

Storm Water Pollution Prevention Plan for Summit Woods Subdivision

Location:

NYS Route 52
Town of East Fishkill
County of Dutchess

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Certification Statements

Owner's/Operator's Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluated the information submitted. Based on my inquiry of the persons or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Name (please print) _____

Title _____ **Date** _____

Address _____

Phone _____ **Email** _____

Signature _____

Contractor's Certification

"I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of State of New York and could subject me to criminal, civil and/or administrative proceedings."

Contracting Firm Name (please print) _____

Address _____

Phone _____ **Fax** _____

Name (please print) _____

Title _____ **Date** _____

Signature _____

SWPPP Responsibilities _____

Trained Individual Name (please print) _____

Title _____ **Date** _____

Signature _____

SWPPP Responsibilities _____

Note: All contractors involved with Stormwater related activities shall sign a contractor's certification form.

Subcontractor's Certification

"I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of State of New York and could subject me to criminal, civil and/or administrative proceedings."

Subcontracting Firm Name (please print) _____

Address _____

Phone _____ **Fax** _____

Name (please print) _____

Title _____ **Date** _____

Signature _____

SWPPP Responsibilities _____

Trained Individual Name (please print) _____

Title _____ **Date** _____

Signature _____

SWPPP Responsibilities _____

Note: All contractors involved with Stormwater related activities shall sign a contractor's certification form.

Qualified Professional's Credentials and Certification

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-Construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print) _____

Title _____ **Date** _____

Address _____

Phone _____ **Email** _____

Signature _____

"Qualified Professional" means a person knowledgeable in the principles and practices of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

1 Introduction

This Stormwater Pollution Prevention Plan (SWPPP) for the 175-lot residential subdivision to be known as “Summit Woods Subdivision” has been developed in accordance with New York State Department of Environmental Conservation (NYSDEC) technical standards as presented in the New York Standards and Specifications for Sediment and Erosion Control Manual (July 2016), and the New York State Stormwater Management Design Manual (January 2015). This report has also been designed to meet the criteria requirements of the New York State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-20-001.

Project Background

The proposed project site consists of a 325.22-acre parcel of land, located on the west side of New York State Route 52 in the Town of East Fishkill, Dutchess County, New York. The project is located within the R-1 and R-2 residential zoning district and is proposed to be 175 individual parcels arranged in accordance with the Cluster Bulk Regulations. and has frontage along Depot Hill Road.

The project consists of 5 separate adjoining parcels, located on State Route 52 near the intersections of Old Route 52 and Primrose Lane.

A location map has been provided in figure A below, which shows an aerial view of the site and the surrounding area.

Proposed Project

The proposed project includes the development of the parcels for the creation of a 175-lot single-family residential development. The Applicant intends to develop the site, disturbing approximately 39% of the property and leaving the remaining land (steep slopes and wetlands) as open space. The Applicant is proposing to provide 201.42 acres of open space on the property inclusive of the mapped wetland area. Other improvements to the site will include associated amenities for a single family subdivision such as driveways, lawns, landscaping etc.

A stormsewer system shall be constructed to direct runoff from the site into Extended Detention Ponds. The roof runoff from the proposed houses will be directed into drywells. Please refer to section 5.0, “Permanent Water Quality and Quantity Controls,” of this report for further information.

This site will be served by municipal water and sewer facilities, which shall approved by the Town of East Fishkill, Dutchess County Department of Health and the DEC.

According to the NY SPDES General Permit, a SWPPP must be implemented for a single family residential project greater than five (5) acre of disturbance. The total disturbance for this project shall be approximately 128.42 acres, therefore a complete SWPPP is provided. Disturbance to the site during construction will be minimized to every extent possible. Temporary erosion and sediment control measures have been provided and locations have been shown on the plan to indicate the limits of disturbance and to delineate the areas deemed necessary for regrading and clearing during construction. This report has been designed to offer both temporary and permanent mitigation practices during and after the construction phase in an effort to reduce the sediment laden runoff created by the disturbed areas.

Figure A - Location
Map



2 Existing Site Features

The predominant existing land use on the site is open space with an isolated single-family residential site. The large majority of the open space consists of abandoned fields, woodlands, thickets, and a large NYSDEC wetland and stream. Existing land uses along Route 52 in this area are single family residential and open space areas agricultural lands.

Historic Places

A Phase IA archeological sensitivity assessment was conducted on the 325.22-acre Summit Woods site in November of 2010. The Phase 1A study had revealed that the property was situated in an area of higher than average potential recovery of prehistoric sites.

A Phase IB archeological field investigation was also conducted on the Summit Woods site in March of 2011. The Phase IIB report study encountered (2) small prehistoric sites (Loci 1 and 2). Recommendations were made to conduct a Phase II intensive testing of the Locus 1 and Locus 2 sites.

A Phase II intensive study was conducted on both of the sites between April 26 and May 3, 2011.

The results of the Phase II intensive study were submitted to OPRHP on June 22, 2011.

OPRHP submitted a letter on April 26, 2012, stating that since the area of Locus 1 was preserved as open space and would be protected during construction, the project will have no adverse impact on Historic Resources. A copy of the correspondence has been provided in Appendix "G" of the report.

Site Soils

The official soil type indicated by the USDA Soil Conservation Service for the Site is as follow;

Cc – Carlisle Muck (0.3%)

Hydrologic Soil Classification = A/D

Description: This is a very deep, nearly level, poorly drained organic soil. Slopes range from 0% to 3%. Permeability is moderately slow to moderately rapid. Depth to the water table is approximately 0.5 to 1.0 foot from September to June.

The erosion potential is generally moderate. The construction limitations for roads are wetness and frost action.

ChB & ChD – Charlton loam (12.8%)

Hydrologic Soil Classification = B

Description: The Charlton soil is a very deep well drained loamy soil formed in till. Slopes are 3% to 8% and 15% to 25%. The erosion potential is generally high. The construction limitations for roads are moderate slope and frost action on slopes of less than 15% and severe slope on areas greater than 15%. The construction limitations for dwellings with basements and shallow excavations are slight to moderate slope on areas less than 15% slope and severe slope on areas greater than 15%.

CuC - Copake gravelly silt loam (12.5%)

Hydrologic Soil Classification = B

Description: This is a very deep, well-drained sandy gravelly soil formed in outwash. Slopes are 5% to 16%. Permeability is rapid to moderately rapid in the solum and very rapid in the substratum.

The erosion potential is generally low. The construction limitations for roads and dwellings with basements are slight to moderate slope on areas less than 15% slope and severe slope on areas greater than 15%. The construction limitations for shallow excavations are severe caving of cutbanks in areas less than 15% slope and severe slope and caving of cutbanks in areas greater than 15%.

FcD - Farmington - Galway complex (5.9%)

Hydrologic Soil Classification = C

Description: This is a shallow to moderately deep, excessively well-drained loamy soil formed in till underlain by folded limestone bedrock. Permeability is moderate. This soil averages 10"-20" over bedrock and the depth to the seasonal high water table is 1.5 to 3.0 feet from March to April.

The erosion potential is moderate. The construction limitations for roads, dwellings with basements, and shallow excavations are severe due to depth to rock on slopes of less than 15% and severe slope and depth to rock on areas greater than 15%.

GfB – Galway - Farmington complex (4.5%)

Hydrologic Soil Classification = B

Description: This soil is about 40% Galway soils, 30% Farmington soils, and 30% other soils and rock outcrop.

The erosion potential is moderate. The construction limitations for roads, dwellings with basements, and shallow excavations are severe due to depth to rock on slopes of less than 15% and severe slope and depth to rock on areas greater than 15%.

HoD & HoE – Hollis - Chatfield- Rock Outcrop (7.8%)

Hydrologic Soil Classification = C/D

Description: This complex is a steep to very steep, well and excessively drained loamy soil formed in till underlain by granite. Permeability is moderate to moderately rapid.

The erosion potential is generally moderate. The construction limitations for roads are severe slopes and frost.

MnA & MnB – Massena silt loam (10.1%)

Hydrologic Soil Classification = C

Description: This is a very deep, nearly level, well-drained loamy soil formed in till. Permeability is moderate in the surface layer and the subsoil, and moderately slow in the substratum. Slopes are nearly level (0-3% and 3-8%). The depth to the seasonal high water table is 0.5 to 1.5 feet from November to May.

The erosion potential is generally moderate. The construction limitation for roads and for dwellings with basements is flooding.

SkB – Stockbridge silt loam (11.6%)

Hydrologic Soil Classification = C

Description: This is a very deep, well-drained soil formed in till. Permeability is moderately slow to moderate in the surface layer and slow in the subsoil and the substratum. Slopes are (3-8%). This soil is classified as Prime Farmland.

Su – Sun silt loam (11.6%)

Hydrologic Soil Classification = D

Description: This is a very deep, nearly level, poorly and very poorly drained loamy soil formed in till. Permeability is moderate in the surface layer and slow in the substratum. Depth to the seasonal high water table is 1.0 to 0.5 feet from November to April. This soil is Hydric.

The erosion potential is moderate. The construction limitations for roads, dwellings with basements, and shallow excavations are severe due to depth to water.

SmB - Stockbridge - Farmington complex (29.9%)

Hydrologic Soil Classification = C/D

Description: This soil is about 50% Stockbridge soils, 30% Farmington soils, and 20% other soils and rock outcrop.

The erosion potential is high. The construction limitations for roads, dwellings with basements, and shallow excavations are severe due to depth to rock on slopes of less than 15% and severe slope and depth to rock on areas greater than 15%.

Ra - Raynham silt loam (3.9%)

Hydrologic Soil Classification = C/D

Description: This is a very deep, nearly level, poorly and very poorly drained loamy soil formed in lake laid sediments. Permeability is moderate in the surface layer and moderately slow in the substratum. Depth to the seasonal high water table is 0.5 to 2.0 feet from November to May.

The erosion potential is moderate. The construction limitations for roads, dwellings with basements, and shallow excavations are severe due to depth to water.

As proposed, construction will predominantly occur on the Stockbridge Farmington soils (SmB). According to the Dutchess County Soil Conservation Service Soil Survey Users Guide, the primary constraint associated with construction within these soils is related to steep slopes.

Figure B - Soils Map



3 Existing Site Hydrology

A NYSDEC wetland constitutes the central portion of the property, which is generally level with an elevation between 314 feet msl and 324 feet msl. Large areas of steep slopes exist mainly in the southern portion of the site with an elevation between 324 feet msl and 582 feet msl. The remaining areas of the site are generally gently rolling old agricultural field. The majority of the

steep slopes is in the proposed open space area and will remain undisturbed under the current proposal.

Approximately 92% of the development will occur in the area of the property where the natural slopes are between 0% and 10%. About 6% will occur in the slopes from 10% to 20%. The remaining 2% of development will occur in the areas of the property where the slopes are greater than 20%.

Pre Development Drainage Areas

The site has been broken up into nine distinct drainage areas were used when analyzing the runoff from this project. For the post development analysis the same drainage points as in the pre development analysis were used. However to further study the effects of the proposed development the post drainage areas were further broken down into sub areas. To mitigate the impacts of the proposed development stormwater management practices (SMP) have been incorporated into the site development plan to treat both the quantity and quality of the post development runoff.

Refer to Appendix “A” for a detailed calculation of the Area, CN and T_c values. A summary of the pre development drainage input calculations can be found in Table 1 below.

Table 1: Pre Development Drainage Area Input Summary

Area	Total Area (acres)	CN	T_c (minutes)
#1	5.36	60	7.6
#2	8.05	60	9.0
#3	299.54	69	412.1
#4	4.90	71	14.8
#5	2.15	72	13.6
#6	40.78	69	217.4
#7	5.30	61	9.5
#8	6.96	73	12.9
#9	10.42	76	70.8

Pre Development Runoff Flow Rates

The predevelopment runoff rates were calculated using the Area, CN and T_c values as shown above. These values were then entered into HydroCAD, 1, 10 & 100-year storm event flow rate values were obtained for a Type-III storm distribution. Refer to Appendix "A" for predevelopment hydrographs.

The following table is a summary of the predevelopment design flows:

Table 2: Pre Development Hydrograph Summary

Design Point	1-year Event	10-Year Event	100-Year Event
#1	0.50 c.f.s.	5.88 c.f.s.	21.08 c.f.s.
#2	0.74 c.f.s.	8.54 c.f.s.	30.00 c.f.s.
#3	15.99 c.f.s.	62.56 c.f.s.	169.23 c.f.s.
#4	2.05 c.f.s.	8.24 c.f.s.	21.44 c.f.s.
#5	1.03 c.f.s.	3.89 c.f.s.	9.90 c.f.s.
#6	3.16 c.f.s.	13.23 c.f.s.	36.41 c.f.s.
#7	0.58 c.f.s.	5.96 c.f.s.	20.20 c.f.s.
#8	3.71 c.f.s.	13.36 c.f.s.	33.32 c.f.s.
#9	3.17 c.f.s.	10.10 c.f.s.	23.95 c.f.s.

4 Developed Site Hydrology

The proposed project include the development of the 128.42-acre parcel into 175 individual lots, the remaining 201.42-acres lot will remain undeveloped. Other improvements to the site will include associated amenities for a single family subdivision such as driveways, lawns, landscaping etc. and various land-grading. Ground cover changes will include wooded/grass areas being converted to impervious and grassed lawn areas.

Construction and regrading on the site will alter the existing topography and will therefore change the existing drainage patterns. While the same design point that was analyzed in the pre-development condition will be analyzed in the post-development condition, the drainage area and flow will be altered due to the improvements on the site. Please refer to Drainage Sheet 2 of 2, "Post Development Hydrology", included in the back of this report, for graphical representations of drainage flow paths and areas.

4.1 The Five Step Process for Stormwater Site Planning and Practice Selection (Section 3.6 of the Manual)

Site Planning

During the original site planning process many green aspects were incorporated into the site layout. Some of these practices include the preservation of natural features and the reduction of impervious cover. By utilizing the cluster layout, the impervious areas are condensed and the length of roadways are reduced. This allows for open space parcels.

Preservation of Natural Resources

The following measures have been incorporated into the site design to preserve natural resources.

Preservation of Undisturbed Areas – Five open space parcels are being created and are to remain "open space" in perpetuity. The total acreage of the "open space" parcels is 299.08 acres. Therefore, the proposed developed areas are approximately 16% of the site.

Reduction of Clearing and Grading - The site has been designed with the intent to limit clearing and grading required to the minimum amount necessary.

Reduction of Impervious Cover

Throughout the site an effort has been made to reduce the amount of impervious cover. Homes are close to the front yard setback thereby reducing the driveway length. Dwelling footprints are reduced by allowing 2-story construction.

Runoff Reduction Techniques

The site has been designed to manage the impacts by using natural features and runoff reduction practices to slow down the runoff and promote infiltration. The following management practices have been integrated into the site layout:

Incorporation of infiltration practices in the form of infiltration basins. This practice will capture and temporarily store the runoff before allowing it to be infiltrated into the surrounding soils.

Determine Water Quality Treatment Volumes (WQv)

The required WQvs have been calculated in accordance with Chapter 4: Unified Stormwater Sizing Criteria of the New York State Stormwater Management Design Manual January 2015. Please refer to section 5.0, "Permanent Water Quality and Quantity Controls," of this report for further information.

Runoff Reduction by Applying Green Infrastructure and Standard SMPs with RRV Capacity

The standard SMPs with RRV capacity are listed in table 3.5 of the manual. The following percentages for WQv (provided by the standard SMP) towards meeting the RRV sizing criteria.

Runoff Reduction Capacity for Standard SMPs	
SMP	RRv Capacity (% of WQv Provided by Parctice)
Infiltration Practice	100%
Bioretention Practice	100% in HSG A & B (without underdrain)
	40% in HSG C & D (with underdrain)
Dry Swale	40% in HSG A & B
	20% in HSG C & D

By applying a combination of green infrastructure techniques and standard SMPs with RRV capacity, the design must reduce 100% of the WQv calculated in Step 2. If the RRV calculated in this step is greater than or equal to the WQv calculated in Step 2, the design has met the RRV requirements and may proceed to Step 5.

The calculations can be found in Appendix C.

Apply Standard Stormwater Management Practices to Address Remaining Water Quality Volumes

100% of the WQv has been addressed by applying the green infrastructure technique and standard SMP's with RRV capacity.

Apply Volume and Peak Rate Control Practices if Still Needed to Meet Requirements

The post-development peak flow rates are less than the pre-development rates, therefore the required Channel Protect Storage Volume (CPv), Overbank Flood (Qp) and the Extreme Flood (Qf) control are not required.

4.6 Post Development Drainage Areas

The post-development condition for design points #3 and #6 have been further broken down into a smaller sub-area to properly analyze the overall drainage. Sub-areas shall consist of portions of the site where development is to take place and will therefore contain a stormwater

management practice (SMP) to properly mitigate runoff for that area. Each of these sub-areas in the post-development condition contribute flow to a common design point (ex. Sub-area #3A, #3B etc., would all contribute flow to Design Point #3). The cumulative post development flows are then compared to the pre-development flows at each design point and the difference is noted. It is the goal of this report to demonstrate that the pre vs post development drainage impacts are adequately mitigated to a level which is at or below existing pre-development conditions.

Refer to Appendix "B" for a detailed calculation of the Area, CN and T_c values. A summary of the post development drainage input can be found below in Table 5.

Table 3: Post Development Drainage Input Summary

Sub-Area	Total Area (acres)	CN	T _c (minutes)
1	5.36	60	9.0
2	8.05	60	9.0
3A	229.90	71	429.3
3B	3.43	78	6.0*
3C	3.08	78	11.2
3D	6.22	78	12.1
3E	9.67	80	11.8
3F	2.68	80	6.0*
3G	7.49	79	16.8
3H	0.66	71	6.0*
3I	6.15	71	38.8
3J	13.58	76	15.0
3K	7.55	70	15.4
3L	11.34	67	12.4
4	3.31	76	20.3
5	1.62	74	10.5
6A	27.91	72	206.9
6B	6.20	79	17.3
6C	3.26	74	7.0
6D-1	2.94	77	9.3
6D-2	1.11	90	16.9
7	2.99	67	11.3
8	6.79	73	23.0
9	12.17	76	77.8

* The Minimum T_c used in TR-55 is 0.1 hours (6 minutes)

4.7 Post Development Runoff Flow Rate

The post development runoff rates were calculated using the Area, CN and T_c values obtained as shown in the chart in above. These values were entered into HydroCAD, 1 , 10 & 100-year storm flow rate values were obtained for a Type-III storm distribution. Please refer to the

Appendix “B” for the hydrographs for sub-areas. Refer to the following chart for a summary of the post development design flows:

Table 4: Post Development Hydrograph Summary

Design Pont	1-Year Event	10-Year Event	100-Year Event
1	0.49 c.f.s.	5.68 c.f.s.	19.98 c.f.s.
2	0.74 c.f.s.	8.54 c.f.s.	30.00 c.f.s.
3	13.72 c.f.s.	50.58 c.f.s.	137.42 c.f.s.
4	1.9 c.f.s.	6.03 c.f.s.	14.24 c.f.s.
5	1.01 c.f.s.	3.49 c.f.s.	8.53 c.f.s.
6	2.97 c.f.s.	10.91 c.f.s.	28.94 c.f.s.
7	0.86 c.f.s.	4.56 c.f.s.	13.01 c.f.s.
8	2.91 c.f.s.	10.42 c.f.s.	26.07 c.f.s.
9	3.74 c.f.s.	11.12 c.f.s.	26.42 c.f.s.

4.8 Pre vs. Post Runoff Flow Rates

4.8.1 Pre vs. Post Summary

Table 5: Pre vs. Post Summary

Design Pont	1-Year Event	10-Year Event	100-Year Event
1	-0.01 c.f.s.	-0.2 c.f.s.	-1.10 c.f.s.
2	0.00 c.f.s.	0.00 c.f.s.	0.00 c.f.s.
3	-2.27 c.f.s.	-11.98 c.f.s.	-31.81 c.f.s.
4	-0.15 c.f.s.	-2.21 c.f.s.	-7.20 c.f.s.
5	-0.02 c.f.s.	-0.4 c.f.s.	-1.37 c.f.s.
6	-0.19 c.f.s.	-2.32 c.f.s.	7.47 c.f.s.
7	0.28 c.f.s.	-1.4 c.f.s.	-7.19 c.f.s.
8	-0.8 c.f.s.	-2.94 c.f.s.	-7.25 c.f.s.
9	0.57 c.f.s.	1.02 c.f.s.	2.74 c.f.s.

Bold numbers indicate increase in flow

Design points #6 and #9 will experience a net increase in imperious area, and therefore an increase stormwater runoff will occur between the pre and post development conditions. This

net increase is due to the development of the site and the increase of impervious ground cover within the drainage area. The proposed storm sewer system will capture runoff in the post-development condition and direct it towards the proposed storm basins. This storm sewer 6.

5 Unified Stormwater Sizing Criteria

The New York State Stormwater Management Design Manual outlines the guidelines, requirements and waivers for implementation of permanent water quality and quantity control measures on a given construction site. The unified stormwater sizing criteria has been used to develop stormwater management practices (SMP's) that meet pollutant removal goals, reduce channel erosion, prevent overbank flooding, and help control extreme floods. Since the drainage areas experience an increase in impervious area in the post development condition, the use of stormwater management practices is required. Stormwater management basin systems are being proposed to satisfy the requirements for water quality. In accordance with Chapter 4: Unified Stormwater Sizing Criteria of the New York State Stormwater Management Design Manual June 2015, water quality volumes (WQ_v) shall all be accounted for within the proposed stormwater basin management system.

Stormwater management basin systems are being proposed to satisfy both the requirements for water quality and quantity. Water quality (WQ_v), stream channel protection (CP_v), overbank flood protection (QP_v) and extreme flood protection (Q_f) volumes, shall all be accounted for within the proposed stormwater management basin system. The following is an outline of the criteria for the stormwater management practices of this project site

Water Quality Volume (WQ_v)

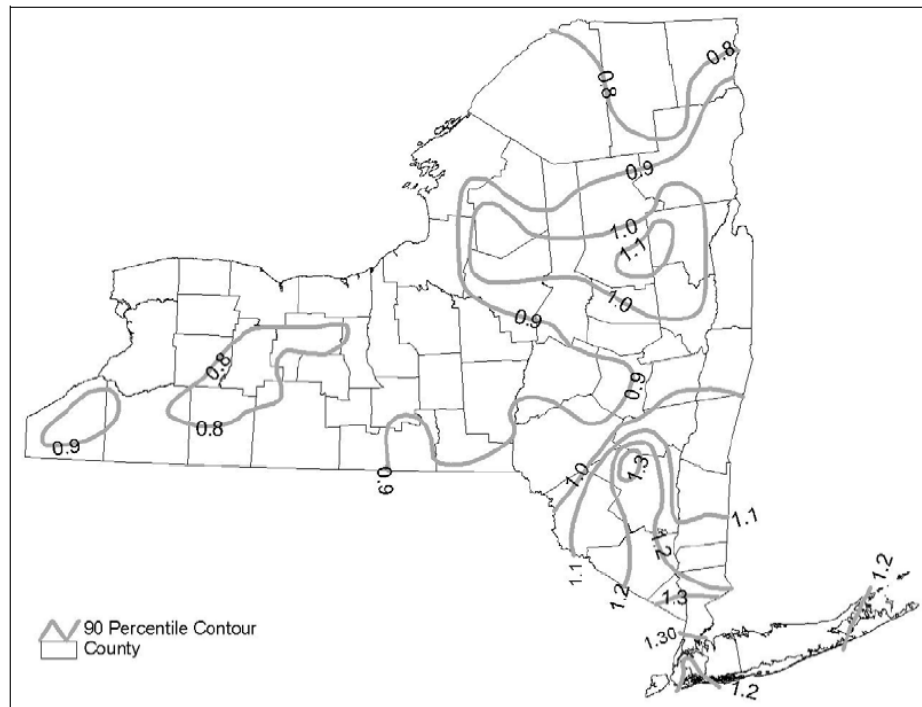
The Water Quality Volume (WQ_v) is designed to improve water quality and is sized to capture and treat 90% of the average annual stormwater runoff volume. The WQ_v is directly related to the amount of impervious cover created on a site. Water quality storage volume can be calculated using the following equation:

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

- WQ_v = Water Quality Volume (acre-feet)
- P = 90% Rainfall Event Number (See Figure D)
- R_v = 0.05 + 0.009(I), where I is percent impervious cover
- A = Contributing area (acres)

Figure C– 90% Rainfall in New York State



The WQ_v for the combined drainage #3 has been calculated to be 18.99 ac-ft.

The provided RR_v for the combined drainage #3 has been calculated to be 2.99 ac-ft.

Pond 3B RR_v provided = 0.32 acre/feet $\rightarrow$ 9,034 ft^3
 Pond 3C RR_v provided = 0.08 acre/feet $\rightarrow$ 3,508 ft^3
 Pond 3D RR_v provided = 0.21 acre/feet $\rightarrow$ 9,579 ft^3
 Pond 3E RR_v provided = 0.10 acre/feet $\rightarrow$ 4,400 ft^3
 Pond 3F RR_v provided = 0.05 acre/feet $\rightarrow$ 3,234 ft^3
 Pond 3G RR_v provided = 0.44 acre/feet $\rightarrow$ 19,166 ft^3
 Pond 3H RR_v provided = 0.57 acre/feet $\rightarrow$ 25,109 ft^3
 Pond 3I RR_v provided = 0.57 acre/feet $\rightarrow$ 25,109 ft^3
 Pond 3J RR_v provided = 0.31 acre/feet $\rightarrow$ 13,579 ft^3
 Pond 3K RR_v provided = 0.17 acre/feet $\rightarrow$ 7,708 ft^3
 Pond 3L RR_v provided = 0.17 acre/feet $\rightarrow$ 7,515 ft^3

The WQ_v for the combined drainage #6 has been calculated to be 0.32 ac-ft.

The provided RR_v for the combined drainage #6 has been calculated to be 0.34 ac-ft.

Pond 6B RR_v provided = 0.22 acre/feet $\rightarrow$ 9,735 ft³

Pond 6C RR_v provided = 0.06 acre/feet $\rightarrow$ 2,444 ft³

Pond 6D-1 RR_v provided = 0.06 acre/feet $\rightarrow$ 2,828 ft³

The calculations can be found in Appendix C

Sub-Area	WQv	RRv required	RRv provided
3B	0.08 ac-ft	0.015 ac-ft	0.32 ac-ft
3C	0.07 ac-ft	0.06 ac-ft	0.08
3D	0.03 ac-ft	0.03 ac-ft	0.21
3E	0.075 ac-ft	0.07 ac-ft	0.10
3F	0.02 ac-ft	0.02 ac-ft	0.05
3G	0.24 ac-ft	0.06 ac-ft	0.44
3H	0.01 ac-ft	0.007 ac-ft	0.57
3I	0.095 ac-ft	0.02 ac-ft	0.57
3J	0.29 ac-ft	0.05 ac-ft	0.31
3K	0.11 ac-ft	0.03 ac-ft	0.03
3L	0.22 ac-ft	0.07 ac-ft	0.17
6B	0.15 ac-ft	0.04 ac-ft	0.22
6C	0.12 ac-ft	0.03 ac-ft	0.06
6D	0.05 ac-ft	0.013 ac-ft	0.03

6 Stormwater Management Practices

Stormwater Management Ponds

To ensure the quality of the stormwater, Extended Detention ponds (P-3) will be implemented to properly mitigate stormwater quality and quantity for the drainage areas. These systems shall be designed to mitigate stormwater quality and quantity before discharging into the adjacent stream.

Details of each pond can be found in Appendix of this report.

7 Temporary Erosion & Sediment Control Measures

This SWPPP adheres to the erosion and sediment control requirements as described in the New York State Standards and Specifications for Erosion and Sediment Control. Construction on the project site involves the disturbance of greater than one (1) acre of soil and, therefore, requires GP-0-15-001 permit coverage. Coverage under this permit requires that a comprehensive Erosion and Sediment Control Plan be developed for the site during the construction phase. Please refer to the following items concerning temporary erosion & sediment control practices:

**STANDARDS AND SPECIFICATIONS
FOR
SILT FENCE**



Silt Fence:

All silt fencing locations have been shown on the SWPPP insert in the back of this report and shall be installed in accordance with the detail shown in Figure F below:

Definition

A temporary barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil.

Purpose

The purpose of a silt fence is to reduce runoff velocity and effect deposition of transported sediment load. Limits imposed by ultraviolet stability of the fabric will dictate the maximum period the silt fence may be used (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope lengths contributing runoff to a silt fence placed on a slope are:

<u>Slope Maximum</u>	<u>Steepness Length (ft.)</u>
2:1	25
3:1	50
4:1	75
5:1 or flatter	100

Maximum drainage area for overland flow to a silt fence shall not exceed ¼ acre per 100 feet of fence, with maximum ponding depth of 1.5 feet behind the fence.

Erosion would occur in the form of sheet erosion.

There is no concentration of water flowing to the barrier.

Design Criteria

Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff. All silt fences shall be placed as close to the areas as possible, but at least 10 feet from the toe of a slope to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized. Sensitive areas to be protected by silt fence may need to be reinforced by using heavy wire fencing for added support to prevent collapse. Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. A detail of the silt fence shall be shown on the plan. See Figure below for details.

Criteria for Silt Fence Materials

Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Table 6: Silt Fence Requirements

Fabric Properties	Acceptable Value	Test Method
Grab Tensile Strength (lbs)	90	ASTM D1682
Elongation at Failure (%)	50	ASTM D1682
Mullen Burst Strength (PSI)	190	ASTM D3786
Puncture Strength (lbs)	40	ASTM D751 (modified)
Slurry Flow Rate (gal/min/sf)	0.3	
Equivalent Opening Size	40-80	US Std Sieve CW-02215
Ultraviolet Radiation Stability (%)	90	ASTM G-26

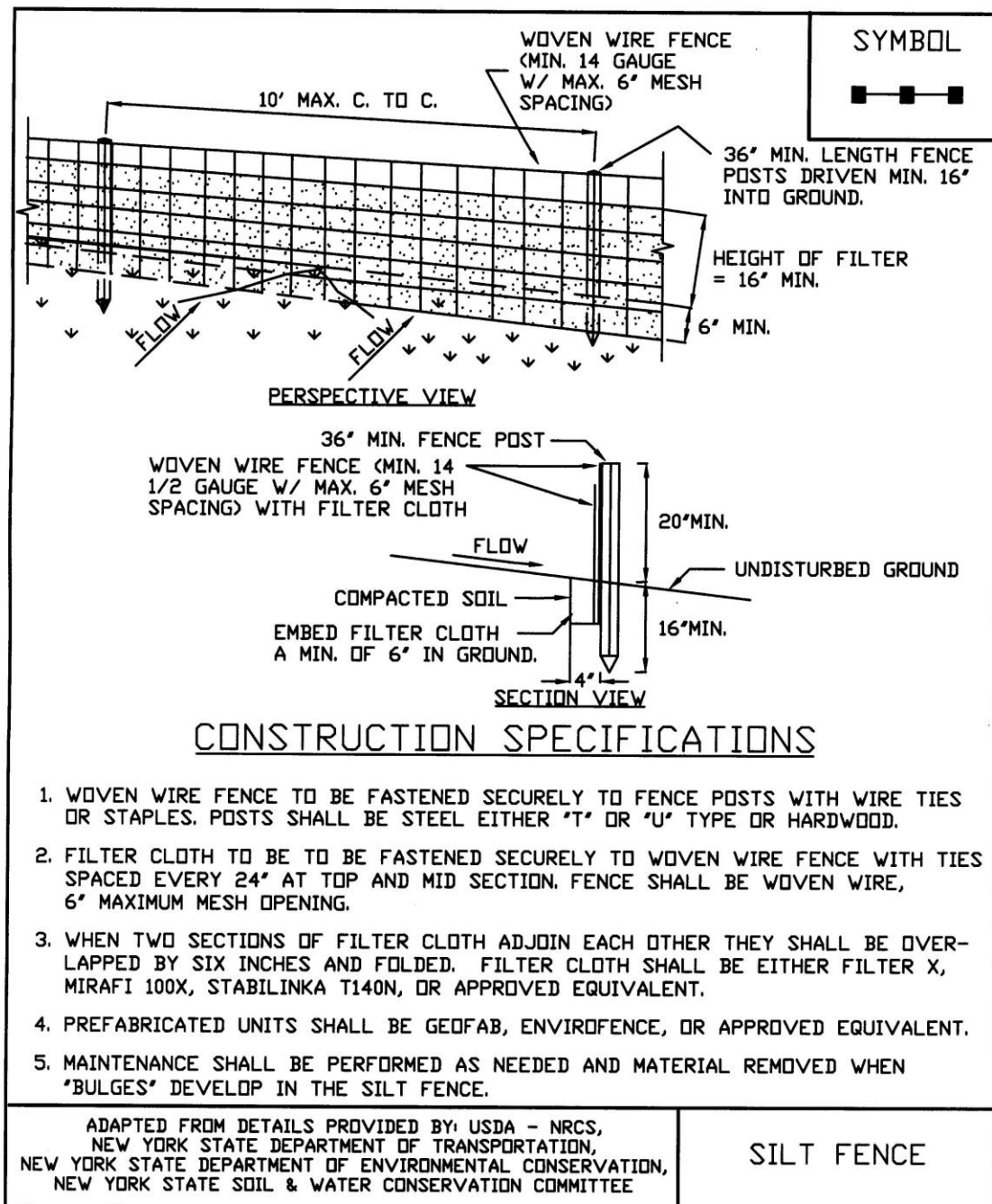
Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 2 square

inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot.

Wire Fence (for fabricated units): Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

Prefabricated Units: Envirofence, Geofab, or approved equal, may be used in lieu of the above method providing the unit is installed per the detail shown below

Figure E - Silt Fence Detail



***STANDARD AND SPECIFICATIONS
FOR
STABILIZED CONSTRUCTION ENTRANCE***



Construction Entrance:

A construction entrance location has been shown on the SWPPP insert in the back of this report and shall be installed and maintained in accordance with the detail shown in Figure I below; until such time that the driveway has been stabilized by pavement.

Definition

A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area.

Purpose

The purpose of stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights-of way or streets.

Conditions Where Practice Applies

A stabilized construction entrance shall be used at all points of construction ingress and egress.

Design Criteria

Aggregate Size: Use a matrix of 1-4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12-foot minimum but not less than the full width of points where ingress or egress occurs. 24-foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single-family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

Criteria for Geotextile

The geotextile shall be woven or non-woven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown

Table 7: Criteria for Geotextile Material in Construction Entrance

<u>Fabric Properties</u> ³	Light Duty ¹ Roads Grade <u>Subgrade</u>	Heavy Duty ² Haul Roads Rough <u>Graded</u>	<u>Test Method</u>
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Brust Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 modified
Equivalent Opening Size	40-80	40-80	US Std Sieve CW-02215
Aggregate Depth	6	10	--

¹Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

²Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

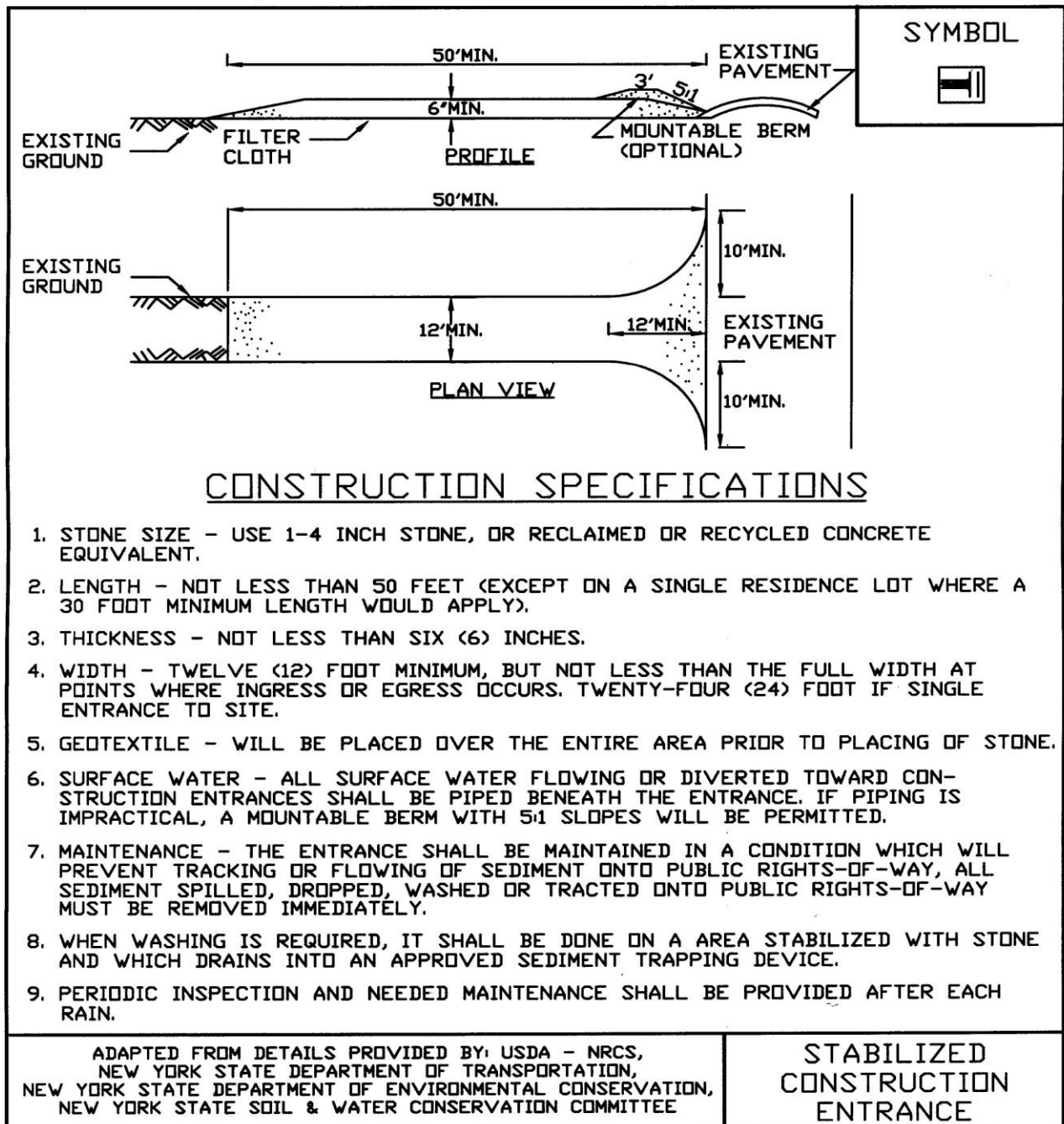
³Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

Maintenance

The entrance shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be

removed immediately. When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.

Figure F – Construction Entrance
Detail



***STANDARD AND SPECIFICATIONS
FOR
DUST CONTROL***



Dust Control:

During the construction phase of the project, approximately 4.50 acres of soil will be disturbed to facilitate land regrading and general building construction. The time interval from initial excavation of the proposed disturbed area to the seeding and mulching stabilization phase shall be kept to a minimum. During this window of time during construction of bare soil exposure, dust control may be necessary. Refer to the following specifications regarding dust control.

Definition

The control of dust resulting from land-disturbing activities.

Purpose

To prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria are given;

see construction specifications below for common methods of dust control. Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the local permitting authority.

Construction Specifications

A.

Non-driving Areas – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

B.

Driving Areas – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access routes.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

Barriers – Woven geo-textiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

August 2005 Page 5A.87 New York Standards and Specifications for Erosion and Sediment Control All Stormwater Pollution Prevention Plans must contain the NYS DEC issued "Conditions for Use" and "Application Instructions" for any polymers used on the site. This information can be obtained from the NYS DEC website.

Maintenance

Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.

***STANDARD AND SPECIFICATIONS
FOR
TEMPORARY SWALE***

Temporary Swale:

Definition

A temporary excavated drainage way.

Purpose

The purpose of a temporary swale is to prevent runoff from entering disturbed areas by intercepting and diverting it to a stabilized outlet or to intercept sediment laden water and divert it to a sediment trapping device.

Conditions Where Practice Applies

Temporary swales are constructed:

1. to divert flows from entering a disturbed area.
2. intermittently across disturbed areas to shorten overland flow distances.
3. to direct sediment laden water along the base of slopes to a trapping device.
4. to transport offsite flows across disturbed areas such as rights-of-way.

Swales collecting runoff from disturbed areas shall remain in place until the disturbed areas are permanently stabilized.

Design Criteria

See Figure 5A.2 on page 5A.5 for details.

	Swale A	Swale B
Drainage Area	<5 Ac	5-10 Ac
Bottom Width of Flow Channel	4 ft	6 ft
Depth of Flow channel	1 ft	1 ft
Side Slopes	2:1 or flatter	2:1 or flatter
Grade	0.5% Min. 20% Max.	0.5% Min. 20% Max.

For drainage areas larger than 10 acres, refer to the Standard and Specification for Waterways on page 5B.11.

Stabilization

Stabilization of the swale shall be completed within 7 days of installation in accordance with the appropriate standard and specifications for vegetative stabilization or stabilization with mulch as determined by the time of year. The flow channel shall be stabilized as per the following criteria:

Type of Treatment	Channel Grade ¹	Flow Channel	
		A (<5 Ac.)	B (5-10 Ac)
1	0.5-3.0%	Seed & Straw Mulch	Seed & Straw Mulch
2	3.1-5.0%	Seed & Straw Mulch	Seed and cover with RECP, Sod, or lined with plastic or 2 in. stone
3	5.1-8.0%	Seed and cover with RECP, Sod, or line with plastic or 2 in. stone	Line with 4-8 in. or stone or Recycled Concrete Equivalent ² or geotextile
4	8.1-20%	Line with 4-8 in. stone or Recycled Concrete Equivalent ² or geotextile	Site Specific Engineering Design

¹ In highly erodible soils, as defined by the local approving agency, refer to the next higher slope grade for type of stabilization.

² Recycled Concrete Equivalent shall be concrete broken into the required size, and shall contain no steel reinforcement.

Outlet

Swale shall have an outlet that functions with a minimum of erosion, and dissipates runoff velocity prior to discharge off the site.

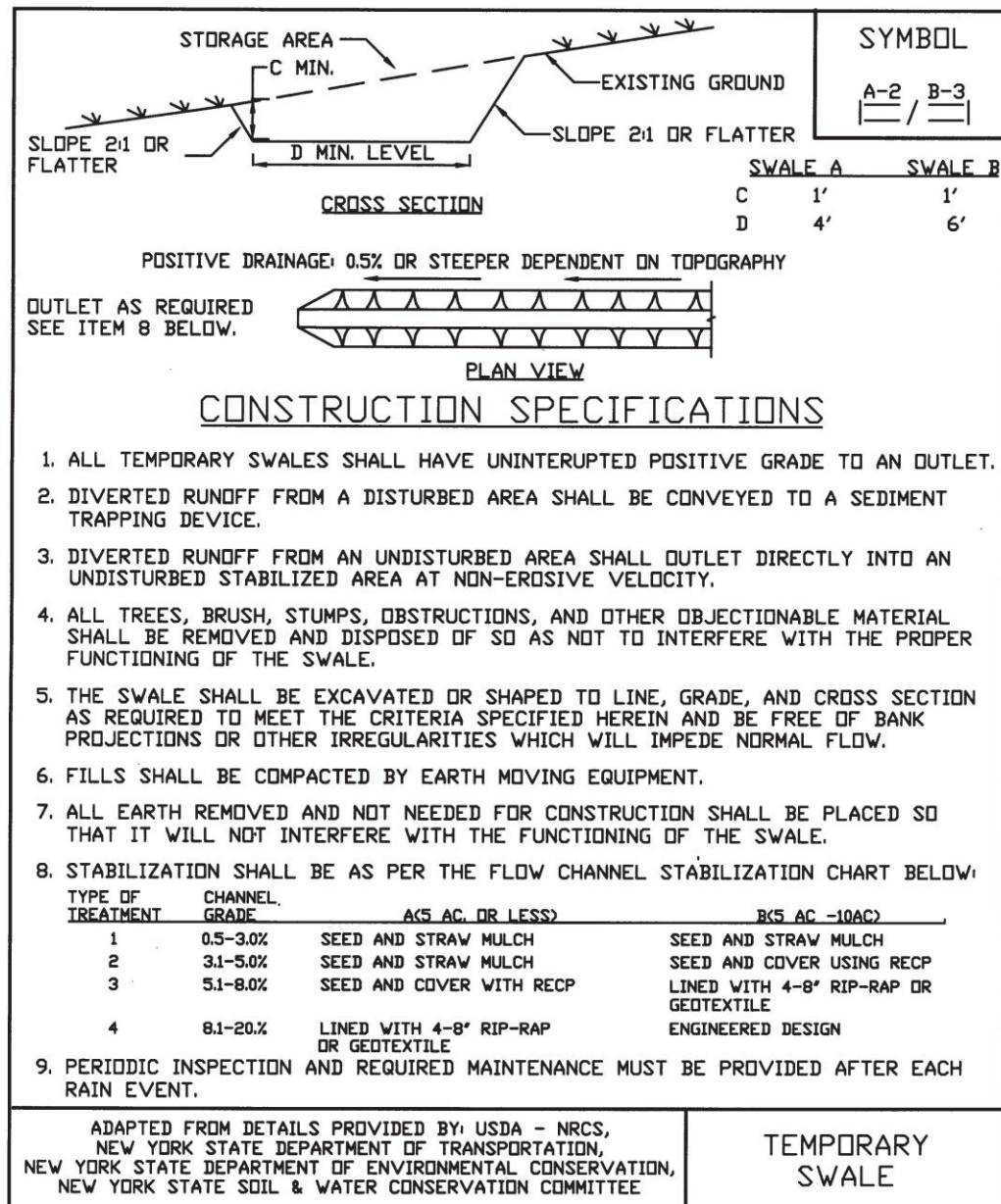
Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment

basin until the drainage area above the swale is adequately stabilized.

The on-site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet condition.

If a swale is used to divert clean water flows from entering a disturbed area, a sediment trapping device may not be needed.

Figure 5A.2
Temporary Swale



8 Permanent Erosion & Sediment Control Measures

STANDARDS AND SPECIFICATIONS FOR LANDGRADING



Landgrading:

Definition

Reshaping of the existing land surface in accordance with a plan as determined by engineering survey and layout.

Purpose

The purpose of a landgrading specification is to provide for erosion control and vegetative establishment on those areas where the existing land surface is to be reshaped by grading according to plan.

Design Criteria

The grading plan should be based upon the incorporation of building designs and street layouts that fit and utilize existing topography and desirable natural surrounding to avoid extreme grade modifications. Information submitted must provide sufficient topographic surveys and soil investigations to determine limitations that must be imposed on the grading operation related to slope stability, effect on adjacent properties and drainage patterns, measures for drainage and water removal and vegetative treatment, etc.

Many counties have regulations and design procedures already established for land grading and cut and fill slopes. Where these requirements exist, they shall be followed.

The plan must show existing and proposed contours of the area(s) to be graded. The plan shall also include practices for erosion control, slope stabilization, safe disposal of runoff water and drainage, such as waterways, lined ditches, reverse slope benches (include grade and cross section), grade stabilization structures, retaining walls, and surface and subsurface drains. The plan shall also include phasing of these practices. The following shall be incorporated into the plan:

1. Provisions shall be made to safely conduct surface runoff to storm drains, protected outlets, or to stable water courses to ensure that surface runoff will not damage slopes or other graded areas.
2. Cut and fill slopes that are to be stabilized with grasses shall not be steeper than 2:1. When slopes exceed 2:1, special design and stabilization considerations are required and shall be adequately shown on the plans. (Note: Where the slope is to be mowed, the slope should be no steeper than 3:1, although 4:1 is preferred because of safety factors related to mowing steep slopes.
3. Reverse slope benches or diversion shall be provided whenever the vertical interval (height) of any 2:1 slope exceeds 20 feet; for 3:1 slope it shall be increased to 30 feet and for a 4:1 to 40 feet. Benches shall be located to divide the slope face as equally as possible and shall convey the water to a stable outlet. Soils, seeps, rock outcrops, etc., shall also be taken into consideration when designing benches.
 - A. Benches shall be a minimum of 6 feet wide to provide ease for maintenance.
 - B. Benches shall be designed with a reverse slope of 6:1 or flatter to the toe of the upper slope and with a minimum of one foot in depth. Bench gradient to the outlet shall be between 2 percent and 3 percent, unless accompanied by appropriate design and computations.
 - C. The flow length within a bench shall not exceed 800 feet unless accompanied by appropriate design and computations.
4. Surface water shall be diverted from the face of all cut and/or fill slopes by the use of diversions, ditches and swales or conveyed downslope by the use of a designed structure, except where:
 - A. The face of the slope is or shall be stabilized and the face of all graded slopes shall be protected from surface runoff until they are stabilized.
 - B. The face of the slope shall not be subject to any concentrated flows of surface water such as from natural drainage ways, graded swales, downspouts, etc.
 - C. The face of the slope will be protected by special erosion control materials, sod, gravel, riprap, or other stabilization method.
5. Cut slopes occurring in ripable rock shall be serrated. The serrations shall be made with conventional equipment as the excavation is made. Each step or serration shall be

constructed on the contour and will have steps cut at nominal two-foot intervals with nominal three-foot horizontal shelves. These steps will vary depending on the slope ratio or the cut slope. The nominal slope line is 1.5:1. These steps will weather and act to hold moisture, lime, fertilizer, and seed thus producing a much quicker and longer-lived vegetative cover and better slope stabilization. Overland flow shall be diverted from the top of all serrated cut slopes and carries to a suitable outlet.

6. Subsurface drainage shall be provided where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions.
7. Slopes shall not be created so close to property lines as to endanger adjoining properties without adequately protecting such properties against sedimentation, erosion, slippage, settlement, subsidence, or other related damages.
8. Fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris, and other objectionable material. It should be free of stones over two inches in diameter where compacted by hand or mechanical tampers or over eight inches in diameter where compacted by rollers or other equipment. Frozen materials shall not be placed in the fill nor shall the fill material be placed on a frozen foundation.
9. Stockpiles, borrowed areas, and spoil shall be shown on the plans and shall be subject to the provision of this Standards and Specifications.
10. All disturbed areas shall be stabilized structurally or vegetatively in compliance with the Critical Area Treatment section of the New York State Standards and Specifications for Erosion and Sediment Control Manual.

Construction Specifications

See Figure N below for the list of Construction Specifications. This list can also be found on the SWPPP details sheet included in the back of this report.

Figure G – Landgrading Detail

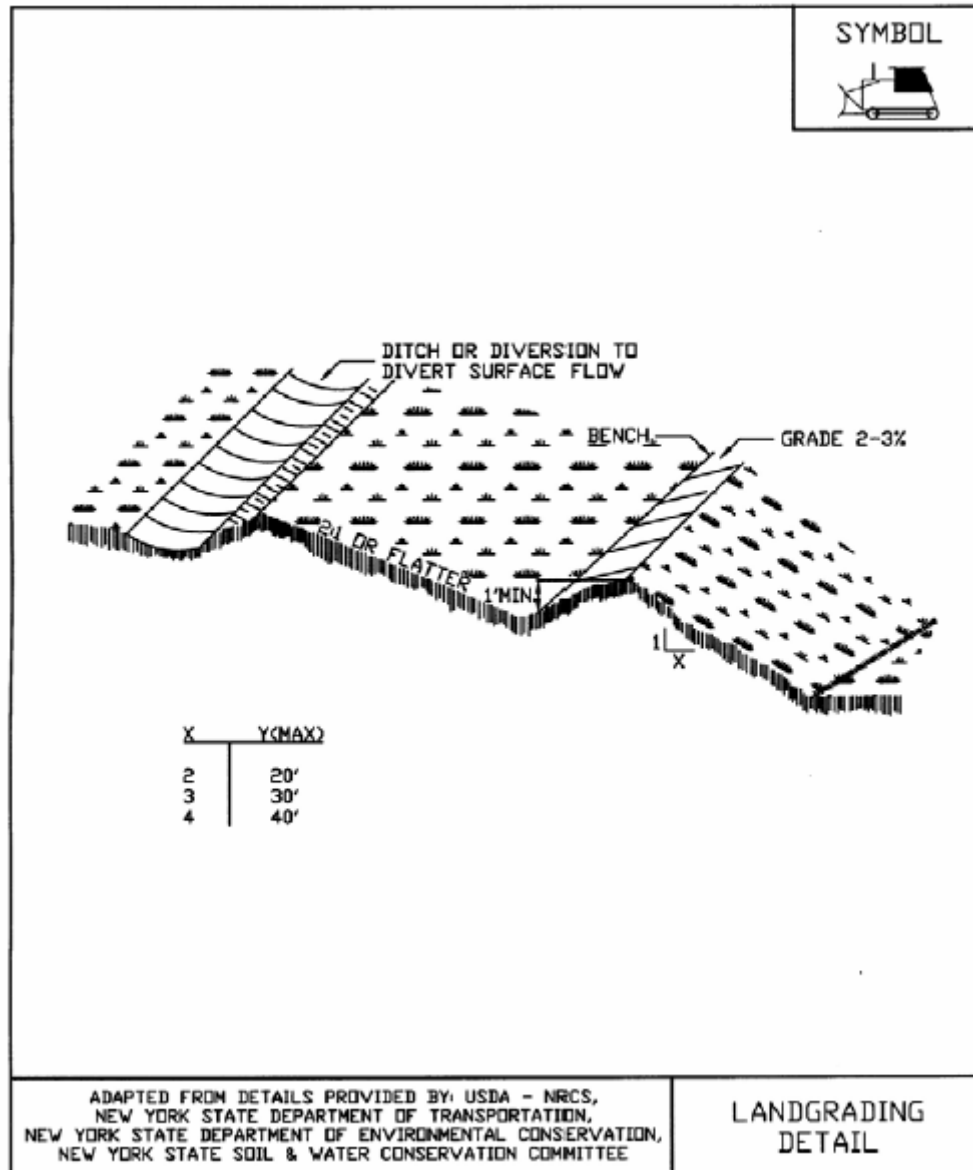


Figure H – Landgrading Construction Specifications Detail

<u>CONSTRUCTION SPECIFICATIONS</u>	
1. ALL GRADED OR DISTURBED AREAS INCLUDING SLOPES SHALL BE PROTECTED DURING CLEARING AND CONSTRUCTION IN ACCORDANCE WITH THE APPROVED SEDIMENT CONTROL PLAN UNTIL THEY ARE PERMANENTLY STABILIZED. 2. ALL SEDIMENT CONTROL PRACTICES AND MEASURES SHALL BE CONSTRUCTED, APPLIED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED SEDIMENT CONTROL PLAN AND THE 'STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL IN DEVELOPING AREAS'. 3. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED IN AMOUNT NECESSARY TO COMPLETE FINISHED GRADING OF ALL EXPOSED AREAS. 4. AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL. 5. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF FOUR INCHES PRIOR TO PLACEMENT OF TOPSOIL. 6. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES. 7. ALL FILL TO BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS. 8. EXCEPT FOR APPROVED LANDFILLS, FILL MATERIAL SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS. 9. FROZEN MATERIALS OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED IN FILLS. 10. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES. 11. ALL BENCHES SHALL BE KEPT FREE OF SEDIMENT DURING ALL PHASES OF DEVELOPMENT. 12. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD. 13. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING. 14. STOCKPILES, BORROW AREAS AND SPOIL AREAS SHALL BE SHOWN ON THE PLANS AND SHALL BE SUBJECT TO THE PROVISIONS OF THIS STANDARD AND SPECIFICATION.	
ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	LANDGRADING SPECIFICATIONS

STANDARD AND SPECIFICATIONS FOR ROCK OUTLET PROTECTION



Rock Outlet Protection

Definition

A section of rock protection placed at the outlet end of the culverts, conduits, or channels.

Purpose

The purpose of the rock outlet protection is to reduce the depth, velocity, and energy of water, such that the flow will not erode the receiving downstream reach.

Scope

This standard applies to the planning, design, and construction of rock riprap and gabions for protection of downstream areas. It does not apply to rock lining of channels or streams.

Conditions Where Practice Applies

This practice applies where discharge velocities and energies at the outlets of culverts, conduits, or channels are sufficient to erode the next downstream reach. This applies to:

1. Culvert outlets of all types.
2. Pipe conduits from all sediment basins, dry storm water ponds, and permanent type ponds.
3. New channels constructed as outlets for culverts and conduits.

Design Criteria

The design of rock outlet protection depends entirely on the location. 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. Many counties and state agencies have regulations and design procedures already established for dimensions, type and size of materials, and locations where outlet protection is required. Where these requirements exist, they shall be followed.

Tailwater Depth

The depth of tailwater immediately below the pipe outlet must be determined for the design capacity of the pipe. If the tailwater depth is less than half the diameter of the outlet pipe, and the receiving stream is wide enough to accept divergence of the flow, it shall be classified as a Minimum Tailwater Condition; see Figure 5B.12 on page 5B.25 as an example. If the tailwater depth is greater than half the pipe diameter and the receiving stream will continue to confine the flow, it shall be classified as a Maximum Tailwater Condition; see Figure 5B.13 on page 5B.26 as an example. Pipes which outlet onto flat areas with no defined channel may be assumed to have a Minimum Tailwater Condition; see Figure 5B.12 on page 5B.25 as an example.

Apron Size

The apron length and width shall be determined from the curves according to the tailwater conditions:

Minimum Tailwater – Use Figure 5B.12 on page 5B.25

Maximum Tailwater – Use Figure 5B.13 on page 5B.26

If the pipe discharges directly into a well-defined channel, the apron shall extend across the channel bottom and up the channel banks to an elevation one foot above the maximum tailwater depth or to the top of the bank, whichever is less. The upstream end of the apron, adjacent to the pipe, shall have a width two (2) times the diameter of the outlet pipe, or conform to pipe end section if used.

Bottom Grade

The outlet protection apron shall be constructed with no slope along its length. There shall be no overfall at the end of the apron. The elevation of the downstream end of the apron shall be equal to the elevation of the receiving channel or adjacent ground.

Alignment

The outlet protection apron shall be located so that there are no bends in the horizontal alignment.

Materials

The outlet protection may be done using rock riprap, grouted riprap, or gabions. Riprap shall be composed of a well-graded mixture of stone size so that 50 percent of the pieces, by weight, shall be larger than the d50 size determined by using the charts. A well-graded mixture, as used herein, is defined as a mixture composed primarily of larger stone sizes, but with a sufficient mixture of other sizes to fill the smaller voids between the stones. The diameter of the largest stone size in such a mixture shall be 1.5 times the d50 size.

Thickness

The minimum thickness of the riprap layer shall be 1.5 times the maximum stone diameter for d50 of 15 inches or less; and 1.2 times the maximum stone size for d50 greater than 15 inches. The following chart lists some examples:

Stone Quality

Stone for riprap shall consist of field stone or rough unhewn quarry stone. The stone shall be hard and angular and of a quality that will not disintegrate on exposure to water or weathering. The specific gravity of the individual stones shall be at least 2.5. Recycled concrete equivalent may be used provided it has a density of at least 150 pounds per cubic foot, and does not have any exposed steel or reinforcing bars.

Filter

A filter is a layer of material placed between the riprap and the underlying soil surface to prevent soil movement into and through the riprap. Riprap shall have a filter placed under it in all cases. A filter can be of two general forms: a gravel layer or a plastic filter cloth. The plastic filter cloth can be woven or non-woven monofilament yarns, and shall meet these base requirements: thickness 20-60 mils, grab strength 90-120 lbs; and shall conform to ASTM D-1777 and ASTM D-1682. Gravel filter blanket, when used, shall be designed by comparing particle sizes of the overlying material and the base material. Design criteria are available in Standard and Specification for Riprap Slope Protection on page 5B.57.

Gabions

Gabions shall be made of hexagonal triple twist mesh with heavily galvanized steel wire. The maximum linear dimension of the mesh opening shall not exceed 4 ½ inches and the area of the mesh opening shall not exceed 10 square inches. Gabions shall be fabricated in such a manner that the sides, ends, and lid can be assembled at the construction site into a rectangular basket of the specified sizes. Gabions shall be of single unit construction and shall be installed according to manufacturers recommendations. The area on which the gabion is to be installed shall be graded as shown on the drawings. Foundation conditions shall be the same as for placing rock riprap, and filter cloth shall be placed under all gabions. Where necessary, key, or tie, the structure into the bank to prevent undermining of the main gabion structure

Maintenance

Once a riprap outlet has been installed, the maintenance needs are very low. It should be inspected after high flows for evidence of scour beneath the riprap or for dislodged stones. Repairs should be made immediately.

Design Procedure

1. Investigate the downstream channel to assure that nonerosive velocities can be maintained.
2. Determine the tailwater condition at the outlet to establish which curve to use.
3. Enter the appropriate chart with the design discharge to determine the riprap size and apron length required. It is noted that references to pipe diameters in the charts are based on full flow. For other than full pipe flow, the parameters of depth of flow and velocity must be used to adjust the design discharges.
4. Calculate apron width at the downstream end if a flare section is to be employed

Construction Specifications

1. The subgrade for the filter, riprap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
2. The rock or gravel shall conform to the specified grading limits when installed respectively in the rip rap or filter.
3. Filter cloth shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the

damaged part or by completely replacing the cloth. All overlaps, whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.

4. Stone for the riprap or gabion outlets may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for riprap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogenous with the smaller stones and spalls filling the voids between the larger stones. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

Figure I – Rip-rap Outlet Design

Figure 5B.13
Outlet Protection Design—Maximum Tailwater Condition
(Design of Outlet Protection from a Round Pipe Flowing Full,
Maximum Tailwater Condition: $T_w \geq 0.5D_o$) (USDA - NRCS)

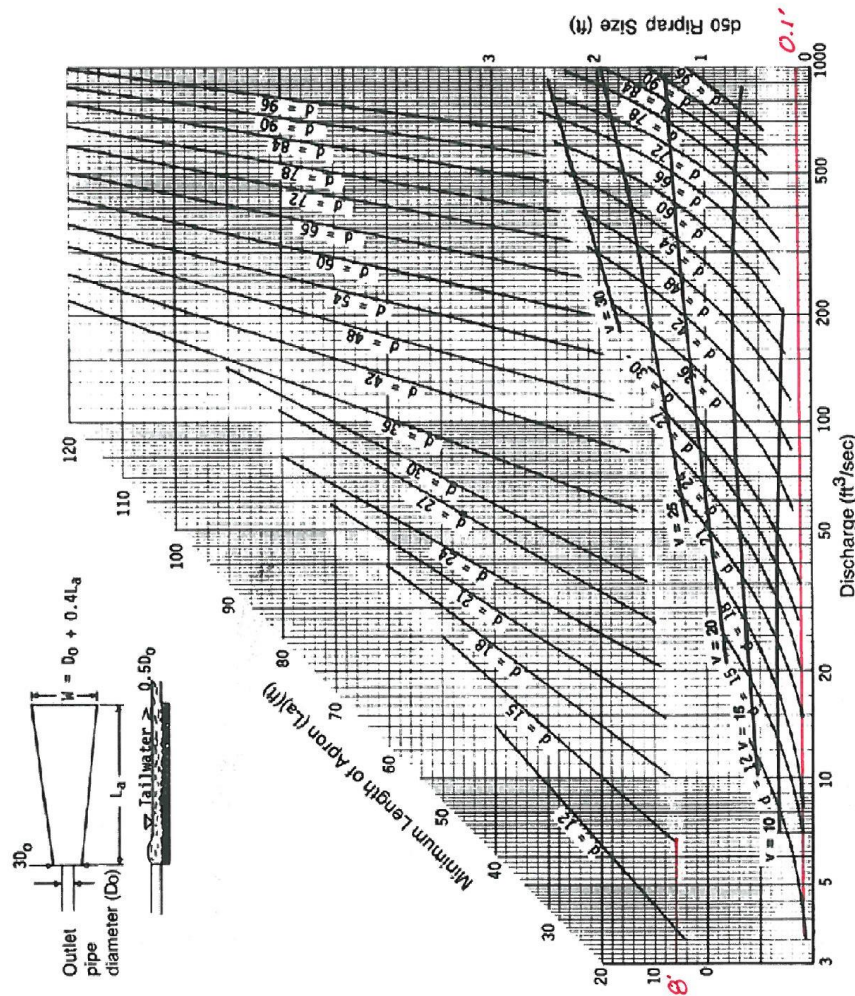
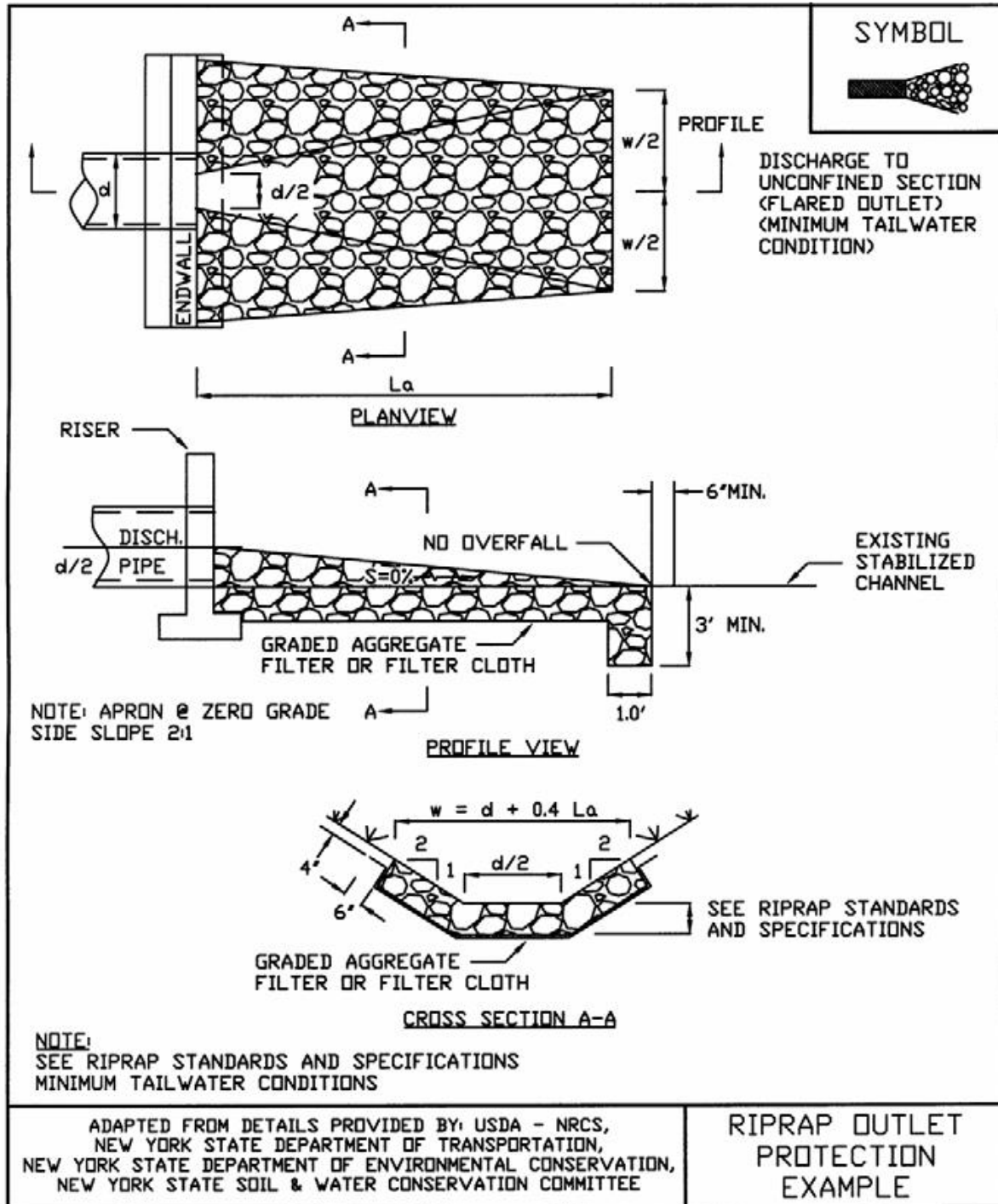


Figure J— Rip-rap Outlet Protection Detail



STANDARD AND SPECIFICATIONS FOR LINED WATERWAY OR OUTLET



Definition

A waterway or outlet with a lining of concrete, stone, or other permanent material. The lined section extends up the side slopes to the designed depth. The earth above the permanent lining may be vegetated or otherwise protected.

Purpose

To provide for the disposal of concentrated runoff without damage from erosion or flooding, where grassed waterways would be inadequate due to high velocities.

Scope

This standard applies to waterways or outlets with linings of cast-in-place concrete, flagstone mortared in place, rock riprap, gabions, or similar permanent linings. It does not apply to irrigation ditch or canal linings, grassed waterways with stone centers or small lined sections that carry prolonged low flows, or to reinforced concrete channels. The maximum capacity of the waterway flowing at design depth shall not exceed 100 cubic feet per second.

Conditions Where Practice Applies

This practice applies where the following or similar conditions exist:

1. Concentrated runoff is such that a lining is required to control erosion.
2. Steep grades, wetness, prolonged base flow, seepage, or piping that would cause erosion
3. The location is such that damage from use by people or animals precludes use of vegetated waterways or outlets.
4. Soils are highly erosive or other soil and climate conditions preclude using vegetation.
5. High value property or adjacent facilities warrant the extra cost to contain design runoff in a limited space.

Design Criteria

Capacity

1. The minimum capacity shall be adequate to carry the peak rate of runoff from a 10-year, 24-hour storm. Velocity shall be computed using Manning's equation with a coefficient of roughness "n" as follows:

Lined Material "n"

Concrete (Type):

Trowel Finish	0.015
Float Finish	0.019
Gunit	0.019
Flagstone	0.022
Riprap	Determine from Figure 5B.11 on page 5B.19
Gabion	0.030

2. Riprap gradation and filter (bedding) are generally designed in accordance with criteria set forth in the National Cooperative Highway Research Program Report 108, available from the University Microfilm International, 300 N. Zee Road, Ann Arbor, Michigan 48016, Publication No. PB-00839; or the Hydraulic Engineering Circular No. 11, prepared by the U.S. Bureau of Public Roads, available from Federal Highway Administration, 400 7th Street, S.W., Washington, D.C. 20590, HNG-31, or the procedure in the USDA-NRCS's Engineering Field Manual, Chapter 16.

Velocity

1. Maximum design velocity shall be as shown below. Except for short transition sections, flow with a channel gradient within the range of 0.7 to 1.3 of this flow's critical slope must be avoided unless the channel is straight. Velocities exceeding critical will be restricted to straight reaches.

Design Flow Depth (ft.)	Maximum Velocity (ft./sec.)
0.0 – 0.5	25
0.5 – 1.0	15
Greater than 1.0	10

2. Waterways or outlets with velocities exceeding critical shall discharge into an energy dissipater to reduce velocity to less than critical, or to a velocity the downstream soil and vegetative conditions will allow.

Cross Section

The cross section shall be triangular, parabolic, or trapezoidal. Monolithic concrete or gabions may be rectangular.

Freeboard

The minimum freeboard for lined waterways or outlets shall be 0.25 feet above design high water in areas where erosion resistant vegetation cannot be grown adjacent to the paved side slopes. No freeboard is required where good vegetation can be grown and is maintained.

Side Slope

Steepest permissible side slopes, horizontal to vertical will be as follows:

1. Non-Reinforced Concrete
 - Hand-placed, formed concrete
 - Height of lining, 1.5 ft or less..... Vertical
 - Hand placed screened concrete or mortared
 - In-place flagstone
 - Height of lining, less than 2 ft..... 1 to 1
 - Height of lining, more than 2 ft..... 2 to 1
2. Slip form concrete:
 - Height of lining, less than 3 ft..... 1 to 1
3. Rock Riprap..... 2 to 1
4. Gabions..... Vertical
5. Pre-cast Concrete Sections..... Vertical

Lining Thickness

Minimum lining thickness shall be as follows:

1. Concrete.....4 in. (In most problem areas, shall be 5 in. with welded wire fabric reinforcing.)
2. Rock Riprap.....1.5 x maximum stone size plus thickness of filter or bedding.
3. Flagstone.....4 in. including mortar bed.

Related Structures

Side inlets, drop structures, and energy dissipaters shall meet the hydraulic and structural requirements of the site.

Filters or Bedding

Filters or bedding to prevent piping, reduce uplift pressure, and collect water will be used as required and will be designed in accordance with sound engineering principles. Weep holes and drains should be provided as needed.

Concrete

Concrete used for lining shall be so proportioned that it is plastic enough for thorough consolidation and stiff enough to stay in place on side slopes. A dense product will be required. A mix that can be certified as suitable to produce a minimum strength of at least 3,000 pounds per square inch will be required. Cement used shall be Portland Cement, Type I, II, IV, or V. Aggregate used shall have a maximum diameter of 1 ½ inches.

Weep holes should be provided in concrete footings and retaining walls to allow free drainage of water. Pipe used for weep holes shall be non-corrosive.

Mortar

Mortar used for mortared in-place flagstone shall consist of a mix of cement, sand, and water. Follow directions on the bag of mortar for proper mixing of mortar and water.

Contraction Joints

Contraction joints in concrete linings, where required, shall be formed transversely to a depth of about one third the thickness of the lining at a uniform spacing in the range of 10 to 15 feet.

Rock Riprap or Flagstone

Stone used for riprap or gabions shall be dense and hard enough to withstand exposure to air, water, freezing, and thawing. Flagstone shall be flat for ease of placement and have the strength to resist exposure and breaking. Rock riprap maximum size shall be as follows:

<u>Velocity, f.p.s.</u>	<u>dmax, inches</u>
5.0	6
8.5	12
10	18
12	24
15	36

A complete riprap gradations is provided in Table 5B.4, page 5B.38.

Cutoff Walls

Cutoff walls shall be used at the beginning and ending of concrete lining. For rock riprap lining, cutoff walls shall be keyed into the channel bottom and at both ends of the lining.

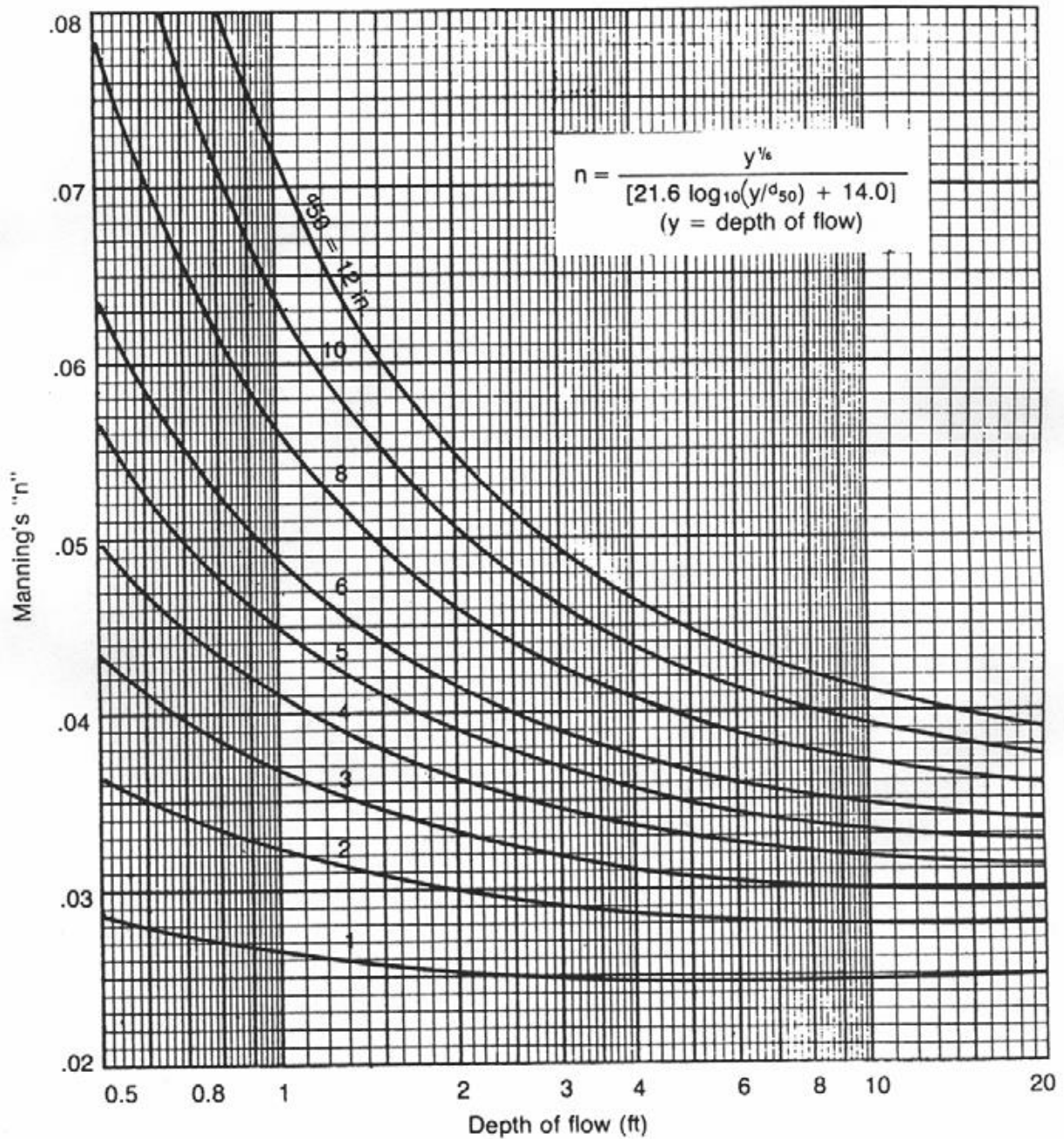
Construction Specifications

1. The foundation area shall be cleared of trees, stumps, roots, sod, loose rock, or other objectionable material.
2. The cross-section shall be excavated to the neat lines and grades as shown on the plans. Over-excavated areas shall be backfilled with moist soil compacted to the density of the surrounding material.
3. No abrupt deviations from design grade or horizontal alignment shall be permitted.
4. Concrete linings shall be placed to the thickness shown on the plans and finished in a workmanlike manner. Adequate precautions shall be taken to protect freshly placed concrete from extreme (hot or cold) temperatures, to ensure proper curing.
5. Filter bedding and rock riprap shall be placed to line and grade in the manner specified.
6. Construction operation shall be done in such a manner that erosion, air pollution, and water pollution will be minimized and held within legal limits. The completed job shall present a workmanlike appearance. All disturbed areas shall be vegetated or otherwise protected against soil erosion.

Maintenance

Pavement or lining should be maintained as built to prevent undermining and deterioration. Existing trees next to pavements should be removed, as roots can cause uplift damage. Vegetation next to pavement should be maintained in good condition to prevent scouring if the pavement is overtopped. See Standard and Specifications for Permanent Critical Area Seeding on page 3.5

Figure K– Determining “n” for Riprap Lined Channel using Depth of Flow



9 Construction Schedule

As required under GP-0-20-001 permit coverage, a construction schedule for the site is required and must be strictly followed. This project is able to be done in a single phases and still to adhere to the NYS DEC policy of disturbing less than five (5) acres of land at any given time. Please refer to the construction schedule outlined below:

The construction sequence will be strictly followed unless a modified plan is submitted for review and approval by the Town. Limits of disturbance for each sequence should be clearly marked out to the Town Engineer's satisfaction prior to construction of that sequence. Coverage for the preliminary work shall be obtained and terminated by the subdivider. Individual lot owners must obtain their own coverage.

Pre-Construction Schedule (Duplicate on SWPPP Plan Sheet)

As required under GP-0-20-001 permit coverage, a construction schedule for the site is required and must be strictly adhered to. This project will adhere to the NYS DEC policy of disturbing less than five (5) acres of land at any given time. Please refer to the construction schedule outlined below: Any deviations to this schedule must receive prior approval by the applicant's Engineer and shall be noticed to the Town. Limits of disturbance for each sequence should be clearly marked to the Town Engineer's satisfaction prior to construction of that sequence. coverage for the preliminary work shall be obtained and terminated by the Subdivider. Individual lot owner must obtain their own coverage.

PRE-CONSTRUCTION SEQUENCE:

2. Submit N.O.I. accompanied by an executed MS4 SWPPP acceptance form to bureau of water permits, Albany NY.
3. Receive acknowledgement back from NYSDEC.
4. Non-disturbance areas shall be marked with 4-ft orange snow fencing to town engineer's satisfaction prior to site disturbance, and shall be maintained until issuance of a Certificate-of-Occupancy for that lot.
5. Hold a pre-construction meeting with the site engineer, Town engineer, contractor, erosion control inspector and building inspector. Place a copy of the SWPPP report on site along with a copy of the inspector's log book containing copies of the weekly inspections. (applicant's erosion & sediment control inspection agent shall conduct an inspection on a weekly basis)

Construction Schedule (Duplicate on SWPPP Plan Sheet)

CONSTRUCTION SEQUENCE:

1. Install silt fencing and other temporary controls on all downhill slopes as shown on the Erosion and Sediment Control plan.
2. Install and stabilize temporary construction entrance for the pond area.
3. Commence initial site clearing and grub areas of disturbance of the proposed pond area.
4. Rough grade the roadway and site utilities.
5. Construct the drainage ponds as shown on the plans.
6. Construction of the individual lots may commence once the temporary sediment trap and drainage swale has been completed. The total disturbance at any one time shall not exceed 5 acres.
7. Once all major site disturbance activities have completed and the site has been stabilized, all swales, yard drains and culverts shall be cleaned of all debris and sediment. All grassed areas shall be seeded and mulched. The temporary sedimentation basin shall be cleaned to its bottom elevation and converted to a permanent basin.
8. Once an MS4 Acceptance letter has been issued an N.O.T. (notice of termination) can be filled with NYSDEC.
9. Terminate erosion control inspection

Construction on the Individual Lots:

- 1) Install/construct the temporary construction entrance into the lot.
- 2) Install all silt fencing, diversion swales and all other necessary erosion control measures necessary to prevent sediment-laden runoff from leaving the lot.
- 4) Construct all improvements on the lot. Final grading shall be completed as soon as practicable.
- 5) Inlet protection shall be provided for the drywell until the lot is stabilized.
- 6) Topsoil, seed and mulch shall be applied as soon as final grading is completed.
- 7) Once the completed lawn has been established and stabilized, the erosion control measures shall be removed.
- 8) The individual who files the Notice of Intent (NOI) shall be responsible for maintenance of the erosion control measures while construction on the lot is underway. This person shall also be responsible for any clean-up or damage due to failure of erosion control measures on the respective lot.

Construction waste management plan

Construction waste management practices are designed to maintain a clean and orderly work environment. This will reduce the potential for significant materials to come into contact with stormwater. A maintenance schedule shall be developed for these areas. The general contractor shall implement the following practices:

Material resulting from the clearing and grubbing operation will be stockpiled up slope from adequate sedimentation controls.

Equipment cleaning, maintenance, and repair areas shall be designated and protected by a temporary perimeter berm.

The use of detergents for large scale washing is prohibited (i.e., vehicles, buildings, pavement surfaces, etc.).

Spill Prevention and Response

A Spill Prevention and Response Plan shall be developed for the site by the general contractor. The plan shall detail the steps needed to be followed in the event of an accidental spill and shall identify contact names and phone numbers of people and agencies that must be notified.

The plan shall include Material Safety Data Sheets (MSDS) for all materials to be stored on-site. All workers on-site will be required to be trained on safe handling and spill prevention procedures for all materials used during construction. Regular tailgate safety meetings shall be held and all workers that are expected on the site during the week shall be required to attend.

Material Storage

Construction materials shall be stored in a dedicated staging area. The staging area shall be located in an area that minimizes the impacts of the construction materials effecting stormwater quality.

Chemicals, paints, solvents, fertilizers, and other toxic material must be stored in waterproof containers. Except during application, the contents must be kept in trucks or within storage facilities. Runoff containing such material must be collected, removed from the site, treated and disposed at an approved solid waste or chemical disposal facility.

Temporary Concrete Washout Facility

Temporary concrete washout facilities should be located a minimum of 50 ft from storm drain inlets, open drainage facilities, and watercourses. Each facility should be located away from construction traffic or access areas to prevent disturbance or tracking. A sign should be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.

When temporary concrete washout facilities are no longer required for the work, the hardened concrete shall be removed and disposed of. Materials used to construct the temporary concrete washout facilities shall be removed from the site and disposed of. Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities shall be backfilled and/or repaired and seeded and mulched for final stabilization.

Solid Waste Disposal

No solid materials, including building materials, are allowed to be discharged from the site with stormwater. All solid waste, including disposable materials incidental to the major construction activities, must be collected and placed in containers. The containers will be emptied periodically by a contract trash disposal service and hauled away from the site.

Substances that have the potential for polluting surface and/or groundwater must be controlled by whatever means necessary in order to ensure that they do not discharge from the site. As an example, special care must be exercised during equipment fueling and servicing operations. If a spill occurs, it must be contained and disposed so that it will not flow from the site or enter groundwater, even if this requires removal, treatment, and disposal of soil. In this regard, potentially polluting substances should be handled in a manner consistent with the impact they represent.

Water Source

Non-stormwater components of site discharge must be clean water. Water used for construction, which discharges from the site, must originate from a public water supply or private well approved by the Health Department. Water used for construction that does not originate from an approved public supply must not discharge from the site. It can be retained in the ponds until it infiltrates and evaporates.

10 Conclusions

The SWPPP (Stormwater Pollution Prevention Plan) for the site to be known as “Summit Woods Subdivision”, has been designed in accordance with the *New York Standards and Specifications for Sediment and Erosion Control Manual August 2016*, and the *New York State Stormwater Management Design Manual 2015*. All BMP (Best Management Practices) have been applied to the site to ensure the proper control of any erosion and sediment created on site from disturbance activities. The Town of East Fishkill building inspector, Town Engineer and NYSDEC representative have the authority to modify, add or eliminate any erosion control practice on the construction site. The site’s owner shall file an NOI, included in Appendix F of this report, as required by the NYSDEC before starting construction.

Appendix

Appendix A

Pre-Development Cn, Tc Calculations & Pre-Development Summary



Pre Area #1



Pre Area #2



Pre Area #3



Pre Area #4



Pre Area #5



Pre Area #6



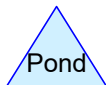
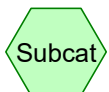
Pre Area #7



Pre Area #8



Pre Area #9



Routing Diagram for Summit Woods

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
26.000	77	2 acre lots, 12% imp, HSG C (3S, 9S)
35.350	56	Brush, Fair, HSG B (1S, 2S, 3S, 6S, 7S)
73.520	70	Brush, Fair, HSG C (3S, 4S, 5S, 6S, 7S, 8S, 9S)
31.200	78	Wetland HSG C (3S)
6.750	78	Wetland, HSG A (3S)
7.100	78	Wetland, HSG C (6S, 8S)
32.500	78	Wetland, HSG D (3S)
4.040	36	Woods, Fair, HSG A (3S)
79.580	60	Woods, Fair, HSG B (1S, 2S, 3S, 7S)
80.110	73	Woods, Fair, HSG C (1S, 3S, 4S, 5S, 8S, 9S)
7.310	79	Woods, Fair, HSG D (3S)
383.460	69	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
10.790	HSG A	3S
114.930	HSG B	1S, 2S, 3S, 6S, 7S
217.930	HSG C	1S, 3S, 4S, 5S, 6S, 7S, 8S, 9S
39.810	HSG D	3S
0.000	Other	
383.460		TOTAL AREA

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Type III 24-hr 1-yr Rainfall=2.66"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre Area #1	Runoff Area=5.360 ac 0.00% Impervious Runoff Depth>0.19" Flow Length=438' Tc=7.6 min CN=60 Runoff=0.50 cfs 0.083 af
Subcatchment2S: Pre Area #2	Runoff Area=8.050 ac 0.00% Impervious Runoff Depth>0.19" Flow Length=712' Tc=9.0 min CN=60 Runoff=0.74 cfs 0.124 af
Subcatchment3S: Pre Area #3	Runoff Area=299.540 ac 0.70% Impervious Runoff Depth>0.23" Flow Length=7,988' Tc=412.1 min CN=69 Runoff=15.99 cfs 5.790 af
Subcatchment4S: Pre Area #4	Runoff Area=4.900 ac 0.00% Impervious Runoff Depth>0.51" Flow Length=525' Tc=14.8 min CN=71 Runoff=2.05 cfs 0.208 af
Subcatchment5S: Pre Area #5	Runoff Area=2.150 ac 0.00% Impervious Runoff Depth>0.55" Flow Length=648' Tc=13.6 min CN=72 Runoff=1.03 cfs 0.098 af
Subcatchment6S: Pre Area #6	Runoff Area=40.780 ac 0.00% Impervious Runoff Depth>0.37" Flow Length=2,431' Tc=217.4 min CN=69 Runoff=3.19 cfs 1.241 af
Subcatchment7S: Pre Area #7	Runoff Area=5.300 ac 0.00% Impervious Runoff Depth>0.21" Flow Length=393' Tc=9.5 min CN=61 Runoff=0.58 cfs 0.092 af
Subcatchment8S: Pre Area #8	Runoff Area=6.960 ac 0.00% Impervious Runoff Depth>0.59" Flow Length=912' Tc=12.9 min CN=73 Runoff=3.71 cfs 0.342 af
Subcatchment9S: Pre Area #9	Runoff Area=10.420 ac 9.79% Impervious Runoff Depth>0.70" Flow Length=1,761' Tc=70.8 min CN=76 Runoff=3.17 cfs 0.606 af

Total Runoff Area = 383.460 ac Runoff Volume = 8.585 af Average Runoff Depth = 0.27"
99.19% Pervious = 380.340 ac 0.81% Impervious = 3.120 ac

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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 1S: Pre Area #1

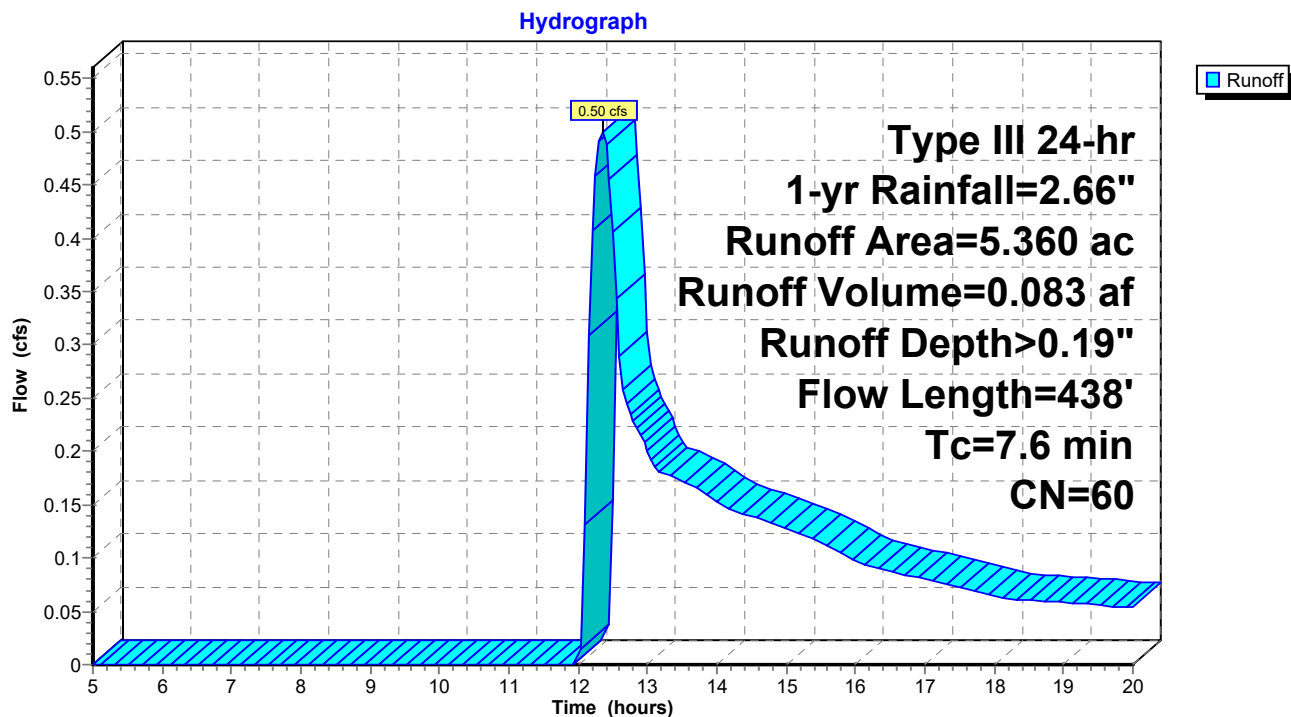
Runoff = 0.50 cfs @ 12.35 hrs, Volume= 0.083 af, Depth> 0.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
2.770	60	Woods, Fair, HSG B
0.630	73	Woods, Fair, HSG C
1.960	56	Brush, Fair, HSG B
5.360	60	Weighted Average
5.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.3000	0.24		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
0.6	338	0.2900	8.67		Shallow Concentrated Flow, Reach B-DP#1
					Unpaved Kv= 16.1 fps
7.6	438	Total			

Subcatchment 1S: Pre Area #1



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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 2S: Pre Area #2

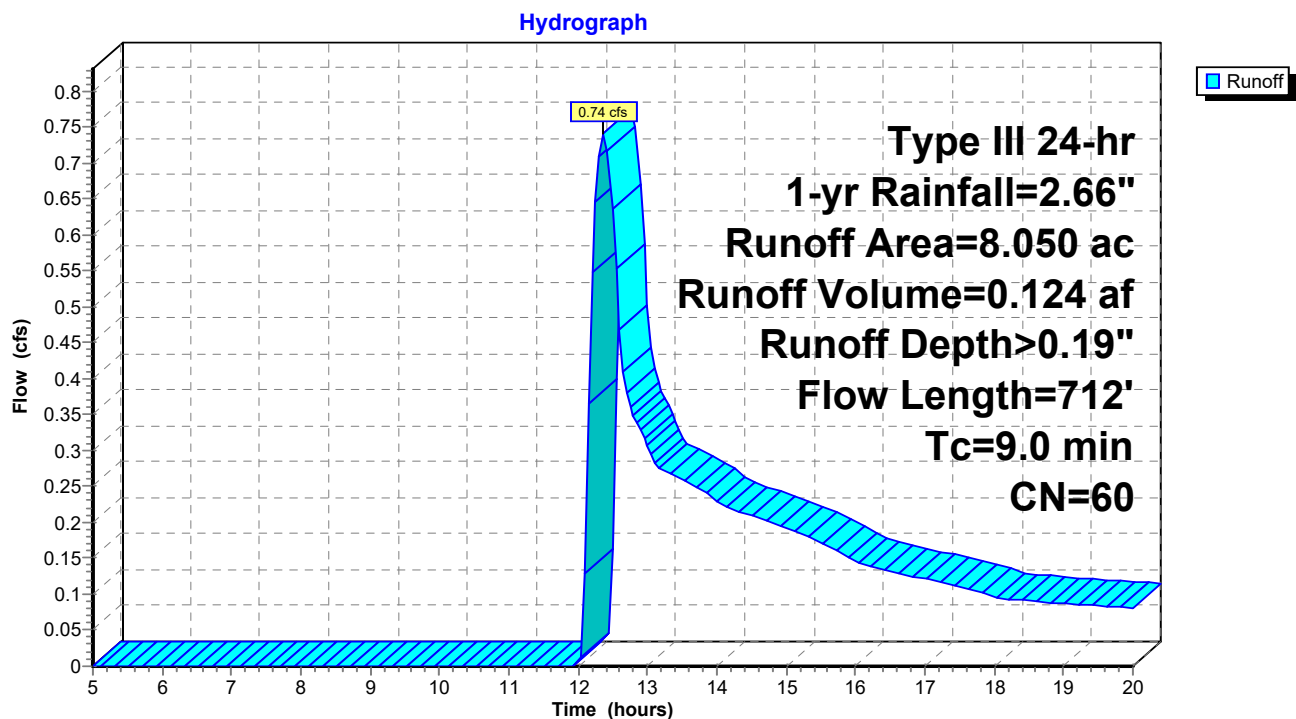
Runoff = 0.74 cfs @ 12.37 hrs, Volume= 0.124 af, Depth> 0.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
7.770	60	Woods, Fair, HSG B
0.280	56	Brush, Fair, HSG B
8.050	60	Weighted Average
8.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2400	0.22		Sheet Flow, Reach A-B
1.4	612	0.1990	7.18		Woods: Light underbrush n= 0.400 P2= 3.50"
					Shallow Concentrated Flow, Reach B-DP#2
					Unpaved Kv= 16.1 fps
9.0	712	Total			

Subcatchment 2S: Pre Area #2



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Type III 24-hr 1-yr Rainfall=2.66"

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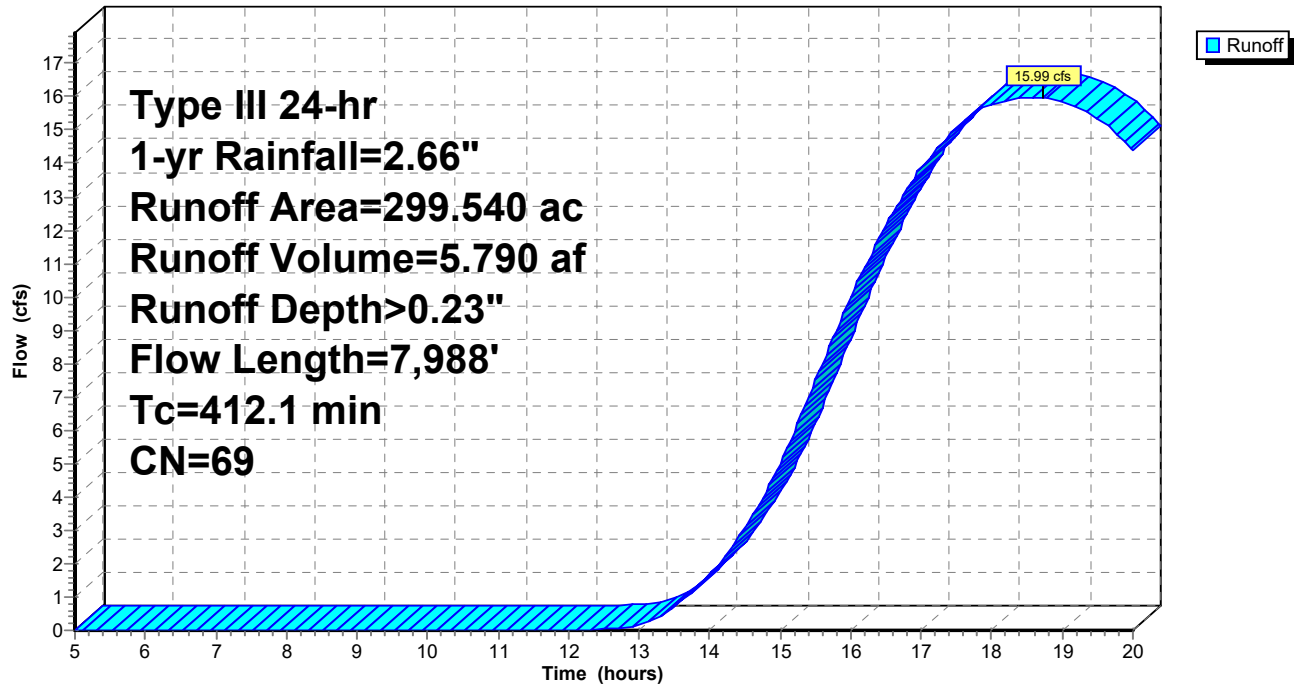
Summary for Subcatchment 3S: Pre Area #3

Runoff = 15.99 cfs @ 18.73 hrs, Volume= 5.790 af, Depth> 0.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
4.040	36	Woods, Fair, HSG A
* 6.750	78	Wetland, HSG A
68.110	60	Woods, Fair, HSG B
23.540	56	Brush, Fair, HSG B
73.270	73	Woods, Fair, HSG C
35.320	70	Brush, Fair, HSG C
* 31.200	78	Wetland HSG C
17.500	77	2 acre lots, 12% imp, HSG C
7.310	79	Woods, Fair, HSG D
* 32.500	78	Wetland, HSG D
299.540	69	Weighted Average
297.440		99.30% Pervious Area
2.100		0.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.1600	0.19		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	611	0.2060	7.31		Shallow Concentrated Flow, REach B-C
					Unpaved Kv= 16.1 fps
104.2	3,669	0.0130	0.59	15.26	Channel Flow, Reach C-D
					Area= 26.0 sf Perim= 34.3' r= 0.76' n= 0.240
297.6	3,608	0.0020	0.20	5.05	Channel Flow, Reach D-DP#3
					Area= 25.0 sf Perim= 40.1' r= 0.62' n= 0.240
412.1	7,988	Total			

Subcatchment 3S: Pre Area #3**Hydrograph**

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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 4S: Pre Area #4

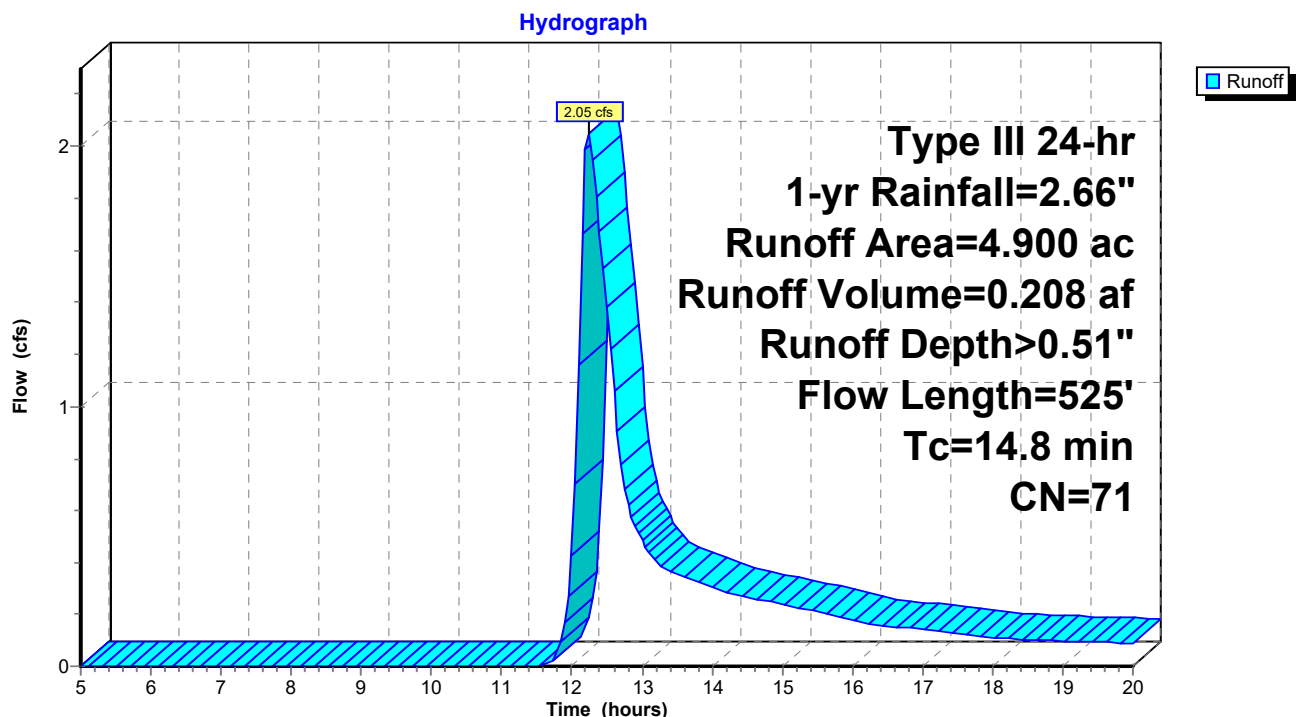
Runoff = 2.05 cfs @ 12.24 hrs, Volume= 0.208 af, Depth> 0.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
1.760	73	Woods, Fair, HSG C
3.140	70	Brush, Fair, HSG C
4.900	71	Weighted Average
4.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.14		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
3.2	425	0.0190	2.22		Shallow Concentrated Flow, Reach DP#4
					Unpaved Kv= 16.1 fps
14.8	525	Total			

Subcatchment 4S: Pre Area #4



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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 5S: Pre Area #5

Runoff = 1.03 cfs @ 12.22 hrs, Volume= 0.098 af, Depth> 0.55"

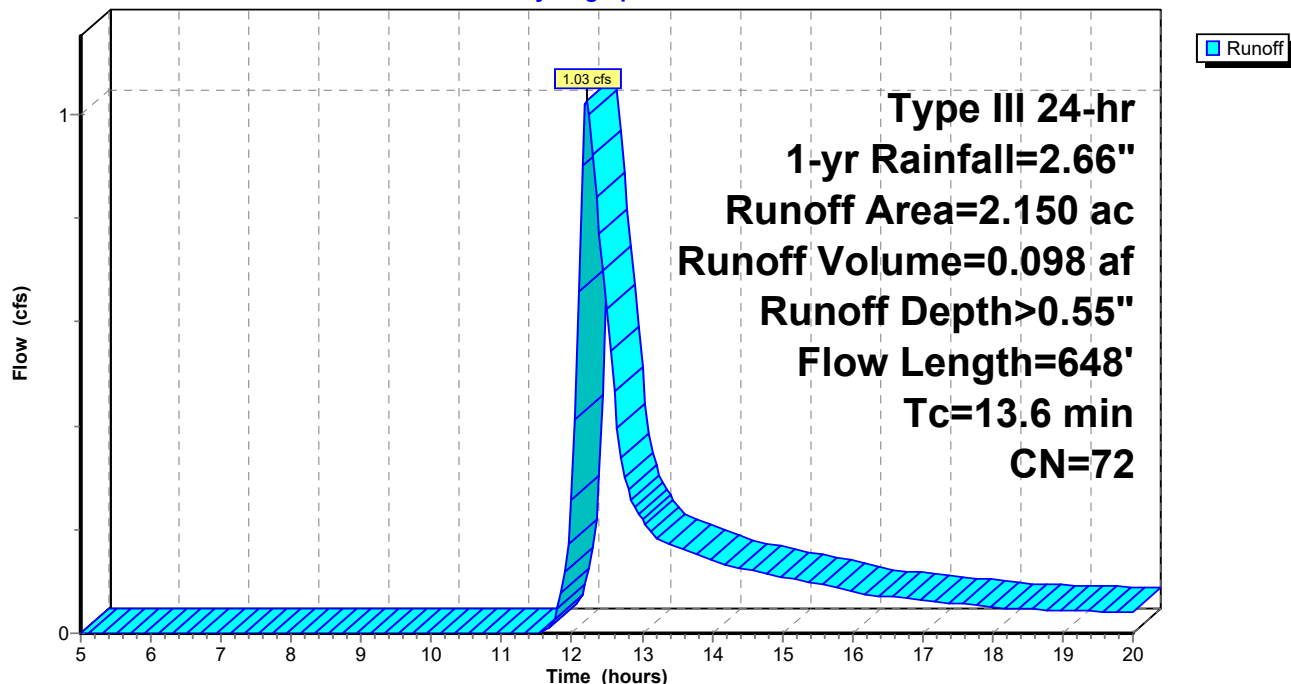
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
1.250	73	Woods, Fair, HSG C
0.900	70	Brush, Fair, HSG C
2.150	72	Weighted Average
2.150		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0330	0.15		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
2.4	548	0.0550	3.78		Shallow Concentrated Flow, Reach B-DP#5
					Unpaved Kv= 16.1 fps
13.6	648	Total			

Subcatchment 5S: Pre Area #5

Hydrograph



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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 6S: Pre Area #6

Runoff = 3.19 cfs @ 15.44 hrs, Volume= 1.241 af, Depth> 0.37"

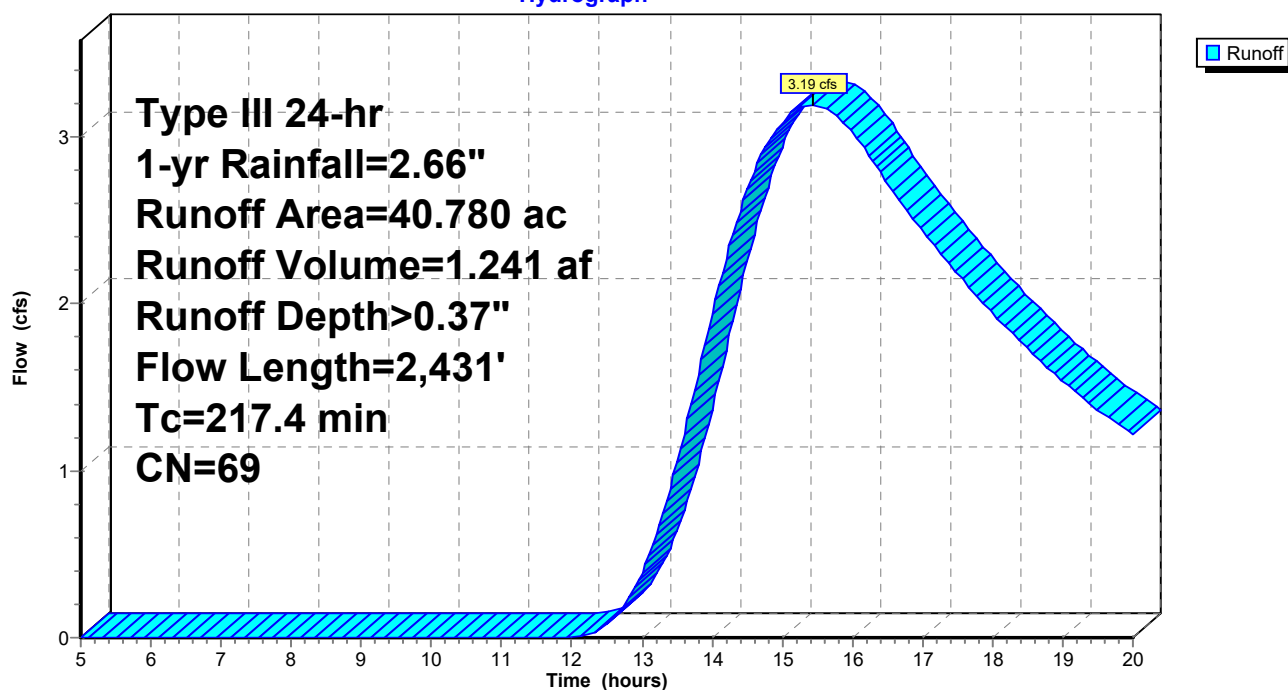
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
7.000	56	Brush, Fair, HSG B
28.500	70	Brush, Fair, HSG C
* 5.280	78	Wetland, HSG C
40.780	69	Weighted Average
40.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	100	0.0800	0.21		Sheet Flow, REach A-B
					Grass: Dense n= 0.240 P2= 3.50"
1.0	269	0.0740	4.38		Shallow Concentrated Flow, Reach B-C
					Unpaved Kv= 16.1 fps
208.6	2,062	0.0050	0.16	0.44	Channel Flow, Reach C-DP#6
					Area= 2.7 sf Perim= 11.0' r= 0.25' n= 0.250
217.4	2,431	Total			

Subcatchment 6S: Pre Area #6

Hydrograph



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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 7S: Pre Area #7

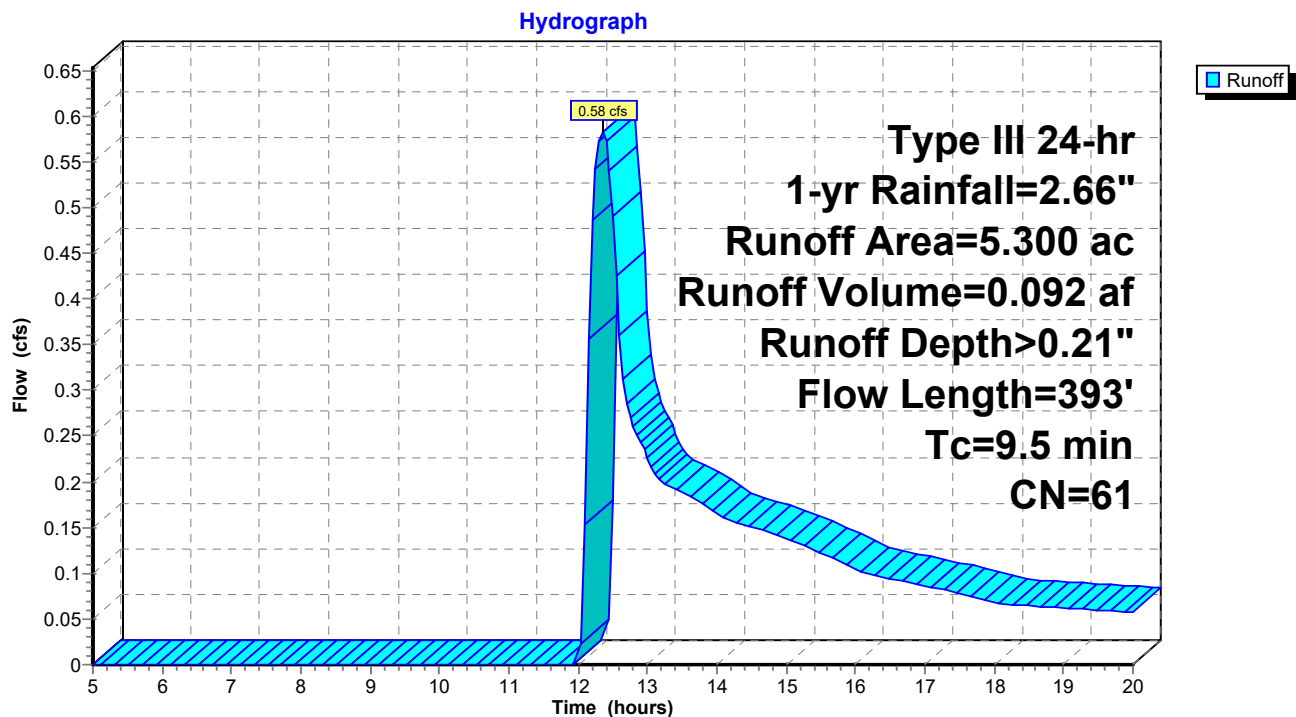
Runoff = 0.58 cfs @ 12.35 hrs, Volume= 0.092 af, Depth> 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.930	60	Woods, Fair, HSG B
2.570	56	Brush, Fair, HSG B
1.800	70	Brush, Fair, HSG C
5.300	61	Weighted Average
5.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0730	0.21		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
1.4	293	0.0500	3.60		Shallow Concentrated Flow, Reach B-DP#7
					Unpaved Kv= 16.1 fps
9.5	393	Total			

Subcatchment 7S: Pre Area #7



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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 8S: Pre Area #8

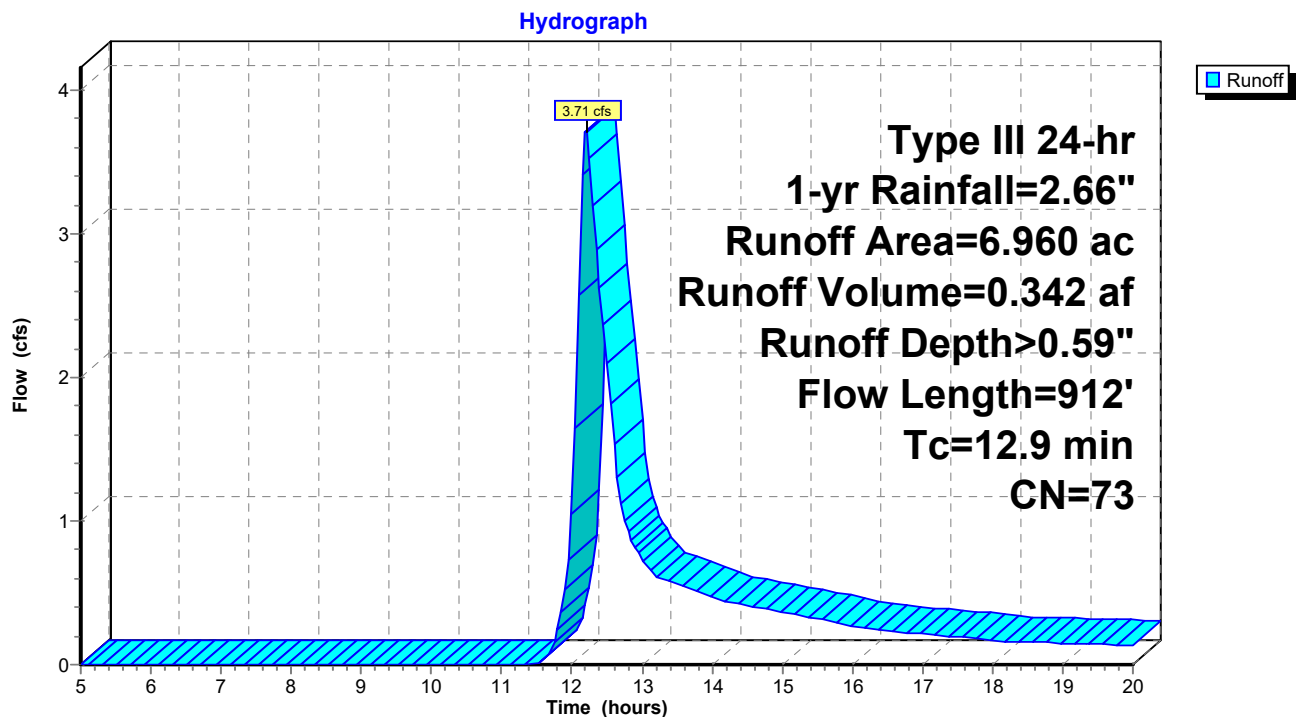
Runoff = 3.71 cfs @ 12.21 hrs, Volume= 0.342 af, Depth> 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
1.730	73	Woods, Fair, HSG C
* 1.820	78	Wetland, HSG C
3.410	70	Brush, Fair, HSG C
6.960	73	Weighted Average
6.960		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0900	0.22		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
5.4	812	0.0240	2.49		Shallow Concentrated Flow, Reach B-DP#8
					Unpaved Kv= 16.1 fps
12.9	912	Total			

Subcatchment 8S: Pre Area #8



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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 9S: Pre Area #9

Runoff = 3.17 cfs @ 13.02 hrs, Volume= 0.606 af, Depth> 0.70"

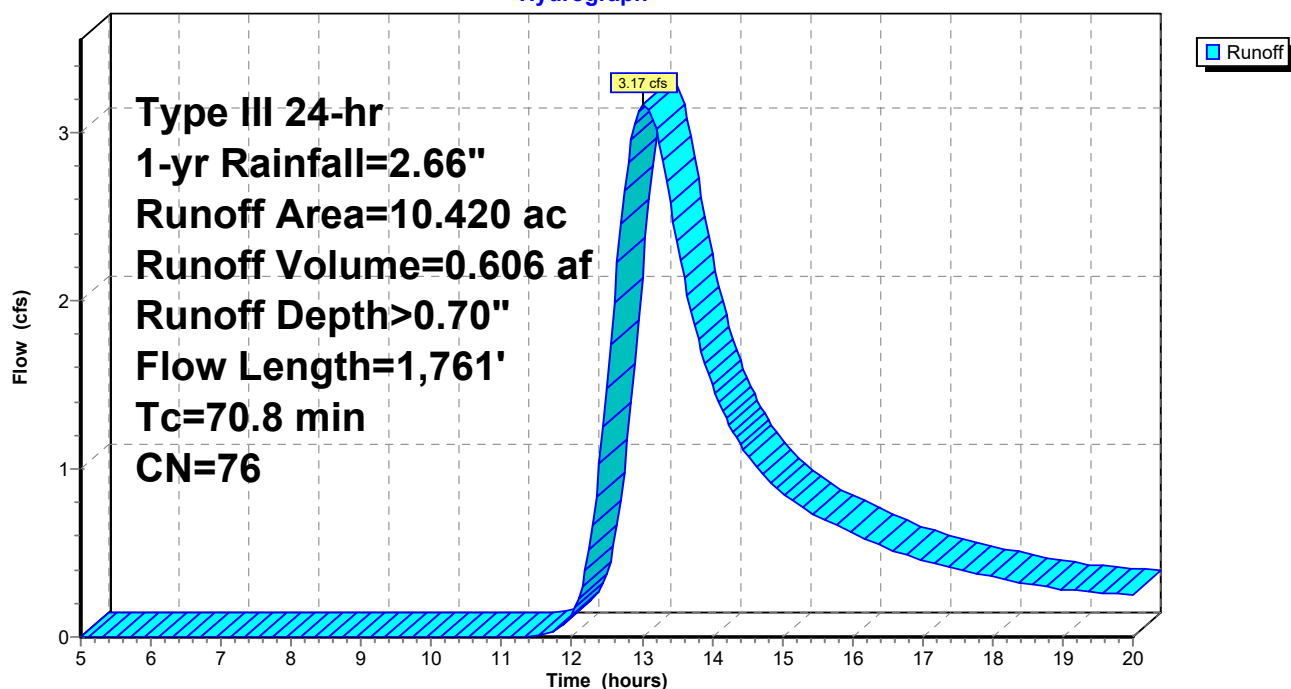
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
1.470	73	Woods, Fair, HSG C
8.500	77	2 acre lots, 12% imp, HSG C
0.450	70	Brush, Fair, HSG C
10.420	76	Weighted Average
9.400		90.21% Pervious Area
1.020		9.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
1.5	187	0.0160	2.04		Shallow Concentrated Flow, Reach B-C
					Unpaved Kv= 16.1 fps
48.8	1,474	0.0430	0.50	1.36	Channel Flow, Reach C-DP#(
					Area= 2.7 sf Perim= 11.0' r= 0.25' n= 0.240
70.8	1,761	Total			

Subcatchment 9S: Pre Area #9

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.76"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre Area #1	Runoff Area=5.360 ac 0.00% Impervious Runoff Depth>1.05" Flow Length=438' Tc=7.6 min CN=60 Runoff=5.88 cfs 0.468 af
Subcatchment2S: Pre Area #2	Runoff Area=8.050 ac 0.00% Impervious Runoff Depth>1.05" Flow Length=712' Tc=9.0 min CN=60 Runoff=8.54 cfs 0.702 af
Subcatchment3S: Pre Area #3	Runoff Area=299.540 ac 0.70% Impervious Runoff Depth>0.96" Flow Length=7,988' Tc=412.1 min CN=69 Runoff=62.56 cfs 24.054 af
Subcatchment4S: Pre Area #4	Runoff Area=4.900 ac 0.00% Impervious Runoff Depth>1.78" Flow Length=525' Tc=14.8 min CN=71 Runoff=8.24 cfs 0.726 af
Subcatchment5S: Pre Area #5	Runoff Area=2.150 ac 0.00% Impervious Runoff Depth>1.85" Flow Length=648' Tc=13.6 min CN=72 Runoff=3.89 cfs 0.332 af
Subcatchment6S: Pre Area #6	Runoff Area=40.780 ac 0.00% Impervious Runoff Depth>1.42" Flow Length=2,431' Tc=217.4 min CN=69 Runoff=13.23 cfs 4.838 af
Subcatchment7S: Pre Area #7	Runoff Area=5.300 ac 0.00% Impervious Runoff Depth>1.11" Flow Length=393' Tc=9.5 min CN=61 Runoff=5.96 cfs 0.488 af
Subcatchment8S: Pre Area #8	Runoff Area=6.960 ac 0.00% Impervious Runoff Depth>1.93" Flow Length=912' Tc=12.9 min CN=73 Runoff=13.36 cfs 1.119 af
Subcatchment9S: Pre Area #9	Runoff Area=10.420 ac 9.79% Impervious Runoff Depth>2.12" Flow Length=1,761' Tc=70.8 min CN=76 Runoff=10.10 cfs 1.838 af

Total Runoff Area = 383.460 ac Runoff Volume = 34.564 af Average Runoff Depth = 1.08"
99.19% Pervious = 380.340 ac 0.81% Impervious = 3.120 ac

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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 1S: Pre Area #1

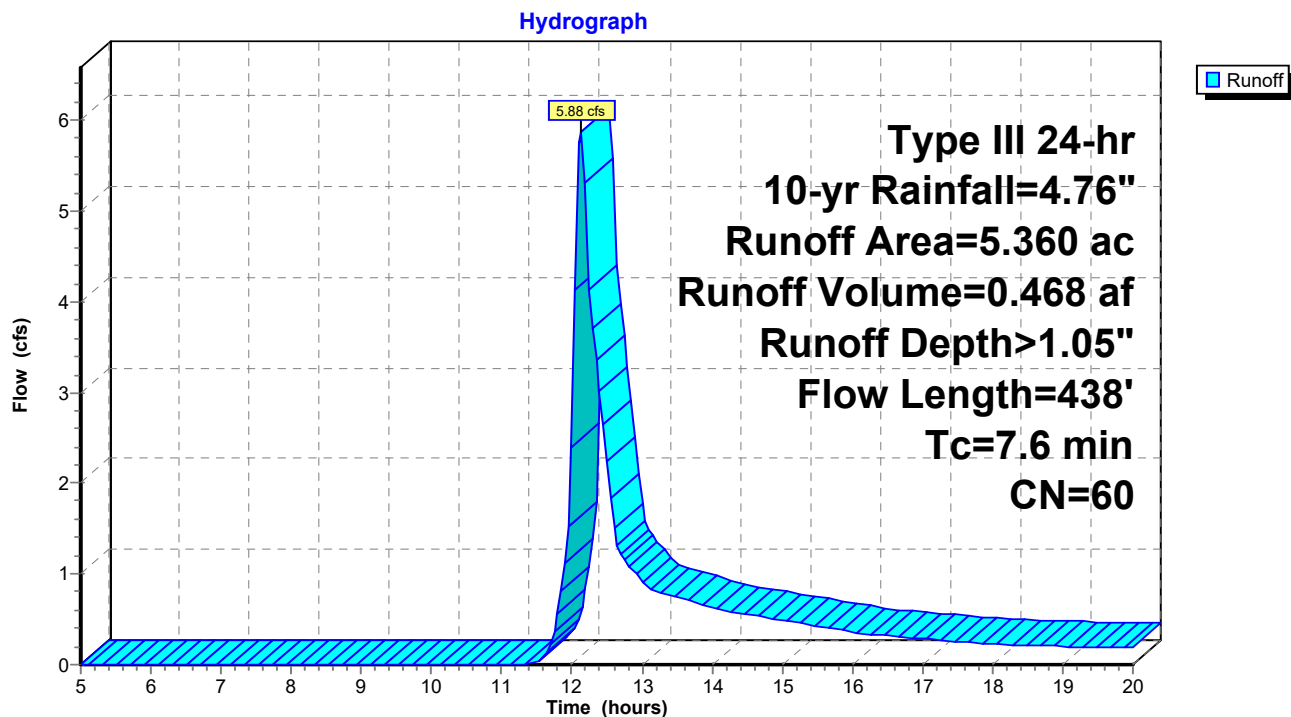
Runoff = 5.88 cfs @ 12.13 hrs, Volume= 0.468 af, Depth> 1.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
2.770	60	Woods, Fair, HSG B
0.630	73	Woods, Fair, HSG C
1.960	56	Brush, Fair, HSG B
5.360	60	Weighted Average
5.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.3000	0.24		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
0.6	338	0.2900	8.67		Shallow Concentrated Flow, Reach B-DP#1
					Unpaved Kv= 16.1 fps
7.6	438	Total			

Subcatchment 1S: Pre Area #1



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 2S: Pre Area #2

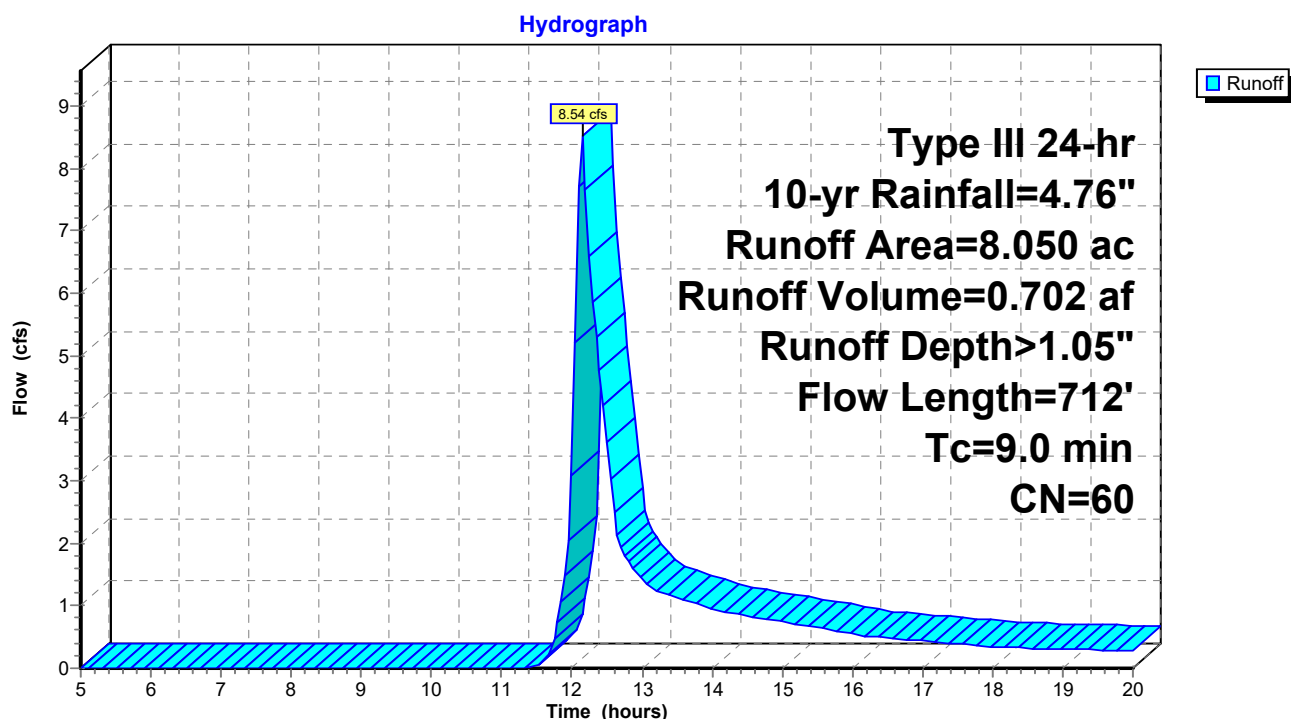
Runoff = 8.54 cfs @ 12.15 hrs, Volume= 0.702 af, Depth> 1.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
7.770	60	Woods, Fair, HSG B
0.280	56	Brush, Fair, HSG B
8.050	60	Weighted Average
8.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2400	0.22		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	612	0.1990	7.18		Shallow Concentrated Flow, Reach B-DP#2
					Unpaved Kv= 16.1 fps
9.0	712	Total			

Subcatchment 2S: Pre Area #2



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Type III 24-hr 10-yr Rainfall=4.76"

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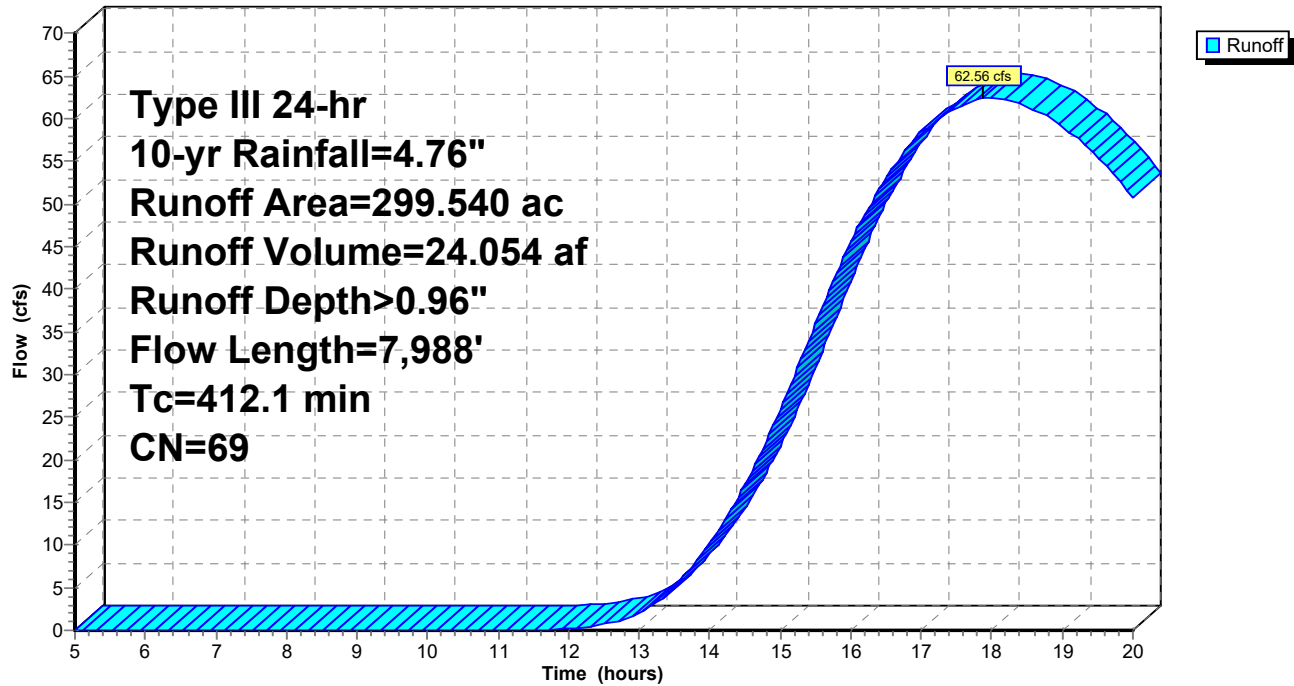
Summary for Subcatchment 3S: Pre Area #3

Runoff = 62.56 cfs @ 17.87 hrs, Volume= 24.054 af, Depth> 0.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
4.040	36	Woods, Fair, HSG A
* 6.750	78	Wetland, HSG A
68.110	60	Woods, Fair, HSG B
23.540	56	Brush, Fair, HSG B
73.270	73	Woods, Fair, HSG C
35.320	70	Brush, Fair, HSG C
* 31.200	78	Wetland HSG C
17.500	77	2 acre lots, 12% imp, HSG C
7.310	79	Woods, Fair, HSG D
* 32.500	78	Wetland, HSG D
299.540	69	Weighted Average
297.440		99.30% Pervious Area
2.100		0.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.1600	0.19		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	611	0.2060	7.31		Shallow Concentrated Flow, REach B-C
					Unpaved Kv= 16.1 fps
104.2	3,669	0.0130	0.59	15.26	Channel Flow, Reach C-D
					Area= 26.0 sf Perim= 34.3' r= 0.76' n= 0.240
297.6	3,608	0.0020	0.20	5.05	Channel Flow, Reach D-DP#3
					Area= 25.0 sf Perim= 40.1' r= 0.62' n= 0.240
412.1	7,988	Total			

Subcatchment 3S: Pre Area #3**Hydrograph**

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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 4S: Pre Area #4

Runoff = 8.24 cfs @ 12.21 hrs, Volume= 0.726 af, Depth> 1.78"

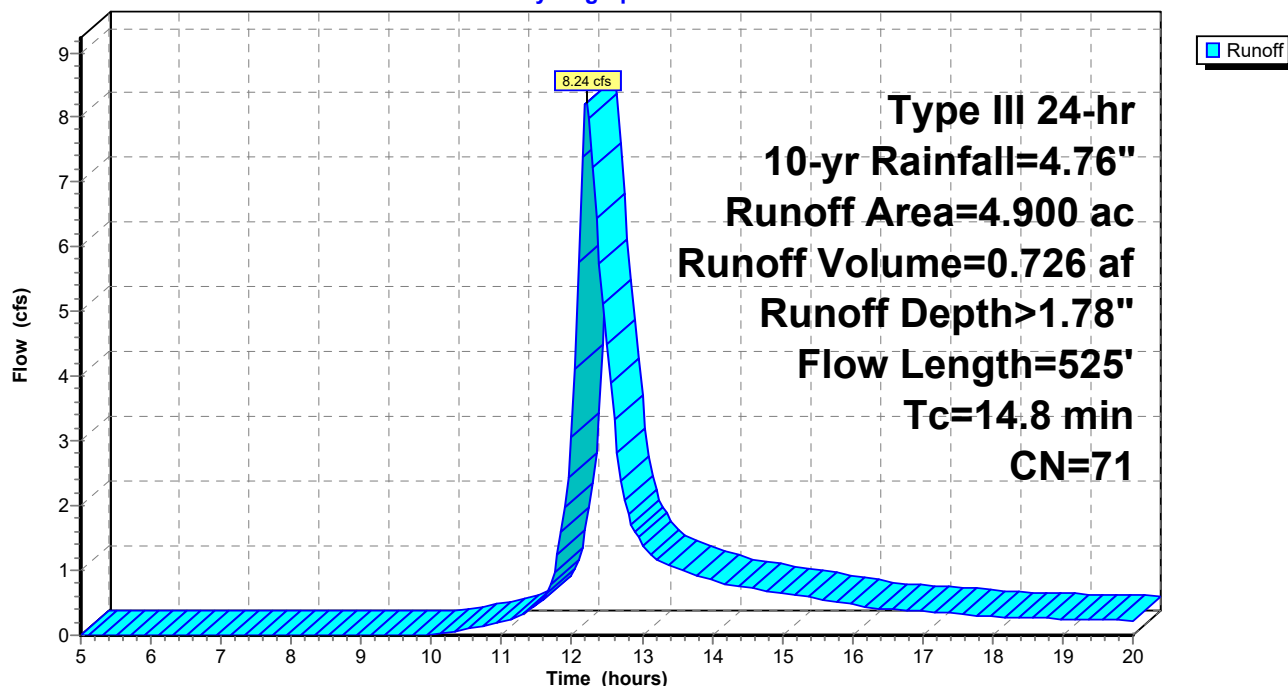
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
1.760	73	Woods, Fair, HSG C
3.140	70	Brush, Fair, HSG C
4.900	71	Weighted Average
4.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.14		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
3.2	425	0.0190	2.22		Shallow Concentrated Flow, Reach DP#4
					Unpaved Kv= 16.1 fps
14.8	525	Total			

Subcatchment 4S: Pre Area #4

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 5S: Pre Area #5

Runoff = 3.89 cfs @ 12.20 hrs, Volume= 0.332 af, Depth> 1.85"

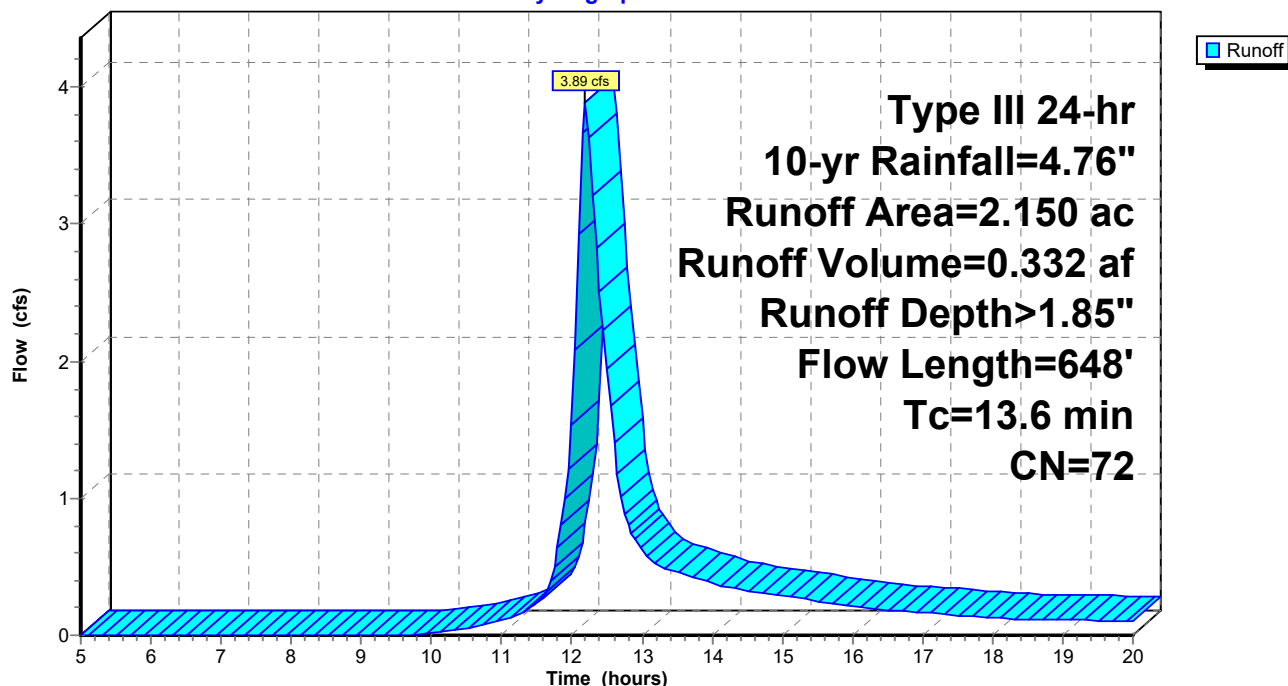
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
1.250	73	Woods, Fair, HSG C
0.900	70	Brush, Fair, HSG C
2.150	72	Weighted Average
2.150		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0330	0.15		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
2.4	548	0.0550	3.78		Shallow Concentrated Flow, Reach B-DP#5
					Unpaved Kv= 16.1 fps
13.6	648	Total			

Subcatchment 5S: Pre Area #5

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 6S: Pre Area #6

Runoff = 13.23 cfs @ 15.20 hrs, Volume= 4.838 af, Depth> 1.42"

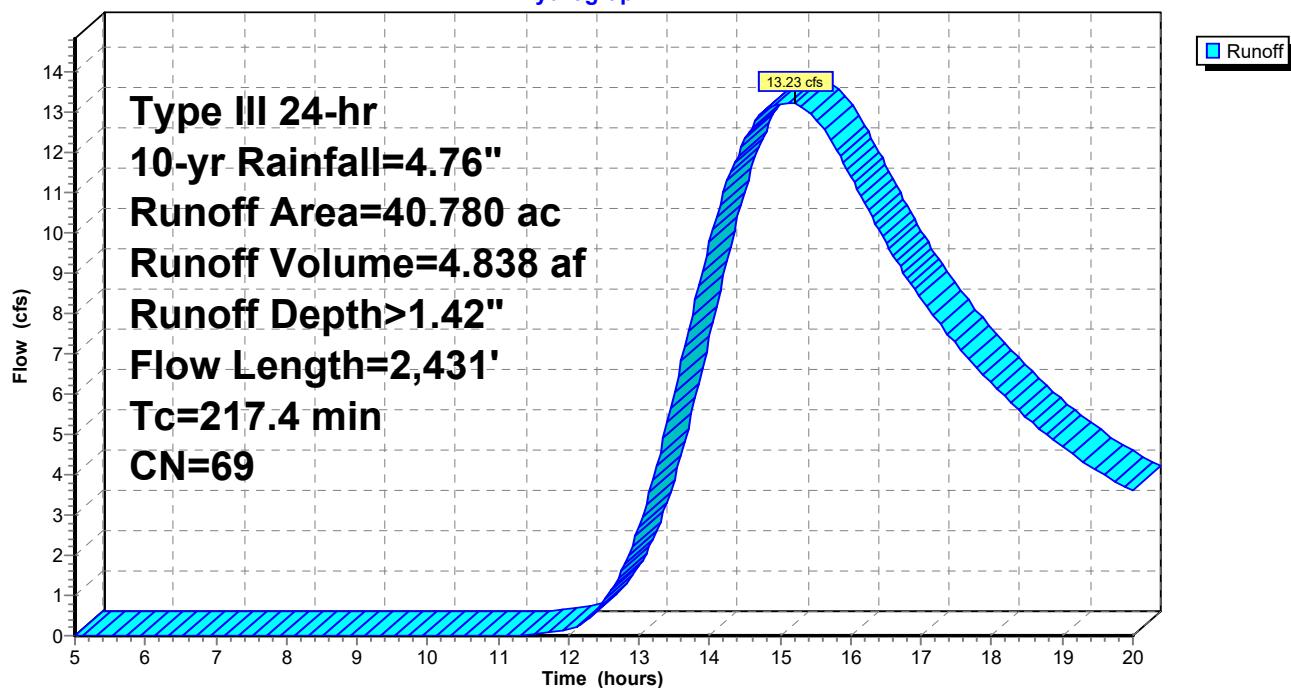
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
7.000	56	Brush, Fair, HSG B
28.500	70	Brush, Fair, HSG C
* 5.280	78	Wetland, HSG C
40.780	69	Weighted Average
40.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	100	0.0800	0.21		Sheet Flow, REach A-B
					Grass: Dense n= 0.240 P2= 3.50"
1.0	269	0.0740	4.38		Shallow Concentrated Flow, Reach B-C
					Unpaved Kv= 16.1 fps
208.6	2,062	0.0050	0.16	0.44	Channel Flow, Reach C-DP#6
					Area= 2.7 sf Perim= 11.0' r= 0.25' n= 0.250
217.4	2,431	Total			

Subcatchment 6S: Pre Area #6

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 7S: Pre Area #7

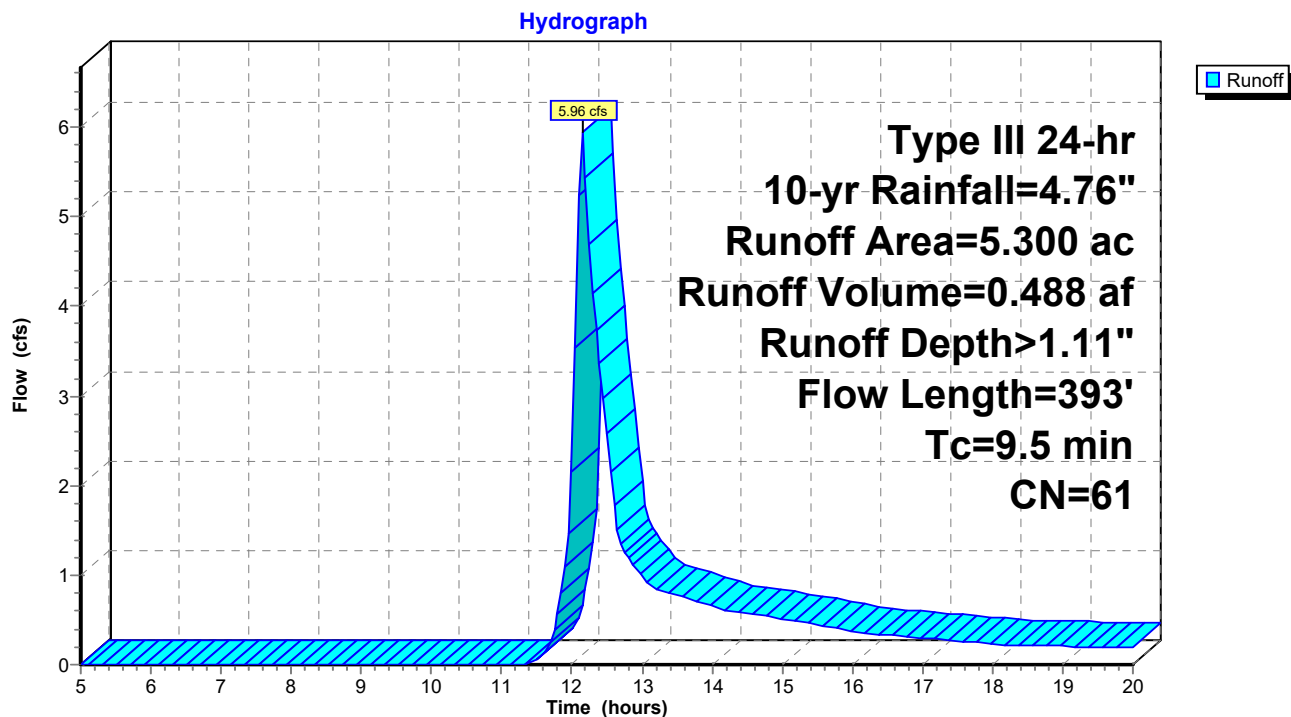
Runoff = 5.96 cfs @ 12.15 hrs, Volume= 0.488 af, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.930	60	Woods, Fair, HSG B
2.570	56	Brush, Fair, HSG B
1.800	70	Brush, Fair, HSG C
5.300	61	Weighted Average
5.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0730	0.21		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
1.4	293	0.0500	3.60		Shallow Concentrated Flow, Reach B-DP#7
					Unpaved Kv= 16.1 fps
9.5	393	Total			

Subcatchment 7S: Pre Area #7



Summit Woods

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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 8S: Pre Area #8

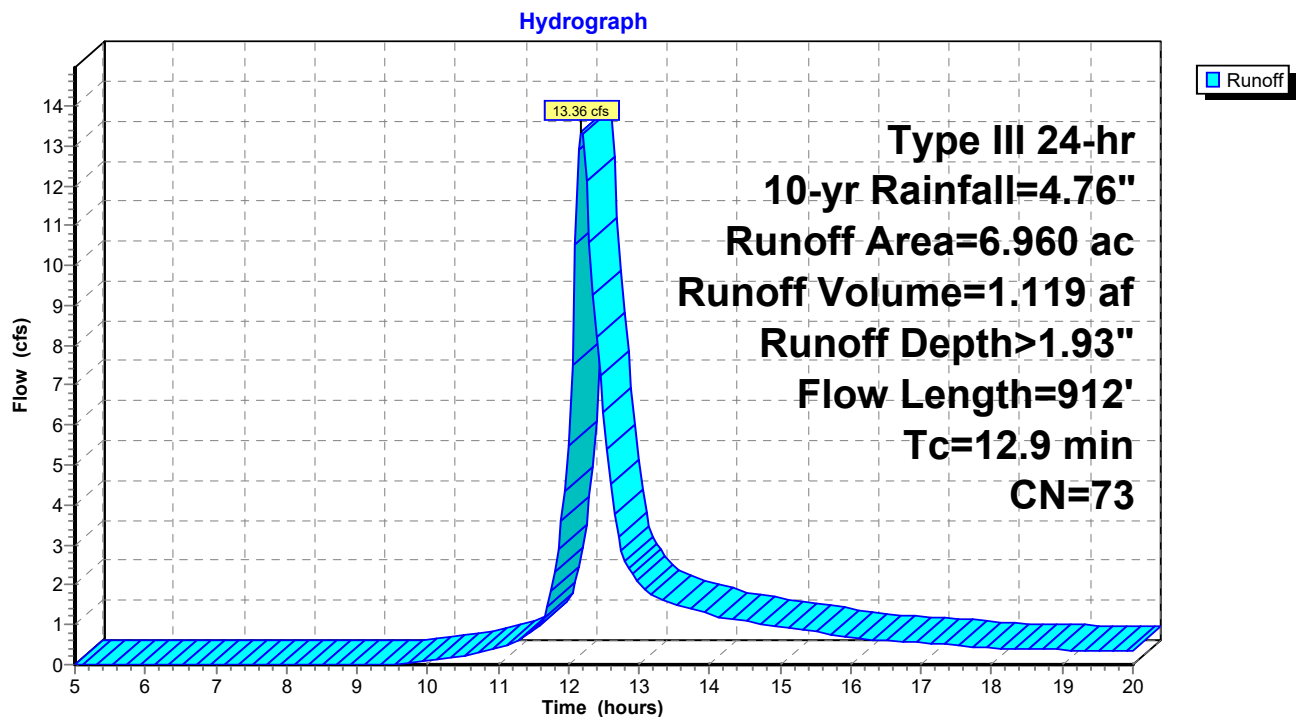
Runoff = 13.36 cfs @ 12.19 hrs, Volume= 1.119 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
1.730	73	Woods, Fair, HSG C
* 1.820	78	Wetland, HSG C
3.410	70	Brush, Fair, HSG C
6.960	73	Weighted Average
6.960		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0900	0.22		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
5.4	812	0.0240	2.49		Shallow Concentrated Flow, Reach B-DP#8
					Unpaved Kv= 16.1 fps
12.9	912	Total			

Subcatchment 8S: Pre Area #8



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 9S: Pre Area #9

Runoff = 10.10 cfs @ 12.98 hrs, Volume= 1.838 af, Depth> 2.12"

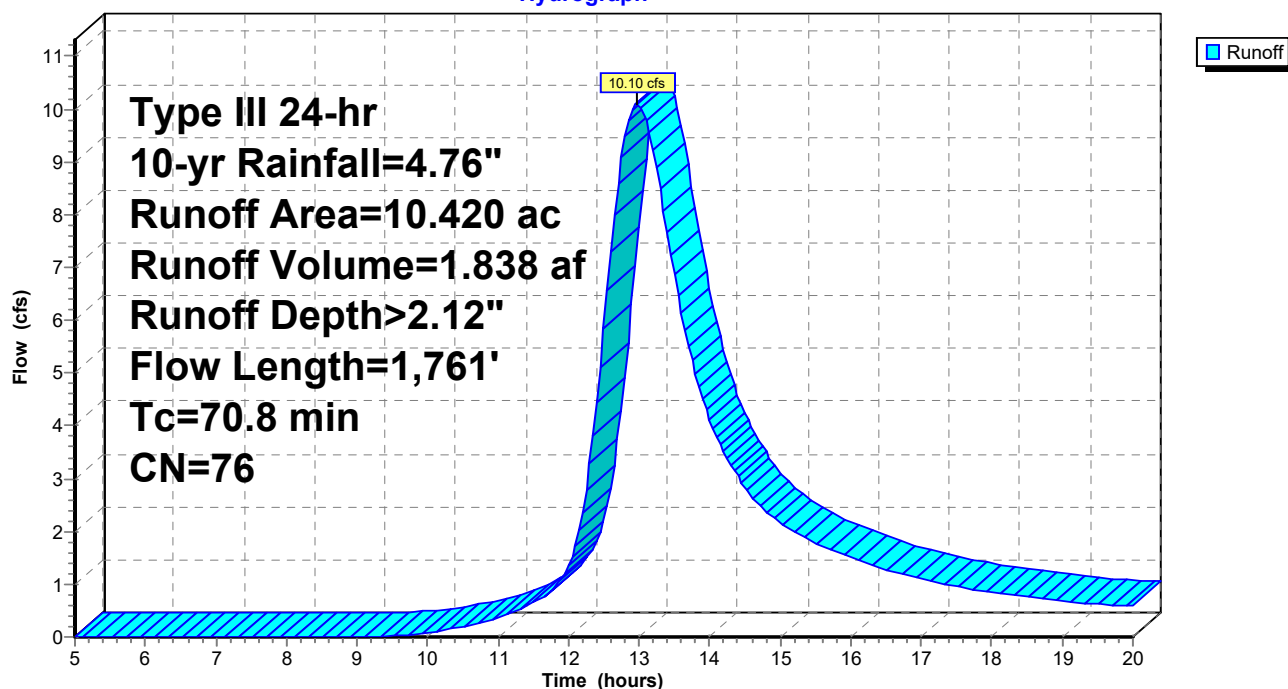
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
1.470	73	Woods, Fair, HSG C
8.500	77	2 acre lots, 12% imp, HSG C
0.450	70	Brush, Fair, HSG C
10.420	76	Weighted Average
9.400		90.21% Pervious Area
1.020		9.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
1.5	187	0.0160	2.04		Shallow Concentrated Flow, Reach B-C
					Unpaved Kv= 16.1 fps
48.8	1,474	0.0430	0.50	1.36	Channel Flow, Reach C-DP#(
					Area= 2.7 sf Perim= 11.0' r= 0.25' n= 0.240
70.8	1,761	Total			

Subcatchment 9S: Pre Area #9

Hydrograph



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Type III 24-hr 100-yr Rainfall=8.40"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre Area #1	Runoff Area=5.360 ac 0.00% Impervious Runoff Depth>3.35" Flow Length=438' Tc=7.6 min CN=60 Runoff=21.08 cfs 1.498 af
Subcatchment2S: Pre Area #2	Runoff Area=8.050 ac 0.00% Impervious Runoff Depth>3.35" Flow Length=712' Tc=9.0 min CN=60 Runoff=30.00 cfs 2.249 af
Subcatchment3S: Pre Area #3	Runoff Area=299.540 ac 0.70% Impervious Runoff Depth>2.74" Flow Length=7,988' Tc=412.1 min CN=69 Runoff=169.23 cfs 68.458 af
Subcatchment4S: Pre Area #4	Runoff Area=4.900 ac 0.00% Impervious Runoff Depth>4.59" Flow Length=525' Tc=14.8 min CN=71 Runoff=21.44 cfs 1.876 af
Subcatchment5S: Pre Area #5	Runoff Area=2.150 ac 0.00% Impervious Runoff Depth>4.71" Flow Length=648' Tc=13.6 min CN=72 Runoff=9.90 cfs 0.844 af
Subcatchment6S: Pre Area #6	Runoff Area=40.780 ac 0.00% Impervious Runoff Depth>3.90" Flow Length=2,431' Tc=217.4 min CN=69 Runoff=36.41 cfs 13.249 af
Subcatchment7S: Pre Area #7	Runoff Area=5.300 ac 0.00% Impervious Runoff Depth>3.46" Flow Length=393' Tc=9.5 min CN=61 Runoff=20.20 cfs 1.530 af
Subcatchment8S: Pre Area #8	Runoff Area=6.960 ac 0.00% Impervious Runoff Depth>4.83" Flow Length=912' Tc=12.9 min CN=73 Runoff=33.32 cfs 2.800 af
Subcatchment9S: Pre Area #9	Runoff Area=10.420 ac 9.79% Impervious Runoff Depth>5.08" Flow Length=1,761' Tc=70.8 min CN=76 Runoff=23.95 cfs 4.410 af

Total Runoff Area = 383.460 ac Runoff Volume = 96.914 af Average Runoff Depth = 3.03"
99.19% Pervious = 380.340 ac 0.81% Impervious = 3.120 ac

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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 1S: Pre Area #1

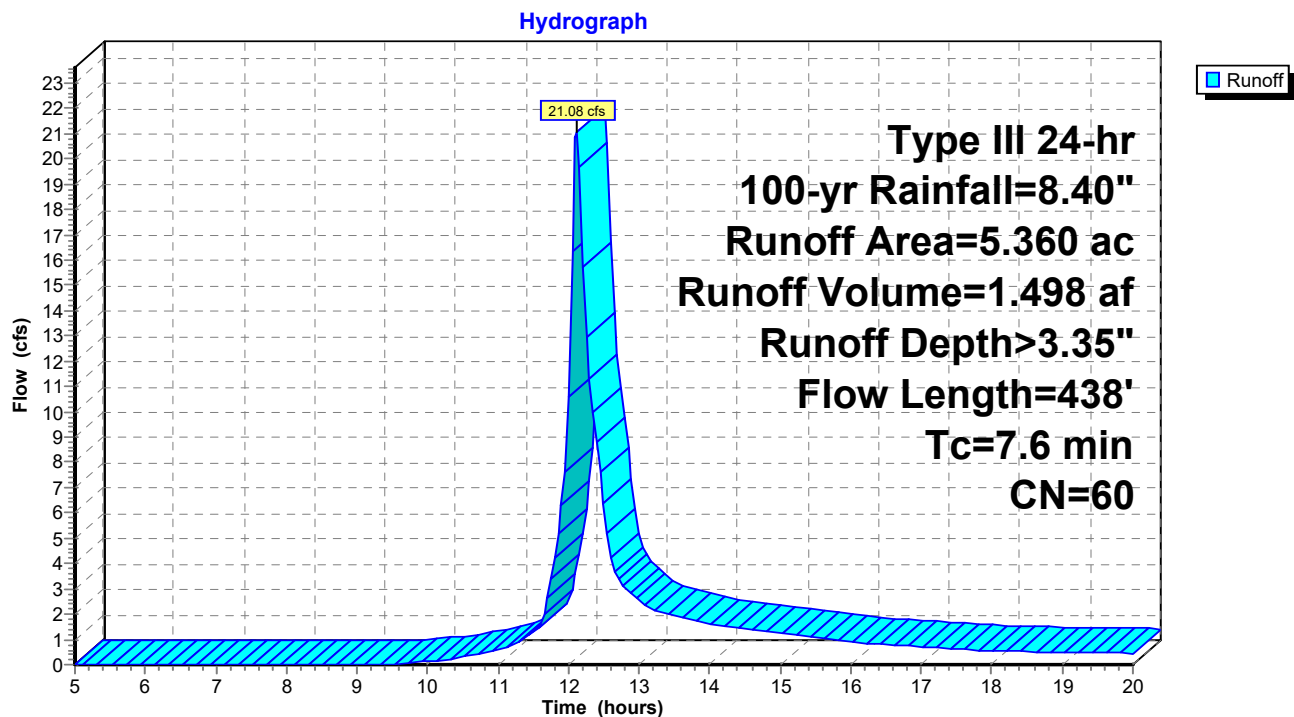
Runoff = 21.08 cfs @ 12.11 hrs, Volume= 1.498 af, Depth> 3.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
2.770	60	Woods, Fair, HSG B
0.630	73	Woods, Fair, HSG C
1.960	56	Brush, Fair, HSG B
5.360	60	Weighted Average
5.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.3000	0.24		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
0.6	338	0.2900	8.67		Shallow Concentrated Flow, Reach B-DP#1
					Unpaved Kv= 16.1 fps
7.6	438	Total			

Subcatchment 1S: Pre Area #1



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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 2S: Pre Area #2

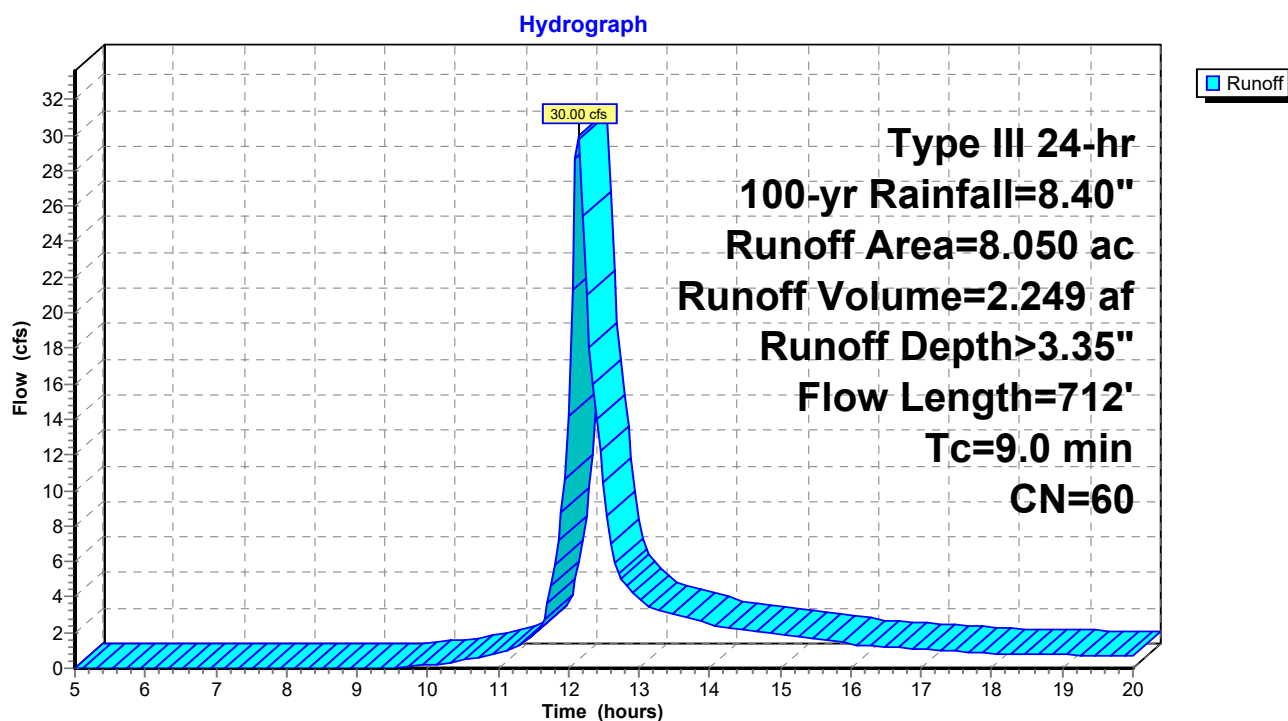
Runoff = 30.00 cfs @ 12.14 hrs, Volume= 2.249 af, Depth> 3.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
7.770	60	Woods, Fair, HSG B
0.280	56	Brush, Fair, HSG B
8.050	60	Weighted Average
8.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2400	0.22		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	612	0.1990	7.18		Shallow Concentrated Flow, Reach B-DP#2
					Unpaved Kv= 16.1 fps
9.0	712	Total			

Subcatchment 2S: Pre Area #2



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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 3S: Pre Area #3

Runoff = 169.23 cfs @ 17.84 hrs, Volume= 68.458 af, Depth> 2.74"

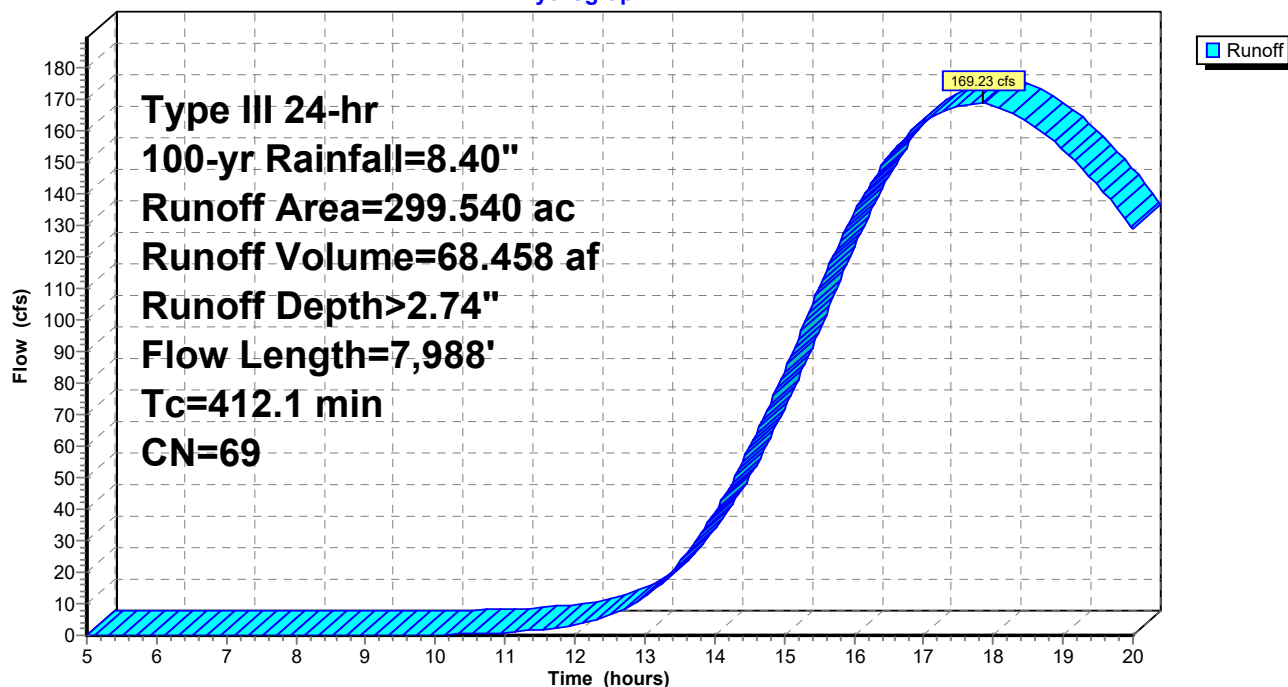
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
4.040	36	Woods, Fair, HSG A
* 6.750	78	Wetland, HSG A
68.110	60	Woods, Fair, HSG B
23.540	56	Brush, Fair, HSG B
73.270	73	Woods, Fair, HSG C
35.320	70	Brush, Fair, HSG C
* 31.200	78	Wetland HSG C
17.500	77	2 acre lots, 12% imp, HSG C
7.310	79	Woods, Fair, HSG D
* 32.500	78	Wetland, HSG D
299.540	69	Weighted Average
297.440		99.30% Pervious Area
2.100		0.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.1600	0.19		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	611	0.2060	7.31		Shallow Concentrated Flow, REach B-C
					Unpaved Kv= 16.1 fps
104.2	3,669	0.0130	0.59	15.26	Channel Flow, Reach C-D
					Area= 26.0 sf Perim= 34.3' r= 0.76' n= 0.240
297.6	3,608	0.0020	0.20	5.05	Channel Flow, Reach D-DP#3
					Area= 25.0 sf Perim= 40.1' r= 0.62' n= 0.240
412.1	7,988	Total			

Subcatchment 3S: Pre Area #3

Hydrograph



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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 4S: Pre Area #4

Runoff = 21.44 cfs @ 12.21 hrs, Volume= 1.876 af, Depth> 4.59"

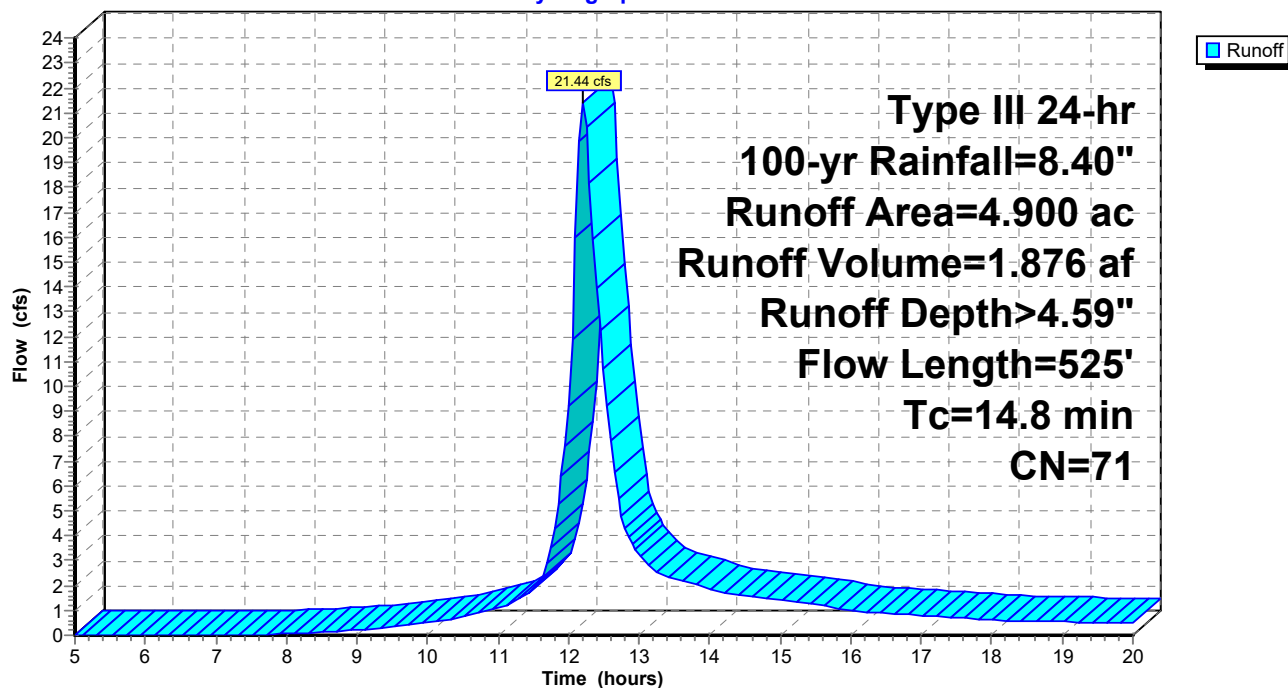
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
1.760	73	Woods, Fair, HSG C
3.140	70	Brush, Fair, HSG C
4.900	71	Weighted Average
4.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.14		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
3.2	425	0.0190	2.22		Shallow Concentrated Flow, Reach DP#4
					Unpaved Kv= 16.1 fps
14.8	525	Total			

Subcatchment 4S: Pre Area #4

Hydrograph



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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 5S: Pre Area #5

Runoff = 9.90 cfs @ 12.19 hrs, Volume= 0.844 af, Depth> 4.71"

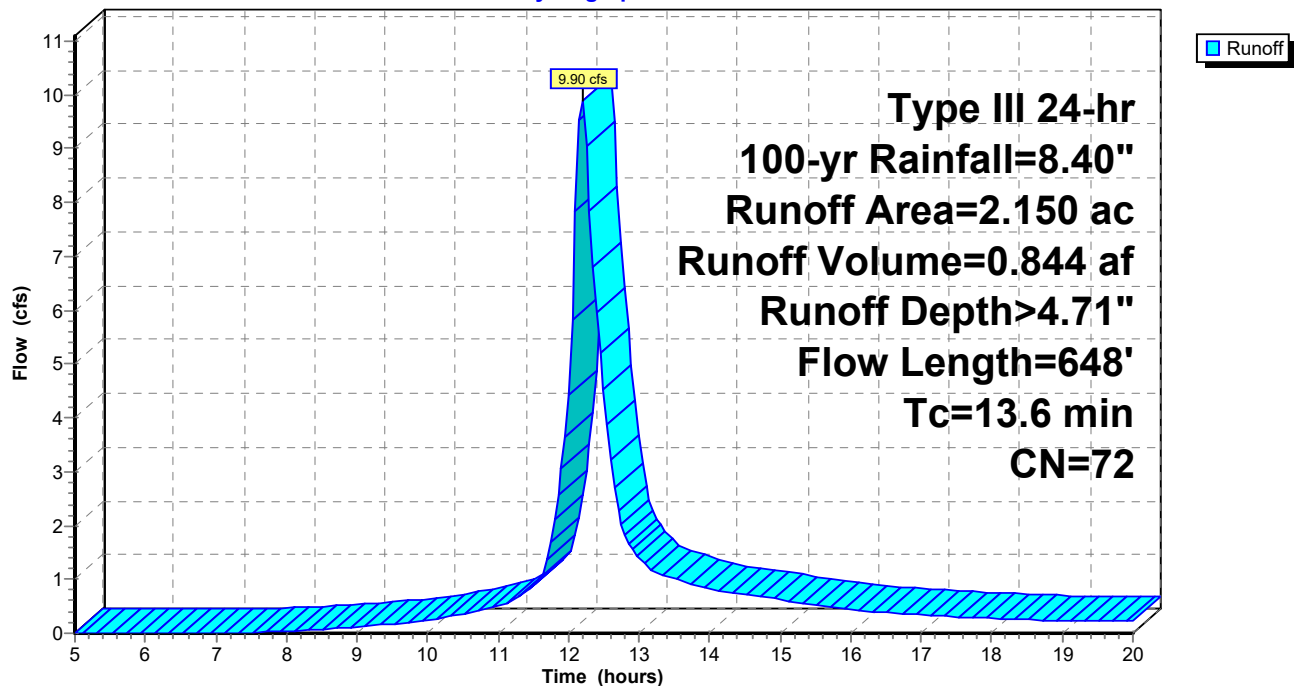
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
1.250	73	Woods, Fair, HSG C
0.900	70	Brush, Fair, HSG C
2.150	72	Weighted Average
2.150		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0330	0.15		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
2.4	548	0.0550	3.78		Shallow Concentrated Flow, Reach B-DP#5
					Unpaved Kv= 16.1 fps
13.6	648	Total			

Subcatchment 5S: Pre Area #5

Hydrograph



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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 6S: Pre Area #6

Runoff = 36.41 cfs @ 14.75 hrs, Volume= 13.249 af, Depth> 3.90"

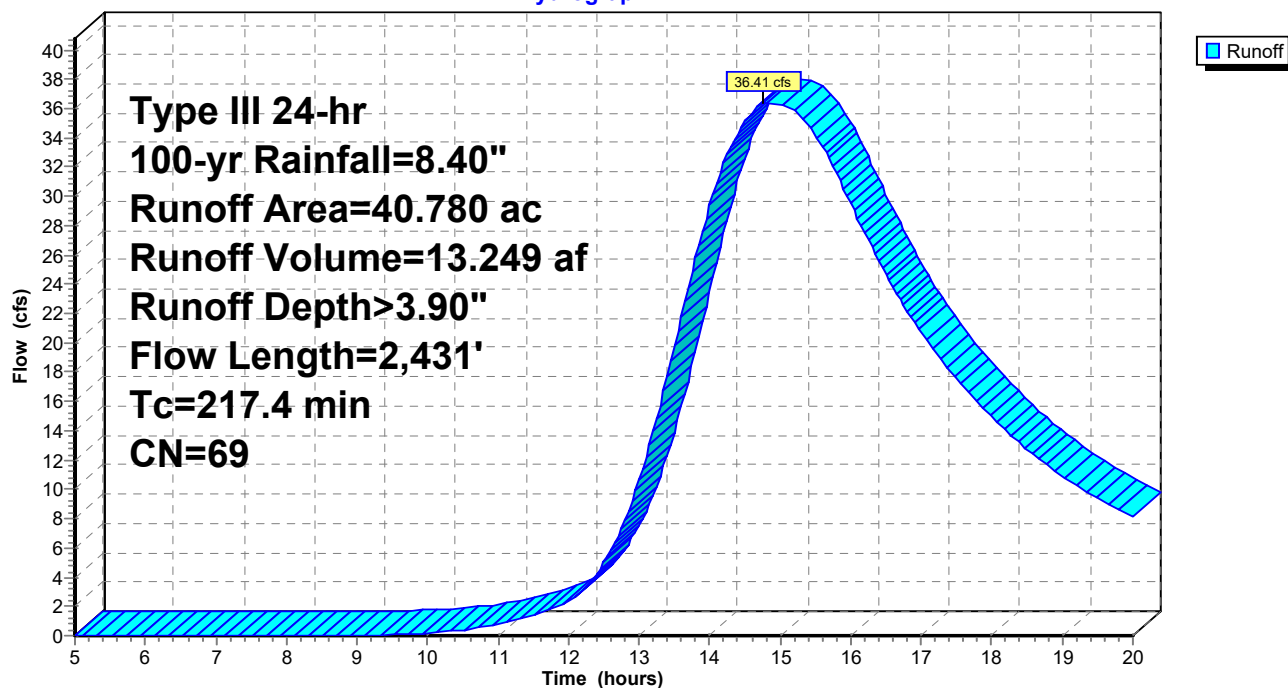
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
7.000	56	Brush, Fair, HSG B
28.500	70	Brush, Fair, HSG C
* 5.280	78	Wetland, HSG C
40.780	69	Weighted Average
40.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	100	0.0800	0.21		Sheet Flow, REach A-B
					Grass: Dense n= 0.240 P2= 3.50"
1.0	269	0.0740	4.38		Shallow Concentrated Flow, Reach B-C
					Unpaved Kv= 16.1 fps
208.6	2,062	0.0050	0.16	0.44	Channel Flow, Reach C-DP#6
					Area= 2.7 sf Perim= 11.0' r= 0.25' n= 0.250
217.4	2,431	Total			

Subcatchment 6S: Pre Area #6

Hydrograph



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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 7S: Pre Area #7

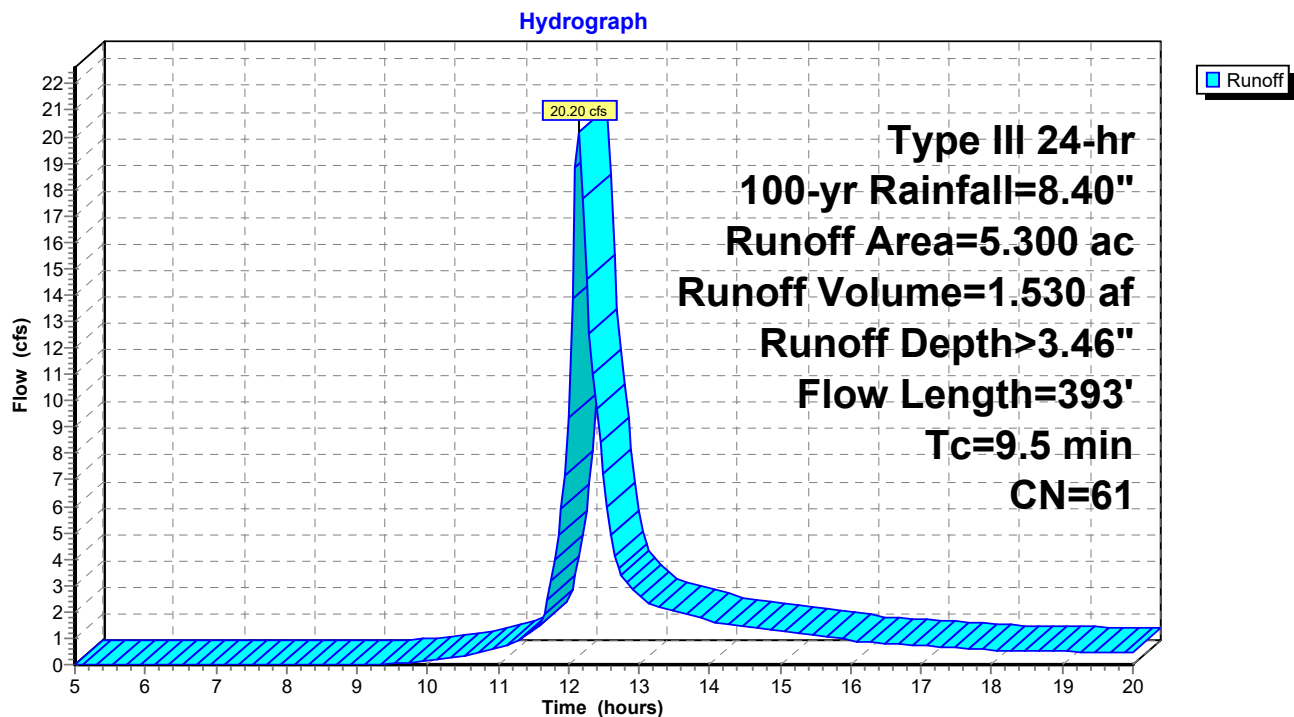
Runoff = 20.20 cfs @ 12.14 hrs, Volume= 1.530 af, Depth> 3.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.930	60	Woods, Fair, HSG B
2.570	56	Brush, Fair, HSG B
1.800	70	Brush, Fair, HSG C
5.300	61	Weighted Average
5.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0730	0.21		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
1.4	293	0.0500	3.60		Shallow Concentrated Flow, Reach B-DP#7
					Unpaved Kv= 16.1 fps
9.5	393	Total			

Subcatchment 7S: Pre Area #7



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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 8S: Pre Area #8

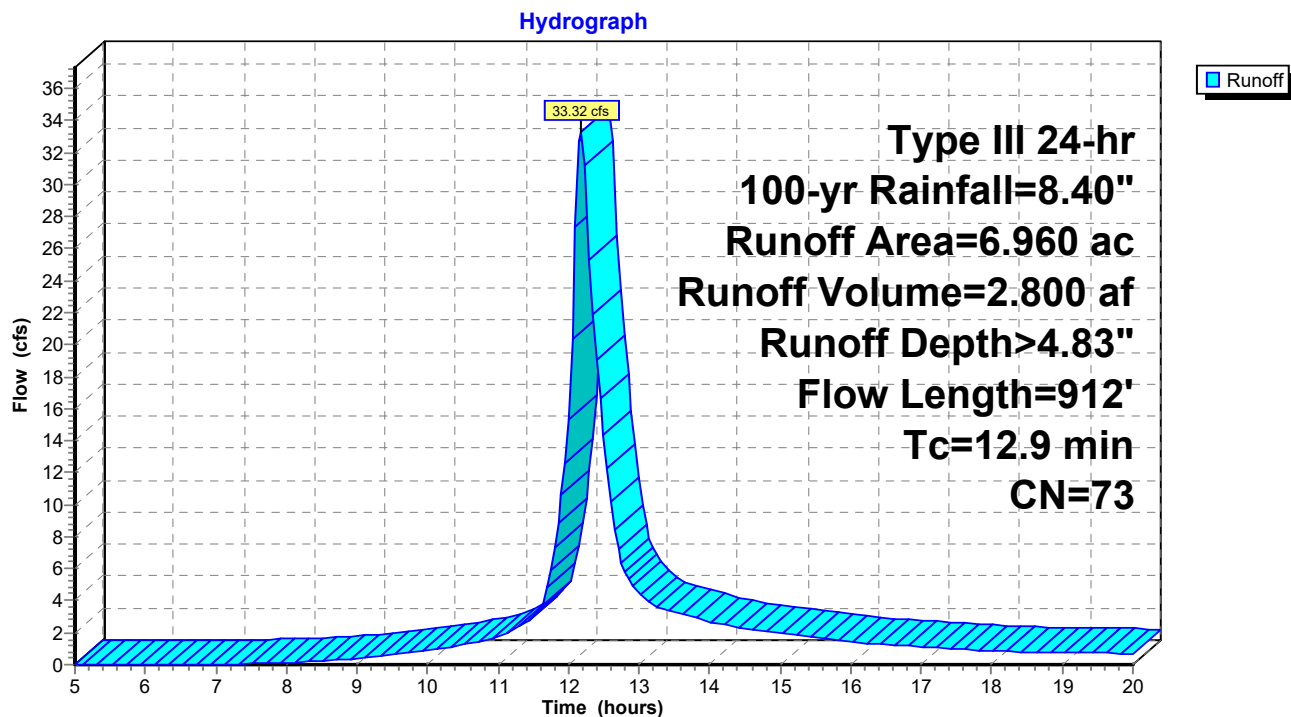
Runoff = 33.32 cfs @ 12.18 hrs, Volume= 2.800 af, Depth> 4.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
1.730	73	Woods, Fair, HSG C
* 1.820	78	Wetland, HSG C
3.410	70	Brush, Fair, HSG C
6.960	73	Weighted Average
6.960		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0900	0.22		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
5.4	812	0.0240	2.49		Shallow Concentrated Flow, Reach B-DP#8
					Unpaved Kv= 16.1 fps
12.9	912	Total			

Subcatchment 8S: Pre Area #8



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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 9S: Pre Area #9

Runoff = 23.95 cfs @ 12.95 hrs, Volume= 4.410 af, Depth> 5.08"

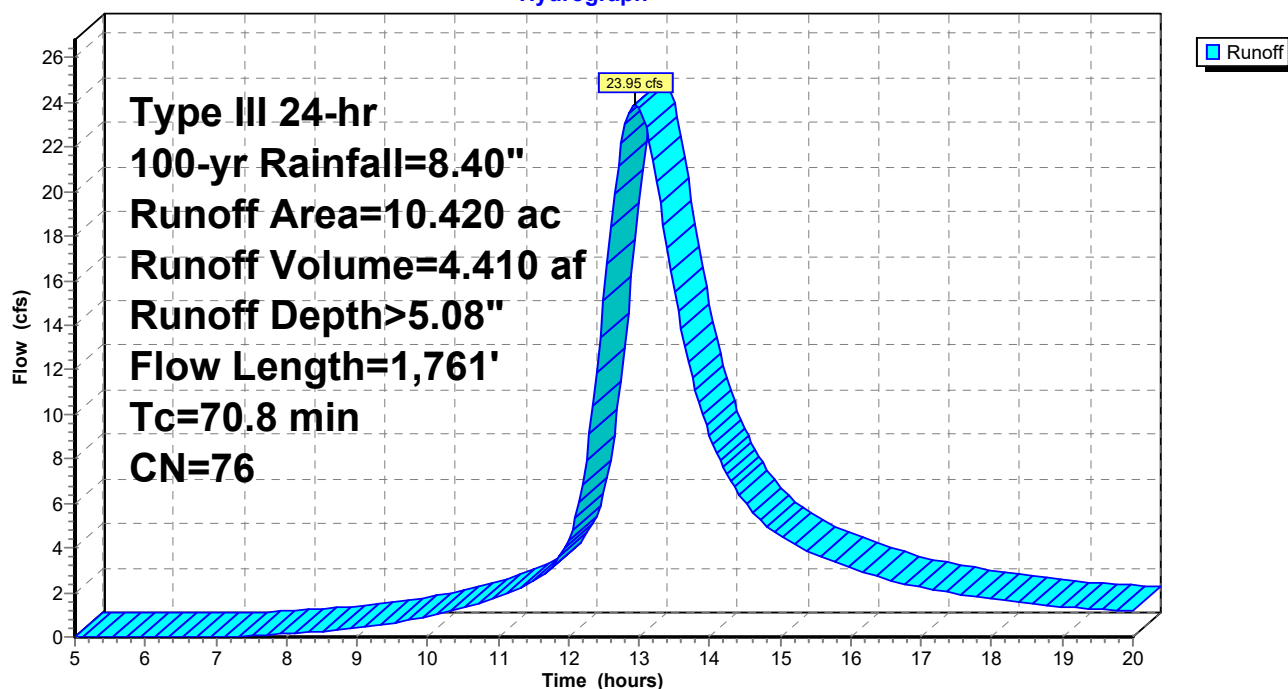
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
1.470	73	Woods, Fair, HSG C
8.500	77	2 acre lots, 12% imp, HSG C
0.450	70	Brush, Fair, HSG C
10.420	76	Weighted Average
9.400		90.21% Pervious Area
1.020		9.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0200	0.08		Sheet Flow, Reach A-B Woods: Light underbrush n= 0.400 P2= 3.50"
1.5	187	0.0160	2.04		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
48.8	1,474	0.0430	0.50	1.36	Channel Flow, Reach C-DP#(Area= 2.7 sf Perim= 11.0' r= 0.25' n= 0.240
70.8	1,761	Total			

Subcatchment 9S: Pre Area #9

Hydrograph



Appendix B

Post-Development Cn, Tc Calculations & Post-Development Summary

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
44.870	68	1 acre lots, 20% imp, HSG B (13S, 19S, 20S, 21S, 22S, 23S, 24S, 27S, 31S)
50.800	79	1 acre lots, 20% imp, HSG C (13S, 14S, 15S, 16S, 17S, 19S, 21S, 22S, 23S, 25S, 26S, 27S, 28S)
2.390	80	1/2 acre lots, 25% imp, HSG C (52S, 53S)
1.600	75	1/4 acre lots, 38% imp, HSG B (29S)
8.500	77	2 acre lots, 12% imp, HSG C (33S)
4.540	35	Brush, Fair, HSG A (13S, 23S)
14.190	56	Brush, Fair, HSG B (11S, 12S, 13S, 17S, 19S, 20S, 21S, 22S, 23S, 24S, 27S, 29S)
70.320	70	Brush, Fair, HSG C (13S, 14S, 15S, 16S, 17S, 18S, 19S, 21S, 22S, 23S, 25S, 26S, 27S, 28S, 32S, 33S, 53S)
2.830	77	Brush, Fair, HSG D (13S)
1.520	98	Paved parking, HSG B (13S, 17S, 19S, 20S, 21S, 22S, 23S)
8.980	98	Paved parking, HSG C (13S, 14S, 15S, 16S, 17S, 18S, 19S, 22S, 24S, 28S, 29S, 33S, 52S)
0.330	98	Paved parking, HSG D (13S)
6.250	78	Wetland, HSG A (13S)
38.300	78	Wetland, HSG C (13S, 27S, 32S, 53S)
32.500	78	Wetland, HSG D (13S)
52.750	60	Woods, Fair, HSG B (11S, 12S, 13S, 23S, 24S, 27S, 31S)
38.640	73	Woods, Fair, HSG C (11S, 13S, 21S, 22S, 23S, 25S, 26S, 32S, 33S)
4.150	79	Woods, Fair, HSG D (13S)
383.460	72	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
10.790	HSG A	13S, 23S
114.930	HSG B	11S, 12S, 13S, 17S, 19S, 20S, 21S, 22S, 23S, 24S, 27S, 29S, 31S
217.930	HSG C	11S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 21S, 22S, 23S, 24S, 25S, 26S, 27S, 28S, 29S, 32S, 33S, 52S, 53S
39.810	HSG D	13S
0.000	Other	
383.460		TOTAL AREA

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Type III 24-hr 1-yr Rainfall=2.66"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment11S: Post Area #1	Runoff Area=5.360 ac 0.00% Impervious Runoff Depth>0.19" Flow Length=430' Tc=9.0 min CN=60 Runoff=0.49 cfs 0.083 af
Subcatchment12S: Post Area #2	Runoff Area=8.050 ac 0.00% Impervious Runoff Depth>0.19" Flow Length=712' Tc=9.0 min CN=60 Runoff=0.74 cfs 0.124 af
Subcatchment13S: Post Area #3A	Runoff Area=229.900 ac 3.52% Impervious Runoff Depth>0.27" Flow Length=7,820' Tc=429.3 min CN=71 Runoff=13.77 cfs 5.120 af
Subcatchment14S: Post Area #3B	Runoff Area=3.430 ac 25.36% Impervious Runoff Depth>0.82" Flow Length=463' Tc=6.0 min CN=78 Runoff=3.37 cfs 0.233 af
Subcatchment15S: Post Area #3C	Runoff Area=3.080 ac 22.08% Impervious Runoff Depth>0.81" Flow Length=492' Tc=11.2 min CN=78 Runoff=2.56 cfs 0.209 af
Subcatchment16S: Post Area #3D	Runoff Area=6.220 ac 20.80% Impervious Runoff Depth>0.81" Flow Length=585' Tc=12.1 min CN=78 Runoff=5.00 cfs 0.422 af
Subcatchment17S: Post Area #3E	Runoff Area=9.670 ac 28.11% Impervious Runoff Depth>0.92" Flow Length=993' Tc=11.8 min CN=80 Runoff=9.02 cfs 0.739 af
Subcatchment18S: Post Area #3F	Runoff Area=2.680 ac 35.07% Impervious Runoff Depth>0.92" Flow Length=485' Tc=6.0 min CN=80 Runoff=3.01 cfs 0.205 af
Subcatchment19S: Post Area #3G	Runoff Area=7.490 ac 33.67% Impervious Runoff Depth>0.86" Flow Length=2,420' Tc=16.8 min CN=79 Runoff=5.74 cfs 0.538 af
Subcatchment20S: Post Area #3H	Runoff Area=0.660 ac 32.12% Impervious Runoff Depth>0.51" Flow Length=454' Tc=6.0 min CN=71 Runoff=0.37 cfs 0.028 af
Subcatchment21S: Post Area #3I	Runoff Area=6.150 ac 13.69% Impervious Runoff Depth>0.50" Flow Length=2,107' Tc=38.8 min CN=71 Runoff=1.74 cfs 0.258 af
Subcatchment22S: Post Area #3J	Runoff Area=13.580 ac 20.62% Impervious Runoff Depth>0.72" Flow Length=819' Tc=15.0 min CN=76 Runoff=8.73 cfs 0.812 af
Subcatchment23S: Post #3K	Runoff Area=7.550 ac 12.29% Impervious Runoff Depth>0.47" Flow Length=1,348' Tc=15.4 min CN=70 Runoff=2.82 cfs 0.298 af
Subcatchment24S: Post Area #3L	Runoff Area=11.340 ac 17.81% Impervious Runoff Depth>0.37" Flow Length=1,281' Tc=12.4 min CN=67 Runoff=3.19 cfs 0.352 af
Subcatchment25S: Post Area #4	Runoff Area=3.310 ac 12.15% Impervious Runoff Depth>0.72" Flow Length=471' Tc=20.3 min CN=76 Runoff=1.90 cfs 0.198 af
Subcatchment26S: Post Area #5	Runoff Area=1.620 ac 7.41% Impervious Runoff Depth>0.63" Flow Length=216' Slope=0.0450 '/' Tc=10.5 min CN=74 Runoff=1.01 cfs 0.085 af

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Subcatchment27S: Post Area #6A	Runoff Area=27.910 ac 6.04% Impervious Runoff Depth>0.47" Flow Length=2,411' Tc=206.9 min CN=72 Runoff=2.97 cfs 1.094 af
Subcatchment28S: Post Area #6B	Runoff Area=6.200 ac 24.19% Impervious Runoff Depth>0.86" Flow Length=864' Tc=17.3 min CN=79 Runoff=4.70 cfs 0.446 af
Subcatchment29S: Post Area #6C	Runoff Area=3.260 ac 40.43% Impervious Runoff Depth>0.63" Flow Length=1,421' Tc=7.0 min CN=74 Runoff=2.29 cfs 0.172 af
Subcatchment31S: Post Area #7	Runoff Area=2.990 ac 17.53% Impervious Runoff Depth>0.37" Flow Length=360' Tc=11.3 min CN=67 Runoff=0.86 cfs 0.093 af
Subcatchment32S: Post Area #8	Runoff Area=6.790 ac 0.00% Impervious Runoff Depth>0.59" Flow Length=803' Tc=23.0 min CN=73 Runoff=2.91 cfs 0.332 af
Subcatchment33S: Post Area #9	Runoff Area=12.170 ac 12.33% Impervious Runoff Depth>0.70" Flow Length=1,749' Tc=77.8 min CN=76 Runoff=3.47 cfs 0.705 af
Subcatchment52S: Post Area #6D-2	Runoff Area=1.110 ac 66.89% Impervious Runoff Depth>1.56" Flow Length=862' Tc=16.9 min CN=90 Runoff=1.56 cfs 0.145 af
Subcatchment53S: Post Area #6D-1	Runoff Area=2.940 ac 16.16% Impervious Runoff Depth>0.77" Flow Length=525' Tc=9.3 min CN=77 Runoff=2.40 cfs 0.188 af
Reach 50R: Reach #3B	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.070 L=789.0' S=0.0089 '/' Capacity=25.36 cfs Outflow=0.00 cfs 0.000 af
Reach 51R: Post Area #3	Avg. Flow Depth=0.81' Max Vel=1.27 fps Inflow=13.77 cfs 5.120 af n=0.040 L=1,478.0' S=0.0027 '/' Capacity=706.54 cfs Outflow=13.72 cfs 4.425 af
Reach 52R: Reach #3L-1	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.100 L=125.0' S=0.2880 '/' Capacity=76.67 cfs Outflow=0.00 cfs 0.000 af
Reach 53R: Reach #3C	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.070 L=858.0' S=0.0152 '/' Capacity=33.14 cfs Outflow=0.00 cfs 0.000 af
Reach 54R: Reach #3D	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.070 L=261.0' S=0.0345 '/' Capacity=84.65 cfs Outflow=0.00 cfs 0.000 af
Reach 55R: Reach 3-3	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=464.0' S=0.0017 '/' Capacity=19.56 cfs Outflow=0.00 cfs 0.000 af
Reach 56R: Reach 3-2	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=424.0' S=0.0019 '/' Capacity=1,796.89 cfs Outflow=0.00 cfs 0.000 af
Reach 57R: Post Area #6	Avg. Flow Depth=0.29' Max Vel=1.29 fps Inflow=2.97 cfs 1.083 af n=0.040 L=338.0' S=0.0109 '/' Capacity=1,420.98 cfs Outflow=2.97 cfs 1.069 af
Reach 58R: Reach #3E	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.080 L=403.0' S=0.0097 '/' Capacity=23.18 cfs Outflow=0.00 cfs 0.000 af

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Reach 59R: Reach 6-2	Avg. Flow Depth=0.41' Max Vel=0.77 fps Inflow=2.97 cfs 1.094 af n=0.040 L=162.0' S=0.0025 '/' Capacity=674.87 cfs Outflow=2.97 cfs 1.083 af
Reach 60R: Reach 6C	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=207.0' S=0.0609 '/' Capacity=139.08 cfs Outflow=0.00 cfs 0.000 af
Reach 61R: Reach 3-4-2	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=358.0' S=0.0011 '/' Capacity=6.21 cfs Outflow=0.00 cfs 0.000 af
Reach 62R: Reach 3-5	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=712.0' S=0.0003 '/' Capacity=154.58 cfs Outflow=0.00 cfs 0.000 af
Reach 63R: Reach 3-6	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=513.8' S=0.0088 '/' Capacity=1,156.63 cfs Outflow=0.00 cfs 0.000 af
Reach 64R: Reach #3F	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.400 L=206.0' S=0.0243 '/' Capacity=21.89 cfs Outflow=0.00 cfs 0.000 af
Reach 65R: Reach #3G	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.070 L=400.0' S=0.0175 '/' Capacity=680.18 cfs Outflow=0.00 cfs 0.000 af
Reach 66R: Reach #3L-2	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.100 L=1,355.0' S=0.0236 '/' Capacity=23.13 cfs Outflow=0.00 cfs 0.000 af
Reach 67R: Reach #3G	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.080 L=399.0' S=0.0175 '/' Capacity=1,116.58 cfs Outflow=0.00 cfs 0.000 af
Reach 68R: Reach 3-7	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=1,366.0' S=0.0216 '/' Capacity=379.08 cfs Outflow=0.00 cfs 0.000 af
Reach 69R: Reach 3-8 36.0" Round Pipe	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.013 L=129.0' S=0.0620 '/' Capacity=166.10 cfs Outflow=0.00 cfs 0.000 af
Reach 70R: Reach 3-9	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=292.0' S=0.0411 '/' Capacity=725.62 cfs Outflow=0.00 cfs 0.000 af
Reach 71R: Reach #3J	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=810.0' S=0.0214 '/' Capacity=1,713.62 cfs Outflow=0.00 cfs 0.000 af
Reach 72R: Reach 3-10	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.030 L=1,709.0' S=0.0199 '/' Capacity=70.44 cfs Outflow=0.00 cfs 0.000 af
Reach 73R: (new Reach)	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=295.0' S=0.0678 '/' Capacity=80.99 cfs Outflow=0.00 cfs 0.000 af
Reach 74R: Reach 6B	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=270.0' S=0.0267 '/' Capacity=50.79 cfs Outflow=0.00 cfs 0.000 af
Reach 75R: Reach 6B	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=230.0' S=0.0383 '/' Capacity=60.84 cfs Outflow=0.00 cfs 0.000 af

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Reach 76R: Reach 3-4-1Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.070 L=253.0' S=0.0051 '/' Capacity=253.93 cfs Outflow=0.00 cfs 0.000 af**Pond 35P: Pond #3B**Peak Elev=315.86' Storage=8,834 cf Inflow=4.49 cfs 0.378 af
Discarded=0.33 cfs 0.233 af Primary=0.00 cfs 0.000 af Outflow=0.33 cfs 0.233 af**Pond 36P: Pond #3C**Peak Elev=320.88' Storage=3,090 cf Inflow=2.56 cfs 0.209 af
Discarded=0.48 cfs 0.208 af Primary=0.00 cfs 0.000 af Outflow=0.48 cfs 0.208 af**Pond 37P: Pond #3D**Peak Elev=319.17' Storage=9,331 cf Inflow=5.00 cfs 0.422 af
Discarded=0.43 cfs 0.286 af Primary=0.00 cfs 0.000 af Outflow=0.43 cfs 0.286 af**Pond 38P: Pond #3E**Peak Elev=319.88' Storage=32,156 cf Inflow=9.02 cfs 0.739 af
Outflow=0.00 cfs 0.000 af**Pond 39P: Pond #3F**Peak Elev=318.55' Storage=2,737 cf Inflow=3.01 cfs 0.205 af
Discarded=0.63 cfs 0.204 af Primary=0.00 cfs 0.000 af Outflow=0.63 cfs 0.204 af**Pond 40P: Pond #3G**Peak Elev=326.82' Storage=19,559 cf Inflow=5.74 cfs 0.538 af
Discarded=0.14 cfs 0.089 af Primary=0.00 cfs 0.000 af Outflow=0.14 cfs 0.089 af**Pond 41P: Pond #3H**Peak Elev=378.15' Storage=196 cf Inflow=0.37 cfs 0.028 af
Discarded=0.16 cfs 0.028 af Primary=0.00 cfs 0.000 af Outflow=0.16 cfs 0.028 af**Pond 42P: Pond #3L**Peak Elev=380.62' Storage=6,812 cf Inflow=3.90 cfs 0.611 af
Discarded=1.34 cfs 0.607 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=1.34 cfs 0.607 af**Pond 43P: Pond #3J**Peak Elev=370.87' Storage=12,073 cf Inflow=8.73 cfs 0.812 af
Discarded=1.72 cfs 0.808 af Primary=0.00 cfs 0.000 af Outflow=1.72 cfs 0.808 af**Pond 44P: Pond #3K**Peak Elev=389.11' Storage=8,063 cf Inflow=2.82 cfs 0.298 af
Discarded=0.20 cfs 0.123 af Primary=0.00 cfs 0.000 af Outflow=0.20 cfs 0.123 af**Pond 45P: Pond #3I**Peak Elev=0.00' Storage=0 cf
Primary=0.00 cfs 0.000 af**Pond 49P: Pond #6B**Peak Elev=317.36' Storage=9,334 cf Inflow=4.70 cfs 0.446 af
Discarded=0.53 cfs 0.336 af Primary=0.00 cfs 0.000 af Outflow=0.53 cfs 0.336 af**Pond 50P: Pond #6C**Peak Elev=314.46' Storage=2,111 cf Inflow=2.29 cfs 0.172 af
Discarded=0.56 cfs 0.170 af Primary=0.00 cfs 0.000 af Outflow=0.56 cfs 0.170 af**Pond 51P: Pond #6D**Peak Elev=318.25' Storage=2,387 cf Inflow=2.40 cfs 0.188 af
Discarded=0.56 cfs 0.187 af Primary=0.00 cfs 0.000 af Outflow=0.56 cfs 0.187 af**Total Runoff Area = 383.460 ac Runoff Volume = 12.880 af Average Runoff Depth = 0.40"**
91.61% Pervious = 351.271 ac 8.39% Impervious = 32.190 ac

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Summary for Subcatchment 11S: Post Area #1

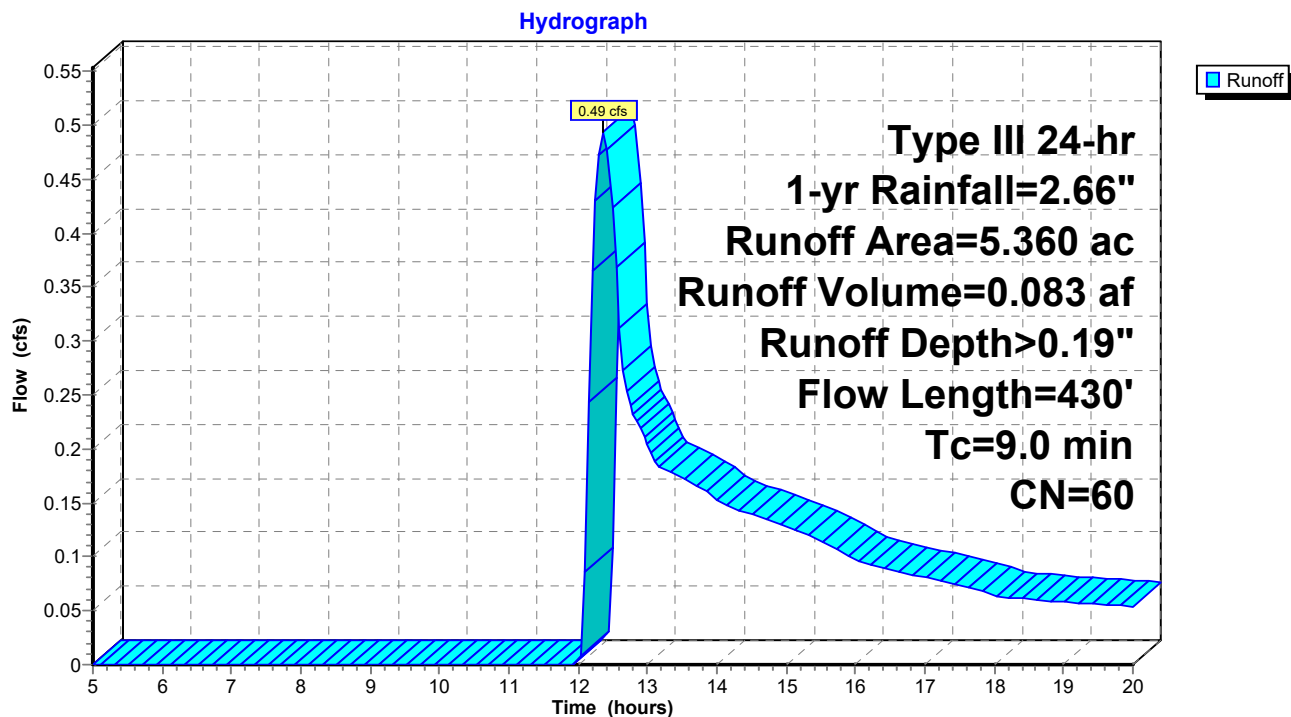
Runoff = 0.49 cfs @ 12.37 hrs, Volume= 0.083 af, Depth> 0.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
2.770	60	Woods, Fair, HSG B
0.630	73	Woods, Fair, HSG C
1.960	56	Brush, Fair, HSG B
5.360	60	Weighted Average
5.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.3000	0.24		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	330	0.2960	2.72		Shallow Concentrated Flow, Reach B-DP#1
					Woodland Kv= 5.0 fps
9.0	430	Total			

Subcatchment 11S: Post Area #1



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Summary for Subcatchment 12S: Post Area #2

Runoff = 0.74 cfs @ 12.37 hrs, Volume= 0.124 af, Depth> 0.19"

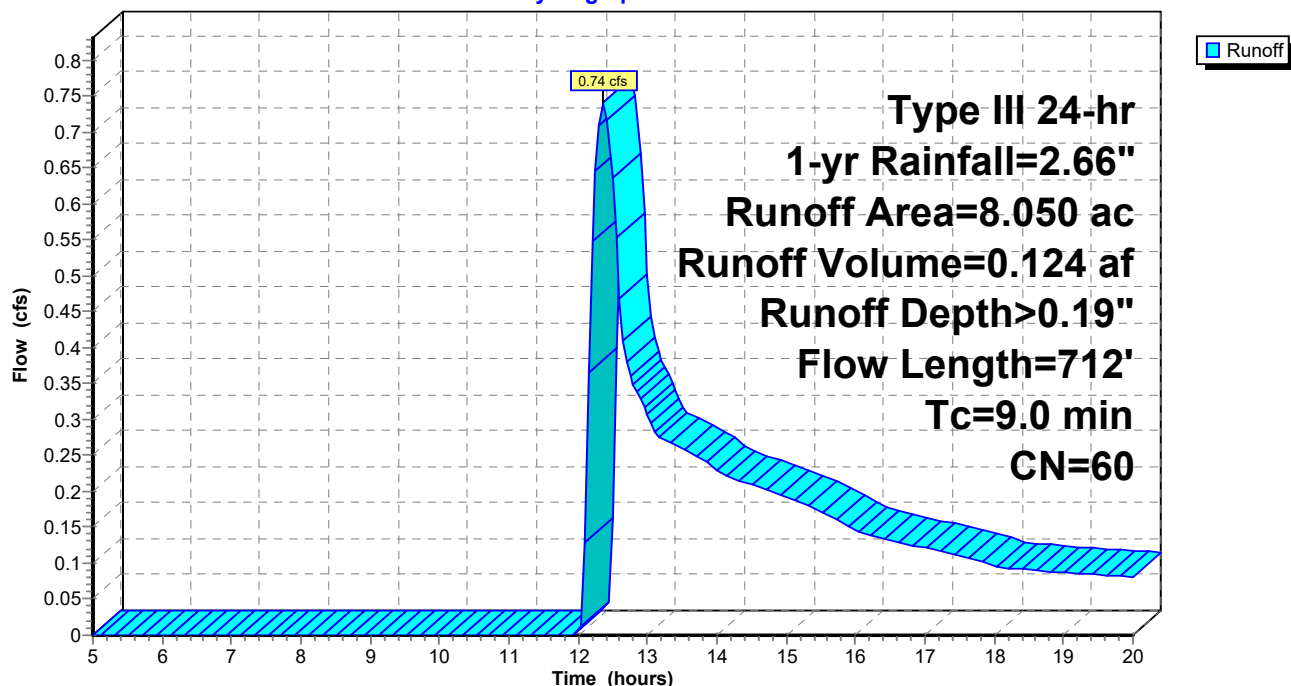
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
7.770	60	Woods, Fair, HSG B
0.280	56	Brush, Fair, HSG B
8.050	60	Weighted Average
8.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2400	0.22		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	612	0.1990	7.18		Shallow Concentrated Flow, Reach B-DP#2
					Unpaved Kv= 16.1 fps
9.0	712	Total			

Subcatchment 12S: Post Area #2

Hydrograph



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Summary for Subcatchment 13S: Post Area #3A

Runoff = 13.77 cfs @ 18.60 hrs, Volume= 5.120 af, Depth> 0.27"

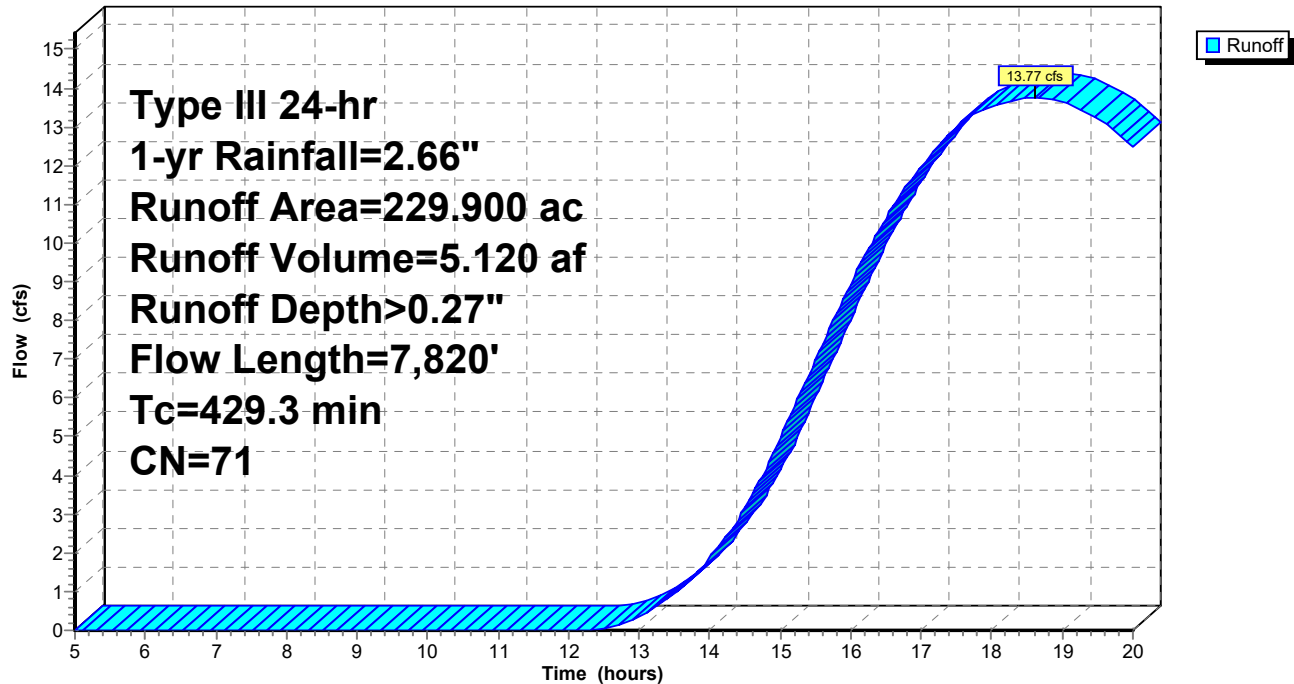
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
4.460	35	Brush, Fair, HSG A
* 6.250	78	Wetland, HSG A
0.200	98	Paved parking, HSG B
23.250	68	1 acre lots, 20% imp, HSG B
36.700	60	Woods, Fair, HSG B
6.540	56	Brush, Fair, HSG B
0.240	98	Paved parking, HSG C
29.260	73	Woods, Fair, HSG C
38.540	70	Brush, Fair, HSG C
* 31.270	78	Wetland, HSG C
13.380	79	1 acre lots, 20% imp, HSG C
4.150	79	Woods, Fair, HSG D
* 32.500	78	Wetland, HSG D
0.330	98	Paved parking, HSG D
2.830	77	Brush, Fair, HSG D
229.900	71	Weighted Average
221.804		96.48% Pervious Area
8.096		3.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.1600	0.19		Sheet Flow, Reac A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	611	0.2060	7.31		Shallow Concentrated Flow, Reach B-C
					Unpaved Kv= 16.1 fps
10.3	748	0.0550	1.21	31.39	Channel Flow, Reach C-D
					Area= 26.0 sf Perim= 34.3' r= 0.76' n= 0.240
0.2	100	0.0320	10.55	8.29	Pipe Channel, CMP_Round 12"
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010
47.2	2,060	0.0200	0.73	18.93	Channel Flow, Reach E-F
					Area= 26.0 sf Perim= 34.3' r= 0.76' n= 0.240
0.1	100	0.0550	22.13	156.42	Pipe Channel, Reach F-G
					36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
22.3	819	0.0250	0.61	5.51	Channel Flow, REach G-H
					Area= 9.0 sf Perim= 18.2' r= 0.49' n= 0.240
213.0	1,974	0.0020	0.15	1.93	Channel Flow, ReachH-I
					Area= 12.5 sf Perim= 30.0' r= 0.42' n= 0.240
125.9	1,308	0.0020	0.17	1.56	Channel Flow, Rach I-DP#3
					Area= 9.0 sf Perim= 18.2' r= 0.49' n= 0.240
429.3	7,820	Total			

Subcatchment 13S: Post Area #3A

Hydrograph



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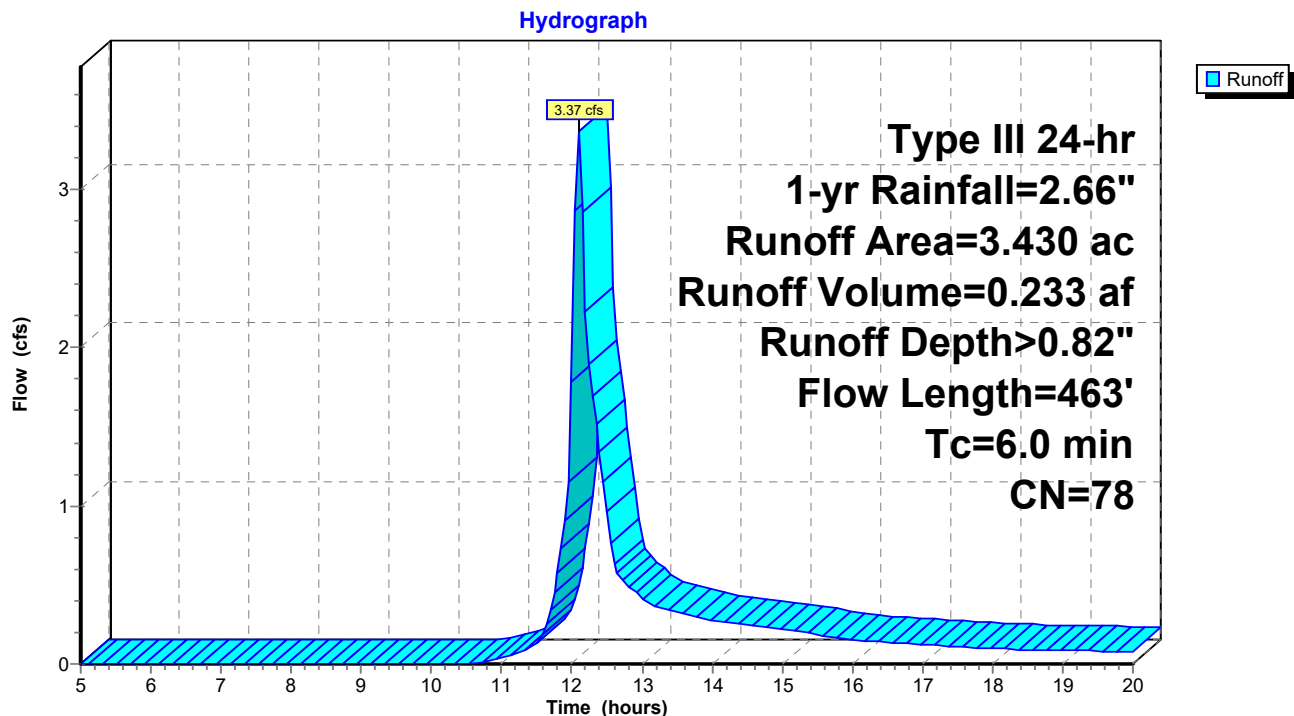
Summary for Subcatchment 14S: Post Area #3B

Runoff = 3.37 cfs @ 12.10 hrs, Volume= 0.233 af, Depth> 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.630	98	Paved parking, HSG C
1.600	70	Brush, Fair, HSG C
1.200	79	1 acre lots, 20% imp, HSG C
3.430	78	Weighted Average
2.560		74.64% Pervious Area
0.870		25.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	85	0.0150	1.24		Sheet Flow, Reach A-B Smooth surfaces n= 0.011 P2= 3.50"
0.5	378	0.0290	13.16	23.25	Pipe Channel, Reach B-C 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.010
4.4					Direct Entry,
6.0	463	Total			

Subcatchment 14S: Post Area #3B

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Summary for Subcatchment 15S: Post Area #3C

Runoff = 2.56 cfs @ 12.17 hrs, Volume= 0.209 af, Depth> 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.330	98	Paved parking, HSG C
1.000	70	Brush, Fair, HSG C
1.750	79	1 acre lots, 20% imp, HSG C
3.080	78	Weighted Average
2.400		77.92% Pervious Area
0.680		22.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.16		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
0.2	55	0.0497	4.53		Shallow Concentrated Flow, Reach B-C Paved Kv= 20.3 fps
0.4	263	0.0377	11.54	20.40	Pipe Channel, Reach C-D 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
0.1	22	0.0060	4.60	8.14	Pipe Channel, Reach D-E 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.2	52	0.0058	4.53	8.00	Pipe Channel, Reach E-F 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
11.2	492	Total			

Summit Woods

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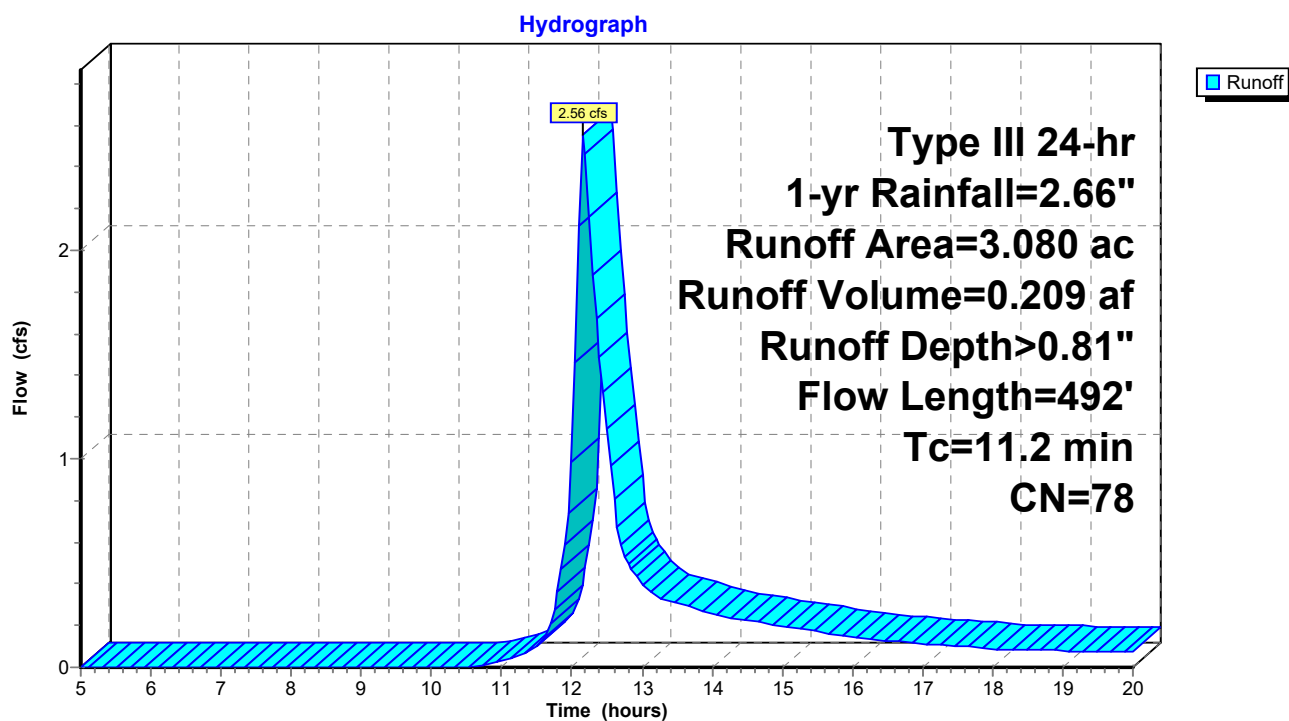
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Type III 24-hr 1-yr Rainfall=2.66"

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Subcatchment 15S: Post Area #3C



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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 16S: Post Area #3D

Runoff = 5.00 cfs @ 12.18 hrs, Volume= 0.422 af, Depth> 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.380	98	Paved parking, HSG C
1.270	70	Brush, Fair, HSG C
4.570	79	1 acre lots, 20% imp, HSG C
6.220	78	Weighted Average
4.926		79.20% Pervious Area
1.294		20.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.16		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
0.9	220	0.0640	4.07		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
0.8	94	0.0100	2.03		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
0.1	171	0.1100	31.05	97.54	Pipe Channel, Reach D-E 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
12.1	585	Total			

Summit Woods

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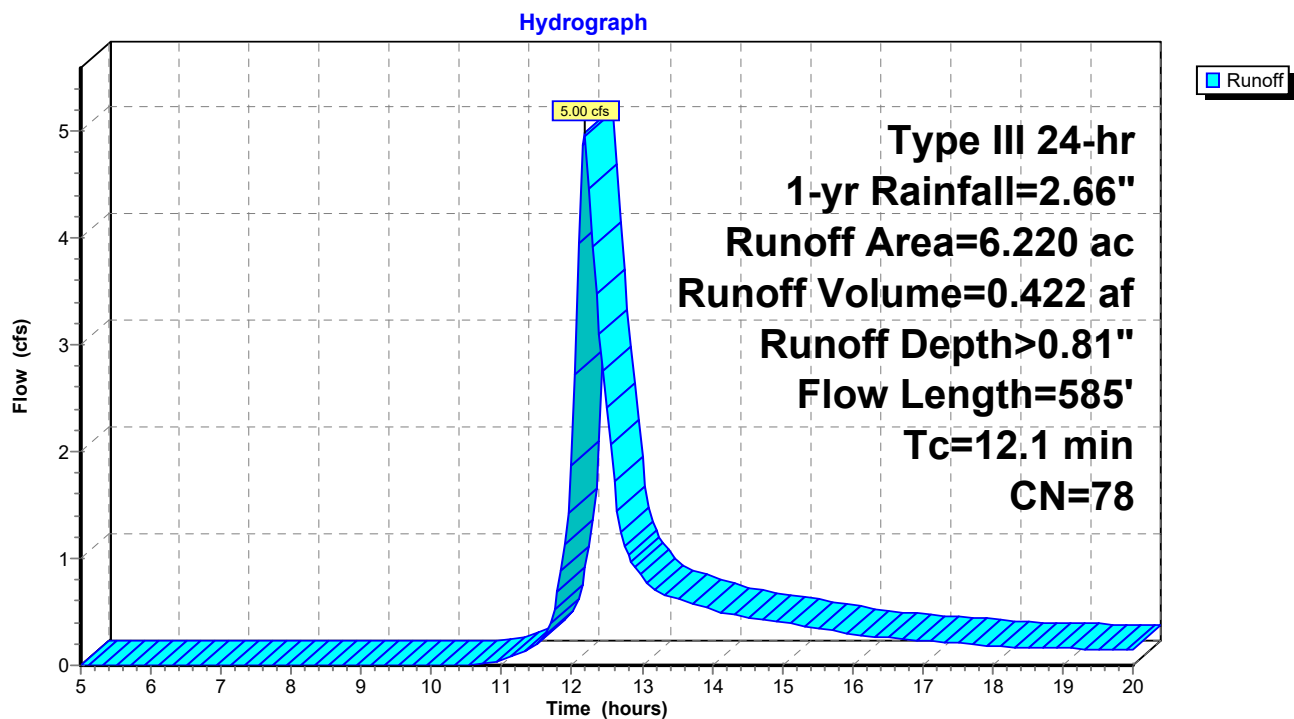
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Type III 24-hr 1-yr Rainfall=2.66"

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Subcatchment 16S: Post Area #3D



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Type III 24-hr 1-yr Rainfall=2.66"

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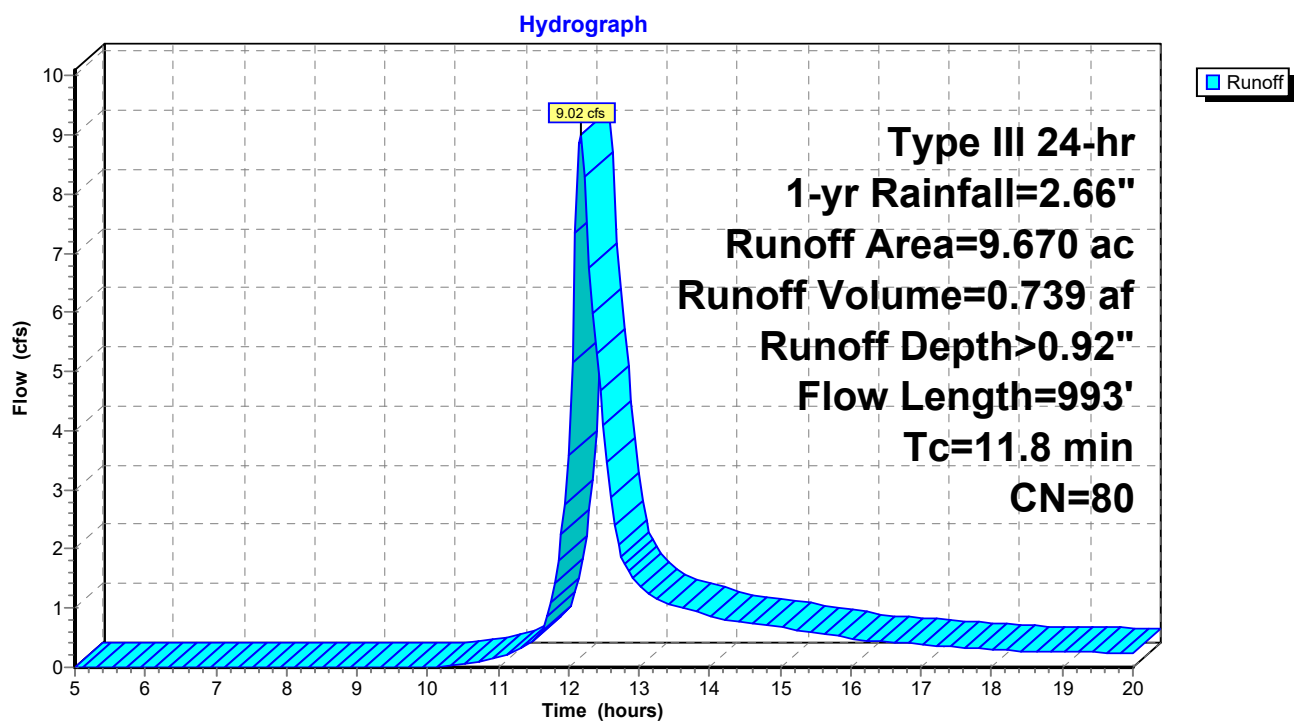
Summary for Subcatchment 17S: Post Area #3E

Runoff = 9.02 cfs @ 12.17 hrs, Volume= 0.739 af, Depth> 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.020	98	Paved parking, HSG B
0.070	56	Brush, Fair, HSG B
1.450	98	Paved parking, HSG C
1.890	70	Brush, Fair, HSG C
6.240	79	1 acre lots, 20% imp, HSG C
9.670	80	Weighted Average
6.952		71.89% Pervious Area
2.718		28.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.0500	0.18		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
0.7	163	0.0670	4.17		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
1.1	203	0.0220	3.01		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
0.5	527	0.0310	16.48	51.78	Pipe Channel, Reach D-E 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
11.8	993	Total			

Subcatchment 17S: Post Area #3E

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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 18S: Post Area #3F

Runoff = 3.01 cfs @ 12.10 hrs, Volume= 0.205 af, Depth> 0.92"

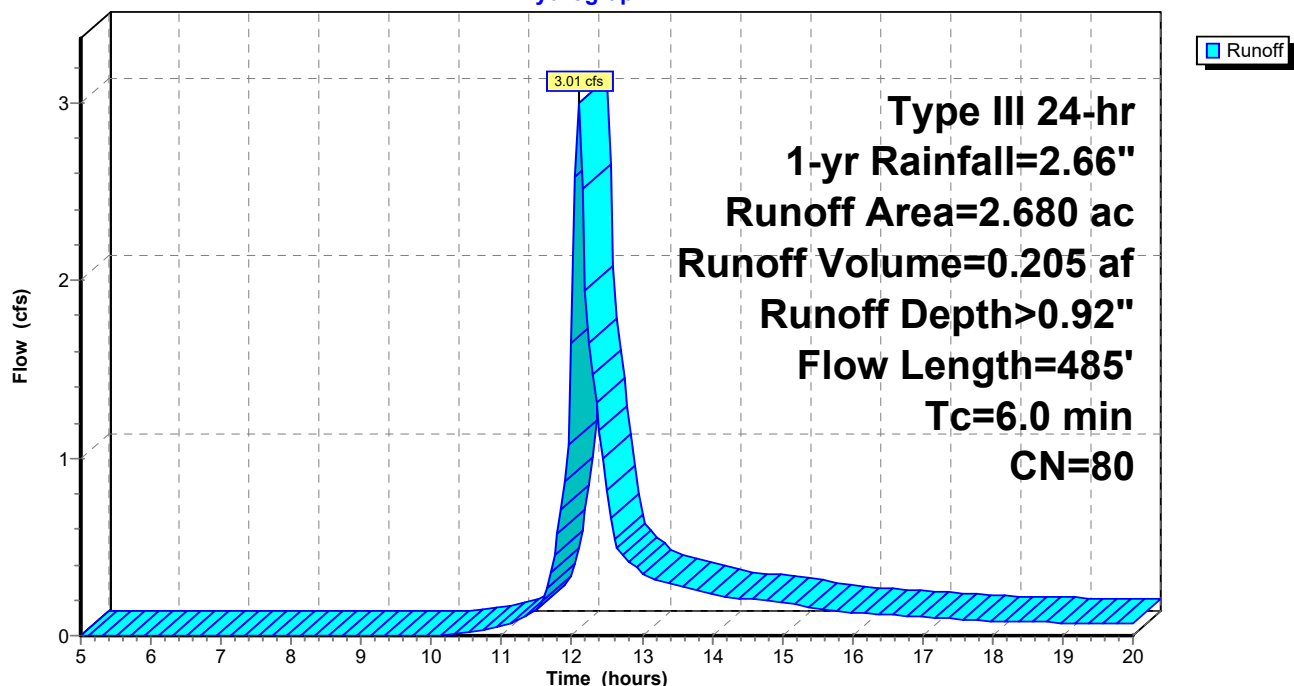
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.940	98	Paved parking, HSG C
1.740	70	Brush, Fair, HSG C
2.680	80	Weighted Average
1.740		64.93% Pervious Area
0.940		35.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0100	1.09		Sheet Flow, Reach A-B Smooth surfaces n= 0.011 P2= 3.50"
1.0	153	0.0170	2.65		Shallow Concentrated Flow, Reach B-C Paved Kv= 20.3 fps
0.3	232	0.0220	13.88	43.62	Pipe Channel, Reach C-D 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
3.2					Direct Entry,
6.0	485	Total			

Subcatchment 18S: Post Area #3F

Hydrograph



Summit Woods

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Type III 24-hr 1-yr Rainfall=2.66"

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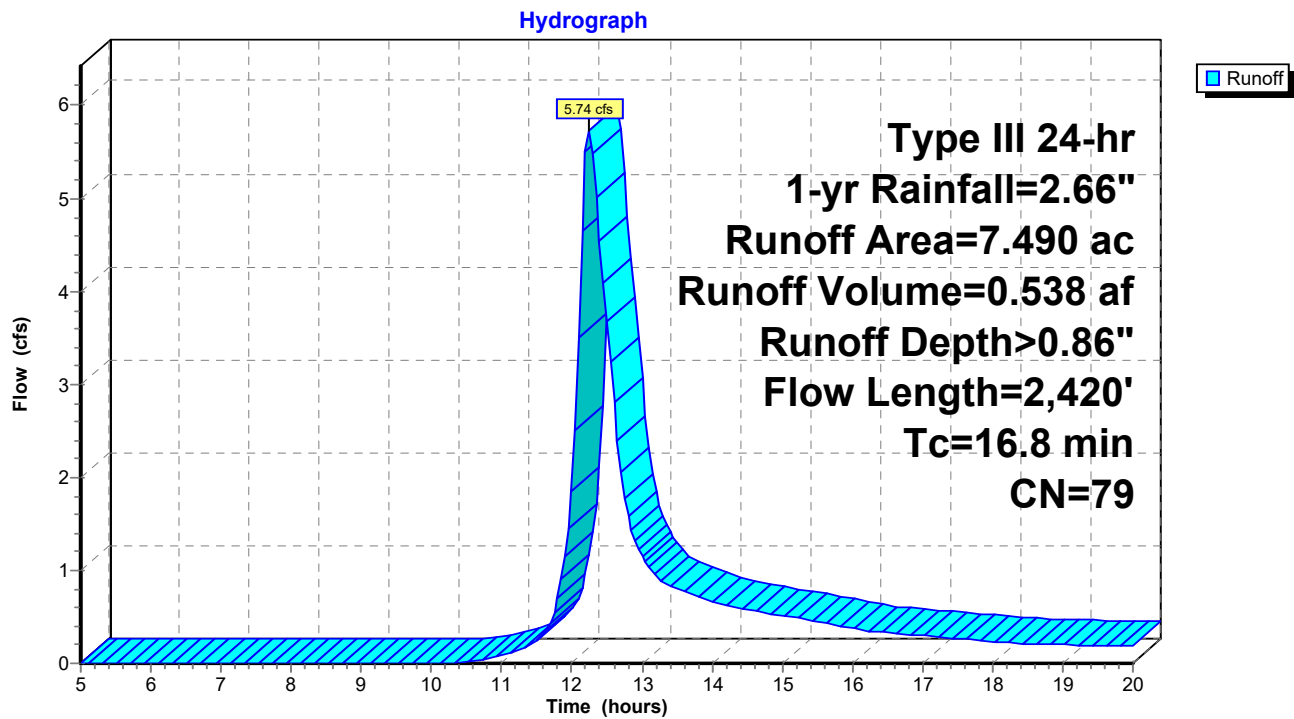
Summary for Subcatchment 19S: Post Area #3G

Runoff = 5.74 cfs @ 12.25 hrs, Volume= 0.538 af, Depth> 0.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.320	98	Paved parking, HSG B
0.930	68	1 acre lots, 20% imp, HSG B
0.280	56	Brush, Fair, HSG B
1.420	98	Paved parking, HSG C
1.560	70	Brush, Fair, HSG C
2.980	79	1 acre lots, 20% imp, HSG C
7.490	79	Weighted Average
4.968		66.33% Pervious Area
2.522		33.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0600	0.19		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
0.7	66	0.0100	1.61		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
0.9	160	0.0200	2.87		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
6.4	2,094	0.0050	5.46	9.66	Pipe Channel, Reach D-E 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.010
16.8	2,420	Total			

Subcatchment 19S: Post Area #3G

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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 20S: Post Area #3H

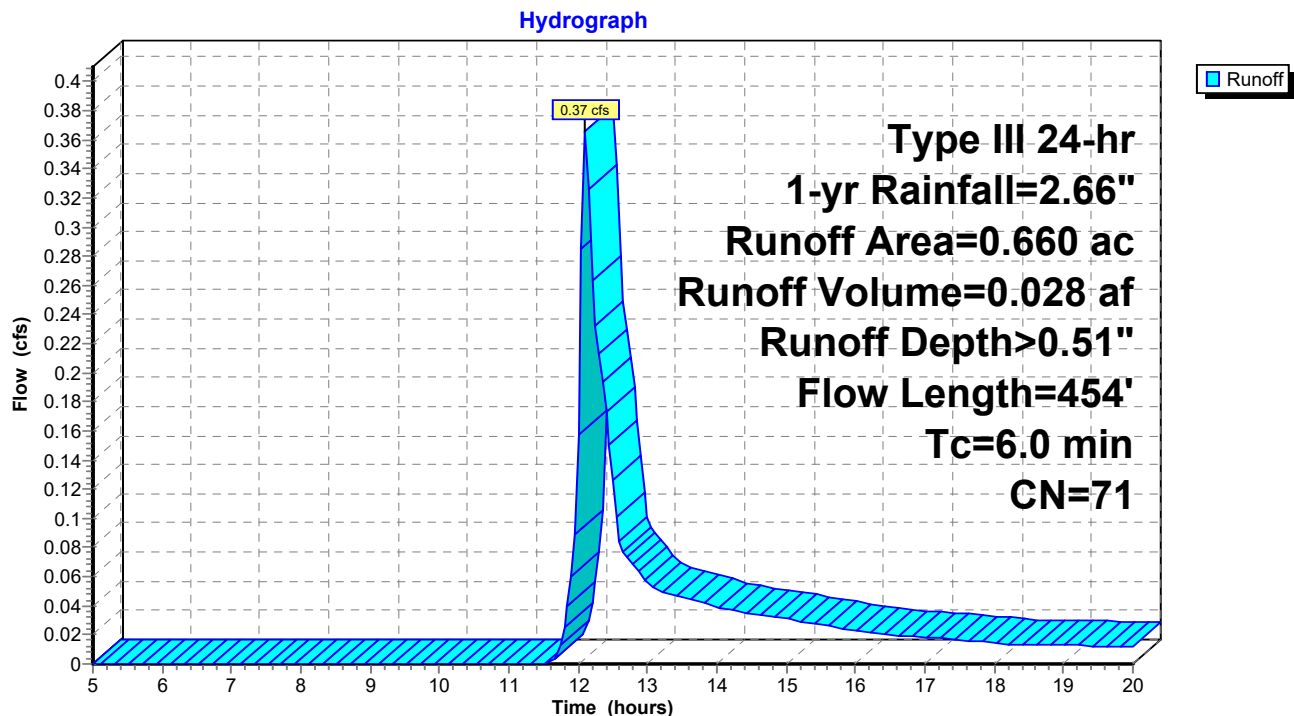
Runoff = 0.37 cfs @ 12.11 hrs, Volume= 0.028 af, Depth> 0.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.160	98	Paved parking, HSG B
0.260	68	1 acre lots, 20% imp, HSG B
0.240	56	Brush, Fair, HSG B
0.660	71	Weighted Average
0.448		67.88% Pervious Area
0.212		32.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.44		Sheet Flow, Reach A-B Smooth surfaces n= 0.011 P2= 3.50"
0.3	354	0.0370	18.01	56.57	Pipe Channel, Reach B-C 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
4.5					Direct Entry,
6.0	454	Total			

Subcatchment 20S: Post Area #3H



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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 21S: Post Area #3I

Runoff = 1.74 cfs @ 12.63 hrs, Volume= 0.258 af, Depth> 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.200	98	Paved parking, HSG B
2.600	68	1 acre lots, 20% imp, HSG B
0.230	56	Brush, Fair, HSG B
1.540	73	Woods, Fair, HSG C
0.970	70	Brush, Fair, HSG C
0.610	79	1 acre lots, 20% imp, HSG C
6.150	71	Weighted Average
5.308		86.31% Pervious Area
0.842		13.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.4600	0.28		Sheet Flow, Reach A-B Woods: Light underbrush n= 0.400 P2= 3.50"
10.1	343	0.0122	0.57	14.78	Channel Flow, REach B-C Area= 26.0 sf Perim= 34.3' r= 0.76' n= 0.240
6.6	409	0.1760	1.03	6.36	Channel Flow, Reach C-D Area= 6.2 sf Perim= 25.0' r= 0.25' n= 0.240
13.4	247	0.0078	0.31	3.38	Channel Flow, Reach D-E Area= 11.0 sf Perim= 26.1' r= 0.42' n= 0.240
2.8	1,008	0.0350	6.02	10.64	Pipe Channel, Reach E-F 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.024
38.8	2,107	Total			

Summit Woods

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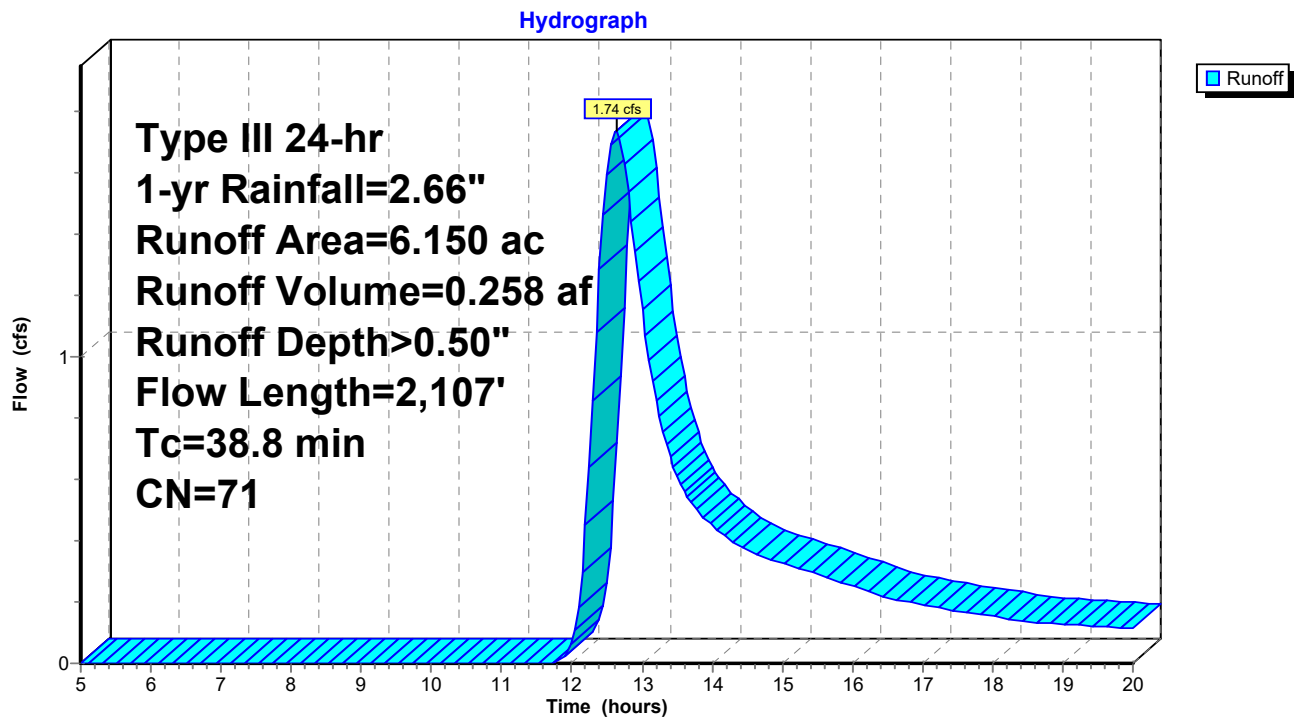
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Subcatchment 21S: Post Area #3I



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Summary for Subcatchment 22S: Post Area #3J

Runoff = 8.73 cfs @ 12.23 hrs, Volume= 0.812 af, Depth> 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.320	98	Paved parking, HSG B
3.100	68	1 acre lots, 20% imp, HSG B
0.390	56	Brush, Fair, HSG B
0.360	98	Paved parking, HSG C
0.160	73	Woods, Fair, HSG C
1.750	70	Brush, Fair, HSG C
7.500	79	1 acre lots, 20% imp, HSG C
13.580	76	Weighted Average
10.780		79.38% Pervious Area
2.800		20.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.16		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
1.5	308	0.0450	3.42		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
2.4	203	0.0050	1.44		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
0.8	208	0.0052	4.29	7.57	Pipe Channel, Reach D-E 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
15.0	819	Total			

Summit Woods

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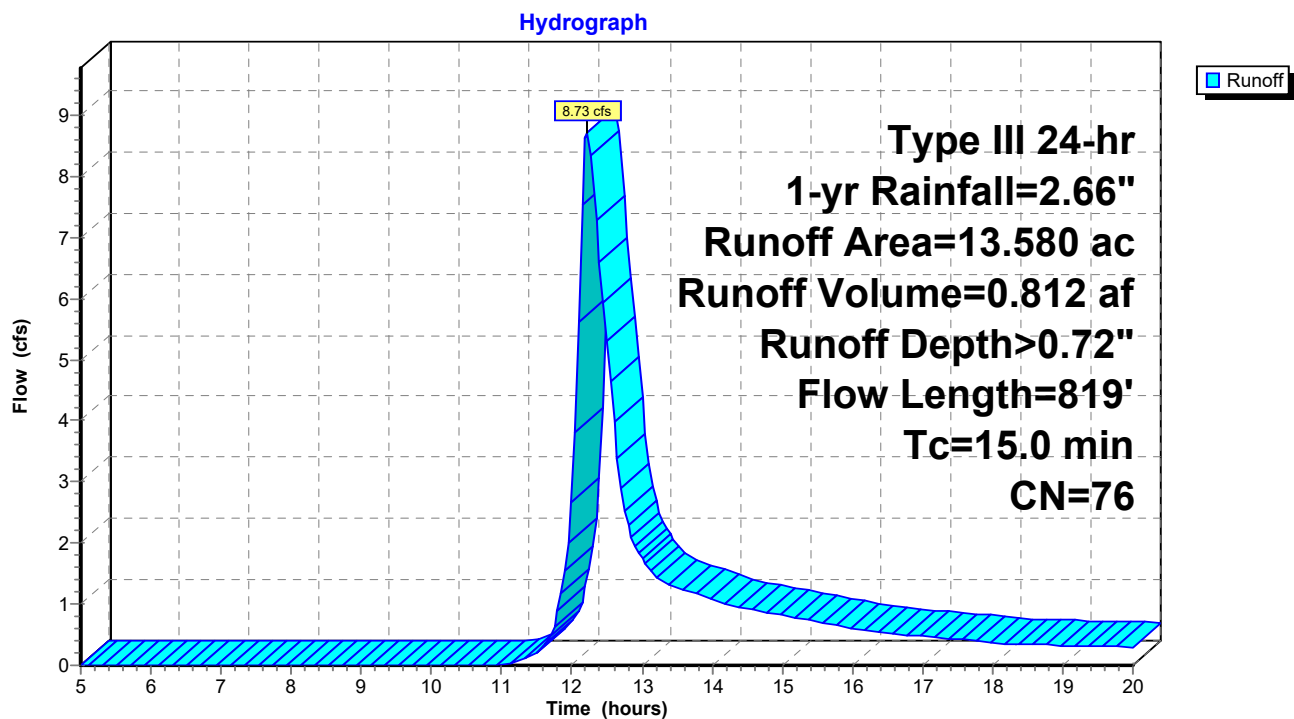
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Type III 24-hr 1-yr Rainfall=2.66"

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Subcatchment 22S: Post Area #3J



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Summary for Subcatchment 23S: Post #3K

Runoff = 2.82 cfs @ 12.26 hrs, Volume= 0.298 af, Depth> 0.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.080	35	Brush, Fair, HSG A
0.300	98	Paved parking, HSG B
2.010	68	1 acre lots, 20% imp, HSG B
0.300	60	Woods, Fair, HSG B
1.040	56	Brush, Fair, HSG B
0.100	70	Brush, Fair, HSG C
2.590	73	Woods, Fair, HSG C
1.130	79	1 acre lots, 20% imp, HSG C
7.550	70	Weighted Average
6.622		87.71% Pervious Area
0.928		12.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.2200	0.21		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
5.9	792	0.2000	2.24		Shallow Concentrated Flow, Reach B-C
					Woodland Kv= 5.0 fps
1.1	323	0.0580	4.89		Shallow Concentrated Flow, Reach C-D
					Paved Kv= 20.3 fps
0.5	133	0.0055	4.41	7.79	Pipe Channel, Reach D-E
					18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38'
					n= 0.013 Corrugated PE, smooth interior
15.4	1,348	Total			

Summit Woods

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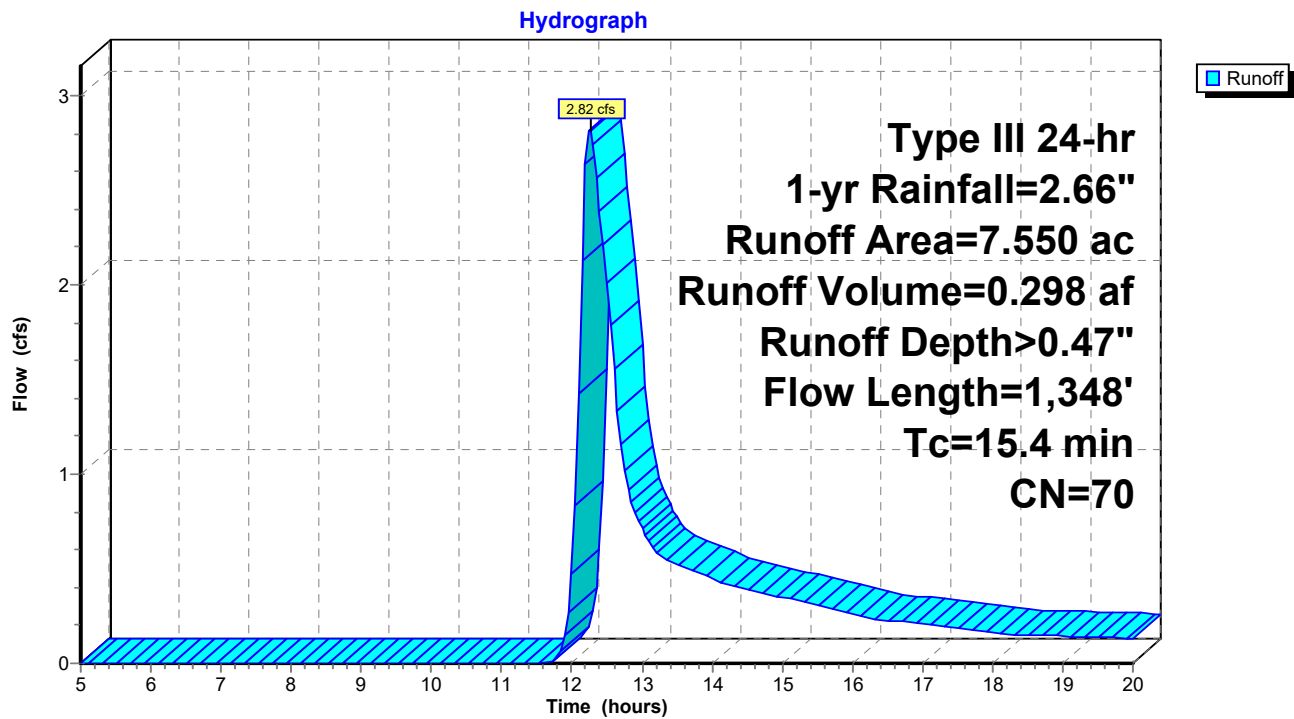
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Subcatchment 23S: Post #3K



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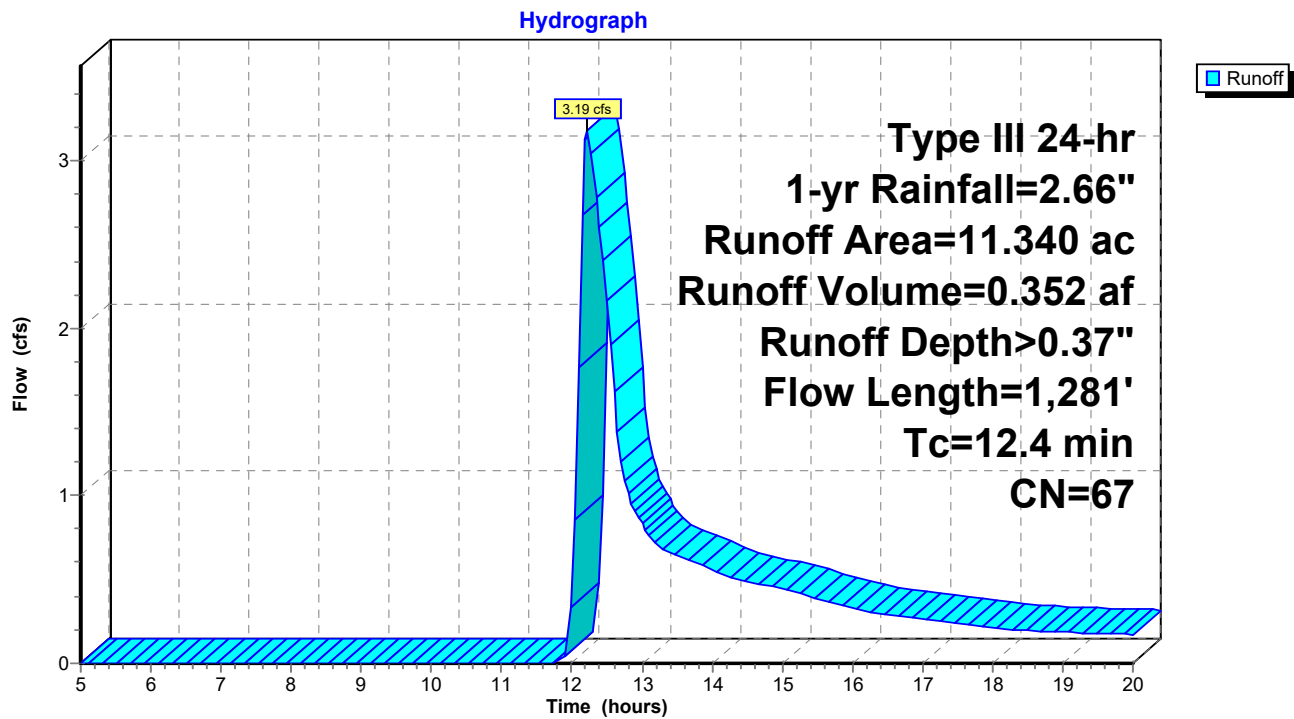
Summary for Subcatchment 24S: Post Area #3L

Runoff = 3.19 cfs @ 12.22 hrs, Volume= 0.352 af, Depth> 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.800	98	Paved parking, HSG C
6.100	68	1 acre lots, 20% imp, HSG B
3.290	60	Woods, Fair, HSG B
1.150	56	Brush, Fair, HSG B
11.340	67	Weighted Average
9.320		82.19% Pervious Area
2.020		17.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.2800	0.35		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
3.4	645	0.2090	3.20		Shallow Concentrated Flow, Reach B-C Short Grass Pasture Kv= 7.0 fps
0.3	88	0.0450	4.31		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
4.0	448	0.0010	1.88	3.32	Pipe Channel, Reach D-E 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
12.4	1,281	Total			

Subcatchment 24S: Post Area #3L

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Type III 24-hr 1-yr Rainfall=2.66"

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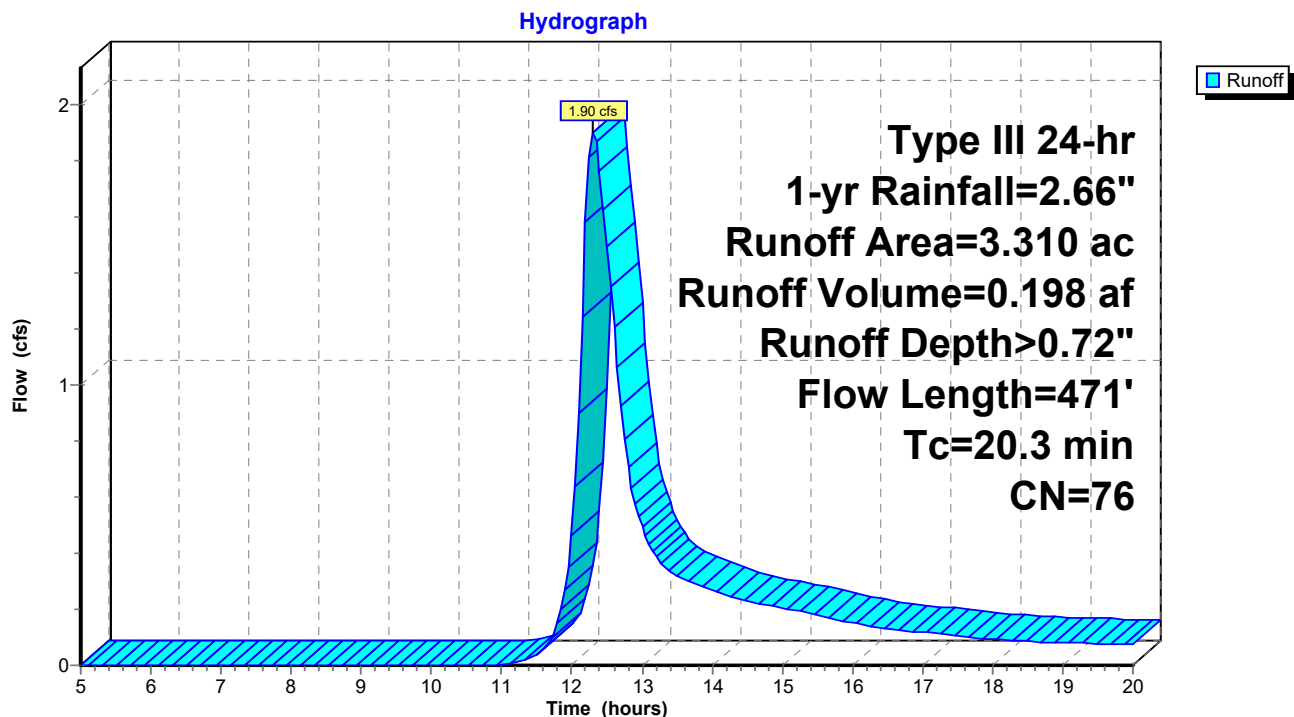
Summary for Subcatchment 25S: Post Area #4

Runoff = 1.90 cfs @ 12.31 hrs, Volume= 0.198 af, Depth> 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
1.030	73	Woods, Fair, HSG C
0.270	70	Brush, Fair, HSG C
2.010	79	1 acre lots, 20% imp, HSG C
3.310	76	Weighted Average
2.908		87.85% Pervious Area
0.402		12.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	100	0.0100	0.09		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
2.3	371	0.0270	2.65		Shallow Concentrated Flow, Reach B- DP#4
					Unpaved Kv= 16.1 fps
20.3	471	Total			

Subcatchment 25S: Post Area #4

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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 26S: Post Area #5

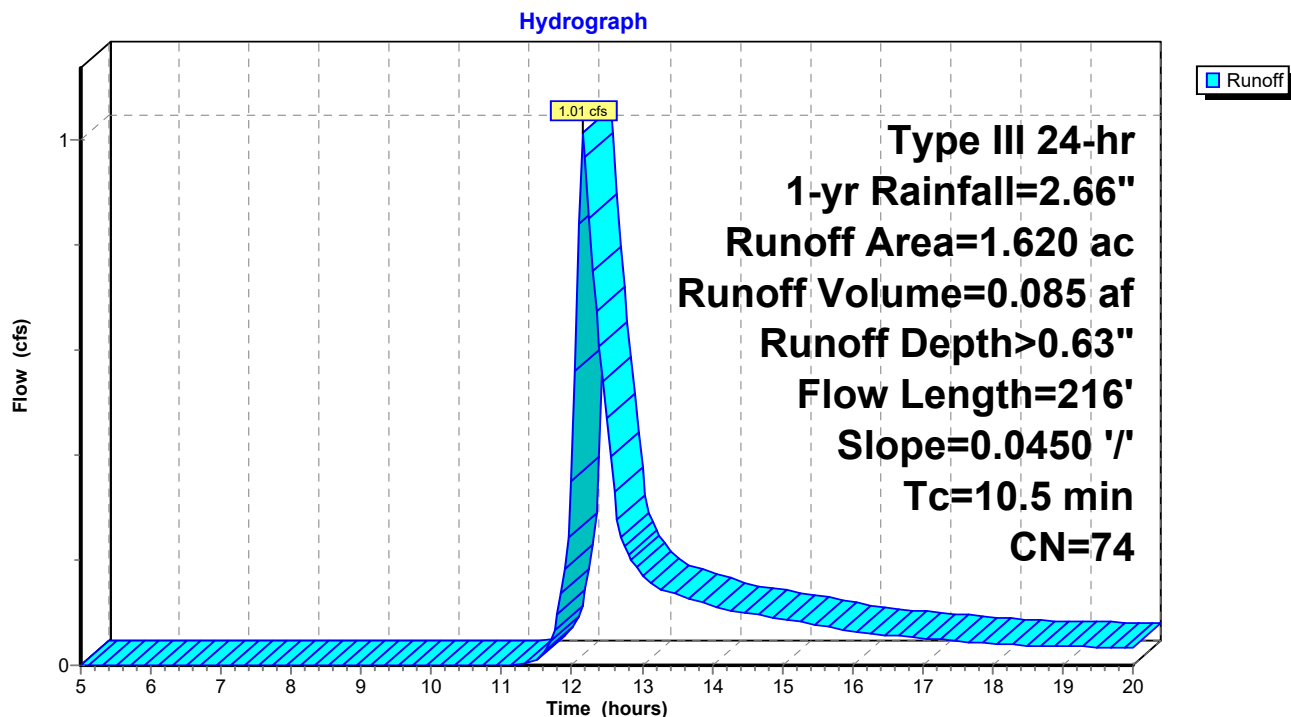
Runoff = 1.01 cfs @ 12.17 hrs, Volume= 0.085 af, Depth> 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.360	73	Woods, Fair, HSG C
0.660	70	Brush, Fair, HSG C
0.600	79	1 acre lots, 20% imp, HSG C
1.620	74	Weighted Average
1.500		92.59% Pervious Area
0.120		7.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0450	0.17		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
0.6	116	0.0450	3.42		Shallow Concentrated Flow, Reach B-DP#5
					Unpaved Kv= 16.1 fps
10.5	216	Total			

Subcatchment 26S: Post Area #5



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Type III 24-hr 1-yr Rainfall=2.66"

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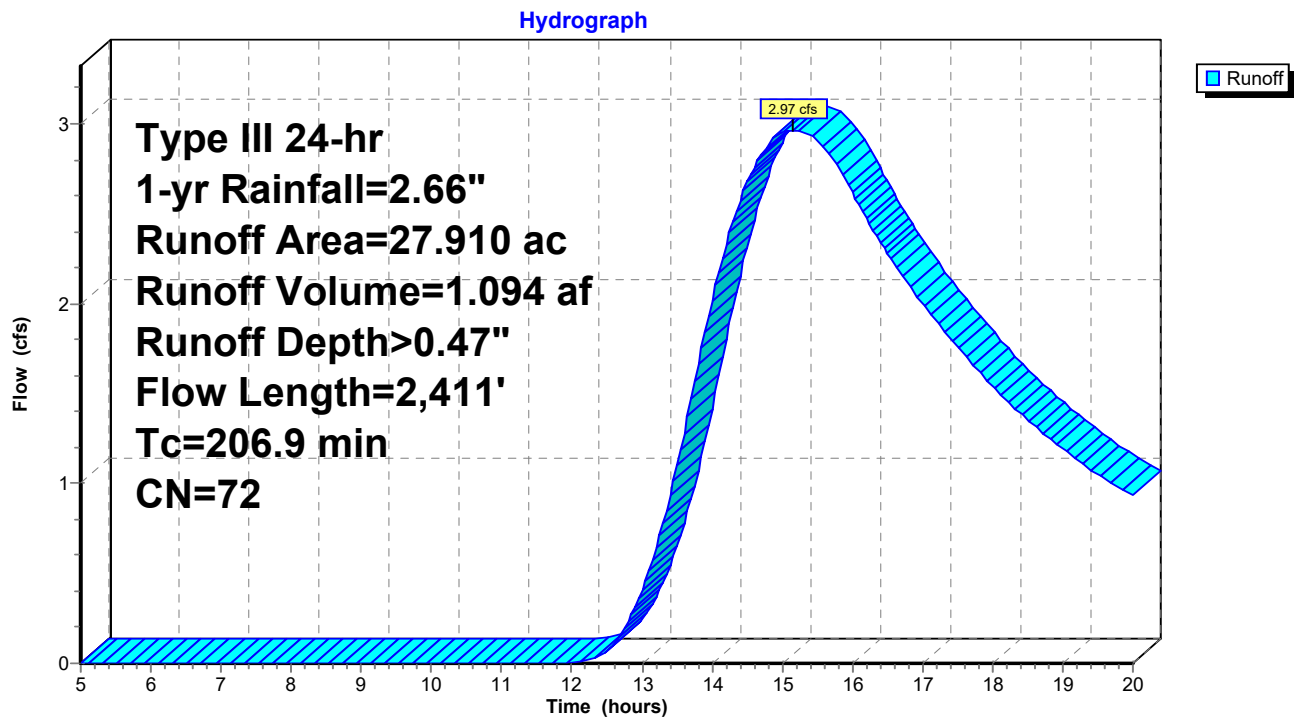
Summary for Subcatchment 27S: Post Area #6A

Runoff = 2.97 cfs @ 15.16 hrs, Volume= 1.094 af, Depth> 0.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
4.000	68	1 acre lots, 20% imp, HSG B
1.550	60	Woods, Fair, HSG B
1.060	56	Brush, Fair, HSG B
11.690	70	Brush, Fair, HSG C
* 5.180	78	Wetland, HSG C
4.430	79	1 acre lots, 20% imp, HSG C
27.910	72	Weighted Average
26.224		93.96% Pervious Area
1.686		6.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	100	0.0800	0.21		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
1.0	271	0.0740	4.38		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
198.1	2,040	0.0050	0.17	0.46	Channel Flow, Reach C-DP#6 Area= 2.7 sf Perim= 11.0' r= 0.25' n= 0.240
206.9	2,411	Total			

Subcatchment 27S: Post Area #6A

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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 28S: Post Area #6B

Runoff = 4.70 cfs @ 12.26 hrs, Volume= 0.446 af, Depth> 0.86"

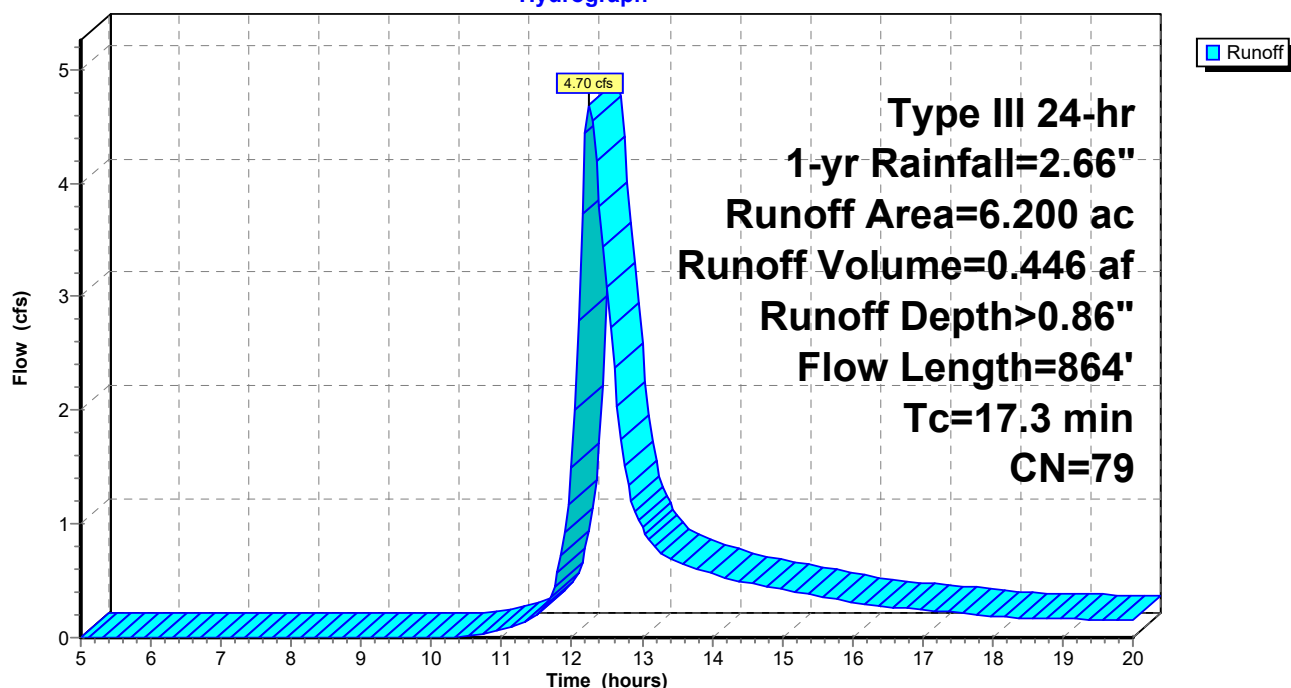
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.620	98	Paved parking, HSG C
1.180	70	Brush, Fair, HSG C
4.400	79	1 acre lots, 20% imp, HSG C
6.200	79	Weighted Average
4.700		75.81% Pervious Area
1.500		24.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0200	0.12		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
3.1	614	0.0410	3.26		Shallow Concentrated Flow, Reach B-C
					Unpaved Kv= 16.1 fps
0.6	150	0.0050	4.20	7.43	Pipe Channel, Reach C-D
					18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38'
					n= 0.013 Corrugated PE, smooth interior
17.3	864	Total			

Subcatchment 28S: Post Area #6B

Hydrograph



Summit Woods

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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 29S: Post Area #6C

Runoff = 2.29 cfs @ 12.12 hrs, Volume= 0.172 af, Depth> 0.63"

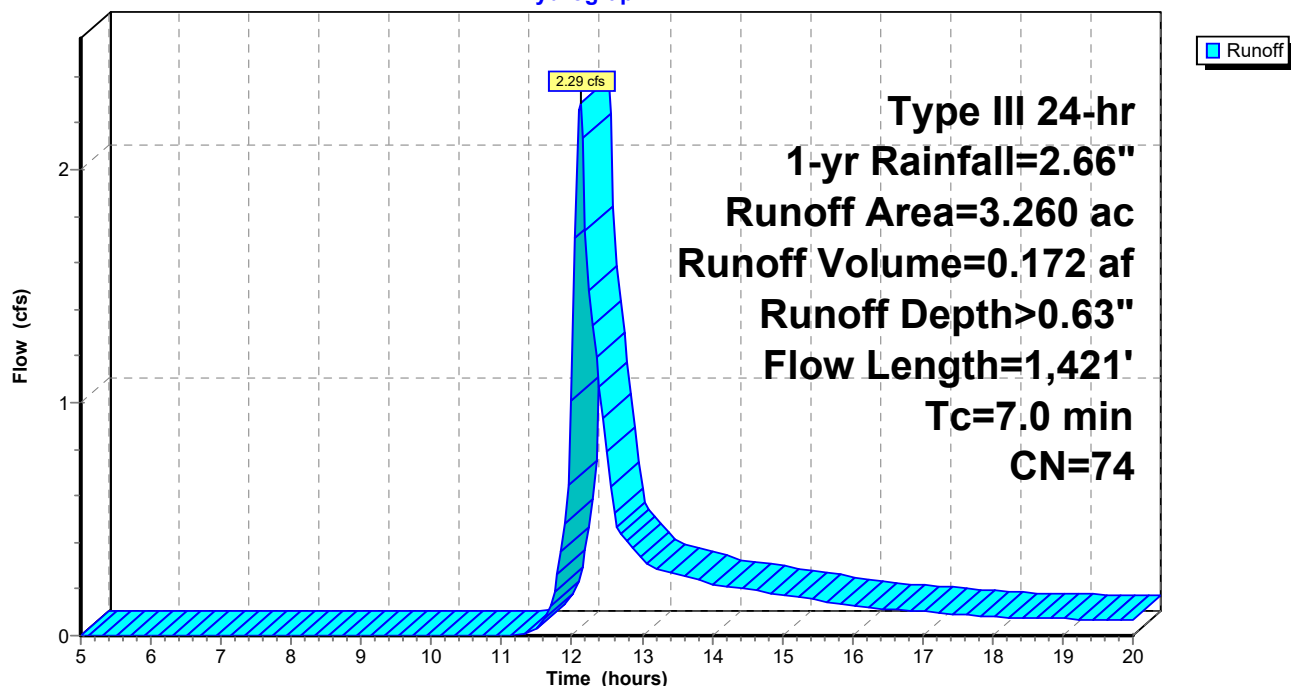
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.710	98	Paved parking, HSG C
0.950	56	Brush, Fair, HSG B
1.600	75	1/4 acre lots, 38% imp, HSG B
3.260	74	Weighted Average
1.942		59.57% Pervious Area
1.318		40.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0100	1.09		Sheet Flow, Reach A-B Smooth surfaces n= 0.011 P2= 3.50"
0.5	50	0.0078	1.79		Shallow Concentrated Flow, Reach B-C Paved Kv= 20.3 fps
5.0	1,271	0.0050	4.20	7.43	Pipe Channel, Reach C-D 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
7.0	1,421	Total			

Subcatchment 29S: Post Area #6C

Hydrograph



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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 31S: Post Area #7

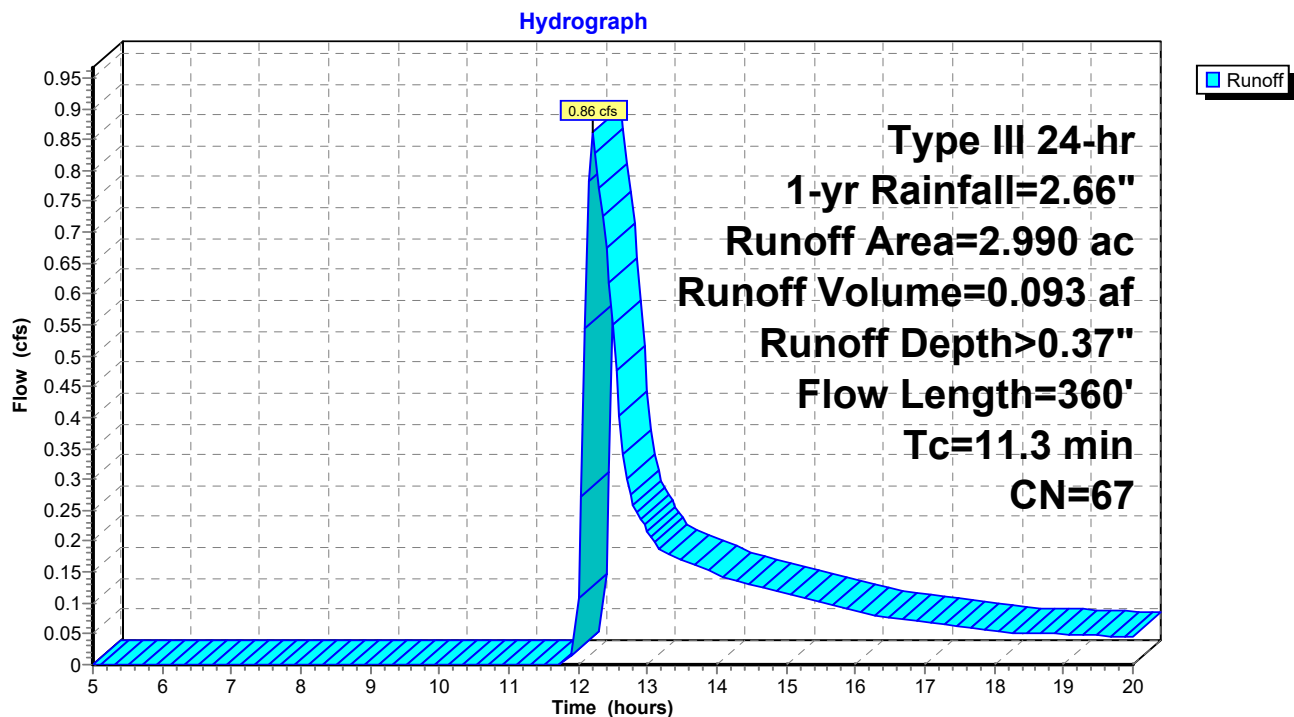
Runoff = 0.86 cfs @ 12.21 hrs, Volume= 0.093 af, Depth> 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
2.620	68	1 acre lots, 20% imp, HSG B
0.370	60	Woods, Fair, HSG B
2.990	67	Weighted Average
2.466		82.47% Pervious Area
0.524		17.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0600	0.19		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
2.5	260	0.0120	1.76		Shallow Concentrated Flow, Reach B-DP#7
					Unpaved Kv= 16.1 fps
11.3	360	Total			

Subcatchment 31S: Post Area #7



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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 32S: Post Area #8

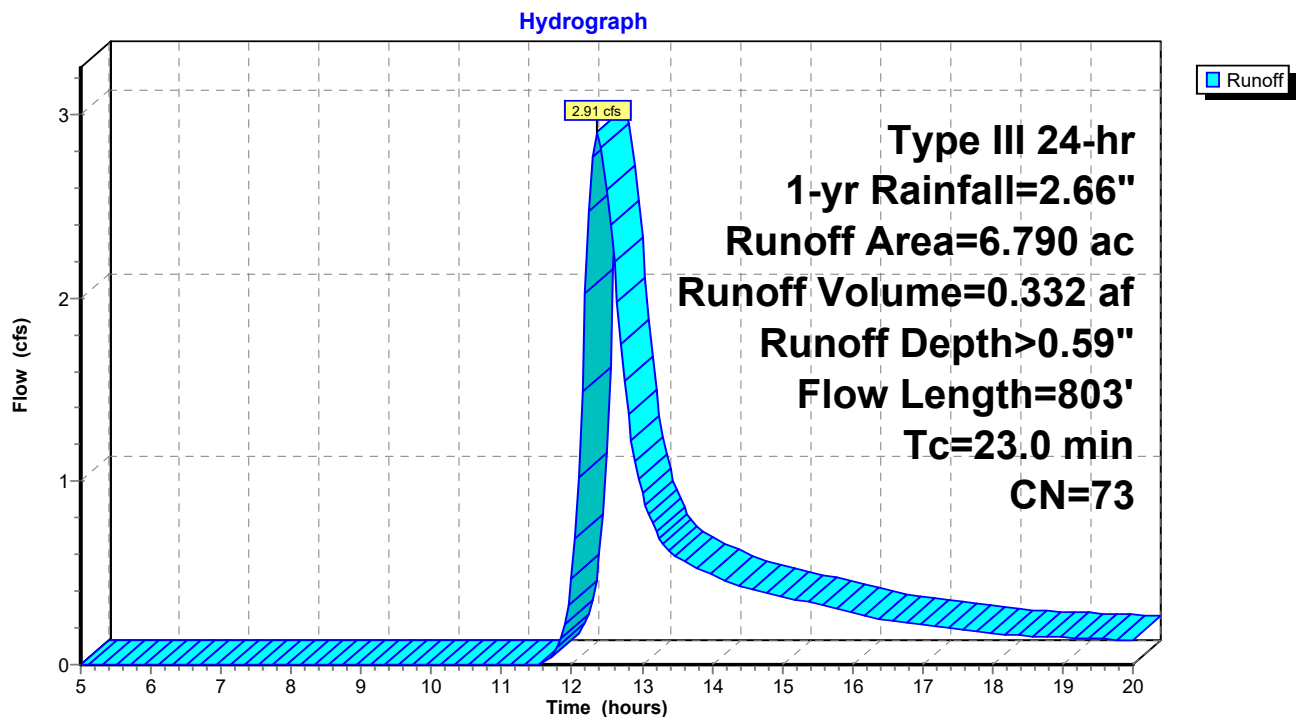
Runoff = 2.91 cfs @ 12.37 hrs, Volume= 0.332 af, Depth> 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
1.600	73	Woods, Fair, HSG C
* 1.780	78	Wetland, HSG C
3.410	70	Brush, Fair, HSG C
6.790	73	Weighted Average
6.790		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0200	0.12		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
9.4	703	0.0060	1.25		Shallow Concentrated Flow, Reach B-DP#8
					Unpaved Kv= 16.1 fps
23.0	803	Total			

Subcatchment 32S: Post Area #8



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Type III 24-hr 1-yr Rainfall=2.66"

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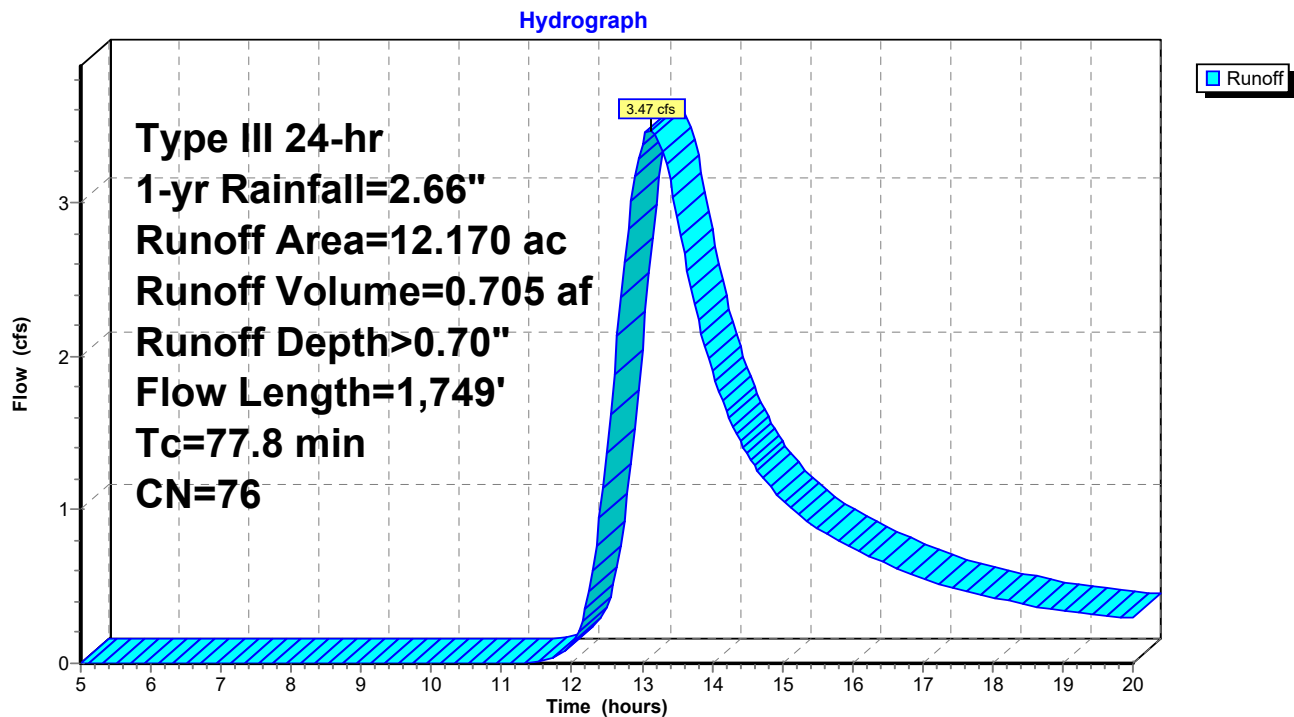
Summary for Subcatchment 33S: Post Area #9

Runoff = 3.47 cfs @ 13.13 hrs, Volume= 0.705 af, Depth> 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
1.470	73	Woods, Fair, HSG C
8.500	77	2 acre lots, 12% imp, HSG C
1.720	70	Brush, Fair, HSG C
0.480	98	Paved parking, HSG C
12.170	76	Weighted Average
10.670		87.67% Pervious Area
1.500		12.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
49.4	100	0.0050	0.03		Sheet Flow, Reach A-B n= 0.600 P2= 3.50"
1.1	152	0.0200	2.28		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
5.7	193	0.0340	0.57	2.85	Channel Flow, Reach C-D Area= 5.0 sf Perim= 14.2' r= 0.35' n= 0.240
0.5	155	0.0110	4.76	3.74	Pipe Channel, Reach D-E 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
21.1	1,149	0.0850	0.91	4.54	Channel Flow, Reach E-DP#9 Area= 5.0 sf Perim= 14.0' r= 0.36' n= 0.240
77.8	1,749	Total			

Subcatchment 33S: Post Area #9

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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Subcatchment 52S: Post Area #6D-2

Runoff = 1.56 cfs @ 12.23 hrs, Volume= 0.145 af, Depth> 1.56"

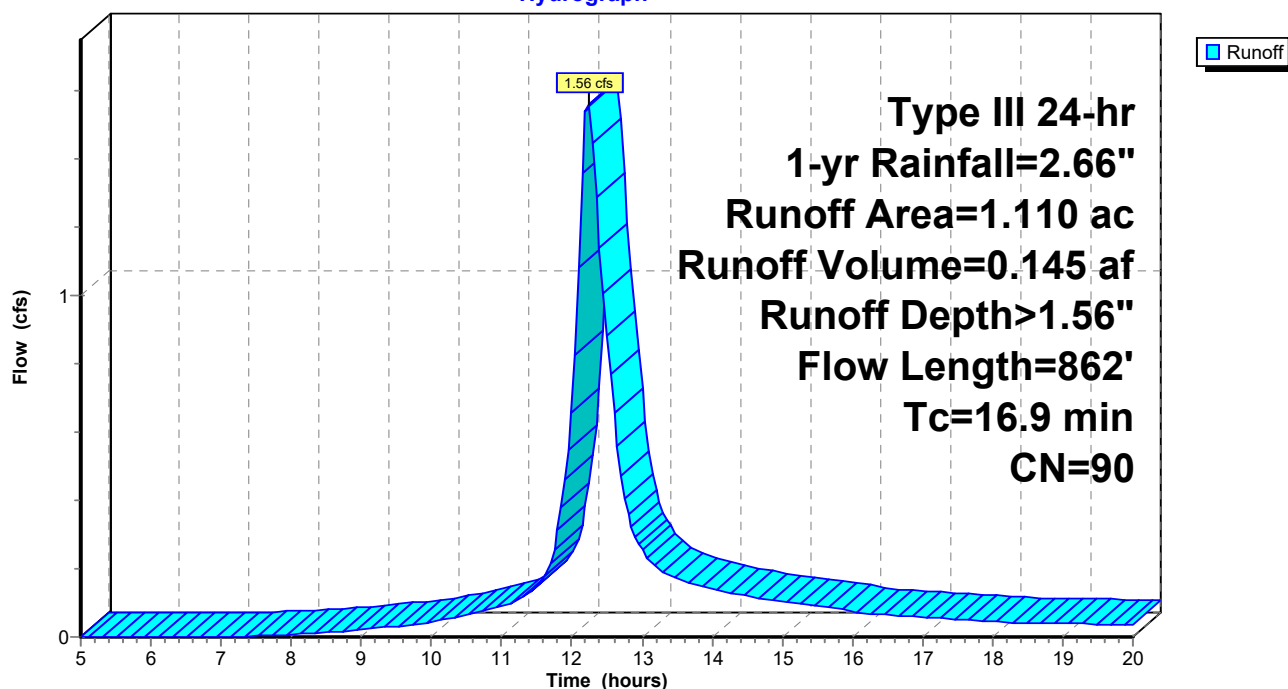
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.620	98	Paved parking, HSG C
0.490	80	1/2 acre lots, 25% imp, HSG C
1.110	90	Weighted Average
0.368		33.11% Pervious Area
0.743		66.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.20		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
8.4	721	0.0050	1.44		Shallow Concentrated Flow, Reach B-C Paved Kv= 20.3 fps
0.2	41	0.0050	4.20	7.43	Pipe Channel, Reach C-D 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
16.9	862	Total			

Subcatchment 52S: Post Area #6D-2

Hydrograph



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Type III 24-hr 1-yr Rainfall=2.66"

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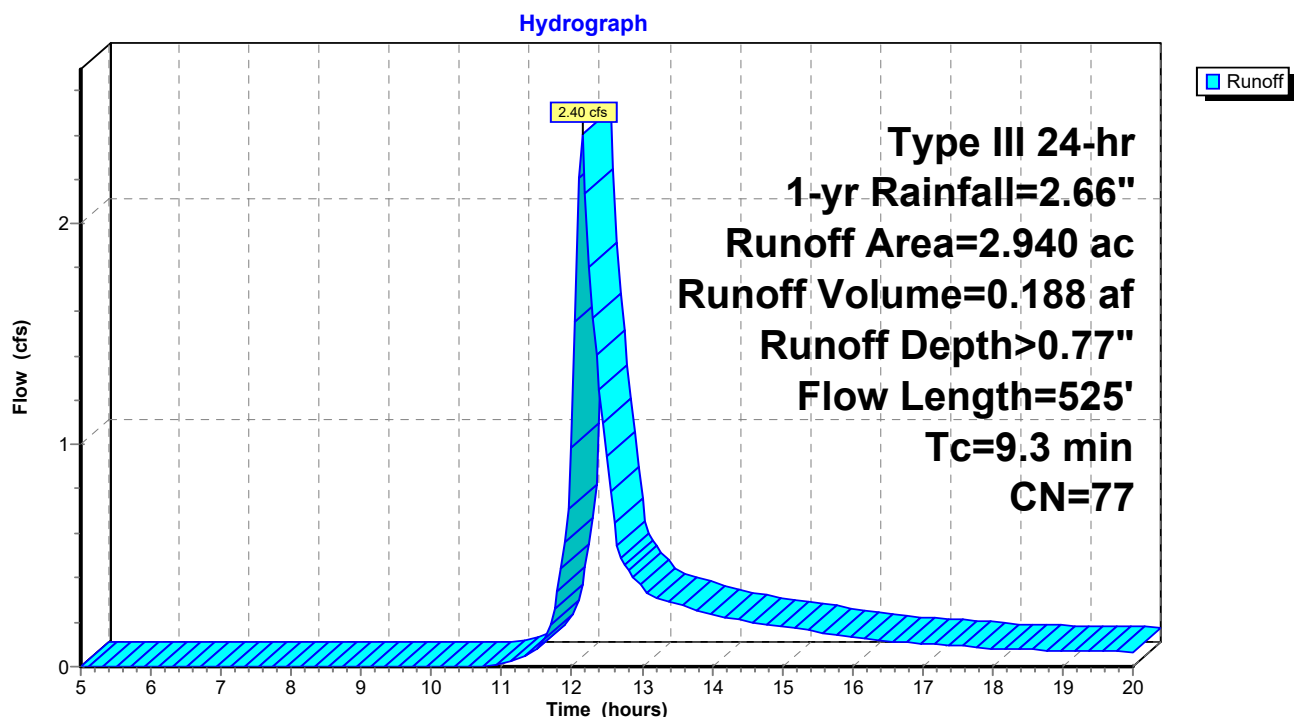
Summary for Subcatchment 53S: Post Area #6D-1

Runoff = 2.40 cfs @ 12.15 hrs, Volume= 0.188 af, Depth> 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-yr Rainfall=2.66"

Area (ac)	CN	Description
0.970	70	Brush, Fair, HSG C
* 0.070	78	Wetland, HSG C
1.900	80	1/2 acre lots, 25% imp, HSG C
2.940	77	Weighted Average
2.465		83.84% Pervious Area
0.475		16.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.20		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
0.6	50	0.0050	1.44		Shallow Concentrated Flow, Reach B-C Paved Kv= 20.3 fps
0.4	375	0.0340	17.26	54.23	Pipe Channel, Reach C-D 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
9.3	525	Total			

Subcatchment 53S: Post Area #6D-1

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Summary for Reach 50R: Reach #3B

Inflow Area = 4.540 ac, 35.52% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 16.7 sf, Capacity= 25.36 cfs

25.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools

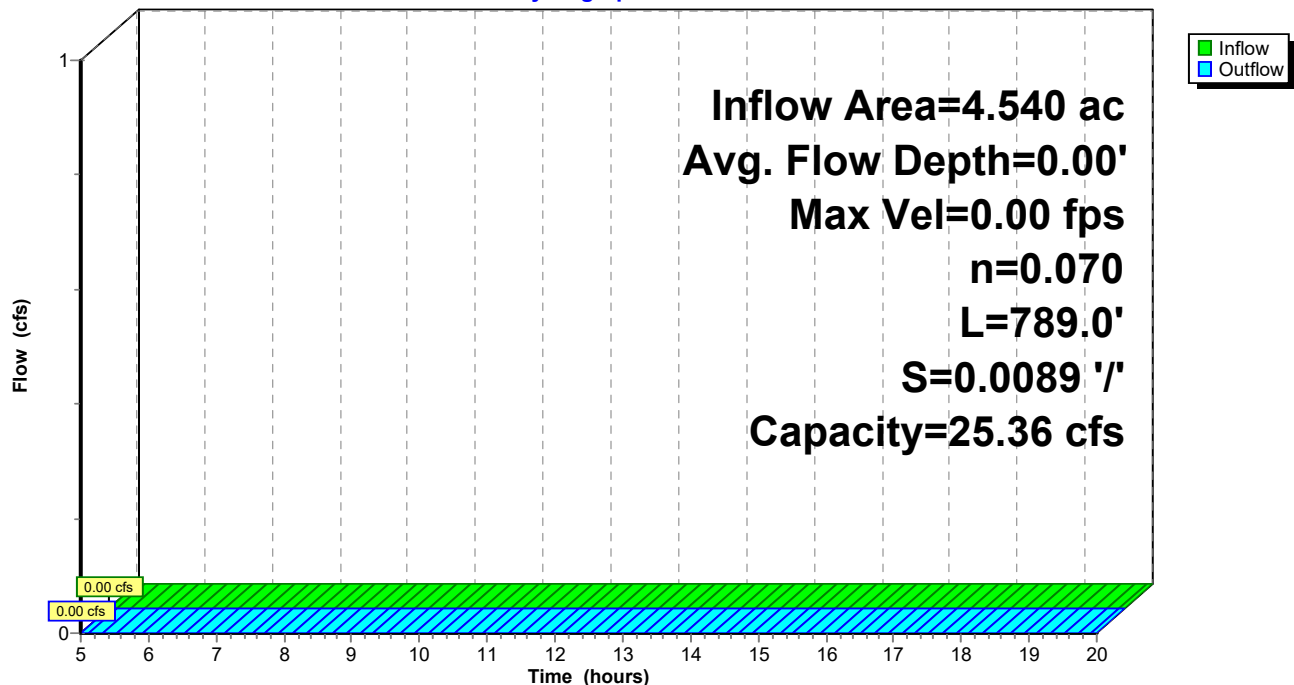
Length= 789.0' Slope= 0.0089 1'

Inlet Invert= 322.00', Outlet Invert= 315.00'



Reach 50R: Reach #3B

Hydrograph



Summit Woods

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Type III 24-hr 1-yr Rainfall=2.66"

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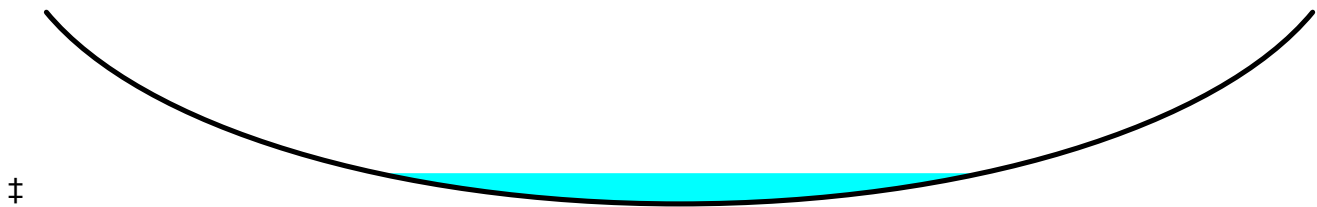
Summary for Reach 51R: Post Area #3

Inflow Area = 302.860 ac, 8.14% Impervious, Inflow Depth > 0.20" for 1-yr event
Inflow = 13.77 cfs @ 18.60 hrs, Volume= 5.120 af
Outflow = 13.72 cfs @ 19.11 hrs, Volume= 4.425 af, Atten= 0%, Lag= 30.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.27 fps, Min. Travel Time= 19.3 min
Avg. Velocity= 0.94 fps, Avg. Travel Time= 26.3 min

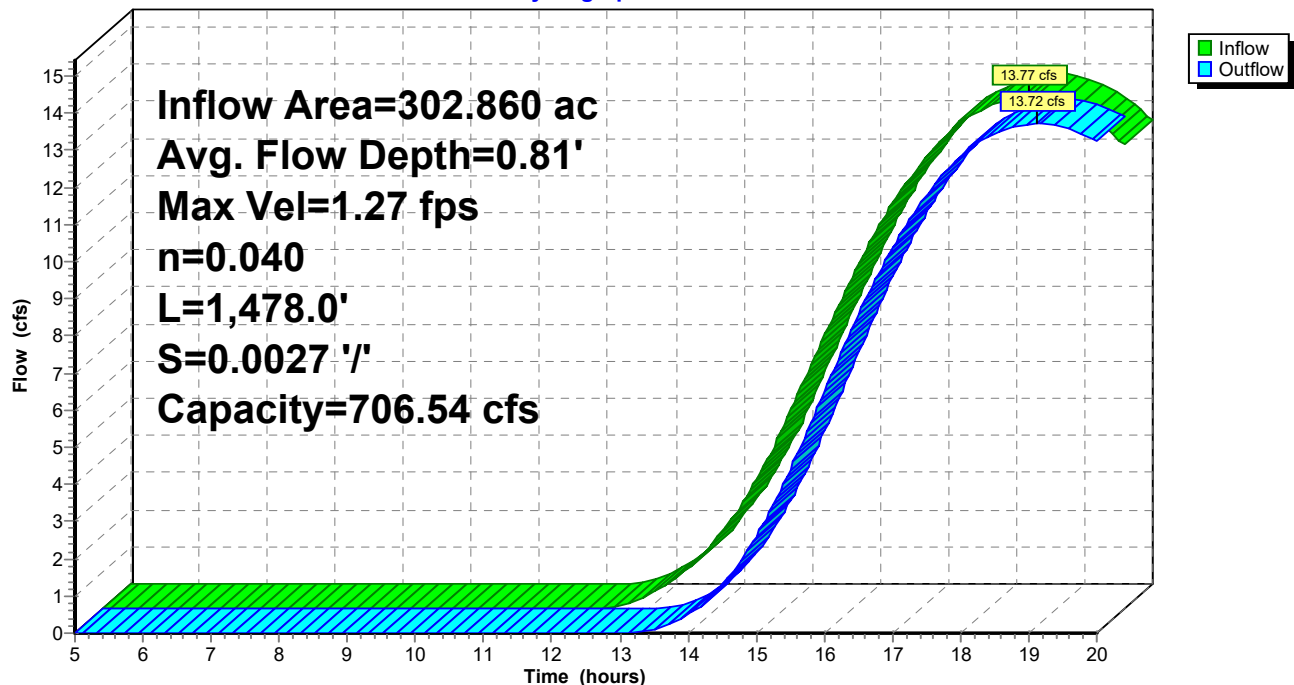
Peak Storage= 15,922 cf @ 18.79 hrs
Average Depth at Peak Storage= 0.81'
Bank-Full Depth= 5.00' Flow Area= 166.7 sf, Capacity= 706.54 cfs

50.00' x 5.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 1,478.0' Slope= 0.0027 '/'
Inlet Invert= 315.00', Outlet Invert= 311.00'



Reach 51R: Post Area #3

Hydrograph



Summit Woods

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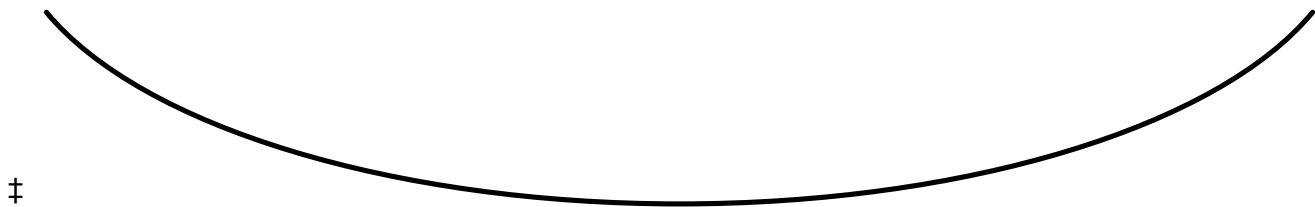
Summary for Reach 52R: Reach #3L-1

Inflow Area = 17.490 ac, 16.36% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

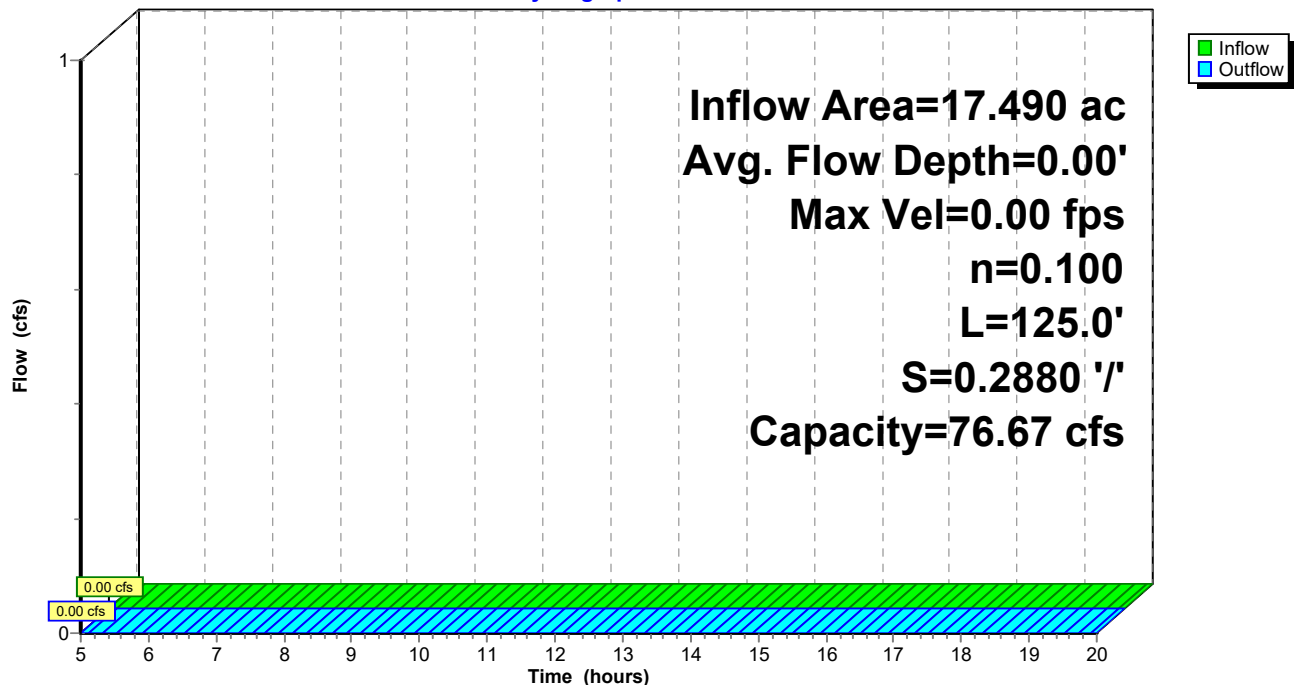
Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.50' Flow Area= 20.0 sf, Capacity= 76.67 cfs

60.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 125.0' Slope= 0.2880 '/'
Inlet Invert= 384.00', Outlet Invert= 348.00'



Reach 52R: Reach #3L-1

Hydrograph



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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Reach 53R: Reach #3C

Inflow Area = 3.080 ac, 22.08% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 16.7 sf, Capacity= 33.14 cfs

25.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools

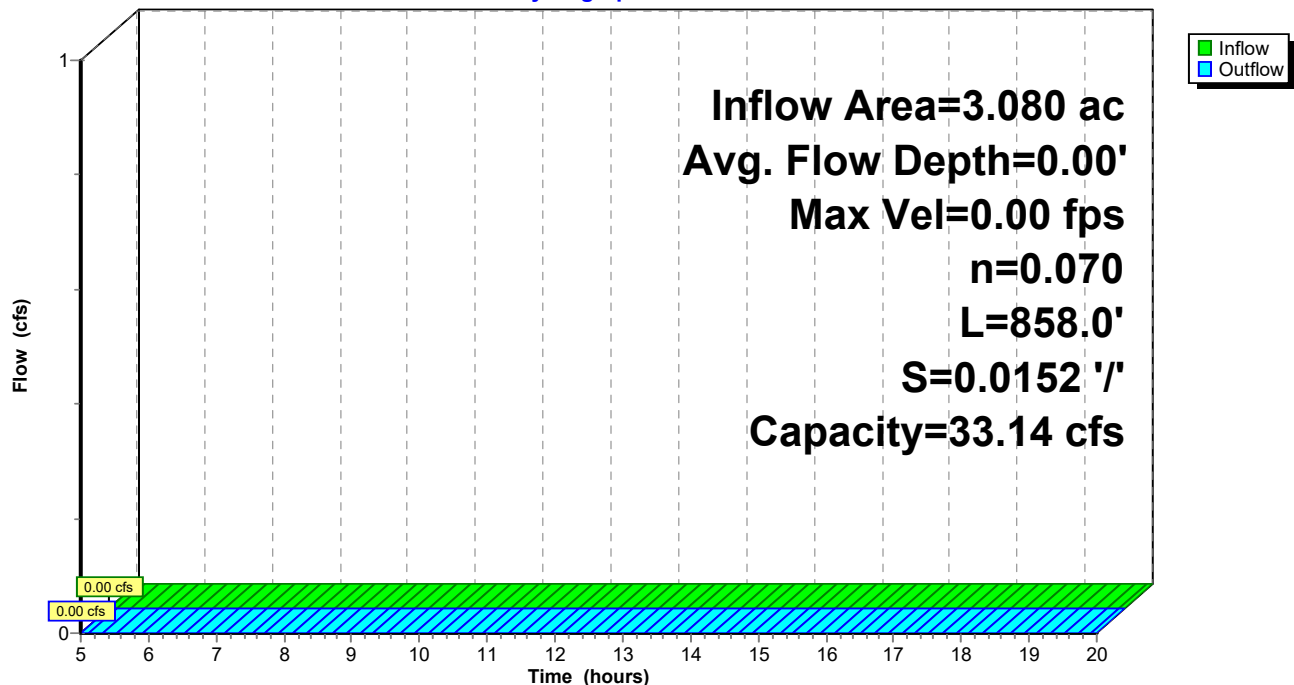
Length= 858.0' Slope= 0.0152 '/'

Inlet Invert= 328.00', Outlet Invert= 315.00'



Reach 53R: Reach #3C

Hydrograph



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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Reach 54R: Reach #3D

Inflow Area = 6.220 ac, 20.80% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 0.50' Flow Area= 44.7 sf, Capacity= 84.65 cfs

134.00' x 0.50' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools

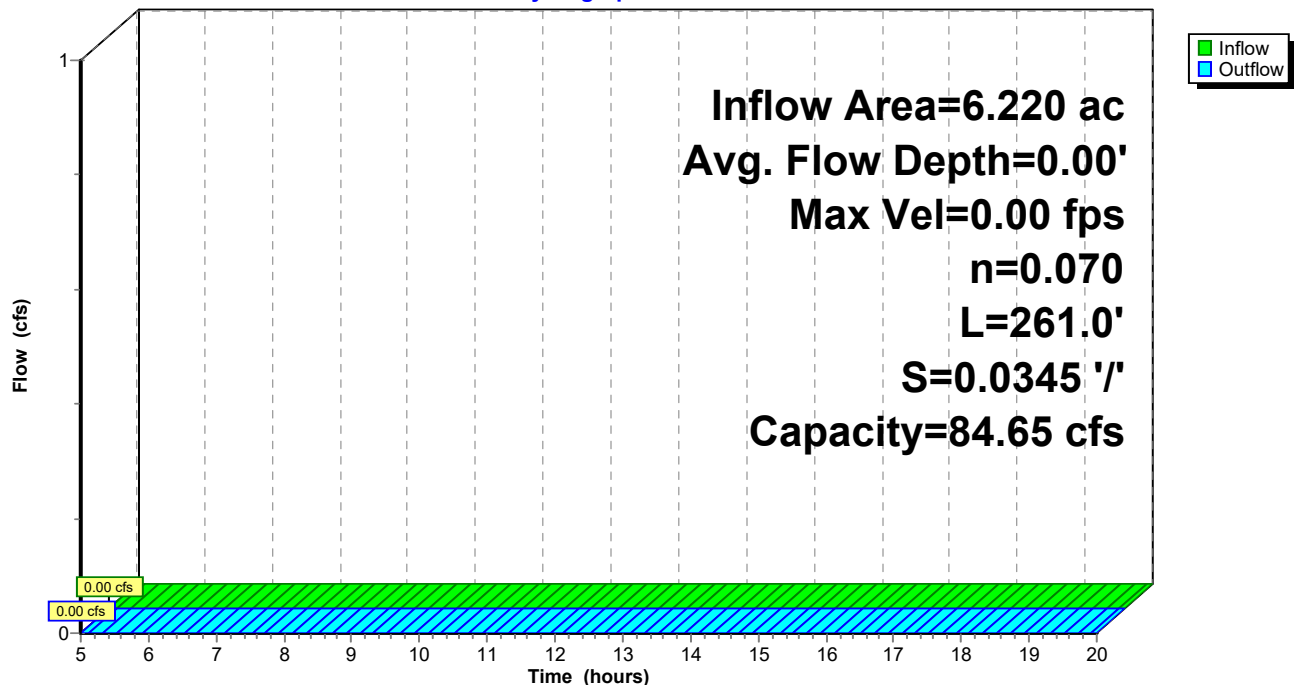
Length= 261.0' Slope= 0.0345 '/'

Inlet Invert= 325.00', Outlet Invert= 316.00'



Reach 54R: Reach #3D

Hydrograph



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Summary for Reach 55R: Reach 3-3

Inflow Area = 47.850 ac, 23.85% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 16.7 sf, Capacity= 19.56 cfs

25.00' x 1.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

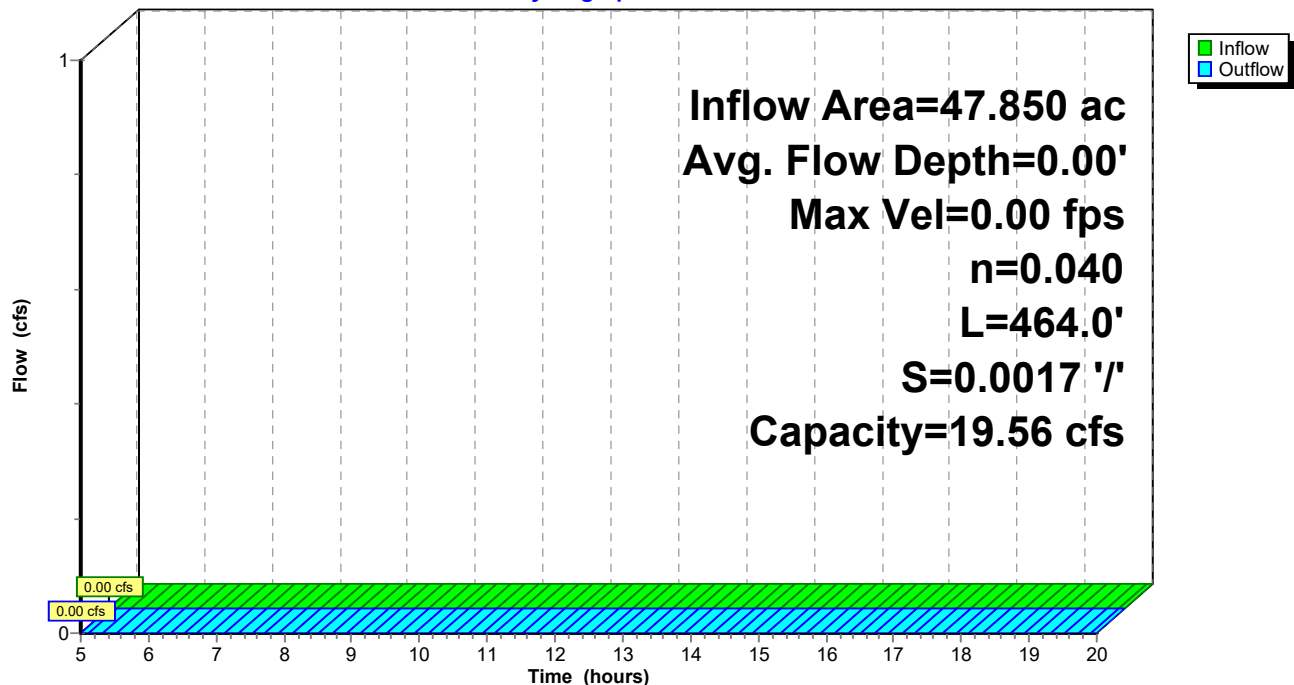
Length= 464.0' Slope= 0.0017 '/

Inlet Invert= 316.60', Outlet Invert= 315.80'



Reach 55R: Reach 3-3

Hydrograph



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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Reach 56R: Reach 3-2

Inflow Area = 65.340 ac, 21.85% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 5.00' Flow Area= 500.0 sf, Capacity= 1,796.89 cfs

150.00' x 5.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

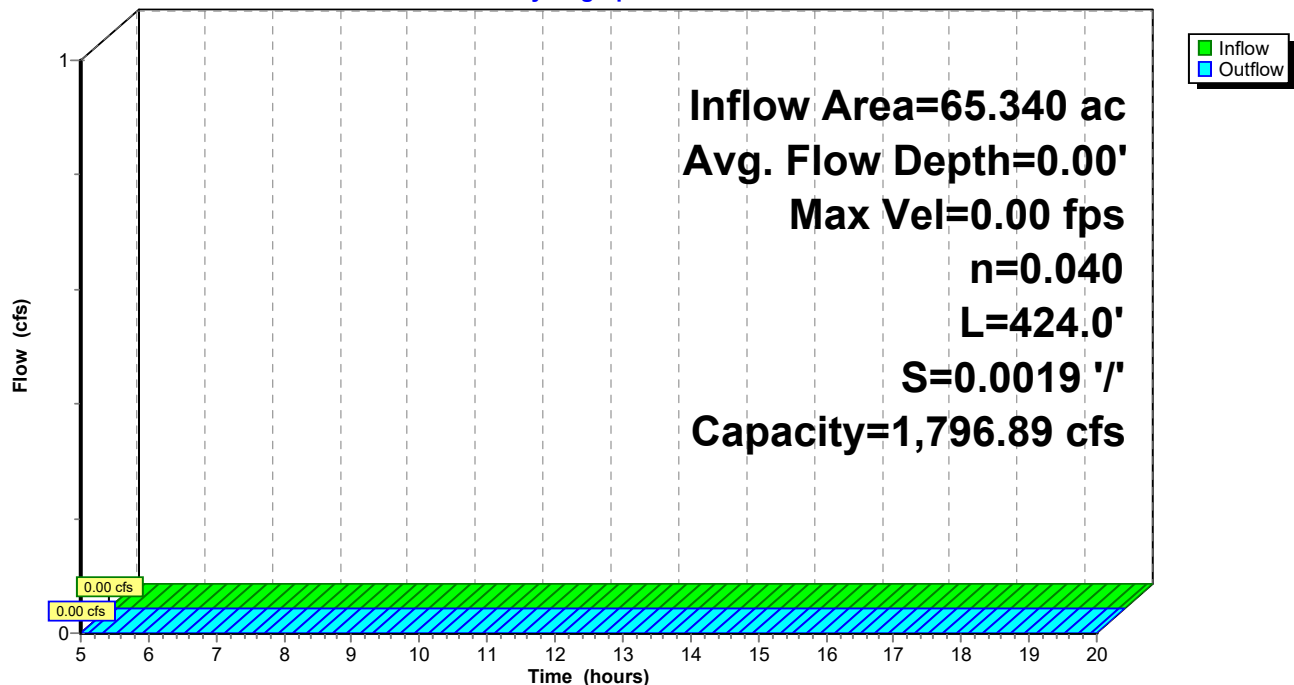
Length= 424.0' Slope= 0.0019 '/

Inlet Invert= 315.80', Outlet Invert= 315.00'



Reach 56R: Reach 3-2

Hydrograph



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Type III 24-hr 1-yr Rainfall=2.66"

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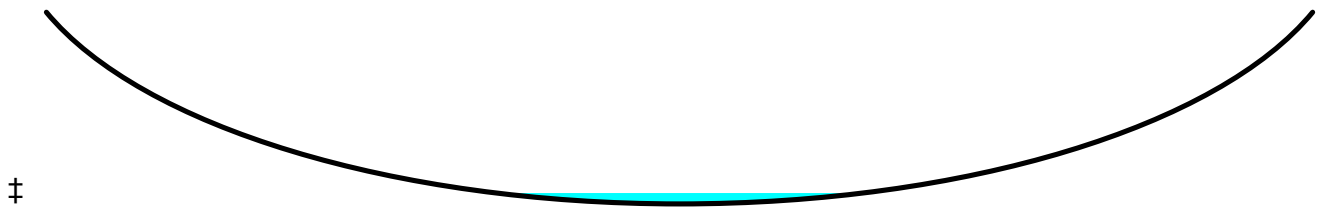
Summary for Reach 57R: Post Area #6

Inflow Area = 40.310 ac, 12.35% Impervious, Inflow Depth > 0.32" for 1-yr event
Inflow = 2.97 cfs @ 15.25 hrs, Volume= 1.083 af
Outflow = 2.97 cfs @ 15.36 hrs, Volume= 1.069 af, Atten= 0%, Lag= 7.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.29 fps, Min. Travel Time= 4.4 min
Avg. Velocity= 1.02 fps, Avg. Travel Time= 5.5 min

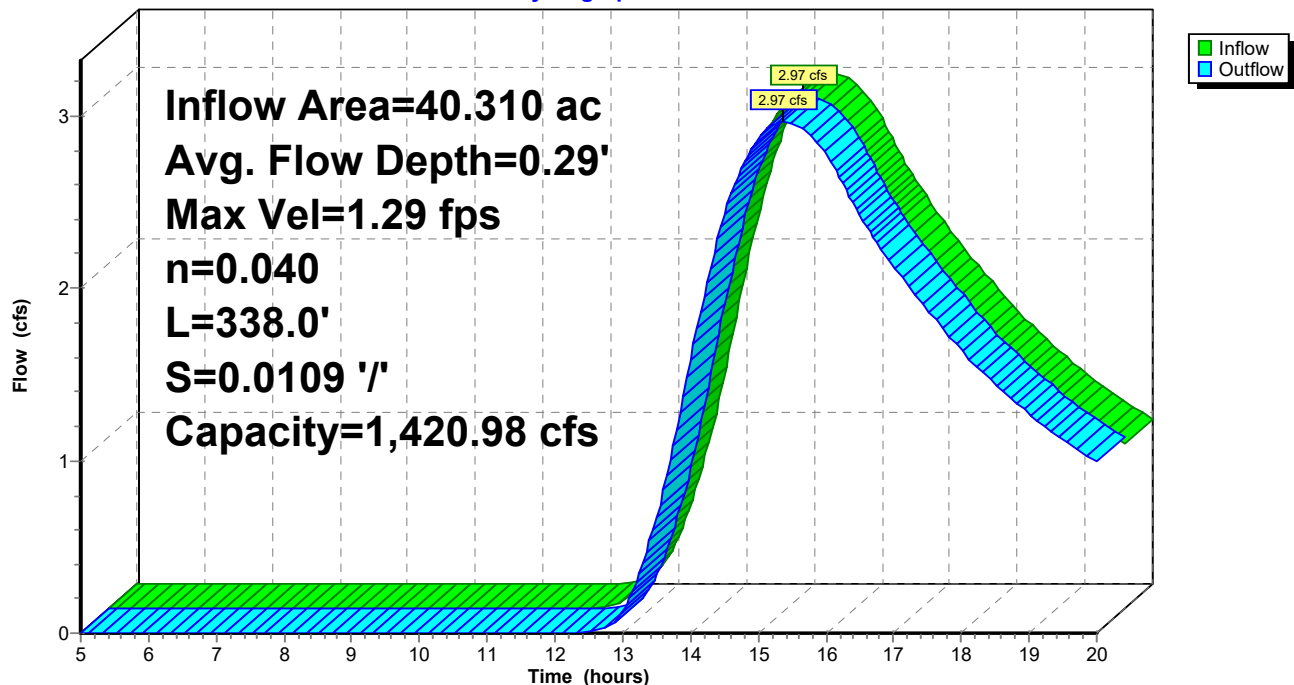
Peak Storage= 774 cf @ 15.29 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 5.00' Flow Area= 166.7 sf, Capacity= 1,420.98 cfs

50.00' x 5.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 338.0' Slope= 0.0109 '/'
Inlet Invert= 316.40', Outlet Invert= 312.70'



Reach 57R: Post Area #6

Hydrograph



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Type III 24-hr 1-yr Rainfall=2.66"

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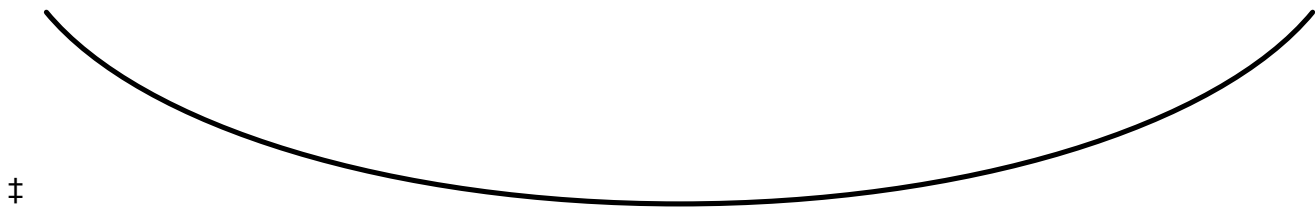
Summary for Reach 58R: Reach #3E

Inflow Area = 9.670 ac, 28.11% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

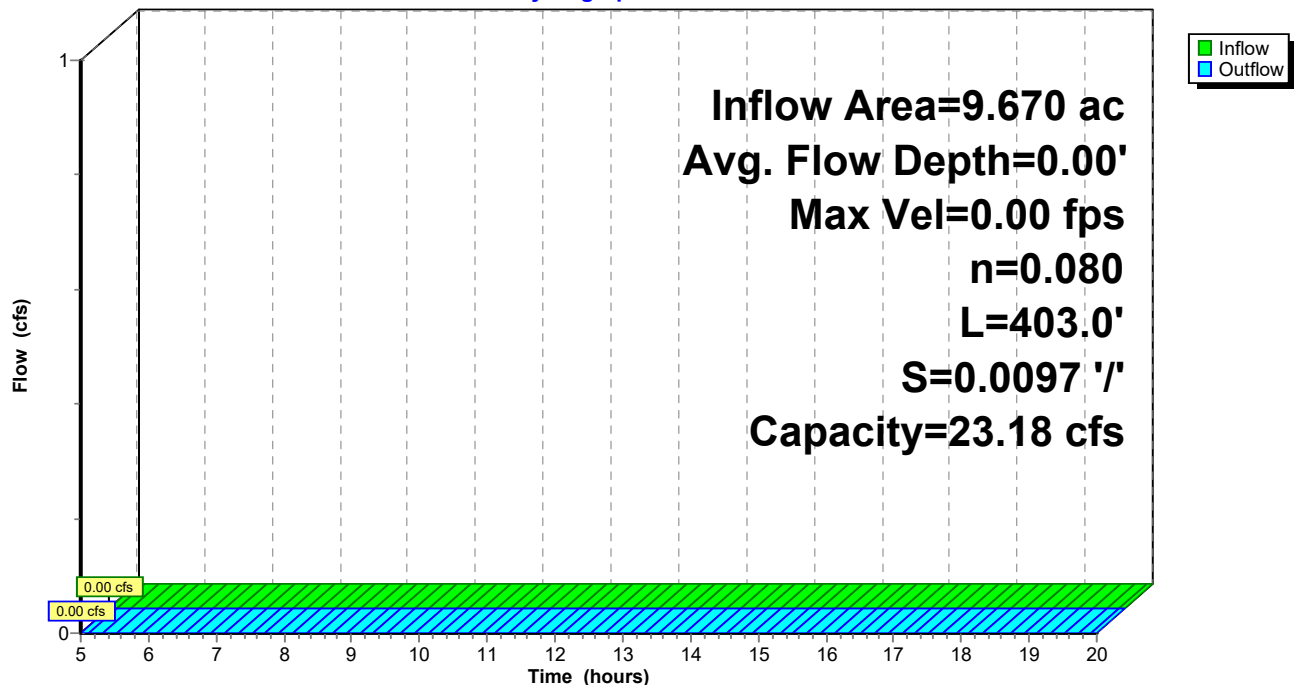
Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 16.7 sf, Capacity= 23.18 cfs

25.00' x 1.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds
Length= 403.0' Slope= 0.0097 '/
Inlet Invert= 321.40', Outlet Invert= 317.50'



Reach 58R: Reach #3E

Hydrograph



Summit Woods

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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Reach 59R: Reach 6-2

Inflow Area = 34.110 ac, 9.34% Impervious, Inflow Depth > 0.39" for 1-yr event
Inflow = 2.97 cfs @ 15.16 hrs, Volume= 1.094 af
Outflow = 2.97 cfs @ 15.25 hrs, Volume= 1.083 af, Atten= 0%, Lag= 5.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.77 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 4.5 min

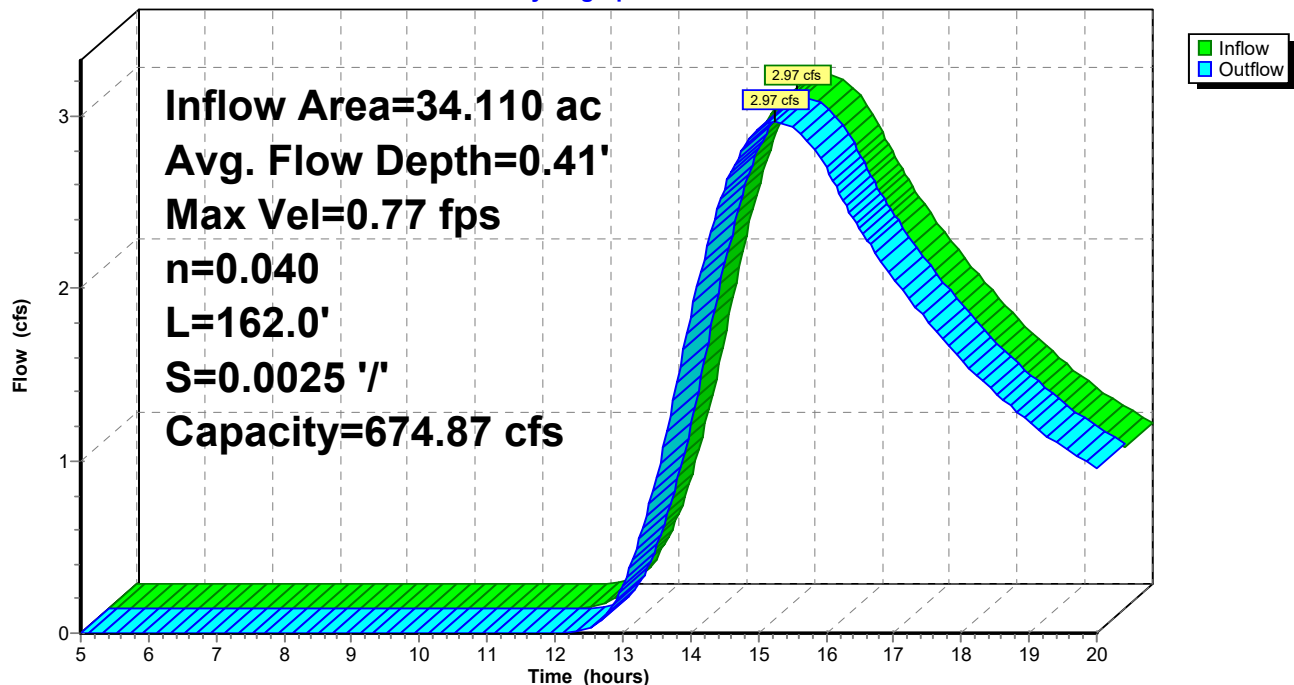
Peak Storage= 623 cf @ 15.19 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 5.00' Flow Area= 166.7 sf, Capacity= 674.87 cfs

50.00' x 5.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 162.0' Slope= 0.0025 '/'
Inlet Invert= 316.80', Outlet Invert= 316.40'



Reach 59R: Reach 6-2

Hydrograph



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Summary for Reach 60R: Reach 6C

Inflow Area = 3.260 ac, 40.43% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

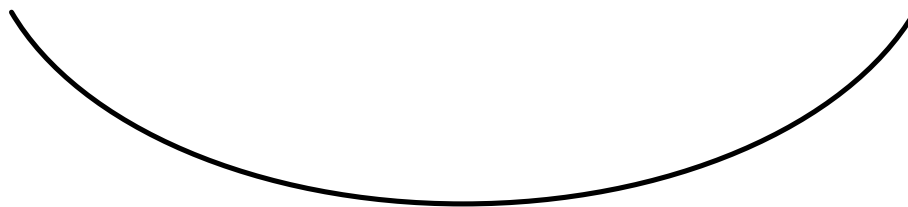
Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 2.00' Flow Area= 13.3 sf, Capacity= 139.08 cfs

10.00' x 2.00' deep Parabolic Channel, n= 0.040 Earth, cobble bottom, clean sides

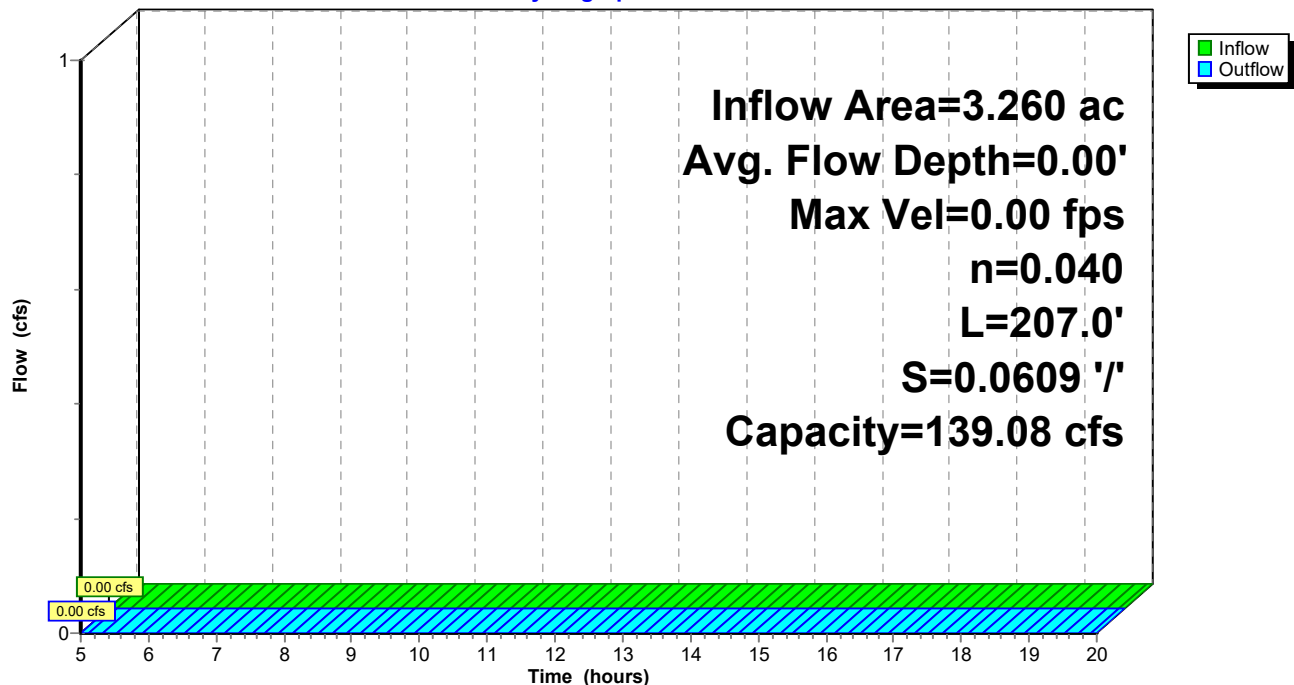
Length= 207.0' Slope= 0.0609 1'

Inlet Invert= 329.00', Outlet Invert= 316.40'



Reach 60R: Reach 6C

Hydrograph



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Summary for Reach 61R: Reach 3-4-2

Inflow Area = 41.630 ac, 24.31% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 6.7 sf, Capacity= 6.21 cfs

10.00' x 1.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

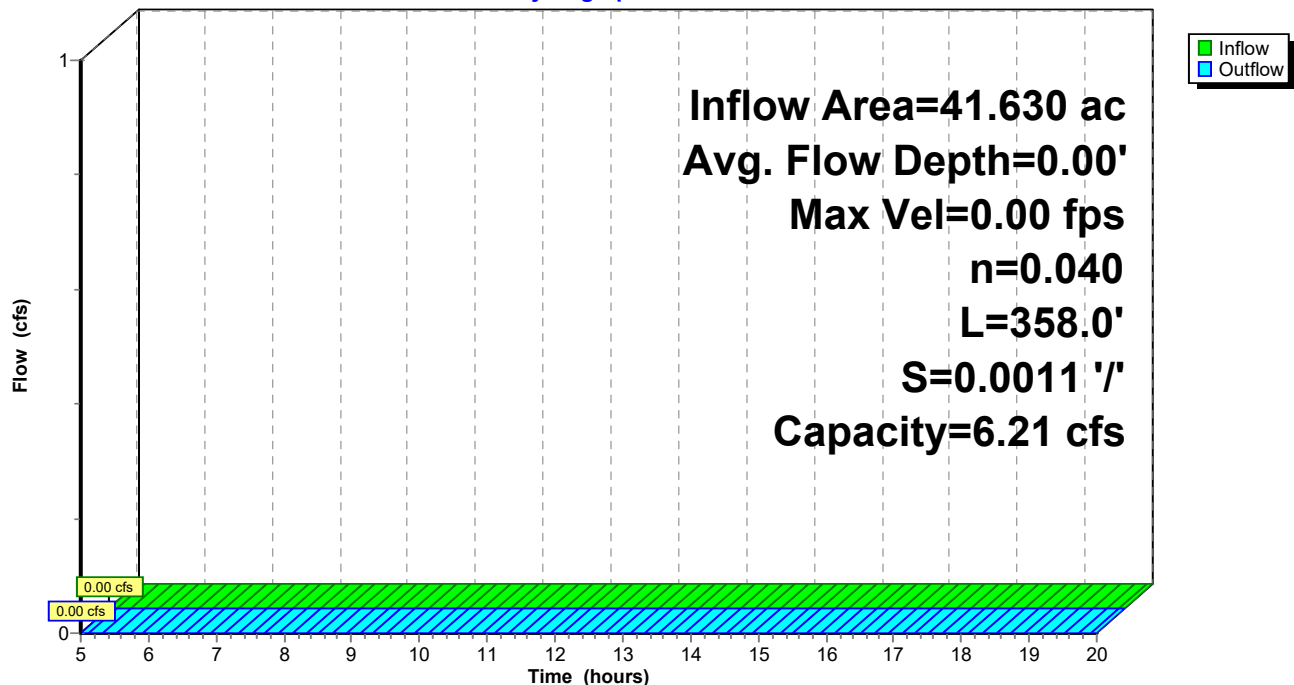
Length= 358.0' Slope= 0.0011 '/

Inlet Invert= 316.00', Outlet Invert= 315.60'



Reach 61R: Reach 3-4-2

Hydrograph



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Summary for Reach 62R: Reach 3-5

Inflow Area = 40.970 ac, 24.18% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 325.3 sf, Capacity= 154.58 cfs

488.00' x 1.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

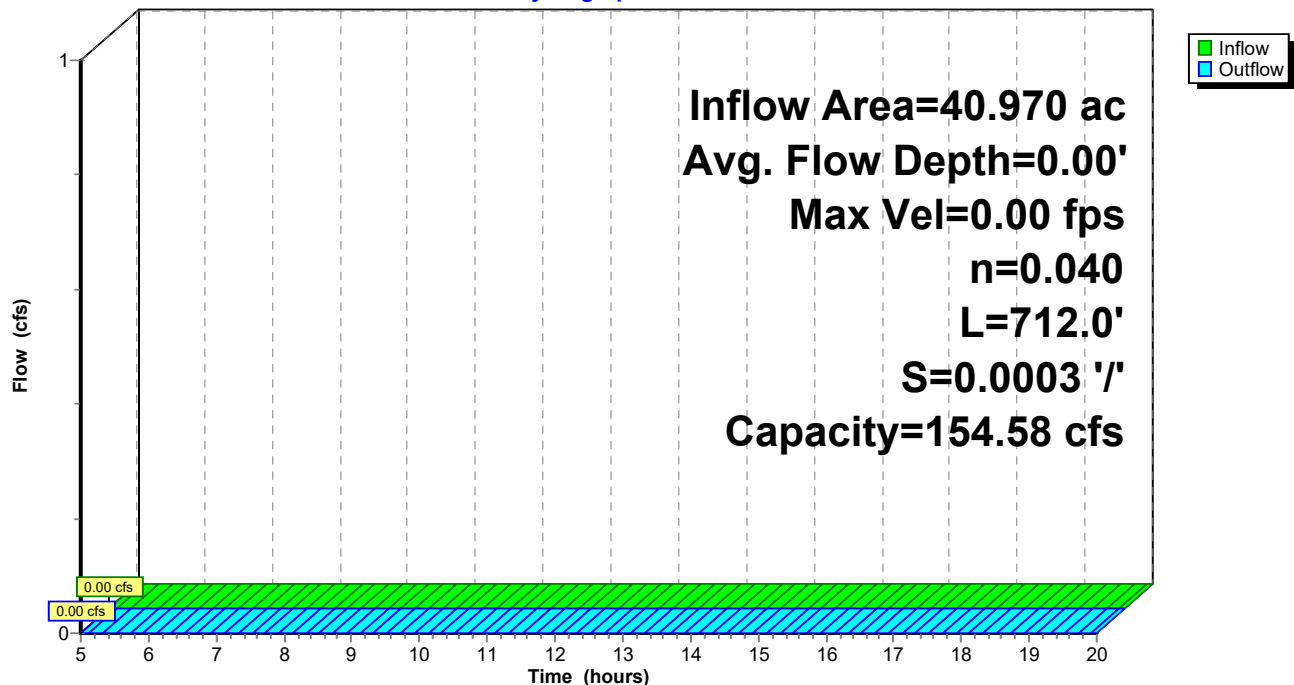
Length= 712.0' Slope= 0.0003 '/'

Inlet Invert= 317.50', Outlet Invert= 317.30'



Reach 62R: Reach 3-5

Hydrograph



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Summary for Reach 63R: Reach 3-6

Inflow Area = 10.170 ac, 34.04% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 2.00' Flow Area= 274.7 sf, Capacity= 1,156.63 cfs

206.00' x 2.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

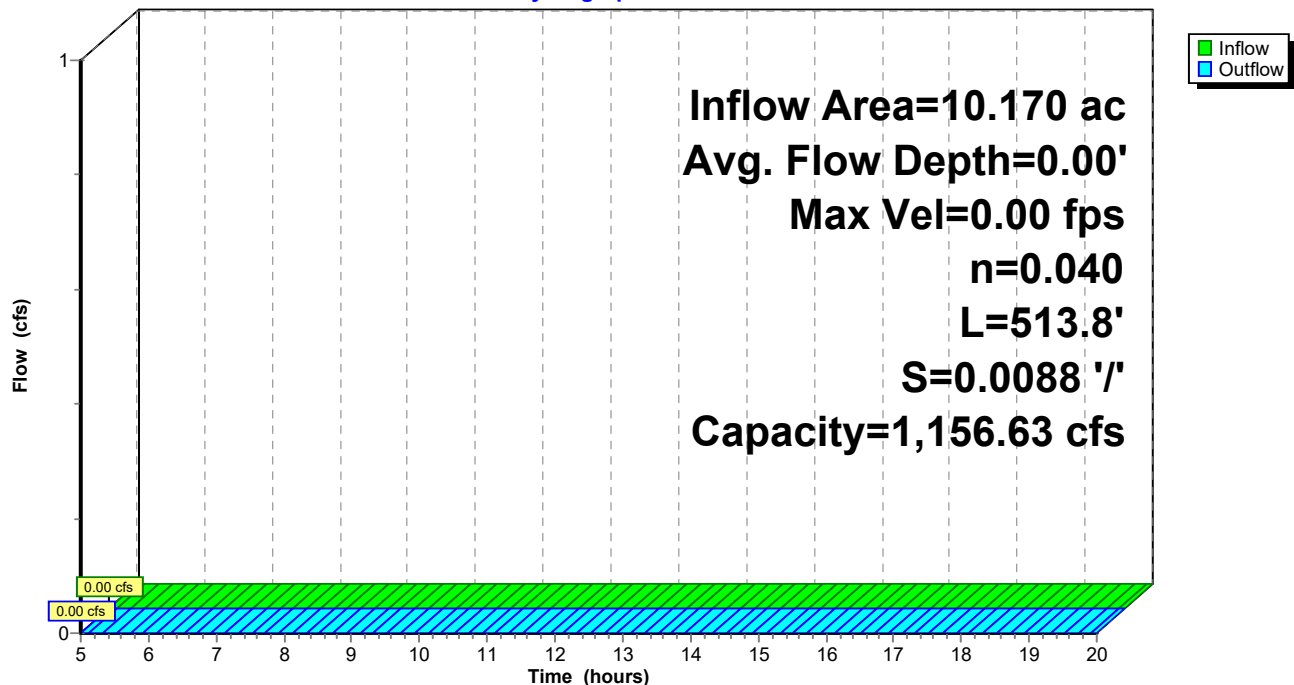
Length= 513.8' Slope= 0.0088 '/

Inlet Invert= 322.00', Outlet Invert= 317.50'



Reach 63R: Reach 3-6

Hydrograph



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Summary for Reach 64R: Reach #3F

Inflow Area = 2.680 ac, 35.07% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 0.50' Flow Area= 78.7 sf, Capacity= 21.89 cfs

236.00' x 0.50' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush

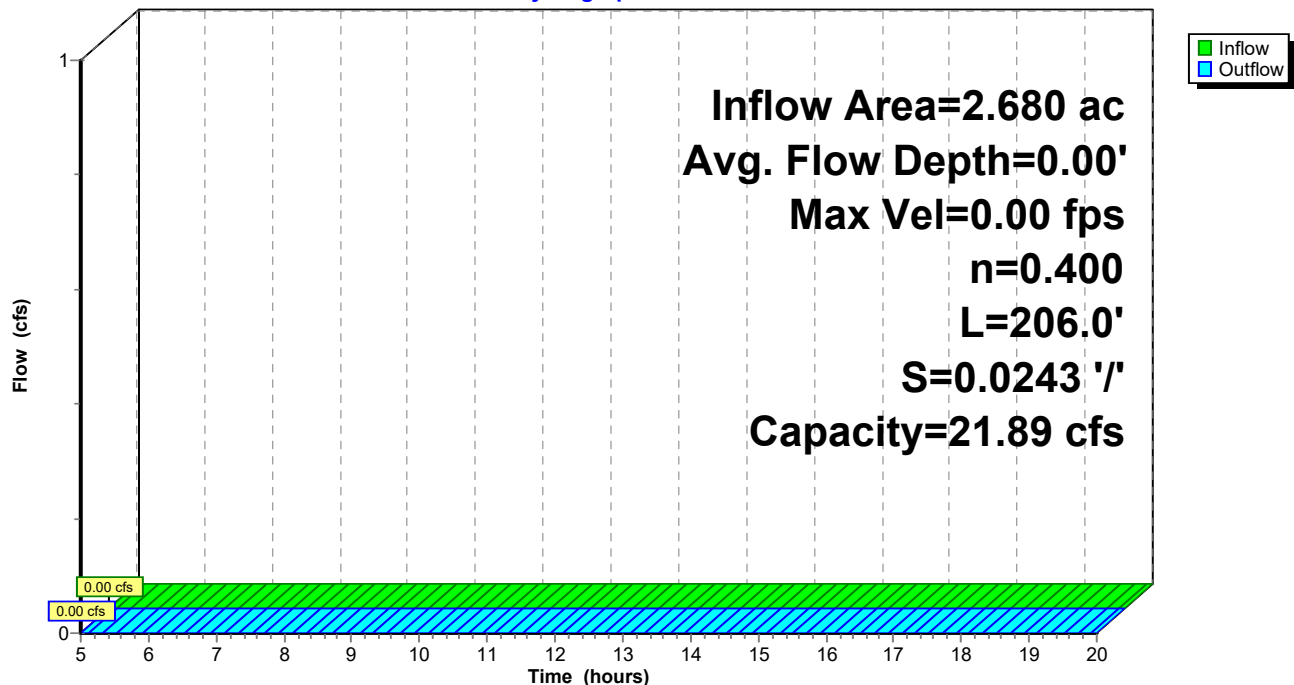
Length= 206.0' Slope= 0.0243 '/

Inlet Invert= 327.00', Outlet Invert= 322.00'



Reach 64R: Reach #3F

Hydrograph



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Summary for Reach 65R: Reach #3G

Inflow Area = 7.490 ac, 33.67% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 2.00' Flow Area= 200.0 sf, Capacity= 680.18 cfs

150.00' x 2.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools

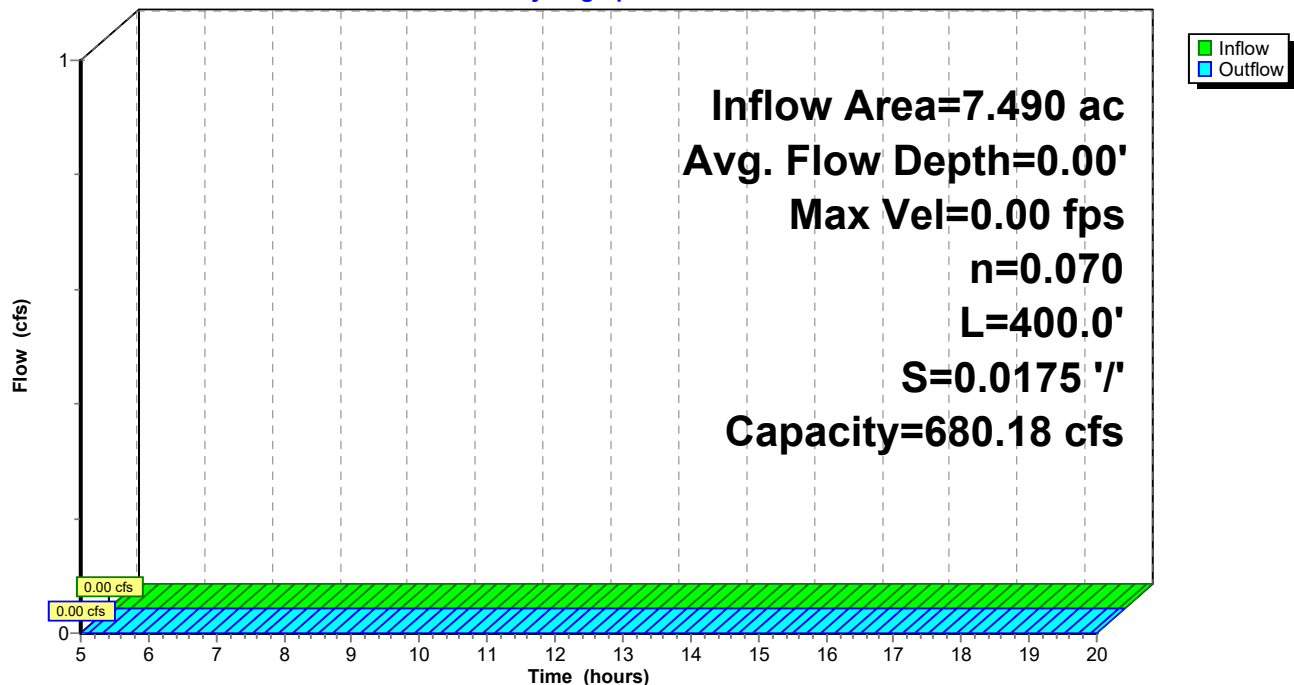
Length= 400.0' Slope= 0.0175 '/'

Inlet Invert= 329.00', Outlet Invert= 322.00'



Reach 65R: Reach #3G

Hydrograph



Summit Woods

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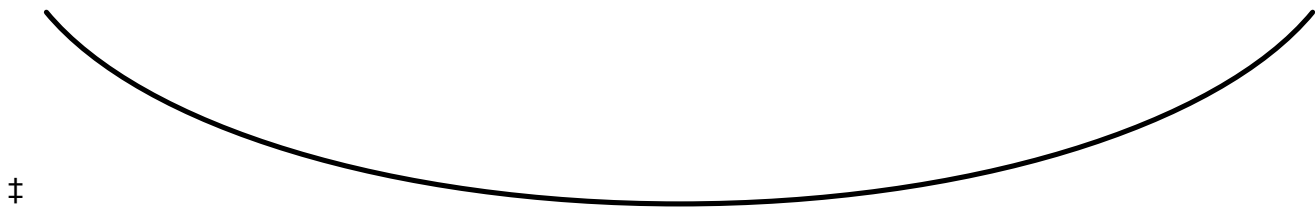
Summary for Reach 66R: Reach #3L-2

Inflow Area = 17.490 ac, 16.36% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

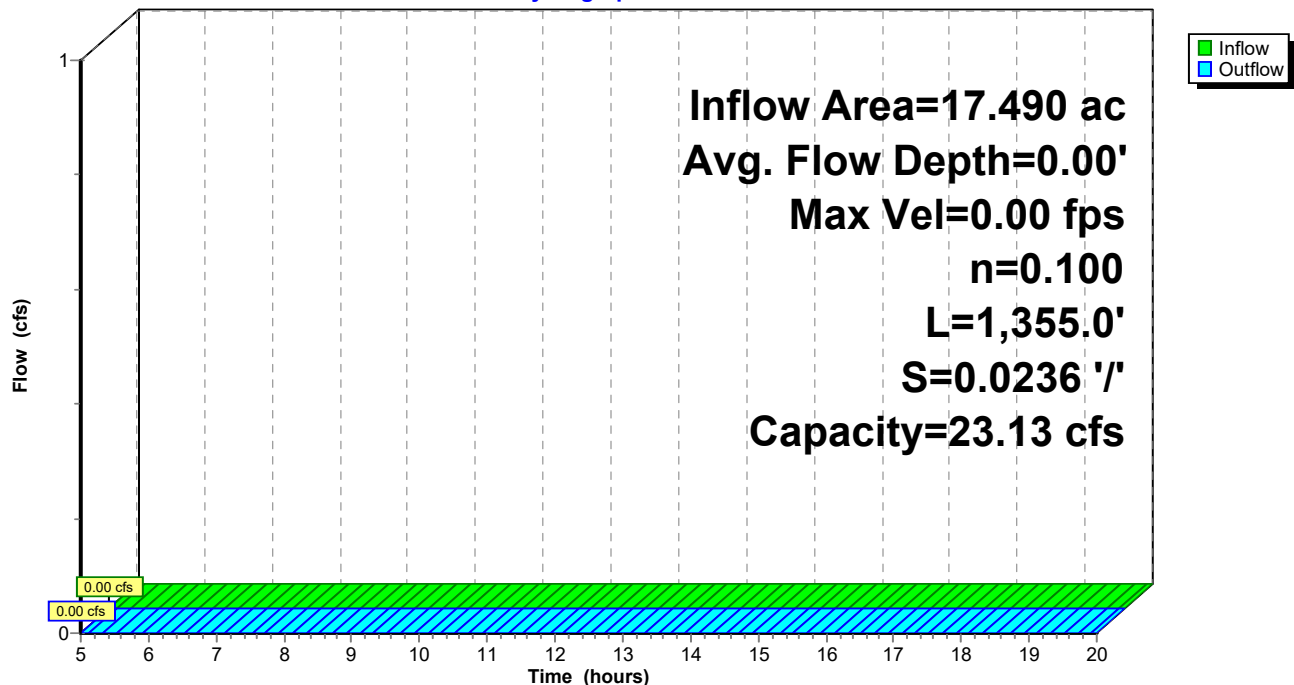
Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 13.3 sf, Capacity= 23.13 cfs

20.00' x 1.00' deep Parabolic Channel, n= 0.100 Very weedy reaches w/pools
Length= 1,355.0' Slope= 0.0236 '/'
Inlet Invert= 348.00', Outlet Invert= 316.00'



Reach 66R: Reach #3L-2

Hydrograph



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Summary for Reach 67R: Reach #3G

Inflow Area = 0.660 ac, 32.12% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 2.00' Flow Area= 374.7 sf, Capacity= 1,116.58 cfs

281.00' x 2.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds

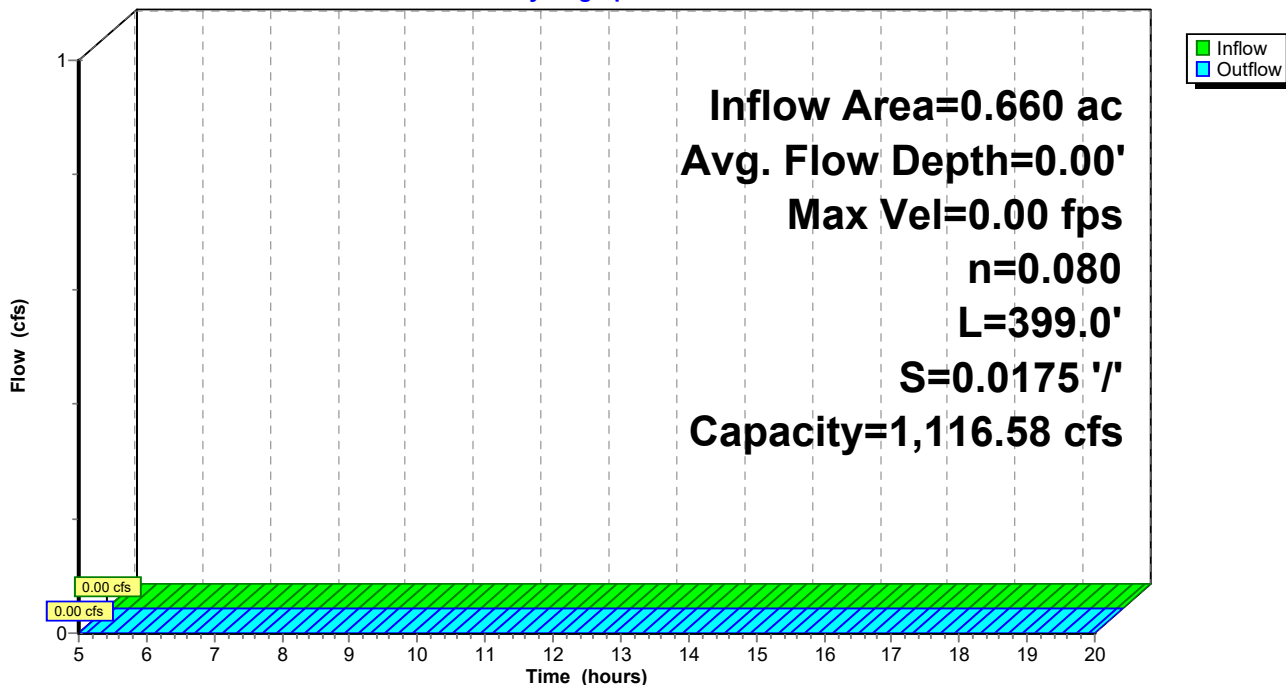
Length= 399.0' Slope= 0.0175 '/'

Inlet Invert= 329.00', Outlet Invert= 322.00'



Reach 67R: Reach #3G

Hydrograph



Summit Woods

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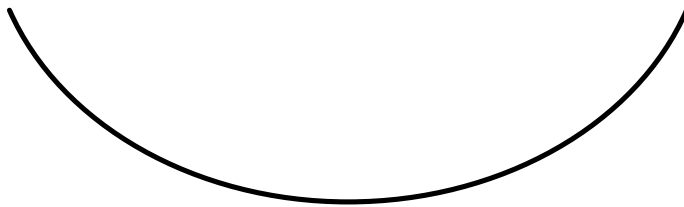
Summary for Reach 68R: Reach 3-7

Inflow Area = 21.130 ac, 17.64% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

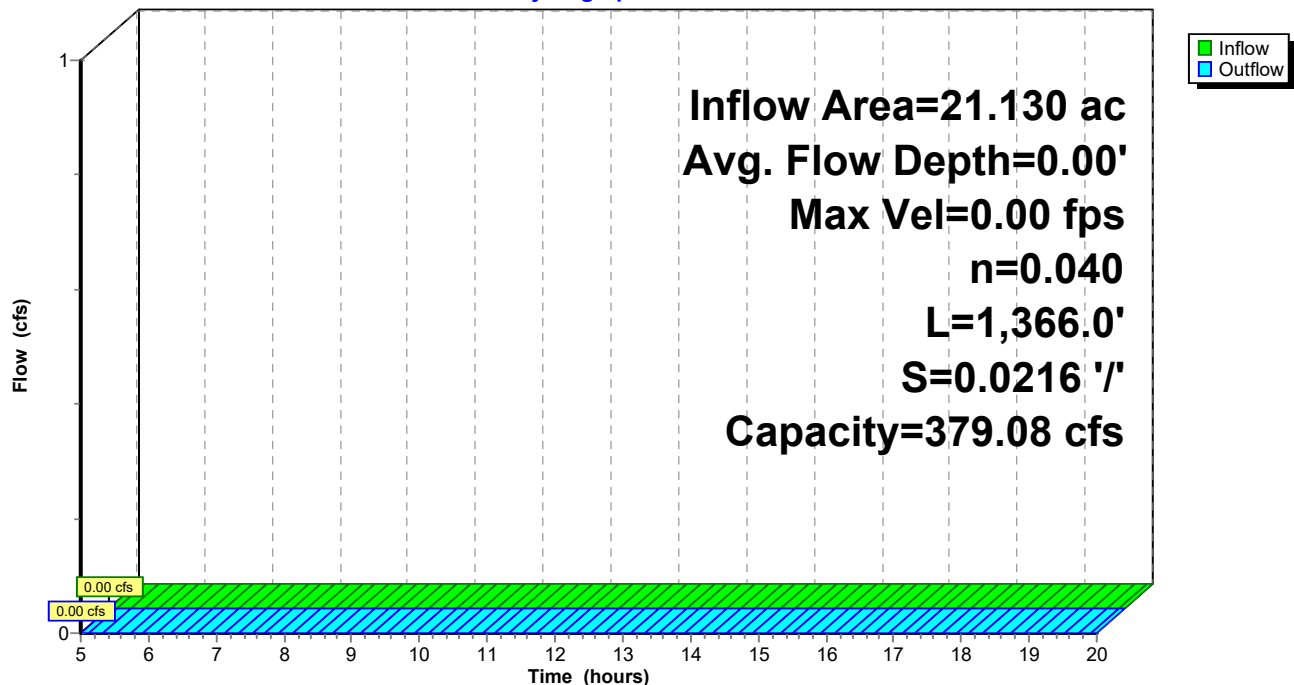
Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 4.00' Flow Area= 40.0 sf, Capacity= 379.08 cfs

15.00' x 4.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 1,366.0' Slope= 0.0216 '/'
Inlet Invert= 347.00', Outlet Invert= 317.50'



Reach 68R: Reach 3-7

Hydrograph



Summit Woods

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Summary for Reach 69R: Reach 3-8

Inflow Area = 21.130 ac, 17.64% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

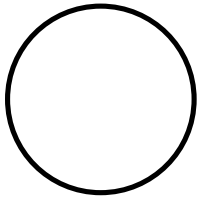
Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 166.10 cfs

36.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

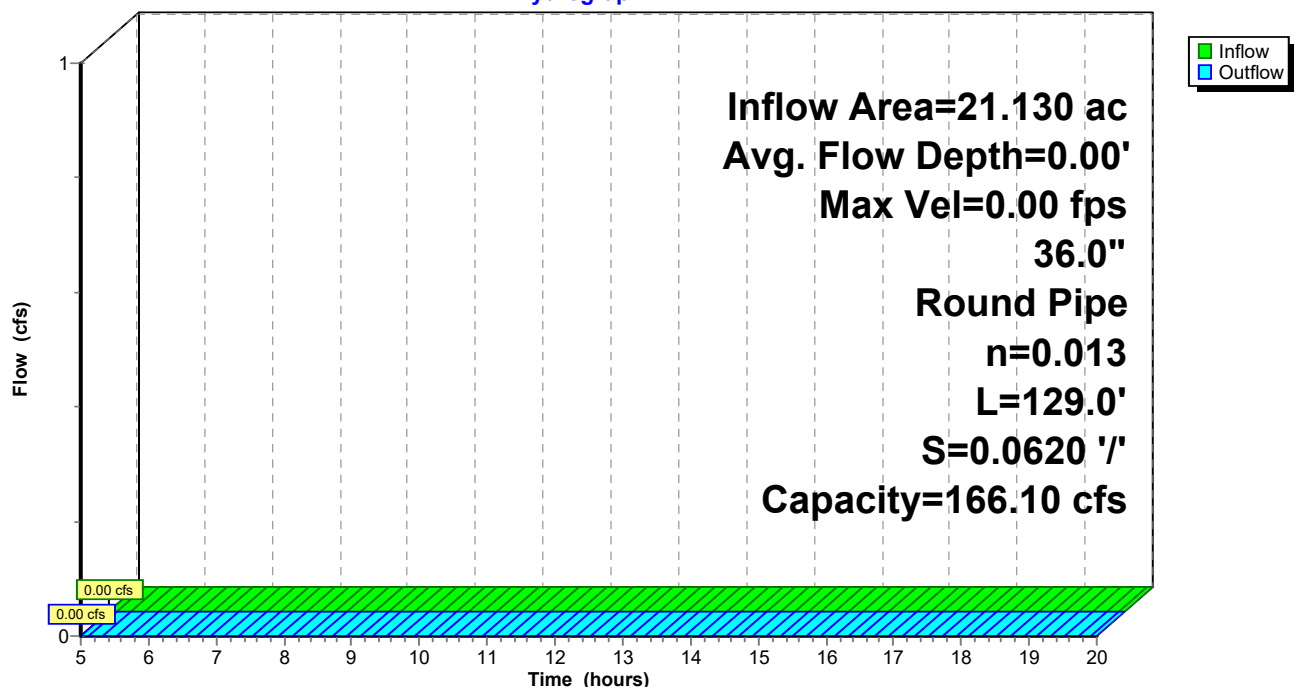
Length= 129.0' Slope= 0.0620 '/'

Inlet Invert= 348.00', Outlet Invert= 340.00'



Reach 69R: Reach 3-8

Hydrograph



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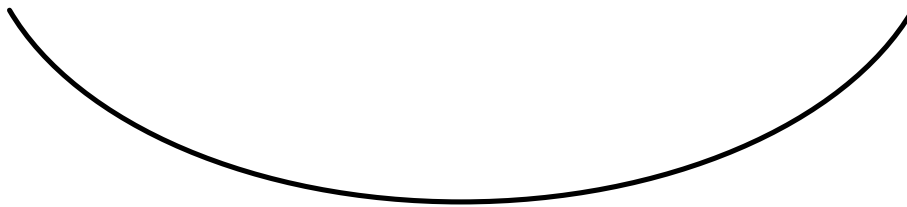
Summary for Reach 70R: Reach 3-9

Inflow Area = 21.130 ac, 17.64% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

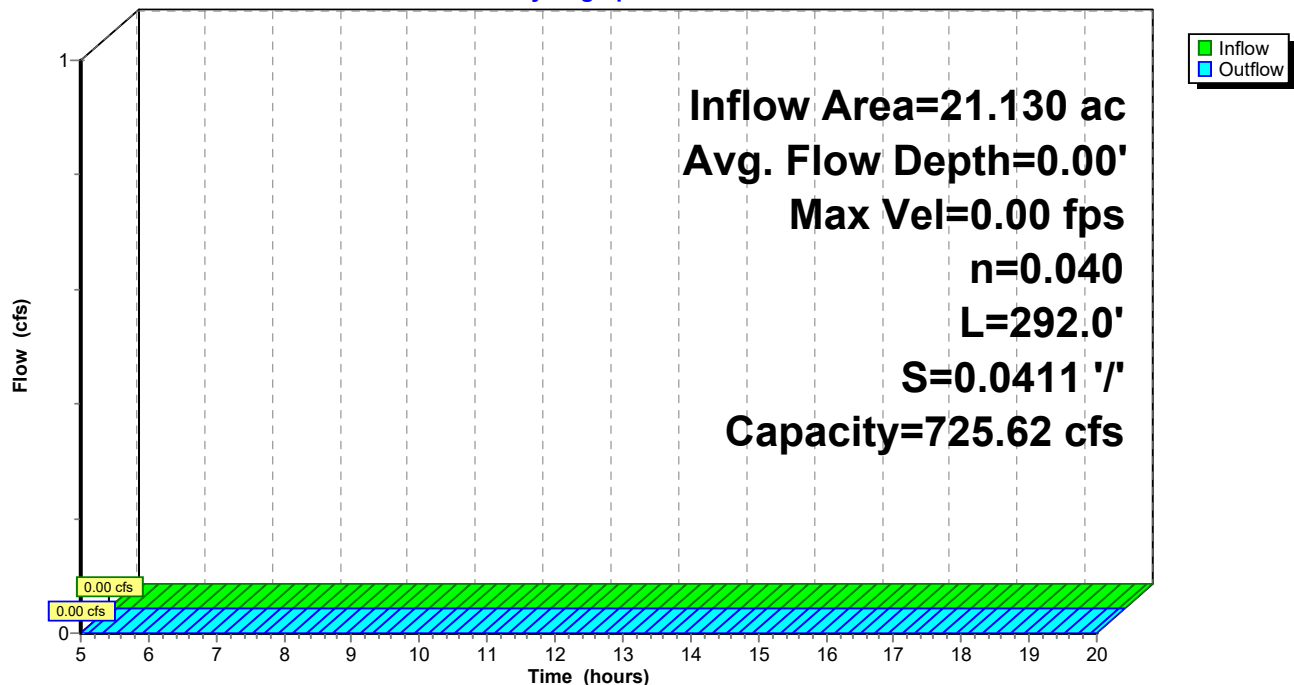
Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 4.00' Flow Area= 53.3 sf, Capacity= 725.62 cfs

20.00' x 4.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 292.0' Slope= 0.0411 '/'
Inlet Invert= 360.00', Outlet Invert= 348.00'



Reach 70R: Reach 3-9

Hydrograph



Summit Woods

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Summary for Reach 71R: Reach #3J

Inflow Area = 13.580 ac, 20.62% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 4.00' Flow Area= 165.3 sf, Capacity= 1,713.62 cfs

62.00' x 4.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

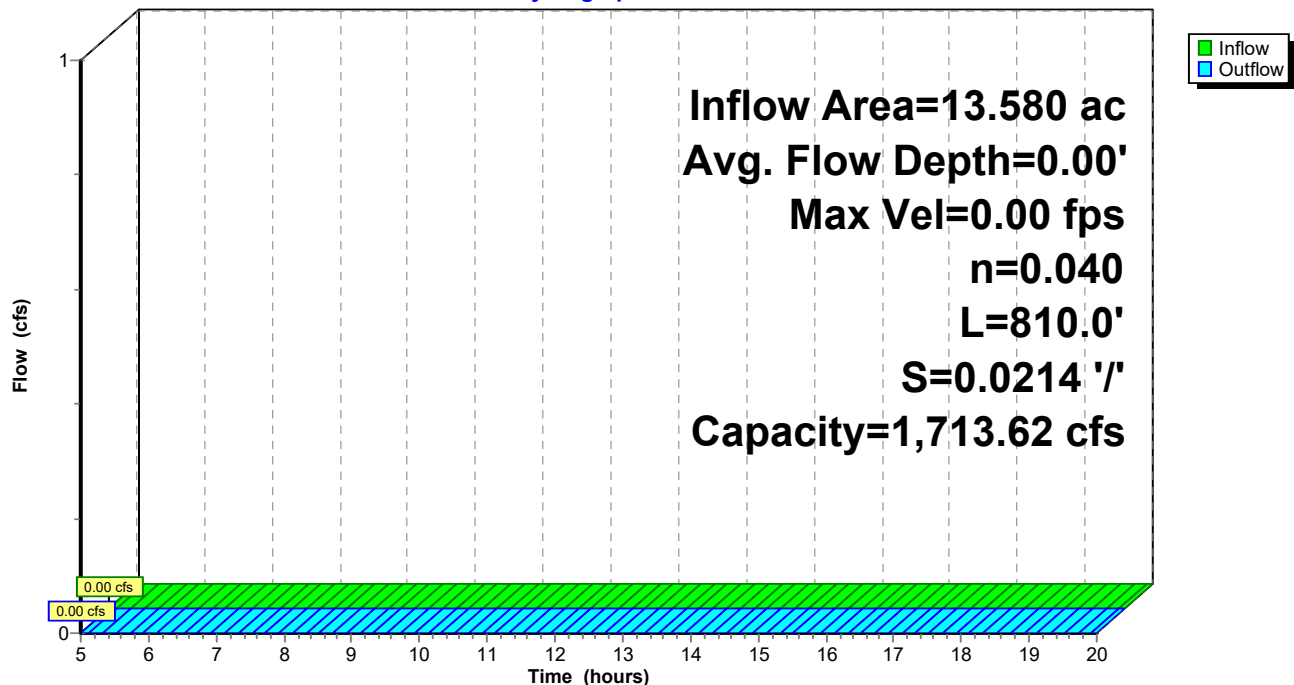
Length= 810.0' Slope= 0.0214 '/'

Inlet Invert= 377.30', Outlet Invert= 360.00'



Reach 71R: Reach #3J

Hydrograph



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Summary for Reach 72R: Reach 3-10

Inflow Area = 7.550 ac, 12.29% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

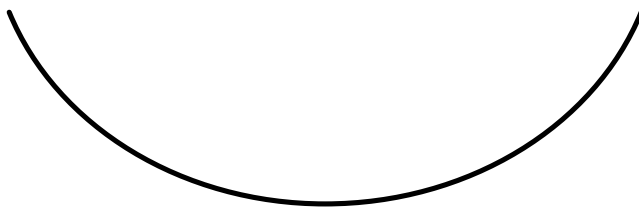
Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 2.00' Flow Area= 9.3 sf, Capacity= 70.44 cfs

7.00' x 2.00' deep Parabolic Channel, n= 0.030 Earth, grassed & winding

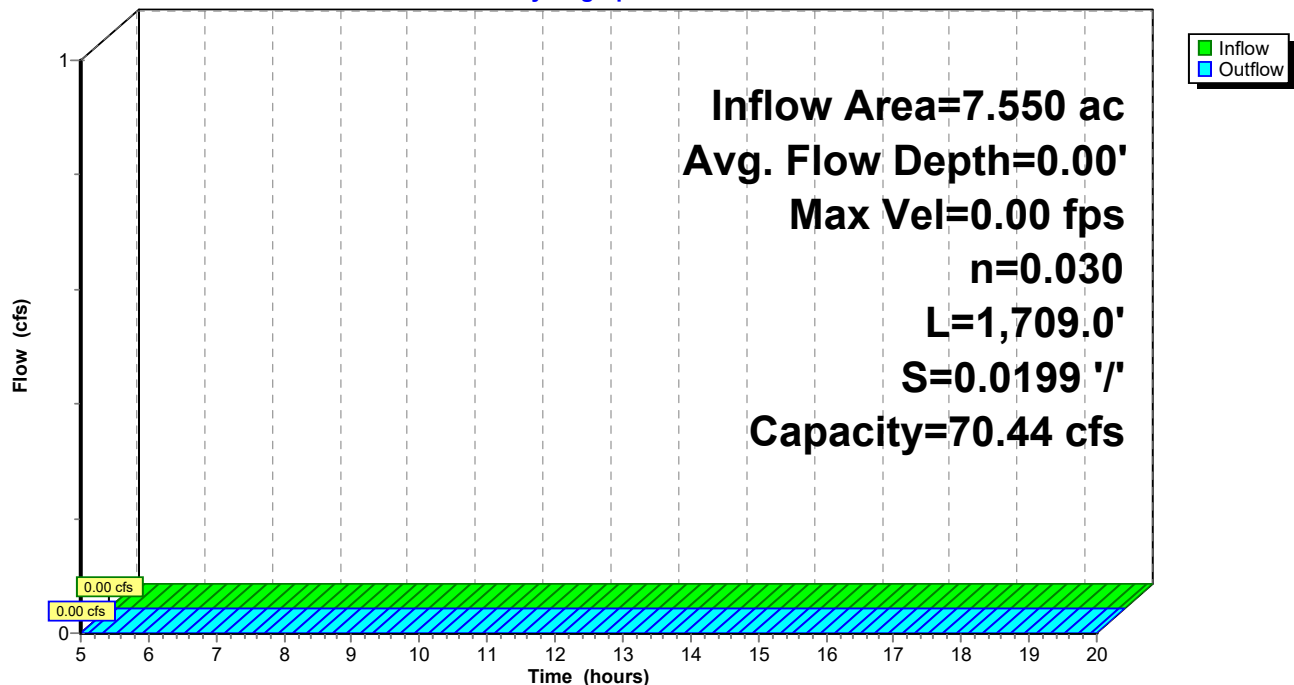
Length= 1,709.0' Slope= 0.0199 '/'

Inlet Invert= 394.00', Outlet Invert= 360.00'



Reach 72R: Reach 3-10

Hydrograph



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Summary for Reach 73R: (new Reach)

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

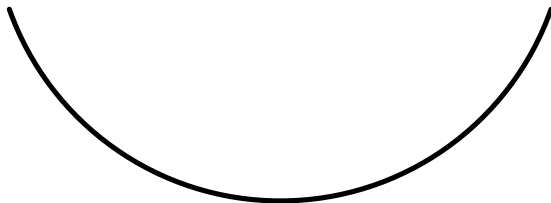
Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 80.99 cfs

6.00' x 2.00' deep Parabolic Channel, n= 0.040 Earth, cobble bottom, clean sides

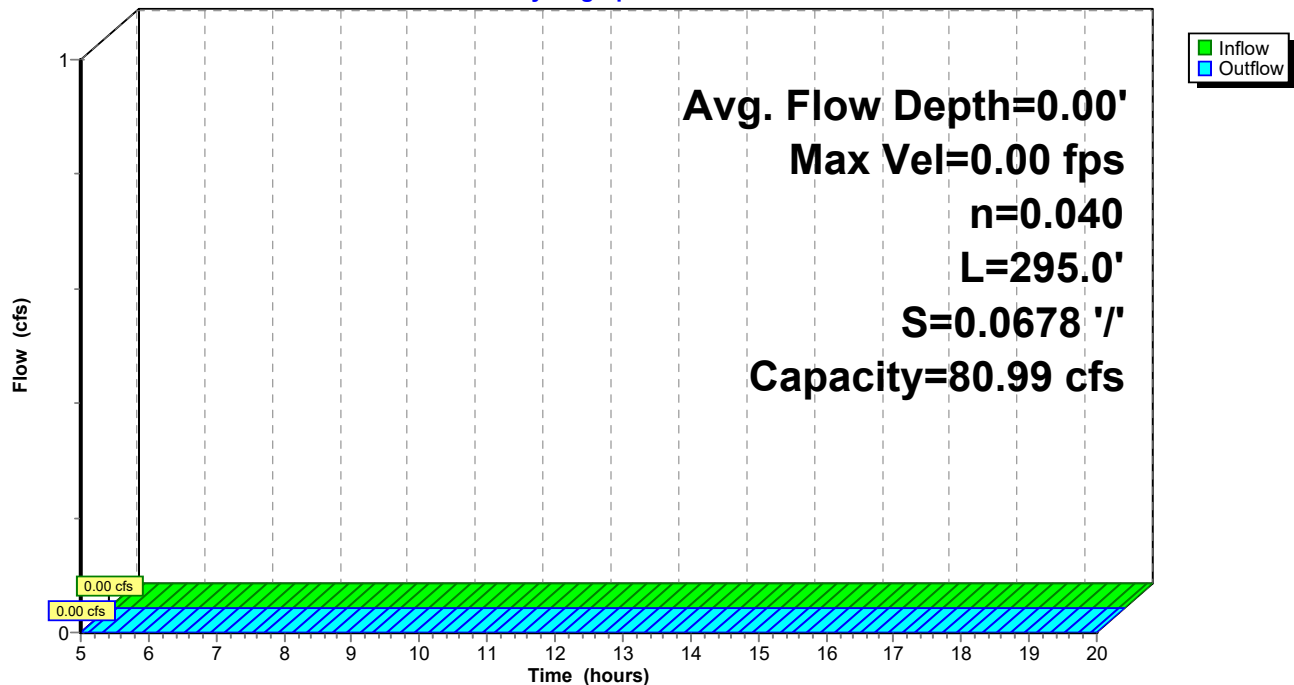
Length= 295.0' Slope= 0.0678 '/'

Inlet Invert= 402.00', Outlet Invert= 382.00'



Reach 73R: (new Reach)

Hydrograph



Summit Woods

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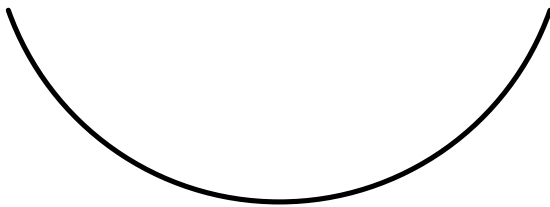
Summary for Reach 74R: Reach 6B

Inflow Area = 6.200 ac, 24.19% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

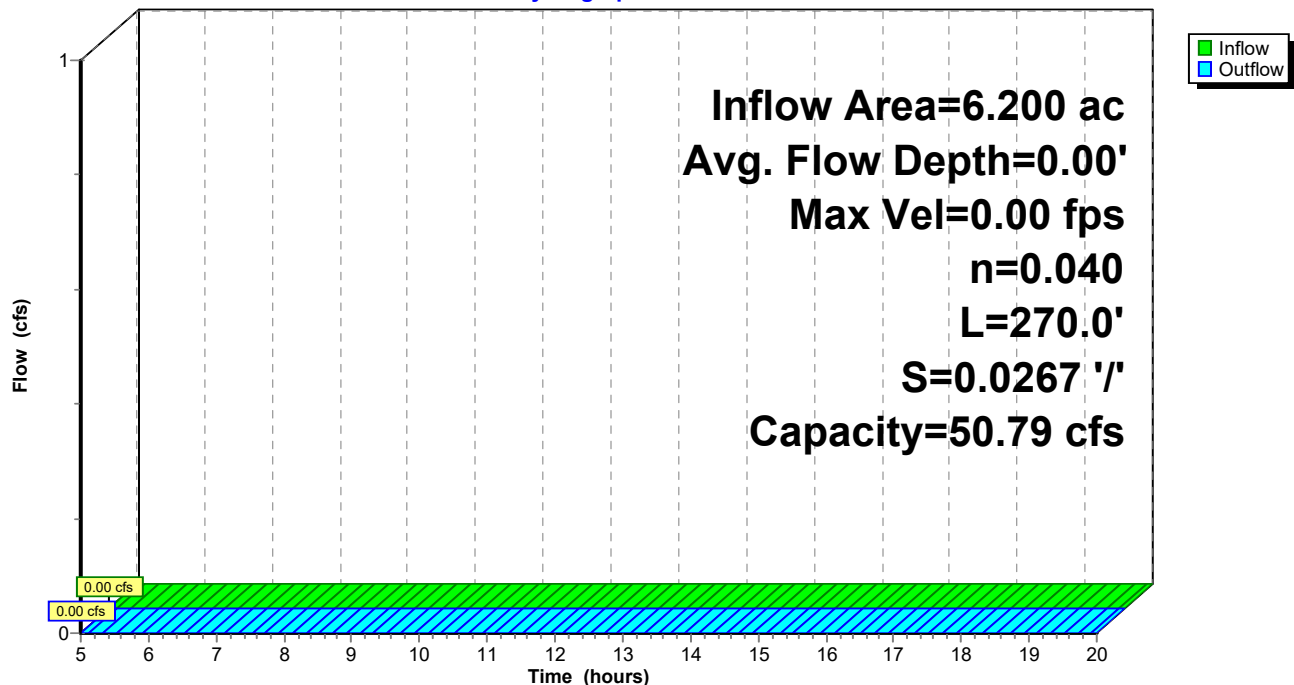
Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 50.79 cfs

6.00' x 2.00' deep Parabolic Channel, n= 0.040 Earth, cobble bottom, clean sides
Length= 270.0' Slope= 0.0267 '/'
Inlet Invert= 324.00', Outlet Invert= 316.80'



Reach 74R: Reach 6B

Hydrograph



Summit Woods

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Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Reach 75R: Reach 6B

Inflow Area = 2.940 ac, 16.16% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

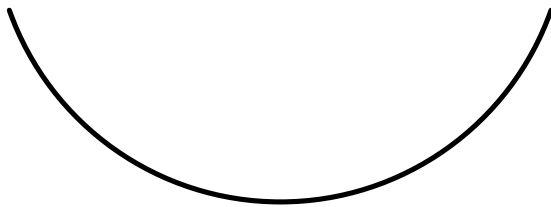
Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 60.84 cfs

6.00' x 2.00' deep Parabolic Channel, n= 0.040 Earth, cobble bottom, clean sides

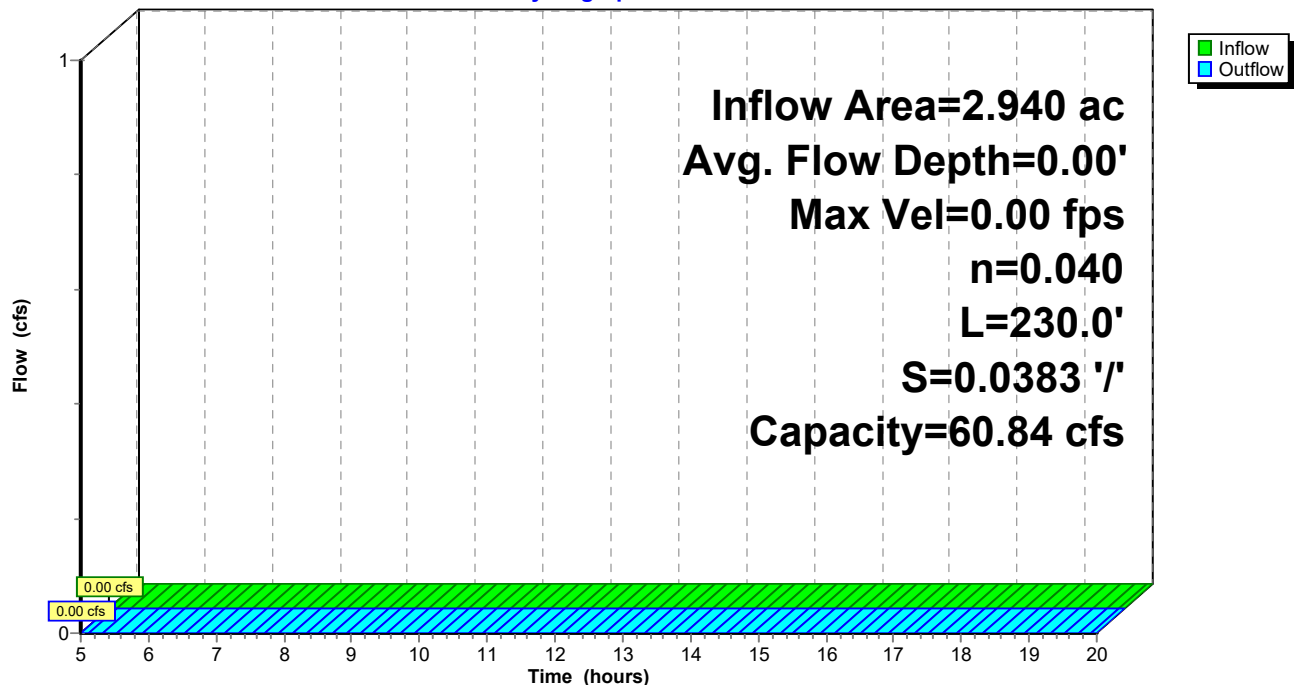
Length= 230.0' Slope= 0.0383 '/'

Inlet Invert= 321.50', Outlet Invert= 312.70'



Reach 75R: Reach 6B

Hydrograph



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Summary for Reach 76R: Reach 3-4-1

Inflow Area = 40.970 ac, 24.18% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 218.7 sf, Capacity= 253.93 cfs

328.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools

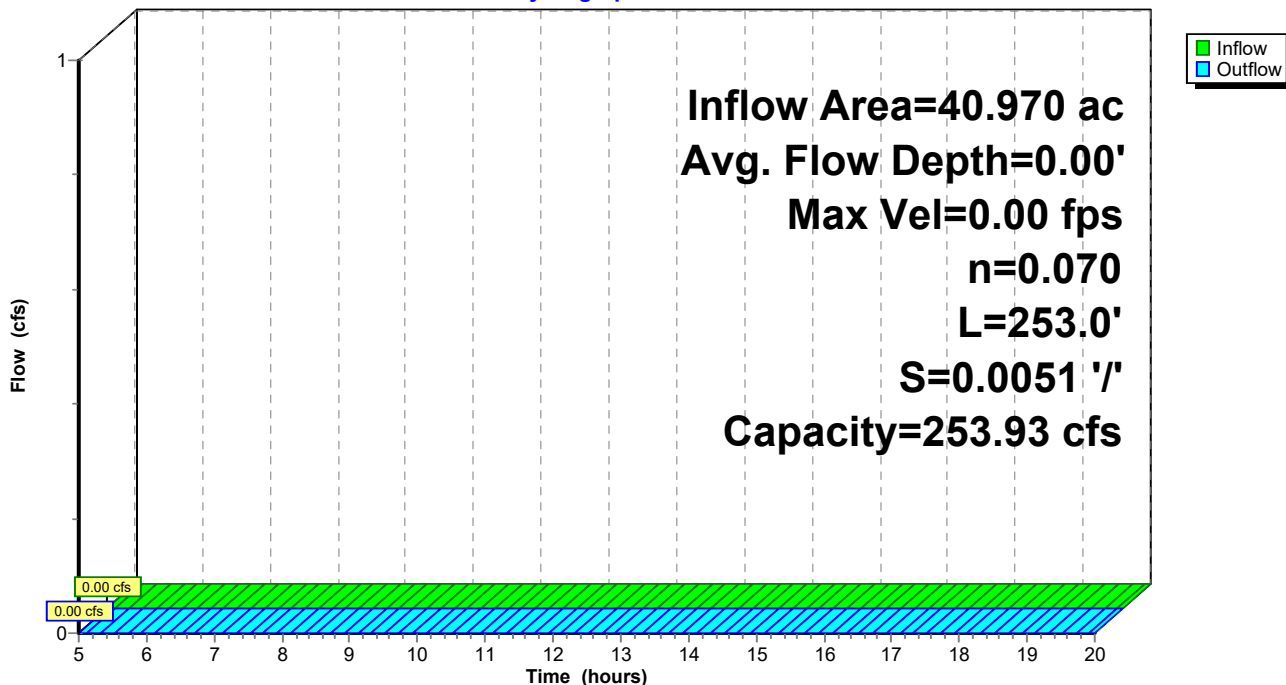
Length= 253.0' Slope= 0.0051 1'

Inlet Invert= 317.30', Outlet Invert= 316.00'



Reach 76R: Reach 3-4-1

Hydrograph



Summit Woods

Type III 24-hr 1-yr Rainfall=2.66"

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Summary for Pond 35P: Pond #3B

Inflow Area = 4.540 ac, 35.52% Impervious, Inflow Depth > 1.00" for 1-yr event
 Inflow = 4.49 cfs @ 12.11 hrs, Volume= 0.378 af
 Outflow = 0.33 cfs @ 14.90 hrs, Volume= 0.233 af, Atten= 93%, Lag= 167.1 min
 Discarded = 0.33 cfs @ 14.90 hrs, Volume= 0.233 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 315.86' @ 14.90 hrs Surf.Area= 5,716 sf Storage= 8,834 cf

Plug-Flow detention time= 205.0 min calculated for 0.233 af (62% of inflow)
 Center-of-Mass det. time= 126.7 min (932.9 - 806.3)

Volume	Invert	Avail.Storage	Storage Description
#1	314.00'	64,079 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
314.00	3,776	0	0
316.00	5,861	9,637	9,637
318.00	8,272	14,133	23,770
320.00	10,038	18,310	42,080
322.00	11,961	21,999	64,079

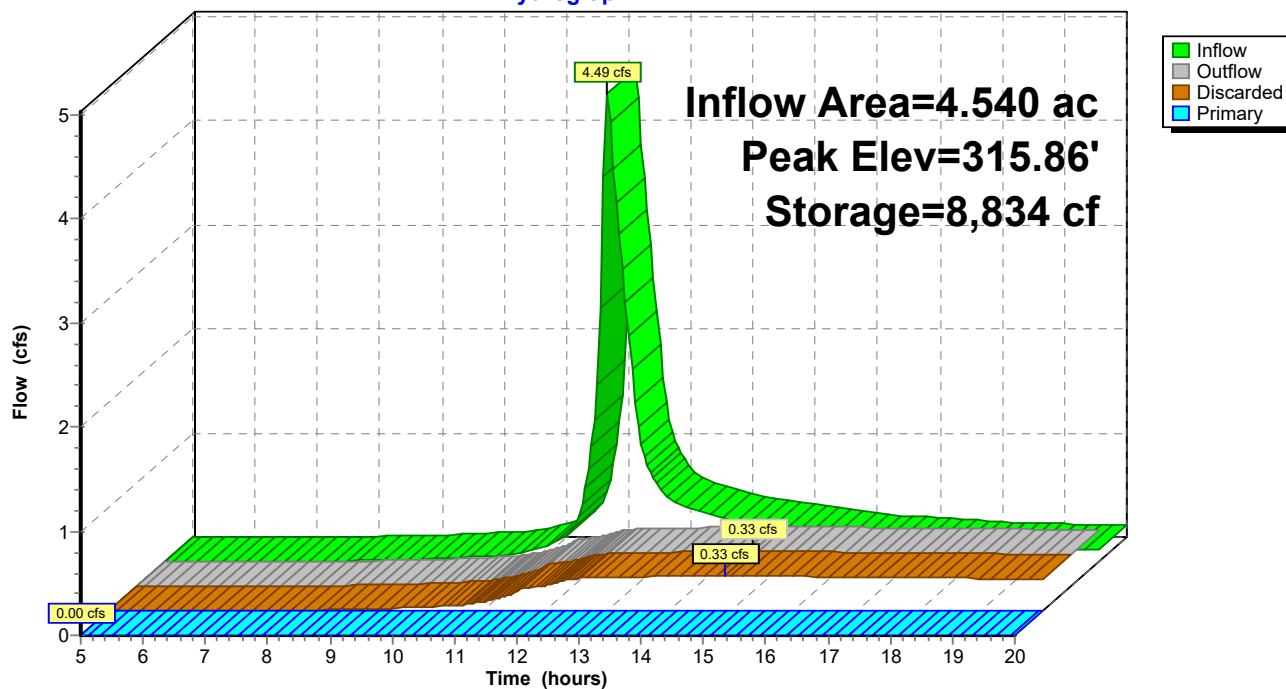
Device	Routing	Invert	Outlet Devices
#1	Primary	322.30'	8.0' long x 6.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	314.00'	2.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.33 cfs @ 14.90 hrs HW=315.86' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 0.33 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=314.00' (Free Discharge)
 ↑**1=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 35P: Pond #3B

Hydrograph



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Summary for Pond 36P: Pond #3C

Inflow Area = 3.080 ac, 22.08% Impervious, Inflow Depth > 0.81" for 1-yr event
 Inflow = 2.56 cfs @ 12.17 hrs, Volume= 0.209 af
 Outflow = 0.48 cfs @ 12.83 hrs, Volume= 0.208 af, Atten= 81%, Lag= 39.5 min
 Discarded = 0.48 cfs @ 12.83 hrs, Volume= 0.208 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 320.88' @ 12.83 hrs Surf.Area= 4,176 sf Storage= 3,090 cf

Plug-Flow detention time= 61.1 min calculated for 0.208 af (99% of inflow)
 Center-of-Mass det. time= 59.9 min (880.6 - 820.7)

Volume	Invert	Avail.Storage	Storage Description
#1	320.00'	24,334 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
320.00	2,815	0	0
322.00	5,894	8,709	8,709
324.00	9,731	15,625	24,334

Device	Routing	Invert	Outlet Devices
#1	Discarded	320.00'	5.000 in/hr Exfiltration over Surface area
#2	Primary	324.00'	30.0' long x 3.0' 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
			Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68
			2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.48 cfs @ 12.83 hrs HW=320.88' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.48 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=320.00' (Free Discharge)
 ↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summit Woods

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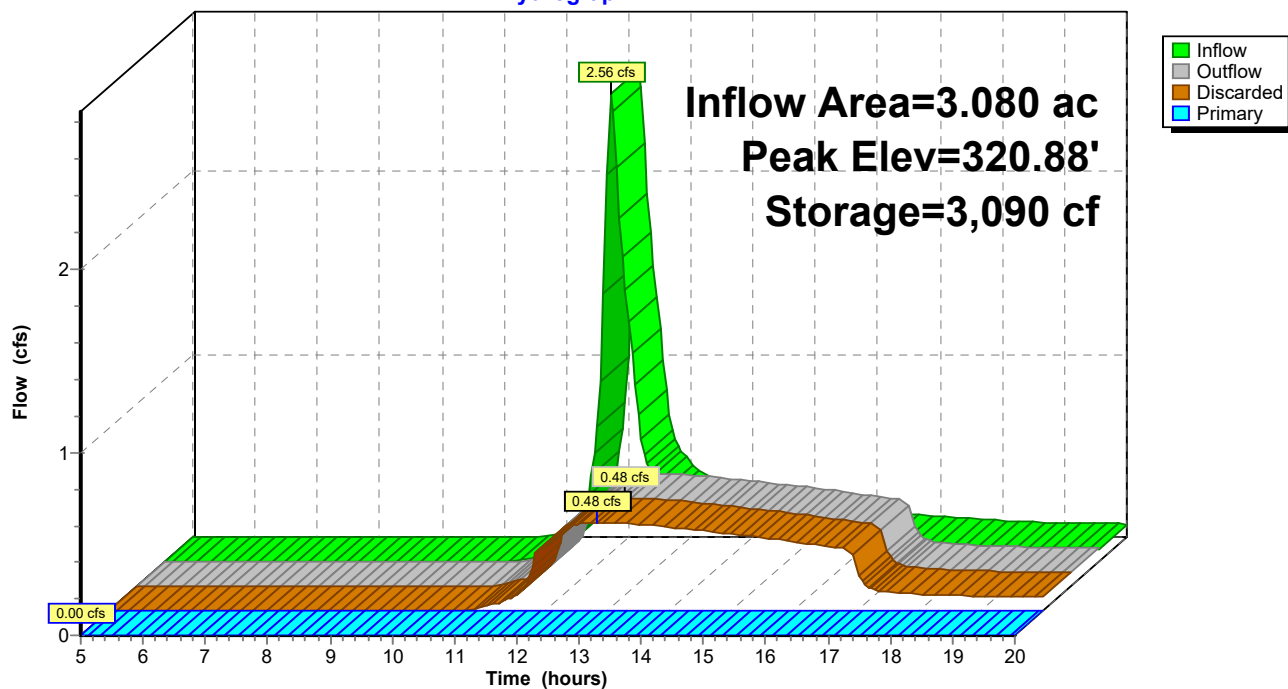
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Pond 36P: Pond #3C

Hydrograph



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Summary for Pond 37P: Pond #3D

Inflow Area = 6.220 ac, 20.80% Impervious, Inflow Depth > 0.81" for 1-yr event
 Inflow = 5.00 cfs @ 12.18 hrs, Volume= 0.422 af
 Outflow = 0.43 cfs @ 14.72 hrs, Volume= 0.286 af, Atten= 91%, Lag= 152.0 min
 Discarded = 0.43 cfs @ 14.72 hrs, Volume= 0.286 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 319.17' @ 14.72 hrs Surf.Area= 9,330 sf Storage= 9,331 cf

Plug-Flow detention time= 201.9 min calculated for 0.286 af (68% of inflow)
 Center-of-Mass det. time= 128.9 min (950.3 - 821.3)

Volume	Invert	Avail.Storage	Storage Description
#1	318.00'	111,342 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.00	6,683	0	0
320.00	11,226	17,909	17,909
322.00	17,122	28,348	46,257
324.00	23,442	40,564	86,821
325.00	25,600	24,521	111,342

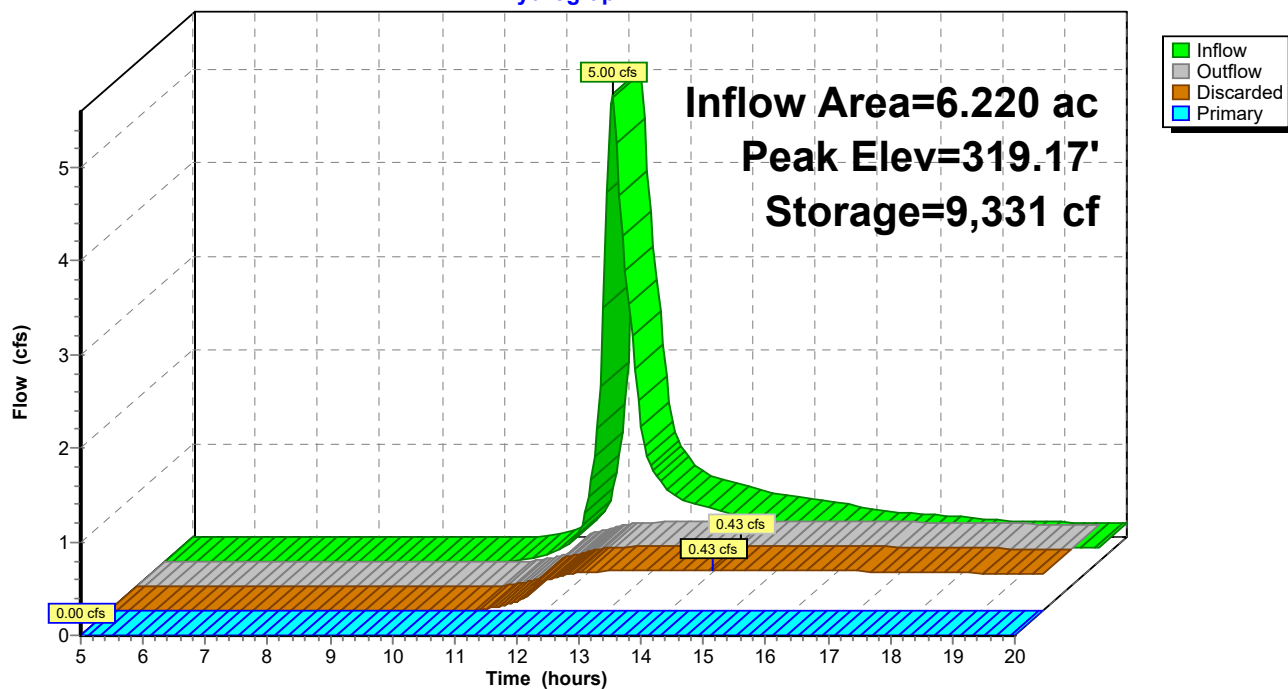
Device	Routing	Invert	Outlet Devices
#1	Primary	325.50'	8.0' long x 3.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	318.00'	2.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.43 cfs @ 14.72 hrs HW=319.17' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.43 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=318.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 37P: Pond #3D

Hydrograph



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Summary for Pond 38P: Pond #3E

Inflow Area = 9.670 ac, 28.11% Impervious, Inflow Depth > 0.92" for 1-yr event
 Inflow = 9.02 cfs @ 12.17 hrs, Volume= 0.739 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 319.88' @ 20.00 hrs Surf.Area= 19,286 sf Storage= 32,156 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	318.00'	202,042 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.00	14,886	0	0
320.00	19,562	34,448	34,448
322.00	24,503	44,065	78,513
324.00	29,702	54,205	132,718
326.00	39,622	69,324	202,042

Device	Routing	Invert	Outlet Devices
#1	Primary	326.10'	10.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=318.00' (Free Discharge)
 ↑1=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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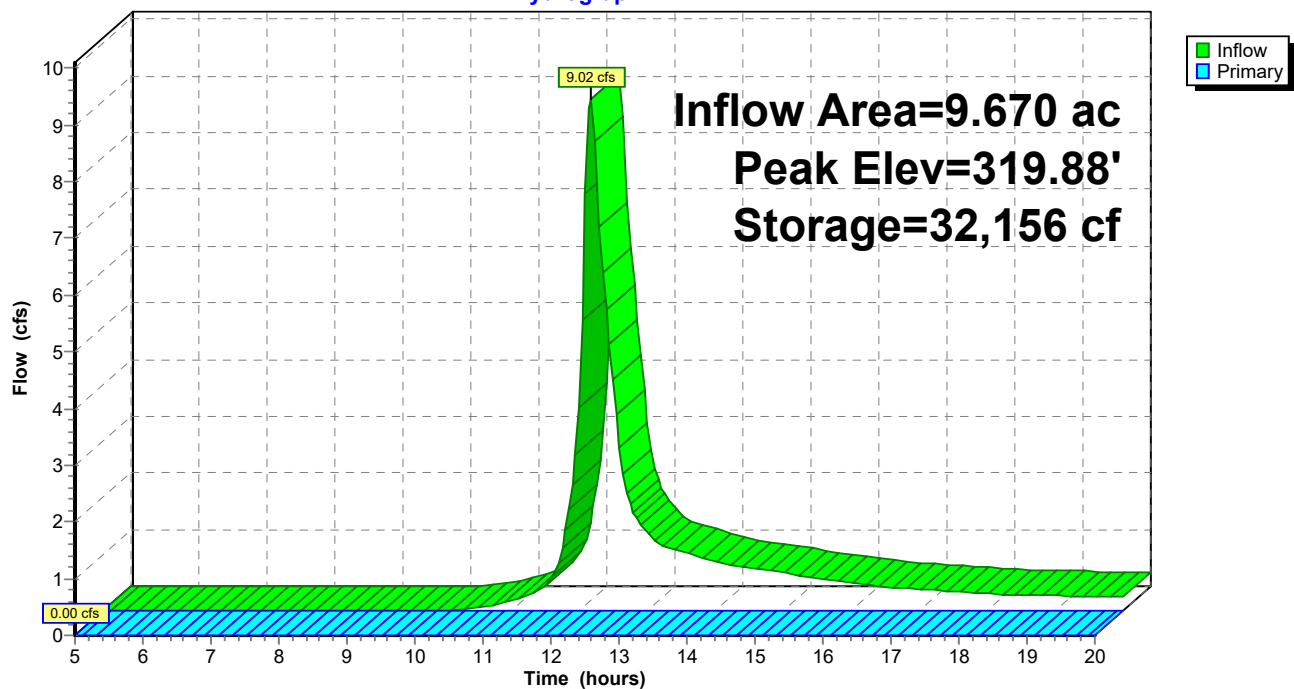
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Pond 38P: Pond #3E

Hydrograph



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Summary for Pond 39P: Pond #3F

Inflow Area = 2.680 ac, 35.07% Impervious, Inflow Depth > 0.92" for 1-yr event
 Inflow = 3.01 cfs @ 12.10 hrs, Volume= 0.205 af
 Outflow = 0.63 cfs @ 12.57 hrs, Volume= 0.204 af, Atten= 79%, Lag= 28.0 min
 Discarded = 0.63 cfs @ 12.57 hrs, Volume= 0.204 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 318.55' @ 12.57 hrs Surf.Area= 5,431 sf Storage= 2,737 cf

Plug-Flow detention time= 37.0 min calculated for 0.204 af (99% of inflow)
 Center-of-Mass det. time= 34.8 min (846.1 - 811.3)

Volume	Invert	Avail.Storage	Storage Description
#1	318.00'	98,777 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.00	4,538	0	0
320.00	7,789	12,327	12,327
322.00	11,752	19,541	31,868
324.00	16,119	27,871	59,739
326.00	22,919	39,038	98,777

Device	Routing	Invert	Outlet Devices
#1	Primary	327.00'	8.0' 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
#2	Discarded	318.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.63 cfs @ 12.57 hrs HW=318.55' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.63 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=318.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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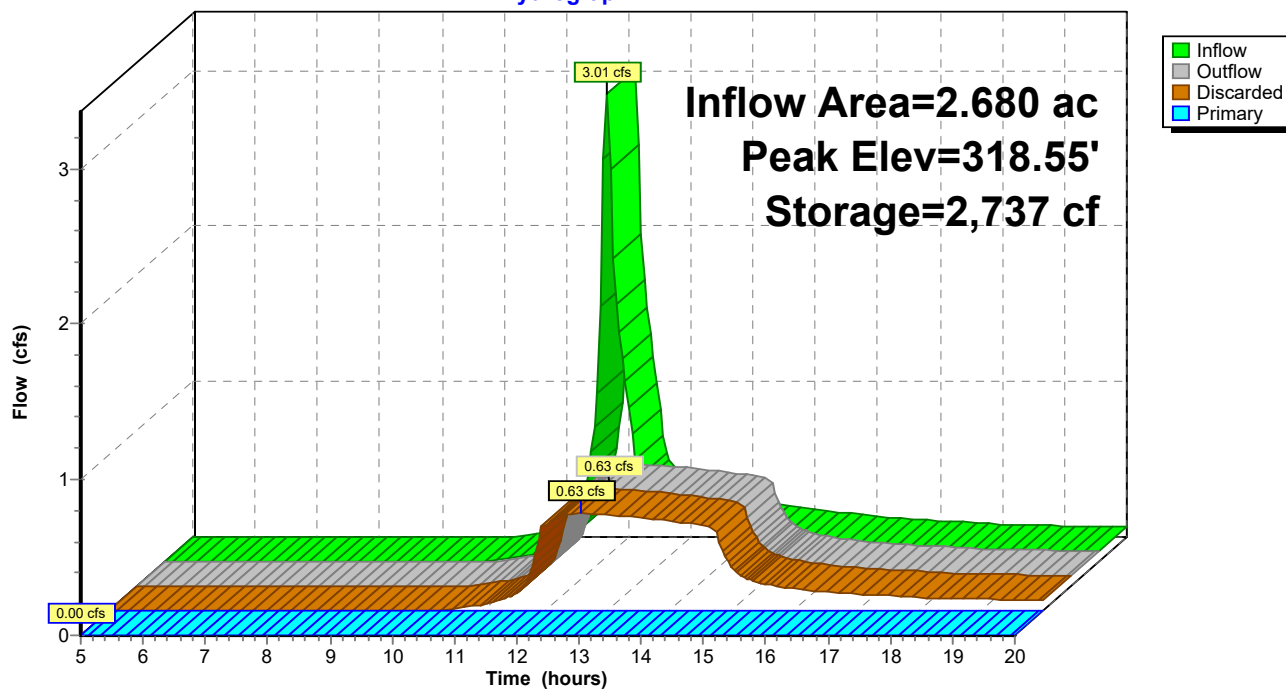
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Pond 39P: Pond #3F

Hydrograph



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Summary for Pond 40P: Pond #3G

Inflow Area = 7.490 ac, 33.67% Impervious, Inflow Depth > 0.86" for 1-yr event
 Inflow = 5.74 cfs @ 12.25 hrs, Volume= 0.538 af
 Outflow = 0.14 cfs @ 20.00 hrs, Volume= 0.089 af, Atten= 98%, Lag= 465.0 min
 Discarded = 0.14 cfs @ 20.00 hrs, Volume= 0.089 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 326.82' @ 20.00 hrs Surf.Area= 6,057 sf Storage= 19,559 cf

Plug-Flow detention time= 243.5 min calculated for 0.089 af (17% of inflow)
 Center-of-Mass det. time= 137.3 min (959.6 - 822.3)

Volume	Invert	Avail.Storage	Storage Description
#1	322.00'	44,209 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
322.00	3,263	0	0
324.00	3,264	6,527	6,527
326.00	5,181	8,445	14,972
328.00	7,326	12,507	27,479
328.90	8,483	7,114	34,593
330.00	9,000	9,616	44,209

Device	Routing	Invert	Outlet Devices
#1	Primary	329.00'	20.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	322.00'	1.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.14 cfs @ 20.00 hrs HW=326.82' (Free Discharge)

↑ **2=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=322.00' (Free Discharge)

↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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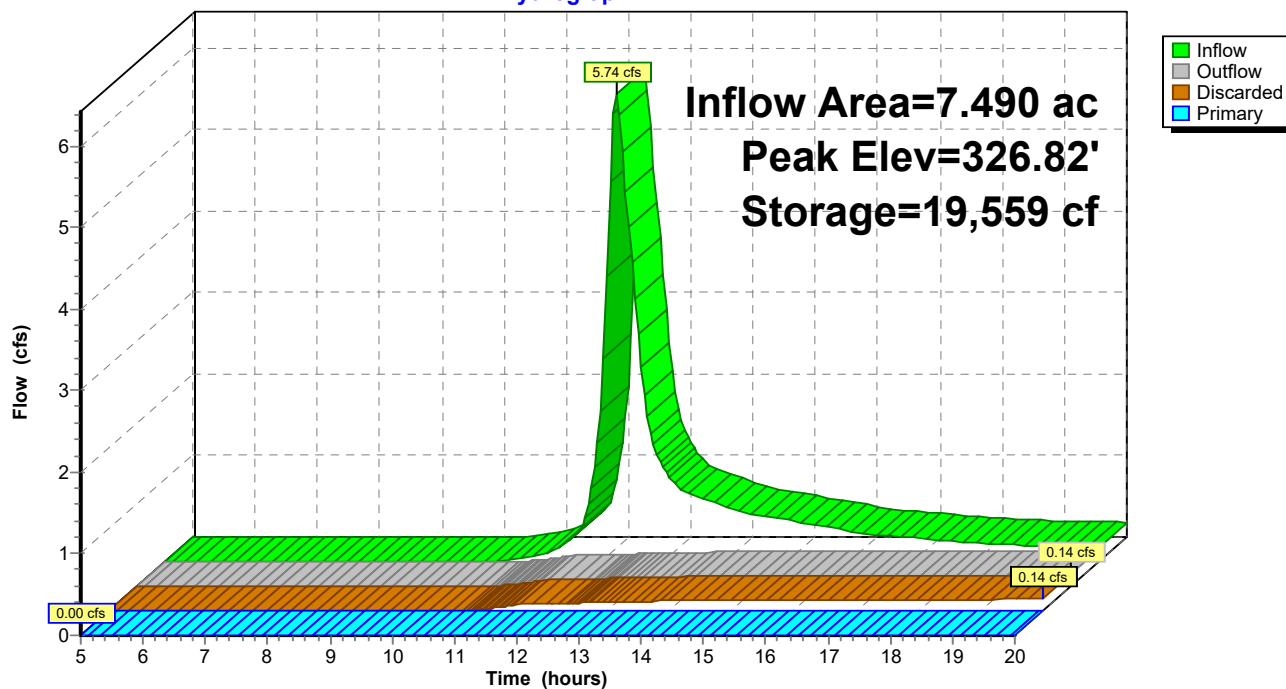
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Pond 40P: Pond #3G

Hydrograph



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Summary for Pond 41P: Pond #3H

Inflow Area = 0.660 ac, 32.12% Impervious, Inflow Depth > 0.51" for 1-yr event
 Inflow = 0.37 cfs @ 12.11 hrs, Volume= 0.028 af
 Outflow = 0.16 cfs @ 12.44 hrs, Volume= 0.028 af, Atten= 57%, Lag= 19.7 min
 Discarded = 0.16 cfs @ 12.44 hrs, Volume= 0.028 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 378.15' @ 12.44 hrs Surf.Area= 1,353 sf Storage= 196 cf

Plug-Flow detention time= 11.6 min calculated for 0.028 af (100% of inflow)
 Center-of-Mass det. time= 9.8 min (846.3 - 836.5)

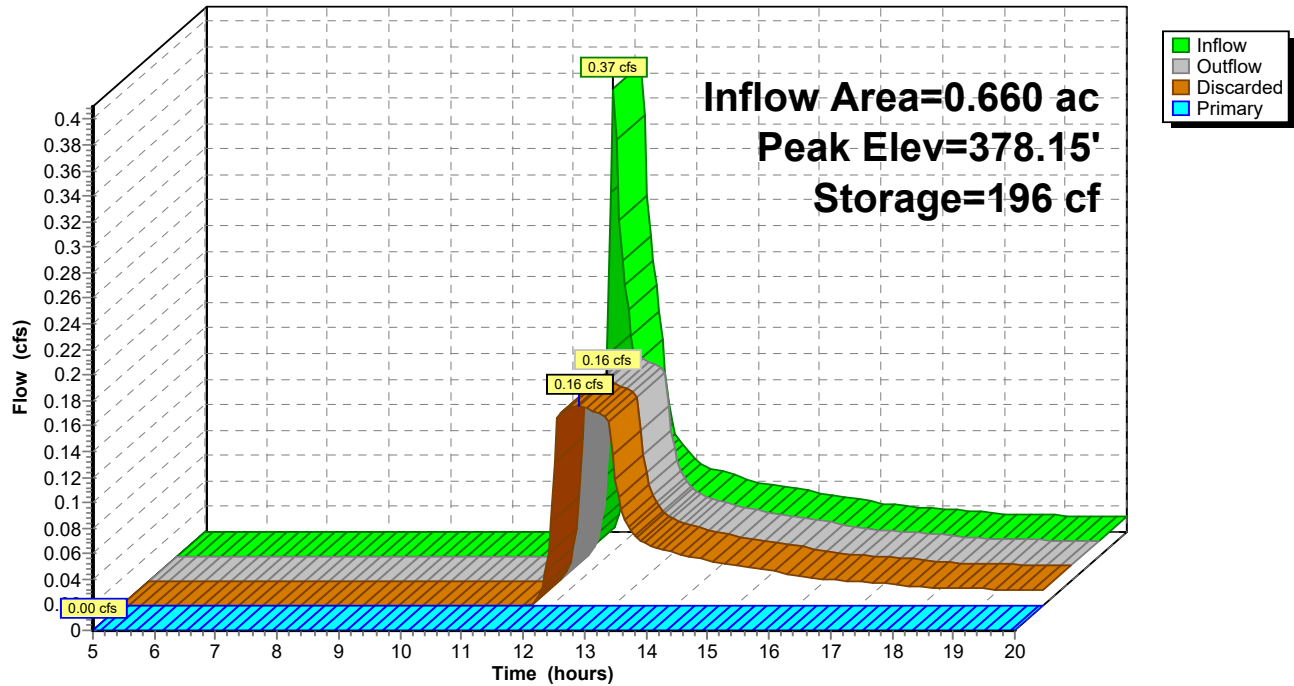
Volume	Invert	Avail.Storage	Storage Description
#1	378.00'	25,109 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
378.00	1,200	0	0
380.00	3,187	4,387	4,387
382.00	5,252	8,439	12,826
384.00	7,031	12,283	25,109

Device	Routing	Invert	Outlet Devices
#1	Primary	383.00'	8.0' 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
#2	Discarded	378.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.16 cfs @ 12.44 hrs HW=378.15' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=378.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 41P: Pond #3H**Hydrograph**

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Summary for Pond 42P: Pond #3L

Inflow Area = 17.490 ac, 16.36% Impervious, Inflow Depth > 0.42" for 1-yr event
 Inflow = 3.90 cfs @ 12.40 hrs, Volume= 0.611 af
 Outflow = 1.34 cfs @ 13.39 hrs, Volume= 0.607 af, Atten= 66%, Lag= 59.6 min
 Discarded = 1.34 cfs @ 13.39 hrs, Volume= 0.607 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 380.62' @ 13.39 hrs Surf.Area= 11,614 sf Storage= 6,812 cf

Plug-Flow detention time= 49.1 min calculated for 0.605 af (99% of inflow)
 Center-of-Mass det. time= 46.8 min (903.9 - 857.1)

Volume	Invert	Avail.Storage	Storage Description
#1	380.00'	112,931 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
380.00	10,344	0	0
382.00	14,437	24,781	24,781
384.00	16,823	31,260	56,041
386.00	19,506	36,329	92,370
387.00	21,616	20,561	112,931

Device	Routing	Invert	Outlet Devices
#1	Device 2	385.00'	36.0" W x 24.0" H Vert. Orifice/Grate C= 0.600
#2	Primary	381.00'	12.0" Round Culvert L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 381.00' / 380.00' S= 0.0256 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#3	Secondary	385.10'	20.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#4	Discarded	380.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=1.34 cfs @ 13.39 hrs HW=380.62' (Free Discharge)
 ↑ **4=Exfiltration** (Exfiltration Controls 1.34 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=380.00' (Free Discharge)
 ↑ **2=Culvert** (Controls 0.00 cfs)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=380.00' (Free Discharge)
 ↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summit Woods

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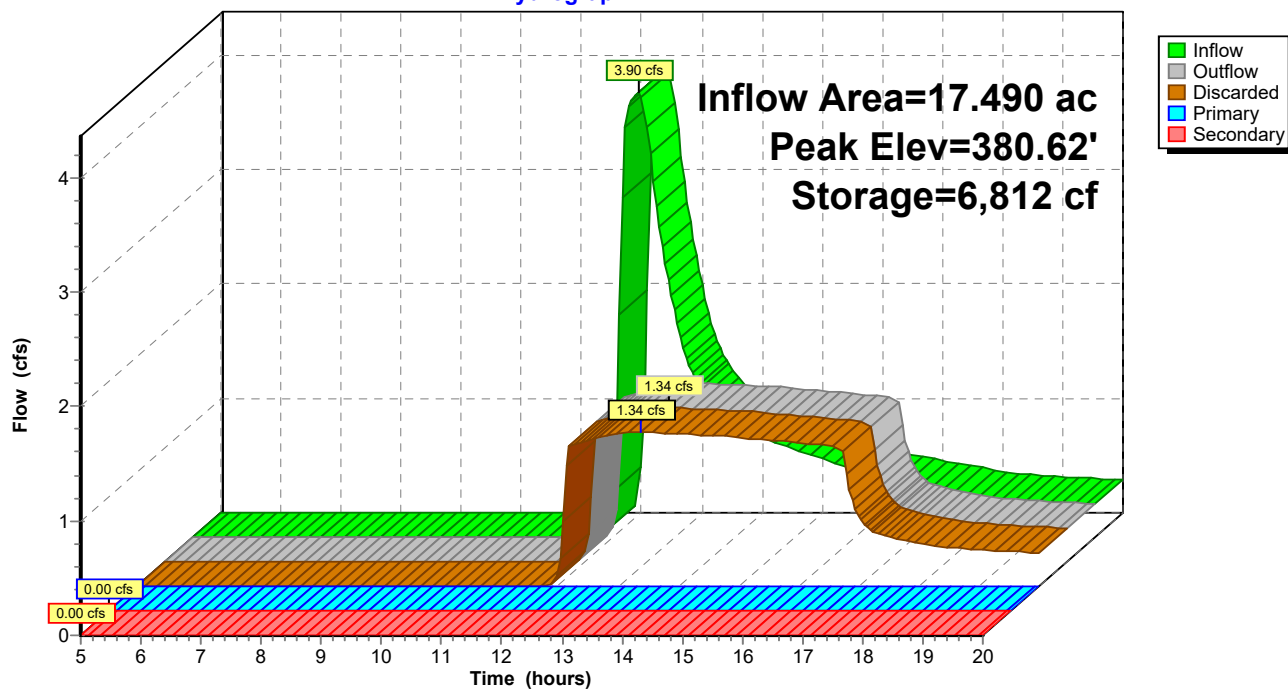
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Pond 42P: Pond #3L

Hydrograph



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Summary for Pond 43P: Pond #3J

Inflow Area = 13.580 ac, 20.62% Impervious, Inflow Depth > 0.72" for 1-yr event
 Inflow = 8.73 cfs @ 12.23 hrs, Volume= 0.812 af
 Outflow = 1.72 cfs @ 13.02 hrs, Volume= 0.808 af, Atten= 80%, Lag= 47.5 min
 Discarded = 1.72 cfs @ 13.02 hrs, Volume= 0.808 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 370.87' @ 13.02 hrs Surf.Area= 14,836 sf Storage= 12,073 cf

Plug-Flow detention time= 67.2 min calculated for 0.808 af (99% of inflow)
 Center-of-Mass det. time= 65.2 min (894.1 - 828.9)

Volume	Invert	Avail.Storage	Storage Description
#1	370.00'	153,422 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
370.00	12,962	0	0
372.00	17,277	30,239	30,239
374.00	21,818	39,095	69,334
376.00	30,536	52,354	121,688
377.00	32,932	31,734	153,422

Device	Routing	Invert	Outlet Devices
#1	Primary	377.30'	54.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	370.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=1.72 cfs @ 13.02 hrs HW=370.87' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 1.72 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=370.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summit Woods

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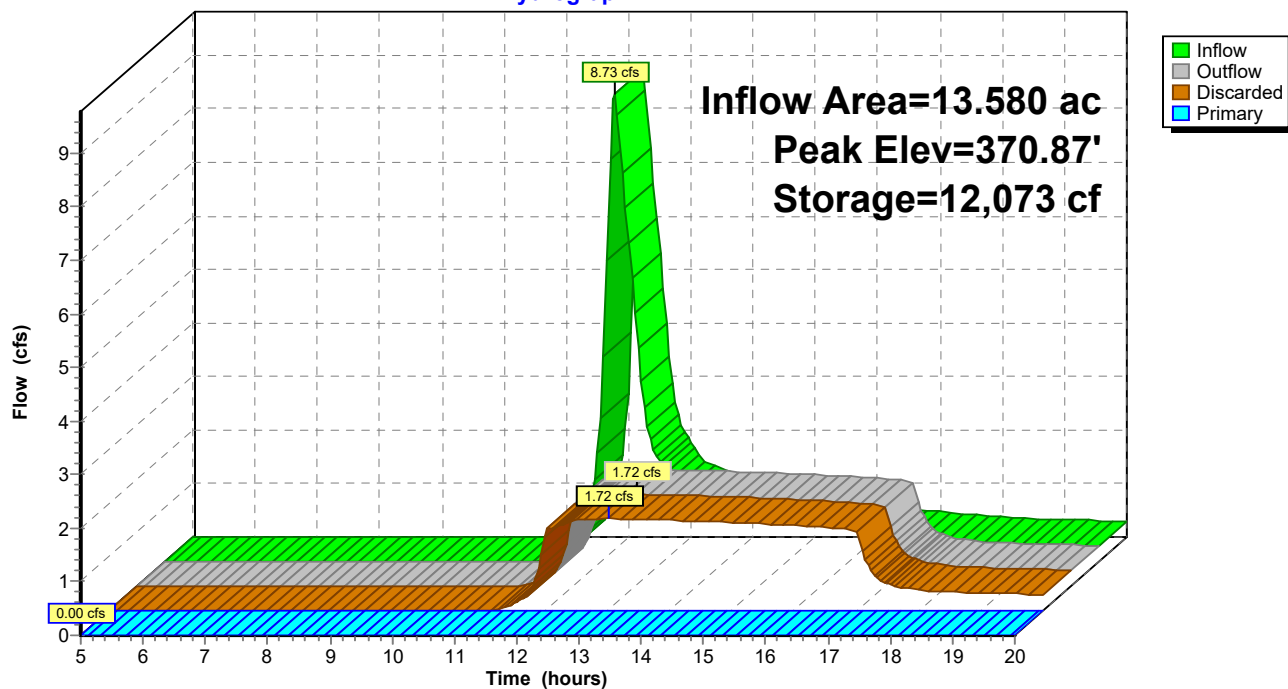
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Pond 43P: Pond #3J

Hydrograph



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Summary for Pond 44P: Pond #3K

Inflow Area = 7.550 ac, 12.29% Impervious, Inflow Depth > 0.47" for 1-yr event
 Inflow = 2.82 cfs @ 12.26 hrs, Volume= 0.298 af
 Outflow = 0.20 cfs @ 17.10 hrs, Volume= 0.123 af, Atten= 93%, Lag= 290.3 min
 Discarded = 0.20 cfs @ 17.10 hrs, Volume= 0.123 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 389.11' @ 17.10 hrs Surf.Area= 4,379 sf Storage= 8,063 cf

Plug-Flow detention time= 232.4 min calculated for 0.123 af (41% of inflow)
 Center-of-Mass det. time= 128.5 min (975.0 - 846.5)

Volume	Invert	Avail.Storage	Storage Description
#1	386.00'	61,250 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
386.00	1,263	0	0
388.00	2,805	4,068	4,068
390.00	5,635	8,440	12,508
392.00	8,614	14,249	26,757
394.00	12,602	21,216	47,973
395.00	13,952	13,277	61,250

Device	Routing	Invert	Outlet Devices
#1	Primary	395.00'	4.0' 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
#2	Discarded	386.00'	2.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.20 cfs @ 17.10 hrs HW=389.11' (Free Discharge)

↑ **2=Exfiltration** (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=386.00' (Free Discharge)

↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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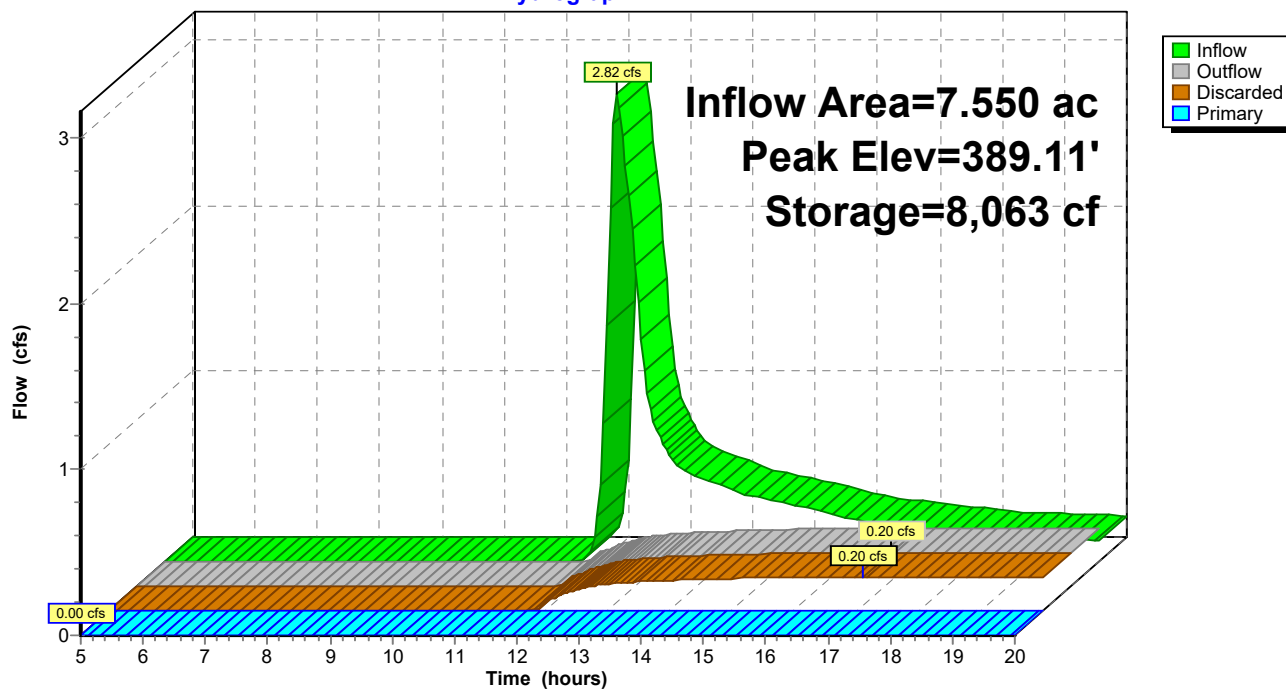
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Pond 44P: Pond #3K

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Summary for Pond 45P: Pind #3I

Volume	Invert	Avail.Storage	Storage Description
#1	402.00'	51,494 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
402.00	3,230	0	0
404.00	7,386	10,616	10,616
406.00	10,335	17,721	28,337
408.00	12,822	23,157	51,494

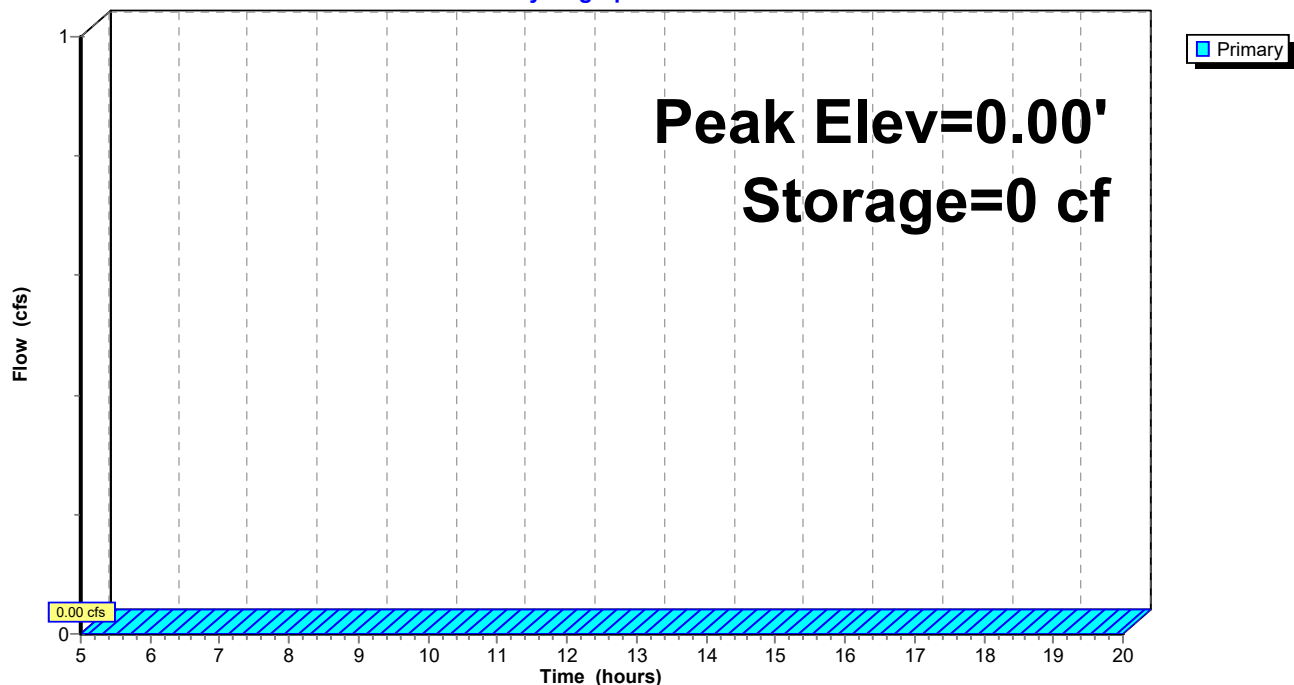
Device	Routing	Invert	Outlet Devices
#1	Primary	407.00'	8.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)

↑1=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 45P: Pind #3I

Hydrograph



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Summary for Pond 49P: Pond #6B

Inflow Area = 6.200 ac, 24.19% Impervious, Inflow Depth > 0.86" for 1-yr event
 Inflow = 4.70 cfs @ 12.26 hrs, Volume= 0.446 af
 Outflow = 0.53 cfs @ 14.15 hrs, Volume= 0.336 af, Atten= 89%, Lag= 113.6 min
 Discarded = 0.53 cfs @ 14.15 hrs, Volume= 0.336 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 317.36' @ 14.15 hrs Surf.Area= 9,128 sf Storage= 9,334 cf

Plug-Flow detention time= 185.1 min calculated for 0.335 af (75% of inflow)
 Center-of-Mass det. time= 124.2 min (946.9 - 822.6)

Volume	Invert	Avail.Storage	Storage Description
#1	316.00'	63,397 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
316.00	4,611	0	0
318.00	11,260	15,871	15,871
320.00	17,282	28,542	44,413
321.00	20,685	18,984	63,397

Device	Routing	Invert	Outlet Devices
#1	Primary	321.50'	20.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	316.00'	2.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.53 cfs @ 14.15 hrs HW=317.36' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.53 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=316.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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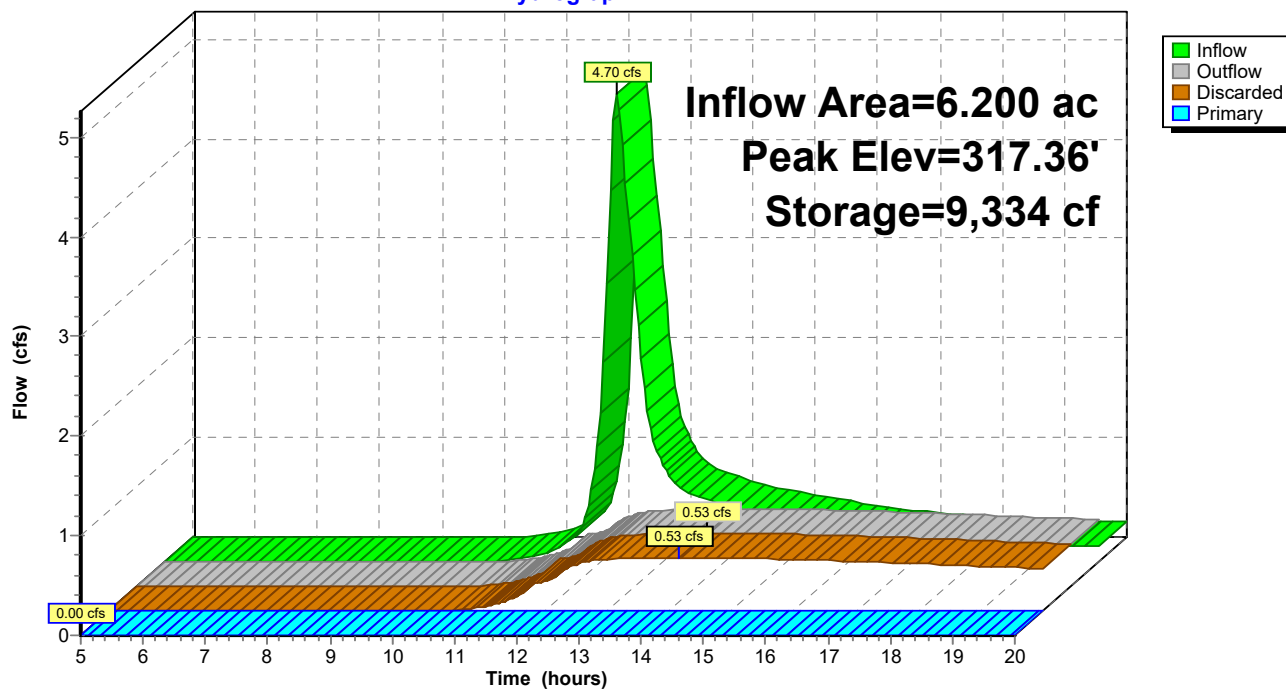
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Pond 49P: Pond #6B

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Summary for Pond 50P: Pond #6C

Inflow Area = 3.260 ac, 40.43% Impervious, Inflow Depth > 0.63" for 1-yr event
 Inflow = 2.29 cfs @ 12.12 hrs, Volume= 0.172 af
 Outflow = 0.56 cfs @ 12.59 hrs, Volume= 0.170 af, Atten= 75%, Lag= 28.2 min
 Discarded = 0.56 cfs @ 12.59 hrs, Volume= 0.170 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 314.46' @ 12.59 hrs Surf.Area= 4,874 sf Storage= 2,111 cf

Plug-Flow detention time= 35.6 min calculated for 0.170 af (99% of inflow)
 Center-of-Mass det. time= 31.4 min (859.8 - 828.4)

Volume	Invert	Avail.Storage	Storage Description
#1	314.00'	30,059 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
314.00	4,235	0	0
316.00	6,993	11,228	11,228
318.00	11,838	18,831	30,059

Device	Routing	Invert	Outlet Devices
#1	Primary	329.00'	12.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	314.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.56 cfs @ 12.59 hrs HW=314.46' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.56 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=314.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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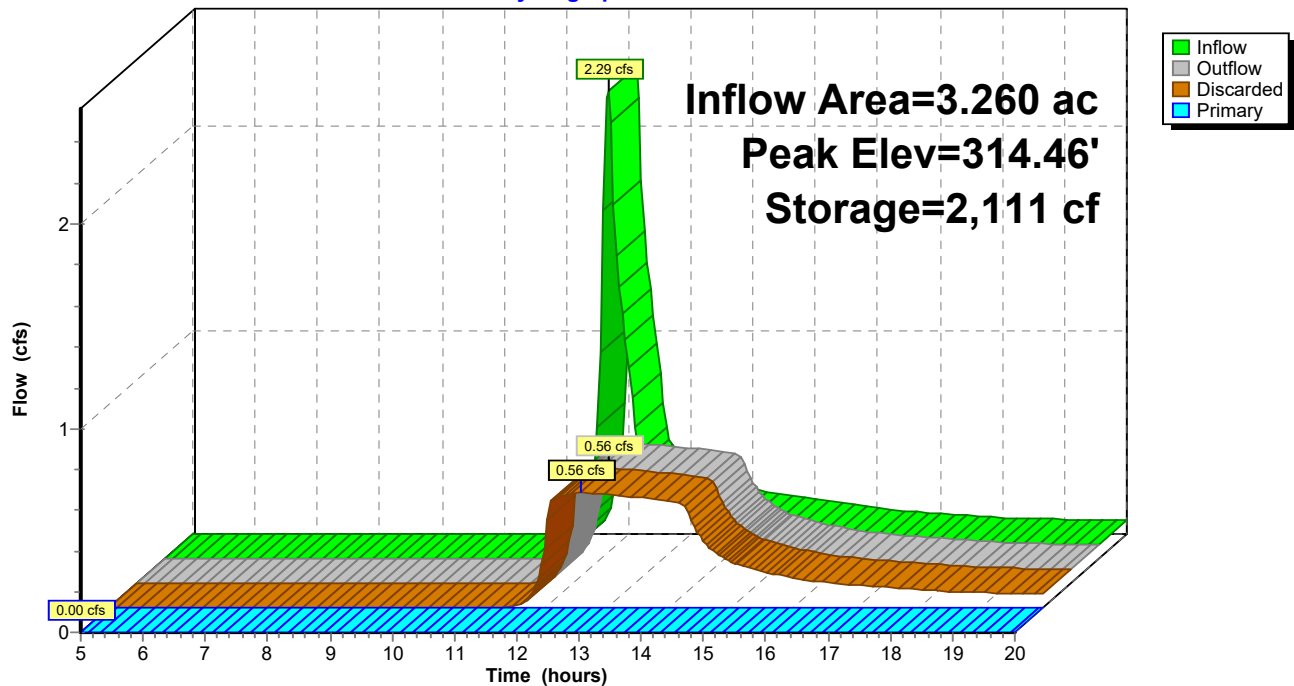
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Pond 50P: Pond #6C

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Summary for Pond 51P: Pond #6D

Inflow Area = 2.940 ac, 16.16% Impervious, Inflow Depth > 0.77" for 1-yr event
 Inflow = 2.40 cfs @ 12.15 hrs, Volume= 0.188 af
 Outflow = 0.56 cfs @ 12.65 hrs, Volume= 0.187 af, Atten= 77%, Lag= 30.1 min
 Discarded = 0.56 cfs @ 12.65 hrs, Volume= 0.187 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 318.25' @ 12.65 hrs Surf.Area= 9,709 sf Storage= 2,387 cf

Plug-Flow detention time= 35.2 min calculated for 0.187 af (99% of inflow)
 Center-of-Mass det. time= 33.1 min (855.0 - 821.9)

Volume	Invert	Avail.Storage	Storage Description
#1	318.00'	55,387 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.00	9,125	0	0
320.00	13,729	22,854	22,854
322.00	18,804	32,533	55,387

Device	Routing	Invert	Outlet Devices
#1	Primary	321.50'	6.0' 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
#2	Discarded	318.00'	2.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.56 cfs @ 12.65 hrs HW=318.25' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.56 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=318.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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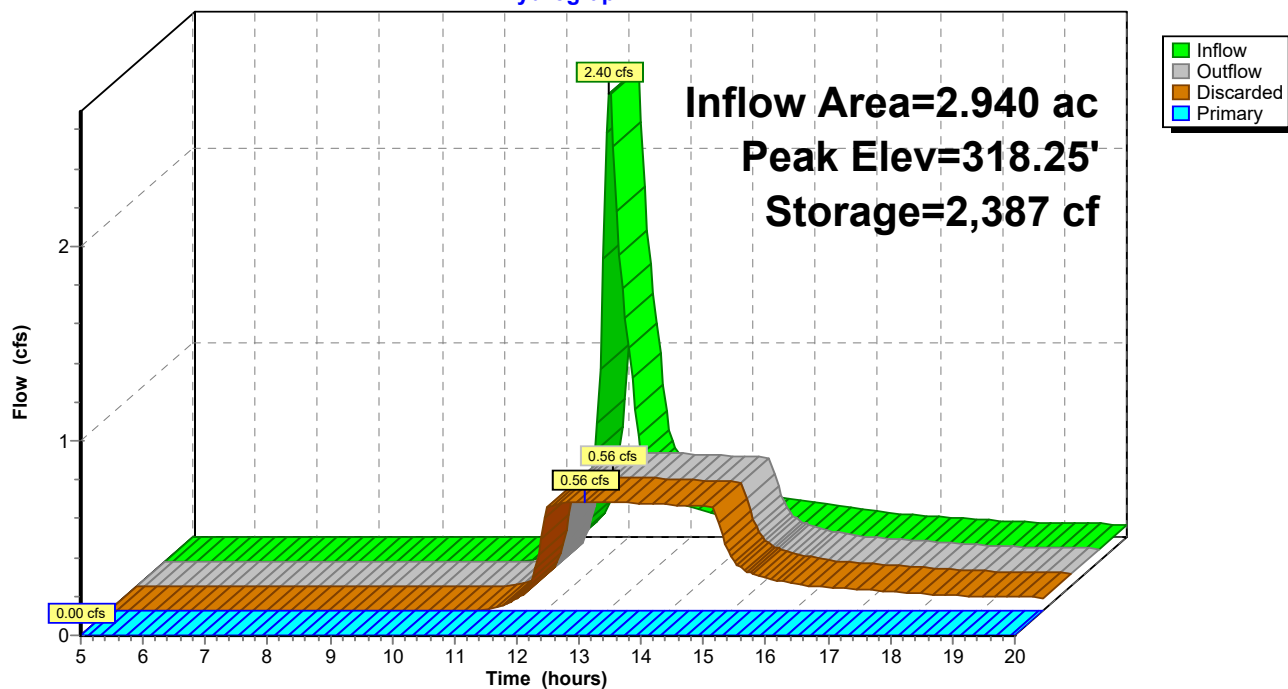
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Pond 51P: Pond #6D

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment11S: Post Area #1	Runoff Area=5.360 ac 0.00% Impervious Runoff Depth>1.05" Flow Length=430' Tc=9.0 min CN=60 Runoff=5.68 cfs 0.467 af
Subcatchment12S: Post Area #2	Runoff Area=8.050 ac 0.00% Impervious Runoff Depth>1.05" Flow Length=712' Tc=9.0 min CN=60 Runoff=8.54 cfs 0.702 af
Subcatchment13S: Post Area #3A	Runoff Area=229.900 ac 3.52% Impervious Runoff Depth>1.03" Flow Length=7,820' Tc=429.3 min CN=71 Runoff=50.09 cfs 19.698 af
Subcatchment14S: Post Area #3B	Runoff Area=3.430 ac 25.36% Impervious Runoff Depth>2.34" Flow Length=463' Tc=6.0 min CN=78 Runoff=9.89 cfs 0.667 af
Subcatchment15S: Post Area #3C	Runoff Area=3.080 ac 22.08% Impervious Runoff Depth>2.33" Flow Length=492' Tc=11.2 min CN=78 Runoff=7.57 cfs 0.598 af
Subcatchment16S: Post Area #3D	Runoff Area=6.220 ac 20.80% Impervious Runoff Depth>2.33" Flow Length=585' Tc=12.1 min CN=78 Runoff=14.88 cfs 1.208 af
Subcatchment17S: Post Area #3E	Runoff Area=9.670 ac 28.11% Impervious Runoff Depth>2.50" Flow Length=993' Tc=11.8 min CN=80 Runoff=25.01 cfs 2.015 af
Subcatchment18S: Post Area #3F	Runoff Area=2.680 ac 35.07% Impervious Runoff Depth>2.51" Flow Length=485' Tc=6.0 min CN=80 Runoff=8.27 cfs 0.559 af
Subcatchment19S: Post Area #3G	Runoff Area=7.490 ac 33.67% Impervious Runoff Depth>2.41" Flow Length=2,420' Tc=16.8 min CN=79 Runoff=16.40 cfs 1.505 af
Subcatchment20S: Post Area #3H	Runoff Area=0.660 ac 32.12% Impervious Runoff Depth>1.78" Flow Length=454' Tc=6.0 min CN=71 Runoff=1.45 cfs 0.098 af
Subcatchment21S: Post Area #3I	Runoff Area=6.150 ac 13.69% Impervious Runoff Depth>1.76" Flow Length=2,107' Tc=38.8 min CN=71 Runoff=6.84 cfs 0.902 af
Subcatchment22S: Post Area #3J	Runoff Area=13.580 ac 20.62% Impervious Runoff Depth>2.16" Flow Length=819' Tc=15.0 min CN=76 Runoff=27.95 cfs 2.449 af
Subcatchment23S: Post #3K	Runoff Area=7.550 ac 12.29% Impervious Runoff Depth>1.70" Flow Length=1,348' Tc=15.4 min CN=70 Runoff=11.95 cfs 1.072 af
Subcatchment24S: Post Area #3L	Runoff Area=11.340 ac 17.81% Impervious Runoff Depth>1.49" Flow Length=1,281' Tc=12.4 min CN=67 Runoff=16.65 cfs 1.411 af
Subcatchment25S: Post Area #4	Runoff Area=3.310 ac 12.15% Impervious Runoff Depth>2.16" Flow Length=471' Tc=20.3 min CN=76 Runoff=6.03 cfs 0.596 af
Subcatchment26S: Post Area #5	Runoff Area=1.620 ac 7.41% Impervious Runoff Depth>2.01" Flow Length=216' Slope=0.0450 '/' Tc=10.5 min CN=74 Runoff=3.49 cfs 0.271 af

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Subcatchment27S: Post Area #6A	Runoff Area=27.910 ac 6.04% Impervious Runoff Depth>1.65" Flow Length=2,411' Tc=206.9 min CN=72 Runoff=10.93 cfs 3.829 af
Subcatchment28S: Post Area #6B	Runoff Area=6.200 ac 24.19% Impervious Runoff Depth>2.41" Flow Length=864' Tc=17.3 min CN=79 Runoff=13.43 cfs 1.245 af
Subcatchment29S: Post Area #6C	Runoff Area=3.260 ac 40.43% Impervious Runoff Depth>2.01" Flow Length=1,421' Tc=7.0 min CN=74 Runoff=7.87 cfs 0.546 af
Subcatchment31S: Post Area #7	Runoff Area=2.990 ac 17.53% Impervious Runoff Depth>1.49" Flow Length=360' Tc=11.3 min CN=67 Runoff=4.56 cfs 0.372 af
Subcatchment32S: Post Area #8	Runoff Area=6.790 ac 0.00% Impervious Runoff Depth>1.92" Flow Length=803' Tc=23.0 min CN=73 Runoff=10.42 cfs 1.087 af
Subcatchment33S: Post Area #9	Runoff Area=12.170 ac 12.33% Impervious Runoff Depth>2.11" Flow Length=1,749' Tc=77.8 min CN=76 Runoff=11.12 cfs 2.141 af
Subcatchment52S: Post Area #6D-2	Runoff Area=1.110 ac 66.89% Impervious Runoff Depth>3.43" Flow Length=862' Tc=16.9 min CN=90 Runoff=3.31 cfs 0.318 af
Subcatchment53S: Post Area #6D-1	Runoff Area=2.940 ac 16.16% Impervious Runoff Depth>2.25" Flow Length=525' Tc=9.3 min CN=77 Runoff=7.33 cfs 0.551 af
Reach 50R: Reach #3B	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.070 L=789.0' S=0.0089 '/' Capacity=25.36 cfs Outflow=0.00 cfs 0.000 af
Reach 51R: Post Area #3	Avg. Flow Depth=1.47' Max Vel=1.90 fps Inflow=50.66 cfs 19.865 af n=0.040 L=1,478.0' S=0.0027 '/' Capacity=706.54 cfs Outflow=50.58 cfs 18.249 af
Reach 52R: Reach #3L-1	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.100 L=125.0' S=0.2880 '/' Capacity=76.67 cfs Outflow=0.00 cfs 0.000 af
Reach 53R: Reach #3C	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.070 L=858.0' S=0.0152 '/' Capacity=33.14 cfs Outflow=0.00 cfs 0.000 af
Reach 54R: Reach #3D	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.070 L=261.0' S=0.0345 '/' Capacity=84.65 cfs Outflow=0.00 cfs 0.000 af
Reach 55R: Reach 3-3	Avg. Flow Depth=0.26' Max Vel=0.48 fps Inflow=1.10 cfs 0.263 af n=0.040 L=464.0' S=0.0017 '/' Capacity=19.56 cfs Outflow=1.09 cfs 0.221 af
Reach 56R: Reach 3-2	Avg. Flow Depth=0.16' Max Vel=0.37 fps Inflow=1.09 cfs 0.221 af n=0.040 L=424.0' S=0.0019 '/' Capacity=1,796.89 cfs Outflow=1.08 cfs 0.168 af
Reach 57R: Post Area #6	Avg. Flow Depth=0.52' Max Vel=1.93 fps Inflow=10.91 cfs 3.808 af n=0.040 L=338.0' S=0.0109 '/' Capacity=1,420.98 cfs Outflow=10.91 cfs 3.781 af
Reach 58R: Reach #3E	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.080 L=403.0' S=0.0097 '/' Capacity=23.18 cfs Outflow=0.00 cfs 0.000 af

Summit Woods*Type III 24-hr 10-yr Rainfall=4.76"*

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Reach 59R: Reach 6-2	Avg. Flow Depth=0.74' Max Vel=1.15 fps Inflow=10.93 cfs 3.829 af n=0.040 L=162.0' S=0.0025 '/' Capacity=674.87 cfs Outflow=10.91 cfs 3.808 af
Reach 60R: Reach 6C	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=207.0' S=0.0609 '/' Capacity=139.08 cfs Outflow=0.00 cfs 0.000 af
Reach 61R: Reach 3-4-2	Avg. Flow Depth=0.45' Max Vel=0.55 fps Inflow=1.10 cfs 0.289 af n=0.040 L=358.0' S=0.0011 '/' Capacity=6.21 cfs Outflow=1.10 cfs 0.263 af
Reach 62R: Reach 3-5	Avg. Flow Depth=0.10' Max Vel=0.10 fps Inflow=2.35 cfs 0.514 af n=0.040 L=712.0' S=0.0003 '/' Capacity=154.58 cfs Outflow=1.11 cfs 0.333 af
Reach 63R: Reach 3-6	Avg. Flow Depth=0.11' Max Vel=0.63 fps Inflow=2.78 cfs 0.528 af n=0.040 L=513.8' S=0.0088 '/' Capacity=1,156.63 cfs Outflow=2.35 cfs 0.514 af
Reach 64R: Reach #3F	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.400 L=206.0' S=0.0243 '/' Capacity=21.89 cfs Outflow=0.00 cfs 0.000 af
Reach 65R: Reach #3G	Avg. Flow Depth=0.16' Max Vel=0.63 fps Inflow=3.47 cfs 0.539 af n=0.070 L=400.0' S=0.0175 '/' Capacity=680.18 cfs Outflow=2.78 cfs 0.528 af
Reach 66R: Reach #3L-2	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.100 L=1,355.0' S=0.0236 '/' Capacity=23.13 cfs Outflow=0.00 cfs 0.000 af
Reach 67R: Reach #3G	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.080 L=399.0' S=0.0175 '/' Capacity=1,116.58 cfs Outflow=0.00 cfs 0.000 af
Reach 68R: Reach 3-7	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=1,366.0' S=0.0216 '/' Capacity=379.08 cfs Outflow=0.00 cfs 0.000 af
Reach 69R: Reach 3-8 36.0" Round Pipe	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.013 L=129.0' S=0.0620 '/' Capacity=166.10 cfs Outflow=0.00 cfs 0.000 af
Reach 70R: Reach 3-9	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=292.0' S=0.0411 '/' Capacity=725.62 cfs Outflow=0.00 cfs 0.000 af
Reach 71R: Reach #3J	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=810.0' S=0.0214 '/' Capacity=1,713.62 cfs Outflow=0.00 cfs 0.000 af
Reach 72R: Reach 3-10	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.030 L=1,709.0' S=0.0199 '/' Capacity=70.44 cfs Outflow=0.00 cfs 0.000 af
Reach 73R: (new Reach)	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=295.0' S=0.0678 '/' Capacity=80.99 cfs Outflow=0.00 cfs 0.000 af
Reach 74R: Reach 6B	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=270.0' S=0.0267 '/' Capacity=50.79 cfs Outflow=0.00 cfs 0.000 af
Reach 75R: Reach 6B	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=230.0' S=0.0383 '/' Capacity=60.84 cfs Outflow=0.00 cfs 0.000 af

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Reach 76R: Reach 3-4-1Avg. Flow Depth=0.08' Max Vel=0.22 fps Inflow=1.11 cfs 0.333 af
n=0.070 L=253.0' S=0.0051 '/' Capacity=253.93 cfs Outflow=1.10 cfs 0.289 af**Pond 35P: Pond #3B**Peak Elev=318.54' Storage=28,351 cf Inflow=12.25 cfs 0.985 af
Discarded=0.51 cfs 0.388 af Primary=0.00 cfs 0.000 af Outflow=0.51 cfs 0.388 af**Pond 36P: Pond #3C**Peak Elev=322.53' Storage=12,082 cf Inflow=7.57 cfs 0.598 af
Discarded=0.80 cfs 0.507 af Primary=0.00 cfs 0.000 af Outflow=0.80 cfs 0.507 af**Pond 37P: Pond #3D**Peak Elev=321.25' Storage=34,224 cf Inflow=14.88 cfs 1.208 af
Discarded=0.69 cfs 0.498 af Primary=0.00 cfs 0.000 af Outflow=0.69 cfs 0.498 af**Pond 38P: Pond #3E**Peak Elev=322.37' Storage=87,719 cf Inflow=25.01 cfs 2.015 af
Outflow=0.00 cfs 0.000 af**Pond 39P: Pond #3F**Peak Elev=319.75' Storage=10,464 cf Inflow=8.27 cfs 0.559 af
Discarded=0.86 cfs 0.551 af Primary=0.00 cfs 0.000 af Outflow=0.86 cfs 0.551 af**Pond 40P: Pond #3G**Peak Elev=329.17' Storage=36,925 cf Inflow=16.40 cfs 1.505 af
Discarded=0.20 cfs 0.148 af Primary=3.47 cfs 0.539 af Outflow=3.67 cfs 0.686 af**Pond 41P: Pond #3H**Peak Elev=378.90' Storage=1,492 cf Inflow=1.45 cfs 0.098 af
Discarded=0.24 cfs 0.098 af Primary=0.00 cfs 0.000 af Outflow=0.24 cfs 0.098 af**Pond 42P: Pond #3L**Peak Elev=383.98' Storage=55,635 cf Inflow=19.63 cfs 2.313 af
Discarded=1.94 cfs 1.317 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=1.94 cfs 1.317 af**Pond 43P: Pond #3J**Peak Elev=373.32' Storage=55,091 cf Inflow=27.95 cfs 2.449 af
Discarded=2.35 cfs 1.656 af Primary=0.00 cfs 0.000 af Outflow=2.35 cfs 1.656 af**Pond 44P: Pond #3K**Peak Elev=392.80' Storage=34,275 cf Inflow=11.95 cfs 1.072 af
Discarded=0.47 cfs 0.300 af Primary=0.00 cfs 0.000 af Outflow=0.47 cfs 0.300 af**Pond 45P: Pond #3I**Peak Elev=0.00' Storage=0 cf
Primary=0.00 cfs 0.000 af**Pond 49P: Pond #6B**Peak Elev=319.30' Storage=33,070 cf Inflow=13.43 cfs 1.245 af
Discarded=0.88 cfs 0.618 af Primary=0.00 cfs 0.000 af Outflow=0.88 cfs 0.618 af**Pond 50P: Pond #6C**Peak Elev=315.91' Storage=10,578 cf Inflow=7.87 cfs 0.546 af
Discarded=0.79 cfs 0.506 af Primary=0.00 cfs 0.000 af Outflow=0.79 cfs 0.506 af**Pond 51P: Pond #6D**Peak Elev=319.06' Storage=11,020 cf Inflow=7.33 cfs 0.551 af
Discarded=0.67 cfs 0.473 af Primary=0.00 cfs 0.000 af Outflow=0.67 cfs 0.473 af**Total Runoff Area = 383.460 ac Runoff Volume = 44.307 af Average Runoff Depth = 1.39"**
91.61% Pervious = 351.271 ac 8.39% Impervious = 32.190 ac

Summit Woods

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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 11S: Post Area #1

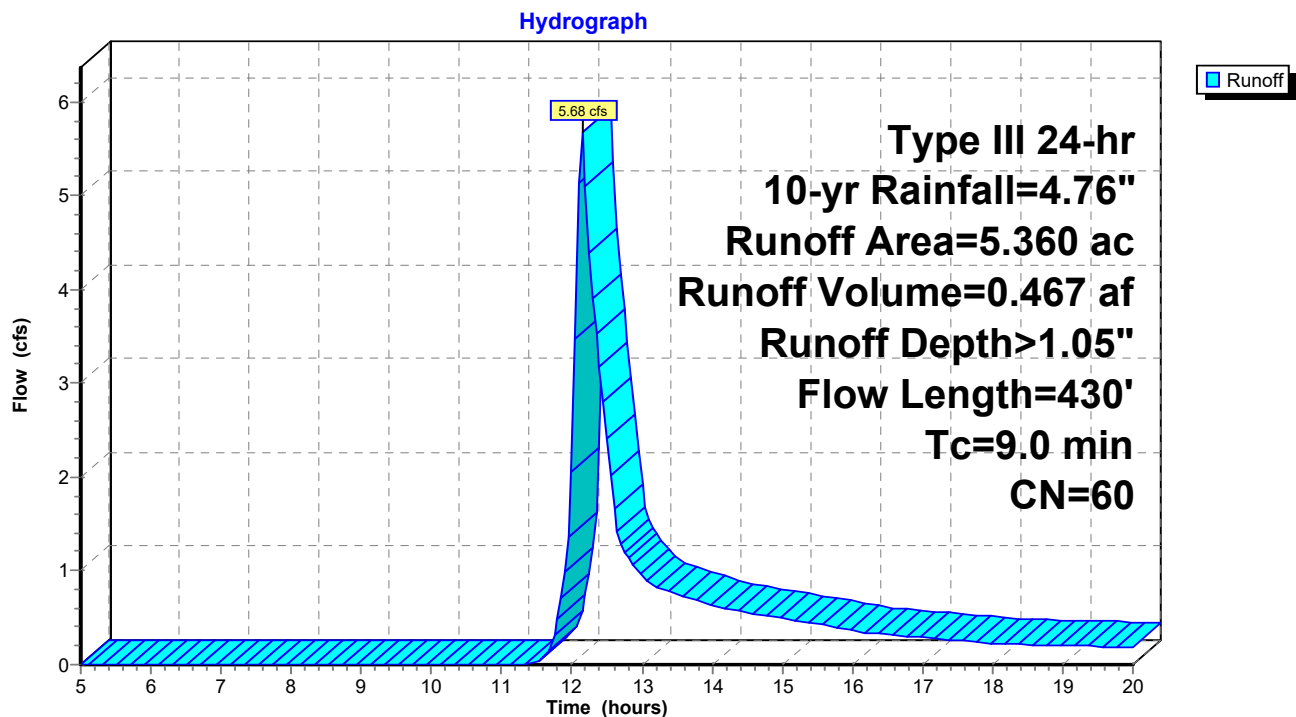
Runoff = 5.68 cfs @ 12.15 hrs, Volume= 0.467 af, Depth> 1.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
2.770	60	Woods, Fair, HSG B
0.630	73	Woods, Fair, HSG C
1.960	56	Brush, Fair, HSG B
5.360	60	Weighted Average
5.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.3000	0.24		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	330	0.2960	2.72		Shallow Concentrated Flow, Reach B-DP#1
					Woodland Kv= 5.0 fps
9.0	430	Total			

Subcatchment 11S: Post Area #1



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Summary for Subcatchment 12S: Post Area #2

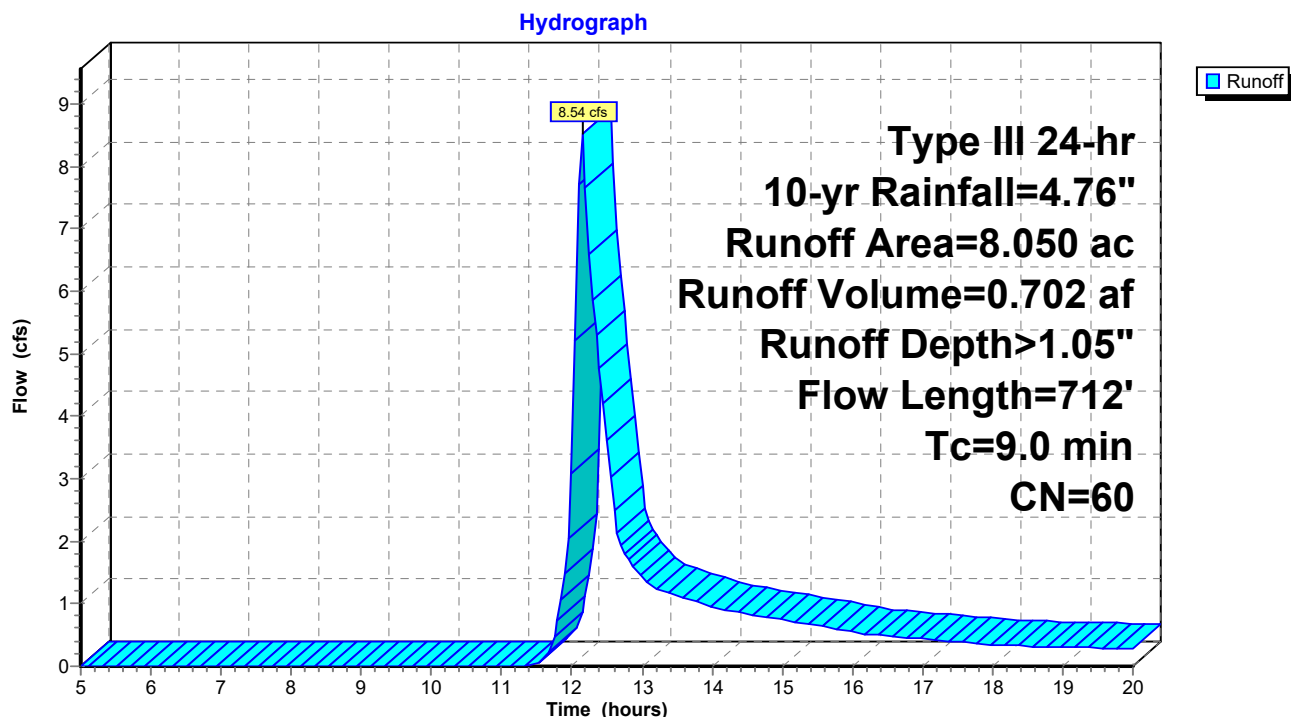
Runoff = 8.54 cfs @ 12.15 hrs, Volume= 0.702 af, Depth> 1.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
7.770	60	Woods, Fair, HSG B
0.280	56	Brush, Fair, HSG B
8.050	60	Weighted Average
8.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2400	0.22		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	612	0.1990	7.18		Shallow Concentrated Flow, Reach B-DP#2
					Unpaved Kv= 16.1 fps
9.0	712	Total			

Subcatchment 12S: Post Area #2



Summit Woods

Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 13S: Post Area #3A

Runoff = 50.09 cfs @ 18.09 hrs, Volume= 19.698 af, Depth> 1.03"

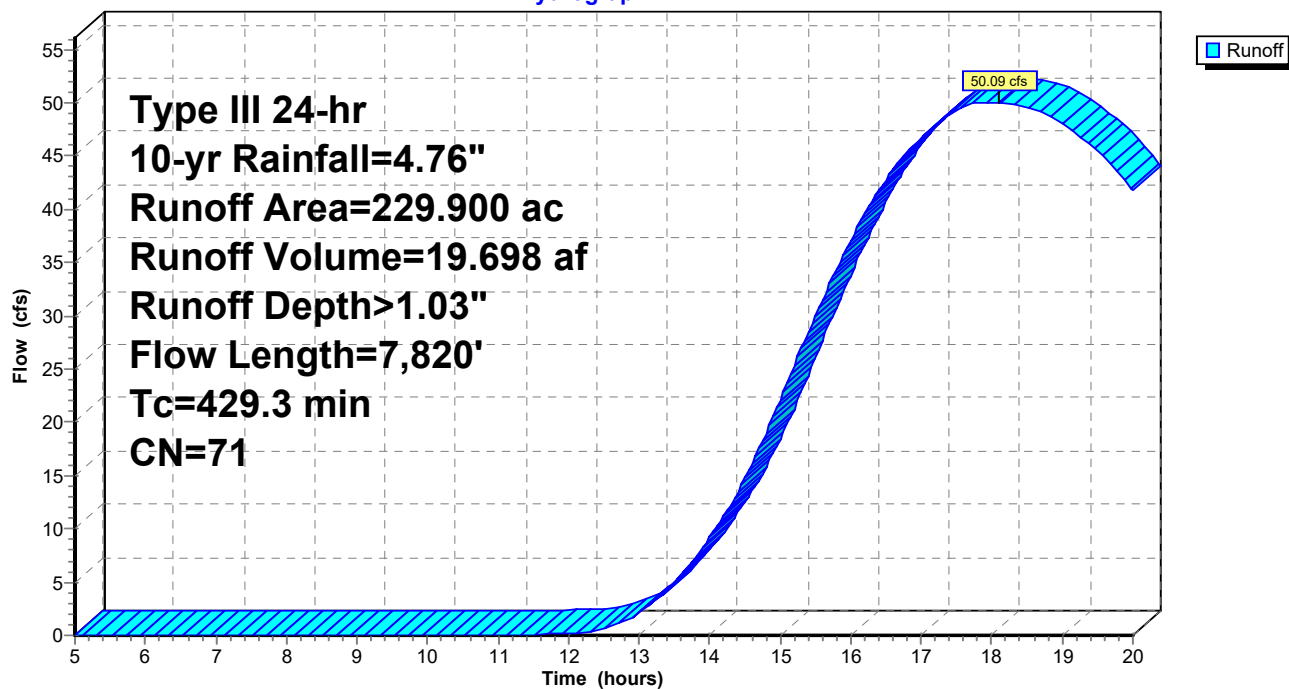
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
4.460	35	Brush, Fair, HSG A
* 6.250	78	Wetland, HSG A
0.200	98	Paved parking, HSG B
23.250	68	1 acre lots, 20% imp, HSG B
36.700	60	Woods, Fair, HSG B
6.540	56	Brush, Fair, HSG B
0.240	98	Paved parking, HSG C
29.260	73	Woods, Fair, HSG C
38.540	70	Brush, Fair, HSG C
* 31.270	78	Wetland, HSG C
13.380	79	1 acre lots, 20% imp, HSG C
4.150	79	Woods, Fair, HSG D
* 32.500	78	Wetland, HSG D
0.330	98	Paved parking, HSG D
2.830	77	Brush, Fair, HSG D
229.900	71	Weighted Average
221.804		96.48% Pervious Area
8.096		3.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.1600	0.19		Sheet Flow, Reac A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	611	0.2060	7.31		Shallow Concentrated Flow, Reach B-C
					Unpaved Kv= 16.1 fps
10.3	748	0.0550	1.21	31.39	Channel Flow, Reach C-D
					Area= 26.0 sf Perim= 34.3' r= 0.76' n= 0.240
0.2	100	0.0320	10.55	8.29	Pipe Channel, CMP_Round 12"
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010
47.2	2,060	0.0200	0.73	18.93	Channel Flow, Reach E-F
					Area= 26.0 sf Perim= 34.3' r= 0.76' n= 0.240
0.1	100	0.0550	22.13	156.42	Pipe Channel, Reach F-G
					36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
22.3	819	0.0250	0.61	5.51	Channel Flow, REach G-H
					Area= 9.0 sf Perim= 18.2' r= 0.49' n= 0.240
213.0	1,974	0.0020	0.15	1.93	Channel Flow, ReachH-I
					Area= 12.5 sf Perim= 30.0' r= 0.42' n= 0.240
125.9	1,308	0.0020	0.17	1.56	Channel Flow, Rach I-DP#3
					Area= 9.0 sf Perim= 18.2' r= 0.49' n= 0.240
429.3	7,820	Total			

Subcatchment 13S: Post Area #3A

Hydrograph



Summit Woods

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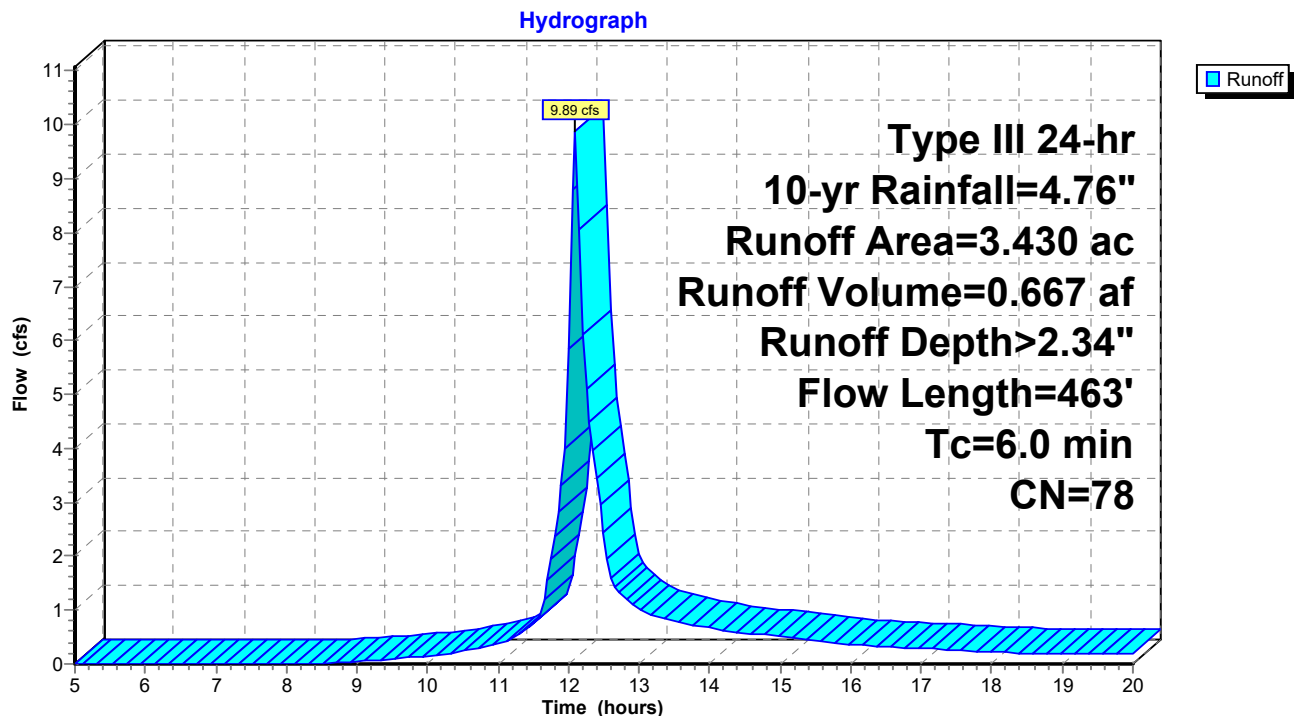
Summary for Subcatchment 14S: Post Area #3B

Runoff = 9.89 cfs @ 12.09 hrs, Volume= 0.667 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.630	98	Paved parking, HSG C
1.600	70	Brush, Fair, HSG C
1.200	79	1 acre lots, 20% imp, HSG C
3.430	78	Weighted Average
2.560		74.64% Pervious Area
0.870		25.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	85	0.0150	1.24		Sheet Flow, Reach A-B Smooth surfaces n= 0.011 P2= 3.50"
0.5	378	0.0290	13.16	23.25	Pipe Channel, Reach B-C 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.010
4.4					Direct Entry,
6.0	463	Total			

Subcatchment 14S: Post Area #3B

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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 15S: Post Area #3C

Runoff = 7.57 cfs @ 12.16 hrs, Volume= 0.598 af, Depth> 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.330	98	Paved parking, HSG C
1.000	70	Brush, Fair, HSG C
1.750	79	1 acre lots, 20% imp, HSG C
3.080	78	Weighted Average
2.400		77.92% Pervious Area
0.680		22.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.16		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
0.2	55	0.0497	4.53		Shallow Concentrated Flow, Reach B-C Paved Kv= 20.3 fps
0.4	263	0.0377	11.54	20.40	Pipe Channel, Reach C-D 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
0.1	22	0.0060	4.60	8.14	Pipe Channel, Reach D-E 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.2	52	0.0058	4.53	8.00	Pipe Channel, Reach E-F 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
11.2	492	Total			

Summit Woods

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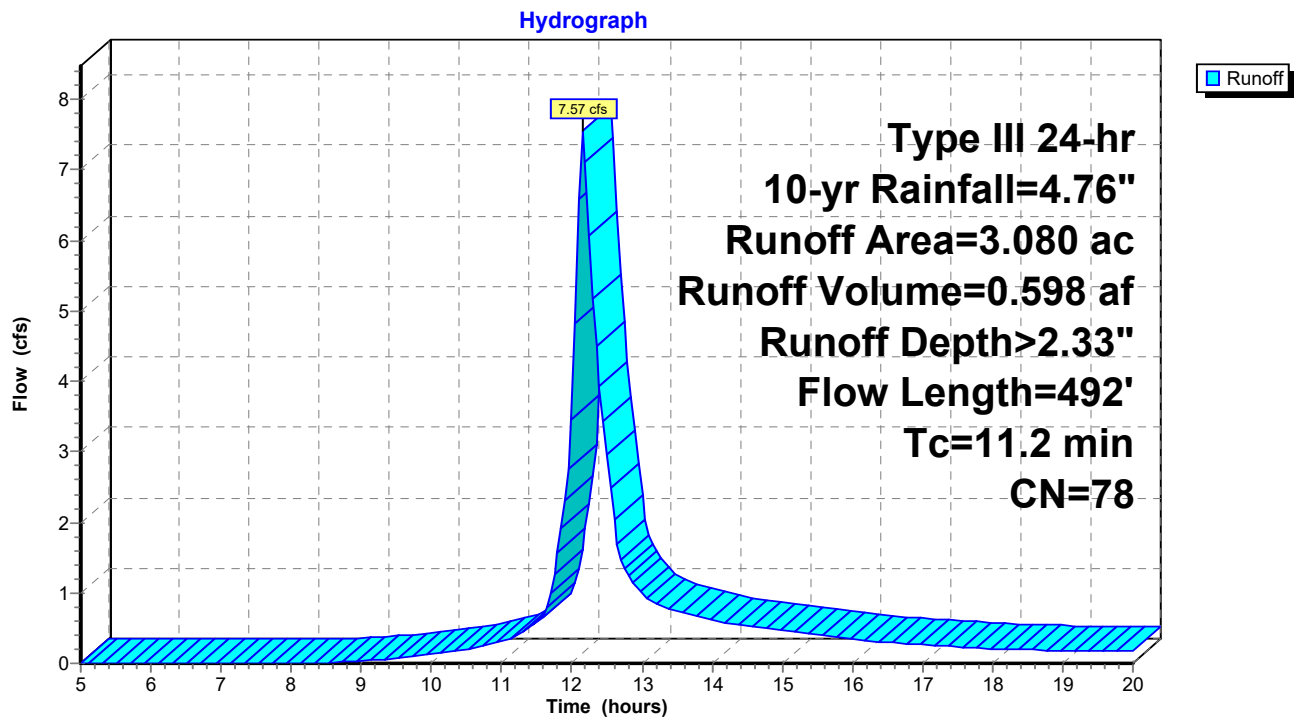
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Subcatchment 15S: Post Area #3C



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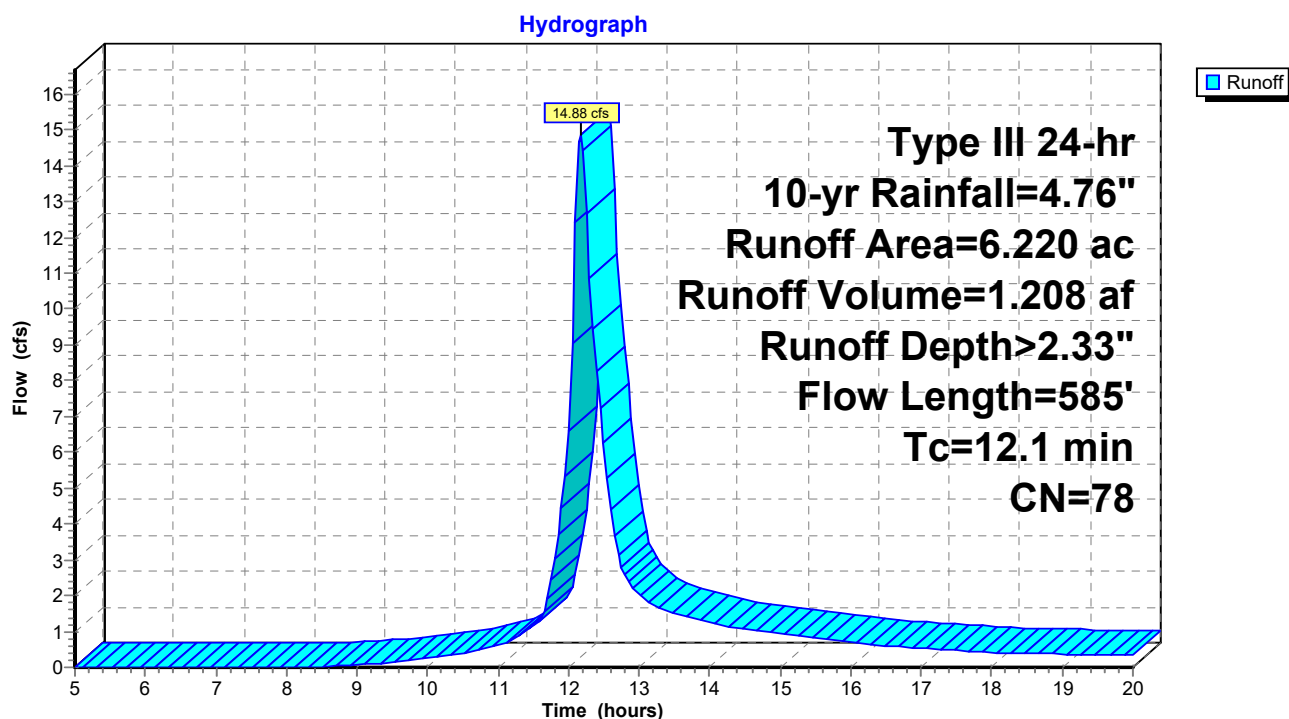
Summary for Subcatchment 16S: Post Area #3D

Runoff = 14.88 cfs @ 12.17 hrs, Volume= 1.208 af, Depth> 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.380	98	Paved parking, HSG C
1.270	70	Brush, Fair, HSG C
4.570	79	1 acre lots, 20% imp, HSG C
6.220	78	Weighted Average
4.926		79.20% Pervious Area
1.294		20.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.16		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
0.9	220	0.0640	4.07		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
0.8	94	0.0100	2.03		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
0.1	171	0.1100	31.05	97.54	Pipe Channel, Reach D-E 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
12.1	585	Total			

Subcatchment 16S: Post Area #3D

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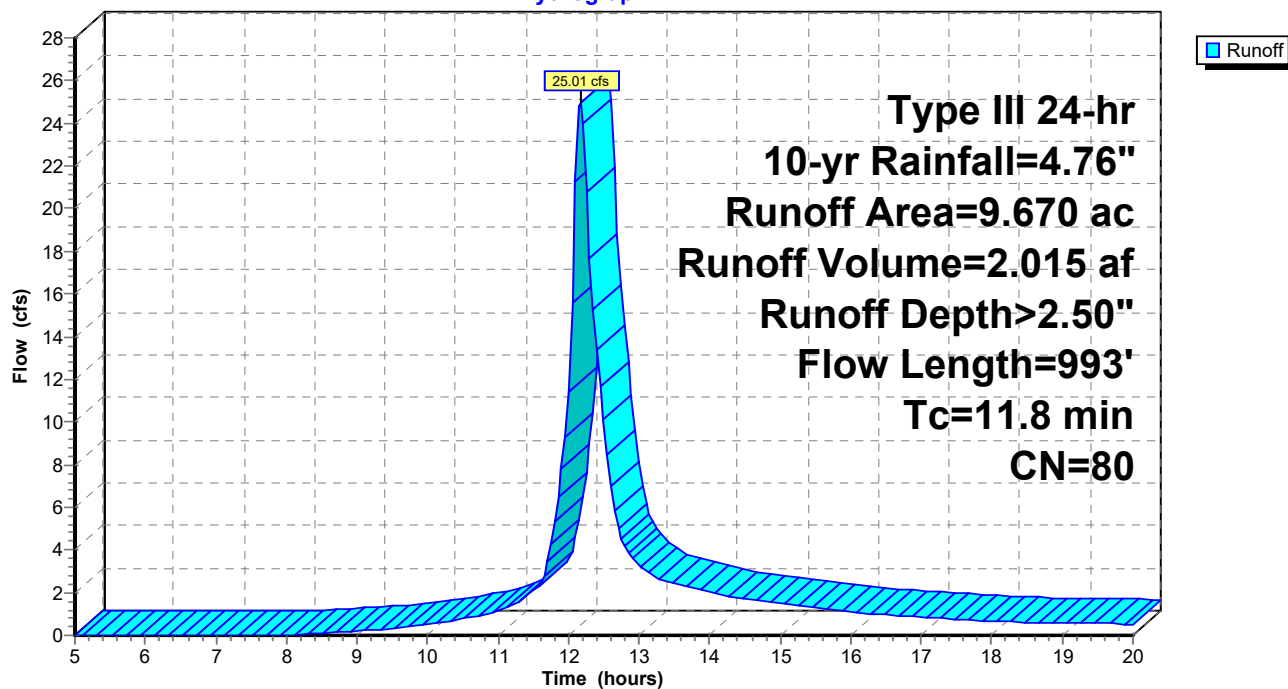
Summary for Subcatchment 17S: Post Area #3E

Runoff = 25.01 cfs @ 12.17 hrs, Volume= 2.015 af, Depth> 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.020	98	Paved parking, HSG B
0.070	56	Brush, Fair, HSG B
1.450	98	Paved parking, HSG C
1.890	70	Brush, Fair, HSG C
6.240	79	1 acre lots, 20% imp, HSG C
9.670	80	Weighted Average
6.952		71.89% Pervious Area
2.718		28.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.0500	0.18		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
0.7	163	0.0670	4.17		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
1.1	203	0.0220	3.01		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
0.5	527	0.0310	16.48	51.78	Pipe Channel, Reach D-E 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
11.8	993	Total			

Subcatchment 17S: Post Area #3E**Hydrograph**

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Summary for Subcatchment 18S: Post Area #3F

Runoff = 8.27 cfs @ 12.09 hrs, Volume= 0.559 af, Depth> 2.51"

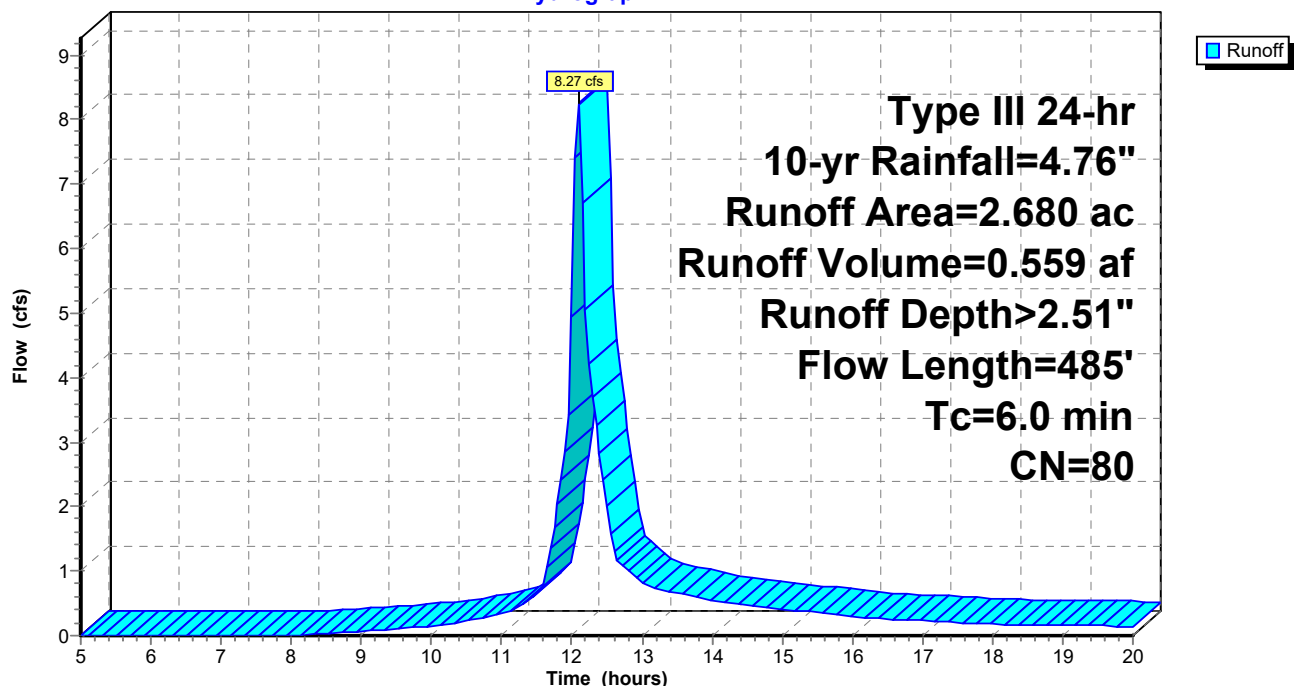
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.940	98	Paved parking, HSG C
1.740	70	Brush, Fair, HSG C
2.680	80	Weighted Average
1.740		64.93% Pervious Area
0.940		35.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0100	1.09		Sheet Flow, Reach A-B
					Smooth surfaces n= 0.011 P2= 3.50"
1.0	153	0.0170	2.65		Shallow Concentrated Flow, Reach B-C
					Paved Kv= 20.3 fps
0.3	232	0.0220	13.88	43.62	Pipe Channel, Reach C-D
					24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50'
					n= 0.010
3.2					Direct Entry,
6.0	485	Total			

Subcatchment 18S: Post Area #3F

Hydrograph



Summit Woods

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Type III 24-hr 10-yr Rainfall=4.76"

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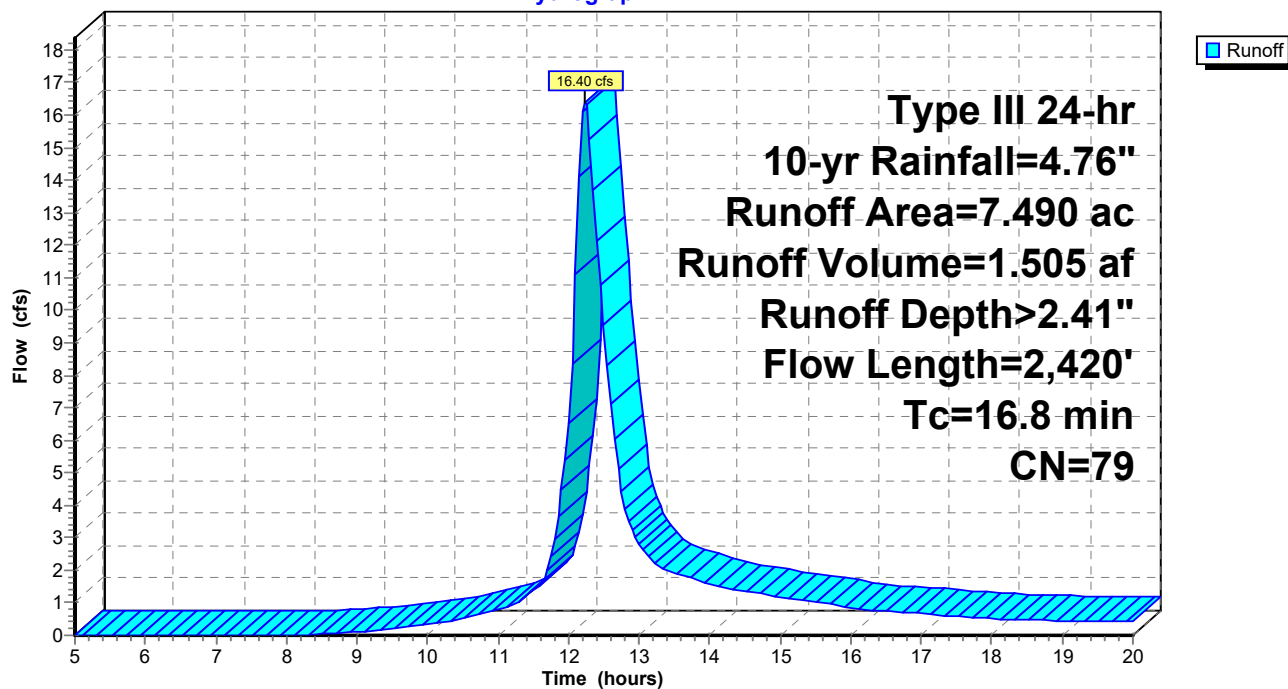
Summary for Subcatchment 19S: Post Area #3G

Runoff = 16.40 cfs @ 12.23 hrs, Volume= 1.505 af, Depth> 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.320	98	Paved parking, HSG B
0.930	68	1 acre lots, 20% imp, HSG B
0.280	56	Brush, Fair, HSG B
1.420	98	Paved parking, HSG C
1.560	70	Brush, Fair, HSG C
2.980	79	1 acre lots, 20% imp, HSG C
7.490	79	Weighted Average
4.968		66.33% Pervious Area
2.522		33.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0600	0.19		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
0.7	66	0.0100	1.61		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
0.9	160	0.0200	2.87		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
6.4	2,094	0.0050	5.46	9.66	Pipe Channel, Reach D-E 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.010
16.8	2,420	Total			

Subcatchment 19S: Post Area #3G**Hydrograph**

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Type III 24-hr 10-yr Rainfall=4.76"

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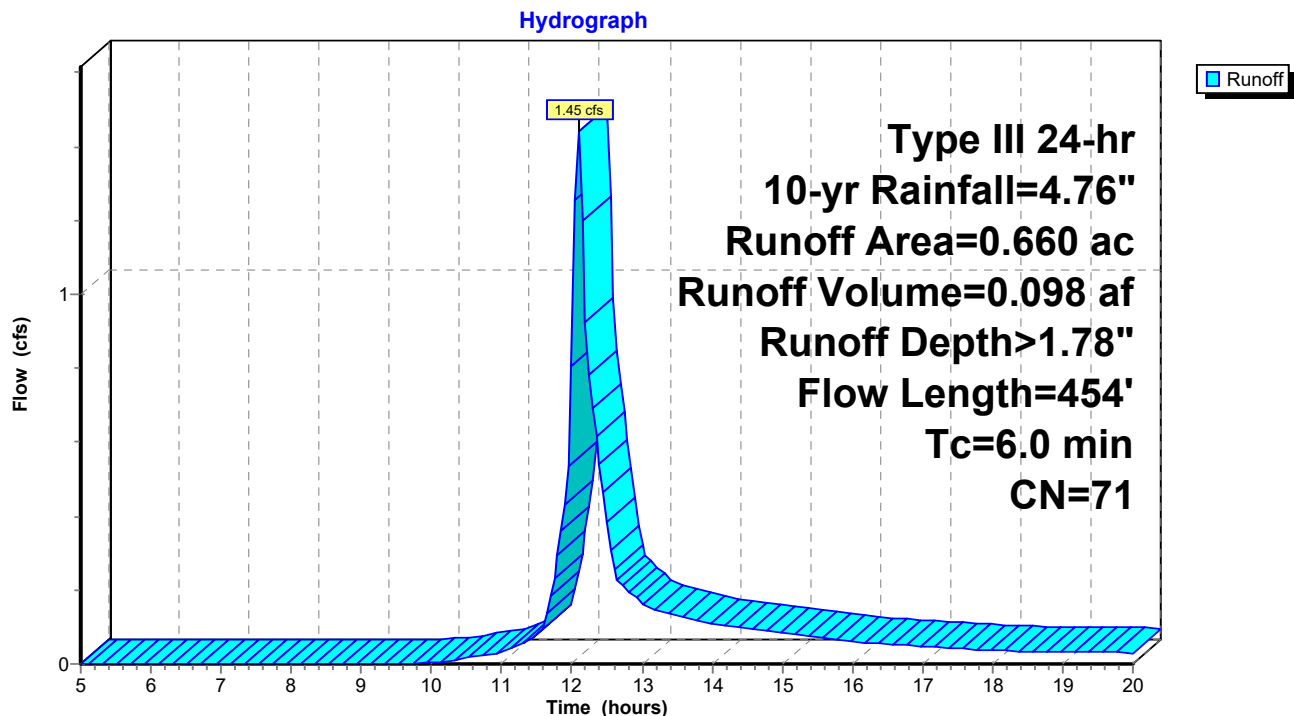
Summary for Subcatchment 20S: Post Area #3H

Runoff = 1.45 cfs @ 12.10 hrs, Volume= 0.098 af, Depth> 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.160	98	Paved parking, HSG B
0.260	68	1 acre lots, 20% imp, HSG B
0.240	56	Brush, Fair, HSG B
0.660	71	Weighted Average
0.448		67.88% Pervious Area
0.212		32.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.44		Sheet Flow, Reach A-B Smooth surfaces n= 0.011 P2= 3.50"
0.3	354	0.0370	18.01	56.57	Pipe Channel, Reach B-C 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
4.5					Direct Entry,
6.0	454	Total			

Subcatchment 20S: Post Area #3H

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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 21S: Post Area #3I

Runoff = 6.84 cfs @ 12.56 hrs, Volume= 0.902 af, Depth> 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.200	98	Paved parking, HSG B
2.600	68	1 acre lots, 20% imp, HSG B
0.230	56	Brush, Fair, HSG B
1.540	73	Woods, Fair, HSG C
0.970	70	Brush, Fair, HSG C
0.610	79	1 acre lots, 20% imp, HSG C
6.150	71	Weighted Average
5.308		86.31% Pervious Area
0.842		13.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.4600	0.28		Sheet Flow, Reach A-B Woods: Light underbrush n= 0.400 P2= 3.50"
10.1	343	0.0122	0.57	14.78	Channel Flow, REach B-C Area= 26.0 sf Perim= 34.3' r= 0.76' n= 0.240
6.6	409	0.1760	1.03	6.36	Channel Flow, Reach C-D Area= 6.2 sf Perim= 25.0' r= 0.25' n= 0.240
13.4	247	0.0078	0.31	3.38	Channel Flow, Reach D-E Area= 11.0 sf Perim= 26.1' r= 0.42' n= 0.240
2.8	1,008	0.0350	6.02	10.64	Pipe Channel, Reach E-F 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.024
38.8	2,107	Total			

Summit Woods

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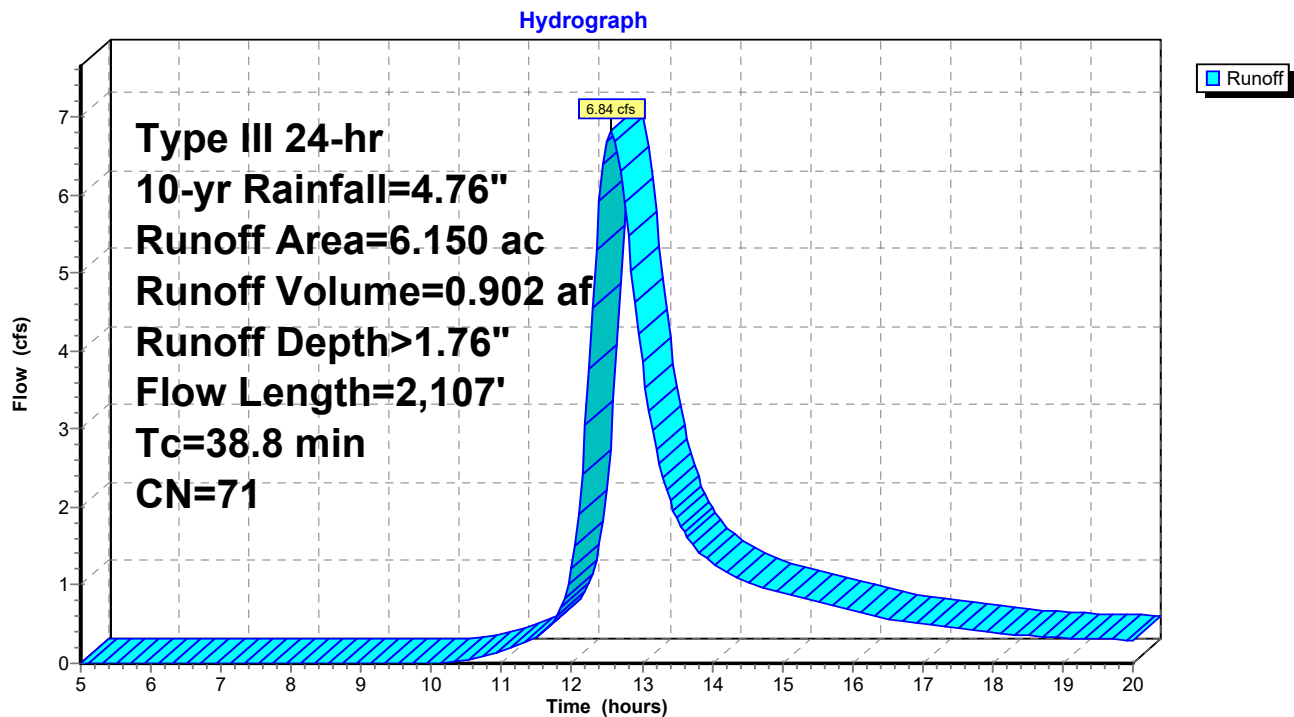
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Subcatchment 21S: Post Area #3I



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Summary for Subcatchment 22S: Post Area #3J

Runoff = 27.95 cfs @ 12.21 hrs, Volume= 2.449 af, Depth> 2.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.320	98	Paved parking, HSG B
3.100	68	1 acre lots, 20% imp, HSG B
0.390	56	Brush, Fair, HSG B
0.360	98	Paved parking, HSG C
0.160	73	Woods, Fair, HSG C
1.750	70	Brush, Fair, HSG C
7.500	79	1 acre lots, 20% imp, HSG C
13.580	76	Weighted Average
10.780		79.38% Pervious Area
2.800		20.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.16		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
1.5	308	0.0450	3.42		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
2.4	203	0.0050	1.44		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
0.8	208	0.0052	4.29	7.57	Pipe Channel, Reach D-E 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
15.0	819	Total			

Summit Woods

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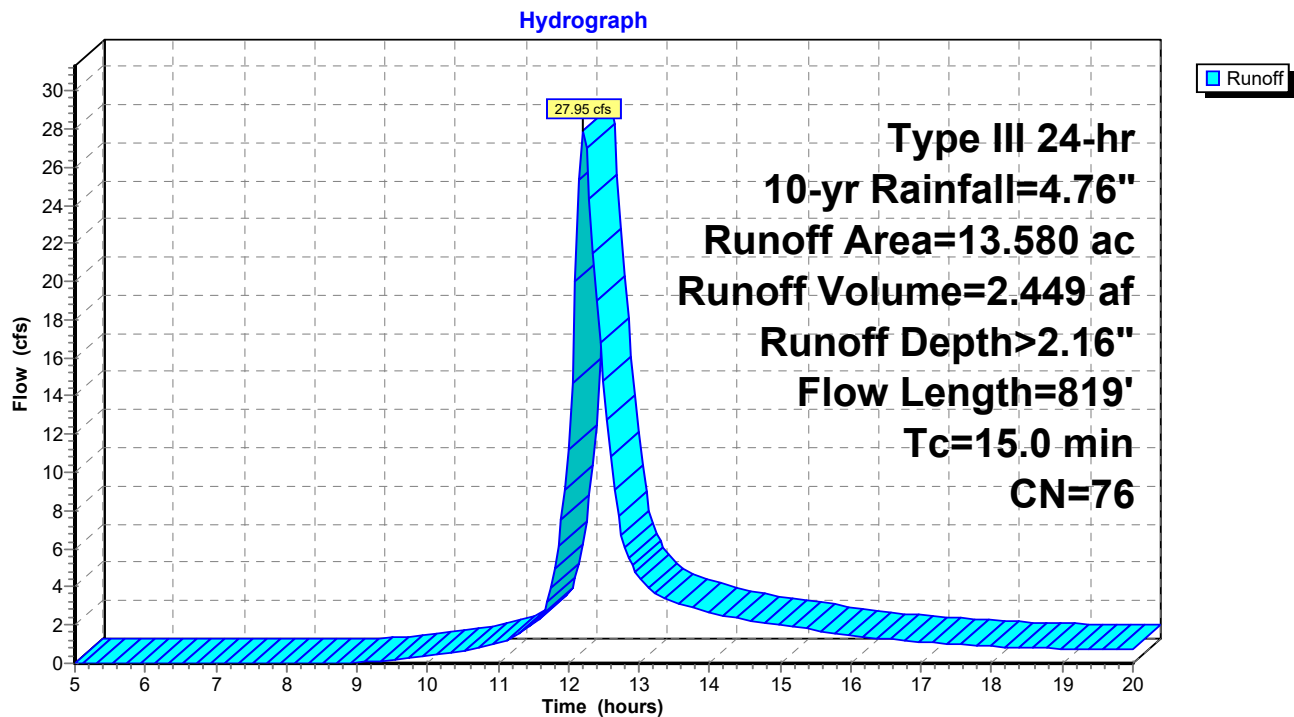
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Type III 24-hr 10-yr Rainfall=4.76"

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Subcatchment 22S: Post Area #3J



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 23S: Post #3K

Runoff = 11.95 cfs @ 12.22 hrs, Volume= 1.072 af, Depth> 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.080	35	Brush, Fair, HSG A
0.300	98	Paved parking, HSG B
2.010	68	1 acre lots, 20% imp, HSG B
0.300	60	Woods, Fair, HSG B
1.040	56	Brush, Fair, HSG B
0.100	70	Brush, Fair, HSG C
2.590	73	Woods, Fair, HSG C
1.130	79	1 acre lots, 20% imp, HSG C
7.550	70	Weighted Average
6.622		87.71% Pervious Area
0.928		12.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.2200	0.21		Sheet Flow, Reach A-B Woods: Light underbrush n= 0.400 P2= 3.50"
5.9	792	0.2000	2.24		Shallow Concentrated Flow, Reach B-C Woodland Kv= 5.0 fps
1.1	323	0.0580	4.89		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
0.5	133	0.0055	4.41	7.79	Pipe Channel, Reach D-E 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
15.4	1,348	Total			

Summit Woods

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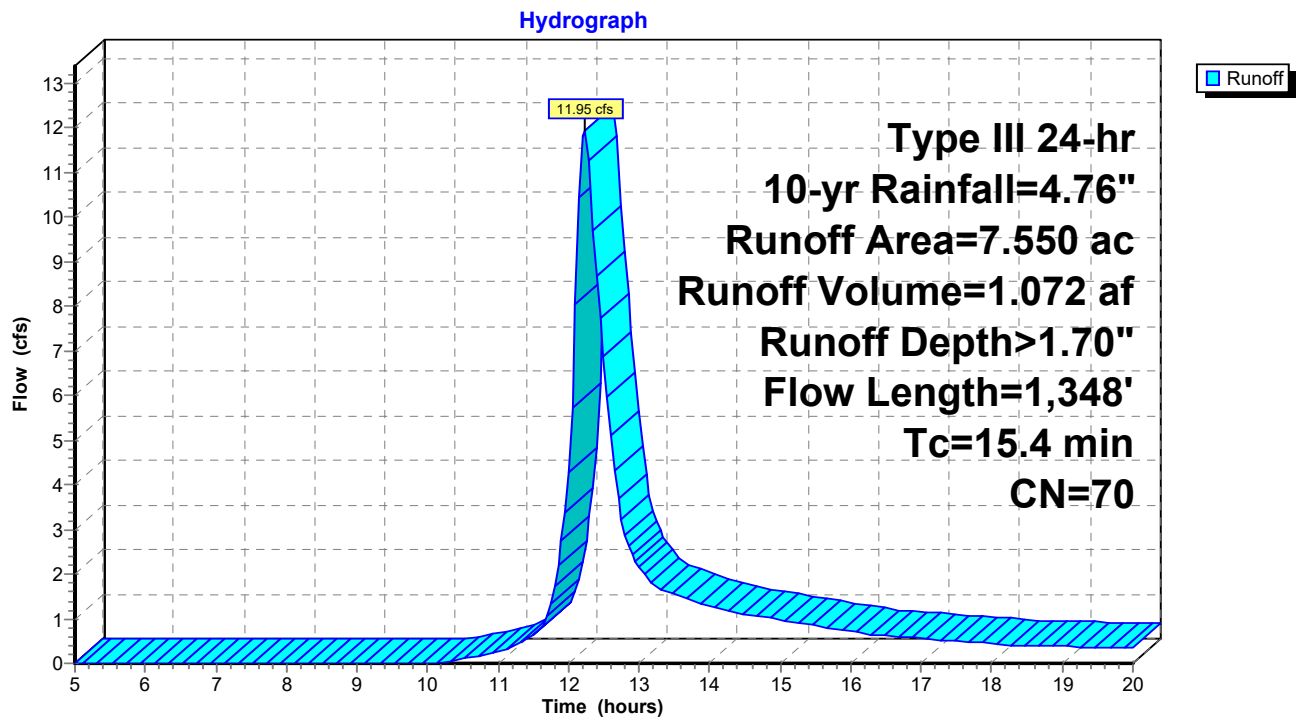
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Subcatchment 23S: Post #3K



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 24S: Post Area #3L

Runoff = 16.65 cfs @ 12.19 hrs, Volume= 1.411 af, Depth> 1.49"

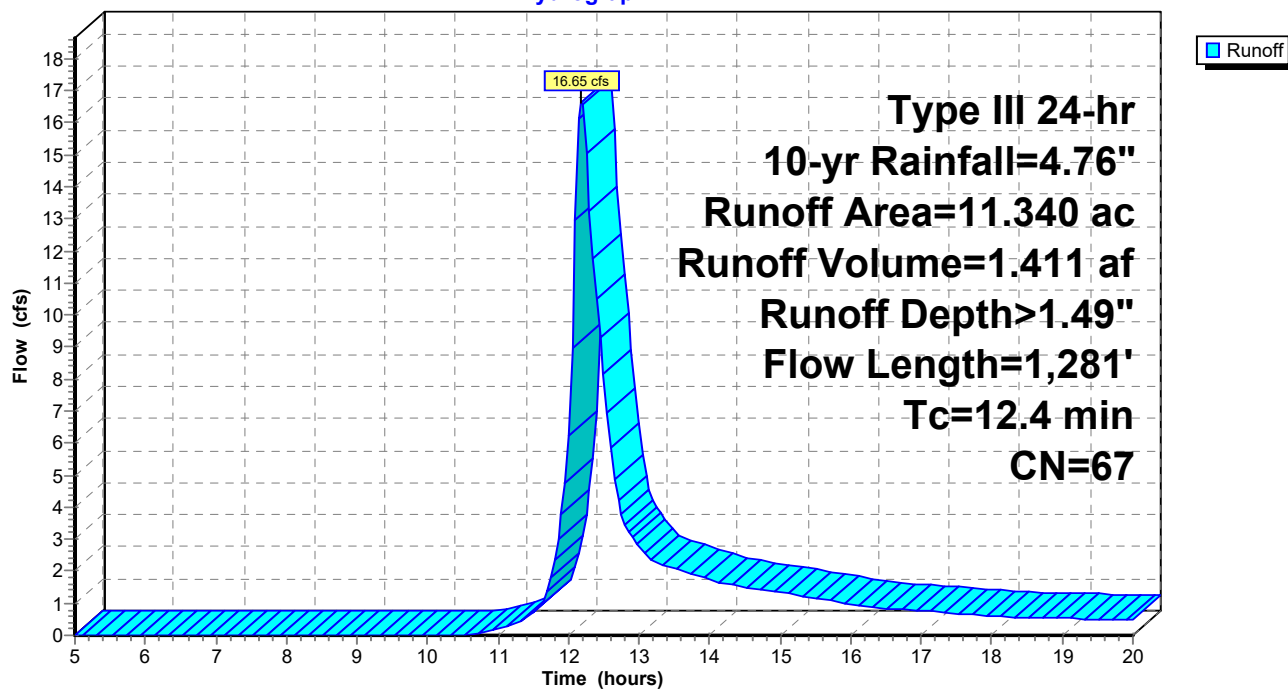
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.800	98	Paved parking, HSG C
6.100	68	1 acre lots, 20% imp, HSG B
3.290	60	Woods, Fair, HSG B
1.150	56	Brush, Fair, HSG B
11.340	67	Weighted Average
9.320		82.19% Pervious Area
2.020		17.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.2800	0.35		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
3.4	645	0.2090	3.20		Shallow Concentrated Flow, Reach B-C Short Grass Pasture Kv= 7.0 fps
0.3	88	0.0450	4.31		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
4.0	448	0.0010	1.88	3.32	Pipe Channel, Reach D-E 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
12.4	1,281	Total			

Subcatchment 24S: Post Area #3L

Hydrograph



Summit Woods

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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 25S: Post Area #4

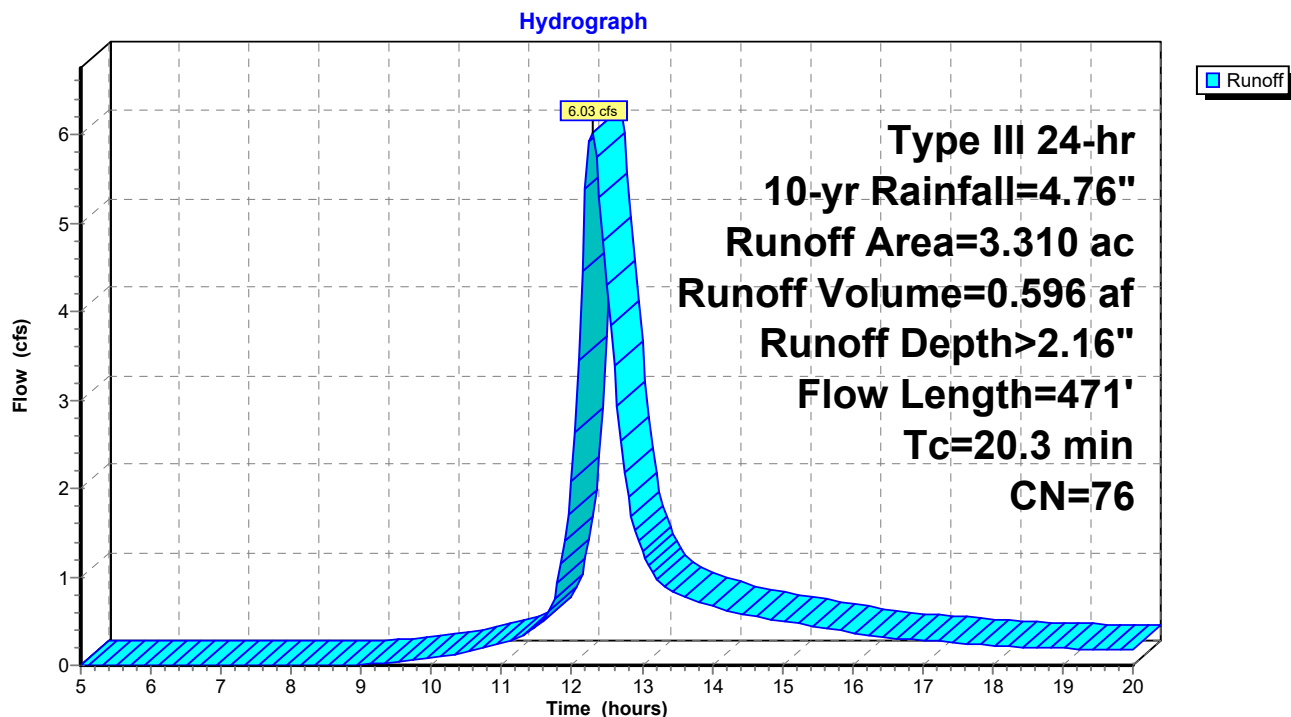
Runoff = 6.03 cfs @ 12.29 hrs, Volume= 0.596 af, Depth> 2.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
1.030	73	Woods, Fair, HSG C
0.270	70	Brush, Fair, HSG C
2.010	79	1 acre lots, 20% imp, HSG C
3.310	76	Weighted Average
2.908		87.85% Pervious Area
0.402		12.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	100	0.0100	0.09		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
2.3	371	0.0270	2.65		Shallow Concentrated Flow, Reach B- DP#4
					Unpaved Kv= 16.1 fps
20.3	471	Total			

Subcatchment 25S: Post Area #4



Summit Woods

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Type III 24-hr 10-yr Rainfall=4.76"

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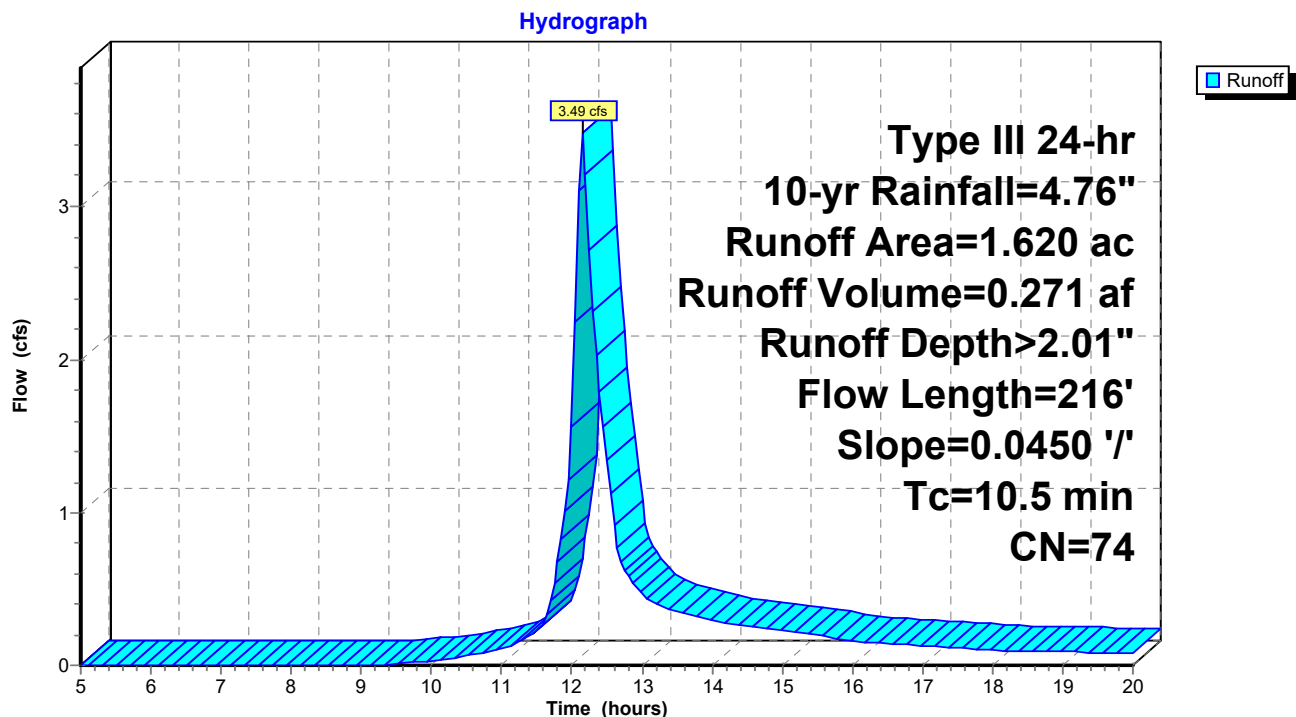
Summary for Subcatchment 26S: Post Area #5

Runoff = 3.49 cfs @ 12.15 hrs, Volume= 0.271 af, Depth> 2.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.360	73	Woods, Fair, HSG C
0.660	70	Brush, Fair, HSG C
0.600	79	1 acre lots, 20% imp, HSG C
1.620	74	Weighted Average
1.500		92.59% Pervious Area
0.120		7.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0450	0.17		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
0.6	116	0.0450	3.42		Shallow Concentrated Flow, Reach B-DP#5
					Unpaved Kv= 16.1 fps
10.5	216	Total			

Subcatchment 26S: Post Area #5

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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 27S: Post Area #6A

Runoff = 10.93 cfs @ 14.94 hrs, Volume= 3.829 af, Depth> 1.65"

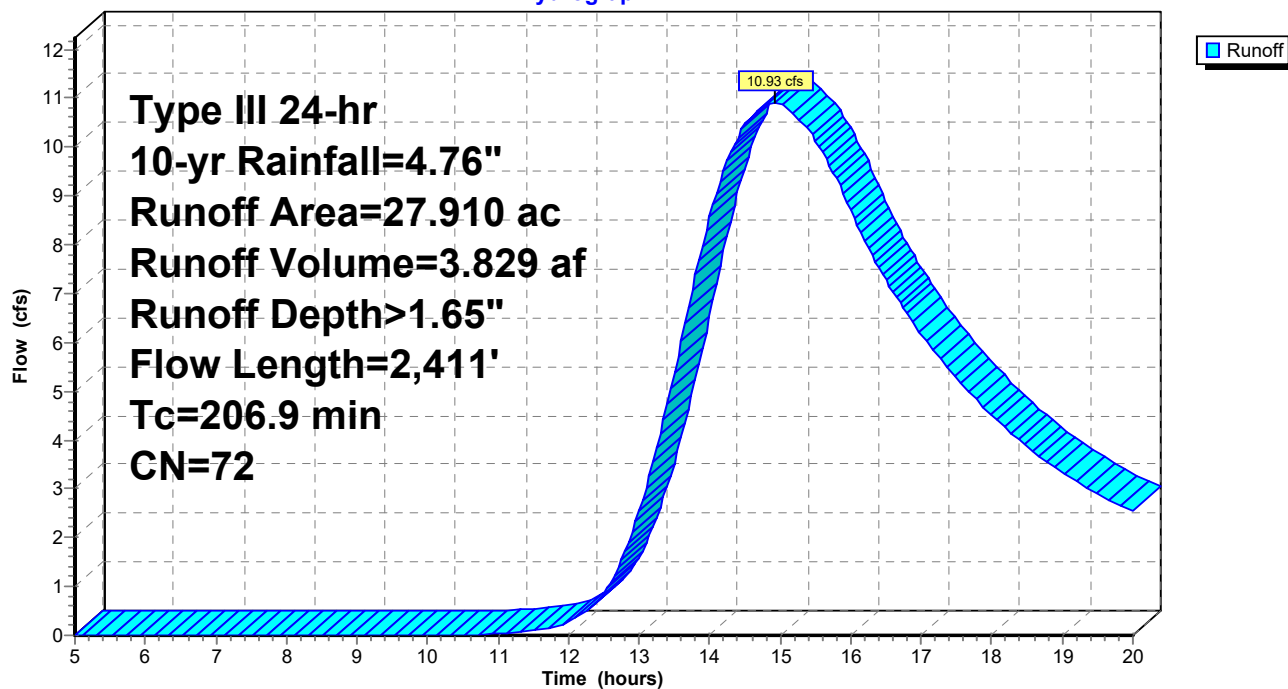
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
4.000	68	1 acre lots, 20% imp, HSG B
1.550	60	Woods, Fair, HSG B
1.060	56	Brush, Fair, HSG B
11.690	70	Brush, Fair, HSG C
* 5.180	78	Wetland, HSG C
4.430	79	1 acre lots, 20% imp, HSG C
27.910	72	Weighted Average
26.224		93.96% Pervious Area
1.686		6.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	100	0.0800	0.21		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
1.0	271	0.0740	4.38		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
198.1	2,040	0.0050	0.17	0.46	Channel Flow, Reach C-DP#6 Area= 2.7 sf Perim= 11.0' r= 0.25' n= 0.240
206.9	2,411	Total			

Subcatchment 27S: Post Area #6A

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 28S: Post Area #6B

Runoff = 13.43 cfs @ 12.24 hrs, Volume= 1.245 af, Depth> 2.41"

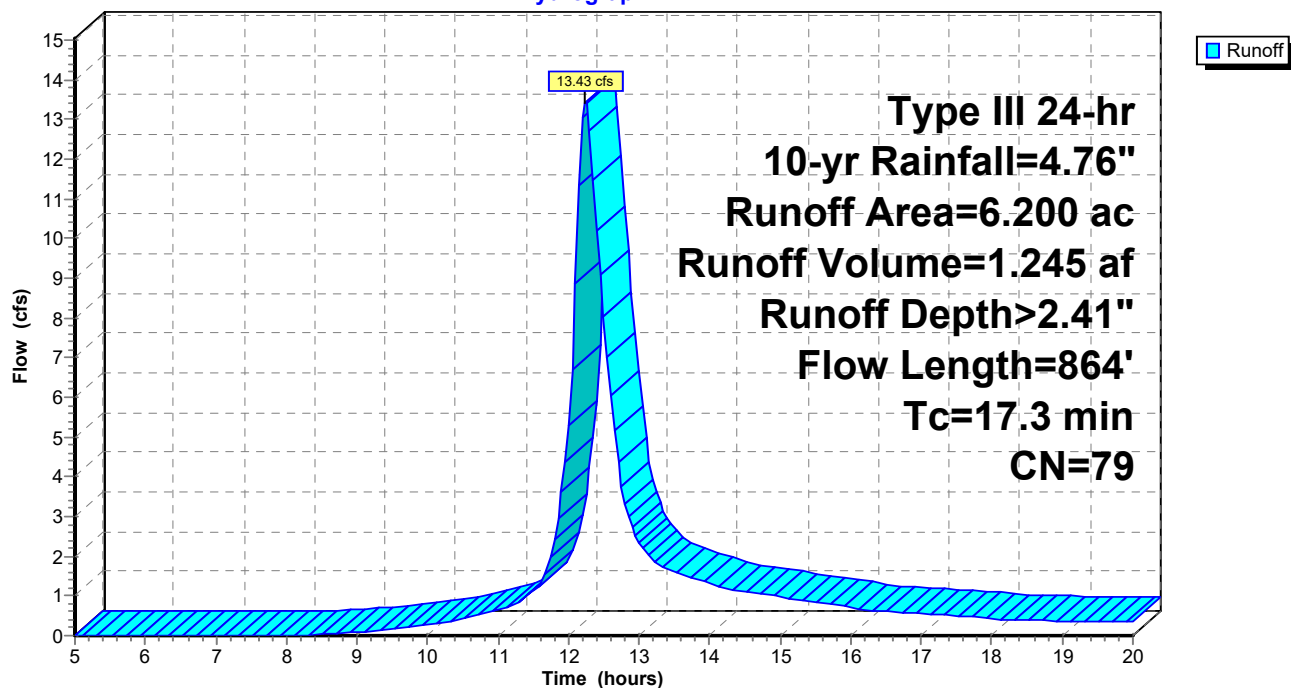
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.620	98	Paved parking, HSG C
1.180	70	Brush, Fair, HSG C
4.400	79	1 acre lots, 20% imp, HSG C
6.200	79	Weighted Average
4.700		75.81% Pervious Area
1.500		24.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0200	0.12		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
3.1	614	0.0410	3.26		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
0.6	150	0.0050	4.20	7.43	Pipe Channel, Reach C-D 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
17.3	864	Total			

Subcatchment 28S: Post Area #6B

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 29S: Post Area #6C

Runoff = 7.87 cfs @ 12.11 hrs, Volume= 0.546 af, Depth> 2.01"

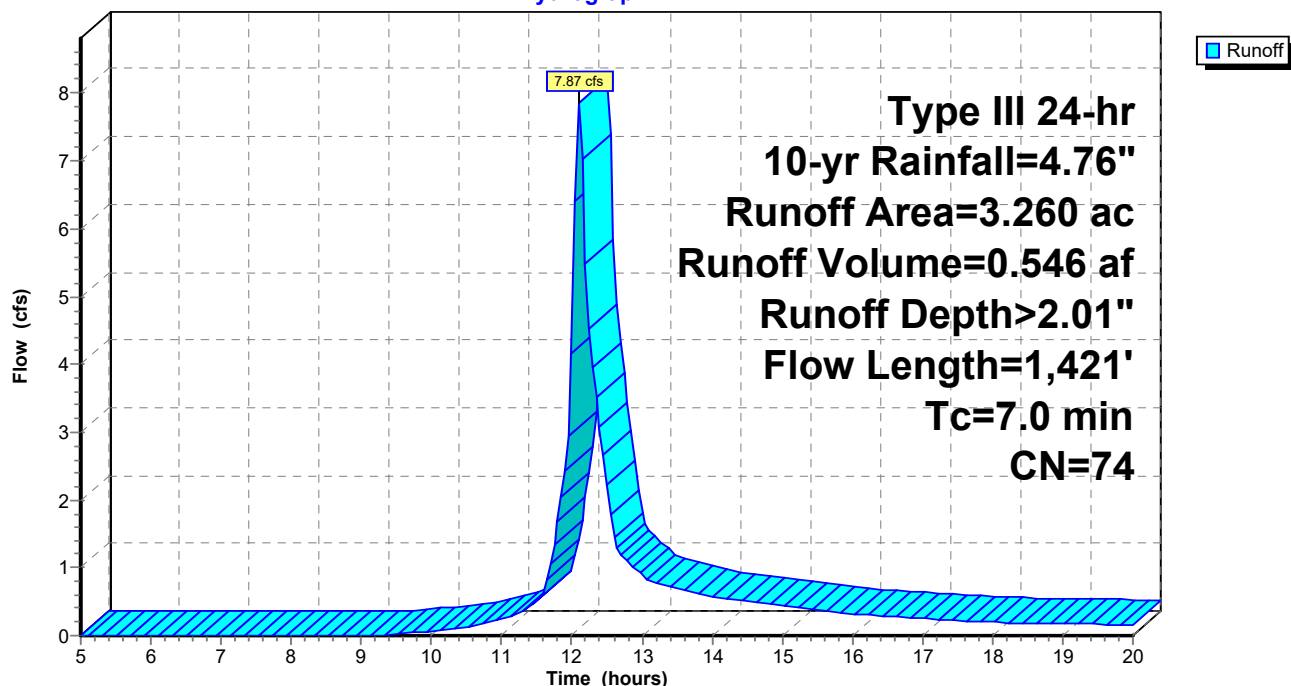
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.710	98	Paved parking, HSG C
0.950	56	Brush, Fair, HSG B
1.600	75	1/4 acre lots, 38% imp, HSG B
3.260	74	Weighted Average
1.942		59.57% Pervious Area
1.318		40.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0100	1.09		Sheet Flow, Reach A-B Smooth surfaces n= 0.011 P2= 3.50"
0.5	50	0.0078	1.79		Shallow Concentrated Flow, Reach B-C Paved Kv= 20.3 fps
5.0	1,271	0.0050	4.20	7.43	Pipe Channel, Reach C-D 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
7.0	1,421	Total			

Subcatchment 29S: Post Area #6C

Hydrograph



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Summary for Subcatchment 31S: Post Area #7

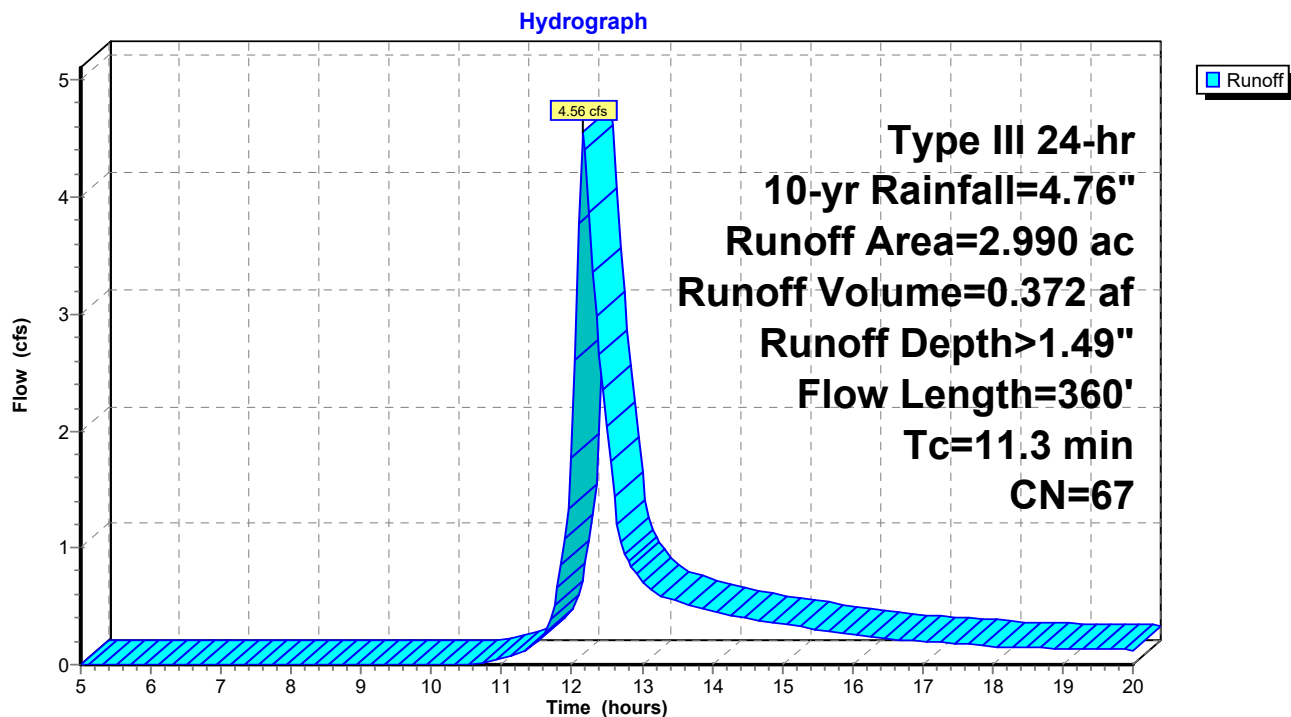
Runoff = 4.56 cfs @ 12.17 hrs, Volume= 0.372 af, Depth> 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
2.620	68	1 acre lots, 20% imp, HSG B
0.370	60	Woods, Fair, HSG B
2.990	67	Weighted Average
2.466		82.47% Pervious Area
0.524		17.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0600	0.19		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
2.5	260	0.0120	1.76		Shallow Concentrated Flow, Reach B-DP#7
					Unpaved Kv= 16.1 fps
11.3	360	Total			

Subcatchment 31S: Post Area #7



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Type III 24-hr 10-yr Rainfall=4.76"

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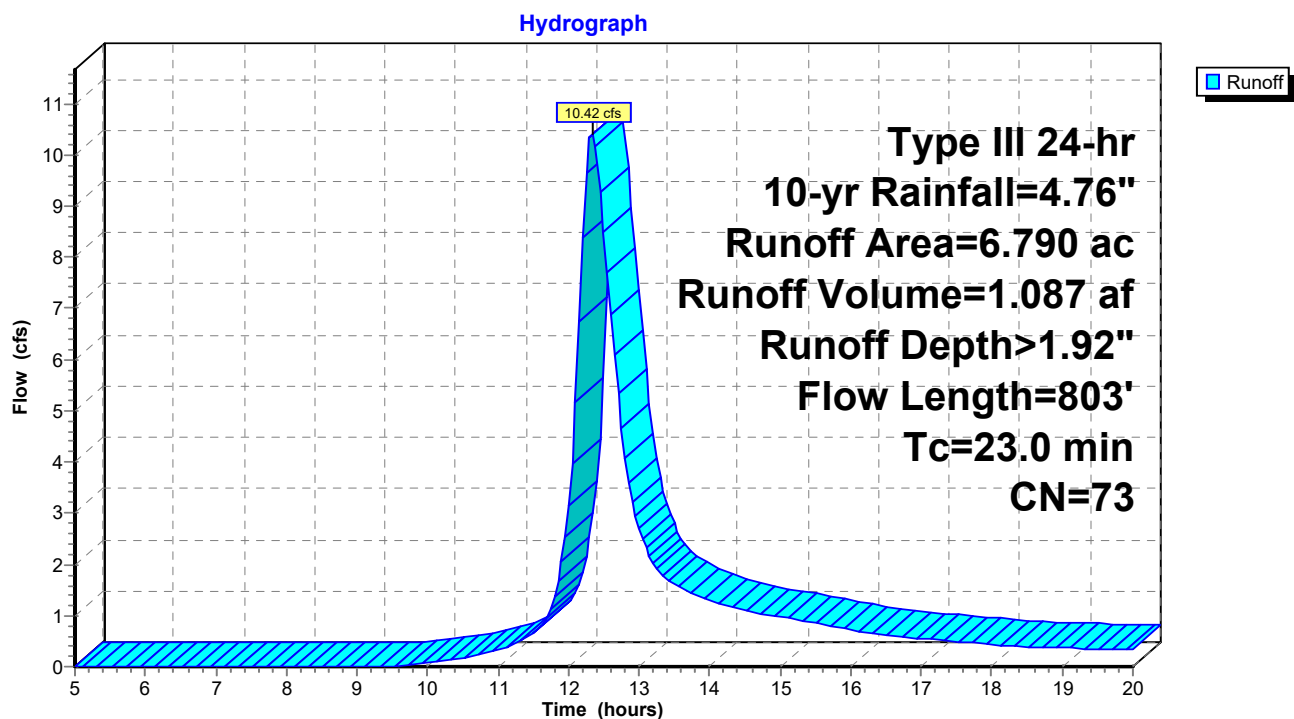
Summary for Subcatchment 32S: Post Area #8

Runoff = 10.42 cfs @ 12.33 hrs, Volume= 1.087 af, Depth> 1.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
1.600	73	Woods, Fair, HSG C
* 1.780	78	Wetland, HSG C
3.410	70	Brush, Fair, HSG C
6.790	73	Weighted Average
6.790		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0200	0.12		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
9.4	703	0.0060	1.25		Shallow Concentrated Flow, Reach B-DP#8
					Unpaved Kv= 16.1 fps
23.0	803	Total			

Subcatchment 32S: Post Area #8

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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 33S: Post Area #9

Runoff = 11.12 cfs @ 13.06 hrs, Volume= 2.141 af, Depth> 2.11"

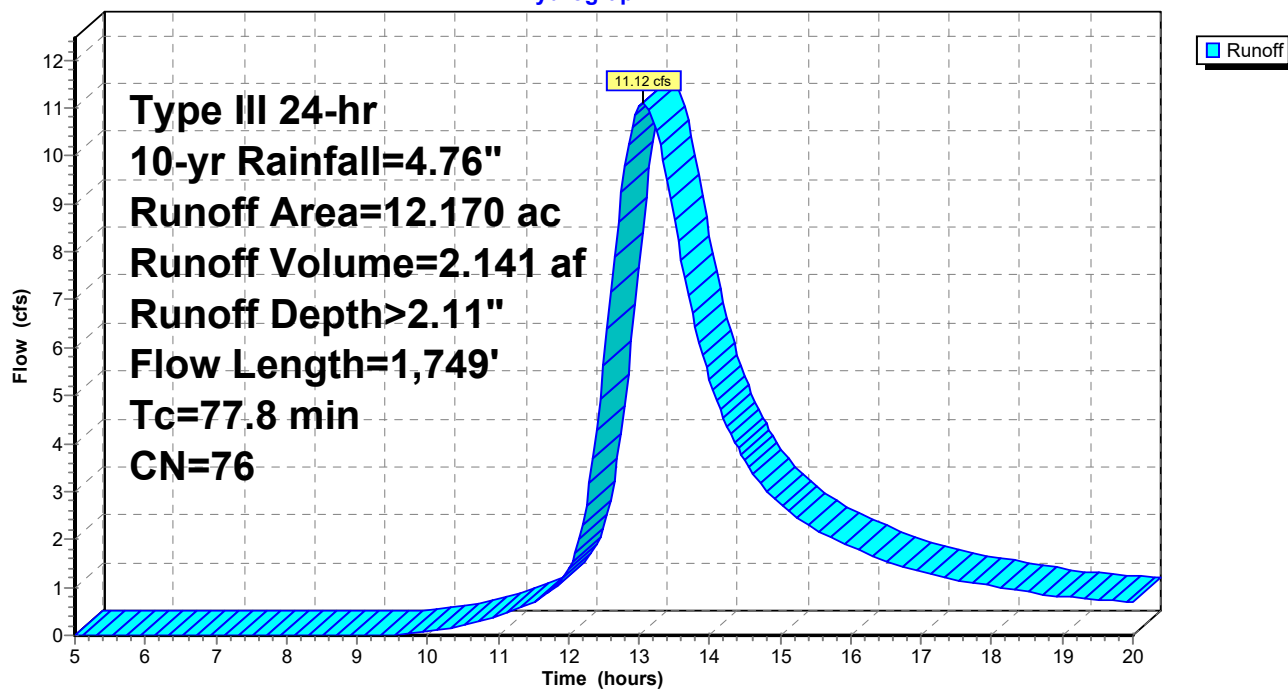
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
1.470	73	Woods, Fair, HSG C
8.500	77	2 acre lots, 12% imp, HSG C
1.720	70	Brush, Fair, HSG C
0.480	98	Paved parking, HSG C
12.170	76	Weighted Average
10.670		87.67% Pervious Area
1.500		12.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
49.4	100	0.0050	0.03		Sheet Flow, Reach A-B n= 0.600 P2= 3.50"
1.1	152	0.0200	2.28		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
5.7	193	0.0340	0.57	2.85	Channel Flow, Reach C-D Area= 5.0 sf Perim= 14.2' r= 0.35' n= 0.240
0.5	155	0.0110	4.76	3.74	Pipe Channel, Reach D-E 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
21.1	1,149	0.0850	0.91	4.54	Channel Flow, Reach E-DP#9 Area= 5.0 sf Perim= 14.0' r= 0.36' n= 0.240
77.8	1,749	Total			

Subcatchment 33S: Post Area #9

Hydrograph



Summit Woods

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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 52S: Post Area #6D-2

Runoff = 3.31 cfs @ 12.23 hrs, Volume= 0.318 af, Depth> 3.43"

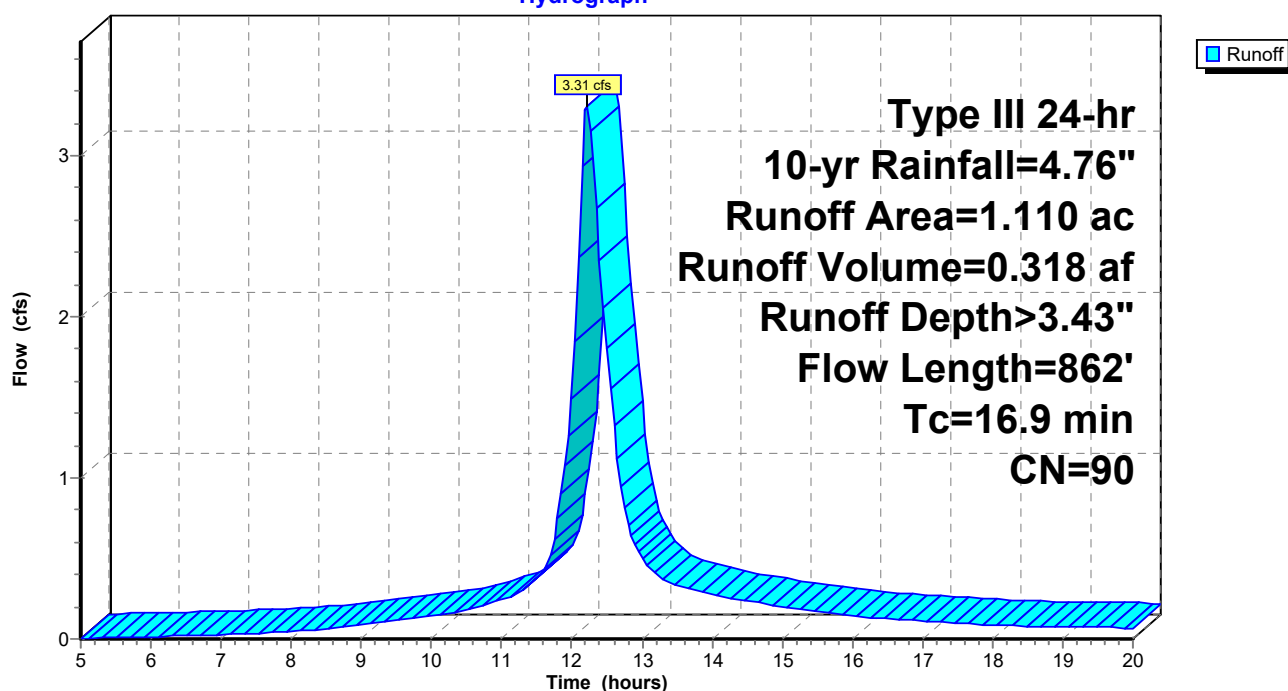
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.620	98	Paved parking, HSG C
0.490	80	1/2 acre lots, 25% imp, HSG C
1.110	90	Weighted Average
0.368		33.11% Pervious Area
0.743		66.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.20		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
8.4	721	0.0050	1.44		Shallow Concentrated Flow, Reach B-C Paved Kv= 20.3 fps
0.2	41	0.0050	4.20	7.43	Pipe Channel, Reach C-D 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
16.9	862	Total			

Subcatchment 52S: Post Area #6D-2

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Subcatchment 53S: Post Area #6D-1

Runoff = 7.33 cfs @ 12.14 hrs, Volume= 0.551 af, Depth> 2.25"

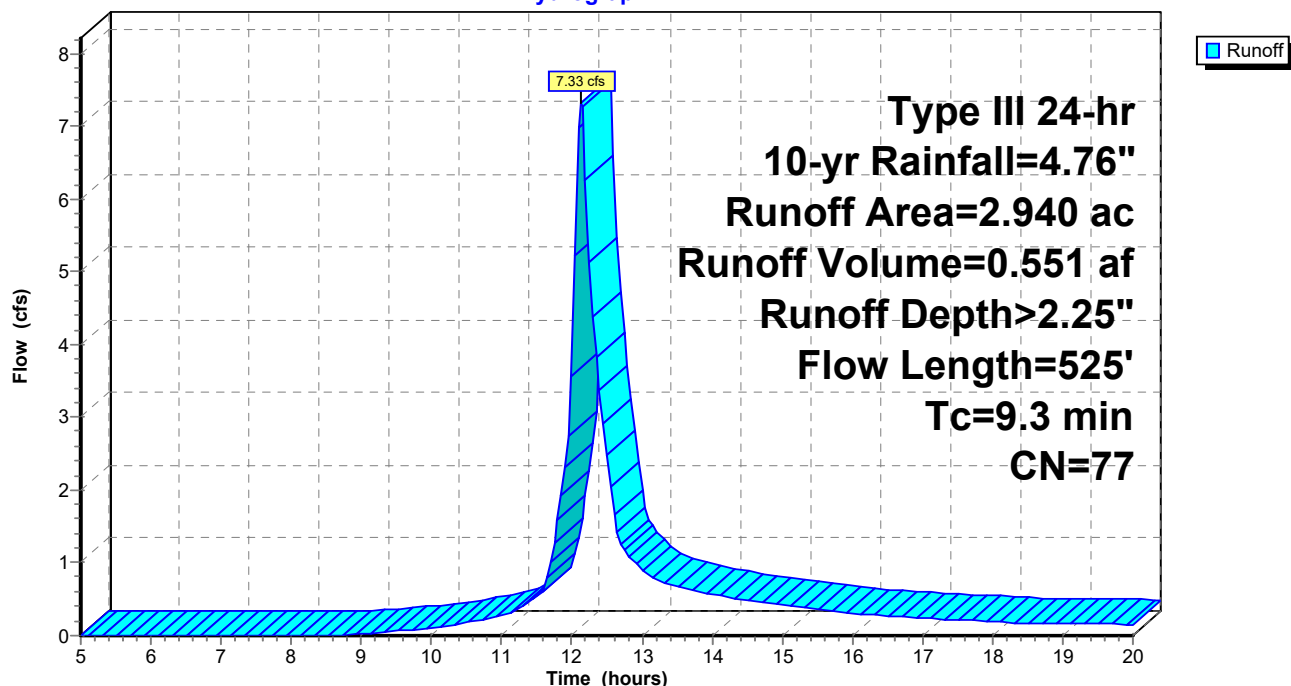
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.76"

Area (ac)	CN	Description
0.970	70	Brush, Fair, HSG C
* 0.070	78	Wetland, HSG C
1.900	80	1/2 acre lots, 25% imp, HSG C
2.940	77	Weighted Average
2.465		83.84% Pervious Area
0.475		16.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.20		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
0.6	50	0.0050	1.44		Shallow Concentrated Flow, Reach B-C Paved Kv= 20.3 fps
0.4	375	0.0340	17.26	54.23	Pipe Channel, Reach C-D 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
9.3	525	Total			

Subcatchment 53S: Post Area #6D-1

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Reach 50R: Reach #3B

Inflow Area = 4.540 ac, 35.52% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 16.7 sf, Capacity= 25.36 cfs

25.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools

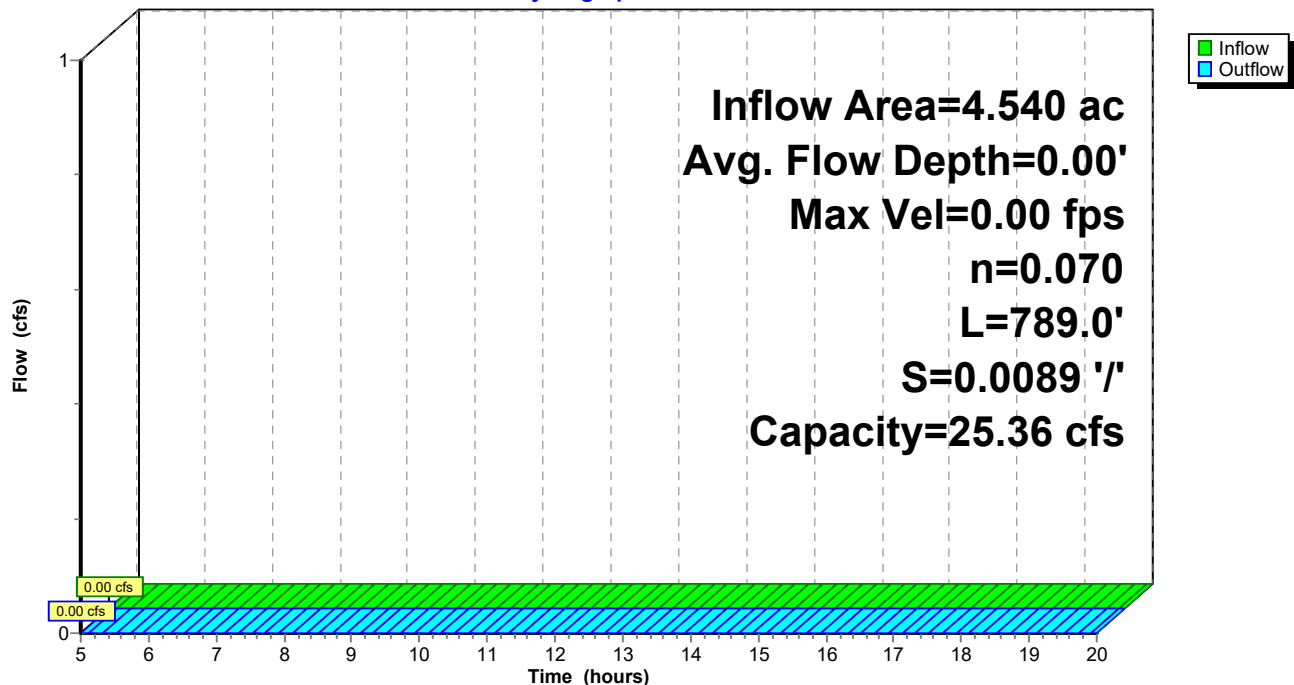
Length= 789.0' Slope= 0.0089 1'

Inlet Invert= 322.00', Outlet Invert= 315.00'



Reach 50R: Reach #3B

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Reach 51R: Post Area #3

Inflow Area = 302.860 ac, 8.14% Impervious, Inflow Depth > 0.79" for 10-yr event
Inflow = 50.66 cfs @ 18.16 hrs, Volume= 19.865 af
Outflow = 50.58 cfs @ 18.57 hrs, Volume= 18.249 af, Atten= 0%, Lag= 24.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.90 fps, Min. Travel Time= 13.0 min

Avg. Velocity= 1.23 fps, Avg. Travel Time= 20.1 min

Peak Storage= 39,360 cf @ 18.35 hrs

Average Depth at Peak Storage= 1.47'

Bank-Full Depth= 5.00' Flow Area= 166.7 sf, Capacity= 706.54 cfs

50.00' x 5.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

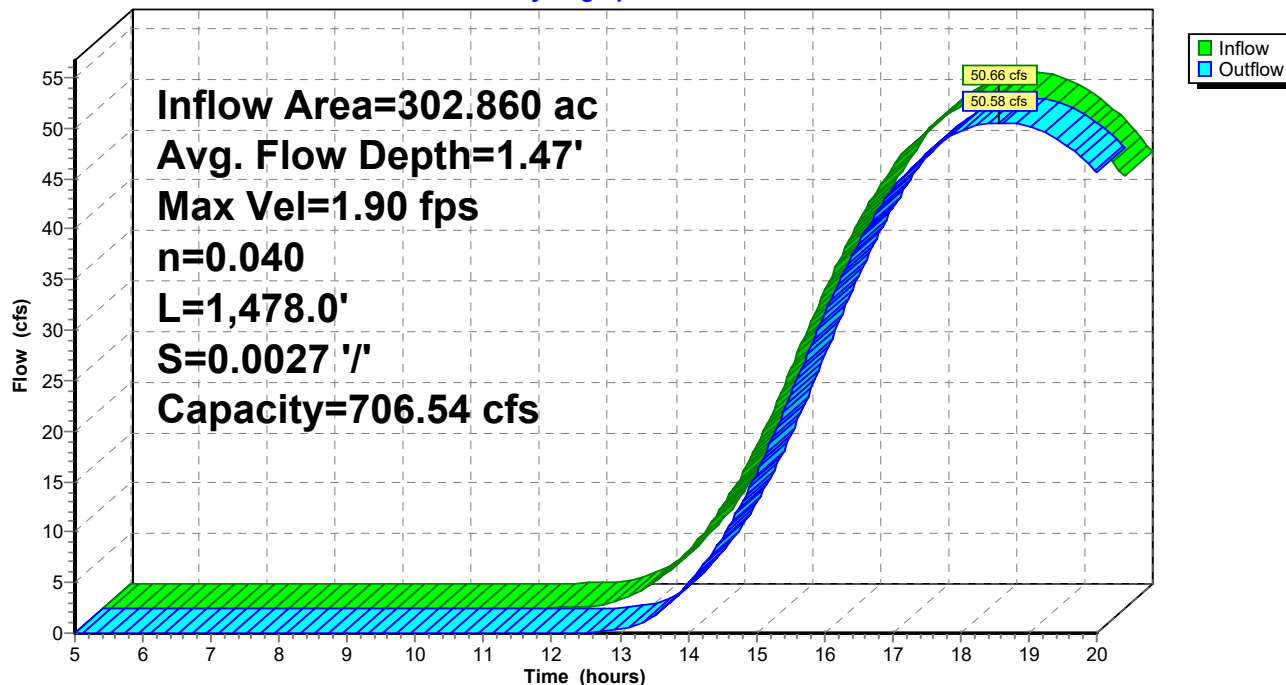
Length= 1,478.0' Slope= 0.0027 '/'

Inlet Invert= 315.00', Outlet Invert= 311.00'



Reach 51R: Post Area #3

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Reach 52R: Reach #3L-1

Inflow Area = 17.490 ac, 16.36% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 0.50' Flow Area= 20.0 sf, Capacity= 76.67 cfs

60.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

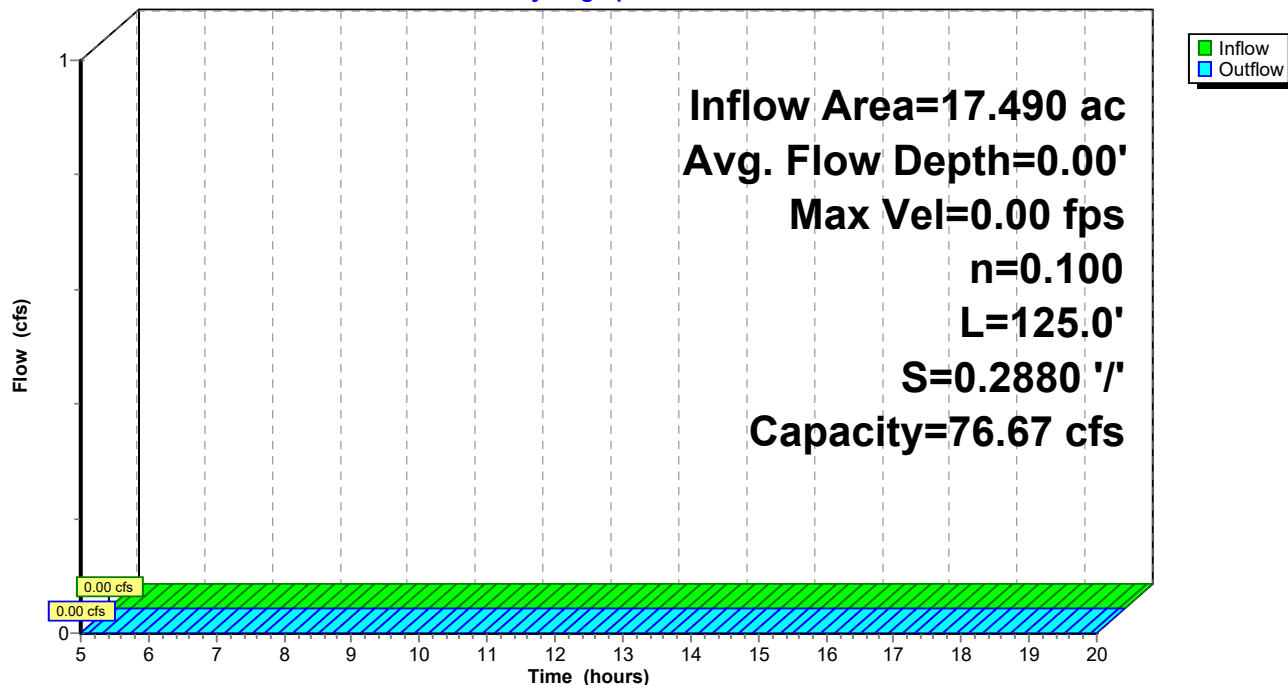
Length= 125.0' Slope= 0.2880 1'

Inlet Invert= 384.00', Outlet Invert= 348.00'



Reach 52R: Reach #3L-1

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Reach 53R: Reach #3C

Inflow Area = 3.080 ac, 22.08% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 16.7 sf, Capacity= 33.14 cfs

25.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools

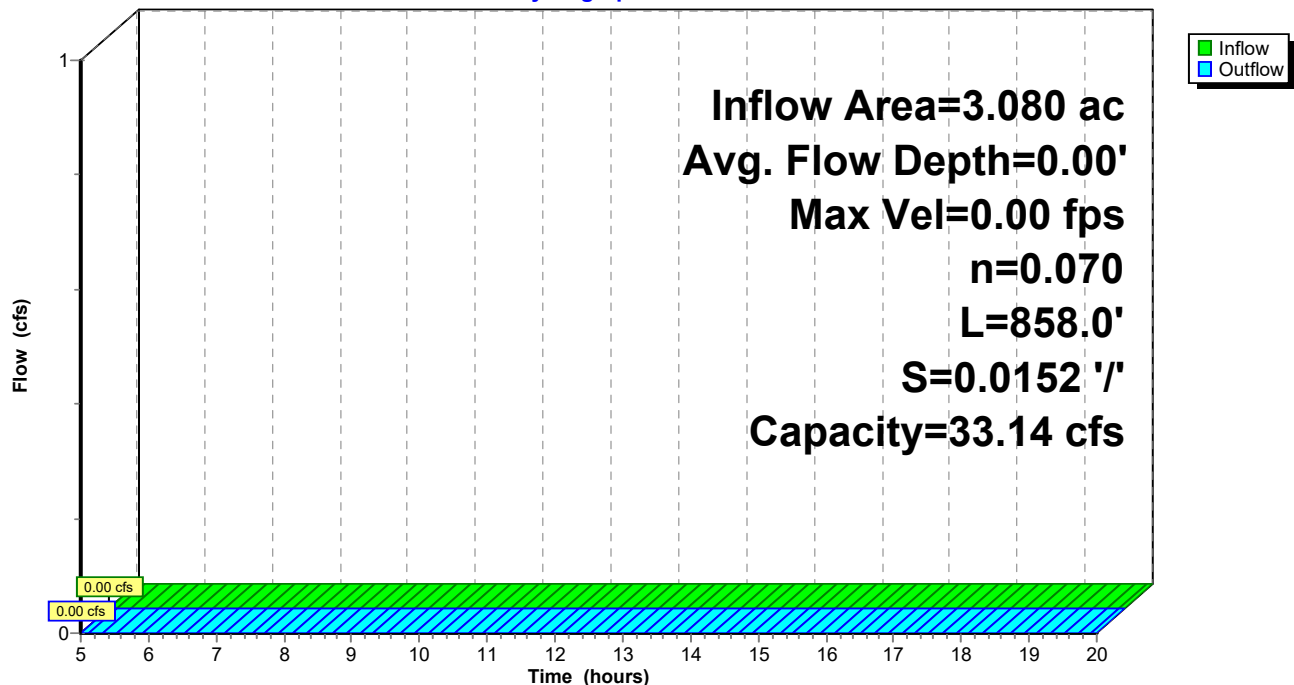
Length= 858.0' Slope= 0.0152 '/'

Inlet Invert= 328.00', Outlet Invert= 315.00'



Reach 53R: Reach #3C

Hydrograph



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Summary for Reach 54R: Reach #3D

Inflow Area = 6.220 ac, 20.80% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

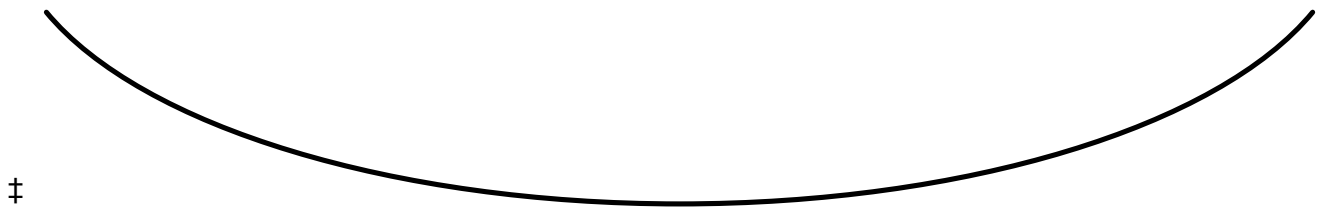
Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 0.50' Flow Area= 44.7 sf, Capacity= 84.65 cfs

134.00' x 0.50' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools

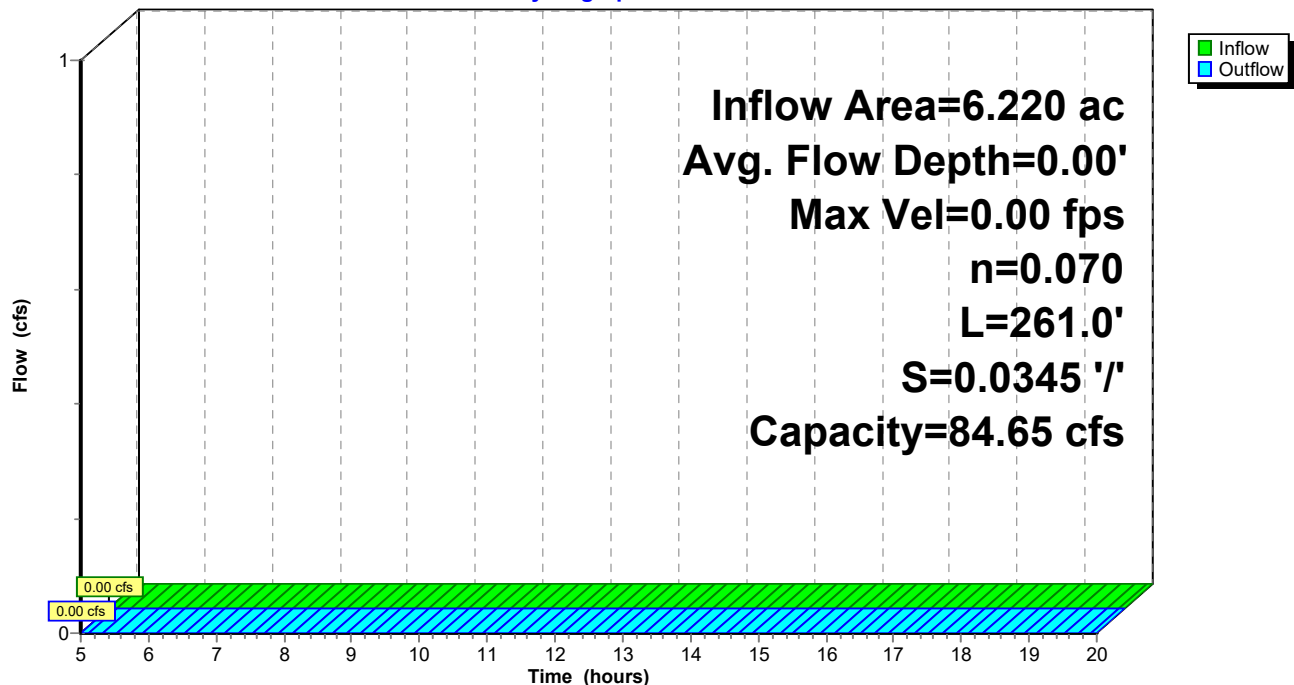
Length= 261.0' Slope= 0.0345 '/'

Inlet Invert= 325.00', Outlet Invert= 316.00'



Reach 54R: Reach #3D

Hydrograph



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Summary for Reach 55R: Reach 3-3

Inflow Area = 47.850 ac, 23.85% Impervious, Inflow Depth > 0.07" for 10-yr event
Inflow = 1.10 cfs @ 18.33 hrs, Volume= 0.263 af
Outflow = 1.09 cfs @ 18.81 hrs, Volume= 0.221 af, Atten= 1%, Lag= 29.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.48 fps, Min. Travel Time= 16.0 min

Avg. Velocity = 0.38 fps, Avg. Travel Time= 20.5 min

Peak Storage= 1,046 cf @ 18.55 hrs

Average Depth at Peak Storage= 0.26'

Bank-Full Depth= 1.00' Flow Area= 16.7 sf, Capacity= 19.56 cfs

25.00' x 1.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

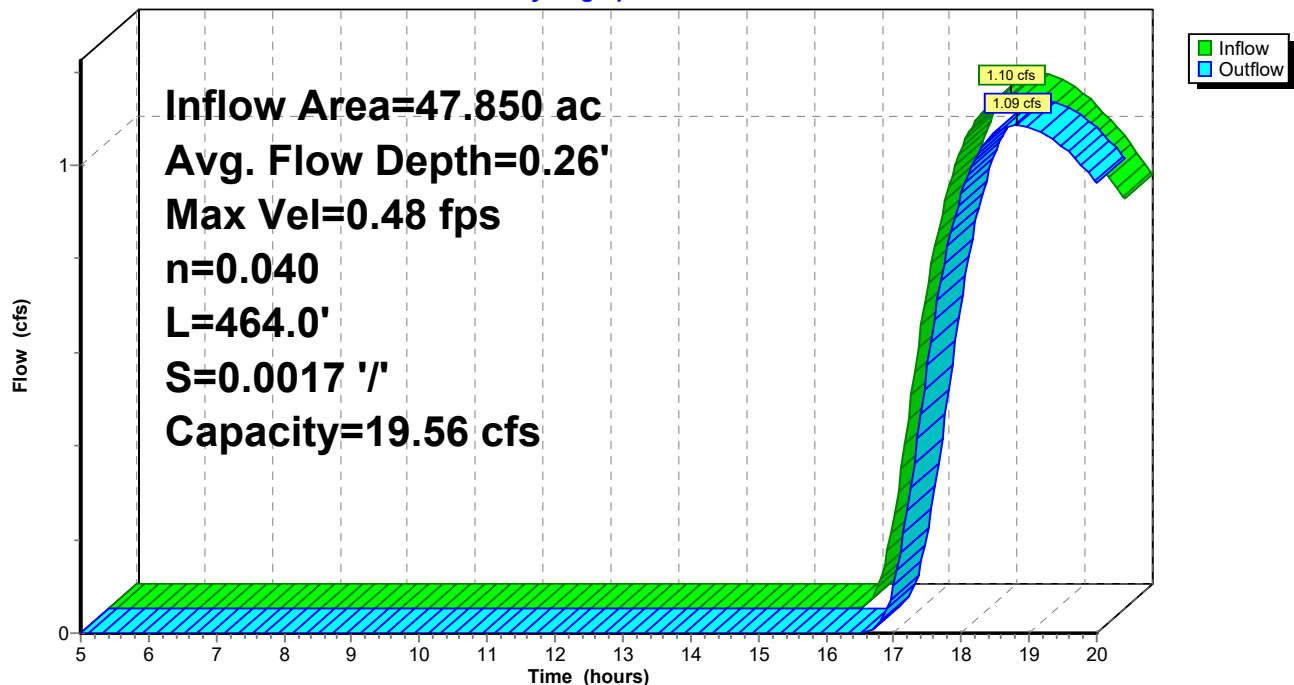
Length= 464.0' Slope= 0.0017 '/'

Inlet Invert= 316.60', Outlet Invert= 315.80'



Reach 55R: Reach 3-3

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Reach 56R: Reach 3-2

Inflow Area = 65.340 ac, 21.85% Impervious, Inflow Depth > 0.04" for 10-yr event
Inflow = 1.09 cfs @ 18.81 hrs, Volume= 0.221 af
Outflow = 1.08 cfs @ 19.40 hrs, Volume= 0.168 af, Atten= 1%, Lag= 35.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.37 fps, Min. Travel Time= 19.1 min

Avg. Velocity = 0.30 fps, Avg. Travel Time= 23.8 min

Peak Storage= 1,236 cf @ 19.08 hrs

Average Depth at Peak Storage= 0.16'

Bank-Full Depth= 5.00' Flow Area= 500.0 sf, Capacity= 1,796.89 cfs

150.00' x 5.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

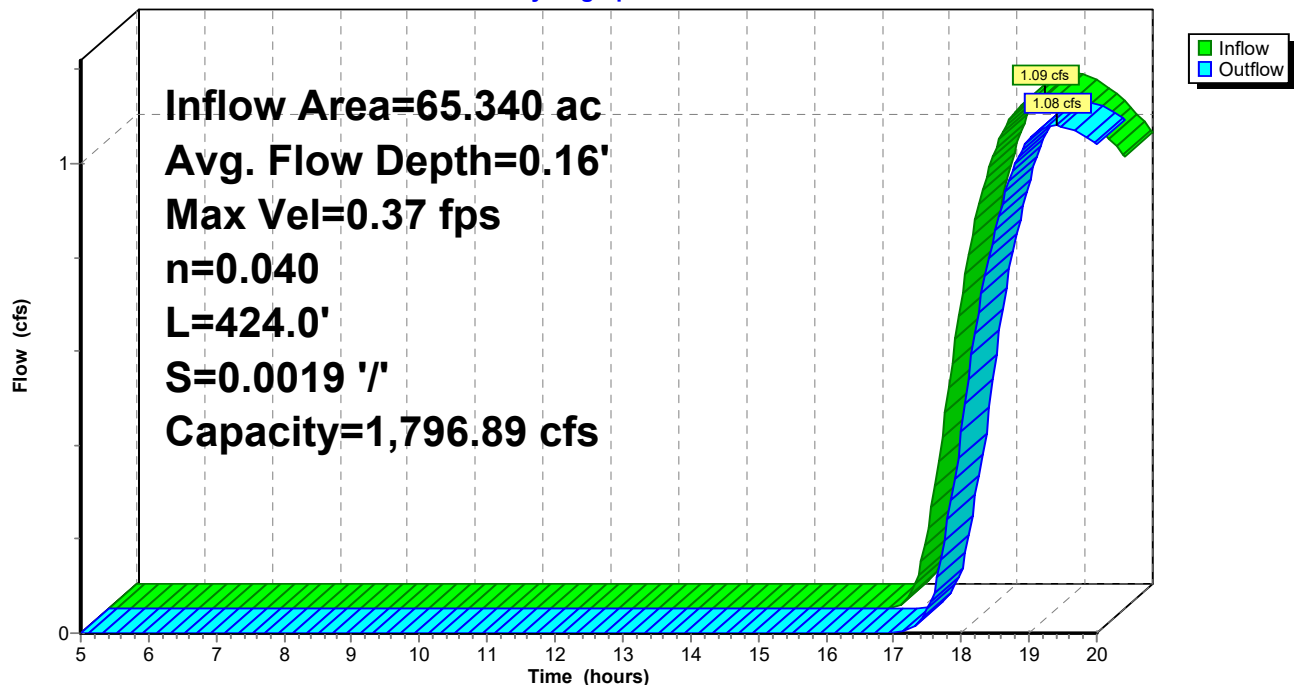
Length= 424.0' Slope= 0.0019 '/'

Inlet Invert= 315.80', Outlet Invert= 315.00'



Reach 56R: Reach 3-2

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Reach 57R: Post Area #6

Inflow Area = 40.310 ac, 12.35% Impervious, Inflow Depth > 1.13" for 10-yr event
Inflow = 10.91 cfs @ 15.00 hrs, Volume= 3.808 af
Outflow = 10.91 cfs @ 15.08 hrs, Volume= 3.781 af, Atten= 0%, Lag= 4.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.93 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 1.29 fps, Avg. Travel Time= 4.4 min

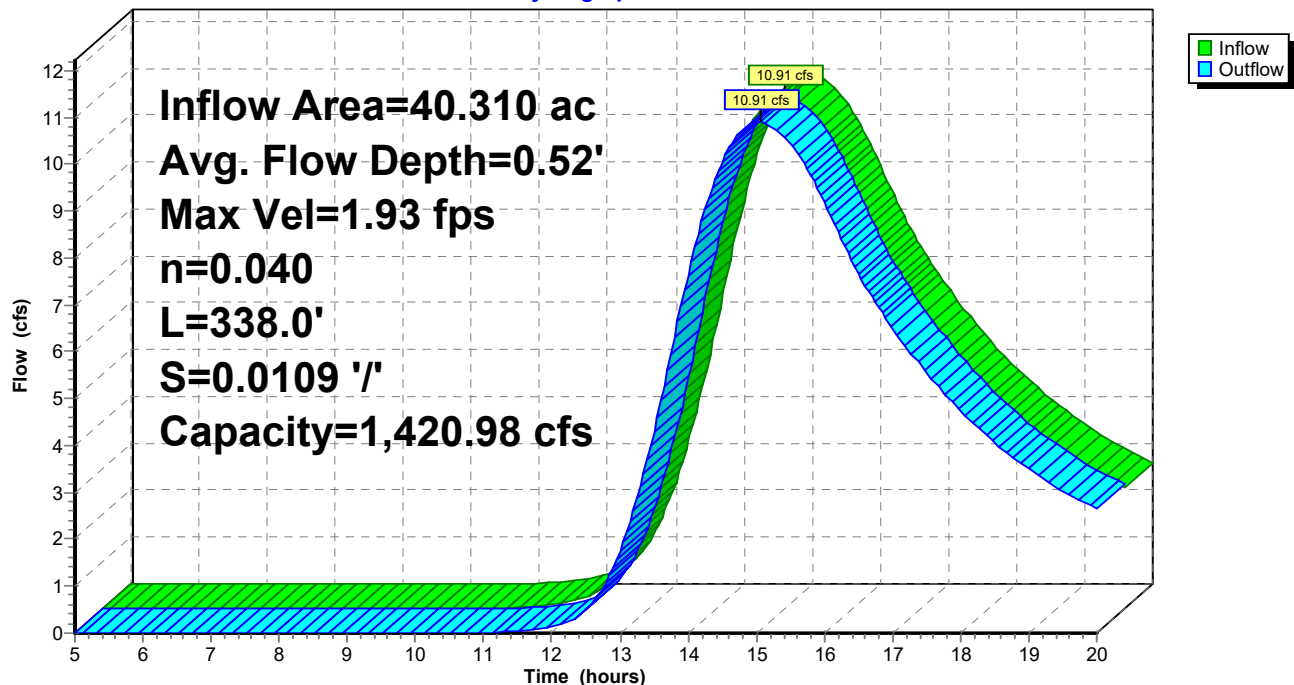
Peak Storage= 1,912 cf @ 15.03 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 5.00' Flow Area= 166.7 sf, Capacity= 1,420.98 cfs

50.00' x 5.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 338.0' Slope= 0.0109 '/
Inlet Invert= 316.40', Outlet Invert= 312.70'



Reach 57R: Post Area #6

Hydrograph



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Summary for Reach 58R: Reach #3E

Inflow Area = 9.670 ac, 28.11% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 16.7 sf, Capacity= 23.18 cfs

25.00' x 1.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds

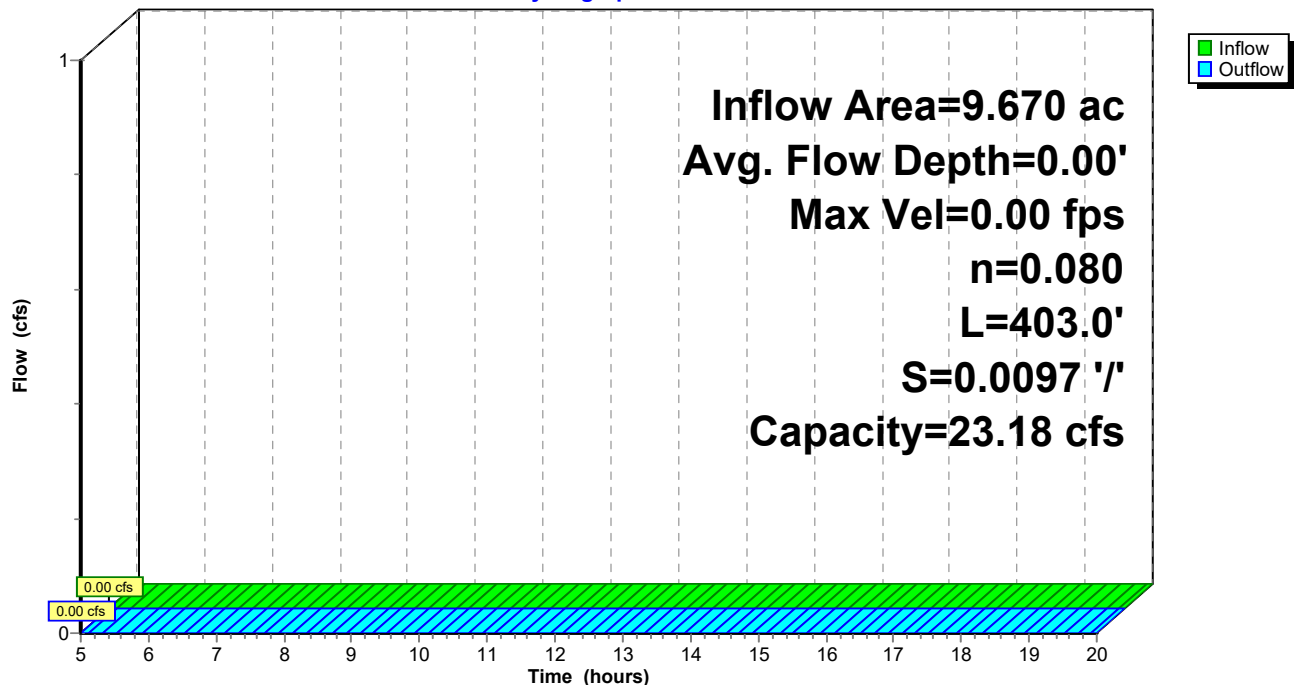
Length= 403.0' Slope= 0.0097 '/'

Inlet Invert= 321.40', Outlet Invert= 317.50'



Reach 58R: Reach #3E

Hydrograph



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Summary for Reach 59R: Reach 6-2

Inflow Area = 34.110 ac, 9.34% Impervious, Inflow Depth > 1.35" for 10-yr event
Inflow = 10.93 cfs @ 14.94 hrs, Volume= 3.829 af
Outflow = 10.91 cfs @ 15.00 hrs, Volume= 3.808 af, Atten= 0%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.15 fps, Min. Travel Time= 2.3 min

Avg. Velocity = 0.75 fps, Avg. Travel Time= 3.6 min

Peak Storage= 1,537 cf @ 14.96 hrs

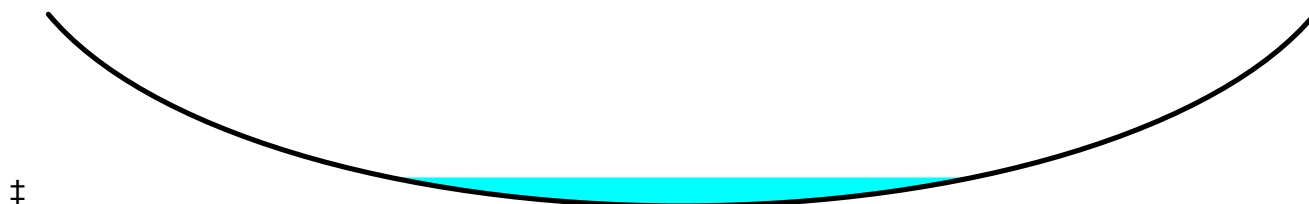
Average Depth at Peak Storage= 0.74'

Bank-Full Depth= 5.00' Flow Area= 166.7 sf, Capacity= 674.87 cfs

50.00' x 5.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

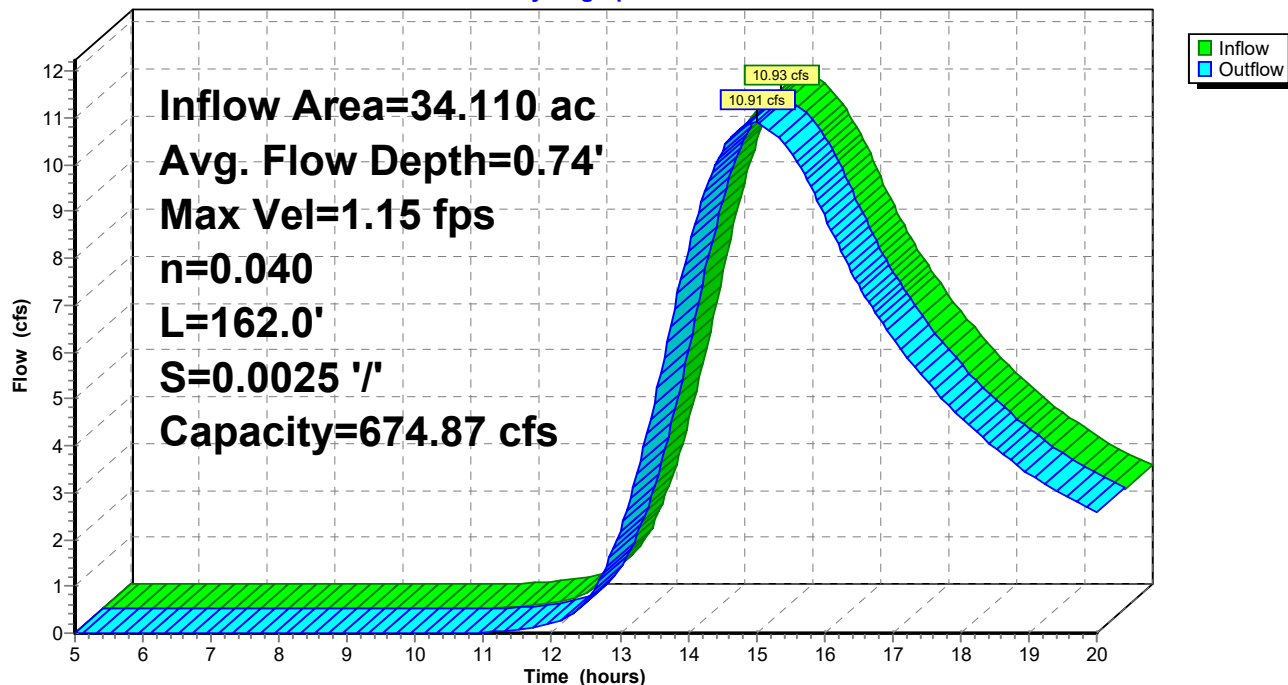
Length= 162.0' Slope= 0.0025 '/'

Inlet Invert= 316.80', Outlet Invert= 316.40'



Reach 59R: Reach 6-2

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Reach 60R: Reach 6C

Inflow Area = 3.260 ac, 40.43% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

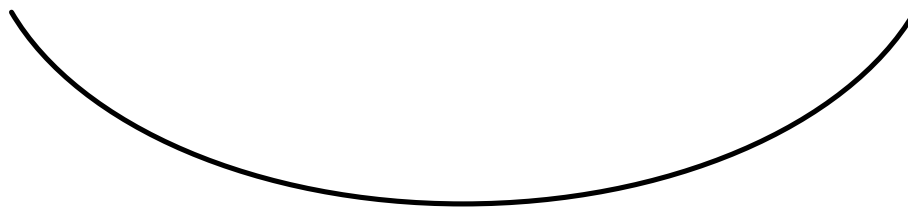
Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 2.00' Flow Area= 13.3 sf, Capacity= 139.08 cfs

10.00' x 2.00' deep Parabolic Channel, n= 0.040 Earth, cobble bottom, clean sides

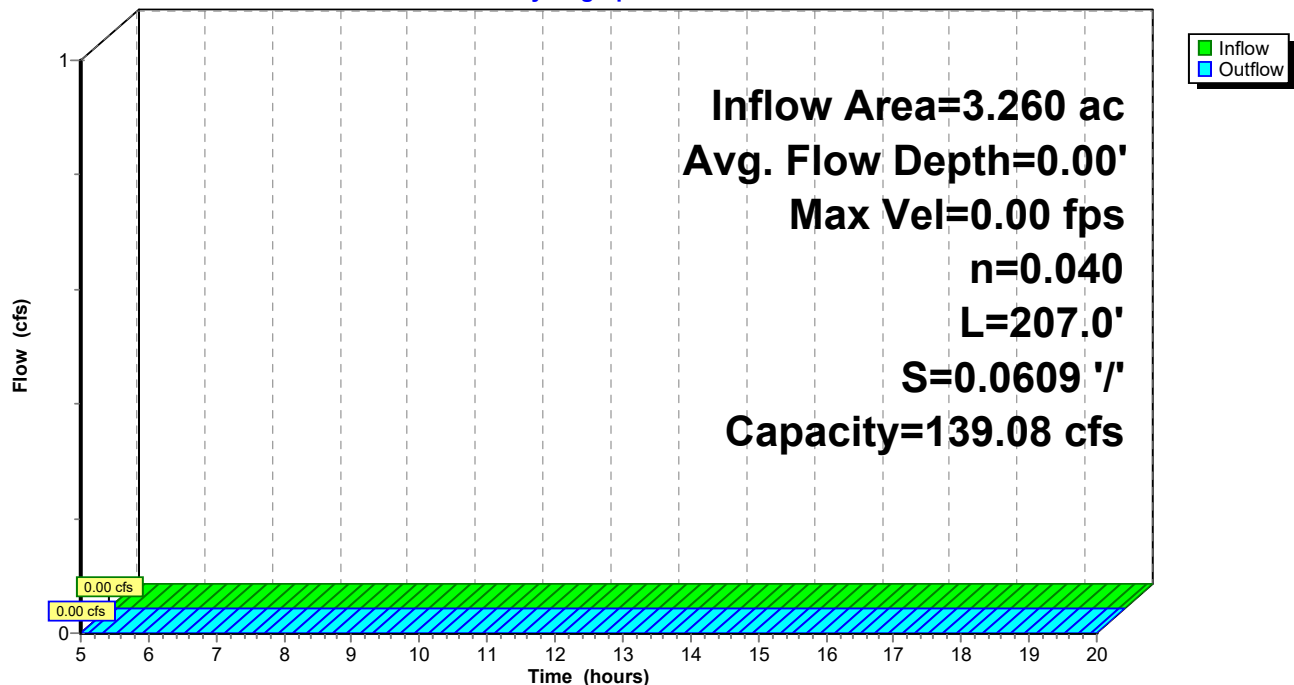
Length= 207.0' Slope= 0.0609 1'

Inlet Invert= 329.00', Outlet Invert= 316.40'



Reach 60R: Reach 6C

Hydrograph



Summit Woods

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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Reach 61R: Reach 3-4-2

Inflow Area = 41.630 ac, 24.31% Impervious, Inflow Depth > 0.08" for 10-yr event
Inflow = 1.10 cfs @ 18.01 hrs, Volume= 0.289 af
Outflow = 1.10 cfs @ 18.33 hrs, Volume= 0.263 af, Atten= 0%, Lag= 19.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.55 fps, Min. Travel Time= 10.9 min

Avg. Velocity = 0.44 fps, Avg. Travel Time= 13.5 min

Peak Storage= 713 cf @ 18.15 hrs

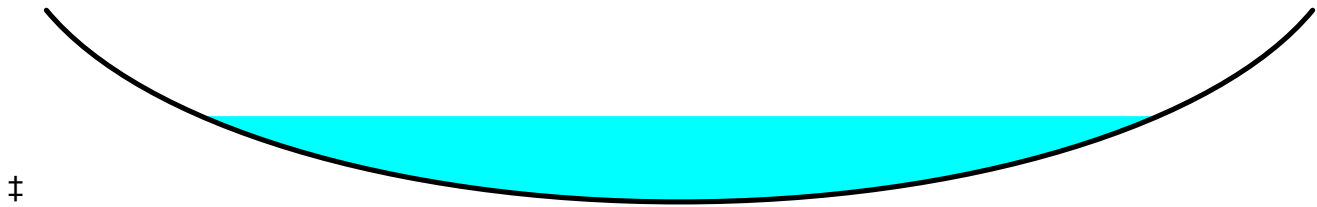
Average Depth at Peak Storage= 0.45'

Bank-Full Depth= 1.00' Flow Area= 6.7 sf, Capacity= 6.21 cfs

10.00' x 1.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

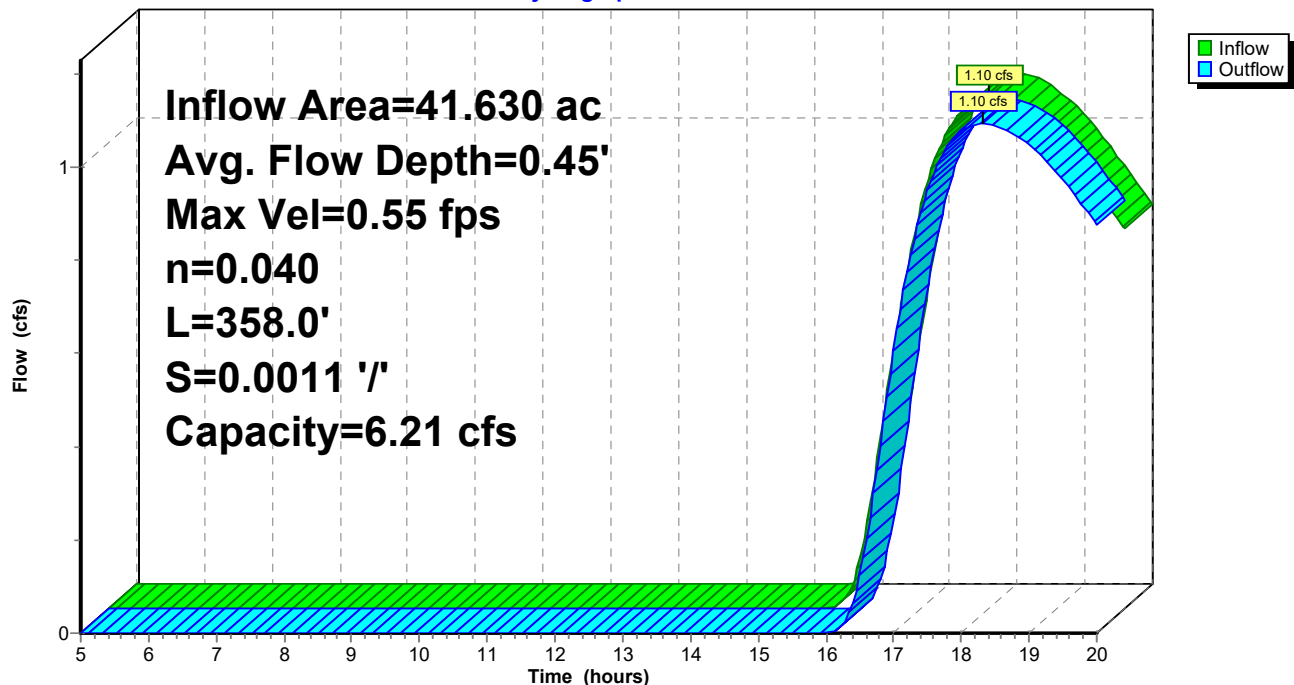
Length= 358.0' Slope= 0.0011 '/'

Inlet Invert= 316.00', Outlet Invert= 315.60'



Reach 61R: Reach 3-4-2

Hydrograph



Summit Woods

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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Reach 62R: Reach 3-5

Inflow Area = 40.970 ac, 24.18% Impervious, Inflow Depth > 0.15" for 10-yr event
Inflow = 2.35 cfs @ 13.70 hrs, Volume= 0.514 af
Outflow = 1.11 cfs @ 17.41 hrs, Volume= 0.333 af, Atten= 53%, Lag= 222.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.10 fps, Min. Travel Time= 114.1 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 135.4 min

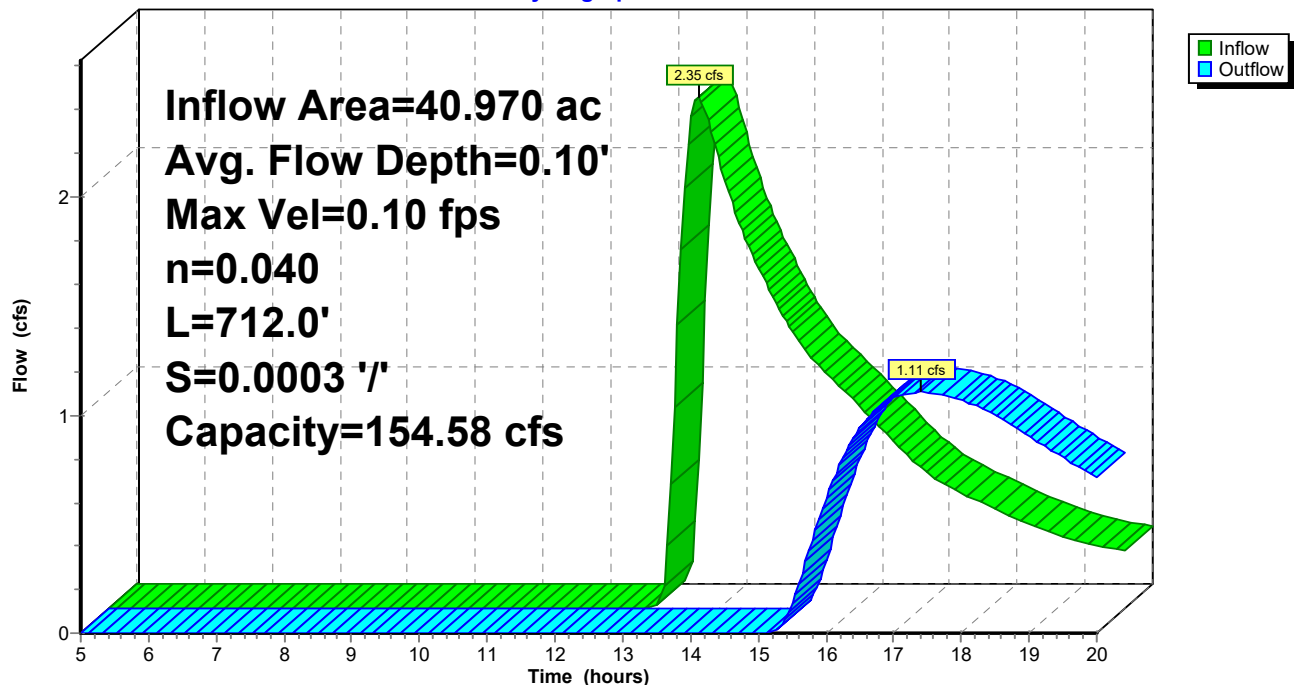
Peak Storage= 7,574 cf @ 15.51 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00' Flow Area= 325.3 sf, Capacity= 154.58 cfs

488.00' x 1.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 712.0' Slope= 0.0003 '/'
Inlet Invert= 317.50', Outlet Invert= 317.30'



Reach 62R: Reach 3-5

Hydrograph



Summit Woods

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Type III 24-hr 10-yr Rainfall=4.76"

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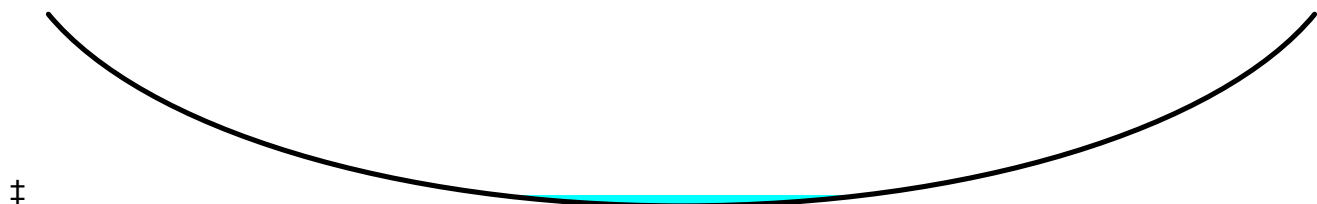
Summary for Reach 63R: Reach 3-6

Inflow Area = 10.170 ac, 34.04% Impervious, Inflow Depth > 0.62" for 10-yr event
Inflow = 2.78 cfs @ 13.22 hrs, Volume= 0.528 af
Outflow = 2.35 cfs @ 13.70 hrs, Volume= 0.514 af, Atten= 15%, Lag= 28.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.63 fps, Min. Travel Time= 13.7 min
Avg. Velocity = 0.44 fps, Avg. Travel Time= 19.5 min

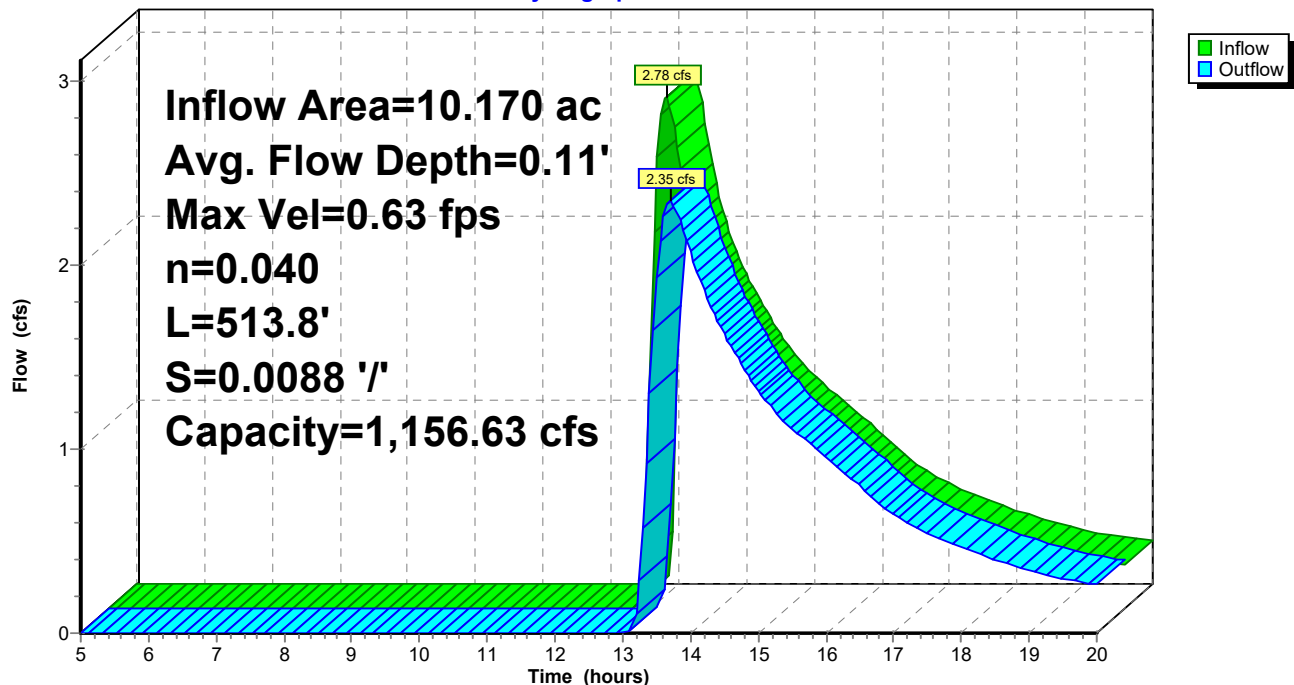
Peak Storage= 1,926 cf @ 13.47 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 2.00' Flow Area= 274.7 sf, Capacity= 1,156.63 cfs

206.00' x 2.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 513.8' Slope= 0.0088 '/'
Inlet Invert= 322.00', Outlet Invert= 317.50'



Reach 63R: Reach 3-6

Hydrograph



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Summary for Reach 64R: Reach #3F

Inflow Area = 2.680 ac, 35.07% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

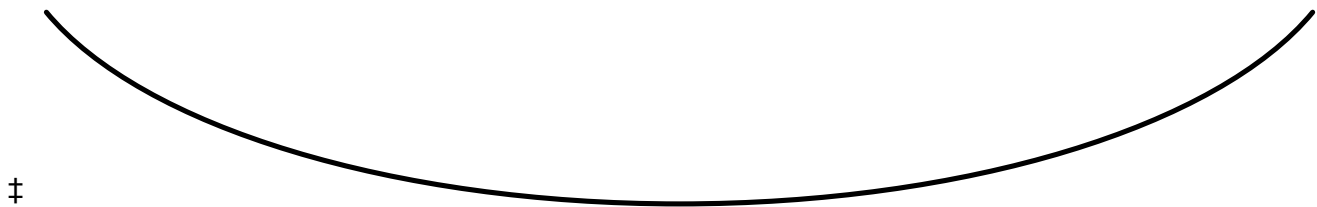
Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 0.50' Flow Area= 78.7 sf, Capacity= 21.89 cfs

236.00' x 0.50' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush

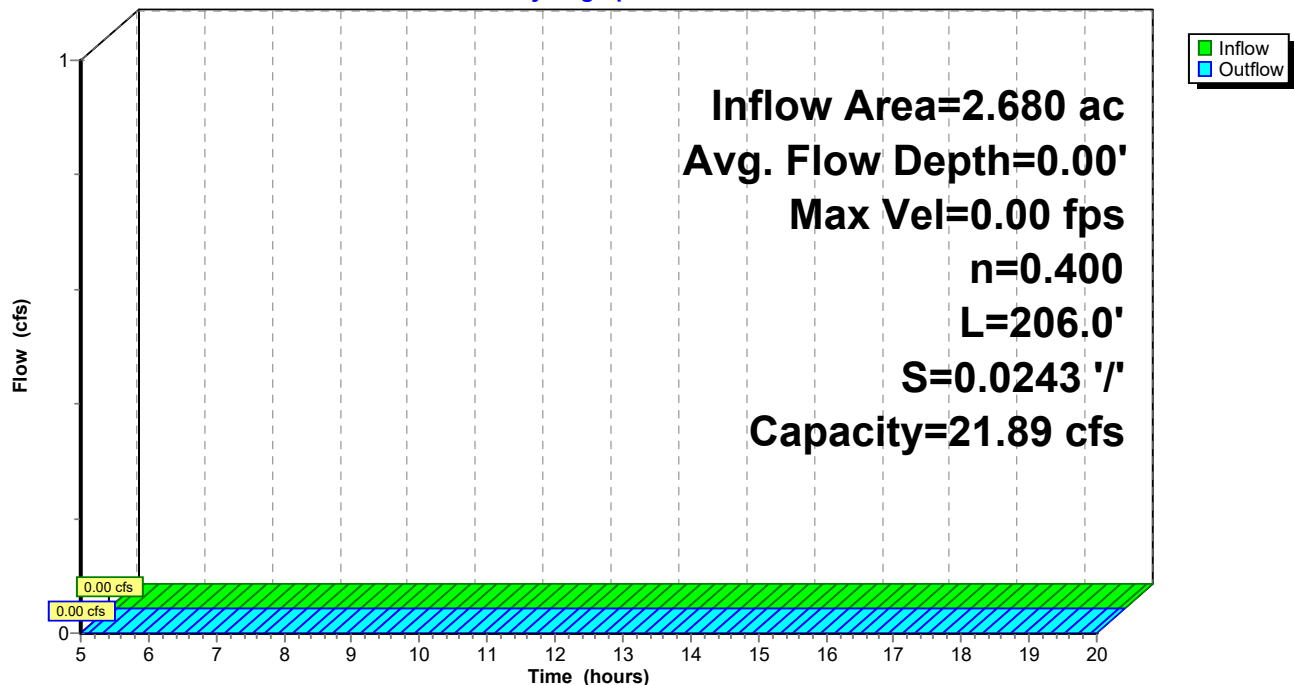
Length= 206.0' Slope= 0.0243 '/

Inlet Invert= 327.00', Outlet Invert= 322.00'



Reach 64R: Reach #3F

Hydrograph



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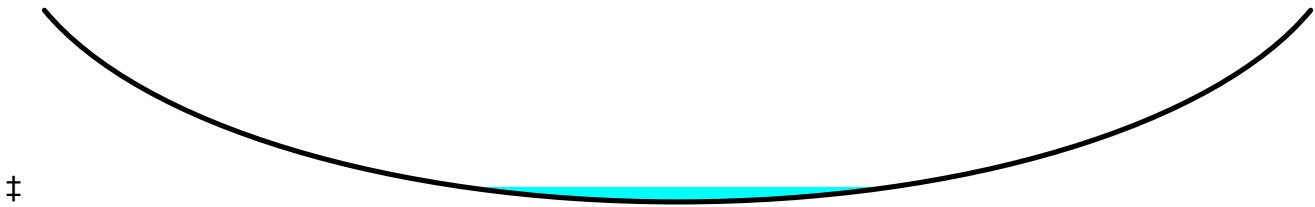
Summary for Reach 65R: Reach #3G

Inflow Area = 7.490 ac, 33.67% Impervious, Inflow Depth > 0.86" for 10-yr event
Inflow = 3.47 cfs @ 12.84 hrs, Volume= 0.539 af
Outflow = 2.78 cfs @ 13.22 hrs, Volume= 0.528 af, Atten= 20%, Lag= 23.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.63 fps, Min. Travel Time= 10.6 min
Avg. Velocity = 0.42 fps, Avg. Travel Time= 16.1 min

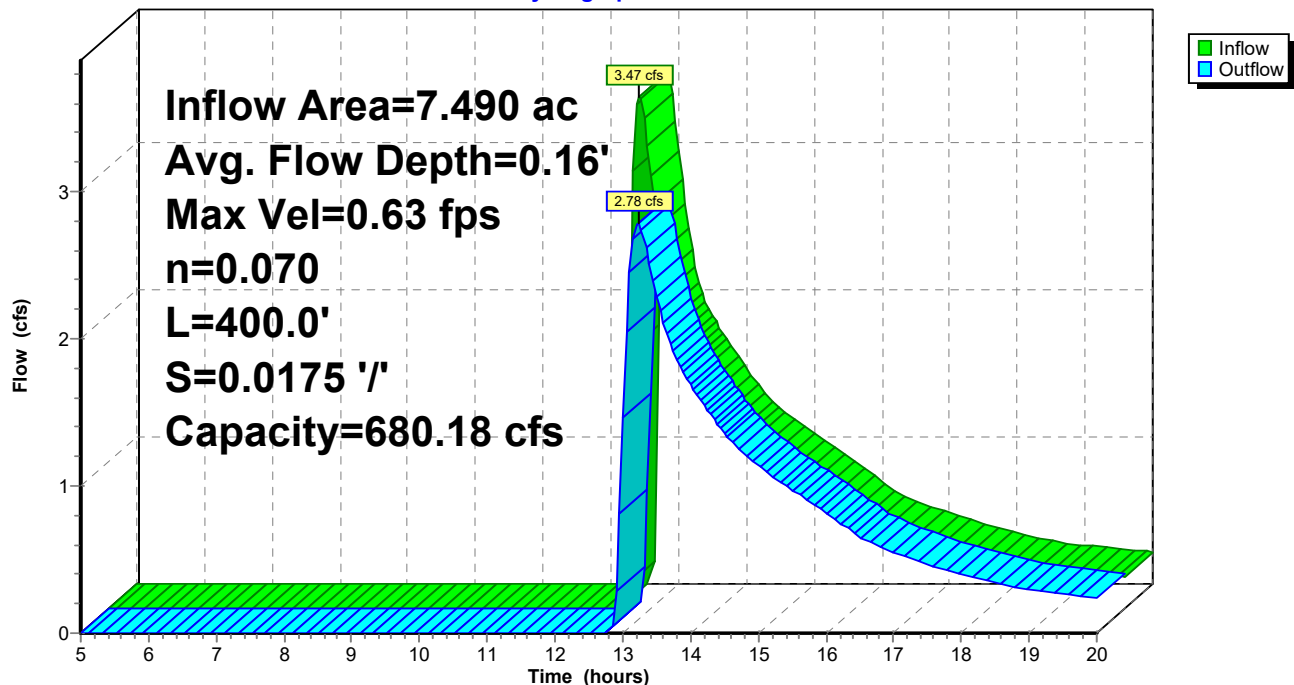
Peak Storage= 1,776 cf @ 13.05 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 2.00' Flow Area= 200.0 sf, Capacity= 680.18 cfs

150.00' x 2.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 400.0' Slope= 0.0175 '/'
Inlet Invert= 329.00', Outlet Invert= 322.00'



Reach 65R: Reach #3G

Hydrograph



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Summary for Reach 66R: Reach #3L-2

Inflow Area = 17.490 ac, 16.36% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 13.3 sf, Capacity= 23.13 cfs

20.00' x 1.00' deep Parabolic Channel, n= 0.100 Very weedy reaches w/pools

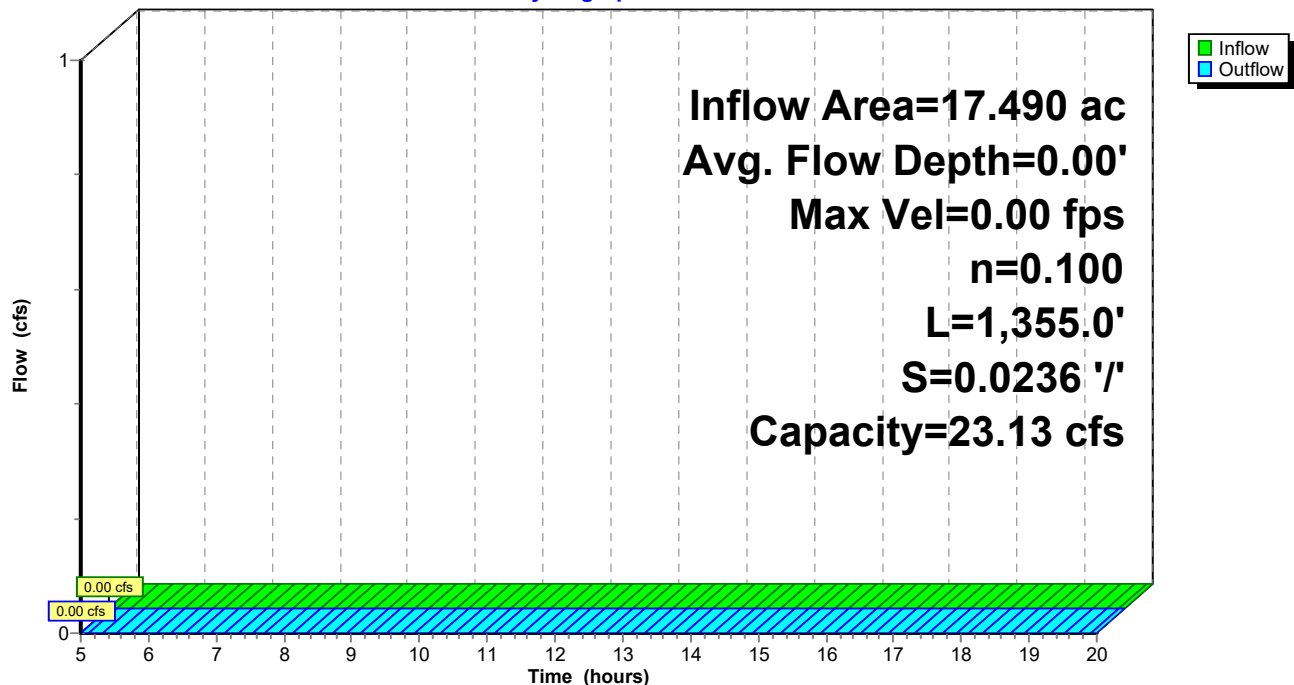
Length= 1,355.0' Slope= 0.0236 '/'

Inlet Invert= 348.00', Outlet Invert= 316.00'



Reach 66R: Reach #3L-2

Hydrograph



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Summary for Reach 67R: Reach #3G

Inflow Area = 0.660 ac, 32.12% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 2.00' Flow Area= 374.7 sf, Capacity= 1,116.58 cfs

281.00' x 2.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds

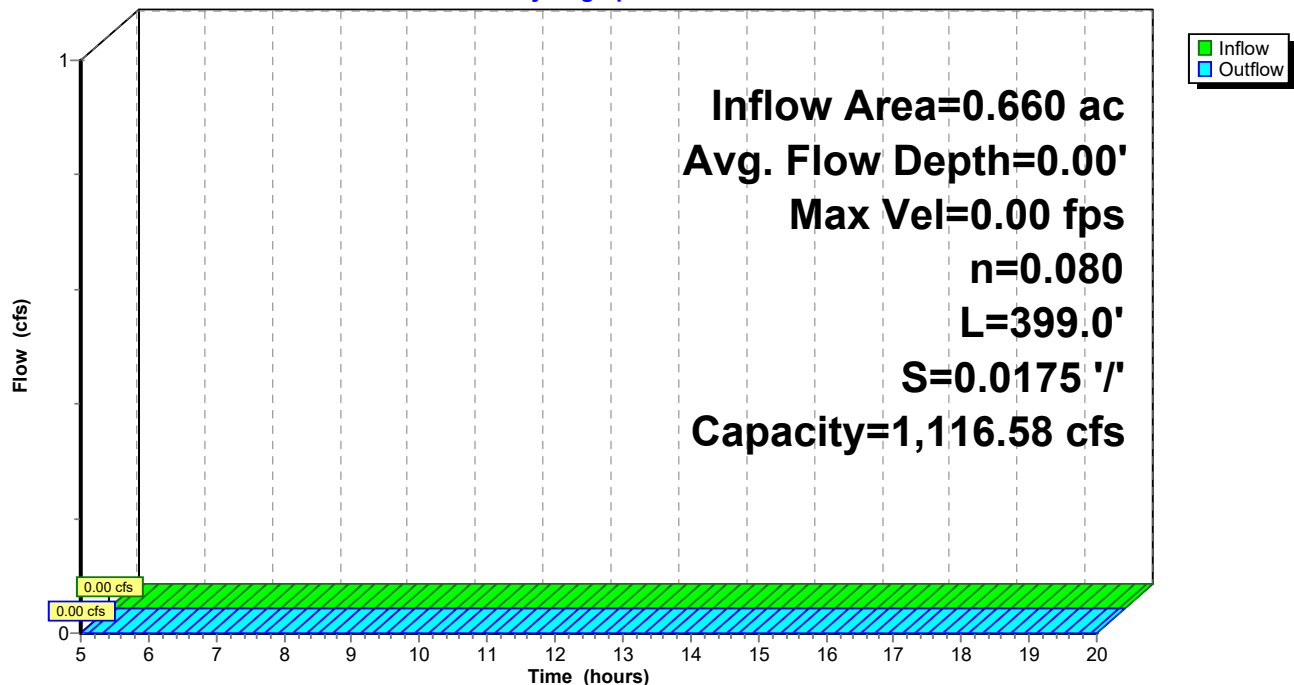
Length= 399.0' Slope= 0.0175 '/'

Inlet Invert= 329.00', Outlet Invert= 322.00'



Reach 67R: Reach #3G

Hydrograph



Summit Woods

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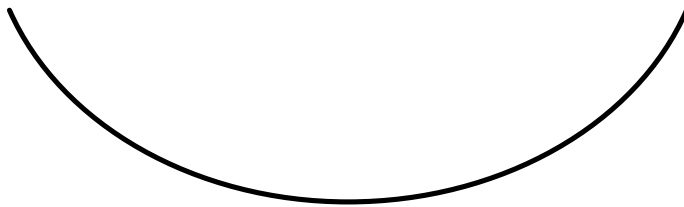
Summary for Reach 68R: Reach 3-7

Inflow Area = 21.130 ac, 17.64% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

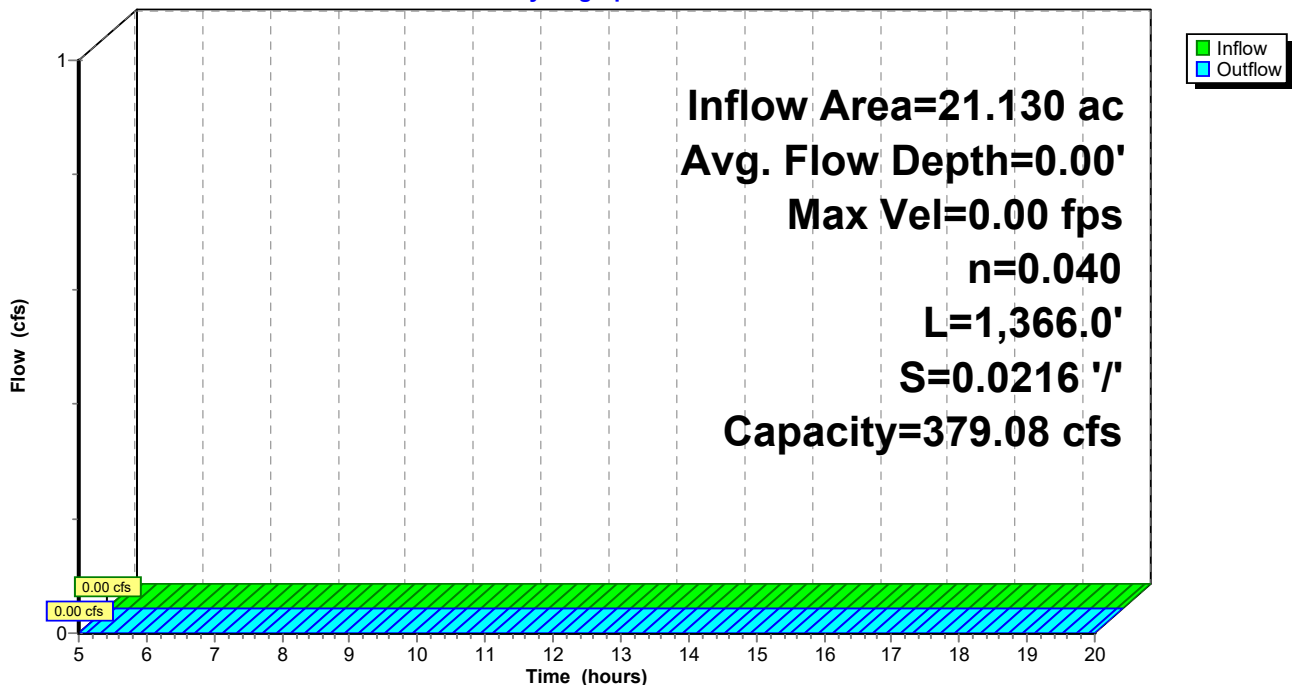
Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 4.00' Flow Area= 40.0 sf, Capacity= 379.08 cfs

15.00' x 4.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 1,366.0' Slope= 0.0216 '/'
Inlet Invert= 347.00', Outlet Invert= 317.50'



Reach 68R: Reach 3-7

Hydrograph



Summit Woods

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Summary for Reach 69R: Reach 3-8

Inflow Area = 21.130 ac, 17.64% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

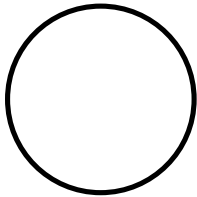
Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 166.10 cfs

36.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

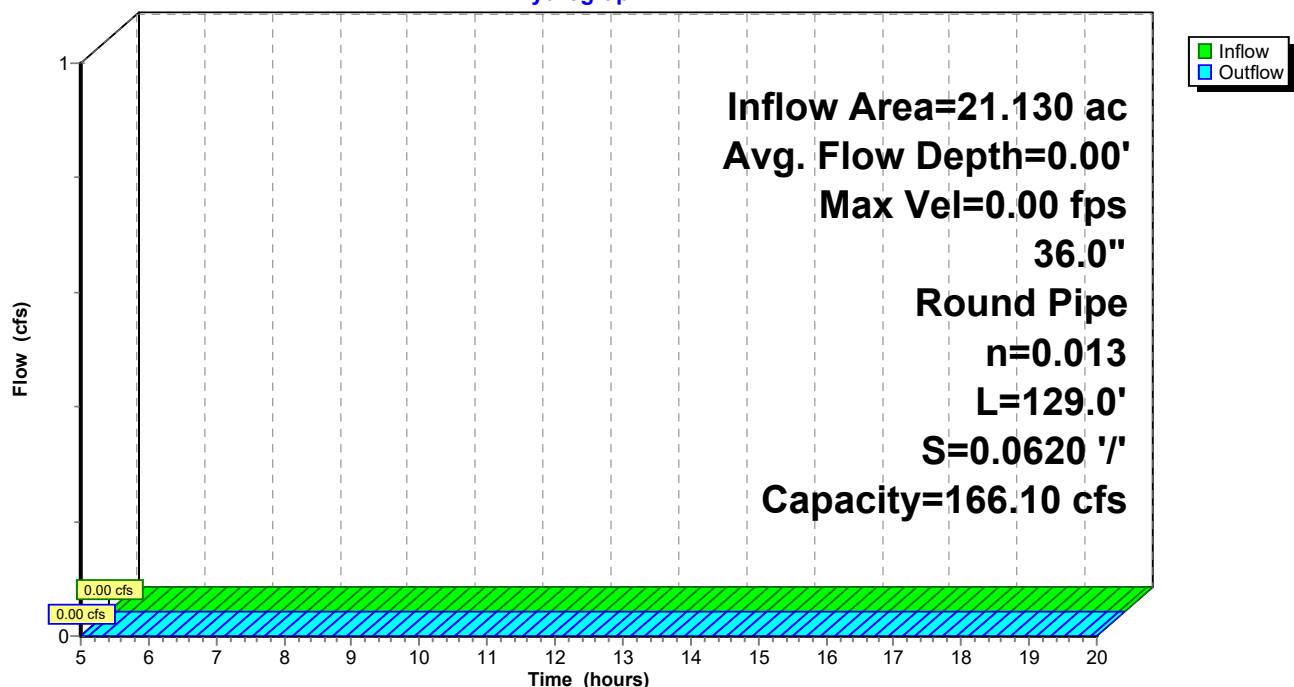
Length= 129.0' Slope= 0.0620 '/'

Inlet Invert= 348.00', Outlet Invert= 340.00'



Reach 69R: Reach 3-8

Hydrograph



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Summary for Reach 70R: Reach 3-9

Inflow Area = 21.130 ac, 17.64% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

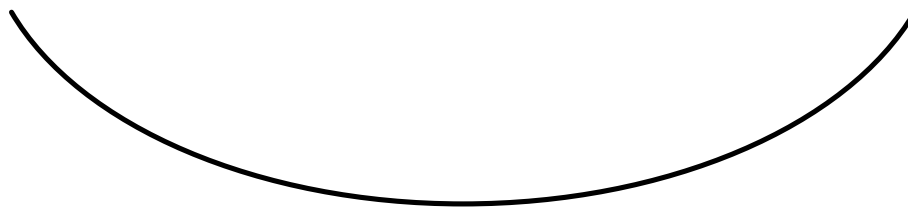
Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 4.00' Flow Area= 53.3 sf, Capacity= 725.62 cfs

20.00' x 4.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

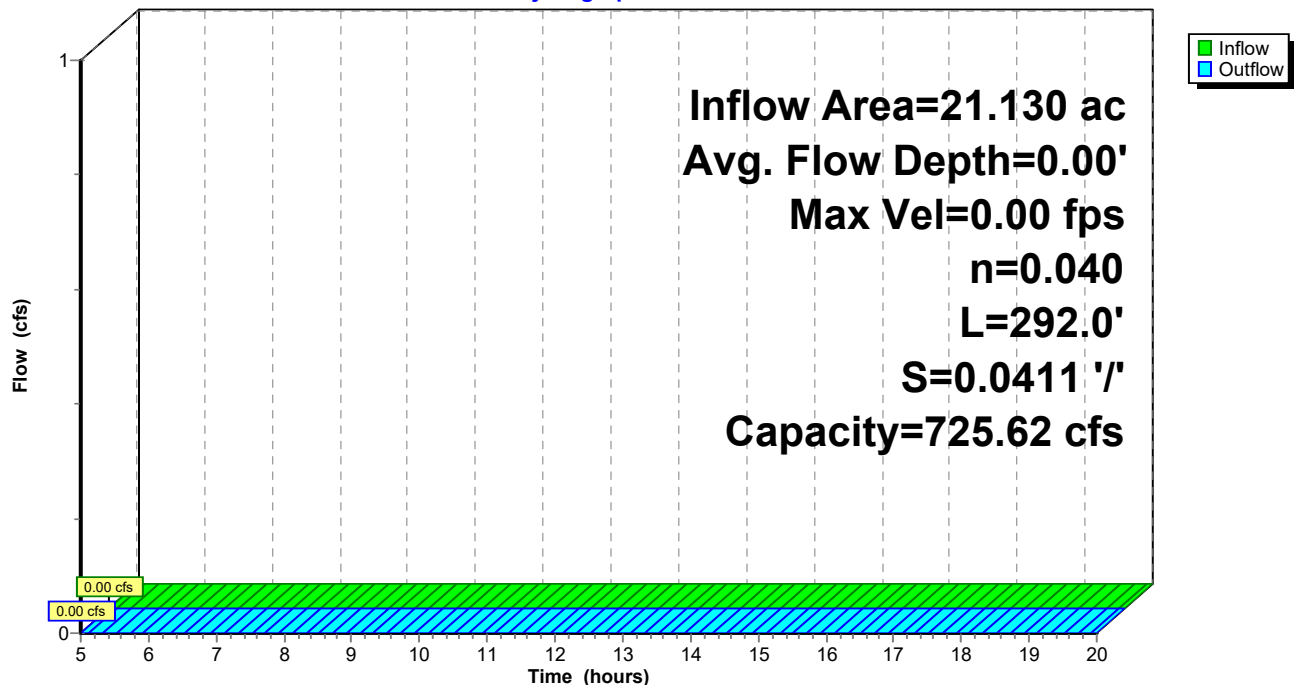
Length= 292.0' Slope= 0.0411 1'

Inlet Invert= 360.00', Outlet Invert= 348.00'



Reach 70R: Reach 3-9

Hydrograph



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Summary for Reach 71R: Reach #3J

Inflow Area = 13.580 ac, 20.62% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

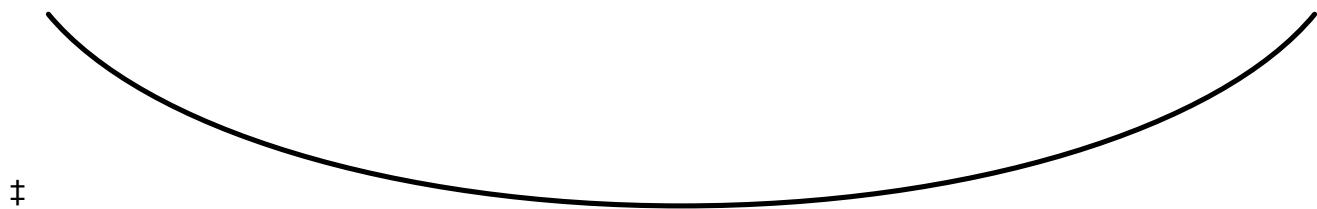
Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 4.00' Flow Area= 165.3 sf, Capacity= 1,713.62 cfs

62.00' x 4.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

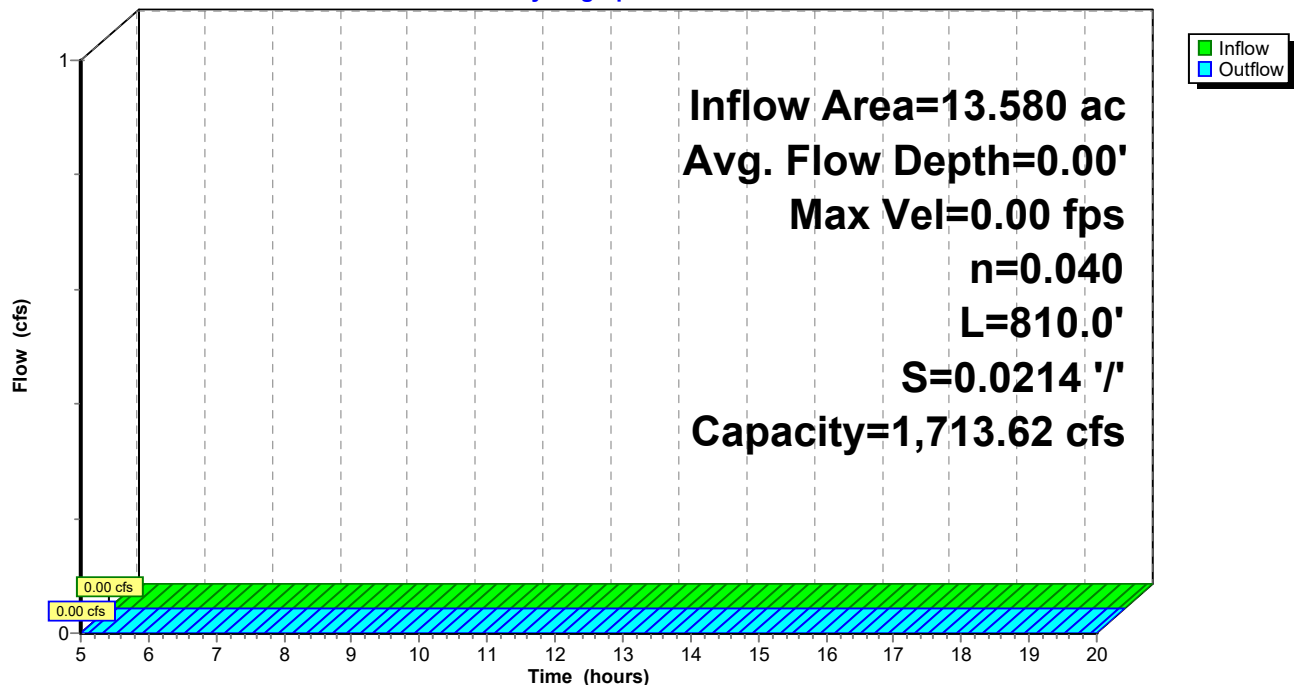
Length= 810.0' Slope= 0.0214 '/'

Inlet Invert= 377.30', Outlet Invert= 360.00'



Reach 71R: Reach #3J

Hydrograph



Summit Woods

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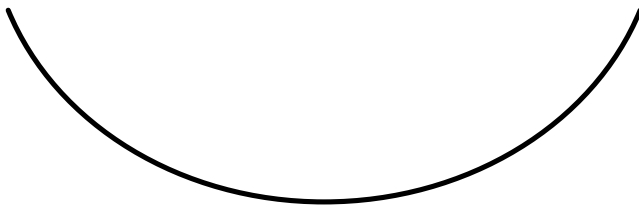
Summary for Reach 72R: Reach 3-10

Inflow Area = 7.550 ac, 12.29% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

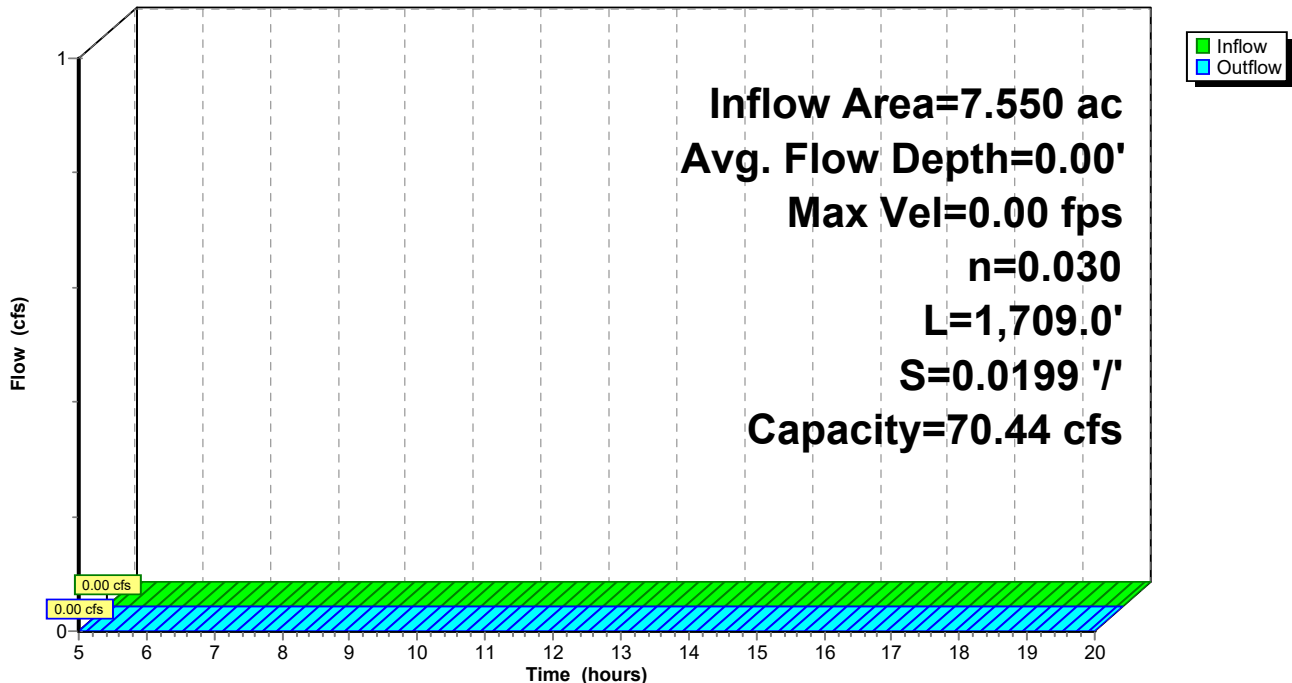
Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 9.3 sf, Capacity= 70.44 cfs

7.00' x 2.00' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 1,709.0' Slope= 0.0199 '/'
Inlet Invert= 394.00', Outlet Invert= 360.00'



Reach 72R: Reach 3-10

Hydrograph



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Summary for Reach 73R: (new Reach)

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

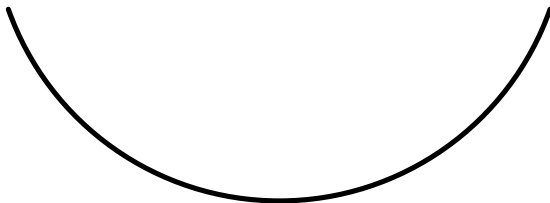
Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 80.99 cfs

6.00' x 2.00' deep Parabolic Channel, n= 0.040 Earth, cobble bottom, clean sides

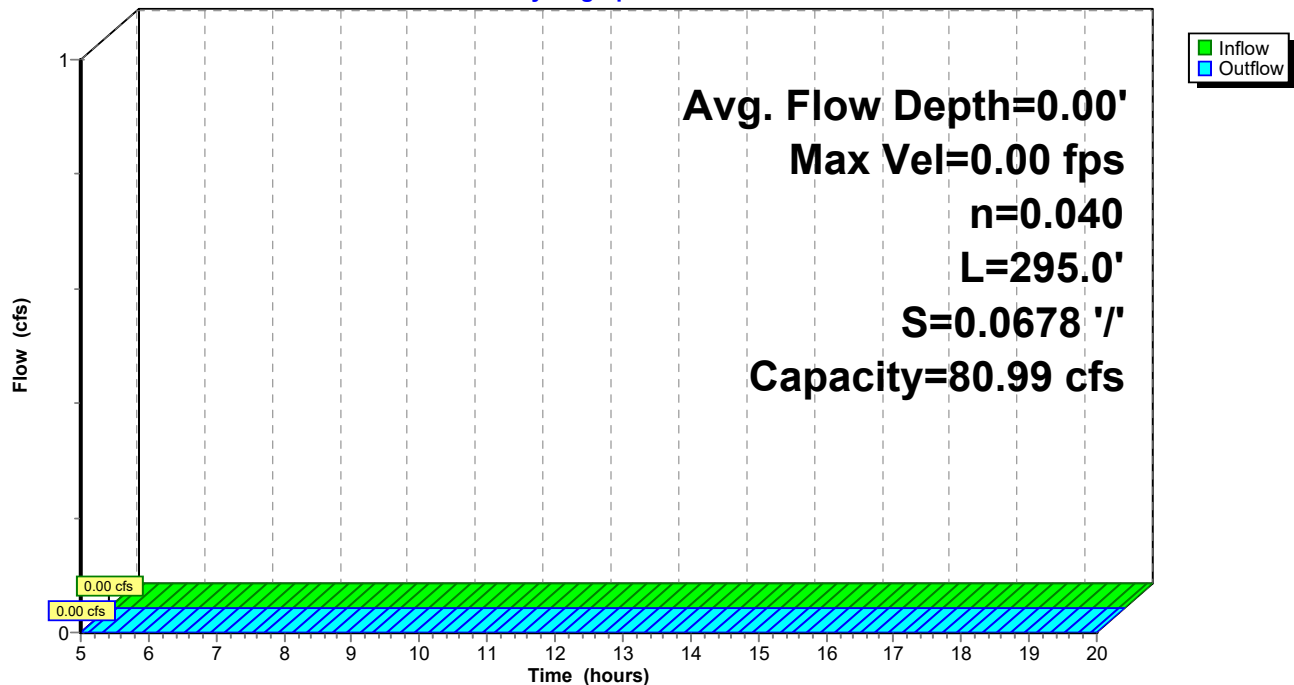
Length= 295.0' Slope= 0.0678 '/'

Inlet Invert= 402.00', Outlet Invert= 382.00'



Reach 73R: (new Reach)

Hydrograph



Summit Woods

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Summary for Reach 74R: Reach 6B

Inflow Area = 6.200 ac, 24.19% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

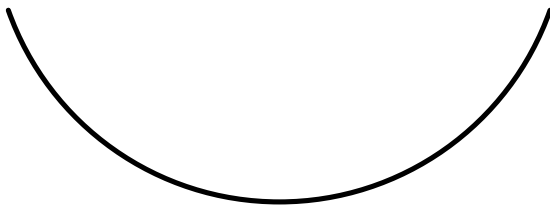
Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 50.79 cfs

6.00' x 2.00' deep Parabolic Channel, n= 0.040 Earth, cobble bottom, clean sides

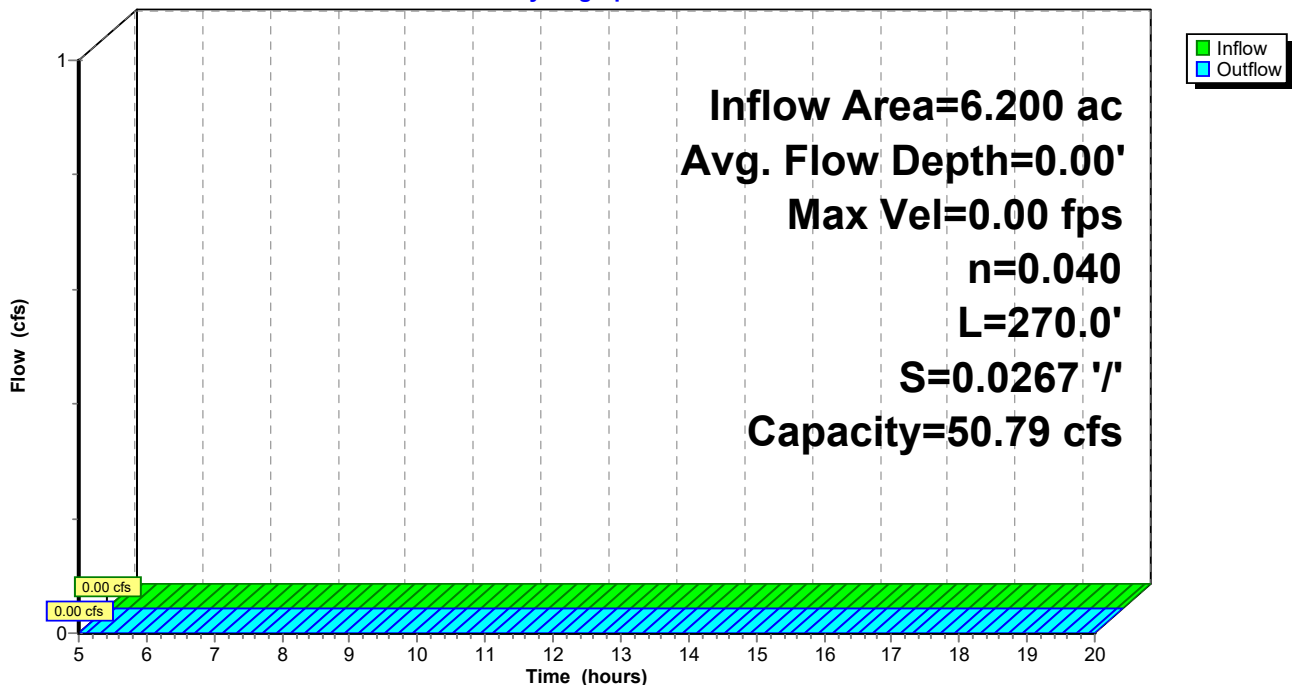
Length= 270.0' Slope= 0.0267 '/'

Inlet Invert= 324.00', Outlet Invert= 316.80'



Reach 74R: Reach 6B

Hydrograph



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Summary for Reach 75R: Reach 6B

Inflow Area = 2.940 ac, 16.16% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

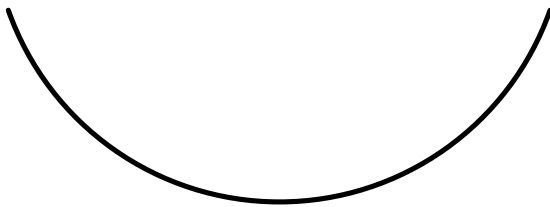
Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 60.84 cfs

6.00' x 2.00' deep Parabolic Channel, n= 0.040 Earth, cobble bottom, clean sides

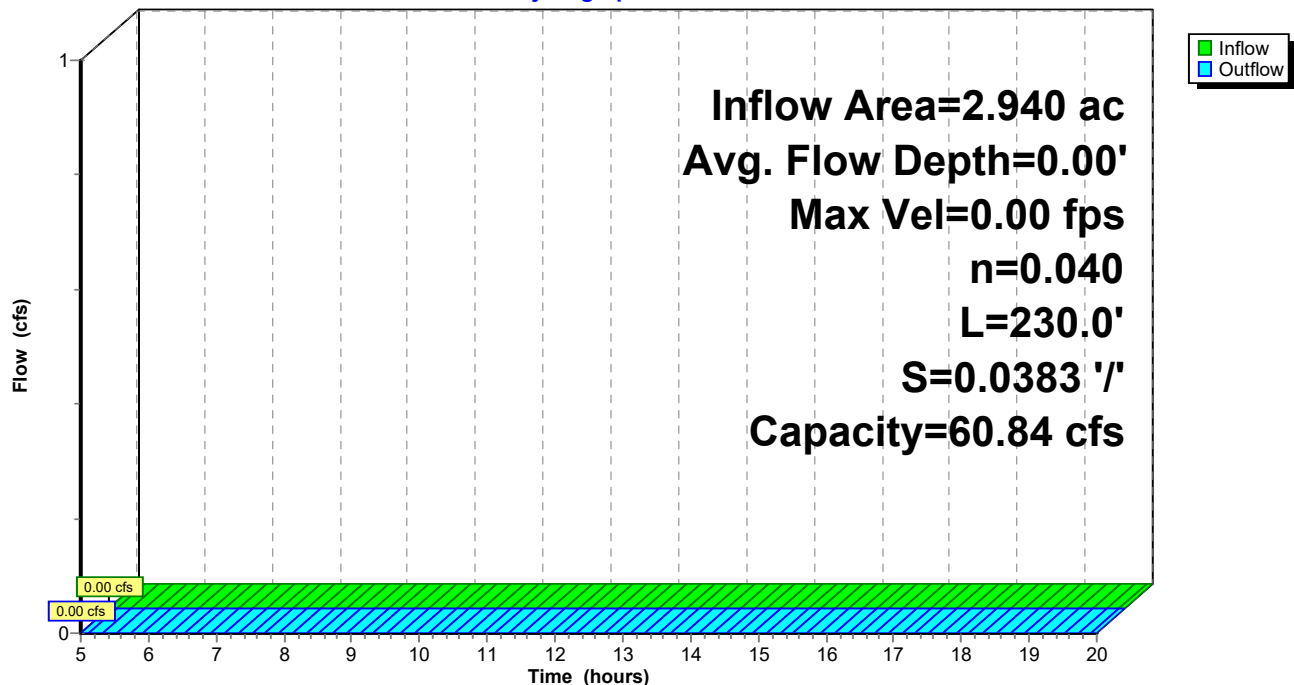
Length= 230.0' Slope= 0.0383 '/'

Inlet Invert= 321.50', Outlet Invert= 312.70'



Reach 75R: Reach 6B

Hydrograph



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Summary for Reach 76R: Reach 3-4-1

Inflow Area = 40.970 ac, 24.18% Impervious, Inflow Depth > 0.10" for 10-yr event
Inflow = 1.11 cfs @ 17.41 hrs, Volume= 0.333 af
Outflow = 1.10 cfs @ 18.01 hrs, Volume= 0.289 af, Atten= 1%, Lag= 36.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.22 fps, Min. Travel Time= 19.4 min

Avg. Velocity = 0.18 fps, Avg. Travel Time= 23.2 min

Peak Storage= 1,276 cf @ 17.68 hrs

Average Depth at Peak Storage= 0.08'

Bank-Full Depth= 1.00' Flow Area= 218.7 sf, Capacity= 253.93 cfs

328.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools

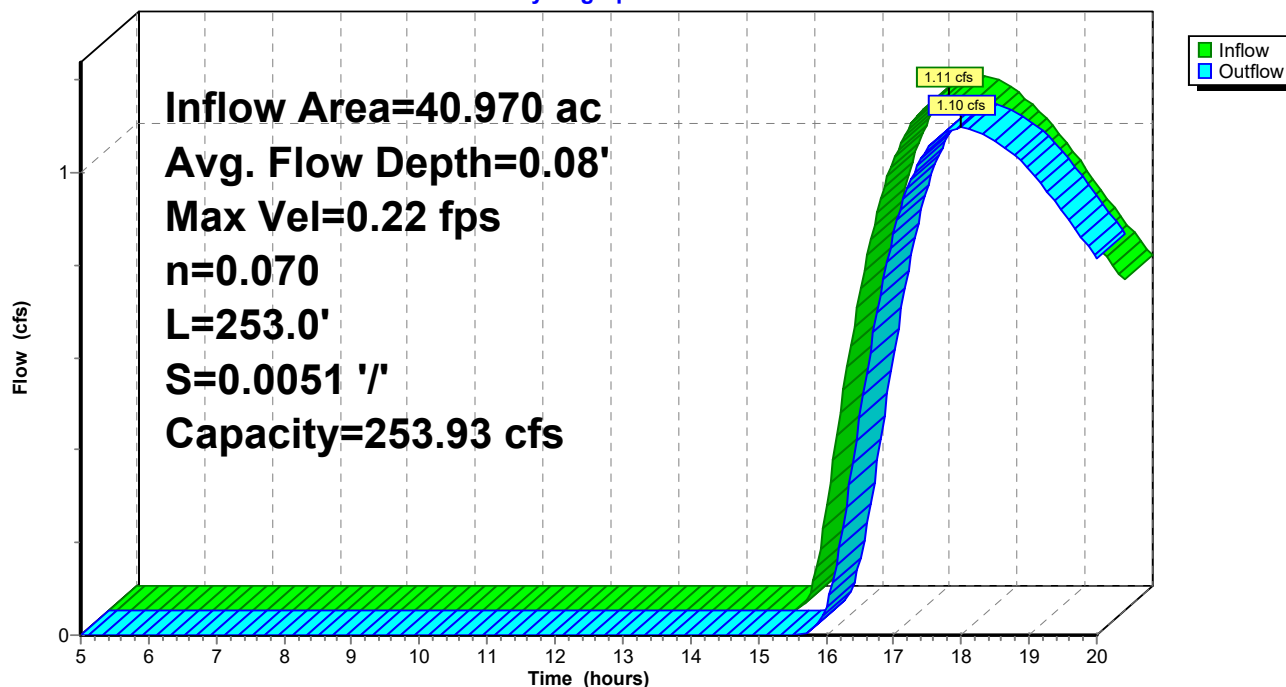
Length= 253.0' Slope= 0.0051 '/

Inlet Invert= 317.30', Outlet Invert= 316.00'



Reach 76R: Reach 3-4-1

Hydrograph



Summit Woods

Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Pond 35P: Pond #3B

Inflow Area = 4.540 ac, 35.52% Impervious, Inflow Depth > 2.60" for 10-yr event
 Inflow = 12.25 cfs @ 12.10 hrs, Volume= 0.985 af
 Outflow = 0.51 cfs @ 16.01 hrs, Volume= 0.388 af, Atten= 96%, Lag= 234.3 min
 Discarded = 0.51 cfs @ 16.01 hrs, Volume= 0.388 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 318.54' @ 16.01 hrs Surf.Area= 8,747 sf Storage= 28,351 cf

Plug-Flow detention time= 214.9 min calculated for 0.387 af (39% of inflow)
 Center-of-Mass det. time= 123.0 min (909.0 - 786.0)

Volume	Invert	Avail.Storage	Storage Description
#1	314.00'	64,079 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
314.00	3,776	0	0
316.00	5,861	9,637	9,637
318.00	8,272	14,133	23,770
320.00	10,038	18,310	42,080
322.00	11,961	21,999	64,079

Device	Routing	Invert	Outlet Devices
#1	Primary	322.30'	8.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	314.00'	2.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.51 cfs @ 16.01 hrs HW=318.54' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 0.51 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=314.00' (Free Discharge)
 ↑**1=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summit Woods

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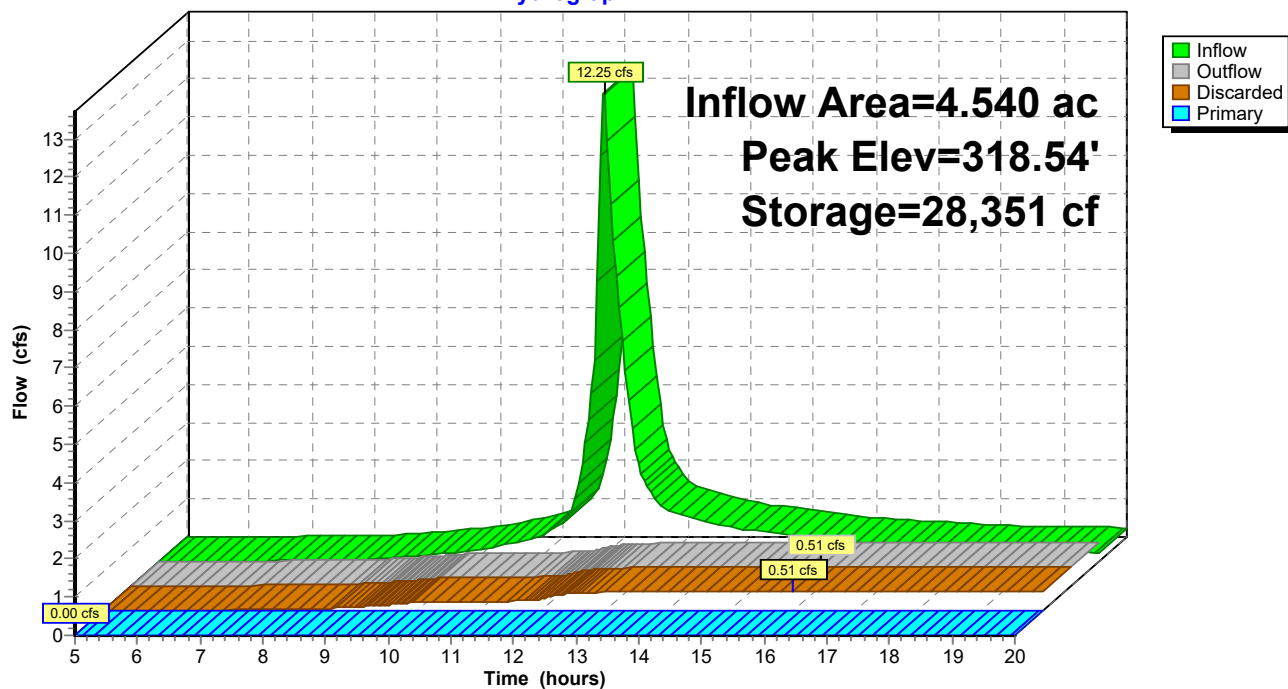
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Pond 35P: Pond #3B

Hydrograph



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Summary for Pond 36P: Pond #3C

Inflow Area = 3.080 ac, 22.08% Impervious, Inflow Depth > 2.33" for 10-yr event
 Inflow = 7.57 cfs @ 12.16 hrs, Volume= 0.598 af
 Outflow = 0.80 cfs @ 13.30 hrs, Volume= 0.507 af, Atten= 89%, Lag= 68.6 min
 Discarded = 0.80 cfs @ 13.30 hrs, Volume= 0.507 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 322.53' @ 13.30 hrs Surf.Area= 6,905 sf Storage= 12,082 cf

Plug-Flow detention time= 164.5 min calculated for 0.507 af (85% of inflow)
 Center-of-Mass det. time= 120.5 min (917.7 - 797.2)

Volume	Invert	Avail.Storage	Storage Description
#1	320.00'	24,334 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
320.00	2,815	0	0
322.00	5,894	8,709	8,709
324.00	9,731	15,625	24,334

Device	Routing	Invert	Outlet Devices
#1	Discarded	320.00'	5.000 in/hr Exfiltration over Surface area
#2	Primary	324.00'	30.0' long x 3.0' 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
			Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68
			2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.80 cfs @ 13.30 hrs HW=322.53' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.80 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=320.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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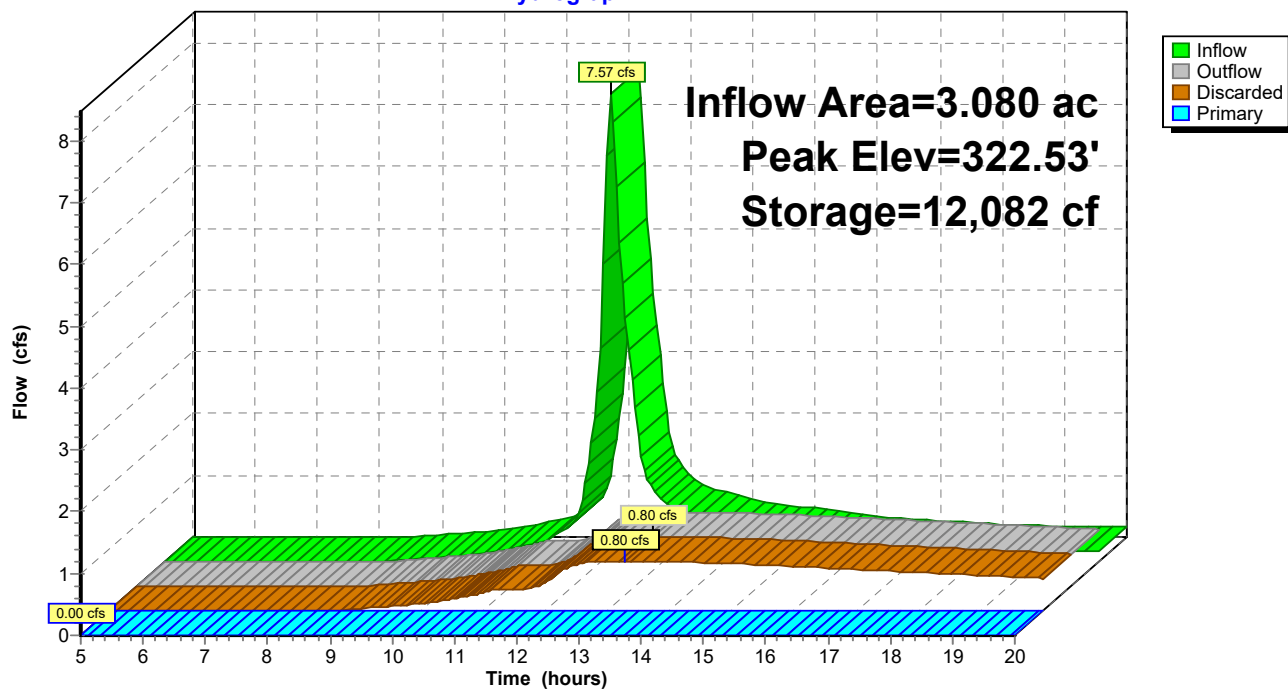
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Pond 36P: Pond #3C

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.76"

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Summary for Pond 37P: Pond #3D

Inflow Area = 6.220 ac, 20.80% Impervious, Inflow Depth > 2.33" for 10-yr event
 Inflow = 14.88 cfs @ 12.17 hrs, Volume= 1.208 af
 Outflow = 0.69 cfs @ 15.96 hrs, Volume= 0.498 af, Atten= 95%, Lag= 227.5 min
 Discarded = 0.69 cfs @ 15.96 hrs, Volume= 0.498 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 321.25' @ 15.96 hrs Surf.Area= 14,907 sf Storage= 34,224 cf

Plug-Flow detention time= 218.0 min calculated for 0.497 af (41% of inflow)
 Center-of-Mass det. time= 130.9 min (928.8 - 797.9)

Volume	Invert	Avail.Storage	Storage Description
#1	318.00'	111,342 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.00	6,683	0	0
320.00	11,226	17,909	17,909
322.00	17,122	28,348	46,257
324.00	23,442	40,564	86,821
325.00	25,600	24,521	111,342

Device	Routing	Invert	Outlet Devices
#1	Primary	325.50'	8.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	318.00'	2.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.69 cfs @ 15.96 hrs HW=321.25' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.69 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=318.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summit Woods

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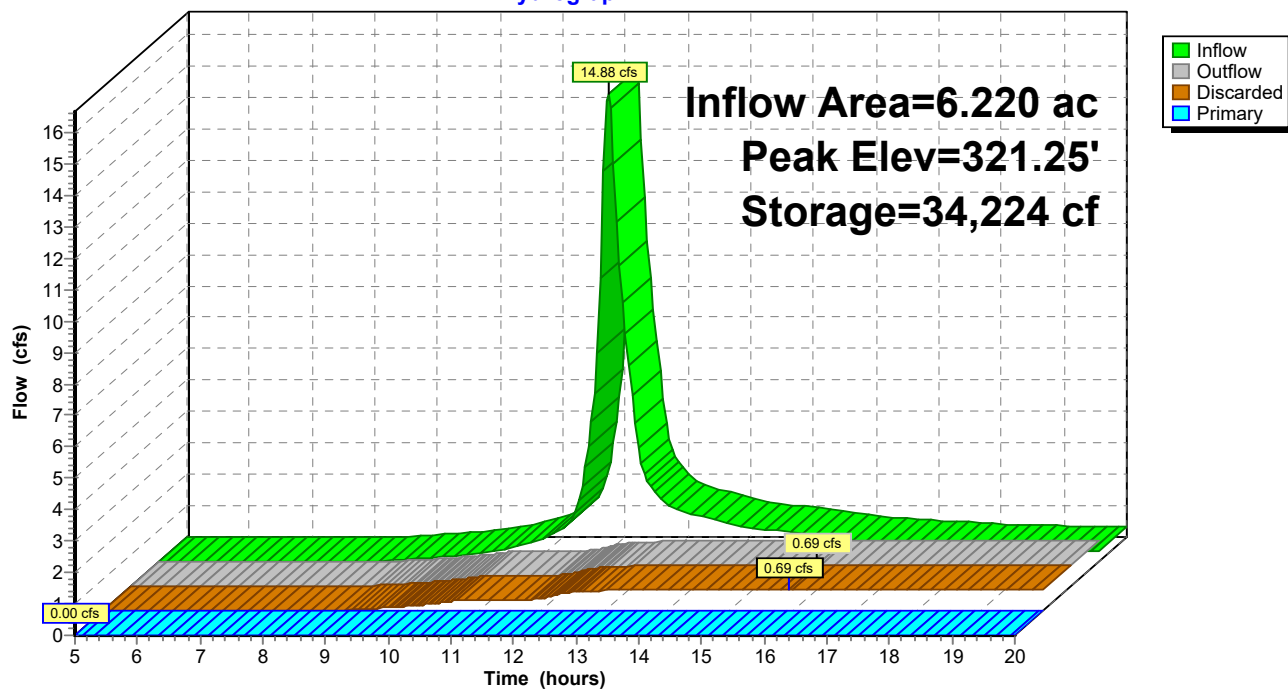
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Pond 37P: Pond #3D

Hydrograph



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Summary for Pond 38P: Pond #3E

Inflow Area = 9.670 ac, 28.11% Impervious, Inflow Depth > 2.50" for 10-yr event
 Inflow = 25.01 cfs @ 12.17 hrs, Volume= 2.015 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 322.37' @ 20.00 hrs Surf.Area= 25,461 sf Storage= 87,719 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	318.00'	202,042 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.00	14,886	0	0
320.00	19,562	34,448	34,448
322.00	24,503	44,065	78,513
324.00	29,702	54,205	132,718
326.00	39,622	69,324	202,042

Device	Routing	Invert	Outlet Devices
#1	Primary	326.10'	10.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=318.00' (Free Discharge)
 ↑1=**Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summit Woods

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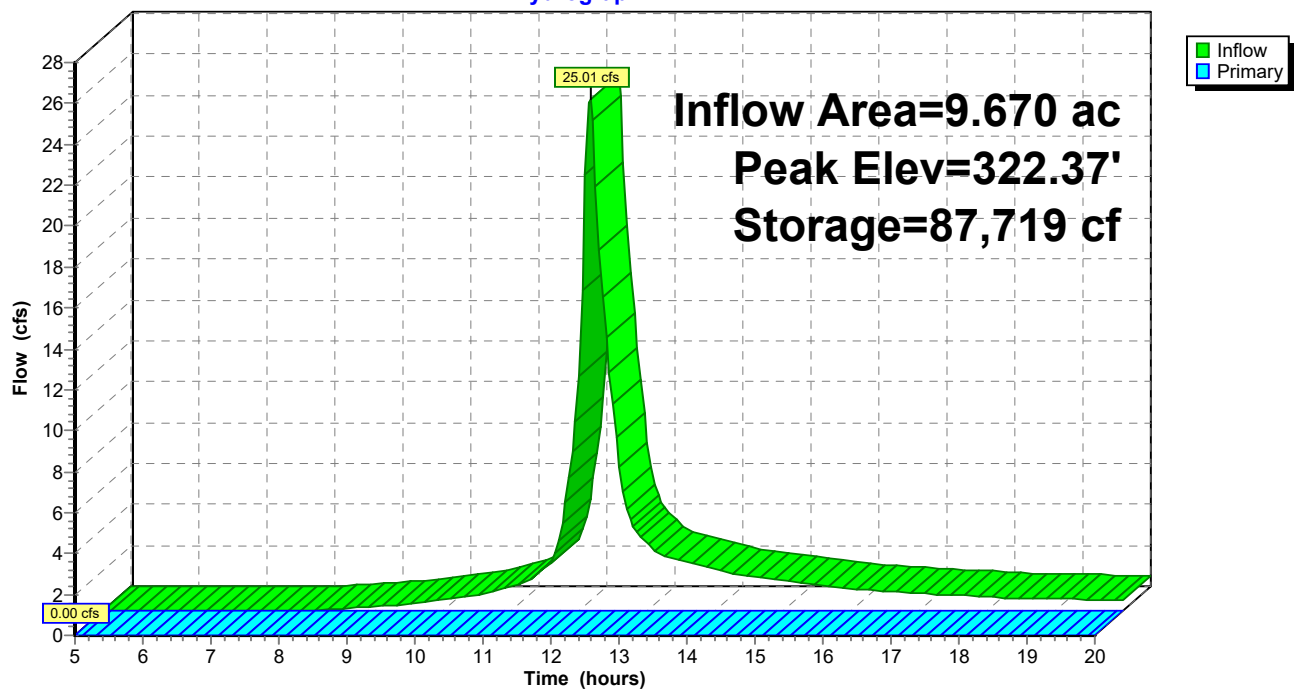
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Pond 38P: Pond #3E

Hydrograph



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Summary for Pond 39P: Pond #3F

Inflow Area = 2.680 ac, 35.07% Impervious, Inflow Depth > 2.51" for 10-yr event
 Inflow = 8.27 cfs @ 12.09 hrs, Volume= 0.559 af
 Outflow = 0.86 cfs @ 12.98 hrs, Volume= 0.551 af, Atten= 90%, Lag= 53.1 min
 Discarded = 0.86 cfs @ 12.98 hrs, Volume= 0.551 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 319.75' @ 12.98 hrs Surf.Area= 7,390 sf Storage= 10,464 cf

Plug-Flow detention time= 127.6 min calculated for 0.551 af (99% of inflow)
 Center-of-Mass det. time= 121.9 min (910.6 - 788.8)

Volume	Invert	Avail.Storage	Storage Description
#1	318.00'	98,777 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.00	4,538	0	0
320.00	7,789	12,327	12,327
322.00	11,752	19,541	31,868
324.00	16,119	27,871	59,739
326.00	22,919	39,038	98,777

Device	Routing	Invert	Outlet Devices
#1	Primary	327.00'	8.0' 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
#2	Discarded	318.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.86 cfs @ 12.98 hrs HW=319.75' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.86 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=318.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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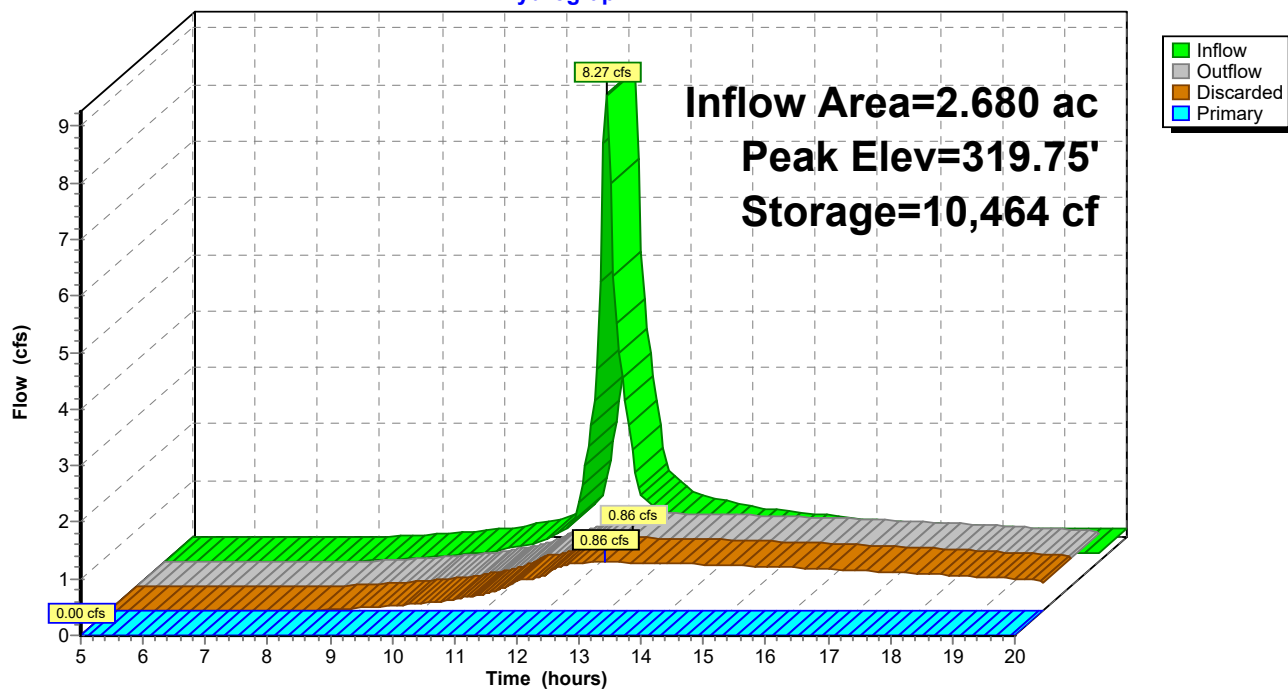
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Pond 39P: Pond #3F

Hydrograph



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Summary for Pond 40P: Pond #3G

Inflow Area = 7.490 ac, 33.67% Impervious, Inflow Depth > 2.41" for 10-yr event
 Inflow = 16.40 cfs @ 12.23 hrs, Volume= 1.505 af
 Outflow = 3.67 cfs @ 12.84 hrs, Volume= 0.686 af, Atten= 78%, Lag= 36.1 min
 Discarded = 0.20 cfs @ 12.84 hrs, Volume= 0.148 af
 Primary = 3.47 cfs @ 12.84 hrs, Volume= 0.539 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 329.17' @ 12.84 hrs Surf.Area= 8,611 sf Storage= 36,925 cf

Plug-Flow detention time= 180.3 min calculated for 0.686 af (46% of inflow)
 Center-of-Mass det. time= 95.6 min (895.0 - 799.5)

Volume	Invert	Avail.Storage	Storage Description
#1	322.00'	44,209 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
322.00	3,263	0	0
324.00	3,264	6,527	6,527
326.00	5,181	8,445	14,972
328.00	7,326	12,507	27,479
328.90	8,483	7,114	34,593
330.00	9,000	9,616	44,209

Device	Routing	Invert	Outlet Devices
#1	Primary	329.00'	20.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	322.00'	1.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.20 cfs @ 12.84 hrs HW=329.17' (Free Discharge)

↑ **2=Exfiltration** (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=3.39 cfs @ 12.84 hrs HW=329.17' (Free Discharge)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 3.39 cfs @ 0.98 fps)

Summit Woods

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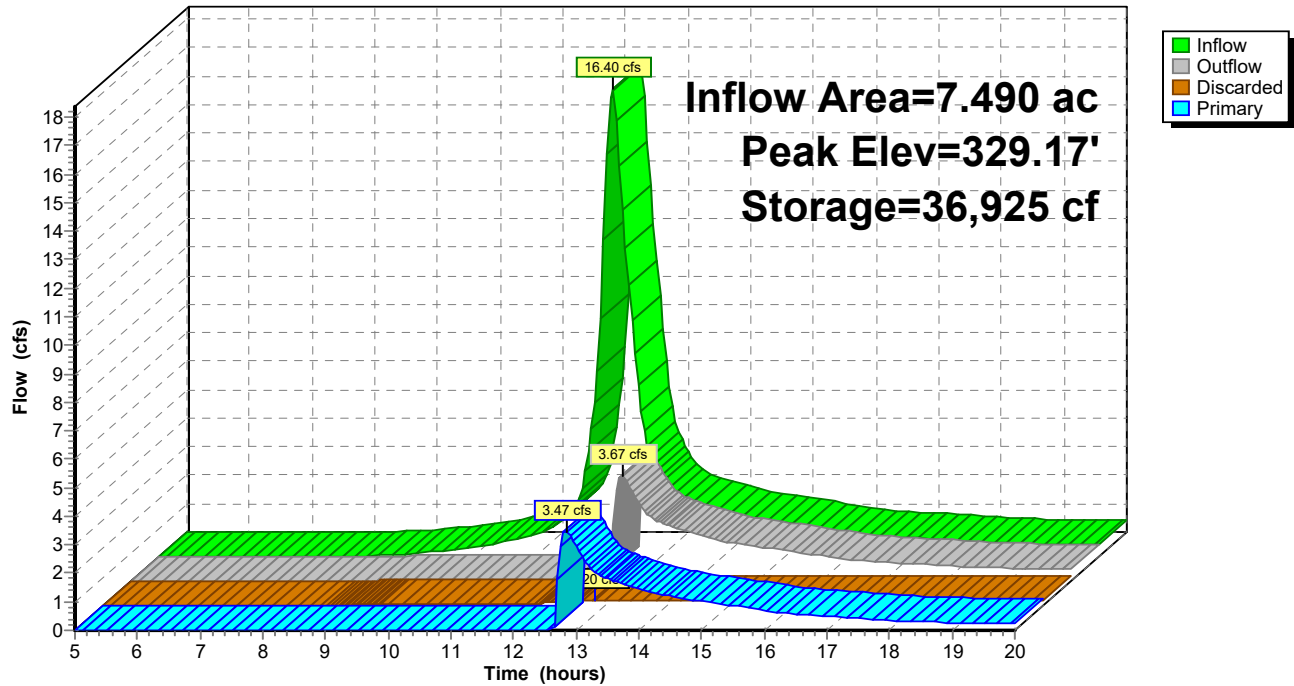
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Pond 40P: Pond #3G

Hydrograph



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Summary for Pond 41P: Pond #3H

Inflow Area = 0.660 ac, 32.12% Impervious, Inflow Depth > 1.78" for 10-yr event
 Inflow = 1.45 cfs @ 12.10 hrs, Volume= 0.098 af
 Outflow = 0.24 cfs @ 12.62 hrs, Volume= 0.098 af, Atten= 83%, Lag= 31.6 min
 Discarded = 0.24 cfs @ 12.62 hrs, Volume= 0.098 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 378.90' @ 12.62 hrs Surf.Area= 2,099 sf Storage= 1,492 cf

Plug-Flow detention time= 58.5 min calculated for 0.098 af (100% of inflow)
 Center-of-Mass det. time= 57.0 min (864.5 - 807.5)

Volume	Invert	Avail.Storage	Storage Description
#1	378.00'	25,109 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
378.00	1,200	0	0
380.00	3,187	4,387	4,387
382.00	5,252	8,439	12,826
384.00	7,031	12,283	25,109

Device	Routing	Invert	Outlet Devices
#1	Primary	383.00'	8.0' 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
#2	Discarded	378.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.24 cfs @ 12.62 hrs HW=378.90' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=378.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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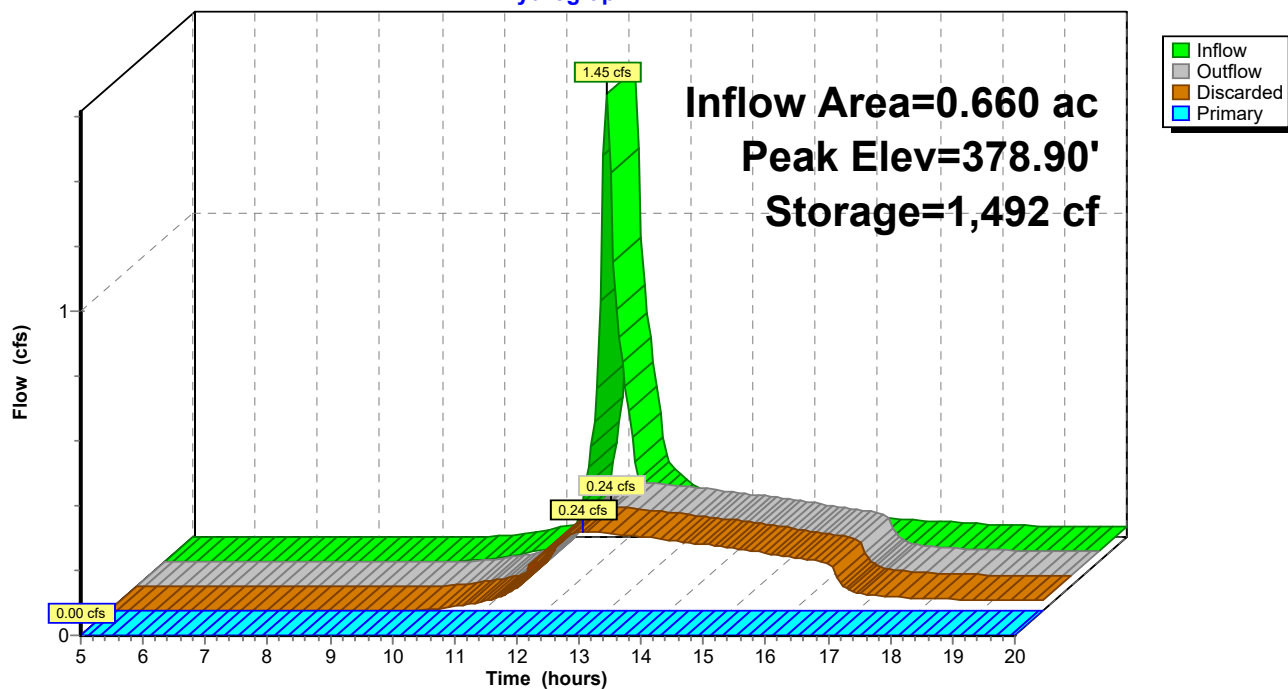
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Pond 41P: Pond #3H

Hydrograph



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Summary for Pond 42P: Pond #3L

Inflow Area = 17.490 ac, 16.36% Impervious, Inflow Depth > 1.59" for 10-yr event
 Inflow = 19.63 cfs @ 12.20 hrs, Volume= 2.313 af
 Outflow = 1.94 cfs @ 15.50 hrs, Volume= 1.317 af, Atten= 90%, Lag= 197.6 min
 Discarded = 1.94 cfs @ 15.50 hrs, Volume= 1.317 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 383.98' @ 15.50 hrs Surf.Area= 16,794 sf Storage= 55,635 cf

Plug-Flow detention time= 205.8 min calculated for 1.317 af (57% of inflow)
 Center-of-Mass det. time= 123.7 min (949.0 - 825.2)

Volume	Invert	Avail.Storage	Storage Description
#1	380.00'	112,931 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
380.00	10,344	0	0
382.00	14,437	24,781	24,781
384.00	16,823	31,260	56,041
386.00	19,506	36,329	92,370
387.00	21,616	20,561	112,931

Device	Routing	Invert	Outlet Devices
#1	Device 2	385.00'	36.0" W x 24.0" H Vert. Orifice/Grate C= 0.600
#2	Primary	381.00'	12.0" Round Culvert L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 381.00' / 380.00' S= 0.0256 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#3	Secondary	385.10'	20.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#4	Discarded	380.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=1.94 cfs @ 15.50 hrs HW=383.98' (Free Discharge)
 ↑ **4=Exfiltration** (Exfiltration Controls 1.94 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=380.00' (Free Discharge)
 ↑ **2=Culvert** (Controls 0.00 cfs)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=380.00' (Free Discharge)
 ↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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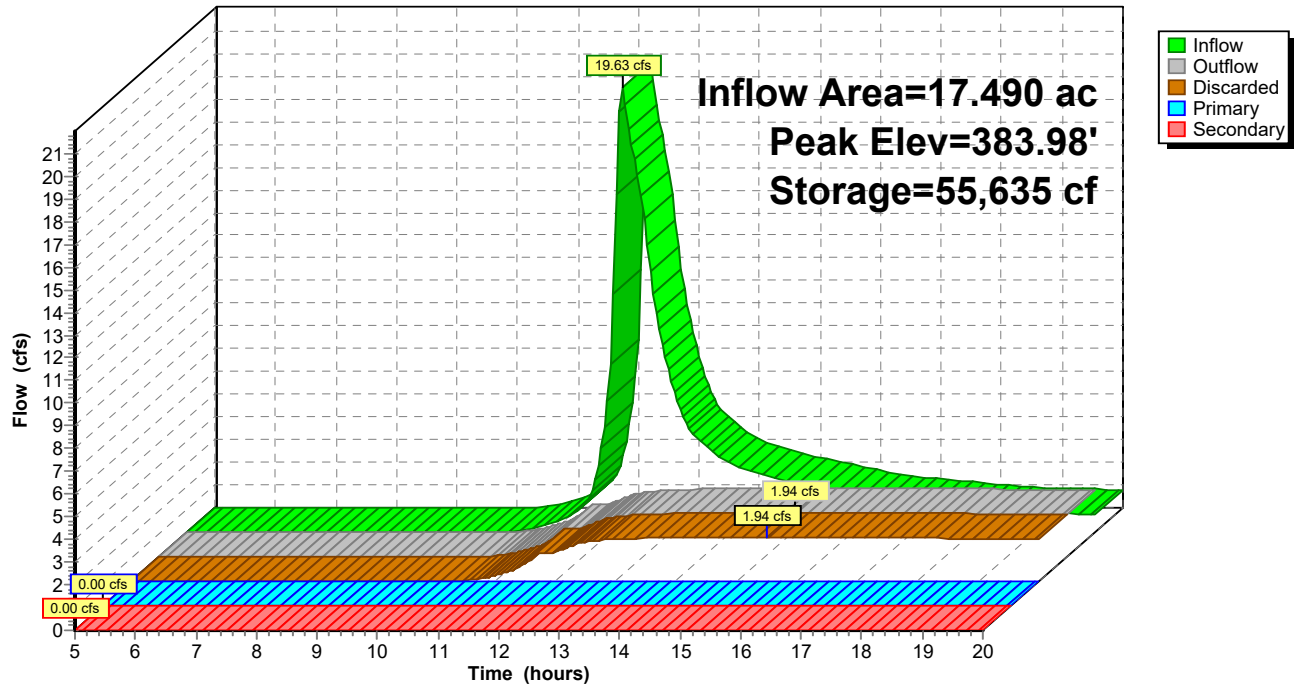
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Pond 42P: Pond #3L

Hydrograph



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Summary for Pond 43P: Pond #3J

Inflow Area = 13.580 ac, 20.62% Impervious, Inflow Depth > 2.16" for 10-yr event
 Inflow = 27.95 cfs @ 12.21 hrs, Volume= 2.449 af
 Outflow = 2.35 cfs @ 14.37 hrs, Volume= 1.656 af, Atten= 92%, Lag= 129.6 min
 Discarded = 2.35 cfs @ 14.37 hrs, Volume= 1.656 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 373.32' @ 14.37 hrs Surf.Area= 20,282 sf Storage= 55,091 cf

Plug-Flow detention time= 193.5 min calculated for 1.650 af (67% of inflow)
 Center-of-Mass det. time= 124.5 min (928.8 - 804.4)

Volume	Invert	Avail.Storage	Storage Description
#1	370.00'	153,422 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
370.00	12,962	0	0
372.00	17,277	30,239	30,239
374.00	21,818	39,095	69,334
376.00	30,536	52,354	121,688
377.00	32,932	31,734	153,422

Device	Routing	Invert	Outlet Devices
#1	Primary	377.30'	54.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	370.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=2.35 cfs @ 14.37 hrs HW=373.32' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 2.35 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=370.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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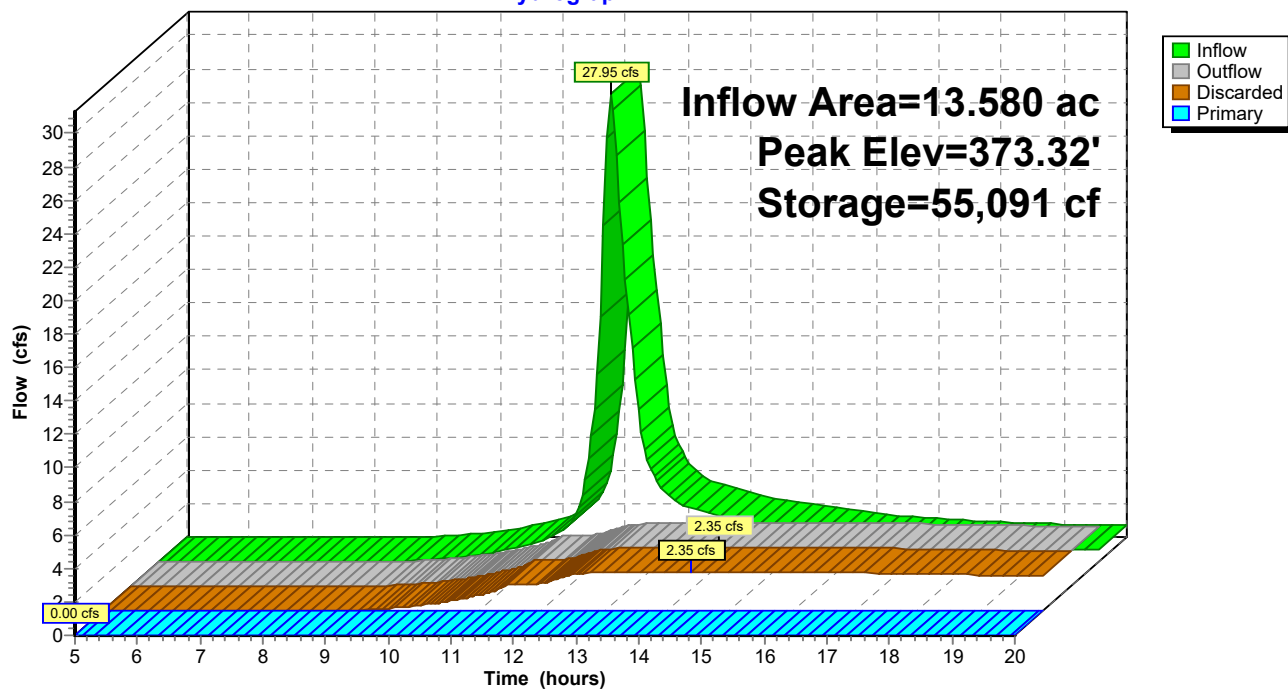
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Pond 43P: Pond #3J

Hydrograph



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Summary for Pond 44P: Pond #3K

Inflow Area = 7.550 ac, 12.29% Impervious, Inflow Depth > 1.70" for 10-yr event
 Inflow = 11.95 cfs @ 12.22 hrs, Volume= 1.072 af
 Outflow = 0.47 cfs @ 17.70 hrs, Volume= 0.300 af, Atten= 96%, Lag= 328.8 min
 Discarded = 0.47 cfs @ 17.70 hrs, Volume= 0.300 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 392.80' @ 17.70 hrs Surf.Area= 10,207 sf Storage= 34,275 cf

Plug-Flow detention time= 244.8 min calculated for 0.299 af (28% of inflow)
 Center-of-Mass det. time= 148.1 min (964.8 - 816.7)

Volume	Invert	Avail.Storage	Storage Description
#1	386.00'	61,250 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
386.00	1,263	0	0
388.00	2,805	4,068	4,068
390.00	5,635	8,440	12,508
392.00	8,614	14,249	26,757
394.00	12,602	21,216	47,973
395.00	13,952	13,277	61,250

Device	Routing	Invert	Outlet Devices
#1	Primary	395.00'	4.0' 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
#2	Discarded	386.00'	2.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.47 cfs @ 17.70 hrs HW=392.80' (Free Discharge)

↑ **2=Exfiltration** (Exfiltration Controls 0.47 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=386.00' (Free Discharge)

↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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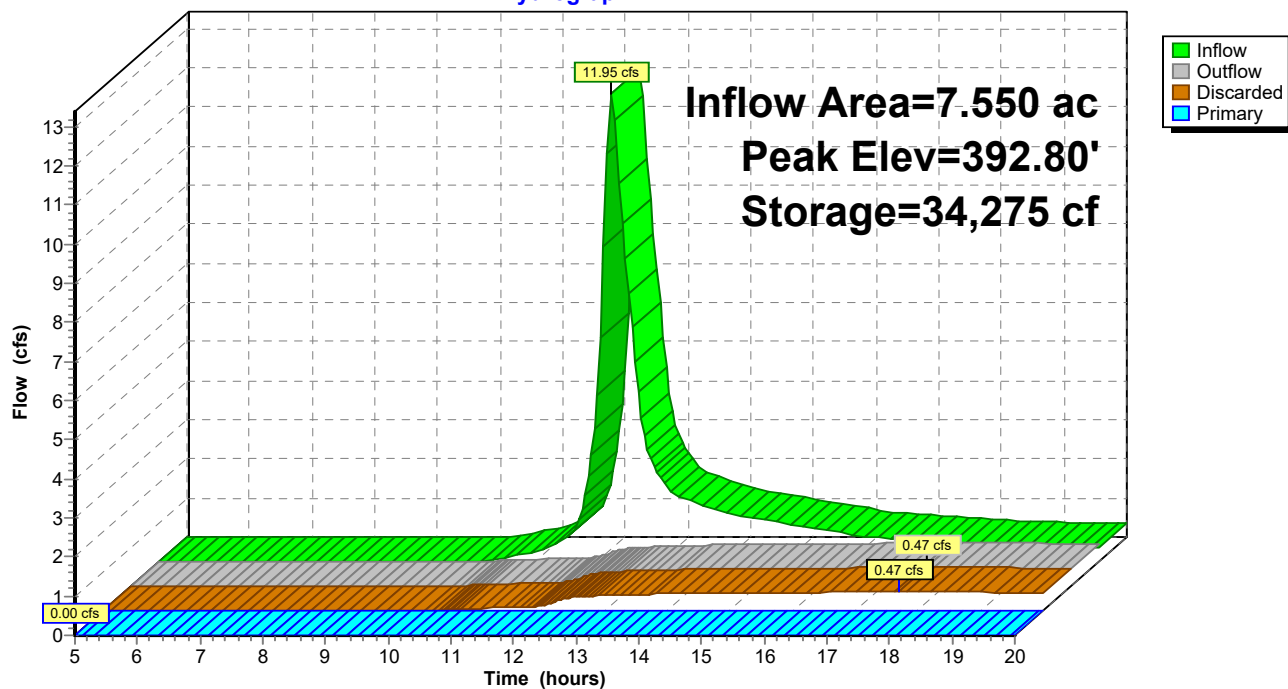
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Pond 44P: Pond #3K

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Summary for Pond 45P: Pind #3I

Volume	Invert	Avail.Storage	Storage Description
#1	402.00'	51,494 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
402.00	3,230	0	0
404.00	7,386	10,616	10,616
406.00	10,335	17,721	28,337
408.00	12,822	23,157	51,494

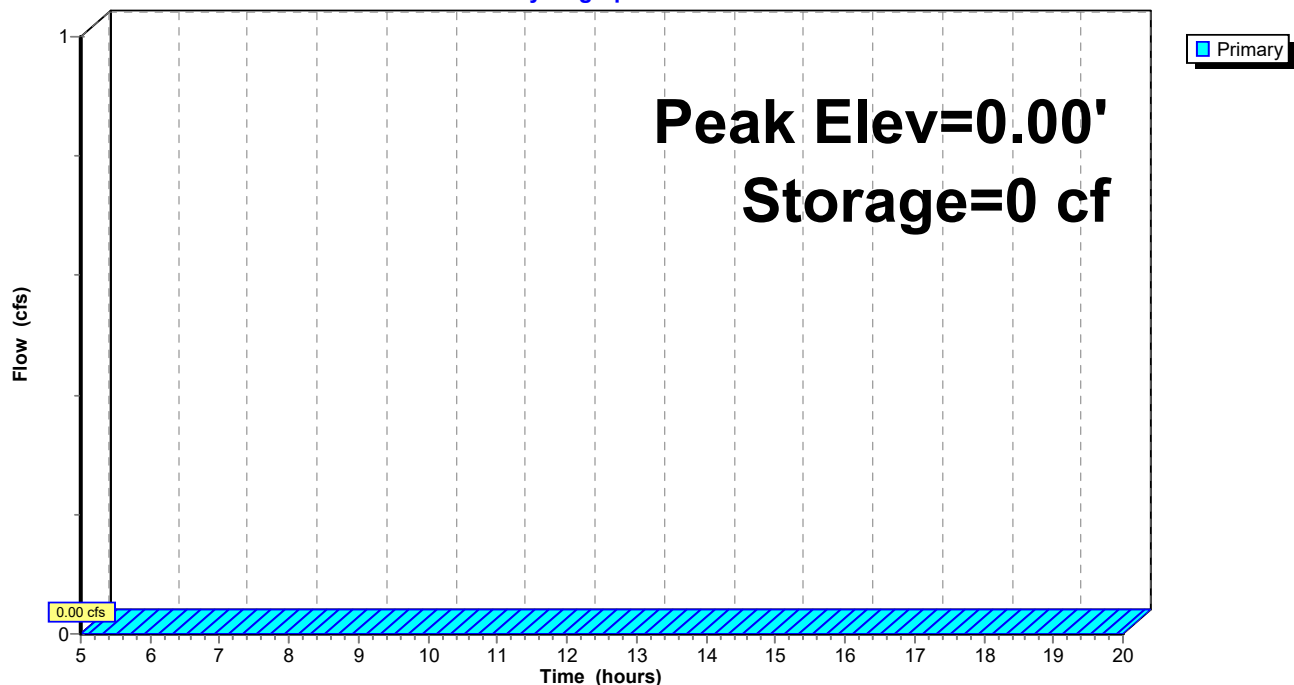
Device	Routing	Invert	Outlet Devices
#1	Primary	407.00'	8.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)

1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 45P: Pind #3I

Hydrograph



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Summary for Pond 49P: Pond #6B

Inflow Area = 6.200 ac, 24.19% Impervious, Inflow Depth > 2.41" for 10-yr event
 Inflow = 13.43 cfs @ 12.24 hrs, Volume= 1.245 af
 Outflow = 0.88 cfs @ 15.39 hrs, Volume= 0.618 af, Atten= 93%, Lag= 188.6 min
 Discarded = 0.88 cfs @ 15.39 hrs, Volume= 0.618 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 319.30' @ 15.39 hrs Surf.Area= 15,178 sf Storage= 33,070 cf

Plug-Flow detention time= 214.1 min calculated for 0.618 af (50% of inflow)
 Center-of-Mass det. time= 132.0 min (931.9 - 799.9)

Volume	Invert	Avail.Storage	Storage Description
#1	316.00'	63,397 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
316.00	4,611	0	0
318.00	11,260	15,871	15,871
320.00	17,282	28,542	44,413
321.00	20,685	18,984	63,397

Device	Routing	Invert	Outlet Devices
#1	Primary	321.50'	20.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	316.00'	2.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.88 cfs @ 15.39 hrs HW=319.30' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.88 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=316.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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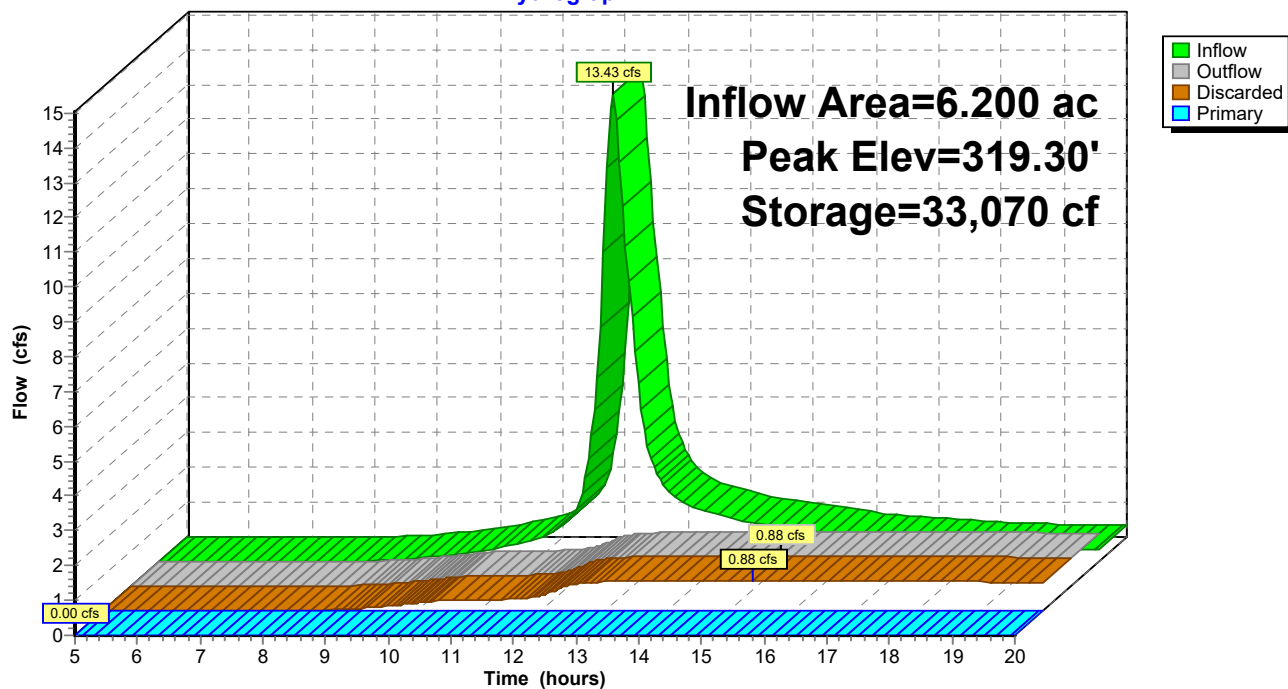
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Pond 49P: Pond #6B

Hydrograph



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Summary for Pond 50P: Pond #6C

Inflow Area = 3.260 ac, 40.43% Impervious, Inflow Depth > 2.01" for 10-yr event
 Inflow = 7.87 cfs @ 12.11 hrs, Volume= 0.546 af
 Outflow = 0.79 cfs @ 13.15 hrs, Volume= 0.506 af, Atten= 90%, Lag= 62.6 min
 Discarded = 0.79 cfs @ 13.15 hrs, Volume= 0.506 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 315.91' @ 13.15 hrs Surf.Area= 6,864 sf Storage= 10,578 cf

Plug-Flow detention time= 150.6 min calculated for 0.504 af (92% of inflow)
 Center-of-Mass det. time= 125.5 min (927.7 - 802.2)

Volume	Invert	Avail.Storage	Storage Description
#1	314.00'	30,059 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
314.00	4,235	0	0
316.00	6,993	11,228	11,228
318.00	11,838	18,831	30,059

Device	Routing	Invert	Outlet Devices
#1	Primary	329.00'	12.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	314.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.79 cfs @ 13.15 hrs HW=315.91' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.79 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=314.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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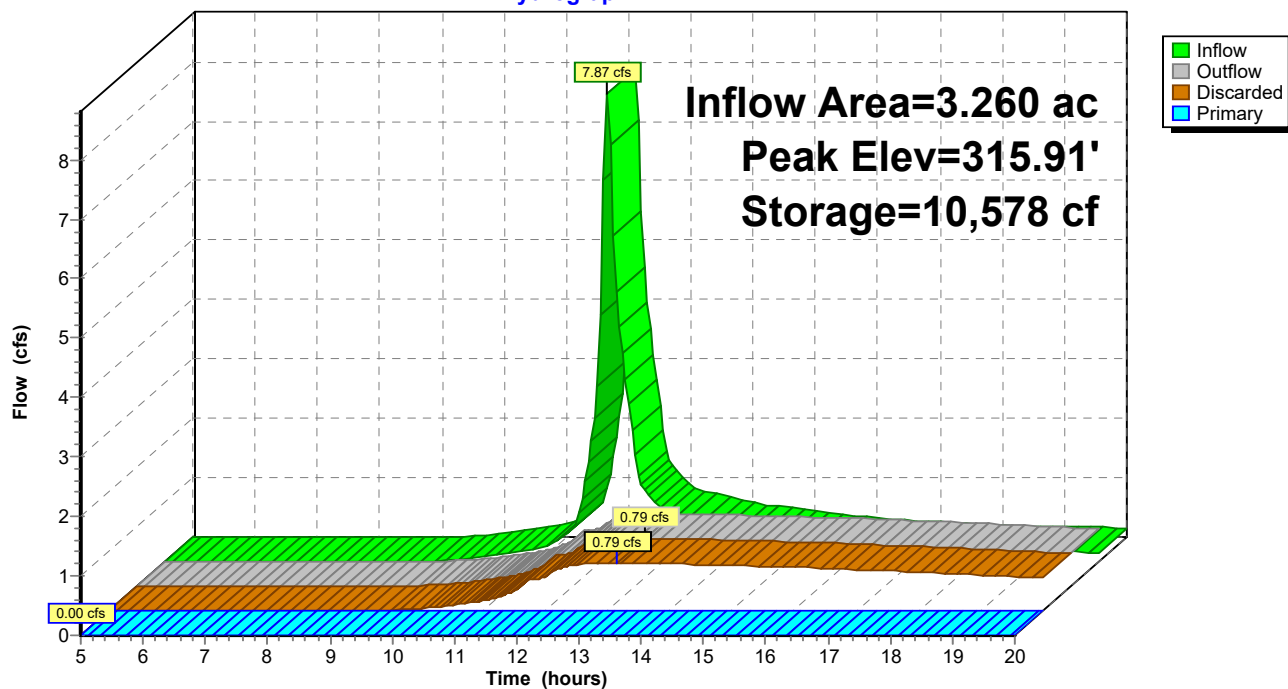
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Pond 50P: Pond #6C

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Summary for Pond 51P: Pond #6D

Inflow Area = 2.940 ac, 16.16% Impervious, Inflow Depth > 2.25" for 10-yr event
 Inflow = 7.33 cfs @ 12.14 hrs, Volume= 0.551 af
 Outflow = 0.67 cfs @ 13.58 hrs, Volume= 0.473 af, Atten= 91%, Lag= 86.8 min
 Discarded = 0.67 cfs @ 13.58 hrs, Volume= 0.473 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 319.06' @ 13.58 hrs Surf.Area= 11,576 sf Storage= 11,020 cf

Plug-Flow detention time= 169.0 min calculated for 0.473 af (86% of inflow)
 Center-of-Mass det. time= 127.0 min (924.9 - 797.8)

Volume	Invert	Avail.Storage	Storage Description
#1	318.00'	55,387 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.00	9,125	0	0
320.00	13,729	22,854	22,854
322.00	18,804	32,533	55,387

Device	Routing	Invert	Outlet Devices
#1	Primary	321.50'	6.0' 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
#2	Discarded	318.00'	2.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.67 cfs @ 13.58 hrs HW=319.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.67 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=318.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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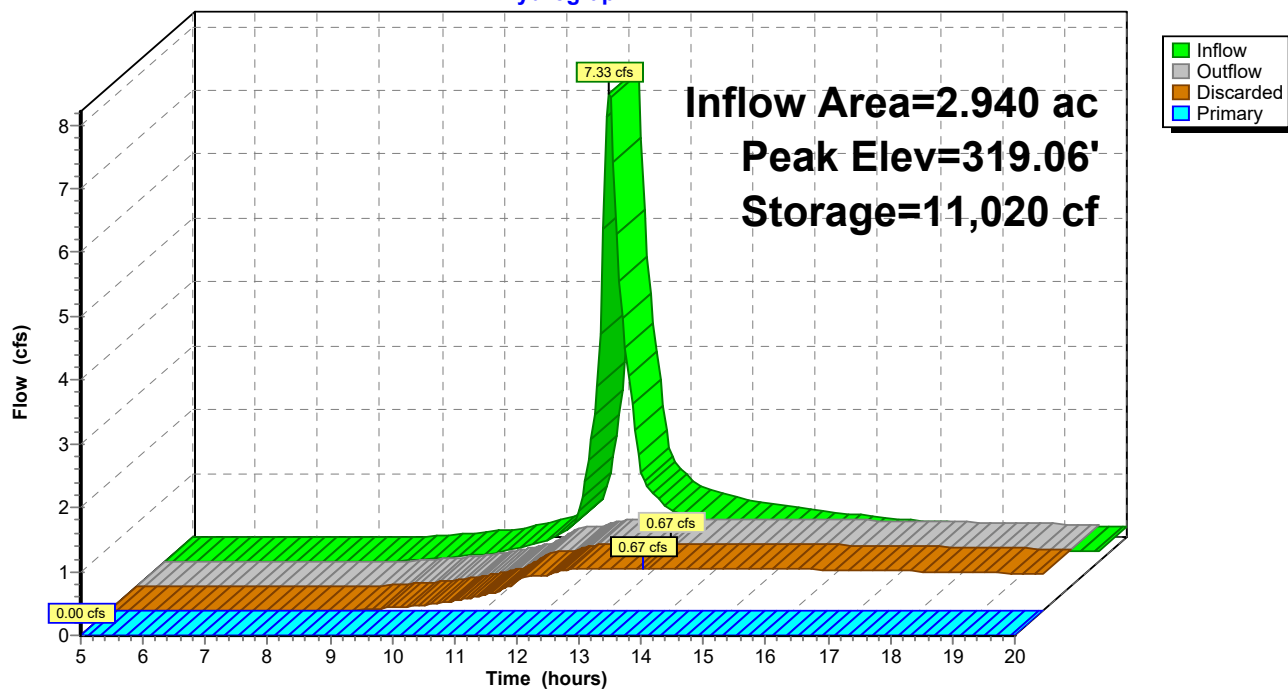
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Pond 51P: Pond #6D

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment11S: Post Area #1	Runoff Area=5.360 ac 0.00% Impervious Runoff Depth>3.35" Flow Length=430' Tc=9.0 min CN=60 Runoff=19.98 cfs 1.498 af
Subcatchment12S: Post Area #2	Runoff Area=8.050 ac 0.00% Impervious Runoff Depth>3.35" Flow Length=712' Tc=9.0 min CN=60 Runoff=30.00 cfs 2.249 af
Subcatchment13S: Post Area #3A	Runoff Area=229.900 ac 3.52% Impervious Runoff Depth>2.82" Flow Length=7,820' Tc=429.3 min CN=71 Runoff=131.96 cfs 54.047 af
Subcatchment14S: Post Area #3B	Runoff Area=3.430 ac 25.36% Impervious Runoff Depth>5.42" Flow Length=463' Tc=6.0 min CN=78 Runoff=22.39 cfs 1.549 af
Subcatchment15S: Post Area #3C	Runoff Area=3.080 ac 22.08% Impervious Runoff Depth>5.41" Flow Length=492' Tc=11.2 min CN=78 Runoff=17.21 cfs 1.389 af
Subcatchment16S: Post Area #3D	Runoff Area=6.220 ac 20.80% Impervious Runoff Depth>5.41" Flow Length=585' Tc=12.1 min CN=78 Runoff=33.88 cfs 2.804 af
Subcatchment17S: Post Area #3E	Runoff Area=9.670 ac 28.11% Impervious Runoff Depth>5.65" Flow Length=993' Tc=11.8 min CN=80 Runoff=55.01 cfs 4.549 af
Subcatchment18S: Post Area #3F	Runoff Area=2.680 ac 35.07% Impervious Runoff Depth>5.65" Flow Length=485' Tc=6.0 min CN=80 Runoff=18.10 cfs 1.263 af
Subcatchment19S: Post Area #3G	Runoff Area=7.490 ac 33.67% Impervious Runoff Depth>5.52" Flow Length=2,420' Tc=16.8 min CN=79 Runoff=36.73 cfs 3.445 af
Subcatchment20S: Post Area #3H	Runoff Area=0.660 ac 32.12% Impervious Runoff Depth>4.61" Flow Length=454' Tc=6.0 min CN=71 Runoff=3.73 cfs 0.253 af
Subcatchment21S: Post Area #3I	Runoff Area=6.150 ac 13.69% Impervious Runoff Depth>4.56" Flow Length=2,107' Tc=38.8 min CN=71 Runoff=17.76 cfs 2.335 af
Subcatchment22S: Post Area #3J	Runoff Area=13.580 ac 20.62% Impervious Runoff Depth>5.17" Flow Length=819' Tc=15.0 min CN=76 Runoff=65.93 cfs 5.853 af
Subcatchment23S: Post #3K	Runoff Area=7.550 ac 12.29% Impervious Runoff Depth>4.48" Flow Length=1,348' Tc=15.4 min CN=70 Runoff=31.78 cfs 2.817 af
Subcatchment24S: Post Area #3L	Runoff Area=11.340 ac 17.81% Impervious Runoff Depth>4.14" Flow Length=1,281' Tc=12.4 min CN=67 Runoff=47.77 cfs 3.911 af
Subcatchment25S: Post Area #4	Runoff Area=3.310 ac 12.15% Impervious Runoff Depth>5.16" Flow Length=471' Tc=20.3 min CN=76 Runoff=14.24 cfs 1.424 af
Subcatchment26S: Post Area #5	Runoff Area=1.620 ac 7.41% Impervious Runoff Depth>4.95" Flow Length=216' Slope=0.0450 '/' Tc=10.5 min CN=74 Runoff=8.53 cfs 0.668 af

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Subcatchment27S: Post Area #6A	Runoff Area=27.910 ac 6.04% Impervious Runoff Depth>4.27" Flow Length=2,411' Tc=206.9 min CN=72 Runoff=28.03 cfs 9.927 af
Subcatchment28S: Post Area #6B	Runoff Area=6.200 ac 24.19% Impervious Runoff Depth>5.52" Flow Length=864' Tc=17.3 min CN=79 Runoff=30.07 cfs 2.851 af
Subcatchment29S: Post Area #6C	Runoff Area=3.260 ac 40.43% Impervious Runoff Depth>4.95" Flow Length=1,421' Tc=7.0 min CN=74 Runoff=19.18 cfs 1.345 af
Subcatchment31S: Post Area #7	Runoff Area=2.990 ac 17.53% Impervious Runoff Depth>4.14" Flow Length=360' Tc=11.3 min CN=67 Runoff=13.01 cfs 1.031 af
Subcatchment32S: Post Area #8	Runoff Area=6.790 ac 0.00% Impervious Runoff Depth>4.81" Flow Length=803' Tc=23.0 min CN=73 Runoff=26.07 cfs 2.723 af
Subcatchment33S: Post Area #9	Runoff Area=12.170 ac 12.33% Impervious Runoff Depth>5.07" Flow Length=1,749' Tc=77.8 min CN=76 Runoff=26.42 cfs 5.138 af
Subcatchment52S: Post Area #6D-2	Runoff Area=1.110 ac 66.89% Impervious Runoff Depth>6.78" Flow Length=862' Tc=16.9 min CN=90 Runoff=6.34 cfs 0.627 af
Subcatchment53S: Post Area #6D-1	Runoff Area=2.940 ac 16.16% Impervious Runoff Depth>5.30" Flow Length=525' Tc=9.3 min CN=77 Runoff=16.92 cfs 1.298 af
Reach 50R: Reach #3B	Avg. Flow Depth=0.22' Max Vel=0.55 fps Inflow=2.20 cfs 0.166 af n=0.070 L=789.0' S=0.0089 '/' Capacity=25.36 cfs Outflow=0.93 cfs 0.165 af
Reach 51R: Post Area #3	Avg. Flow Depth=2.34' Max Vel=2.58 fps Inflow=137.79 cfs 58.025 af n=0.040 L=1,478.0' S=0.0027 '/' Capacity=706.54 cfs Outflow=137.42 cfs 55.050 af
Reach 52R: Reach #3L-1	Avg. Flow Depth=0.16' Max Vel=1.79 fps Inflow=6.50 cfs 0.716 af n=0.100 L=125.0' S=0.2880 '/' Capacity=76.67 cfs Outflow=6.44 cfs 0.716 af
Reach 53R: Reach #3C	Avg. Flow Depth=0.37' Max Vel=1.03 fps Inflow=8.97 cfs 0.223 af n=0.070 L=858.0' S=0.0152 '/' Capacity=33.14 cfs Outflow=3.86 cfs 0.223 af
Reach 54R: Reach #3D	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.070 L=261.0' S=0.0345 '/' Capacity=84.65 cfs Outflow=0.00 cfs 0.000 af
Reach 55R: Reach 3-3	Avg. Flow Depth=0.82' Max Vel=1.03 fps Inflow=12.95 cfs 3.018 af n=0.040 L=464.0' S=0.0017 '/' Capacity=19.56 cfs Outflow=12.79 cfs 2.961 af
Reach 56R: Reach 3-2	Avg. Flow Depth=0.53' Max Vel=0.81 fps Inflow=14.20 cfs 3.667 af n=0.040 L=424.0' S=0.0019 '/' Capacity=1,796.89 cfs Outflow=13.99 cfs 3.590 af
Reach 57R: Post Area #6	Avg. Flow Depth=0.82' Max Vel=2.60 fps Inflow=28.94 cfs 10.472 af n=0.040 L=338.0' S=0.0109 '/' Capacity=1,420.98 cfs Outflow=28.94 cfs 10.427 af
Reach 58R: Reach #3E	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.080 L=403.0' S=0.0097 '/' Capacity=23.18 cfs Outflow=0.00 cfs 0.000 af

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Reach 59R: Reach 6-2	Avg. Flow Depth=1.16' Max Vel=1.55 fps Inflow=28.95 cfs 10.490 af n=0.040 L=162.0' S=0.0025 '/' Capacity=674.87 cfs Outflow=28.94 cfs 10.455 af
Reach 60R: Reach 6C	Avg. Flow Depth=0.17' Max Vel=2.07 fps Inflow=0.94 cfs 0.017 af n=0.040 L=207.0' S=0.0609 '/' Capacity=139.08 cfs Outflow=0.59 cfs 0.017 af
Reach 61R: Reach 3-4-2	Avg. Flow Depth=1.51' Max Vel=1.10 fps Inflow=13.06 cfs 3.055 af n=0.040 L=358.0' S=0.0011 '/' Capacity=6.21 cfs Outflow=12.95 cfs 3.018 af
Reach 62R: Reach 3-5	Avg. Flow Depth=0.32' Max Vel=0.22 fps Inflow=28.64 cfs 3.403 af n=0.040 L=712.0' S=0.0003 '/' Capacity=154.58 cfs Outflow=13.30 cfs 3.116 af
Reach 63R: Reach 3-6	Avg. Flow Depth=0.36' Max Vel=1.35 fps Inflow=32.19 cfs 2.431 af n=0.040 L=513.8' S=0.0088 '/' Capacity=1,156.63 cfs Outflow=28.64 cfs 2.408 af
Reach 64R: Reach #3F	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.400 L=206.0' S=0.0243 '/' Capacity=21.89 cfs Outflow=0.00 cfs 0.000 af
Reach 65R: Reach #3G	Avg. Flow Depth=0.49' Max Vel=1.34 fps Inflow=35.65 cfs 2.450 af n=0.070 L=400.0' S=0.0175 '/' Capacity=680.18 cfs Outflow=32.19 cfs 2.431 af
Reach 66R: Reach #3L-2	Avg. Flow Depth=0.45' Max Vel=1.02 fps Inflow=6.44 cfs 0.716 af n=0.100 L=1,355.0' S=0.0236 '/' Capacity=23.13 cfs Outflow=4.08 cfs 0.706 af
Reach 67R: Reach #3G	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.080 L=399.0' S=0.0175 '/' Capacity=1,116.58 cfs Outflow=0.00 cfs 0.000 af
Reach 68R: Reach 3-7	Avg. Flow Depth=0.63' Max Vel=2.99 fps Inflow=8.93 cfs 1.002 af n=0.040 L=1,366.0' S=0.0216 '/' Capacity=379.08 cfs Outflow=7.33 cfs 0.995 af
Reach 69R: Reach 3-8	Avg. Flow Depth=0.47' Max Vel=12.49 fps Inflow=8.95 cfs 1.002 af 36.0" Round Pipe n=0.013 L=129.0' S=0.0620 '/' Capacity=166.10 cfs Outflow=8.93 cfs 1.002 af
Reach 70R: Reach 3-9	Avg. Flow Depth=0.51' Max Vel=3.65 fps Inflow=8.97 cfs 1.003 af n=0.040 L=292.0' S=0.0411 '/' Capacity=725.62 cfs Outflow=8.95 cfs 1.002 af
Reach 71R: Reach #3J	Avg. Flow Depth=0.12' Max Vel=1.00 fps Inflow=1.72 cfs 0.058 af n=0.040 L=810.0' S=0.0214 '/' Capacity=1,713.62 cfs Outflow=0.84 cfs 0.058 af
Reach 72R: Reach 3-10	Avg. Flow Depth=0.76' Max Vel=4.21 fps Inflow=29.51 cfs 0.949 af n=0.030 L=1,709.0' S=0.0199 '/' Capacity=70.44 cfs Outflow=8.97 cfs 0.945 af
Reach 73R: (new Reach)	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=295.0' S=0.0678 '/' Capacity=80.99 cfs Outflow=0.00 cfs 0.000 af
Reach 74R: Reach 6B	Avg. Flow Depth=1.13' Max Vel=4.34 fps Inflow=21.77 cfs 0.564 af n=0.040 L=270.0' S=0.0267 '/' Capacity=50.79 cfs Outflow=11.15 cfs 0.564 af
Reach 75R: Reach 6B	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.040 L=230.0' S=0.0383 '/' Capacity=60.84 cfs Outflow=0.00 cfs 0.000 af

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Type III 24-hr 100-yr Rainfall=8.40"

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Reach 76R: Reach 3-4-1 Avg. Flow Depth=0.25' Max Vel=0.47 fps Inflow=13.30 cfs 3.116 af
n=0.070 L=253.0' S=0.0051 '/' Capacity=253.93 cfs Outflow=13.06 cfs 3.055 af

Pond 35P: Pond #3B Peak Elev=322.53' Storage=64,079 cf Inflow=26.88 cfs 2.177 af
Discarded=0.69 cfs 0.568 af Primary=2.20 cfs 0.166 af Outflow=2.89 cfs 0.734 af

Pond 36P: Pond #3C Peak Elev=324.25' Storage=24,334 cf Inflow=17.21 cfs 1.389 af
Discarded=1.13 cfs 0.824 af Primary=8.97 cfs 0.223 af Outflow=10.10 cfs 1.047 af

Pond 37P: Pond #3D Peak Elev=324.10' Storage=89,110 cf Inflow=33.88 cfs 2.804 af
Discarded=1.09 cfs 0.833 af Primary=0.00 cfs 0.000 af Outflow=1.09 cfs 0.833 af

Pond 38P: Pond #3E Peak Elev=325.90' Storage=198,058 cf Inflow=55.01 cfs 4.549 af
Outflow=0.00 cfs 0.000 af

Pond 39P: Pond #3F Peak Elev=321.66' Storage=28,026 cf Inflow=18.10 cfs 1.263 af
Discarded=1.28 cfs 0.932 af Primary=0.00 cfs 0.000 af Outflow=1.28 cfs 0.932 af

Pond 40P: Pond #3G Peak Elev=329.76' Storage=42,073 cf Inflow=36.73 cfs 3.445 af
Discarded=0.21 cfs 0.172 af Primary=35.65 cfs 2.450 af Outflow=35.86 cfs 2.622 af

Pond 41P: Pond #3H Peak Elev=380.16' Storage=4,907 cf Inflow=3.73 cfs 0.253 af
Discarded=0.39 cfs 0.236 af Primary=0.00 cfs 0.000 af Outflow=0.39 cfs 0.236 af

Pond 42P: Pond #3L Peak Elev=385.77' Storage=87,900 cf Inflow=55.98 cfs 6.246 af
Discarded=2.22 cfs 1.694 af Primary=6.50 cfs 0.716 af Secondary=29.32 cfs 2.161 af Outflow=38.04 cfs 4.571 af

Pond 43P: Pond #3J Peak Elev=377.35' Storage=153,422 cf Inflow=65.93 cfs 5.853 af
Discarded=3.81 cfs 2.889 af Primary=1.72 cfs 0.058 af Outflow=5.53 cfs 2.947 af

Pond 44P: Pond #3K Peak Elev=396.71' Storage=61,250 cf Inflow=31.78 cfs 2.817 af
Discarded=0.65 cfs 0.461 af Primary=29.51 cfs 0.949 af Outflow=30.16 cfs 1.411 af

Pond 45P: Pond #3I Peak Elev=0.00' Storage=0 cf
Primary=0.00 cfs 0.000 af

Pond 49P: Pond #6B Peak Elev=322.05' Storage=63,397 cf Inflow=30.07 cfs 2.851 af
Discarded=1.20 cfs 0.928 af Primary=21.77 cfs 0.564 af Outflow=22.97 cfs 1.491 af

Pond 50P: Pond #6C Peak Elev=329.09' Storage=30,059 cf Inflow=19.18 cfs 1.345 af
Discarded=1.37 cfs 0.945 af Primary=0.94 cfs 0.017 af Outflow=2.31 cfs 0.961 af

Pond 51P: Pond #6D Peak Elev=320.67' Storage=32,580 cf Inflow=16.92 cfs 1.298 af
Discarded=0.89 cfs 0.710 af Primary=0.00 cfs 0.000 af Outflow=0.89 cfs 0.710 af

Total Runoff Area = 383.460 ac Runoff Volume = 114.996 af Average Runoff Depth = 3.60"
91.61% Pervious = 351.271 ac 8.39% Impervious = 32.190 ac

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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 11S: Post Area #1

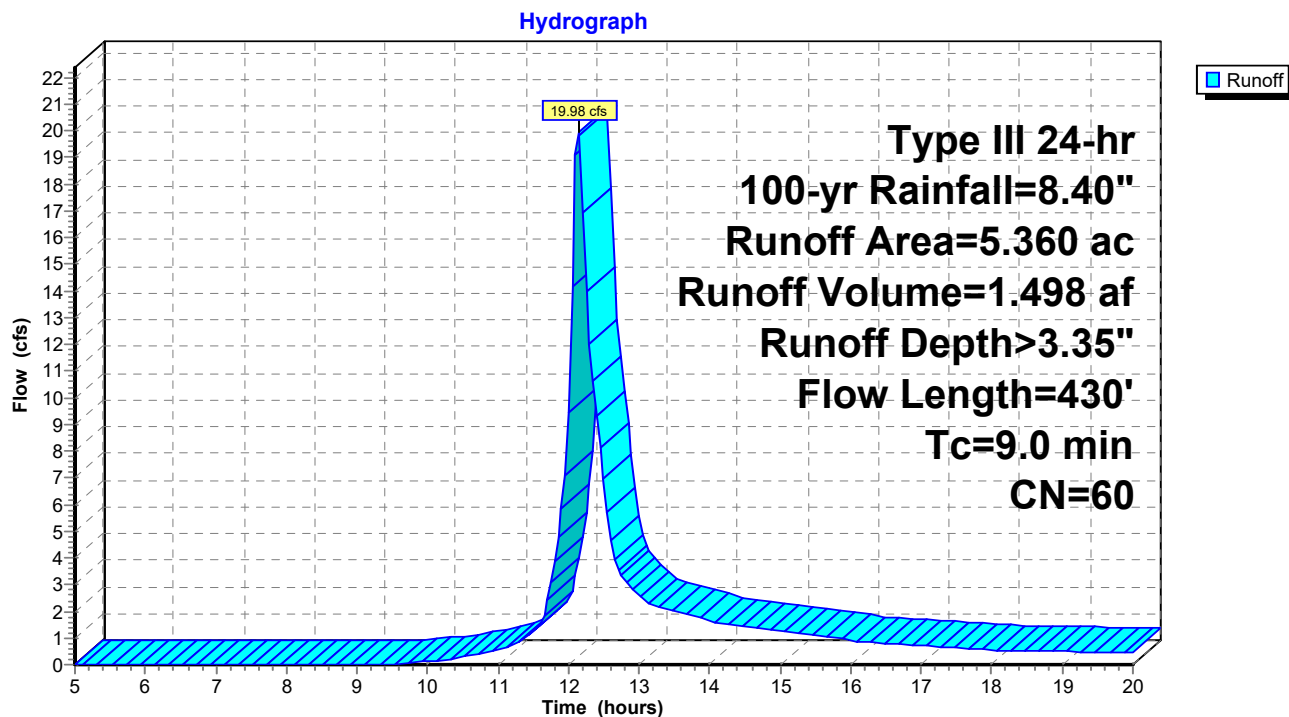
Runoff = 19.98 cfs @ 12.14 hrs, Volume= 1.498 af, Depth> 3.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
2.770	60	Woods, Fair, HSG B
0.630	73	Woods, Fair, HSG C
1.960	56	Brush, Fair, HSG B
5.360	60	Weighted Average
5.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.3000	0.24		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
2.0	330	0.2960	2.72		Shallow Concentrated Flow, Reach B-DP#1
					Woodland Kv= 5.0 fps
9.0	430	Total			

Subcatchment 11S: Post Area #1



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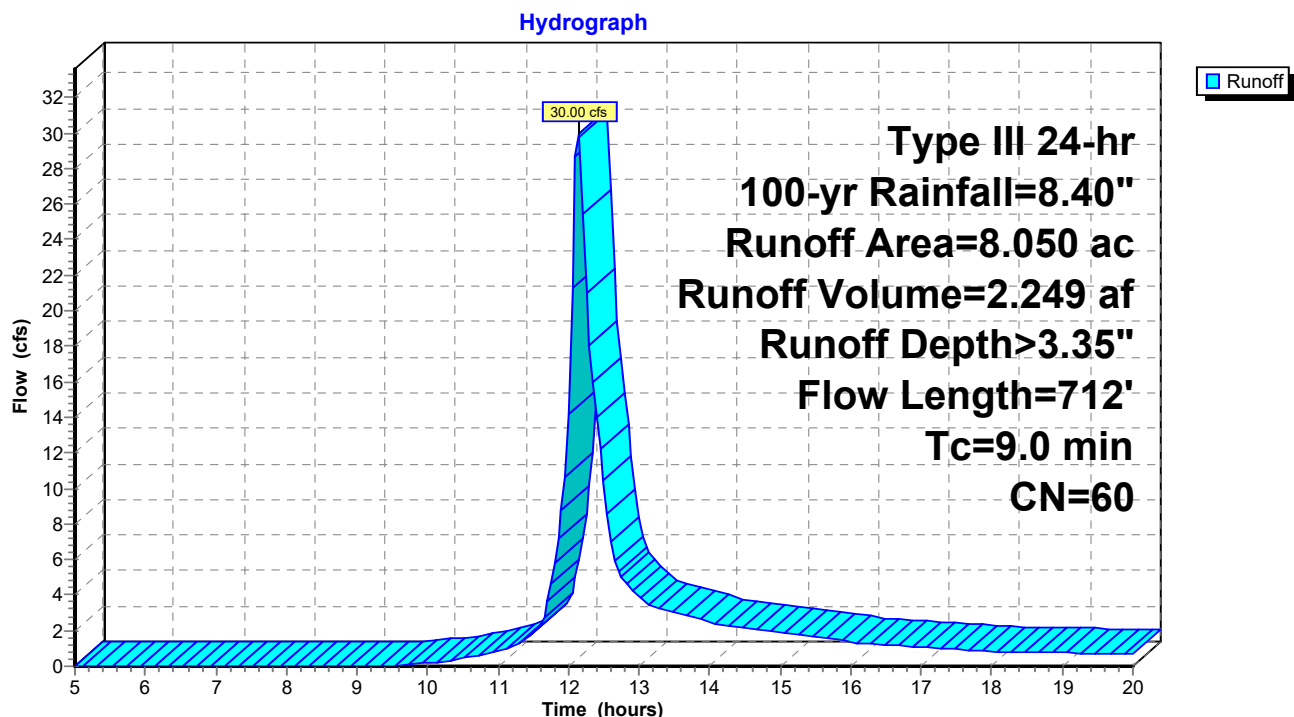
Summary for Subcatchment 12S: Post Area #2

Runoff = 30.00 cfs @ 12.14 hrs, Volume= 2.249 af, Depth> 3.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
7.770	60	Woods, Fair, HSG B
0.280	56	Brush, Fair, HSG B
8.050	60	Weighted Average
8.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2400	0.22		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	612	0.1990	7.18		Shallow Concentrated Flow, Reach B-DP#2
					Unpaved Kv= 16.1 fps
9.0	712	Total			

Subcatchment 12S: Post Area #2

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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 13S: Post Area #3A

Runoff = 131.96 cfs @ 17.66 hrs, Volume= 54.047 af, Depth> 2.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
4.460	35	Brush, Fair, HSG A
* 6.250	78	Wetland, HSG A
0.200	98	Paved parking, HSG B
23.250	68	1 acre lots, 20% imp, HSG B
36.700	60	Woods, Fair, HSG B
6.540	56	Brush, Fair, HSG B
0.240	98	Paved parking, HSG C
29.260	73	Woods, Fair, HSG C
38.540	70	Brush, Fair, HSG C
* 31.270	78	Wetland, HSG C
13.380	79	1 acre lots, 20% imp, HSG C
4.150	79	Woods, Fair, HSG D
* 32.500	78	Wetland, HSG D
0.330	98	Paved parking, HSG D
2.830	77	Brush, Fair, HSG D
229.900	71	Weighted Average
221.804		96.48% Pervious Area
8.096		3.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.1600	0.19		Sheet Flow, Reac A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
1.4	611	0.2060	7.31		Shallow Concentrated Flow, Reach B-C
					Unpaved Kv= 16.1 fps
10.3	748	0.0550	1.21	31.39	Channel Flow, Reach C-D
					Area= 26.0 sf Perim= 34.3' r= 0.76' n= 0.240
0.2	100	0.0320	10.55	8.29	Pipe Channel, CMP_Round 12"
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010
47.2	2,060	0.0200	0.73	18.93	Channel Flow, Reach E-F
					Area= 26.0 sf Perim= 34.3' r= 0.76' n= 0.240
0.1	100	0.0550	22.13	156.42	Pipe Channel, Reach F-G
					36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
22.3	819	0.0250	0.61	5.51	Channel Flow, REach G-H
					Area= 9.0 sf Perim= 18.2' r= 0.49' n= 0.240
213.0	1,974	0.0020	0.15	1.93	Channel Flow, ReachH-I
					Area= 12.5 sf Perim= 30.0' r= 0.42' n= 0.240
125.9	1,308	0.0020	0.17	1.56	Channel Flow, Rach I-DP#3
					Area= 9.0 sf Perim= 18.2' r= 0.49' n= 0.240
429.3	7,820	Total			

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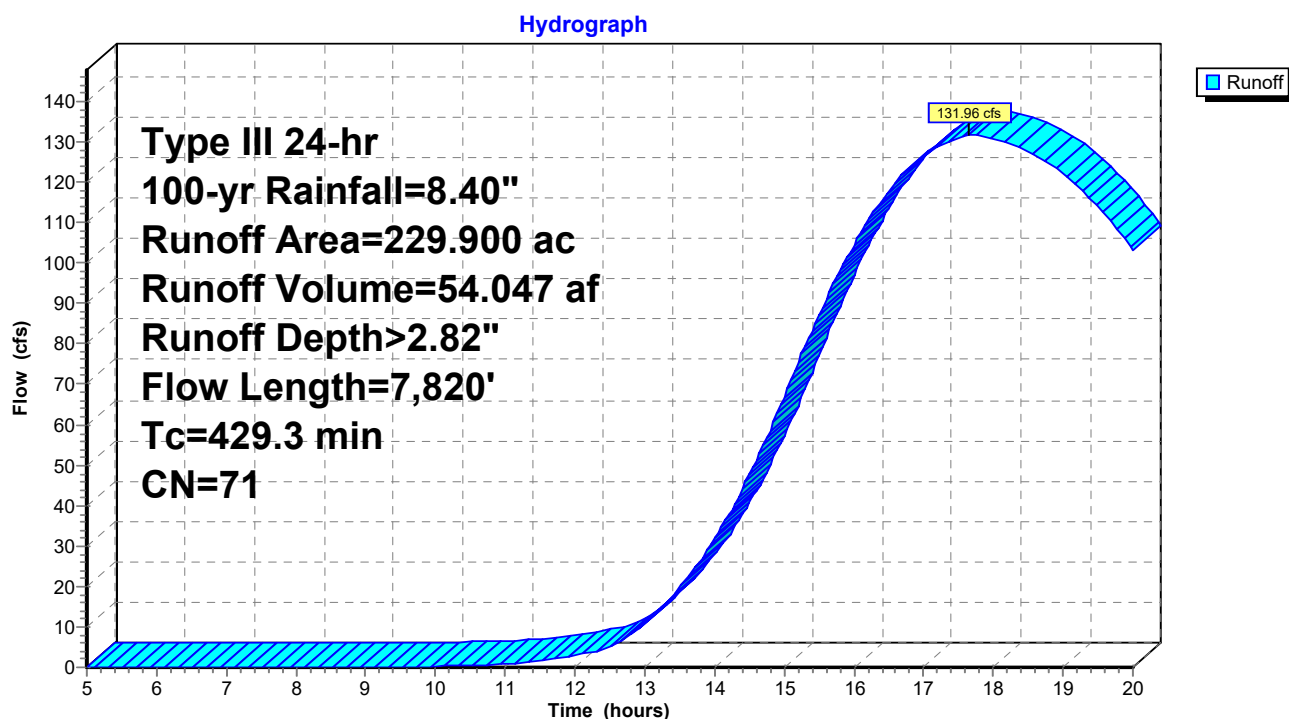
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Type III 24-hr 100-yr Rainfall=8.40"

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Subcatchment 13S: Post Area #3A



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Summary for Subcatchment 14S: Post Area #3B

Runoff = 22.39 cfs @ 12.09 hrs, Volume= 1.549 af, Depth> 5.42"

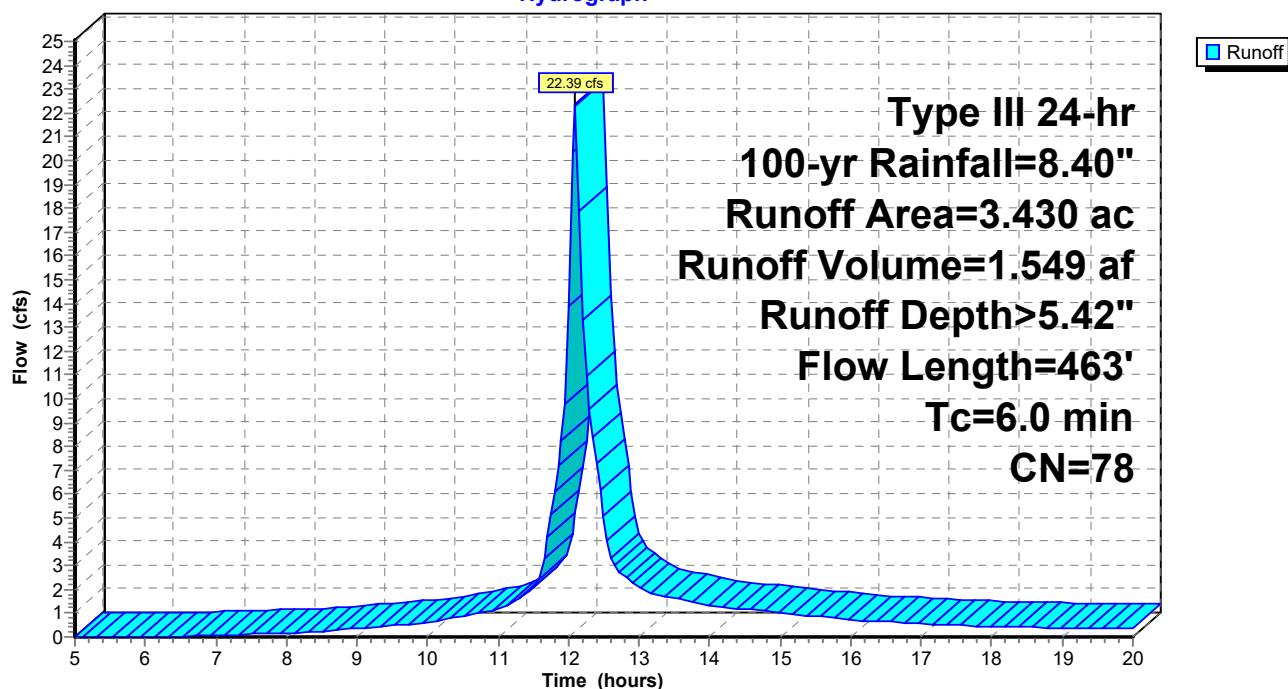
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.630	98	Paved parking, HSG C
1.600	70	Brush, Fair, HSG C
1.200	79	1 acre lots, 20% imp, HSG C
3.430	78	Weighted Average
2.560		74.64% Pervious Area
0.870		25.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	85	0.0150	1.24		Sheet Flow, Reach A-B Smooth surfaces n= 0.011 P2= 3.50"
0.5	378	0.0290	13.16	23.25	Pipe Channel, Reach B-C 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.010
4.4					Direct Entry,
6.0	463	Total			

Subcatchment 14S: Post Area #3B

Hydrograph



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Type III 24-hr 100-yr Rainfall=8.40"

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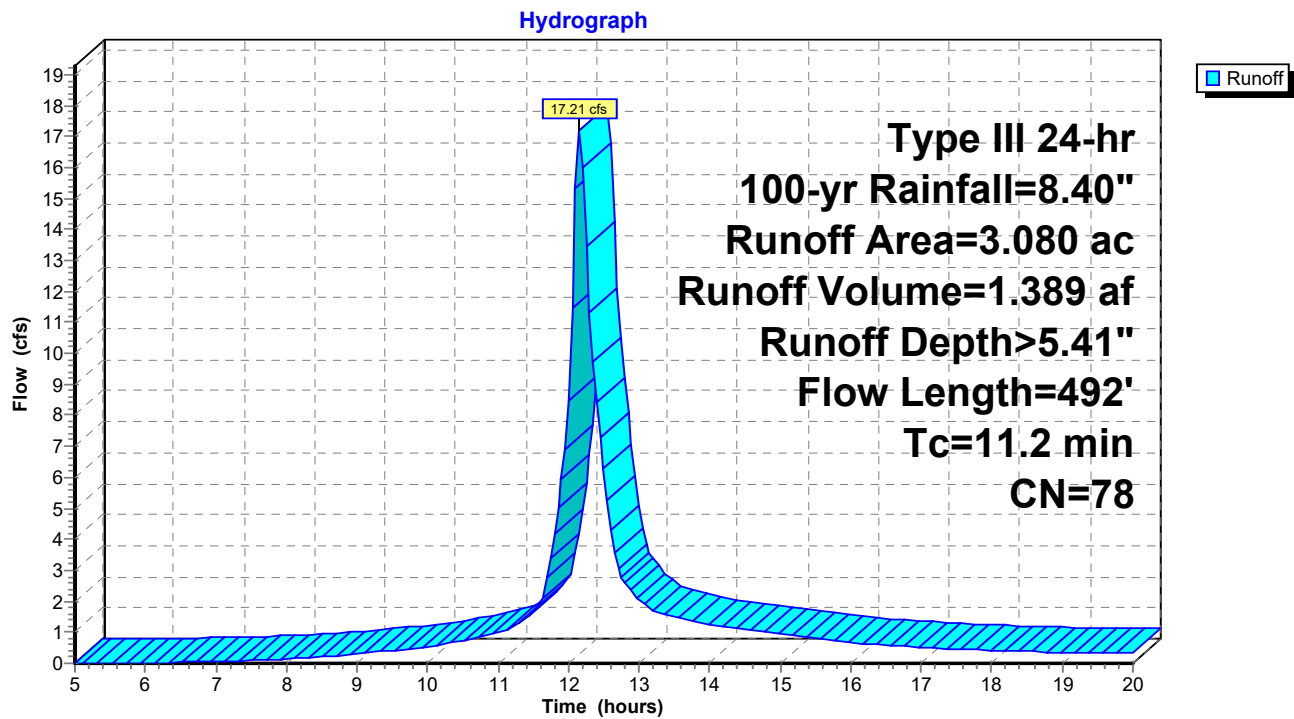
Summary for Subcatchment 15S: Post Area #3C

Runoff = 17.21 cfs @ 12.16 hrs, Volume= 1.389 af, Depth> 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.330	98	Paved parking, HSG C
1.000	70	Brush, Fair, HSG C
1.750	79	1 acre lots, 20% imp, HSG C
3.080	78	Weighted Average
2.400		77.92% Pervious Area
0.680		22.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.16		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
0.2	55	0.0497	4.53		Shallow Concentrated Flow, Reach B-C Paved Kv= 20.3 fps
0.4	263	0.0377	11.54	20.40	Pipe Channel, Reach C-D 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
0.1	22	0.0060	4.60	8.14	Pipe Channel, Reach D-E 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.2	52	0.0058	4.53	8.00	Pipe Channel, Reach E-F 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
11.2	492	Total			

Subcatchment 15S: Post Area #3C

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Type III 24-hr 100-yr Rainfall=8.40"

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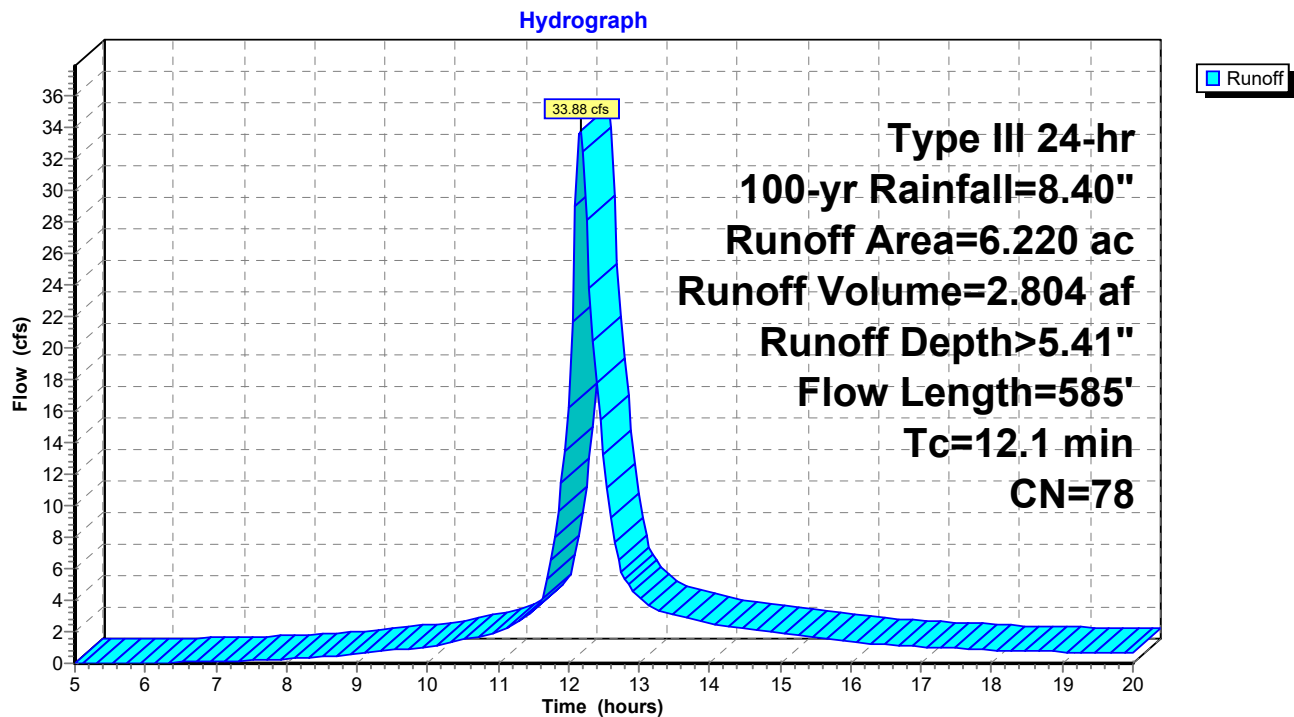
Summary for Subcatchment 16S: Post Area #3D

Runoff = 33.88 cfs @ 12.17 hrs, Volume= 2.804 af, Depth> 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.380	98	Paved parking, HSG C
1.270	70	Brush, Fair, HSG C
4.570	79	1 acre lots, 20% imp, HSG C
6.220	78	Weighted Average
4.926		79.20% Pervious Area
1.294		20.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.16		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
0.9	220	0.0640	4.07		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
0.8	94	0.0100	2.03		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
0.1	171	0.1100	31.05	97.54	Pipe Channel, Reach D-E 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
12.1	585	Total			

Subcatchment 16S: Post Area #3D

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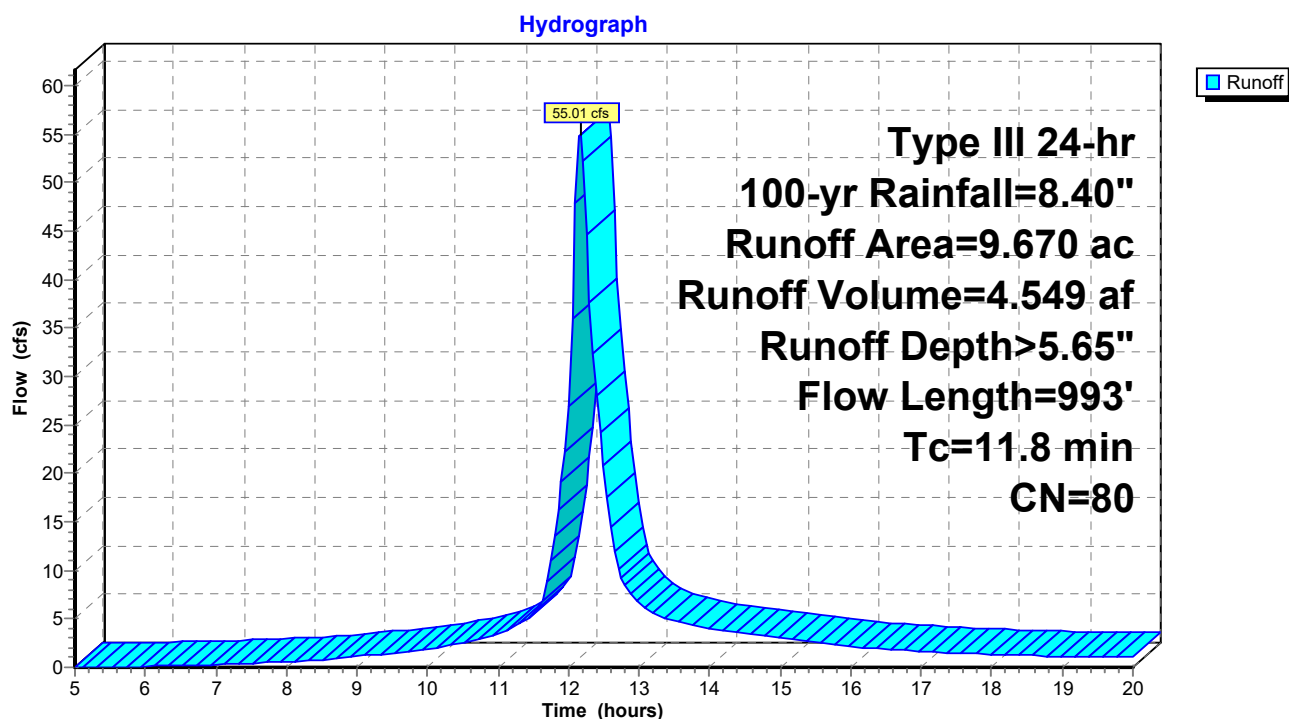
Summary for Subcatchment 17S: Post Area #3E

Runoff = 55.01 cfs @ 12.16 hrs, Volume= 4.549 af, Depth> 5.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.020	98	Paved parking, HSG B
0.070	56	Brush, Fair, HSG B
1.450	98	Paved parking, HSG C
1.890	70	Brush, Fair, HSG C
6.240	79	1 acre lots, 20% imp, HSG C
9.670	80	Weighted Average
6.952		71.89% Pervious Area
2.718		28.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.0500	0.18		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
0.7	163	0.0670	4.17		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
1.1	203	0.0220	3.01		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
0.5	527	0.0310	16.48	51.78	Pipe Channel, Reach D-E 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
11.8	993	Total			

Subcatchment 17S: Post Area #3E

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Summary for Subcatchment 18S: Post Area #3F

Runoff = 18.10 cfs @ 12.09 hrs, Volume= 1.263 af, Depth> 5.65"

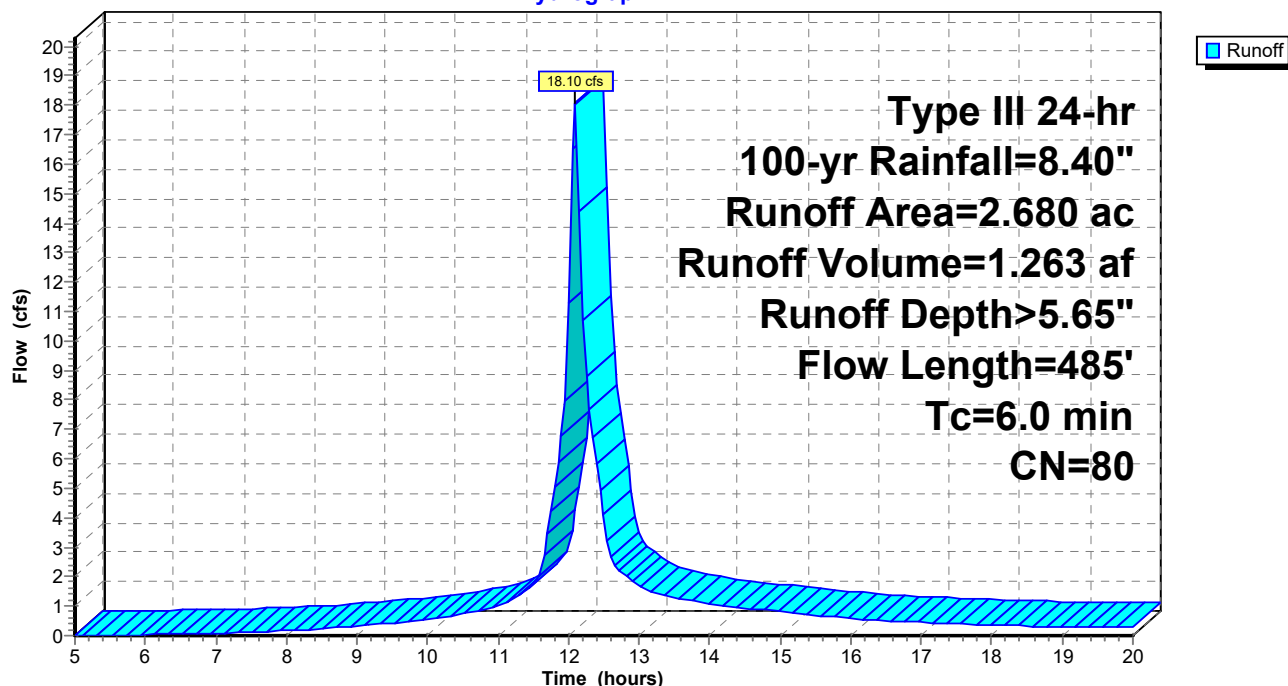
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.940	98	Paved parking, HSG C
1.740	70	Brush, Fair, HSG C
2.680	80	Weighted Average
1.740		64.93% Pervious Area
0.940		35.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0100	1.09		Sheet Flow, Reach A-B
					Smooth surfaces n= 0.011 P2= 3.50"
1.0	153	0.0170	2.65		Shallow Concentrated Flow, Reach B-C
					Paved Kv= 20.3 fps
0.3	232	0.0220	13.88	43.62	Pipe Channel, Reach C-D
					24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50'
					n= 0.010
3.2					Direct Entry,
6.0	485	Total			

Subcatchment 18S: Post Area #3F

Hydrograph



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Type III 24-hr 100-yr Rainfall=8.40"

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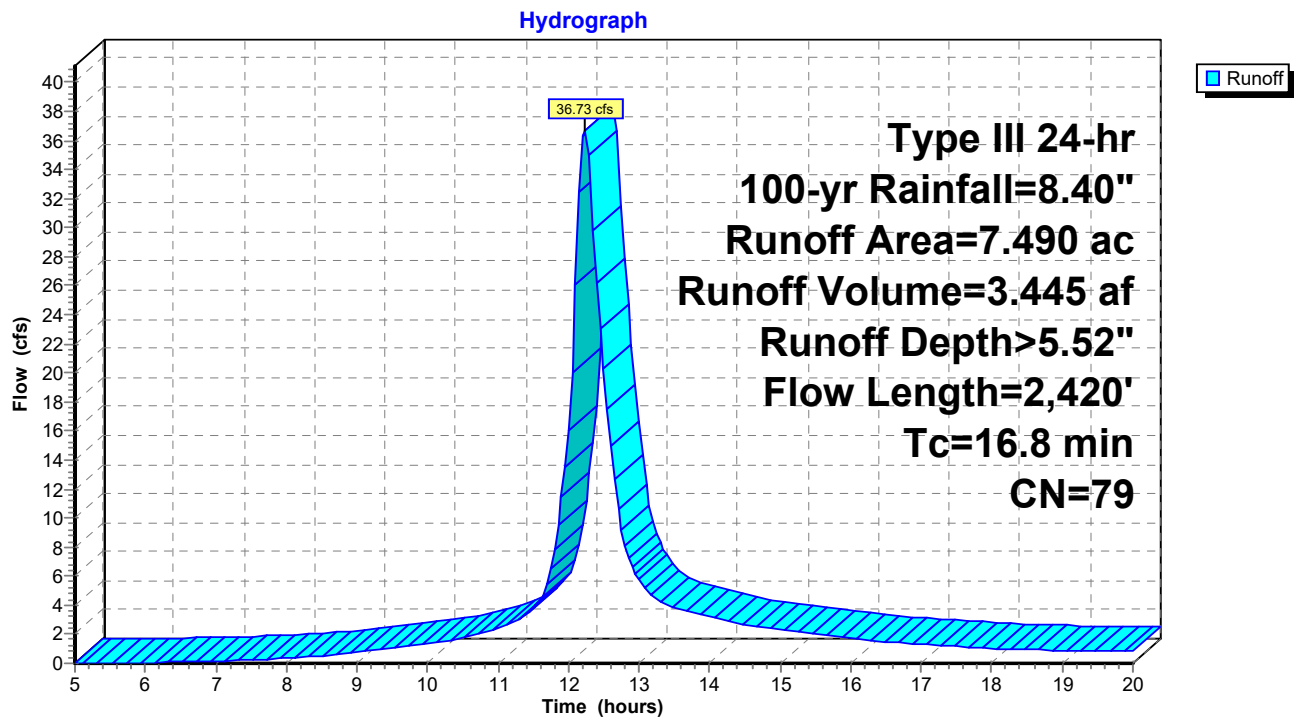
Summary for Subcatchment 19S: Post Area #3G

Runoff = 36.73 cfs @ 12.23 hrs, Volume= 3.445 af, Depth> 5.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.320	98	Paved parking, HSG B
0.930	68	1 acre lots, 20% imp, HSG B
0.280	56	Brush, Fair, HSG B
1.420	98	Paved parking, HSG C
1.560	70	Brush, Fair, HSG C
2.980	79	1 acre lots, 20% imp, HSG C
7.490	79	Weighted Average
4.968		66.33% Pervious Area
2.522		33.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0600	0.19		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
0.7	66	0.0100	1.61		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
0.9	160	0.0200	2.87		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
6.4	2,094	0.0050	5.46	9.66	Pipe Channel, Reach D-E 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.010
16.8	2,420	Total			

Subcatchment 19S: Post Area #3G

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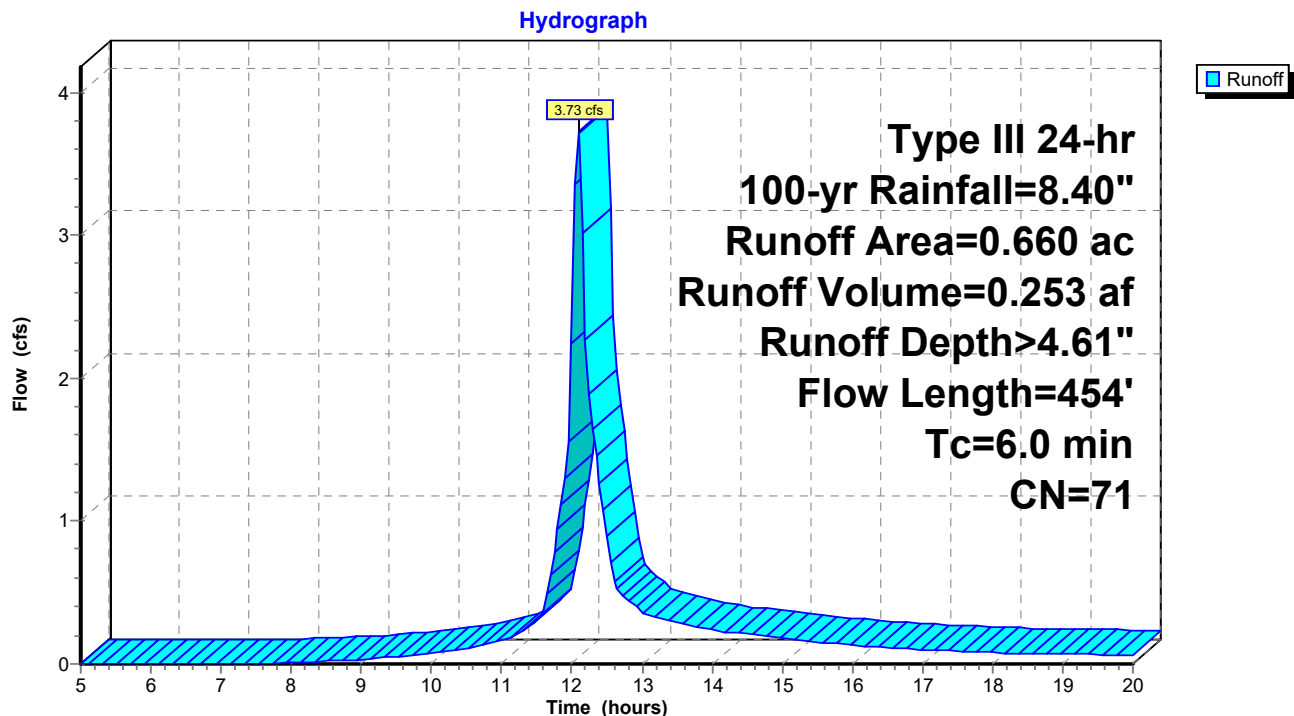
Summary for Subcatchment 20S: Post Area #3H

Runoff = 3.73 cfs @ 12.09 hrs, Volume= 0.253 af, Depth> 4.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.160	98	Paved parking, HSG B
0.260	68	1 acre lots, 20% imp, HSG B
0.240	56	Brush, Fair, HSG B
0.660	71	Weighted Average
0.448		67.88% Pervious Area
0.212		32.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.44		Sheet Flow, Reach A-B Smooth surfaces n= 0.011 P2= 3.50"
0.3	354	0.0370	18.01	56.57	Pipe Channel, Reach B-C 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
4.5					Direct Entry,
6.0	454	Total			

Subcatchment 20S: Post Area #3H

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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 21S: Post Area #3I

Runoff = 17.76 cfs @ 12.54 hrs, Volume= 2.335 af, Depth> 4.56"

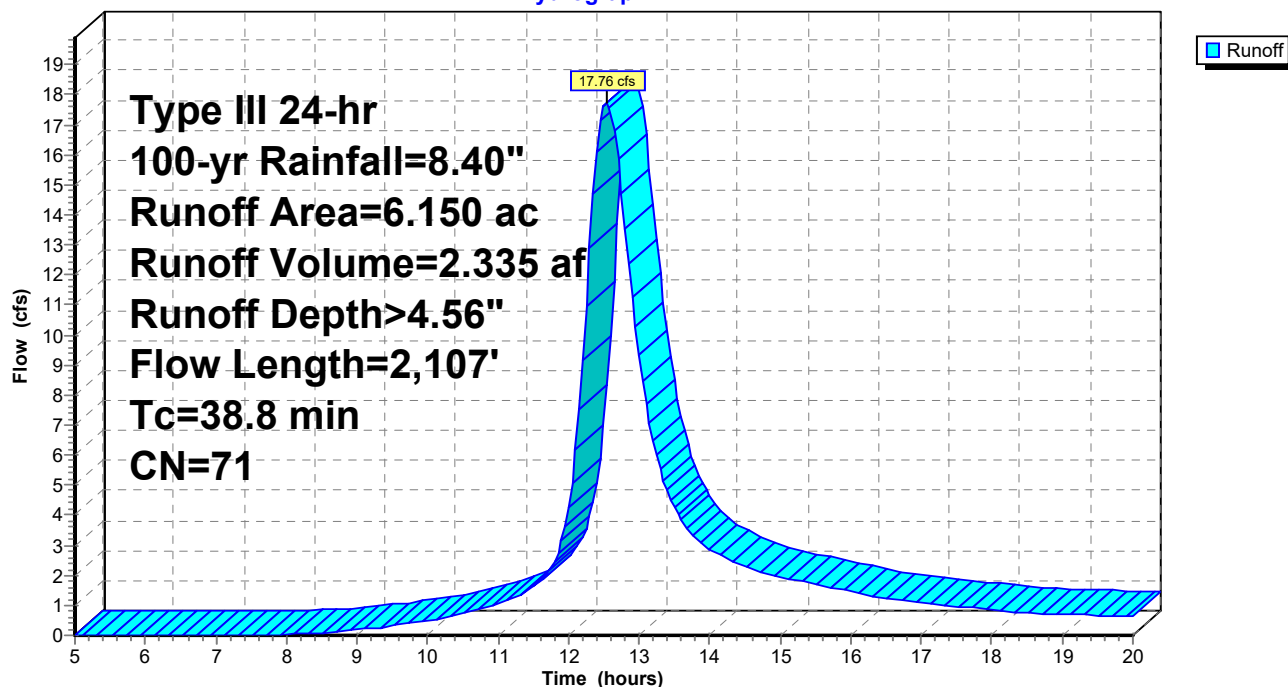
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.200	98	Paved parking, HSG B
2.600	68	1 acre lots, 20% imp, HSG B
0.230	56	Brush, Fair, HSG B
1.540	73	Woods, Fair, HSG C
0.970	70	Brush, Fair, HSG C
0.610	79	1 acre lots, 20% imp, HSG C
6.150	71	Weighted Average
5.308		86.31% Pervious Area
0.842		13.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.4600	0.28		Sheet Flow, Reach A-B Woods: Light underbrush n= 0.400 P2= 3.50"
10.1	343	0.0122	0.57	14.78	Channel Flow, REach B-C Area= 26.0 sf Perim= 34.3' r= 0.76' n= 0.240
6.6	409	0.1760	1.03	6.36	Channel Flow, Reach C-D Area= 6.2 sf Perim= 25.0' r= 0.25' n= 0.240
13.4	247	0.0078	0.31	3.38	Channel Flow, Reach D-E Area= 11.0 sf Perim= 26.1' r= 0.42' n= 0.240
2.8	1,008	0.0350	6.02	10.64	Pipe Channel, Reach E-F 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.024
38.8	2,107	Total			

Subcatchment 21S: Post Area #3I

Hydrograph



Summit Woods

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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 22S: Post Area #3J

Runoff = 65.93 cfs @ 12.21 hrs, Volume= 5.853 af, Depth> 5.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.320	98	Paved parking, HSG B
3.100	68	1 acre lots, 20% imp, HSG B
0.390	56	Brush, Fair, HSG B
0.360	98	Paved parking, HSG C
0.160	73	Woods, Fair, HSG C
1.750	70	Brush, Fair, HSG C
7.500	79	1 acre lots, 20% imp, HSG C
13.580	76	Weighted Average
10.780		79.38% Pervious Area
2.800		20.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.16		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
1.5	308	0.0450	3.42		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
2.4	203	0.0050	1.44		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
0.8	208	0.0052	4.29	7.57	Pipe Channel, Reach D-E 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
15.0	819	Total			

Summit Woods

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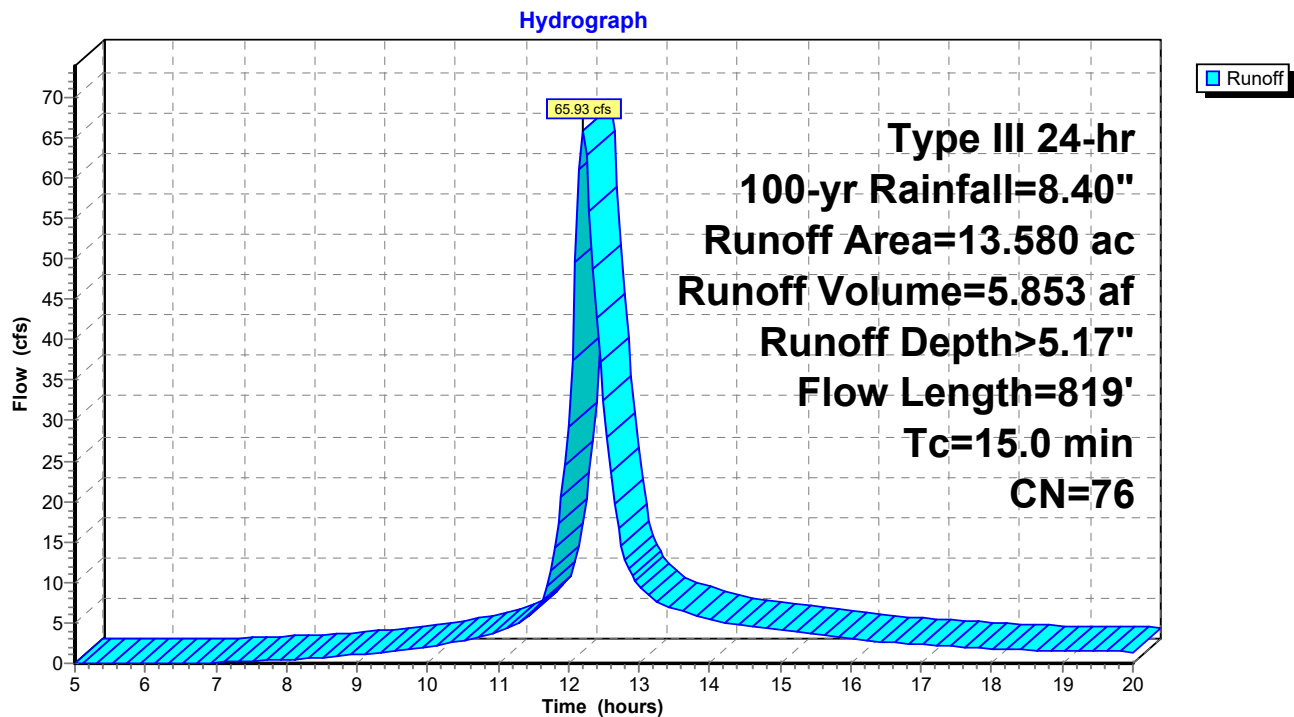
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Type III 24-hr 100-yr Rainfall=8.40"

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Subcatchment 22S: Post Area #3J



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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 23S: Post #3K

Runoff = 31.78 cfs @ 12.21 hrs, Volume= 2.817 af, Depth> 4.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.080	35	Brush, Fair, HSG A
0.300	98	Paved parking, HSG B
2.010	68	1 acre lots, 20% imp, HSG B
0.300	60	Woods, Fair, HSG B
1.040	56	Brush, Fair, HSG B
0.100	70	Brush, Fair, HSG C
2.590	73	Woods, Fair, HSG C
1.130	79	1 acre lots, 20% imp, HSG C
7.550	70	Weighted Average
6.622		87.71% Pervious Area
0.928		12.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.2200	0.21		Sheet Flow, Reach A-B
					Woods: Light underbrush n= 0.400 P2= 3.50"
5.9	792	0.2000	2.24		Shallow Concentrated Flow, Reach B-C
					Woodland Kv= 5.0 fps
1.1	323	0.0580	4.89		Shallow Concentrated Flow, Reach C-D
					Paved Kv= 20.3 fps
0.5	133	0.0055	4.41	7.79	Pipe Channel, Reach D-E
					18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38'
					n= 0.013 Corrugated PE, smooth interior
15.4	1,348	Total			

Summit Woods

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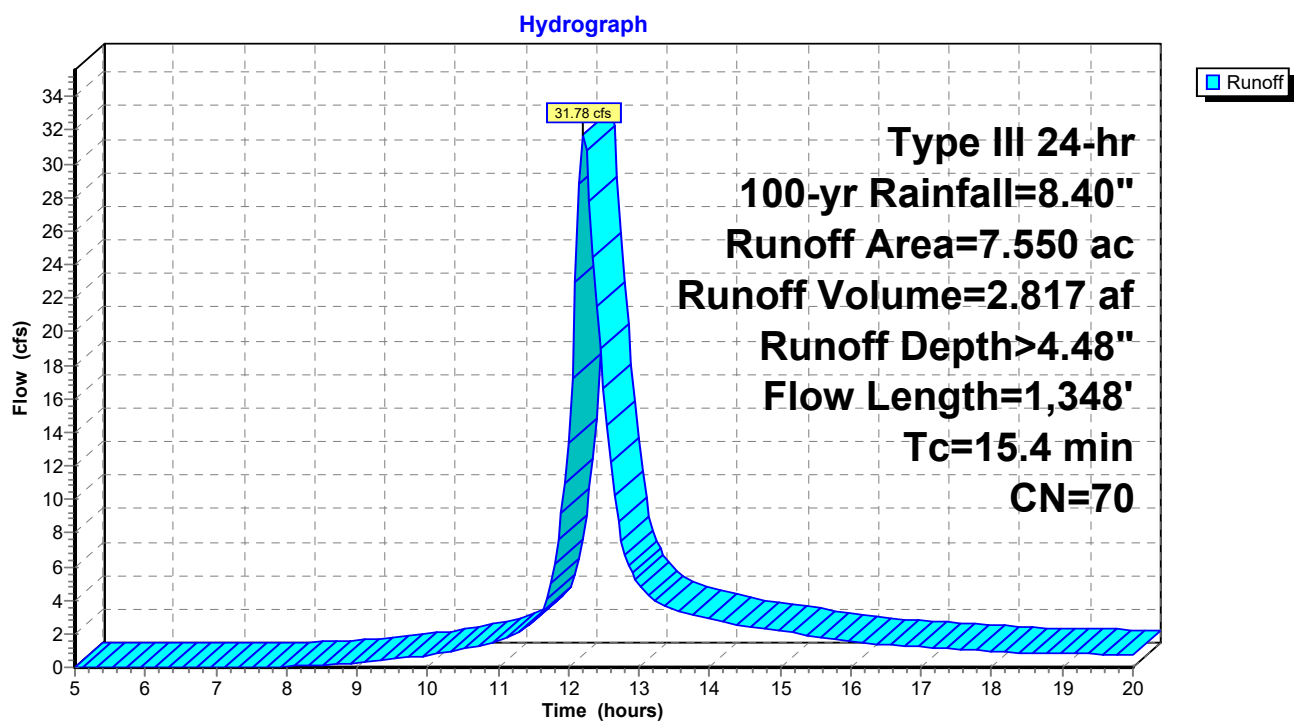
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Type III 24-hr 100-yr Rainfall=8.40"

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Subcatchment 23S: Post #3K



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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 24S: Post Area #3L

Runoff = 47.77 cfs @ 12.17 hrs, Volume= 3.911 af, Depth> 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.800	98	Paved parking, HSG C
6.100	68	1 acre lots, 20% imp, HSG B
3.290	60	Woods, Fair, HSG B
1.150	56	Brush, Fair, HSG B
11.340	67	Weighted Average
9.320		82.19% Pervious Area
2.020		17.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	100	0.2800	0.35		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
3.4	645	0.2090	3.20		Shallow Concentrated Flow, Reach B-C Short Grass Pasture Kv= 7.0 fps
0.3	88	0.0450	4.31		Shallow Concentrated Flow, Reach C-D Paved Kv= 20.3 fps
4.0	448	0.0010	1.88	3.32	Pipe Channel, Reach D-E 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
12.4	1,281	Total			

Summit Woods

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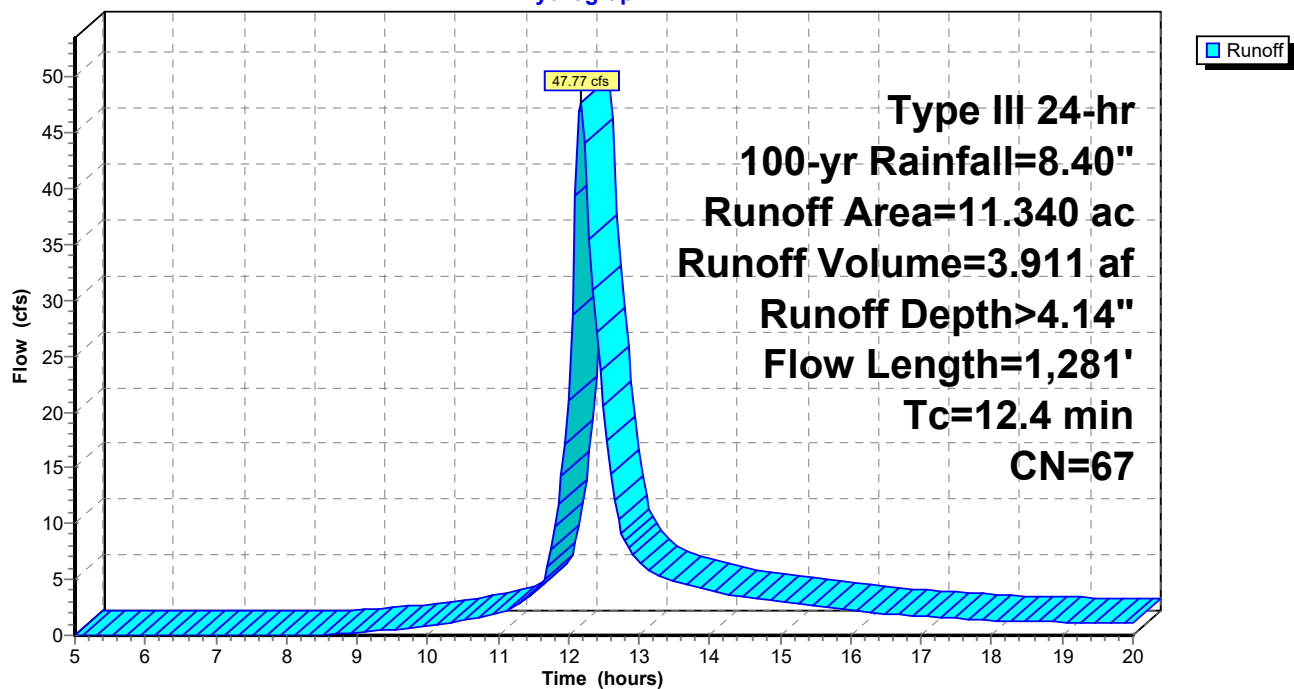
Type III 24-hr 100-yr Rainfall=8.40"

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Subcatchment 24S: Post Area #3L

Hydrograph



Summit Woods

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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 25S: Post Area #4

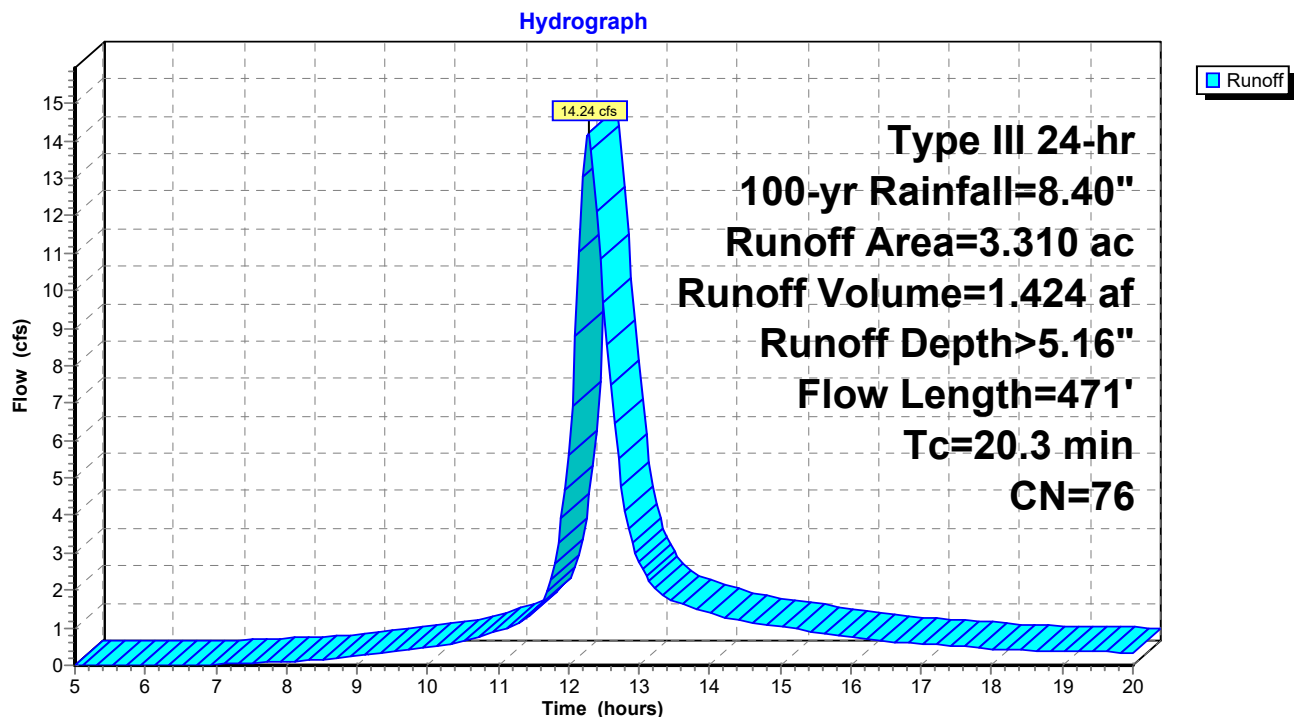
Runoff = 14.24 cfs @ 12.28 hrs, Volume= 1.424 af, Depth> 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
1.030	73	Woods, Fair, HSG C
0.270	70	Brush, Fair, HSG C
2.010	79	1 acre lots, 20% imp, HSG C
3.310	76	Weighted Average
2.908		87.85% Pervious Area
0.402		12.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	100	0.0100	0.09		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
2.3	371	0.0270	2.65		Shallow Concentrated Flow, Reach B- DP#4
					Unpaved Kv= 16.1 fps
20.3	471	Total			

Subcatchment 25S: Post Area #4



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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 26S: Post Area #5

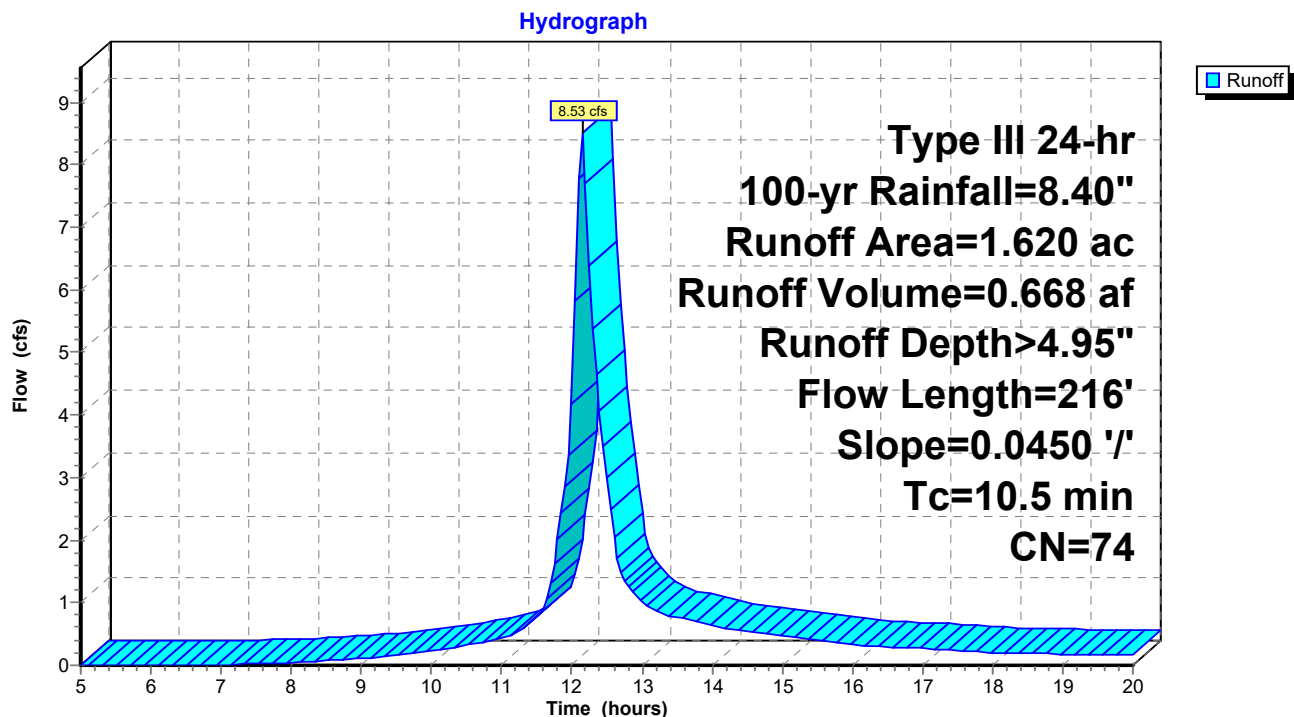
Runoff = 8.53 cfs @ 12.15 hrs, Volume= 0.668 af, Depth> 4.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.360	73	Woods, Fair, HSG C
0.660	70	Brush, Fair, HSG C
0.600	79	1 acre lots, 20% imp, HSG C
1.620	74	Weighted Average
1.500		92.59% Pervious Area
0.120		7.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0450	0.17		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
0.6	116	0.0450	3.42		Shallow Concentrated Flow, Reach B-DP#5
					Unpaved Kv= 16.1 fps
10.5	216	Total			

Subcatchment 26S: Post Area #5



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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 27S: Post Area #6A

Runoff = 28.03 cfs @ 14.75 hrs, Volume= 9.927 af, Depth> 4.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
4.000	68	1 acre lots, 20% imp, HSG B
1.550	60	Woods, Fair, HSG B
1.060	56	Brush, Fair, HSG B
11.690	70	Brush, Fair, HSG C
* 5.180	78	Wetland, HSG C
4.430	79	1 acre lots, 20% imp, HSG C
27.910	72	Weighted Average
26.224		93.96% Pervious Area
1.686		6.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	100	0.0800	0.21		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
1.0	271	0.0740	4.38		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
198.1	2,040	0.0050	0.17	0.46	Channel Flow, Reach C-DP#6 Area= 2.7 sf Perim= 11.0' r= 0.25' n= 0.240
206.9	2,411	Total			

Summit Woods

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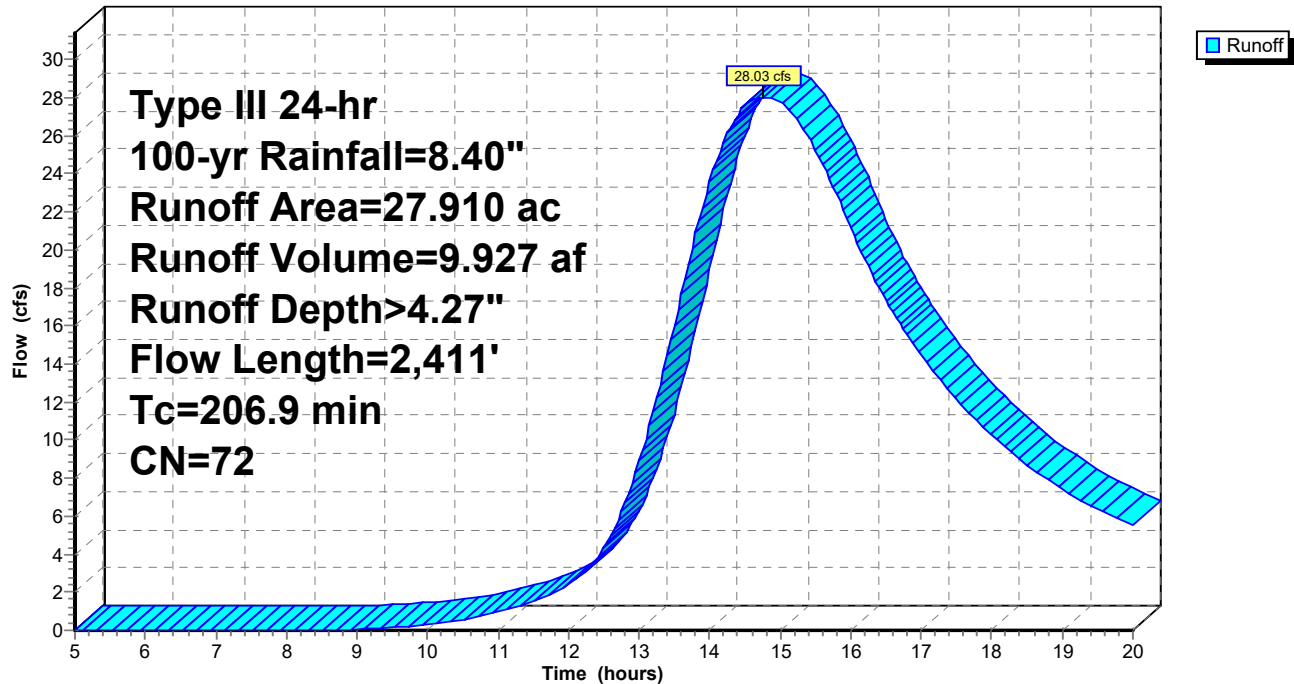
Type III 24-hr 100-yr Rainfall=8.40"

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Subcatchment 27S: Post Area #6A

Hydrograph



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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 28S: Post Area #6B

Runoff = 30.07 cfs @ 12.23 hrs, Volume= 2.851 af, Depth> 5.52"

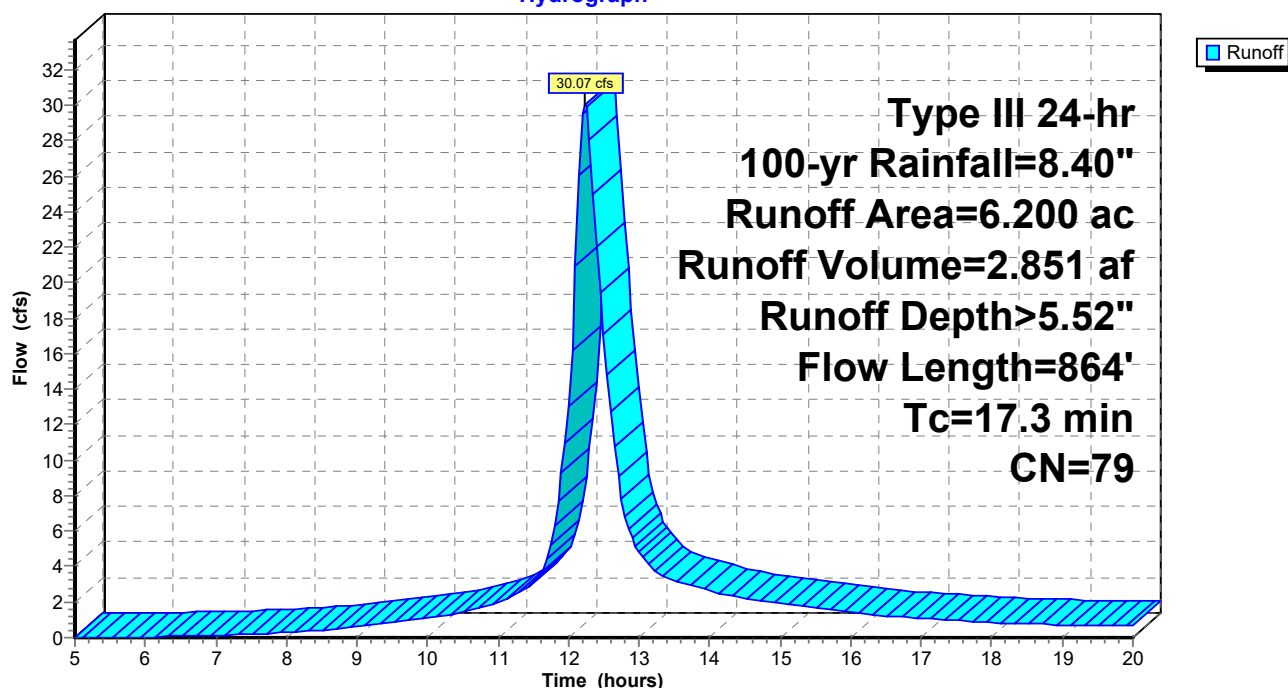
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.620	98	Paved parking, HSG C
1.180	70	Brush, Fair, HSG C
4.400	79	1 acre lots, 20% imp, HSG C
6.200	79	Weighted Average
4.700		75.81% Pervious Area
1.500		24.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0200	0.12		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
3.1	614	0.0410	3.26		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
0.6	150	0.0050	4.20	7.43	Pipe Channel, Reach C-D 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
17.3	864	Total			

Subcatchment 28S: Post Area #6B

Hydrograph



Summit Woods

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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 29S: Post Area #6C

Runoff = 19.18 cfs @ 12.10 hrs, Volume= 1.345 af, Depth> 4.95"

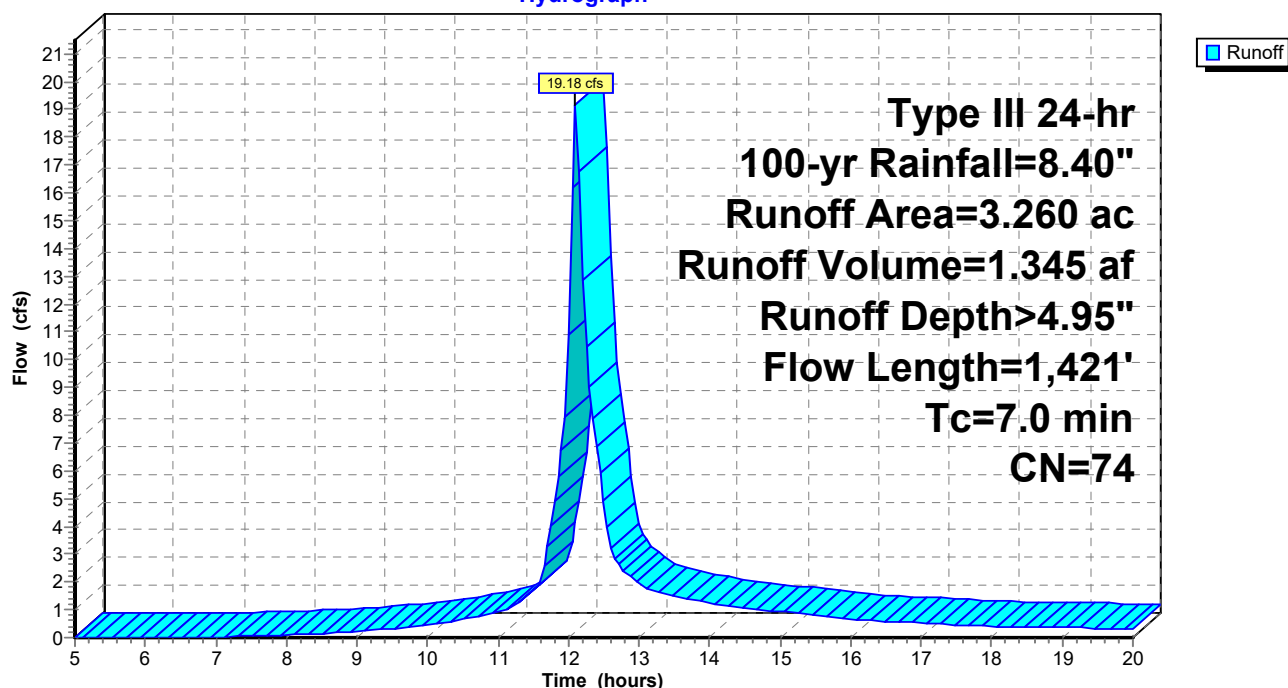
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.710	98	Paved parking, HSG C
0.950	56	Brush, Fair, HSG B
1.600	75	1/4 acre lots, 38% imp, HSG B
3.260	74	Weighted Average
1.942		59.57% Pervious Area
1.318		40.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0100	1.09		Sheet Flow, Reach A-B Smooth surfaces n= 0.011 P2= 3.50"
0.5	50	0.0078	1.79		Shallow Concentrated Flow, Reach B-C Paved Kv= 20.3 fps
5.0	1,271	0.0050	4.20	7.43	Pipe Channel, Reach C-D 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
7.0	1,421	Total			

Subcatchment 29S: Post Area #6C

Hydrograph



Summit Woods

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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 31S: Post Area #7

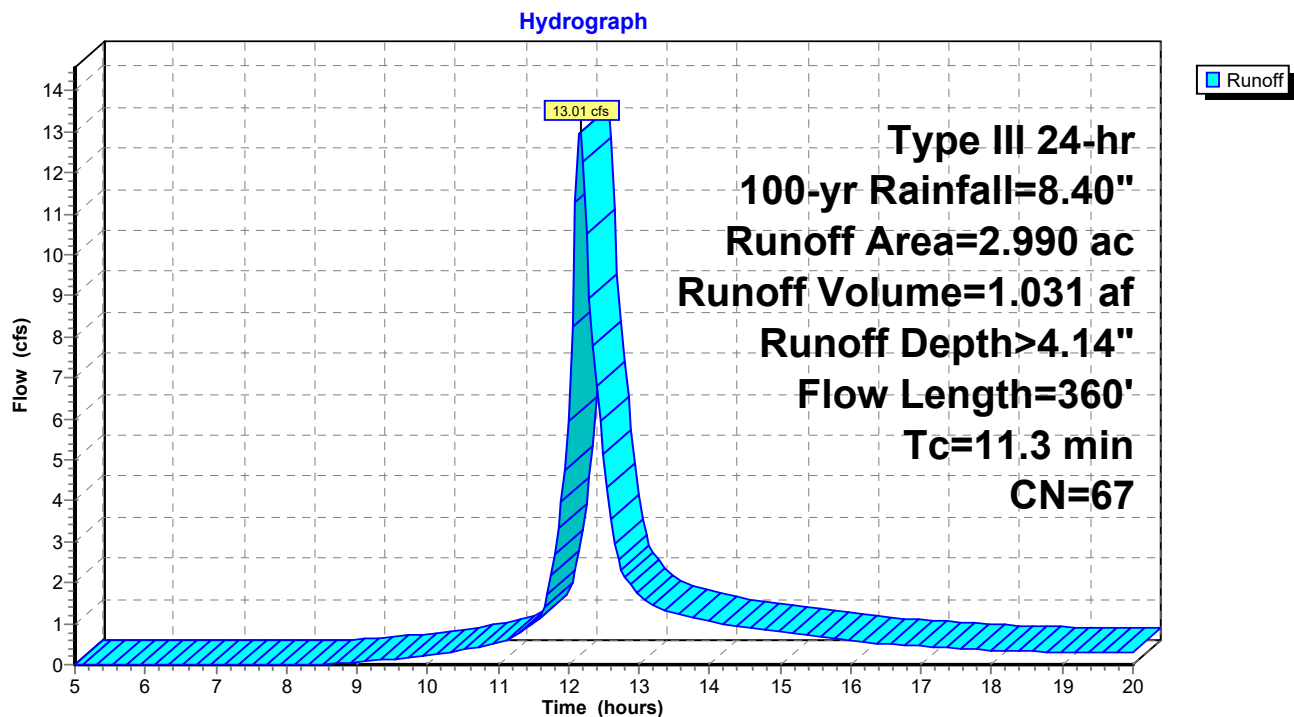
Runoff = 13.01 cfs @ 12.16 hrs, Volume= 1.031 af, Depth> 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
2.620	68	1 acre lots, 20% imp, HSG B
0.370	60	Woods, Fair, HSG B
2.990	67	Weighted Average
2.466		82.47% Pervious Area
0.524		17.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0600	0.19		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
2.5	260	0.0120	1.76		Shallow Concentrated Flow, Reach B-DP#7
					Unpaved Kv= 16.1 fps
11.3	360	Total			

Subcatchment 31S: Post Area #7



Summit Woods

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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 32S: Post Area #8

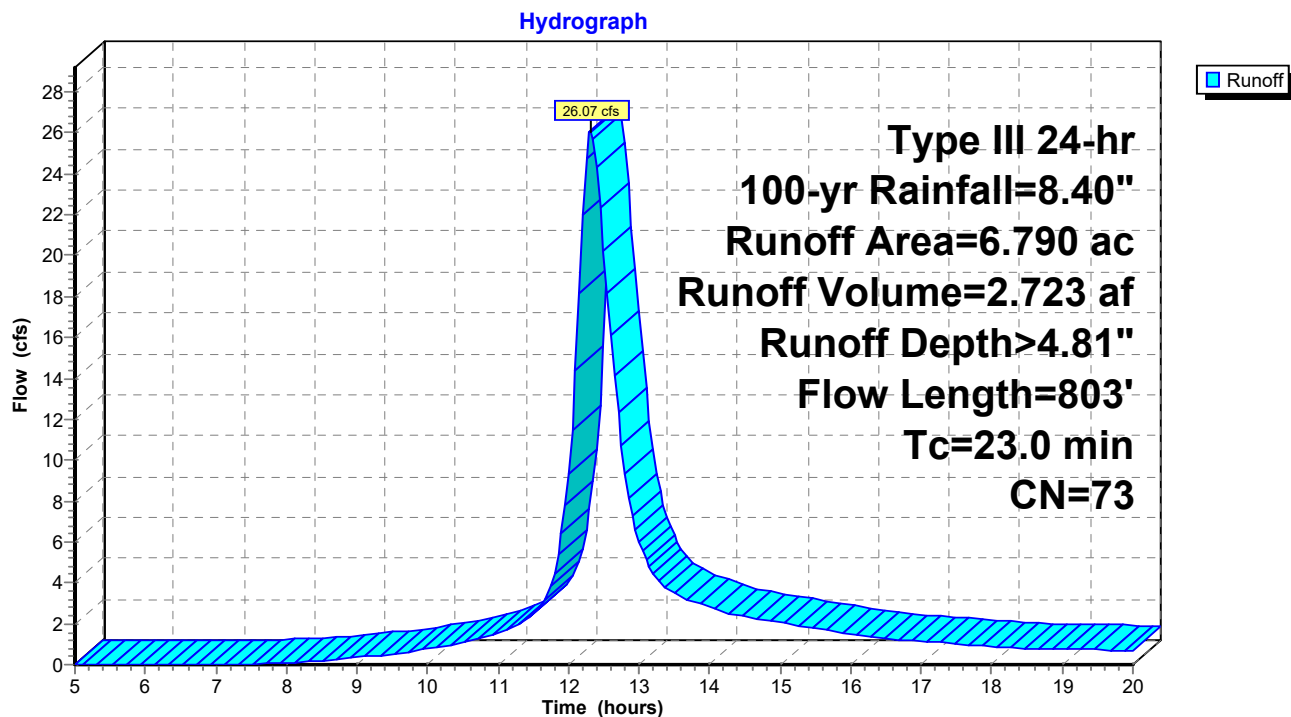
Runoff = 26.07 cfs @ 12.32 hrs, Volume= 2.723 af, Depth> 4.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
1.600	73	Woods, Fair, HSG C
* 1.780	78	Wetland, HSG C
3.410	70	Brush, Fair, HSG C
6.790	73	Weighted Average
6.790		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0200	0.12		Sheet Flow, Reach A-B
					Grass: Dense n= 0.240 P2= 3.50"
9.4	703	0.0060	1.25		Shallow Concentrated Flow, Reach B-DP#8
					Unpaved Kv= 16.1 fps
23.0	803	Total			

Subcatchment 32S: Post Area #8



Summit Woods

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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 33S: Post Area #9

Runoff = 26.42 cfs @ 13.04 hrs, Volume= 5.138 af, Depth> 5.07"

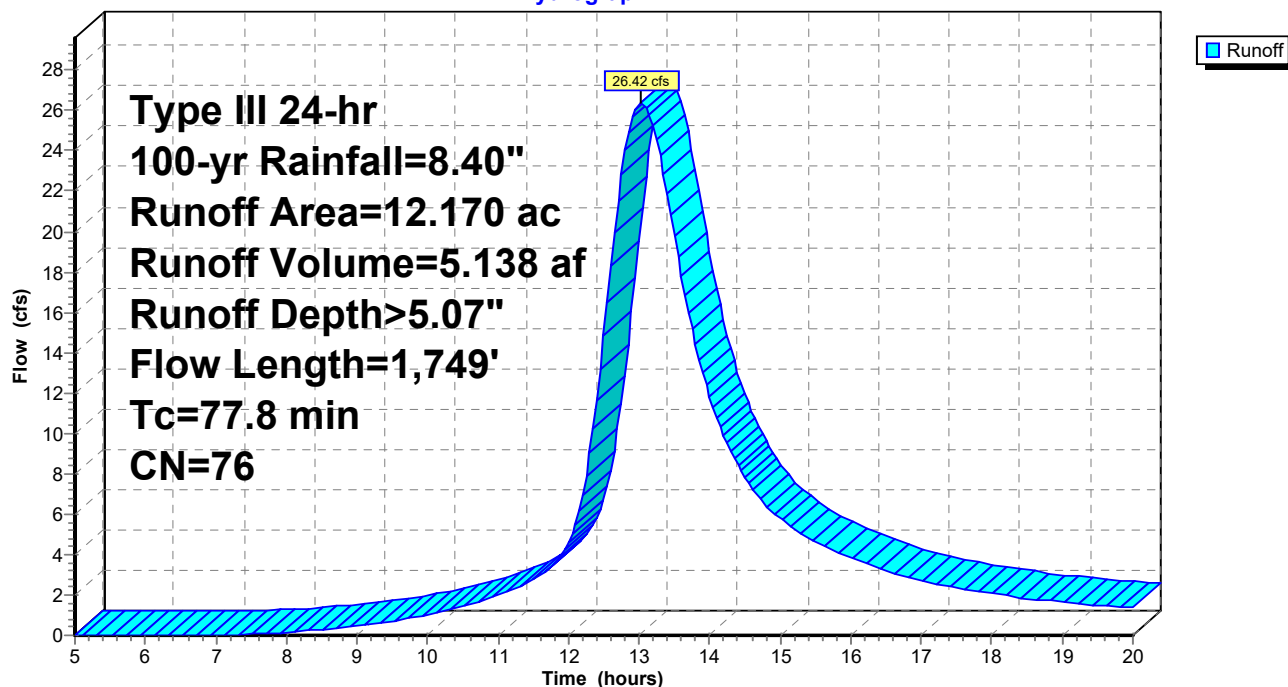
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
1.470	73	Woods, Fair, HSG C
8.500	77	2 acre lots, 12% imp, HSG C
1.720	70	Brush, Fair, HSG C
0.480	98	Paved parking, HSG C
12.170	76	Weighted Average
10.670		87.67% Pervious Area
1.500		12.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
49.4	100	0.0050	0.03		Sheet Flow, Reach A-B n= 0.600 P2= 3.50"
1.1	152	0.0200	2.28		Shallow Concentrated Flow, Reach B-C Unpaved Kv= 16.1 fps
5.7	193	0.0340	0.57	2.85	Channel Flow, Reach C-D Area= 5.0 sf Perim= 14.2' r= 0.35' n= 0.240
0.5	155	0.0110	4.76	3.74	Pipe Channel, Reach D-E 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
21.1	1,149	0.0850	0.91	4.54	Channel Flow, Reach E-DP#9 Area= 5.0 sf Perim= 14.0' r= 0.36' n= 0.240
77.8	1,749	Total			

Subcatchment 33S: Post Area #9

Hydrograph



Summit Woods

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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 52S: Post Area #6D-2

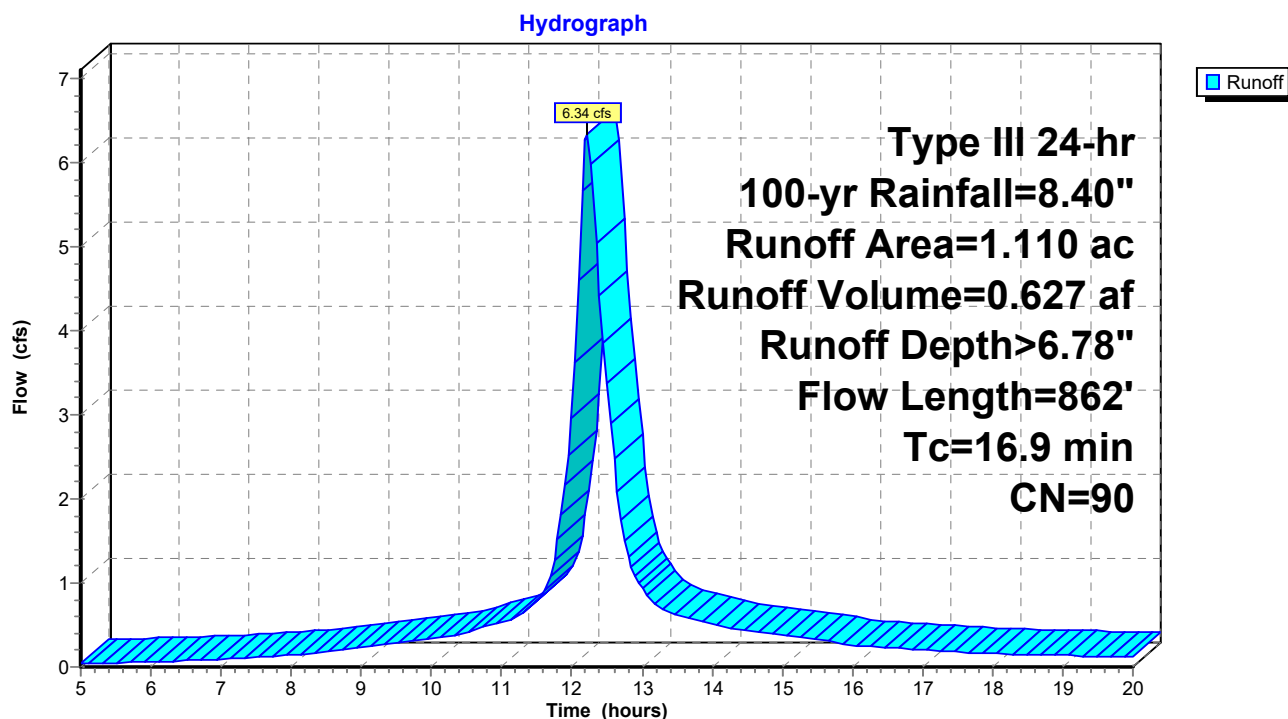
Runoff = 6.34 cfs @ 12.22 hrs, Volume= 0.627 af, Depth> 6.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.620	98	Paved parking, HSG C
0.490	80	1/2 acre lots, 25% imp, HSG C
1.110	90	Weighted Average
0.368		33.11% Pervious Area
0.743		66.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.20		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
8.4	721	0.0050	1.44		Shallow Concentrated Flow, Reach B-C Paved Kv= 20.3 fps
0.2	41	0.0050	4.20	7.43	Pipe Channel, Reach C-D 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
16.9	862	Total			

Subcatchment 52S: Post Area #6D-2



Summit Woods

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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Subcatchment 53S: Post Area #6D-1

Runoff = 16.92 cfs @ 12.13 hrs, Volume= 1.298 af, Depth> 5.30"

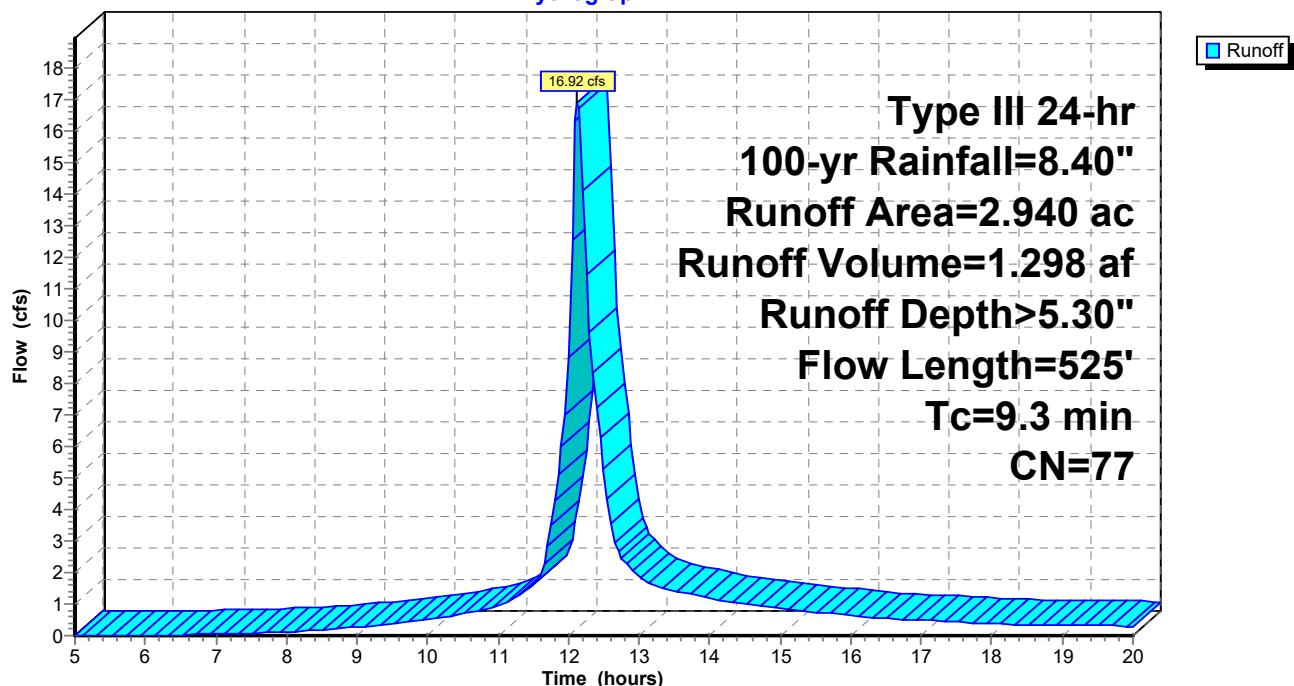
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.40"

Area (ac)	CN	Description
0.970	70	Brush, Fair, HSG C
* 0.070	78	Wetland, HSG C
1.900	80	1/2 acre lots, 25% imp, HSG C
2.940	77	Weighted Average
2.465		83.84% Pervious Area
0.475		16.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0700	0.20		Sheet Flow, Reach A-B Grass: Dense n= 0.240 P2= 3.50"
0.6	50	0.0050	1.44		Shallow Concentrated Flow, Reach B-C Paved Kv= 20.3 fps
0.4	375	0.0340	17.26	54.23	Pipe Channel, Reach C-D 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
9.3	525	Total			

Subcatchment 53S: Post Area #6D-1

Hydrograph



Summit Woods

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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Reach 50R: Reach #3B

Inflow Area = 4.540 ac, 35.52% Impervious, Inflow Depth = 0.44" for 100-yr event
Inflow = 2.20 cfs @ 13.75 hrs, Volume= 0.166 af
Outflow = 0.93 cfs @ 14.83 hrs, Volume= 0.165 af, Atten= 58%, Lag= 64.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.55 fps, Min. Travel Time= 23.9 min

Avg. Velocity = 0.33 fps, Avg. Travel Time= 39.8 min

Peak Storage= 1,331 cf @ 14.43 hrs

Average Depth at Peak Storage= 0.22'

Bank-Full Depth= 1.00' Flow Area= 16.7 sf, Capacity= 25.36 cfs

25.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools

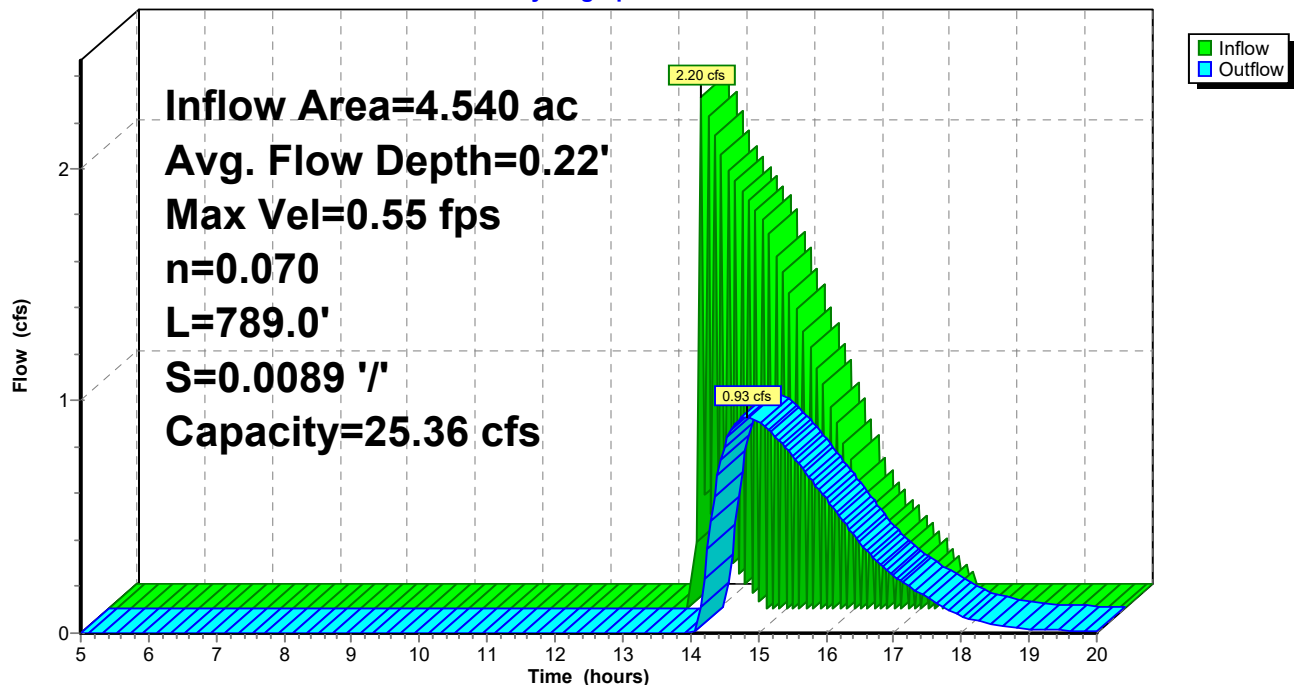
Length= 789.0' Slope= 0.0089 1'

Inlet Invert= 322.00', Outlet Invert= 315.00'



Reach 50R: Reach #3B

Hydrograph



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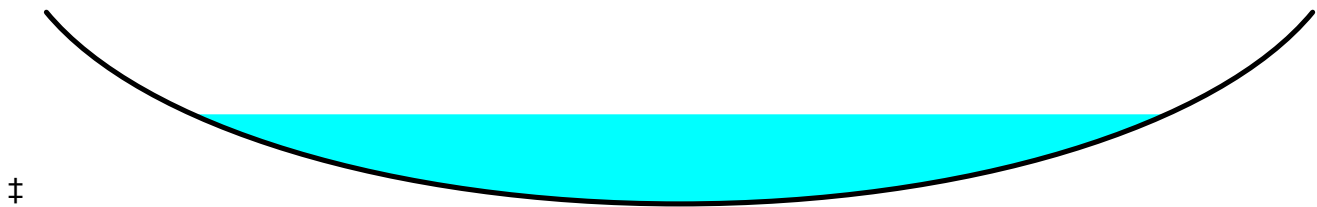
Summary for Reach 51R: Post Area #3

Inflow Area = 302.860 ac, 8.14% Impervious, Inflow Depth > 2.30" for 100-yr event
Inflow = 137.79 cfs @ 17.65 hrs, Volume= 58.025 af
Outflow = 137.42 cfs @ 17.89 hrs, Volume= 55.050 af, Atten= 0%, Lag= 14.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.58 fps, Min. Travel Time= 9.6 min
Avg. Velocity= 1.47 fps, Avg. Travel Time= 16.8 min

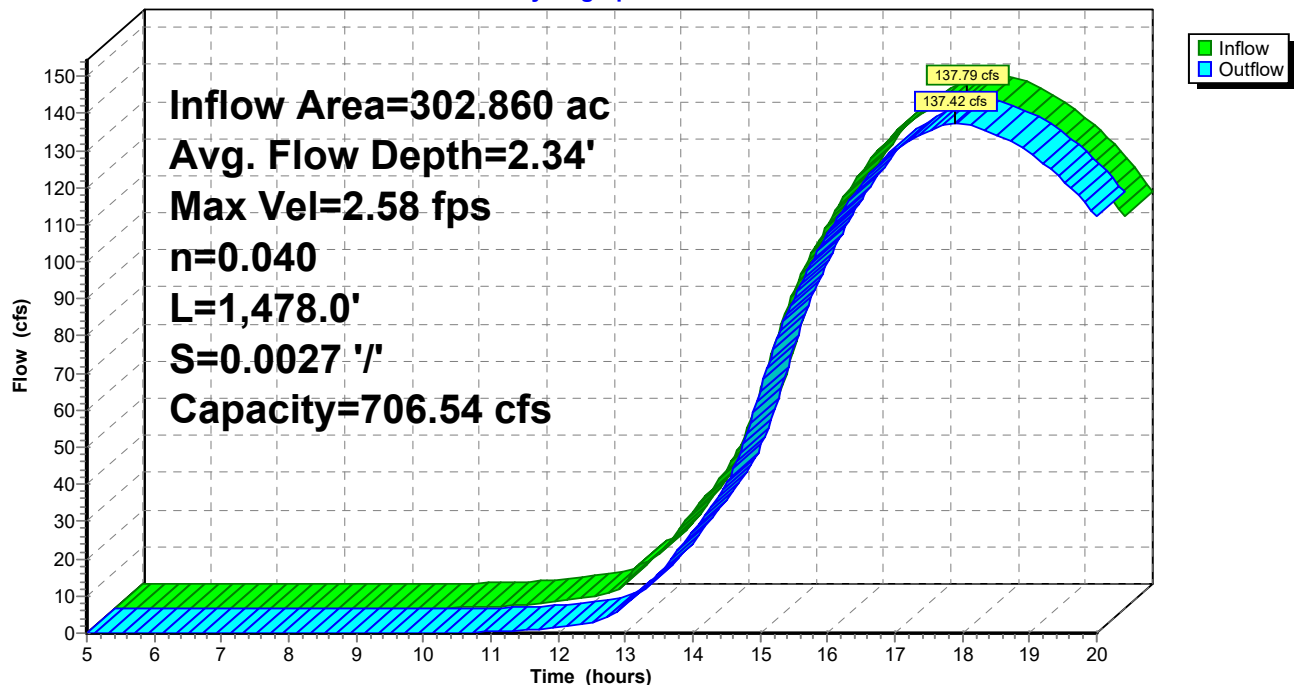
Peak Storage= 78,801 cf @ 17.73 hrs
Average Depth at Peak Storage= 2.34'
Bank-Full Depth= 5.00' Flow Area= 166.7 sf, Capacity= 706.54 cfs

50.00' x 5.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 1,478.0' Slope= 0.0027 '/'
Inlet Invert= 315.00', Outlet Invert= 311.00'



Reach 51R: Post Area #3

Hydrograph



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Summary for Reach 52R: Reach #3L-1

Inflow Area = 17.490 ac, 16.36% Impervious, Inflow Depth = 0.49" for 100-yr event
Inflow = 6.50 cfs @ 12.51 hrs, Volume= 0.716 af
Outflow = 6.44 cfs @ 12.55 hrs, Volume= 0.716 af, Atten= 1%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.79 fps, Min. Travel Time= 1.2 min

Avg. Velocity = 0.90 fps, Avg. Travel Time= 2.3 min

Peak Storage= 453 cf @ 12.52 hrs

Average Depth at Peak Storage= 0.16'

Bank-Full Depth= 0.50' Flow Area= 20.0 sf, Capacity= 76.67 cfs

60.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

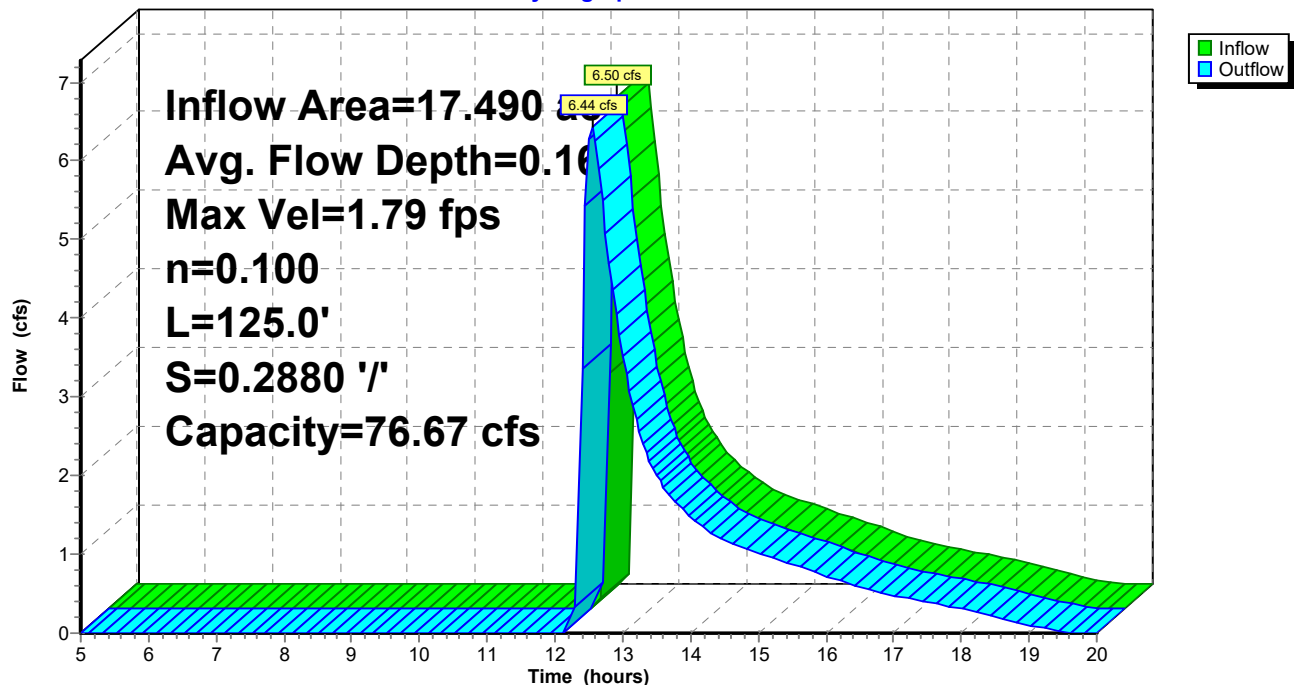
Length= 125.0' Slope= 0.2880 1'

Inlet Invert= 384.00', Outlet Invert= 348.00'



Reach 52R: Reach #3L-1

Hydrograph



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Summary for Reach 53R: Reach #3C

Inflow Area = 3.080 ac, 22.08% Impervious, Inflow Depth = 0.87" for 100-yr event
Inflow = 8.97 cfs @ 12.39 hrs, Volume= 0.223 af
Outflow = 3.86 cfs @ 12.80 hrs, Volume= 0.223 af, Atten= 57%, Lag= 24.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.03 fps, Min. Travel Time= 13.9 min

Avg. Velocity = 0.29 fps, Avg. Travel Time= 49.0 min

Peak Storage= 3,246 cf @ 12.57 hrs

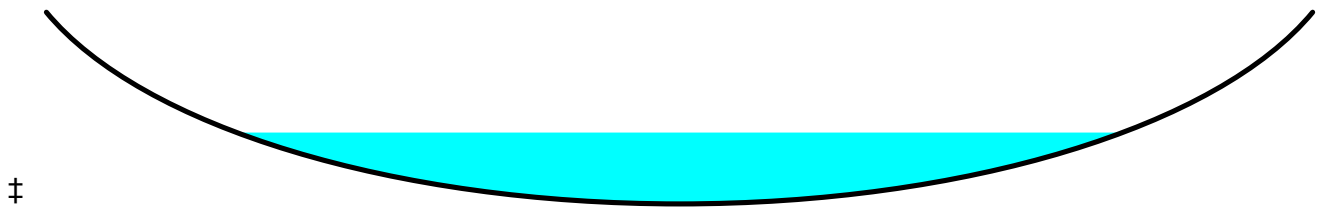
Average Depth at Peak Storage= 0.37'

Bank-Full Depth= 1.00' Flow Area= 16.7 sf, Capacity= 33.14 cfs

25.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools

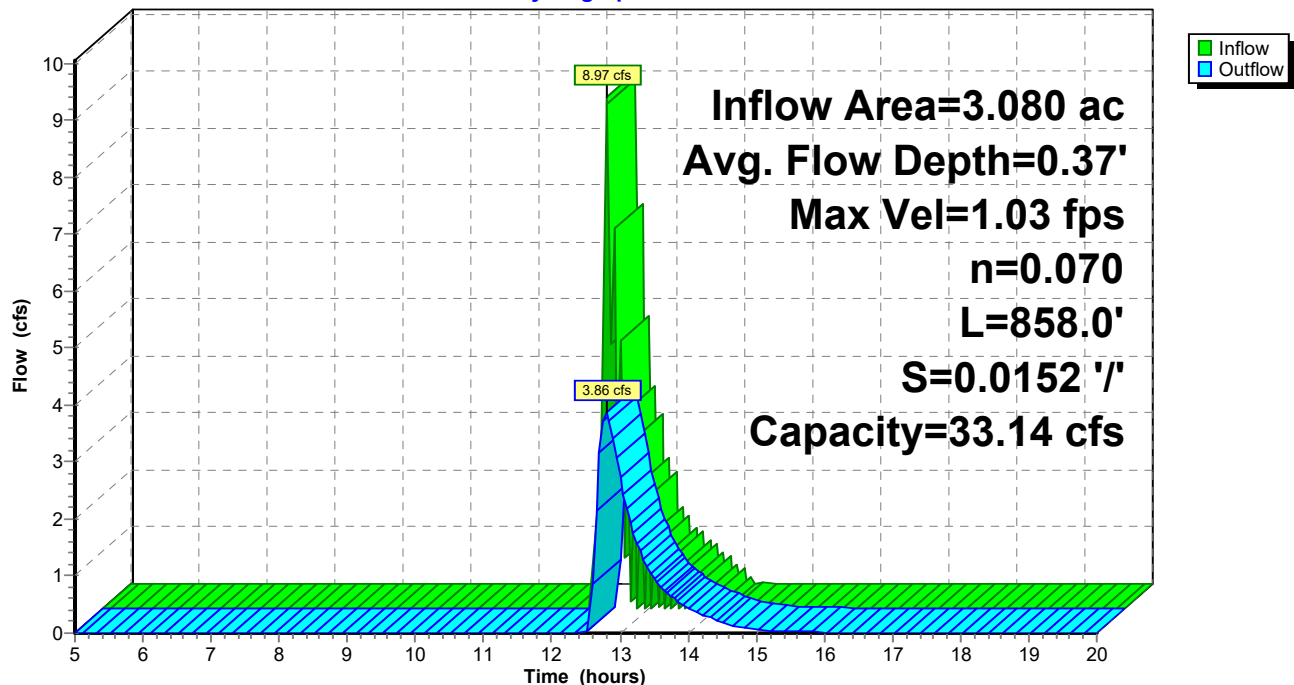
Length= 858.0' Slope= 0.0152 1'

Inlet Invert= 328.00', Outlet Invert= 315.00'



Reach 53R: Reach #3C

Hydrograph



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Summary for Reach 54R: Reach #3D

Inflow Area = 6.220 ac, 20.80% Impervious, Inflow Depth = 0.00" for 100-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 0.50' Flow Area= 44.7 sf, Capacity= 84.65 cfs

134.00' x 0.50' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools

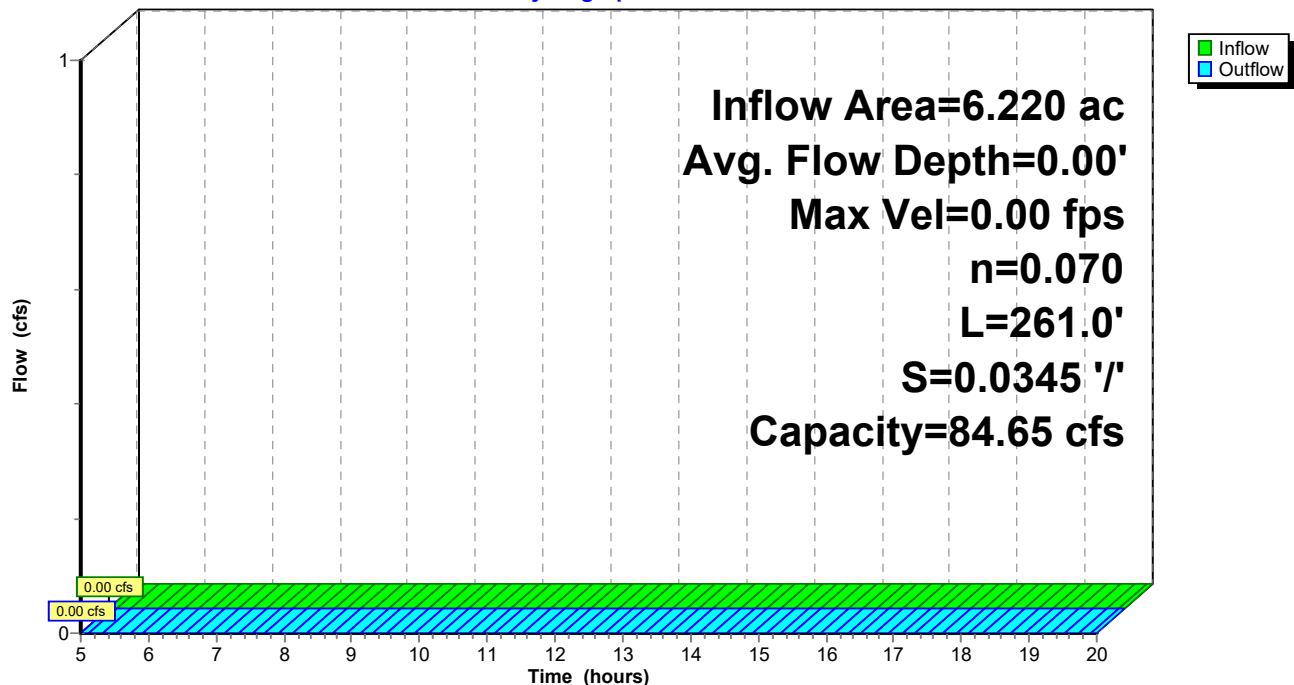
Length= 261.0' Slope= 0.0345 '/'

Inlet Invert= 325.00', Outlet Invert= 316.00'



Reach 54R: Reach #3D

Hydrograph



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Summary for Reach 55R: Reach 3-3

Inflow Area = 47.850 ac, 23.85% Impervious, Inflow Depth > 0.76" for 100-yr event
Inflow = 12.95 cfs @ 14.65 hrs, Volume= 3.018 af
Outflow = 12.79 cfs @ 14.88 hrs, Volume= 2.961 af, Atten= 1%, Lag= 13.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.03 fps, Min. Travel Time= 7.5 min

Avg. Velocity = 0.75 fps, Avg. Travel Time= 10.3 min

Peak Storage= 5,762 cf @ 14.75 hrs

Average Depth at Peak Storage= 0.82'

Bank-Full Depth= 1.00' Flow Area= 16.7 sf, Capacity= 19.56 cfs

25.00' x 1.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

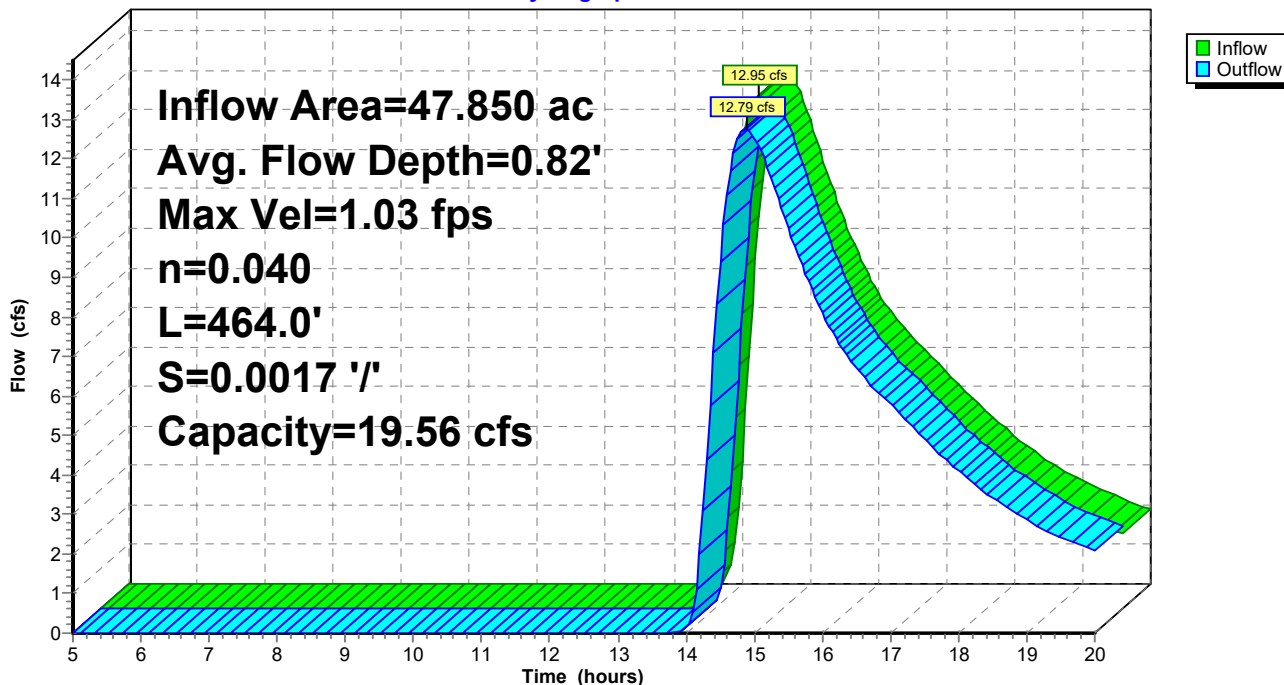
Length= 464.0' Slope= 0.0017 '/'

Inlet Invert= 316.60', Outlet Invert= 315.80'



Reach 55R: Reach 3-3

Hydrograph



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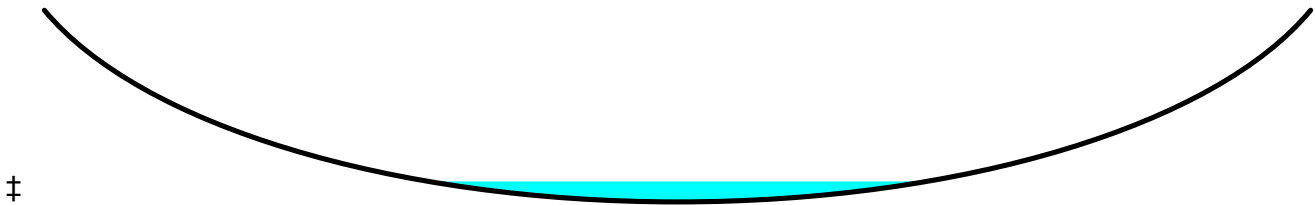
Summary for Reach 56R: Reach 3-2

Inflow Area = 65.340 ac, 21.85% Impervious, Inflow Depth > 0.67" for 100-yr event
Inflow = 14.20 cfs @ 14.86 hrs, Volume= 3.667 af
Outflow = 13.99 cfs @ 15.13 hrs, Volume= 3.590 af, Atten= 2%, Lag= 16.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.81 fps, Min. Travel Time= 8.7 min
Avg. Velocity = 0.59 fps, Avg. Travel Time= 11.9 min

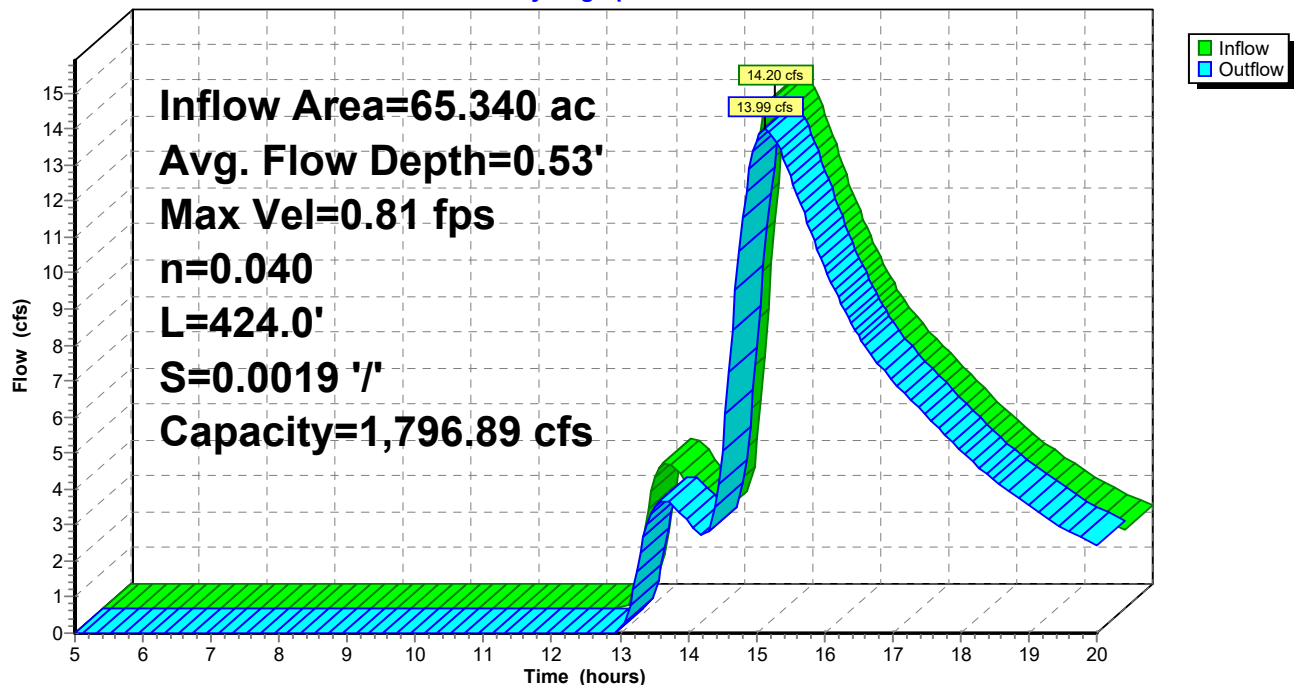
Peak Storage= 7,336 cf @ 14.99 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 5.00' Flow Area= 500.0 sf, Capacity= 1,796.89 cfs

150.00' x 5.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 424.0' Slope= 0.0019 '/
Inlet Invert= 315.80', Outlet Invert= 315.00'



Reach 56R: Reach 3-2

Hydrograph



Summit Woods

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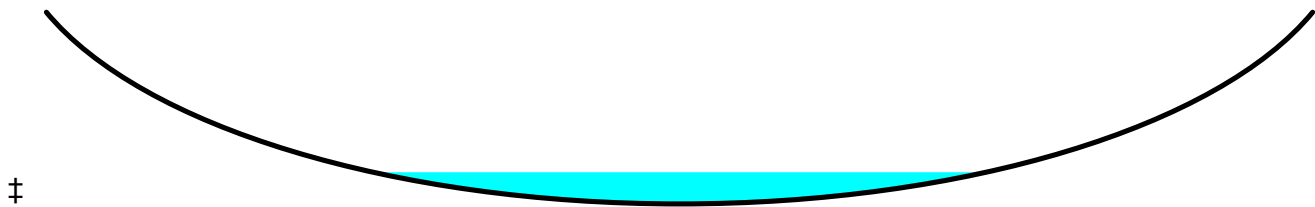
Summary for Reach 57R: Post Area #6

Inflow Area = 40.310 ac, 12.35% Impervious, Inflow Depth > 3.12" for 100-yr event
Inflow = 28.94 cfs @ 14.78 hrs, Volume= 10.472 af
Outflow = 28.94 cfs @ 14.85 hrs, Volume= 10.427 af, Atten= 0%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.60 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 3.6 min

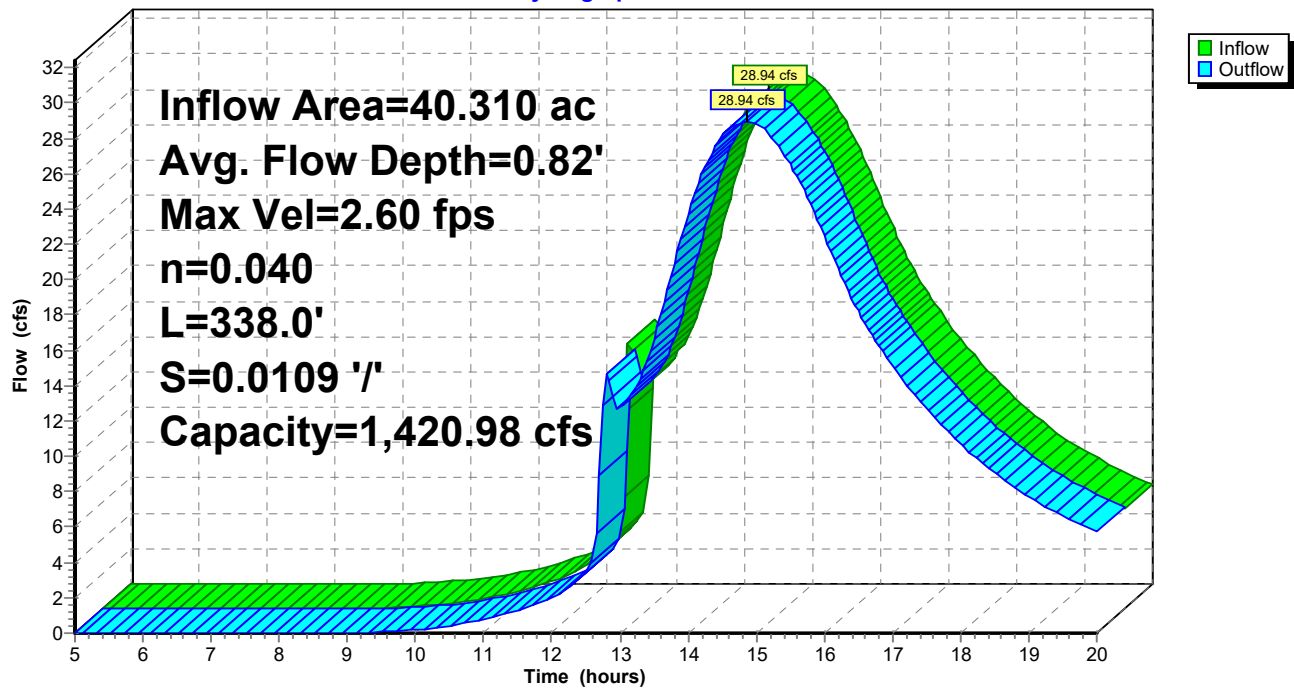
Peak Storage= 3,763 cf @ 14.81 hrs
Average Depth at Peak Storage= 0.82'
Bank-Full Depth= 5.00' Flow Area= 166.7 sf, Capacity= 1,420.98 cfs

50.00' x 5.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 338.0' Slope= 0.0109 '/'
Inlet Invert= 316.40', Outlet Invert= 312.70'



Reach 57R: Post Area #6

Hydrograph



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Summary for Reach 58R: Reach #3E

Inflow Area = 9.670 ac, 28.11% Impervious, Inflow Depth = 0.00" for 100-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 16.7 sf, Capacity= 23.18 cfs

25.00' x 1.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds

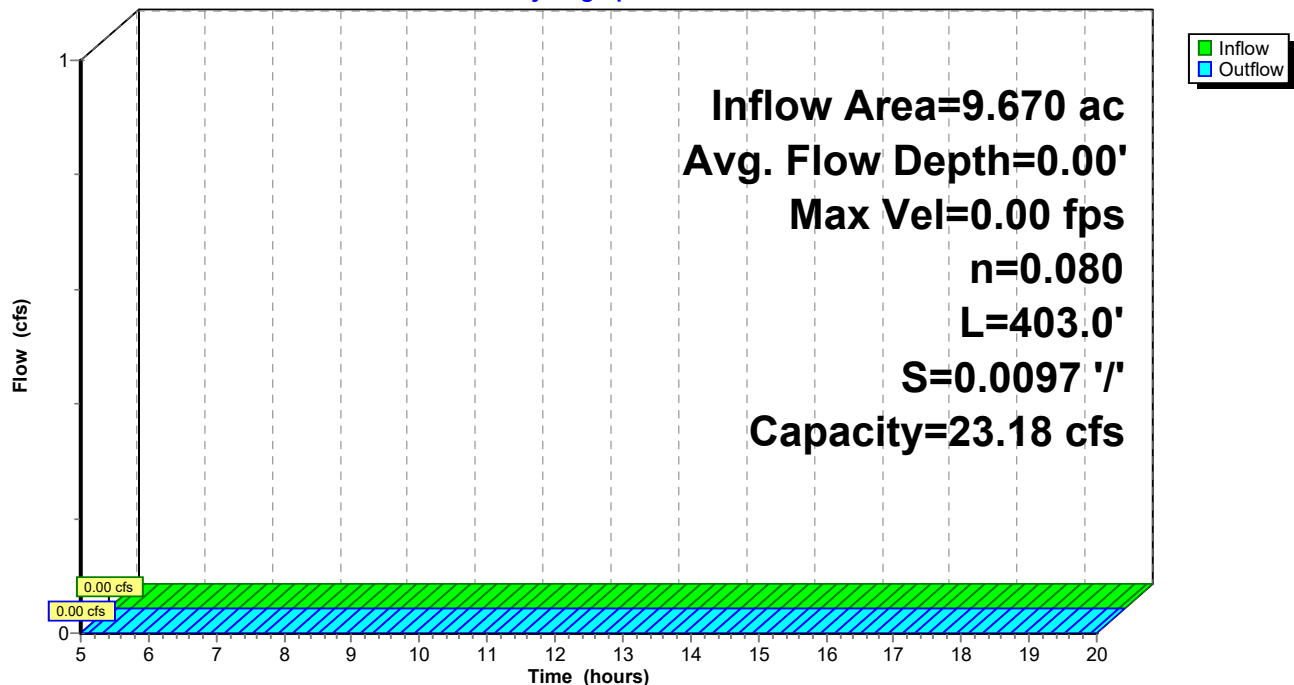
Length= 403.0' Slope= 0.0097 '/

Inlet Invert= 321.40', Outlet Invert= 317.50'



Reach 58R: Reach #3E

Hydrograph



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Summary for Reach 59R: Reach 6-2

Inflow Area = 34.110 ac, 9.34% Impervious, Inflow Depth > 3.69" for 100-yr event
Inflow = 28.95 cfs @ 14.73 hrs, Volume= 10.490 af
Outflow = 28.94 cfs @ 14.78 hrs, Volume= 10.455 af, Atten= 0%, Lag= 3.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.55 fps, Min. Travel Time= 1.7 min

Avg. Velocity = 0.92 fps, Avg. Travel Time= 2.9 min

Peak Storage= 3,024 cf @ 14.75 hrs

Average Depth at Peak Storage= 1.16'

Bank-Full Depth= 5.00' Flow Area= 166.7 sf, Capacity= 674.87 cfs

50.00' x 5.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

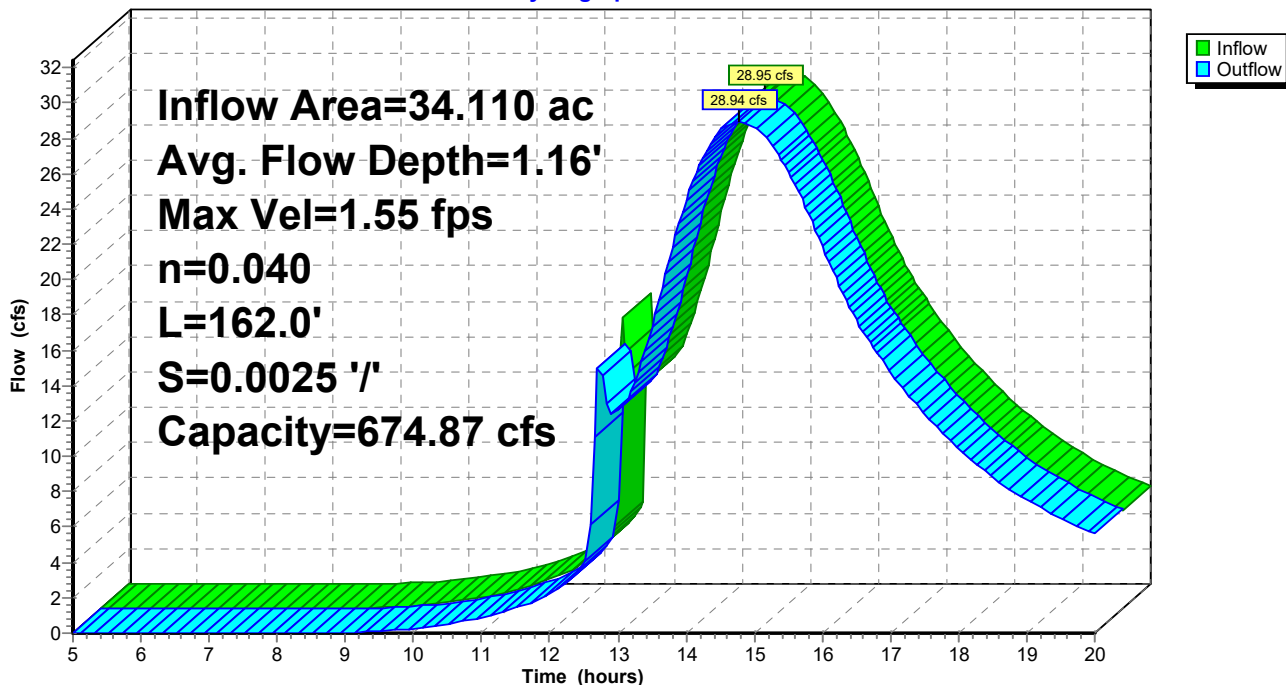
Length= 162.0' Slope= 0.0025 '/'

Inlet Invert= 316.80', Outlet Invert= 316.40'



Reach 59R: Reach 6-2

Hydrograph



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Summary for Reach 60R: Reach 6C

Inflow Area = 3.260 ac, 40.43% Impervious, Inflow Depth = 0.06" for 100-yr event
Inflow = 0.94 cfs @ 13.00 hrs, Volume= 0.017 af
Outflow = 0.59 cfs @ 13.06 hrs, Volume= 0.017 af, Atten= 37%, Lag= 3.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.07 fps, Min. Travel Time= 1.7 min

Avg. Velocity = 1.07 fps, Avg. Travel Time= 3.2 min

Peak Storage= 67 cf @ 13.02 hrs

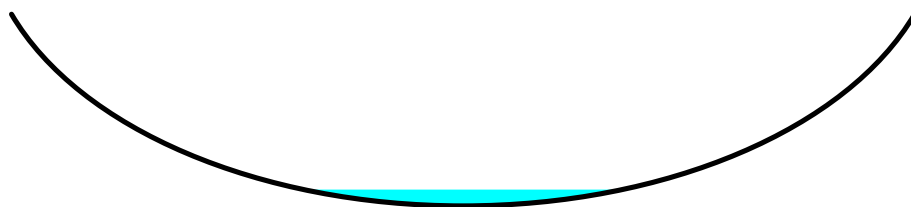
Average Depth at Peak Storage= 0.17'

Bank-Full Depth= 2.00' Flow Area= 13.3 sf, Capacity= 139.08 cfs

10.00' x 2.00' deep Parabolic Channel, n= 0.040 Earth, cobble bottom, clean sides

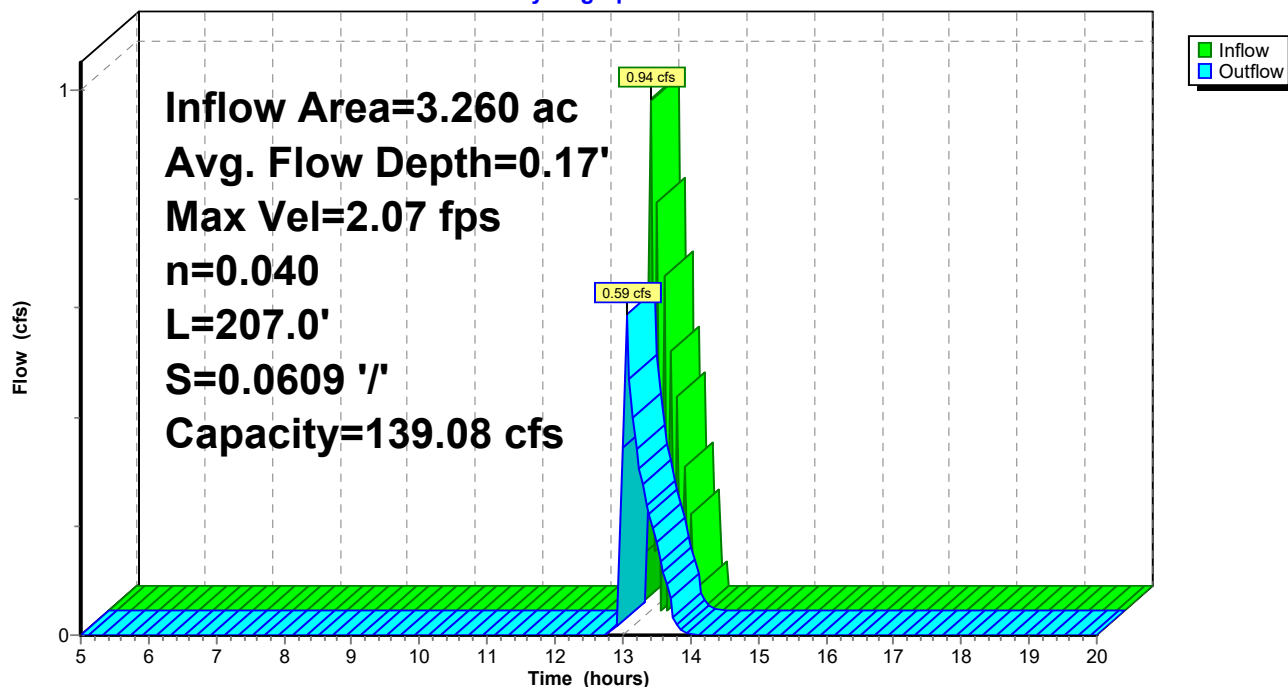
Length= 207.0' Slope= 0.0609 1'

Inlet Invert= 329.00', Outlet Invert= 316.40'



Reach 60R: Reach 6C

Hydrograph



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Summary for Reach 61R: Reach 3-4-2

Inflow Area = 41.630 ac, 24.31% Impervious, Inflow Depth > 0.88" for 100-yr event
Inflow = 13.06 cfs @ 14.47 hrs, Volume= 3.055 af
Outflow = 12.95 cfs @ 14.65 hrs, Volume= 3.018 af, Atten= 1%, Lag= 10.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.10 fps, Min. Travel Time= 5.4 min

Avg. Velocity = 0.84 fps, Avg. Travel Time= 7.1 min

Peak Storage= 4,200 cf @ 14.56 hrs

Average Depth at Peak Storage= 1.51'

Bank-Full Depth= 1.00' Flow Area= 6.7 sf, Capacity= 6.21 cfs

10.00' x 1.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

Length= 358.0' Slope= 0.0011 '/'

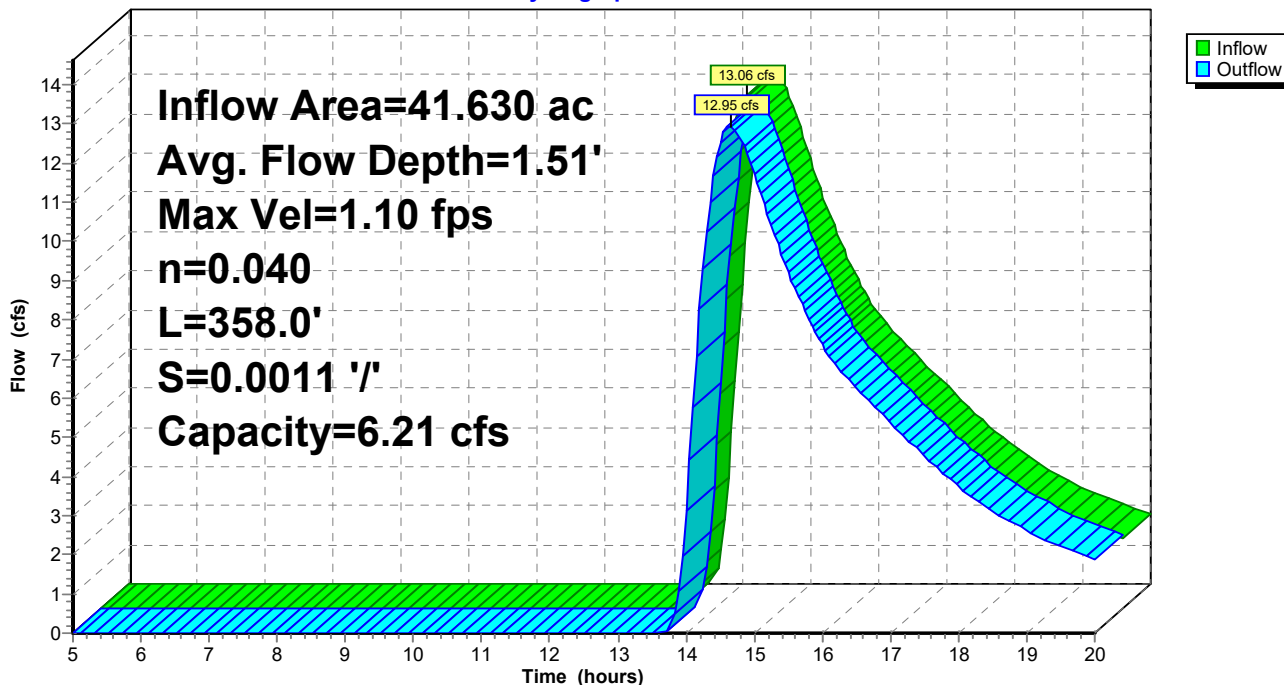
Inlet Invert= 316.00', Outlet Invert= 315.60'



‡

Reach 61R: Reach 3-4-2

Hydrograph



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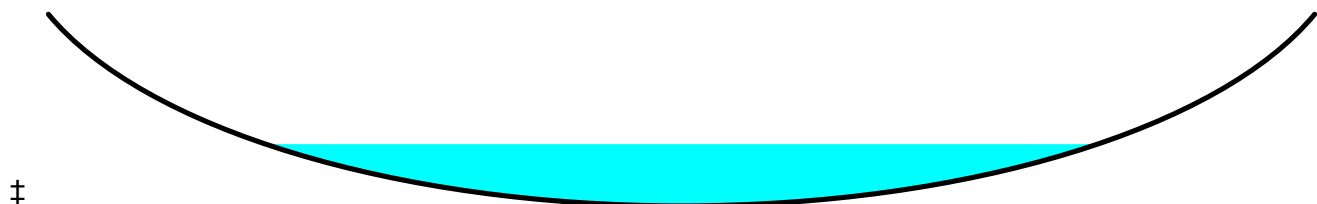
Summary for Reach 62R: Reach 3-5

Inflow Area = 40.970 ac, 24.18% Impervious, Inflow Depth > 1.00" for 100-yr event
Inflow = 28.64 cfs @ 12.65 hrs, Volume= 3.403 af
Outflow = 13.30 cfs @ 14.19 hrs, Volume= 3.116 af, Atten= 54%, Lag= 92.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.22 fps, Min. Travel Time= 53.1 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 77.0 min

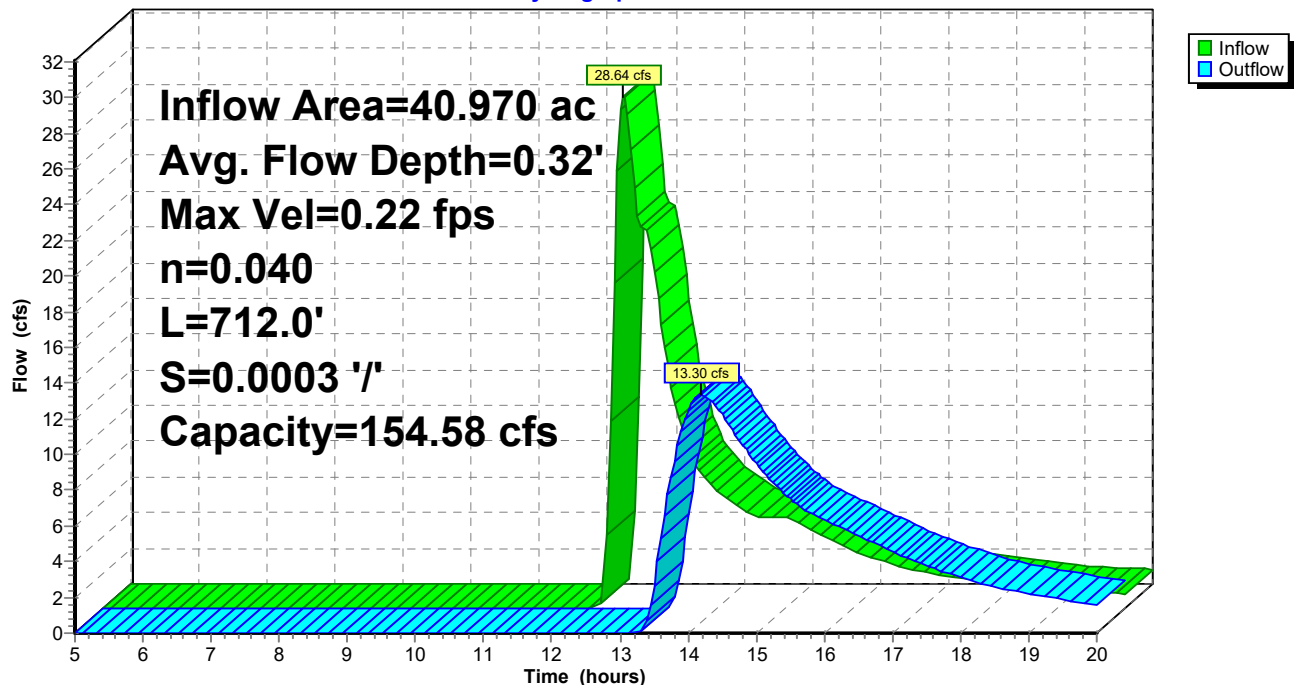
Peak Storage= 42,413 cf @ 13.31 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00' Flow Area= 325.3 sf, Capacity= 154.58 cfs

488.00' x 1.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 712.0' Slope= 0.0003 '/'
Inlet Invert= 317.50', Outlet Invert= 317.30'



Reach 62R: Reach 3-5

Hydrograph



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Summary for Reach 63R: Reach 3-6

Inflow Area = 10.170 ac, 34.04% Impervious, Inflow Depth > 2.87" for 100-yr event
Inflow = 32.19 cfs @ 12.44 hrs, Volume= 2.431 af
Outflow = 28.64 cfs @ 12.65 hrs, Volume= 2.408 af, Atten= 11%, Lag= 12.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.35 fps, Min. Travel Time= 6.3 min

Avg. Velocity = 0.63 fps, Avg. Travel Time= 13.7 min

Peak Storage= 10,925 cf @ 12.54 hrs

Average Depth at Peak Storage= 0.36'

Bank-Full Depth= 2.00' Flow Area= 274.7 sf, Capacity= 1,156.63 cfs

206.00' x 2.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals

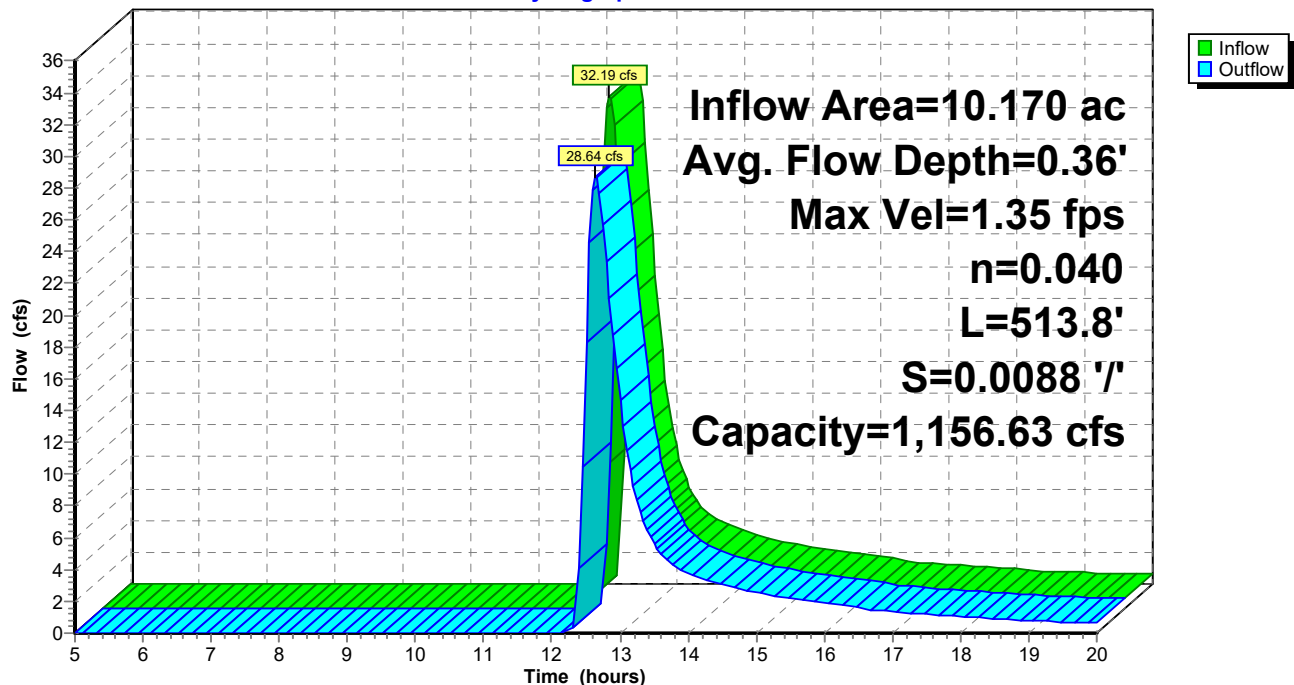
Length= 513.8' Slope= 0.0088 '/'

Inlet Invert= 322.00', Outlet Invert= 317.50'



Reach 63R: Reach 3-6

Hydrograph



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Summary for Reach 64R: Reach #3F

Inflow Area = 2.680 ac, 35.07% Impervious, Inflow Depth = 0.00" for 100-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 0.50' Flow Area= 78.7 sf, Capacity= 21.89 cfs

236.00' x 0.50' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush

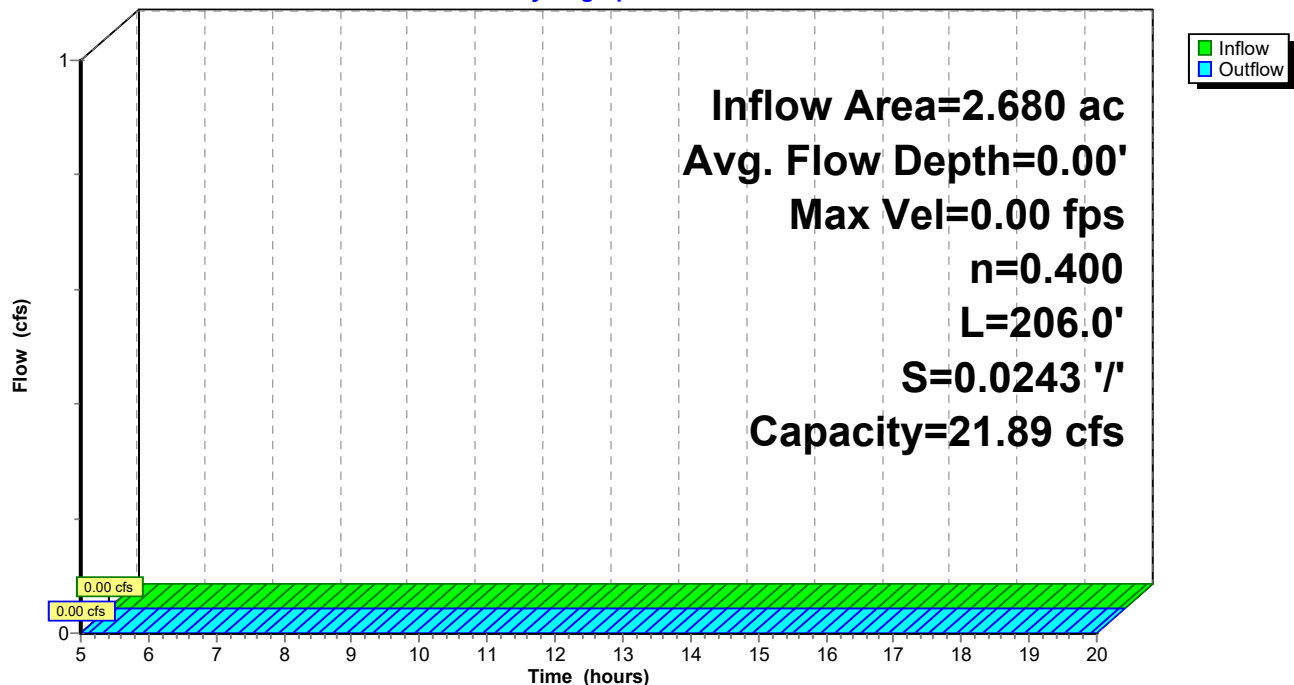
Length= 206.0' Slope= 0.0243 '/

Inlet Invert= 327.00', Outlet Invert= 322.00'



Reach 64R: Reach #3F

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Summary for Reach 65R: Reach #3G

Inflow Area = 7.490 ac, 33.67% Impervious, Inflow Depth > 3.93" for 100-yr event
Inflow = 35.65 cfs @ 12.27 hrs, Volume= 2.450 af
Outflow = 32.19 cfs @ 12.44 hrs, Volume= 2.431 af, Atten= 10%, Lag= 10.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.34 fps, Min. Travel Time= 5.0 min
Avg. Velocity = 0.59 fps, Avg. Travel Time= 11.3 min

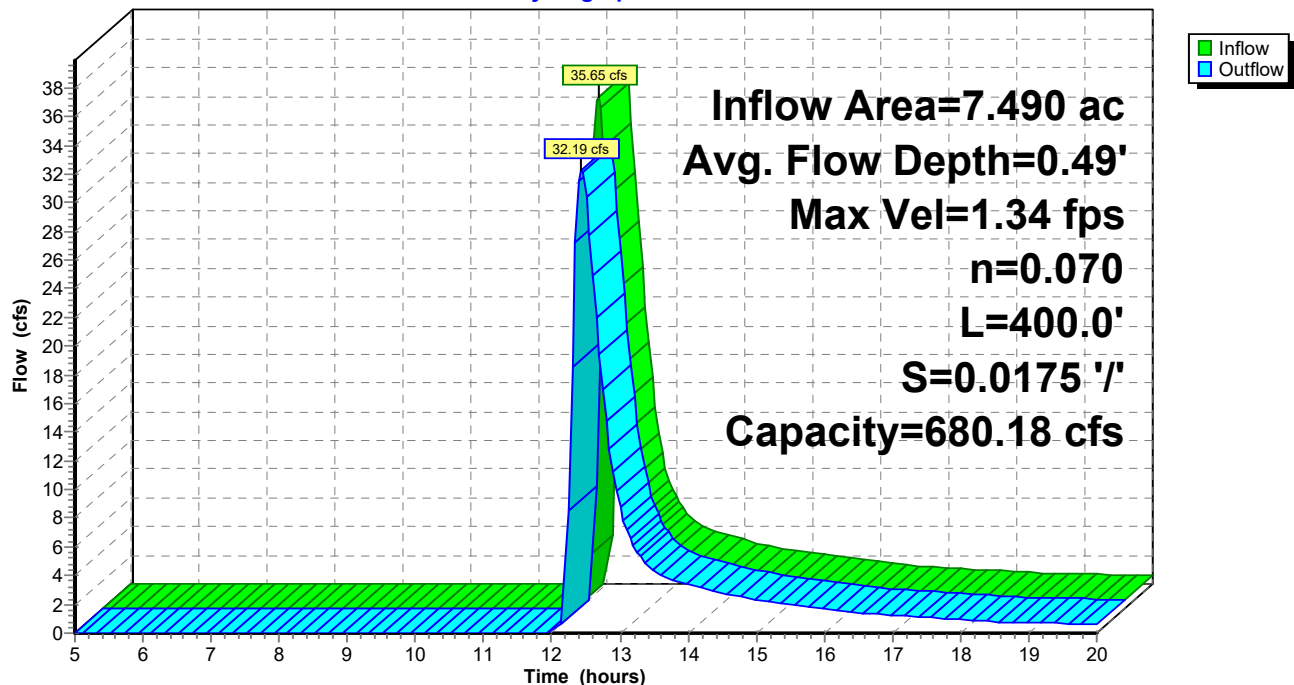
Peak Storage= 9,751 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 2.00' Flow Area= 200.0 sf, Capacity= 680.18 cfs

150.00' x 2.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 400.0' Slope= 0.0175 '/'
Inlet Invert= 329.00', Outlet Invert= 322.00'



Reach 65R: Reach #3G

Hydrograph



Summit Woods

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Type III 24-hr 100-yr Rainfall=8.40"

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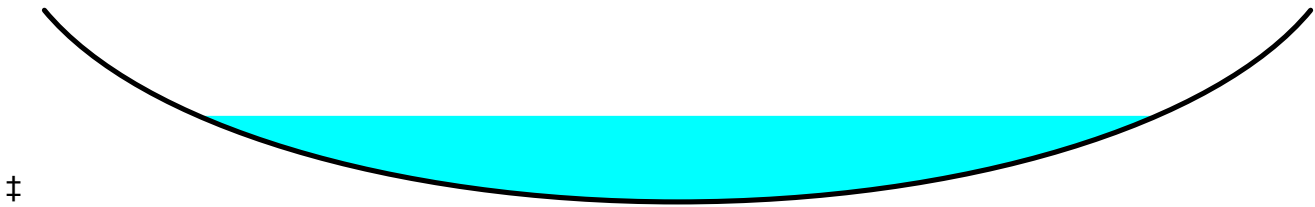
Summary for Reach 66R: Reach #3L-2

Inflow Area = 17.490 ac, 16.36% Impervious, Inflow Depth > 0.49" for 100-yr event
Inflow = 6.44 cfs @ 12.55 hrs, Volume= 0.716 af
Outflow = 4.08 cfs @ 13.27 hrs, Volume= 0.706 af, Atten= 37%, Lag= 43.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.02 fps, Min. Travel Time= 22.1 min
Avg. Velocity = 0.62 fps, Avg. Travel Time= 36.5 min

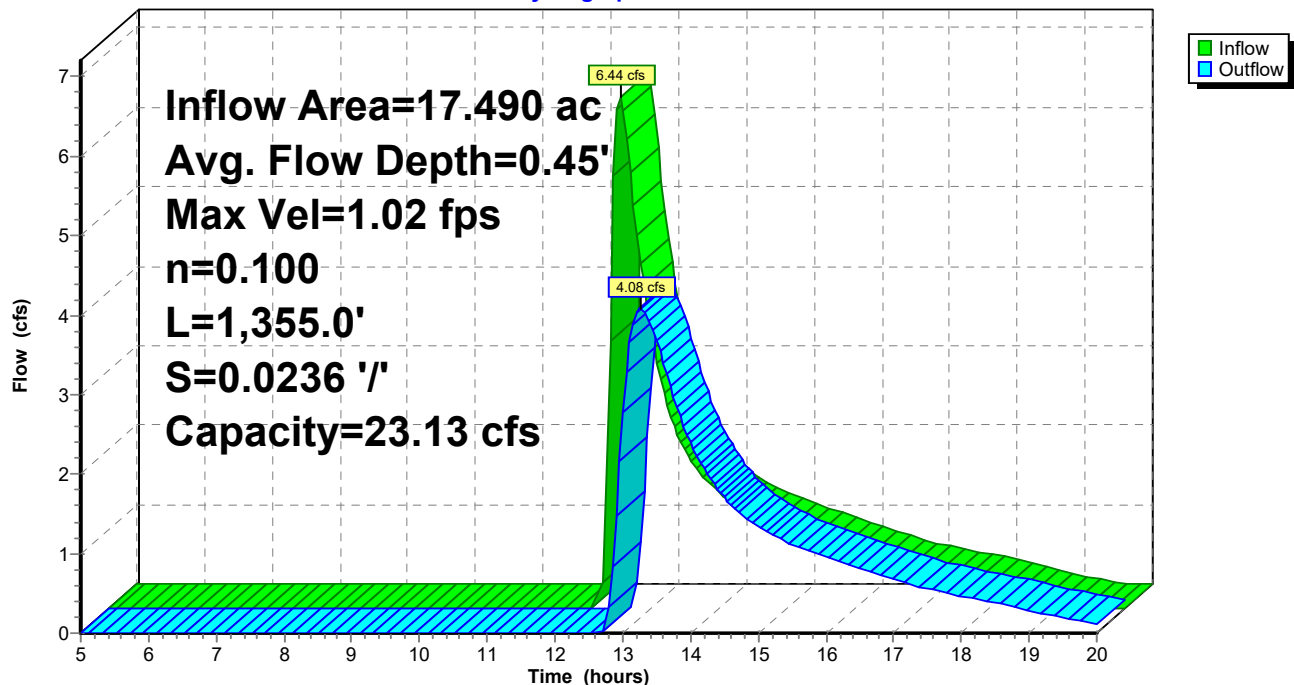
Peak Storage= 5,433 cf @ 12.90 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.00' Flow Area= 13.3 sf, Capacity= 23.13 cfs

20.00' x 1.00' deep Parabolic Channel, n= 0.100 Very weedy reaches w/pools
Length= 1,355.0' Slope= 0.0236 '/'
Inlet Invert= 348.00', Outlet Invert= 316.00'



Reach 66R: Reach #3L-2

Hydrograph



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Summary for Reach 67R: Reach #3G

Inflow Area = 0.660 ac, 32.12% Impervious, Inflow Depth = 0.00" for 100-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 2.00' Flow Area= 374.7 sf, Capacity= 1,116.58 cfs

281.00' x 2.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds

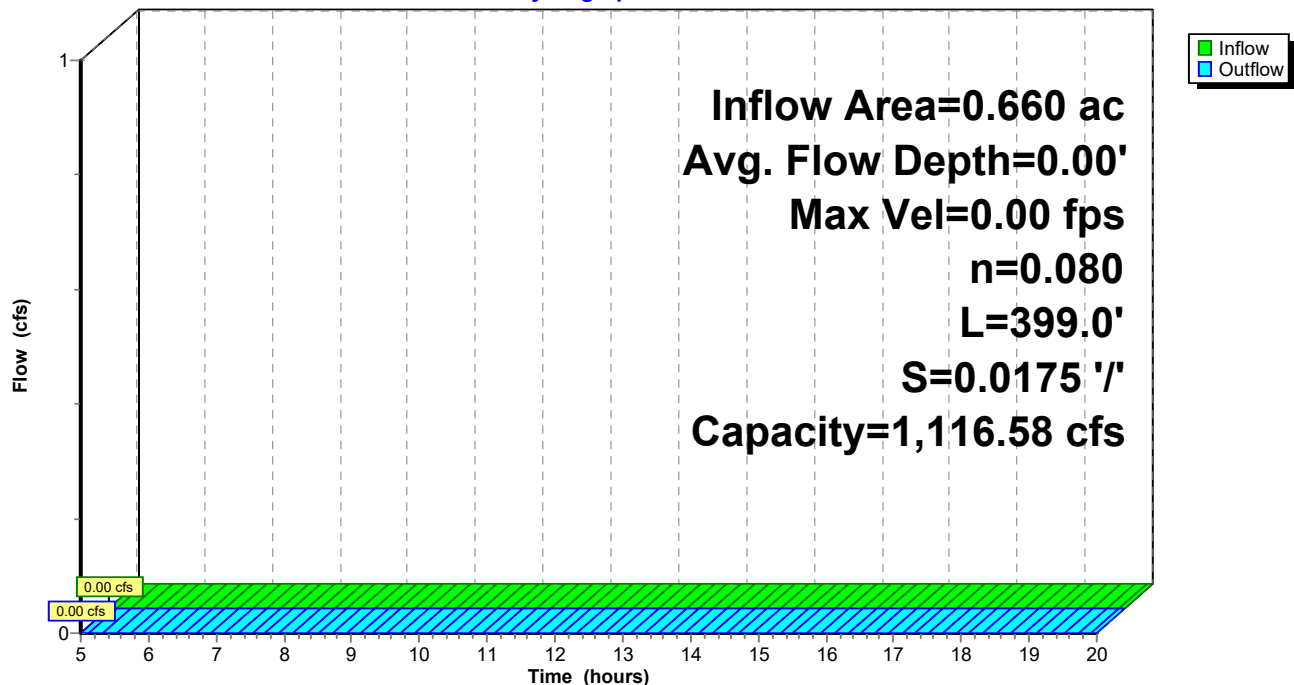
Length= 399.0' Slope= 0.0175 '/'

Inlet Invert= 329.00', Outlet Invert= 322.00'



Reach 67R: Reach #3G

Hydrograph



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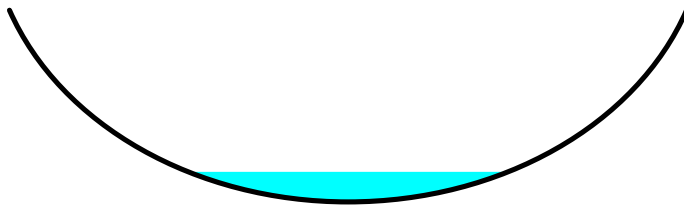
Summary for Reach 68R: Reach 3-7

Inflow Area = 21.130 ac, 17.64% Impervious, Inflow Depth > 0.57" for 100-yr event
Inflow = 8.93 cfs @ 12.82 hrs, Volume= 1.002 af
Outflow = 7.33 cfs @ 13.10 hrs, Volume= 0.995 af, Atten= 18%, Lag= 16.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.99 fps, Min. Travel Time= 7.6 min
Avg. Velocity = 1.70 fps, Avg. Travel Time= 13.4 min

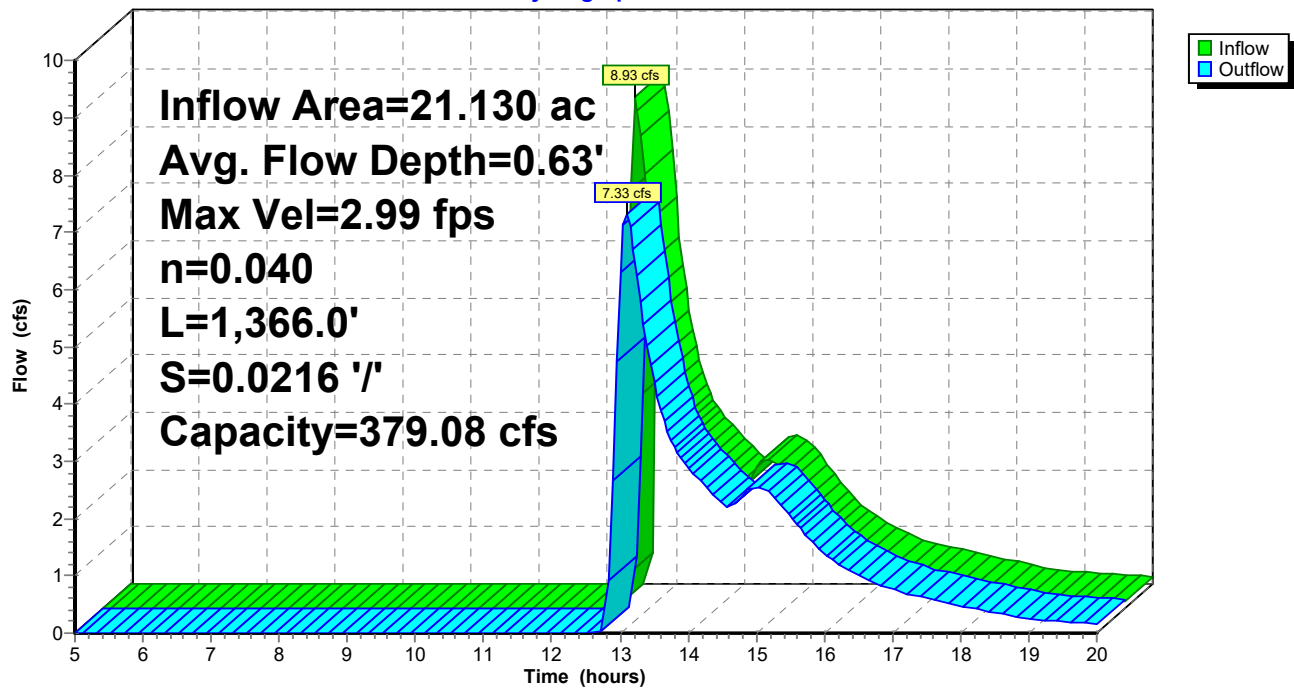
Peak Storage= 3,376 cf @ 12.97 hrs
Average Depth at Peak Storage= 0.63'
Bank-Full Depth= 4.00' Flow Area= 40.0 sf, Capacity= 379.08 cfs

15.00' x 4.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 1,366.0' Slope= 0.0216 '/'
Inlet Invert= 347.00', Outlet Invert= 317.50'



Reach 68R: Reach 3-7

Hydrograph



Summit Woods

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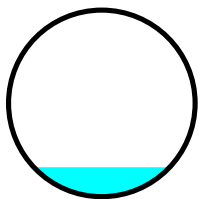
Summary for Reach 69R: Reach 3-8

Inflow Area = 21.130 ac, 17.64% Impervious, Inflow Depth > 0.57" for 100-yr event
Inflow = 8.95 cfs @ 12.82 hrs, Volume= 1.002 af
Outflow = 8.93 cfs @ 12.82 hrs, Volume= 1.002 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.49 fps, Min. Travel Time= 0.2 min
Avg. Velocity= 6.69 fps, Avg. Travel Time= 0.3 min

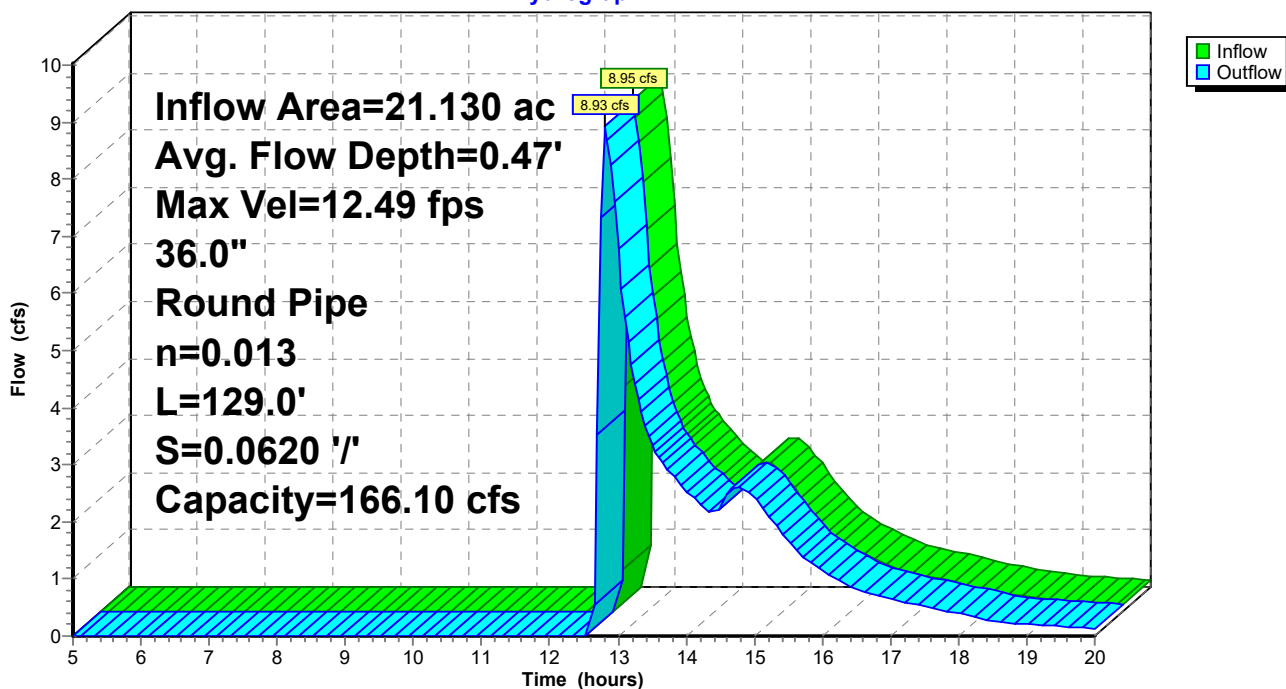
Peak Storage= 92 cf @ 12.82 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 166.10 cfs

36.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 129.0' Slope= 0.0620 '/'
Inlet Invert= 348.00', Outlet Invert= 340.00'



Reach 69R: Reach 3-8

Hydrograph



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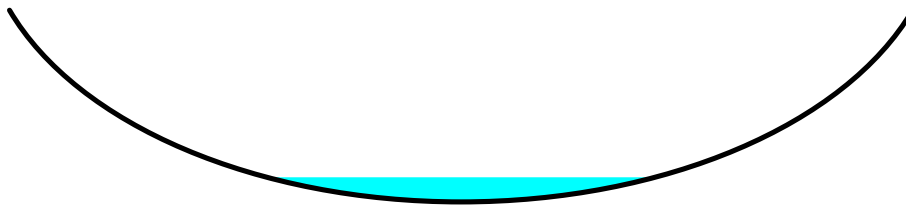
Summary for Reach 70R: Reach 3-9

Inflow Area = 21.130 ac, 17.64% Impervious, Inflow Depth > 0.57" for 100-yr event
Inflow = 8.97 cfs @ 12.77 hrs, Volume= 1.003 af
Outflow = 8.95 cfs @ 12.82 hrs, Volume= 1.002 af, Atten= 0%, Lag= 2.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.65 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 1.93 fps, Avg. Travel Time= 2.5 min

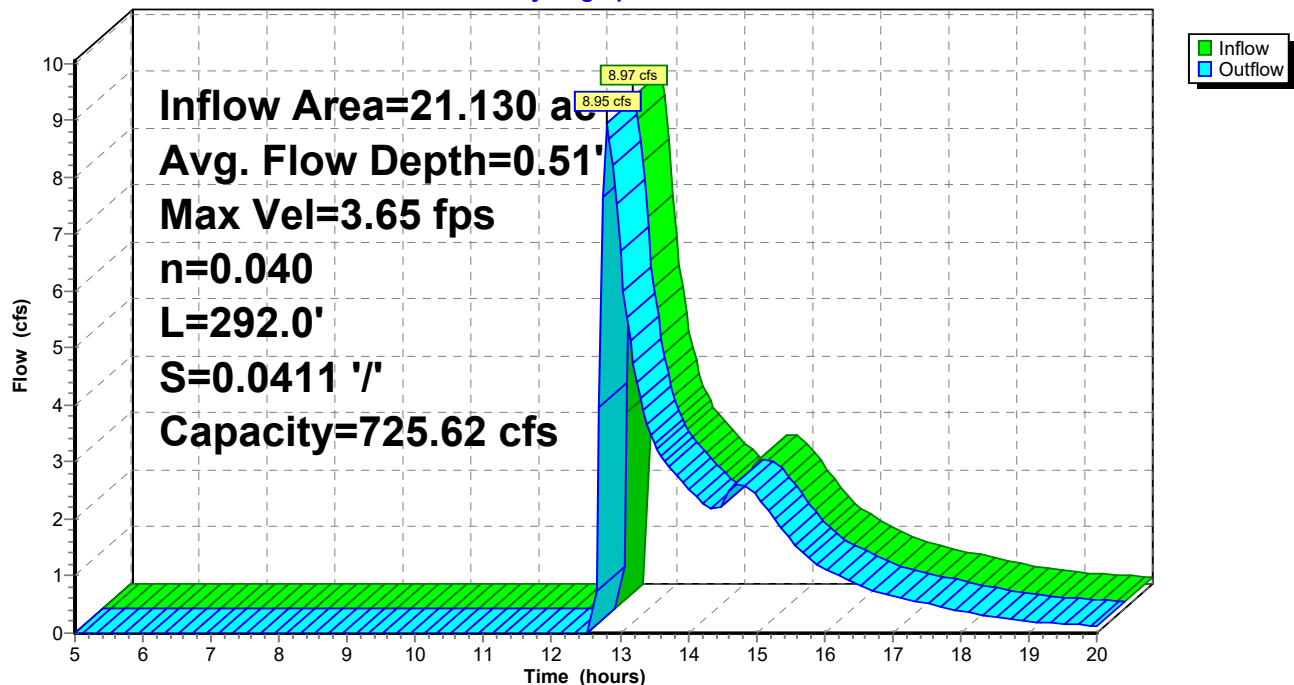
Peak Storage= 713 cf @ 12.75 hrs
Average Depth at Peak Storage= 0.51'
Bank-Full Depth= 4.00' Flow Area= 53.3 sf, Capacity= 725.62 cfs

20.00' x 4.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 292.0' Slope= 0.0411 '/'
Inlet Invert= 360.00', Outlet Invert= 348.00'



Reach 70R: Reach 3-9

Hydrograph



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Summary for Reach 71R: Reach #3J

Inflow Area = 13.580 ac, 20.62% Impervious, Inflow Depth = 0.05" for 100-yr event
Inflow = 1.72 cfs @ 14.21 hrs, Volume= 0.058 af
Outflow = 0.84 cfs @ 14.77 hrs, Volume= 0.058 af, Atten= 51%, Lag= 33.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.00 fps, Min. Travel Time= 13.5 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 23.2 min

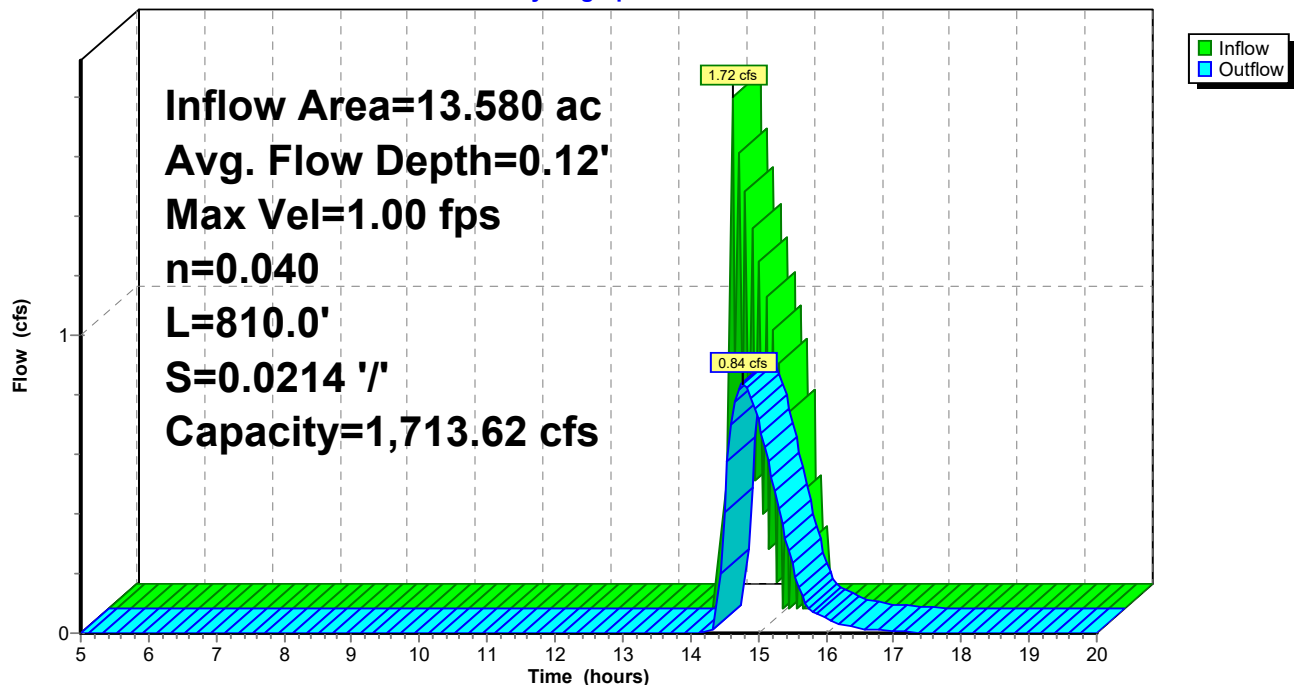
Peak Storage= 678 cf @ 14.54 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 4.00' Flow Area= 165.3 sf, Capacity= 1,713.62 cfs

62.00' x 4.00' deep Parabolic Channel, n= 0.040 Winding stream, pools & shoals
Length= 810.0' Slope= 0.0214 '/'
Inlet Invert= 377.30', Outlet Invert= 360.00'



Reach 71R: Reach #3J

Hydrograph



Summit Woods

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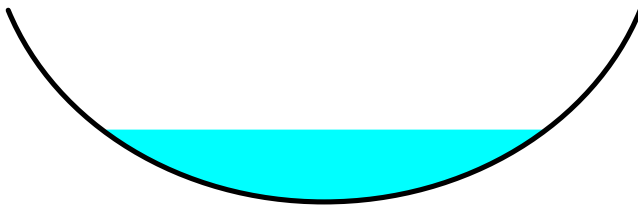
Summary for Reach 72R: Reach 3-10

Inflow Area = 7.550 ac, 12.29% Impervious, Inflow Depth > 1.51" for 100-yr event
Inflow = 29.51 cfs @ 12.55 hrs, Volume= 0.949 af
Outflow = 8.97 cfs @ 12.77 hrs, Volume= 0.945 af, Atten= 70%, Lag= 13.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.21 fps, Min. Travel Time= 6.8 min
Avg. Velocity = 2.17 fps, Avg. Travel Time= 13.1 min

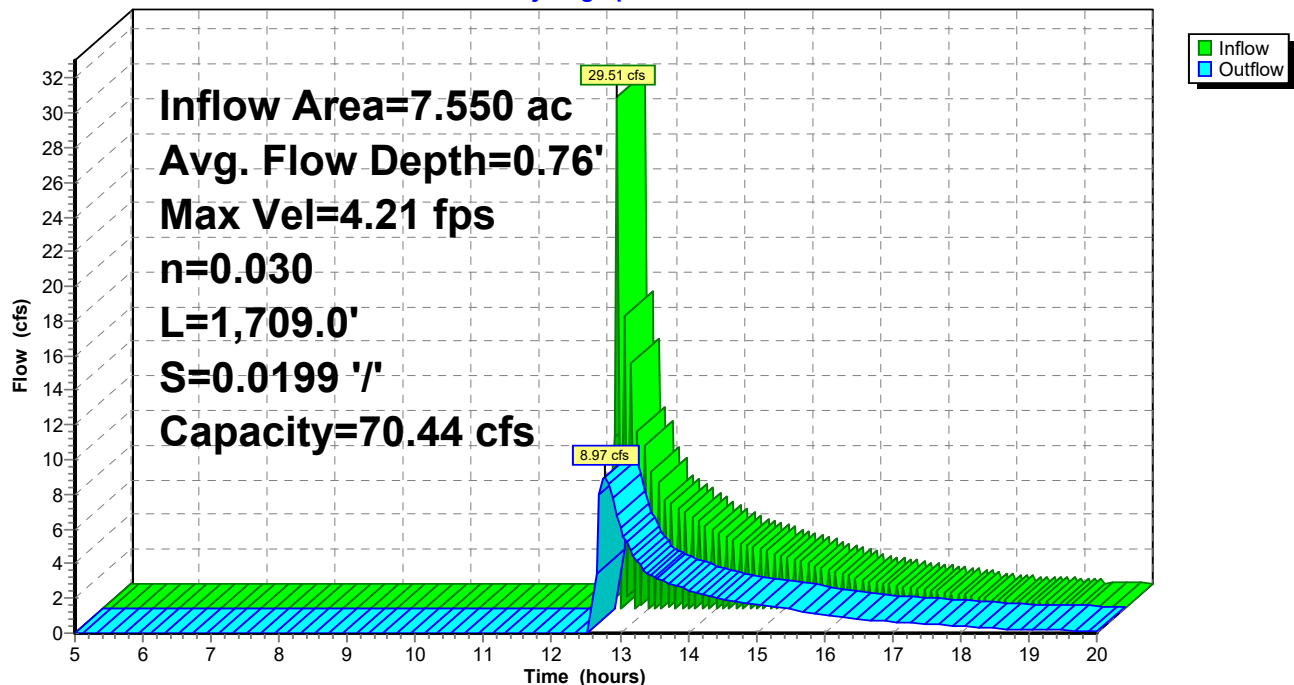
Peak Storage= 3,701 cf @ 12.60 hrs
Average Depth at Peak Storage= 0.76'
Bank-Full Depth= 2.00' Flow Area= 9.3 sf, Capacity= 70.44 cfs

7.00' x 2.00' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 1,709.0' Slope= 0.0199 '/'
Inlet Invert= 394.00', Outlet Invert= 360.00'



Reach 72R: Reach 3-10

Hydrograph



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Summary for Reach 73R: (new Reach)

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

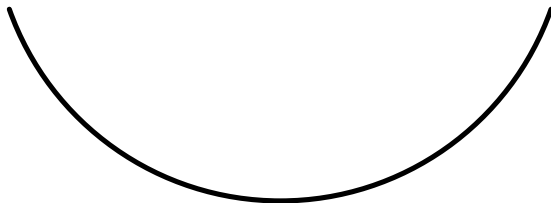
Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 80.99 cfs

6.00' x 2.00' deep Parabolic Channel, n= 0.040 Earth, cobble bottom, clean sides

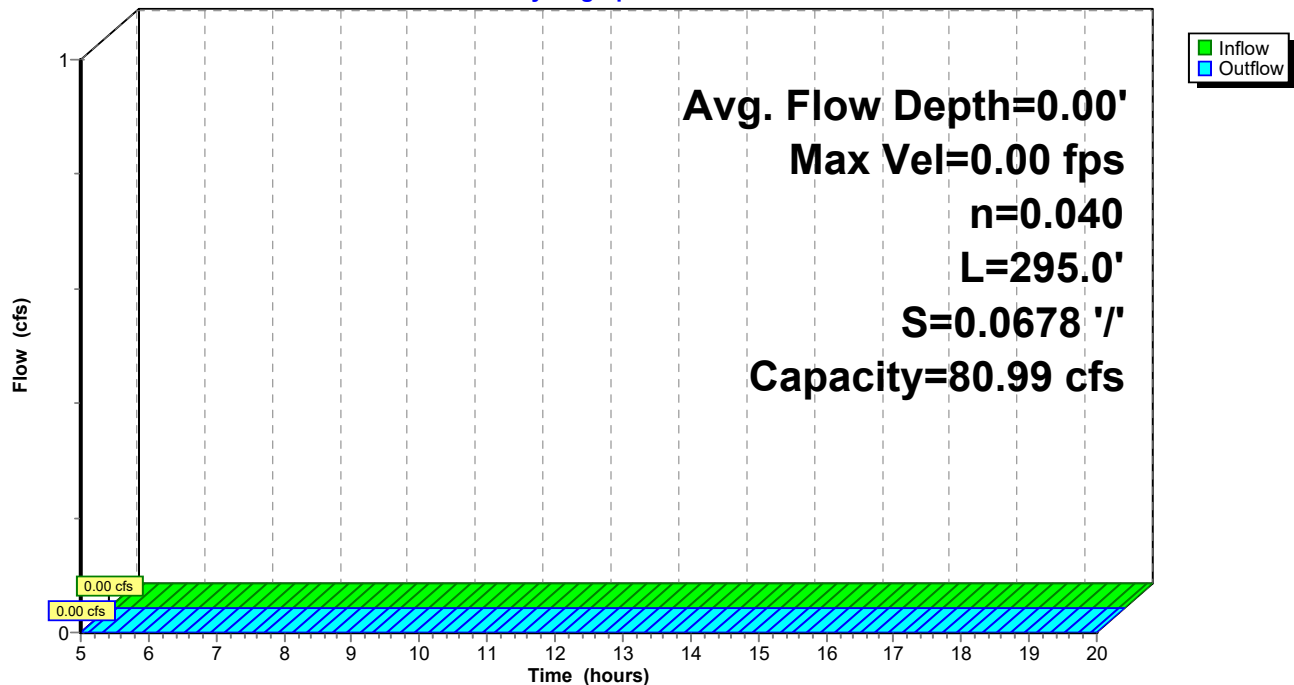
Length= 295.0' Slope= 0.0678 '/'

Inlet Invert= 402.00', Outlet Invert= 382.00'



Reach 73R: (new Reach)

Hydrograph



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Summary for Reach 74R: Reach 6B

Inflow Area = 6.200 ac, 24.19% Impervious, Inflow Depth = 1.09" for 100-yr event
Inflow = 21.77 cfs @ 12.60 hrs, Volume= 0.564 af
Outflow = 11.15 cfs @ 12.65 hrs, Volume= 0.564 af, Atten= 49%, Lag= 3.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.34 fps, Min. Travel Time= 1.0 min

Avg. Velocity= 1.71 fps, Avg. Travel Time= 2.6 min

Peak Storage= 863 cf @ 12.62 hrs

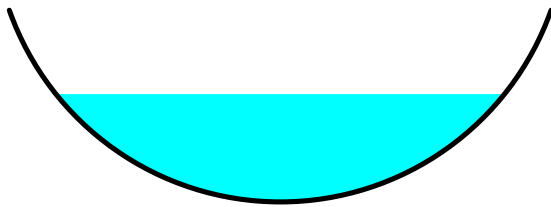
Average Depth at Peak Storage= 1.13'

Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 50.79 cfs

6.00' x 2.00' deep Parabolic Channel, n= 0.040 Earth, cobble bottom, clean sides

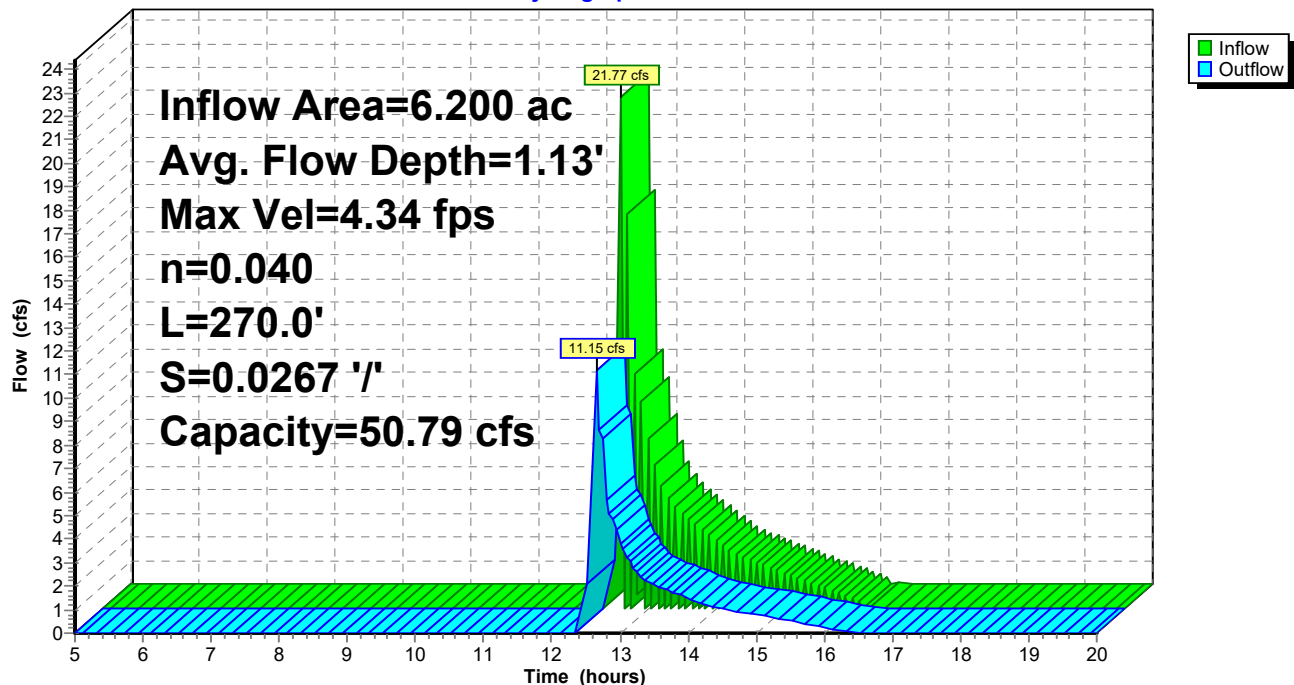
Length= 270.0' Slope= 0.0267 '/'

Inlet Invert= 324.00', Outlet Invert= 316.80'



Reach 74R: Reach 6B

Hydrograph



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Summary for Reach 75R: Reach 6B

Inflow Area = 2.940 ac, 16.16% Impervious, Inflow Depth = 0.00" for 100-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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 @ 5.00 hrs

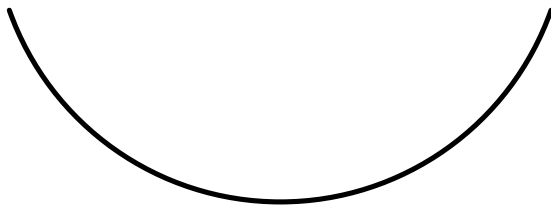
Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 60.84 cfs

6.00' x 2.00' deep Parabolic Channel, n= 0.040 Earth, cobble bottom, clean sides

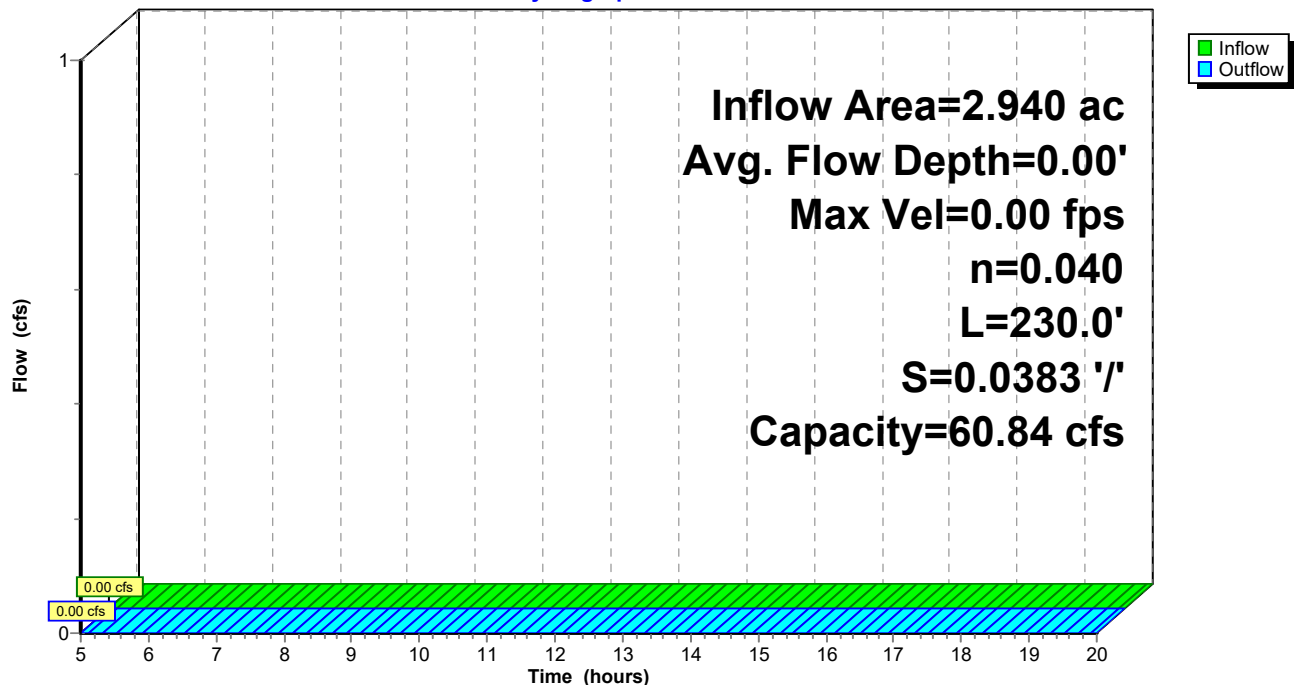
Length= 230.0' Slope= 0.0383 '/'

Inlet Invert= 321.50', Outlet Invert= 312.70'



Reach 75R: Reach 6B

Hydrograph



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Summary for Reach 76R: Reach 3-4-1

Inflow Area = 40.970 ac, 24.18% Impervious, Inflow Depth > 0.91" for 100-yr event
Inflow = 13.30 cfs @ 14.19 hrs, Volume= 3.116 af
Outflow = 13.06 cfs @ 14.47 hrs, Volume= 3.055 af, Atten= 2%, Lag= 16.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.47 fps, Min. Travel Time= 9.0 min

Avg. Velocity = 0.33 fps, Avg. Travel Time= 12.6 min

Peak Storage= 7,089 cf @ 14.32 hrs

Average Depth at Peak Storage= 0.25'

Bank-Full Depth= 1.00' Flow Area= 218.7 sf, Capacity= 253.93 cfs

328.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools

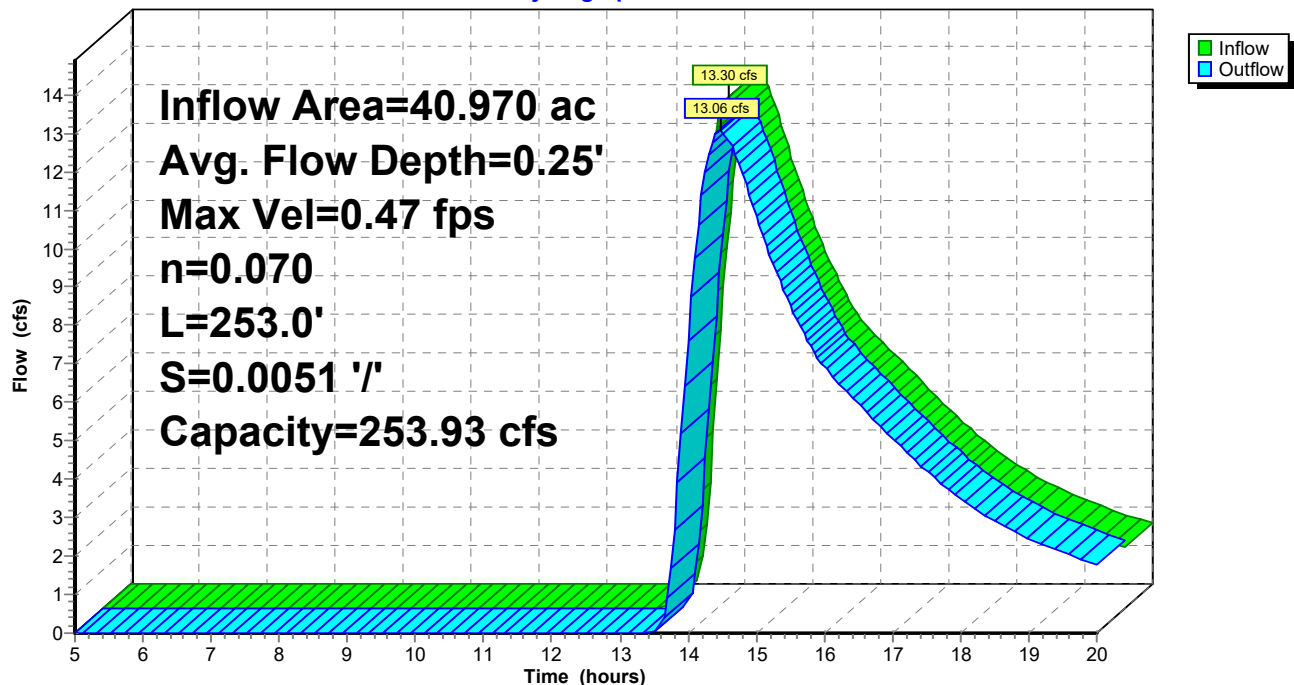
Length= 253.0' Slope= 0.0051 '/'

Inlet Invert= 317.30', Outlet Invert= 316.00'



Reach 76R: Reach 3-4-1

Hydrograph



Summit Woods

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Summary for Pond 35P: Pond #3B

Inflow Area = 4.540 ac, 35.52% Impervious, Inflow Depth > 5.75" for 100-yr event
 Inflow = 26.88 cfs @ 12.10 hrs, Volume= 2.177 af
 Outflow = 2.89 cfs @ 13.75 hrs, Volume= 0.734 af, Atten= 89%, Lag= 99.1 min
 Discarded = 0.69 cfs @ 13.70 hrs, Volume= 0.568 af
 Primary = 2.20 cfs @ 13.75 hrs, Volume= 0.166 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 322.53' @ 13.75 hrs Surf.Area= 11,961 sf Storage= 64,079 cf

Plug-Flow detention time= 221.8 min calculated for 0.731 af (34% of inflow)
 Center-of-Mass det. time= 115.4 min (884.3 - 768.8)

Volume	Invert	Avail.Storage	Storage Description
#1	314.00'	64,079 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
314.00	3,776	0	0
316.00	5,861	9,637	9,637
318.00	8,272	14,133	23,770
320.00	10,038	18,310	42,080
322.00	11,961	21,999	64,079

Device	Routing	Invert	Outlet Devices
#1	Primary	322.30'	8.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	314.00'	2.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.69 cfs @ 13.70 hrs HW=322.40' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.69 cfs)

Primary OutFlow Max=2.18 cfs @ 13.75 hrs HW=322.53' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 2.18 cfs @ 1.16 fps)

Summit Woods

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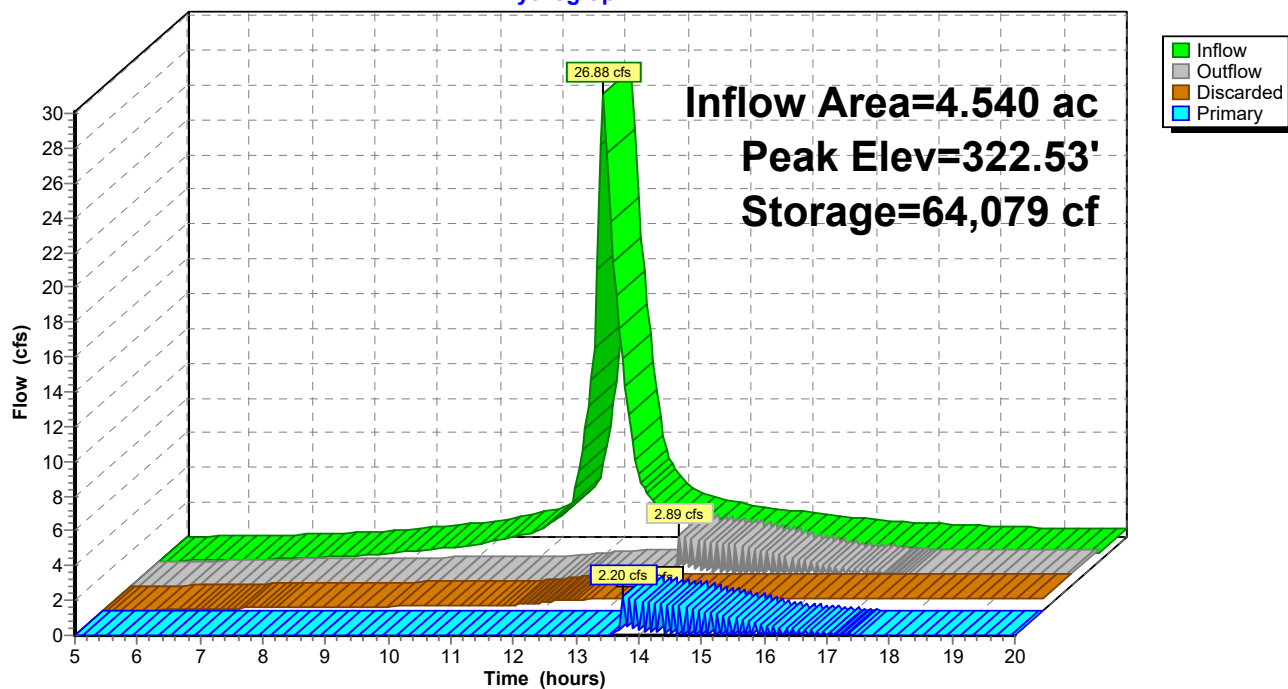
Type III 24-hr 100-yr Rainfall=8.40"

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Pond 35P: Pond #3B

Hydrograph



Summit Woods

Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Pond 36P: Pond #3C

Inflow Area = 3.080 ac, 22.08% Impervious, Inflow Depth > 5.41" for 100-yr event
 Inflow = 17.21 cfs @ 12.16 hrs, Volume= 1.389 af
 Outflow = 10.10 cfs @ 12.39 hrs, Volume= 1.047 af, Atten= 41%, Lag= 14.1 min
 Discarded = 1.13 cfs @ 12.35 hrs, Volume= 0.824 af
 Primary = 8.97 cfs @ 12.39 hrs, Volume= 0.223 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 324.25' @ 12.39 hrs Surf.Area= 9,731 sf Storage= 24,334 cf

Plug-Flow detention time= 152.5 min calculated for 1.047 af (75% of inflow)
 Center-of-Mass det. time= 93.0 min (870.6 - 777.6)

Volume	Invert	Avail.Storage	Storage Description
#1	320.00'	24,334 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
320.00	2,815	0	0
322.00	5,894	8,709	8,709
324.00	9,731	15,625	24,334

Device	Routing	Invert	Outlet Devices
#1	Discarded	320.00'	5.000 in/hr Exfiltration over Surface area
#2	Primary	324.00'	30.0' long x 3.0' 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
			Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68
			2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=1.13 cfs @ 12.35 hrs HW=324.21' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 1.13 cfs)

Primary OutFlow Max=8.47 cfs @ 12.39 hrs HW=324.24' (Free Discharge)
 ↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 8.47 cfs @ 1.20 fps)

Summit Woods

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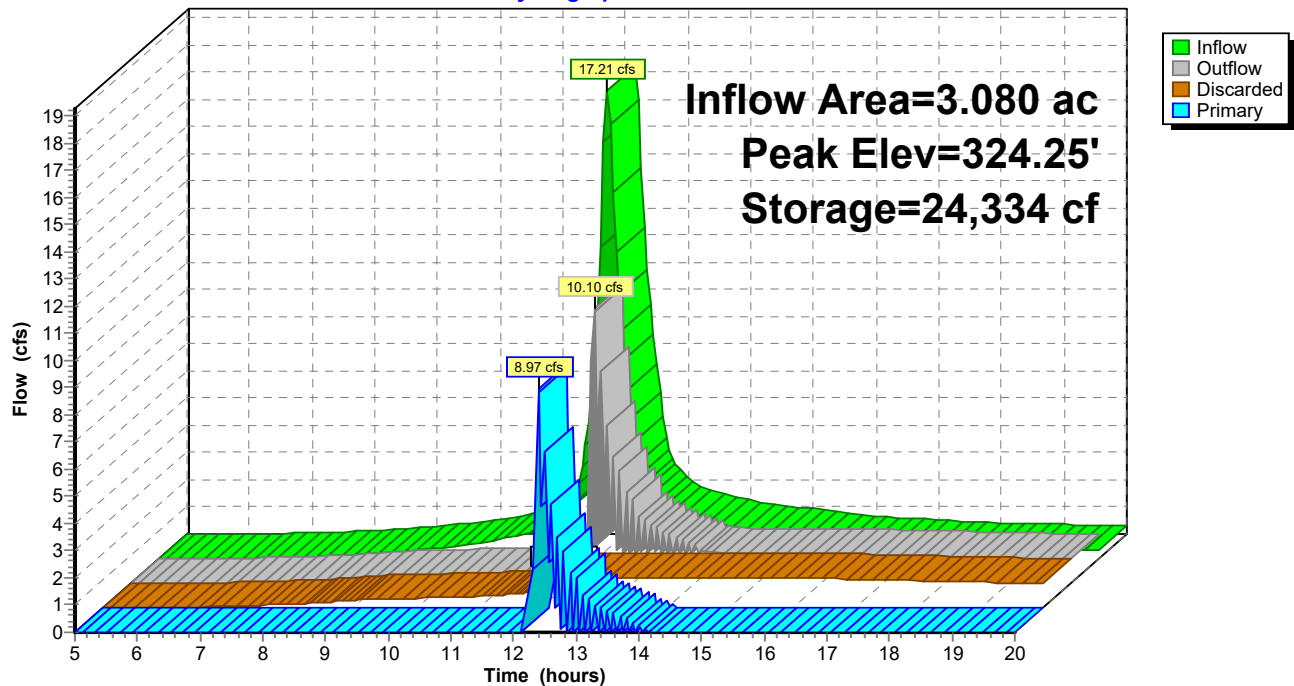
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Pond 36P: Pond #3C

Hydrograph



Summit Woods

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Summary for Pond 37P: Pond #3D

Inflow Area = 6.220 ac, 20.80% Impervious, Inflow Depth > 5.41" for 100-yr event
 Inflow = 33.88 cfs @ 12.17 hrs, Volume= 2.804 af
 Outflow = 1.09 cfs @ 16.86 hrs, Volume= 0.833 af, Atten= 97%, Lag= 281.5 min
 Discarded = 1.09 cfs @ 16.86 hrs, Volume= 0.833 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 324.10' @ 16.86 hrs Surf.Area= 23,652 sf Storage= 89,110 cf

Plug-Flow detention time= 237.7 min calculated for 0.833 af (30% of inflow)
 Center-of-Mass det. time= 129.8 min (908.2 - 778.4)

Volume	Invert	Avail.Storage	Storage Description
#1	318.00'	111,342 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.00	6,683	0	0
320.00	11,226	17,909	17,909
322.00	17,122	28,348	46,257
324.00	23,442	40,564	86,821
325.00	25,600	24,521	111,342

Device	Routing	Invert	Outlet Devices
#1	Primary	325.50'	8.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	318.00'	2.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=1.09 cfs @ 16.86 hrs HW=324.10' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 1.09 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=318.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summit Woods

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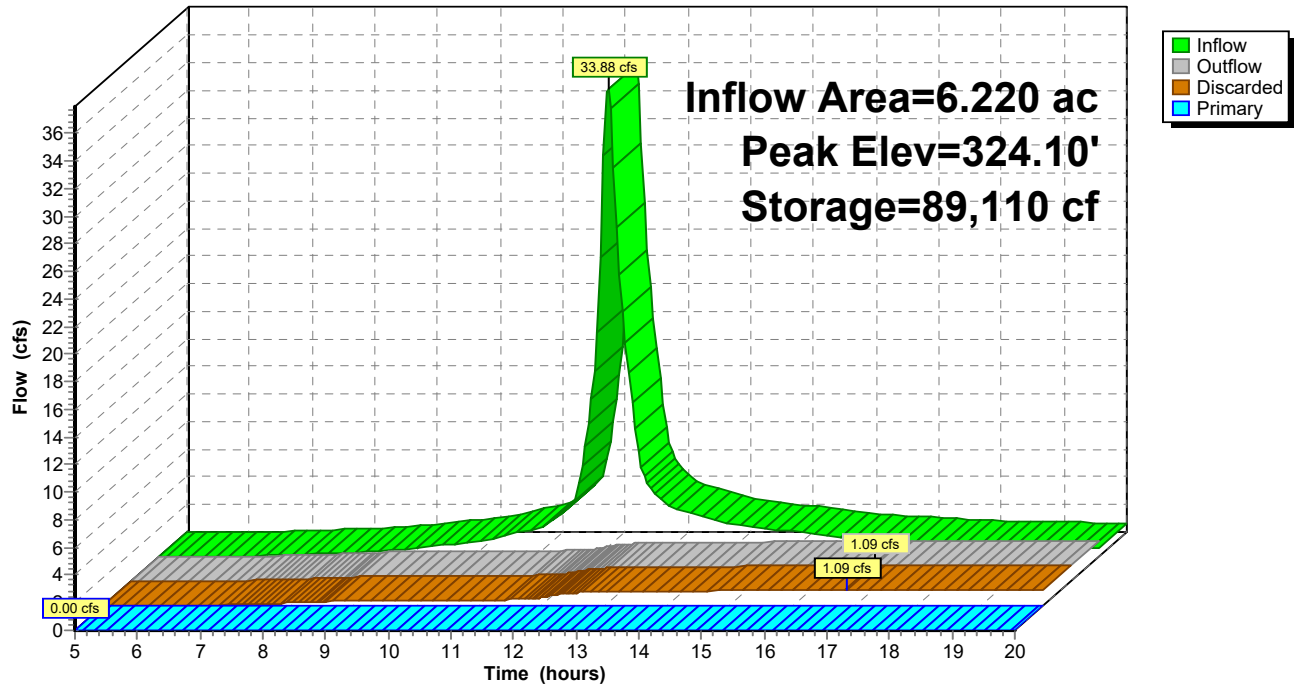
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Pond 37P: Pond #3D

Hydrograph



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Summary for Pond 38P: Pond #3E

Inflow Area = 9.670 ac, 28.11% Impervious, Inflow Depth > 5.65" for 100-yr event
 Inflow = 55.01 cfs @ 12.16 hrs, Volume= 4.549 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 325.90' @ 20.00 hrs Surf.Area= 39,120 sf Storage= 198,058 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	318.00'	202,042 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.00	14,886	0	0
320.00	19,562	34,448	34,448
322.00	24,503	44,065	78,513
324.00	29,702	54,205	132,718
326.00	39,622	69,324	202,042

Device	Routing	Invert	Outlet Devices
#1	Primary	326.10'	10.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=318.00' (Free Discharge)
 ↑1=**Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

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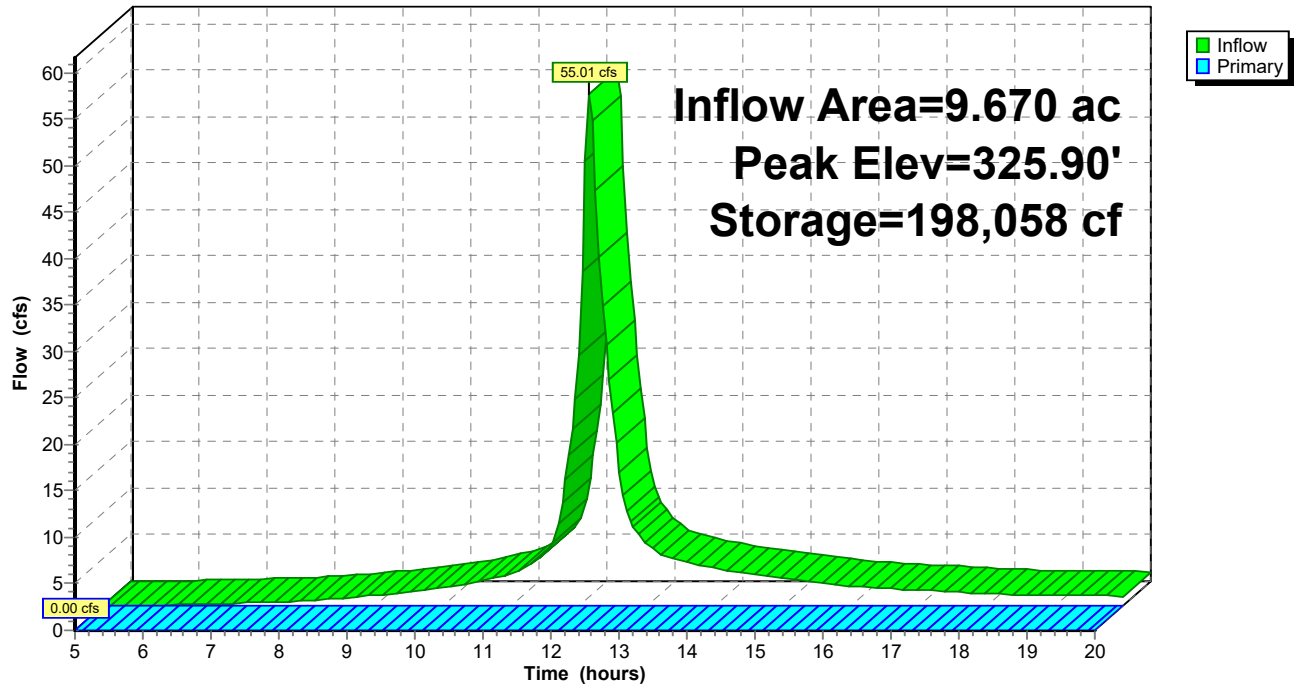
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Pond 38P: Pond #3E

Hydrograph



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Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Pond 39P: Pond #3F

Inflow Area = 2.680 ac, 35.07% Impervious, Inflow Depth > 5.65" for 100-yr event
 Inflow = 18.10 cfs @ 12.09 hrs, Volume= 1.263 af
 Outflow = 1.28 cfs @ 13.56 hrs, Volume= 0.932 af, Atten= 93%, Lag= 88.2 min
 Discarded = 1.28 cfs @ 13.56 hrs, Volume= 0.932 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 321.66' @ 13.56 hrs Surf.Area= 11,085 sf Storage= 28,026 cf

Plug-Flow detention time= 185.3 min calculated for 0.929 af (74% of inflow)
 Center-of-Mass det. time= 124.1 min (893.7 - 769.6)

Volume	Invert	Avail.Storage	Storage Description
#1	318.00'	98,777 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.00	4,538	0	0
320.00	7,789	12,327	12,327
322.00	11,752	19,541	31,868
324.00	16,119	27,871	59,739
326.00	22,919	39,038	98,777

Device	Routing	Invert	Outlet Devices
#1	Primary	327.00'	8.0' 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
#2	Discarded	318.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=1.28 cfs @ 13.56 hrs HW=321.66' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 1.28 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=318.00' (Free Discharge)
 ↑**1=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

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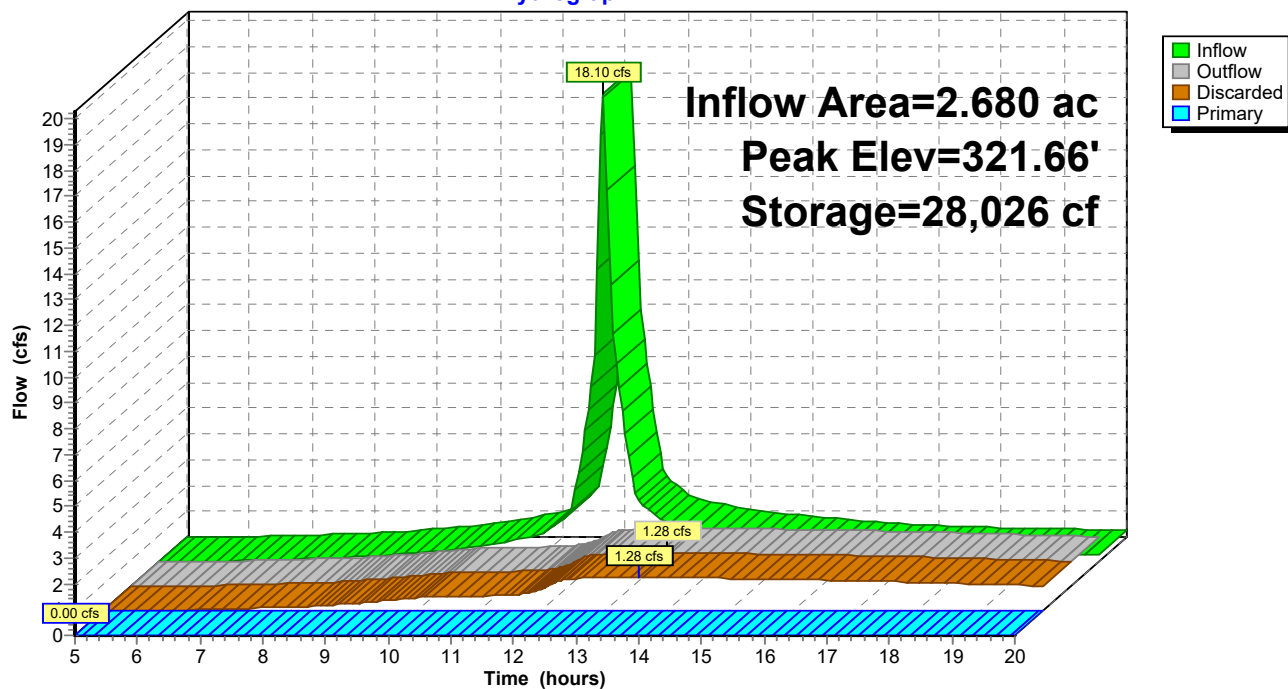
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Pond 39P: Pond #3F

Hydrograph



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Summary for Pond 40P: Pond #3G

Inflow Area = 7.490 ac, 33.67% Impervious, Inflow Depth > 5.52" for 100-yr event
 Inflow = 36.73 cfs @ 12.23 hrs, Volume= 3.445 af
 Outflow = 35.86 cfs @ 12.27 hrs, Volume= 2.622 af, Atten= 2%, Lag= 2.6 min
 Discarded = 0.21 cfs @ 12.27 hrs, Volume= 0.172 af
 Primary = 35.65 cfs @ 12.27 hrs, Volume= 2.450 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 329.76' @ 12.27 hrs Surf.Area= 8,888 sf Storage= 42,073 cf

Plug-Flow detention time= 97.8 min calculated for 2.622 af (76% of inflow)
 Center-of-Mass det. time= 39.8 min (820.1 - 780.2)

Volume	Invert	Avail.Storage	Storage Description
#1	322.00'	44,209 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
322.00	3,263	0	0
324.00	3,264	6,527	6,527
326.00	5,181	8,445	14,972
328.00	7,326	12,507	27,479
328.90	8,483	7,114	34,593
330.00	9,000	9,616	44,209

Device	Routing	Invert	Outlet Devices
#1	Primary	329.00'	20.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	322.00'	1.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.21 cfs @ 12.27 hrs HW=329.75' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=35.17 cfs @ 12.27 hrs HW=329.75' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 35.17 cfs @ 2.33 fps)

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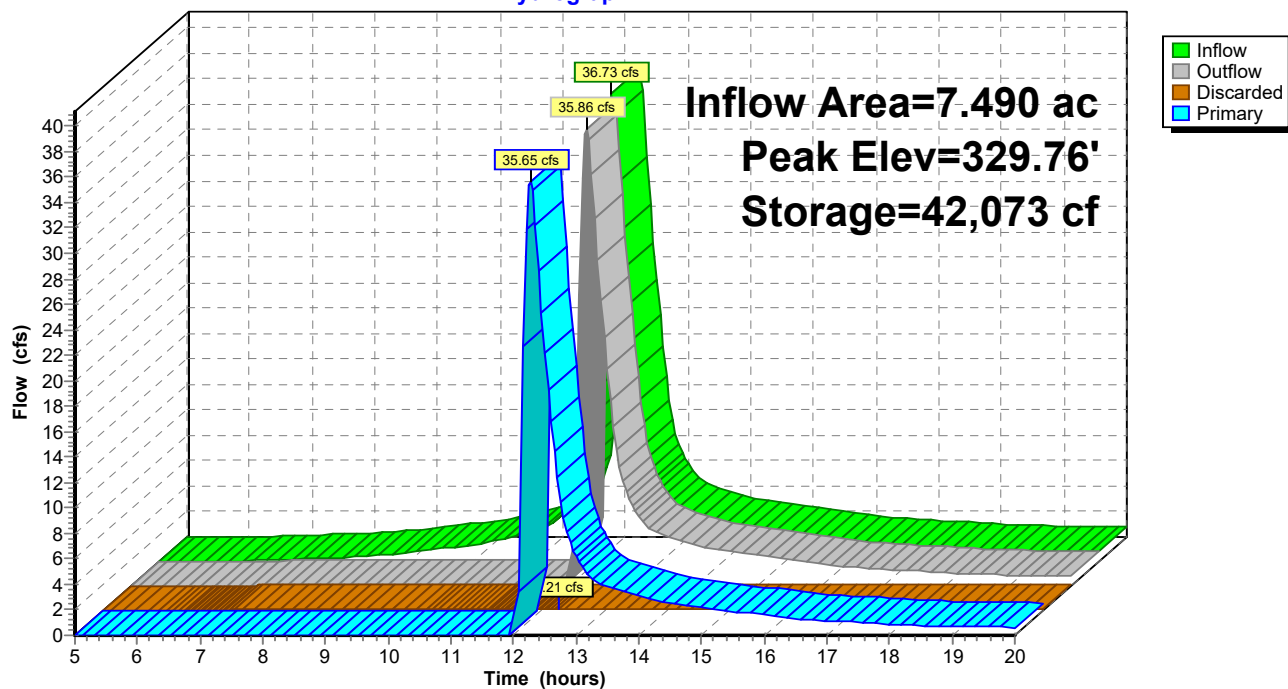
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Pond 40P: Pond #3G

Hydrograph



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Summary for Pond 41P: Pond #3H

Inflow Area = 0.660 ac, 32.12% Impervious, Inflow Depth > 4.61" for 100-yr event
 Inflow = 3.73 cfs @ 12.09 hrs, Volume= 0.253 af
 Outflow = 0.39 cfs @ 12.96 hrs, Volume= 0.236 af, Atten= 90%, Lag= 52.1 min
 Discarded = 0.39 cfs @ 12.96 hrs, Volume= 0.236 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 380.16' @ 12.96 hrs Surf.Area= 3,351 sf Storage= 4,907 cf

Plug-Flow detention time= 141.2 min calculated for 0.236 af (93% of inflow)
 Center-of-Mass det. time= 117.1 min (903.1 - 786.0)

Volume	Invert	Avail.Storage	Storage Description
#1	378.00'	25,109 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
378.00	1,200	0	0
380.00	3,187	4,387	4,387
382.00	5,252	8,439	12,826
384.00	7,031	12,283	25,109

Device	Routing	Invert	Outlet Devices
#1	Primary	383.00'	8.0' 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
#2	Discarded	378.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.39 cfs @ 12.96 hrs HW=380.16' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.39 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=378.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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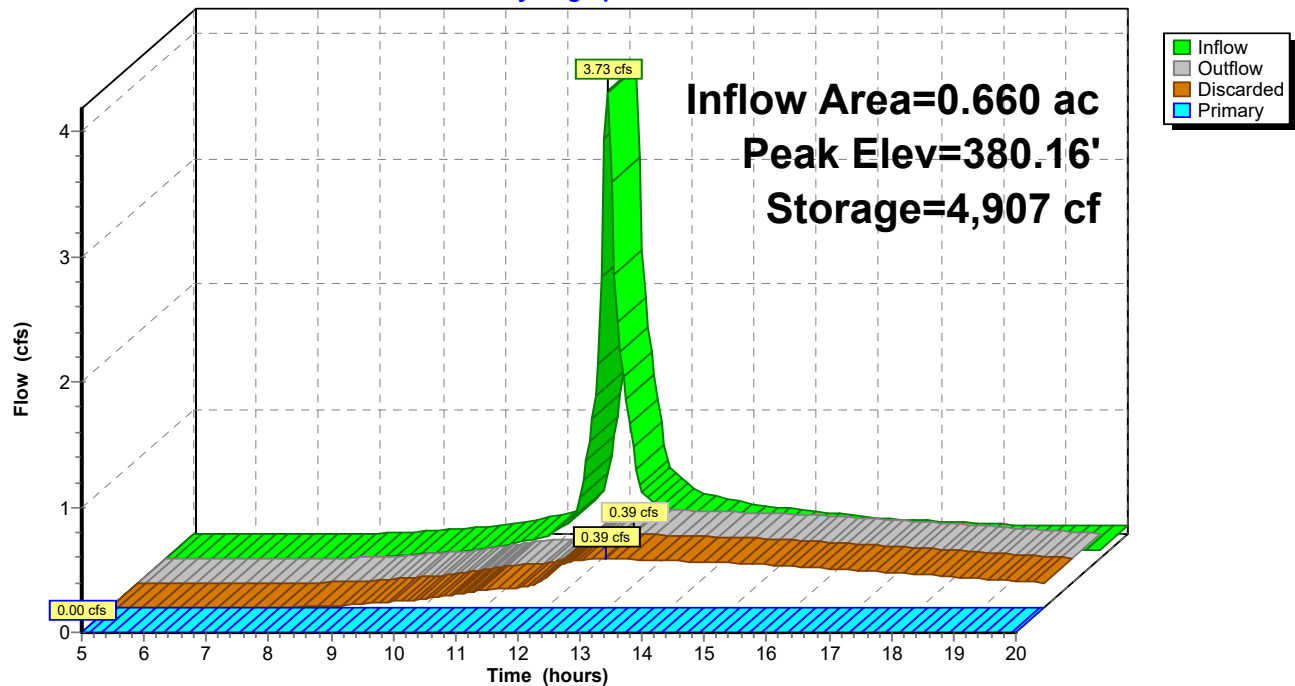
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Pond 41P: Pond #3H

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Summary for Pond 42P: Pond #3L

Inflow Area = 17.490 ac, 16.36% Impervious, Inflow Depth > 4.29" for 100-yr event
 Inflow = 55.98 cfs @ 12.19 hrs, Volume= 6.246 af
 Outflow = 38.04 cfs @ 12.51 hrs, Volume= 4.571 af, Atten= 32%, Lag= 19.3 min
 Discarded = 2.22 cfs @ 12.51 hrs, Volume= 1.694 af
 Primary = 6.50 cfs @ 12.51 hrs, Volume= 0.716 af
 Secondary = 29.32 cfs @ 12.51 hrs, Volume= 2.161 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 385.77' @ 12.51 hrs Surf.Area= 19,196 sf Storage= 87,900 cf

Plug-Flow detention time= 104.1 min calculated for 4.571 af (73% of inflow)
 Center-of-Mass det. time= 42.2 min (845.3 - 803.1)

Volume	Invert	Avail.Storage	Storage Description
#1	380.00'	112,931 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
380.00	10,344	0	0
382.00	14,437	24,781	24,781
384.00	16,823	31,260	56,041
386.00	19,506	36,329	92,370
387.00	21,616	20,561	112,931

Device	Routing	Invert	Outlet Devices
#1	Device 2	385.00'	36.0" W x 24.0" H Vert. Orifice/Grate C= 0.600
#2	Primary	381.00'	12.0" Round Culvert L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 381.00' / 380.00' S= 0.0256 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#3	Secondary	385.10'	20.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#4	Discarded	380.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=2.22 cfs @ 12.51 hrs HW=385.77' (Free Discharge)
 ↑ **4=Exfiltration** (Exfiltration Controls 2.22 cfs)

Primary OutFlow Max=6.46 cfs @ 12.51 hrs HW=385.77' (Free Discharge)
 ↑ **2=Culvert** (Passes 6.46 cfs of 7.81 cfs potential flow)
 ↑ **1=Orifice/Grate** (Orifice Controls 6.46 cfs @ 2.81 fps)

Secondary OutFlow Max=29.12 cfs @ 12.51 hrs HW=385.77' (Free Discharge)
 ↑ **3=Broad-Crested Rectangular Weir** (Weir Controls 29.12 cfs @ 2.18 fps)

Summit Woods

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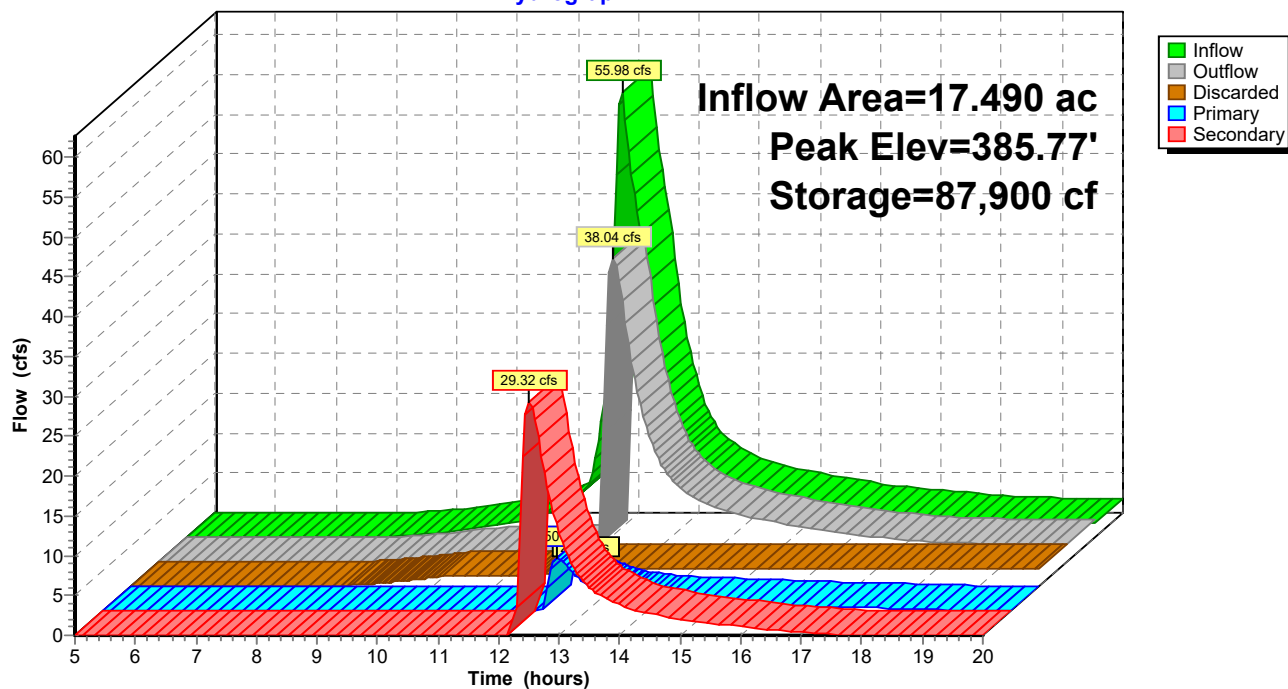
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Pond 42P: Pond #3L

Hydrograph



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Summary for Pond 43P: Pond #3J

Inflow Area = 13.580 ac, 20.62% Impervious, Inflow Depth > 5.17" for 100-yr event
 Inflow = 65.93 cfs @ 12.21 hrs, Volume= 5.853 af
 Outflow = 5.53 cfs @ 14.21 hrs, Volume= 2.947 af, Atten= 92%, Lag= 120.1 min
 Discarded = 3.81 cfs @ 14.20 hrs, Volume= 2.889 af
 Primary = 1.72 cfs @ 14.21 hrs, Volume= 0.058 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 377.35' @ 14.20 hrs Surf.Area= 32,932 sf Storage= 153,422 cf

Plug-Flow detention time= 205.6 min calculated for 2.947 af (50% of inflow)
 Center-of-Mass det. time= 123.7 min (908.1 - 784.4)

Volume	Invert	Avail.Storage	Storage Description
#1	370.00'	153,422 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
370.00	12,962	0	0
372.00	17,277	30,239	30,239
374.00	21,818	39,095	69,334
376.00	30,536	52,354	121,688
377.00	32,932	31,734	153,422

Device	Routing	Invert	Outlet Devices
#1	Primary	377.30'	54.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	370.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=3.81 cfs @ 14.20 hrs HW=377.35' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 3.81 cfs)

Primary OutFlow Max=1.21 cfs @ 14.21 hrs HW=377.34' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 1.21 cfs @ 0.50 fps)

Summit Woods

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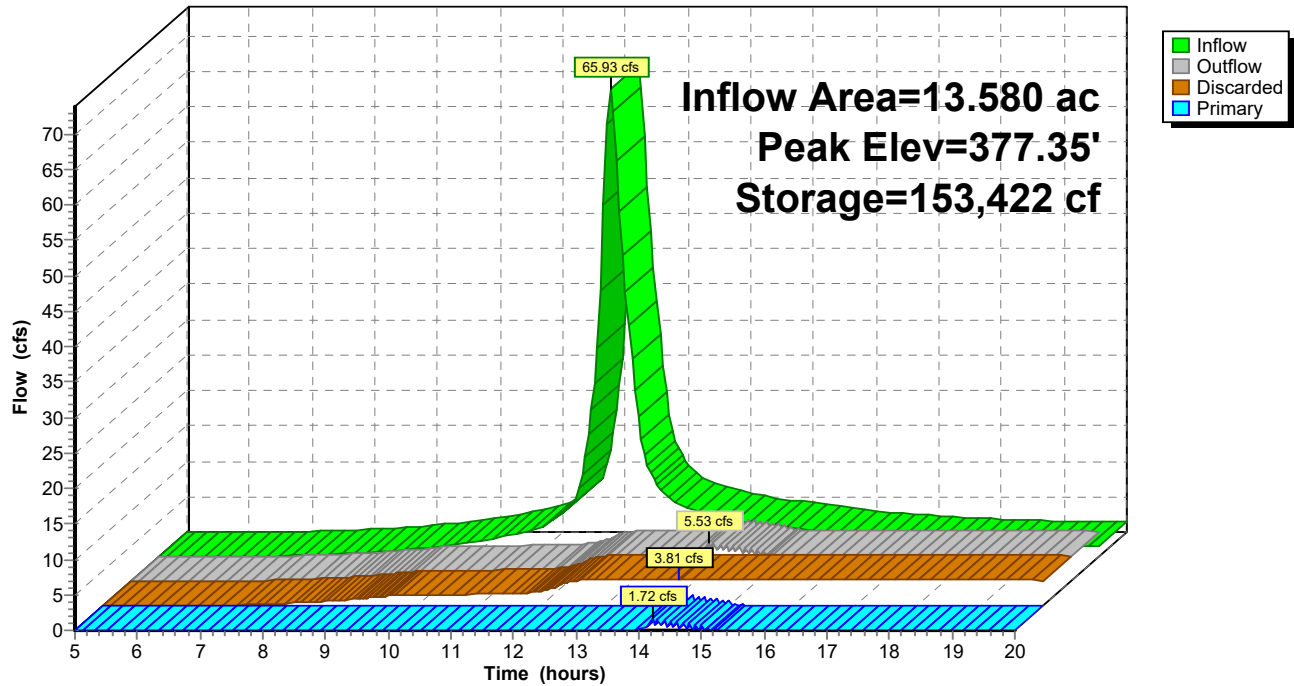
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Pond 43P: Pond #3J

Hydrograph



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Summary for Pond 44P: Pond #3K

Inflow Area = 7.550 ac, 12.29% Impervious, Inflow Depth > 4.48" for 100-yr event
 Inflow = 31.78 cfs @ 12.21 hrs, Volume= 2.817 af
 Outflow = 30.16 cfs @ 12.55 hrs, Volume= 1.411 af, Atten= 5%, Lag= 20.2 min
 Discarded = 0.65 cfs @ 12.53 hrs, Volume= 0.461 af
 Primary = 29.51 cfs @ 12.55 hrs, Volume= 0.949 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 396.71' @ 12.55 hrs Surf.Area= 13,952 sf Storage= 61,250 cf

Plug-Flow detention time= 159.0 min calculated for 1.406 af (50% of inflow)
 Center-of-Mass det. time= 78.3 min (873.4 - 795.2)

Volume	Invert	Avail.Storage	Storage Description
#1	386.00'	61,250 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
386.00	1,263	0	0
388.00	2,805	4,068	4,068
390.00	5,635	8,440	12,508
392.00	8,614	14,249	26,757
394.00	12,602	21,216	47,973
395.00	13,952	13,277	61,250

Device	Routing	Invert	Outlet Devices
#1	Primary	395.00'	4.0' 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
#2	Discarded	386.00'	2.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.65 cfs @ 12.53 hrs HW=395.89' (Free Discharge)

↑ **2=Exfiltration** (Exfiltration Controls 0.65 cfs)

Primary OutFlow Max=29.44 cfs @ 12.55 hrs HW=396.71' (Free Discharge)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 29.44 cfs @ 4.31 fps)

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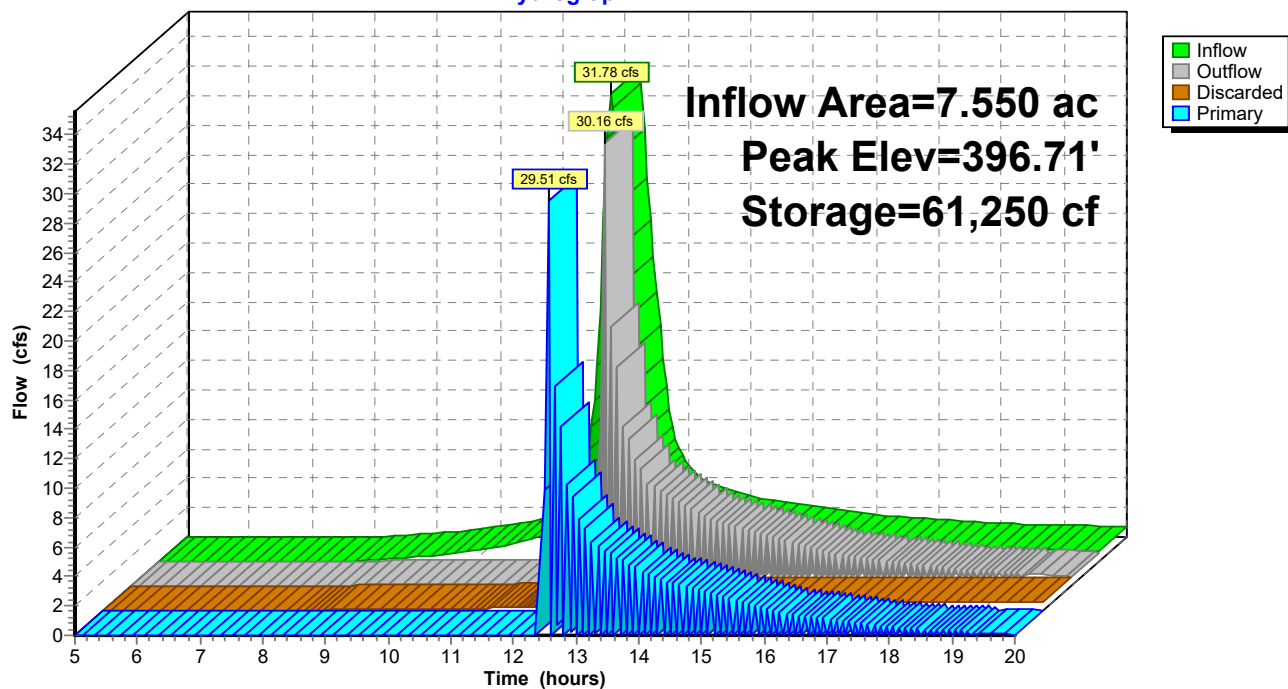
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Pond 44P: Pond #3K

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Summary for Pond 45P: Pind #3I

Volume	Invert	Avail.Storage	Storage Description
#1	402.00'	51,494 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
402.00	3,230	0	0
404.00	7,386	10,616	10,616
406.00	10,335	17,721	28,337
408.00	12,822	23,157	51,494

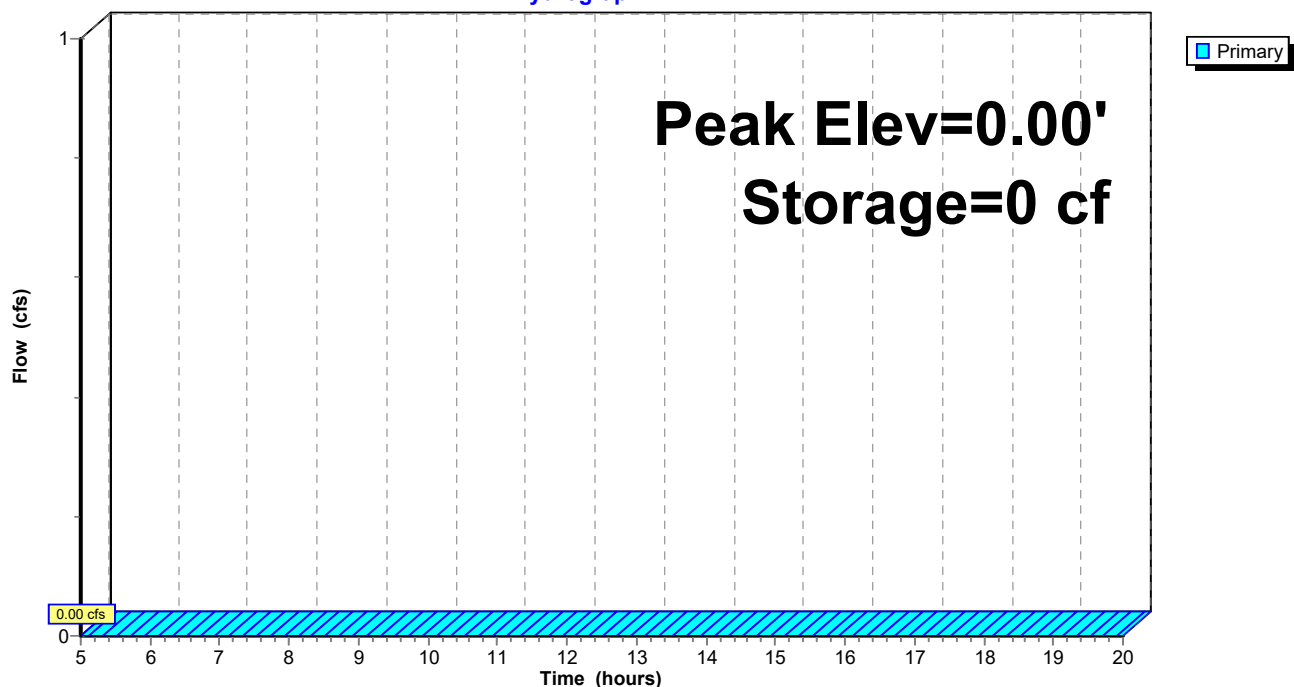
Device	Routing	Invert	Outlet Devices
#1	Primary	407.00'	8.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)

↑1=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 45P: Pind #3I

Hydrograph



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Summary for Pond 49P: Pond #6B

Inflow Area = 6.200 ac, 24.19% Impervious, Inflow Depth > 5.52" for 100-yr event
 Inflow = 30.07 cfs @ 12.23 hrs, Volume= 2.851 af
 Outflow = 22.97 cfs @ 12.60 hrs, Volume= 1.491 af, Atten= 24%, Lag= 21.9 min
 Discarded = 1.20 cfs @ 12.60 hrs, Volume= 0.928 af
 Primary = 21.77 cfs @ 12.60 hrs, Volume= 0.564 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 322.05' @ 12.60 hrs Surf.Area= 20,685 sf Storage= 63,397 cf

Plug-Flow detention time= 167.3 min calculated for 1.491 af (52% of inflow)
 Center-of-Mass det. time= 86.4 min (867.1 - 780.6)

Volume	Invert	Avail.Storage	Storage Description
#1	316.00'	63,397 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
316.00	4,611	0	0
318.00	11,260	15,871	15,871
320.00	17,282	28,542	44,413
321.00	20,685	18,984	63,397

Device	Routing	Invert	Outlet Devices
#1	Primary	321.50'	20.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	316.00'	2.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=1.20 cfs @ 12.60 hrs HW=322.05' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 1.20 cfs)

Primary OutFlow Max=21.77 cfs @ 12.60 hrs HW=322.05' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 21.77 cfs @ 1.97 fps)

Summit Woods

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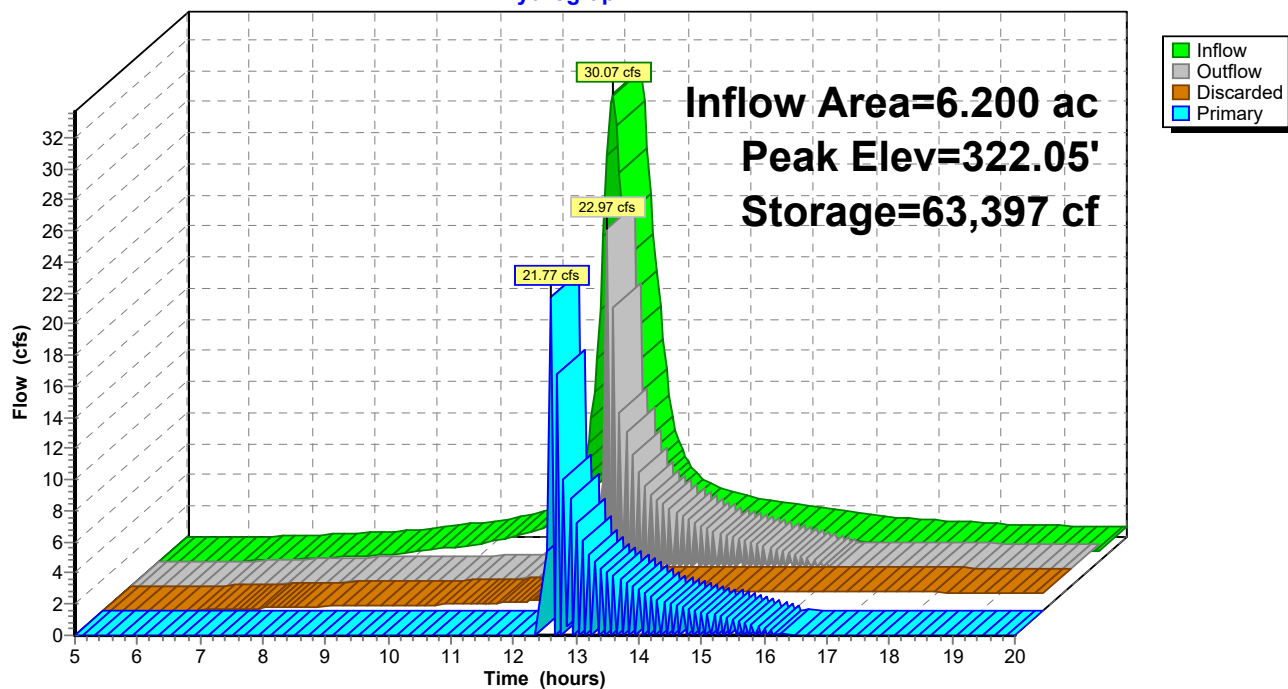
Type III 24-hr 100-yr Rainfall=8.40"

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Pond 49P: Pond #6B

Hydrograph



Summit Woods

Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Pond 50P: Pond #6C

Inflow Area = 3.260 ac, 40.43% Impervious, Inflow Depth > 4.95" for 100-yr event
 Inflow = 19.18 cfs @ 12.10 hrs, Volume= 1.345 af
 Outflow = 2.31 cfs @ 13.00 hrs, Volume= 0.961 af, Atten= 88%, Lag= 53.6 min
 Discarded = 1.37 cfs @ 12.95 hrs, Volume= 0.945 af
 Primary = 0.94 cfs @ 13.00 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 329.09' @ 13.00 hrs Surf.Area= 11,838 sf Storage= 30,059 cf

Plug-Flow detention time= 191.5 min calculated for 0.961 af (71% of inflow)
 Center-of-Mass det. time= 126.6 min (908.2 - 781.6)

Volume	Invert	Avail.Storage	Storage Description
#1	314.00'	30,059 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
314.00	4,235	0	0
316.00	6,993	11,228	11,228
318.00	11,838	18,831	30,059

Device	Routing	Invert	Outlet Devices
#1	Primary	329.00'	12.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Discarded	314.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=1.37 cfs @ 12.95 hrs HW=329.03' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 1.37 cfs)

Primary OutFlow Max=0.66 cfs @ 13.00 hrs HW=329.08' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 0.66 cfs @ 0.67 fps)

Summit Woods

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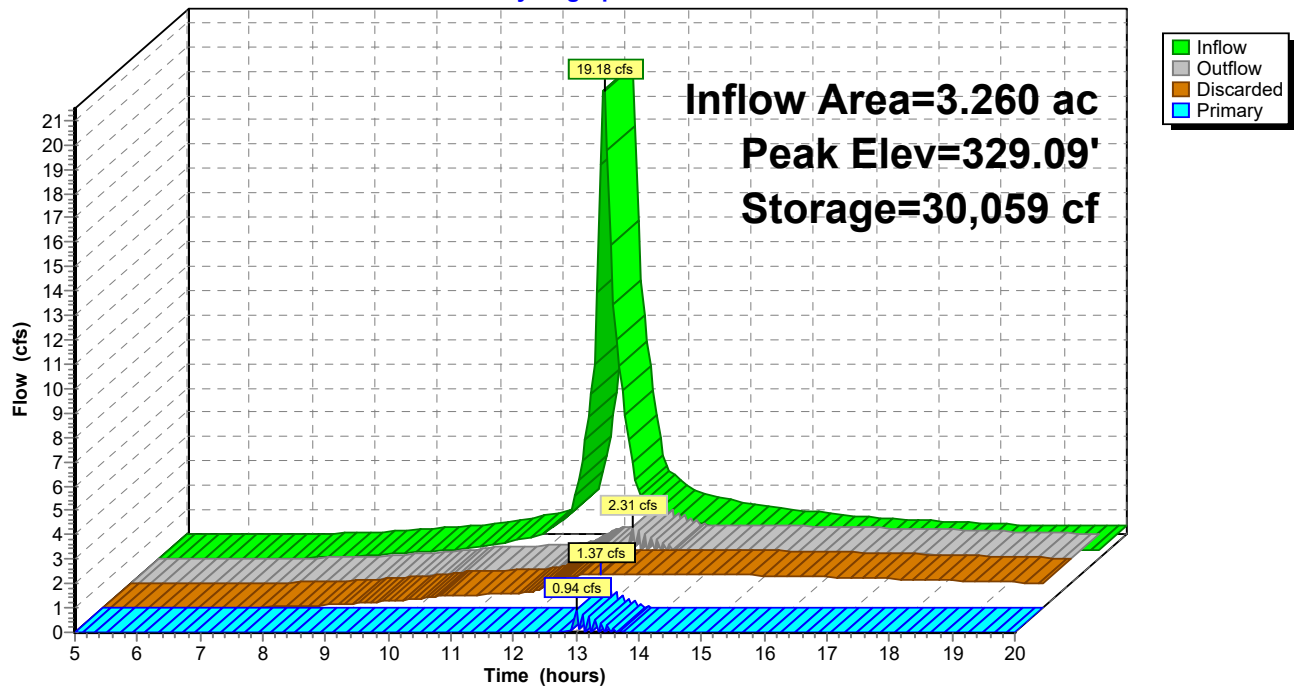
Type III 24-hr 100-yr Rainfall=8.40"

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Pond 50P: Pond #6C

Hydrograph



Summit Woods

Type III 24-hr 100-yr Rainfall=8.40"

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Summary for Pond 51P: Pond #6D

Inflow Area = 2.940 ac, 16.16% Impervious, Inflow Depth > 5.30" for 100-yr event
 Inflow = 16.92 cfs @ 12.13 hrs, Volume= 1.298 af
 Outflow = 0.89 cfs @ 14.95 hrs, Volume= 0.710 af, Atten= 95%, Lag= 168.9 min
 Discarded = 0.89 cfs @ 14.95 hrs, Volume= 0.710 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 320.67' @ 14.95 hrs Surf.Area= 15,422 sf Storage= 32,580 cf

Plug-Flow detention time= 194.9 min calculated for 0.707 af (54% of inflow)
 Center-of-Mass det. time= 116.8 min (894.8 - 778.0)

Volume	Invert	Avail.Storage	Storage Description
#1	318.00'	55,387 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.00	9,125	0	0
320.00	13,729	22,854	22,854
322.00	18,804	32,533	55,387

Device	Routing	Invert	Outlet Devices
#1	Primary	321.50'	6.0' 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
#2	Discarded	318.00'	2.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.89 cfs @ 14.95 hrs HW=320.67' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.89 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=318.00' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summit Woods

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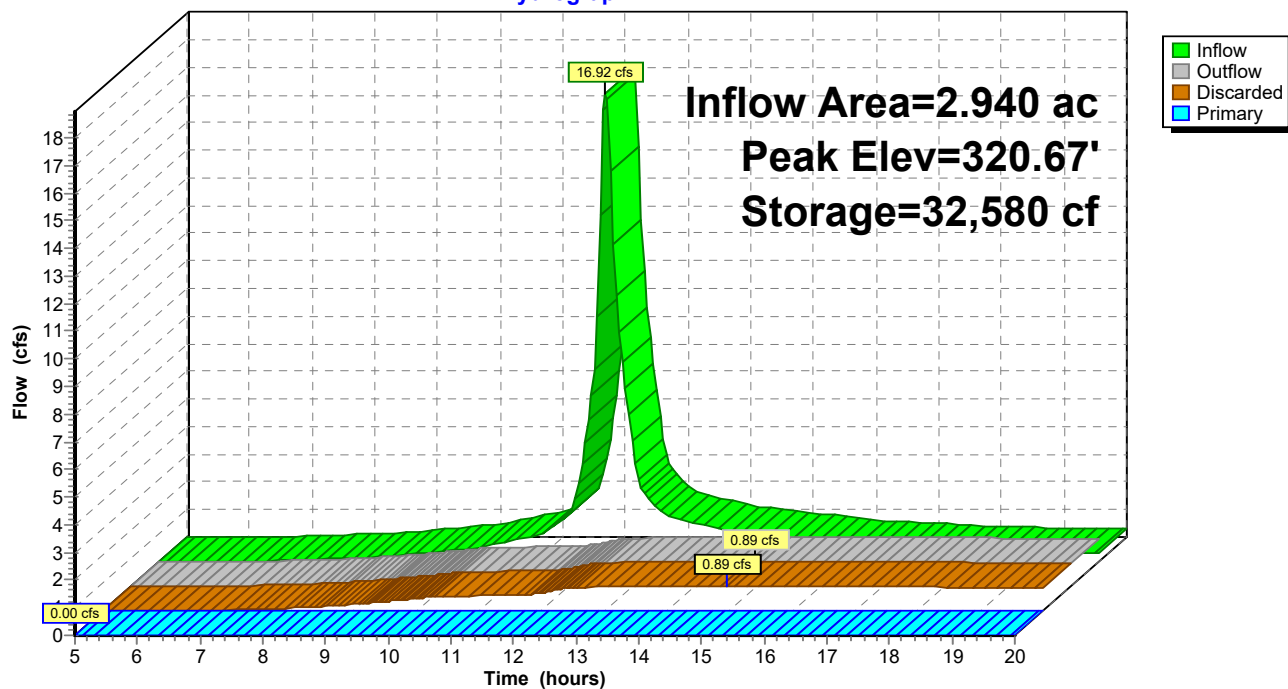
Type III 24-hr 100-yr Rainfall=8.40"

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Pond 51P: Pond #6D

Hydrograph



Appendix C

Unified Sizing Criteria Calculations

Water Quality Calculations

Area 3-A

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

- WQ_v = Water Quality Volume (acre-feet)
- P = 90% Rainfall Event Number (See Figure C)
- R_v = 0.05 + 0.009(I), where I is percent impervious cover
- A = Contributing area (acres)

Compute Impervious Cover, I:

Total Area of Drainage Area = 229.90Ac.
Impervious Area within Drainage Area = 80.6 Ac.
Percentage of Impervious Cover (I) = 3.52%

Compute Runoff Coefficient, R_v:

$$\begin{aligned} R_v &= 0.05 + (0.009)(I) \\ R_v &= 0.05 + (0.009)(3.52) \\ R_v &= 0.082 \end{aligned}$$

Compute Water Quality Volume, WQ_v:

P = 1.1 (Using the 90% Rainfall Event Number from Figure C)

$$WQ_v = \frac{(1.1)(0.82)(229.76)}{12}$$

$$\begin{aligned} WQ_v &= 17.3 \text{ ac-ft} \\ WQ_v &= 75,2294 \text{ ft}^3 \end{aligned}$$

Area 3-B

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

- WQ_v = Water Quality Volume (acre-feet)
- P = 90% Rainfall Event Number (See Figure C)
- R_v = 0.05 + 0.009(I), where I is percent impervious cover
- A = Contributing area (acres)

Compute Impervious Cover, I:

Total Area of Drainage Area = 3.43 Ac.

Impervious Area within Drainage Area = 0.87 Ac.

Percentage of Impervious Cover (I) = 25.36%

Compute Runoff Coefficient, R_v :

$$R_v = 0.05 + (0.009) (I)$$

$$R_v = 0.05 + (0.009) (25.36)$$

$$R_v = 0.27$$

Compute Water Quality Volume, WQ_v :

$P = 1.1$ (Using the 90% Rainfall Event Number from Figure C)

$$WQ_v = \frac{(1.1)(0.27)(3.43)}{12}$$

$$WQ_v = 0.08 \text{ ac-ft}$$

$$WQ_v = 3,697 \text{ ft}^3$$

Runoff Reduction Volume Calculations

The Runoff Reduction Volume (RR_v) is the reduction of the total WQ_v by application of green infrastructure technique and SMPs to replicate pre-development hydrology.

The required RR_v :

$$RR_v = \frac{(P)(R_v^*)(A_i)}{12}$$

Where:

$$A_i = (S)(A_{ic}) = 0.174$$

A_i = impervious cover targeted for runoff reduction

(A_{ic}) = Total area of new impervious cover → 0.87 acres

$R_v^* = 0.05 + 0.009(I)$ where I is 100% impervious → 0.95

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S) → 0.20

$$RR_v = [(1.1)(0.95)(0.174)] / 12 = 0.015 \text{ ac-ft} \rightarrow 660 \text{ ft}^3$$

Pond 3B RR_v provided = 0.32 acre/feet → 9,034 ft^3 (1 year storm storage)

Area 3-C

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

- WQ_v = Water Quality Volume (acre-feet)
- P = 90% Rainfall Event Number (See Figure C)
- R_v = 0.05 + 0.009(I), where I is percent impervious cover
- A = Contributing area (acres)

Compute Impervious Cover, I:

Total Area of Drainage Area = 3.08 Ac.
Impervious Area within Drainage Area = 0.68 Ac.
Percentage of Impervious Cover (I) = 22.08%

Compute Runoff Coefficient, R_v:

$$R_v = 0.05 + (0.009)(I)$$
$$R_v = 0.05 + (0.009)(22.08)$$
$$R_v = 0.24$$

Compute Water Quality Volume, WQ_v:

P = 1.1 (Using the 90% Rainfall Event Number from Figure C)

$$WQ_v = \frac{(1.1)(0.24)(3.08)}{12}$$

$$WQ_v = 0.07 \text{ ac-ft}$$
$$WQ_v = 3,049 \text{ ft}^3$$

Runoff Reduction Volume Calculations

The Runoff Reduction Volume (RR_v) is the reduction of the total WQ_v by application of green infrastructure technique and SMPs to replicate pre-development hydrology.

The required RR_v:

$$RR_v = \frac{(P)(R_v^*)(Ai)}{12}$$

Where:

$$A_i = (S)(A_{ic}) = 0.14$$

A_i = impervious cover targeted for runoff reduction

(A_{ic}) = Total area of new impervious cover $\rightarrow$ 0.68 acres

$R_v^* = 0.05 + 0.009(I)$ where I is 100% impervious $\rightarrow$ 0.95

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S) $\rightarrow$ 0.20

$$RR_v = [(1.1)(0.95)(0.68)] / 12 = 0.06 \text{ ac-ft} \rightarrow 2,579 \text{ ft}^3$$

Pond 3C RR_v provided = 0.08 acre/feet $\rightarrow$ 3,508 ft^3 (1 year storm storage)

Area 3-D

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

WQ_v = Water Quality Volume (acre-feet)

P = 90% Rainfall Event Number (See Figure C)

R_v = $0.05 + 0.009(I)$, where I is percent impervious cover

A = Contributing area (acres)

Compute Impervious Cover, I :

Total Area of Drainage Area = 6.22 Ac.

Impervious Area within Drainage Area = 1.3 Ac.

Percentage of Impervious Cover (I) = 22.80%

Compute Runoff Coefficient, R_v :

$$R_v = 0.05 + (0.009)(I)$$

$$R_v = 0.05 + (0.009)(22.80)$$

$$R_v = 0.25$$

Compute Water Quality Volume, WQ_v :

$P = 1.1$ (Using the 90% Rainfall Event Number from Figure C)

$$WQ_v = \frac{(1.1)(0.25)(1.3)}{12}$$

$$WQ_v = 0.03 \text{ ac-ft}$$

$$WQ_v = 1,297 \text{ ft}^3$$

Runoff Reduction Volume Calculations

The Runoff Reduction Volume (RR_v) is the reduction of the total WQ_v by application of green infrastructure technique and SMPs to replicate pre-development hydrology.

The required RR_v:

$$RR_v = \frac{(P)(R_v^*)(Ai)}{12}$$

Where:

$$Ai = (S)(Aic) = 0.387$$

Ai = impervious cover targeted for runoff reduction

(Aic) = Total area of new impervious cover → 1.29 acres

R_v* = 0.05 + 0.009(I) where I is 100% impervious → 0.95

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S) → 0.30

$$RR_v = [(1.1)(0.95)(0.387)] / 12 = 0.03 \text{ ac-ft} \rightarrow 1,306 \text{ ft}^3$$

Pond 3D RR_v provided = 0.21 acre/feet → 9,579 ft³ (1 year storm storage)

Area 3-E

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

WQ_v = Water Quality Volume (acre-feet)

P = 90% Rainfall Event Number (See Figure C)

R_v = 0.05 + 0.009(I), where I is percent impervious cover

A = Contributing area (acres)

Compute Impervious Cover, I:

Total Area of Drainage Area = 9.67 Ac.

Impervious Area within Drainage Area = 2.72 Ac.

Percentage of Impervious Cover (I) = 28.11%

Compute Runoff Coefficient, R_v:

$$R_v = 0.05 + (0.009)(I)$$

$$R_v = 0.05 + (0.009)(28.11)$$

$$R_v = 0.30$$

Compute Water Quality Volume, WQ_v:

P = 1.1 (Using the 90% Rainfall Event Number from Figure C)

$$WQ_v = \frac{(1.1)(0.30)(2.72)}{12}$$

$$WQ_v = 0.075 \text{ ac-ft}$$
$$WQ_v = 3,290 \text{ ft}^3$$

Runoff Reduction Volume Calculations

The Runoff Reduction Volume (RRv) is the reduction of the total WQv by application of green infrastructure technique and SMPs to replicate pre-development hydrology.

The required RRv:

$$RR_v = \frac{(P)(R_v^*)(Ai)}{12}$$

Where:

$$Ai = (S)(Aic) = 2.72 * 0.3 = 0.816$$

Ai = impervious cover targeted for runoff reduction

(Aic)= Total area of new impervious cover → 2.72 acres

Rv* = 0.05+0.009(I) where I is 100% impervious → 0.95

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S) → 0.30

$$RR_v = [(1.1)(0.95)(0.816)] / 12 = 0.07 \text{ ac-ft} \rightarrow 3,095 \text{ ft}^3$$

Pond 3E RRv provided = 0.10 acre/feet → 4,400 ft³ (31,831 ft³ = 1 year storm storage provided)

Area 3-F

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

WQ_v = Water Quality Volume (acre-feet)

P = 90% Rainfall Event Number (See Figure C)

R_v = 0.05 + 0.009(I), where I is percent impervious cover

A = Contributing area (acres)

Compute Impervious Cover, I:

Total Area of Drainage Area = 2.68 Ac.

Impervious Area within Drainage Area = 0.94 Ac.

Percentage of Impervious Cover (I) = 35.07%

Compute Runoff Coefficient, R_v :

$$\begin{aligned}R_v &= 0.05 + (0.009)(I) \\R_v &= 0.05 + (0.009)(35.07) \\R_v &= 0.815\end{aligned}$$

Compute Water Quality Volume, WQ_v :

P = 1.1 (Using the 90% Rainfall Event Number from Figure C)

$$WQ_v = \frac{(1.1)(0.815)(2.68)}{12}$$

$$\begin{aligned}WQ_v &= 0.20 \text{ ac-ft} \\WQ_v &= 8,728 \text{ ft}^3\end{aligned}$$

Runoff Reduction Volume Calculations

The Runoff Reduction Volume (RR_v) is the reduction of the total WQ_v by application of green infrastructure technique and SMPs to replicate pre-development hydrology.

The required RR_v:

$$RR_v = \frac{(P)(R_v^*)(A_i)}{12}$$

Where:

$$A_i = (S)(A_{ic}) = 0.282$$

A_i = impervious cover targeted for runoff reduction

(A_{ic}) = Total area of new impervious cover → 0.94 acres

$R_v^* = 0.05 + 0.009(I)$ where I is 100% impervious → 0.95

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S) → 0.30

$$RR_v = [(1.1)(0.95)(0.282)] / 12 = 0.02 \text{ ac-ft} \rightarrow 1,070 \text{ ft}^3$$

Pond 3F RR_v provided = 0.05 acre/feet → 3,234 ft³ (1 year storm storage)

Area 3-G

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

WQ_v = Water Quality Volume (acre-feet)

- P = 90% Rainfall Event Number (See Figure C)
 R_v = 0.05 + 0.009(I), where I is percent impervious cover
 A = Contributing area (acres)

Compute Impervious Cover, I:

Total Area of Drainage Area = 7.49 Ac.
 Impervious Area within Drainage Area = 2.52 Ac.
 Percentage of Impervious Cover (I) = 33.67%

Compute Runoff Coefficient, R_v:

$$\begin{aligned}
 R_v &= 0.05 + (0.009)(I) \\
 R_v &= 0.05 + (0.009)(33.67) \\
 R_v &= 0.35
 \end{aligned}$$

Compute Water Quality Volume, WQ_v:

P = 1.1 (Using the 90% Rainfall Event Number from Figure C)

$$WQ_v = \frac{(1.1)(0.35)(7.49)}{12}$$

$$\begin{aligned}
 WQ_v &= 0.24 \text{ ac-ft} \\
 WQ_v &= 10,468 \text{ ft}^3
 \end{aligned}$$

Runoff Reduction Volume Calculations

The Runoff Reduction Volume (RR_v) is the reduction of the total WQ_v by application of green infrastructure technique and SMPs to replicate pre-development hydrology.

The required RR_v:

$$RR_v = \frac{(P)(R_v^*)(Ai)}{12}$$

Where:

$$Ai = (S)(Aic) = 0.76$$

Ai = impervious cover targeted for runoff reduction

(Aic)= Total area of new impervious cover → 2.52 acres

R_v* = 0.05+0.009(I) where I is 100% impervious → 0.95

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S) → 0.30

$$RR_v = [(1.1)(0.95)(0.76)] / 12 = 0.06 \text{ ac-ft} \rightarrow 2,882 \text{ ft}^3$$

Pond 3G RRv provided = 0.44 acre/feet $\rightarrow$ 19,330 ft³ (1 year storm storage)

Area 3-H

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

WQ_v = Water Quality Volume (acre-feet)

P = 90% Rainfall Event Number (See Figure C)

R_v = 0.05 + 0.009(I), where I is percent impervious cover

A = Contributing area (acres)

Compute Impervious Cover, I:

Total Area of Drainage Area = 0.66 Ac.

Impervious Area within Drainage Area = 0.21 Ac.

Percentage of Impervious Cover (I) = 32.12%

Compute Runoff Coefficient, R_v:

$$R_v = 0.05 + (0.009)(I)$$

$$R_v = 0.05 + (0.009)(24.17)$$

$$R_v = 0.26$$

Compute Water Quality Volume, WQ_v:

P = 1.1 (Using the 90% Rainfall Event Number from Figure C)

$$WQ_v = \frac{(1.1)(0.21)(0.66)}{12}$$

$$WQ_v = 0.01 \text{ ac-ft}$$

$$WQ_v = 553 \text{ ft}^3$$

Runoff Reduction Volume Calculations

The Runoff Reduction Volume (RRv) is the reduction of the total WQv by application of green infrastructure technique and SMPs to replicate pre-development hydrology.

The required RRv:

$$RR_v = \frac{(P)(R_v^*)(A_i)}{12}$$

Where:

$$A_i = (S)(A_{ic}) = 0.084$$

A_i = impervious cover targeted for runoff reduction

(A_{ic}) = Total area of new impervious cover $\rightarrow$ 0.21 acres

$R_v^* = 0.05 + 0.009(I)$ where I is 100% impervious $\rightarrow$ 0.95

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S) $\rightarrow$ 0.40

$$RR_v = [(1.1)(0.95)(0.084)] / 12 = 0.007 \text{ ac-ft} \rightarrow 318 \text{ ft}^3$$

Pond 3H RR_v provided = 0.57 acre/feet $\rightarrow$ 25,109 ft^3 (1 year storm utilized storage = 282 ft^3)

Area 3-I

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

WQ_v = Water Quality Volume (acre-feet)

P = 90% Rainfall Event Number (See Figure C)

R_v = $0.05 + 0.009(I)$, where I is percent impervious cover

A = Contributing area (acres)

Compute Impervious Cover, I :

Total Area of Drainage Area = 6.15 Ac.

Impervious Area within Drainage Area = 0.84 Ac.

Percentage of Impervious Cover (I) = 13.69%

Compute Runoff Coefficient, R_v :

$$R_v = 0.05 + (0.009)(I)$$

$$R_v = 0.05 + (0.009)(13.69)$$

$$R_v = 0.17$$

Compute Water Quality Volume, WQ_v :

$P = 1.1$ (Using the 90% Rainfall Event Number from Figure C)

$$WQ_v = \frac{(1.1)(0.17)(6.15)}{12}$$

$$WQ_v = 0.095 \text{ ac-ft}$$

$$WQ_v = 4,174 \text{ ft}^3$$

Runoff Reduction Volume Calculations

The Runoff Reduction Volume (RRv) is the reduction of the total WQv by application of green infrastructure technique and SMPs to replicate pre-development hydrology.

The required RRv:

$$RR_v = \frac{(P)(R_v^*)(Ai)}{12}$$

Where:

$$Ai = (S)(Aic) = 0.25$$

Ai = impervious cover targeted for runoff reduction

(Aic)= Total area of new impervious cover → 0.84 acres

Rv* = 0.05+0.009(I) where I is 100% impervious → 0.95

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S) → 0.30

$$RR_v = [(1.1)(0.95)(0.25)] / 12 = 0.02 \text{ ac-ft} \rightarrow 948 \text{ ft}^3$$

Pond 3I RRv provided = 0.57 acre/feet → 25,109 ft³ (1 year storm utilized storage = 282 ft³)

Area 3-J

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

WQ_v = Water Quality Volume (acre-feet)

P = 90% Rainfall Event Number (See Figure C)

R_v = 0.05 + 0.009(I), where I is percent impervious cover

A = Contributing area (acres)

Compute Impervious Cover, I:

Total Area of Drainage Area = 13.58 Ac.

Impervious Area within Drainage Area = 2.80 Ac.

Percentage of Impervious Cover (I) = 20.62%

Compute Runoff Coefficient, R_v:

$$R_v = 0.05 + (0.009) (I)$$

$$R_v = 0.05 + (0.009) (20.62)$$

$$R_v = 0.24$$

Compute Water Quality Volume, WQ_v:

P = 1.1 (Using the 90% Rainfall Event Number from Figure C)

$$WQ_v = \frac{(1.1)(0.24)(13.58)}{12}$$

$$WQ_v = 0.29 \text{ ac-ft}$$

$$WQ_v = 12,632 \text{ ft}^3$$

Runoff Reduction Volume Calculations

The Runoff Reduction Volume (RR_v) is the reduction of the total WQ_v by application of green infrastructure technique and SMPs to replicate pre-development hydrology.

The required RR_v:

$$RR_v = \frac{(P)(R_v^*)(Ai)}{12}$$

Where:

$$Ai = (S)(Aic) = 0.56$$

Ai = impervious cover targeted for runoff reduction

(Aic) = Total area of new impervious cover → 2.80 acres

R_v* = 0.05 + 0.009(I) where I is 100% impervious → 0.95

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S) → 0.20

$$RR_v = [(1.1)(0.95)(0.56)] / 12 = 0.05 \text{ ac-ft} \rightarrow 3,484 \text{ ft}^3$$

Pond 3J RR_v provided = 0.31 acre/feet → 13,579 ft³ (1 year storm storage volume)

Area 3-K

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

WQ_v = Water Quality Volume (acre-feet)

P = 90% Rainfall Event Number (See Figure C)

R_v = 0.05 + 0.009(I), where I is percent impervious cover

A = Contributing area (acres)

Compute Impervious Cover, I:

Total Area of Drainage Area = 7.55 Ac.
 Impervious Area within Drainage Area = 0.93 Ac.
 Percentage of Impervious Cover (I) = 12.29%

Compute Runoff Coefficient, R_v :

$$R_v = 0.05 + (0.009)(I)$$

$$R_v = 0.05 + (0.009)(12.29)$$

$$R_v = 0.16$$

Compute Water Quality Volume, WQ_v :

$P = 1.1$ (Using the 90% Rainfall Event Number from Figure C)

$$WQ_v = \frac{(1.1)(0.16)(7.55)}{12}$$

$$WQ_v = 0.11 \text{ ac-ft}$$

$$WQ_v = 4,824 \text{ ft}^3$$

Runoff Reduction Volume Calculations

The Runoff Reduction Volume (RR_v) is the reduction of the total WQ_v by application of green infrastructure technique and SMPs to replicate pre-development hydrology.

The required RR_v :

$$RR_v = \frac{(P)(R_v^*)(A_i)}{12}$$

Where:

$$A_i = (S)(A_{ic}) = 0.372$$

A_i = impervious cover targeted for runoff reduction

(A_{ic}) = Total area of new impervious cover → 0.93 acres

$R_v^* = 0.05 + 0.009(I)$ where I is 100% impervious → 0.95

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S) → 0.40

$$RR_v = [(1.1)(0.95)(0.372)] / 12 = 0.03 \text{ ac-ft} \rightarrow 1,411 \text{ ft}^3$$

(1 year storm storage volume)

Area 3-L

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

- WQ_v = Water Quality Volume (acre-feet)
- P = 90% Rainfall Event Number (See Figure C)
- R_v = 0.05 + 0.009(I), where I is percent impervious cover
- A = Contributing area (acres)

Compute Impervious Cover, I:

- Total Area of Drainage Area = 11.34 Ac.
- Impervious Area within Drainage Area = 2.02 Ac.
- Percentage of Impervious Cover (I) = 17.81%

Compute Runoff Coefficient, R_v:

$$\begin{aligned} R_v &= 0.05 + (0.009)(I) \\ R_v &= 0.05 + (0.009)(17.81) \\ R_v &= 0.21 \end{aligned}$$

Compute Water Quality Volume, WQ_v:

P = 1.1 (Using the 90% Rainfall Event Number from Figure C)

$$WQ_v = \frac{(1.1)(0.21)(11.34)}{12}$$

$$\begin{aligned} WQ_v &= 0.22 \text{ ac-ft} \\ WQ_v &= 9,583 \text{ ft}^3 \end{aligned}$$

Runoff Reduction Volume Calculations

The Runoff Reduction Volume (RR_v) is the reduction of the total WQ_v by application of green infrastructure technique and SMPs to replicate pre-development hydrology.

The required RR_v:

$$RR_v = \frac{(P)(R_v^*)(A_i)}{12}$$

Where:

$$A_i = (S)(A_{ic}) = .81$$

A_i = impervious cover targeted for runoff reduction

(A_{ic}) = Total area of new impervious cover → 2.02 acres

$R_v^* = 0.05 + 0.009(I)$ where I is 100% impervious → 0.95

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S) → 0.40

$$RR_v = [(1.1)(0.95)(.81)] / 12 = 0.07 \text{ ac-ft} \rightarrow 3,072 \text{ ft}^3$$

Pond 3L RR_v provided = 0.17 acre/feet → 7,515 ft^3 (1 year storm storage volume)

Area 6-B

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

WQ_v = Water Quality Volume (acre-feet)

P = 90% Rainfall Event Number (See Figure C)

R_v = $0.05 + 0.009(I)$, where I is percent impervious cover

A = Contributing area (acres)

Compute Impervious Cover, I :

Total Area of Drainage Area = 6.20 Ac.

Impervious Area within Drainage Area = 1.50 Ac.

Percentage of Impervious Cover (I) = 24.19%

Compute Runoff Coefficient, R_v :

$$R_v = 0.05 + (0.009)(I)$$

$$R_v = 0.05 + (0.009)(24.19)$$

$$R_v = 0.27$$

Compute Water Quality Volume, WQ_v :

$P = 1.1$ (Using the 90% Rainfall Event Number from Figure C)

$$WQ_v = \frac{(1.1)(0.27)(6.20)}{12}$$

$$WQ_v = 0.15 \text{ ac-ft}$$

$$WQ_v = 6,684 \text{ ft}^3$$

Runoff Reduction Volume Calculations

The Runoff Reduction Volume (RRv) is the reduction of the total WQv by application of green infrastructure technique and SMPs to replicate pre-development hydrology.

The required RRv:

$$RR_v = \frac{(P)(R_v^*)(Ai)}{12}$$

Where:

$$Ai = (S)(Aic) = 0.45$$

Ai = impervious cover targeted for runoff reduction

(Aic)= Total area of new impervious cover → 1.50 acres

Rv* = 0.05+0.009(I) where I is 100% impervious → 0.95

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S) → 0.30

$$RR_v = [(1.1)(0.95)(0.45)] / 12 = 0.04 \text{ ac-ft} \rightarrow 1,707 \text{ ft}^3$$

Pond 6B RRv provided = 0.22 acre/feet → 9,735 ft³ (1 year storm storage volume)

Area 6C

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

WQ_v = Water Quality Volume (acre-feet)

P = 90% Rainfall Event Number (See Figure C)

R_v = 0.05 + 0.009(I), where I is percent impervious cover

A = Contributing area (acres)

Compute Impervious Cover, I:

Total Area of Drainage Area = 3.26 Ac.

Impervious Area within Drainage Area = 0.73 Ac.

Percentage of Impervious Cover (I) = 40.43%

Compute Runoff Coefficient, R_v:

$$R_v = 0.05 + (0.009) (I)$$

$$R_v = 0.05 + (0.009) (43.43)$$

$$R_v = 0.41$$

Compute Water Quality Volume, WQ_v:

P = 1.1 (Using the 90% Rainfall Event Number from Figure C)

$$WQ_v = \frac{(1.1)(0.41)(3.26)}{12}$$

$$WQ_v = 0.12 \text{ ac-ft}$$

$$WQ_v = 5,387 \text{ ft}^3$$

Runoff Reduction Volume Calculations

The Runoff Reduction Volume (RR_v) is the reduction of the total WQ_v by application of green infrastructure technique and SMPs to replicate pre-development hydrology.

The required RR_v:

$$RR_v = \frac{(P)(R_v^*)(Ai)}{12}$$

Where:

$$Ai = (S)(Aic) = 0.292$$

Ai = impervious cover targeted for runoff reduction

(Aic)= Total area of new impervious cover → 0.73 acres

Rv* = 0.05+0.009(I) where I is 100% impervious → 0.95

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S) → 0.40

$$RR_v = [(1.1)(0.95)(0.292)] / 12 = 0.03 \text{ ac-ft} \rightarrow 1,107 \text{ ft}^3$$

Pond 6C RR_v provided = 0.06 acre/feet → 2,444 ft³ (1 year storm storage volume)

Area 6D-1

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

WQ_v = Water Quality Volume (acre-feet)

P = 90% Rainfall Event Number (See Figure C)

$$R_v = 0.05 + 0.009(I), \text{ where } I \text{ is percent impervious cover}$$

$$A = \text{Contributing area (acres)}$$

Compute Impervious Cover, I:

$$\begin{aligned} \text{Total Area of Drainage Area} &= 2.94 \text{ Ac.} \\ \text{Impervious Area within Drainage Area} &= 0.48 \text{ Ac.} \\ \text{Percentage of Impervious Cover (I)} &= 16.16\% \end{aligned}$$

Compute Runoff Coefficient, R_v :

$$\begin{aligned} R_v &= 0.05 + (0.009)(I) \\ R_v &= 0.05 + (0.009)(16.16) \\ R_v &= 0.19 \end{aligned}$$

Compute Water Quality Volume, WQ_v :

$$P = 1.1 \text{ (Using the 90\% Rainfall Event Number from Figure C)}$$

$$WQ_v = \frac{(1.1)(0.19)(2.94)}{12}$$

$$WQ_v = 0.05 \text{ ac-ft}$$

$$WQ_v = 2,230 \text{ ft}^3$$

Runoff Reduction Volume Calculations

The Runoff Reduction Volume (RR_v) is the reduction of the total WQ_v by application of green infrastructure technique and SMPs to replicate pre-development hydrology.

The required RR_v :

$$RR_v = \frac{(P)(R_v^*)(A_i)}{12}$$

Where:

$$A_i = (S)(A_{ic}) = 0.144$$

A_i = impervious cover targeted for runoff reduction

(A_{ic}) = Total area of new impervious cover $\rightarrow 0.48$ acres

$R_v^* = 0.05 + 0.009(I)$ where I is 100% impervious $\rightarrow 0.95$

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S) $\rightarrow 0.30$

$$RR_v = [(1.1)(0.95)(0.144)] / 12 = 0.013 \text{ ac-ft} \rightarrow 546 \text{ ft}^3$$

Pond 6D-1 RR_v provided = 0.06 acre/feet $\rightarrow 2,828 \text{ ft}^3$ (1 year storm storage volume)

Appendix D

NYSOPRHP Correspondence



New York State Office of Parks, Recreation and Historic Preservation

Historic Preservation Field Services Bureau • Peebles Island, PO Box 189, Waterford, New York 12188-0189

518-237-8643

www.nysparks.com



Andrew M. Cuomo
Governor

Rose Harvey
Commissioner

April 26, 2012

David Lynch
M.A. Day Engineering, PC
3 Van Wyck Lane
Suite 2
Wappingers Falls, NY 12590

Re: DEC
Van Orden Site 1 Avoidance Plan
Summit Woods Subdivision
NY Route 52, north of I-84/EAST FISHKILL,
Dutchess County
10PR06152

Dear Mr. Lynch:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP) concerning your project's potential impact/effect upon historic and/or prehistoric cultural resources. Our staff has received the revised avoidance plan you recently submitted which illustrates that Lot 30 has been shifted to avoid impacting the Van Orden Site Locus 1 (Unique Site Number A02705.000281) and identifies how the lot will be protected during construction by the erection of protective fencing, and into the future by a requirement to consult with office for any future changes to the plans. Based on this review it is our opinion that your project will have No Adverse Impact on Historic Resources with the condition that this avoidance plan is followed.

When responding, please be sure to refer to the OPRHP Project Review (PR) number noted above. Please contact me at extension 3291, or by e-mail at douglas.mackey@oprhp.state.ny.us, if you have any questions regarding these comments.

Sincerely

Douglas P. Mackey
Historic Preservation Program Analyst
Archaeology

Appendix E

SPDES General Permit for Stormwater Discharges from Construction Activity

Permit No. GP-0-20-001



Department of
Environmental
Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

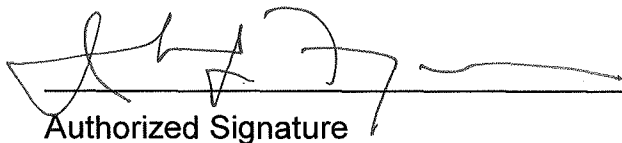
Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator



Authorized Signature

1-23-20
Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act (“CWA”), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System (“NPDES”)* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of “*construction activity*”, as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM
CONSTRUCTION ACTIVITIES**

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;
2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State*.
3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

Discharges authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge of pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

- a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:
- (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharges*;
 - (ii) Control stormwater *discharges*, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;
 - (iii) *Minimize* the amount of soil exposed during *construction activity*;
 - (iv) *Minimize* the disturbance of *steep slopes*;
 - (v) *Minimize* sediment *discharges* from the site;
 - (vi) Provide and maintain *natural buffers* around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharges*, unless *infeasible*;
 - (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;
 - (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and
 - (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.
- b. **Soil Stabilization.** In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

- c. **Dewatering.** *Discharges* from *dewatering* activities, including *discharges* from *dewatering* of trenches and excavations, must be managed by appropriate control measures.
- d. **Pollution Prevention Measures.** Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:
 - (i) *Minimize the discharge of pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;
 - (ii) *Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater.* Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge of pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and
 - (iii) Prevent the *discharge of pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.
- e. **Prohibited Discharges.** The following *discharges* are prohibited:
 - (i) Wastewater from washout of concrete;
 - (ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

- (iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;
 - (iv) Soaps or solvents used in vehicle and equipment washing; and
 - (v) Toxic or hazardous substances from a spill or other release.
- f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual (“Design Manual”), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices (“SMPs”) are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.
2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

- (i) Runoff Reduction Volume (“RRv”): Reduce the total Water Quality Volume (“WQv”) by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.
- (ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

- (iii) Channel Protection Volume (“Cpv”): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
 - (1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
 - (2) The site discharges directly to tidal waters, or fifth order or larger streams.
- (iv) *Overbank* Flood Control Criteria (“Qp”): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - (1) the site discharges directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.
- (v) Extreme Flood Control Criteria (“Qf”): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - (1) the site discharges directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.

b. Sizing Criteria for New Development in Enhanced Phosphorus Removal Watershed

- (i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

- (ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

- (iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
 - (1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
 - (2) The site *discharges* directly to tidal waters, or fifth order or larger streams.
- (iv) Overbank Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.
- (v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

- (i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.
 - (1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or
 - (2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRV capacity., or
 - (3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or
 - (4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

- (ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.
- (iii) Overbank Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.
- (iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;
2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and
3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity to surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.
2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharges*; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.
3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: “Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned”; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharges* from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.
4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharges after construction activities* have been completed and the site has undergone *final stabilization*;
2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;
3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;
4. *Construction activities or discharges from construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;
6. *Construction activities* for residential, commercial and institutional projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which are undertaken on land with no existing *impervious cover*; and
 - c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.
7. *Construction activities* for linear transportation projects and linear utility projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which are undertaken on land with no existing *impervious cover*; and
 - c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:
- a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.
 - 1-5 acres of disturbance - 20 feet
 - 5-20 acres of disturbance - 50 feet
 - 20+ acres of disturbance - 100 feet, or
 - b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
 - (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
 - (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
 - (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
 - (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or
 - c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

- (i) No Affect
- (ii) No Adverse Affect
- (iii) Executed Memorandum of Agreement, or

d. Documentation that:

- (i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharges from construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.
2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.
3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of Owner or Operator) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (<http://www.dec.ny.gov/>). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

**NOTICE OF INTENT
NYS DEC, Bureau of Water Permits
625 Broadway, 4th Floor
Albany, New York 12233-3505**

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.
3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.
4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.
2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:
 - a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (<http://www.dec.ny.gov/>) for more information,
 - b. where required, all necessary Department permits subject to the *Uniform Procedures Act* ("UPA") (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators of construction activities* that are required to obtain UPA permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

- c. the final SWPPP has been prepared, and
 - d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.
3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:
- a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:
 - (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or
 - (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;
 - (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

- b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:
 - (i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed “MS4 SWPPP Acceptance” form, or
 - (ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed “MS4 SWPPP Acceptance” form.
- 4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

- 1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination (“NOT”) has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.
- 2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor’s or subcontractor’s certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.
- 3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the regulated, traditional land use control MS4 (provided the regulated, traditional land use control MS4 is not the owner or operator of the construction activity). At a minimum, the owner or operator must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

- a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
 - b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.
 - c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.
 - d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.
 - e. The *owner or operator* shall include the requirements above in their SWPPP.
4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..
 5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.
 6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of a *construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4*, the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.
2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.
3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.
2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.
3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.
4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:
 - a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

- b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;
 - c. to address issues or deficiencies identified during an inspection by the *qualified inspector*, the Department or other regulatory authority; and
 - d. to document the final construction conditions.
5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.
6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor*. The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:
 - a. Background information about the scope of the project, including the location, type and size of project

- b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge(s)*;
- c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);
- d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;
- e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;
- f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;
- g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;
- h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;
- i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

- j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;
 - k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and
 - l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.
2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

The post-construction stormwater management practice component of the SWPPP shall include the following:

- a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

- b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;
- c. A Stormwater Modeling and Analysis Report that includes:
 - (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;
 - (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;
 - (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;
 - (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;
 - (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and
 - (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;
- d. Soil testing results and locations (test pits, borings);
- e. Infiltration test results, when required; and
- f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria*, Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators of construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators of the construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.
2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.
3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
 - Certified Professional in Erosion and Sediment Control (CPESC),
 - New York State Erosion and Sediment Control Certificate Program holder
 - Registered Landscape Architect, or
 - someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].
1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:
 - a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

- b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;
 - c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and
 - d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.
2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:
- a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.
 - b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
 - c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

- d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization*, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the “*Final Stabilization*” and “*Post-Construction Stormwater Management Practice*” certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.
 - e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization*, all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.
 4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

- a. Date and time of inspection;
- b. Name and title of person(s) performing inspection;
- c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
- d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
- e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;
- f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;
- g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
- h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;
- i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
- j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);
- k. Identification and status of all corrective actions that were required by previous inspection; and

- I. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.
5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.
6. All inspection reports shall be signed by the *qualified inspector*. Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.
2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:
 - a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

- b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;
 - c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.
 - d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.
3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the “*Final Stabilization*” and “Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.
4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the “MS4 Acceptance” statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector’s* final site inspection certification(s) required in Part V.A.3. of this permit.
5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:
- a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

- b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),
- c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,
- d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator*, its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to \$37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit, or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:
 - a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

- (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
 - (ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
 - b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or
 - c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:
 - (i) the chief executive officer of the agency, or
 - (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).
2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:
- a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

- c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.
3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.
4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4*, or by a duly authorized representative of that person.

It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge(s)*, the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner's or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.
4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.
2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property – means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State” prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both “sewage” and “stormwater”.

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for “*Construction Activity(ies)*” also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for “*Commence (Commencement of) Construction Activities*” and “*Larger Common Plan of Development or Sale*” also.

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment – means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department’s rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

- (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State;
- (ii) Designed or used for collecting or conveying stormwater;
- (iii) Which is not a *combined sewer*; and
- (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer – means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the “Required Elements” sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means 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 infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank Flood* (Qp), and *Extreme Flood* (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture (“USDA”) Soil Survey as Soil Slope Phase “D”, (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint sources*. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint sources*, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres: • Single family home <u>not</u> located in one of the watersheds listed in Appendix C or <u>not directly discharging</u> to one of the 303(d) segments listed in Appendix E • Single family residential subdivisions with 25% or less impervious cover at total site build-out and <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E • Construction of a barn or other <i>agricultural building</i>, silo, stock yard or pen.
The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land: All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.
The following construction activities that involve soil disturbances of one (1) or more acres of land: • Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains • Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects • Pond construction • Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover • Cross-country ski trails and walking/hiking trails • Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development; • Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path. • Slope stabilization projects • Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

**Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP
THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS**

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State”, excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES
POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development conditions*
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

**CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES
POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES**

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover*, and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual (“Design Manual”).

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

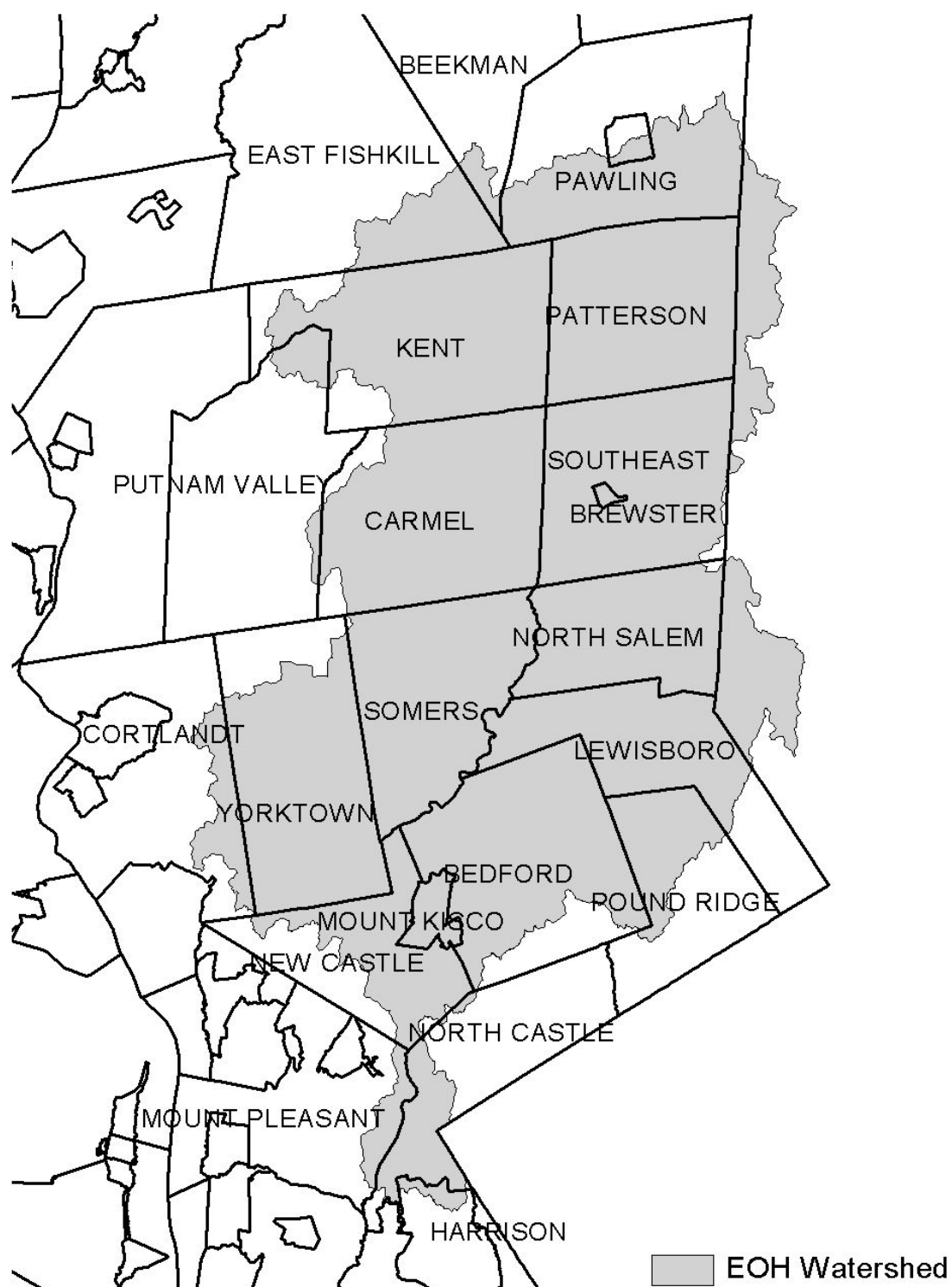
Figure 1 - New York City Watershed East of the Hudson

Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

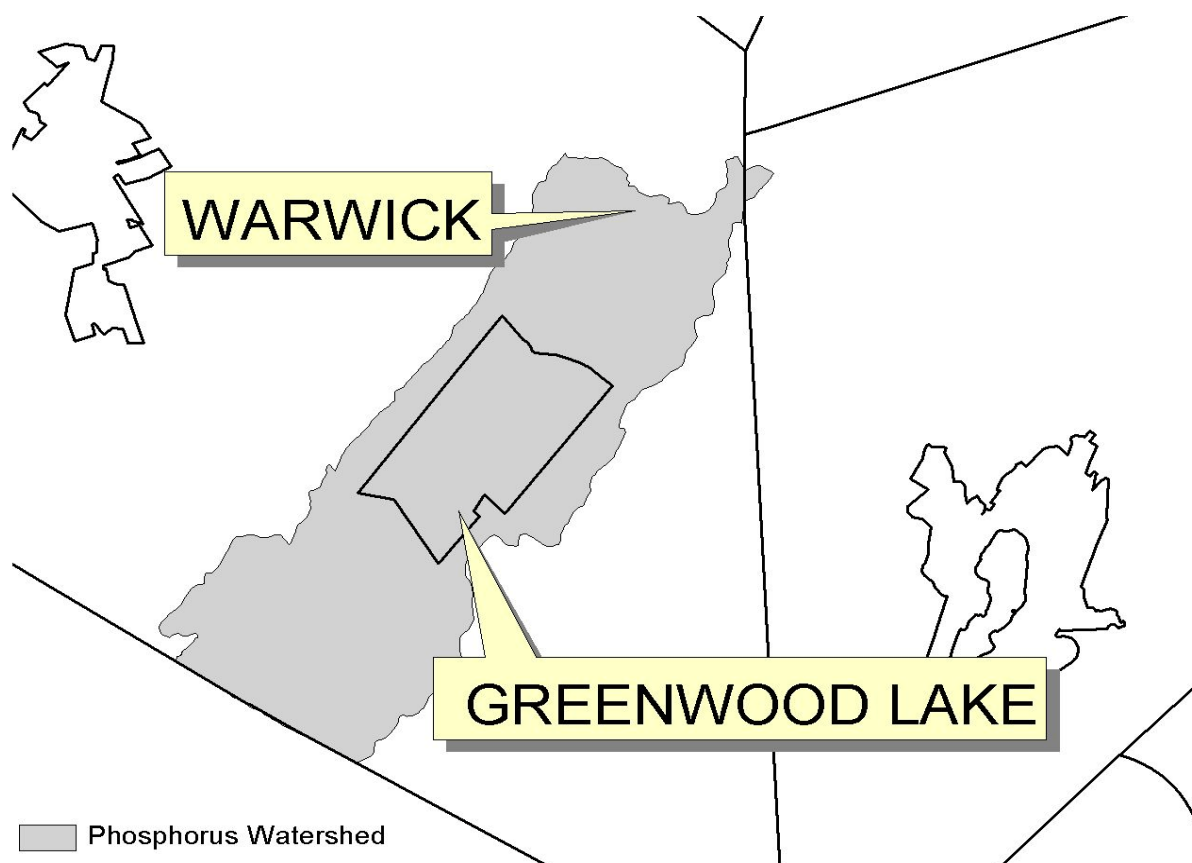


Figure 4 - Oscawana Lake Watershed

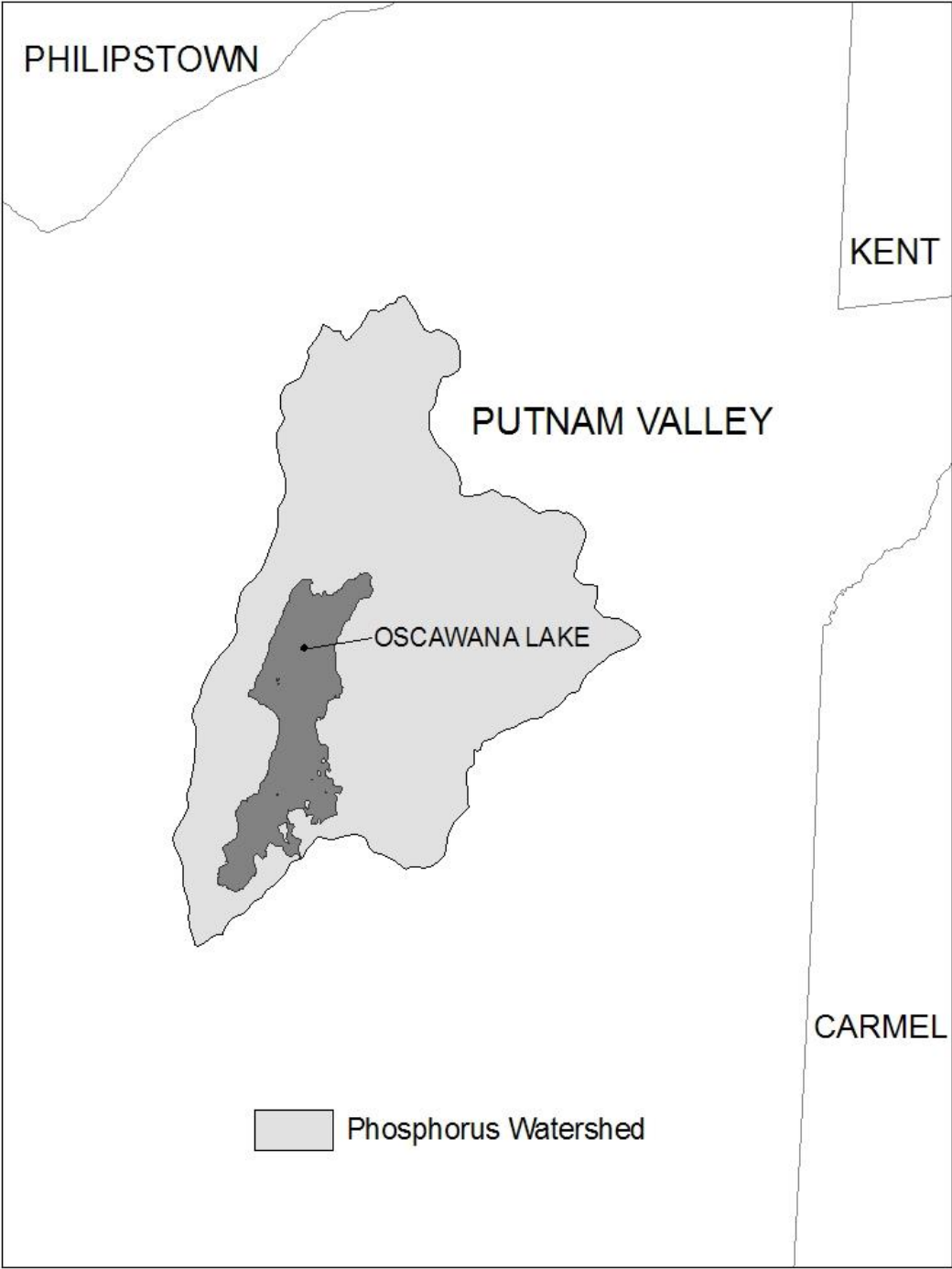
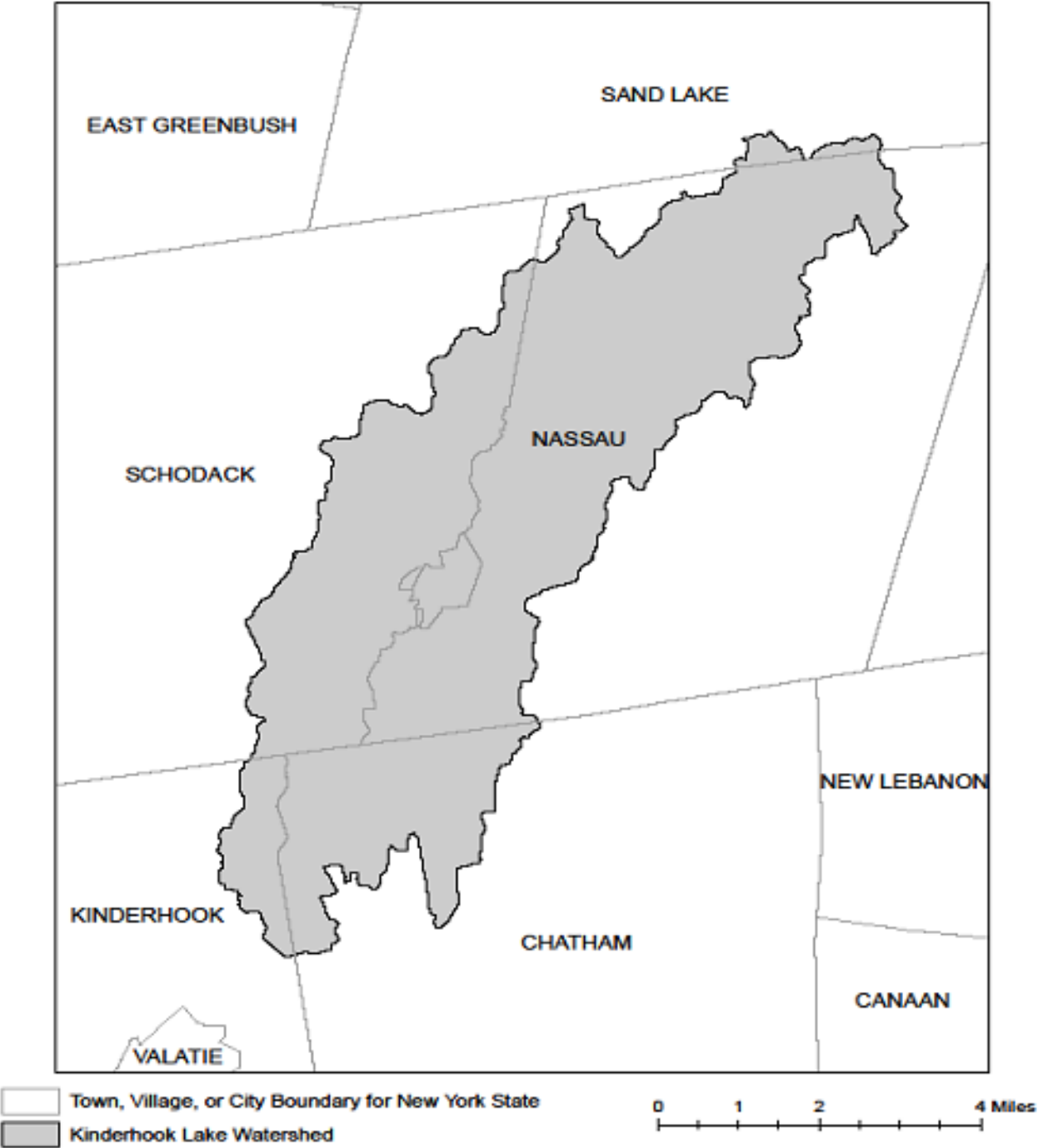


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

<u>Region</u>	<u>COVERING THE FOLLOWING COUNTIES:</u>	<u>DIVISION OF ENVIRONMENTAL PERMITS (DEP) PERMIT ADMINISTRATORS</u>	<u>DIVISION OF WATER (DOW) WATER (SPDES) PROGRAM</u>
1	NASSAU AND SUFFOLK	50 CIRCLE ROAD STONY BROOK, NY 11790 TEL. (631) 444-0365	50 CIRCLE ROAD STONY BROOK, NY 11790-3409 TEL. (631) 444-0405
2	BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4997	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4933
3	DUTCHESS, ORANGE, PUTNAM, ROCKLAND, SULLIVAN, ULSTER AND WESTCHESTER	21 SOUTH PUTT CORNERS ROAD NEW PALTZ, NY 12561-1696 TEL. (845) 256-3059	100 HILLSIDE AVENUE, SUITE 1W WHITE PLAINS, NY 10603 TEL. (914) 428 - 2505
4	ALBANY, COLUMBIA, DELAWARE, GREENE, MONTGOMERY, OTSEGO, RENSSELAER, SCHENECTADY AND SCHOHARIE	1150 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2069	1130 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2045
5	CLINTON, ESSEX, FRANKLIN, FULTON, HAMILTON, SARATOGA, WARREN AND WASHINGTON	1115 STATE ROUTE 86, Po Box 296 RAY BROOK, NY 12977-0296 TEL. (518) 897-1234	232 GOLF COURSE ROAD WARRENSBURG, NY 12885-1172 TEL. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

Appendix F

Notice of Intent (eNOI)

**TO BE COMPLETED PRIOR TO SITE
DISTURBANCE**

Appendix G

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form



Department of
Environmental
Conservation

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit
*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information

1. Owner/Operator Name:

2. Contact Person:

3. Street Address:

4. City/State/Zip:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/State/Zip:

III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information

8. SWPPP Reviewed by:

9. Title/Position:

10. Date Final SWPPP Reviewed and Accepted:

IV. Regulated MS4 Information

11. Name of MS4:

12. MS4 SPDES Permit Identification Number: NYR20A

13. Contact Person:

14. Street Address:

15. City/State/Zip:

16. Telephone Number:

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

Appendix H

Notice of Termination (NOT)

(To Be Completed Upon Completion of Project)



New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized
under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ____

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person:

4a. Telephone:

5. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. ☐ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP.

***Date final stabilization completed** (month/year): _____

9b. ☐ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ____

(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. ☐ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? ☐ yes ☐ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? ☐ yes ☐ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

**NOTICE OF TERMINATION for Storm Water Discharges Authorized under the
SPDES General Permit for Construction Activity - continued**

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? ☐ yes ☐ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

- ☐ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.
- ☐ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).
- ☐ For post-construction stormwater management practices that are privately owned, the deed of record has been modified to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.
- ☐ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? ☐ yes ☐ no
(If Yes, complete section VI - "MS4 Acceptance" statement)

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:

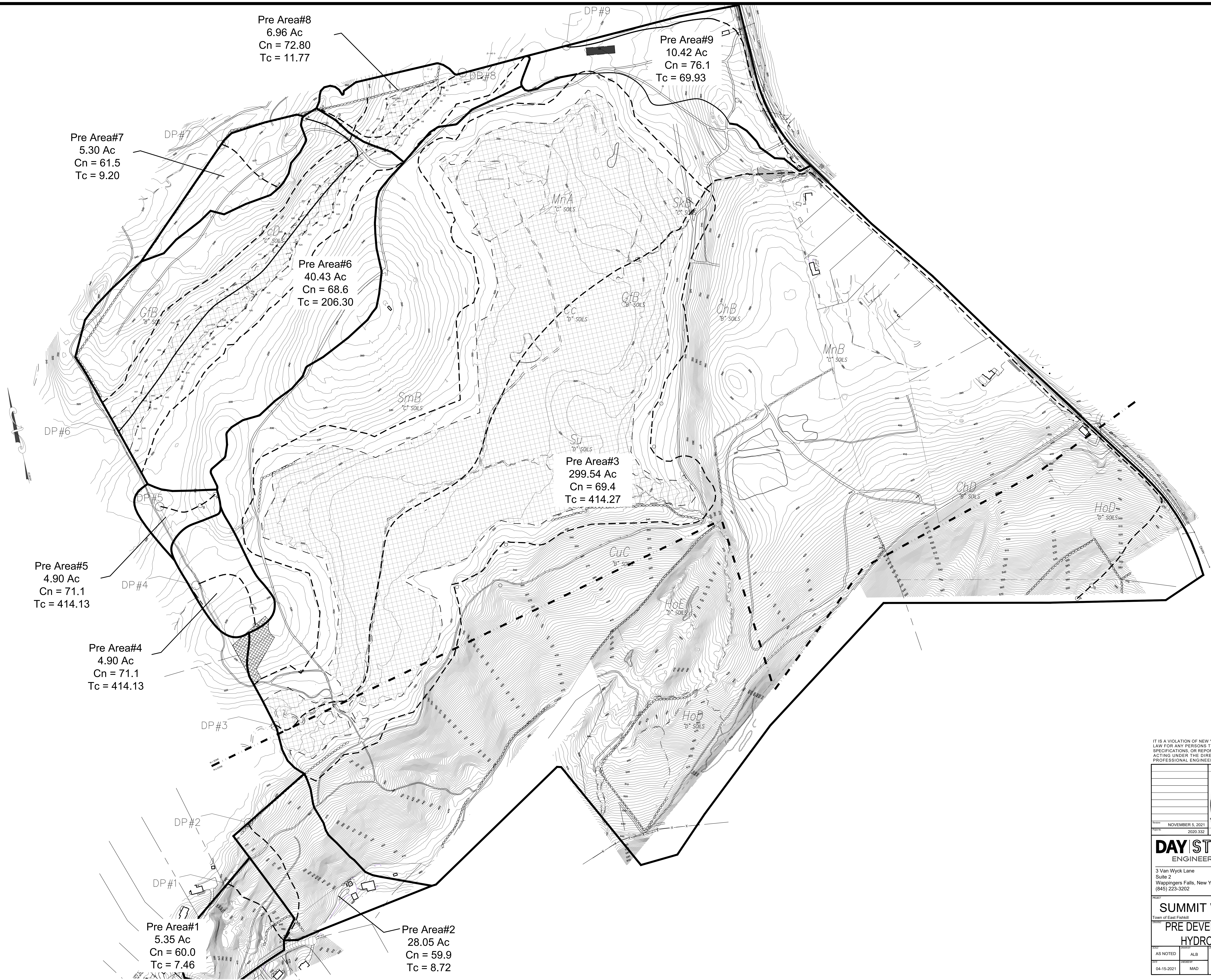
Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued	
VII. Qualified Inspector Certification - Final Stabilization:	
I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):	
I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
IX. Owner or Operator Certification	
I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2010)

Appendix I

Pre & Post Hydrology Plans



Pre Area#8
6.96 Ac
Cn = 72.80
Tc = 11.77

Pre Area#9
10.42 Ac
Cn = 76.1
Tc = 69.93

Pre Area#7
5.30 Ac
Cn = 61.5
Tc = 9.20

Pre Area#6
40.43 Ac
Cn = 68.6
Tc = 206.30

Pre Area#3
299.54 Ac
Cn = 69.4
Tc = 414.27

Pre Area#5
4.90 Ac
Cn = 71.1
Tc = 414.13

Pre Area#4
4.90 Ac
Cn = 71.1
Tc = 414.13

Pre Area#1
5.35 Ac
Cn = 60.0
Tc = 7.46

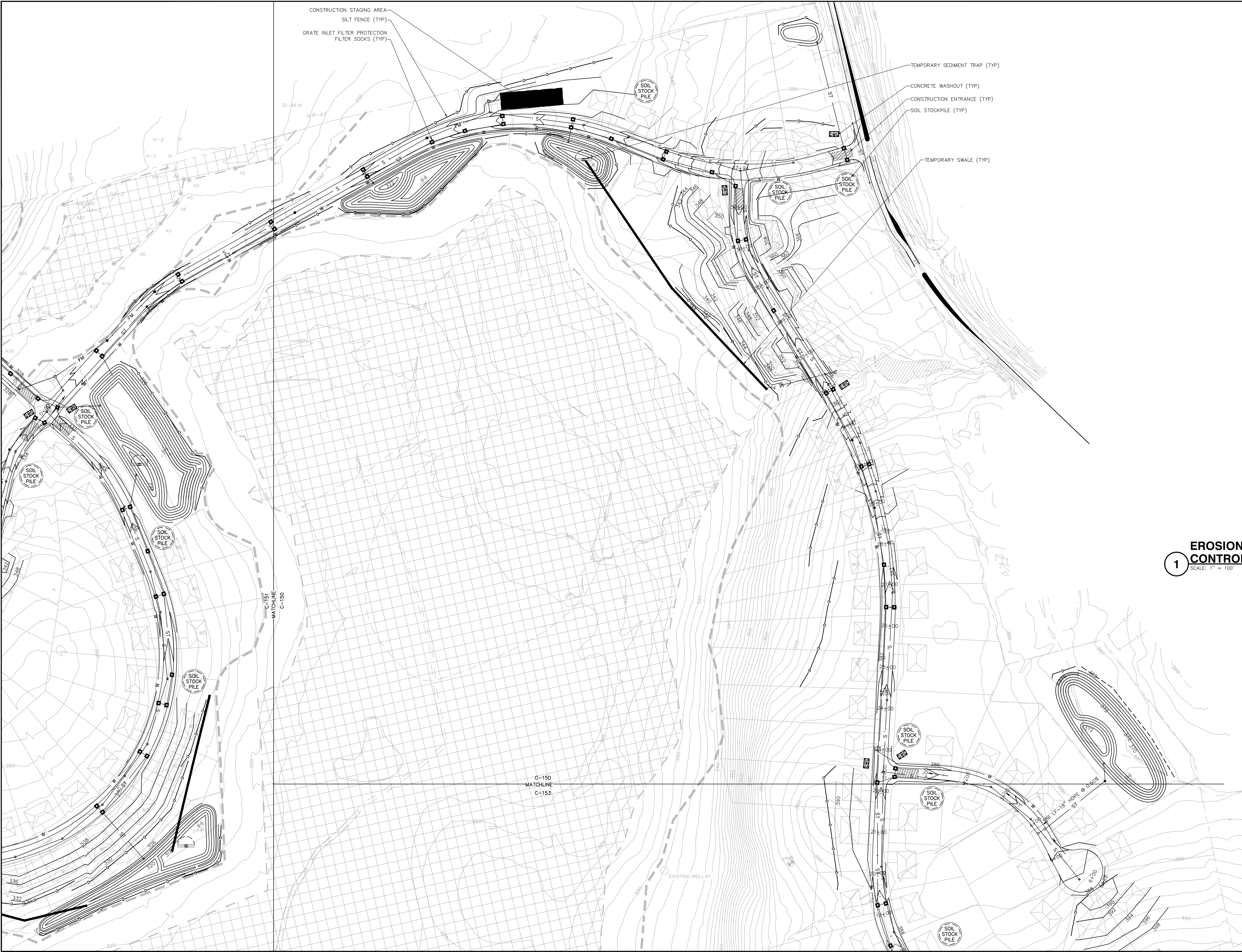
Pre Area#2
28.05 Ac
Cn = 59.9
Tc = 8.72

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSONS TO ALTER THESE PLANS, SPECIFICATIONS, OR REPORTS IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR.

Mark A. Day, PE	
DATE: NOVEMBER 5, 2021	PROJECT: 2020.332
DAY STOKOSA ENGINEERING P.C.	
3 Van Wyck Lane Suite 2 Wappingers Falls, New York 12590 (845) 223-3202	
PROJECT: SUMMIT WOODS Town of East Fishkill, Dutchess County, New York	
PRE DEVELOPMENT HYDROLOGY	
AS NOTED	ALB
04-15-2021	MAD
1-PRE	

Appendix J

Erosion and Sediment Control Plan & Details



1 EROSION & SEDIMENT CONTROL PLAN
SCALE: 1" = 100'

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSONS TO ALTER THESE PLANS, SPECIFICATIONS, OR REPORTS IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR.

Mark A. Day, PE	
	
Revisions	Project No. 2020.332 License No. 069646
DAY STOKOSA ENGINEERING P.C.	
3 Van Wyck Lane Suite 2 Wappingers Falls, New York 12590 (845) 223-3202	
PROJECT SUMMIT WOODS Town of East Fishkill Dutchess County, New York	
DRAWING EROSION & SEDIMENT CONTROL PLAN	
SCALE AS NOTED	DRAWN BY ALB
DATE 04-15-2021	CHECKED BY MAD
C-150	



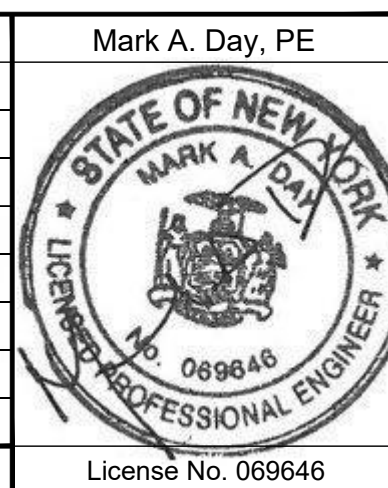
- TEMPORARY SEDIMENT TRAP (TYP)
- CONCRETE WASHOUT (TYP)
- CONSTRUCTION ENTRANCE (TYP)
- SOIL STOCKPILE (TYP)
- TEMPORARY SWALE (TYP)

EROSION & SEDIMENT CONTROL PLAN

1 SCALE: 1" = 100'

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSONS TO ALTER THESE PLANS, SPECIFICATIONS, OR REPORTS IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR.

Revisions	Mark A. Day, PE
Project No.	2020.332
	License No. 069646



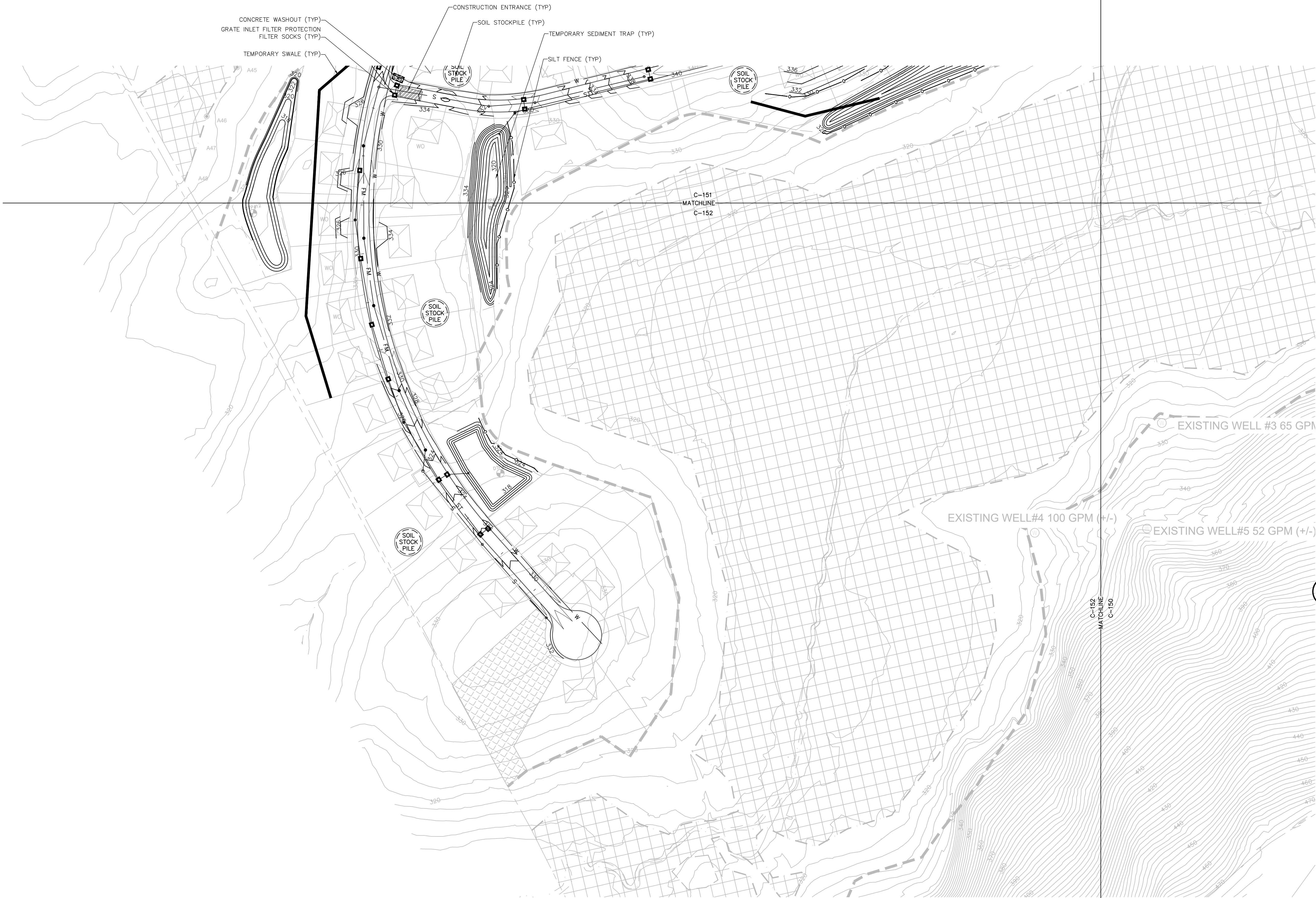
DAY|STOKOSA
ENGINEERING P.C.

3 Van Wyck Lane
Suite 2
Wappingers Falls, New York 12590
(845) 223-3202

PROJECT
SUMMIT WOODS
Town of East Fishkill Dutchess County, New York

DRAWING
EROSION & SEDIMENT CONTROL PLAN

SCALE AS NOTED	DRAWN BY ALB	C-151
DATE 04-15-2021	CHECKED BY MAD	



1

EROSION & SEDIMENT CONTROL PLAN

SCALE: 1" = 100'

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSONS TO ALTER THESE PLANS, SPECIFICATIONS, OR REPORTS IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR.

Mark A. Day, PE	
Revisions	
Project No.	2020.332
License No. 069646	

DAY|STOKOSA

ENGINEERING P.C.

3 Van Wyck Lane
Suite 2
Wappingers Falls, New York 12590
(845) 223-3202

PROJECT

SUMMIT WOODS

Town of East Fishkill Dutchess County, New York

DRAWING

EROSION & SEDIMENT CONTROL PLAN

C-152

SCALE	DRAWN BY	DRAWING NO.
AS NOTED	ALB	C-152
DATE	CHECKED BY	
04-15-2021	MAD	



EROSION & SEDIMENT CONTROL PLAN

SCALE: 1" = 100'

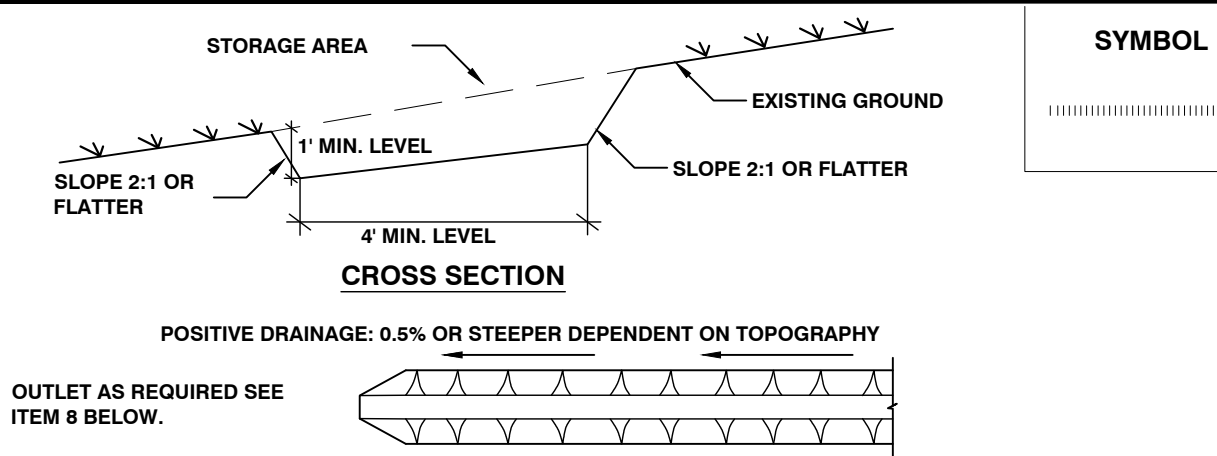
IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSONS TO ALTER THESE PLANS, SPECIFICATIONS, OR REPORTS IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR.

Revisions	Project No.	2020.332	License No.	069646
Mark A. Day, PE				

DAY|STOKOSA
ENGINEERING P.C.

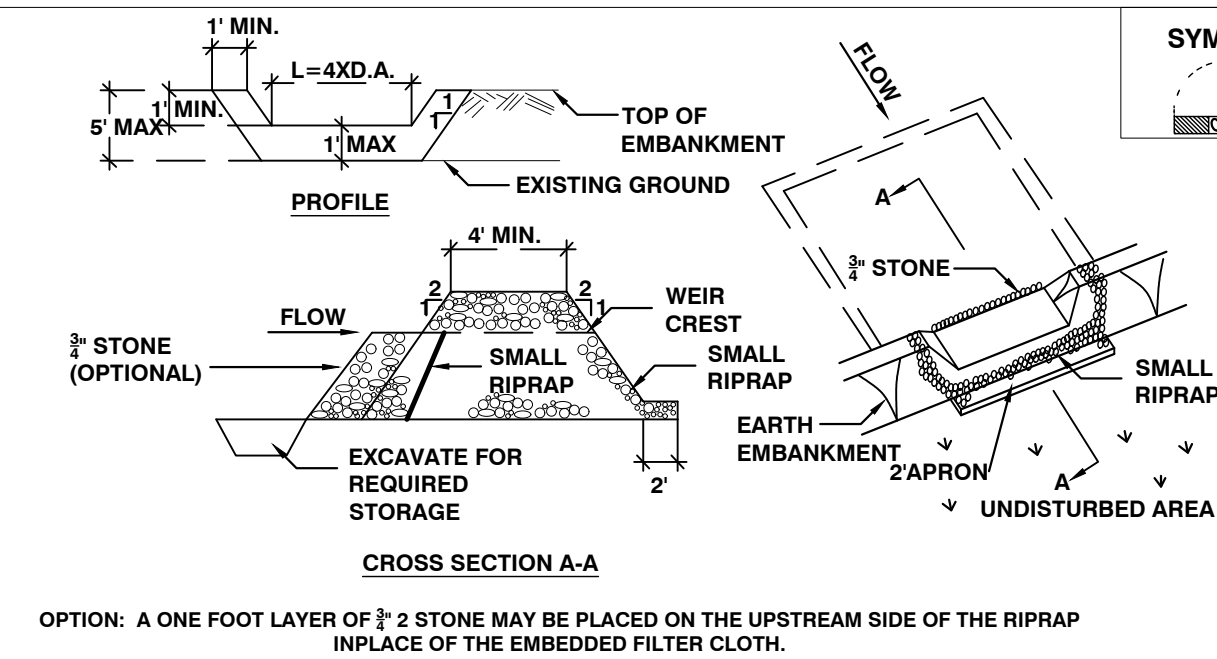
3 Van Wyck Lane
Suite 2
Wappingers Falls, New York 12590
(845) 223-3202

PROJECT	SUMMIT WOODS	
Location	Town of East Fishkill	Dutchess County, New York
DRAWING	EROSION & SEDIMENT CONTROL PLAN	
SCALE	AS NOTED	C-153
DATE	04-15-2021	
DRAWN BY	ALB	
CHECKED BY	MAD	



- CONSTRUCTION SPECIFICATIONS**
1. ALL TEMPORARY SWALES SHALL HAVE UNINTERRUPTED 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 IMPED 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 CHANNEL STABILIZATION CHART BELOW:
- | TYPE OF TREATMENT | CHANNEL GRADE | A/(6 AC. OR LESS) | B/(6 AC.-10AC) |
|-------------------|---------------|---|--|
| 1 | 0.5-3.0% | SEED AND STRAW MULCH | SEED AND STRAW MULCH |
| 2 | 3.1-6.0% | SEED AND STRAW MULCH | SEED USING JUTE OR EXCELSIOR |
| 3 | 6.1-18.0% | SEED WITH JUTE OR EXCELSIOR, RECYCLED CONCRETE EQUIVALENT | LINED WITH 4-8" RIP-RAP OR ENGINEERED DESIGN |
| 4 | 8.1-20.0% | LINED WITH 4-8" RIP-RAP | |
9. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

TEMPORARY SWALE DETAIL



- CONSTRUCTION SPECIFICATIONS**
1. 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 AND 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.
 3. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER.
 4. THE STONE USED IN THE OUTLET SHALL BE SMALL RIPRAP 4"-8" ALONG WITH A 1" THICKNESS OF 2" AGGREGATE PLACED ON THE UP-GRADE SIDE ON THE SMALL RIPRAP OR EMBEDDED FILTER CLOTH IN THE RIPRAP.
 5. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP.
 6. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
 7. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION IS MINIMIZED.
 8. THE STRUCTURE SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
- MAXIMUM DRAINAGE AREA 5 ACRES

SEDIMENT TRAP ST-IV & DEWATERING DETAIL

NOT TO SCALE

LONG TERM MAINTENANCE TABLE WITH RESPONSIBLE PARTIES:

IN ORDER FOR ANY PLAN TO OPERATE AS IT WAS ORIGINALLY INTENDED, IT MUST BE MAINTAINED PROPERLY. FOLLOWING THE COMPLETION OF CONSTRUCTION ACTIVITIES, THE PARCEL OWNER SHALL ASSUME RESPONSIBILITY FOR MAINTENANCE OF STRUCTURES AND SMP FACILITIES LOCATED WITHIN THE PARCEL BOUNDARIES. THE FOLLOWING MEASURES HAVE BEEN IMPLEMENTED IN THE OVERALL DESIGN.

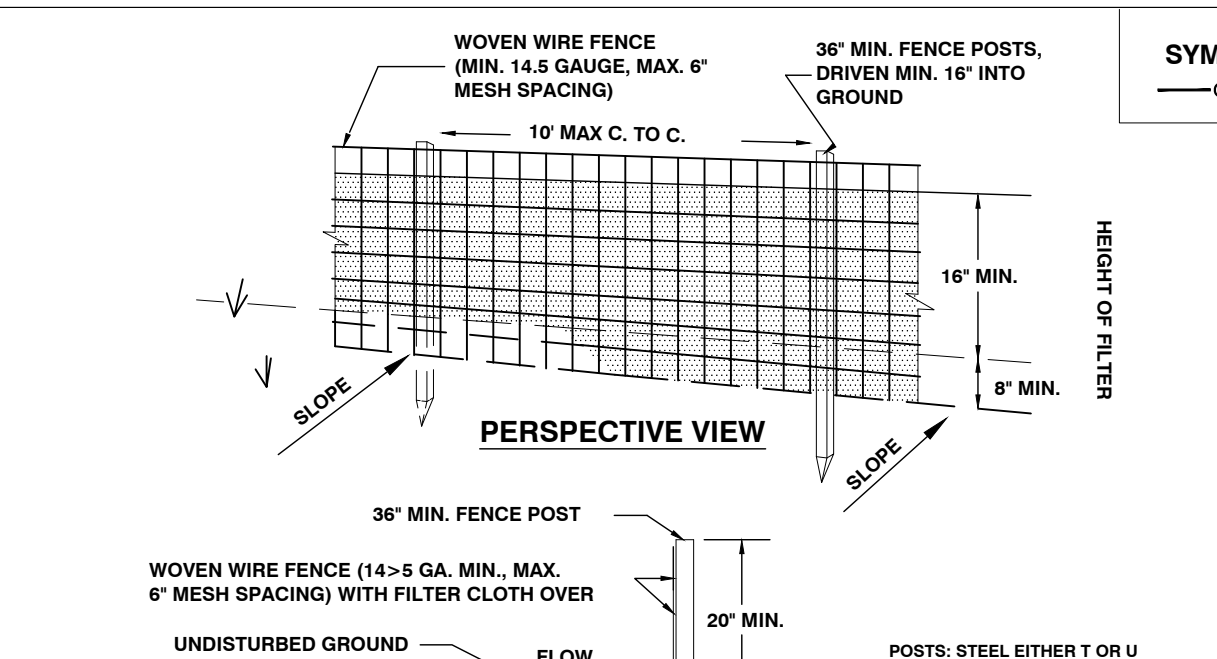
STORMWATER MANAGEMENT PRACTICE	RESPONSIBLE MAINTENANCE ENTITY	RESPONSIBLE MAINTENANCE CONTACT INFO	INSPECTION FREQUENCY	MAINTENANCE REQUIRED	GENERAL NOTES
GRASS FILTER STRIP(S)	INDIVIDUAL PARCEL OWNER	XXXX	ANNUALLY OR, AFTER EACH EVENT WHERE 3 IN. OF RAINFALL IS EXCEEDED IN A 24HR PERIOD	GENERAL INSPECTION, CLEANING, REMOVE DEBRIS	ALL DEBRIS AND LITTER SHOULD BE COLLECTED AND REMOVED. IN ADDITION, THE FOLLOWING ITEMS SHOULD BE CHECKED AND REPAIR AS NEEDED: * THE SWALES SHOULD BE CHECKED FOR EROSION, AND ALL ERODED AREAS SHOULD BE STABILIZED IMMEDIATELY. * ALL CULVERT OUTLETS AND INLETS SHOULD BE CHECKED FOR CLOGGING AND ACCUMULATION OF SEDIMENT, AND CLEANED AS NEEDED. GRASSED SWALES SHOULD BE MOVED AT LEAST TWICE DURING THE GROWING SEASON (E.G., MIDDLE AND END OF THE GROWING SEASON) TO PREVENT THE GROWTH OF TREES AND SHRUBS, AND TO CONTROL WEED GROWTH.
INFILTRATION TRENCH	INDIVIDUAL PARCEL OWNER	XXXX	INFILTRATION FACILITY - ANNUALLY MONTHLY - MOW UPLAND AREAS	GENERAL INSPECTION, CLEANING, REMOVE DEBRIS & SEDIMENT, MOW UPLAND AREAS	THE FACILITY SHALL BE CHECKED TO INSURE PROPER FUNCTION MEETING DESIGN INTENT, UPLAND AREAS SHALL BE CHECKED AND DIVERSION SWALES SHALL BE CHECKED TO INSURE ONLY POST DEVELOPMENT RUNOFF FROM THE SEDIMENT FOREBAY/GRASS SWALE ENTERS THE PRACTICE. DIVERSION SWALES SHALL BE CAREFULLY CHECKED/REMEDIED AS NECESSARY.

SEEDING NOTES:	DESCRIPTION OF EROSION CONTROL PRACTICES
1) EXPOSED SLOPES AND ALL GRADED AREAS SHALL BE SEED WITH THE FOLLOWING GRASS SEED MIX AS REQUIRED: STEEP SLOPES (3:1) TEMPORARY SEEDING - SUMMER SEASON - GERMAN MILLET @ 40 LBS PER ACRE WINTER SEASON - RYE GRASS @ 120 LBS PER ACRE PERMANENT SEEDING - SPRING/FALL TALL FESCUE @ 100 LBS PER ACRE KOBLE LESPREZEA @ 10 LBS PER ACRE BAHIA GRASS @ 25 LBS PER ACRE RYE GRASS @ 40 LBS PER ACRE 4) GRASS SEED MIX MAY BE APPLIED BY EITHER MECHANICAL OR HYDROSEEDING METHODS. HYDROSEEDING SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT EDITION OF N.Y. STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL. 5) SEEDING AREAS SHALL BE MULCHED AS REQUIRED: MID-SUMMER, LATE FALL OR WINTER APPLY AT A RATE OF 100 LBS/1,000 SQ.FT. GRAIN STRAW, COVER WITH NETTING AND TRAFFIC TO THE SLOPE. SPRING OR EARLY FALL APPLY AT A RATE OF 45 LBS/1,000 SQ. FT. WOOD FIBER IN A HYDRO SEEDER SLURRY.	TEMPORARY SWALE - A TEMPORARY EXCAVATED DRAINAGE WAY. THE PURPOSE OF A TEMPORARY SWALE IS TO PREVENT RUNOFF FROM ENTERED DISTURBANCE AREAS BY INTERCEPTING AND DIVERTING IT TO A STABILIZED OUTLET OR TO INTERCEPT SEDIMENT LADEN WATER AND DIVERT IT TO A SEDIMENT TRAPPING DEVICE. SILT FENCE - A TEMPORARY BARRIER OF GEOTEXTILE FABRIC (FILTER CLOTH) USED TO INTERCEPT SEDIMENT LADEN RUNOFF FROM SMALL DRAINAGE AREAS OF DISTURBED SOIL. THE PURPOSE OF A SILT FENCE IS TO REDUCE RUNOFF VELOCITY AND EFFECT DEPOSITION OF TRANSPORTED SEDIMENT LOAD. LIMITS IMPOSED BY ULTRAVIOLET STABILITY OF THE FABRIC WILL DICTATE THE MAXIMUM PERIOD THE SILT FENCE MAY BE USED. STABILIZED CONSTRUCTION ENTRANCE - A STABILIZED PAD OF AGGREGATE UNDERLAIN WITH FILTER CLOTH LOCATED AT ANY POINT WHERE TRAFFIC WILL BE ENTERING OR LEAVING A CONSTRUCTION SITE TO OR FROM A PUBLIC RIGHT OF WAY, STREET ALLEY, SIDEWALK OR PARKING. THE PURPOSE OF A STABILIZED CONSTRUCTION ENTRANCE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY OR STREETS. DUST CONTROL - THE CONTROL OF DUST RESULTING FROM LAND-DISTURBING ACTIVITIES. THE PURPOSE IS TO PREVENT SURFACE AND AIR MOVEMENT OF DUST FROM DISTURBED SOIL SURFACES THAT MAY CAUSE OFF-SITE DAMAGE, HEALTH HAZARDS, AND TRAFFIC SAFETY PROBLEMS. ROCK OUTLET PROTECTION - A SECTION OF ROCK PROTECTION PLACED AT THE OUTLET AND OF THE CULVERTS, CONDUITS, OR CHANNELS. THE PURPOSE OF THE ROCK OUTLET PROTECTION IS TO REDUCE THE DEPTH, VELOCITY, AND ENERGY OF THE WATER, SUCH THAT THE FLOW WILL NOT ERODE THE RECEIVING DOWNSTREAM REACH. SEE EROSION CONTROL PLAN FOR FURTHER DETAIL.

CONSTRUCTION SPECIFICATIONS

- 1) THE LINER SHALL BE PLASTIC SHEETING WITH A MINIMUM THICKNESS OF 10 MILS WITH NO HOLES OR TEARS, AND ANCHORED BEYOND THE TOP OF THE PIT WITH AN EARTHEN BERM, SAND BAGS, STONE, OR OTHER STRUCTURAL APPEARANCE EXCEPT AT THE ACCESS POINT.
- 2) LOCATE THE FACILITY A MINIMUM OF 10 FEET FROM DRAINAGE SWALES, STORM DRAIN INLETS, WETLANDS, STREAMS AND OTHER SURFACE WATERS. PREVENT SURFACE WATER FROM ENTERING THE STRUCTURE EXCEPT FOR THE ACCESS ROAD. PROVIDE APPROPRIATE ACCESS WITH A GRAVEL ACCESS ROAD SLOPED DOWN TO THE STRUCTURE. SIGNS SHALL BE PLACED TO DIRECT DRIVERS TO THE FACILITY AFTER THEIR LOAD IS DISCHARGED.
- 3) ALL CONCRETE WASHOUT FACILITIES SHALL BE INSPECTED DAILY. DAMAGED OR LEAKING FACILITIES SHALL BE DEACTIVATED AND REPAIRED OR REPLACED IMMEDIATELY. EXCESS RUNAWAY THAT HAS ACCUMULATED OVER HARDENED CONCRETE SHOULD BE PUMPED TO A STABILIZED AREA. SUCH AS A GRASS FILTER STRIP.
- 4) ACCUMULATED HARDENED MATERIAL SHALL BE REMOVED WHEN 75% OF THE STORAGE CAPACITY OF THE STRUCTURE IS FILLED. ANY EXCESS WASH WATER SHALL BE PUMPED INTO A CONTAINMENT VESSEL AND PROPERLY DISPOSED OF OFF SITE.
- 5) DEPOSE OF THE HARDENED MATERIAL OFF-SITE IN A CONSTRUCTION DEMOLITION LANDFILL. ON-SITE DISPOSAL MAY BE ALLOWED IF THIS HAS BEEN APPROVED AND ACCEPTED AS PART OF THE PROJECTS SWPPP. IN THAT CASE, THE MATERIAL SHOULD BE RECYCLED AS SPECIFIED, OR BURIED AND COVERED WITH A MINIMUM OF 2 FEET OF CLEAN COMPACTED SATURATED THAT IS PERMANENTLY STABILIZED TO PREVENT BROKEN.
- 6) THE PLASTIC LINER SHALL BE REPLACED WITH EACH CLEANING OF THE WASHOUT FACILITY.
- 7) INSPECT THE PROJECT SITE FREQUENTLY TO ENSURE THAT NO CONCRETE DISCHARGES ARE TAKING PLACE IN NON-DESIGNATED AREAS.

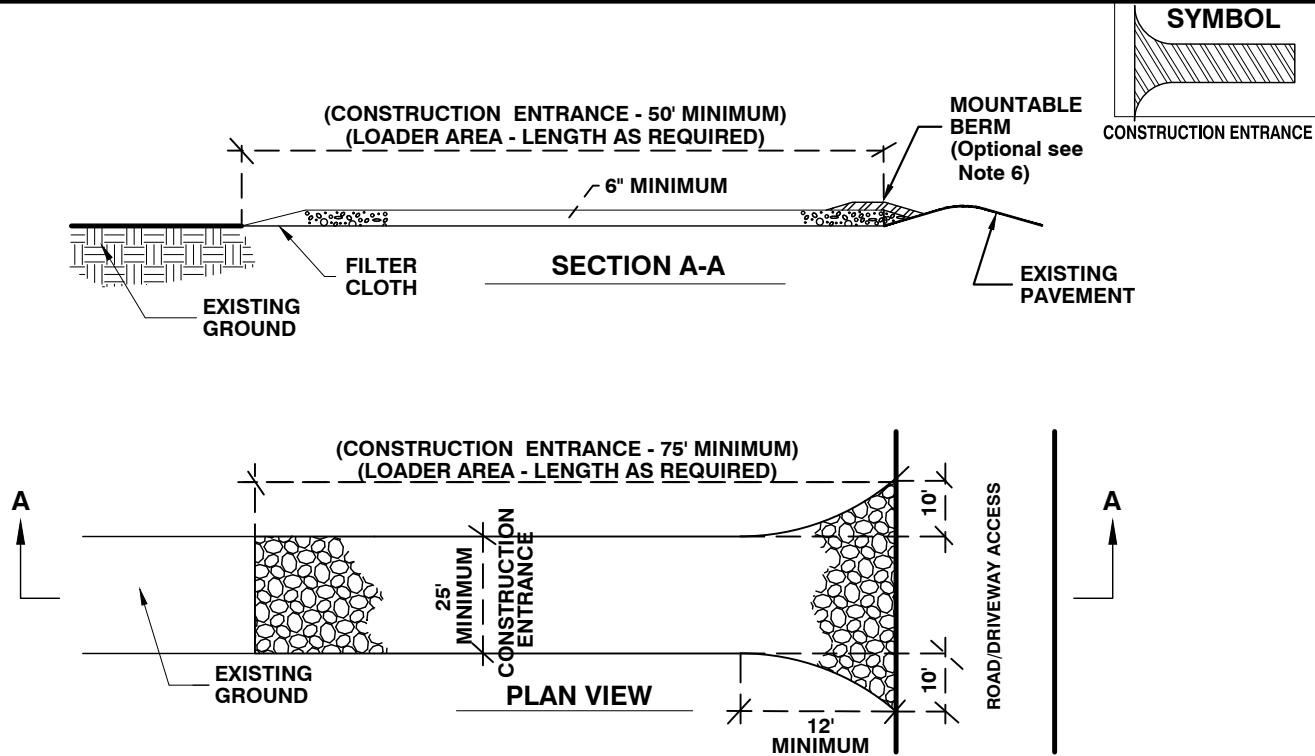
TYPICAL CONCRETE TRUCK WASHOUT DETAIL



- CONSTRUCTION SPECIFICATIONS**
- 1) 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 2" HARDWOOD.
 - 2) FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
 - 3) WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND POLYED.
 - 4) PREFABRICATED UNITS SHALL BE GEOTAP, ENVIRONMENT, OR APPROVED EQUIVALENT.
 - 5) MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
- | SLOPE STEEPNESS | MAXIMUM LENGTH |
|-----------------|----------------|
| 2:1 | 50 |
| 3:1 | 75 |
| 6:1 OR FLATTER | 100 |
2. MAX. DRAINAGE AREA FOR OVERLAND FLOW TO A SILT FENCE SHALL NOT EXCEED 1 ACRE PER 100' OF FENCE, WITH MAXIMUM PONDING DEPTH OF 1.5' BEHIND THE FENCE.

SILT FENCING DETAIL

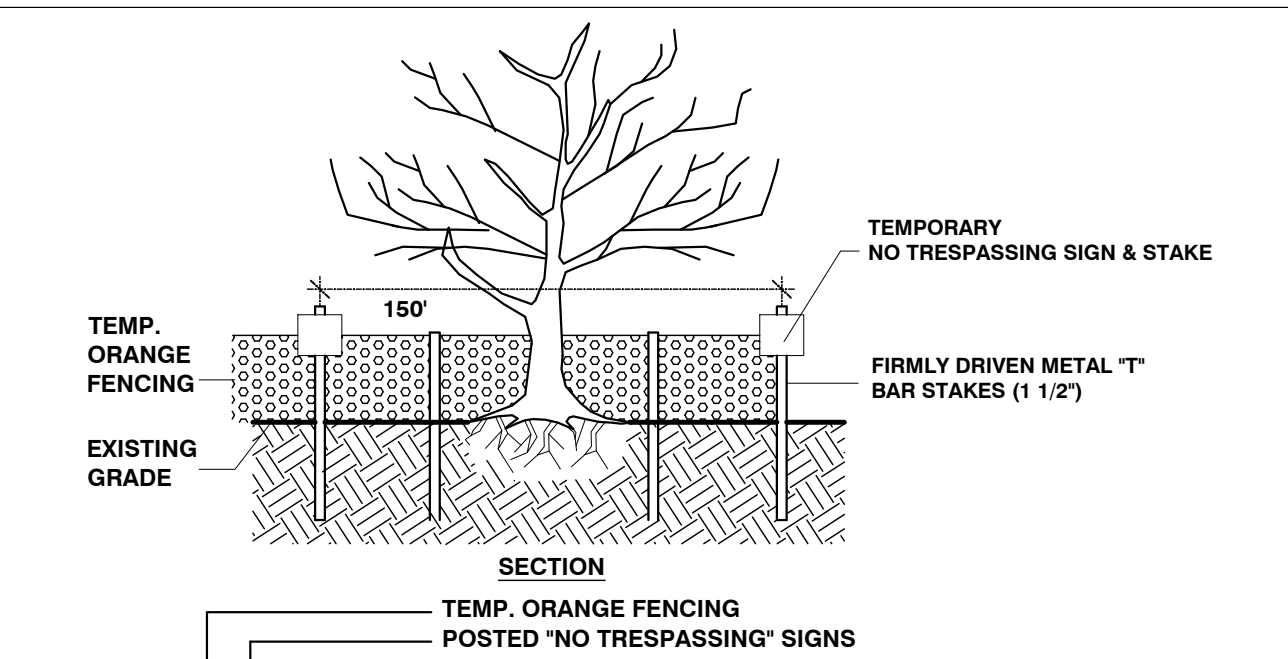
NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" MIN. STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - AS REQUIRED, BUT NOT LESS THAN 50 FEET.
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - 12 FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 25 FOOT MINIMUM IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 6:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURE USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DRIPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

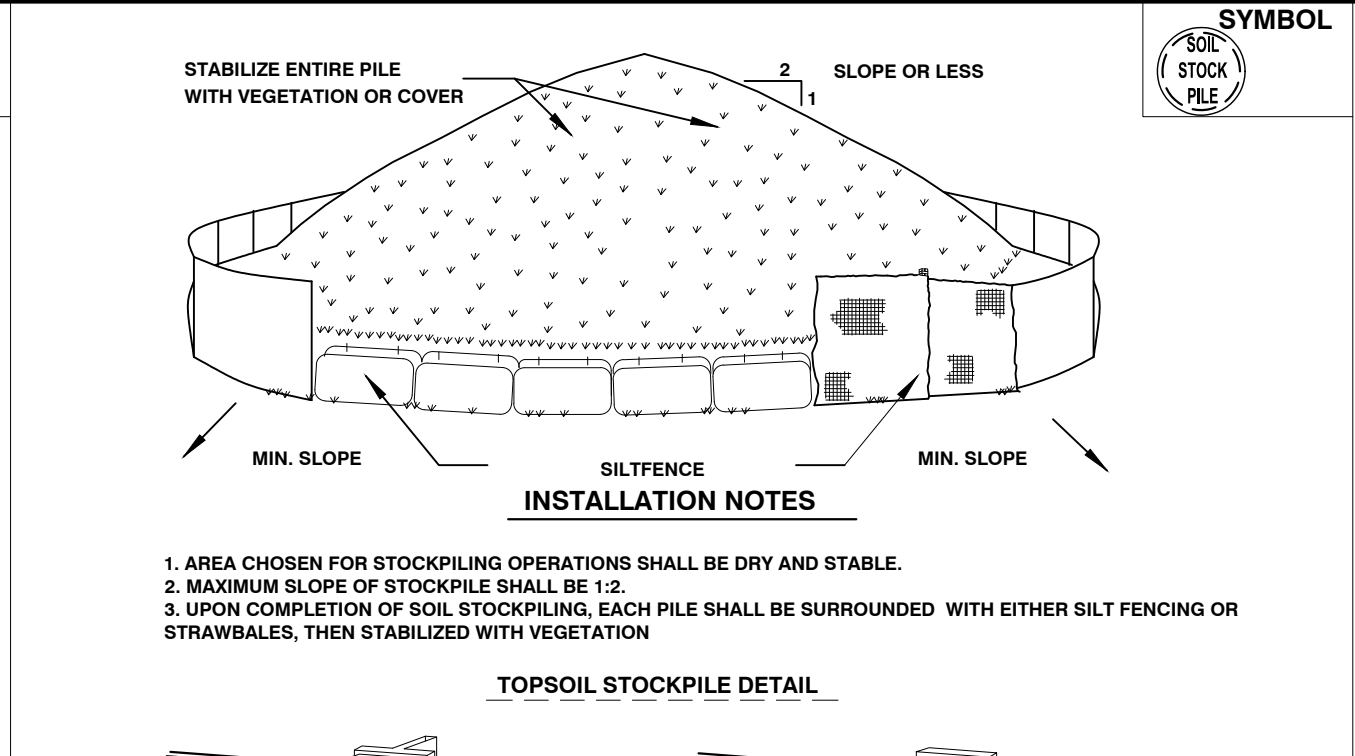
CONSTRUCTION ENTRANCE DETAIL



- CONSTRUCTION NOTES:**
1. BARRIER LIMITS ACCESS INTO BUFFER AREAS AND EDGE OF DISTURBANCE AREA DURING CONSTRUCTION ACTIVITIES. BARRIER AND SIGNAGE SHALL BE POSTED AND INSPECTED PRIOR TO SITE DISTURBANCE.
 2. BARRIER SHALL BE COMPRISED OF TEMPORARY ORANGE CONSTRUCTION FENCING.
 3. POSTED "NO TRESPASSING" SIGNS TO BE INSPECTED BY TOWN ENGINEER OR BUILDING INSPECTOR PRIOR TO SITE DISTURBANCE.
 4. PROPOSED SIGNS SHALL STATE "NO TRESPASSING", AND BE COMPRISED OF A WEATHER RESISTANT MATERIAL TO INSURE LONGEVITY.
 5. DRIVE STAKES FIRMLY INTO GROUND AT LEAST 12" BELOW GRADE.

TEMPORARY LIMIT OF DISTURBANCE FENCING

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" MIN. STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
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9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STOCKPILE & FENCING DETAIL

NOT TO SCALE

SPDES PERMIT COVERAGE

THE NOI SHALL BE SUBMITTED TO THE NYSDCE TO OBTAIN THE SPDES GENERAL PERMIT GP-20-001. THIS MUST BE DONE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITY. STANDARD PERMIT CONDITIONS CAN BE FOUND IN THE APPENDIX OF THIS REPORT. A COPY OF THE NOI AND A BRIEF DESCRIPTION OF THE PROJECT SHALL BE POSTED AT THE CONSTRUCTION SITE IN A PROMINENT PLACE FOR PUBLIC VIEWING. THE OPERATOR MUST COMPLY WITH ALL CONDITIONS OF THE PERMIT AND SHALL BE RESPONSIBLE FOR IMPLEMENTING THE PROVISIONS OF THE SWPPP AND ENSURING THAT ALL CONTRACTORS AND SUBCONTRACTORS WHO PERFORM PROFESSIONAL SERVICES AT THE SITE PROVIDE CONTRIBUTION TO THE SWPPP. SMOKE CONTRACTORS ASSOCIATED WITH THE PROJECT MUST COMPLY WITH THE PERMIT AND SHALL BE RESPONSIBLE FOR IMPLEMENTING THE PROVISIONS OF THE SWPPP AND ENSURING THAT ALL CONTRACTORS AND SUBCONTRACTORS WHO PERFORM PROFESSIONAL SERVICES AT THE SITE PROVIDE CONTRIBUTION TO THE SWPPP. 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Appendix K

Construction Inspection Log Book

Construction Site Inspection Log Book for Temporary Erosion & Sediment Controls in use on Summit Woods Subdivision

Location:

Town of East Fishkill
Dutchess County

APPENDIX H

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES CONSTRUCTION SITE LOG BOOK

Table of Contents

- I. Pre-Construction Meeting Documents
 - a. Preamble to Site Assessment and Inspections
 - b. Operator's Certification
 - c. Qualified Professional's Credentials & Certification
 - d. Pre-Construction Site Assessment Checklist
- II. Construction Duration Inspections
 - a. Directions
 - b. Modification to the SWPPP
- III. Monthly Summary Reports
- IV. Monitoring, Reporting, and Three-Month Status Reports
 - a. Operator's Compliance Response Form

Properly completing forms such as those contained in Appendix H meet the inspection requirement of NYS-DEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name _____
Permit No. _____ **Date of Authorization** _____
Name of Operator _____
Prime Contractor _____

a. Preamble to Site Assessment and Inspections

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional¹ conduct an assessment of the site prior to the commencement of construction² and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization³ using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

c. Qualified Professional's Credentials & Certification

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

d. Pre-construction Site Assessment Checklist

(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

- ☐ ☐ ☐ Has a Notice of Intent been filed with the NYS Department of Conservation?
- ☐ ☐ ☐ Is the SWPPP on-site? Where? _____
- ☐ ☐ ☐ Is the Plan current? What is the latest revision date? _____
- ☐ ☐ ☐ Is a copy of the NOI (with brief description) onsite? Where? _____
- ☐ ☐ ☐ Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

- ☐ ☐ ☐ Are construction limits clearly flagged or fenced?
- ☐ ☐ ☐ Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
- ☐ ☐ ☐ Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

- ☐ ☐ ☐ Clean stormwater runoff has been diverted from areas to be disturbed.
- ☐ ☐ ☐ Bodies of water located either on site or in the vicinity of the site have been identified and protected.
- ☐ ☐ ☐ Appropriate practices to protect on-site or downstream surface water are installed.
- ☐ ☐ ☐ Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

- ☐ ☐ ☐ A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
- ☐ ☐ ☐ Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
- ☐ ☐ ☐ Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

- ☐ ☐ ☐ Silt fence material and installation comply with the standard drawing and specifications.
- ☐ ☐ ☐ Silt fences are installed at appropriate spacing intervals
- ☐ ☐ ☐ Sediment/detention basin was installed as first land disturbing activity.
- ☐ ☐ ☐ Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

- ☐ ☐ ☐ The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
- ☐ ☐ ☐ The plan is contained in the SWPPP on page _____
- ☐ ☐ ☐ Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:

Inspection Forms will be filled out during the entire construction phase of the project.

Required Elements:

- (1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;
- (2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;
- (3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;
- (4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);
- (5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and
- (6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

Inspector (print name)

Date of Inspection

Qualified Professional (print name)

Qualified Professional Signature

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality**Yes No NA**

- ☐ ☒ ☐ Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
- ☐ ☒ ☐ Is there residue from oil and floating substances, visible oil film, or globules or grease?
- ☒ ☐ ☐ All disturbance is within the limits of the approved plans.
- ☐ ☒ ☐ Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping**1. General Site Conditions****Yes No NA**

- ☒ ☐ ☐ Is construction site litter and debris appropriately managed?
- ☒ ☐ ☐ Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
- ☐ ☒ ☐ Is construction impacting the adjacent property?
- ☒ ☐ ☐ Is dust adequately controlled?

2. Temporary Stream Crossing**Yes No NA**

- ☐ ☐ ☒ Maximum diameter pipes necessary to span creek without dredging are installed.
- ☐ ☐ ☒ Installed non-woven geotextile fabric beneath approaches.
- ☐ ☐ ☒ Is fill composed of aggregate (no earth or soil)?
- ☐ ☐ ☒ Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices**1. Excavation Dewatering****Yes No NA**

- ☐ ☐ ☒ Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
- ☐ ☐ ☒ Clean water from upstream pool is being pumped to the downstream pool.
- ☐ ☐ ☒ Sediment laden water from work area is being discharged to a silt-trapping device.
- ☐ ☐ ☒ Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader**Yes No NA**

- ☐ ☐ ☒ Installed per plan.
- ☐ ☐ ☒ Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
- ☐ ☐ ☒ Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales**Yes No NA**

- ☐ ☐ ☒ Installed per plan with minimum side slopes 2H:1V or flatter.
- ☐ ☐ ☒ Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
- ☐ ☐ ☒ Sediment-laden runoff directed to sediment trapping structure

CONSTRUCTION DURATION INSPECTIONS
Runoff Control Practices (continued)

Page 3 of _____

4. Stone Check Dam

Yes No NA

- ☐ ☐ ☒ Is channel stable? (flow is not eroding soil underneath or around the structure).
☐ ☐ ☒ Check is in good condition (rocks in place and no permanent pools behind the structure).
☐ ☐ ☒ Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

- ☐ ☐ ☒ Installed per plan.
☐ ☐ ☒ Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

- ☐ ☐ ☒ Stockpiles are stabilized with vegetation and/or mulch.
☐ ☐ ☒ Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

- ☐ ☐ ☒ Temporary seedings and mulch have been applied to idle areas.
☐ ☐ ☒ 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance

Yes No NA

- ☒ ☐ ☐ Stone is clean enough to effectively remove mud from vehicles.
☒ ☐ ☐ Installed per standards and specifications?
☒ ☐ ☐ Does all traffic use the stabilized entrance to enter and leave site?
☒ ☐ ☐ Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No NA

- ☒ ☐ ☐ Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
☒ ☐ ☐ Joints constructed by wrapping the two ends together for continuous support.
☒ ☐ ☐ Fabric buried 6 inches minimum.
☐ ☒ ☐ Posts are stable, fabric is tight and without rips or frayed areas. See notes
Sediment accumulation is 50% of design capacity.

Sediment Control Practices (continued)**3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)****Yes No NA**

- ☐ ☐ ☐ Installed concrete blocks lengthwise so open ends face outward, not upward.
 - ☐ ☐ ☐ Placed wire screen between No. 3 crushed stone and concrete blocks.
 - ☐ ☐ ☐ Drainage area is 1acre or less.
 - ☐ ☐ ☐ Excavated area is 900 cubic feet.
 - ☐ ☐ ☐ Excavated side slopes should be 2:1.
 - ☐ ☐ ☐ 2" x 4" frame is constructed and structurally sound.
 - ☐ ☐ ☐ Posts 3-foot maximum spacing between posts.
 - ☐ ☐ ☐ Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
 - ☐ ☐ ☐ Posts are stable, fabric is tight and without rips or frayed areas.
- Sediment accumulation ____% of design capacity.

4. Temporary Sediment Trap**Yes No NA**

- ☐ ☐ ☐ Outlet structure is constructed per the approved plan or drawing.
 - ☐ ☐ ☐ Geotextile fabric has been placed beneath rock fill.
- Sediment accumulation is ____% of design capacity.

5. Temporary Sediment Basin**Yes No NA**

- ☐ ☐ ☐ Basin and outlet structure constructed per the approved plan.
 - ☐ ☐ ☐ Basin side slopes are stabilized with seed/mulch.
 - ☐ ☐ ☐ Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
- Sediment accumulation is ____% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:

1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
 - a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
 - b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:[illegible]

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature of Permittee or Duly Authorized Representative

Name of Permittee or Duly Authorized Representative

Date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.