project, all of which reduce environmental impacts along with the overall size of the project are set forth in detail in the SDEIS Executive Summary as well as the body of the SDEIS. The modified project represents a new, lower impact, alternative which minimizes or avoids the potential for significant adverse environmental impacts identified during the public comment period and Issues Conference, and which the State has determined will provide significant economic benefits to the Central Catskills region.

Based upon public comments, DEC has updated attendance figures and lift ticket prices through the 2013/2014 ski season in the UMP-FEIS. However, the year to year attendance data for the existing ski center while informative, is not determinative, moreover the historical skier attendance figures were not used for design purposes. The purpose of the project is to provide the public with improved recreational opportunities on Forest Preserve land by constructing and maintaining additional mileage of ski trails at Belleayre, consistent with constitutional limits. The 1986 amendment of the Constitution provided for the expansion of the ski trails at the Ski Center by increasing the ski trail mileage cap up to a total of 25 miles in length. Currently, the Ski Center has just 16.3 miles of ski trails. Accordingly, the Department has developed a plan that provides for the full build out potential of Belleayre Mountain Ski Center under current constitutional limits. That is the basis of the proposed Comfortable Carrying Capacity calculation of 9,000 skiers and he plan for full build out of the facility. The potential 320,000 yearly maximum attendance figure is a conservative estimate used only to evaluate socio economic impacts from the perspective of the ski area and not as a determining factor in the sizing of facility components. Long needed upgrades and modernization of facilities and amenities (lodges and parking lots) will enhance the skier experience and along with improved and varied ski trails likely attract many new visitors. Regarding ticket prices, based on experience operating a ski center, ORDA believes that it is important that ticket prices are on par with other ski areas in the region.

(32) In addition, many such speculative resort developments fail. This seems particularly likely in the present case since investing in a ski resort is self-evidently a risky proposition, given climate change and the fact that skiing is already only made possible here by extensive snow-

making. We taxpayers are quite likely to be left with an ugly, toxic, decaying boondoggle blighting our mountainside. **I338**

Response: Comment noted.

(33) Failure is not an option. Failed projects leave scars. Have funds been or will there be allocated to restore Belleayre Mountain to its pre-BMMP conditions?

Are earnings to be removed from the community or will funds be used to invest in the area? **I405**

Response: Comment noted. See responses to comments above, such as 2.A, regarding job creation and secondary spending.

By "BMMP" in the comment it is assumed that the commenter is referring to Belleayre Mountain Management Plan (UMP). Financials relating to that State project are separate from those of the resort project, so that portion of the comment is not applicable.

(34) The largest portion of economic benefit and jobs I believe will go to outside corporate interests and contractors and will alleviate the locally economically depressed areas and local unemployment only quite minimally. **I407**

Response: As described in the response to comment 2a, the local community would benefit from off-site visitor spending, employee spending, and would benefit from the goods and services demands of the proposed project (please see the response to Comment 2a).

(35) What if it fails? Many in the surrounding community expect the project to unrealistically provide solution to all their economic needs. Factory-towns have been closing, putting many people who grew dependent on the factory out of a job.

The moral implications of the jobs offered with the possibility of the resort connected into casino. I am concerned with the moral value that workers, especially young, high school graduates who are starting their life as adults. I appreciate the good intention of creating jobs, but what kind of jobs are we creating?

The state money proposed for funding $74M of tax money can be spent better on existing infrastructure and education. To give it to a for-profit business is unacceptable and wrong use of public funding. **I396**

Response: No project, whatever the size, can guarantee it will never fail, nor can it guarantee that it will provide solutions to "all" the community's needs. It can however provide a significant economic benefit to a community in terms of taxes, employment, payroll, corporate support to local organizations, projects and program.

The Resort, by nature of deed restrictions, will not allow a Class III gaming casino to be operated on its property.

The expected payroll for resort employees is enumerated in Section1.3.G of the SDEIS and is significantly above the average pay of employees working in the towns surrounding the Resort. The Resort will employ people requiring everything from a GED to a Master's Degree. The Resort expects to provide first time work experience for many on its staff as well; this experience will be an important precursor for any individual looking to advance him/her whether in the lodging industry or any other chosen profession.

(36) I believe the project has not successfully outlined their financial business plan to illustrate profits and contingency plans should targets fail. **I398**

Response: Comment noted. SEQR does not require the presentation of financial business plans associated with the environmental review of a project. Every effort has been made to explain the plan to build out the Modified Belleayre Resort Project in a reasonable and responsible fashion.

(37) Tax gained by this project should be collected and fed back into local areas to renew infrastructure and make improvements. **I398**

Response: Property taxes generated from the proposed project would be fed back into local areas. As shown in Tables 3.9.3-11 through 3.9.3-14 in Appendix 3 (and updated below in response to comment 43), property tax revenues would go towards local taxing jurisdictions (general tax, fire, light, water, library, school).

(38) The State should NOT become involved with Crossroads Ventures at all. Let them succeed or fail on their own. Sucking up to the comparative handful of private guests who want to "ski in & ski out" of their units @ that resort would be a blatant misuse of taxpayers' dollars.

It is important both to preserve the Catskills. A full build-up will increase local property taxes.

Preserving a healthy environment for ourselves, the earth and our children's children is much more important than development that will provide jobs and income for only a scant few years. Better to invest in Green for everyone. I want to see only development that preserves the environment and protects the viability of hamlet life.

I understand the need for jobs in the area, but all too often private developer get government assistance and then don't follow up on their end of the bargain or water down their commitment and offer fewer local jobs all at the taxpayers' expense.

On my morning hike today I noticed many houses and properties for sale and suddenly realized that those who will be drawn to Gitter's resort will be drawn not by beauty or because they want to live in the country, but by golf, and spa treatments and luxury. An entirely different flavor from both those who were born and raised here and those who choose to make the Catskill Mountains home.

Response: NY State is not funding the private modified resort project. The socioeconomic impact assessments contained in the SDEIS does not indicate that the project will result in increase in *property tax. The jobs created by the resort and described in detail in the SDEIS will exist as long as the modified resort is in operation.*

(39) We are concerned about our property value decreasing. **I166**

Response: Comment noted. However, there is no basis to believe that values will decrease. The potential impacts on individual property values are beyond the scope of SEQR.

(40) We are a small (13 unit) lodging business in Phoenicia, and we have serious concerns about the scale of this development. Our primary issue is the impact that the number of units included in the project (629 to our count) will have to the local lodging community. 629 seems wildly out of scale for our area. Indeed, we would be surprised if the current number of lodging units in the Catskills equaled this number. It seems obvious and undeniable that dramatically increasing the number of units in the area will have an adverse effect on existing businesses. Most businesses (including ours) just get by each year, and even a slight decrease would put many of us out of business. By roughly doubling the supply, Crossroads Ventures risks not only drastically cutting our occupancy rates, but we believe they are also dramatically overestimating the potential of their own demand, and are therefore making a poor business decision, potentially putting even themselves out of business. Regardless, the local lodging community cannot sustain this increase.

Response: An analysis of potential market saturation and competition with local businesses is beyond the scope of this SEQR analysis. As stated in the Final Scoping Document, "SEQR's definition of environment protects the socio-economic elements reflected in existing population patterns and neighborhood and community character. Pure economic or competitive interests, however, fall outside the scope of SEQR and the purview of SEQR review."

The proposed project would offer a level of amenities that is not commonly found in the study area, and therefore is expected to attract a new and different consumer base to the socioeconomic study area. The on- and off-site spending of any new consumers is not likely to cannibalize existing consumer dollars within the study area.

I am concerned about the implications on the local taxes. Please clearly explain, in dollar value estimates, what kind of taxes will be paid to each township within which the resort will reside. Please explain the abatement values more clearly.

Response: Table 3.9.3-5 in Appendix 3 shows non-property tax revenues that would result from the proposed project. These include state sales taxes, county sales taxes, and hotel occupancy taxes. In addition, the SDEIS presents an estimate of future property taxes generated by the proposed project based on current tax rates and assessment practices within each of the affected taxing jurisdictions, as directed by the Final Scoping Document. Tables 3.9.3-11 to Tables 3.9.3-11 from Appendix 3 have been revised (below) in response to Comment 43.

As per the Final Scoping Document, the estimate of future property taxes reflects anticipated tax abatements for the proposed project. As stated in the SDEIS: "New commercial development projects like the proposed project are often provided a business investment exemption which shields a percentage of the new assessed value from taxation for a period of 10 years. Individual *municipalities have the authority to waive the exemption, or vary the extent to which the exemption will apply to a particular project. This analysis assumes that the full business investment exemption would likely apply for the proposed project. The exemption would provide a 50 percent deduction in the assessed value after the first re-assessment, with the deductible amount decreasing by 5 percent each year for 10 years, after which the proposed project would pay property taxes based on the full assessed value. The business investment exemption would apply to all taxing districts within the municipalities with the exception of fire districts and school districts.*

As an example, as shown in Table 3.9-3-9, in January 2013, the total construction cost for Wildacres was estimated at $45,280,000. Following the methodology outlined on pages 47 and 48 in Appendix 3, the total assessed value for Wildacres in 2013 was estimated at $6,520,320. As a result of the business tax exemption, there would be a 50 percent deduction in the assessed value after the first reassessment. Therefore, the taxable value after the exemption is $3,260,160. The deductible amount would decrease by 5 percent each year for 10 years, after which the proposed project would pay property taxes based on the full assessed value.

I am concerned about increased services for guests and workers, without adequate taxes going to the communities that provide them. I am concerned that the townships that will be most impacted (those east of the resort) stand to benefit less from the taxes because of the location of the resort (mainly westwards). Specifically, I am concerned about my own municipality Shandaken.

Response: As per the Final Scoping Document, the SDEIS presents an estimate of future property taxes generated by the Resort (see Tables 3.9.3-11 to 3.9.3-14), which show how the estimated tax revenues would be apportioned among the applicable taxing districts in which the proposed project would be located. The distribution of taxes is at the discretion of County and Town and is outside of the scope of SEQRA.

I feel the supporting materials provided are very weak and require more recent, robust data and analysis. If the state were to accept the project with the supporting materials as is, it would be clear to me that the "fix was in." Even a cursory reading of the socio-economic impact section by a reasonably intelligent person shows there is a gross lack of current data nor independent verification of the salutary claims.

There is no mention of the 2010 census. Much of the material is based on the 1990/2000 census to analyze potential workforce/housing trends. This is shocking to me. The new census material has been available for over two years, and shows some very big shifts. Additionally, by omitting recent census data, it does not capture the fairly profound impact of the 2008 economic collapse.

Response: The data presented in the SDEIS was an update of the original DEIS that was published in November 2003. The original DEIS presented 1990 and 2000 Census data and 2005 data from Claritas. For the SDEIS, the 1990 and 2000 data that was originally presented remained in the chapter. The 2005 data was updated with the most up-to-date data that was available when the SDEIS was published. The SDEIS was released in April 2011. 2010 Census Summary File 1 data was released between June 16, 2011 and August 25, 2011 (see http://www.census.gov/population/www/cen2010/glance/)

The appendix presented historic data and the most current data that was available at the time that the chapter was published. Below are tables with updated Census data for population, housing, households, and median household income.

2010 Census data on households does not show significant changes from what was presented in the SDEIS. In the SDEIS, there was a 4.2 and 4.6 percent increase in households in the Socioeconomic Study Area and Workforce Study Area, respectively, from 2000 to 2008. Based on 2010 Census data, the increase in households in these areas is lower at 3.3 percent. The percent increase in the number of households in the Tri-County Area between 2000 and 2010 is 5.5 percent, which is slightly lower than the 6 percent growth from 2000 to the 2008 estimates. The lower number of households in the socioeconomic study area and the workforce study area would not materially affect the findings presented in the SDEIS.

Table 3-2
Households (1990, 2000, 2008, 2010)

	1990	2000	Est. 2008	2010	2000-2008 % Change	2000-2010 % Change
Socioeconomic Study Area	4,303	5,004	5,216	5,170	4.2%	3.3%
Workforce Study Area	11,722	13,153	13,758	13,584	4.6%	3.3%
Tri-County Area	95,049	105,025	111,323	110,770	6.0%	5.5%
New York State	6,639,322	7,056,860	7,270,269	7,317,755	3.0%	3.7%

Notes: Socioeconomic Study Area includes: Middletown town, Olive town, and Shandaken Town; Workforce Study Area includes: Andes town, Bovina town, Middletown town, Halcott town, Hunter town, Lexington town, Hardenburgh town, Hurley town, Olive town, Shandaken town, and Woodstock town; Tri-County area includes Delaware County, Greene County, and Ulster County.

Sources: U.S. Department of Commerce, Bureau of the Census, 1990 and 2000 Census, Summary File 1; ESRI Inc., Market Profile 2008, Accessed May 2008. Census 2010.

2010 Census data shows a 4 to 5 percent decrease in population since 2000 in the Socioeconomic Study Area and Work Force Study Area. However, based on 2008 estimates, there was a 3 percent increase in population from 2000 in these areas. In the Tri-County Area and the State, there was a 2.1 percent increase in population from 2000 to 2010. This is lower population growth than using the 2008 estimates.

Between 1990 and 2000, the population of adults above 50 years of age increased in share in the socioeconomic study area. As shown in Tables 3.9.1-2 and 3.9.1-3, the percentage of adults in the socioeconomic study area increased from 35.4 percent in 1990 to 38.9 percent in 2000. This trend continued between 2000 and 2010. Based on 2010 Census data, approximately 47.9 percent of the socioeconomic study area was above 50 years of age.

The SDEIS also finds that the young adult population (18-34 year olds) decreased in share from 19.9 percent of the population in 1990 to 14.1 percent of the population in 2000 in the socioeconomic study area, and from 19.6 percent of the population in 1990 to 13.4 percent of the *population in 2000 in the workforce study area. In 2010, approximately 12.9 percent of both the workforce study area and the socioeconomic study area were between 18-34 years old. Therefore, there is a continuing decrease in young adults in the socioeconomic study which could further weaken the supply of labor in the study area.*

Table 3-3
Population Change 1990 to 2010

	1990	2000	Est. 2008	2010	2000-2008 % Change	2000-2010 % Change
Socioeconomic Study Area	10,505	11,865	12,210	11,254	2.9%	-5.1%
Workforce Study Area	28,721	30,642	31,561	29,419	3.0%	-4.0%
Tri-County Area	257,268	273,999	285,915	279,694	4.3%	2.1%
New York State	17,990,455	18,976,457	19,554,879	19,378,102	3.0%	2.1%

Notes: Socioeconomic Study Area includes: Middletown town, Olive town, and Shandaken Town; Workforce Study Area includes: Andes town, Bovina town, Middletown town, Halcott town, Hunter town, Lexington town, Hardenburgh town, Hurley town, Olive town, Shandaken town, and Woodstock town; Tri-County area includes Delaware County, Greene County, and Ulster County.

Sources: U.S. Department of Commerce, Bureau of the Census, 1990 and 2000 Census, Summary File 1; ESRI Inc., Market Profile 2008, Accessed May 2008. Census 2010.

The SDEIS presented 1989 and 1999 data for median household income. As discussed in the SDEIS, between 1989 and 1999, the median household income increased by 9.6 percent in the socioeconomic study area and decreased by 3.4 percent in the workforce study area.

The 2007-2011 median household income for all study areas is lower than the median household income in 1999. The median household income for the 2007-2011 time period for the socioeconomic study area is $48,564, which is 8.5 percent lower than the median household income in 1999. Similarly, the median household income for the 2007-2011 time period for the workforce study area is 11.1 percent lower than the median household income in 1999. This mirrors trends in the state, where the median household income for the 2007-2011 time period is 6 percent lower than the median household income in 1999. The lower median household income in the socioeconomic study area and the workforce study area would not materially affect findings presented in the SDEIS.

Table 3-4
Median Household Income in 2013 dollars (1989, 1999, 2007-2011)

	1989	1999	2007-2011	1989-1999 Percent Change	1999-(2007-2011)
Socioeconomic Study Area	$48,438	$53,090	$48,564	9.6%	-8.5%
Workforce Study Area	$62,870	$60,759	$54,035	-3.4%	-11.1%
Tri-County Area	$60,880	$57,373	$55,778	-5.8%	-2.8%

New York State	$64,650	$62,792	$58,885	-2.9%	-6.2%

Notes: Socioeconomic Study Area includes: Middletown town, Olive town, and Shandaken Town; Workforce Study Area includes: Andes town, Bovina town, Middletown town, Halcott town, Hunter town, Lexington town, Hardenburgh town, Hurley town, Olive town, Shandaken town, and Woodstock town; Tri-County area includes Delaware County, Greene County, and Ulster County.

Sources: U.S. Department of Commerce, Bureau of the Census, 1990 and 2000 Census, Summary File 1; 2007-2011 American Community Survey.

2010 Census data shows an increase in the number of housing units in the study areas between 2008 and 2010. As shown below there were 8,503 housing units in the socioeconomic study area in 2010, which was a 6.5 percent increase from 2000. There was also a 6.6 percent increase in the number of housing units in the workforce study area between 2000 and 2010.

As shown in Table 3.9.1-10 in the SDEIS, in the workforce study area 495 housing units were vacant and for rent and 335 housing units were vacant and for sale in the workforce study area, based on 2000 Census data. The number of vacant housing units for rent or for sale has declined between 2000 and 2010. Based on 2010 Census data, there are 214 vacant housing units for rent and 230 housing units for sale. This decline in the number of for rent and for sale vacant housing units could affect the findings of the SDEIS as there are fewer homes available for the in-migrating labor force, compared with the 2000 Census data. However, the SDEIS finds that there could be up to 250 in-migrants or new worker/residents that could be introduced with the proposed project, which is lower than the number of vacant housing units for rent or for sale.

Table 3-5
Housing Units (1990, 2000, 2008, 2010)

	1990	2000	Est. 2008	2010	2000-2008 % Change	2000-2010 % Change
Socioeconomic Study Area	7,580	7,985	8,298	8,503	3.9%	6.5%
Workforce Study Area	20,287	20,882	21,657	22,261	3.7%	6.6%
Tri-County Area	124,077	133,152	140,739	144,070	5.7%	8.2%
New York State	7,226,891	7,679,307	8,015,819	8,108,103	4.4%	5.6%

Notes: Socioeconomic Study Area includes: Middletown town, Olive town, and Shandaken Town; Workforce Study Area includes: Andes town, Bovina town, Middletown town, Halcott town, Hunter town, Lexington town, Hardenburgh town, Hurley town, Olive town, Shandaken town, and Woodstock town; Tri-County area includes Delaware County, Greene County, and Ulster County.

Sources: U.S. Department of Commerce, Bureau of the Census, 1990 and 2000 Census, Summary File 1; ESRI Inc., Market Profile 2008, Accessed May 2008. Census 2010.

The analysis on the # of jobs and the positive economic effect is based on extremely weak grounds. The projected jobs and money brought into the area is determined by the developer's understandably biased projections and a single firm that he hired using a proprietary formula to determine the effect. Nowhere was the formula or the basis for the developer's projections documented. This needs to be rectified.

Response: As discussed above, the employment estimates presented in the SDEIS were provided by the Applicant and are based on their professional expertise and their financial feasibility analyses. Their employment estimates have been reviewed for their reasonableness against standard employment density ratios. It should be noted that employment density ratios vary based on the characteristics of a facility.

Page 42 of Appendix 3 "Overview of Methodology" describes the model that was used to estimate the overall effect annual operations of the proposed project. As stated in that section, the analysis relied on the Regional Input-Output Modeling System (RIMS II) model, which was developed by the U.S. Department of Commerce, Bureau of Economic Analysis. Separate models were developed by the U.S. Department of Commerce for the tri-county region of Delaware, Ulster, and Greene Counties, and for New York State.[9] Using the model and the projected direct permanent jobs, earnings and other direct spending at the Resort, the total annual, recurring economic effects of Belleayre Resort operations were projected.

I would like to see, for a more accurate unbiased projection of impact, research on other communities who had a similar large project, essentially the size of a hamlet, added into their midst. Other resort and ski centers exist where this very thing has happened. We need the state to have an independent researcher (not the eloper, nor it's hired firm) to study a "before- and after" in 5 or 6 of the communities. Surely, in all cases the projected impact versus the actual impact on the community is well-documented in material available to the public: prior permitting documents such as a DEIS and then in population and budgetary data after these resorts are built.

If I can think of any one thing that is the most important, it would be to go back into the record and see what the actual effects were when something like this was built. It wouldn't take much time, and it needs to be paid for by the state, not the developer.

Response: The presentation of case studies is outside the scope of this EIS. However, it should be noted that case studies were extensively considered during the issues conference proceedings in July 2004. The following case studies were evaluated: Windham, New York; Gore, New York; and Mt. Greylock, Massachusetts. Based on these case studies, the following conclusions were identified and presented at the issues conference:

- *No strong evidence of explosive or sprawling growth from development of ski center or four season amenities (Windham and Gore)*
- *Labor markets are fairly elastic in that jobs get filled without major changes to demographic base or local housing markets (Windham and Gore)*
- *In tough economic climate, public incentives often needed to get "amenity" driven projects off the ground (Gore and Mt. Greylock)*

I am concerned about over-crowding in the housing market for all new workers. There is a real crunch in housing in Shandaken. We have very few current residents looking for, or qualified

[9] The model of the New York State economy was created by the U.S. Department of Commerce in May 2008, and for the tri-county Ulster, Delaware, and Greene County region, in June 2008.

for, the work of the sort the resort will provide. Outsiders will have to move in, but where will they live? **I3641**

Response: The SDEIS analysis finds that the proposed project is expected to have a negligible effect on year-round residential development in the study area. As stated on page 21 in Appendix 4, "the majority of Resort employees would already reside in existing housing, and that only a small number would enter the regional housing market as new renters and purchasers of existing housing stock." The demand for housing would be from the 16 to 20 full-time mid- and upper-management positions. The remaining jobs would be expected to be filled by people in the workforce study area.

The commenter wrote "few residents are looking, or qualified for, the work of the sort the resort will provide." Based on the most recent data that was available at the publication of the SDEIS, the unemployment rate in the workforce study area was 4.1 percent and the unemployment rate in Shandaken was 5.7 percent. Unemployment rates in these areas have since increased. Based on the 2007-2011 American Community Survey, the unemployment rate in the workforce study area is 6.9 percent and the unemployment rate in Shandaken is 9.0 percent. The proposed project would provide employment opportunities for the workforce study area.

(41) Full consideration of socio-economic impacts falls within this wider perspective. I have heard that much of the data to "prove" that this project benefits "us" is actually based on analysis, which uses census data that is old population data, some dating back to 1990. What respectable firm submits a report whose most recent census data is from 2000?

Response: Appendix 3 presented the most current data that was available at the time that the SDEIS was published. The SDEIS was released in April 2011. 2010 Census Summary File 1 data was released between June 16, 2011 and August 25, 2011 (see http://www.census.gov/population/www/cen2010/glance/*). See response to comment 40 which presents 2010 Census data for population, housing, households, and median household income.*

The analysis is based on unsubstantiated, rosy projections by the developer, not based on any research into existent stats.

The "professional" analysis is by a single firm using the developer projections and their own "in-house analytics" -- without reference to what these analytics are, or how they have been validated. There is no reference to any of the standard projection indexes used by social scientists. Additionally, the firm's qualifications for making this analysis are not listed. There is no independent firm review or second opinion on this analysis. Should the SEQR process accept a single-source shaky review on something that will impact lives, in tangible ways?

Response: As discussed above, the employment estimates presented in the SDEIS were provided by the Applicant and are based on their professional expertise and their financial feasibility analyses. Their employment estimates have been reviewed for their reasonableness against standard employment density ratios. It should be noted that employment density ratios vary based on the characteristics of a facility.

Page 42 of Appendix 3 "Overview of Methodology" describes the model that was used to estimate the overall effect annual operations of the proposed project. As stated in that section, the analysis relied on the Regional Input-Output Modeling System (RIMS II) model, which was developed by the U.S. Department of Commerce, Bureau of Economic Analysis. Separate models were developed by the U.S. Department of Commerce for the tri-county region of Delaware, Ulster, and Greene Counties, and for New York State.[10] Using the model and the projected direct permanent jobs, earnings and other direct spending at the Resort, the total annual, recurring economic effects of Belleayre Resort operations were projected.

This part of the Catskill Forest, has undergone a shift in demographics, economy. Recent shifts are not reflected in the "study". For ex: In 2001, we saw a huge influx of second-home owners, greatly changing the availability of local workers. The use of "Air B&B" instead of motel rooms has increased tourism and helped local economy. Retirees and conversion of summer to all-year rounders has also increased. And, most importantly, in 2008, we had the Great Recession, which was a game changer. It is highly suspect that the U.S. Census of 2010 numbers (available now for two years) is not mentioned. This is a great omission considering how it might impact people directly living within the town in which the resort is to be built.

Response: Appendix 3 presented the most current data that was available at the time that the SDEIS was published. The SDEIS was released in April 2011. 2010 Census Summary File 1 data was released between June 16, 2011 and August 25, 2011 (see http://www.census.gov/population/www/cen2010/glance/).

I'd like to re-emphasize also that the "analysis" only directs itself to all the possible wonderful results, and not any of the possible negative results. It makes no reference to the problematic history of this kind of development in small rural communities, that have been experienced in western "ski" resorts. Higher taxes, lack of services, and lack of worker housing within the community are all well documented in towns such as Vail, Telluride, etc. Projections (can't be defined as an "analysis"), made up out of thin air by a firm, on retainer by the developer, imply the worse kind of bias for judging the objective impact that the SEQR process demands. Is it possible to require a study in which projections are contrasted with actualities?

Response: The Socioeconomic Conditions analysis in the SDEIS follows the Final Scoping Document and evaluates whether the existing workforce would be able to meet the expected demand for employees directly generated by the proposed project; estimates the effects of the local housing markets form the potential in-migration of workers from the outside of the study area; and presents the economic benefits that would result from the proposed project.

An analysis of competition with businesses in small rural communities is beyond the scope of this SEQR analysis. As stated in the Final Scoping Document, "SEQR's definition of environment protects the socio-economic elements reflected in existing population patterns and neighborhood and community character. Pure economic or competitive interests, however, fall outside the scope of SEQR and the purview of SEQR review."

[10] The model of the New York State economy was created by the U.S. Department of Commerce in May 2008, and for the tri-county Ulster, Delaware, and Greene County region, in June 2008.

In response to the commenter's concern about a lack of services, all service providers contacted indicated they had the ability to serve the Modified Project, some with mitigation measures in place. Service providers contacted included police, fire, ambulance, hospitals, schools, solid waste, electric and telephone.

In response to the commenter's concern about lack of worker housing, the majority of the year-round and seasonal jobs created by the proposed project are expected to be filled by local residents or people who already reside within a reasonable commuting radius. As stated on page 33 of Appendix 4, of the 771 jobs that would be introduced by the proposed project, up to 250 jobs (or 32 percent) could be in-migrants or new worker/residents within the workforce study area. These 250 employees include approximately 16 to 20 mid- to upper-management positions that would be imported into the region since filling these positions may not be possible due to the specialty or technical nature of these positions. The SDEIS finds that it is likely that the existing housing supply could accommodate the new workers/residents.

Sixth, impact on local hamlet business, on local area ski resorts should be considered. **I511**

Response: The socioeconomic analyses contained in the DEIS and SDEIS substantiate that the resort project will produce benefits to local businesses including increased revenues, the potential for part time businesses to remain open full time, etc. See SDEIS appendix 3.

The impact on local ski resorts was outside the scope of the SDEIS. As stated in the Final Scoping Document, "As an explanatory note to the socio-economic section and its scope, SEQR's definition of environment protects the socio-economic elements reflected in existing population patterns and neighborhood and community character. Pure economic or competitive interests, however, fall outside the scope of SEQR and the purview of SEQR review. Economic information or studies are accordingly included or described herein for the purpose of evaluating socio-economic elements as distinct from competitive effects."

(42) My other concern is economic. Who will go to this resort? The ski industry seems to be dying for lack of snow. If this project fails (which most of this magnitude do), will the taxpayers pick up the tab? Yes! In all likelihood. **I400**

Response: The proposed project was planned based on market research that has indicated that there is demand for this type of project. The Belleayre Resort is situated in the Catskill Mountains which attracts over 2.5 million visitors each year and is in close proximity to over 20 million people making the resort a prime destination. Because of the amenities and types of units offered (i.e. fractional units and timeshare units), the proposed project would attract new visitors to the region and convert current day trippers to overnight or weekend visitors.

Additionally, the Resort, its amenities and the surrounding area and resources will attract visitors, not just for skiing, but for a variety of different reasons including golf, hiking, spa and convention services and other resources available in the region. The existing buildings at the base of the former Highmount Ski Area will be adaptively reused as the Resort's Wilderness Activity Center which will assist resort guests in planning their Forest Preserve (and other outdoor) activities and other historical and cultural features of the surrounding region.

NY State is not funding the private modified resort project and no public money is being spent to build the resort facilities. The lifts and trails at the Highmount Spa Resort will be built by the Applicant, and not the State.

(43) According to the tables presented in Appendix 3 of the Supplemental Draft Environmental Impact Statement ("SDEIS"), the project applicant bases its estimated property taxes on 2007 data from the Town of Shandaken. In 2007, the school tax rate in the Town of Shandaken was 42.06 per thousand dollars. In estimating the taxes to be generated by this project, the applicant assumes that the underlying tax rates for each taxing jurisdiction will remain constant throughout the analysis period (Appendix 3 of the SDElS, at p. 51).

However, in the most recent fiscal year (2012- 1 3), the school tax rate in the Town of Shandaken was 118.60 per thousand dollars, an increase of 1.5 %. As tax rates vary from year to year, the District believes the estimates concerning the property taxes to be generated by this project are inaccurate.

In addition the estimate assume that the equalization rates will remain constant. However, with regard to the Town of Shandaken equalization rates historically over the last 10 years have ranged from twenty-two percent (22%) to thirty-one percent (31%).' "Also, there has been recent discussion that the Town of Shandaken will be conducting a revaluation.

Moreover, the tables indicate that the Highmount Resort will generate property taxes for the ·"Onteora Library" but no property taxes for the District. As the District levies taxes for a number of libraries within its territorial boundaries, no taxes can be levied by it on taxable property that doesn't also generate taxes for the District.

Thus, the District is concerned that the estimates of property tax revenues to be generated by the Modified Belleayre Resort included in the DEIS may not accurately capture what property taxes will be received if this project is approved. **O476**

Response: Comment noted. Estimates of future property tax revenues were calculated based on the scope, which states "Future property tax revenues were estimated based on current tax rates and assessment practices within each of the affected taxing jurisdictions." However, it is noted on page 46 of Appendix 3 that "The valuation and assessment of properties for tax levy purposes is ultimately the responsibility of the local assessors."

In response to the comment that the tables indicate that the Highmount Resort will generate property taxes for the "Onteora Library" but no property taxes for the District, the tables in the DSEIS did not correctly account for the geography of the Onteora Library taxing jurisdiction. There are no taxes generated in the Onteora Library District. The tables have been updated and are shown below and are also included in the errata section of this FEIS.

SDEIS Table 3.9.3-11
Highmount Resort – Estimated Future Tax Revenues (Ulster County)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Ulster County General Tax	$47,381	$108,976	$119,720	$130,176	$154,524	$190,348	$214,344	$236,492	$256,741	$289,732	$313,719
Shandaken Town General Tax	$26,175	$60,203	$66,139	$71,915	$85,366	$105,157	$118,413	$130,649	$141,835	$160,061	$173,312
Shandaken Town Highway Tax	$24,802	$57,044	$62,668	$68,141	$80,886	$99,638	$112,199	$123,793	$134,392	$151,661	$164,217
Highmount Fire	$23,013	$50,630	$50,785	$50,785	$57,533	$69,180	$73,917	$77,283	$79,390	$87,475	$90,378
Pine Hill Fire	$1,624	$3,572	$3,583	$3,583	$4,059	$4,881	$5,215	$5,453	$5,601	$6,172	$6,377
Pine Hill Light	$319	$733	$806	$876	$1,040	$1,281	$1,442	$1,591	$1,728	$1,950	$2,111
Pine Hill Water	$357	$822	$903	$982	$1,165	$1,436	$1,617	$1,784	$1,936	$2,185	$2,366
Onteora Library	~~$21~~ $0	~~$49~~ $0	~~$54~~ $0	~~$59~~ $0	~~$70~~ $0	~~$86~~ $0	~~$97~~ $0	~~$107~~ $0	~~$116~~ $0	~~$131~~ $0	~~$142~~ $0
Onteora Central School	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Margaretville School	$235,984	$519,165	$589,960	$589,960	$659,153	$778,581	$827,159	$861,674	$883,279	$966,182	$995,953
Total	**~~$359,677~~ $359,655**	**~~$801,194~~ $801,145**	**~~$894,618~~ $894,564**	**~~$916,477~~ $916,418**	**~~$1,043,796~~ $1,043,726**	**~~$1,250,588~~ $1,250,502**	**~~$1,354,404~~ $1,354,307**	**~~$1,438,827~~ $1,438,720**	**~~$1,505,020~~ $1,504,903**	**~~$1,665,548~~ $1,665,417**	**~~$1,748,575~~ $1,748,433**

Notes: Estimated tax revenues based on fiscal year 2007 tax bills, reflecting non-escalated (e.g., conservative) tax rates and assessments, and final 2006 equalization rates. All amounts are shown in non-escalated 2008 dollars.

SDEIS Table 3.9.3-11 (continued)
Highmount Resort – Estimated Future Tax Revenues (Ulster County)

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Ulster County General Tax	$327,588	$335,771	$343,923	$352,074	$358,837	$363,201	$366,590	$369,286	$371,548	$372,146
Shandaken Town General Tax	$180,974	$185,495	$189,998	$194,501	$198,237	$200,648	$202,521	$204,010	$205,260	$205,590
Shandaken Town Highway Tax	$171,477	$175,761	$180,028	$184,295	$187,835	$190,119	$191,893	$193,304	$194,489	$194,802
Highmount Fire	$90,378	$90,378	$90,378	$90,378	$90,378	$90,378	$90,378	$90,378	$90,378	$90,378
Pine Hill Fire	$6,377	$6,377	$6,377	$6,377	$6,377	$6,377	$6,377	$6,377	$6,377	$6,377
Pine Hill Light	$2,205	$2,260	$2,314	$2,369	$2,415	$2,444	$2,467	$2,485	$2,500	$2,504
Pine Hill Water	$2,471	$2,532	$2,594	$2,655	$2,706	$2,739	$2,765	$2,785	$2,802	$2,807
Onteora Library	~~$149~~ $0	~~$152~~ $0	~~$156~~ $0	~~$160~~ $0	~~$163~~ $0	~~$165~~ $0	~~$166~~ $0	~~$168~~ $0	~~$169~~ $0	~~$169~~ $0
Onteora Central School	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Margaretville School	$995,953	$995,953	$995,953	$995,953	$995,953	$995,953	$995,953	$995,953	$995,953	$995,953
Total	**~~$1,777,570~~ $1,777,422**	**~~$1,794,679~~ $1,794,527**	**~~$1,811,721~~ $1,811,565**	**~~$1,828,763~~ $1,828,603**	**~~$1,842,900~~ $1,842,737**	**~~$1,852,024~~ $1,851,859**	**~~$1,859,109~~ $1,858,943**	**~~$1,864,746~~ $1,864,578**	**~~$1,869,475~~ $1,869,307**	**~~$1,870,725~~ $1,870,556**

Notes: see above

SDEIS Table 3.9.3-12
Highmount Resort – Estimated Future Tax Revenues (Delaware County)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Delaware County General	$1,545	$3,554	$24,467	$26,864	$29,261	$31,658	$34,055	$36,453	$38,850	$41,247	$43,644
Middletown Town	$690	$1,587	$10,925	$11,996	$13,066	$14,137	$15,207	$16,278	$17,348	$18,418	$19,489
Highway Outside Village	$429	$987	$6,797	$7,463	$8,129	$8,795	$9,461	$10,127	$10,793	$11,459	$12,125
General Outside Village	$29	$66	$452	$496	$541	$585	$629	$674	$718	$762	$807
Middletown FD #1	$225	$495	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490
Margaretville School	$5,318	$11,699	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295
Total	**$8,236**	**$18,389**	**$59,426**	**$63,604**	**$67,782**	**$71,959**	**$76,137**	**$80,315**	**$84,493**	**$88,671**	**$92,849**
Notes: see above											

SDEIS Table 3.9.3-12 (continued)
Highmount Resort– Estimated Future Tax Revenues (Delaware County)

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Delaware County General	$45,887	$47,944	$47,944	$47,944	$47,944	$47,944	$47,944	$47,944	$47,944	$47,944
Middletown Town	$20,490	$21,409	$21,409	$21,409	$21,409	$21,409	$21,409	$21,409	$21,409	$21,409
Highway Outside Village	$12,748	$13,319	$13,319	$13,319	$13,319	$13,319	$13,319	$13,319	$13,319	$13,319
General Outside Village	$848	$886	$886	$886	$886	$886	$886	$886	$886	$886
Middletown FD #1	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490	$3,490
Margaretville School	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295	$13,295
Total	**$96,758**	**$100,343**	**$100,343**	**$100,343**	**$100,343**	**$100,343**	**$100,343**	**$100,343**	**$100,343**	**$100,343**
Notes: see above										

SDEIS Table 3.9.3-13
Wildacres Resort – Estimated Future Tax Revenues (Ulster County)

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Ulster County General Tax	$50,362	$115,832	$155,096	$194,577	$216,572	$237,119	$258,284	$276,998	$294,839
Shandaken Town General Tax	$27,822	$63,990	$85,682	$107,493	$119,644	$130,995	$142,687	$153,026	$162,882
Shandaken Town Highway Tax	$26,362	$60,633	$81,186	$101,852	$113,365	$124,121	$135,200	$144,996	$154,335
Highmount Fire	$24,461	$53,815	$67,504	$73,465	$76,155	$77,873	$79,719	$80,191	$80,191
Pine Hill Fire	$1,726	$3,797	$4,763	$5,183	$5,373	$5,494	$5,625	$5,658	$5,658
Pine Hill Light	$339	$779	$1,044	$1,309	$1,457	$1,596	$1,738	$1,864	$1,984
Pine Hill Water	$380	$874	$1,170	$1,468	$1,633	$1,788	$1,948	$2,089	$2,224
Onteora Library	~~$23~~ $68	~~$53~~ $150	~~$70~~ $201	~~$88~~ $221	~~$98~~ $235	~~$108~~ $241	~~$117~~ $252	~~$126~~ $255	~~$134~~ $255
Onteora Central School	$115,312	$253,685	$339,574	$373,852	$398,017	$408,191	$427,073	$432,356	$432,356
Margaretville School	$145,357	$319,786	$381,603	$411,369	$416,853	$425,163	$426,825	$426,825	$426,825
Total	**~~$392,143~~ $392,188**	**~~$873,243~~ $873,341**	**~~$1,117,691~~ $1,117,821**	**~~$1,270,657~~ $1,270,789**	**~~$1,349,169~~ $1,349,306**	**~~$1,412,448~~ $1,412,582**	**~~$1,479,217~~ $1,479,352**	**~~$1,524,128~~ $1,524,258**	**~~$1,561,427~~ $1,561,549**

Notes: see above

SDEIS Table 3.9.3-13 (continued)
Wildacres Resort – Estimated Future Tax Revenues (Ulster County)

	2022	2023	2024	2025	2026	2027	2028	2029	2030
Ulster County General Tax	$312,680	$330,521	$343,326	$350,087	$354,030	$355,415	$356,246	$356,723	$356,820
Shandaken Town General Tax	$172,738	$182,595	$189,669	$193,404	$195,582	$196,347	$196,806	$197,070	$197,123
Shandaken Town Highway Tax	$163,674	$173,013	$179,716	$183,255	$185,319	$186,044	$186,479	$186,728	$186,779
Highmount Fire	$80,191	$80,191	$80,191	$80,191	$80,191	$80,191	$80,191	$80,191	$80,191
Pine Hill Fire	$5,658	$5,658	$5,658	$5,658	$5,658	$5,658	$5,658	$5,658	$5,658
Pine Hill Light	$2,104	$2,224	$2,310	$2,356	$2,382	$2,392	$2,397	$2,401	$2,401
Pine Hill Water	$2,358	$2,493	$2,589	$2,640	$2,670	$2,681	$2,687	$2,691	$2,691
Onteora Library	~~$142~~ $255	~~$150~~ $255	~~$156~~ $255	~~$159~~ $255	~~$161~~ $255	~~$161~~ $255	~~$162~~ $255	~~$162~~ $255	~~$162~~ $255
Onteora Central School	$432,356	$432,356	$432,356	$432,356	$432,356	$432,356	$432,356	$432,356	$432,356
Margaretville School	$426,825	$426,825	$426,825	$426,825	$426,825	$426,825	$426,825	$426,825	$426,825
Total	**~~$1,598,726~~ $1,598,839**	**~~$1,636,025~~ $1,636,130**	**~~$1,662,795~~ $1,662,895**	**~~$1,676,931~~ $1,677,027**	**~~$1,685,174~~ $1,685,269**	**~~$1,688,069~~ $1,688,163**	**~~$1,689,806~~ $1,689,900**	**~~$1,690,803~~ $1,690,897**	**~~$1,691,006~~ $1,691,100**
Notes: see above									

SDEIS Table 3.9.3-14

Wildacres Resort – Estimated Future Tax Revenues (Delaware County)

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Delaware County General	$0	$0	$9,650	$14,616	$21,656	$33,778	$42,218	$46,822	$50,432
Middletown Town	$0	$0	$4,309	$6,527	$9,670	$15,083	$18,852	$20,908	$22,520
Highway Outside Village	$0	$0	$2,681	$4,060	$6,016	$9,384	$11,728	$13,007	$14,010
General Outside Village	$0	$0	$178	$270	$400	$624	$780	$865	$932
Middletown FD #1	$0	$0	$1,405	$1,521	$2,348	$3,831	$4,630	$4,791	$4,791
Margaretville School	$0	$0	$33,208	$35,962	$55,489	$90,554	$109,442	$113,238	$113,238
Total	**$0**	**$0**	**$51,432**	**$62,958**	**$95,579**	**$153,254**	**$187,650**	**$199,631**	**$205,924**

Notes: see above

SDEIS Table 3.9.3-14 (continued)
Wildacres Resort – Estimated Future Tax Revenues (Delaware County)

	2022	2023	2024	2025	2026	2027	2028	2029	2030
Delaware County General	$54,043	$57,654	$61,264	$64,875	$67,521	$69,766	$71,444	$72,104	$72,214
Middletown Town	$24,132	$25,745	$27,357	$28,969	$30,151	$31,154	$31,903	$32,197	$32,246
Highway Outside Village	$15,013	$16,017	$17,020	$18,023	$18,758	$19,381	$19,848	$20,031	$20,061
General Outside Village	$999	$1,065	$1,132	$1,199	$1,248	$1,289	$1,320	$1,333	$1,335
Middletown FD #1	$4,791	$4,791	$4,791	$4,791	$4,791	$4,791	$4,791	$4,791	$4,791
Margaretville School	$113,238	$113,238	$113,238	$113,238	$113,238	$113,238	$113,238	$113,238	$113,238
Total	**$212,217**	**$218,509**	**$224,802**	**$231,095**	**$235,706**	**$239,620**	**$242,544**	**$243,693**	**$243,886**
Notes: see above									

(44) What exactly will the state be liable for before, during and after the project if approved? Will new sewage treatment plants be necessary? Will new traffic lights be necessary? Will additional road improvements be needed? What about drainage along the route and where the resort is planned? What about lighting? **I225**

Response: As indicated in the SDEIS; a new sewage treatment plant will not be required since adequate capacity to serve the project exists at the Pine Hill WWTP, a new traffic light is proposed for the Route 28/49A intersection the cost of which will be shared between the Applicant for the modified resort and NY State as per the AIP, road improvements along County Route 49A described in the SDEIS will be paid for by the Applicant, and all drainage and lighting associated with the modified resort will be paid for by the Applicant.

(45) Is review of the application for the private project construction and operation by regulatory agencies being paid for by the applicant or by the taxpaying public?

If application fees do not cover review expenses paid for with public monies, why not and when? **O3635**

Response: The Applicant provided significant funds to pay for consultants hired by DEC to review certain technical portions of the SDEIS. DEC provided oversight of this work, the Applicant was not involved. The review work being undertaken directly by DEC is not being paid for by the Applicant.

3.10 Community Services

(1) In reading the SDEIS, we would like to know where the waste management plan is found. If these two resorts are run with any degree of success, it will mean an astronomical increased trash/garbage load to the county landfills.

Have there been any studies done showing the ability of these two landfills having the capacity and ability to absorb many more tons of waste on a regular basis?

The increased number of large refuse trucks on our rural back roads and on the State roads presents a safety and infrastructure concern as well. **I534**

(1a) How long will it take for our landfills to be overburdened with these additional wastes, due to the massive amounts of garbage that will be produced by this development? Our current landfills were designed based upon the local town's populations with only a standard amount of growth. **I3506**

(1b) How about Garbage. **I422**

Response: SDEIS appendix 27 contains correspondence from the Ulster County Resource Recovery Agency stating that they have capacity to serve the project. Refuse trucks will be traveling on State Highway 28 and County Route 49A.

(2) I am concerned about fire breaking out in the huge hotels of the full build resort plan. They have deep underground garages and involve very unusual designs, over 10 stories tall from bottom to top. Our local fire departments have never had to deal with giant complex structures like this. I am worried for my volunteer firemen friends and neighbors, and the safety of the guests and workers. **I302D, H32**

(2a) Volunteer fire departments are inadequate for the large complex buildings proposed, including underground parking garages. A fully staffed professional fire department is required despite the local volunteer fire department's assurances that they are able to handle any emergency. **I3588**

(2b) This is a very realistic concern. There have been at least 5 suspicious fires in developments Mr. Gitter is associated with, and at least 2 have burned completely, even thought they had state of the art sprinkler systems. We would need a big city fire department to even approach a fire in one of those buildings. Yes, a hundred years ago there were some very large hotels around here. They have mostly all burned down. **I302.**

Response: Chief Lowell Smith of the Pine Hill Fire Company, the primary responder for the Modified Project, has stated that, as currently equipped and trained, the Department is not capable of serving the Modified Project. However, Chief Smith states that with additional equipment and training, the Department would be capable of serving the needs of the Modified Project. The Applicant has agreed to provide such funding that is not addressed by any significant increases in local fire tax revenues applicable to the Resort for the equipment and training that the Pine Hill Fire Company requires to serve the Modified Project. In addition, all necessary Building Codes (which for the main hotel buildings fall under Assembly Group A2 & A3, Residential Group R2 and Storage Group S2 Low Hazard) will be strictly adhered to, especially those relative to Health and Life Safety. Type I building construction, automatic sprinkler systems, smoke control, fire detection systems, and standby power will all be included in the final designs. The design of the buildings will also meet code requirements for exit access travel distance, fire separation, smoke proof fire stair enclosures with areas of refuge, means of egress continuity, exit discharge directly to grade, exit sign illumination, and panic & fire exit hardware regulations, just to name a few.

(3) Our police will not be large enough to handle all of the coverage that something this big will cause. **I228**

Response: The Applicant reached out to five police agencies that serve the Modified Project: New York State Police Troops C and F; Ulster and Delaware County Sheriffs; and, the Shandaken Police Department. All five agencies responded that they have the resources necessary to serve the Modified Project. The Shandaken Police Department expressed concerns regarding traffic management during construction of the Modified Project, during which time heavy equipment may be deployed, and requested compensation for the extra expenses incurred during that time. The Applicant has agreed to contribute to the Town a sum equal to the salary and benefits of one additional police officer for a period not to exceed four years to mitigate or completely avoid any fiscal impact to the town.

(4) All of the police officials respond that they feel confident that the security at the proposed double resort complex will be adequately handled by the in-house security presence. (As we don't know who will be managing these resorts, there is no fire/safety security responsibility put anywhere in writing.) I'm sure that these law enforcement departments would also respond, but it seem incredible that the fact that many hundreds more people will be on the mountain at these resorts at any given time and that these officers don't seemed concerned.

We do not feel safe, nor secure, knowing that our local police feel that there's no cause for concern as far as crime or emergency response is concerned because they are confident that the resort complex's security personnel will be on hand to address the issues. The issue of increased emergency response will have a negative effect on the local residents of surrounding villages, towns and hills. With the forecast of many hundreds of people in these resorts, the fact is obvious that many more emergencies will occur and the appropriate trained officials must be available at all times.

Response: As discussed in the SDEIS, the Applicant has indicated that it expects to have internal resort security operating daily on a full-time basis, and expects to hire individuals with first aid or emergency medical training to provide a first response to any individuals requiring medical assistance. This level of staffing would reduce or minimize calls to the Shandaken Ambulance Service — similar to operations of the Belleayre Mountain Ski Center (BMSC). While the overall number of requests for additional assistance would increase over the full year, the demand on a monthly basis would not be expected to be greater than what is experienced during ski season when BMSC is active.

In addition, the Applicant reached out to five police agencies that serve the Modified Project: New York State Police Troops C and F; Ulster and Delaware County Sheriffs; and, the Shandaken Police Department. All five agencies responded that they have the resources necessary to serve the Modified Project. As noted above, the Applicant has agreed to contribute funding to the Shandaken Police Department to cover additional traffic management anticipated during the construction period.

Any additional demand for equipment or services experienced by the Shandaken Ambulance Service would likely be covered by the significant increase in tax revenues generated by the Modified Project.

Chief Smith writes that Pine Hill F.D. responds to approximately 40 calls a YEAR now...how many calls per year will there be with hundreds more people in the fire district throughout the year?

Response: The Modified Project would have to be designed and constructed with fire detection and suppression systems that meet the New York State Building and Fire Codes. The Applicant has indicated that it will in at least some instances exceed code requirements. The Applicant has also committed itself to have Project staff monitor these systems to ensure proper operations and maintenance and would respond to any indications of trouble to minimize the need for additional support. According to the Applicant, Project staff would work collaboratively with the Pine Hill

Fire Company to ensure all required inspections are performed and all systems and protocol for assistance from Pine Hill Fire Company are followed.

Chief Lowell Smith of the Pine Hill Fire Company, the primary responder for the Modified Project, has stated that, as currently equipped and trained, the Department is not capable of serving the Modified Project. However, Chief Smith states that with additional equipment and training, the Department would be capable of serving the needs of the Modified Project. The Applicant has agreed to provide funding for the equipment and training that the Pine Hill Fire Company requires to serve the Modified Project that are not addressed by the significant increase in local tax revenues.

We greatly fear the threat of wildfire in these mountains as they are a disaster just waiting to happen as they have not been maintained for decades and the forest floor is covered by flammable detritus. Once careless person tossing a cigarette on the ground or a camper not totally extinguishing all coals from an outside fire could have the devastating affect that has been occurring throughout the western area of our country. The local fire departments are manned by dedicated volunteers and due to the nature of a volunteer fire department, response time takes much longer than in an urban town.

Last, who will pay for the additional equipment and training that Pine Hill's Fire Chief, Lowell Smith requests in his response? The taxpayer's of Shandaken and the Town of Middletown are already overwhelmed with property taxes...and, if the resort gets a moratorium on property taxes, it will all fall onto the shoulders of the local residents.

The personal safety of not only the employees and guests of the resorts needs to be guaranteed as well as the continued service to local taxpayers who should not be held hostage to pay for a private organization's police and fire protection abilities. **I3117**

Response: Responses to any incident involving fire (either within the structure or in the forested areas on or adjacent to the site) would be from the Pine Hill Fire Company. The Applicant has agreed to provide funding for the equipment and training that the Pine Hill Fire Company requires to serve the Modified Project that are not addressed by the significant increase in local tax revenues. No additional equipment would be necessary to fight forest fires on or adjacent to the Project site. Any fires located in areas immediately surrounding the Modified Project could be controlled with on-site water, including the site's irrigation system.

All service providers contacted indicated they had the ability to serve the Modified Project, some with mitigation measures in place. The Applicant will provide funding for manpower and equipment to the Shandaken Police Department, the Pine Hill Fire Department and the Shandaken Ambulance Squad to mitigate the effects of increased demands for the services of these providers as a result of the Modified Project that are not addressed by the significant increase in local tax revenues. No mitigation measures are required for any of the other service providers.

(5) SDEIS Re - Services Appendix #27:

Page 22/26 Susan McIntyre, Solid Waste Director for Delaware County writes: ".....strongly recommend Belleayre Resort recycle in some reasonable manner."

Page 23/25 states: "....highly unlikely for the resorts to separate solid waste and recyclable materials in order to take advantage of County landfill."

Response: The 2011 correspondence cited above was prior to the preparation of SDEIS section 2.8.12(C), Recycling, which includes a commitment to a resort-wide recyclable materials management plan.

Page 26/26 Shows no response from Margaretville Telephone Co. to the request for information of service provisions. **I213**

Response; On the bottom of page 26 of 26 there is a signed affirmation statement by the company's General Manager that they have the capacity to serve the project.

(6) In reading the SDEIS and the Service Providers Correspondence section, we find a preponderance of the same "hope" for safety/security responsibility expressed in each response, with the exception of Lowell Smith, Fire Chief of Pine Hill F.D. **I3117**

Response: All service providers contacted indicated they had the ability to serve the Modified Project, some with mitigation measures in place. Chief Smith expressed that additional equipment and training would be necessary to ensure proper fire protection for the Modified Project.

(7) Is there now sufficient equipment and manpower to respond to multiple incidents within the district inclusive of the proposed resort without compromising response time for fire, police, and/or medical in your existing service district? If not, please quantify such things as cost to add a fire truck, cost to add an emergency medical team, cost to add an ambulance to the existing district so that response time is maintained for the rest of the district when equipment and/or manpower is needed at the resort. A half minute delay of emergency response for a person suffering a heart attack or for a victim of a car crash can be the difference between life and death.

If streets are private within the planned resort; will your state police be allowed access for patrol and/or speed enforcement? **I2131**

Response: The Applicant will provide funding for personnel and equipment to the Shandaken Police Department, the Pine Hill Fire Department and the Shandaken Ambulance Squad to mitigate the effects of increased demands for the services of these providers as a result of the Modified Project that are not addressed by the significant increase in local tax revenues. No mitigation measures are required for any of the other service providers.

The State Police will be allowed access to the property to respond to any emergency or to conduct any lawful investigation.

(8) The proposed resort is far too large for this area. It would overwhelm existing services in communities. **O3547**

Response: All service providers contacted indicated they had the ability to serve the Modified Project, some with mitigation measures in place. Service providers contacted included police, fire, ambulance, hospitals, schools, solid waste, electric and telephone.

(9) The major impact on our infra-structure during construction will be devastating; and the tax payers will pay for it. Our schools will be over-loaded by construction worker's children, and the tax payers will pay for it. **I3510**

Response: As stated in Appendix 27, the Superintendents of the Margaretville and Onteora School Districts have stated that their respective districts can provide educational services to the additional children that are projected as a part of the Modified Project. It is not anticipated that construction workers at the site would enroll their children in either school district. In addition, by 2031, when construction is completed and when all business investment tax exemptions have expired, there will be an estimated annual property tax revenue increase of $418,306 for the Onteora Central School District and $1,400,446 for the Margaretville School District from the Modified Project.

(10) Thirdly, there is haphazard wish-full projection about the actual needs for community services. The developer dismisses real demand for community services, such as volunteer firefighters, and ambulance. How can this oversight be re-addressed? **I511**

Response: The estimated increase in demand for community services was developed in consultation with the community service providers for the Modified Project. All service providers contacted indicated they had the ability to serve the Modified Project, some with mitigation measures in place. Service providers contacted included police, fire, ambulance, hospitals, schools, solid waste, electric and telephone.

(11) Will the state be paying for the electricity lines needed on the perimeter of the project? Phone lines? Wifi?

Response: Based on the responses provide by the service providers in SDEIS appendix 27, no such additional electrical lines or phone lines will be needed to serve the modified resort project. Provision of Wifi within the resort will be the responsibility of the resort and not the State.

(12) LITTER: The litter along the way is sickening now from tourists and even some locals. We'll need more cleanup employees just for that.

Response: Neither NYSDOT (Route 28) nor Ulster County (CR 49A) have expressed any concerns regarding litter along these roadways in regards to the proposed modified project.

(13) This project (Crossroads) will only benefit those investors who are pushing to see it through regardless of the lack of existing utilities and access to the site-regardless of the deleterious impact it will have on the county's residents. **I225**

Response: Chapter 3.9 of the SDEIS summarizes the potential economic benefits of the Modified Project, including economic and fiscal benefits to the region and local community. The Modified Project will not have deleterious effects on existing utilities or access along existing roadways.

3.11 Global Climate Change and Carbon Footprint

(1) Due to the lack of a transportation study that examines the traffic impacts from the year-round activities associated with this project (see comments 1-3), the greenhouse gas emission (GHG) analysis for the Belleayre Resort and the Cumulative Impacts Analysis is flawed and incomplete. Appendix 28,Global Climate Change and Carbon Footprint Assessment, identifies the same shortcoming, stating "Other typical indirect emissions such as those associated with visitor travel to and from the Belleayre Resort were not included in the quantitative analysis because of the lack of sufficient input data or reliable methods to estimate this information based on other generic data" (page 2-5) because "The total number of annual visitor trips and an annual vehicle miles traveled estimate for the resort has not been developed" (page 2-8). It should be noted that in the UMP DEIS, visitor and commuting trips account for about two-thirds of all the indirect greenhouse gas emissions. Since this critical element of a complete greenhouse gas analysis is missing, any conclusions or findings made relative to greenhouse gas emissions in these documents is inaccurate and incomplete. Appendix 28, Table 2-6, shows that, once operational the project will exceed the 25,000 metric tons per year reporting threshold and Prevention of Significant Deterioration requirements that energy generating facilities must comply with. If indirect GHG emissions were to be included, the threshold would be exceeded earlier in the project schedule and would continue at a much higher level once the project is fully operational. 22.

It should be noted that Attachment 8.1of Appendix 24, the Air Quality Study, shows that the $C0_2$ emissions from the propane heating sources would exceed the 25,000 metric tons per year reporting threshold at nearly 33,000 tons per year while Appendix 28 indicates combustion emissions at about half that level assuming natural gas combustion. This seeming discrepancy of fuel source should be addressed.

There are numerous other defects in the assessment of air pollution impacts, including greenhouse gas emissions.

Climate change will increase the levels of stormwater runoff and impacts to culverts and roadways. This was not taken into account. **O3635**

Response: As the comment states, data are not available to estimate the amount of GHG that would be emitted by vehicles associated with visitors to and from the Crossroads Resort. One of the reasons this value was not estimated was that the emissions from the baseline and from the no action alternative are not known. For example, currently, and in the future, people could be traveling farther to other ski resorts or other activities. The net change from the proposed

Crossroads Resort at Belleayre cannot be assessed. It is difficult to identify the class of persons who would otherwise be traveling to another resort versus the people who would not be traveling but for the existence of the resort. Furthermore, emissions in the future from all mobile sources are likely to go down, as the fleet of vehicles becomes dominated by newer, more fuel efficient vehicles. The modified project mitigates for greenhouse gas emissions through the construction of buildings that would qualify for Leadership in Energy and Environmental Design or LEED certification (for further information on what this certification means, see http://www.dec.ny.gov/energy/83937.html).

Section 1.2 of Appendix 28 of the SDEIS does acknowledge that runoff could increase in the future from more intense summertime storms. Storm drainage infrastructure is designed with a buffer to accommodate high intensity storms.

The comment that refers to mandatory reporting under the Prevention of Significant Deterioration (PSD) regulations is mixing requirements for power plants and other industrial major emission sources with the emissions from diffuse sources like the proposed Crossroads Resort. There is no requirement for reporting of GHG emissions to the USEPA from a development like Crossroads that is not classified as a major source.

Because the total greenhouse gas emissions, estimated for the project, are below 25,000 tons per year, EPA does not require inventory reporting of greenhouse gas emissions or control technologies.

The NYSDEC GHG protocols require an enumeration of the GHGs, a consideration of alternatives, and mitigation requirements. The preferred alternative would generate lower emissions than the other project alternatives, but more than the no action alternative, as reported in Appendix 28 of the SDEIS. The mitigation measures described in the SDEIS (Appendix 28) would reduce the emissions reported here and in the SDEIS, making this analysis conservative. As the comment reports, the proposed emissions of CO_2e from heating sources during operations should be reported as 32,808 tpy based on propane as the heating fuel. The value of 15,725 tpy of CO_2e disclosed in Table 2-3 of Appendix 28 in the DGEIS for all heating sources was based on natural gas and is not applicable to propane. This represents an increase in reportable emissions of 17,083 tpy. This would raise the total emissions from all sources (heating, hot water, vehicles, etc.), as reported in Table 2-6 of the DGEIS, from 25,053 tpy CO_2e to 42,136 tpy CO_2e. This is still below the major source threshold of 100,000 tpy CO_2e. The impacts would also be reduced by the proposed mitigation, but it is not feasible to quantify those reductions. Although natural gas would generate lower CO_2e emissions, it was determined that natural gas is not an alternative, as the closest natural gas pipeline is 35 miles away and the utilities have no plans to extend a line toward the site.

See SDEIS Appendix 28, Section 4, Potential Mitigation Measures.

(2) The total amount of greenhouse gases that are claimed will be produced is a significantly lower number than expected and documented with other developments of the same magnitude.

During my brief three-minute talk, I spoke of the well over 73,000,000 pounds per year of toxic poisonous greenhouse gas that is stated in the DEIS for Crossroads site only, to be produced by the completed project. Recalculating, I believe this figure will be far greater; another area that I did not include into this recalculation was that there is one ton of CO2 produced for every ton of cement produced on this project. I did not see this calculation included in the impact statement, either. **I3506**

Response: Standard protocols for assessment as promulgated by USEPA and NYSDEC establish boundaries for the quantification of GHG emissions that do not include life-cycle emissions of building materials. The quantification does, however, include the emissions associated with the delivery of these materials.

(3) How will it affect and be affected by the change in the climate? **I3591**

Response: Impacts of climate change are addressed in Section 1.2 of Appendix 28.

3.12 Air Quality

(1) Since the SDEIS for this project did not consider regional transportation impacts or conduct a regional traffic study, the air quality study is deficient. Appendix 24 of the SDEIS describes the mobile source air quality analysis that was performed for this project. It concludes that a mesoscale analysis was not necessary because the difference in vehicle miles travelled (VMT) among the alternatives did not meet the 10% difference criterion, as described in the New York State Department of Transportation (NYSDOT) Air Quality Analysis Procedures. However, as indicated above (comments 1-3), when all features of the Belleayre Resort and ski area expansion are considered, the increase in traffic may be substantial and may well meet the 10% criterion. A regional transportation study would conclusively determine whether this criterion is met and should, therefore, be performed.

Response: The analysis completed for the modified project was defined in the Final Scoping Document, which was publicly noticed, and did not include a regional traffic study. As noted in the Air Quality Assessment (appendix 24 of the SDEIS), the criteria for conducting a mesoscale air quality assessment are not met.

The additional travel in the summer resulting from this project, and the associated VOC and NO, emissions, may be sufficient to cause this area to fall into non-attainment of the ozone ambient air quality standard, especially if USEPA further tightens the ozone air quality standard, as it is expected to do soon (Integrated Review Plan For The Ozone National Ambient Air Quality Standards, USEPA, April, 2011). The Air Quality Study for the UMP considered this issue. Section 4.8 of the UMP DEIS includes a mesoscale analysis. This analysis was based on the on the ski center expansion only and looked at emissions along the Route 28 corridor. Since this analysis only considered the ski center expansion, it looked at the Route 28 corridor only since the expansion would primarily affect this road way. It also concluded that the emissions associated with ski center expansion would be primarily in the winter and would not significantly affect summer time emissions of VOC and NO•. However, it is appropriate that the Belleayre Resort look at the effect of the combined projects on summer time emissions. Due to the year-round nature of the project and its potential impact on regional travel (as explained above in comments 1-3),the scale of the analysis should be expanded to include those roadways to and from the New York City Metropolitan area that would be affected by the operation of the Belleayre Resort. It is particularly important that the SDEIS should include this analysis in order to assess the potential of the Resort's additional regional travel, and the resultant emissions, to cause Ulster County and/or nearby counties to become non-attainment for ozone.

Response: Ulster County is identified as attainment for ozone. The most recent air quality data at Belleayre Mountain (2012) shows the 4th Highest Daily Maximum 8-Hour Average over the latest three years is 0.069 parts per million (ppm) which is less than the 0.075ppm Ambient Air Quality Standard. As noted in the Air Quality Assessment, the criteria for a mesoscale analysis are not met and therefore the analysis is not required nor is it identified in the Final Scoping Document.

Ulster County is on the verge of exceeding the ozone National Ambient Air Quality Standard (NAAQS) and may exceed the standard in the near future. In fact, USEPA proposed to tighten the standard to between 60 and 70 parts per billion (ppb) in January, 2010. Air quality monitoring data from NYSDEC's ozone monitor located at Belleayre Mountain indicates that the County would likely be designated as non-attainment for the ozone NAAQS under such a standard. Using the fourth highest daily maximum 8-hour average during the last three years (through2011), which determines whether an area is in non-attainment, Belleayre Mountain's value was.069 ppb. For years 2008-2010, 2007-2009 and 2006-2008, the values were .068 ppb, .069 ppb, and .072 ppb, respectively. (http: //www.dec. ny. gov/chemical/29311.html). Although USEPA withdrew that proposal under pressure, it is expected to begin review of the standard this year and is expected to tighten the standard from the current value of 75 ppb. At that point, the monitoring data will be reviewed again for a possible non-attainment designation. The consequences of a non-attainment designation are substantial and can affect economic development in the county and the larger region. For this reason it is very important that all emission sources be understood and quantified. The potential emissions resulting from the proposed Belleayre project can be determined from a mesoscale analysis that includes all aspects of the project. From this information NYSDEC can evaluate the potential of Ulster County to exceed the ozone standard and to what extent this project may contribute.

Response: Ulster County is still identified as attainment for ozone. The most recent air quality data at Belleayre Mountain (2012) shows the 4th Highest Daily Maximum 8-Hour Average over the latest three years is 0.069 parts per million (ppm) which is less than the 0.075ppm Ambient Air Quality Standard. As noted in the Air Quality Assessment, the criteria for a mesoscale analysis are not met and therefore the analysis is not required nor is it identified in the Final Scoping Document

The mobile source air quality study used models that are obsolete and no longer supported by air quality agencies. Appendix 24 of the SDEIS indicates that the analysis used MOBILE 6.2 for the emissions component and CAL3QHC for the dispersion component of the analysis. Both models have been replaced. USEPA has replaced MOBILE 6.2 with MOVES to estimate emissions and has replaced CAL3QHC with CAL3QHCR or AERMOD for dispersion analysis (http://www.epa.govIotaq/stateresources/transconfIprojectleve1-hotspot.htm#disperse-models). FHWA refers to EPA guidance on model selection through its website (http://www.fhwa.dot.gov/environment/air_quality/). USEPA requires these models be used on analyses performed in non-attainment areas. Although Ulster County is not a non-attainment area, these models are the most up-to-date models and contain features not found in the models they are replacing. The existing analysis should be redone with these newer models to assure that air quality is protected in the project area and that the local citizens and visitors to the area are not exposed to harmful levels of air pollution.

Response: The updates to the Air Quality procedures were initiated in December 2012. The Air Quality Assessment was completed in February 2011 and based on a scoping document that was approved in 2008.

The use of Mobile 6.2 was appropriate because the modeling for this project was completed prior to the implementation of MOVES. However, regardless of the model utilized, it is reasonable to conclude that since the project is regionally insignificant from an emissions and vehicle population perspective based on an assessment of emissions from just Ulster County, the project would not contribute to a violation of ambient air quality standards.

Given the complexities mentioned above and the need to complete a timely review of modeling data for this project, the use of Mobile 6.2 was the appropriate model to use for the Air Quality Assessment. Air Quality Assessment follows the procedures set forth in the "New York State Department of Transportation (NYSDOT) Air Quality Analysis Procedure: Project Environmental Guidelines," as identified in the final scoping document. Specifically, section 8 "Air Quality Models" in NYSDOT's "The Environmental Manual" only requires the Motor Vehicle Emission Simulator (MOVES) model for all quantitative project level microscale/hot-spot analyses in carbon monoxide and particulate matter in nonattainment and maintenance areas beginning on or after December 20, 2012. Prior to December 20, 2012 project staff and consultants could continue to use the Mobile 6.2 model for all carbon monoxide microscale/hot-spot analyses. This guidance is consistent with the Environmental Protection Agency's (EPA's) February 27, 2012 final rule, which extended the grace period for the use of MOVES for regional conformity to March 2, 2013. In that rulemaking, although the model was released in March of 2010, EPA provided additional transition time for using MOVES due to the significant software, operational and technical differences between MOVES and the previous version of the mobile model, Mobile 6.2. The modeling for the Modified Belleayre Resort at Catskill Park was completed in February of 2011 based on a scoping document approved in 2008. The updates to the Air Quality procedures were initiated in December 2012, which is within the window of time where using the Mobile 6.2 Model was a legal and acceptable practice.

Furthermore, updating to a newer model would also require the use of the latest planning assumptions (i.e., age distributions, new motor vehicle control programs, etc.), some of which would have the effect of lowering emissions.

With respect to the notion that the project would violate or exacerbate a violation of one or more ambient air quality standards for carbon monoxide (CO), nitrogen dioxide (NO2), particulate matter (PM), and Ozone, the following responses are provided:

For CO, as noted in the May 15, 2014 Annual Monitoring Network Plan, Monitoring Plan CO discussion, "The number of monitors and concentration trends chart over the years in New York State are depicted in Figure 4.1 from the Department's May 2014 Annual Network Monitoring Plan" which clearly demonstrates that the current ambient levels of CO are well below the NAAQS, in spite of the continual increase in automobiles and vehicle-miles traveled in the State. As of 2002, all counties in the State have achieved attainment designation." Further in the CO Limited Maintenance Plan (LMP) submitted by the Department in January 2013, the Department concluded that the seven county nonattainment area, comprised of Bronx County, Kings County, Nassau County, New York County, Queens County, Richmond County and Westchester County, satisfied all the criteria of Section 175A of the Act.

The SIP submittal showed that design values (two years of ambient monitoring data) for CO are at or below 85% of exceedance levels of the CO NAAQS and the maintenance demonstration showed that future year CO emissions will not exceed the level of the attainment year and effective safeguards are in place for the NAAQS for at least 10 years following EPA's redesignation. It should be noted that the highest monitored design value for eight-hour CO in New York is 1.3 ppm, which is less than 15% of the CO NAAQS.

Given the conclusion that projected vehicle growth in the seven county nonattainment area would not result in CO emissions that would exceed the level of the ambient air quality standard with a safety margin, it was reasonably concluded that project level CO emissions associated with this project, regardless of the mobile model selected, would not contribute to a violation of ambient air quality standards. Also, the vehicle additions associated with the project are insignificant relative to the annual average daily traffic (AADT) levels required for CO near-road monitoring as shown in Table 4.2 from the Department's May 2014 Annual Network Monitoring Plan.

The Department also included a discussion in the May 2014 Annual Network Monitoring Plan for NO2. The near-road NO2 monitors are being established for a road segment that has a high annual average daily traffic (AADT), is accessible, is located away from obstructions, and is located on the downwind side of the roadway, if possible. New York State will need to establish such a site in each of the following areas: Albany-Schenectady-Troy, Buffalo-Niagara Falls, Poughkeepsie-Newburgh-Middletown, Nassau-Suffolk, New York-White Plains, Rochester and Syracuse. Table 4.2 from the plan provides a list of the CBSAs in New York required to have a near-road NO2 monitor. The primary objective of the near-road NO2 network is to monitor where peak, ambient NO2 concentrations are expected to occur as a result of on-road mobile source emissions. In the past, these locations would be considered to be Micro-scale locations.

The EPA has since stated that the area alongside a major road is similar to the areas alongside the entire road segment and this area should be considered to be Middle—scale because one location is representative of a larger "line source" shaped area. The sites will also represent the worst case for population exposure for each CBSA since the sites are at locations where NO2 concentrations are expected to be high for one or more hours at a time. Preliminary results from the current NO2 monitoring network have not shown a violation of the standard. Again, with no violations at locations in population centers with AADT significantly higher than the number of vehicles added by the project, it can be reasonably conclude that project level emissions associated with this project, regardless of the mobile model selected, would not contribute to a violation of ambient air quality standards.

As noted by the commentator, the area is currently in attainment of the ozone standard. Although it was noted that Ulster County monitoring for Ozone showed the area was close to the standard, the Department would emphasize regardless of the level, the area is still in attainment. The Department also notes that ozone is regional in nature and that nonattainment areas are not necessarily defined on a single county basis. As previously mentioned in earlier responses, the Project is not located in a PM non-attainment area. In addition, the Project does not require a quantitative PM hot spot analysis because it is not one of the projects listed in 40 CFR Part 93.123(b).

The particulate matter (PM) analysis that comprises the mobile source air quality analysis in Appendix 24 of the SDEIS likely severely underestimates the emissions of PM. MOBILE 6.2, the emissions model used, does not account for effects of temperature, speed, idling (for light duty vehicles),road grade (as high as 14% on County Route 49A},and how recently the vehicle was started. These parameters have significant effects on emissions of PM from vehicles. The new emissions model, MOVES, does account for these effects. The analysis should be redone using MOVES.

Response: The updates to the Air Quality procedures were initiated in December 2012. The Air Quality Assessment was completed in February 2011 and based on a scoping document that was approved in 2008.

The mobile source analysis in Appendix 24 of the SDEIS and the air quality analysis for the UMP DEIS only considered the intersection of Route 28 with County Route 49A. While this location is appropriate, it alone is not sufficient for a technically sound analysis of the potential air quality impacts of a project as complex as this one. The analysis should consider public exposure to air pollutants coming from the parking lots and nearby buildings. The analysis should include receptors near the parking lots and should model all sources, including roadways, parking lots, buildings, construction vehicles (53 truck trips into the site per day and 53 truck trips leaving the site per day during Stage 1,page 3-61of the SDEIS),construction and operational equipment, emergency generators, shuttle busses, etc. In fact, the Scoping Document clearly spells out the requirement to analyze emissions in the parking lot (Part A, Section 4.8.0). The dispersion model AERMOD can model multiple receptors and sources and should be used.

Response: The updates to the Air Quality procedures were initiated in December 2012. The Air Quality Assessment was completed in February 2011 and based on a scoping document that was approved in 2008. Section 1.11 of Part C, Cumulative Impacts includes a detailed assessment of construction and operational air quality.

Generally, emissions arising from construction that are of short duration need not be considered in an air quality analysis of this type. For example, NYSDOT uses two years as the cutoff (Section 15 of Air Quality Analysis Procedures- https://www.dot.ny.gov/divisions/engineering/environmental-analysis/manuals-and-guidance/epm/chapter-1) while USEPA considers five years as short-term (40 CFR Part 93.123 (c)(5)). Since this project will be constructed in three phases stretching over nine years, the air quality analysis should include the effects of the construction phasing. Because some elements of the project are expected to be operational while others are still under construction, both aspects need to be considered. Thus, the analysis should include the combined emissions associated with the elements of the Resort that are operational (buildings, parking lots, roadways, etc.) and emissions associated with the ongoing construction (construction equipment, construction vehicles on the roadways entering and leaving the project site, etc.).

Response: An assessment of the cumulative impacts of both projects together was completed for air quality based on the approved Final Scoping Document and is summarized in Section 1.11 of Part C, Cumulative Impacts.

The air quality study omitted a number of relevant pollutants that should be examined. In February 2010,USEPA promulgated a new National Ambient Air Quality Standard for nitrogen dioxide (N02) (40CFR Parts 50 and 58). It established a short term standard of 100 parts per billion (ppb). USEPA did so, in part because the science is showing that emissions from vehicles travelling on roadways can lead to health effects even at short-term exposures of N02. It concluded "Research suggests that the concentrations of on-road mobile source pollutants such as NO,, carbon monoxide (CO), directly emitted air toxics, and certain size distributions of particulate matter (PM), such as ultrafine PM, typically display peak concentrations on or immediately adjacent to roads.", and "In light of the body of available evidence and analyses,... the Administrator concluded in the proposal that it is necessary to provide increased public health protection for at-risk individuals against an array of adverse respiratory health effects linked with short-term (i.e.,30 minutes to 24 hours) exposures to N02 • Such health effects have been associated with exposure to the distribution of short- term ambient N02 concentrations across an area, including higher short-term (i.e., peak) exposure concentrations, such as those that can occur on or near major roadways and near other sources of N02, as well as the lower short-term exposure concentrations that can occur in areas not near major roadways or other sources of N02 • The exposure assessment ... estimated that roadway-associated exposures account for the majority of exposures to peak N02 concentrations.", and ".. that N0 2 concentrations in heavy traffic or on freeways 'can be twice the residential outdoor or gradient, the proposal noted that available monitoring studies suggest that N0 2 concentrations could be 30 to 100% higher than those in the same area but away from the road." (Federal Register, Vol. 75,No. 26, February 9, 2010). Although USEPA still believes at this point that high levels of N02 are associated with major roadways with high traffic volumes, this project should analyze expected concentrations of NO, in the project area due to the unique mix of emission sources caused by the phasing of this project. local residents and visitors to the area could be subject to unacceptably high levels of N02 from emissions of on-road traffic, construction vehicles, construction equipment, operating sources, all of which are expected to be occurring at the same time.

Response: The Final Scoping Document for the Belleayre Resort at Catskill Park included conducting a microscale analysis for CO. In addition to the microscale CO analysis, a Particulate Matter (PM) analysis was included in the SDEIS. An assessment of Global Climate Change and Carbon Footprint are included in Appendix 28 of the SDEIS.

The cumulative impact assessment included as Section 1.11 of Part C of the Belleayre Mountain UMP DEIS includes a construction and operational assessment of VOC, CO, NO_x, SO_2, PM_{10} and $PM_{2.5}$. Assessment of additional pollutants is not required as per the scoping document.

The air quality study also did not consider emissions of mobile source air taxies (MSATs). MSATs are emitted during the combustion of fuel (gasoline or diesel, for example) in engines and include such compounds as benzene, formaldehyde and diesel particulate matter. Similarly to N02 concerns (see previous comment), MSATs impacts are frequently associated with high traffic volumes and/or a high level of diesel trucks. FHWA has issued guidance for addressing MSAT concerns on transportation projects http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/aqintguidmem.cfm). They identify three tiers of analysis. Since this project will have a meaningful impact on traffic volumes, it would at least meet the criterion for a qualitative analysis. However, as with N02 ,because of the unique mix of emission sources caused by the phasing of this project, this project should quantitatively analyze the effects of the project on emissions of MSATs. Although the FHWA guidance generally reserves quantitative analyses for projects with high traffic volumes, the Belleayre project, with its construction equipment and vehicles emitting while visitor vehicles are also present and emitting, “has the potential to concentrate high levels of diesel particulate matter in a single location, involving a significant number of diesel vehicles for new projects or accommodating with a significant increase in the number of diesel vehicles".

Response: The analysis contained in the Air Quality Assessment follows the procedures set for the in NYSDOT Air Quality Analysis Procedure: Project Environmental Guidelines as identified in the Final Scoping Document.

The mobile source air quality study, as described in Appendix 24, states that typical "worst-case" meteorological conditions were assumed in the analysis. "Worst-case" assumptions are used to portray a conservative analysis so that if air quality standards are not exceeded, they would not be exceeded under other, typical conditions. However, many of the so-called "worst-case" assumptions that go into the air quality modeling process are often characteristic of an urban or suburban area or are reflective of the nearest airport (in this case, Albany International Airport). The analysis that was completed and documented in Appendix 24 used inputs such as stability class, surface roughness and mixing height, that are likely not representative of the Belleayre area. For example, a "worst-case" temperature of 30 degrees Fahrenheit was used in the carbon monoxide screening analysis. Belleayre Mountain is a rural area with unique topography and meteorology, hardly represented by suburban conditions or conditions at Albany International Airport. It is likely that conditions at Belleayre Mountain are actually more "worst-case" than those assumed, which would lead to higher levels of pollution experienced by the public. Using the inputs that have been used in Appendix 24 likely under- predict pollutant levels. To determine appropriate "worst-case" conditions in the project area, the project sponsor should install monitoring equipment at the project site that will accurately measure meteorological conditions and pollutant background levels. These inputs, then, will result in a more accurate analysis of air quality with the project in place. Gathering robust meteorological and background pollutant data is often a multi-year effort. However, some research may indicate that this can be accomplished in a shorter time frame ("Short-Term Monitoring for Compliance with Air Quality Standards, National Cooperative Highway Research Program Report 479, Transportation Research Board,2002). This monitoring effort is necessary to protect the local residents and visitors from unhealthful levels of air quality and to provide adequate safeguards should the project result in pollutant concentrations that approach unacceptable levels.

Response: The analysis contained in the Air Quality Assessment follows the procedures set for the in NYSDOT Air Quality Analysis Procedure: Project Environmental Guidelines as identified in the Final Scoping Document. The model inputs were determined based upon a review of the modeling procedures using an acceptable methodology. The NYSDOT Air Quality Analysis Procedure notes that "Most of the defaults are conservative for air quality purposes. Thus, an over-reliance on defaults can indicate a potential project air quality impact and cause an unnecessary Level II analyses." Since the modeling results using accepted NYSDOT procedures were well below the significant impact thresholds for Particulate Matter, the collection of site specific meteorological data is not necessary.

Due to the duration of the project's phasing and construction (nine years),clean diesel requirements should be part of the project's construction. Use of technologies such as diesel particulate filters and/or diesel oxidation catalysts can substantially reduce emissions of diesel particulate matter and other harmful pollutants and should be required on all construction vehicles and construction equipment. Similarly, once operational, any equipment that uses diesel fuel should be required to use clean diesel technology. The project sponsor should replace older vehicles and equipment with those that meet the latest emission standards, repower the equipment and vehicles to comply with cleaner emission standards or use equipment and vehicles that have been retrofitted with the appropriate technology. The project sponsor has a number of options available to implement clean diesel requirements on this project but this requirement should be part of any permit conditions issued by NYSDEC for this project. The type of clean diesel application to be used on this project should be done in consultation with NYSDEC staff and the project sponsor.

Response: A more detailed evaluation of air quality during construction is included in Section 1.11 of Part C, Cumulative Impacts.

Appendix 24 of the SDEIS indicates that 2009 is the latest year of available information for ambient air quality monitoring. This is out-of-date. Per NYSDEC's website (http://www.dec.ny.gov/chemical/29311.html), data is available for 2011. The outdated information should be replaced with the latest data.

Response: At the time the Air Quality Assessment was completed, 2009 was the most recent available data. Review of the New York State Ambient Air Quality Report for 2012 shows that the closest stations are in compliance for sulfur dioxide, ozone, and $PM_{2.5}$. The Schenectady station no longer monitors carbon monoxide, but the Loudonville station (the next closest station) is in compliance with standards.

The Catskill Resort SDEIS lists 250 parking spaces under the hotel and a separate 208 space parking garage. It does not appear that the emissions of the vehicles idling and driving slowly within the garages have been considered in the air quality analysis. The SDEIS also does not identify if the garages will be ventilated and if any air quality permits for the garages will be required from NYSDEC. It is good practice to consider these emissions in order to protect public health and many jurisdictions require this element of an air quality analysis or provide guidance on how to assess these emissions such as the New York City Department of Environmental Protection (www.nyc.gov/html/oec/...cegr.../2012_ceqr_tm_appendix_air_quality.pdf) and the North Carolina Department of Environment and Natural Resources (daq.state.nc.us/permits/mets/TF_Guide.pdf). The air quality analysis for the Resort should be supplemented to include an examination of the potential impact of the parking garages.

Response: The analysis contained in the Air Quality Assessment is consistent with the approved Final Scoping Document.

The Project has implications for potential non-attainment levels of ozone pollution in the summer.

Response: Ulster County is identified as attainment for ozone. The most recent air quality data at Belleayre Mountain (2012) shows the 4th Highest Daily Maximum 8-Hour Average over the latest three years is 0.069 parts per million (ppm) which is less than the 0.075ppm Ambient Air Quality Standard. An ozone analysis was not included in the approved Final Scoping Document.

Obsolete models were used for modeling air quality impacts, and the modeling must be redone.

Responses: The updates to the Air Quality procedures were initiated in December 2012. The Air Quality Assessment was completed in February 2011 and based on a scoping document that was approved in 2008.

Particulate matter emissions appear to have been underestimated and not all relevant pollutants were examined.

Response: The analysis contained in the Air Quality Assessment follows the procedures set for the in NYSDOT Air Quality Analysis Procedure: Project Environmental Guidelines as identified in the Final Scoping Document and followed the guidelines for Particulate Matter. The project does not meet the criteria for requiring a mesoscale analysis, therefore the assessment of PM_{10} and $PM_{2.5}$ satisfy the analysis requirements.

The air modeling should have been done using local weather data, rather than data from the Albany Airport, where weather, altitude and topographic conditions are quite different. **O3635, H21**

Response: The analysis contained in the Air Quality Assessment follows the procedures set for the in NYSDOT Air Quality Analysis Procedure: Project Environmental Guidelines as identified in the Final Scoping Document. The model inputs were determined based upon a review of the modeling procedures using an acceptable methodology. The NYSDOT Air Quality Analysis Procedure notes that "Most of the defaults are conservative for air quality purposes. Thus, an over-reliance on defaults can indicate a potential project air quality impact and cause an unnecessary Level II analyses." Since the modeling results using accepted NYSDOT procedures were well below the significant impact thresholds for Particulate Matter, the collection of site specific meteorological data is not necessary.

(2) AIR: Will the state of NY have the EPA test the air as it is now and then estimate what the quality will be after the proposed project? **I225**

Response: An Air Quality Assessment was completed for the proposed Belleayre Resort at Catskill Park. The assessment identifies existing conditions and estimates future conditions as required in the Final Scoping Document. Additional testing by the EPA is not expected.

3.13 Cultural Resources

(1) Does any part of the project affect an archeological area of interest or property listed on the State or National Historic Registry? The New York State Office of Parks, Recreation and Historic Preservation is the governing agency reviewing this area of the SDEIS. Clearly, we can see that there are sensitive areas that the project will affect. A letter dated January 6, 2003, from Kenneth Markunas, Historic Sites Restoration Coordinator for the New York State Historic Preservation Office (SHPO) submits findings, with conditions, that all work on historic structures on the site would be reviewed by SHPO prior to the initiation of any construction activities. However, this relates to the original Crossroads project in 2003, and new areas of concern have been added that were not recognized by SHPO in 2003 and therefore escaped their survey. One such area is an Archeological Area of Interest that the 11,000-foot sewer line will pass through (lies off project property but on undetermined utility right of way). The Historic Office should perform an up-to-date review to document the environmental effects in the complete areas of concern of this project.

The SDEIS states on page xxvi that the Historic Office had determined there "will be no adverse impacts" from the project. What part of the project was investigated? Where is this report? On what data was this based? A review of the Historic Registry website shows an Area of Archeological Interest. Was an environmental review by the Historic Office also included? The detailed report needs to be fully disclosed.

The SDEIS (page xxviii) states that after approvals of the project are received, the Historic Office will continue to be consulted on the complete and total reconstruction of the Marlowe

Mansion. The normal procedure is to disclose plans to the approving officials during the application, not get permission to construct, then disclose or discuss construction plans afterwards. Have construction plans and application for approvals been submitted? **O3635**

Response: Please see Responses 1.4 (15) and 3.6 (6), above A September 13, 2013 letter from NYS Office of Parks, Recreation and Historic Preservation Division of Historic Preservation is included in the errata section of this FEIS. In this letter it is stated that, based on the review of the current project plans, the project will not have an adverse impact on historic resources identified as part of the DEIS and the SDEIS. OPRHP does not conduct a separate environmental review, but rather provides to DEC as lead agency a determination under section 14.09 of the Parks, Recreation and Historic Preservation Law whether any historic, architectural, archeological or cultural resources present in the project impact area are significant. The appended letter evidences OPRHP's required determination. OPRHP has monitored this project over many years and has been provided with all documents and plans necessary to issue its determinations.

(2) The SDEIS indicates the intent to construct a 12,000 square foot conference/clubhouse center on the site of the historic Leach Farmhouse but does not provide any more specifics about the intended use. Depending upon the use it is actually put to, the operation of the center could itself have noise or other impacts. The need for such a center has not been justified nor have the impacts of any potential uses been evaluated. The SDEIS should identify these uses and their intensity and analyze any impacts associated with them. No different uses or similar uses of greater intensity should be permitted absent a permit revision process.

Alternatively, the Leach Farm property could be dedicated to non-project uses. The land on which the Farm is located is already included on the National and State Registers as part of the lands constituting the historic Galli-Curci Estate.

The applicant should be required to consider the restoration and maintenance of the building as a historic farmhouse that would be available for public viewing.

As a related matter, I am concerned about degradation that may have already occurred to the historic Leach Farmhouse. Actions taken by the developer to remove historic artifacts should not be viewed as separate and distinct from the modified project now being reviewed. DEC should insist on obtaining a full inventory of artifacts in the Leach Farmhouse since the adoption of the AIP. In the event that any of these artifacts have been removed or there has been any destruction or alteration of the property in anticipation of erecting the Conference Center, DEC should insist on full restoration. **I3535**

Response: The intended use is implicit in the conference/clubhouse center name. It will be gathering space for resort guests. As a component of the project, this facility was included in the various assessments of potential impacts including such things as traffic, noise, cultural resources, aesthetics, etc. The subject property is private land, and thus there would be no basis for a requirement for an alternative public use.

For additional response related to impacts to the Galli-Curci Mansion, please see Response 1.4 (15), above. Please also see the Visual Impact Assessment for the Galli-Curci Mansion in the FEIS Errata section.

(3) Was the Galli Curci Mansion and the surrounding properties, including the Leech Farm considered eligible for and/or functionally equivalent to being listed on the State and/or National Registers of Historic Places as part of the consultative review with NYSOPRHP?

Were the impacts to historic and potentially historic structures in the Village of Pine Hills covered by the consultative review with NYSOPRHP?

The SDEIS is virtually devoid of any site-specific analysis of the project's potential impacts on the Galli-Curci Mansion. **I3535**

Response: Cultural resources investigations of the project site and surroundings were in the DEIS and in the SDEIS and included Pine Hills and the Galli-Curci Mansion. The Leech Farm was identified as being register-eligible and the Galli-Curci Mansion is listed on the historic register. As per the response to comment 1 above, NYSOPRHP has determined that the project would not have an adverse impact on historic resources, including the Leech Farm or the Galli-Curci Mansion. Please see Responses 1.4 (15), 3.5 (13), and 3.6 (6). In addition, in responses to comments received on the SDEIS relating to potential visual impacts to the Galli-Curci Estate, a separate visual impact analysis was conducted of the Galli-Curci Mansion, finding no significant impacts to it. This assessment used photographs and line of sight analysis, and when combined with the OPRHP "No Adverse Impact" Determination sufficiently responds to these comments. This visual impact assessment is included in the FEIS Errata.

3.14 Catskill Forest Preserve

(1) The Catskill Park was created by Chapter 233 of the Laws of 1904, following the tradition set forth by the Adirondack Park in 1892. In 1916 the voters approved a bond issue for $7.5 Million, a tidy sum for 1916, to protect from development 49,000 acres of land in the Catskill Park. In 1960, another $75 Million; in 1962, $451,000; in 1972, $15 Million; and in 1996 voters approved $1.75 Billion for a Clean Water Bond Act. Today, about 300,000 acres are part of the Catskill Park Preserve, but only 2% are designated for Intensive Use. The 2% intensive use areas are spread out throughout the Park in eleven (11) Units to further limit the environmental impact due the designation. This allocation of such a small percentage of the Park Lands is an attempt to provide uniform and environmentally sensitive management of the Catskill Park. We should expand upon this concept, as articulated in revisions to the Catskill Park Master Plan in 1985, 2003, and 2008 and not let resort development adjacent to wild forest and wilderness areas inadvertently expand intensive use beyond the 2% cap that has served us well for over one hundred years. **O3635**

Response:
The CPSLMP does not mandate that the acreage of Forest Preserve land classified as Intensive Use in the Catskill Park may not exceed 2% of the acreage of Forest Preserve land within the

Park, although historically this has been the approximate percentage of Intensive Use acreage of Forest Preserve lands in the Catskill Park. A chart on page i of the CPSLMP shows that 5,580 acres of the 279,560 acres of Forest Preserve land within the Park is classified as Intensive Use, which equals 1.995% of Forest preserve lands within the Park. With the proposed classification, 5,685 acres of 279,665 acres will be classified as Intensive Use, equaling 2.03% of Forest Preserve lands within the Park.

A chart on page ii of the 2008 Catskill Park State Master Plan (CPSLMP), based on 2002 trail registers, camping permits and lift tickets, shows that more than 80% of all visitors to Forest Preserve lands in the Catskill Park recreate in areas classified by the CPSLMP as Intensive Use. The CPSLMP provides on page 16 that "DEC will provide for the use and enjoyment of Forest Preserve lands in ways that will support the economy of the Catskill region while protecting the wildness that is essential to the character of the Forest Preserve." Expanding the existing Belleayre Ski Area to include the newly acquired Highmount Ski Area, an area on which a ski slope has historically existed, is consistent with this goal. Moreover, Article XIV, Section 1 of the State Constitution authorizes the construction and maintenance of ski trails and appurtenances thereto on the slopes of Belleayre Mountain, so long as the mileage and width limitations for the trails that are set forth in the Constitution are not exceeded. Expanding the existing Ski Area onto this newly acquired area will not exceed those constitutional limits.

(2) As a full time resident and active volunteer in local organizations that work to increase sustainable use of our wonderful natural resources while promoting awareness of our rich history and local cultural institutions and improving the economic health of our region, I believe that we must look to the source of our appeal to the public first. Clearly, what sets the Catskills apart is the richness of the Forest Preserve and the Park. If these are degraded on a scale that creates lasting damage to the experience of wilderness and natural beauty, whether through adverse visual impacts or degradation of natural communities and our water resources, we will pay a huge and lasting price for our lack of thoughtful and careful stewardship. **I3524**

Response: Expansion of the Belleayre Ski Area onto the adjacent Highmount area can occur with a minimum amount of environmental disturbance because of the areas prior use as a downhill ski area. Section 3.14 of the SDEIS contains measures to minimize project impacts on the Forest Preserve, including provision of use data for resort patrons that may be helpful in the preparation of future Forest Preserve Unit Management Plans.

For discussion of visual impacts, please see Responses 1.4 (1), 1.4 (1a), and 3.6 (6).

(3) Belleayre is my local state park and it should not be used to enhance a private development. Public and private must not be co-mingled. If a developer is determined to blast my mountain to pieces for his own gain, our ski center should not be connected to that in any way. Enlarging all the facilities at Belleayre to attract more skiers is okay but this public state park should stand on its own. **O3547**

Response: The entire Catskill Park is a co-mingling of public and private lands. The amounts of public and private lands are nearly equal and they are interspersed throughout the Park. The private modified resort project is making use of the attractiveness of the public ski facility to establish a four-season resort on adjacent lands. The proposed project is located entirely on privately-owned lands and not on any State-owned lands. Belleayre Mountain Ski Center is not being expanded for the purpose of benefitting private development on adjacent lands though it may incidentally benefit the private resort just as the existence of the private vice versa. It implements the CPSLMP goal of furthering the region's economy while protecting the wildness of the Forest Preserve, and implements the Constitution's authorization for a ski area on Belleayre Mountain.

SECTION 4.0 UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

All comments received regarding potential impacts were placed into Section 3**.**

SECTION 5.0 ALTERNATIVES (GENERAL)

The following comments pertain to alternatives to the proposed action in general, and not to specific alternatives discussed in sections 5.1 through 5.9 in the SDEIS.

(1) The EIS should not be finalized, nor should any permits be issued, until such time as the project developers execute and duly file a legally binding document that runs with the land and prohibits in perpetuity the construction, establishment, and operation of any Las Vegas style, table game casino anywhere on the Belleayre resort development site. **O3650**

(1a) The new Cuomo casino bill would allow up to 5,000 slot machines and gaming tables at the proposed Belleayre resort. This must be considered in light of extreme opposition of this community to casinos. The legal binding "non- casino" rider Crossroads has promised to attach permanently to the proposed resort would no longer have any power, and the public would have no recourse to object by voting.

The huge size of the "full build" plan is completely based on the size requirements for commercial gaming, not the economic reality of the community. The huge resort would not attract investors unless it included gambling. The only way to protect the community from casino gambling would be to reduce the size to a "lower build" alternative. It would maintain the "family friendly" quality people expect from a Belleayre Ski Area hotel.

Approve no Highmount hotel. It would surely become a casino out of economic necessity. Approve a smaller Wildacres hotel that meets the needs of the community, not the gambling industry. **I433**

(1b) I am also concerned that this resort could become a casino in the future as one of the Belleayre Crossroads ventures investors, Anthony Sanfilippo, was named “Gaming Executive of the Year” by Casino Journal Magazine in 2011, and other casinos are being debated in the state government right now. I oppose the building of a casino in this area. **I401**

Response: Crossroads has agreed to memorialize, through duly recorded covenants or deed restrictions in favor of the owner of the conservation easement on the Adelstein property, its commitment: (a) not to increase total lodging or residential density beyond that represented in the modified project/lower impact alternative, and (b) not to allow the operation of Class III gaming facilities pursuant to the Indian Gaming Regulatory Act of 1988, at the Highmount Spa Resort and Wildacres Resort. Crossroads indicates, however, that these covenants or deed restrictions will not be recorded until the final, non-appealable approvals have been issued for the Modified Belleayre Resort Project.

See response 1 in section 2.1 regarding definitive prohibitions of casino facilities.

(2) The state should acquire the property and turn all of it into parkland, to be enjoyed by all. **O3489**

Response: As a result of the modified project, the State has already acquired approximately 1,200 acres of land that will be open to the public.

(3) Under SEQRA law, it is required that the applicant present a Range of Alternatives which is totally absent in this File. Is the developer's “not making enough money” a reason to allow exclusion? **I2151**

Response: Section 5 of the SDEIS includes assessments of various alternatives in accordance with the Final Scoping Document for the Modified Belleayre Resort Project. The alternatives include: (1) a comparison with the DEIS project; (2) an alternative design of the Highmount Spa Resort project without the upper detached lodging units (which is now the Applicant’s preferred alternative and an alternative that further reduces the overall impact of the project); (3) eliminating the Highmount development; (4) alternative golf course layout and management; and (5) a no-action alternative. In evaluating project alternatives, SEQRA requires that the objectives of the project sponsor be taken into account. To establish the need for the proposed size of the Modified Belleayre Resort Project, the project sponsor included in the DEIS, SDEIS and this FEIS its expert reports on the feasibility of the project. Moreover, the Modified Belleayre Resort Project is itself an alternative to the originally proposed project which affected a much greater area of land and land considered by many parties to be of greater environmental sensitivity. The comparison of the Modified Belleayre resort Project to the original project is set forth in great detail in the SDEIS along with the other alternatives.

(4) Section 5 of the SDEIS purports to describe several alternatives, plus the no-build alternative. However, most of these so-called “alternatives” are just discussions of potential mitigation measures for various impacts of the project, such as water supply (§ 5.4) and wastewater disposal (§ 5.5).Two more of the alleged alternatives are descriptions of former plans that the applicant itself has already rejected (§ 5.1 & § 5.2.A), so that these discussions are just academic exercises, and are not a legitimate comparison of alternatives.

Finally, spared from the poorly designed layout forced on it by the goal of connecting BMSC to the Highmount Spa Resort, so that Crossroads Ventures can sell ski-in/ski-out “shared-ownership units", BMSC can implement a well-designed plan to improve the skiing experience for the public. **O3635**

Response: See response to comment 3 above. The UMP proposal and justification is set forth in Part A. Supplemental assessment of the no-Highmount can be found in the errata section of this FEIS.

The purpose of consideration of alternatives under SEQRA is to explore reasonable and feasible ways to minimize or avoid identified significant adverse environmental effects. The SEQRA regulations do not mandate the inclusion of any particular alternative, but rather allow the lead agency to select the ***appropriate*** *types of alternatives to be considered for each particular action or project under consideration. The regulations note in 6.17.9.b.5.v: "The range of alternatives may also include, as appropriate, alternative (a) sites; (b) technology; (c) scale or magnitude; (d) design; (e) timing; (f) use; and (g) types of action. For private project sponsors, any alternative for which no discretionary approvals are needed may be described. Site alternatives may be limited to parcels owned by, or under option to, a private project sponsor.*

(5) This modified project remains exactly as it was originally designed: a fantastic boon for the developers and their investors and a boondoggle for the locals and NYS taxpayers. Please consider another round of scale and design modifications based on more realistic facts, figures and projections. **I419**

Response: The SDEIS describes the changes to the DEIS project that has resulted in the modified project that is the subject of this SEIS. As a result of the modified project, approximately 1,200 acres (Big Indian) have been conveyed to the State and into the Forest Preserve and the project itself has been made more compact and downsized.

The 2013 SDEIS provides a thorough alternatives analysis comparing the 2003 DEIS plan and the Modified Project, which underlines the significant reduction in the overall size and scope of the proposed project and identifies several environmental impacts that have been eliminated or mitigated. The modified project alternative is also compared to the proposed plan under the AIP, and the major difference between these two alternatives is that the AIP included 24 lodging structures in the upper part of Highmount. The modified project transfers the lodging capacity of the 24 Highmount lodging structures to Wildacres by adding another level to structures already planned for Wildacres. This eliminates the impacts of constructing the 24 units on the upper slopes of Highmount while minimizing the potential increase in impacts of this relocation at Wildacres. The environmental benefits of this change include eliminating the construction of 1.1 miles of road, the majority of which would be on slopes of greater than 20%, and reducing the number of acres of impervious surfaces for the entire project from 27 to 21 acres, among other environmental benefits (see 2013 SDEIS at 5-4 to 5-5).

Another alternative considered in the 2013 SDEIS is the complete elimination of the development at Highmount (see 2013 SDEIS at 5-5 to 5-8). The alternatives analysis shows that, while the number of acres to be disturbed by elimination of development on Highmount *would be reduced by 42 acres, the number of impervious acres would only be reduced by "approximately 3 acres" (draft FEIS at xiv). The analysis of the "no-Highmount" alternative shows that the environmental benefits would be modest and according to the applicant, the elimination of Highmount would result in the project becoming economically infeasible (see 2013 SDEIS at 5-7 to 5-8; see also id. Appendix 5; FEIS, Errata § 2.8 [No Highmount Alternative Additional Analysis, at 2-4 (providing a comparison of environmental impacts based on category – surface waters, groundwater, visual, noise, etc.)]; FEIS, Errata § 2.5 [HVS November 2013 Feasibility Study and Sensitivity Analysis (updating the feasibility analysis)]).*

The alternatives analysis also considers alternative layouts for project components (golf course layout, water supply, wastewater disposal, stormwater practices, and construction phasing), as well as the "no-action alternative" (see 2013 SDEIS, Sections 5.3 to 5.9)

(6) Build on this [BMSC], not on the Crossroad Ventures mega Belleayre Resort at Catskill Park. (Their website offers a glimpse on how the resort has been "downsized"; 62% reduction in size of a resort that still is too large). **I3321**

Response: The SDEIS analyzed the no action alternative for the modified project. Section 5.9 of the SDEIS describes how the benefits of and to employment and taxes, open space protection, road improvements, recreational use and cultural amenities would not occur under the no action alternative.

(7) As members of Catskill Heritage Alliance, we ask that the resort development be limited to the Wildacres area only. **I86**

Response: The comment is noted.

(7a) While the double resort has been reduced somewhat in size, the aspect of two large hotels in an almost pristine mountainous watershed environment is till just too darn big.

As Town of Shandaken full time residents, we support the addition of the lower Wildacres resort and tally OPPOSE the Spa resort planned for the side of Highmount Ridge, above CR 49A.

We urge the DEC to NOT allow the upper (Spa Resort, Conference Center, etc.) Crossroads development above CR49A.

We feel that the Wildacres resort with all of its accoutrements is much less threatening to the environment, specifically that it offers much less of a pollution threat to the Pepacton Reservoir. **I213.**

Response: This comment is noted.

Nevertheless, it should be noted that the specific lands on which the resort is to be located are not "pristine". They were most recently used for commercial lodging and farming since the late

19th century up to 1999. As stated in Section 1.3 of both the DEIS and Supplemental DEIS the area surrounding the Belleayre Mountain Ski Center provided thousands of hotel, inn and guest house accommodations to visitors throughout much of the 20th century. One hotel alone, the Grand Hotel, accommodated up to 400 guests and the resort as currently planned will offer but a small fraction of the lodging space that the RT.28 corridor region provided in years past. In addition, The Belleayre Mountain Ski Center is already a major development "above" CR49A affecting hundreds of acres and the Highmount Spa Resort would limit disturbance to a mere 42 acres of its 339 total. Furthermore, the scale of the project is consistent with the projected demand for the resort facilities. [See Comment 31 in Section 3.9]

With respect to the effects on the Pepacton Reservoir, the modified project does not divert stormwater runoff either in or out of the Ashokan or Pepacton drainage. Although there will be interbasin transfer of water when potable groundwater is taken from the Pepacton drainage and wastewater is sent to the Pine Hill wastewater treatment plant in the Ashokan basin. As indicated in section 1.4 of the SDEIS, this will require a permit from the Delaware River Basin Commission.

(7b) Alternatives could include building better trails and a smaller scale resort. Why not start small and if the demand is there then move forward? I recommend some support for the Wild Acres resort area, but no other senseless, destructive construction at this time. **I237.**

Response: It should be noted that the Applicant has proposed to phase development of the resort as indicated in the SDEIS. Under the Applicant's phasing plan, it would not be constructing all 629 units at once. Only the two main hotels structures (consisting of 250 and 173 units respectively) would be built during the first phase. The remaining 206 units will only be built if demand warrants. There are a total of 3 phases planned for this project that will take up to 11 years to construct dependent on the selling of the detached lodging units. The first phase has two components, Phases 1A and 1B, which will be constructed separately. The hotel and the golf course were to be completed in the first phase of construction. The Department believes that phasing is an important and effective way to reduce impacts, and, in this case, through various phasing alternatives, including the one proposed by the Applicant, construction and operational impacts of the project can be mitigated or avoided.

(7c) To summarize I believe the majority of the development proposed by Crossroads, namely that below Route 49A, is worth approval although so far the proponents' related Emerson project on Route 28, I am told, does not operate at a profit. Hopefully the operators of the Crossroads Ventures can reverse this trend. I309

Response: This comment is noted.

(7d) I think it would be good to have another hotel. I do feel that given all these concerns, a small hotel lower on the mountain would be the best thing for all, and would not put the pre-existing communities at risk economically and in terms of water quality. **I3641, H32**

Response: The commenter's opinions are noted. In the recent up-dated Feasibility Study conducted by HVS they note the two following conclusions… 1) "the notion of constructing the *hotels without the detached lodging unit communities is economically impractical. It is our experience that the potentiality of superior yields associated with the detached lodging units elevate the project's investment market appeal into a particularly desirable realm." and 2) "Furthermore, we conclude that the only logical and economically feasible approach to the development of the subject property calls for the construction of both resort components. Only the entirety of the subject resort (rather than Wildacres alone) can generate the critical mass in terms of market awareness that is necessary to overcome the limitations associated with the surrounding area." Water quality concerns are discussed in Section 3.1.*

(8) The reason this review process is dragging on longer than any in history is because the developer failed to provide a realistic lower build alternative.

Crossroads finally came up with a lower build alternative that has just about the same oversize resort plan crammed into half the acres. That is not a true lower build alternative. **I302D**

Response: As outlined in the SDEIS, the modified project represents a 72% reduction in lodging structures and 82% reduction in roads, and a 67% reduction in impervious area. This is a lower build alternative.

(9) If you really want to help the area, limit the size to a moderately large hotel with a restaurant, bar and gift shop and shuttle folks West to Margaretville and East to Phoenicia and watch how your friends and neighbors in the community benefit instead of suffer. **I321**

CR Response: The projected economic benefits of the project for the area are outlined in Section 3.9 and Appendix 3 of the SDEIS. As recently confirmed by HVS' updated "Feasibility Study and Sensitivity Analysis" a smaller resort would not likely achieve the critical mass necessary to market its appeal to the greater metropolitan area. Based on our analysis, we conclude that the only economically feasible approach to the development of the subject property calls for the construction of both resort components. Furthermore, SDEIS analysis finds that the proposed project would benefit the local residents and local business owners. In addition to providing opportunities for employment to the local community, the local community would benefit from off-site visitor spending. Resort visitors would not limit their spending entirely to on-site Resort goods and service; they would travel off-site for spending on a variety of goods and services such as antiques, crafts, restaurant meals, groceries, gas and oil, recreational fees for off-site amenities, and cultural attractions. Assuming that only 25 percent of visitor spending were to occur offsite, visitor consumer spending is projected to be $10.64 million annually throughout the Route 28 corridor, mostly in the village and hamlet centers where existing businesses and shops are concentrated.

(10) However, as to that part of the Crossroads Ventures' plan which proposes a second hotel and additional housing on the west portion of their property, I take strong objection for the following reasons:

1. This whole proposed development to the west is intertwined with property to be purchased by the State of New York from the developer which is sure to attract lawsuits.

2. It is miles from available and necessary infrastructure such as sewer, water, safe access and the State Highway.

3. It would introduce unwanted traffic onto Dry Brook Road and at night create illumination pollution for many viewsheds. **I309**

(10a) The resort project is much too huge and needs to be scaled down. **I234**

Response:

<u>Sale of Property to State</u>
The potential for a lawsuit is not a basis for not advancing a project. The sale of the Big Indian Parcels to the State of New York did not result in any lawsuits. The sale of the Highmount Ski Area to be used for expansion of the BMSC serves a legitimate State interest in view of the benefits to expanding the BMSC to the West on existing cleared lands rather than clearing lands to the East which are in the Ashokan watershed and which are much more environmentally sensitive. See NYSDEC Responses to Comments on this issue for further information.

<u>Infrastructure Costs</u>
The Modified Belleayre Resort Project will have its own central water supply system and the source of potable water will be wells that are located in the valley along NY Route 28 further west of the project site. The Modified Belleayre Resort Project will have its own central wastewater collection system and wastewater will be sent to the NYCDEP Pine Hill Wastewater Treatment Plant as agreed to in the Agreement in Principle. As the Agreement in Principle (Exhibit H) provides, the Applicant will pay an annual sewage fee to NYCDEP, and the Applicant will be responsible for all infrastructure construction, operations and maintenance costs associated with the project connection to the Pine Hill WWTP.

<u>Dry Brook Road</u>
Highmount, the lodge and detached units will obtain access off of County Route 49A (Galli Curci Road). Wildacres main access is a through road connecting to both Gunnison Road and Route 49A, while the Front 9 Village is a short cul-de-sac off of 49A. Temporary road construction related impacts to Dry Brook Road have been identified and addressed in the SDEIS in Section 3.5. Additionally, a full traffic analysis was performed and is made part of the SDEIS at Appendix 11.

The traffic impact study indicates that a very small percentage of traffic (2%) may travel to and from the project site on CR 49A south/west of the resorts, which equates to approximately 5 vehicles during the peak travel period. This small percentage was included in the analysis to represent travel by local residents that may occur and would likely be limited to employees at the site. Travel on CR 49A beyond the site access roadways towards Dry Brook Road is not expected to be utilized by out of town patrons who will access the study area primarily via NY Route 28. The existing travel patterns in the study area with the Belleayre Mountain ski center operating confirms that recreational trips are generally not traveling to and from Dry Brook Road as peak hour trips on the northern portion of CR 49A adjacent to NY Route 28 are 902 vehicles and to the south adjacent to Dry Brook Road are 43 vehicles.

(11) Please give serious consideration to the lower build alternatives and limit the amount of taxpayer money that will go to this project. **I3307**

(11a) The alternative proposals will be more environmentally friendly, will bring income directly to the towns themselves rather than to isolated resorts, and will preserve the beauty and traditions of the Catskill Mountains. **I3532**

(11b) With respect to the proposed Crossroads Resort, I support some development at the site, but feel that the size that is proposed is too large. It imposes a dramatic change in the community character of this part of the Catskills and a threat to the environmental quality through noise and light pollution, the possibility of flooding and stormwater runoff, and increased traffic.

I urge you in your review to consider the lower build alternatives. **I3495**

(11c) The developer stated that they would only do the full build option. They presented no lower build alternative at all. That is against the rules of the SEQR review process – a lower build option must be fairly presented to the public.

Gov. Cuomo has announced his intention to approve seven more casinos in the near future. This oversize resort would be ideal only for a casino. Despite the intense objection of this community to casino gambling, I am convinced this is the reason why the developer insists on a grossly oversized resort complex. The only way to protect the community from a casino is to build a smaller resort. Do the public review again with fully detailed lower build option for both Ski Center and Resort project. One that makes sense financially and is in keeping with the environmental and demographic reality of this location. **I483**

(11d) "NYS-DEC please fulfill the DEC's state mandate by conducting a thorough review of the Belleayre resort's size and scope impact on this forested area. Please consider the lower build. **I2764**

(11e) A simple modernization and modest ski lodge expansion and a more modest size hotel would serve the public far better with less risk and less negative impacts. **I3588**

(11f) The Catskill Park is a world-class treasure enshrined in NY's Constitution and "forever wild" Forest Preserve protected from further development for generations to come. But Belleayre Mountain is much more than its ski center. The UMP must not service only skiers - but also sightseers, families on vacation, hikers, bird watchers, leaf peepers and people simply seeking the peace and inspiration of the wild nature of this special place. Belleayre Mountain belongs to all New Yorkers, for their enjoyment in the Spring, Summer, Fall and the Winter, whether or not they ski. Please reject the current proposals for the Belleayre mega-resort and the parallel expansions contained within the UMP. Instead consider alternatives that are consistent with the economic needs of the community and wilderness character of the Catskill Park. **O3638**

(11g) Please consider the lower build alternatives. **I2762, I3310, I2839, I2765**

(11h) Please fulfill the DEC's state mandate by conducting a thorough review of the Belleayre resort's size and scope impact on this forested area. Please consider the lower build alternatives. **I2787**

(11j) Please reject the current proposals for the Belleayre mega-resort and the parallel expansions contained within the UMP. Instead consider alternatives that are consistent with the economic needs of the community and wilderness character of the Catskill Park. **SCACPET**

(11k) As far as I can see, there wasn't much attention paid to a smaller build-out. **I3510**

(11l) Would a much scaled down resort make more sense and be a viable alternative to a mega resort? **I3591**

(11m) Please consider all alternatives to building a monumental real estate plan, and go for the "small is beautiful" alternative.

(11n) I urge you to consider the smaller building alternatives, which will not ask tax payers to pay ($74 million) into a private condo deal as an extension of the ski center. **I511**

Response: As described throughout the SDEIS, the modified project represents a lower build alternative to the DEIS project. Changes in the proposed project have yielded a project that is smaller in size and environmental impact. For example, the Modified Project is only 37% of its originally proposed size. Total acreage to be developed has been reduced by 60%. Total number of hotel and lodging units has been reduced by about 30%. The total acreage of land that will be converted to impervious surface has been reduced by about 70%. Additionally, almost 1,200 acres of land that was previously unprotected will be added to the Forest Preserve under the Modified Project and an additional 200 acres will be protected under a conservation easement. These statistics are discussed in detail in the SDEIS Executive Summary.

(12) But I am strongly opposed to the Highmount Spa part of the Belleayre Development. Why? First, because we have never had development at the top of ANY mountain in the Catskills. Development should be ideally in the Villages or Hamlets, or if not on the slopes, but not at the top of a mountain at a high elevation. **I3491**

Response: The Catskill Mountain House and Overlook Mountain House are two historic examples of high elevation hotel/resort development that has occurred in the past in the Catskills.

As per the SDEIS, previously considered development at the top of Highmount has been removed from the project and the units have been relocated to the Wildacres portion of the modified project site.

(13) We stand very firm in our opposition to the proposed resort and the full proposed expansion / build out of the Belleayre ski center. The proposed profit margin and the State expenditure don't financially make sense. With a state expenditure of 74 million with hopes of making 1 million annually is bad business. I realize it is not about the financial viability for the ski center,

but about your new private partner Crossroads Ventures, and their development. It is great to have some development, but to help the Highmount spa resort come into existence and give them access to skiing at the expense of the taxpayers is an injustice to the people of NY who don't ski at Belleayre. Do we really need the largest spa resort in North America on Rte. 49A? **I3531**

Response: Comment noted.

(14) The initial Crossroads DEIS and the current SDEIS violate the SEQRA requirements to complete a cumulative impact analysis including a cost-benefit analysis of delayed and off-site impacts such as water supply costs and flooding and destruction of trout habitat. Totally omitted was an evaluation of a full range of development alternatives from the "no-build option" to that of a "full build-out" alternative. The only alternative included is the development plan of Crossroads that had been endorsed by the AIP.

No mid-range options are fleshed-out such as relocating the hotel for better integration into the economic life of the local hamlets rather than to remain isolated as a "gated" enterprise separated from local business and residential activity. The scale and relocation of the proposed ski trail expansion to the east to benefit the Pine Hill community is a viable option. The relocation and/or elimination of the SPA, condo's, and private home enclaves from a detrimental high elevation into the hamlets also has beneficial potential that was omitted.

A serious range of alternative construction plans and impacts must still take place. **O2071**

Response: See Part A of the FEIS for a discussion of the east alternative for the BMSC. Part B, The Department agrees that efforts should be made to integrate the project into the economic life of the hamlets as suggested by the Catskill Center for Conservation and Development in its comment (see Comment 03639 above). According to the Applicant, the resort will be working with local businesses in the hamlet and tourism business in general to encourage those who visit the resort also look beyond the boundary of the resort to increase the likelihood that the community at large and businesses will benefit from the resort. Crossroads also indicates that the resort will also continue to work closely with Catskill Center in seeking to achieve these goals.

(15) Secondly, I object to the way that the Belleayre Development has pursued its objectives. It has taken years to submit its proposal, and now there is a "take it or leave it" "accept it or we will all perish" mentality at work in the local community. We should be able to debate the merits of a proposal carefully, and have the ability to modify it. The DEC needs to safeguard the principle of careful development. Putting the Highmount Spa at such a high elevation will be disastrous precedent.

If you approve the Highmount Spa, you will embark on a dangerous path. The Poconos are ruined, in my opinion. Indeed, development has ruined many of the beautiful parts of the country – that is what developers to often do. But tourism in the Catskills is reliant on careful and intelligent development. Please, then, give only a partial permit, or ask them to resubmit. **I3491**

Response: This project has been "debated" since 1999 and was the subject of the 2007 Agreement in Principle which led up to the proposal of the lower-build modified project that is the subject of this SDEIS. As for precedent, the middle of the Highmount Hotel is at an elevation of 2570 feet, while the Discovery Lodge and Sunset Lodge at BMSC are at elevations of 2450 and 3325 feet respectively. The previously mentioned Catskill Mountain House and Overlook Mountain House hotels were built at elevations of 2200 feet and 2900 feet respectively.

(16) I ask that the NYSDEC approve a development project that is scaled down from the currently proposed build-out to a size and scale that is environmentally non-damaging and sustainable. A project that fits that description would get my full-throated support, and there are many other unspoken voices that feel the same way. Reducing the number of single and attached housing units in the project by one half would be a good place to start. **I3640**

Response: There are no single housing units in the proposed modified project. The 179 proposed detached lodging units are within 31 buildings at various locations on the site. This is a significant reduction in both the number of units and the number of buildings previously proposed in the original project.

(17) Usually, developers ask for more than they know they can get and then compromise, but Crossroads' representatives have stated that it will be full build or nothing at all. That should worry people who want to see something built soon. While Crossroads has been stalling the Belleayre expansion, Saugerties built a large new hotel that is part of the Main Street neighborhood and Saugerties is doing quite well. **I302**

Response: Comment noted.

(18) Eco tourism is huge in many countries and we have what it takes to be a world class eco-tourism destination. Imagine the rail trail from Walkway over the Hudson, passing through the stunning Ashokan Reservoir, drawing tourists to Belleayre. People could eat at restaurants and stay at inns along the way, benefitting hundreds of local businesses. A winning plan for far less cost. **I302**

Response: One of the reasons "Eco-tourism" has not developed in this area is that we have too few accommodations to serve as a world class destination. It is the intent of the project to help fill this void in lodging accommodations in this area. The Wilderness Activity Center, which is a critical element of the Resort will feed resort guests out to all recreational and eco-tourism assets in the region.

(19) Generally speaking, I believe development in the Catskill Park should be centered in the hamlets and designed to enhance what is here and what most people come for-the peace and beauty of the area, hiking, fishing, biking, tubing, and the vibrant and burgeoning arts culture that this area is increasingly being recognized for. **I310**

Response: The proposal makes use of an existing ski area that has been a focal point of the Catskills. People come to the area to ski and that, because of a lack of available nearby hotel rooms, there a disproportionate amount of day-trippers to BMSC, as opposed to more longer-stay skiers who would put more money into the local economy.

(20) The State of NY does not need to be subsidizing the goals of a private resort. Instead it needs to create a plan that involves the hamlets as much as possible, preserves the Catskills and serves the public first.

I live only miles from Belleayre and the brilliant stars and small scale community are two things that I cherish - that would be at risk if the Full Build Out proceeded. There are many more modest and sensible ways to develop here that would strengthen our local economy without the risks inherent in the Full Build Out. **O3547**

Response: In 2008, New York State provided $500,000 to the Central Catskill region for hamlet revitalization. Within certain constraints, towns, through their zoning powers, can direct development into the hamlets should they choose to do so. New York State is not subsidizing the private modified resort project. The modified resort development is situated next to an existing ski area.

(21) A smaller project targeted to the market of people who are interested in natural and historic travel will have a far greater chance of economic success. Serving such a market, a development that pays strict attention to environmental performance will only enhance the marketability of the project and help to create the image of the Catskills as a sustainable resort destination. **I3645**

(21a) The proposed resort, big as it is, is not so big that it can't fail. In fact, in my opinion, it is so big that there is every likelihood that it *will* fail. Tourists today are looking for small, intimate places built with consideration for the natural environment and beauty-not for a style that owes more to Las Vegas than to the Catskills. **I3536**

Response: The Belleayre Resort is situated in the Catskill Mountains which attracts over 2.5 million visitors each year and is in close proximity to over 20 million people making the resort a prime destination. The Applicant has indicated that a smaller resort would not likely achieve the critical mass necessary to market its appeal to the greater metropolitan area (HVS' updated "Feasibility Study and Sensitivity Analysis").

Additionally, the Resort, its amenities and the surrounding area and resources will attract visitors for a variety of different reasons including natural and historic travel. For example, the existing buildings at the base of the former Highmount Ski Area will be adaptively reused as the Resort's Wilderness Activity Center which will assist resort guests in planning their Forest Preserve (and other outdoor) activities and other historical and cultural features of the surrounding region.

5.1 Comparison of Proposed Action with Previously Proposed Action

(1) We urge the NYS Department of Environmental Conservation and all stakeholders (those who are parties to the 2007 Agreement in Principle, and others) should jointly seek to advance a dialogue seeking a new, more limited scale low impact, tightly clustered conservation design alternative for the Belleayre Resort that can enhance local and regional buy-in, integrated mountain and hamlet benefits while safeguarding the local and regional watershed capacity, wild life and fisheries habitat, and overall capability to adapt under climate change and severe storm events on the rise. **O3639**

Response: This dialogue has already happened and it resulted in the Agreement in Principle upon which the proposed modified project is based.

(2) After all this I see no downsizing of any significance to this project. **I228**

Response: As outlined in the SDEIS, the modified project represents a 72% reduction in lodging structures and 82% reduction in roads, and a 67% reduction in impervious area. The project site has been more than cut in half. This is a lower build alternative.

(3) This proposed project is overwhelming in many ways. It has barely been downsized from the one previously proposed. 85% of the previously proposed east section has been moved to the west. There are only 30 fewer rooms in this proposal than in the previous one. **I3648**

Response: See the response to the previous, substantively similar comment.

5.2 Alternative Layout for Highmount Spa Resort

(1) The Catskill Center recognizes the significant reduction in visual impacts and impervious surfaces in this proposal through the relocation of the highest ridgeline units and elimination of the access road to them. **O1776**

Response: Comment noted. No response required.

(2) Therefore the Gould's specifically object to any development of Highmount, and any construction above C R-49A, as well as the full Build Out of the BMSC. which would include the acquisition of the former Highmount ski area.

In the alternatives section of the Resort SDEIS, the applicant claims that the Highmount complex is critical to the viability of the entire Resort project, and that the HVS study supports this assertion. Resort SDEIS, Vol. 1 at xxxvii. However, HVS did not even consider, or compare alternatives, let alone conclude that the full development of the resort is the only viable option. Even more significantly, the Resort SDEIS contains no skier market or ski resort lodge metrics, even though the Highmount complex is directly linked to the proposed new ski slopes.

A more appropriate alternative would be to:

Eliminate the proposed resort's Highmount element.

It accomplishes the necessary down-sizing and lower capitalization of the proposed resort as the resort's Highmount element is dependent upon slope-side access, which it will not have absent a west-side expansion,

Down-sizing the resort will mitigate any negative impacts on the region's existing communities and visitor-sector that would otherwise see much of their economic base transferred to the proposed resort,

The resort SDEIS dismisses a "no build Highmount alternative," speculating that without the Highmount portion it would be "…unlikely that this alternative would ever attract sufficient equity investment or financing or, if built, would be marginally performing or scaled back to a substantially lower quality development" (Resort SDEIS, p. xxxvii). No analysis of a no build Highmount alternative can be found in HVS or Ragatz's contributions. The foregoing statement, however, does accurately characterize the result of HVS' feasibility analysis of the proposed resort. Accordingly, there is no valid basis for the dismissal of a no build Highmount alternative, or other alternatives that would decrease its size and/or capital intensity.

Without the Highmount element there is no reason for a west-side expansion of BMSC. The Highmount clement has no viability without a west-side expansion as lacking slope side access it loses, value, convenience, market, and cachet. Without a west-side expansion Highmount is isolated and cut-off from the ski center. Unlike the Highmount clement, the proposed resort's Wildacres clement remains potentially viable either without a west-side BMSC expansion, with an east-side expansion, or no expansion.

Much of the premise for the Highmount element relies upon the developer and HVS' assertion that the proposed resort's market is "worldwide" (e.g., Resort SDEIS, Appendix 5, HVS, p. 3-1), similar to international ski resort oriented destinations as Vail and Aspen, Colorado, Chamonix/Mont Blanc, FR, Banff/Lake Louise, and Whistler/Blackcomb, CA. The Highmount element is presumably geared more towards the resort's presumed worldwide clientele which would tend to gravitate more to a 5-star hotel.

The decision documents cite no examples of skier-oriented and snow-making dependent destination resort(s) with a significant international clientele with as limited in terrain and as few skier visits (as forecast by the UMP) as the proposed resort. The premise that the proposed resort would be a destination for a significant international clientele appears to be based only upon conjecture. More so given that the resort would be the base area village for a publicly owned ski center dependent upon the largesse of State legislators for much of its capital funds.

Being more remote makes the Highmount element more likely to impose greater linear and pumping costs for water and sewer. The Highmount hotel is to be recessed into the side of the mountain which together with its 5-star fit-out also contributes to its higher unit cost.

A no-Highmount alternative presents cost savings that would enhance feasibility by eliminating the need for internal roads and the need to circulate traffic between Highmount, Wildacres, and the BMSC's base area. Likewise, the cost of stormwater facilities, and site preparation such as grading, road cuts, and blasting will also be reduced with a no-Highmount alternative.

The Highmount element will also be more cost intensive to operate -with 274 jobs it is more labor intensive than the larger Wildacres element that would have 267 jobs. (Resort SDEIS, p.119).

Public savings would also be achieved to the extent that the capital and operating costs associated with a west-side expansion of BMSC exceed those of an east-side expansion, or no expansion. To the extent it reduces BMSC operating and/or capital costs a no-Highmount alternative will also relieve upward pressure on lift tickets prices and other ski center services.

Accordingly, there is no basis for the resort SDEIS and/or the UMP to dismiss or omit analysis of a no-build Highmount alternative, particularly as all objective evidence shows the proposed resort to generate sub-par returns, to be too large, and too highly capitalized. All of which are mitigated by a no-Highmount alternative. **I2130**

CR Response: Based on the data and analysis detailed in the 2013 HVS feasibility study, the full Resort with the Highmount component is the only economically feasible approach to the development of the property.

The 2013 report calculated the rate of return for two different scenarios: (1) the Resort without the Highmount component and (2) the full Resort with the Highmount component. The 2013 data shows that industry margins for capitalization rates currently required by hotel real estate investors range from 4.0% to 11.0% with an overall average of 7.95% return. The 2013 report shows that the calculated yield for the Resort without the Highmount component only was 4.8% as compared to 8.2% for the full build with the Highmount component.

The study shows that the current industry standard for capitalization rates required by hotel real estate investors is an average return of 7.95%. The calculated yield for the full Resort with the Highmount component is 8.2% as compared to 4.8% without the Highmount component.

The 2013 study discerns between the Full Resort and Wildacres Only scenarios, and clearly demonstrates that the yield indicated for Wildacres Only scenario is below the threshold necessary for the project to receive serious investor consideration. For the numerous reasons elucidated in the study (but primarily due to economies of scale associated with the defraying of both construction and ongoing operating costs over the combined resort development), the only economically feasible approach to the development of the subject property calls for the construction of both resort components.

Additionally, only the entirety of the subject resort (rather than Wildacres alone) can generate the critical mass in terms of market awareness that is necessary to overcome the limitations associated with the surrounding area. With very few exceptions, the subject property's Catskills location lacks top quality development. The surrounding area may be characterized as economically stagnant, and, despite its heritage, is not perceived as a major resort destination. Additional factors concern economies of scale, as they relate to both operating efficiencies and *infrastructural development costs. The co-operation of the two components is expected to result in savings in a variety of key expense departments, contributing to the overall feasibility of the project. The project described herein is expected to offer the critical mass, economies of scale, and operating efficiencies necessary to support a successful major resort development in the Catskills, but only if developed in its entirety. More importantly, the substantial cost of constructing roads, utility connections, and other underlying infrastructure for the project must be defrayed among the two proposed resorts in order for the property yields to support a positive feasibility conclusion. Wildacres alone does not provide a sufficient return on investment for the project to attract interest in the debt and equity capital markets.*

A supplemental assessment of the no-Highmount alternative is included in the errata section of this FEIS. This assessment concludes that the reduction in environmental impacts would not be significant, but that there would be a significant reduction in socioeconomic benefits under the no-Highmount alternative.

(3) In the Alternatives Section (Section 5) of the most recent version of the SDEIS, the Applicant maintains that it cannot eliminate the Highmount portion of the project for economic reasons and bases that conclusion on the outdated and insufficient studies noted above. Yet the SDEIS indicates the Highmount portion of the project appears to be the most speculative and most costly portion thereof. Of the entire proposed project, the Highmount portion is most problematic in terms of feasibility, climate effects, environmental impacts, and most importantly to any citizen of the State of New York, use of taxpayer money to further an exclusive private development. Aside from those associated with its ridge-top location, none of these issues can be mitigated or ameliorated by merely relocating the Highmount elements lower on the mountain.

The only true alternative that is discussed (§ 5.2.B) is the elimination of the Highmount Spa Resort aspect of the project.

CHA supports this no-Highmount alternative. However, the SDEIS fails to analyze the comparative adverse environmental impacts of this alternative vs. those of the preferred alternative, let alone provide a "level of detail sufficient to permit a comparative assessment of the alternatives discussed" as required by 6 NYCRR §617.9(b)(5)(v). For example, there is no comparison of the impacts from wastewater disposal, at the Pine Hill WWTP ,the impacts from runoff and erosion, the impacts to wildlife habitat, air pollution and traffic impacts, adverse impacts to the local economy, and all other categories of adverse impacts that have been raised in the EISs. Reducing the size of the project by about one-third by eliminating the Highmount Spa Resort would substantially reduce the project's impacts. By contrast, the DUMP compares the impacts of some (if not all) of its alternatives across 16 different types of potential impacts.

The SDEIS does contain two tables (5-2 and 5-3) comparing a random few impacts for the preferred alternative and the two alternatives that have already been rejected by the applicant. The no-Highmount alternative is not included in this comparison. Thus, rather than serving its intended purpose of providing the decision-makers with a basis for choosing "from among the reasonable alternatives available" to "avoid or minimize adverse environmental impacts to the maximum extent practicable" (6 NYCRR §617.11(d)(5)), the alternatives discussion in the SDEIS is used solely to justify the applicant's preferred alternative.

Analysis of the no-Highmount alternative was mandated by the Scoping Document for the SDEIS: “[t]he Supplemental DEIS shall also address the alternative of eliminating the Highmount Spa Resort in its entirety.” Scoping Document, Part B, p. 39; SDEIS p. 5-6. However, without analyzing the environmental impacts (and benefits) of this alternative to the extent necessary to comply with 6 NYCRR §617.9(b)(5)(v), and to allow the requisite comparison of this alternative with the preferred alternative (6 NYCRR §617.11(d)(5)), the no-Highmount alternative was dismissed out of hand by the authors of the SDEIS solely for financial reasons. SDEIS p. 5-6.

Not only does this failure violate SEQR, and the guidance of the SEQR Handbook, it violates the express mandate of the Scoping Document. Moreover, it is not even based on a realistic assessment of the economics of the Project.

Response: The Errata section of this FEIS included a supplemental analysis of the “no-Highmount Alternative”.

The stated justification for retaining the Highmount Spa Resort part of the project relies heavily on a report prepared by HVS Consulting Services and Ragatz Associates in 2008. SDEIS p.5-7. However, that report, which was prepared when the real estate market was at its peak, found that the hotel aspect of the Highmount Spa Resort was only “marginally feasible”. SDEIS, Appendix 5, HVS Report p. 7-8. At this point, 5 years later, it is no longer feasible. See Siegel Report.

Furthermore, Ragatz now believes that has determined that the market for shared-ownership units such as those proposed for the Resort has declined 80% since that time. The detailed economic analysis of the Project prepared for CHA by Siegel demonstrates that the Resort as a whole is oversized and should be reduced in scale. This is further described at Section III.A below. **O3635**

CR Response: Based on the data and analysis detailed in the 2013 HVS feasibility study, the full Resort with the Highmount component is the only economically feasible approach to the development of the property.

The 2013 report calculated the rate of return for two different scenarios: (1) the Resort without the Highmount component and (2) the full Resort with the Highmount component. The 2013 data shows that industry margins for capitalization rates currently required by hotel real estate investors range from 4.0% to 11.0% with an overall average of 7.95% return. The 2013 report shows that the calculated yield for the Resort without the Highmount component only was 4.8% as compared to 8.2% for the full build with the Highmount component.

The study shows that the current industry standard for capitalization rates required by hotel real estate investors is an average return of 7.95%. The calculated yield for the full Resort with the Highmount component is 8.2% as compared to 4.8% without the Highmount component.

The 2013 study discerns between the Full Resort and Wildacres Only scenarios, and clearly demonstrates that the yield indicated for Wildacres Only scenario is below the threshold *necessary for the project to receive serious investor consideration. For the numerous reasons elucidated in the study (but primarily due to economies of scale associated with the defraying of both construction and ongoing operating costs over the combined resort development), the only economically feasible approach to the development of the subject property calls for the construction of both resort components.*

Additionally, only the entirety of the subject resort (rather than Wildacres alone) can generate the critical mass in terms of market awareness that is necessary to overcome the limitations associated with the surrounding area. With very few exceptions, the subject property's Catskills location lacks top quality development. The surrounding area may be characterized as economically stagnant, and, despite its heritage, is not perceived as a major resort destination. Additional factors concern economies of scale, as they relate to both operating efficiencies and infrastructural development costs. The co-operation of the two components is expected to result in savings in a variety of key expense departments, contributing to the overall feasibility of the project. The project described herein is expected to offer the critical mass, economies of scale, and operating efficiencies necessary to support a successful major resort development in the Catskills, but only if developed in its entirety. More importantly, the substantial cost of constructing roads, utility connections, and other underlying infrastructure for the project must be defrayed among the two proposed resorts in order for the property yields to support a positive feasibility conclusion. Wildacres alone does not provide a sufficient return on investment for the project to attract interest in the debt and equity capital markets.

5.3 Alternative Golf Course Layout

No substantive comments were received on this aspect of the SDEIS.

5.4 Alternative Water Supply

Comments and responses regarding water supply can be found in sections 2.8.6, 3.1.3, and 3.2.1 of this FEIS.

5.5 Alternative Wastewater Disposal

(1) Do I get a free ride because I'm sending flow to another facility for treatment saving myself the cost of permitting and building the necessary treatment facility on my own property? **O3636**

Response: The Applicant is not getting a "free ride". It must pay for the infrastructure to pipe the wastewater down to the Pine Hill WWTP and pay to have the project wastewater treated at the plant.

5.6 Alternative Golf Course Management Practices

Comments and responses regarding golf course management can be found in section 2.8.4, 3.1.5 and 3.2.3 of this FEIS.

5.7 Alternative Stormwater Management Practices

(1) A 5-year bond is proposed to assure proper, long term operation and maintenance of the stormwater management system. Details of the financial assurance mechanism after 5 years are not discussed. More effective management controls such creating a municipal drainage district are not evaluated. **I2130**

Response: The bond mechanism is proposed to be used during construction of the project. According to the NYSDEC stormwater management program, long term controls can consist of deed covenants, stormwater districts or other long-term agreements. The Towns of Shandaken and Middletown will ultimately decide what if any mechanism for long term maintenance of the stormwater system will be needed.

5.8 Alternative Construction Phasing Plan

(1) The Draft SWPPP (Appendix 19 in the DSEIS) presents a very detailed plan for the Wildacres Hotel for Phase 1A of the Modified Project (Drawing L-3.01). Project phases characterize when project components are to be constructed. The construction phase for the Wildacres Hotel does not include its unattached parking garage, which is projected to be built during phase 2. The parking garage for the Wildacres Hotel is included on drawings L-3.01 and L-3.00. It is also included in the blasting plan shown on Figure 2-35 of the DSEIS. However, it is not included in Phase 1A of the Modified Project. This parking garage is located downslope from County Route 49A, with no access other than by the Wildacres Hotel site, and should be included in Phase 1A.4 (or eliminated entirely as noted previously). This would then provide 208 parking spaces for the 250 unit hotel. The work area table on drawing L-3.01 and in Table 11, page 54 of the SWPPP should be modified accordingly. **S3592**

Response: The Applicant has determined that it is appropriate to construct the attached parking garage in Phase 2. 310 parking spaces will be built within the hotel building in Phase 1.

5.9 No-Action Alternative

(1) At this time we should be looking at reinvigorating local economies in a sustainable way, not introducing a mega development that will further deplete the environment and local communities. I have yet to understand how clear cutting and carving up a mountain constitutes sustainable and environmentally sensitive development! **I3527**

Response: The proposed project contains a number of elements that can be considered sustainable; LEED certified buildings, an organically managed golf course, re-use of stormwater runoff for golf course irrigation, etc.

(2) No more building at Belleayre. Leave it as a park for all to enjoy human and wildlife. We need more natural, wild area and not less. **O377**

Response: There are nearly 300,000 acres of Forest Preserve lands in and around the Catskill Park. The area to be developed for this project, 218 acres, is less than 1/10th of 1% of the amount of Forest Preserve.

SECTION 6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

No substantive comments were received on this section of the SDEIS.

SECTION 7 GROWTH INDUCING AND SECONDARY IMPACTS OF THE MODIFIED PROPOSED ACTION

(1) As noted above in connection with the UMP, the SDEIS identifies substantial economic benefits but concludes that they will not induce growth. For instance, Section 1.5, Project Need and Benefits, and Section 3.8, Land Use & Planning, note that, "…..off-site Resort patron spending of $10.64 million per year will occur at full project build-out, and that this will occur mostly in businesses located in the local village and hamlet centers." However, the conclusion that economic activity will be limited to existing commercial centers is not supported by any data, and the SDEIS fails to address the potential impacts along Rt. 28 if construction of the proposed resort leads to significant new commercial development.

Similarly, Section 7, Growth Inducing and Secondary Impacts of the Proposed Action, states that that: "Belleayre Resort is expected to have a negligible effect on year-round development in the study area." This statement contrasts with other parts of the Report, including projections that the development would result in a net increase in 771 on-site jobs (541 full-time jobs and 230 part-time jobs). While Section 7 of the SDEIS assumes that the vast majority of these new jobs would be filled with existing under/unemployed residents or new residents who would come to the area and live in the existing housing stock, this assumption is not supported by any analysis in the SDEIS.

The FEIS should more fully address the potential secondary impacts to the area, including new housing construction and impervious surfaces and additional demands for various community services (e.g. schools), associated with any new commercial or residential development. Proposed mitigation for the secondary impacts should be included if significant adverse secondary impacts are identified. **M3637**

Response: Page 22 of Appendix 4 discusses reasons why development is expected to be induced in or limited to existing commercial centers. First, the SDEIS states that zoning would guide development to the existing villages and hamlets: "The zoning codes of the Towns of Shandaken and Middletown direct commercial development into the existing villages and hamlets. The 2005 Comprehensive Plan for the Town of Shandaken states that 'existing hamlets should be revitalized' and that NY Route 28 'must be planned and designed as a series of separate but coordinated experiences—mountain views, bustling hamlets, open fields, unique shops and tourist shops, educational and historic sites, all with quality of design and maintenance worthy of the resource." Second, the SDEIS states that funding sources may encourage growth toward hamlets and villages. Page 23 of Appendix 4 discusses the Catskill Watershed Corporation's REDI Loan program, which provides fast track approval for loan or grant applications for businesses located in, or seeking to locate in, a hamlet or village that has prepared a Whole

Hamlet Program plan. Third, the SDEIS states that there are environmental constraints within the Route 28 corridor that would tend to focus development in already developed areas (see pages 22 and 23 of Appendix 4).

With respect to the commenter's concern that the following statement contrasts with other parts of the Report: "Belleayre Resort is expected to have a negligible effect on year-round development in the study area," the analysis in Appendix 4 is for the NY Route 28 Corridor Study Area, which includes Middletown, Shandaken, and Olive. As stated on page 20 of Appendix 4, the vast majority of the on-site year-round and seasonal jobs created by the proposed project are expected to be filled by local residents or people already within a commuting radius. Those who would relocate include 16 to 20 mid- to upper-management positions, and it is expected that these employees would either rent or purchase existing homes for the duration of their employment. The SDEIS states that these jobs would be imported into the region because of the specialty or technical nature of these positions and filling them from among the available labor pool may not be possible.

Appendix 4 of the SDEIS also states that under a worst-case scenario there could be up to 250 workers who could be "in-migrants," or new worker/residents within the workforce study area. Of these 250 workers, 163 workers are projected to relocate within the NY Route 28 Corridor Study Area (see Table 3.9.2-20). These workers include the approximately 16 to 20 mid- to upper-management positions noted above, as well as others who would relocate to the workforce study area. As stated on page 33 of Appendix 3, "There are numerous and sometimes complex factors that could influence whether a worker would be willing to accept employment at the proposed project, and in addition, possibly relocate to the study area. These include the type of employment and salary offered, how far a worker is willing to travel for employment, how much time they are willing to spend commuting, and the increasing cost of commuting, among others."

The commenter also states that the following, "While Section 7 of the SDEIS assumes that the vast majority of these new jobs would be filled with existing under/unemployed residents or new residents who would come to the area and live in the existing housing stock, this assumption is not supported by any analysis in the SDEIS." As stated on page 31 in Section 3.9 in the SDEIS, "it was assumed that part-time positions would be filled by workers in the area that work part-time but are looking for additional work, unemployed persons who are searching for part-time employment, and others who are not technically in the labor force." Based on 2007 data from the New York State Department of Labor, there were 665 unemployed workers in the workforce study area. The number of unemployed workers in the area has increased to 1,089 unemployed workers, based on 2007-2011 American Community Survey data. The proposed project would offer employment opportunities for these unemployed workers in the workforce study area. Because part-time employment generally does not offer a salary that would support moving from one area to another, it was assumed that they would already live in the workforce study area.

(2) The resort SDEIS estimates off-site spending by resort guests at $10.64 million (Resort SDEIS, p. 1-14). This figure, however, does not reflect any transfer in spending by existing visitors in the Route 28 corridor to the resort. That is, the $10.64 million estimate of off-site spending by resort visitors is not the net impact of the proposed resort upon existing businesses and communities. The associated transfer in spending from existing communities and businesses

to the resort could largely offset, and possibly exceed, the $10.64 figure. Neither the resort SDEIS or the UMP, however, provide an estimate of this transfer in spending to the resort.

Expansion of BMSC absent the proposed resort will cause virtually all economic benefits to occur in existing communities and among existing or new proprietors located therein. With the proposed resort, however, most new visitor spending will occur within the confines of the proposed resort. In addition, a sizable but undetermined amount of spending attributable to existing visitors that currently occurs among existing proprietors in existing communities throughout the Route 28 corridor will also be transferred to the proposed resort.

For the proposed resort to avoid negatively impacting the economic base of the Route 28 corridor's existing communities, the UMP's 320,000 forecast skier visits would need to support more overnight lodging units than the third-largest destination ski area in the U.S (Mammoth, CA), the largest destination ski area in the northeast U.S (Killington, VT), and the Olympic complex at Lake Placid, NY. The corridor's ratio would need to rival that of the four-mountain Aspen ski complex (Ajax, Buttermilk, Snowmass, and Highlands) to avoid causing negative impacts on the economic base of its existing communities.

The aggregate impact of the proposed resort on the local and regional economy has not fully been adequately assessed or fully accounted for. The decision documents assume the proposed resort to be fully additive to the local economy, but this assumption is shown to be highly questionable. For example, the likelihood that the Route 28 corridor can support the same ratio of skiers to lodging units as the marquee Aspen and Vail, CO, Killington/Pico, VT, and Mammoth, CA ski complexes with only fraction of their annual skier visits and terrain has not been assessed by the decision documents, but appears highly dubious. **I2130**

Response: It should be noted that the proposed project would not expect a substantial transfer in spending by existing visitors in the Route 28 corridor because the visitor base to the proposed project is expected to be derived largely from a new consumer group that is not currently frequenting the Route 28 corridor. As stated on page vii of the Executive Summary, "of the limited available rooms in the region many of them are quite fine, but many more offer very basic and outdated accommodations." The proposed project would offer "an unrivaled upscale, four-season resort directly serving the New York metropolitan area. With ski-in, ski-out privileges, ±15,000-square-foot conference facilities, 18 holes of championship golf, and two separate full-service spa operations, the resort features a full array of year-round demand generators. For example, the conference facilities alone address a core need of the region for space with attached lodging where one can hold conferences, weddings, proms, banquets and the like. This feature in turn would generate an increase in the need for local florists, photographers, entertainers and other ancillary services."

Because of the amenities and types of units offered (i.e. fractional units and timeshare units), the proposed project would attract new visitors to the region and convert current day trippers to overnight or weekend visitors. This new spending would not likely result in a significant transfer, or cannibalization, of existing sales within the Route 28 corridor since a comparable product is not available.

Appendix 4 of the DSEIS finds that local communities would benefit from visitor spending, employee spending, and operational demands of the proposed project. While the SDEIS analysis assumes that a majority of visitor spending would occur on-site, resort visitors would not limit their spending entirely to on-site Resort goods and services; they would travel off-site for spending on a variety of goods and services such as antiques, crafts, restaurant meals, groceries, gas and oil, recreational fees for off-site amenities, and cultural attractions. As established in Table 7.3-1, visitors to the Resort are expected to spend $10.64 million throughout the Route 28 corridor, most particularly in the village and hamlet centers where existing businesses and shops are concentrated.

The SDEIS also finds that existing businesses would benefit from employee spending. As stated on page 42 of Appendix 3, the proposed project is expected to generate 771 direct employees and 264 indirect employees in the tri-county region. As set forth in the SDEIS, based on a total projected payroll of $24.85 million and the assumption that 50 percent of these direct wages and salaries would accrue to households within the NY Route 28 Corridor Study Area, it was estimated that there would be $12.43 million in new expenditure potential within the NY Route 28 Corridor Study Area from Resort employees' wages and salaries. It was also expected that local businesses would benefit from the spending from the indirect employees generated by the proposed project. Based on total indirect wages and salaries within the tri-county area of $12.96 million, there would be an estimated $650,000 in new expenditure potential within the NY Route 28 Corridor Study Area from indirect employment generated by resort operations.(CR)

Finally, the SDEIS finds that local businesses would benefit from the goods and services demands of the proposed project, which would purchase certain goods and services from businesses within the Route 28 Corridor. As shown in Table 3.9.3-5 of Appendix 3, the indirect output that would result from the proposed project was $56.78 million, of which $12.96 million were wages and salaries. To estimate the corridor's share of this activity, the off-site activity was estimated proportionate to the corridor's share of retail sales within the tri-county area. This amount—about 2.4 percent—was applied to the net economic activity after subtracting indirect wages and salaries. Therefore, the EIS conservatively assumed that businesses along the Route 28 Corridor study area would receive approximately $1.05 million per year.(CR)

(3) The project itself will increase our population since it needs employees to work. In addition, houses and stores along Rt. 28 and its corridors will continue to be built and developed. (This is in addition to the resort project). With an increase in population comes an increase in crime, traffic and deteriorating infrastructure. Taxes will go up because we will need an increased police force, fire department, etc. **I475**

The majority of the year-round and seasonal jobs created by the proposed project are expected to be filled by local residents or people who already reside within a reasonable commuting radius. As stated on page 33 of Appendix 4, of the 771 jobs that would be introduced by the proposed project, up to 250 jobs (or 32 percent) could be in-migrants or new worker/residents within the workforce study area.

In regards to the commenter's concern about potential commercial development along the Route 28 corridor, as stated on page 21 of Appendix 4, it is expected that new demands for goods and *services that would be generated by the Resort's employees and its visitors would be at existing businesses in the area. The presence of the Resort as a direct competitor to existing businesses would stimulate area businesses to have increased hours and/or days of operation, increased inventory, and would stimulate businesses to upgrade their facilities. The proposed project would generate a maximum demand for an additional 39,400 square feet of new commercial development in the study area. It was expected that the additional commercial space would be accommodated by improvements to existing businesses, re-occupancy of existing structures or in-fill development in hamlets and villages, including Phoenicia, Margaretville, Fleischmanns, Boiceville, and Pine Hill. It is not expected that there will be a significant amount of new construction. (CR)*

In regards to the commenter's concern about increased traffic, the SDEIS analyzed traffic with the proposed project. Please see SDEIS Section 3.5 and FEIS responses to comments in Section 3.5, Traffic.

In regards to the commenter's concern about deteriorating infrastructure, the SDEIS analyzed road infrastructure with the proposed project in section 3.5. Also see responses to comments in FEIS section 3.5.

In response to the commenter's concern about community services, as stated on page xxvii of the Executive Summary, all service providers contacted indicated they had the ability to serve the project, some with mitigation measures in place. Service providers contacted included police (State, counties and local), fire, ambulance, hospitals, schools, solid waste, electric and telephone. The Applicant would provide funding for manpower and/or equipment to the Shandaken Police Department, the Pine Hill Fire Department and the Shandaken Ambulance Squad to mitigate the effects of increased demands for the services of these providers as a result of the Project that are not addressed by the significant increase in local tax revenues generated by the proposed project. Therefore, it is not expected that taxes would go up with the proposed project (see response to comment 8 in Section 3.10, Community Services).

(4) What is the connection between Mr. Gitter's desire to build his oversized resort and hydrofracking??? Well, I will tell you. It goes something like this. By building oversize resorts (or any development) so large up against a wild or preserved forest or land, It is possible and probable to ruin the excellent source of water in the Watershed. How???? By having all that nasty run-off from a high maintenance and populated buildings and golf course. Also it would increase the turbidity of streams in and the reservoir and (God forbid) the water quality may no longer be acceptable. UH OH!!!!There goes the watershed. Hey..... Guess what? No Watershed...Any developer can build a whole bunch of condos where our Watershed used to be. BUT get this..... better yet NO WATERSHED.....WE can FRACK this area to death !!!! **I922**

Response: There is no connection between this project and natural gas drilling using the high volume hydraulic fracturing method. Otherwise, the comment is noted.

(5) The most ambitious development plans for the Belleayre Ski Center and associated Resort would change the nature of how Route 28 is used and experienced, with significant increases in traffic congestion that are deemed "acceptable" by some who have reviewed the related proposed

projects. By the standards of many relatively congested major arteries in the urbanized Northeast that may well be true, but it would significantly degrade one of the major selling points for our currently rebounding local economy. It would also incentivize commercial development literally on Route 28 to capitalize on the transient quick shopping needs of tourists in transit to and from the new proposed Resort. That in turn would make the commercial districts within towns and hamlets in the area that are not physically located directly along Route 28 less sustainable. **I3649**

Response: As a result of the traffic analysis that was conducted for this project, several improvements would be installed in order to improve traffic movements on Route 28. "These include constructing a right turn lane on County Route 49A to facilitate right turns onto NY Route 28 eastbound towards Kingston. A left turn lane would be constructed on NY Route 28 to facilitate left hand turns off of NY Route 28 and onto County Route 49A towards the resort and BMSC. A three-phase traffic signal would also be installed at the NY Route 28/County Route 49A intersection (see page xxi in the Executive Summary).Also, see response to comments on traffic in Part C, Cumulative Impact Analysis

It is not expected that the proposed project would result in substantial new commercial development on Route 28. Rather, it is expected that commercial development would be accommodated by improvements to existing businesses, re-occupancy of existing structures or in-fill development in hamlets and villages. Environmental constraints within the Route 28 corridor would limit development along the corridor. As stated on page 23 of Appendix 4, "Of specific relevance to potential new commercial development is the location of primary streams (including the Esopus Creek and East Branch of the Delaware River) alongside Route 28, the prevalence of floodplain and wetland areas in close proximity to the road, and the numerous locations where steep slopes are located immediately adjacent to the right-of way. These environmental constraints also tend to focus development in already build-up places, including Margaretville, Fleischmanns, Boiceville, Phoenicia, and Pine Hill, or in areas immediately outside these hamlets and villages." Please see response to Comment 1.

(6) Will the BMMP [Belleayre Mountain Master Plan?] be the leverage for 'developing' Route. 28 into a 'strip' mall? **I405**

Response: As discussed on pages 22 and 23 of Appendix 4, and discussed in response to comment 1 above, Route 28 is not expected to be developed into a "strip mall" or experience sprawl like development because of local zoning codes, and environmental constraints. Please see response to Comment 1.

(7) Also the only trickle down the local community would receive would be an increase in motor traffic, otherwise most of the needs of the visitors are met on site by the resort's amenities. **I403**

Response: Local businesses would benefit from off-site visitor spending, employee spending, and would benefit from the goods and services demands of the proposed project (please see response to comment 2a in Section 3.9).

(8) We want to keep the area free from grotesque overdevelopment, as will be the case if the full buildout plan is adopted. Let's not let our community turn into the Hamptons or Vail or Aspen. **O3547**

Response: Comment noted. The proposed project was planned based on market research, which indicated that there is demand for this type of project. ***.*** *Based on the data and analysis detailed in the 2013 HVS feasibility study, the full Resort with the Highmount component is the only economically feasible approach to the development of the property. The study shows that the current industry standard for capitalization rates required by hotel real estate investors is an average return of 7.95%. The calculated yield for the full Resort with the Highmount component is 8.2% as compared to 4.8% without the Highmount component. Based on the 2013 study, the data supports that only the yield indicated by the full resort scenario meets industry standard feasibility thresholds. (CR)*

Furthermore, the scale of the project is consistent with the projected demand for the resort facilities. Changes in the proposed project have yielded a project that is substantially smaller in size and environmental impact. For example, the Modified Project is only 38% of its originally proposed size. See table ES-1 in the SDEIS Total acreage to be developed has been reduced by 60%. Total number of hotel and lodging units has been reduced by about 30%. The total acreage of land that will be converted to impervious surface has been reduced by about 70%. Additionally, the 1,189 acres of land that was previously to be developed as Big Indian has been purchased by the State and will be forever protected from future development. Also, the 200+ acre Adelstein parcel is now subject to a Conservation Easement held by the New York City Department of Environmental Protection. The changes to the project, all of which reduce environmental impacts along with the overall size of the project are set forth in detail in the SDEIS Executive Summary as well as the body of the SDEIS.

It should also be noted that the resort, as indicated in the SDEIS, will not be constructing all 629 units at once. Only the two main hotels structures (consisting of 250 and 173 units respectively) would be built during the first phase. The remaining 206 units will only be built if demand warrants. There are a total of 3 phases planned for this project that will take up to 11 years to construct dependent on the selling of the detached lodging units. The first phase has two components, Phases 1A and 1B, which will be constructed separately. The hotel and the golf course were to be completed in the first phase of construction.

(9) We are concerned about the precedent that this project sets for future development. One only needs to visit the Poconos to see what our area could become with these types of large-scale projects. **I339**

Response: Section 7 of the SDEIS, Secondary and Cumulative Impacts, describes the "spin-off" development that could result from the project as being very limited in scope, and that much of this secondary development can be accommodated by currently unused or underutilized development that already exists in the area. Only a very limited amount of new development is projected to occur as a result of the modified project. (CR)

(10) The amount of turbidity in the water at the Ashokan and other water sources may be enough to wreck the Water Shed. Then once there is no more Water Shed the Catskills will be GONE! Because... now there can be any kind of private development. This Gitter project's main purpose is to destroy the Water Shed and build a gateway so other private developers can more easily purchase and more noise, more low wage jobs, more low income population...unsustainable with rising taxes paid by us. **I422**

Response: The SDEIS analyzed potential impacts of the proposed project on the watershed. See Section 3.1 of the SDEIS and the response to comments in section 3.1 of this FEIS. The modified project does not drain to the Ashokan Reservoir. Under the original project, the eastern, Big Indian portion project was within the Ashokan Reservoir watershed, but that development has been eliminated under the modified project. Under the current proposal, only 12 acres of the modified project are within the Ashokan Watershed and drainage from this part of the project, which is comprised mainly of organically managed golf course, is directed to a bioretention stormwater management device designed to capture any suspended solids in stormwater runoff.

As stated in the project need section of the SDEIS, for almost fifty years, the economic decline of the Central Catskills and the potential for a revitalized tourist economy has been subject of studies by a variety of consultants and commissions. The project may help to revive the local economy.

SECTION 8.0 EFFECT OF THE MODIFIED PROJECT ON THE USE AND CONSERVATION OF ENERGY

(1) The sections of the environmental documents that discuss the effects on the use and conservation of energy are rather skimpy and considerably more thought and commitment must be made to the conservation of energy during both the construction and operational aspects of this project. The use of more energy-efficient snowmaking equipment and the goal of LEED-certified buildings is recognized, yet other energy efficiencies can be achieved. The project sponsor should consider construction equipment and vehicles that are powered by electricity or other alternative fuels (to diesel). Renewable energy sources could reduce the energy use and the use of conventional fuels for operations of the resort. Solar energy, wind turbines and geothermal sources of energy should be investigated. Some non-traditional, renewable energy sources may also provide financial incentives for their implementation. From the environmental documents, it does not appear that any alternative energy sources have been considered. **O3635**

Response: U.S. Green Building Council created the LEED (Leadership in Energy and Environmental Design) rating program to spur the development of high-performance, sustainable buildings. Buildings are awarded points toward LEED certification on a scale that emphasizes Sustainable Site, Water Saving, Energy Efficiency, Materials & Resources, and Indoor Environmental Quality.

The Belleayre Resort at Catskill Park is committed to obtaining Silver Certification or higher for the Wildacres Resort Hotel, the Highmount Spa Resort Hotel and Highmount Lodge building.

The proposed project contains a number of elements that can be considered sustainable; LEED certified buildings, an organically managed golf course, re-use of stormwater runoff for golf course irrigation, among other things.

Two Architectural Firms, Hart/Howerton and Emilio Ambasz & Associates, leaders in the field of green building design, have been employed to conceptualize and design those buildings. These designers have and will continue to take into consideration that buildings qualify for LEED Certification:

- *Innovative design;*
- *Low levels of light pollution;*
- *Use of regionally produced construction materials;*
- *Use of recycled materials in the construction process;*
- *Use of paints, carpets, and composite building materials with low levels of chemical emissions;*
- *Recycling of construction debris to keep it out of landfills;*
- *Energy efficiency;*
- *Water Conservation*
- *and,*
- *Providing daylight and views for the vast majority of space inside the building.*

The incorporation of green building principles into the Belleayre Resort construction to strive for LEED Silver would also result in a number of important measures being taken to increase energy efficiency, lower energy consumption and reduce greenhouse gas emissions. Many of these green design and construction techniques are now commonly used in the construction industries and range from siting and designing the buildings to take greater advantage of passive solar heat gain while also minimizing unwanted solar heat gain, incorporating natural daylight into the mix of the building's interior illumination along with occupancy and light sensors to control electrical lighting, the use of high performance insulation and computer-based building control systems.

In addition to the methods of reducing energy consumption, Crossroads has indicated that it will consider alternative energy sources such as photo-voltaic and geothermal. The methods and technologies, along with the building codes and regulations are ever changing. Therefore, once the project receives permission from the permitting agencies to move forward, these energy considerations will be made as part of the next stage which is the Design Development and Construction Documentation the project. Greenhouse gas mitigation conditions, which have the same effect of conserving energy, would be the subject of the Department's Findings.