STORMWATER POLLUTION PREVENTION PLAN

AUTO WASH NO.06

3150 COUNTY ROAD 10
TOWN OF CANANDAIGUA, ONTARIO COUNTY
STATE OF NEW YORK

PREPARED FOR:
CHRIANNTHA CONSTRUCTION CORPORATION
4661 DEWEY AVENUE, P.O. BOX 165
GORHAM, NEW YORK 14461
(585) 526-6376

PREPARED BY:

COSTICH
ENGINEERING

217 Lake Avenue
Rochester NY 14608

PROJECT NO. CE#7153
SEPTEMBER, 2019
Revised 09/20/2019

TABLE OF CONTENTS
DESCRIPTION

APPENDICES

APPENDIX I **SITE LOCATION MAP**
SITE SOIL MAP AND NRCS HYDROLOGIC SOIL REPORT
NYS DEC ENVIRONMENTAL RESOURCE MAP
NYSDEC STORMWATER INTERACTIVE MAPPER
NATIONAL WETLANDS INVENTORY MAP
NYS CULTURAL RESOURCE INFORMATION SYSTEM MAPPER (CRIS)

APPENDIX II **EXISTING DRAINAGE AREA MAP**
EXISTING HYROCAD ROUTING REPORT
EXISTING SCS CALCULATIONS

APPENDIX III **DEVELOPED DRAINAGE AREA MAP**
DEVELOPED HYDROCAD ROUTING REPORT
DEVELOPED SCS CALCULATIONS
WQV, RRV, CPV CALCULATIONS

APPENDIX IV **NOTICE OF INTENT (DRAFT)**
LETTER OF ACKNOWLEDGEMENT**
SITE INSPECTION REPORT (SAMPLE)
NYSSESC GUIDANCE FOR EROSION & SEDIMENT CONTROL PRACTICE INSTALLATION
GENERAL AND SUB CONTRACTOR CERTIFICATION
MAINTENANCE CHECKLIST & SAMPLE AGREEMENT
GENERAL PERMIT FOR STORMWATER DISCHARGE (GP-0-15-002)
NOTICE OF TERMINATION (DRAFT)

APPENDIX V **DESIGN DRAWINGS**

****To Be Provided At A Later Date**

COSTICH ENGINEERING

AUTO WASH NO.06
TOWN OF CANANDAIGUA, ONTARIO COUNTY, STATE OF NEW YORK
STORMWATER POLLUTION PREVENTION PLAN

OVERVIEW

The Stormwater Pollution Prevention Plan for site improvements on 2.05 ± acre parcel, located at the northwest corner of the NYS Route 5 & 20 and County Road 10 in the Town of Canandaigua, New York, is outlined in this report. No state or federal wetlands exist within the proposed development. Per the US Fish and Wildlife Service, there are no endangered plant or animal species within the project area. Refer to the site maps in Appendix I for details.

The project represents the proposed re-development of property located at 3150 County Road 10 in the Town of Canandaigua. The proposal will include all associated site improvements, including demolition and reconstructing of the existing Community Bank. The proposed facility will include a drive through automobile wash facility (4,500+/- SF) with vacuum cleaning parking stalls, employee parking, stormwater management facilities, utilities, landscape, site lighting, refuse enclosure and other site improvements. The construction for the proposed development will disturb approximately 1.9 +/- acres of land.

This report will analyze the effect the proposed construction will have on storm water runoff. In addition, this report details the onsite erosion and sediment control plan designed in accordance with NYSDEC criteria set forth in the Standards and Specifications for Erosion and Sediment Control, July 2016.

BASIS FOR DESIGN

The design criteria used for this analysis is based on the "New York State Department of Environmental Conservation's Phase II Stormwater Rules" and the "New York State Stormwater Management Design Manual" (Design Manual), dated January 2015, in association with "SPDES General Permit for Stormwater Discharges from Construction Activity", dated January 2015 (GP-0-15-002). Existing and developed drainage sheds will be modeled using the SCS method to determine volume and peak rates of stormwater runoff.

DESCRIPTION OF SOILS

According to the Natural Resources Conservation Service Web Soil Survey 2.0, the predominant soils present onsite are classified as Hydrological Soil Group (HSG) Type D & Type C/D. For soils that are assigned a dual hydrologic group (A/D, B/D, or C/D), the first letter is for the drained areas and the second is for the undrained areas. The only soils in their natural condition in group "D" are assigned a dual class. The soils onsite are listed as the Collamer & Odessa series.

The Collamer series, (HSG) Type C/D, consists of very deep, moderately well drained soils formed in silty glacio-lacustrine sediments. They are on lake plains and till plains that have a thick mantle of lake sediments.

The Odessa series, (HSG) Type D, consists of very deep, somewhat poorly drained soils formed in red, clayey lacustrine deposits. These soils are in moderately low areas on lake plains and valley terraces.

Refer to Appendix I for the NRCS- Hydrologic Soil Group Mapping for further details.

EXISTING CONDITIONS

Under existing conditions, stormwater runoff from the site drains to two (2) discharge points which are outlined below. Four (4) existing drainage areas will be analyzed in this report and are the areas that will be affected by the proposed construction activities. The overall drainage area for the proposed development was determined to be 2.05 ± acres of land. The stormwater design for the proposed development will analyze the existing conditions to compare the drainage areas hydrologically impacted.

Existing Drainage Area 1 (E-1) consists of 0.32 ± acres, and was calculated to have a time of concentration (Tc) of 14.4 minutes and a curve number (CN) of 83. This area is comprised of existing grass areas and runoff from this drainage area generally flows east to west and to an existing depressed area. Stormwater then is discharged through a storm pipe to an existing swale offsite, and ultimately to the Canandaigua Outlet. This drainage area was analyzed for Discharge Point 1 (DP-1).

Existing Drainage Area 2 (E-2) consists of 0.97 ± acres, and was found to have a time of concentration (Tc) of 19.2 minutes and a curve number (CN) of 86. This area is comprised of existing grass areas, the existing Community Bank and a portion of the paved drive aisles. Runoff from this drainage area generally flows east to south west and offsite to neighboring properties. Stormwater then is discharged to an existing swale offsite, and ultimately to the Canandaigua Outlet. This drainage area was analyzed for Discharge Point 1 (DP-1).

Existing Drainage Area 3 (E-3) consists of 0.69 ± acres, and was found to have a time of concentration (Tc) of 16.9 minutes and a curve number (CN) of 91. This area is comprised of the existing Community Bank associated parking, drive aisles, and grass areas. Runoff from this drainage area generally flows from southeast to northwest and to an existing drainage inlet. Stormwater is then conveyed to the depressed area, in Drainage Area E-1, where it is discharged off site, to an existing swale offsite, and ultimately to the Canandaigua Outlet. This drainage area was analyzed for Discharge Point 1 (DP-1).

Existing Drainage Area 4 (E-4) consists of 0.07 ± acres, and was found to have a time of concentration (Tc) of 10.2 minutes and a curve number (CN) of 93. This area is comprised of a portion of the drive aisle for the existing Canandaigua National Bank, and a portion of grass area. Runoff from this drainage area generally flows from west to east and to County Road 10. Stormwater is then conveyed along County Road 10 where it is collected in a drainage inlet. This drainage area was analyzed for Discharge Point 2 (DP-2).

Please refer to the Existing Drainage Map in Appendix II for details.

Table 1 provides a summary of pre-developed peak flow rates and Table 2 provides peak flow rates for the two discharge points analyzed in this report.

TABLE 1 – PRE-DEVELOPED PEAK FLOW RATES (2.05 ± Acres)

Area Designation	Q_1 (cfs)	Q_2 (cfs)	Q_{10} (cfs)	Q_{100} (cfs)
E-1 (0.32 acres) (DP-1)	0.25	0.34	0.65	1.42
E-2 (0.97 acres) (DP-1)	0.83	1.09	1.96	4.03
E-3 (0.69 acres) (DP-1)	0.89	1.11	1.81	3.38
E-4 (0.07 acres) (DP-3)	0.13	0.15	0.24	0.43

TABLE 2 – PRE-DEVELOPED PEAK FLOW RATES (2.05 ± Acres)

Area Designation	Q_1 (cfs)	Q_2 (cfs)	Q_{10} (cfs)	Q_{100} (cfs)
Discharge Point 01	1.95	2.51	4.38	8.73
Discharge Point 02	0.13	0.15	0.24	0.43
Total Site	2.09	2.68	4.62	9.16

All supporting data and calculations used to derive these results can be found in Appendix II.

DEVELOPED CONDITIONS

Under developed conditions, three (3) drainage areas were determined within the 2.05 ± acre site and all drainage areas will be conveyed to Discharge Point 01 (DP-1).

Developed Drainage Area 1 (DA-1) consists of 0.20 ± acres, and was found to have a time of concentration (Tc) of 6.2 minutes and a curve number (CN) of 84. This area is comprised of a portion of the proposed drive aisle leading to the car wash, grass area and a Storm Water Management Facility. Runoff from this area sheet flows from the pavement area into the adjacent grass area, and into the stormwater management facility. Stormwater then is discharged, by means of a level spreader spillway, to the west and returned to sheet flow. Stormwater ultimately drains to an existing swale and storm sewer system and to the Canandaigua Outlet.

Developed Drainage Area 2 (DA-2) consists of 0.79 ± acres, and was found to have a time of concentration (Tc) of 20.5 minutes and a curve number (CN) of 84. This area is comprised of grass areas and a portion of the drive aisle existing the car wash facility. Runoff from this area general sheet flows east to west, and conveyed offsite. Stormwater ultimately drains to an existing swale and storm sewer and to the Canandaigua Outlet.

Developed Drainage Area 3 (DA-3) consists of 1.08 ± acres, and was found to have a time of concentration (Tc) of 19.7 minutes and a curve number (CN) of 89. This area is comprised of the car wash facility, drive aisles, vacuum stations, a rain garden and grass areas. Runoff from this area generally is conveyed to the center island & raingarden area. From the rain garden, by means of an overflow structure and underdrains, stormwater is conveyed the stormwater management facility. Stormwater is then returned to sheet flow on-site by means of a rock overflow level spreader and discharges offsite. Stormwater ultimately drains to an existing swale and storm sewer system and to the Canandaigua Outlet.

Table 3 summarizes the post-developed peak flow rates for the drainage area prior to detention in the stormwater management facilities.

TABLE 3 - DEVELOPED PEAK FLOW RATES (2.05 ± Acres)

Area Designation	Q_1 (cfs)	Q_2 (cfs)	Q_{10} (cfs)	Q_{100} (cfs)
DA-1 (0.20 acres) (DP-1)	0.23	0.31	0.56	1.17
DA-2 (0.79 acres) (DP-1)	0.55	0.74	1.41	3.01
DA-3 (1.08 acres) (DP-1)	1.11	1.41	2.39	4.64
Total Site	1.72	2.23	3.93	7.95

All supporting data and calculations used to derive the post-developed peak flow rates can be found in Appendix III.

SUMMARY OF PEAK FLOW RATES

Table 4 summarizes the results of routing the developed hydrograph through Rain Garden using inflow-storage-outflow scenario for Drainage Areas 3 (DA-3). Peak outflow through the overflow structure is controlled by the use of a 10" Orifice.

TABLE 4 - HYDROGRAPH RESERVOIR ROUTINGS (Rain Garden)

Storm Frequency (yrs)	Inflow Hydrograph Peak (cfs)	Storage Provided ($ft.^3$)	Maximum Water Elevation (ft.)	Peak Outflow (cfs)
1	1.11	1,195	715.49	0.76
2	1.41	1,303	715.52	1.15
10	2.39	1,597	715.59	2.15
100	4.64	3,100	715.79	2.69

Table 5 summarizes the results of routing the developed hydrograph through Storm Water Management Facility using inflow-storage-outflow scenario for Drainage Area 1 (DA-1) and Drainage Area 3 (DA-3), from the Rain Garden outlet structure. The Storm Water Management Facility is use to provide Water Quality & Channel Protection Volumes, not reduce by the Rain Garden Runoff Reduction Volume Capacity, and not to provide peak flow attenuation.

TABLE 5 - HYDROGRAPH RESERVOIR ROUTINGS (STORM WATER MANAGEMENT FACILITY)

Storm Frequency (yrs)	Inflow Hydrograph Peak (cfs)	Storage Provided ($ft.^3$)	Maximum Water Elevation (ft.)	Peak Outflow (cfs)
1	0.80	754	712.18	0.75
2	1.20	777	712.21	1.17
10	2.24	827	712.26	2.22
100	3.44	876	712.31	3.40

Table 6 compares the existing vs. developed peak flow rates for Discharge Point 01 after routing.

TABLE 6 - EXISTING VS. DEVELOPED PEAK FLOW RATES (DP-1)

Storm Frequency	$Q_{Existing}$ (cfs)	$Q_{Developed}$ (cfs)	% Reduction
1	1.53	0.98	36
2	2.05	1.83	11
10	3.81	3.59	6
100	8.08	6.05	25

Table 7 compares the existing vs. developed peak flow rates for Discharge Point 02. No stormwater under existing conditions is conveyed to Discharge Point 02.

TABLE 7 - EXISTING VS. DEVELOPED PEAK FLOW RATES (DP-2)

Storm Frequency	$Q_{Existing}$ (cfs)	$Q_{Developed}$ (cfs)	% Reduction
1	0.12	0.00	100
2	0.15	0.00	100
10	0.23	0.00	100
100	0.43	0.00	100

Table 8 compares the existing vs. developed peak flow rates for the overall developed site after routing.

TABLE 8 - EXISTING VS. DEVELOPED PEAK FLOW RATES (TOTAL SITE)

Storm Frequency	$Q_{Existing}$ (cfs)	$Q_{Developed}$ (cfs)	% Reduction
1	1.62	0.98	40
2	2.15	1.83	15
10	3.97	3.59	10
100	8.39	6.05	28

WATER QUALITY, CHANNEL PROTECTION, AND RUNOFF REDUCTION VOLUME

In keeping with the goals of the NYSDEC Stormwater Pollution Prevention Control and SPDES General Permit GP-0-15-002 associated with long term development, in order to meet pollutant removal goals, Runoff Reduction and Source Control practices have been implemented to provide required Runoff Reduction volume.

The rain garden facility is being proposed and is located in the center island of the drive aisles and vacuum parking stalls. This rain garden will be used to provide source treatment runoff reduction volumes for the project. Refer to the Utility & Grading plans for the location of the facility. Water Quality and Channel Protection volumes will be provided in the Stormwater Management Facility, in which stormwater from the rain garden is conveyed to.

Table 9 below show the required and provided Water Quality, Runoff Reduction and Channel Protection volumes for the development.

TABLE 9 - WATER QUALITY, CHANNEL PROTECTION & RUNOFF REDUCTION VOLUME

*Water Quality		*Channel Protection		Runoff Reduction	
WQv Req'd	**WQv Provided**	**CPv Req'd**	**CPv Provided**	**Min RRv Req'd**	**RRv Provided**
ac-ft	*ac-ft*	*ac-ft*	*ac-ft*	*ac-ft*	*ac-ft*
0.0249	0.0433	0.0814	0.0882	0.0027	0.0079

STORMWATER MANAGEMENT PLANNING

The NYS Stormwater Design Manual has created a five-step planning process for addressing stormwater management in new developments. This process is intended to guide the designer through steps that maintain pre-construction hydrologic conditions of the site.

The five steps include:

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

The five-step process has been applied to this site as follows:

1. As best as possible, the site has been developed in the less sensitive areas of the site, promoting buffers to adjacent properties.
2. Calculations for water quality volume can be found in Appendix III.
3. Green Infrastructure Planning practices have been incorporated into the design of the project. Reduction of clearing and grading and soil restoration are two examples of planning practices used in this development. A rain garden facility has been proposed to provide the required runoff reduction volume.

4. Additional Storm Water Management Facility sizing, has been incorporated into the design of the project to treat the entirety of water quality volume required.
5. The Stormwater Management Facilities have been designed and analyzed for the development and will be able to control the peak flows through the use of an outlet structure and a level spreader spillway.

TECHNICAL JUSTIFICATION FOR RUNOFF REDUCTION REQUIREMENTS

In order to meet pollutant removal goals, the bioretention facility will be constructed. Rain gardens are an example of green infrastructure. The basins treat stormwater runoff from the surrounding impervious surfaces. Table 9 shows the required minimum and the provided Runoff Reduction volume for the development.

TECHNICAL JUSTIFICATION FOR RUNOFF REDUCTION REQUIREMENTS (Per NYS SWDM Ch. 5)

Preservation of Natural Features and Conservation Design

- **Preservation of Undisturbed Areas:** Undisturbed areas will be conserved during and after construction.
- **Preservation of Buffers:** All buffers will be conserved during and after construction.
- **Reduction of Clearing and Grading:** Clearing and Grading limits shall be the minimum necessary to build the driveway, foundations, utilities, and the stormwater management facilities.
- **Locating Development in Less Sensitive Areas:** The Development has been located in areas that will create the least impact to sensitive areas.
- **Open Space Design:** Open space design techniques have been utilized to the greatest extent practical.
- **Soil Restoration:** Deep Ripping and Decompaction will be done in grass areas; where practical, following construction. Soil amendments (profile or approved equal) will be added to the hydro seed mix.

Planning Practices for Reduction of Impervious Cover

- **Sidewalk Reduction:** Sidewalks are proposed in areas where pedestrian access is anticipated or required for emergency egress and for site connectivity.
- **Driveway Reduction:** Driveway lengths and widths have been minimized as much as possible. The proposed width is the minimum necessary to allow car access to the proposed Auto Wash, and allow internal circulation for delivery vehicles (Box Trucks).
- **Cul-de-sac Reduction:** N/A
- **Building Footprint Reduction:** The proposed building footprints depicted within the project plans are believed to be the minimum size to meet the needs of facility operations.
- **Parking Reduction:** Proposed parking has been minimized as much as possible to operate and service the car wash and associated vacuum stations.

Techniques for Runoff Reduction

- **Conservation of Natural Areas:** Undisturbed areas will be conserved during and after construction.
- **Sheet flow to Riparian Buffers or Filter Strips:** Stormwater flows will be treated through sheet flow to filter strips before being conveyed to rain garden facility and storm sewers.
- **Tree Planting:** Trees will be planted in accordance with the landscaping plan.
- **Rooftop Disconnection:** Rooftop runoff will be directed to stormwater management facilities.
- **Stream Daylighting:** No streams are contiguous to the site.

- **Rain Gardens:** Rain garden facility is being proposed as depicted.
- **Green Roofs:** Green roofs will not be used to treat runoff from the proposed buildings. Rooftop runoff will be directed to the storm sewer and treated through proposed stormwater management facilities.
- **Stormwater Planters:** Stormwater Planters will not be used to treat runoff from the proposed buildings due to space limitations/ constraints.
- **Rain Barrels/Cisterns:** Rain Barrels/ Cisterns will not be used be used to treat runoff from the proposed building. Infrequent use of the collection system by the property owner could cause unintended discharge of the collected water.
- **Porous Pavement:** Porous pavement will not be used to treat runoff because of "D" soils present.

DURATION OF ACTIVITY

Earth moving activities is proposed to begin after all necessary local and state approvals have been granted and be completed within 6 months.

POLLUTION PREVENTION CONTROL MEASURES

Temporary stabilization practices for this site include siltation fence, stone and block inlet protection in paved areas; filter fabric drop inlet protection of new inlets. See drawing numbers CA120 and CA503 entitled "Grading and Erosion Control Plan" and "Detail Sheet" for additional Erosion and Sediment Control Details and Notes.

ONSITE CONSTRUCTION MATERIAL STORAGE

All site work shall be performed in accordance with Title 29 of the Federal Regulations, Part 1926 Safety and Health Regulations for Construction (OSHA). In addition, the site subcontractor shall follow all material management practices that will reduce the risk of exposure of any material to stormwater runoff. The site subcontractor shall adhere to all of the following construction practices in regard to material storage:

- All materials shall be stored in an orderly manner with their appropriate manufacturer's labels and storage recommendations visible, and where possible, store any spillable materials under a roof or in a storage container.
- Materials should not be mixed with one another unless recommended by the manufacturer. All materials mixed or not mixed shall be sealed properly when not being used.
- Subcontractor shall follow manufacturer's storage recommendations for proper storage of all materials, and a regular inspection shall be made.
- Every vehicle shall be checked for leakage regularly and stored in the designated area. Any containers used to store petroleum or other liquids for vehicles shall be stored in proper containers and in a place protected from spilling or mixing with other liquids and placed in secondary containment.
- Subcontractor shall provide proper storage for fertilizers, herbicides, pesticides and paints with manufacturer's labels and storage recommendations visible. All fertilizers, herbicides, pesticides and paints shall be applied using the minimum amount recommended by the manufacturer.

In addition to the standard management practices to be followed above, the sites subcontractor shall also follow the spill clean-up procedures:

- Spills of petroleum, toxins or hazardous materials will be reported to the New York State Health Department and the New York State Department of Environmental Conservation.
- Manufacturer's recommended methods for spill clean-up will be clearly posted and site personnel will be made aware of the procedures and location of clean up supplies.
- Materials and equipment necessary for clean-up will be kept in a material storage area onsite to be identified by the site subcontractor.
- Equipment and materials will include, but not be limited to brooms, dust pans, mops, rags, gloves, goggles, speed-dry, sand, sawdust and trash containers.
- Spills will be cleaned up immediately upon discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with the spilled substance.
- A spill report will be completed and filed on site.

TEMPORARY AND PERMANENT EROSION CONTROL MEASURES

All erosion and sediment control measures were designed in accordance with the New York State Standards and Specifications for Erosion and Sediment Control." The site subcontractor shall adhere to all erosion and sediment control measures shown on the Storm Water Pollution Prevention Plan provided in Appendix IV. The following temporary measures must be followed to control any potential pollutants leaving the construction site.

- Install all erosion and sediment control practices (including but not limited to, stabilized construction entrance, silt fence, and staging areas).
- Clearing and Grubbing – All vegetative material to be removed from project site.
- Strip & stock pile topsoil. Install additional erosion controls (silt fence) around stockpile.
- Prepare material storage, and construction vehicle parking areas.
- General Earthwork Activities – Necessary cuts and fills, excavation for building foundation, and rough grade stormwater management facilities.
- Installation of concrete washout once concrete activities commence.
- Trenching and installation of utilities and storm sewers.
- Pavement and concrete subgrade preparation.
- Install inlet protection for storm inlets which are not above grade, as construction progresses.
- Pavement and sidewalk subbase preparation and install.
- Miscellaneous Site Items – Lighting, landscape, signage etc.
- Restore disturbed areas with topsoil, seed and mulch.
- Remove erosion and sediment controls upon final stabilization (as confirmed by SWPPP inspector).

These activities shall be performed in such a manner that all components of activities will be completed and stabilized with vegetation and/or compacted stone base before proceeding to the next section.

The following permanent stabilization procedures shall be implemented:

- Disturbed portions of the site where construction activities have been completed shall be stabilized with topsoil, permanent seed and covered with straw no later than 7 days after the last construction activity has occurred. Soil amendments shall be added where required.
- All disturbed areas shall be restored in accordance with Chapter 5, Table 5.3 of the 2015 New York State Stormwater Management Design Manual.

LOCATION OF EROSION CONTROL MEASURES

See Grading and Erosion Sediment Control Plan & Detail Sheet, drawing numbers C120 and CA503 for location, size and lengths of erosion control measures.

IMPLEMENTATION SCHEDULE

Stabilization measures shall initiate as soon as practicable in portion of the site where construction activities have temporarily or permanently ceased, however, in no case more than fourteen (14) days after the construction activity in that portion of the site has temporarily or permanently ceased. This requirement does not apply in the following instances:

- Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as practicable. Temporary stabilization with straw tracked into the disturbed areas is required.

The onsite construction supervisor shall visually inspect all erosion control measures daily. Any measure that is damaged or becomes inoperative shall be replaced immediately. All erosion/sediment control measures must remain in place and properly inspected and operable until all disturbed areas have been seeded and germination has been obtained.

MAINTENANCE AND INSPECTION SCHEDULE

A qualified site supervisor shall assess the site prior to construction beginning and certify in an inspection report that all erosion and sediment facilities have been completely and properly installed and functional. Once construction begins, an inspection shall be done every seven (7) day. The following should be included in the inspectors report following each site visit:

- 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.
- Indicate on a site plan areas that have had temporary or permanent stabilization.
- Indicate on a site plan areas that have not had active site work within the past 14 days.
- All erosion and sediment controls shall be inspected and the approximate percent of remaining silt storage capacity (in the sediment trap basins) shall be reported in the inspection report on a weekly basis.
- Inspection of erosion and sediment control practices and any maintenance requirements should be recorded. Depths of sediment should be measured, and effectiveness should be recorded. If any methods of erosion or sediment control are found to be inadequate, a recommendation should be made that would bring all facilities to standards set forth by the NYSDEC.
- An on-site logbook shall be maintained and weekly inspections should be kept updated and available for permitting authorities upon request. Prior to construction, the site supervisor shall certify in the site logbook that the SWPPP prepared in accordance with stormwater permit GP-0-15-002 meets all Federal, and State erosion and sediment

control requirements. Prior to filing notice of Termination or the end of the permit, the site supervisor shall perform a final site inspection. The site supervisor shall report that 80% germination has been completed. The report should also state all erosion and sediment methods have been removed.

IMPLEMENTATION OF RESPONSIBILITY

Each contractor(s) and subcontractor(s) shall be responsible for implementing the SWPPP temporary practices, structures and controls. The owner shall be responsible for implementing all permanent operation and maintenance practices and procedures. All contractor(s) and subcontractor(s) and owner shall sign the certification statement. Any new contractor(s) or subcontractor(s) must likewise be added to the certification.

POST-CONSTRUCTION OPERATIONS AND MAINTENANCE

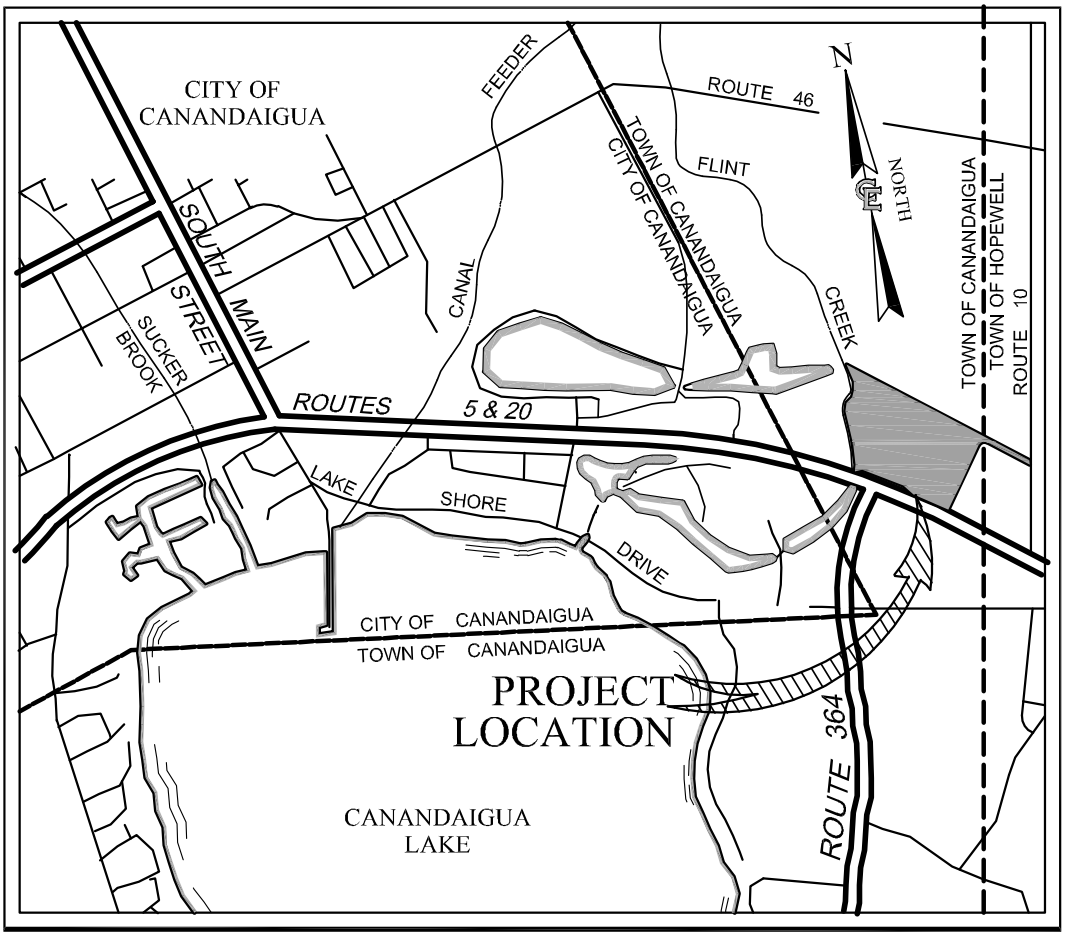
Auto Wash No.06 shall be responsible for the long term maintenance and continuation of stormwater control measures for the development. Refer to the NYSDEC's standard maintenance checklist located in Appendix IV of this SWPPP. The owner shall maintain, clean, repair, replace (if necessary) the stormwater control measures for the site. The facility owner shall be responsible for all expenses related to maintenance of the stormwater management facilities. The facility owner shall provide periodic inspection of stormwater control measures, not less than once every three-year period to determine the condition and integrity of the measures.

CONCLUSION

Stormwater runoff from the proposed development site will be captured and conveyed to the proposed storm water management facilities. The storm water management facilities and bioretention basins will provide 1 through 100-year storm event peak flow attenuation for the site as well as water quality, runoff reduction and stream channel protection volumes. Design and construction criteria conform with the "New York State Department of Environmental Conservation's Phase II Stormwater Rules" and the "New York State Stormwater Management Design Manual", dated January 2015 in association with "SPDES General Permit for Stormwater Discharges from Construction Activity", dated January, 2015 (GP-0-15-002).

APPENDIX I

- **SITE LOCATION SKETCH**
- **NRCS HYDROLOGIC SOIL MAPPING**
- **NYSDEC ENVIRONMENTAL RESOURCE MAPPER**
- **NYSDEC STORMWATER INTERACTIVE MAPPER**
- **NATIONAL WETLANDS INVENTORY**
- **NYS CULTURAL RESOURCE INFORMATION SYSTEM MAPPER (CRIS)**

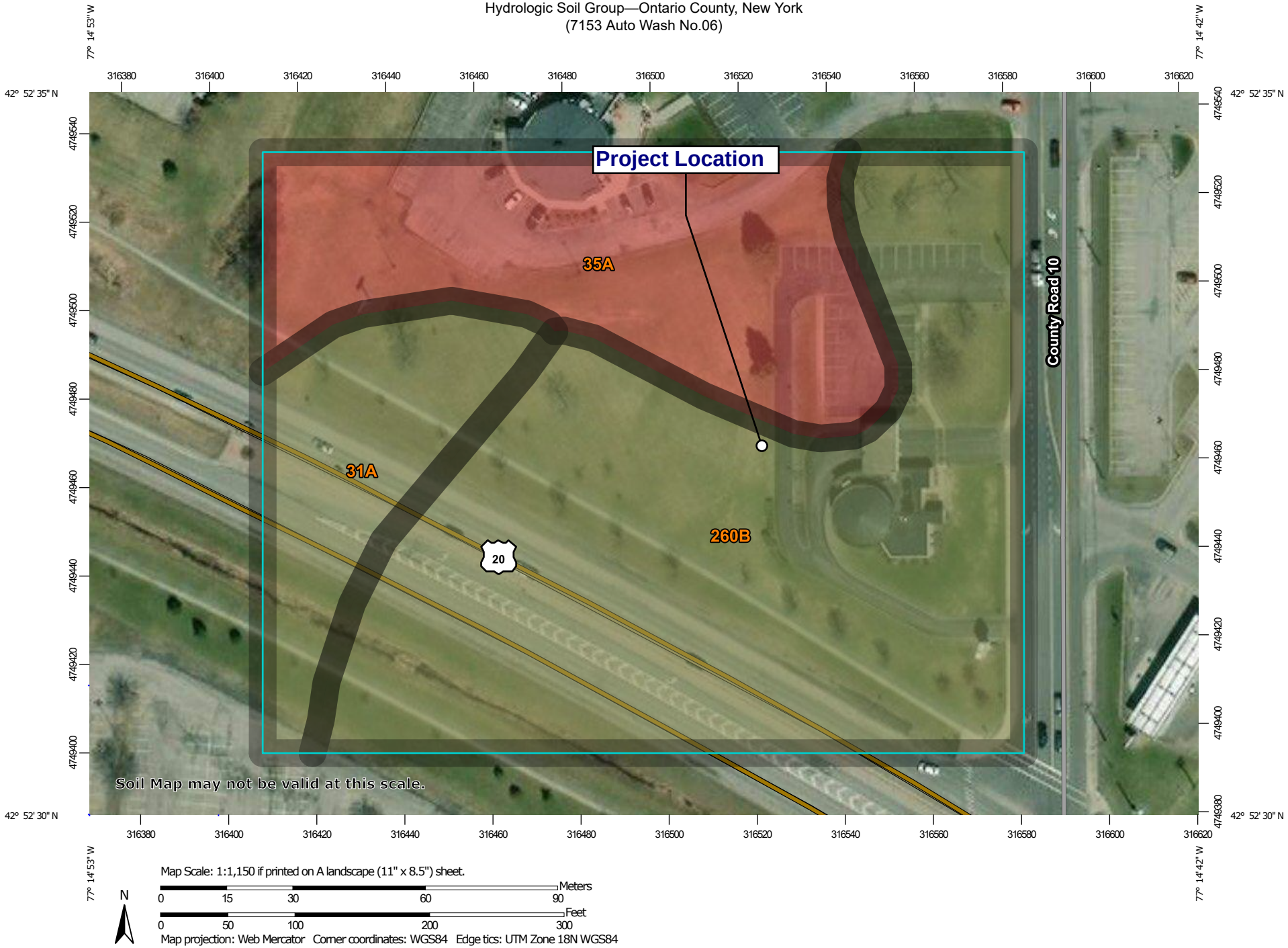


LOCATION SKETCH

NOT TO SCALE

COSTICH ENGINEERING

Hydrologic Soil Group—Ontario County, New York
(7153 Auto Wash No.06)



Map Scale: 1:1,150 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ontario County, New York
Survey Area Data: Version 16, Sep 3, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 11, 2015—Oct 21, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
31A	Collamer silt loam, 0 to 3 percent slopes	C/D	0.8	13.9%
35A	Odessa silt loam, 0 to 3 percent slopes	D	1.6	27.2%
260B	Cayuga silt loam, 3 to 8 percent slopes	C/D	3.4	58.9%
Totals for Area of Interest			**5.8**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

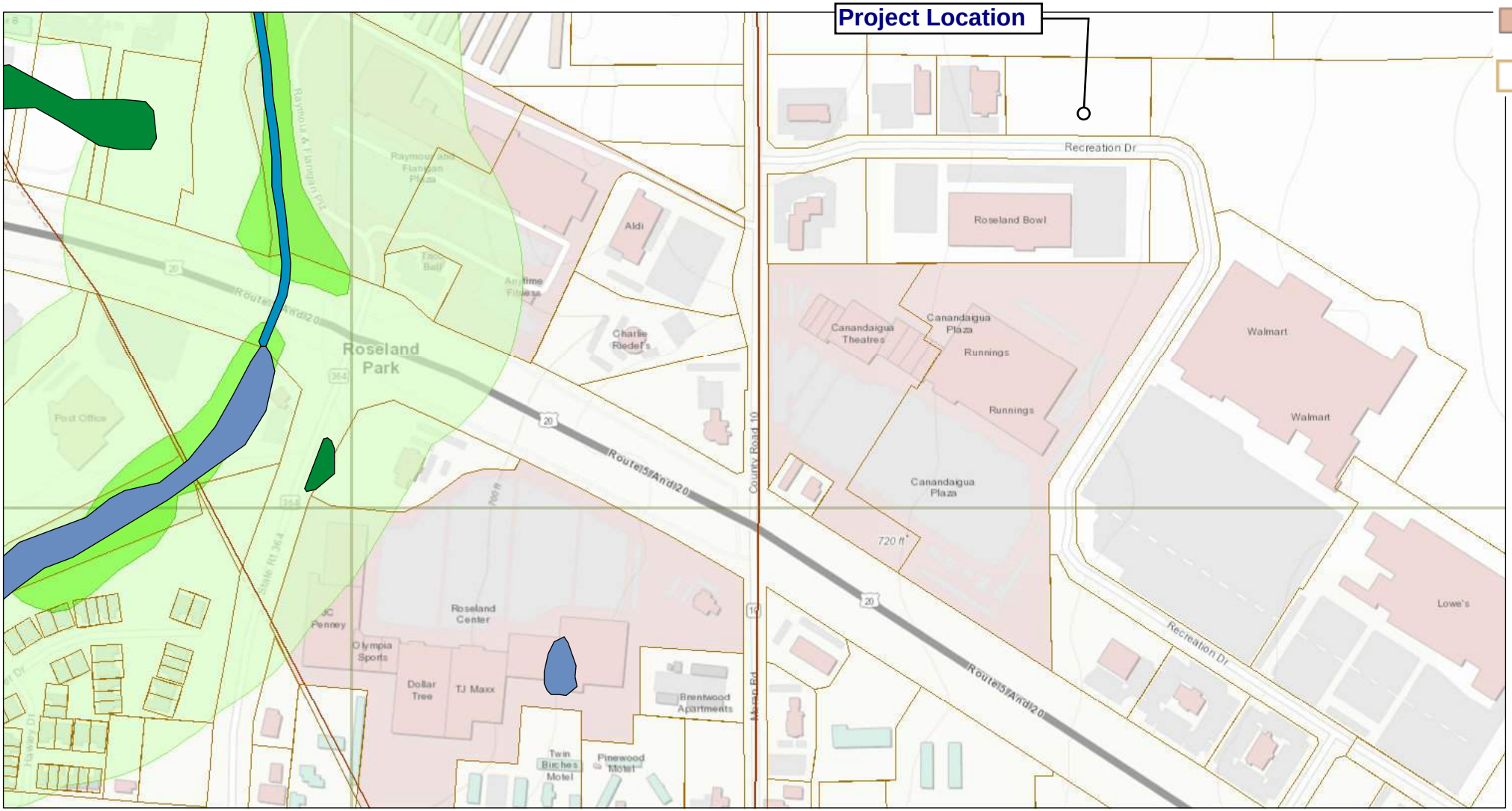
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

CE#7153 AUTO WASH NO.06



September 5, 2019

1:4,514

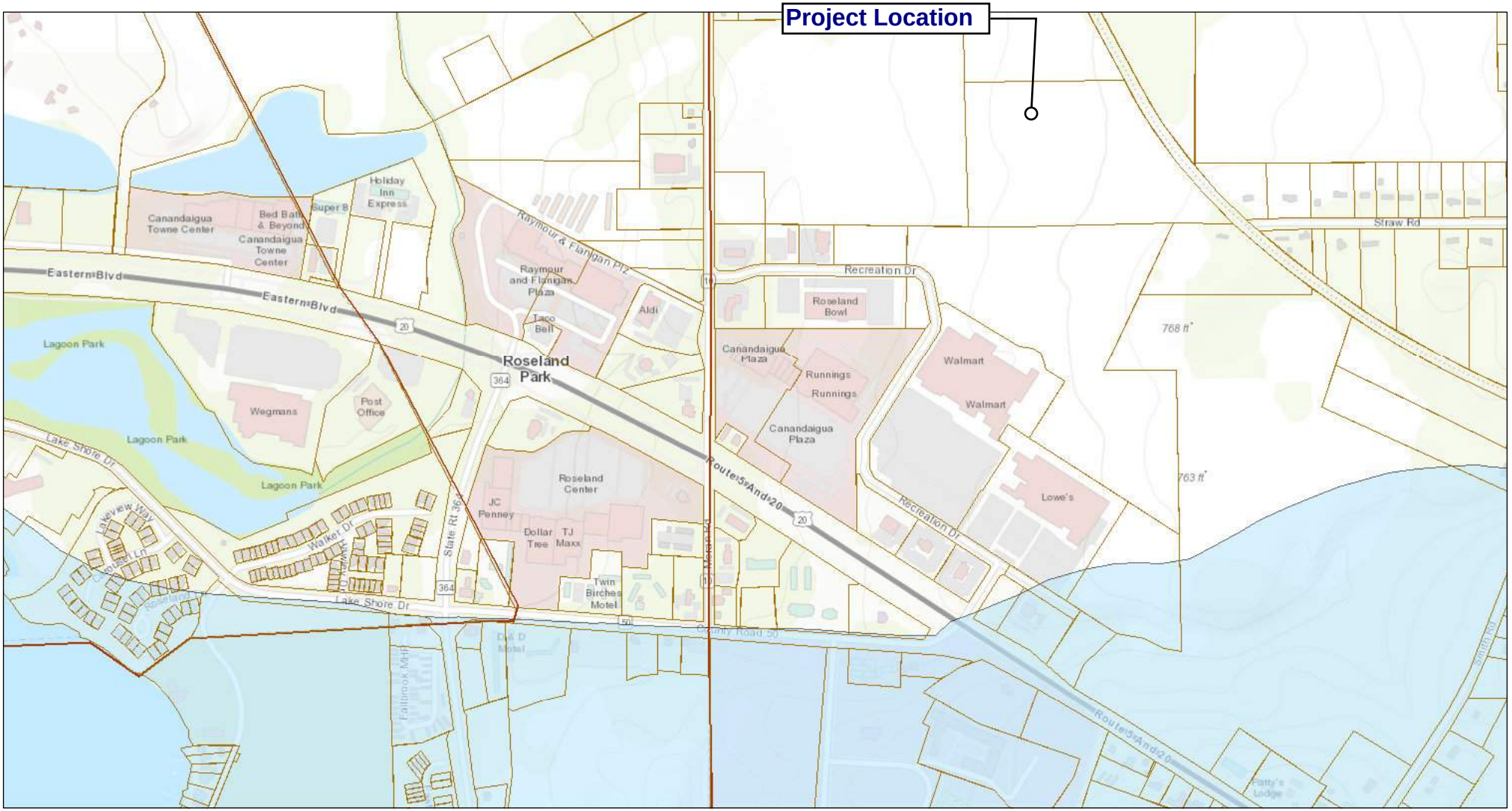
0 0.05 0.1 0.2 mi

0 0.075 0.15 0.3 km

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

NYS Department of Environmental Conservation
Not a legal document

CE#7153 Auto Wash No.06



September 5, 2019

1:9,028

0 0.1 0.2 0.4 mi

0 0.175 0.35 0.7 km

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

NYS Department of Environmental Conservation
Not a legal document

U.S. Fish and Wildlife Service
National Wetlands Inventory

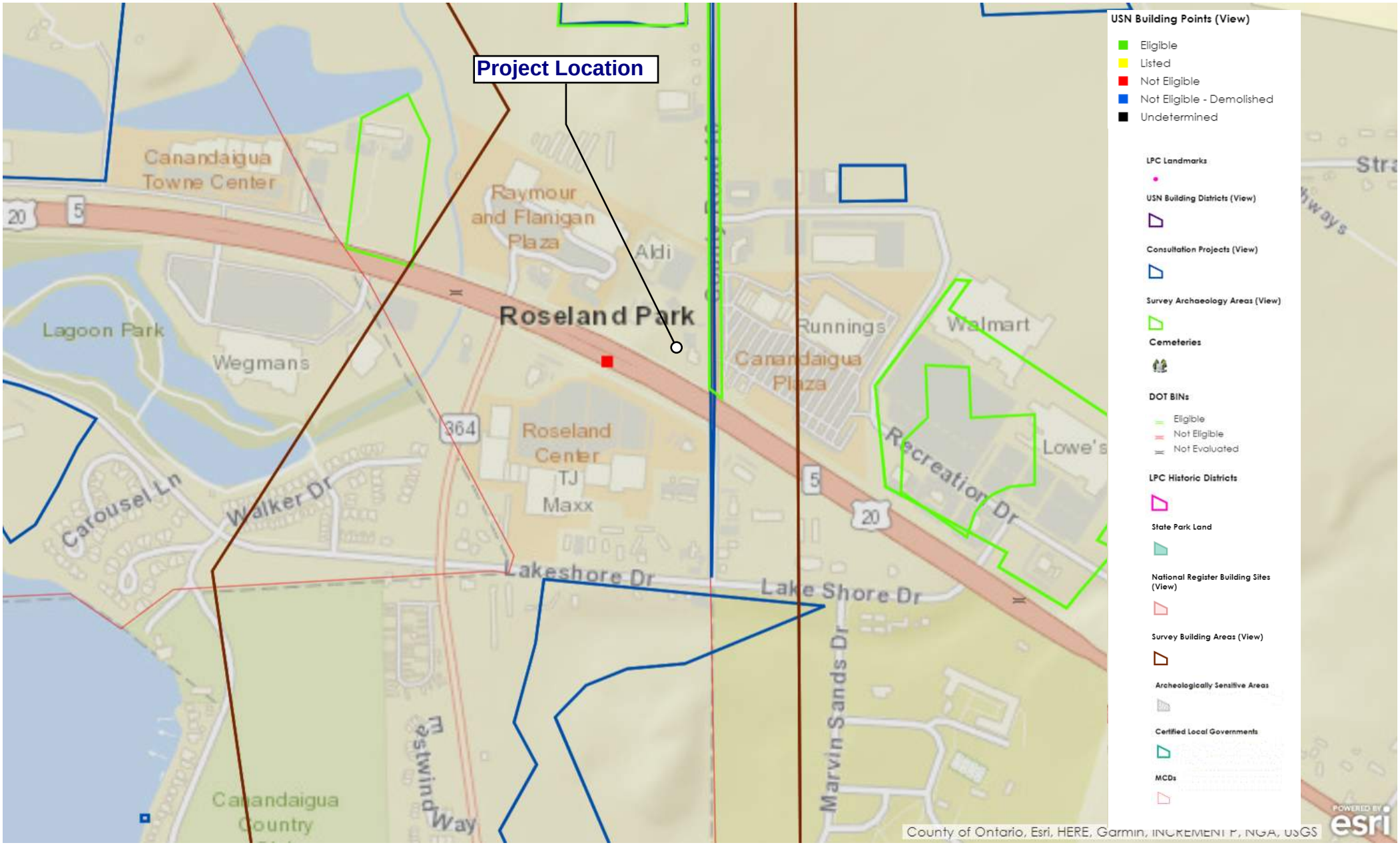
CE#7153 Auto Wash No.06

September 9, 2019

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.


Project Location
USN Building Points (View)
Eligible
Listed
Not Eligible
Not Eligible - Demolished
Undetermined
LPC Landmarks
USN Building Districts (View)
Consultation Projects (View)
Survey Archaeology Areas (View)
Cemeteries
DOT BINs
Eligible
Not Eligible
Not Evaluated
LPC Historic Districts
State Park Land
National Register Building Sites (View)
Survey Building Areas (View)
Archeologically Sensitive Areas
Certified Local Governments
MCDs
Roseland Park
Canandaigua Towne Center
Raymour and Flanigan Plaza
Aldi
Lagoon Park
Wegmans
Runnings
Walmart
Canandaigua Plaza
Roseland Center
TJ Maxx
Lowe's
Recreation Dr
Carousel Ln
Walker Dr
Lakeshore Dr
Lake Shore Dr
Marvin Sands Dr
Eastwind Way
Canandaigua Country
20
5
364
County of Ontario, Esri, HERE, Garmin, INCREMENT P, NGA, USGS
esri

APPENDIX II

- **EXISTING DRAINAGE AREA MAP**
- **EXISTING HYDROCAD ROUTING REPORT**
- **EXISTING SCS CALCULATIONS**

Discharge Point 01
Existing Swale

E-1
AREA = 0.32 ac
Impervious Cover = 0.00 ac
Tc= 0.240 hrs (14.4 Min)
CN= 79

E-3
AREA = 0.69 ac
Impervious Cover = 0.37 ac
Tc= 0.282 hrs (16.9 Min)
CN = 89

E-4
AREA = 0.07 ac
Impervious Cover = 0.05 ac
Tc= 0.170 hrs (10.2 Min)
CN = 92

Discharge Point 02
County Road 10

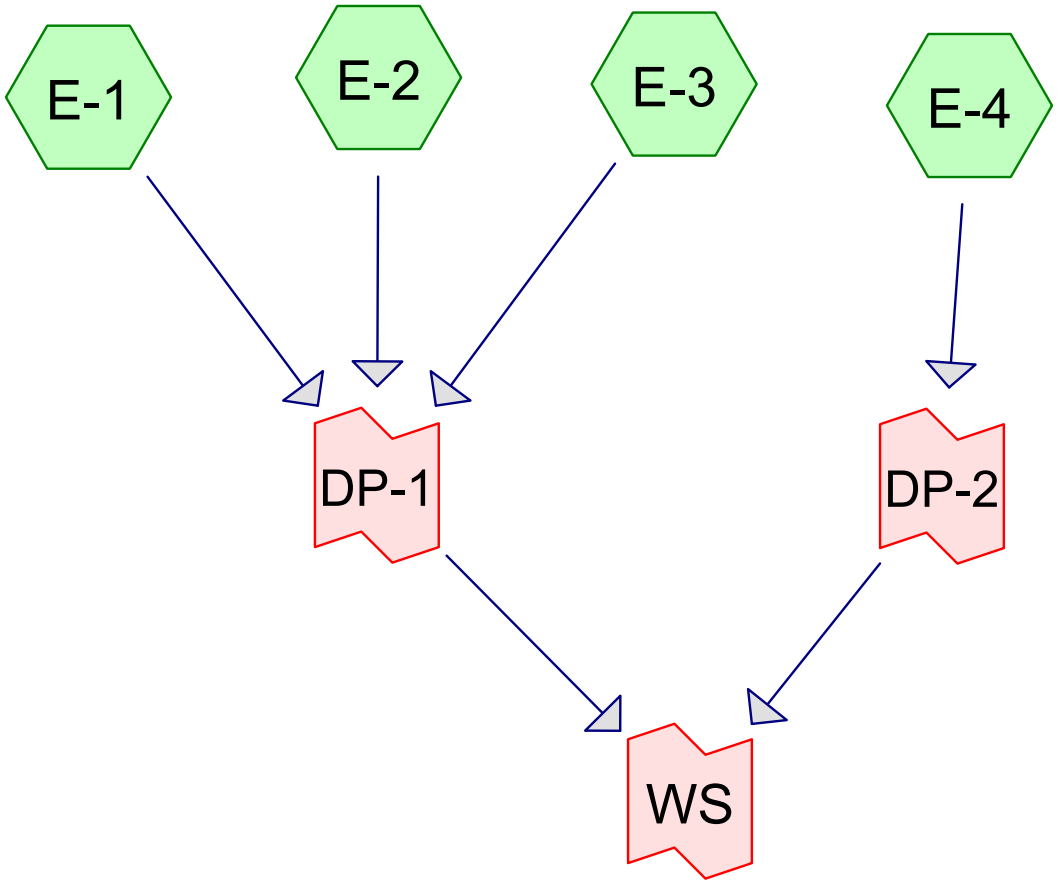
E-2
AREA = 0.97 ac
Impervious Cover = 0.24 ac
Tc= 0.320 hrs (19.2 Min)
CN = 82

Drainage Path
Overal Drainage Area
Sub-Drainage Areas
Existing Storm Sewers

EXISTING DRAINAGE AREA MAP

Auto Wash No.06 ~ CE#7153
C.R.A. ~ 09 / 20 / 2019 ~ 1":40'

COSTICH ENGINEERING



Subcat Reach Pond Link

Routing Diagram for 2019-09-10 EXISTING
Prepared by {enter your company name here}, Printed 9/20/2019

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.320	79	(E-1)
0.970	82	(E-2)
0.690	89	(E-3)
0.070	92	(E-4)
2.050	**84**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
2.050	Other	E-1, E-2, E-3, E-4
2.050		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	2.050	2.050		E-1, E-2, E-3, E-4
0.000	**0.000**	**0.000**	**0.000**	**2.050**	**2.050**	**TOTAL AREA**	

Time span=0.50-24.00 hrs, dt=0.05 hrs, 471 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-1: Runoff Area=0.320 ac 0.00% Impervious Runoff Depth>0.46"
Tc=14.4 min CN=79 Runoff=0.17 cfs 0.012 af

Subcatchment E-2: Runoff Area=0.970 ac 0.00% Impervious Runoff Depth>0.57"
Tc=19.2 min CN=82 Runoff=0.59 cfs 0.046 af

Subcatchment E-3: Runoff Area=0.690 ac 0.00% Impervious Runoff Depth>0.93"
Tc=16.9 min CN=89 Runoff=0.78 cfs 0.054 af

Subcatchment E-4: Runoff Area=0.070 ac 0.00% Impervious Runoff Depth>1.14"
Tc=10.2 min CN=92 Runoff=0.12 cfs 0.007 af

Link DP-1: Inflow=1.53 cfs 0.112 af
Primary=1.53 cfs 0.112 af

Link DP-2: Inflow=0.12 cfs 0.007 af
Primary=0.12 cfs 0.007 af

Link WS: Inflow=1.62 cfs 0.119 af
Primary=1.62 cfs 0.119 af

Total Runoff Area = 2.050 ac Runoff Volume = 0.119 af Average Runoff Depth = 0.70"
100.00% Pervious = 2.050 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment E-1:

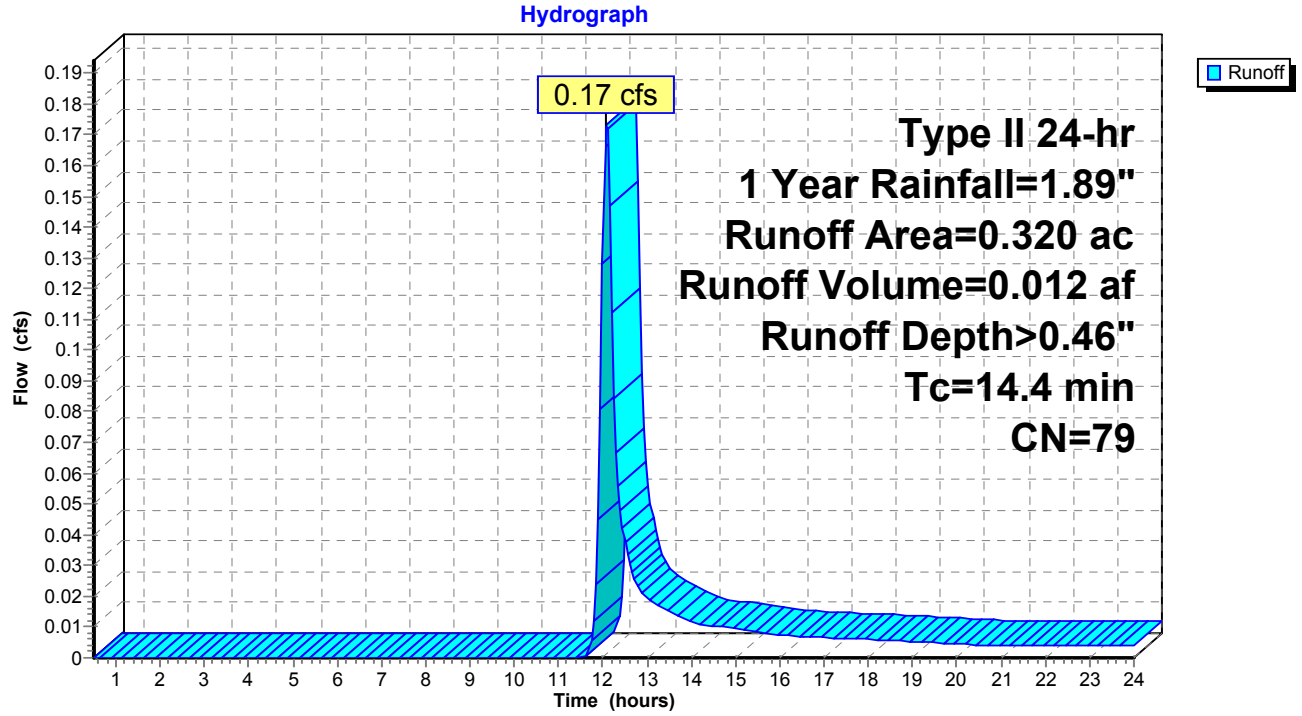
Runoff = 0.17 cfs @ 12.08 hrs, Volume= 0.012 af, Depth> 0.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=1.89"

	Area (ac)	CN	Description
*	0.320	79	
	0.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry,**

Subcatchment E-1:



Summary for Subcatchment E-2:

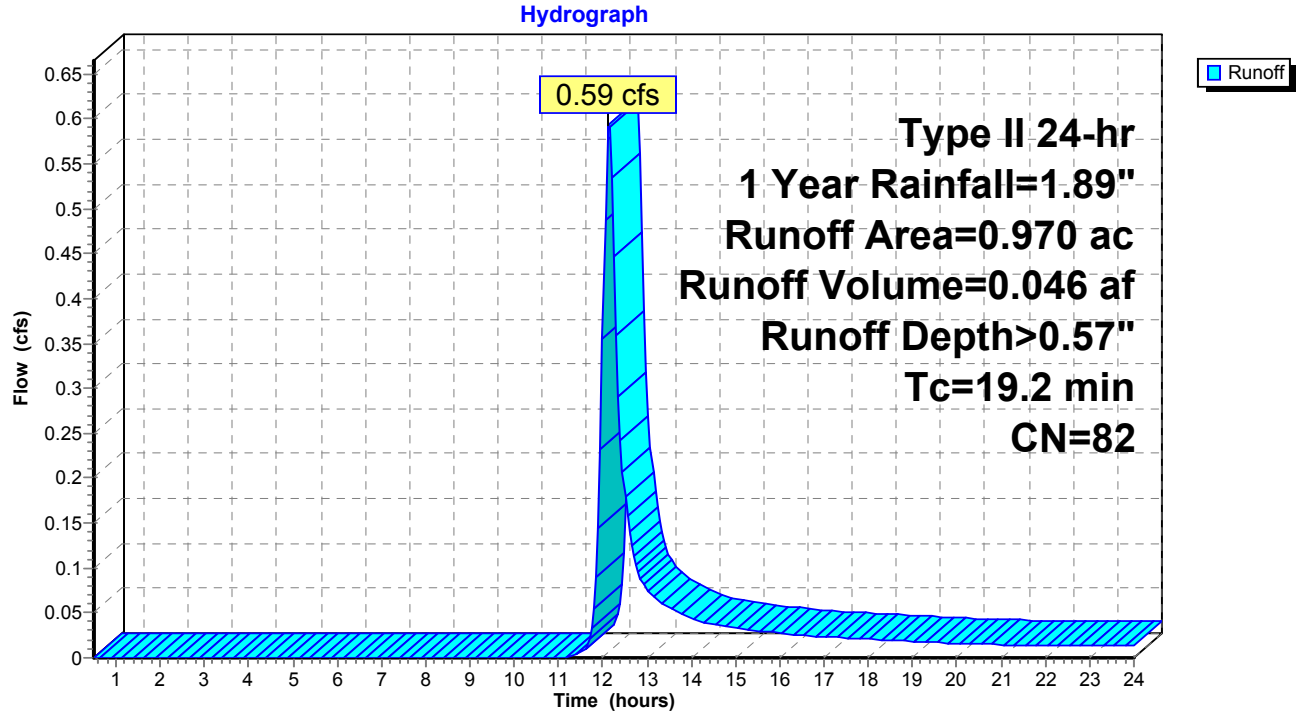
Runoff = 0.59 cfs @ 12.13 hrs, Volume= 0.046 af, Depth> 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=1.89"

	Area (ac)	CN	Description
*	0.970	82	
	0.970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2					**Direct Entry,**

Subcatchment E-2:



Summary for Subcatchment E-3:

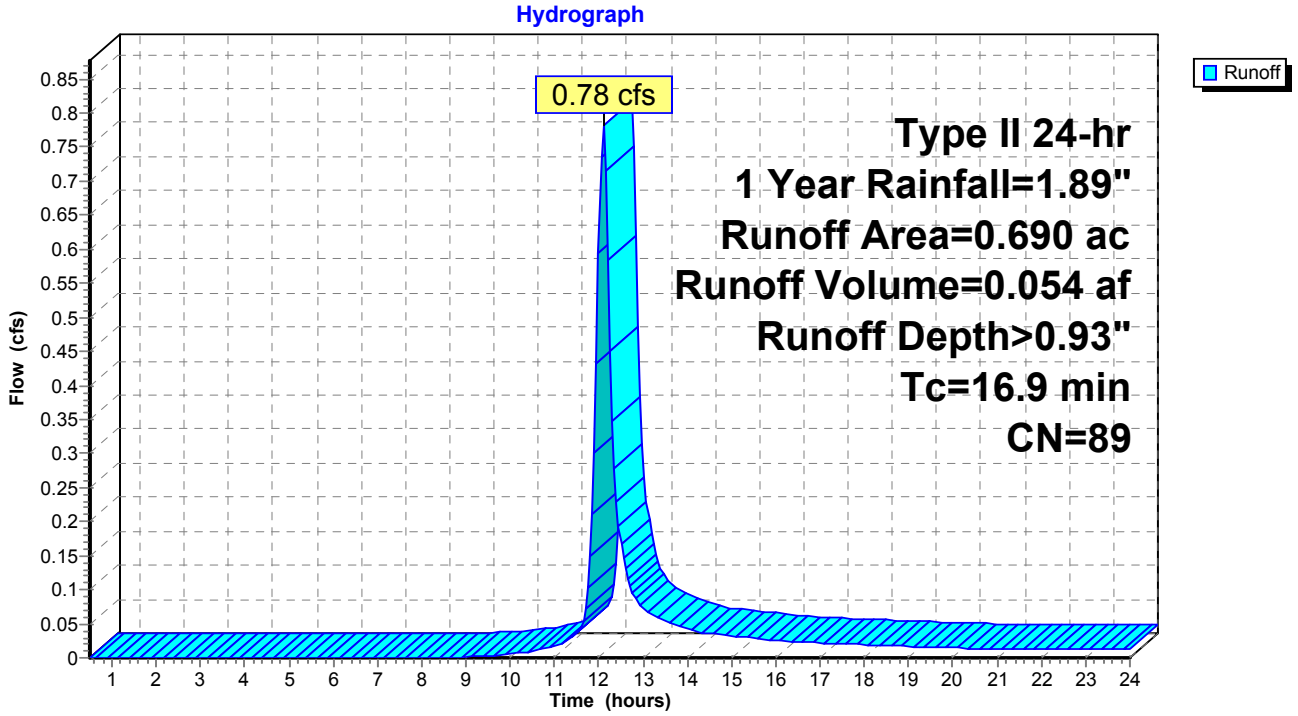
Runoff = 0.78 cfs @ 12.10 hrs, Volume= 0.054 af, Depth> 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=1.89"

	Area (ac)	CN	Description
*	0.690	89	
	0.690		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9					**Direct Entry,**

Subcatchment E-3:



Summary for Subcatchment E-4:

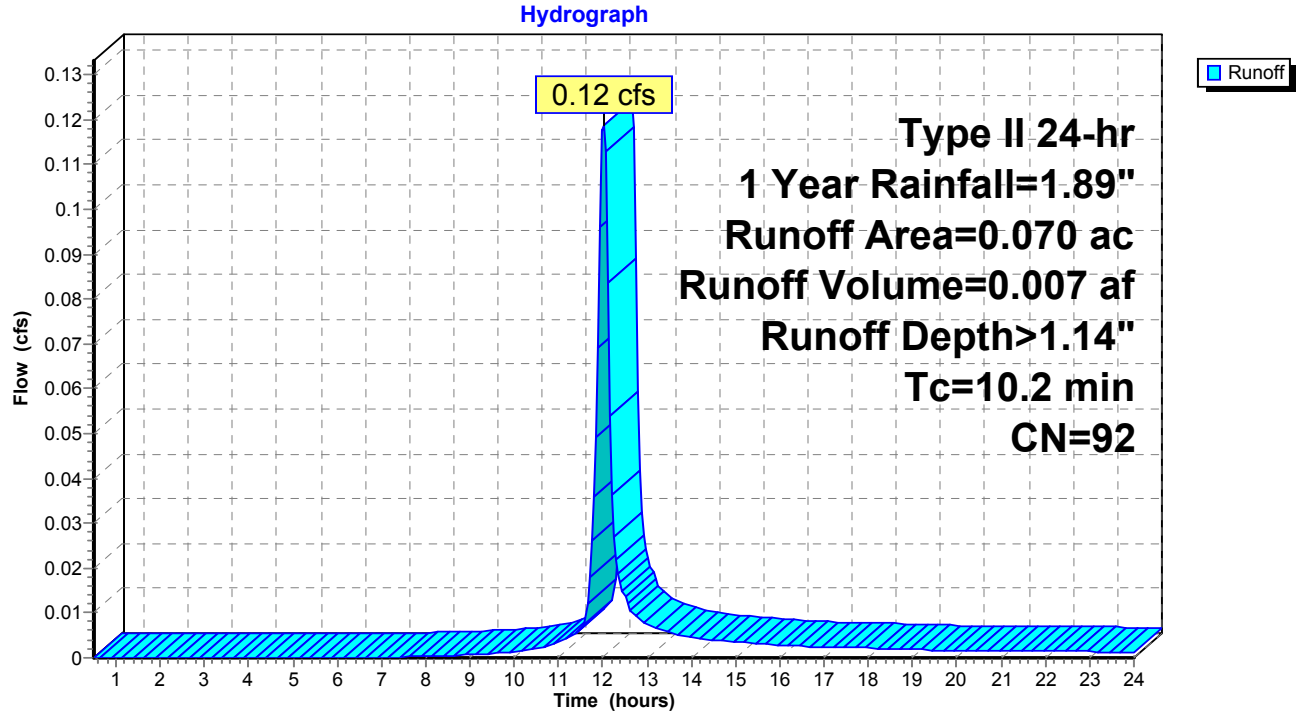
Runoff = 0.12 cfs @ 12.02 hrs, Volume= 0.007 af, Depth> 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=1.89"

	Area (ac)	CN	Description
*	0.070	92	
	0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2					**Direct Entry,**

Subcatchment E-4:

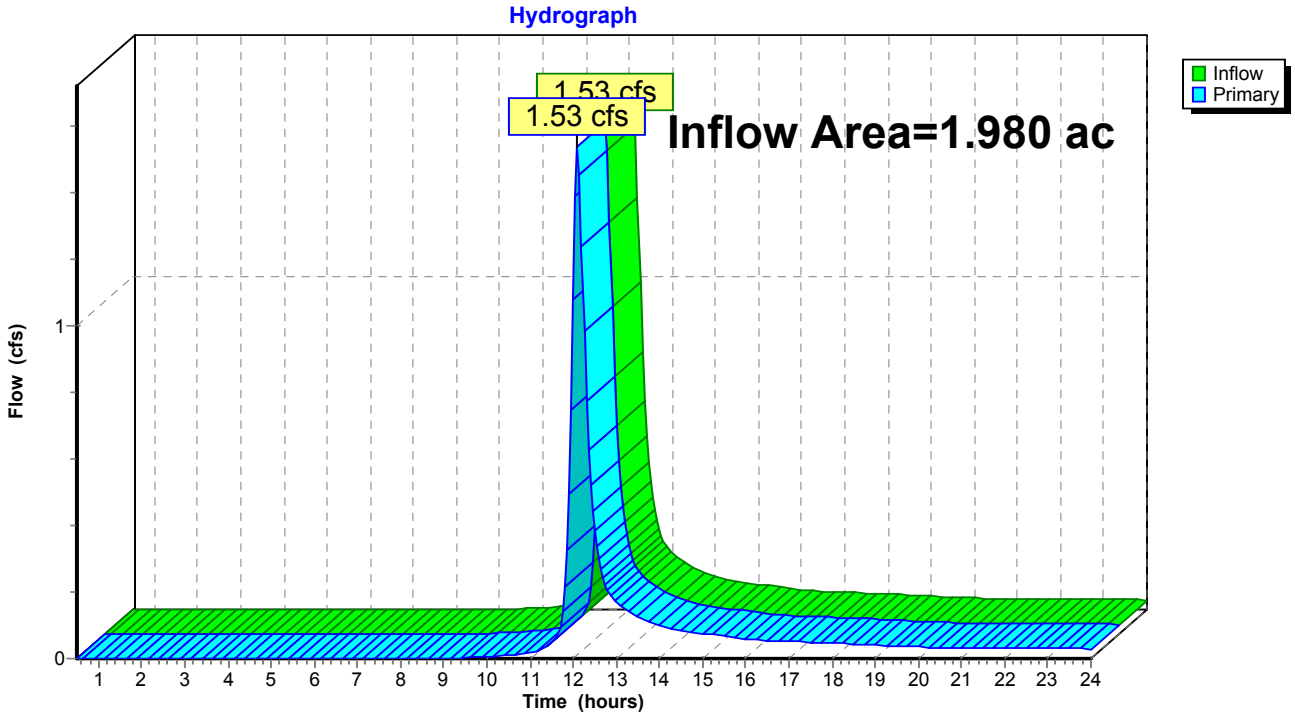


Summary for Link DP-1:

Inflow Area = 1.980 ac, 0.00% Impervious, Inflow Depth > 0.68" for 1 Year event
Inflow = 1.53 cfs @ 12.11 hrs, Volume= 0.112 af
Primary = 1.53 cfs @ 12.11 hrs, Volume= 0.112 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link DP-1:

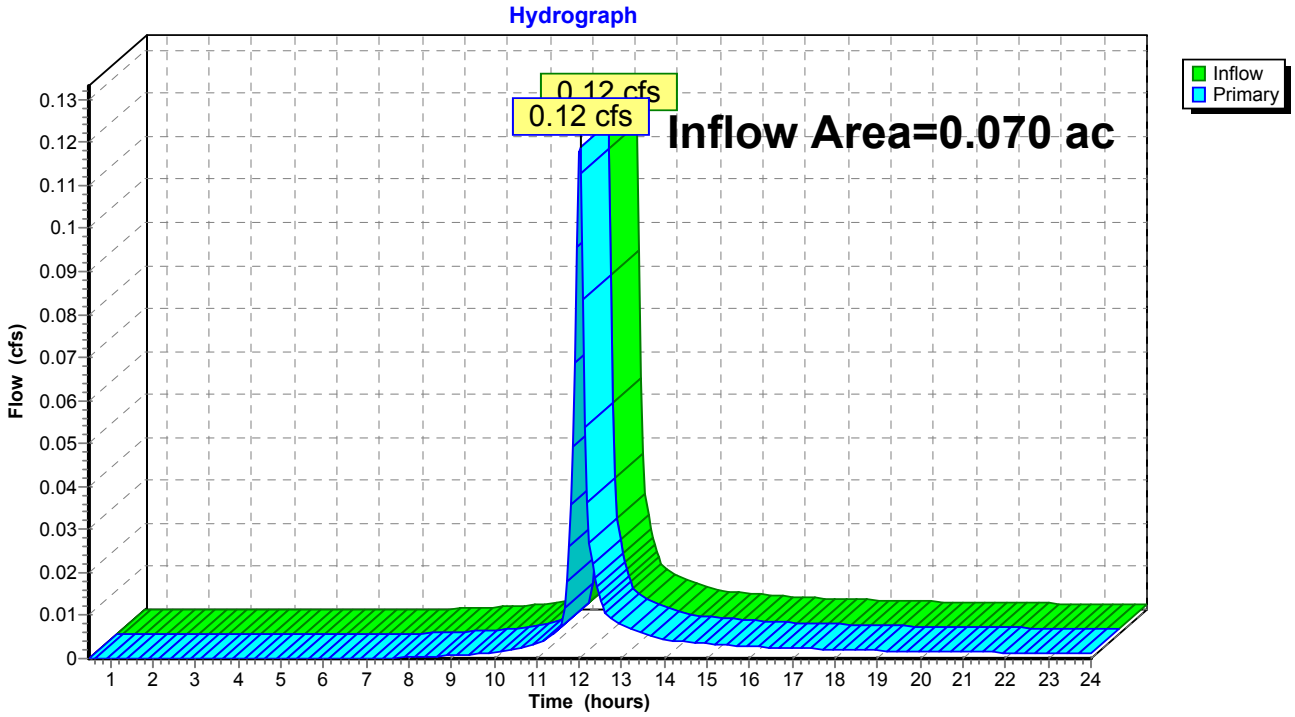


Summary for Link DP-2:

Inflow Area = 0.070 ac, 0.00% Impervious, Inflow Depth > 1.14" for 1 Year event
Inflow = 0.12 cfs @ 12.02 hrs, Volume= 0.007 af
Primary = 0.12 cfs @ 12.02 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link DP-2:

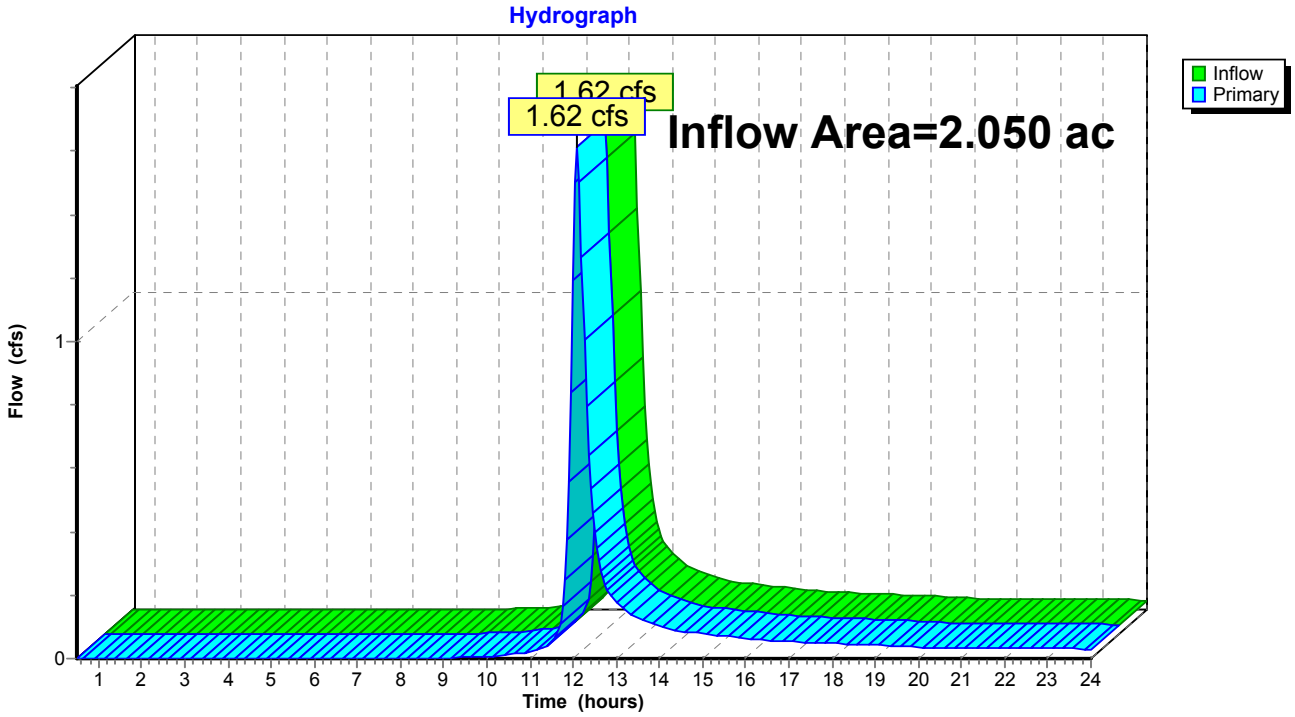


Summary for Link WS:

Inflow Area = 2.050 ac, 0.00% Impervious, Inflow Depth > 0.70" for 1 Year event
Inflow = 1.62 cfs @ 12.10 hrs, Volume= 0.119 af
Primary = 1.62 cfs @ 12.10 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link WS:



Time span=0.50-24.00 hrs, dt=0.05 hrs, 471 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-1: Runoff Area=0.320 ac 0.00% Impervious Runoff Depth>0.63"
Tc=14.4 min CN=79 Runoff=0.25 cfs 0.017 af

Subcatchment E-2: Runoff Area=0.970 ac 0.00% Impervious Runoff Depth>0.77"
Tc=19.2 min CN=82 Runoff=0.82 cfs 0.062 af

Subcatchment E-3: Runoff Area=0.690 ac 0.00% Impervious Runoff Depth>1.18"
Tc=16.9 min CN=89 Runoff=0.99 cfs 0.068 af

Subcatchment E-4: Runoff Area=0.070 ac 0.00% Impervious Runoff Depth>1.41"
Tc=10.2 min CN=92 Runoff=0.15 cfs 0.008 af

Link DP-1: Inflow=2.05 cfs 0.147 af
Primary=2.05 cfs 0.147 af

Link DP-2: Inflow=0.15 cfs 0.008 af
Primary=0.15 cfs 0.008 af

Link WS: Inflow=2.15 cfs 0.156 af
Primary=2.15 cfs 0.156 af

Total Runoff Area = 2.050 ac Runoff Volume = 0.156 af Average Runoff Depth = 0.91"
100.00% Pervious = 2.050 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment E-1:

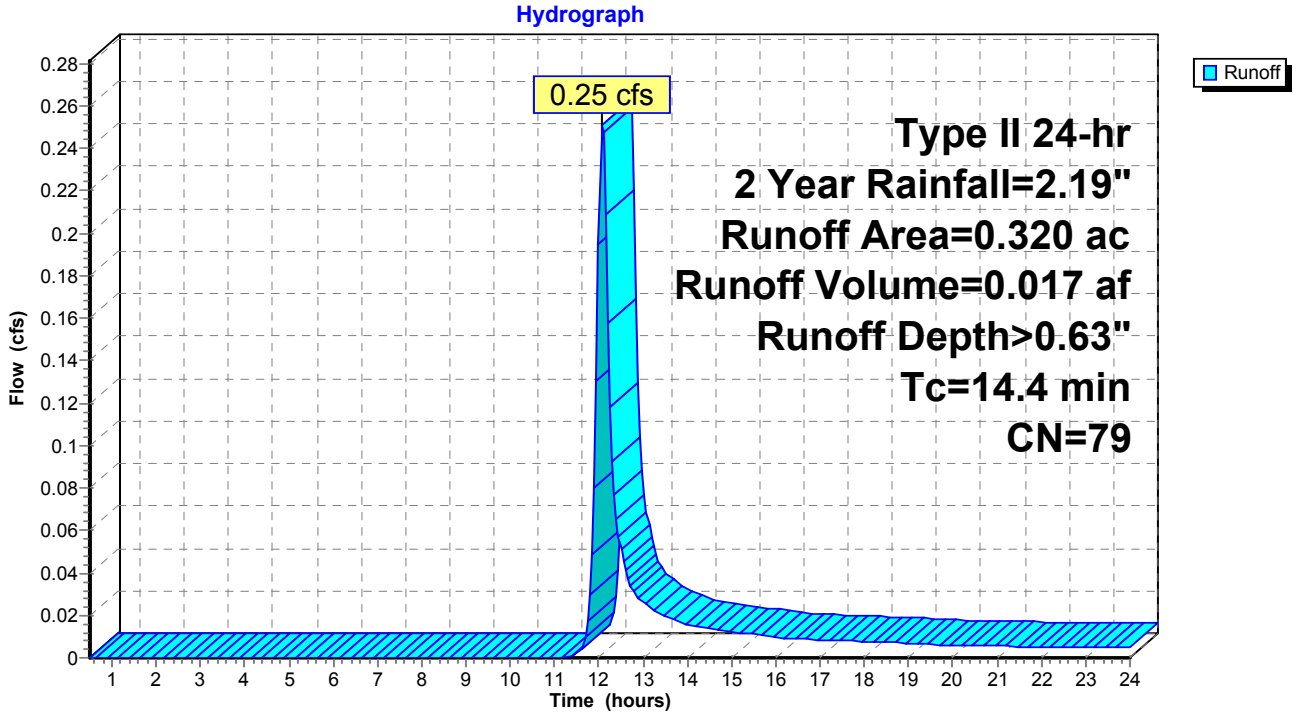
Runoff = 0.25 cfs @ 12.08 hrs, Volume= 0.017 af, Depth> 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 Year Rainfall=2.19"

	Area (ac)	CN	Description
*	0.320	79	
	0.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry,**

Subcatchment E-1:



Summary for Subcatchment E-2:

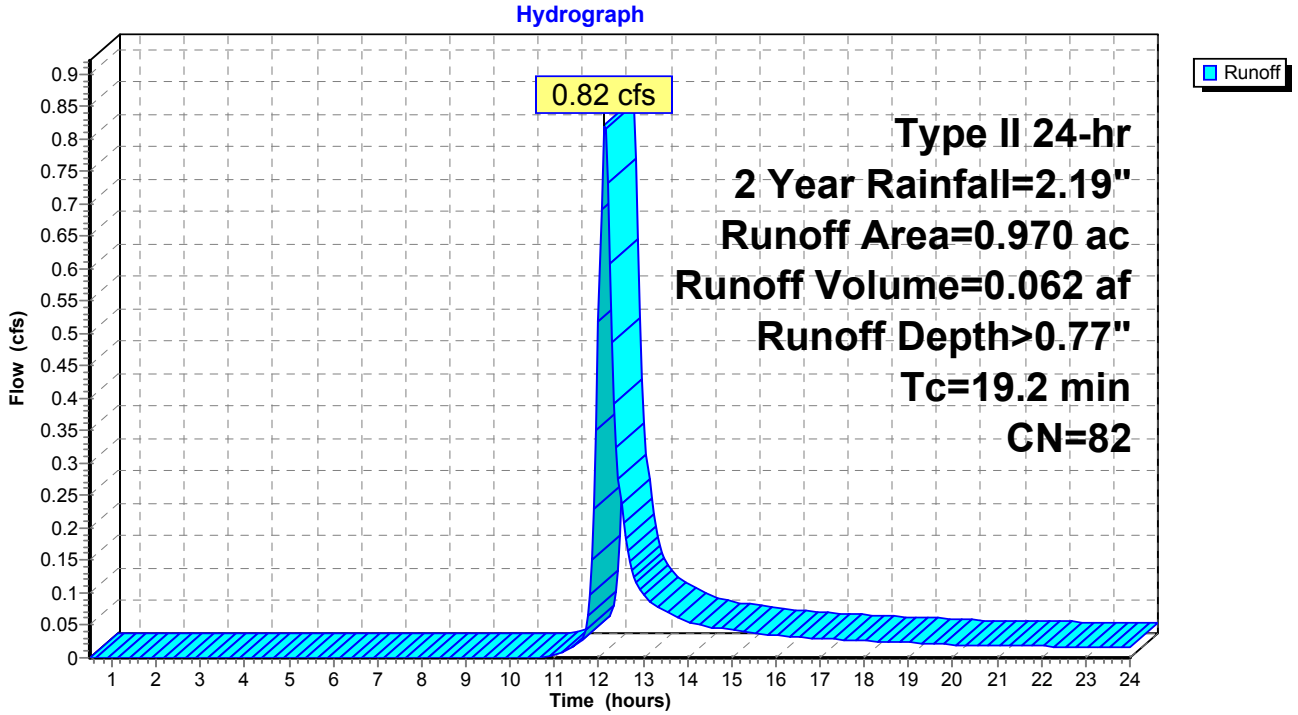
Runoff = 0.82 cfs @ 12.13 hrs, Volume= 0.062 af, Depth> 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 Year Rainfall=2.19"

	Area (ac)	CN	Description
*	0.970	82	
	0.970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2					**Direct Entry,**

Subcatchment E-2:



Summary for Subcatchment E-3:

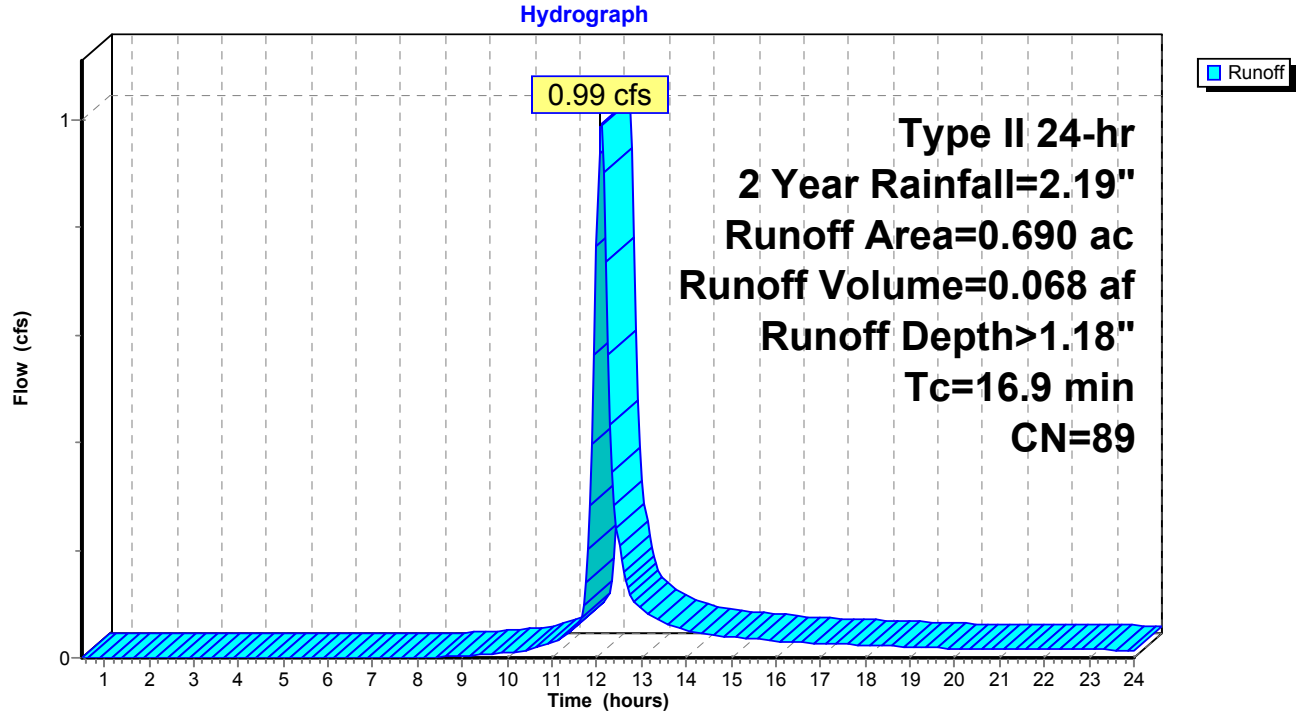
Runoff = 0.99 cfs @ 12.09 hrs, Volume= 0.068 af, Depth> 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 Year Rainfall=2.19"

	Area (ac)	CN	Description
*	0.690	89	
	0.690		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9					**Direct Entry,**

Subcatchment E-3:



Summary for Subcatchment E-4:

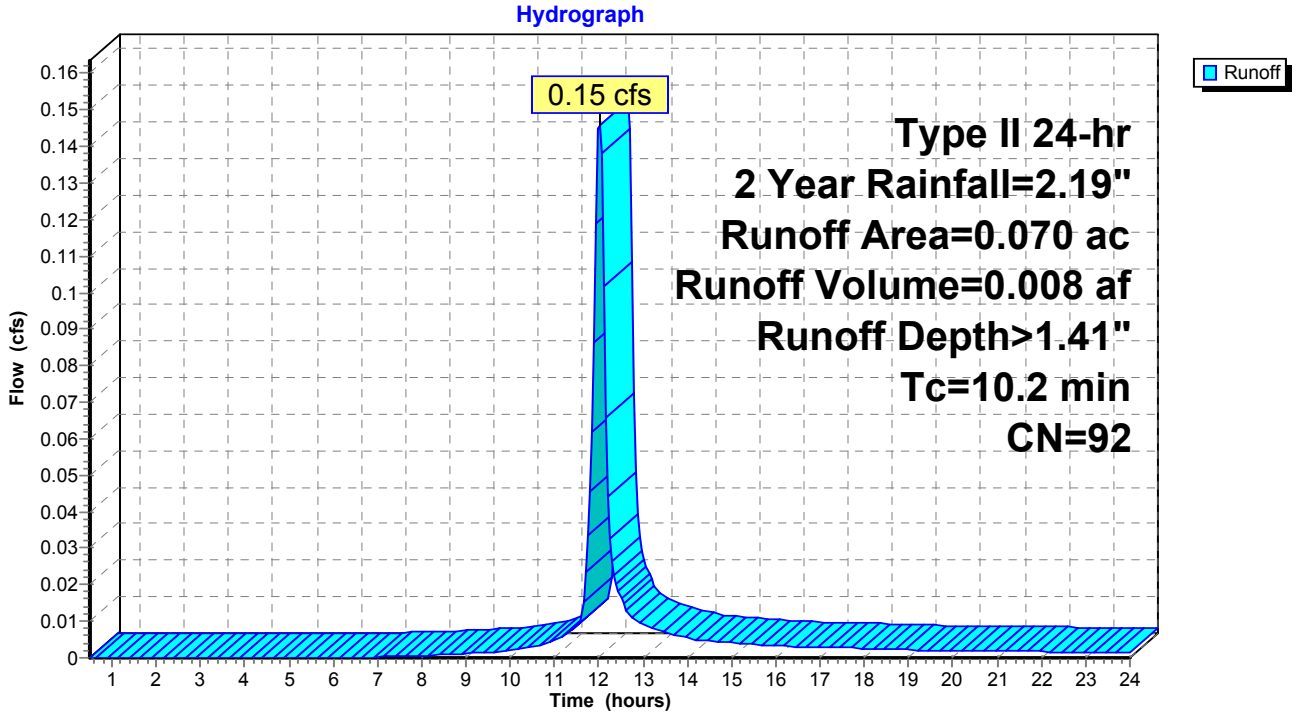
Runoff = 0.15 cfs @ 12.01 hrs, Volume= 0.008 af, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 Year Rainfall=2.19"

	Area (ac)	CN	Description
*	0.070	92	
	0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2					**Direct Entry,**

Subcatchment E-4:

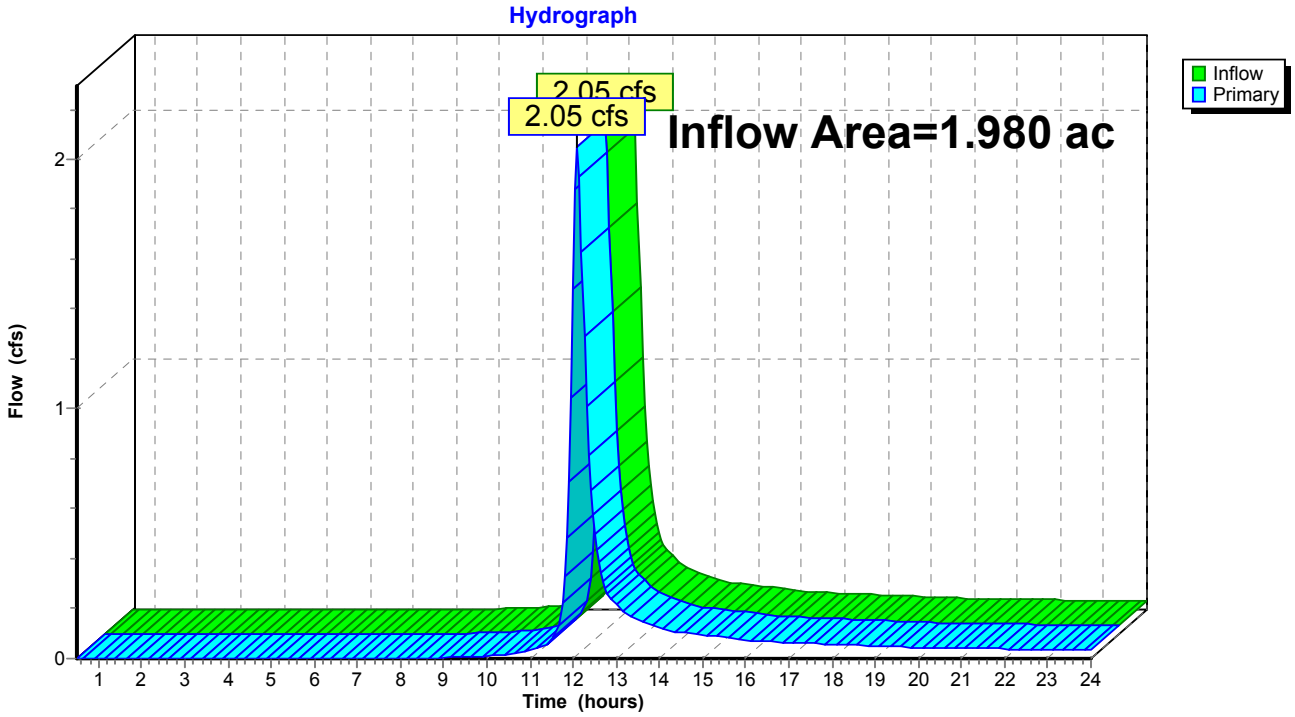


Summary for Link DP-1:

Inflow Area = 1.980 ac, 0.00% Impervious, Inflow Depth > 0.89" for 2 Year event
Inflow = 2.05 cfs @ 12.10 hrs, Volume= 0.147 af
Primary = 2.05 cfs @ 12.10 hrs, Volume= 0.147 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link DP-1:

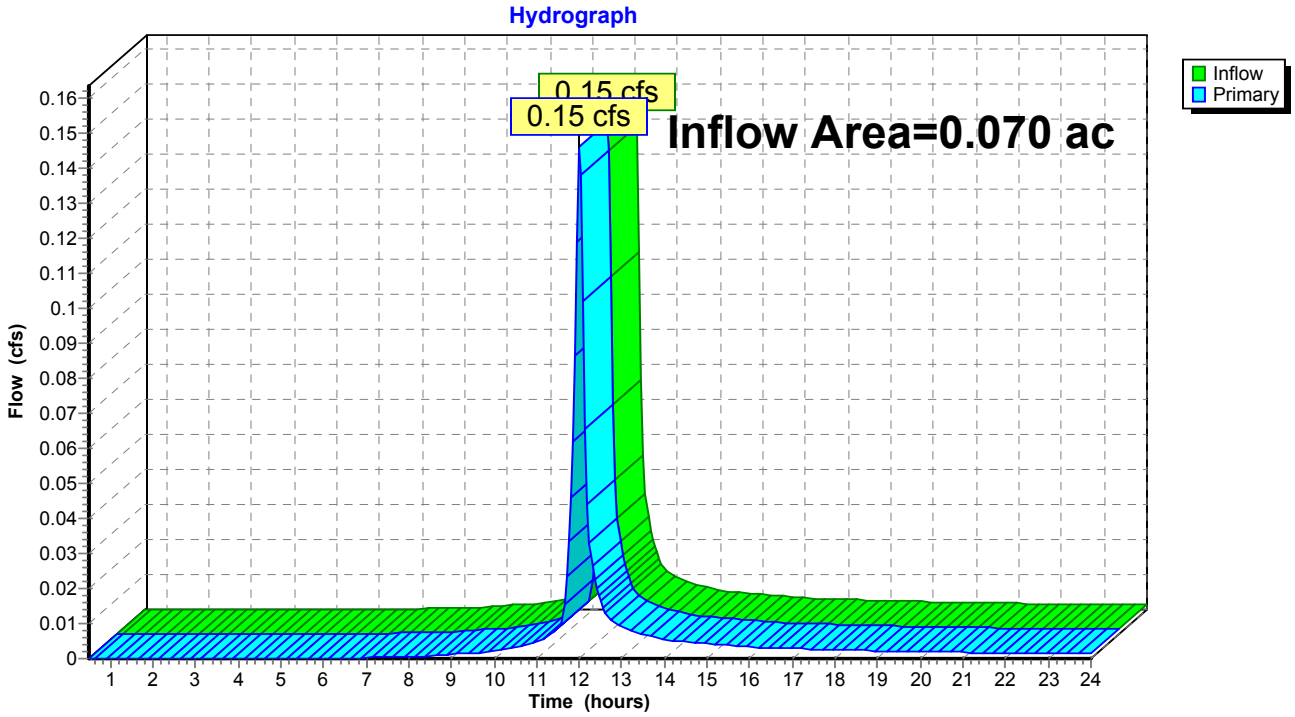


Summary for Link DP-2:

Inflow Area = 0.070 ac, 0.00% Impervious, Inflow Depth > 1.41" for 2 Year event
Inflow = 0.15 cfs @ 12.01 hrs, Volume= 0.008 af
Primary = 0.15 cfs @ 12.01 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link DP-2:

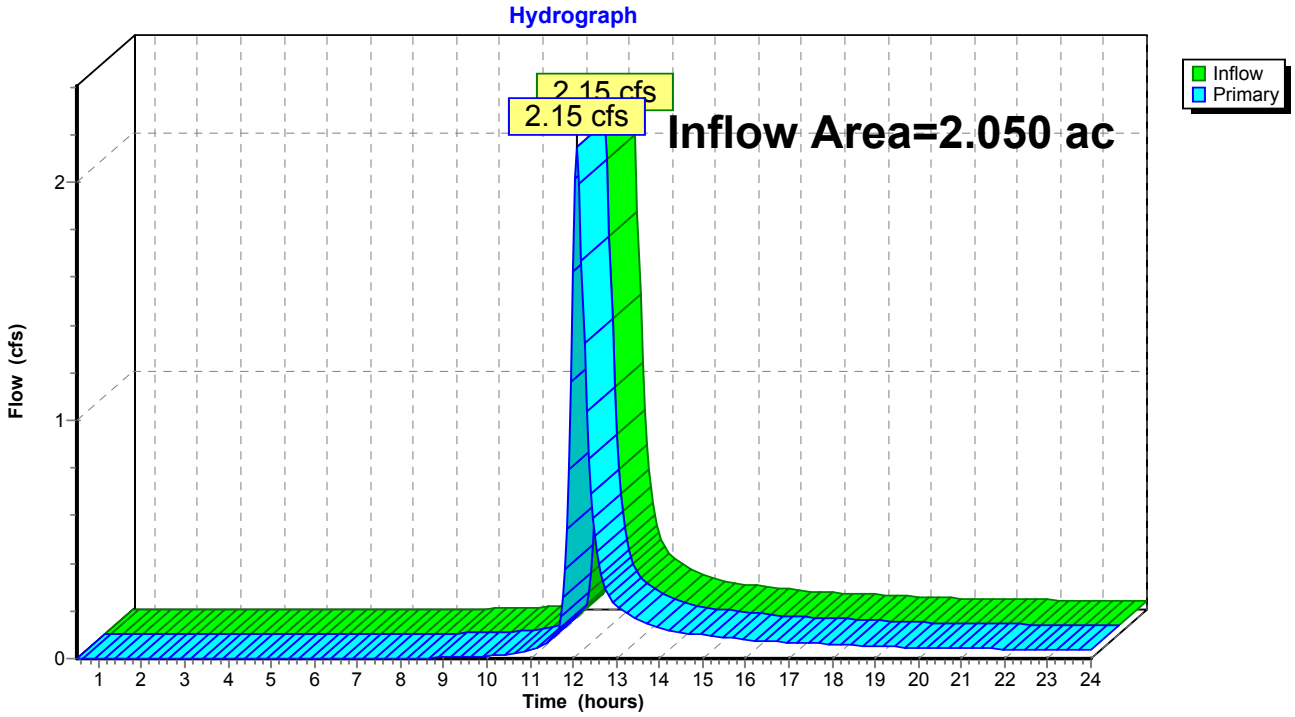


Summary for Link WS:

Inflow Area = 2.050 ac, 0.00% Impervious, Inflow Depth > 0.91" for 2 Year event
Inflow = 2.15 cfs @ 12.10 hrs, Volume= 0.156 af
Primary = 2.15 cfs @ 12.10 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link WS:



Time span=0.50-24.00 hrs, dt=0.05 hrs, 471 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-1: Runoff Area=0.320 ac 0.00% Impervious Runoff Depth>1.29"
Tc=14.4 min CN=79 Runoff=0.54 cfs 0.034 af

Subcatchment E-2: Runoff Area=0.970 ac 0.00% Impervious Runoff Depth>1.48"
Tc=19.2 min CN=82 Runoff=1.63 cfs 0.120 af

Subcatchment E-3: Runoff Area=0.690 ac 0.00% Impervious Runoff Depth>2.02"
Tc=16.9 min CN=89 Runoff=1.68 cfs 0.116 af

Subcatchment E-4: Runoff Area=0.070 ac 0.00% Impervious Runoff Depth>2.29"
Tc=10.2 min CN=92 Runoff=0.23 cfs 0.013 af

Link DP-1: Inflow=3.81 cfs 0.270 af
Primary=3.81 cfs 0.270 af

Link DP-2: Inflow=0.23 cfs 0.013 af
Primary=0.23 cfs 0.013 af

Link WS: Inflow=3.97 cfs 0.284 af
Primary=3.97 cfs 0.284 af

Total Runoff Area = 2.050 ac Runoff Volume = 0.284 af Average Runoff Depth = 1.66"
100.00% Pervious = 2.050 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment E-1:

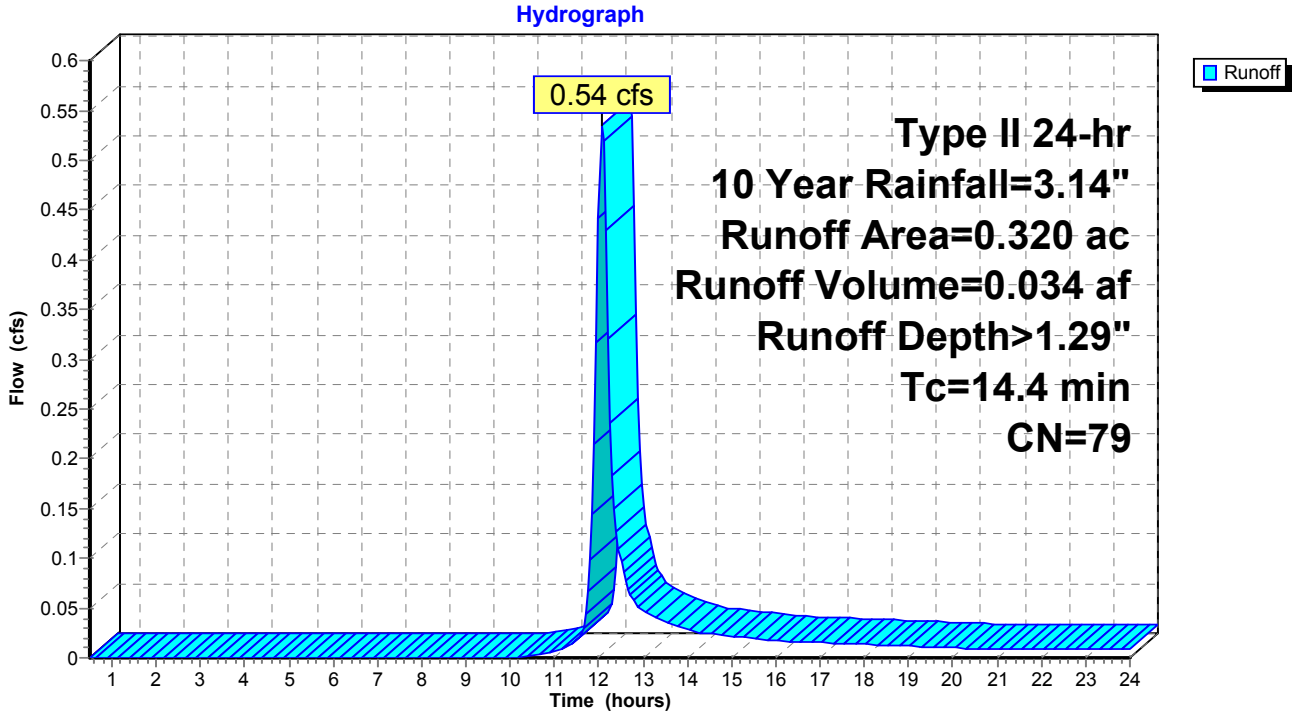
Runoff = 0.54 cfs @ 12.07 hrs, Volume= 0.034 af, Depth> 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=3.14"

	Area (ac)	CN	Description
*	0.320	79	
	0.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry,**

Subcatchment E-1:



Summary for Subcatchment E-2:

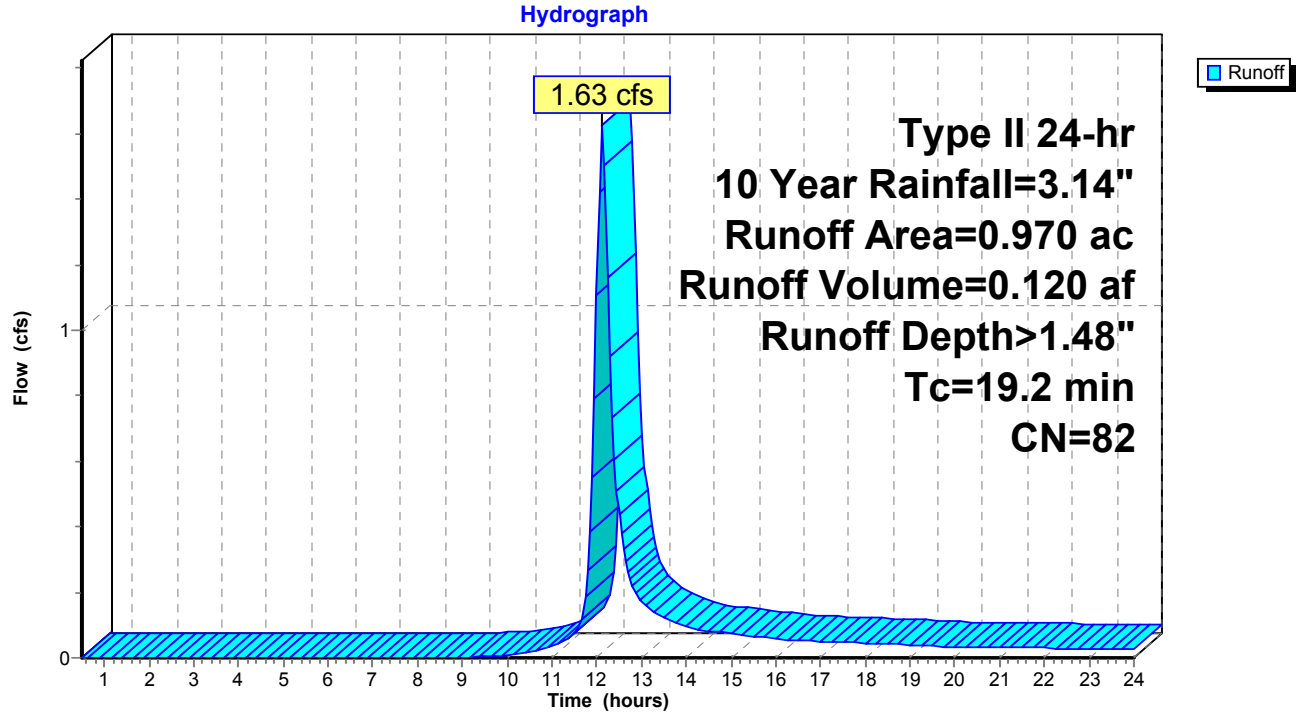
Runoff = 1.63 cfs @ 12.12 hrs, Volume= 0.120 af, Depth> 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=3.14"

	Area (ac)	CN	Description
*	0.970	82	
	0.970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2					**Direct Entry,**

Subcatchment E-2:



Summary for Subcatchment E-3:

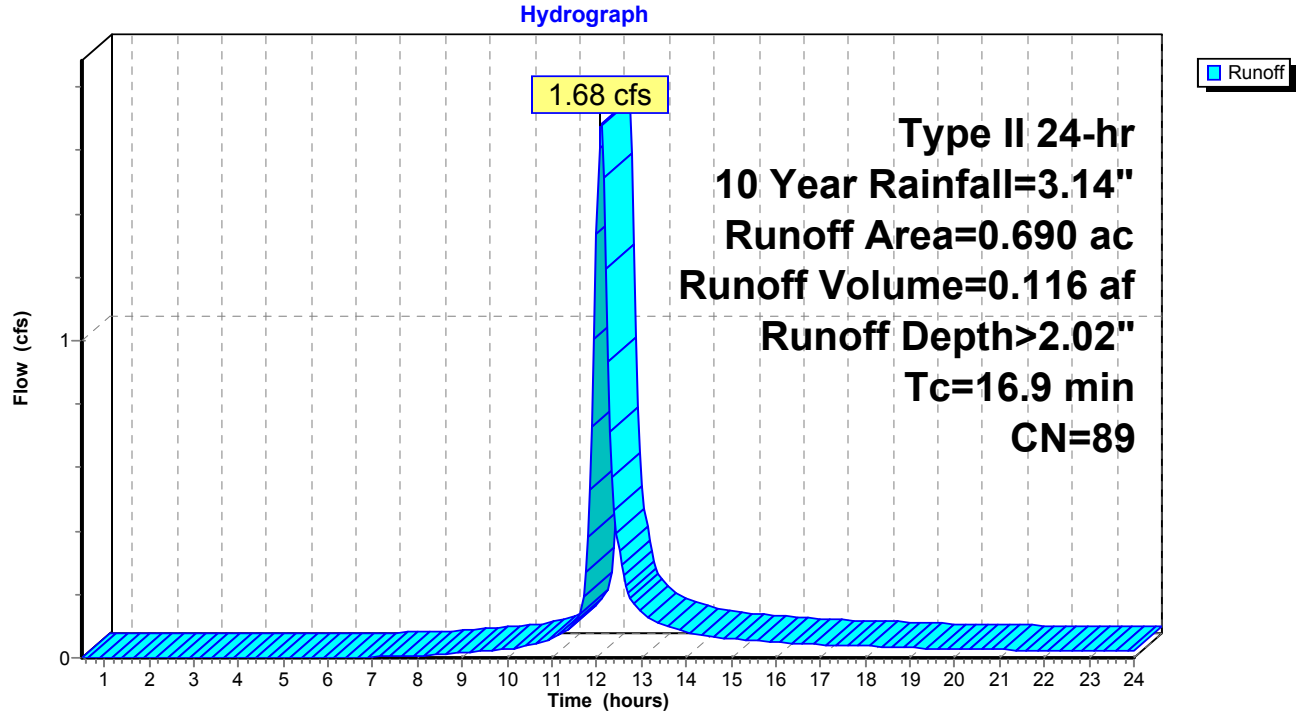
Runoff = 1.68 cfs @ 12.09 hrs, Volume= 0.116 af, Depth> 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=3.14"

	Area (ac)	CN	Description
*	0.690	89	
	0.690		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9					**Direct Entry,**

Subcatchment E-3:



Summary for Subcatchment E-4:

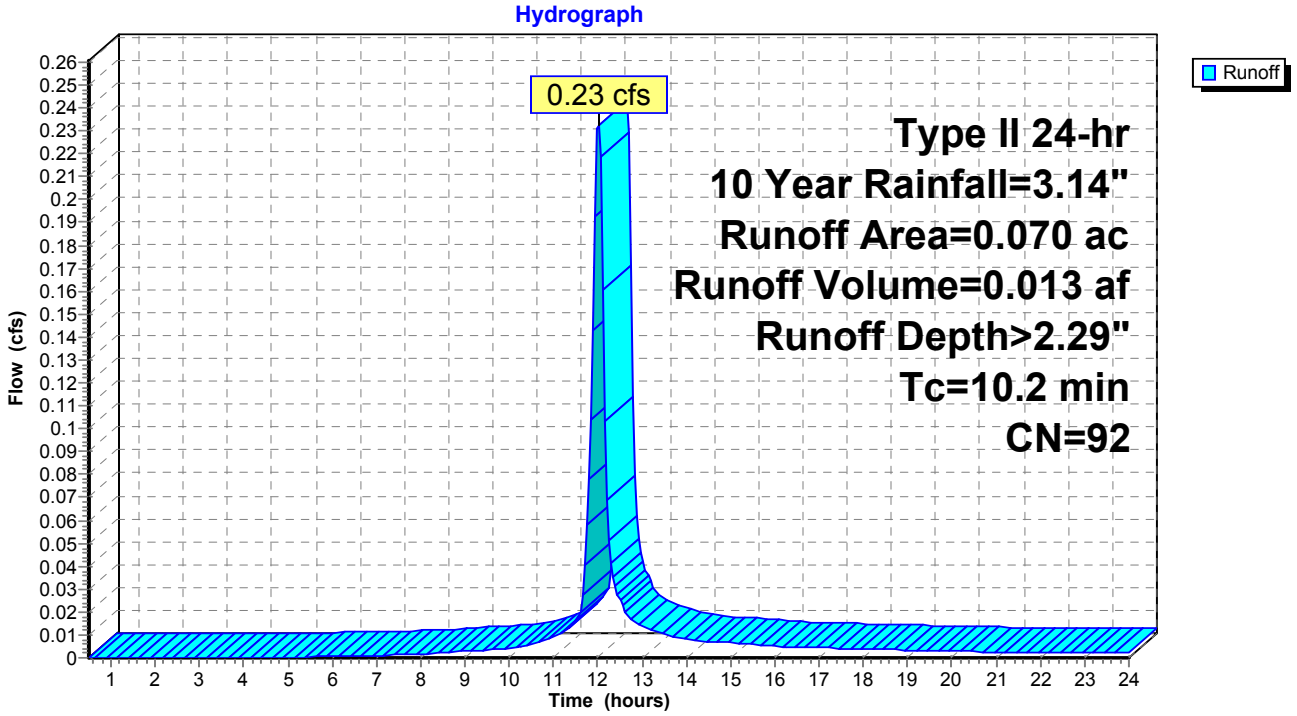
Runoff = 0.23 cfs @ 12.01 hrs, Volume= 0.013 af, Depth> 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=3.14"

	Area (ac)	CN	Description
*	0.070	92	
	0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2					**Direct Entry,**

Subcatchment E-4:

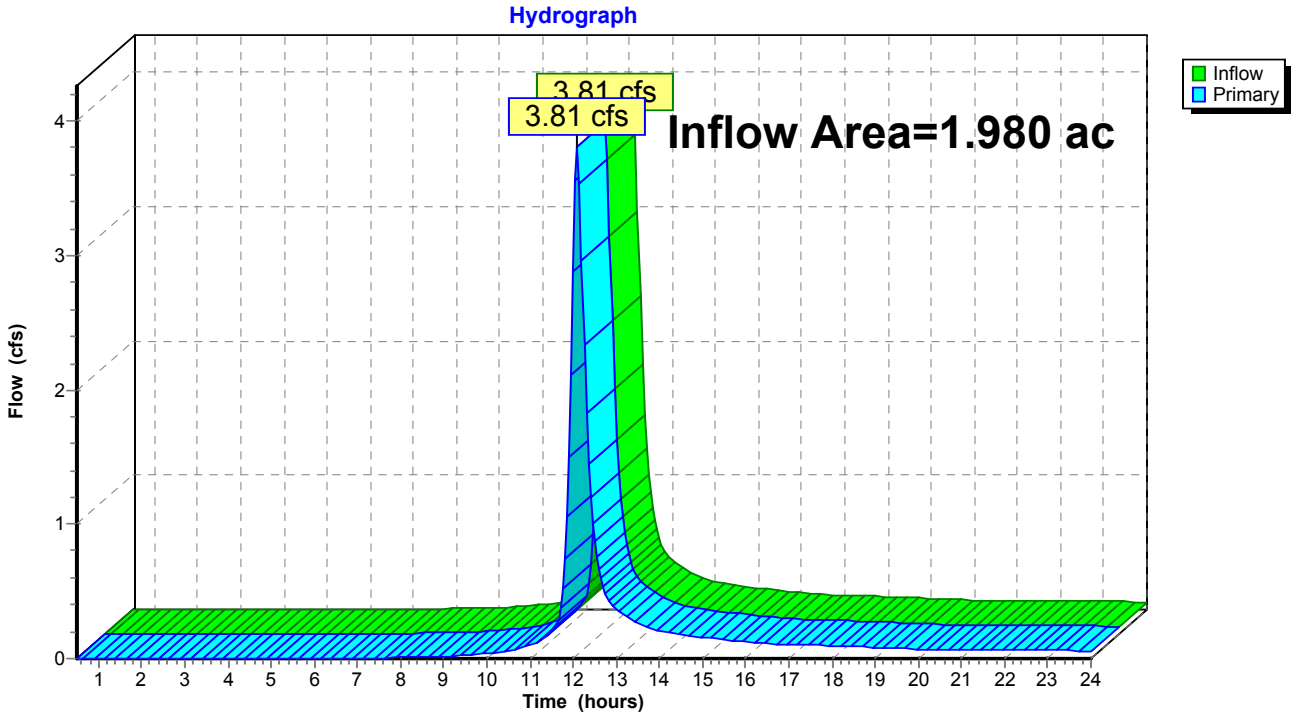


Summary for Link DP-1:

Inflow Area = 1.980 ac, 0.00% Impervious, Inflow Depth > 1.64" for 10 Year event
Inflow = 3.81 cfs @ 12.10 hrs, Volume= 0.270 af
Primary = 3.81 cfs @ 12.10 hrs, Volume= 0.270 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link DP-1:

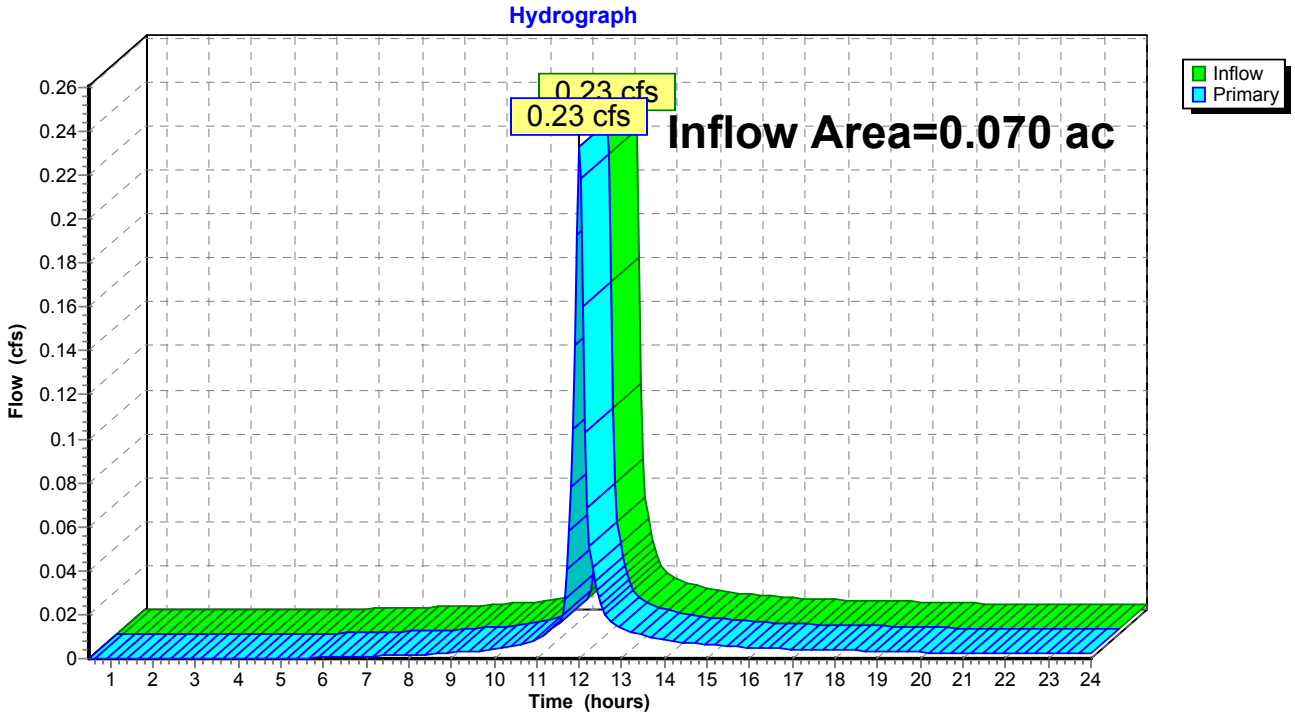


Summary for Link DP-2:

Inflow Area = 0.070 ac, 0.00% Impervious, Inflow Depth > 2.29" for 10 Year event
Inflow = 0.23 cfs @ 12.01 hrs, Volume= 0.013 af
Primary = 0.23 cfs @ 12.01 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link DP-2:

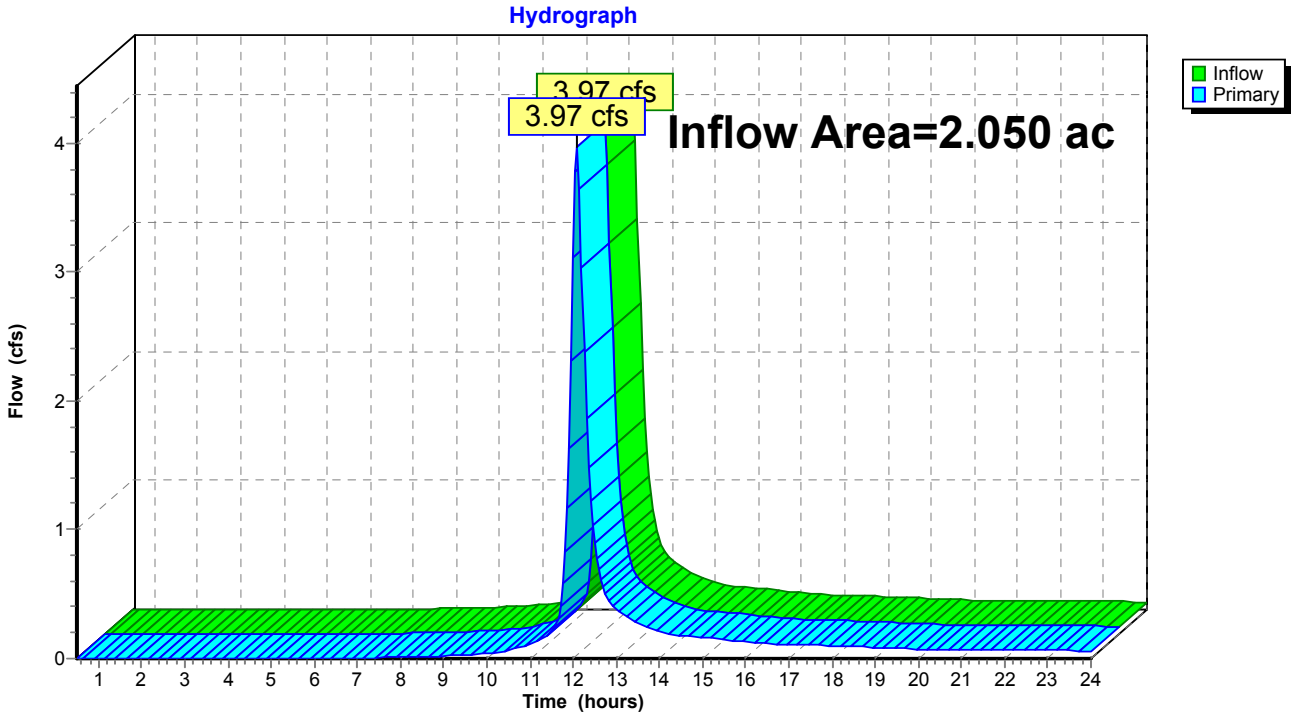


Summary for Link WS:

Inflow Area = 2.050 ac, 0.00% Impervious, Inflow Depth > 1.66" for 10 Year event
Inflow = 3.97 cfs @ 12.09 hrs, Volume= 0.284 af
Primary = 3.97 cfs @ 12.09 hrs, Volume= 0.284 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link WS:



Time span=0.50-24.00 hrs, dt=0.05 hrs, 471 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-1: Runoff Area=0.320 ac 0.00% Impervious Runoff Depth>3.03"
Tc=14.4 min CN=79 Runoff=1.27 cfs 0.081 af

Subcatchment E-2: Runoff Area=0.970 ac 0.00% Impervious Runoff Depth>3.31"
Tc=19.2 min CN=82 Runoff=3.64 cfs 0.267 af

Subcatchment E-3: Runoff Area=0.690 ac 0.00% Impervious Runoff Depth>4.02"
Tc=16.9 min CN=89 Runoff=3.26 cfs 0.231 af

Subcatchment E-4: Runoff Area=0.070 ac 0.00% Impervious Runoff Depth>4.35"
Tc=10.2 min CN=92 Runoff=0.43 cfs 0.025 af

Link DP-1: Inflow=8.08 cfs 0.579 af
Primary=8.08 cfs 0.579 af

Link DP-2: Inflow=0.43 cfs 0.025 af
Primary=0.43 cfs 0.025 af

Link WS: Inflow=8.39 cfs 0.604 af
Primary=8.39 cfs 0.604 af

Total Runoff Area = 2.050 ac Runoff Volume = 0.604 af Average Runoff Depth = 3.54"
100.00% Pervious = 2.050 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment E-1:

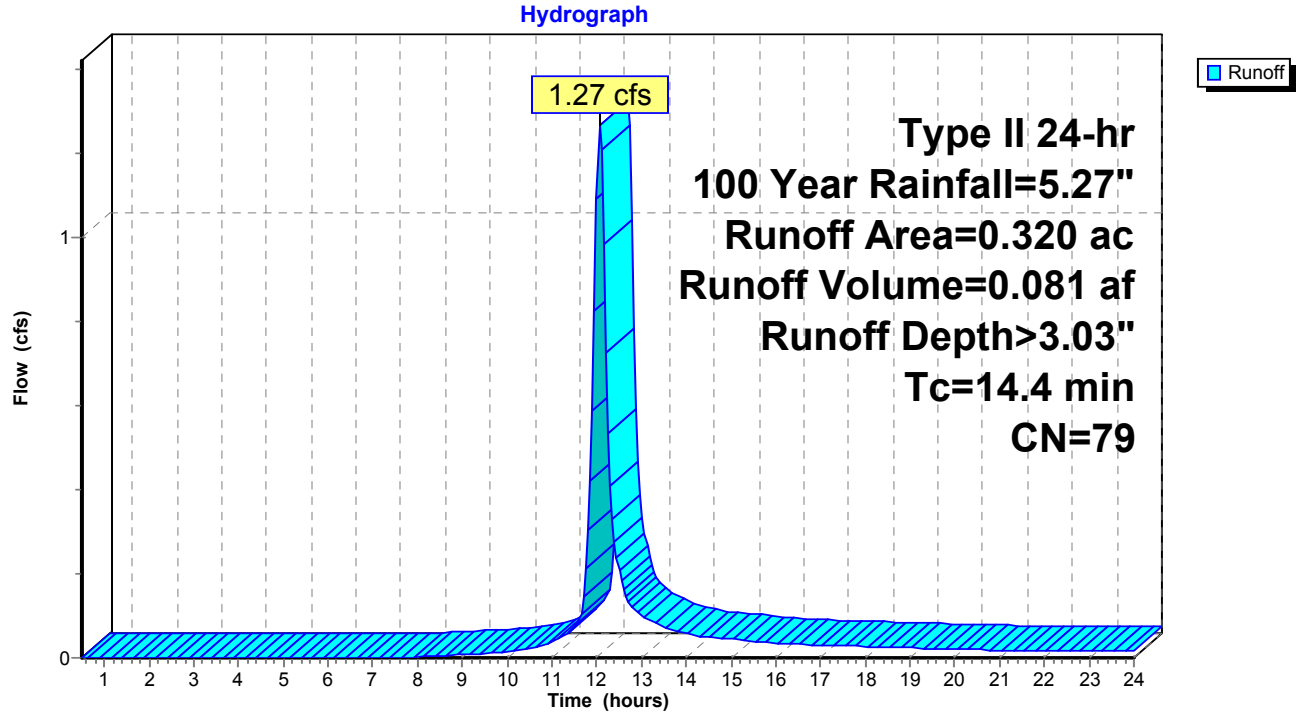
Runoff = 1.27 cfs @ 12.06 hrs, Volume= 0.081 af, Depth> 3.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=5.27"

	Area (ac)	CN	Description
*	0.320	79	
	0.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry,**

Subcatchment E-1:



Summary for Subcatchment E-2:

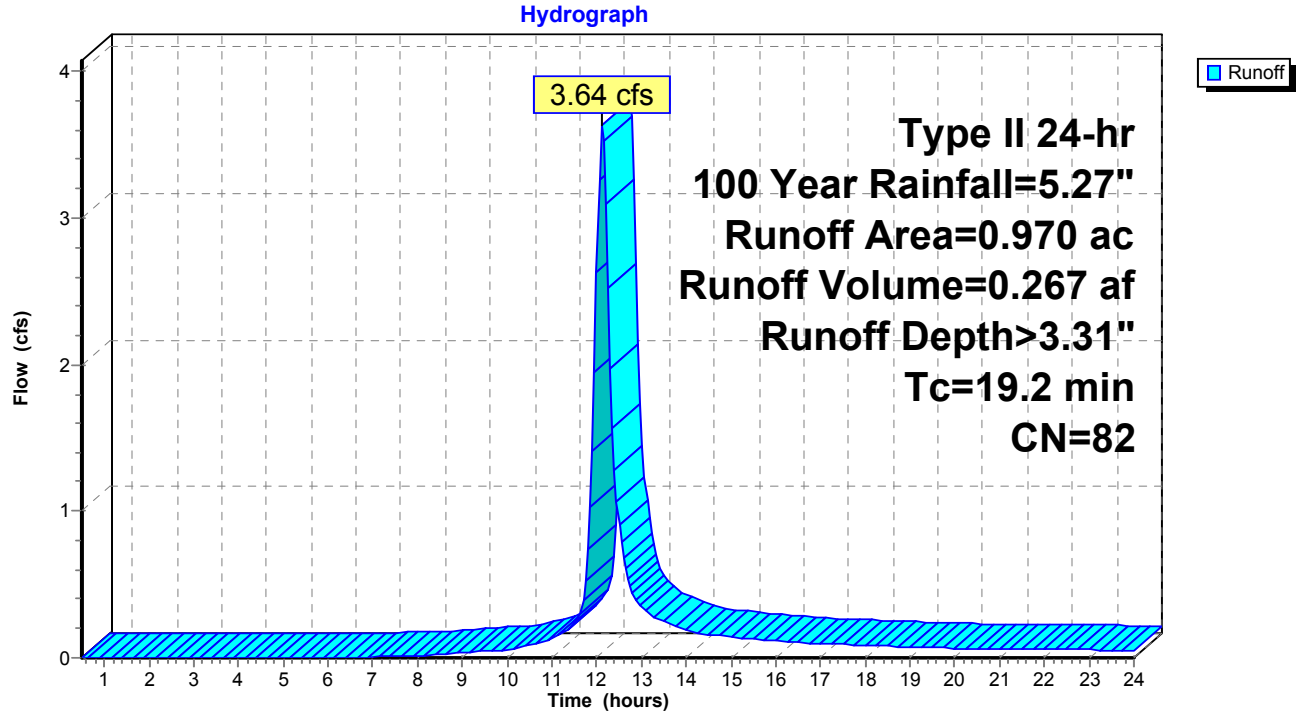
Runoff = 3.64 cfs @ 12.11 hrs, Volume= 0.267 af, Depth> 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=5.27"

	Area (ac)	CN	Description
*	0.970	82	
	0.970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2					**Direct Entry,**

Subcatchment E-2:



Summary for Subcatchment E-3:

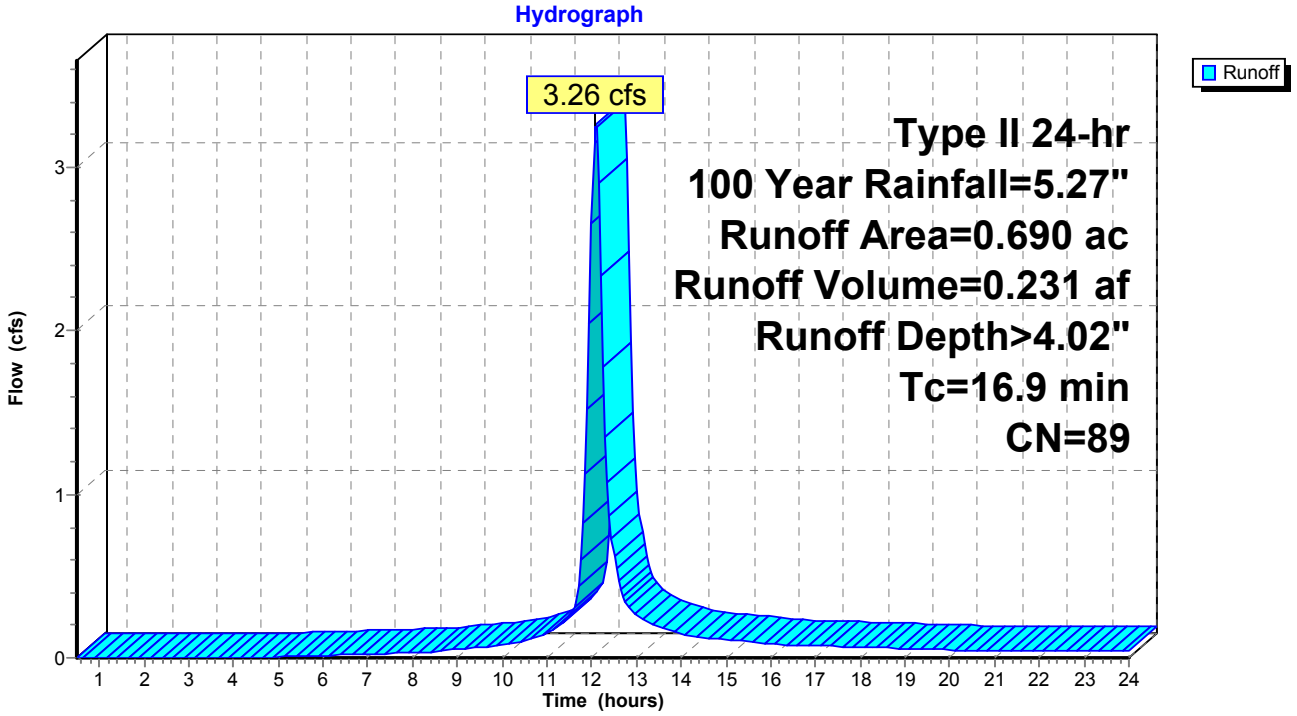
Runoff = 3.26 cfs @ 12.09 hrs, Volume= 0.231 af, Depth> 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=5.27"

	Area (ac)	CN	Description
*	0.690	89	
	0.690		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9					**Direct Entry,**

Subcatchment E-3:



Summary for Subcatchment E-4:

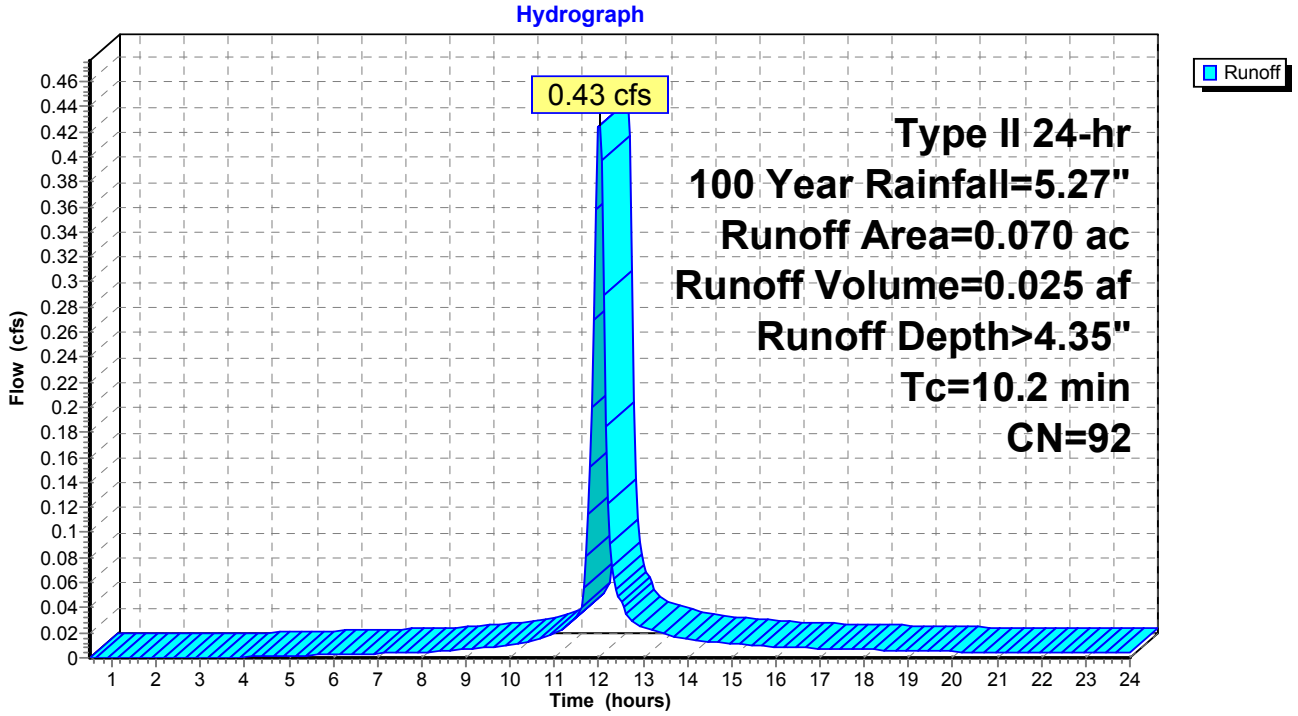
Runoff = 0.43 cfs @ 12.01 hrs, Volume= 0.025 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=5.27"

	Area (ac)	CN	Description
*	0.070	92	
	0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2					**Direct Entry,**

Subcatchment E-4:

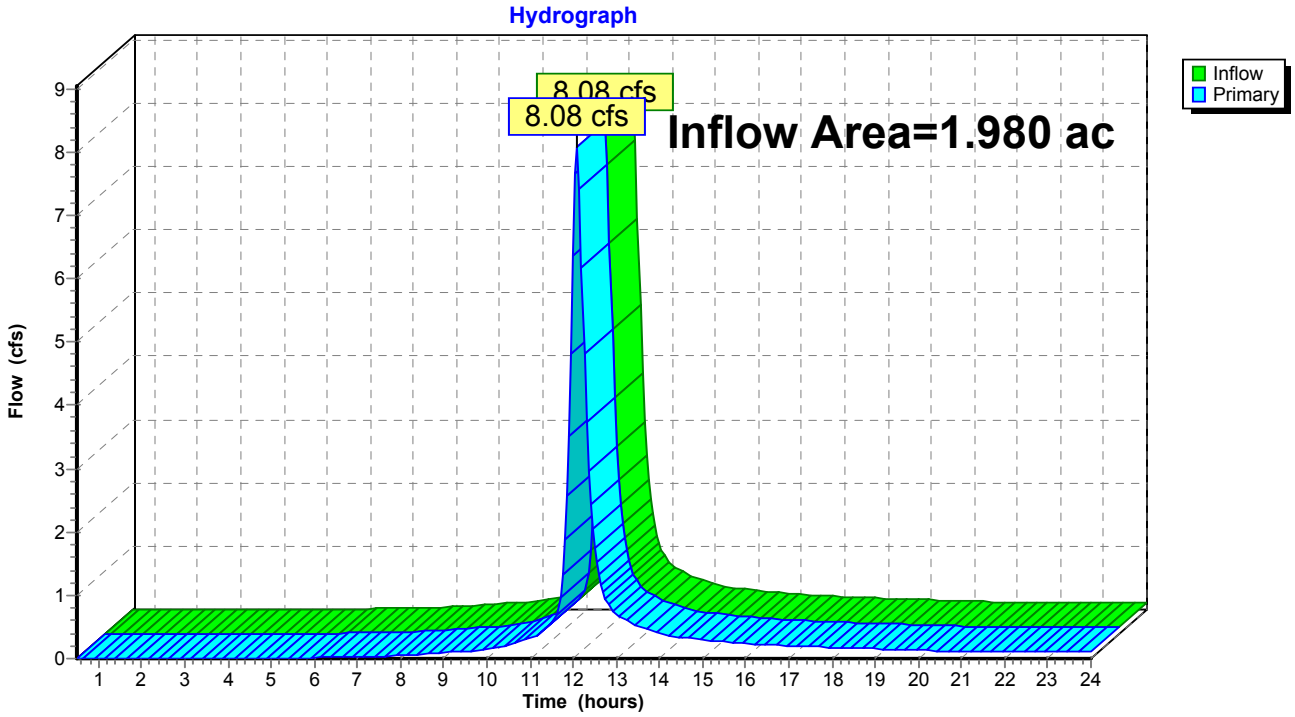


Summary for Link DP-1:

Inflow Area = 1.980 ac, 0.00% Impervious, Inflow Depth > 3.51" for 100 Year event
Inflow = 8.08 cfs @ 12.09 hrs, Volume= 0.579 af
Primary = 8.08 cfs @ 12.09 hrs, Volume= 0.579 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link DP-1:

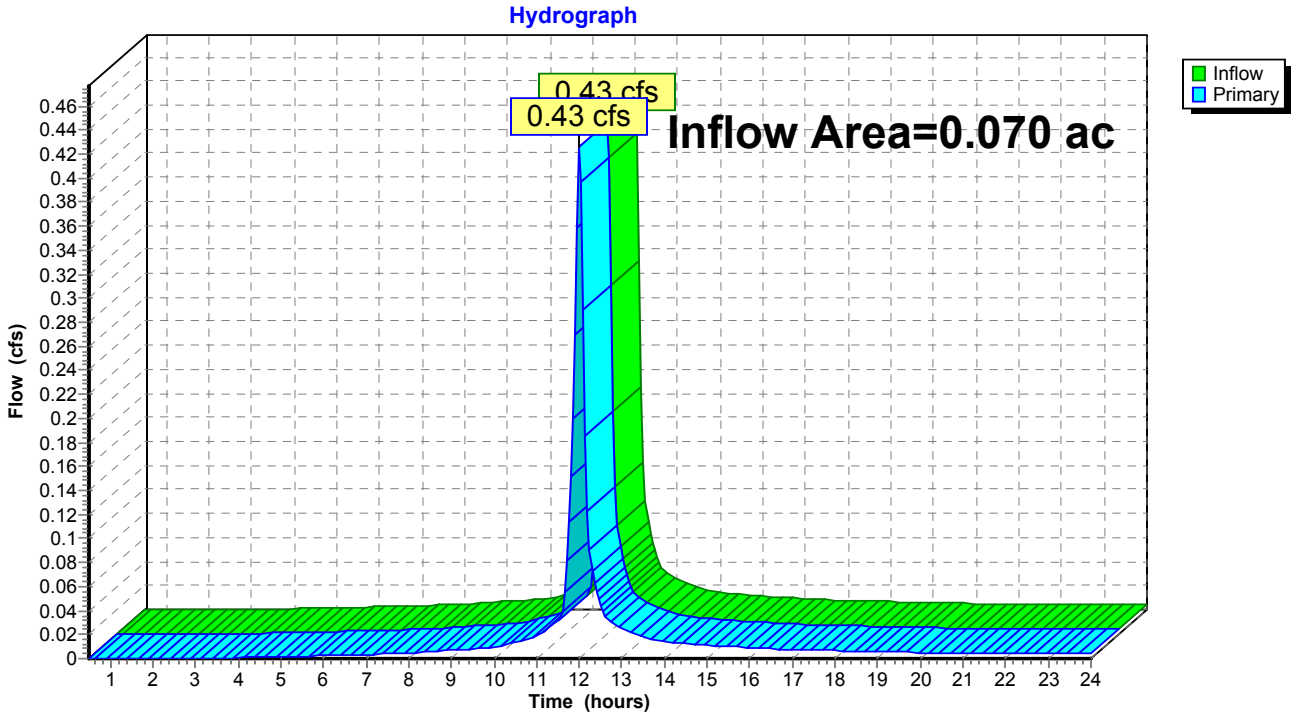


Summary for Link DP-2:

Inflow Area = 0.070 ac, 0.00% Impervious, Inflow Depth > 4.35" for 100 Year event
Inflow = 0.43 cfs @ 12.01 hrs, Volume= 0.025 af
Primary = 0.43 cfs @ 12.01 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link DP-2:

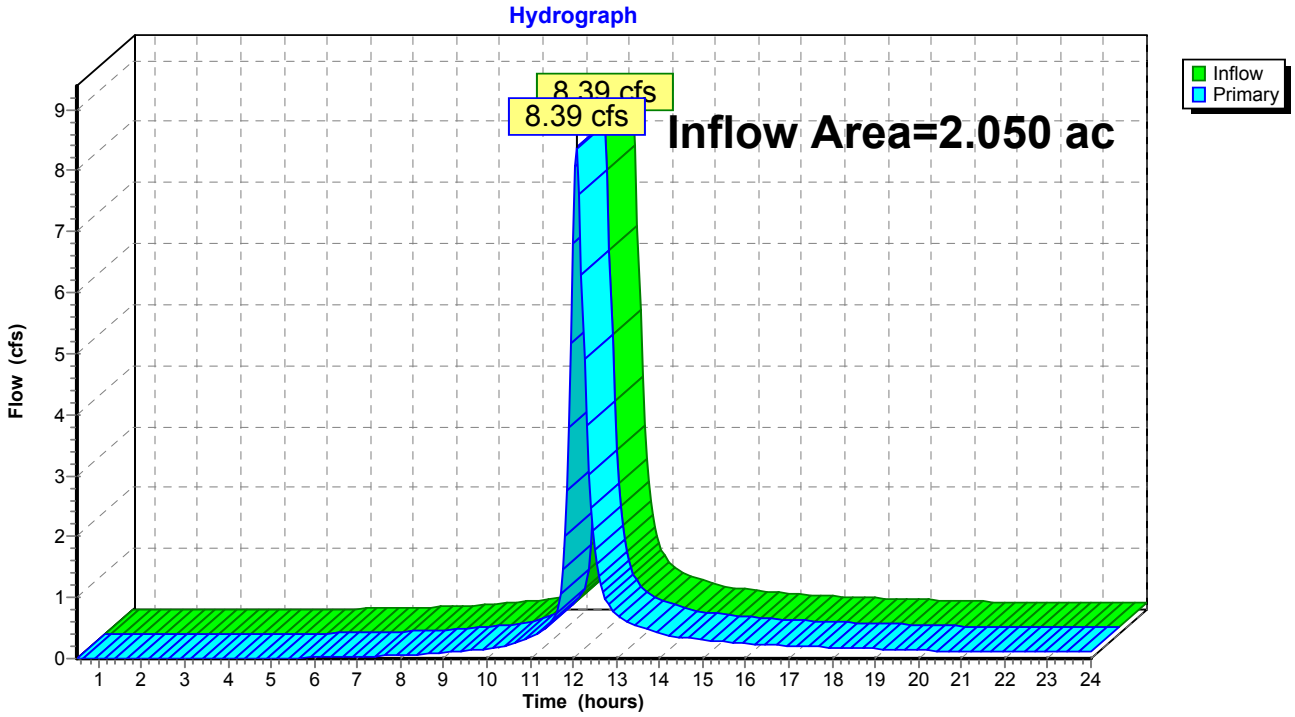


Summary for Link WS:

Inflow Area = 2.050 ac, 0.00% Impervious, Inflow Depth > 3.54" for 100 Year event
Inflow = 8.39 cfs @ 12.09 hrs, Volume= 0.604 af
Primary = 8.39 cfs @ 12.09 hrs, Volume= 0.604 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link WS:



Costich Engineering, P.C.
217 Lake Avenue
Rochester, NY 14608

Curve Number Worksheet

EXISTING CONDITIONS *9/20/2019*
AUTO WASH NO.06 (CANANDAIGUA, NY) CRA

E-1

LAND USE DESCRIPTION	%	A	Total	%	B	Total	%	C	Total	%	D	Total
Cultivated Land:												
Without conservation treatment		72			81			88			91	
With conservation treatment		62			71			78			81	
Pasture or Range Land:												
Poor Condition		68			79			86			89	
Fair Condition		54			70			80			85	
Good Condition		39			61			74			80	
Meadow:												
Good Condition		30			58			71			78	
Woods or Forest Land:												
Thin Stand, Poor Cover, No Mulch		45			66			77			83	
Fair Condition		25			55			70			77	
Open Spaces (lawns, parks, etc.)												
Good Condition with grass cover on 75% or more of the area		39			61		25	74	1850	75	80	6000
Fair Condition with grass cover on 50%-75% of the area		49			69			79			84	
Commercial or Business Areas:												
(85% Impervious)		89			92			94			95	
Industrial Areas:												
(72% Impervious)		81			88			91			93	
Residential Areas:												
Avg. Lot / Avg. % Imp.												
1/8 acre 65		77			85			90			92	
1/4 acre 38		61			75			83			87	
1/3 acre 30		57			72			81			86	
1/2 acre 25		54			70			80			85	
1 acre 20		51			68			79			84	
Paved Parking, Roofs, Driveways, Etc.		98			98			98		0	98	0
Streets and Roads:												
Paved with curbs & storm sewers		98			98			98			98	
Gravel		76			85			89			91	
Dirt		72			82			87			69	
TOTAL	**0**		**0**	**0**		**0**	**25**		**1850**	**75**		**6000**

WEIGHTED CURVE NUMBER = $\frac{\text{TOTAL A + TOTAL B + TOTAL C + TOTAL D}}{100}$ = ***79***

NOTES:

Costich Engineering, P.C.
217 Lake Avenue
Rochester, NY 14608

Curve Number Worksheet

EXISTING CONDITIONS *9/20/2019*
AUTO WASH NO.06 (CANANDAIGUA, NY) CRA

E-2

LAND USE DESCRIPTION	%	A	Total	%	B	Total	%	C	Total	%	D	Total
Cultivated Land:												
Without conservation treatment		72			81			88			91	
With conservation treatment		62			71			78			81	
Pasture or Range Land:												
Poor Condition		68			79			86			89	
Fair Condition		54			70			80			85	
Good Condition		39			61			74			80	
Meadow:												
Good Condition		30			58			71			78	
Woods or Forest Land:												
Thin Stand, Poor Cover, No Mulch		45			66			77			83	
Fair Condition		25			55			70			77	0
Open Spaces (lawns, parks, etc.)												
Good Condition with grass cover on 75% or more of the area		39			61		37	74	2738	38	80	3040
Fair Condition with grass cover on 50%-75% of the area		49			69			79			84	
Commercial or Business Areas:												
(85% Impervious)		89			92			94			95	
Industrial Areas:												
(72% Impervious)		81			88			91			93	
Residential Areas:												
Avg. Lot / Avg. % Imp.												
1/8 acre 65		77			85			90			92	
1/4 acre 38		61			75			83			87	
1/3 acre 30		57			72			81			86	
1/2 acre 25		54			70			80			85	
1 acre 20		51			68			79			84	
Paved Parking, Roofs, Driveways, Etc.		98			98			98		25	98	2450
Streets and Roads:												
Paved with curbs & storm sewers		98			98			98			98	
Gravel		76			85			89			91	
Dirt		72			82			87			69	
TOTAL	**0**		**0**	**0**		**0**	**37**		**2738**	**63**		**5490**

WEIGHTED CURVE NUMBER = $\frac{\text{TOTAL A + TOTAL B + TOTAL C + TOTAL D}}{100}$ = ***82***

NOTES:

Costich Engineering, P.C.
217 Lake Avenue
Rochester, NY 14608

Curve Number Worksheet

EXISTING CONDITIONS *9/20/2019*
AUTO WASH NO.06 (CANANDAIGUA, NY) CRA

E-3

LAND USE DESCRIPTION	%	A	Total	%	B	Total	%	C	Total	%	D	Total
Cultivated Land:												
Without conservation treatment		72			81			88			91	
With conservation treatment		62			71			78			81	
Pasture or Range Land:												
Poor Condition		68			79			86			89	
Fair Condition		54			70			80			85	
Good Condition		39			61			74			80	
Meadow:												
Good Condition		30			58			71			78	
Woods or Forest Land:												
Thin Stand, Poor Cover, No Mulch		45			66			77			83	
Fair Condition		25			55			70			77	
Open Spaces (lawns, parks, etc.)												
Good Condition with grass cover on 75% or more of the area		39			61		11	74	814	35	80	2800
Fair Condition with grass cover on 50%-75% of the area		49			69			79			84	
Commercial or Business Areas:												
(85% Impervious)		89			92			94			95	
Industrial Areas:												
(72% Impervious)		81			88			91			93	
Residential Areas:												
Avg. Lot / Avg. % Imp.												
1/8 acre 65		77			85			90			92	
1/4 acre 38		61			75			83			87	
1/3 acre 30		57			72			81			86	
1/2 acre 25		54			70			80			85	
1 acre 20		51			68			79			84	
Paved Parking, Roofs, Driveways, Etc.		98			98			98		54	98	5292
Streets and Roads:												
Paved with curbs & storm sewers		98			98			98			98	
Gravel		76			85			89			91	
Dirt		72			82			87			69	
TOTAL	**0**		**0**	**0**		**0**	**11**		**814**	**89**		**8092**

WEIGHTED CURVE NUMBER = $\frac{\text{TOTAL A + TOTAL B + TOTAL C + TOTAL D}}{100} =$ ***89***

NOTES:

Costich Engineering, P.C.
217 Lake Avenue
Rochester, NY 14608

Curve Number Worksheet

EXISTING CONDITIONS *9/20/2019*
AUTO WASH NO.06 (CANANDAIGUA, NY) CRA

E-4

LAND USE DESCRIPTION	%	A	Total	%	B	Total	%	C	Total	%	D	Total
Cultivated Land:												
Without conservation treatment		72			81			88			91	
With conservation treatment		62			71			78			81	
Pasture or Range Land:												
Poor Condition		68			79			86			89	
Fair Condition		54			70			80			85	
Good Condition		39			61			74			80	
Meadow:												
Good Condition		30			58			71			78	
Woods or Forest Land:												
Thin Stand, Poor Cover, No Mulch		45			66			77			83	
Fair Condition		25			55			70			77	
Open Spaces (lawns, parks, etc.)												
Good Condition with grass cover on 75% or more of the area		39			61		13	74	962	15	80	1200
Fair Condition with grass cover on 50%-75% of the area		49			69			79			84	
Commercial or Business Areas:												
(85% Impervious)		89			92			94			95	
Industrial Areas:												
(72% Impervious)		81			88			91			93	
Residential Areas:												
Avg. Lot / Avg. % Imp.												
1/8 acre 65		77			85			90			92	
1/4 acre 38		61			75			83			87	
1/3 acre 30		57			72			81			86	
1/2 acre 25		54			70			80			85	
1 acre 20		51			68			79			84	
Paved Parking, Roofs, Driveways, Etc.		98			98			98		72	98	7056
Streets and Roads:												
Paved with curbs & storm sewers		98			98			98			98	
Gravel		76			85			89			91	
Dirt		72			82			87			69	
TOTAL	**0**		**0**	**0**		**0**	**13**		**962**	**87**		**8256**

WEIGHTED CURVE NUMBER = $\frac{\text{TOTAL A + TOTAL B + TOTAL C + TOTAL D}}{100}$ = ***92***

NOTES:

Costich Engineering, P.C.
217 Lake Ave.
Rochester, NY 14608

Time of Concentration Worksheet

EXISTING CONDITIONS *9/10/2019*
AUTO WASH NO.06 (CANANDAIGUA, NY) CRA

E-1

SHEET FLOW (Applicable to Tc only)

Segment ID	A-B				
1. Surface Description (table 3-1) ……..	Grass				
2. Mannings Roughness Coefficient, n (table 3-1) …….	0.24				
3. Flow Length, L (total L<300') ……..…ft	100				
4. Two-year 24-hour rainfall, P_2 ……in	2.19				
5. Land Slope, s ……ft/ft	0.035				
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$ Compute T_t……hr	0.230				0.230

SHALLOW CONCENTRATED FLOW

Segment ID	B-C				
7. Surface Description (paved or unpaved) ……	Unpaved				
8. Flow Length, L ……..……ft	60				
9. Watercourse Slope, s ……ft/ft	0.07				
10. Average Velocity, V (figure 3-1) ……...……..……ft/s	1.7				
11. $T_t = \frac{L}{3600\,V}$ Compute T_t ……...……hr	0.010				0.010

CHANNEL FLOW

Segment ID					
12. Cross Sectional Flow Area, a ……..……..ft^2					
13. Wetted Perimeter, p_w ……ft					
14. Hydraulic Radius, $r = a/p_w$ ……ft					
15. Channel Slope, s ……..……ft/ft					
16. Manning's Roughness Coefficient, n ……					
17. $V=(1.49\,r^{2/3}\,s^{1/2})/n$ ……..……..ft/s					
18. Flow Length, L ……..……ft					
19. $T_t = \frac{L}{3600\,V}$ Compute T_t ……...……hr					0.000

20. Watershed or subarea T_c or T_t (add in steps 6, 11, and 19) ……..hr 0.240

min 14.38

NOTES:

Costich Engineering, P.C.
217 Lake Ave.
Rochester, NY 14608

Time of Concentration Worksheet

EXISTING CONDITIONS *9/10/2019*
AUTO WASH NO.06 (CANANDAIGUA, NY) CRA

E-2

SHEET FLOW (Applicable to Tc only)

Segment ID	A-B				
1. Surface Description (table 3-1) ……..	Grass				
2. Mannings Roughness Coefficient, n (table 3-1) …….	0.24				
3. Flow Length, L (total L<300') ……..…ft	100				
4. Two-year 24-hour rainfall, P_2 ……in	2.19				
5. Land Slope, s ……ft/ft	0.02				
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$ Compute T_t……hr	0.287				0.287

SHALLOW CONCENTRATED FLOW

Segment ID	B-C				
7. Surface Description (paved or unpaved) ……	Unpaved				
8. Flow Length, L ……..……ft	75				
9. Watercourse Slope, s ……ft/ft	0.008				
10. Average Velocity, V (figure 3-1) ……...……..…….ft/s	0.65				
11. $T_t = \frac{L}{3600\ V}$ Compute T_t ……...……hr	0.032				0.032

CHANNEL FLOW

Segment ID					
12. Cross Sectional Flow Area, a ……..……..ft^2					
13. Wetted Perimeter, p_w ……ft					
14. Hydraulic Radius, $r = a/p_w$ ……ft					
15. Channel Slope, s ……..……ft/ft					
16. Manning's Roughness Coefficient, n ……					
17. $V=(1.49\ r^{2/3}\ s^{1/2})/n$ ……..……..ft/s					
18. Flow Length, L ……..……ft					
19. $T_t = \frac{L}{3600\ V}$ Compute T_t ……...……hr					0.000

20. Watershed or subarea T_c or T_t (add in steps 6, 11, and 19) ……..hr 0.320

min 19.17

NOTES:

Costich Engineering, P.C.
217 Lake Ave.
Rochester, NY 14608

Time of Concentration Worksheet

EXISTING CONDITIONS *9/10/2019*
AUTO WASH NO.06 (CANANDAIGUA, NY) CRA

E-3

SHEET FLOW (Applicable to Tc only)

	Segment ID	A-B	B-C		
1. Surface Description (table 3-1) ……..		Grass	Pavement		
2. Mannings Roughness Coefficient, n (table 3-1) …….		0.24	0.011		
3. Flow Length, L (total L<300') ……..…ft		69	31		
4. Two-year 24-hour rainfall, P_2 ……in		2.19	2.19		
5. Land Slope, s ……ft/ft		0.013	0.01		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	Compute T_t……hr	0.254	0.013		0.266

SHALLOW CONCENTRATED FLOW

	Segment ID	B-C			
7. Surface Description (paved or unpaved) ……		Paved			
8. Flow Length, L ……..……ft		113			
9. Watercourse Slope, s ……ft/ft		0.01			
10. Average Velocity, V (figure 3-1) ……...……..…….ft/s		2			
11. $T_t = \frac{L}{3600\ V}$	Compute T_t ……...……hr	0.016			0.016

CHANNEL FLOW

	Segment ID				
12. Cross Sectional Flow Area, a ……..……..ft^2					
13. Wetted Perimeter, p_w ……ft					
14. Hydraulic Radius, $r = a/p_w$ ……ft					
15. Channel Slope, s ……..……ft/ft					
16. Manning's Roughness Coefficient, n ……					
17. $V=(1.49\ r^{2/3}\ s^{1/2})/n$ ……..……..ft/s					
18. Flow Length, L ……..……ft					
19. $T_t = \frac{L}{3600\ V}$	Compute T_t ……...……hr				0.000

20. Watershed or subarea T_c or T_t (add in steps 6, 11, and 19) ……..hr 0.282

min 16.93

NOTES:

Costich Engineering, P.C.
217 Lake Ave.
Rochester, NY 14608

Time of Concentration Worksheet

EXISTING CONDITIONS *9/10/2019*
AUTO WASH NO.06 (CANANDAIGUA, NY) CRA

E-4

SHEET FLOW (Applicable to Tc only)					
Segment ID	A-B				
1. Surface Description (table 3-1)	Grass				
2. Mannings Roughness Coefficient, n (table 3-1)	0.24				
3. Flow Length, L (total L<300') ft	45				
4. Two-year 24-hour rainfall, P_2 in	2.19				
5. Land Slope, s ft/ft	0.015				
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$ Compute T_t hr	0.170				0.170

SHALLOW CONCENTRATED FLOW					
Segment ID					
7. Surface Description (paved or unpaved)					
8. Flow Length, L ft					
9. Watercourse Slope, s ft/ft					
10. Average Velocity, V (figure 3-1) ft/s					
11. $T_t = \frac{L}{3600\,V}$ Compute T_t hr					0.000

CHANNEL FLOW					
Segment ID					
12. Cross Sectional Flow Area, a ft^2					
13. Wetted Perimeter, p_w ft					
14. Hydraulic Radius, $r = a/p_w$ ft					
15. Channel Slope, s ft/ft					
16. Manning's Roughness Coefficient, n					
17. $V=(1.49\,r^{2/3}\,s^{1/2})/n$ ft/s					
18. Flow Length, L ft					
19. $T_t = \frac{L}{3600\,V}$ Compute T_t hr					0.000

20. Watershed or subarea T_c or T_t (add in steps 6, 11, and 19) hr 0.170

min 10.22

NOTES:

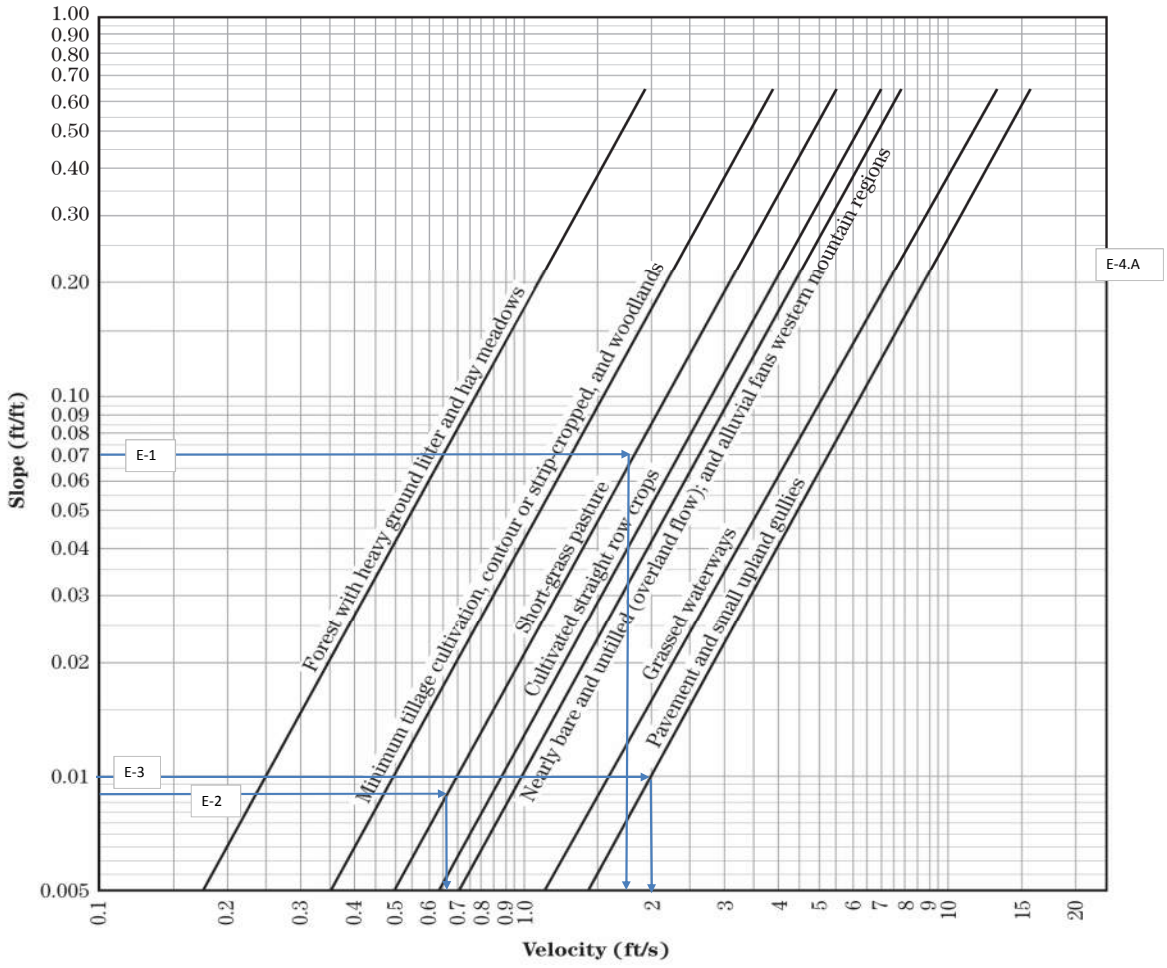
Table 3-1 Roughness coefficients (Manning's n) for sheet flow

Surface description	n [1]
Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover ≤20%	0.06
Residue cover >20%	0.17
Grass:	
Short grass prairie	0.15
Dense grasses [2]	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:[3]	
Light underbrush	0.40
Dense underbrush	0.80

[1] The n values are a composite of information compiled by Engman (1986).
[2] Includes species such as weeping lovegrass, bluegrass, buffalo grass, blue grama grass, and native grass mixtures.
[3] When selecting n , consider cover to a height of about 0.1 ft. This is the only part of the plant cover that will obstruct sheet flow.

E-1

Figure 15–4 Velocity versus slope for shallow concentrated flow



APPENDIX III

- **DEVELOPED DRAINAGE AREA MAP**
- **DEVELOPED HYDROCAD ROUTING REPORT**
- **DEVELOPOPED SCS CALCULATIONS**
- **WQv, RRv & CPv CALCULATIONS**

DA-1
AREA = 0.20 ac
Impervious Cover = 0.06 ac
Tc = 0.104 hrs (6.2 Min)
CN= 84

Discharge Point

DA=2
AREA = 0.79 ac
Impervious Cover = 0.04 ac
Tc = 0.342 hrs (20.5 Min)
CN = 84

DA-3
AREA = 1.08 ac
Impervious Cover = 0.61 ac
Tc = 0.338 hrs (20.3 Min)
CN = 89

CAR WASH
4,360 Sq. Ft.

RGE TD, RTC 81, UGC S.W. FACE

CONC. SIDEWALK

CONC, BASE FOR BANK SIGN

Drainage Path

Overal Drainage Area

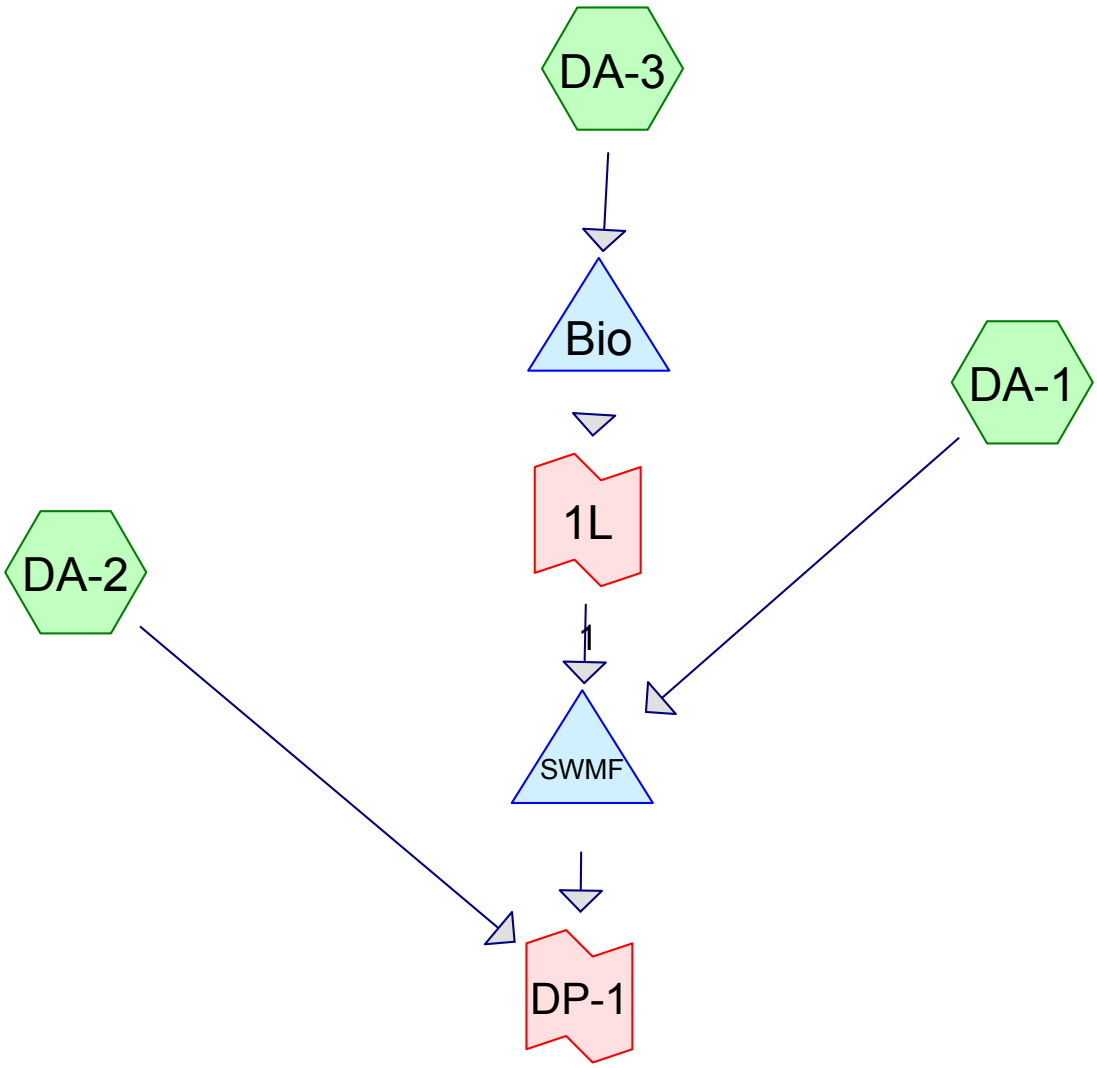
Sub-Drainage Areas

DEVELOPED DRAINAGE AREA MAP

Auto Wash No.06 ~ CE#7153

C.R.A. ~ 09 / 10 / 2019 ~ 1":40'

COSTICH ENGINEERING



Subcat Reach Pond Link

Routing Diagram for 2019-09-20 Developed
Prepared by {enter your company name here}, Printed 9/20/2019

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.990	84	(DA-1, DA-2)
1.080	89	(DA-3)
2.070	**87**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
2.070	Other	DA-1, DA-2, DA-3
2.070		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	2.070	2.070		DA-1, DA-2, DA-3
0.000	**0.000**	**0.000**	**0.000**	**2.070**	**2.070**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	Bio	712.90	712.15	186.0	0.0040	0.013	18.0	0.0	0.0

Time span=0.50-24.00 hrs, dt=0.05 hrs, 471 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: Runoff Area=0.200 ac 0.00% Impervious Runoff Depth>0.67"
Tc=6.2 min CN=84 Runoff=0.23 cfs 0.011 af

Subcatchment DA-2: Runoff Area=0.790 ac 0.00% Impervious Runoff Depth>0.66"
Tc=20.5 min CN=84 Runoff=0.55 cfs 0.044 af

Subcatchment DA-3: Runoff Area=1.080 ac 0.00% Impervious Runoff Depth>0.93"
Tc=20.3 min CN=89 Runoff=1.11 cfs 0.084 af

Pond Bio: Peak Elev=715.49' Storage=1,195 cf Inflow=1.11 cfs 0.084 af
Outflow=0.76 cfs 0.063 af

Pond SWMF: Peak Elev=712.18' Storage=754 cf Inflow=0.80 cfs 0.074 af
Outflow=0.75 cfs 0.058 af

Link 1L: 1 Inflow=0.76 cfs 0.063 af
Primary=0.76 cfs 0.063 af

Link DP-1: Inflow=0.98 cfs 0.102 af
Primary=0.98 cfs 0.102 af

Total Runoff Area = 2.070 ac Runoff Volume = 0.139 af Average Runoff Depth = 0.80"
100.00% Pervious = 2.070 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment DA-1:

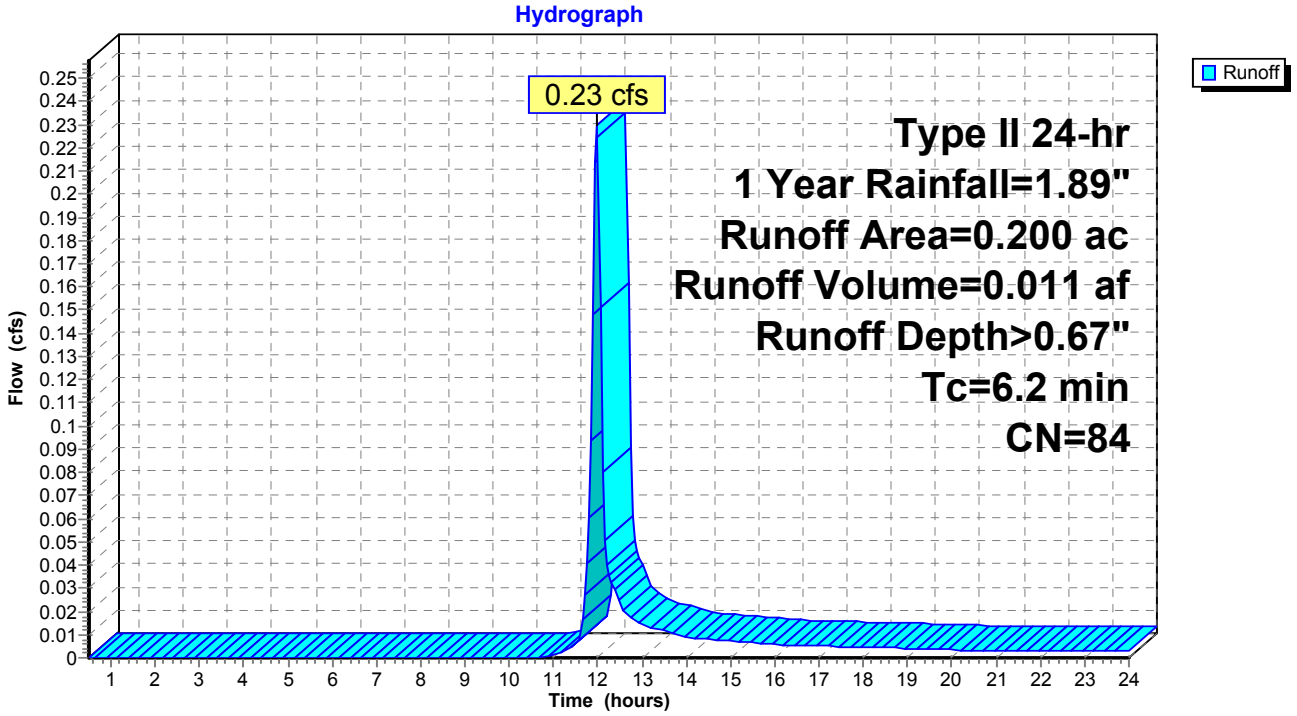
Runoff = 0.23 cfs @ 11.98 hrs, Volume= 0.011 af, Depth> 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=1.89"

	Area (ac)	CN	Description
*	0.200	84	
	0.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2					**Direct Entry,**

Subcatchment DA-1:



Summary for Subcatchment DA-2:

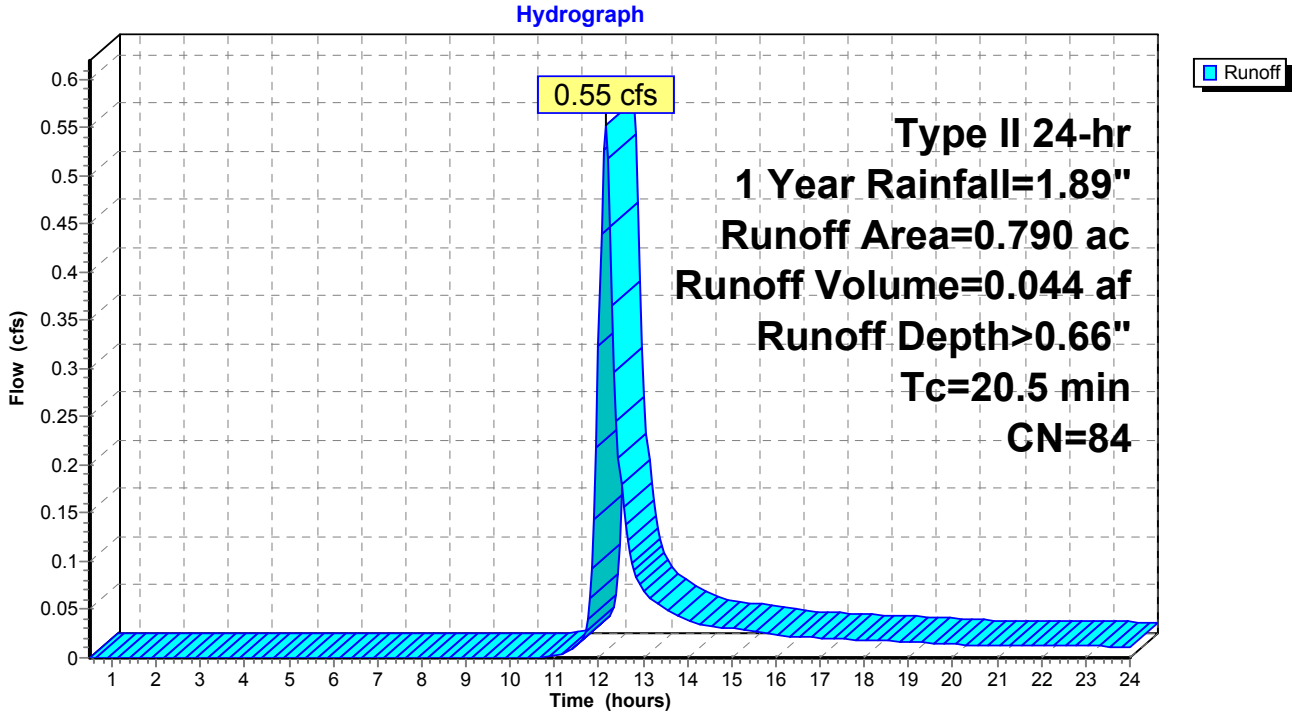
Runoff = 0.55 cfs @ 12.15 hrs, Volume= 0.044 af, Depth> 0.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=1.89"

	Area (ac)	CN	Description
*	0.790	84	
	0.790		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5					**Direct Entry,**

Subcatchment DA-2:



Summary for Subcatchment DA-3:

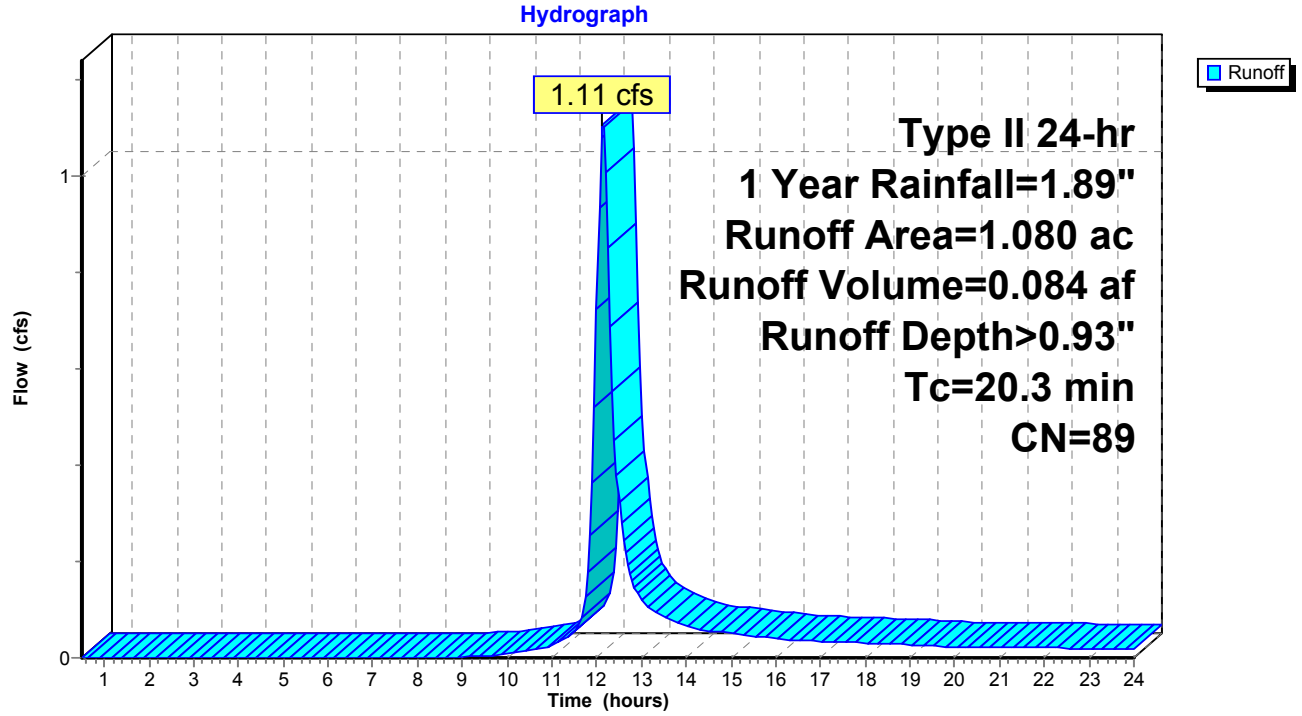
Runoff = 1.11 cfs @ 12.13 hrs, Volume= 0.084 af, Depth> 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 Year Rainfall=1.89"

	Area (ac)	CN	Description
*	1.080	89	
	1.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3					**Direct Entry,**

Subcatchment DA-3:



Summary for Pond Bio:

Inflow Area = 1.080 ac, 0.00% Impervious, Inflow Depth > 0.93" for 1 Year event
Inflow = 1.11 cfs @ 12.13 hrs, Volume= 0.084 af
Outflow = 0.76 cfs @ 12.28 hrs, Volume= 0.063 af, Atten= 31%, Lag= 8.8 min
Primary = 0.76 cfs @ 12.28 hrs, Volume= 0.063 af

Routing by Stor-Ind method, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Peak Elev= 715.49' @ 12.28 hrs Surf.Area= 3,370 sf Storage= 1,195 cf

Plug-Flow detention time= 144.5 min calculated for 0.063 af (75% of inflow)
Center-of-Mass det. time= 50.9 min (891.7 - 840.8)

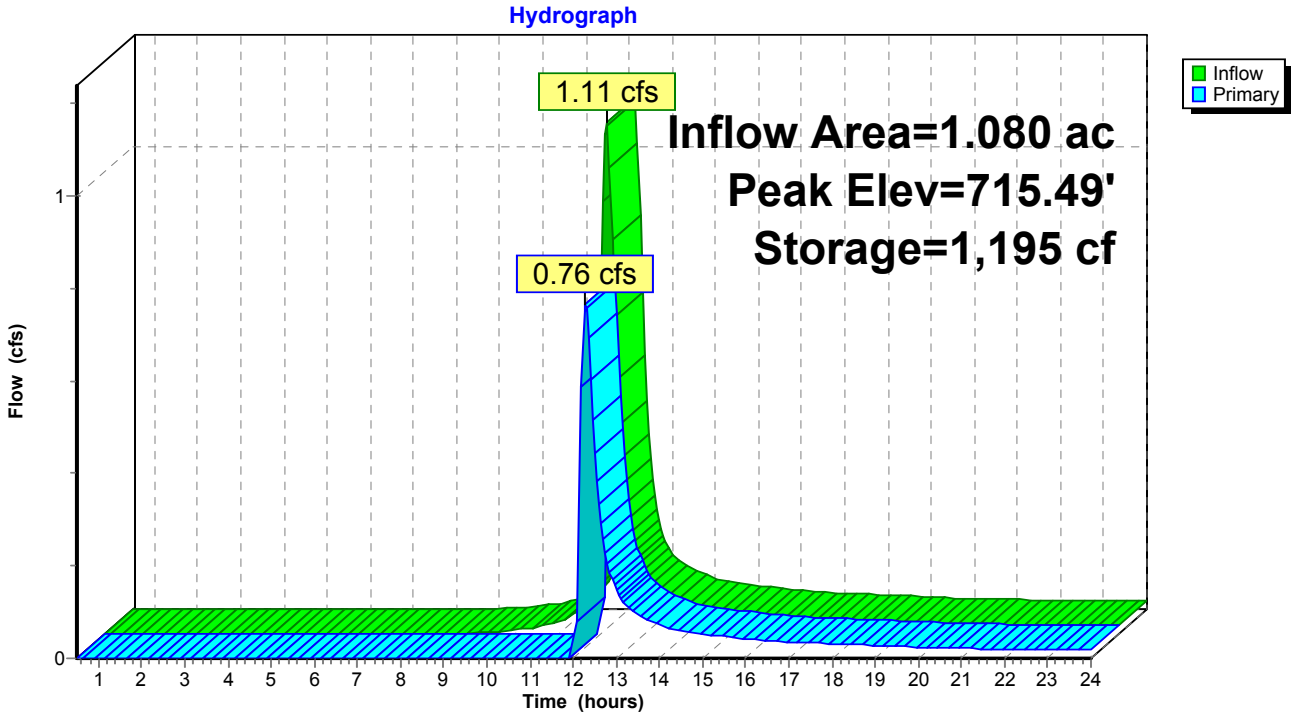
Volume	Invert	Avail.Storage	Storage Description
#1	714.90'	5,843 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
714.90	1,000	0	0
715.00	1,046	102	102
715.50	3,394	1,110	1,212
715.66	6,745	811	2,023
716.00	15,725	3,820	5,843

Device	Routing	Invert	Outlet Devices
#1	Primary	712.90'	**18.0" Round Culvert** L= 186.0' Ke= 0.500 Inlet / Outlet Invert= 712.90' / 712.15' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	712.90'	**8.0" Vert. Orifice/Grate** C= 0.600
#3	Device 2	715.40'	**24.0" x 24.0" Horiz. Top Of Grate** C= 0.600 in 24.0" x 24.0" Grate (100% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.76 cfs @ 12.28 hrs HW=715.49' (Free Discharge)
└**1=Culvert** (Passes 0.76 cfs of 8.70 cfs potential flow)
└**2=Orifice/Grate** (Passes 0.76 cfs of 2.53 cfs potential flow)
└**3=Top Of Grate** (Weir Controls 0.76 cfs @ 1.00 fps)

Pond Bio:


Hydrograph
1.11 cfs
0.76 cfs
Inflow Area=1.080 ac
Peak Elev=715.49'
Storage=1,195 cf
Inflow
Primary
Flow (cfs)
0
1
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Summary for Pond SWMF:

Inflow Area = 1.280 ac, 0.00% Impervious, Inflow Depth > 0.69" for 1 Year event
Inflow = 0.80 cfs @ 12.28 hrs, Volume= 0.074 af
Outflow = 0.75 cfs @ 12.42 hrs, Volume= 0.058 af, Atten= 6%, Lag= 8.1 min
Primary = 0.75 cfs @ 12.42 hrs, Volume= 0.058 af

Routing by Stor-Ind method, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Peak Elev= 712.18' @ 12.42 hrs Surf.Area= 870 sf Storage= 754 cf

Plug-Flow detention time= 133.1 min calculated for 0.058 af (79% of inflow)
Center-of-Mass det. time= 44.1 min (930.0 - 885.9)

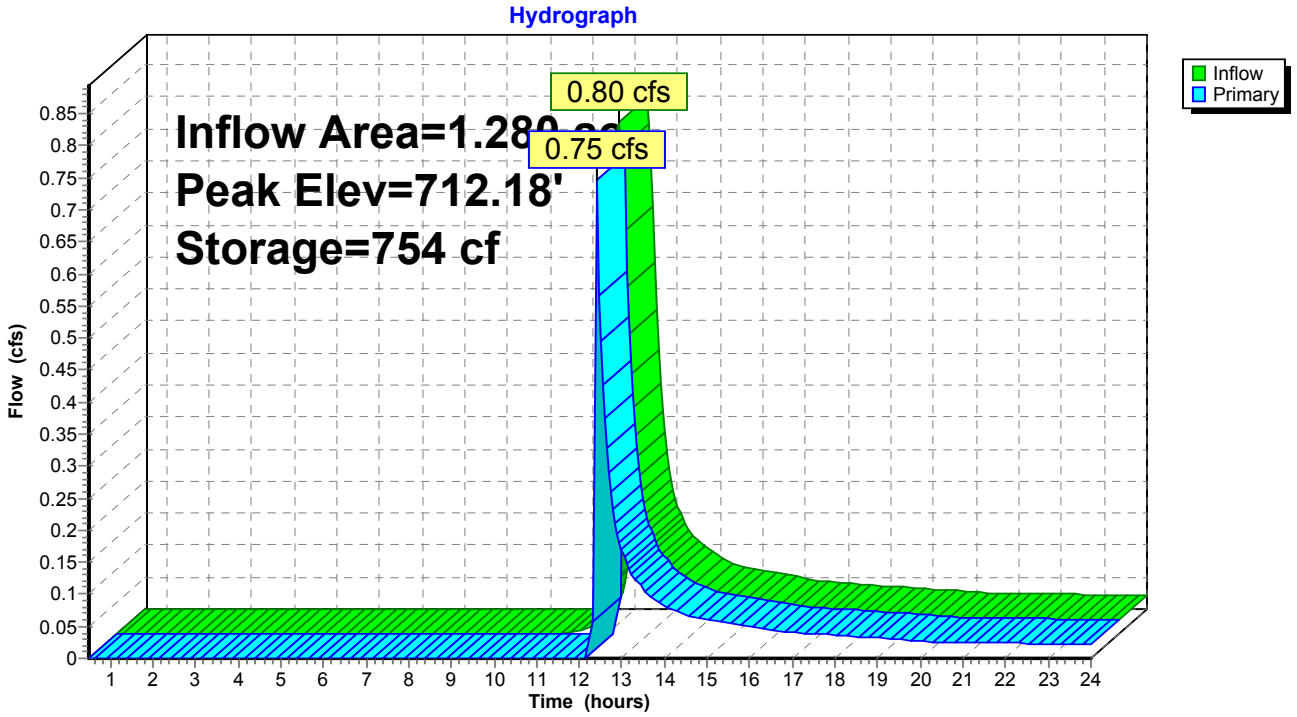
Volume	Invert	Avail.Storage	Storage Description
#1	711.10'	1,652 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
711.10	600	0	0
712.00	750	607	607
712.10	820	79	686
712.50	1,069	378	1,064
713.00	1,285	589	1,652

Device	Routing	Invert	Outlet Devices
#1	Primary	712.10'	**Rock Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.90 1.40 Width (feet) 10.00 15.00 18.00

Primary OutFlow Max=0.66 cfs @ 12.42 hrs HW=712.17' (Free Discharge)
↑—**1=Rock Spillway** (Weir Controls 0.66 cfs @ 0.88 fps)

Pond SWMF:

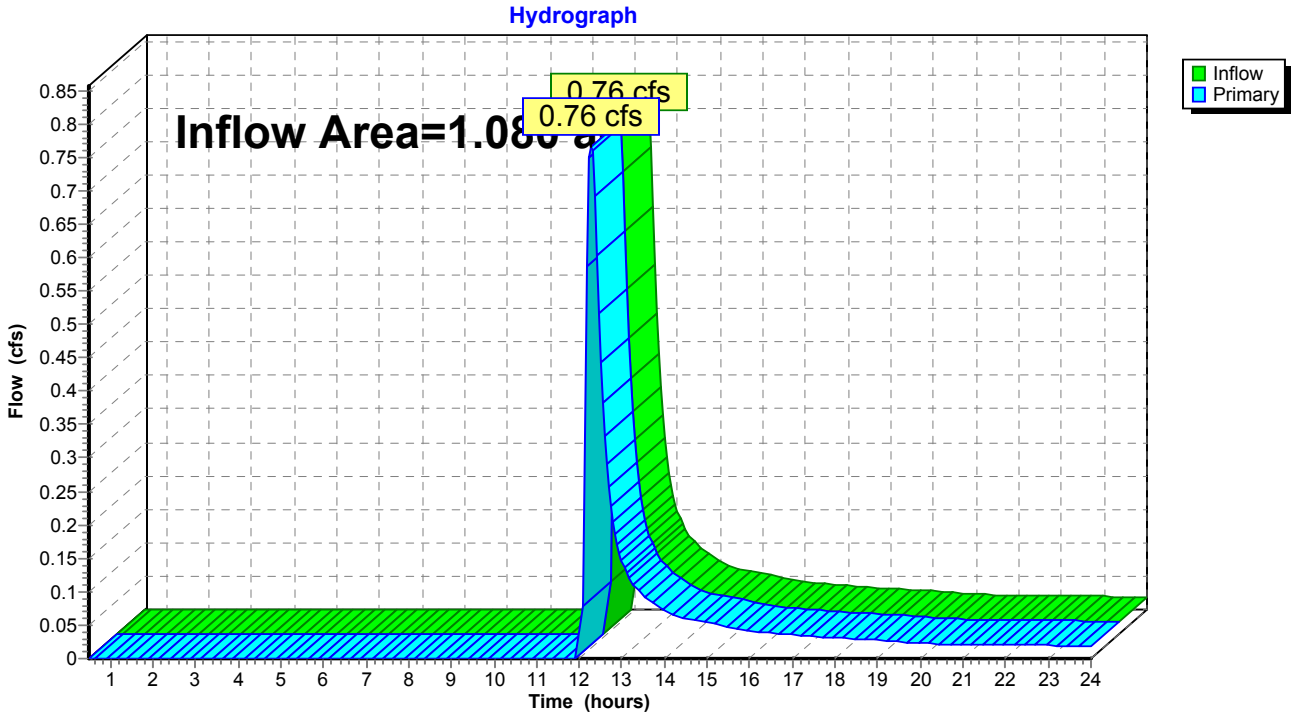

Hydrograph
Inflow
Primary
0.80 cfs
0.75 cfs
Inflow Area=1.280 ac
Peak Elev=712.18'
Storage=754 cf
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
0.7
0.75
0.8
0.85
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Summary for Link 1L: 1

Inflow Area = 1.080 ac, 0.00% Impervious, Inflow Depth > 0.70" for 1 Year event
Inflow = 0.76 cfs @ 12.28 hrs, Volume= 0.063 af
Primary = 0.76 cfs @ 12.28 hrs, Volume= 0.063 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link 1L: 1

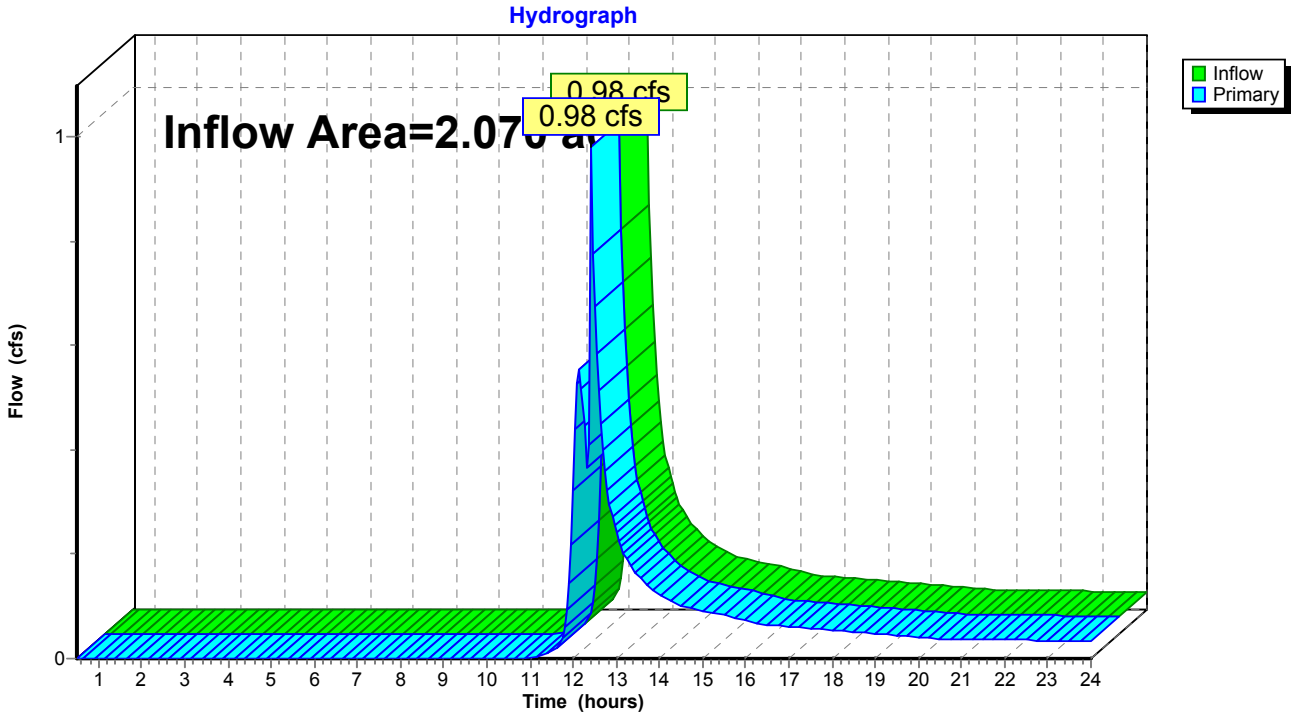


Summary for Link DP-1:

Inflow Area = 2.070 ac, 0.00% Impervious, Inflow Depth > 0.59" for 1 Year event
Inflow = 0.98 cfs @ 12.41 hrs, Volume= 0.102 af
Primary = 0.98 cfs @ 12.41 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link DP-1:



Time span=0.50-24.00 hrs, dt=0.05 hrs, 471 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: Runoff Area=0.200 ac 0.00% Impervious Runoff Depth>0.88"
Tc=6.2 min CN=84 Runoff=0.31 cfs 0.015 af

Subcatchment DA-2: Runoff Area=0.790 ac 0.00% Impervious Runoff Depth>0.88"
Tc=20.5 min CN=84 Runoff=0.74 cfs 0.058 af

Subcatchment DA-3: Runoff Area=1.080 ac 0.00% Impervious Runoff Depth>1.18"
Tc=20.3 min CN=89 Runoff=1.41 cfs 0.106 af

Pond Bio: Peak Elev=715.52' Storage=1,303 cf Inflow=1.41 cfs 0.106 af
Outflow=1.15 cfs 0.085 af

Pond SWMF: Peak Elev=712.21' Storage=777 cf Inflow=1.20 cfs 0.100 af
Outflow=1.17 cfs 0.084 af

Link 1L: 1 Inflow=1.15 cfs 0.085 af
Primary=1.15 cfs 0.085 af

Link DP-1: Inflow=1.83 cfs 0.142 af
Primary=1.83 cfs 0.142 af

Total Runoff Area = 2.070 ac Runoff Volume = 0.179 af Average Runoff Depth = 1.04"
100.00% Pervious = 2.070 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment DA-1:

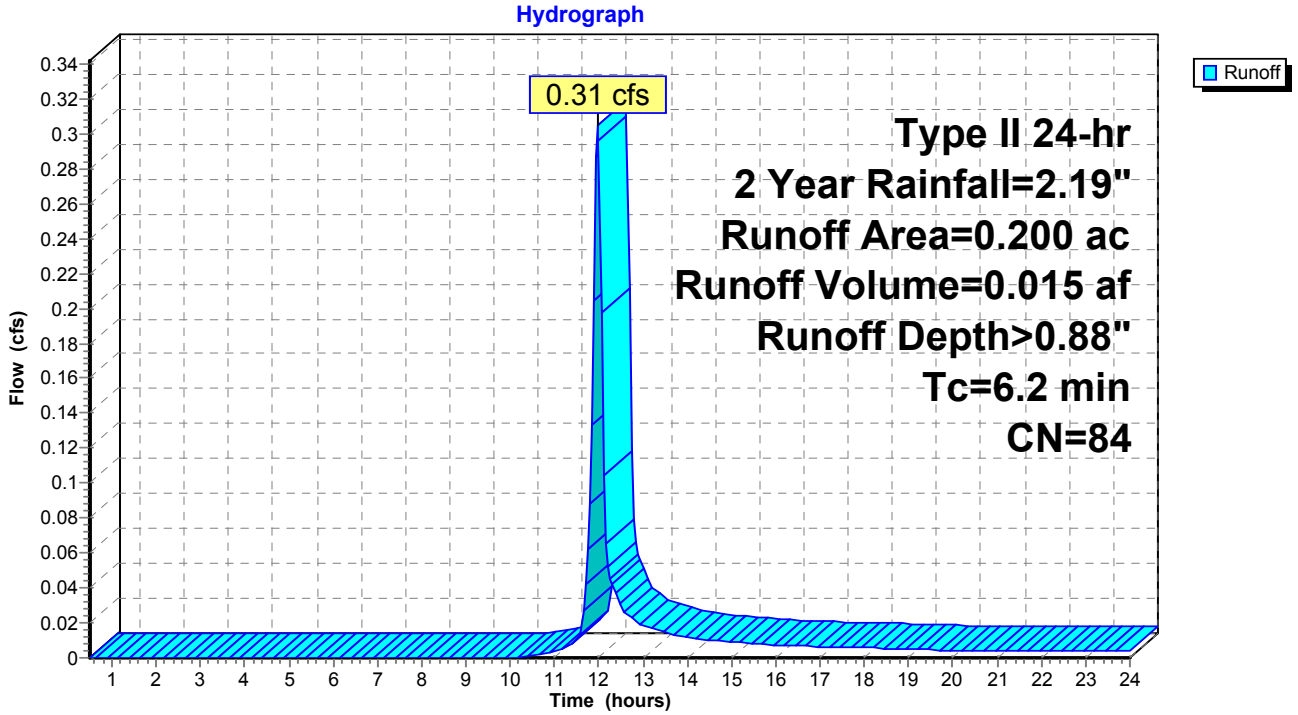
Runoff = 0.31 cfs @ 11.98 hrs, Volume= 0.015 af, Depth> 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 Year Rainfall=2.19"

	Area (ac)	CN	Description
*	0.200	84	
	0.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2					**Direct Entry,**

Subcatchment DA-1:



Summary for Subcatchment DA-2:

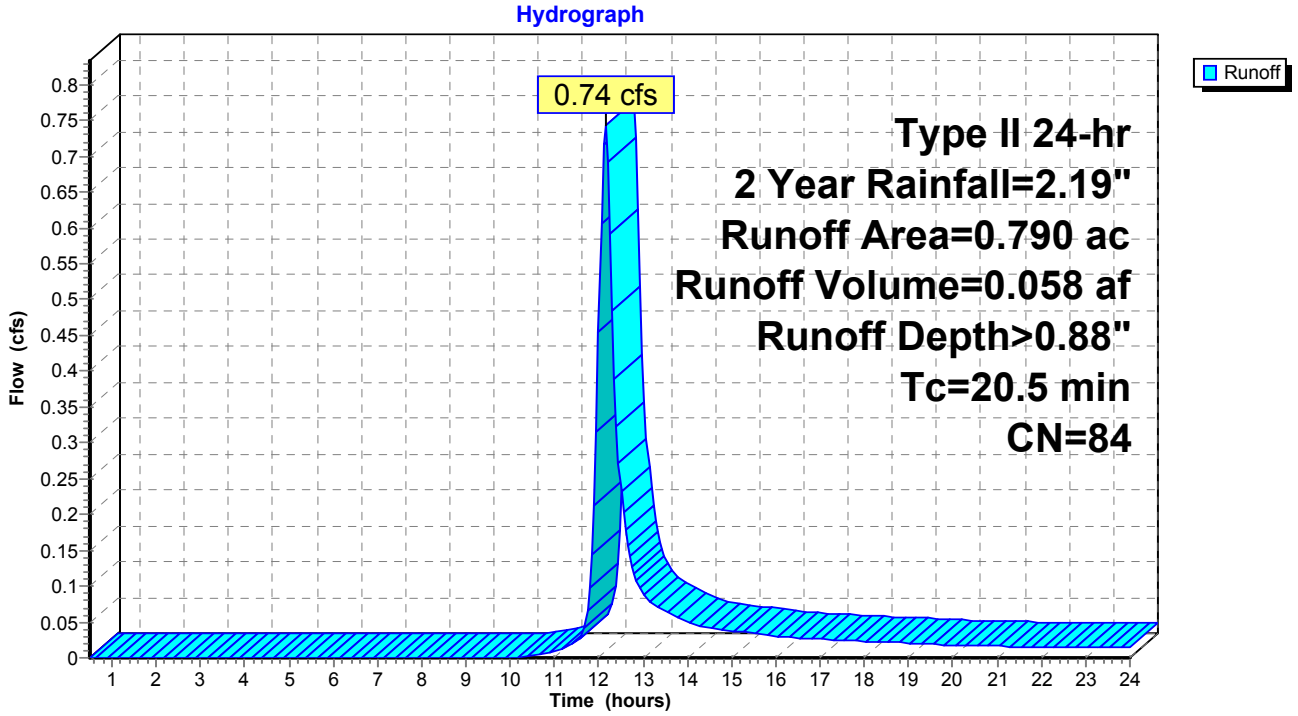
Runoff = 0.74 cfs @ 12.14 hrs, Volume= 0.058 af, Depth> 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 Year Rainfall=2.19"

	Area (ac)	CN	Description
*	0.790	84	
	0.790		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5					**Direct Entry,**

Subcatchment DA-2:



Summary for Subcatchment DA-3:

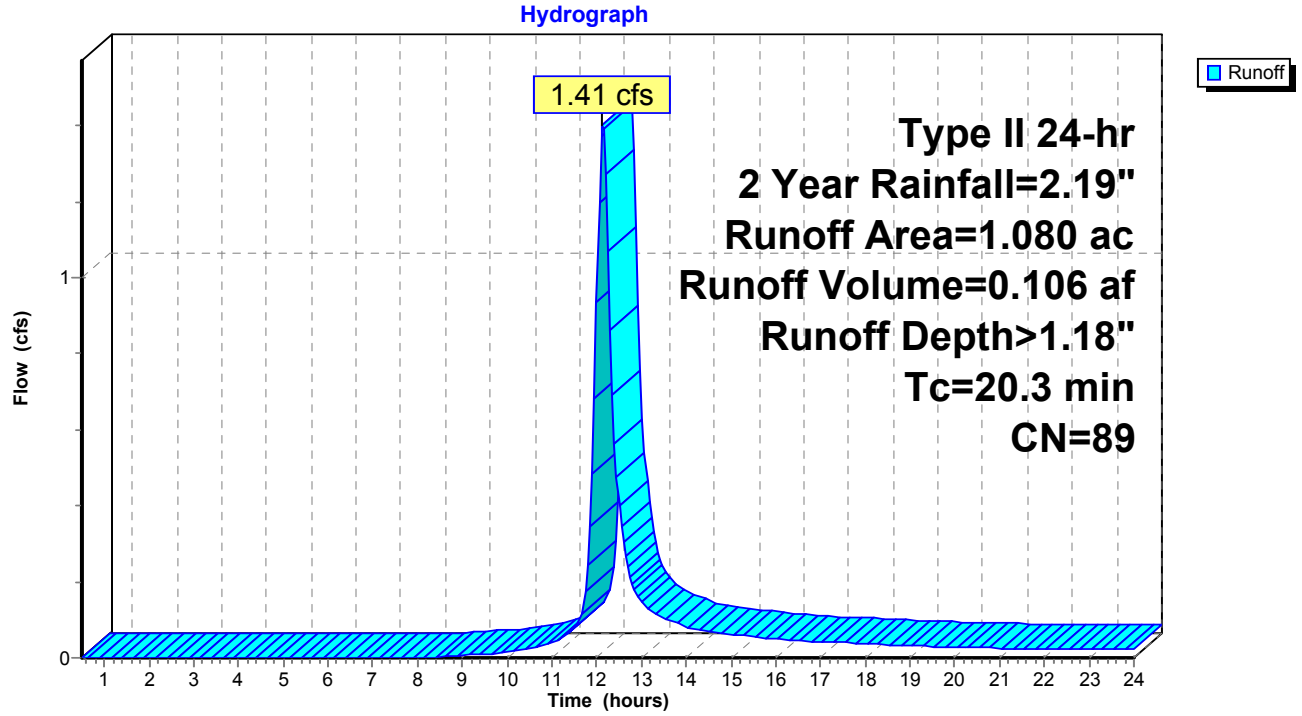
Runoff = 1.41 cfs @ 12.13 hrs, Volume= 0.106 af, Depth> 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 Year Rainfall=2.19"

	Area (ac)	CN	Description
*	1.080	89	
	1.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3					**Direct Entry,**

Subcatchment DA-3:



Summary for Pond Bio:

Inflow Area = 1.080 ac, 0.00% Impervious, Inflow Depth > 1.18" for 2 Year event
Inflow = 1.41 cfs @ 12.13 hrs, Volume= 0.106 af
Outflow = 1.15 cfs @ 12.24 hrs, Volume= 0.085 af, Atten= 18%, Lag= 6.2 min
Primary = 1.15 cfs @ 12.24 hrs, Volume= 0.085 af

Routing by Stor-Ind method, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Peak Elev= 715.52' @ 12.24 hrs Surf.Area= 3,913 sf Storage= 1,303 cf

Plug-Flow detention time= 121.4 min calculated for 0.085 af (80% of inflow)
Center-of-Mass det. time= 40.4 min (874.6 - 834.2)

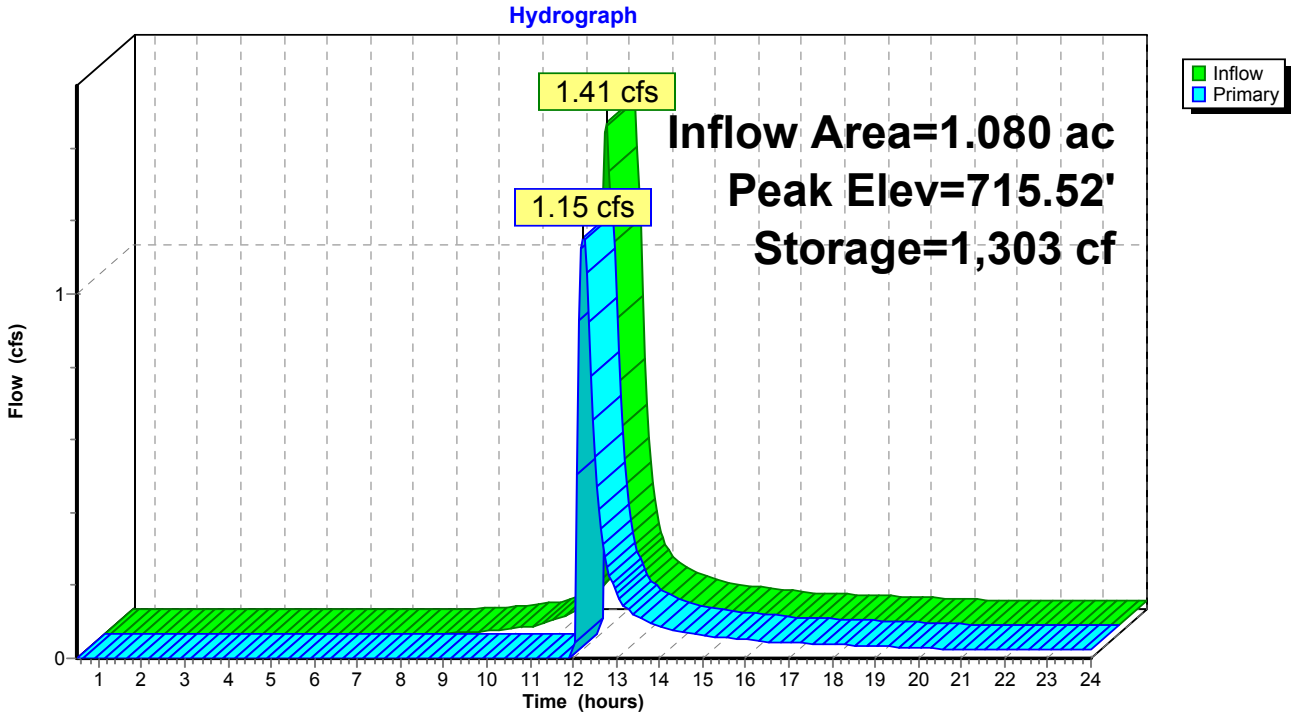
Volume	Invert	Avail.Storage	Storage Description
#1	714.90'	5,843 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
714.90	1,000	0	0
715.00	1,046	102	102
715.50	3,394	1,110	1,212
715.66	6,745	811	2,023
716.00	15,725	3,820	5,843

Device	Routing	Invert	Outlet Devices
#1	Primary	712.90'	**18.0" Round Culvert** L= 186.0' Ke= 0.500 Inlet / Outlet Invert= 712.90' / 712.15' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	712.90'	**8.0" Vert. Orifice/Grate** C= 0.600
#3	Device 2	715.40'	**24.0" x 24.0" Horiz. Top Of Grate** C= 0.600 in 24.0" x 24.0" Grate (100% open area) Limited to weir flow at low heads

Primary OutFlow Max=1.14 cfs @ 12.24 hrs HW=715.52' (Free Discharge)
↑**1=Culvert** (Passes 1.14 cfs of 8.77 cfs potential flow)
↑**2=Orifice/Grate** (Passes 1.14 cfs of 2.54 cfs potential flow)
↑**3=Top Of Grate** (Weir Controls 1.14 cfs @ 1.15 fps)

Pond Bio:


Hydrograph
1.41 cfs
1.15 cfs
Inflow Area=1.080 ac
Peak Elev=715.52'
Storage=1,303 cf
Inflow
Primary
Flow (cfs)
0
1
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Summary for Pond SWMF:

Inflow Area = 1.280 ac, 0.00% Impervious, Inflow Depth > 0.94" for 2 Year event
Inflow = 1.20 cfs @ 12.23 hrs, Volume= 0.100 af
Outflow = 1.17 cfs @ 12.28 hrs, Volume= 0.084 af, Atten= 3%, Lag= 2.7 min
Primary = 1.17 cfs @ 12.28 hrs, Volume= 0.084 af

Routing by Stor-Ind method, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Peak Elev= 712.21' @ 12.28 hrs Surf.Area= 886 sf Storage= 777 cf

Plug-Flow detention time= 99.5 min calculated for 0.084 af (84% of inflow)
Center-of-Mass det. time= 29.2 min (899.3 - 870.1)

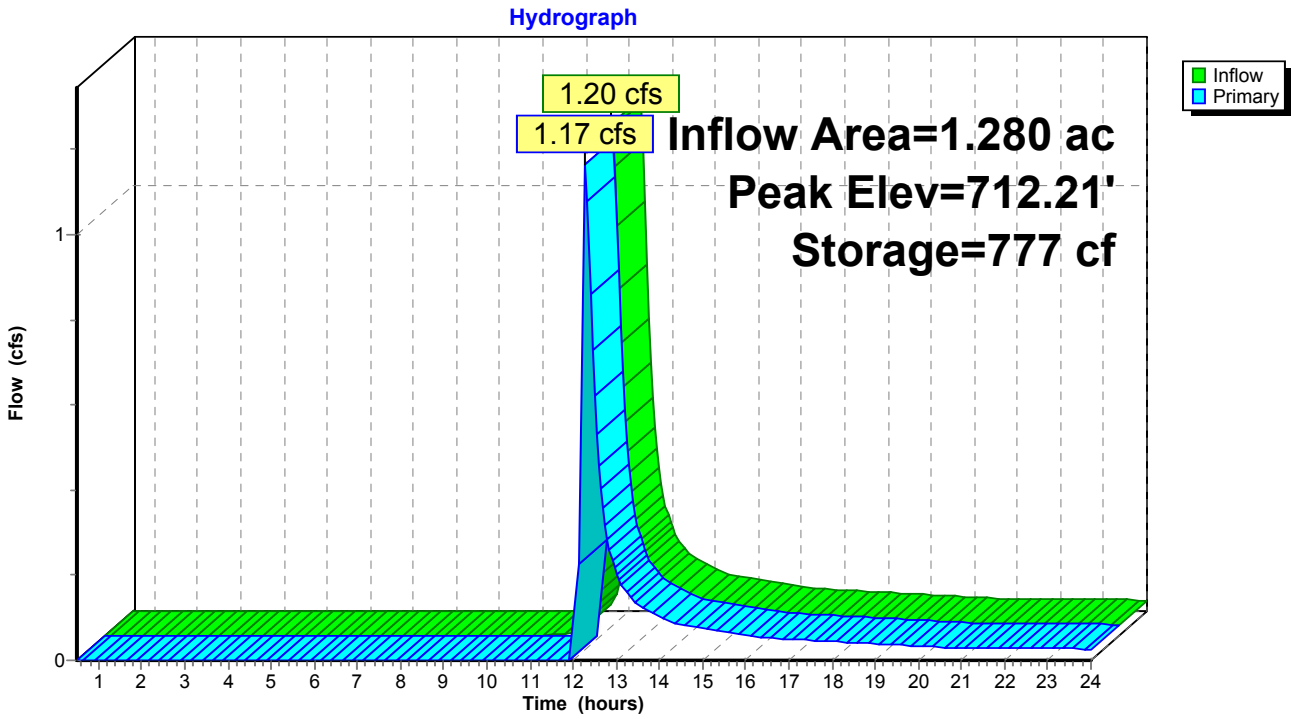
Volume	Invert	Avail.Storage	Storage Description
#1	711.10'	1,652 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
711.10	600	0	0
712.00	750	607	607
712.10	820	79	686
712.50	1,069	378	1,064
713.00	1,285	589	1,652

Device	Routing	Invert	Outlet Devices
#1	Primary	712.10'	**Rock Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.90 1.40 Width (feet) 10.00 15.00 18.00

Primary OutFlow Max=1.15 cfs @ 12.28 hrs HW=712.21' (Free Discharge)
↑—**1=Rock Spillway** (Weir Controls 1.15 cfs @ 1.06 fps)

Pond SWMF:

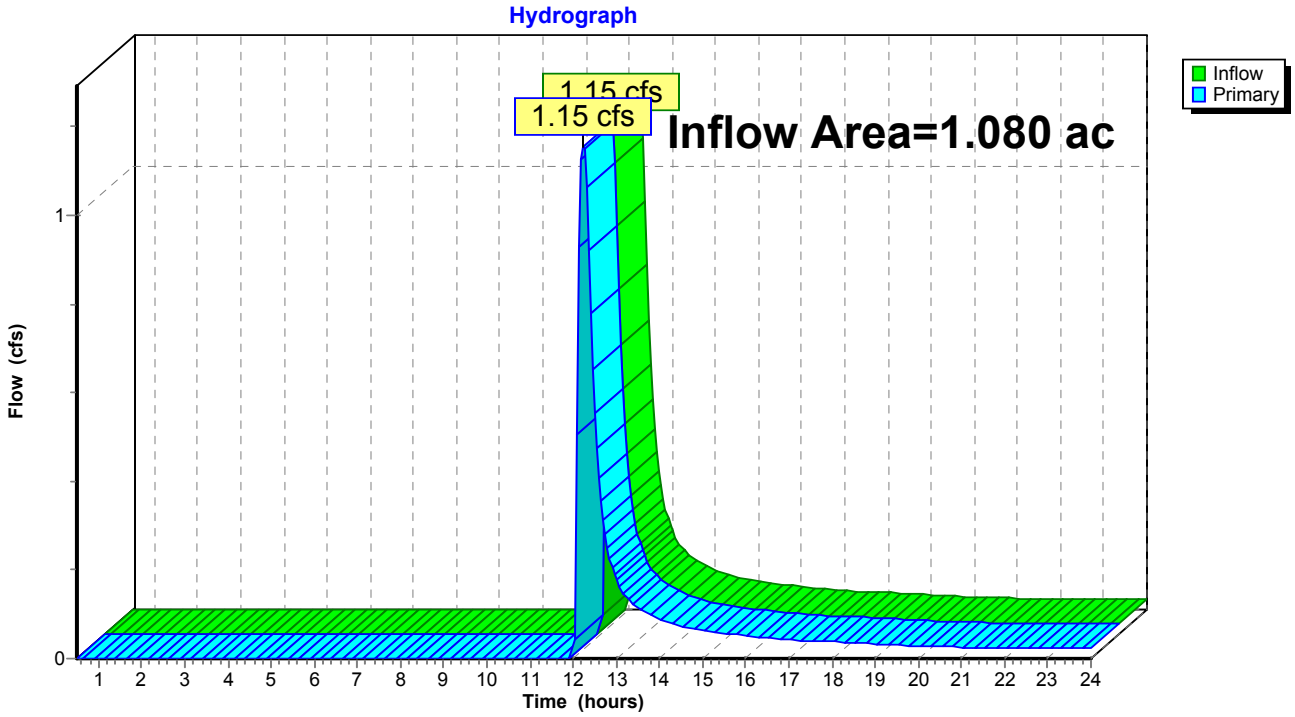

Hydrograph
1.20 cfs
1.17 cfs
Inflow Area=1.280 ac
Peak Elev=712.21'
Storage=777 cf
Inflow
Primary
Flow (cfs)
0
1
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Summary for Link 1L: 1

Inflow Area = 1.080 ac, 0.00% Impervious, Inflow Depth > 0.95" for 2 Year event
Inflow = 1.15 cfs @ 12.24 hrs, Volume= 0.085 af
Primary = 1.15 cfs @ 12.24 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link 1L: 1

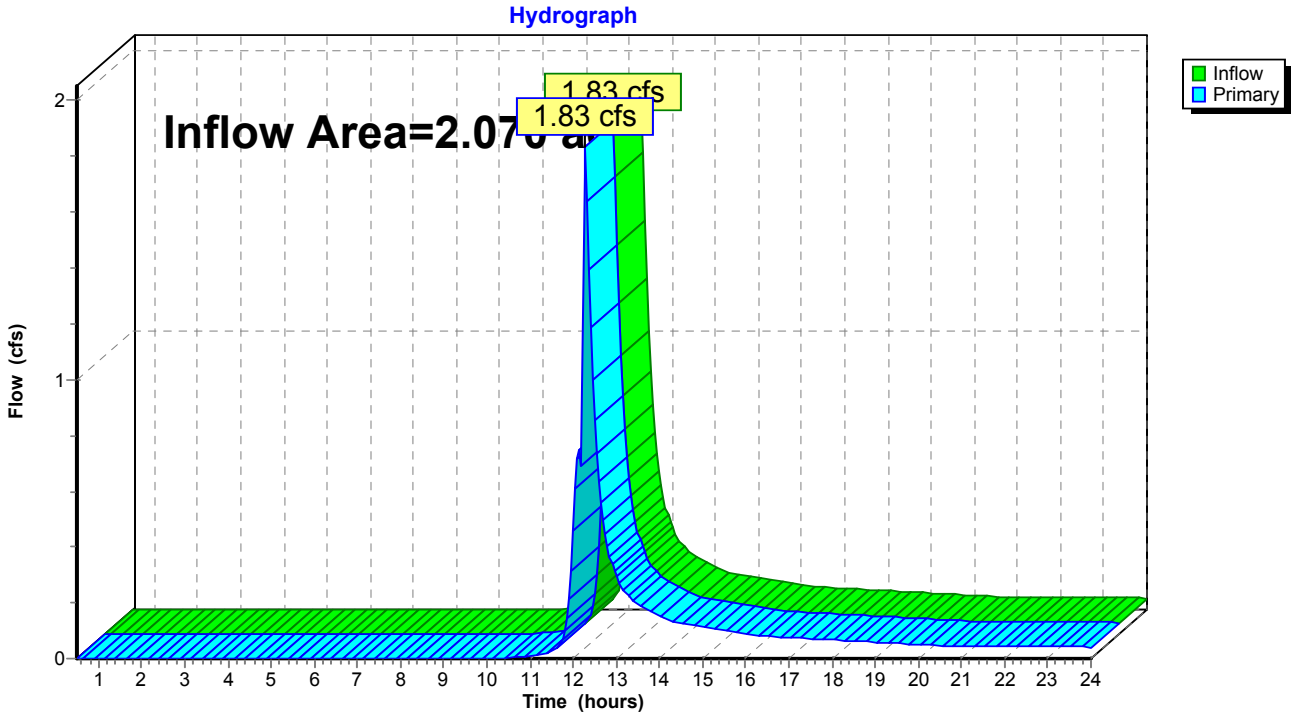


Summary for Link DP-1:

Inflow Area = 2.070 ac, 0.00% Impervious, Inflow Depth > 0.82" for 2 Year event
Inflow = 1.83 cfs @ 12.27 hrs, Volume= 0.142 af
Primary = 1.83 cfs @ 12.27 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link DP-1:



Time span=0.50-24.00 hrs, dt=0.05 hrs, 471 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: Runoff Area=0.200 ac 0.00% Impervious Runoff Depth>1.63"
Tc=6.2 min CN=84 Runoff=0.56 cfs 0.027 af

Subcatchment DA-2: Runoff Area=0.790 ac 0.00% Impervious Runoff Depth>1.62"
Tc=20.5 min CN=84 Runoff=1.41 cfs 0.107 af

Subcatchment DA-3: Runoff Area=1.080 ac 0.00% Impervious Runoff Depth>2.02"
Tc=20.3 min CN=89 Runoff=2.39 cfs 0.182 af

Pond Bio: Peak Elev=715.59' Storage=1,597 cf Inflow=2.39 cfs 0.182 af
Outflow=2.15 cfs 0.160 af

Pond SWMF: Peak Elev=712.26' Storage=827 cf Inflow=2.24 cfs 0.187 af
Outflow=2.22 cfs 0.171 af

Link 1L: 1 Inflow=2.15 cfs 0.160 af
Primary=2.15 cfs 0.160 af

Link DP-1: Inflow=3.59 cfs 0.278 af
Primary=3.59 cfs 0.278 af

Total Runoff Area = 2.070 ac Runoff Volume = 0.316 af Average Runoff Depth = 1.83"
100.00% Pervious = 2.070 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment DA-1:

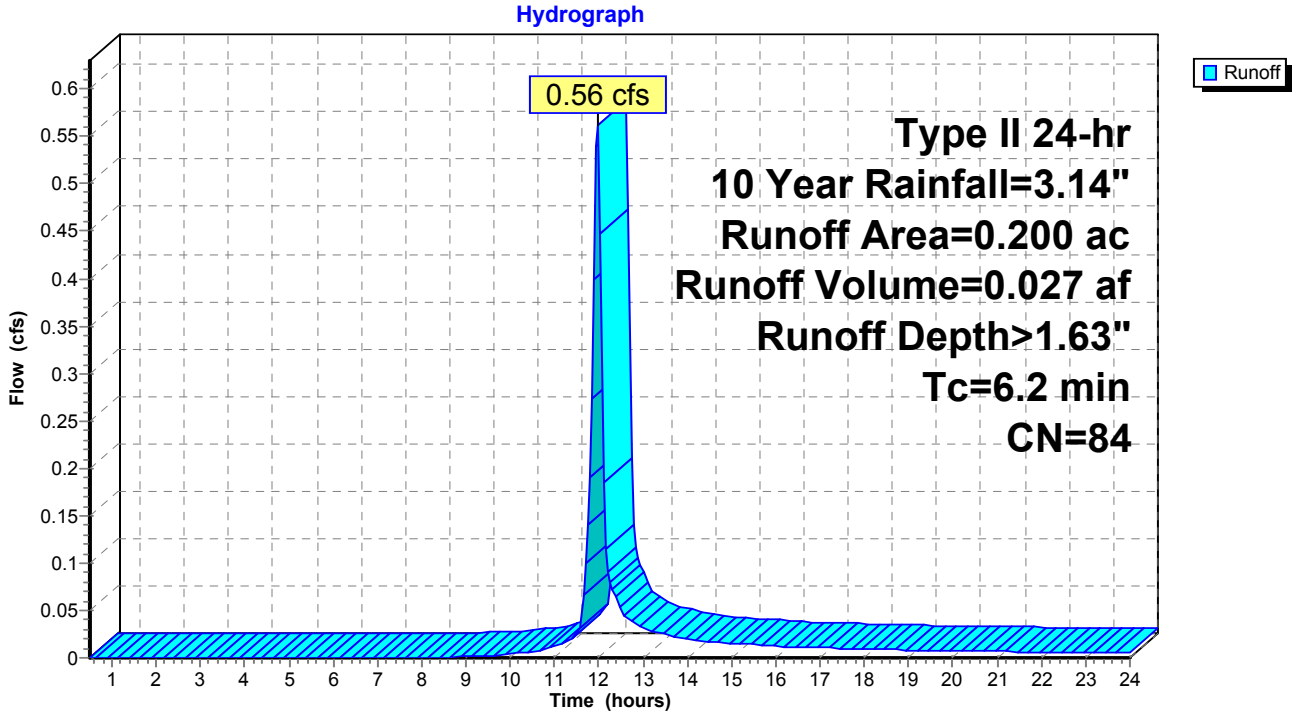
Runoff = 0.56 cfs @ 11.98 hrs, Volume= 0.027 af, Depth> 1.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=3.14"

	Area (ac)	CN	Description
*	0.200	84	
	0.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2					**Direct Entry,**

Subcatchment DA-1:



Summary for Subcatchment DA-2:

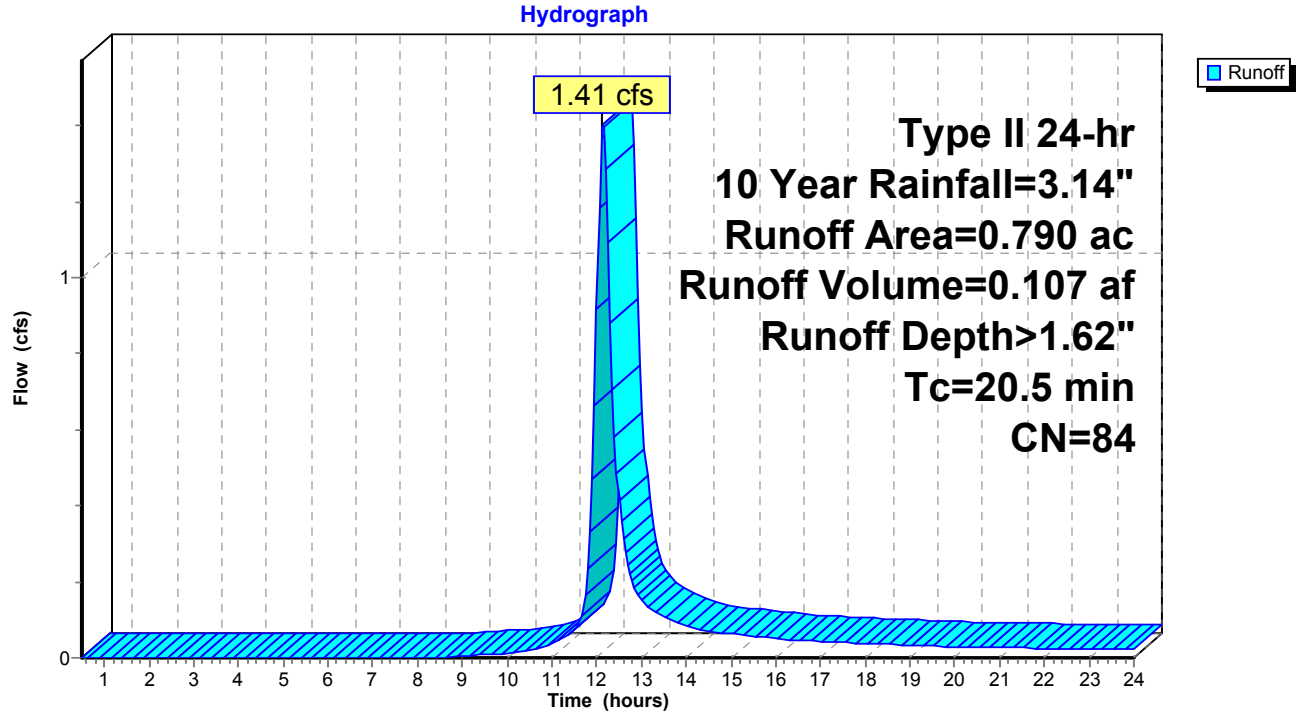
Runoff = 1.41 cfs @ 12.14 hrs, Volume= 0.107 af, Depth> 1.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=3.14"

	Area (ac)	CN	Description
*	0.790	84	
	0.790		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5					**Direct Entry,**

Subcatchment DA-2:



Summary for Subcatchment DA-3:

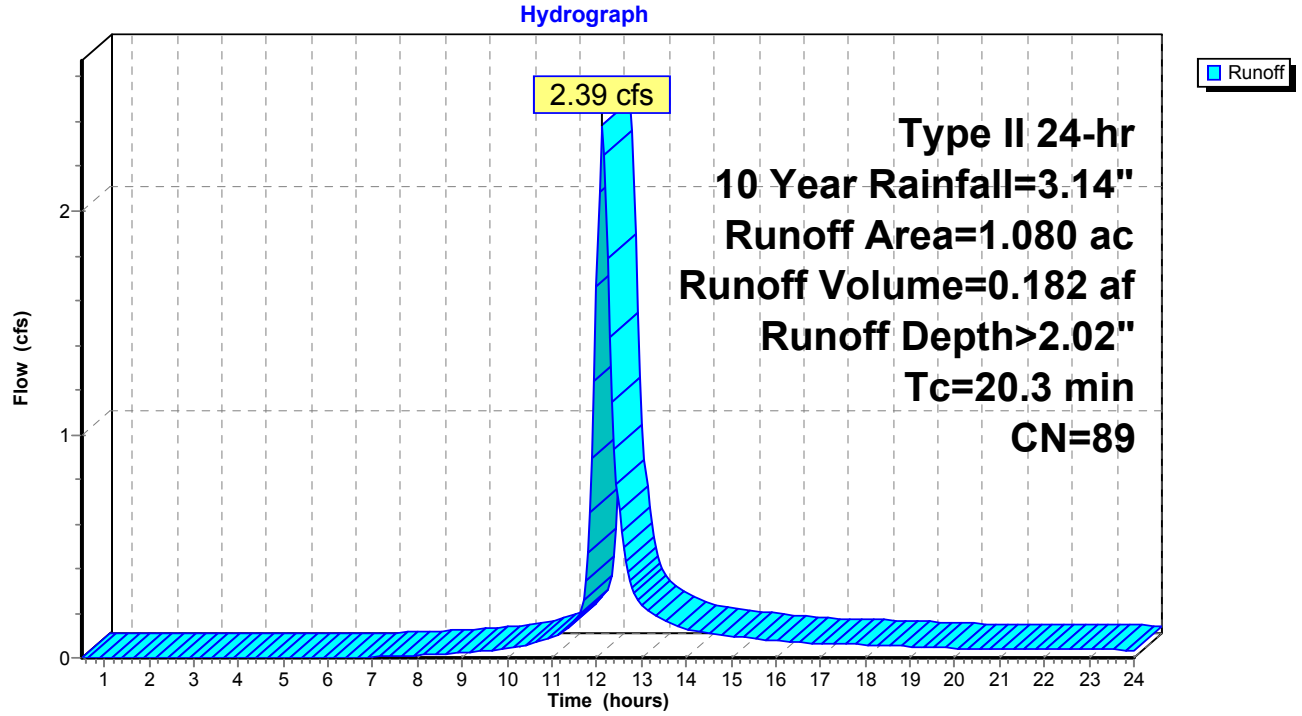
Runoff = 2.39 cfs @ 12.13 hrs, Volume= 0.182 af, Depth> 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 Year Rainfall=3.14"

	Area (ac)	CN	Description
*	1.080	89	
	1.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3					**Direct Entry,**

Subcatchment DA-3:



Summary for Pond Bio:

Inflow Area = 1.080 ac, 0.00% Impervious, Inflow Depth > 2.02" for 10 Year event
Inflow = 2.39 cfs @ 12.13 hrs, Volume= 0.182 af
Outflow = 2.15 cfs @ 12.20 hrs, Volume= 0.160 af, Atten= 10%, Lag= 4.4 min
Primary = 2.15 cfs @ 12.20 hrs, Volume= 0.160 af

Routing by Stor-Ind method, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Peak Elev= 715.59' @ 12.20 hrs Surf.Area= 5,255 sf Storage= 1,597 cf

Plug-Flow detention time= 84.9 min calculated for 0.160 af (88% of inflow)
Center-of-Mass det. time= 28.9 min (848.0 - 819.2)

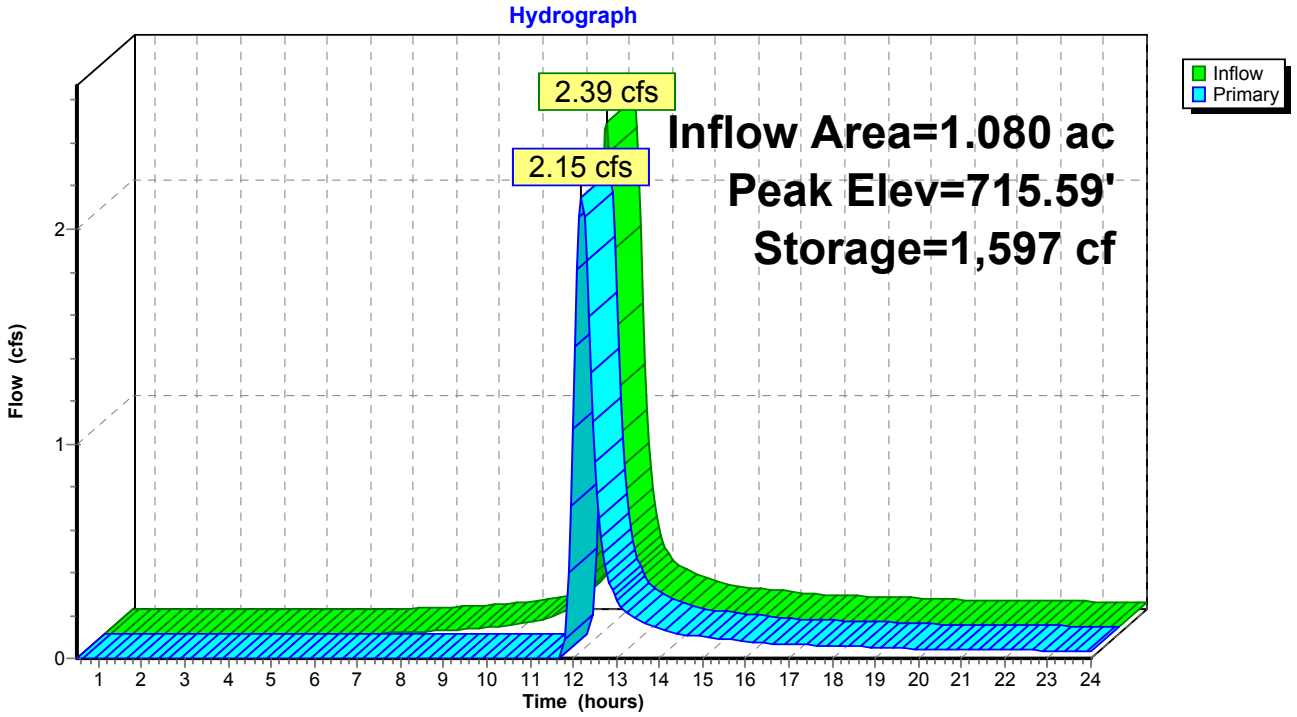
Volume	Invert	Avail.Storage	Storage Description
#1	714.90'	5,843 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
714.90	1,000	0	0
715.00	1,046	102	102
715.50	3,394	1,110	1,212
715.66	6,745	811	2,023
716.00	15,725	3,820	5,843

Device	Routing	Invert	Outlet Devices
#1	Primary	712.90'	**18.0" Round Culvert** L= 186.0' Ke= 0.500 Inlet / Outlet Invert= 712.90' / 712.15' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	712.90'	**8.0" Vert. Orifice/Grate** C= 0.600
#3	Device 2	715.40'	**24.0" x 24.0" Horiz. Top Of Grate** C= 0.600 in 24.0" x 24.0" Grate (100% open area) Limited to weir flow at low heads

Primary OutFlow Max=2.15 cfs @ 12.20 hrs HW=715.59' (Free Discharge)
↑**1=Culvert** (Passes 2.15 cfs of 8.92 cfs potential flow)
↑**2=Orifice/Grate** (Passes 2.15 cfs of 2.58 cfs potential flow)
↑**3=Top Of Grate** (Weir Controls 2.15 cfs @ 1.42 fps)

Pond Bio:


Hydrograph
2.39 cfs
2.15 cfs
Inflow Area=1.080 ac
Peak Elev=715.59'
Storage=1,597 cf
Inflow
Primary
Flow (cfs)
0
1
2
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Summary for Pond SWMF:

Inflow Area = 1.280 ac, 0.00% Impervious, Inflow Depth > 1.76" for 10 Year event
Inflow = 2.24 cfs @ 12.19 hrs, Volume= 0.187 af
Outflow = 2.22 cfs @ 12.20 hrs, Volume= 0.171 af, Atten= 1%, Lag= 0.6 min
Primary = 2.22 cfs @ 12.20 hrs, Volume= 0.171 af

Routing by Stor-Ind method, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Peak Elev= 712.26' @ 12.20 hrs Surf.Area= 921 sf Storage= 827 cf

Plug-Flow detention time= 56.4 min calculated for 0.171 af (91% of inflow)
Center-of-Mass det. time= 13.9 min (858.9 - 845.0)

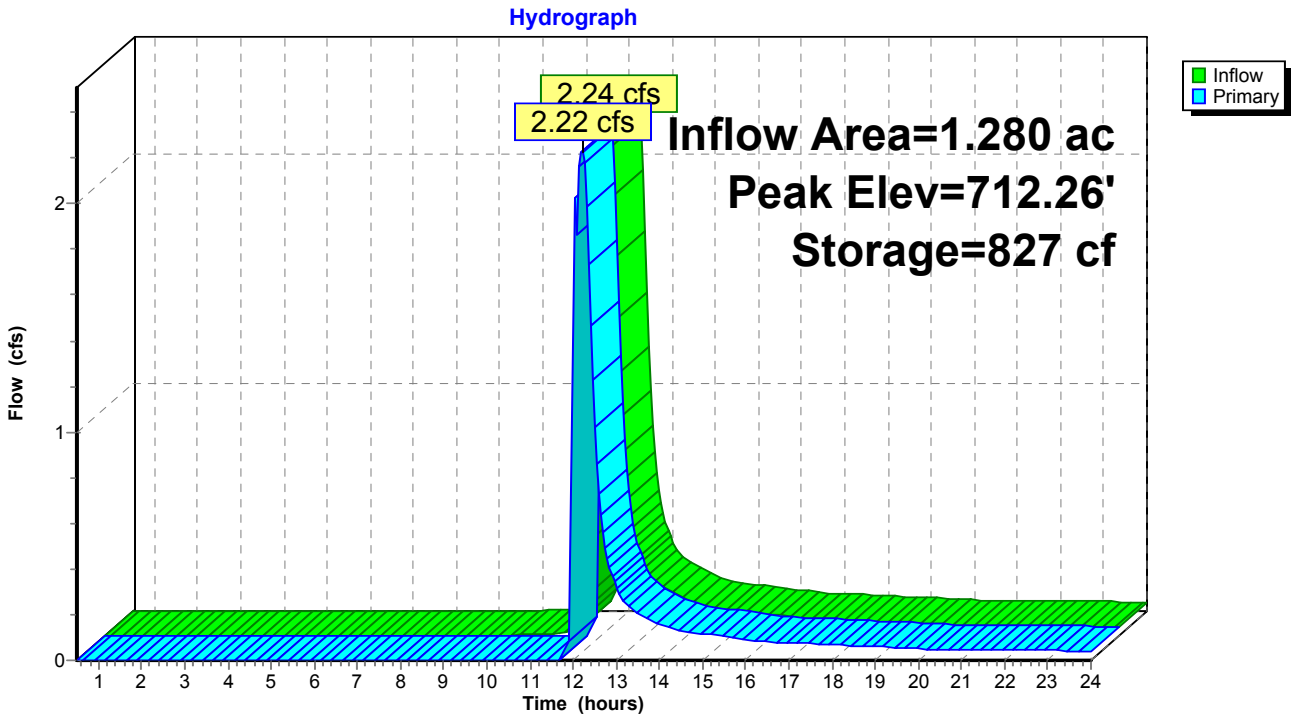
Volume	Invert	Avail.Storage	Storage Description
#1	711.10'	1,652 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
711.10	600	0	0
712.00	750	607	607
712.10	820	79	686
712.50	1,069	378	1,064
713.00	1,285	589	1,652

Device	Routing	Invert	Outlet Devices
#1	Primary	712.10'	**Rock Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.90 1.40 Width (feet) 10.00 15.00 18.00

Primary OutFlow Max=2.22 cfs @ 12.20 hrs HW=712.26' (Free Discharge)
↑—**1=Rock Spillway** (Weir Controls 2.22 cfs @ 1.31 fps)

Pond SWMF:

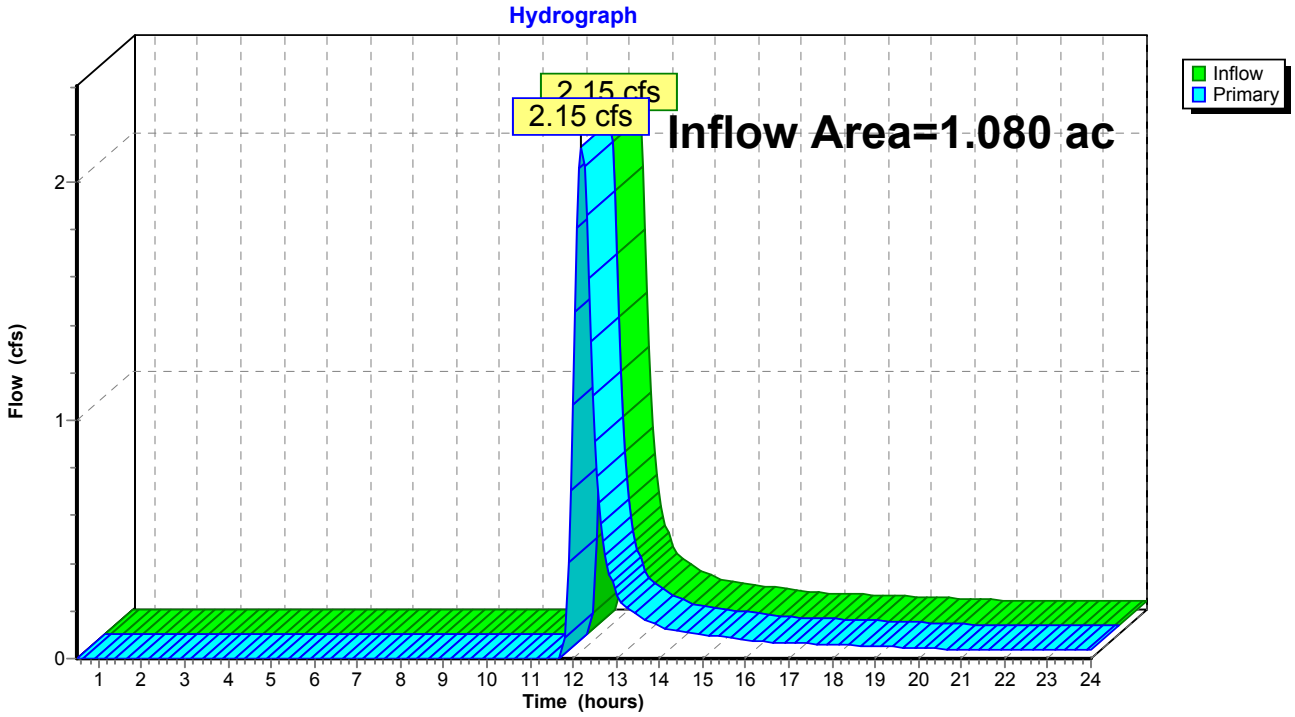

Hydrograph
2.24 cfs
2.22 cfs
Inflow Area=1.280 ac
Peak Elev=712.26'
Storage=827 cf
Inflow
Primary
Flow (cfs)
0
1
2
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Summary for Link 1L: 1

Inflow Area = 1.080 ac, 0.00% Impervious, Inflow Depth > 1.78" for 10 Year event
Inflow = 2.15 cfs @ 12.20 hrs, Volume= 0.160 af
Primary = 2.15 cfs @ 12.20 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link 1L: 1

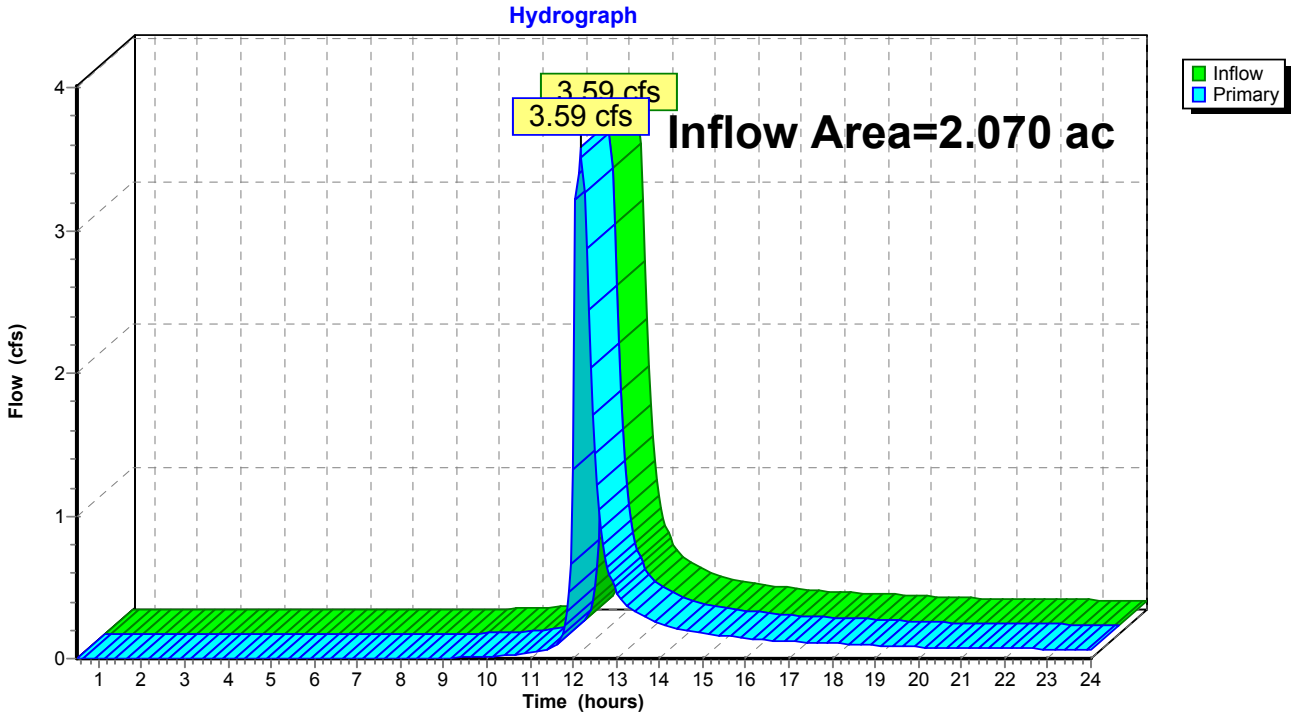


Summary for Link DP-1:

Inflow Area = 2.070 ac, 0.00% Impervious, Inflow Depth > 1.61" for 10 Year event
Inflow = 3.59 cfs @ 12.17 hrs, Volume= 0.278 af
Primary = 3.59 cfs @ 12.17 hrs, Volume= 0.278 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link DP-1:



Time span=0.50-24.00 hrs, dt=0.05 hrs, 471 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: Runoff Area=0.200 ac 0.00% Impervious Runoff Depth>3.51"
Tc=6.2 min CN=84 Runoff=1.17 cfs 0.059 af

Subcatchment DA-2: Runoff Area=0.790 ac 0.00% Impervious Runoff Depth>3.50"
Tc=20.5 min CN=84 Runoff=3.01 cfs 0.231 af

Subcatchment DA-3: Runoff Area=1.080 ac 0.00% Impervious Runoff Depth>4.01"
Tc=20.3 min CN=89 Runoff=4.64 cfs 0.361 af

Pond Bio: Peak Elev=715.79' Storage=3,100 cf Inflow=4.64 cfs 0.361 af
Outflow=2.69 cfs 0.340 af

Pond SWMF: Peak Elev=712.31' Storage=876 cf Inflow=3.44 cfs 0.398 af
Outflow=3.40 cfs 0.382 af

Link 1L: 1 Inflow=2.69 cfs 0.340 af
Primary=2.69 cfs 0.340 af

Link DP-1: Inflow=6.05 cfs 0.613 af
Primary=6.05 cfs 0.613 af

Total Runoff Area = 2.070 ac Runoff Volume = 0.650 af Average Runoff Depth = 3.77"
100.00% Pervious = 2.070 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment DA-1:

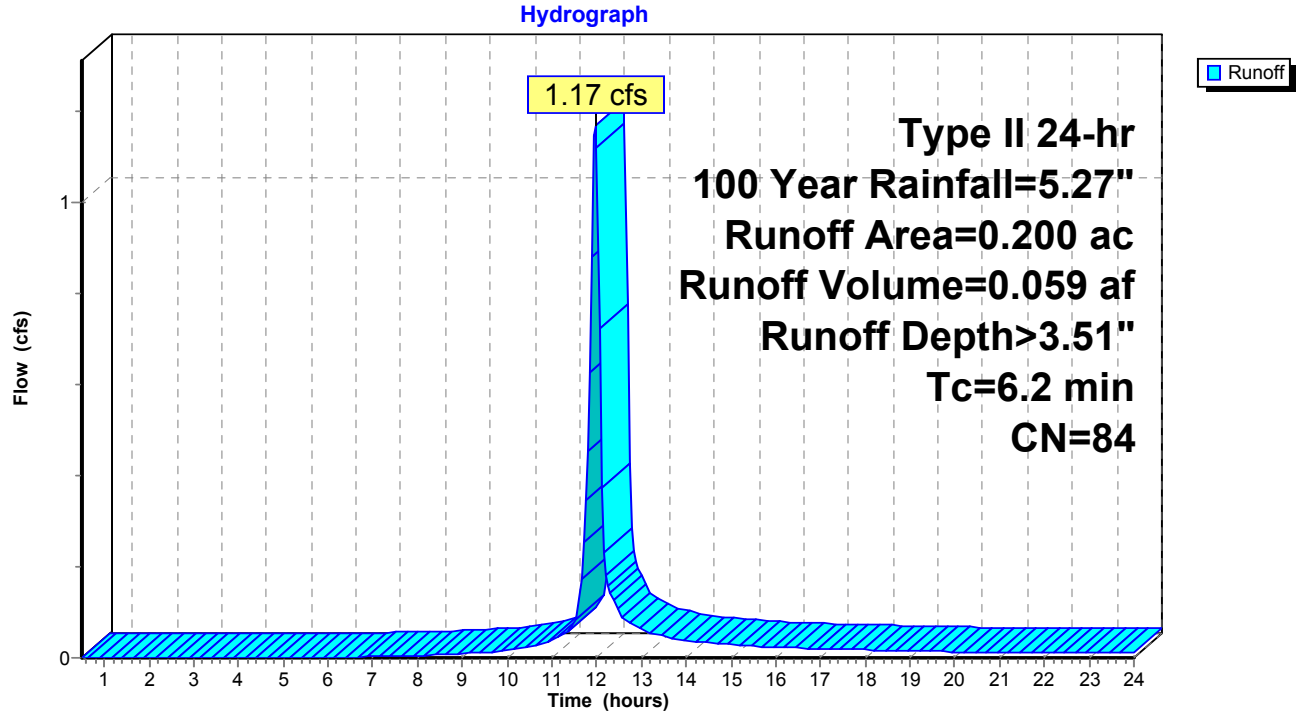
Runoff = 1.17 cfs @ 11.97 hrs, Volume= 0.059 af, Depth> 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=5.27"

	Area (ac)	CN	Description
*	0.200	84	
	0.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2					**Direct Entry,**

Subcatchment DA-1:



Summary for Subcatchment DA-2:

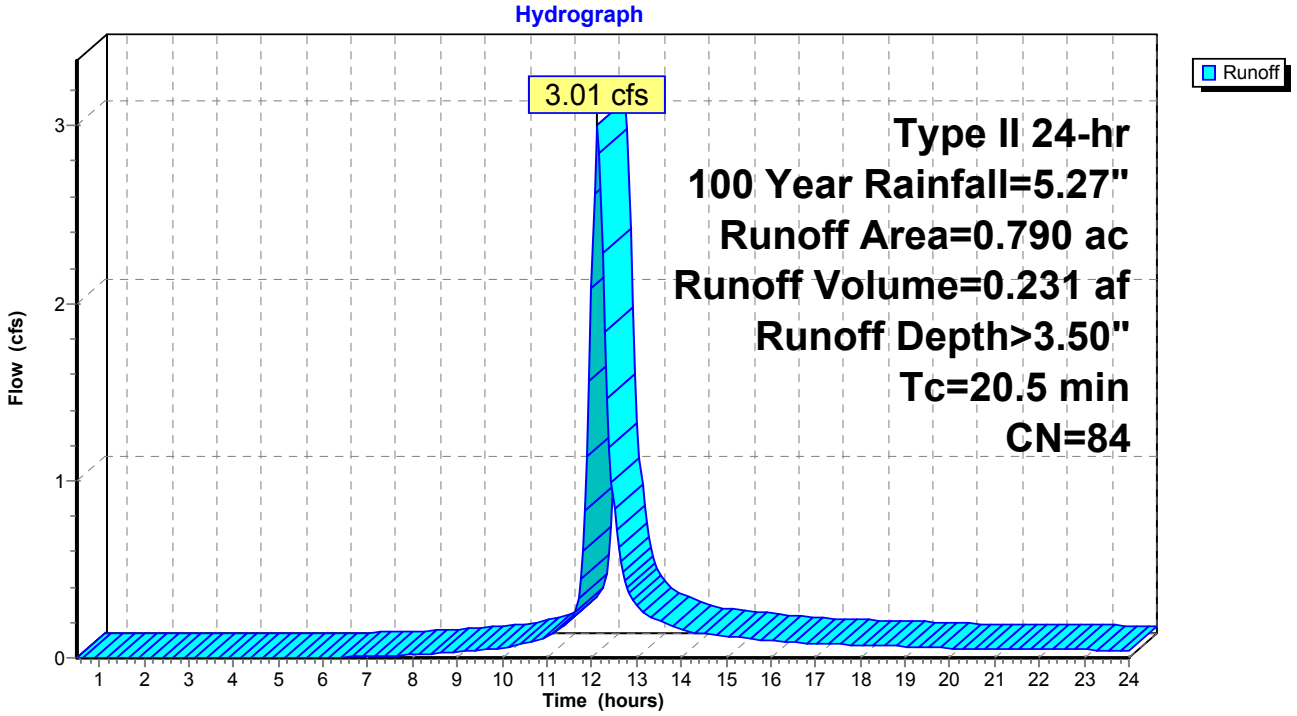
Runoff = 3.01 cfs @ 12.13 hrs, Volume= 0.231 af, Depth> 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=5.27"

	Area (ac)	CN	Description
*	0.790	84	
	0.790		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5					**Direct Entry,**

Subcatchment DA-2:



Summary for Subcatchment DA-3:

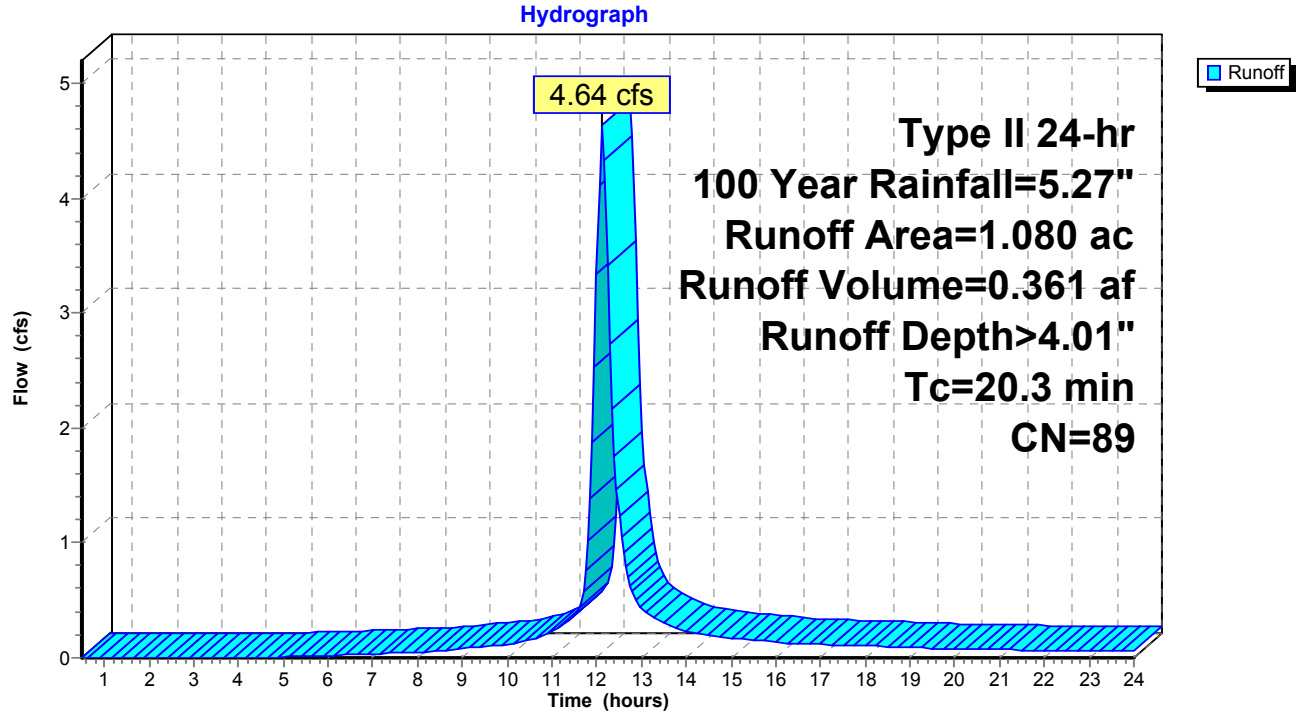
Runoff = 4.64 cfs @ 12.12 hrs, Volume= 0.361 af, Depth> 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=5.27"

	Area (ac)	CN	Description
*	1.080	89	
	1.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3					**Direct Entry,**

Subcatchment DA-3:



Summary for Pond Bio:

Inflow Area = 1.080 ac, 0.00% Impervious, Inflow Depth > 4.01" for 100 Year event
Inflow = 4.64 cfs @ 12.12 hrs, Volume= 0.361 af
Outflow = 2.69 cfs @ 12.31 hrs, Volume= 0.340 af, Atten= 42%, Lag= 11.0 min
Primary = 2.69 cfs @ 12.31 hrs, Volume= 0.340 af

Routing by Stor-Ind method, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Peak Elev= 715.79' @ 12.31 hrs Surf.Area= 10,116 sf Storage= 3,100 cf

Plug-Flow detention time= 58.0 min calculated for 0.339 af (94% of inflow)
Center-of-Mass det. time= 25.4 min (825.4 - 800.0)

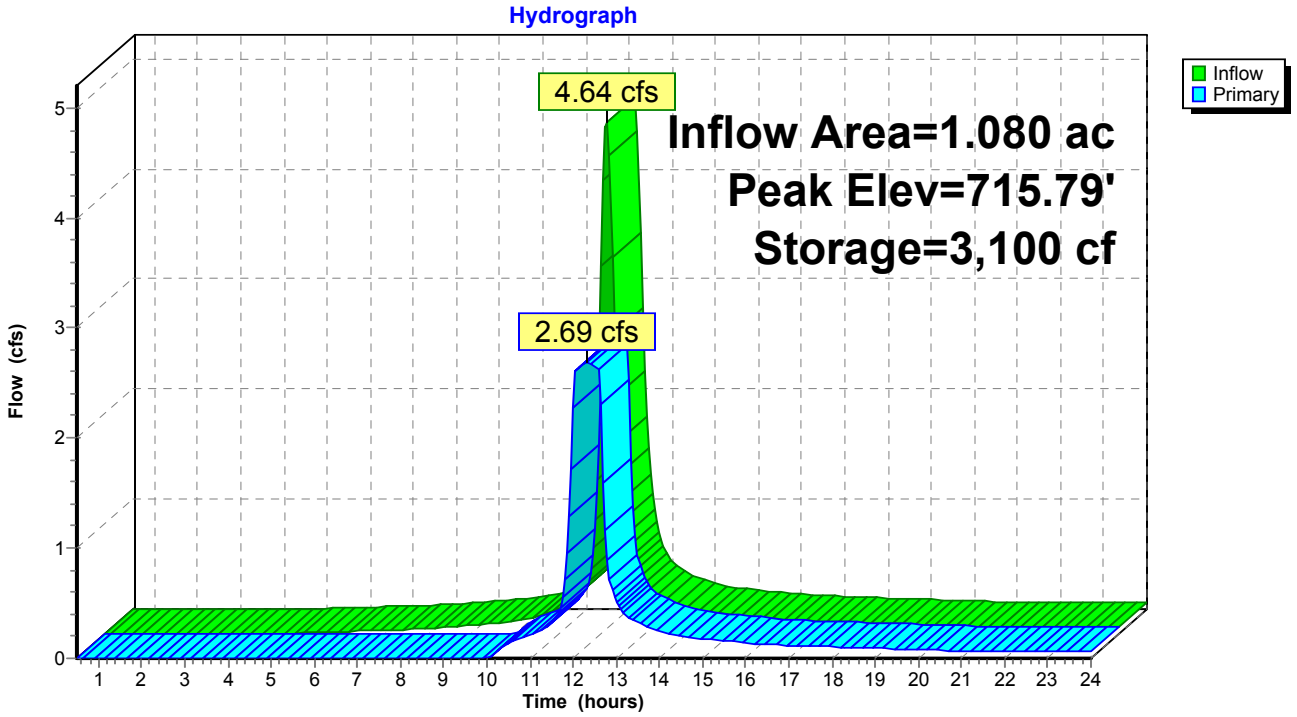
Volume	Invert	Avail.Storage	Storage Description
#1	714.90'	5,843 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
714.90	1,000	0	0
715.00	1,046	102	102
715.50	3,394	1,110	1,212
715.66	6,745	811	2,023
716.00	15,725	3,820	5,843

Device	Routing	Invert	Outlet Devices
#1	Primary	712.90'	**18.0" Round Culvert** L= 186.0' Ke= 0.500 Inlet / Outlet Invert= 712.90' / 712.15' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	712.90'	**8.0" Vert. Orifice/Grate** C= 0.600
#3	Device 2	715.40'	**24.0" x 24.0" Horiz. Top Of Grate** C= 0.600 in 24.0" x 24.0" Grate (100% open area) Limited to weir flow at low heads

Primary OutFlow Max=2.69 cfs @ 12.31 hrs HW=715.79' (Free Discharge)
↑**1=Culvert** (Passes 2.69 cfs of 9.36 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 2.69 cfs @ 7.69 fps)
↑**3=Top Of Grate** (Passes 2.69 cfs of 6.30 cfs potential flow)

Pond Bio:


Hydrograph
4.64 cfs
2.69 cfs
Inflow Area=1.080 ac
Peak Elev=715.79'
Storage=3,100 cf
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Summary for Pond SWMF:

Inflow Area = 1.280 ac, 0.00% Impervious, Inflow Depth > 3.73" for 100 Year event
Inflow = 3.44 cfs @ 12.02 hrs, Volume= 0.398 af
Outflow = 3.40 cfs @ 12.04 hrs, Volume= 0.382 af, Atten= 1%, Lag= 1.0 min
Primary = 3.40 cfs @ 12.04 hrs, Volume= 0.382 af

Routing by Stor-Ind method, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs
Peak Elev= 712.31' @ 12.04 hrs Surf.Area= 953 sf Storage= 876 cf

Plug-Flow detention time= 31.4 min calculated for 0.381 af (96% of inflow)
Center-of-Mass det. time= 9.2 min (831.6 - 822.4)

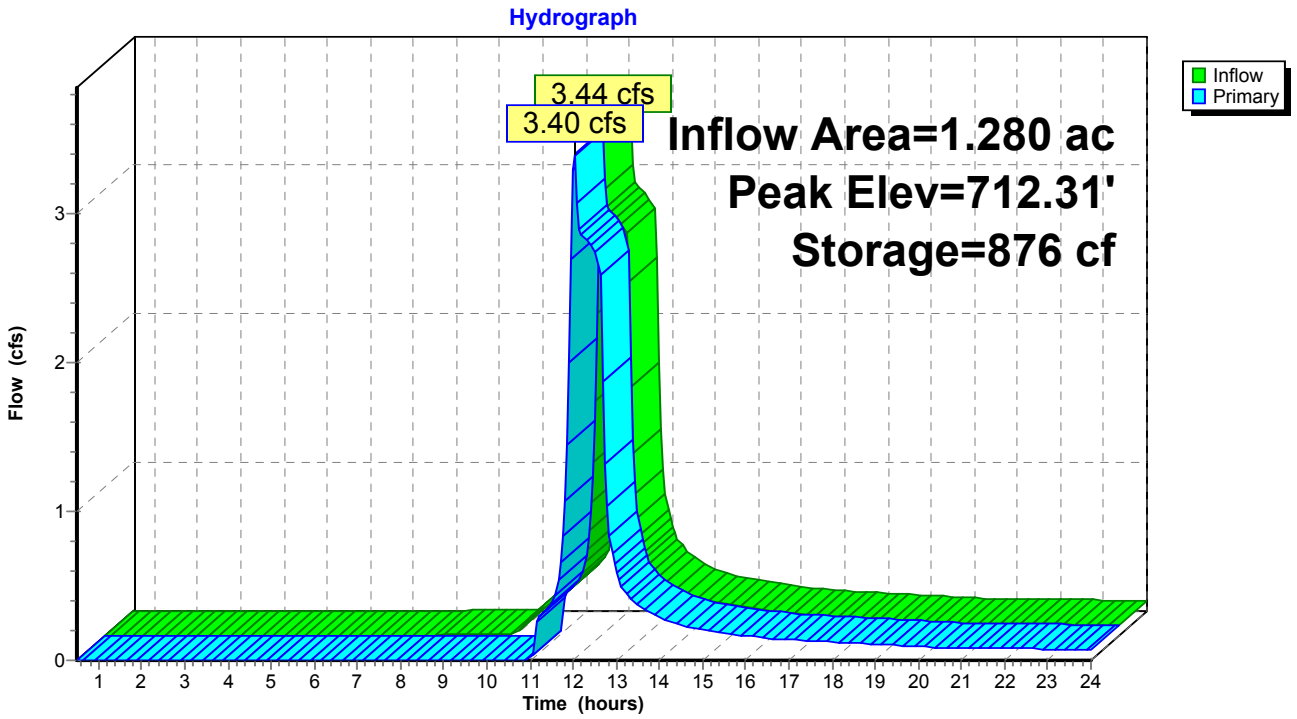
Volume	Invert	Avail.Storage	Storage Description
#1	711.10'	1,652 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
711.10	600	0	0
712.00	750	607	607
712.10	820	79	686
712.50	1,069	378	1,064
713.00	1,285	589	1,652

Device	Routing	Invert	Outlet Devices
#1	Primary	712.10'	**Rock Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.90 1.40 Width (feet) 10.00 15.00 18.00

Primary OutFlow Max=3.36 cfs @ 12.04 hrs HW=712.31' (Free Discharge)
↑—**1=Rock Spillway** (Weir Controls 3.36 cfs @ 1.49 fps)

Pond SWMF:

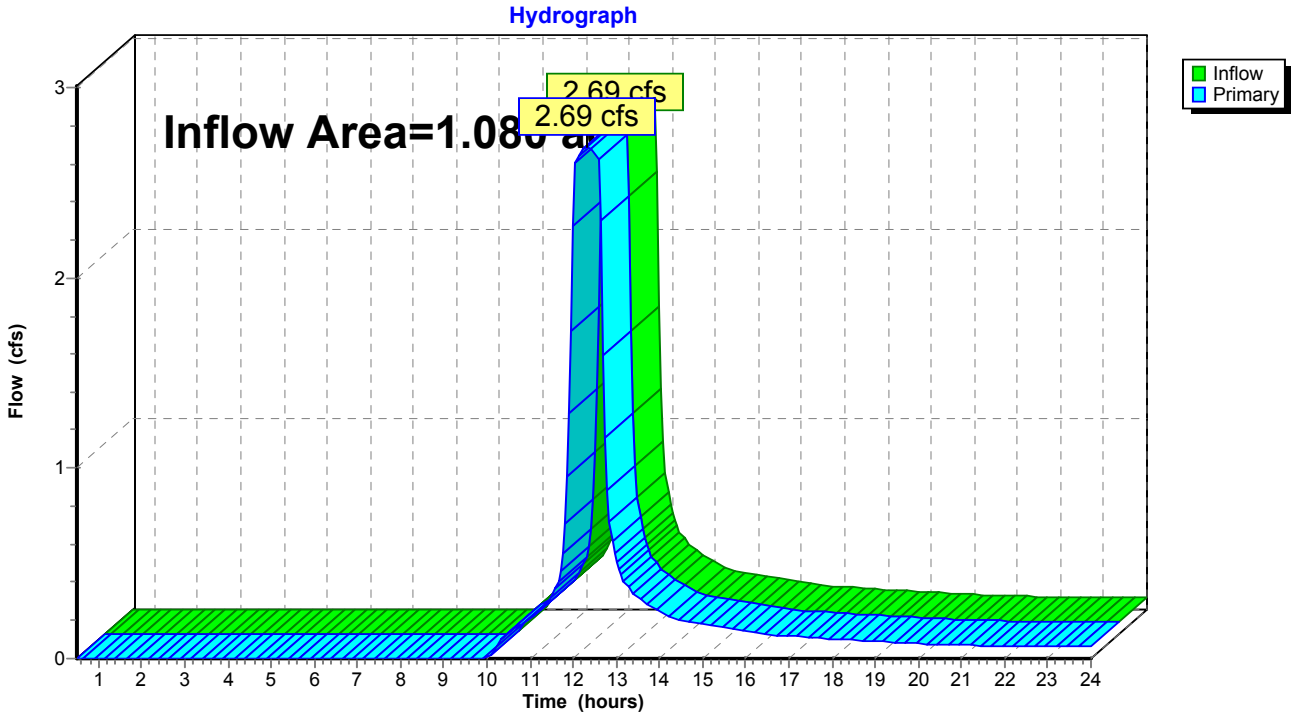

Hydrograph
3.44 cfs
3.40 cfs
Inflow Area=1.280 ac
Peak Elev=712.31'
Storage=876 cf
Inflow
Primary
Flow (cfs)
0
1
2
3
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Summary for Link 1L: 1

Inflow Area = 1.080 ac, 0.00% Impervious, Inflow Depth > 3.77" for 100 Year event
Inflow = 2.69 cfs @ 12.31 hrs, Volume= 0.340 af
Primary = 2.69 cfs @ 12.31 hrs, Volume= 0.340 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link 1L: 1

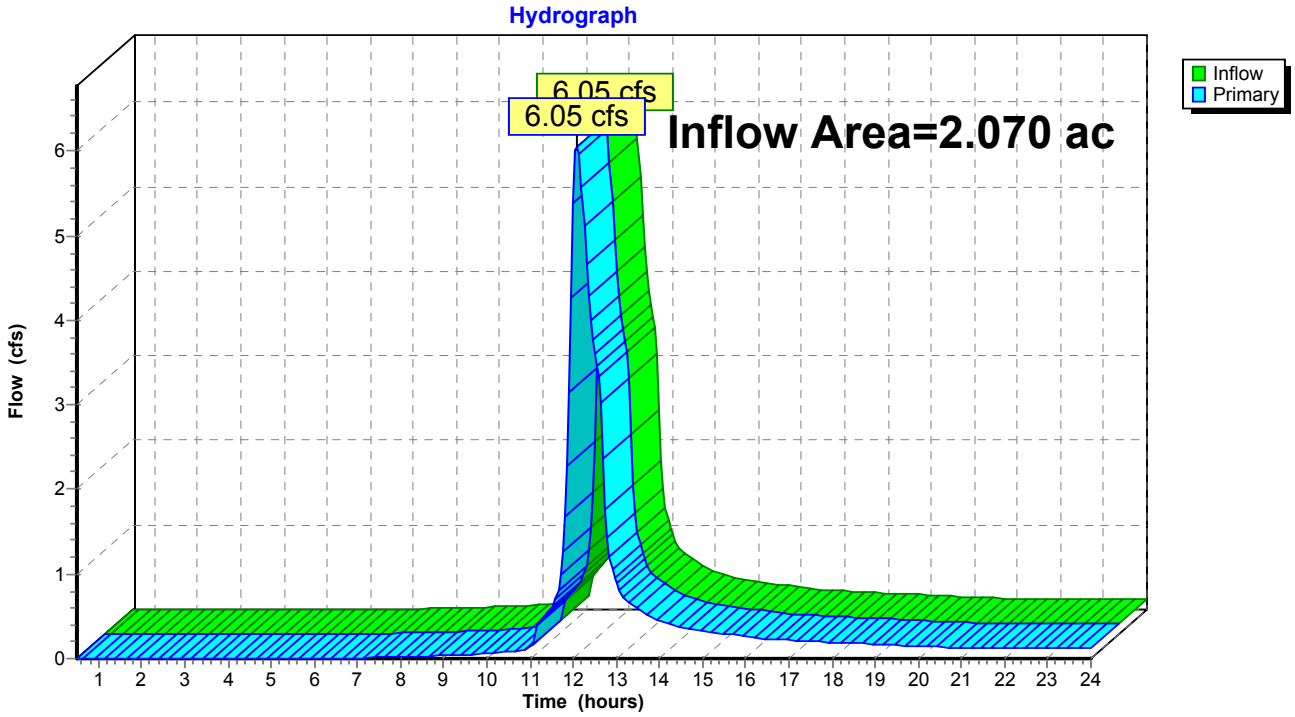


Summary for Link DP-1:

Inflow Area = 2.070 ac, 0.00% Impervious, Inflow Depth > 3.55" for 100 Year event
Inflow = 6.05 cfs @ 12.08 hrs, Volume= 0.613 af
Primary = 6.05 cfs @ 12.08 hrs, Volume= 0.613 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-24.00 hrs, dt= 0.05 hrs

Link DP-1:



Costich Engineering, P.C.
217 Lake Avenue
Rochester, NY 14608

Curve Number Worksheet

DEVELOPED CONDITIONS *9/20/2019*
AUTO WASH NO.06 (CANANDAIGUA, NY) CRA

DA-1

LAND USE DESCRIPTION	%	A	Total	%	B	Total	%	C	Total	%	D	Total
Cultivated Land:												
Without conservation treatment		72			81			88			91	
With conservation treatment		62			71			78			81	
Pasture or Range Land:												
Poor Condition		68			79			86			89	
Fair Condition		54			70			80			85	
Good Condition		39			61			74			80	
Meadow:												
Good Condition		30			58			71			78	
Woods or Forest Land:												
Thin Stand, Poor Cover, No Mulch		45			66			77			83	
Fair Condition		25			55			70			77	
Open Spaces (lawns, parks, etc.)												
Good Condition with grass cover on 75% or more of the area		39			61		17	74	1258	53	80	4240
Fair Condition with grass cover on 50%-75% of the area		49			69			79			84	
Commercial or Business Areas:												
(85% Impervious)		89			92			94			95	
Industrial Areas:												
(72% Impervious)		81			88			91			93	
Residential Areas:												
Avg. Lot / Avg. % Imp.												
1/8 acre 65		77			85			90			92	
1/4 acre 38		61			75			83			87	
1/3 acre 30		57			72			81			86	
1/2 acre 25		54			70			80			85	
1 acre 20		51			68			79			84	
Paved Parking, Roofs, Driveways, Etc.		98			98			98		30	98	2940
Streets and Roads:												
Paved with curbs & storm sewers		98			98			98			98	
Gravel		76			85			89			91	
Dirt		72			82			87			69	
TOTAL	**0**		**0**	**0**		**0**	**17**		**1258**	**83**		**7180**

WEIGHTED CURVE NUMBER = $\frac{\text{TOTAL A + TOTAL B + TOTAL C + TOTAL D}}{100}$ = ***84***

NOTES:

Costich Engineering, P.C.
217 Lake Avenue
Rochester, NY 14608

Curve Number Worksheet

DEVELOPED CONDITIONS *9/20/2019*
AUTO WASH NO.06 (CANANDAIGUA, NY) CRA

DA-2

LAND USE DESCRIPTION	%	A	Total	%	B	Total	%	C	Total	%	D	Total
Cultivated Land:												
Without conservation treatment		72			81			88			91	
With conservation treatment		62			71			78			81	
Pasture or Range Land:												
Poor Condition		68			79			86			89	
Fair Condition		54			70			80			85	
Good Condition		39			61			74			80	
Meadow:												
Good Condition		30			58			71			78	
Woods or Forest Land:												
Thin Stand, Poor Cover, No Mulch		45			66			77			83	
Fair Condition		25			55			70			77	
Open Spaces (lawns, parks, etc.)												
Good Condition with grass cover on 75% or more of the area		39			61			74			80	
Fair Condition with grass cover on 50%-75% of the area		49			69		23	79	1817	72	84	6048
Commercial or Business Areas:												
(85% Impervious)		89			92			94			95	
Industrial Areas:												
(72% Impervious)		81			88			91			93	
Residential Areas:												
Avg. Lot / Avg. % Imp.												
1/8 acre 65		77			85			90			92	
1/4 acre 38		61			75			83			87	
1/3 acre 30		57			72			81			86	
1/2 acre 25		54			70			80			85	
1 acre 20		51			68			79			84	
Paved Parking, Roofs, Driveways, Etc.		98			98			98		5	98	490
Streets and Roads:												
Paved with curbs & storm sewers		98			98			98			98	
Gravel		76			85			89			91	
Dirt		72			82			87			69	
TOTAL	**0**		**0**	**0**		**0**	**23**		**1817**	**77**		**6538**

WEIGHTED CURVE NUMBER = $\frac{\text{TOTAL A + TOTAL B + TOTAL C + TOTAL D}}{100}$ = ***84***

NOTES:

Costich Engineering, P.C.
217 Lake Avenue
Rochester, NY 14608

Curve Number Worksheet

DEVELOPED CONDITIONS *9/20/2019*
AUTO WASH NO.06 (CANANDAIGUA, NY) CRA

DA-3

LAND USE DESCRIPTION	%	A	Total	%	B	Total	%	C	Total	%	D	Total
Cultivated Land:												
Without conservation treatment		72			81			88			91	
With conservation treatment		62			71			78			81	
Pasture or Range Land:												
Poor Condition		68			79			86			89	
Fair Condition		54			70			80			85	
Good Condition		39			61			74			80	
Meadow:												
Good Condition		30			58			71			78	
Woods or Forest Land:												
Thin Stand, Poor Cover, No Mulch		45			66			77			83	
Fair Condition		25			55			70			77	
Open Spaces (lawns, parks, etc.)												
Good Condition with grass cover on 75% or more of the area		39			61		22	74	1628	22	80	1760
Fair Condition with grass cover on 50%-75% of the area		49			69			79			84	
Commercial or Business Areas:												
(85% Impervious)		89			92			94			95	
Industrial Areas:												
(72% Impervious)		81			88			91			93	
Residential Areas:												
Avg. Lot / Avg. % Imp.												
1/8 acre 65		77			85			90			92	
1/4 acre 38		61			75			83			87	
1/3 acre 30		57			72			81			86	
1/2 acre 25		54			70			80			85	
1 acre 20		51			68			79			84	
Paved Parking, Roofs, Driveways, Etc.		98			98			98		56	98	5488
Streets and Roads:												
Paved with curbs & storm sewers		98			98			98			98	
Gravel		76			85			89			91	
Dirt		72			82			87			69	
TOTAL	**0**		**0**	**0**		**0**	**22**		**1628**	**78**		**7248**

WEIGHTED CURVE NUMBER = $\frac{\text{TOTAL A + TOTAL B + TOTAL C + TOTAL D}}{100}$ = ***89***

NOTES:

Costich Engineering, P.C.
217 Lake Ave.
Rochester, NY 14608

Time of Concentration Worksheet

DEVELOPED CONDITIONS *9/20/2019*
AUTO WASH NO.06 (CANANDAIGUA, NY) CRA

DA-1

SHEET FLOW (Applicable to Tc only)

	Segment ID	A-B	B-C		
1. Surface Description (table 3-1)		Paved	Unpaved		
2. Mannings Roughness Coefficient, n (table 3-1)		0.011	0.24		
3. Flow Length, L (total L<300')	ft	69	40		
4. Two-year 24-hour rainfall, P_2	in	2.19	2.19		
5. Land Slope, s	ft/ft	0.015	0.07		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	Compute T_t hr	0.020	0.084		0.104

SHALLOW CONCENTRATED FLOW

	Segment ID				
7. Surface Description (paved or unpaved)					
8. Flow Length, L	ft				
9. Watercourse Slope, s	ft/ft				
10. Average Velocity, V (figure 3-1)	ft/s				
11. $T_t = \frac{L}{3600\ V}$	Compute T_t hr				0.000

CHANNEL FLOW

	Segment ID				
12. Cross Sectional Flow Area, a	ft^2				
13. Wetted Perimeter, p_w	ft				
14. Hydraulic Radius, $r = a/p_w$	ft				
15. Channel Slope, s	ft/ft				
16. Manning's Roughness Coefficient, n					
17. $V=(1.49\ r^{2/3}\ s^{1/2})/n$	ft/s				
18. Flow Length, L	ft				
19. $T_t = \frac{L}{3600\ V}$	Compute T_t hr				0.000

20. Watershed or subarea T_c or T_t (add in steps 6, 11, and 19) ..... hr 0.104

min 6.24

NOTES:

Costich Engineering, P.C.
217 Lake Ave.
Rochester, NY 14608

Time of Concentration Worksheet

DEVELOPED CONDITIONS *9/20/2019*
AUTO WASH NO.06 (CANANDAIGUA, NY) CRA

DA-2

SHEET FLOW (Applicable to Tc only)					
Segment ID	A-B				
1. Surface Description (table 3-1) ……..	Grass				
2. Mannings Roughness Coefficient, n (table 3-1) …….	0.24				
3. Flow Length, L (total L<300') ……..…ft	100				
4. Two-year 24-hour rainfall, P_2 ……in	2.19				
5. Land Slope, s ……ft/ft	0.015				
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$ Compute T_t……hr	0.323				0.323

SHALLOW CONCENTRATED FLOW					
Segment ID	B-C				
7. Surface Description (paved or unpaved) ……	Unpaved				
8. Flow Length, L ……..……ft	70				
9. Watercourse Slope, s ……ft/ft	0.02				
10. Average Velocity, V (figure 3-1) ……...……..…….ft/s	1				
11. $T_t = \frac{L}{3600\ V}$ Compute T_t ……...……hr	0.019				0.019

CHANNEL FLOW					
Segment ID					
12. Cross Sectional Flow Area, a ……..……..ft^2					
13. Wetted Perimeter, p_w ……ft					
14. Hydraulic Radius, $r = a/p_w$ ……ft					
15. Channel Slope, s ……..……ft/ft					
16. Manning's Roughness Coefficient, n ……					
17. $V=(1.49\ r^{2/3}\ s^{1/2})/n$ ……..……..ft/s					
18. Flow Length, L ……..……ft					
19. $T_t = \frac{L}{3600\ V}$ Compute T_t ……...……hr					0.000

20. Watershed or subarea T_c or T_t (add in steps 6, 11, and 19) ……..hr		0.342
	min	20.52

NOTES:

Costich Engineering, P.C.
217 Lake Ave.
Rochester, NY 14608

Time of Concentration Worksheet

DEVELOPED CONDITIONS *9/20/2019*
AUTO WASH NO.06 (CANANDAIGUA, NY) CRA

DA-3

SHEET FLOW (Applicable to Tc only)

Segment ID	A-B				
1. Surface Description (table 3-1) ……..	Grass				
2. Mannings Roughness Coefficient, n (table 3-1) …….	0.24				
3. Flow Length, L (total L<300') ……..…ft	100				
4. Two-year 24-hour rainfall, P_2 ……in	2.19				
5. Land Slope, s ……ft/ft	0.015				
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$ Compute T_t……hr	0.323				0.323

SHALLOW CONCENTRATED FLOW

Segment ID	C-D				
7. Surface Description (paved or unpaved) ……	Unpaved				
8. Flow Length, L ……..……ft	40				
9. Watercourse Slope, s ……ft/ft	0.01				
10. Average Velocity, V (figure 3-1) ……...……..…….ft/s	0.7				
11. $T_t = \frac{L}{3600\ V}$ Compute T_t ……...……hr	0.016				0.016

CHANNEL FLOW

Segment ID					
12. Cross Sectional Flow Area, a ……..……..ft^2					
13. Wetted Perimeter, p_w ……ft					
14. Hydraulic Radius, $r = a/p_w$ ……ft					
15. Channel Slope, s ……..……ft/ft					
16. Manning's Roughness Coefficient, n ……					
17. $V=(1.49\ r^{2/3}\ s^{1/2})/n$ ……..……..ft/s					
18. Flow Length, L ……..……ft					
19. $T_t = \frac{L}{3600\ V}$ Compute T_t ……...……hr					0.000

20. Watershed or subarea T_c or T_t (add in steps 6, 11, and 19) ……..hr 0.338

min 20.31

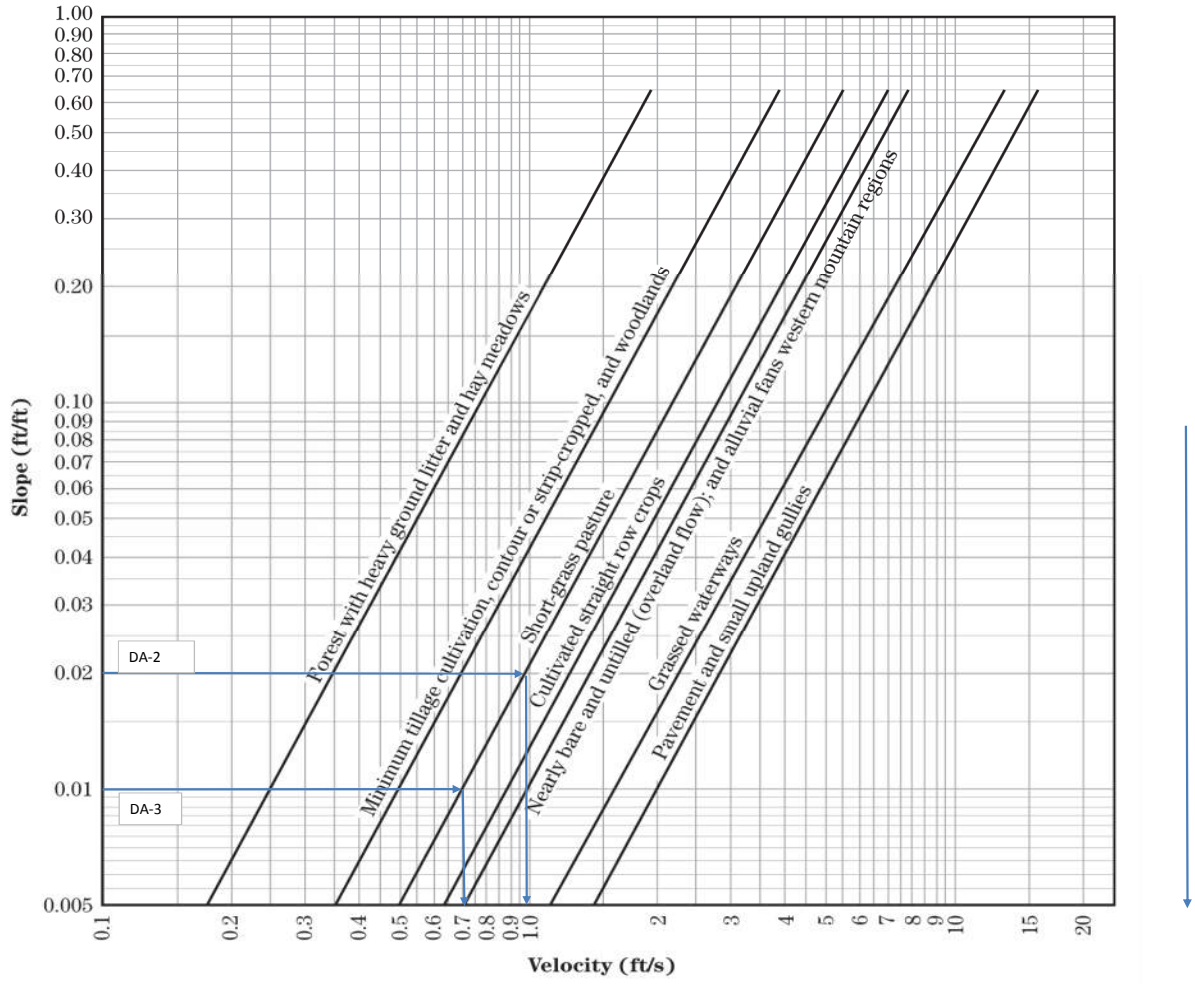
NOTES:

Table 3-1 Roughness coefficients (Manning's n) for sheet flow

Surface description	n [1]
Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover ≤20%	0.06
Residue cover >20%	0.17
Grass:	
Short grass prairie	0.15
Dense grasses [2]	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:[3]	
Light underbrush	0.40
Dense underbrush	0.80

[1] The n values are a composite of information compiled by Engman (1986).
[2] Includes species such as weeping lovegrass, bluegrass, buffalo grass, blue grama grass, and native grass mixtures.
[3] When selecting n , consider cover to a height of about 0.1 ft. This is the only part of the plant cover that will obstruct sheet flow.

Figure 15–4 Velocity versus slope for shallow concentrated flow



PROJECT NAME: *Auto Wash No.06 (Town of Canandaigua, New York)* **PROJECT NUMBER:** *7153*

CALCULATED BY: *C.R.A* **DATE:** *9/12/2019*

SITE DATA: New Development [ ] Redevelopment [X]

	Impervious Cover	Porous Cover	Total Area	
Existing Conditions	0.66	1.39	2.05	ac
Developed Conditions	0.81	1.24	2.05	ac
		Total Site Area:	2.05	ac
		New Impervious Cover	0.15	ac

Site Soils:	**% HSG A**	0	0.55
	% HSG B	0	0.4
	% HSG C	30	0.3
	% HSG D	70	0.2
S = Hydraulic Soil Group Specific Reduction Factor			0.23

Water Quality Volume (wQv) - Required

For New Development: $wQv = \frac{P \; x \; Rv \; x \; Atotal}{12}$

For Redevelopment: $wQv = \frac{P \; x \; Rv \; x \; A \; (Ext \; IC)}{12} \; (0.25) + \frac{P \; x \; Rv \; x \; A \; (New \; IC)}{12}$

Where:	**P =**	90% Rainfall Event Number =	1	in	
	Rv =	0.05 + 0.009(I) =	0.95		**I** = % Impervious Cover = 40 %
	A =	Total Site Area =	2.05	ac	
	A (Ext. IC) =	Existing Impervious Cover =	0.66	ac	
	A (New IC) =	New Impervious Cover =	0.15	ac	

For New Development:	**wQv Reqd =**	**N/A**	**ac-ft**	**=**	**N/A**	**cf**
For Redevelopment:	**wQv Reqd =**	**0.0131**	**+**		**0.0119**	
	wQv Reqd =	**0.0249**	**ac-ft**	**=**	**1,086**	**cf**

Note:
Per NYS Stormwater Design Manual (Chapter 9), 25% Reduction of Existing Impervious Cover & 100% Of New Imperivous Cover Must Be Met For Redevelopment. For New Development, 100% Of New Impervious Cover Must Be Met.

PROJECT NAME: *Auto Wash No.06 (Town of Canandaigua, New York)* **PROJECT NUMBER:** *7153*

CALCULATED BY: *C.R.A* **DATE:** *9/12/2019*

Runoff Reduction Volume (RRv) - Minimum

$$RRv = \frac{P \; x \; S \; x \; Rv \; x \; AIC}{12}$$

Where:	**P =**	90% Rainfall Event Number =	1
	S =	Soil Group Specific Reduction Factor =	0.23
	Rv =	0.05 + 0.009(I = 100 % impervious cover) =	0.95
	A IC =	New Impervious Cover =	0.15 ac

RRv =	**0.0027**	**ac-ft**	**119**	**cf**

PROJECT NAME: *Auto Wash No.06 (Town of Canandaigua, New York)* **PROJECT NUMBER:** *7153*

CALCULATED BY: *C.R.A* **DATE:** *9/12/2019*

Channel Protection Volume (CPv)

$$CPv = \frac{Vrx\left(\frac{Vs}{Vr}\right) x\ A}{12}$$

Where: **A =** **Drainage Areas Total =** **2.05 ac**

Vr = **Weighted Runoff Depth =** **0.80 in**

Vs/Vr **Where:** Vs = Channel Protection Storage
Vr = Volume of Runoff

$$\frac{Vs}{Vr} = 0.683 - 1.43\left(\frac{qo}{qi}\right) + 1.64\left(\frac{qo}{qi}\right)^2 - 0.804\left(\frac{qo}{qi}\right)^3$$

Ia/P = **Initial Abstraction =** **0.158**

Where: Ia = 0.299 For CN (Whole Site) = 87 TR-55 Table 4-1 - See Attached

P = 1.89 inches (1-Year Rainfall Event)

qu = **Unit Peak Discharge =** **560** **csm/in** TR-55 Exhibit 4-II - See Attached

Where: Tc = 0.312 hrs

Ia/P = 0.158 (see above)

qo/qi = **Discharge Ratios =** **0.0250** **TR-55 Figure B.1 - See Attached For 24hr Storm**

Where: qu = 560 csm/in (See Above)

Vs/Vr = **0.595**

CPv =	**0.0814**	**ac-ft**	**3,544**	**cf**

PROJECT NAME: *Auto Wash No.06 (Town of Canandaigua, New York)* **PROJECT NUMBER:** *7153*

CALCULATED BY: *C.R.A* **DATE:** *9/20/2019*

SITE DATA: New Development [ ] Redevelopment [X]

Runoff Reduction Volume (RRv):

RRv Minimum =	**119 CF**	(From Previous Sheet)
RRv Provided in Rain Garden =	**342 CF**	(From GI Worksheet)

RRv Minimum =	**119 CF**	**<**	**RRv Provided =**	**342 CF**	**RRv Met**
=	**0.0027 ac-ft**		**=**	**0.0079 ac-ft**	

Water Quality Volume (wQv):

wQv Required =	**1,086 CF**	(From Previous Sheet)
RRv Provided in Rain Garden =	342 CF	
wQv Required after RRv Reductions =	744 CF	
wQv Provided in Rain Garden Area =	**896 CF**	
wQv Provided in SWMF =	**646 CF**	
Total wQv Provided =	**1,884**	

wQv Required =	**1,086 CF**	**<**	**wQv Provided with RRv Reductions =**	**1,884 CF**	**wQv Met**
=	**0.0249 ac-ft**		**=**	**0.0433 ac-ft**	

PROJECT NAME: *Auto Wash No.06 (Town of Canandaigua, New York)* **PROJECT NUMBER:** *7153*

CALCULATED BY: *C.R.A* **DATE:** *9/20/2019*

Channel Protection Volume (CPv):

CPv Required =	**3,544 CF**	(From Previous Sheet)	
CPv Required after wQv Provided =	**1,660**		
Additional CPv Provided in Rain Garden Island =	**1,957** CF	SWEL = 660.00'	TOG = 661.90'
Total CPv Provided =	**3,841**		

CPv Required =	**3,544 CF**	**<**	**CPv Provided =**	**3,841 CF**	**CPv Met**
=	**0.0814 ac-ft**		**=**	**0.0882 ac-ft**	

CPv Calcs:
CN = 87, Volume of Runoff = 0.84"

Chapter 4 Graphical Peak Discharge Method

This chapter presents the Graphical Peak Discharge method for computing peak discharge from rural and urban areas. The Graphical method was developed from hydrograph analyses using TR-20, "Computer Program for Project Formulation—Hydrology" (SCS 1983). The peak discharge equation used is:

$$q_p = q_u A_m Q F_p \qquad \text{[eq. 4-1]}$$

where:

q_p = peak discharge (cfs)
q_u = unit peak discharge (csm/in)
A_m = drainage area (mi^2)
Q = runoff (in)
F_p = pond and swamp adjustment factor

The input requirements for the Graphical method are as follows: (1) T_c (hr), (2) drainage area (mi^2), (3) appropriate rainfall distribution (I, IA, II, or III), (4) 24-hour rainfall (in), and (5) CN. If pond and swamp areas are spread throughout the watershed and are not considered in the T_c computation, an adjustment for pond and swamp areas is also needed.

Peak discharge computation

For a selected rainfall frequency, the 24-hour rainfall (P) is obtained from appendix B or more detailed local precipitation maps. CN and total runoff (Q) for the watershed are computed according to the methods outlined in chapter 2. The CN is used to determine the initial abstraction (I_a) from table 4-1. I_a / P is then computed.

If the computed I_a / P ratio is outside the range in exhibit 4 (4-I, 4-IA, 4-II, and 4-III) for the rainfall distribution of interest, then the limiting value should be used. If the ratio falls between the limiting values, use linear interpolation. Figure 4-1 illustrates the sensitivity of I_a / P to CN and P.

Peak discharge per square mile per inch of runoff (q_u) is obtained from exhibit 4-I, 4-IA, 4-II, or 4-III by using T_c (chapter 3), rainfall distribution type, and I_a / P ratio. The pond and swamp adjustment factor is obtained from table 4-2 (rounded to the nearest table value). Use worksheet 4 in appendix D to aid in computing the peak discharge using the Graphical method.

Figure 4-1 Variation of I_a / P for P and CN

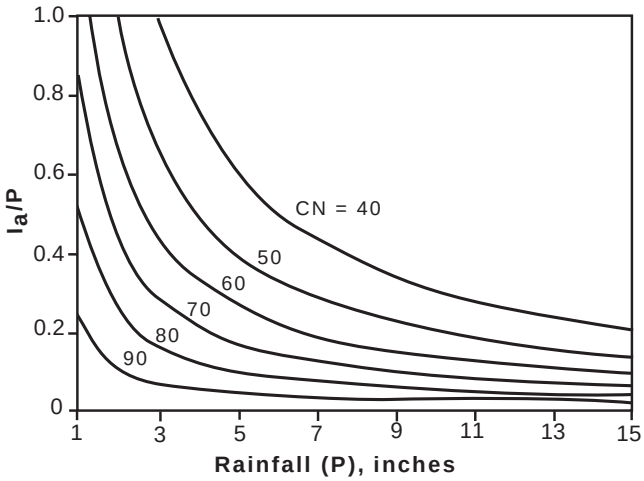
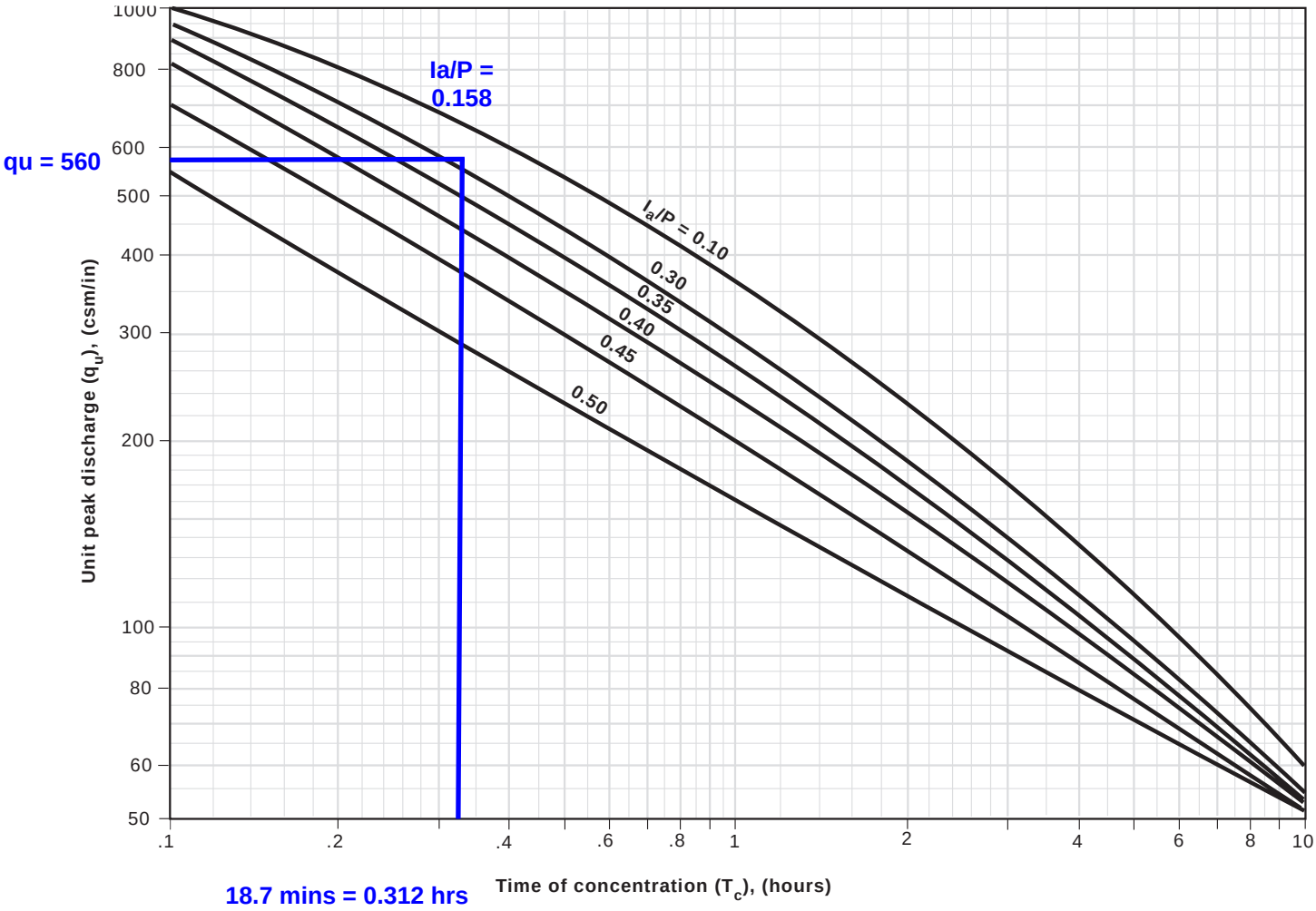


Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

Exhibit 4-II Unit peal discharge (q_u) for NRCS (SCS) type II rainfall distribution



While the TR-55 short-cut method reports to incorporate multiple stage structures, experience has shown that an additional 10-15% storage is required when multiple levels of extended detention are provided.

Figure B.1 Detention Time vs. Discharge Ratios (Source: MDE, 2000)

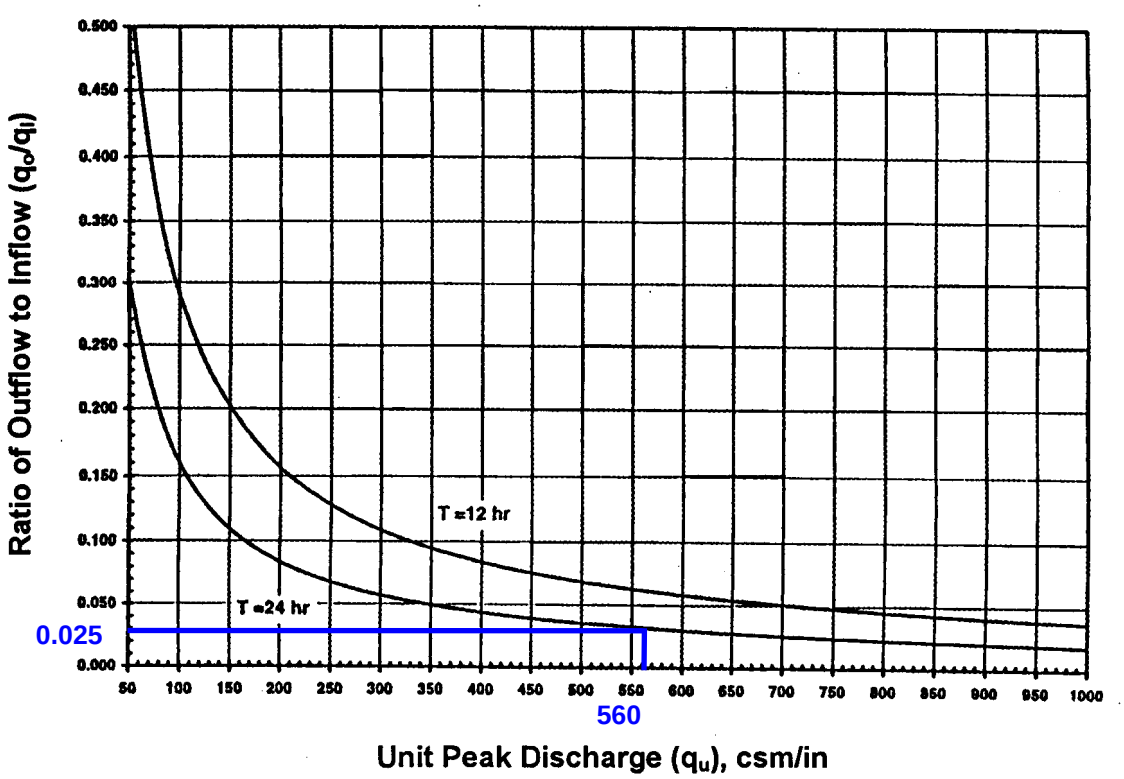
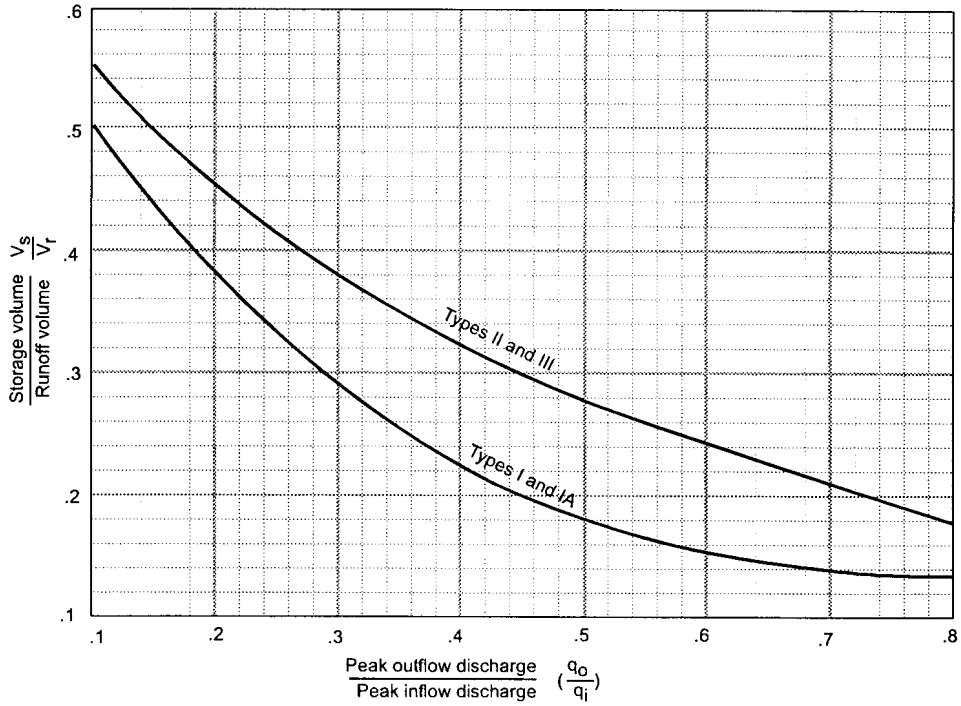


Figure B.2 Approximate Detention Basin Routing For Rainfall Types I, IA, II, and III (Source: NRCS, 1986)



Version 1.2 Total Water Quality Volume Calculation

Last Updated: 10/07/2013 WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	

Design Point:		
P=	1.00	*inch*

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	0.45	0.45	100%	0.95	1,552	Rain Garden
2						
3						
4						
5						
6						
7						
8						
9						
10						
Subtotal (1-30)	0.45	0.45	100%	0.95	**1,552**	**Subtotal 1**
Total	0.45	0.45	100%	0.95	**1,552**	**Initial WQv**

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:

Enter Site Data For Drainage Area to be Treated by Practice

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Precipitation *(in)*	Description
1	0.45	0.45	1.00	0.95	1551.83	1.00	Rain Garden
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	100%	0.95	1,552	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.					0	*ft^3*	

Soil Information

Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area

		Value	Units	Notes
WQv		1,552	*ft^3*	
Enter Depth of Soil Media	*df*	1	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	1	*ft/day*	
Enter Average Height of Ponding	*hf*	0.4	*ft*	*6 inches max.*
Enter Filter Time	*tf*	1	*days*	
Required Filter Area	***Af***	**1108**	***ft^2***	

Determine Actual Bio-Retention Area

Filter Width	*	*ft*	
Filter Length	*	*ft*	
Filter Area	611	*ft^2*	
Actual Volume Provided	855	*ft^3*	

Determine Runoff Reduction

Is the Bioretention contributing flow to another practice?	Yes	Select Practice	Other/Standard SMP
RRv	342		
RRv applied	**342**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***
Volume Treated	0	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*
Volume Directed	1,210	*ft^3*	This volume is directed another practice

Bioretention Worksheet

Total RRv Applied	342.16
Total Area	0.45
Total Impervious Area	0.45
Total Volume Treated	0.00
Rooftop Disconnect Impervious Area Total	0.00

APPENDIX IV

- **NOTICE OF INTENT (DRAFT)**
- **LETTER OF ACKNOWLEDGEMENT ****
- **SITE INSPECTION REPORT (SAMPLE)**
- **NYSSESC GUIDANCE FOR EROSION & SEDIMENT CONTROL PRACTICE INSTALLATION**
- **GENERAL & SUB-CONTRACTOR CERTIFICATION (DRAFT)**
- **MAINTENANCE CHECKLIST & SAMPLE AGREEMENT**
- **GENERAL PERMIT FOR STORMWATER DISCHARGE (GP-0-15-002)**
- **NOTICE OF TERMINATION (DRAFT)**

****TO BE PROVIDED AT A LATER DATE**

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.19

(Submission #: 3DM-7Q4A-MNQX, version 1)

PRINTED ON 9/20/2019

Summary

Submission #:	3DM-7Q4A-MNQX	**Date Submitted:**	Not Submitted
Form:	NOI for coverage under Stormwater General Permit for Construction Activity version 1.19 (NOI for coverage under Stormwater General Permit for Construction Activity - Auto Wash No.06 (Canandaigua))	**Status:**	Draft
Applicant:	Alexander Amering	**Active Steps:**	Form Submitted
Reference #:			
Description:	NOI for coverage under Stormwater General Permit for Construction Activity		

Notes
There are currently no Submission Notes.

Details

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
Auto Wash 3, LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Marchenese

Owner/Operator Contact Person First Name
Bobby

Owner/Operator Mailing Address
P.O. Box 451

City
Town of Canandaigua

State
New York

Zip
14424

Phone
(585)412-6310

Email
bobby@autocarwash.com

Federal Tax ID
NONE PROVIDED

Project Location

Project/Site Name
Auto Wash No.06

Street Address (Not P.O. Box)
3150 County Road 10

Side of Street
West

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Town of Canandaigua

State
NY

Zip
14424

County
NONE PROVIDED

DEC Region
8

Name of Nearest Cross Street
NYS Route 5&20

Distance to Nearest Cross Street (Feet)

0

Project In Relation to Cross Street
North

Tax Map Numbers Section-Block-Parcel
84.00-1-28.110

Tax Map Numbers
NONE PROVIDED

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are: - Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates. - The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates
42.875705701604275,-77.2461147897559

Project Details

2. What is the nature of this project?
Redevelopment with increase in impervious area

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse
Commercial

Post-Development Future Land Use
Commercial

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
NONE PROVIDED

---

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area. *** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)
2.05

Total Area to be Disturbed (acres)
1.87

Existing Impervious Area to be Disturbed (acres)
0.66

Future Impervious Area Within Disturbed Area (acres)
0.81

5. Do you plan to disturb more than 5 acres of soil at any one time?
No

---

6. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)
0

B (%)
0

C (%)
30

D (%)
70

7. Is this a phased project?
No

8. Enter the planned start and end dates of the disturbance activities.

Start Date
11/01/2019

End Date
01/01/2020

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
NONE PROVIDED

9a. Type of waterbody identified in question 9?
NONE PROVIDED

Other Waterbody Type Off Site Description
NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?
NONE PROVIDED

10. Has the surface waterbody(ies in question 9 been identified as a 303(d) segment in Appendix E of GP-0-15-002?

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-15-002?

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey?

If Yes, what is the acreage to be disturbed?
NONE PROVIDED

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?

16. What is the name of the municipality/entity that owns the separate storm sewer system?
NONE PROVIDED

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?

19. Is this property owned by a state authority, state agency, federal government or local government?

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)

Required SWPPP Components

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual?

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

SWPPP Preparer
NONE PROVIDED

Contact Name (Last, Space, First)
NONE PROVIDED

Mailing Address
NONE PROVIDED

City
NONE PROVIDED

State
NONE PROVIDED

Zip
NONE PROVIDED

Phone
NONE PROVIDED

Email
NONE PROVIDED

Download SWPPP Preparer Certification Form

Please take the following steps to prepare and upload your preparer certification form: 1) Click on the link below to download a blank certification form 2) The certified SWPPP preparer should sign this form 3) Scan the signed form 4) Upload the scanned document

Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification - Attachment
NONE PROVIDED
Comment: NONE PROVIDED

Erosion & Sediment Control Criteria

25. Has a construction sequence schedule for the planned management practices been prepared?

26. Select all of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural
NONE PROVIDED

Biotechnical
NONE PROVIDED

Vegetative Measures
NONE PROVIDED

Permanent Structural
NONE PROVIDED

Other
NONE PROVIDED

Post-Construction Criteria

* IMPORTANT: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.
NONE PROVIDED

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
NONE PROVIDED

29. Post-construction SMP Identification

Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28). Identify the SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice. Note: Redevelopment projects shall use the Post-Construction SMP Identification section

to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)

NONE PROVIDED

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28)?

If Yes, go to question 36. If No, go to question 32.

32. Provide the Minimum RRv required based on HSG. [Minimum RRv Required = (P) (0.95) (Ai) / 12, Ai=(s) (Aic)] (acre-feet)

NONE PROVIDED

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

If Yes, go to question 33.

Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP. If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs

Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30). Also, provide the total impervious area that contributes runoff to each practice selected. NOTE: Use the Post-construction SMP Identification section to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)

NONE PROVIDED

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).

NONE PROVIDED

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?

If Yes, go to question 36. If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv required and provided or select waiver (#36a), if applicable.

CPv Required (acre-feet)

NONE PROVIDED

CPv Provided (acre-feet)

NONE PROVIDED

36a. The need to provide channel protection has been waived because:

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (#37a), if applicable.

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
NONE PROVIDED

Post-Development (CFS)
NONE PROVIDED

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
NONE PROVIDED

Post-Development (CFS)
NONE PROVIDED

37a. The need to meet the Qp and Qf criteria has been waived because:

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?

If Yes, Identify the entity responsible for the long term Operation and Maintenance
NONE PROVIDED

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). (See question #32a) This space can also be used for other pertinent project information.

Post-Construction SMP Identification

Other Permits

MS4 SWPPP Acceptance

Owner/Operator Certification

Owner/Operator Certification Form Download

Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.

Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form - Attachment
NONE PROVIDED
Comment: NONE PROVIDED

Attachments

Date	Attachment Name	Context

Status History

Date	User	Processing Status
None		

Processing Steps

Step Name	Assigned To/Completed By	Date Completed
Form Submitted		
Deemed Complete	Toni Cioffi	

STORMWATER MANAGEMENT AND POLLUTION PREVENTION PLAN LEDGER FOR

State of New York

GENERAL 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 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 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. "

Name: _____ Signature: _____
(Print)
Title: _____

Company Name:

Address:

Name and Title of Trained Individual _____
4-hour Stormwater Training Certificate #_____
Telephone Number: _____
Date : _____

Scope of Services:

The above listed contractor is responsible for the following practices: (check all that apply and add more as needed)

✓	SW Management Practice	✓	SW Management Practice	✓	SW Management Practice
	Construction Exit		Diversions		Solid Waste
	Silt Fence		Sediment Traps		Sanitary Waste
	Check Dams		Sediment Basins		Hazardous Waste Management
	Inlet Protection		Dust Control		Record Keeping/SWPPP modifications
	Erosion Control		Concrete Wash-out		
	Vegetation		Fuel Storage/Containment		

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

Standardized Qualified Inspector Form

Project Name and Location of Project: _____ _____ _____ Municipality:_____ County: _____ Qualified Inspector: Qualified Inspector Title:	Date:	Weather:
	Permit #: **NYR10**	
	Entry Time:	Exit Time:
5 Acre Waiver: Ĭ Yes Ĭ No Name of SPDES Permittee:_____ Phone: _____Fax:_____ Name of Representative on Site: _____		

Qualified Inspector's Credentials & Certification

Qualified Inspector (QI) means a person that is knowledgeable in the principles and practices of erosion and sediment control (ESC). A person is considered qualified under the following conditions:

1. A licensed Professional Engineer; licensed Landscape Architect with documented training and education in the principles and practices of ESC;
2. An individual certified in ESC by CPESC, Incorporated or any other agency endorsed by the NYS Department of Environmental Conservation Office of Water Resources;
3. An individual working under the direct supervision of a qualified licensed Professional Engineer or qualified licensed Landscape Architect with documented training and education in the principles and practices of ESC **and has** completed the four (4) hour training program in the principles and practices of erosion and sediment control from either a Soil and Water Conservation District, CPESC or any other agency endorsed by the NYS Department of Environmental Conservation Office of Water Resources. This initial training must be completed no later than May 1, 2010. After receiving the initial training, an individual working under the direct supervision of a qualified licensed Professional Engineer or qualified licensed Landscape Architect must complete four (4) hours of training every three (3) years.
4. Any other individual endorsed by the NYS Department of Environmental Conservation by written documentation.
5. 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.1

Part I. CONSTRUCTION DURATION INSPECTIONS

a. <u>SITE PLAN/SKETCH OF AREAS DISTRUBED AT TIME OF INSPECTION AND AREAS THAT HAVE BEEN STABILIZED (TEMPORARY OR FINAL) SINCE LAST INSPECTION</u>:

Part I. CONSTRUCTION DURATION INSPECTIONS

b. Other Permit Required Reporting

Maintaining Water Quality - *Attach Color Photographs of the site documenting discharge points and site conditions.*
Describe the condition of runoff at all points of discharge.
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? _____
Is there evidence of silt deposition from project in a stream, wetland, or other water body? _____
If yes, where? _____remedial measure needed? _____
Provide a description of the conditions of all natural water bodies within or immediately adjacent to the project. _____

Area of Disturbance
Total area of disturbance (as shown on sketch plan and not including areas that have temporary or permanent stabilization measures applied) _____
Are all disturbances within the limits of the SWPPP? _____

Weather Conditions
A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
_____
_____

General Housekeeping
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?_____
Describe corrective action(s): _____
Date correction needed: _____

c. Runoff Controls *Direct runoff away from exposed soil surfaces and control water that falls onto the site*

Runoff conveyance systems N A
Are all runoff conveyance systems called for in the SWPPP installed, stabilized and working? _____
If not, what specific areas need detailing?_____
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? _____
Describe corrective action(s): _____
Date correction needed: _____

Runoff Control Structures N A
Have all required runoff control structures (rock outlets and aprons) been installed and constructed per plan and according to the Blue Book?_____ Installed concurrently with pipe installation? _____
Describe corrective action(s): _____

Date correction needed: _____

Temporary Stream or Channel Crossing N A

Have construction crossings at concentrated flow areas been culverted?_____
Describe corrective action(s): _____
Date correction needed: _____

Stone Check Dam N A

Installed per standards? _____ channel stable (flow is not eroding soil underneath or around the structure). _____does sediment need to be removed? _____
Describe corrective action(s): _____
Date correction needed: _____

Excavation Dewatering N A

1. Flowing water N A ï Upstream berm (sandbags, inflatable dams, etc. with one-foot minimum freeboard) and downstream berms are installed per plan? _____and functioning? (clean water from upstream pool is being pumped to the downstream pool)? _____
2. Sediment laden water from work area N A - Is being discharged to a silt-trapping device? _____
3. Groundwater from excavations N A - is being managed properly (sumps and sediment control)? _____
Describe corrective action(s): _____
Date correction needed: _____

d. Soil Stabilization *Basic erosion control is achieved by covering all bare ground areas.*

Topsoil and Spoil Stockpiles N A

Stabilized - sediment controls at downhill slope? _____
Describe corrective action(s): _____
Date correction needed: _____

Revegetation/Stabilization N A

Has temporary or permanent seeding *and* mulch (as shown on site sketch plan) been applied to areas that have been inactive for 14 days or less (or, inactive for 7 days if over 5 acres disturbed)?_____
Has soil preparation been applied as specified in the SWPPP and in accordance with the Blue Book (Assure that all the necessary soil testing/fertilizer/lime, topsoil, decompaction has been applied)? _____
Have rolled erosion control products specified for steep slopes or channels been installed? _____
Describe corrective action(s): _____
Date correction needed: _____

e. Sediment Controls

Stabilized Construction Entrance N A

Stone is clean and all access areas covered (entrances, construction routes, materials storage areas, equipment parking)?_____ Tracking onto public streets is minimized and cleaned daily? _____
Describe:_____
Date correction needed: _____

Silt Fence □ N A

Installed on contour? not across conveyance channels?_____ At least 10 feet from toe of slope?_____At appropriate spacing intervals based on slope?_____Wrapped ends for continuous support?_____Fabric is tight, without rips or frayed areas?_____Posts are stable?_____ buried 6 inches minimum?_____Any ñbulgesò?_____
Describe:_____
_____
Date correction needed: _____

Temporary Sediment Trap N A

Is outlet structure constructed properly?_____geotextile fabric has been placed beneath rock fill?_____Maintenance ï depth of sediment in basin? _____ 50% capacity? _____
Describe:_____
_____
Date correction needed: _____

Temporary Sediment Basin N A

Is basin and outlet structure constructed per the approved plan? _____
Are basin side slopes stabilized with seed/mulch? _____
Maintenance ï depth of sediment in basin? _____ 50% capacity? _____
Describe:_____
_____
Date correction needed: _____

Drop Inlet Protection N A

Type(s) of inlet control? _____
Installed per Blue Book specifications: drainage area (typically 1 acre)? _____
Appropriate for location? _____
Describe:_____
_____
Date correction needed: _____

f. Digital Color Photographs of Deficient BMPs

The *qualified inspector* shall attach paper color copies of the digital photographs to this inspection report of deficient BMPs with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions.

g. Digital Color Photographs of BMPs that have been Corrected

The *qualified inspector* shall attach paper color copies of the digital photographs to this inspection report of corrected BMPs with date stamp, that clearly show the condition of the practice(s) after the corrective actions has been completed.

h. Post-Construction Stormwater Management

Report of any corrective action(s) that must be taken to install, correct, repair, replace or maintain any

deficiencies identified with the construction of the post-construction stormwater management practice(s).
Report the current phase of construction of all post-construction stormwater management practice(s) and whether the installation appears to be geometrically consistent with the approved hydraulic design (e.g. the pond, the outlet structure, orifice, pipe sizing and slope is geometrically consistent with the SWPPP):_____
_____
_____
_____

i. Revisions to SWPPP

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 other report, 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 and/or the MS4, they shall promptly submit such facts or information. 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 permit violation (GP-0-10-001 PartVII.G)

_____
_____
_____
_____

j. Inspection Notes and Signature

Inspection Notes:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

PART I. j. Signature

GP-0-10-001 Part VII.Q

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

Standardized Qualified Inspector Form

Articles 175 and 210 of the New York State Penal Law provide for Criminal penalty of a fine and/or imprisonment for falsifying forms and reports required by this permit.

_____ _____

Qualified Inspector (print name) **Date of Inspection**

_____

Signature

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Title: _____ Address: _____

Phone: _____ Email: _____

CPESC#:

Stormwater Training Number for *Trained Individuals*:
P.E. or L.A. Supervisor Name for *Trained Individuals*:

Compliance certification:

Received and reviewed by_____Title:_____

The above signed acknowledges receipt of this inspection report

STANDARD AND SPECIFICATIONS FOR COMPOST FILTER SOCK

Definition & Scope

A **temporary** sediment control practice composed of a degradable geotextile mesh tube filled with compost filter media to filter sediment and other pollutants associated with construction activity to prevent their migration offsite.

Condition Where Practice Applies

Compost filter socks can be used in many construction site applications where erosion will occur in the form of sheet erosion and there is no concentration of water flowing to the sock. In areas with steep slopes and/or rocky terrain, soil conditions must be such that good continuous contact between the sock and the soil is maintained throughout its length. For use on impervious surfaces such as road pavement or parking areas, proper anchorage must be provided to prevent shifting of the sock or separation of the contact between the sock and the pavement. Compost filter socks are utilized both at the site perimeter as well as within the construction areas. These socks may be filled after placement by blowing compost into the tube pneumatically, or filled at a staging location and moved into its designed location.

Design Criteria

1. Compost filter socks will be placed on the contour with both terminal ends of the sock extended 8 feet upslope at a 45 degree angle to prevent bypass flow.

2. Diameters designed for use shall be 12" – 32" except that 8" diameter socks may be used for residential lots to control areas less than 0.25 acres.

3. The flat dimension of the sock shall be at least 1.5 times the nominal diameter.

4. The **Maximum Slope Length** (in feet) above a compost filter sock shall not exceed the following limits:

Dia. (in.)	Slope %						
	2	5	10	20	25	33	50
8	225*	200	100	50	20	—	—
12	250	225	125	65	50	40	25
18	275	250	150	70	55	45	30
24	350	275	200	130	100	60	35
32	450	325	275	150	120	75	50
* Length in feet							

5. The compost infill shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table. **Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metals content. When using compost filter socks adjacent to surface water, the compost should have a low nutrient value.**

6. The compost filter sock fabric material shall meet the

7. Compost filter socks shall be anchored in earth with 2" x 2" wooden stakes driven 12" into the soil on 10 foot centers on the centerline of the sock. On uneven terrain, effective ground contact can be enhanced by the placement of a fillet of filter media on the disturbed area side of the compost sock.

8. All specific construction details and material specifications shall appear on the erosion and sediment control constructions drawings when compost filter socks are included in the plan.

Maintenance

1. Traffic shall not be permitted to cross filter socks.

2. Accumulated sediment shall be removed when it reaches half the above ground height of the sock and disposed of in accordance with the plan.

3. Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired in the manner required by the manufacturer or replaced within 24 hours of inspection notification.

4. Biodegradable filter socks shall be replaced after 6 months; photodegradable filter socks after 1 year. Polypropylene socks shall be replaced according to the manufacturer's recommendations.

5. Upon stabilization of the area contributory to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed in accordance with the stabilization plan. For removal the mesh can be cut and the compost spread as an additional mulch to act as a soil supplement.

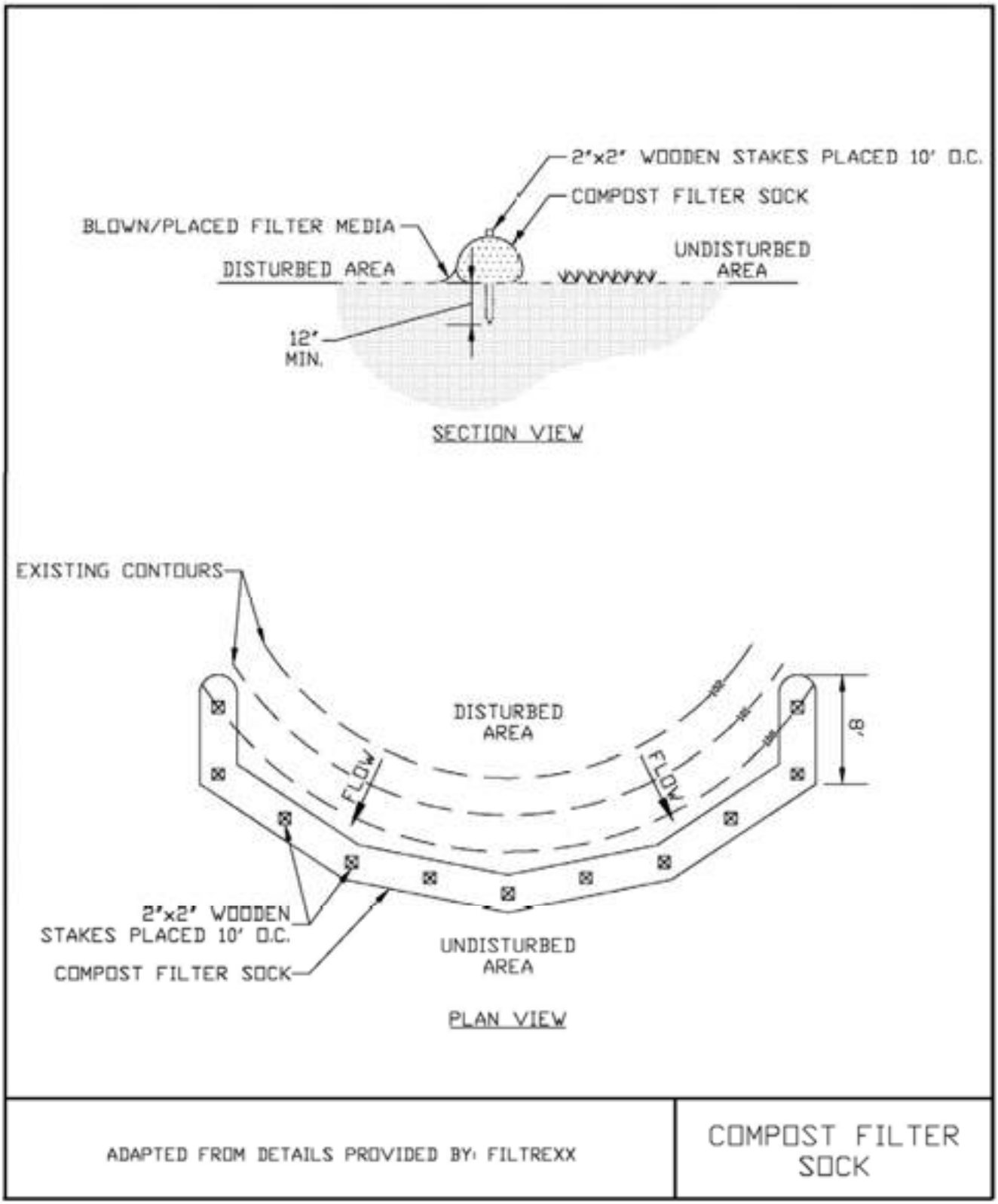
Table 5.1 - Compost Sock Fabric Minimum Specifications Table

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photodegradable	Photodegradable	Biodegradable	Photodegradable	Photodegradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years

Table 5.2 - Compost Standards Table

Organic matter content	25% - 100% (dry weight)
Organic portion	Fibrous and elongated
pH	6.0 – 8.0
Moisture content	30% - 60%
Particle size	100% passing a 1" screen and 10 - 50% passing a 3/8" screen
Soluble salt concentration	5.0 dS/m (mmhos/cm) maximum

Figure 5.2
Compost Filter Sock



STANDARD AND SPECIFICATIONS FOR SILT FENCE

Definition & Scope

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 by temporarily ponding the sediment laden runoff allowing settling to occur. The maximum period of use is limited by the ultraviolet stability of the fabric (approximately one year).

Conditions Where Practice Applies

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

1. Maximum allowable slope length and fence length will not exceed the limits shown in the Design Criteria for the specific type of silt fence used ; and
2. Maximum ponding depth of 1.5 feet behind the fence; and
3. Erosion would occur in the form of sheet erosion; and
4. There is no concentration of water flowing to the barrier; and
5. Soil conditions allow for proper keying of fabric, or other anchorage, to prevent blowouts.

Design Criteria

1. Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff.
2. All silt fences shall be placed as close to the disturbed area as possible, but at least 10 feet from the toe of a slope steeper than 3H:1V, to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.
3. The type of silt fence specified for each location on the plan shall not exceed the maximum slope length and maximum fence length requirements shown in the following table:

		Slope Length/Fence Length (ft.)		
Slope	Steepness	Standard	Reinforced	Super
<2%	< 50:1	300/1500	N/A	N/A
2-10%	50:1 to 10:1	125/1000	250/2000	300/2500
10-20%	10:1 to 5:1	100/750	150/1000	200/1000
20-33%	5:1 to 3:1	60/500	80/750	100/1000
33-50%	3:1 to 2:1	40/250	70/350	100/500
>50%	> 2:1	20/125	30/175	50/250

Standard Silt Fence (SF) is fabric rolls stapled to wooden stakes driven 16 inches in the ground.
Reinforced Silt Fence (RSF) is fabric placed against welded wire fabric with anchored steel posts driven 16 inches in the ground.
Super Silt Fence (SSF) is fabric placed against chain link fence as support backing with posts driven 3 feet in the ground.

4. Silt fence shall be removed as soon as the disturbed area has achieved final stabilization.

The silt fence shall be installed in accordance with the appropriate details. Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Butt joints are not acceptable. A detail of the silt fence shall be shown on the plan. See Figure 5.30 on page 5.56 for Reinforced Silt Fence as an example of details to be provided.

Criteria for Silt Fence Materials

1. 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.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D 4632
Elongation at Failure (%)	20	ASTM D 4632
Mullen Burst Strength (PSI)	300	ASTM D 3786
Puncture Strength (lbs)	60	ASTM D 4833
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533
Flow Through Rate (gal/ min/sf)	25	ASTM D 4491
Equivalent Opening Size	40-80	US Std Sieve ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355

2. 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 3.5 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot. Posts for super silt fence shall be standard chain link fence posts.

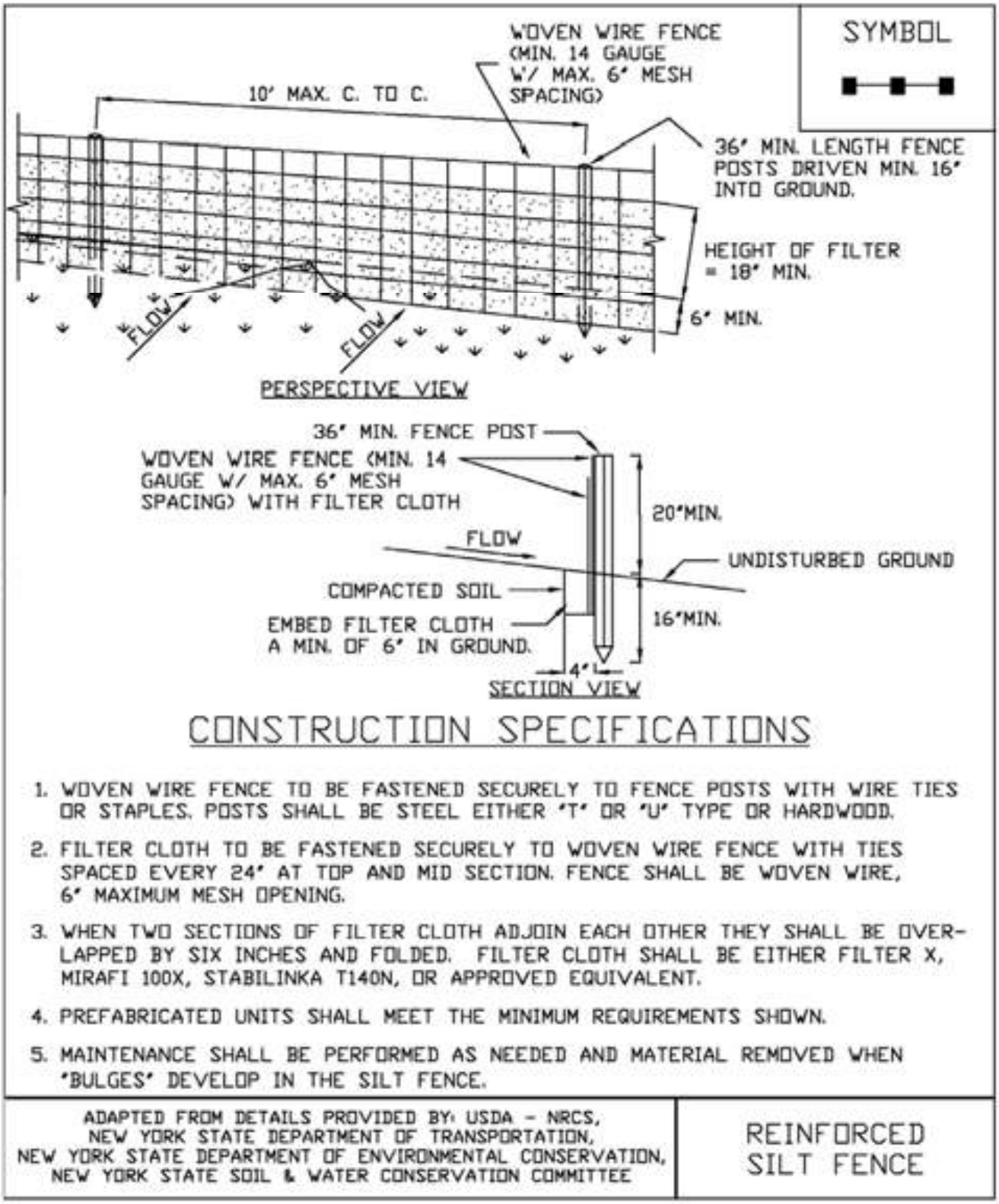
3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated silt fence is acceptable as long as all material specifications are met.

Super Silt Fence

Reinforced Silt Fence

Figure 5.30
Reinforced Silt Fence



STANDARD AND SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION

Definition & Scope

A **temporary** barrier with low permeability, installed around inlets in the form of a fence, berm or excavation around an opening, detaining water and thereby reducing the sediment content of sediment laden water by settling thus preventing heavily sediment laden water from entering a storm drain system.

Conditions Where Practice Applies

This practice shall be used where the drainage area to an inlet is disturbed, it is not possible to temporarily divert the storm drain outfall into a trapping device, and watertight blocking of inlets is not advisable. **It is not to be used in place of sediment trapping devices.** This practice shall be used with an upstream buffer strip if placed at a storm drain inlet on a paved surface. It may be used in conjunction with storm drain diversion to help prevent siltation of pipes installed with low slope angle.

Types of Storm Drain Inlet Practices

There are five (5) specific types of storm drain inlet protection practices that vary according to their function, location, drainage area, and availability of materials:

I. Excavated Drop Inlet Protection
II. Fabric Drop Inlet Protection
III. Stone & Block Drop Inlet Protection
IV. Paved Surface Inlet Protection
V. Manufactured Insert Inlet Protection

Design Criteria

Drainage Area – The drainage area for storm drain inlets shall not exceed one acre. Erosion control/temporary stabilization measures must be implemented on the disturbed drainage area tributary to the inlet. The crest elevations of these practices shall provide storage and minimize bypass flow.

Type I – Excavated Drop Inlet Protection

This practice is generally used during initial overlot grading after the storm drain trunk line is installed.

Limit the drainage area to the inlet device to 1 acre. Excavated side slopes shall be no steeper than 2:1. The minimum depth shall be 1 foot and the maximum depth 2 feet as measured from the crest of the inlet structure. Shape the excavated basin to fit conditions with the longest dimension oriented toward the longest inflow area to provide maximum trap efficiency. The capacity of the excavated basin should be established to contain 900 cubic feet per acre of disturbed area. Weep holes, protected by fabric and stone, should be provided for draining the temporary pool.

Inspect and clean the excavated basin after every storm. Sediment should be removed when 50 percent of the storage volume is achieved This material should be incorporated into the site in a stabilized manner.

Type II – Fabric Drop Inlet Protection

This practice is generally used during final elevation grading phases after the storm drain system is completed.

Limit the drainage area to 1 acre per inlet device. Land area slope immediately surrounding this device should not exceed 1 percent. The maximum height of the fabric above the inlet crest shall not exceed 1.5 feet unless reinforced.

The top of the barrier should be maintained to allow overflow to drop into the drop inlet and not bypass the inlet to

unprotected lower areas. Support stakes for fabric shall be a minimum of 3 feet long, spaced a maximum 3 feet apart. They should be driven close to the inlet so any overflow drops into the inlet and not on the unprotected soil. Improved performance and sediment storage volume can be obtained by excavating the area.

Inspect the fabric barrier after each rain event and make repairs as needed. Remove sediment from the pool area as necessary with care not to undercut or damage the filter fabric. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the adjacent area of the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

Type III – Stone and Block Drop Inlet Protection

This practice is generally used during the initial and intermediate overlot grading of a construction site.

Limit the drainage area to 1 acre at the drop inlet. The stone barrier should have a minimum height of 1 foot and a maximum height of 2 feet. Do not use mortar. The height should be limited to prevent excess ponding and bypass flow.

Recess the first course of blocks at least 2 inches below the crest opening of the storm drain for lateral support. Subsequent courses can be supported laterally if needed by placing a 2x4 inch wood stud through the block openings perpendicular to the course. The bottom row should have a few blocks oriented so flow can drain through the block to dewater the basin area.

The stone should be placed just below the top of the blocks on slopes of 2:1 or flatter. Place hardware cloth of wire mesh with ½ inch openings over all block openings to hold stone in place.

As an optional design, the concrete blocks may be omitted and the entire structure constructed of stone, ringing the outlet ("doughnut"). The stone should be kept at a 3:1 slope toward the inlet to keep it from being washed into the inlet. A level area 1 foot wide and four inches below the crest will further prevent wash. Stone on the slope toward the inlet should be at least 3 inches in size for stability and 1 inch or smaller away from the inlet to control flow rate. The elevation of the top of the stone crest must be maintained 6 inches lower than the ground elevation down slope from the inlet to ensure that all storm flows pass over the stone into the storm drain and not past the structure. Temporary diking should be used as necessary to prevent bypass flow.

The barrier should be inspected after each rain event and repairs made where needed. Remove sediment as necessary to provide for accurate storage volume for subsequent rains. Upon stabilization of contributing drainage area, remove all materials and any unstable soil and dispose of properly.

Bring the disturbed area to proper grade, smooth, compact and stabilize in a manner appropriate to the site.

Type IV – Paved Surface Inlet Protection

This practice is generally used after pavement construction has been done while final grading and soil stabilization is occurring. These practices should be used with upstream buffer strips in linear construction applications, and with temporary surface stabilization for overlot areas, to reduce the sediment load at the practice. This practice includes sand bags, compost filter socks, geo-tubes filled with ballast, and manufactured surface barriers. Pea gravel can also be used in conjunction with these practices to improve performance. When the inlet is not at a low point, and is offset from the pavement or gutter line, protection should be selected and installed so that flows are not diverted around the inlet.

The drainage area should be limited to 1 acre at the drain inlet. All practices will be placed at the inlet perimeter or beyond to maximize the flow capacity of the inlet. Practices shall be weighted, braced, tied, or otherwise anchored to prevent movement or shifting of location on paved surfaces. Traffic safety shall be integrated with the use of this practice. All practices should be marked with traffic safety cones as appropriate. Structure height shall not cause flooding or by-pass flow that would cause additional erosion.

The structure should be inspected after every storm event. Any sediment should be removed and disposed of on the site. Any broken or damaged components should be replaced. Check all materials for proper anchorage and secure as necessary.

Type V - Manufactured Insert Inlet Protection

The drainage area shall be limited to 1 acre at the drain inlet. All inserts will be installed and anchored in accordance with the manufacturers recommendations and design details. The fabric portion of the structure will equal or exceed the performance standard for the silt fence fabric. The inserts will be installed to preserve a minimum of 50 percent of the open, unobstructed design flow area of the storm drain inlet opening to maintain capacity for storm events.

Figure 5.31
Excavated Drop Inlet Protection

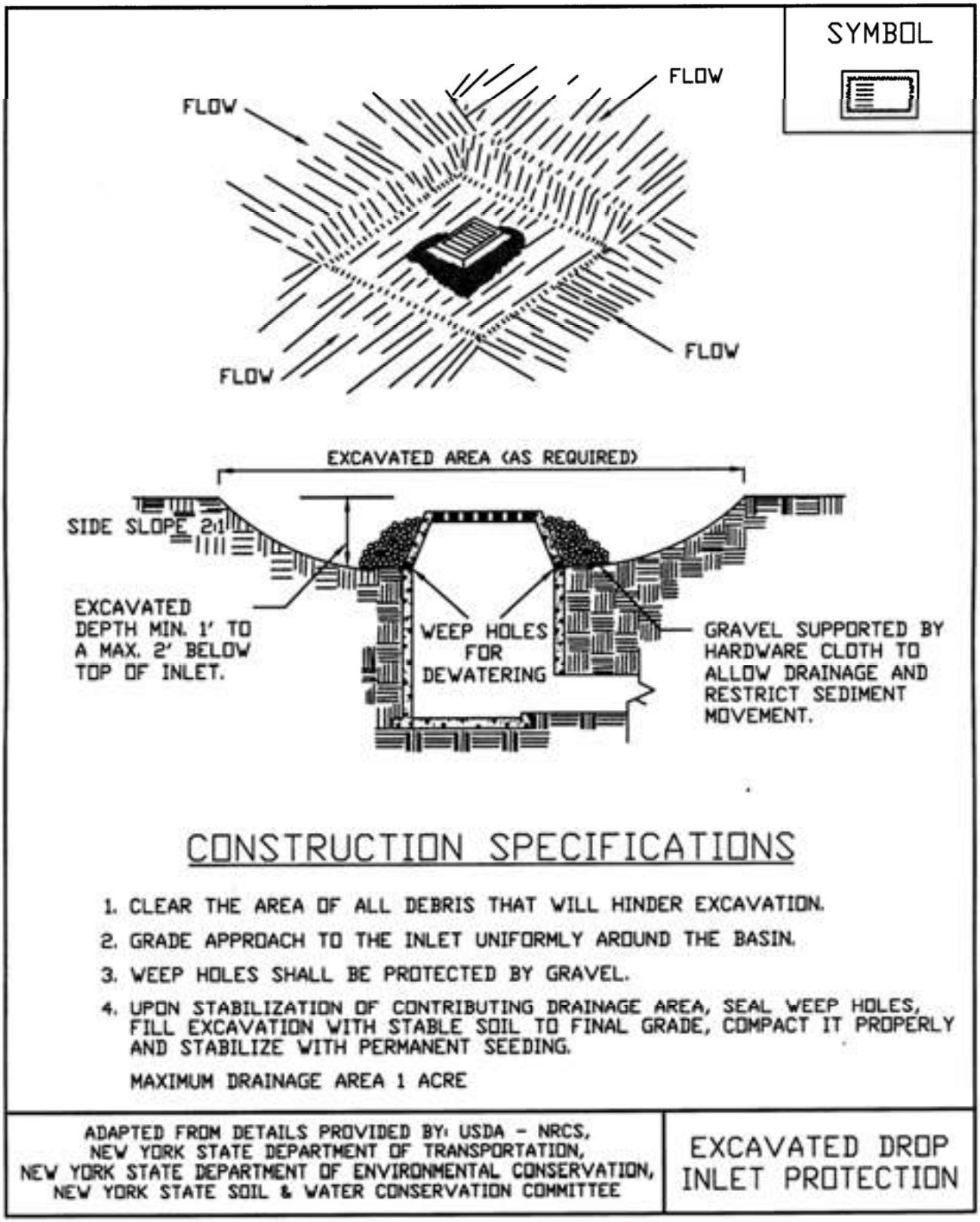


Figure 5.32
Fabric Drop Inlet Protection

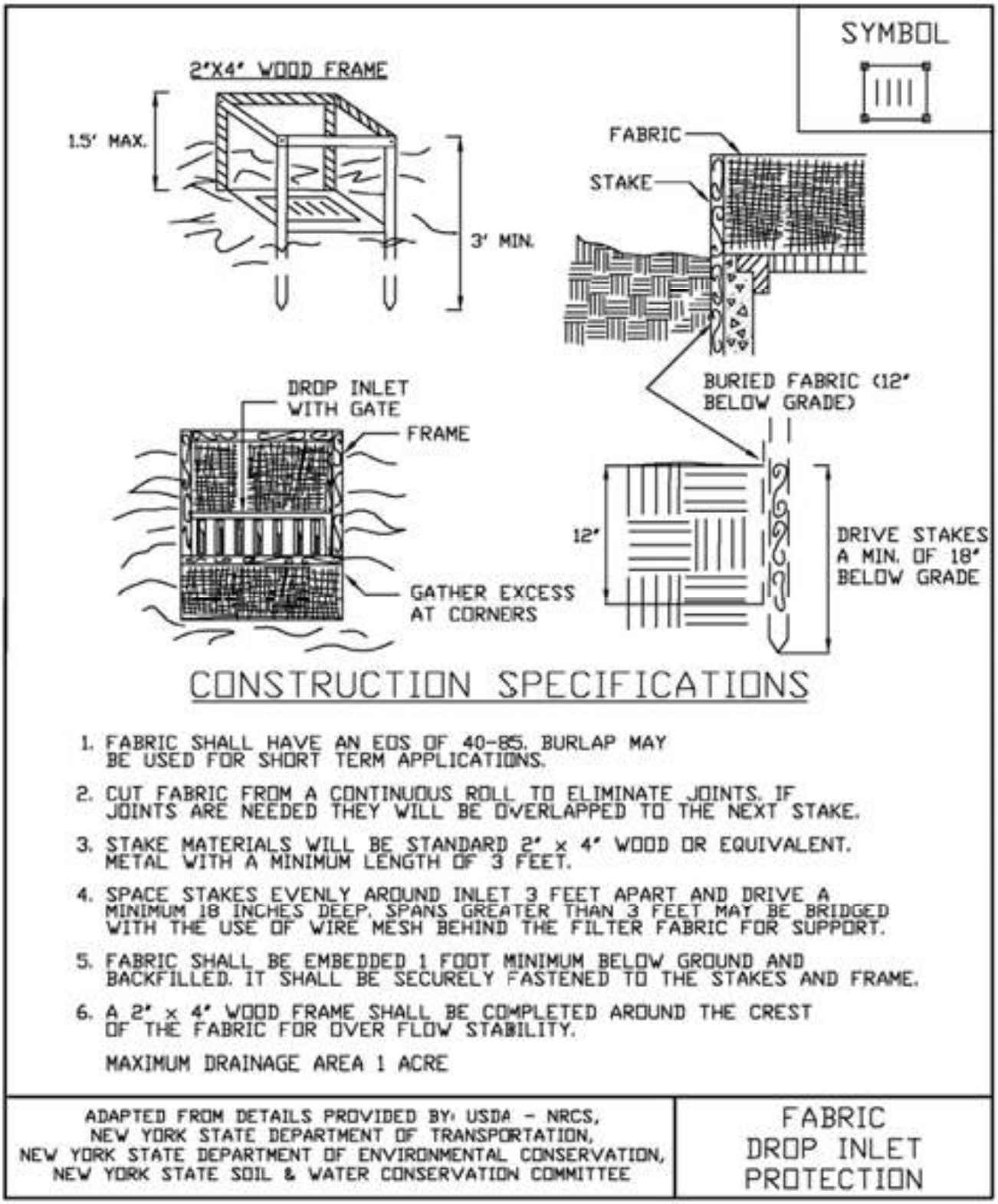
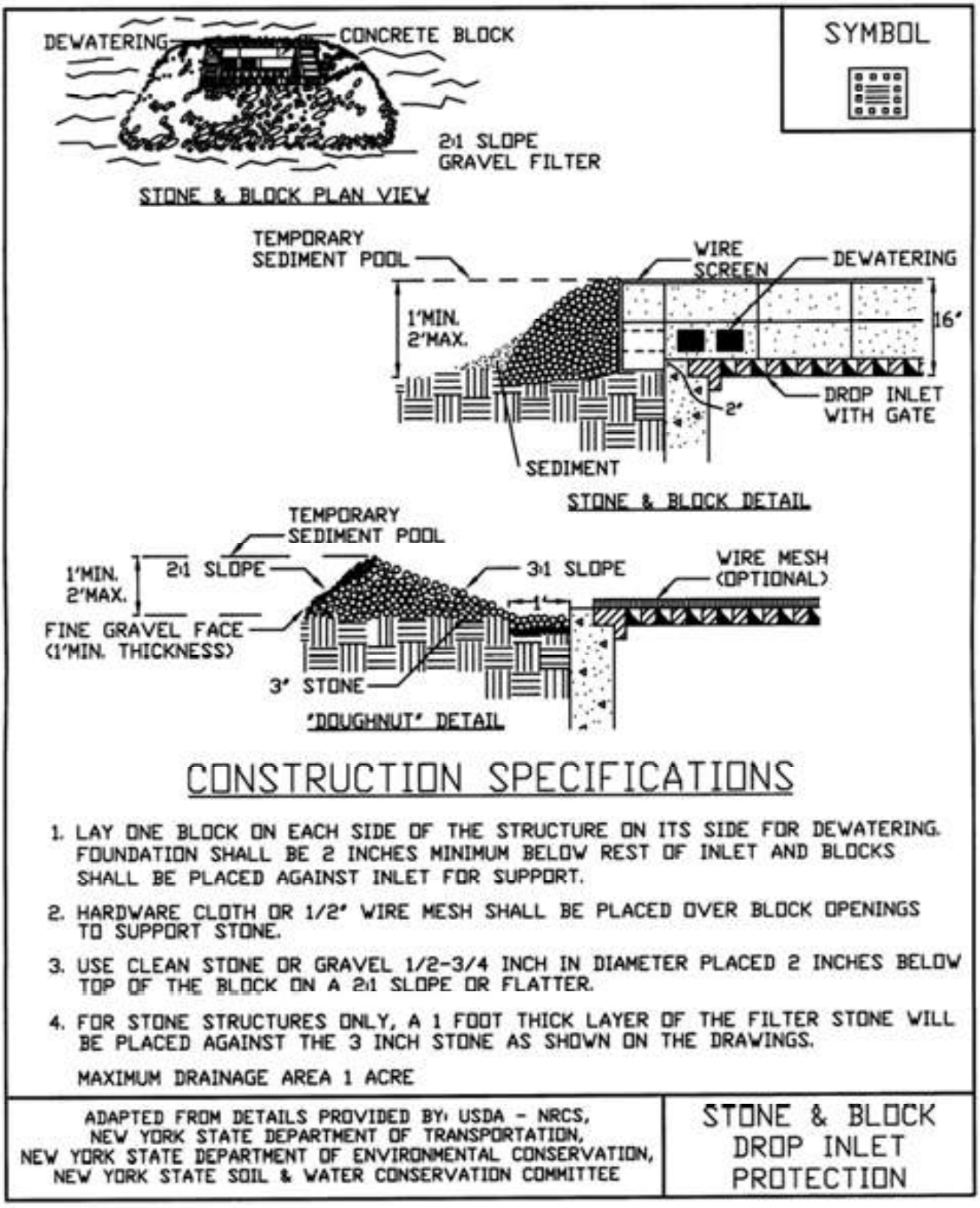


Figure 5.33
Stone & Block Drop Inlet Protection



CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

MAXIMUM DRAINAGE AREA 1 ACRE

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

STONE & BLOCK DROP INLET PROTECTION

STANDARD AND SPECIFICATIONS FOR CHECK DAM

Definition & Scope

Small barriers or dams constructed of stone, bagged sand or gravel, or other durable materials across a drainageway to reduce erosion in a drainage channel by reducing the velocity of flow in the channel.

Conditions Where Practice Applies

This practice is used as a **temporary** and, in some cases, a **permanent** measure to limit erosion by reducing velocities in open channels that are degrading or subject to erosion or where permanent stabilization is impractical due to short period of usefulness and time constraints of construction.

Design Criteria

Drainage Area: Maximum drainage area above the check dam shall not exceed two (2) acres.

Height: Not greater than 2 feet. Center shall be maintained 9 inches lower than abutments at natural ground elevation.

Side Slopes: Shall be 2:1 or flatter.

Spacing: The check dams shall be spaced as necessary in the channel so that the crest of the downstream dam is at the elevation of the toe of the upstream dam. This spacing is equal to the height of the check dam divided by the channel slope.

Therefore: $$S = \frac{h}{s}$$

Where: S = spacing interval (ft.)
h = height of check dam (ft.)
s = channel slope (ft./ft.)

Example:

For a channel with a 4% slope and 2 ft. high stone check dams, they are spaced as follows:

$$S = \frac{2\ \text{ft}}{0.04\ \frac{\text{ft}}{\text{ft}}} = 50\ \text{ft}$$

For stone check dams: Use a well graded stone matrix 2 to 9 inches in size (NYS – DOT Light Stone Fill meets these requirements).

The overflow of the check dams will be stabilized to resist erosion that might be caused by the check dam. See Figure 3.1 on page 3.3 for details.

Check dams should be anchored in the channel by a cutoff trench 1.5 ft. wide and 0.5 ft. deep and lined with filter fabric to prevent soil migration.

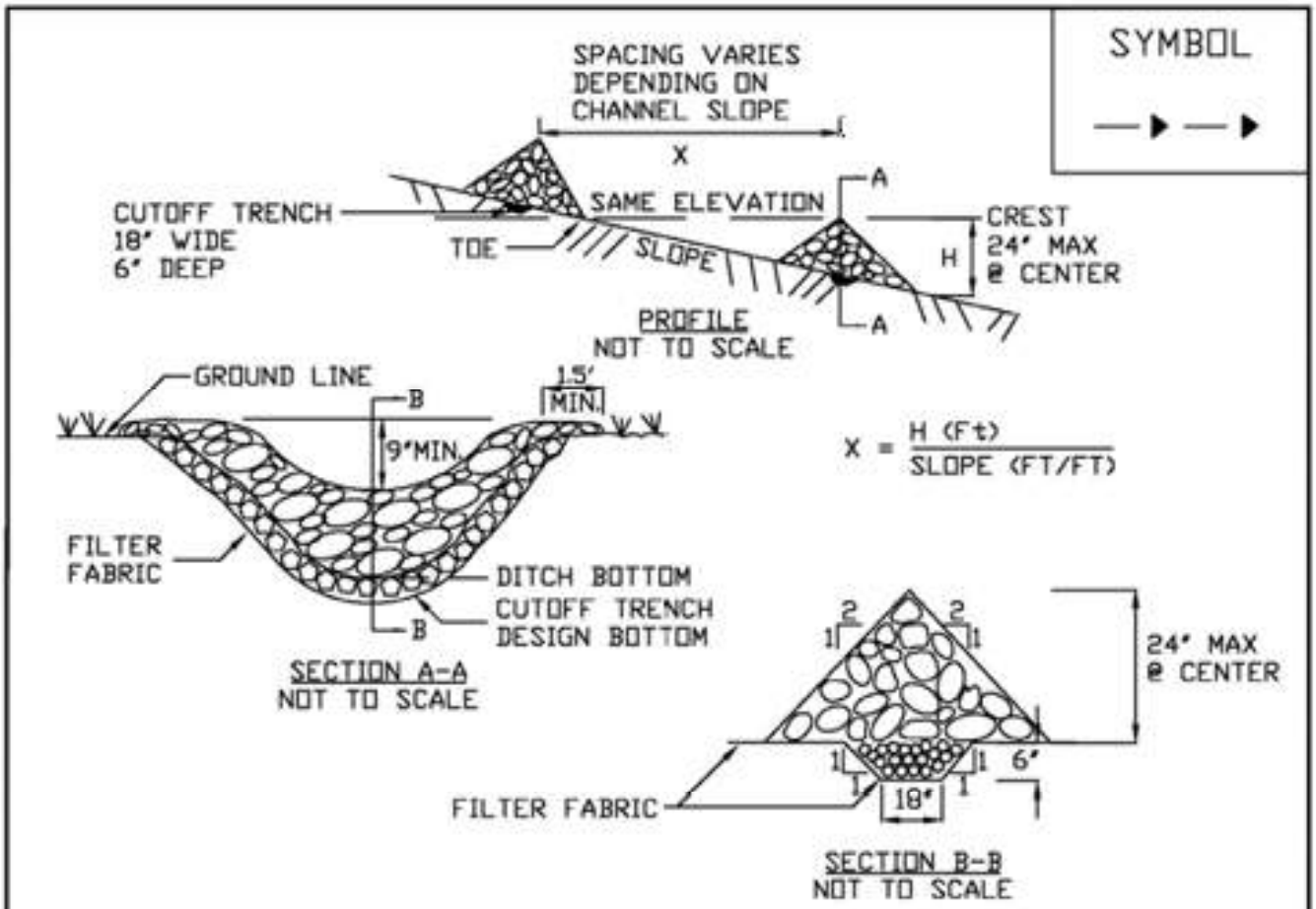
For filter sock or fiber roll check dams: The check dams will be anchored by staking the dam to the earth contact surface. The dam will extend to the top of the bank. The check dam will have a splash apron of NYS DOT #2 crushed stone extending a minimum 3 feet downstream from the dam and 1 foot up the sides of the channel. The compost and materials for a filter sock check dam shall meet the requirements shown in the standard for Compost Filter Sock on page 5.7.

Maintenance

The check dams should be inspected after each runoff event. Correct all damage immediately. If significant erosion has occurred between structures, a liner of stone or other suitable material should be installed in that portion of the channel or additional check dams added.

Remove sediment accumulated behind the dam as needed to allow channel to drain through the stone check dam and prevent large flows from carrying sediment over the dam.

Figure 3.1
Stone Check Dam Detail



CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

MAXIMUM DRAINAGE AREA 2 ACRES.

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

STONE CHECK DAM

STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ENTRANCE

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

See Figure 5A.35 on page 5A.76 for details.

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 nonwoven 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:

Fabric Properties[3]	Light Duty[1] Roads Grade Subgrade	Heavy Duty[2] Haul Roads Rough Graded	Test Method
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	--

[1]Light 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.

[2]Heavy 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.

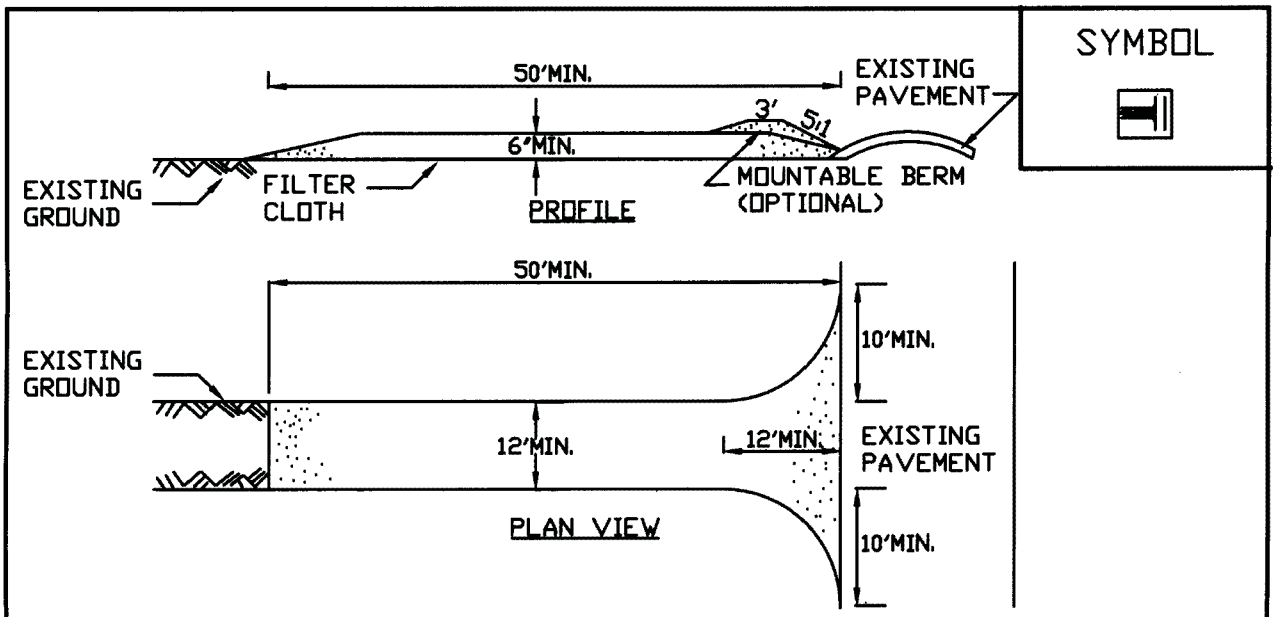
[3]Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

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 5A.35
Stabilized Construction Entrance



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - 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 BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A 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.

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	STABILIZED CONSTRUCTION ENTRANCE

Post-Construction
Maintenance and Management Inspection Checklist

Project: _____

Location: _____
Site Status: _____

Date: _____
Inspector: _____

Bioretention Operation

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Debris Cleanout (Monthly)		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Monthly)		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 6 inches		
No evidence of erosion		
3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)		
No evidence of sediment buildup		
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
4. Dewatering (Monthly)		
Dewaters between storms		
5. Sediment Deposition (Annual)		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
6. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
7. Integrity of Filter Bed (Annual)		
Filter bed has not been blocked or filled inappropriately		

Comments:

_____
_____
_____
_____

Actions to be Taken:

_____
_____
_____
_____

STORMWATER CONTROL FACILITY MAINTENANCE AGREEMENT

Whereas, the (TOWN/MUNICIPALITY) and (FACILITY OWNER & ADDRESS)

want to enter into an agreement to provide for the long term maintenance and continuation of stormwater control measures approved by the Town of _____ (TOWN/MUNICIPALITY) for the (PROJECT TITLE) located at (PROJECT LOCATION)

Whereas, the Town and the facility owner desire that the stormwater control measures be built in accordance with the approved project plans and thereafter be maintained, cleaned, repaired, replaced and continued in perpetuity in order to ensure optimum performance of the components. Therefore, the Town and the facility owner agree as follows:

1. This agreement binds the Town and the facility owner, its successors and assigns, to the maintenance provisions depicted in the approved final site plan, which are attached as Appendix A of this agreement.
2. The facility owner shall maintain, clean, repair, replace (if necessary) the stormwater control measures depicted in Schedule A as necessary to ensure optimum performance of the measures as designed.
3. The facility owner shall be responsible for all expenses related to maintenance of stormwater management and shall establish a means for collection and distribution of expenses among parties for any commonly owner facilities.
4. The facility owner shall provide periodic inspection of stormwater control measures, not less than once every three-year period, to determine the condition and integrity of the measures. A Professional Engineer licensed by the State of New York shall perform such inspections. The inspecting engineer shall prepare and submit a report of the findings, including recommended actions, to the Town within 30 days of the inspection.
5. The facility owner shall not authorize, undertake or permit alteration, abandon, modification or discontinuation of the stormwater control measures without written approval of the Town.

6. The facility owner shall undertake necessary repairs and replacement of the stormwater control measures at the direction of the Town or in accordance with the recommendation of the inspecting engineer.
7. The agreement shall be recorded in the Office of the County Clerk, County of _____ **(COUNTY)** together with the deed for the common property.
8. If ever the Town determines that the facility owner has failed to construct or maintain the stormwater control measures in accordance with the project plans or has failed to undertake required corrective measures, the Town is authorized to undertake steps reasonably necessary for the preservation, continuation or maintenance of the facility and to affix the expenses as a lien against the property.
9. This agreement is effective on _____. **(DATE)**

Signature of Owner: _____

Signature of Town Official: _____

Notary Public:

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP-0-15-002

Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: January 29, 2015 Expiration Date: January 28, 2020

Modification Date:
July 14, 2015 – Correction of typographical error in definition of "New Development", Appendix A

November 23, 2016 – Updated to require the use of the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. The use of this standard will be required as of February 1, 2017.

John J. Ferguson
Chief Permit Administrator

Authorized Signature 11-14-16 Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

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: **Bobby Marchenese**

2. Street Address: **P.O. Box 451**

3. City/State/Zip: **Canandaigua, New York 14424**

4. Contact Person: **Bobby Marchenese** | 4a.Telephone: **(585) 412-6310**

4b. Contact Person E-Mail: **bobby@autocarwash.com**

II. Project Site Information

5. Project/Site Name: **Auto Wash No.06**

6. Street Address: **3150 County Road 10**

7. City/Zip: **Town of Canandaigua, 14424**

8. County: **Ontario**

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, a mechanism is 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.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; 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 2015)

APPENDIX V

- **DESIGN DRAWINGS**