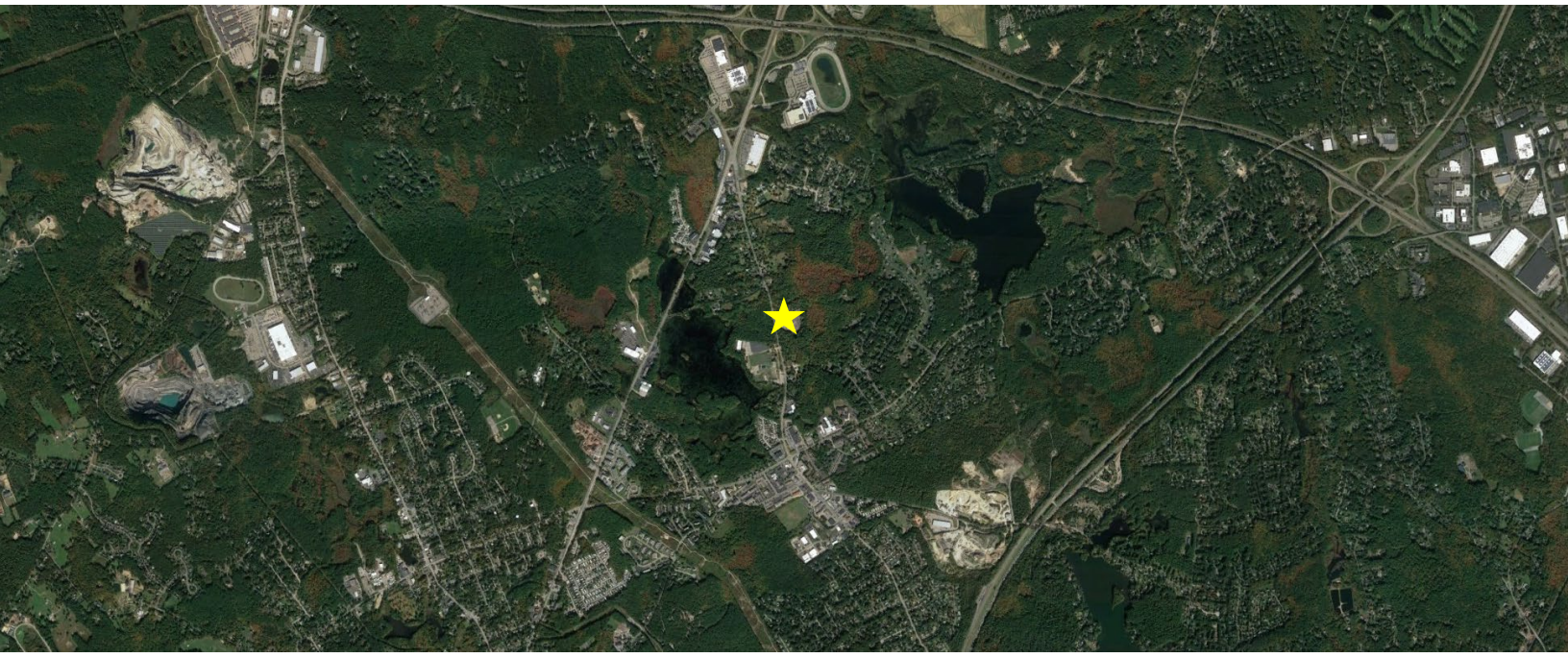
Project Address:	43 Taunton Street Plainville, MA 02762
Date Prepared:	March 24, 2022
Project Number:	21018
Prepared for:	TSC Taunton Street 43 LLC 175 Paramount Drive Raynham, MA 02767
Prepared by:	**Highpoint Engineering Inc.** Dedham Executive Center 980 Washington Street, Suite 216 Dedham, MA 02026 www.highpointeng.com



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INTRODUCTION

This analysis summarizes pre- and post-development stormwater impacts associated with the construction of a proposed industrial building and associated site improvements (the Project) located at 43 Taunton Street (the Subject Property) in Plainville, Massachusetts. The Subject Property is shown on the Town of Plainville Assessors' Map 6 as Parcel 23.

The land area of the Subject Property is approximately 18 acres. The Subject Property is located within the Shopping Center Commercial A (CA) District. The Subject Property is bounded by Taunton Street to the west and a wetland and perennial waterway systems associated with Turtle Brook to the north, east and south. The Subject Property is accessed via a single paved two-way driveway from Taunton Street.

The Subject Property was formally used as an outdoor drive-in cinema complex from 1954 until it closed in 1993 and currently supports the remains of the complex, including paved and gravel parking areas and gravel walkways. The existing developed areas are in poor condition and the remainder of the site is covered with vegetation.

Runoff from ground surfaces of the developed portion of the Subject Property flows predominantly toward the existing wetland areas which surround the property on three sides. Existing lawn/landscape, woods and paved areas nearest Taunton Street flow over land into the rights of way, where runoff is collected in a series of catch basins and routed towards the wetlands. These wetlands are tributary to Lake Mirimichi, which is a 305(b)/303(d) Category 4C impaired water, the impairment being caused by non-native aquatic plants.

The site is subject to an Activities and Use Limitation (AUL; RTN Tracking No.: 4-0000877) as a portion of the site comprises part of a disposal site as the result of release(s) of oil and/or hazardous material. In accordance with the AUL, the project is subject to a Health and Safety Plan and Soils Management Plan (HASP/SMP) to be prepared by Inland Professional Corp., the Licensed Site Professional (LSP) assigned to the project on behalf of the property owner. All sitework and earthmoving activities shall be conducted in conformance with the HASP/SMP and in direct coordination with the LSP.

Work associated with the Project includes:

- Construction of a new industrial building comprising a 112,500± ft^2 high-bay Industrial space and two-story, 14,000± ft^2 office component, twenty-one (21) loading docks, and two (2) drive-up rigging doors to support long-term delivery operations.
- Construction of landscape and hardscape improvements, including conversion of existing gravel and paved parking and driveway areas to newly paved vehicular and trailer parking areas, paved driveways, and reclamation of existing gravel and paved areas for use as lawn and landscape planting areas.
- Construction of stormwater management improvements, including two (2) CDS Water Quality Units, a stone-embedded underground modular detention system, a sand filter basin with an upstream sediment forebay, a surface detention/infiltration basin with two (2) upstream sediment forebays, and deep-dump catch basins with hoods.
- Construction of utility infrastructure improvements, including site lighting improvements and water, sewer, gas, electric and telecommunications utility connections to existing municipal utilities.

For detailed information regarding existing site conditions and proposed development, refer to the plans entitled, “Proposed Industrial Building | 43 Taunton Street | Plainville, Massachusetts,” dated March 24, 2022, and prepared by Highpoint Engineering, Inc.

METHODOLOGY

The hydrologic analysis models the pre- and post-development stormwater characteristics for the Project and compares changes in peak rate of runoff and water quality associated with the proposed development. Where increases to peak rate of runoff or reductions in water quality are identified, Stormwater Best Management Practices (BMPs) and Low Impact Development (LID) techniques are considered. The analysis shall demonstrate that post-development hydrologic conditions generally mimic pre-development hydrologic conditions; that any potential impacts to downstream properties, infrastructure, or environmentally sensitive areas are mitigated; and that local and state stormwater management standards are met to the extent practicable.

The pre-development hydrologic model establishes the limits of the study area and down-gradient Points of Analysis (POAs), which are dependent on topographic and environmental conditions. The model quantifies sub-watershed stormwater runoff characteristics related to topography, land use/cover types and soil conditions, computing peak runoff rates for specific design storm frequencies under pre-development conditions at the POAs.

The post-development hydrologic model analyzes the same study area, and accounts for changes in sub-watershed area topography and land use/cover types associated with the proposed development. The model computes the changes to the peak runoff rates at the same POAs, and BMPs are implemented to mitigate stormwater impacts due to development. In addition, BMPs are also implemented to improve water quality and reduce Total Suspended Solid (TSS) pollutant concentrations to satisfy stormwater regulation requirements for the new construction.

For this analysis three (3) POAs have been established:

- POA 1: Wetlands Series A to the East and North.
- POA 2: Wetlands Series B to the South.
- POA 3: The Taunton Street Right of Way.

The hydrologic model, analysis, and proposed mitigation measures have been developed using the following resources:

- Hydrologic modeling techniques and methods established in NRCS - Technical Releases No. 20 and No. 55 (TR-20 and TR-55) using proprietary HydroCAD® stormwater modeling software.
- Massachusetts Department of Environmental Protection – Stormwater Handbook Volumes #1, #2, and #3 (as amended).
- Town of Plainville Stormwater Management Bylaw and Regulations (as amended).

RAINFALL DATA

Peak stormwater discharges have been determined for total rainfall estimated for the 1, 2, 10, 25, and 100-year storm event recurrence intervals. For this analysis, the values used for the 24-hour rainfall calculations were taken from NRCC Extreme Precipitation Data. The rainfall depths for all NRCC Extreme Precipitation Data storm events are outlined in Table 1.

Table 1. – Summary of Rainfall Data

Reference	Rainfall Recurrence Interval	24 Hour Rainfall Depth
NRCC Extreme Precipitation Data	1-Year Storm	2.71 inches
	2-Year Storm	3.27 inches
	10-Year Storm	4.94 inches
	25-Year Storm	6.26 inches
	100-Year Storm	8.99 inches

SOILS DATA

Based upon the USDA – NRCS Soil Conservation Service (SCS) Web Soil Survey for Norfolk and Suffolk Counties, soils underlying the Project (excluding surface water bodies) are classified as follows:

Table 2. – Summary of USDA Soil Classification

Soil Classification	Hydrologic Soil Group (HSG)
Urban land, 0 to 15 percent slopes	N/A
Freetown muck, 0 to 1 percent slopes	B/D
Hinckley loamy sand, 3 to 8 percent slopes	A

Soils testing was performed in the locations of the proposed surface detention/infiltration basin and underground detention system on January 28, 2022, by Highpoint Engineering and witnessed by Graves Engineering (the Town's Engineering Peer Review Consultant). The existing seasonal high groundwater elevation in the location of the proposed infiltration basin was determined at 173.1 feet. The existing high groundwater elevation in the location of the proposed underground detention basin was determined at 176.7 feet.

Soils encountered during testing comprised sandy/gravelly fill material overlying sandy to fine silty glacial till parent material. Test pit data is provided on the Soil Evaluation Plan and test pit logs provided under Figures herein.

PRE-DEVELOPMENT CONDITIONS

The portions of the Subject Property subject to this analysis comprise three (3) watershed areas as described below and analyzed at three (3) POA described in the "Methodology" section in this report. Existing watershed areas include:

- E-1 – A 315,045 ft^2 area comprising existing woods, gravel and paved driveway and walkway areas at the interior and the easternmost developed portions of the property. Runoff from this watershed flows over land into the wetlands adjacent to the eastern and northern edges of the property (POA-1).
- E-2 – A 67,511 ft^2 area comprising existing woods, lawn/landscape, gravel and paved driveway and walkway areas at the southern extents of the property. Runoff from this watershed flows over land into the wetlands adjacent to the southern edge of the property (POA-2).
- E-3 – A 16,800 ft^2 area comprising existing woods, lawn/landscape, gravel and paved driveway areas at the western extents of the property. Runoff from this watershed flows over land into the Taunton Street Right of Way (POA-3).

Refer to the Pre-Development Watershed Plan under Figures for information and limits of the existing watershed areas.

For the pre-development watershed analysis, Table 3 presents a summary of the watershed areas, the weighted TR-55 runoff curve numbers (CN – based on ground cover types), and Times of Concentration (T_c) for the existing Watershed Areas:

Table 3. – Pre-Development Watershed Areas and Runoff Curve Numbers

	E-1	E-2	E-3
Area	315,045 ft^2	67,511 ft^2	16,800 ft^2
CN	90	85	95
T_c	7.6 min	9.8 min	5.0 min

POST-DEVELOPMENT CONDITIONS

The project proposes to construct a warehouse building and associated site improvements, including the following:

- Construction of a new industrial building comprising a 112,500± ft^2 high-bay industrial space and two-story, 14,000± ft^2 office component, twenty-one (21) loading docks, and two (2) drive-up rigging doors to support long-term delivery operations.
- Construction of landscape and hardscape improvements, including conversion of existing gravel and paved parking and driveway areas to newly paved vehicular and trailer parking areas, paved driveways, and reclamation of existing gravel and paved areas for use as lawn and landscape planting areas.
- Construction of stormwater management improvements, including two (2) CDS Water Quality Units, a stone-embedded underground modular detention system, a sand filter basin with an upstream sediment forebay, a surface detention/infiltration basin with two (2) upstream sediment forebays, and deep-dump catch basins with hoods.
- Construction of utility infrastructure improvements, including site lighting improvements and water, sewer, gas, electric and telecommunications utility connections to existing municipal utilities.

New drainage and utility infrastructure will be constructed to service the Project, and existing infrastructure will be re-used where feasible. The total impervious land cover of the affected Project area under post-development conditions is 278,535 ft^2 (6.39 acres) as opposed to 154,560 ft^2 (3.55 acres) under existing conditions, thus resulting in a 123,975 ft^2 (2.85 acres) increase in impervious area. The 1, 2, 10, 25, and 100-year storm events will be mitigated for peak runoff through implementation of a sand filter basins, an infiltration basin, and an underground stormwater detention system.

The portions of the Subject Property affected by the Project are divided into nine (9) proposed watershed areas. The POAs remain unchanged.

- P-1 – A 108,403 ft^2 area comprising proposed lawn/landscape, riprap, stormwater basins and paved parking and driveway areas at the northern extents of the site. Runoff from this watershed flows over land into two (2) sediment forebay sized to hold 0.1-inch of runoff from the impervious area of the contributing watershed. Flow then overtops an armored spillway before entering the primary treatment Infiltration Basin designed to retain the required tributary water quality and recharge volumes as specified in the Massachusetts Stormwater Handbook. Larger stormwater events will overtop an armored emergency spillway that will convey the stormwater to an adjacent wetland along the eastern property boundary (POA-1) at a controlled rate.
- P-2 – A 39,922 ft^2 area comprising proposed lawn/landscape, riprap, stormwater basins and paved parking and driveway areas at the southern extents of the site. Runoff from this watershed flows over land into a sediment forebay sized to hold 0.1-inch of runoff from the impervious area of the contributing watershed. Flow then overtops an armored spillway before entering the primary treatment sand filter designed to retain the required tributary water quality and recharge volumes as specified in the Massachusetts Stormwater Handbook. The sand filter is constructed to allow stormwater to infiltrate through the sand media before being captured by a subsurface perforated pipe that directs flow to an outlet control structure. Flow is controlled by an internal weir before overtopping and discharging to an adjacent wetland along the eastern property boundary (POA-1) at a controlled rate. Larger storm event not infiltrated through the sand media, will overtop an armored

emergency spillway prior to discharging to said wetland. It should be noted that the sand filter is designed with an impermeable membrane that underlies the system and is not intended to provide recharge to the underlying soils due to evidence of high estimated seasonal groundwater identified during field soil testing.

- P-3 – A 68,527 ft^2 area comprising proposed lawn/landscape, and paved parking and driveway areas located within the western parking areas of the site. Runoff from this watershed flows overland before being captured by a series of catch basin structure utilized to direct flow through a closed channel piping conveyance system to a Contech CDS Water Quality Unit (#1). The Contech CDS is sized to treat the tributary water quality flow rate before entering the subsurface stormwater detention system. The intent of the subsurface facility is to control stormwater flow via and outlet-control structure prior to discharging to an adjacent wetland along the eastern property boundary (POA-1) at a controlled rate. It should be noted that the subsurface detention facility is designed with an impermeable membrane that surrounds the system and is not intended to provide recharge to the underlying soils due to evidence of high estimated seasonal groundwater identified during field soil testing.
- P-3A – A 13,953 ft^2 area comprising paved parking and driveway areas located within the eastern portions of the site. Runoff from this watershed flows overland before being captured by a series of catch basin structure utilized to direct flow through a closed channel piping conveyance system to a Contech CDS Water Quality Unit (#2). The Contech CDS is sized to treat the tributary water quality flow rate before entering the subsurface stormwater detention system. The intent of the subsurface facility is to control stormwater flow via and outlet-controlled structure prior to discharging to an adjacent wetland along the eastern property boundary (POA-1) at a controlled rate. It should be noted that the subsurface detention facility is design with an impermeable membrane that surrounds the system and is not intended to provide recharge to the underlying soils due to evidence of high estimated seasonal groundwater identified during field soil testing.
- P-3B – A 39,502 ft^2 area comprising lawn/landscape areas along the embankment of the northern and eastern property boundary proximate to an adjacent wetland. Flow from this area is not tributary to the stormwater infrastructures associated with the proposed site improvements. Runoff from this watershed flows overland into the existing wetland along the southern portion of the site (POA-1).
- P-4 – A 13,896 ft^2 area comprising of lawn/landscape areas along the embankment of the southern property boundary proximate to an adjacent wetland. Flow from this area is not tributary to the stormwater infrastructures associated with the proposed site improvements. Runoff from this watershed flows overland into the existing wetland along the southern portion of the site (POA-2).
- P-5 – A 15,100 ft^2 area comprising lawn/landscape areas at the western portion of the site along Taunton Street. Flow from this area is not tributary to the stormwater infrastructures associated with the proposed site improvements. Runoff from this watershed flows overland into the Taunton Street Right of Way (POA-3).
- R-1 – A 53,577 ft^2 area comprising one half of the roof area of the major section of the proposed building and the roof area of the proposed office section of the proposed building. Runoff from this watershed enters a roof drain conveyance system which is routed directly to the subsurface stormwater detention/infiltration system.

- R-2 – A 46,520 ft^2 area comprising one half of the roof area of the major section of the proposed building. Runoff from this watershed enters a roof drain conveyance system which is routed directly to the sand filter basin at the southern extent of the site.

Refer to the Post-Development Watershed Plan under Figures for information and limits of the proposed watershed areas.

Table 4 presents a comparison of watershed area, the weighted TR-55 runoff curve number (CN – based on ground cover types), and Time of Concentration (T_c) for the proposed watersheds:

Table 4. – Post-Development Watershed Areas and Runoff Curve Numbers

	P-1	P-2	P-3	P-3A	P-3B	R-1	R-2	P-4	P-5
Area	108,403 ft²	39,922 ft²	68,527 ft²	13,953 ft²	39,502 ft²	53,577 ft²	46,476 ft²	13,896 ft²	15,100 ft²
CN	96	92	91	98	74	98	98	74	85
T_c	5.0 min	5.0 min	5.0 min	5.0 min	5.0 min	5.0 min	5.0 min	5.0 min	5.0 min

STORMWATER MITIGATION

The stormwater improvements were designed to meet the requirements of the Massachusetts Stormwater Handbook to provide the required water quality pretreatment of 1.0" of runoff for discharge to the bordering vegetated wetland systems on the north, east, and south sides of the Subject Property. The sand filter surface detention/infiltration basin and underground detention system are designed to drain completely in less than 72 hours, are located outside lines of influence from existing and proposed building foundations and are geometrically coordinated with proposed utility infrastructure.

The Project will result in a 123,975 ft^2 (2.85 acres) net increase in impervious area. The stormwater management system and BMPs proposed for the Project are designed to mitigate water quantity and quality impacts, where no such measures currently exist on site, prior to discharge to the adjacent bordering vegetated wetlands. The Project results in net decreases in peak runoff rates generated by all storm events up to and including the 100-year storm. The proposed drainage collection system is designed to adequately collect and convey the 25-year storm event.

The following is a summary of the drainage infrastructure and BMPs selected for the Project as well as proposed improvements to existing BMPs and site improvements, where applicable:

- Deep-sump/hooded catch basins and HDPE pipe collection system in the proposed driveway and parking areas will connect to the new underground detention system.
- Two (2) Contech CDS proprietary water quality units to treat the required 1.0" water quality volume from proposed driveway and parking areas prior to downstream discharge to the new underground detention system.
- Roof drainage collection system to convey clean runoff from the proposed roof to the new underground detention system and to the proposed sand filter on the southern side of the developed site.
- Underground detention system comprising ACF R-Tank modular stormwater management chambers embedded in crushed stone. This system provides stormwater detention and controlled discharge to the existing wetland area at the eastern extents of the Subject Property. Approximately 0.10 feet of internal freeboard is provided within the underground system for the 100-year storm event.
- A sand filter with upstream sediment forebay to provide water quality treatment for overland runoff on the south side of the proposed building prior to downstream discharge.
- A surface detention/infiltration basin with two (2) upstream sediment forebays to provide water quality treatment and groundwater infiltration for overland runoff from the loading area on the north side of the proposed building prior to downstream discharge.
- Incorporation of new shade tree and planting elements into site proposed landscape.

The increase in impervious area is mitigated via the implementation of the above ground and the underground detention/infiltration systems. Table 5 summarizes the pre- and post-development peak rates of runoff at the POA for the Project after implementation of the selected stormwater BMPs for the NRCC Extreme Precipitation Data.

Table 5. – Summary of Pre- and Post-Development Peak Rates of Runoff

Design Storm	**POA 1 (Wetland Outfall)**		
	Pre-Dev	**Post-Dev**	**Change**
1 Year	13.73 cfs	7.01 cfs	-6.72 cfs
2 Year	17.71 cfs	12.35 cfs	-5.36 cfs
10 Year	29.60 cfs	24.89 cfs	-4.71 cfs
25 Year	38.93 cfs	35.03 cfs	-3.90 cfs
100 Year	58.00 cfs	50.59 cfs	-7.41 cfs
Design Storm	**POA 2 (Wetland Series-B)**		
	Pre-Dev	**Post-Dev**	**Change**
1 Year	2.15 cfs	0.26 cfs	-1.89 cfs
2 Year	2.91 cfs	0.40 cfs	-2.51 cfs
10 Year	5.25 cfs	0.89 cfs	-4.36 cfs
25 Year	7.12 cfs	1.32 cfs	-5.80 cfs
100 Year	10.99 cfs	2.24 cfs	-8.75 cfs
Design Storm	**POA 3 (Taunton Street)**		
	Pre-Dev	**Post-Dev**	**Change**
1 Year	0.97 cfs	0.57 cfs	-0.40 cfs
2 Year	1.20 cfs	0.77 cfs	-0.43 cfs
10 Year	1.88 cfs	1.38 cfs	-0.50 cfs
25 Year	2.41 cfs	1.87 cfs	-0.54 cfs
100 Year	3.49 cfs	2.89 cfs	-0.60 cfs

Refer to Appendix C for TSS removal rates for each treatment train. The proposed TSS removal rates meet the Massachusetts Stormwater Policy Guidelines minimum removal rate of 80% prior to surface discharge.

Construction-Phase and Long-Term Stormwater Operation and Maintenance Plans (O&M Plans) have been included under a separate cover and include information on the responsible party for the O&M plan implementation, a project overview, and the structural and non-structural BMPs to be utilized on site.

CONCLUSION

The Project will preserve the existing runoff patterns and off-site discharge locations of the Subject Property and will improve discharge conditions through implementation of stormwater infiltration BMPs and reducing the volume of uncontrolled and untreated off-site runoff. The Project will also implement water quality treatment measures, whereas no treatment measures currently exist on-site. Potential stormwater impacts associated with the development will be mitigated as required by State and Municipal Regulations.

The Project will comply with Standards outlined in the Massachusetts Stormwater Management Handbook as follows:

STANDARD **1**	No New Untreated Discharges	All existing discharge points are maintained. Mitigation is proposed to treat discharge impacts at existing points as feasible.
STANDARD **2**	Peak Rate Attenuation	Calculations are provided showing post-development peak discharge rates do not exceed pre-development rates for the 1, 2, 10, 25, and 100-year 24-hour storm events at the POA.
STANDARD **3**	Recharge	The required recharge volume for C soils is provided within the underground detention/infiltration basin.
STANDARD **4**	Water Quality	Water Quality Units, deep-sump catch basins with hoods, and two sand filter basins have been sized to treat the full water quality and are designed to achieve a minimum 80% TSS removal rate prior to discharge.
STANDARD **5**	Land Uses with Higher Potential Pollutant Loads	The proposed project is not a listed activity associated with a LUHPPL defined in the Handbook.
STANDARD **6**	Critical Areas	The Site does not discharge to an Outstanding Resource Water. Appropriate methods are used to treat 1.0” of water quality volume.
STANDARD **7**	Redevelopments and Other Projects Subject to the Standards only to the Maximum Extent Practicable	The proposed project is considered a mix of new development and Redevelopment. Stormwater management facilities and BMP designs are completed in accordance with the DEP guidance to the extent practicable for the redeveloped portion of the site.
STANDARD **8**	Construction Period Pollution Prevention and Erosion and Sedimentation Control	The project is required to obtain an EPA - NPDES Construction General Permit prior to construction. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared and filed with the EPA.
STANDARD **9**	Operation & Maintenance Plan	Construction Phase and Long-Term Operation and Maintenance (O&M) Plans are included under a separate cover.
STANDARD **10**	Prohibition of Illicit Discharges	A No Illicit Discharge Compliance Statement will be submitted by the Owner prior to the discharge of any stormwater to post-construction BMP’s.

FIGURES

P:\Shearwater Companies (The)\21018 (43 Taunton St, Plainville T&M)\04_Design\Dwg\@GIS\USGS.mxd

Source: Office of Geographic and Environmental Information (MassGIS); Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs; NearMap Ltd./NearMap US, Inc.

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DEDHAM, MA 02026

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USGS MAP

43 Taunton Street
Plainville, MA 02762

2/23/2022

N
W E
S

0 1,000 2,000 4,000 Feet

1 in = 2,000 ft

P:\Shearwater Companies (The)\21018 (43 Taunton St, Plainville T&M)\04_Design\Dwg\@GIS\SOILS.mxd

LEGEND

- Subject Property

MassDOT Roads

Road Type

- Limited Access Highway
- Other Numbered Highway
- Major Road, Collector
- Minor Road, Arterial
- Soils

SOIL SUMMARY:

52 Freetown muck, 0-1% slopes (HSG B/D)

245B Hinckley loamy sand, 3-8% slopes (HSG A)

602 Urban land, 0-15% slopes (No HSG)

Source: "Soil Survey of Norfolk and Suffolk Counties, Massachusetts," USDA SCS, September 1989.

Source: Office of Geographic and Environmental Information (MassGIS); Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs; NearMap Ltd./NearMap US, Inc.

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SOILS MAP

43 Taunton Street
Plainville, MA 02762

2/23/2022

N
W E
S

0 200 400 800 Feet

1 in = 400 ft

P:\Shearwater Companies (The)\21018 (43 Taunton St, Plainville T&M)\04_Design\Dwg\@GIS\FEMA.mxd

LEGEND

MassDOT Roads

Road Type

- Limited Access Highway
- Other Numbered Highway
- Major Road, Collector
- Minor Road, Arterial
- FEMA Zone A
- FEMA Zone AE
- Level III Assessors Parcels

Source: Office of Geographic and Environmental Information (MassGIS); Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs; NearMap Ltd./NearMap US, Inc.

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FEMA MAP

43 Taunton Street
Plainville, MA 02762

2/23/2022

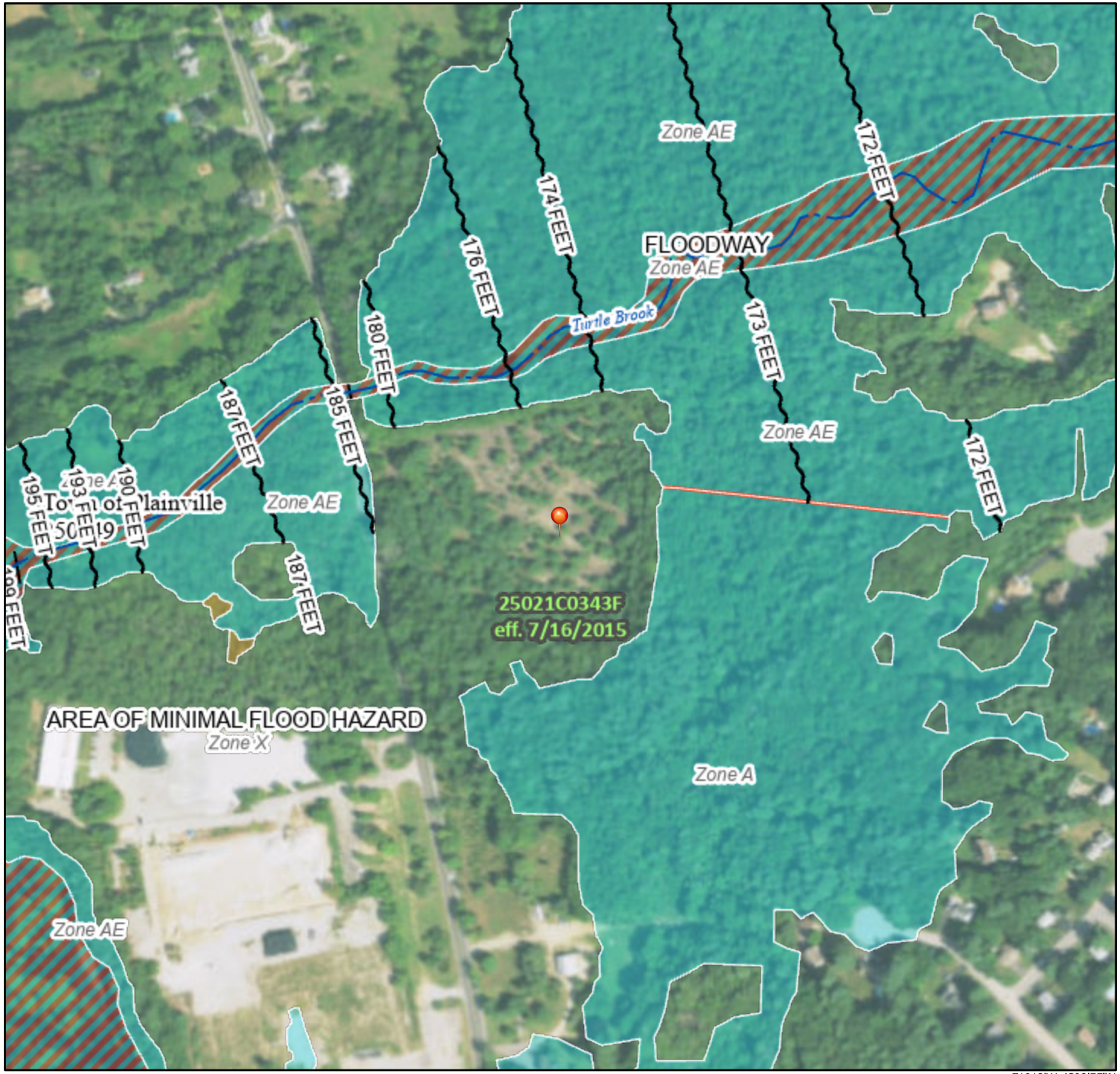
N
W E
S

0 200 400 800 Feet

1 in = 400 ft

National Flood Hazard Layer FIRMette

71°18'37"W 42°1'22"N



71°18'W 42°0'55"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/30/2021 at 2:25 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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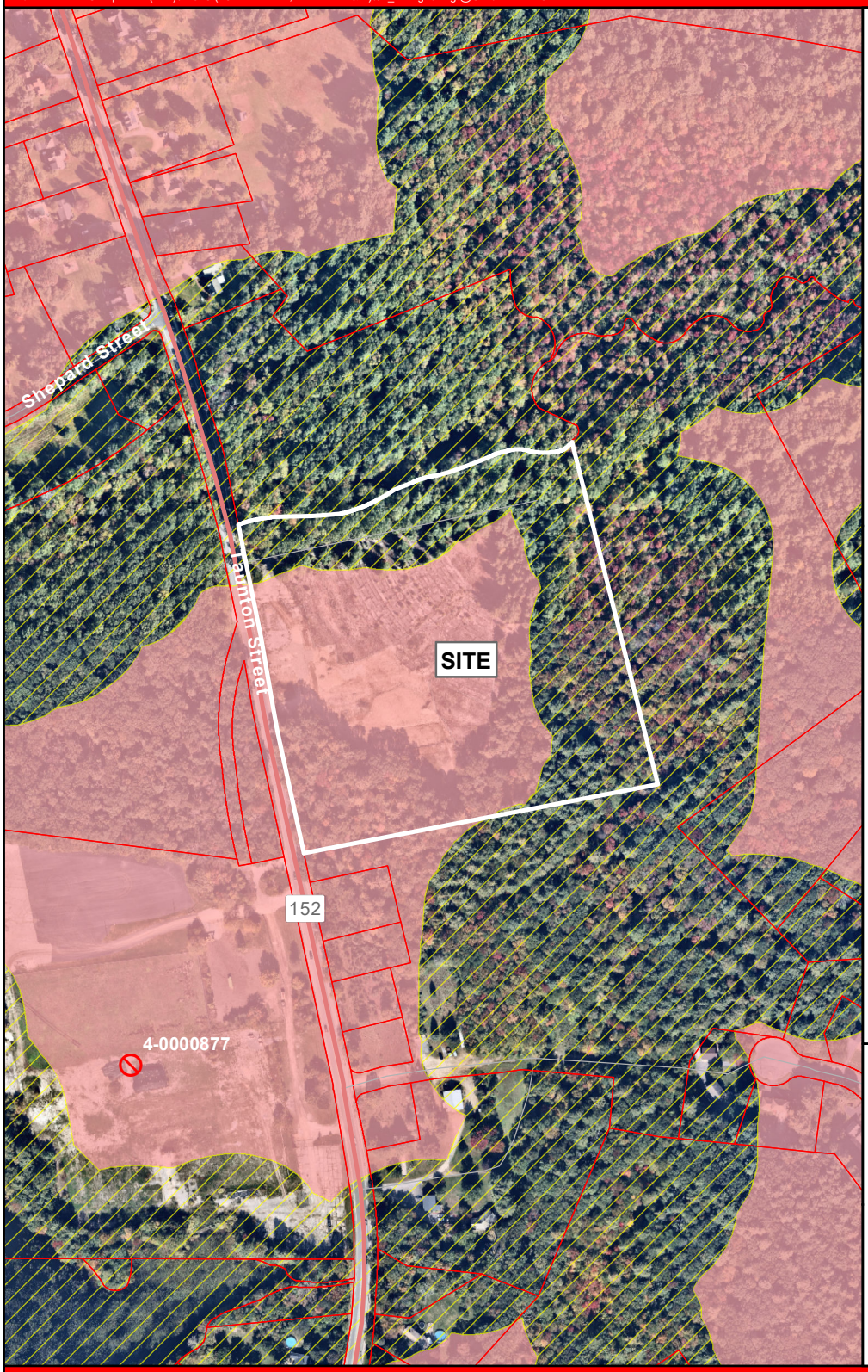

LEGEND

MassDOT Roads

Road Type

- Limited Access Highway
- Other Numbered Highway
- Major Road, Collector
- Minor Road, Arterial
- ZONE A
- ZONE B
- ZONE C
- AUL Sites
- Level III Assessors Parcels

NOTE

Entire site is located within an Outstanding Resource Water (ORW): Wading River (Blakes Pond) Watershed (surface water supply watershed)

Source: Office of Geographic and Environmental Information (MassGIS); Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs; NearMap Ltd./NearMap US, Inc.

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DEDHAM, MA 02026

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SURFACE WATER SUPPLY PROTECTION MAP

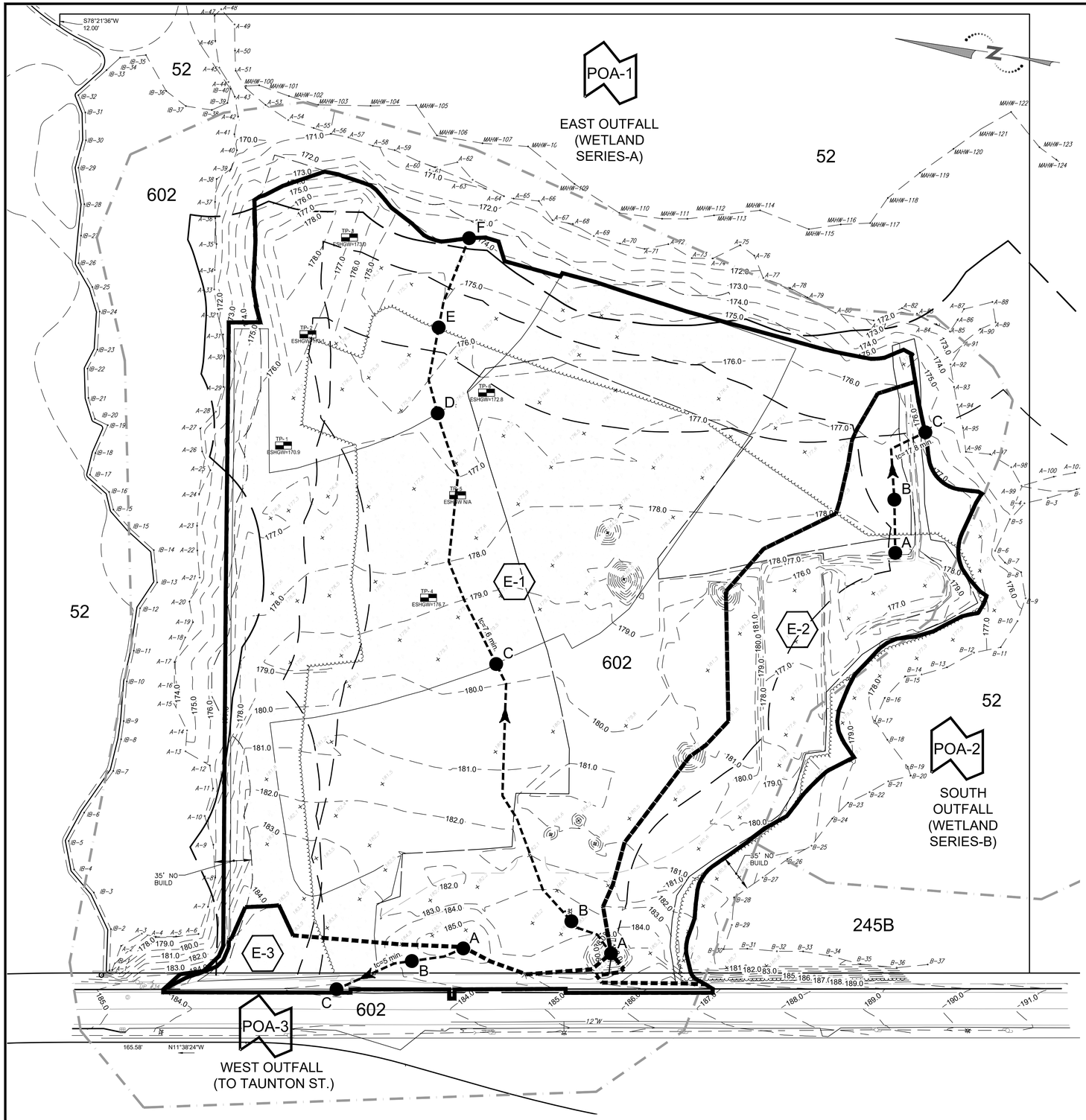
43 Taunton Street
Plainville, MA 02762

2/23/2022

N
W E
S

0 200 400 800 Feet

1 in = 400 ft



NOTES:

1. SOIL BOUNDARY SHOWN HEREON TAKEN FROM "SOIL SURVEY OF NORFOLK AND SUFFOLK COUNTIES, MASSACHUSETTS" USDA SCS, SEPTEMBER 1989.

SYMBOL LEGEND

———	WATERSHED BOUNDARY
— — —	SUB-WATERSHED AREA
- - - -	TIME OF CONCENTRATION
➤	TIME OF CONCENTRATION FLOW PATH
POA 1	POINT OF ANALYSIS DESIGNATION
E-1	SUB-WATERSHED DESIGNATION
———	SOIL BOUNDARY

USDA SOIL CLASSIFICATION	
SOIL CLASSIFICATION NUMBER	SOIL DESCRIPTION
245B	HINCKLEY LOAMY SAND, 3 TO 8 PERCENT SLOPES, HSG A
52	FREETOWN MUCK, 0 TO 1 PERCENT SLOPES, HSG B/D
602	URBAN LAND, 0 TO 15 PERCENT SLOPES, NO HSG

PRE-DEVELOPMENT WATERSHED SUMMARY

WATERSHED AREA: E-1
- TOTAL AREA = 315,045 SF
- WOODS HSG C = 55,136 SF
- PAVEMENT = 143,096 SF
- GRAVEL = 1116813 SF
- CURVE NUMBER (CN) = 90
- TIME OF CONCENTRATION (Tc) = 7.6 MIN

WATERSHED AREA: E-2
- TOTAL AREA = 67,511 SF
- WOODS HSG C = 13,622 SF
- GRAVEL = 53,889 SF
- CURVE NUMBER (CN) = 85
- TIME OF CONCENTRATION (Tc) = 17.8 MIN

WATERSHED AREA: E-3
- TOTAL AREA = 16,800 SF
- WOODS HSG C = 166 SF
- PAVEMENT = 11,464 SF
- GRAVEL = 5,170 SF
- CURVE NUMBER (CN) = 95
- TIME OF CONCENTRATION (Tc) = 5.0 MIN

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www.HighpointEng.com

CLIENT:
THE SHEARWATER COMPANIES

CONSULTANT:

SEAL

PROPOSED INDUSTRIAL BUILDING

43 TAUNTON STREET
PLAINVILLE, MA 02762

OWNER/APPLICANT: TSC TAUNTON STREET 43 LLC c/o THE SHEARWATER COMPANIES

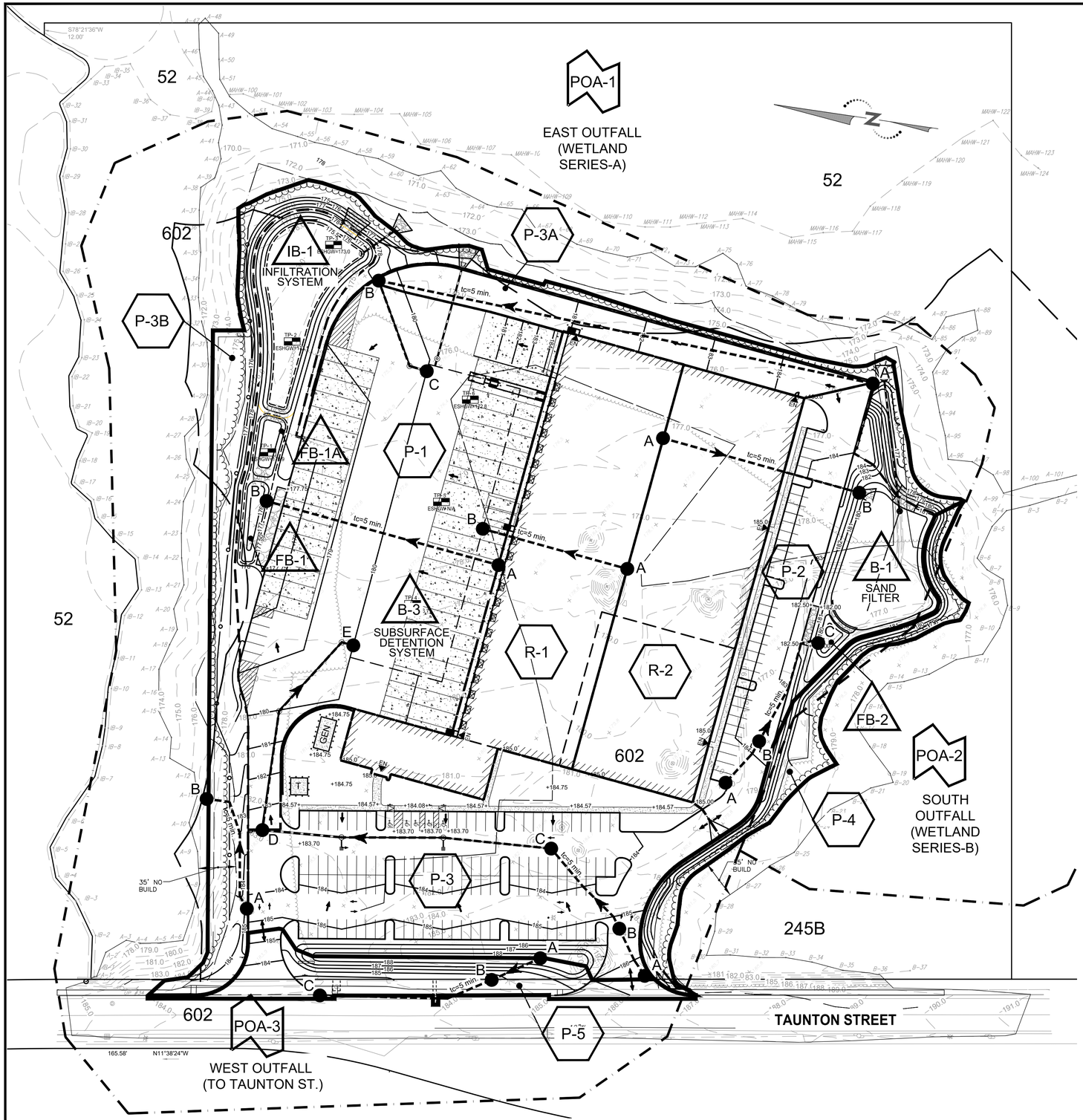
REV DATE DESCRIPTION

ISSUE TYPE:
PERMIT SUBMISSION
ISSUE DATE:
3.04.2022
PROJECT NUMBER:
21018

DRAWN BY: AB
CHECKED BY: JA/DTB

SHEET TITLE:
PRE-DEVELOPMENT WATERSHED MAP

SHEET NUMBER:
PRE-DEV



NOTES:

1. SOIL BOUNDARY SHOWN HEREON TAKEN FROM "SOIL SURVEY OF NORFOLK AND SUFFOLK COUNTIES, MASSACHUSETTS" USDA SCS, SEPTEMBER 1989.

SYMBOL LEGEND

———	WATERSHED BOUNDARY
— — —	SUB-WATERSHED AREA
- - - -	TIME OF CONCENTRATION
➤	TIME OF CONCENTRATION FLOW PATH
POA 1	POINT OF ANALYSIS DESIGNATION
B-1	STORMWATER BASIN DESIGNATION
P-1	SUB-WATERSHED DESIGNATION
— · — · —	SOIL BOUNDARY

USDA SOIL CLASSIFICATION	
SOIL CLASSIFICATION NUMBER	SOIL DESCRIPTION
245B	HINCKLEY LOAMY SAND, 3 TO 8 PERCENT SLOPES, HSG A
52	FREETOWN MUCK, 0 TO 1 PERCENT SLOPES, HSG B/D
602	URBAN LAND, 0 TO 15 PERCENT SLOPES, NO HSG

POST-DEVELOPMENT WATERSHED SUMMARY

WATERSHED AREA: P-1
- TOTAL AREA = 108,403 SF
- OPEN SPACE HSG C = 8,261 SF
- PAVEMENT = 87,749 SF
- WATER SURFACE = 12,393 SF
- CURVE NUMBER (CN) = 96
- TIME OF CONCENTRATION (Tc) = 5.0 MIN

WATERSHED AREA: P-2
- TOTAL AREA = 39,922 SF
- OPEN SPACE HSG C = 9,196 SF
- PAVEMENT = 21,591 SF
- WATER SURFACE = 9,135 SF
- CURVE NUMBER (CN) = 92
- TIME OF CONCENTRATION (Tc) = 5.0 MIN

WATERSHED AREA: P-3
- TOTAL AREA = 68,527 SF
- OPEN SPACE HSG C = 20,187 SF
- PAVEMENT = 48,340 SF
- CURVE NUMBER (CN) = 91
- TIME OF CONCENTRATION (Tc) = 5.0 MIN

WATERSHED AREA: P-3A
- TOTAL AREA = 13,953 SF
- OPEN SPACE HSG C = 0 SF
- PAVEMENT = 13,953 SF
- CURVE NUMBER (CN) = 98
- TIME OF CONCENTRATION (Tc) = 5.0 MIN

WATERSHED AREA: P-3B
- TOTAL AREA = 39,502 SF
- OPEN SPACE HSG C = 39,502 SF
- PAVEMENT = 0 SF
- CURVE NUMBER (CN) = 74
- TIME OF CONCENTRATION (Tc) = 5.0 MIN

WATERSHED AREA: P-4
- TOTAL AREA = 13,896 SF
- OPEN SPACE HSG C = 13,896 SF
- PAVEMENT = 0 SF
- CURVE NUMBER (CN) = 74
- TIME OF CONCENTRATION (Tc) = 5.0 MIN

WATERSHED AREA: P-5
- TOTAL AREA = 15,100 SF
- OPEN SPACE HSG C = 8,251 SF
- PAVEMENT = 6,849 SF
- CURVE NUMBER (CN) = 85
- TIME OF CONCENTRATION (Tc) = 5.0 MIN

WATERSHED AREA: R-1
- TOTAL AREA = 53,577 SF
- BLDG & PAVEMENT = 53,577 SF
- CURVE NUMBER (CN) = 98
- TIME OF CONCENTRATION (Tc) = 5.0 MIN

WATERSHED AREA: R-2
- TOTAL AREA = 46,476 SF
- BLDG & PAVEMENT = 46,476 SF
- CURVE NUMBER (CN) = 98
- TIME OF CONCENTRATION (Tc) = 5.0 MIN

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www.HighpointEng.com

CLIENT:
THE SHEARWATER COMPANIES

CONSULTANT:

SEAL

PROPOSED INDUSTRIAL BUILDING

43 TAUNTON STREET
PLAINVILLE, MA 02762

OWNER/APPLICANT: TSC TAUNTON STREET 43 LLC c/o THE SHEARWATER COMPANIES

REV DATE DESCRIPTION

ISSUE TYPE:
PERMIT SUBMISSION

ISSUE DATE:
3.04.2022

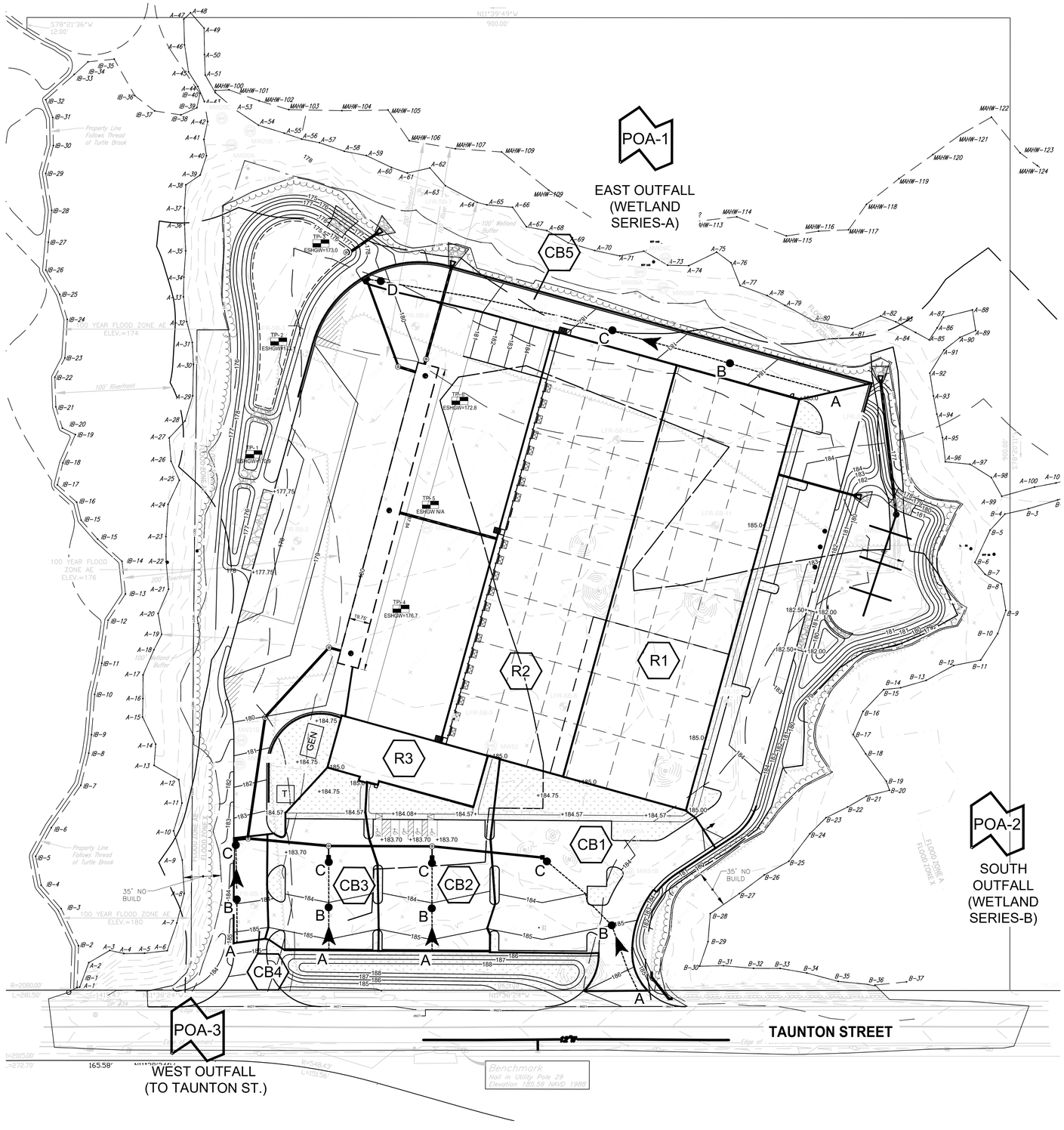
PROJECT NUMBER:
21018

DRAWN BY: AB

CHECKED BY: JA/DTB

SHEET TITLE:
POST-DEVELOPMENT WATERSHED MAP

SHEET NUMBER:
POST-DEV



SUBCATCHMENT SUMMARY		
SUBCAT NAME	GROUND COVER	AREA (SF)
CB1	WOODS	0
	OPEN	7306.3
	IMP	19913.6
	TOTAL	27219.9
CB2	WOODS	0
	OPEN	2977.2
	IMP	13446.3
	TOTAL	16423.5
CB3	WOODS	0
	OPEN	2938.7
	IMP	11438.4
	TOTAL	14377.1
CB4	WOODS	0
	OPEN	0
	IMP	3009.4
	TOTAL	3009.4
CB5	WOODS	0
	OPEN	0
	IMP	14122.92
	TOTAL	14122.92
ROOF-1	IMP	46545.6
	TOTAL	46545.6
ROOF-2	IMP	46545.6
	TOTAL	46545.6
ROOF-3	IMP	6993.2
	TOTAL	6993.2

SYMBOL LEGEND

	WATERSHED BOUNDARY
	SUBCATCHMENT AREA
	TIME OF CONCENTRATION
	TIME OF CONCENTRATION FLOW PATH
POA 1	POINT OF ANALYSIS DESIGNATION
P-1	WATERSHED DESIGNATION

50 0 25 50 100 200
GRAPHIC SCALE 1 inch = 50 ft.

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www.HighpointEng.com

CLIENT: The Shearwater Companies

CONSULTANT:

SEAL

PROPOSED INDUSTRIAL BUILDING

43 TAUNTON STREET
PLAINVILLE, MA 02762

OWNER/APPLICANT: TSC TAUNTON STREET 43 LLC c/o THE SHEARWATER COMPANIES

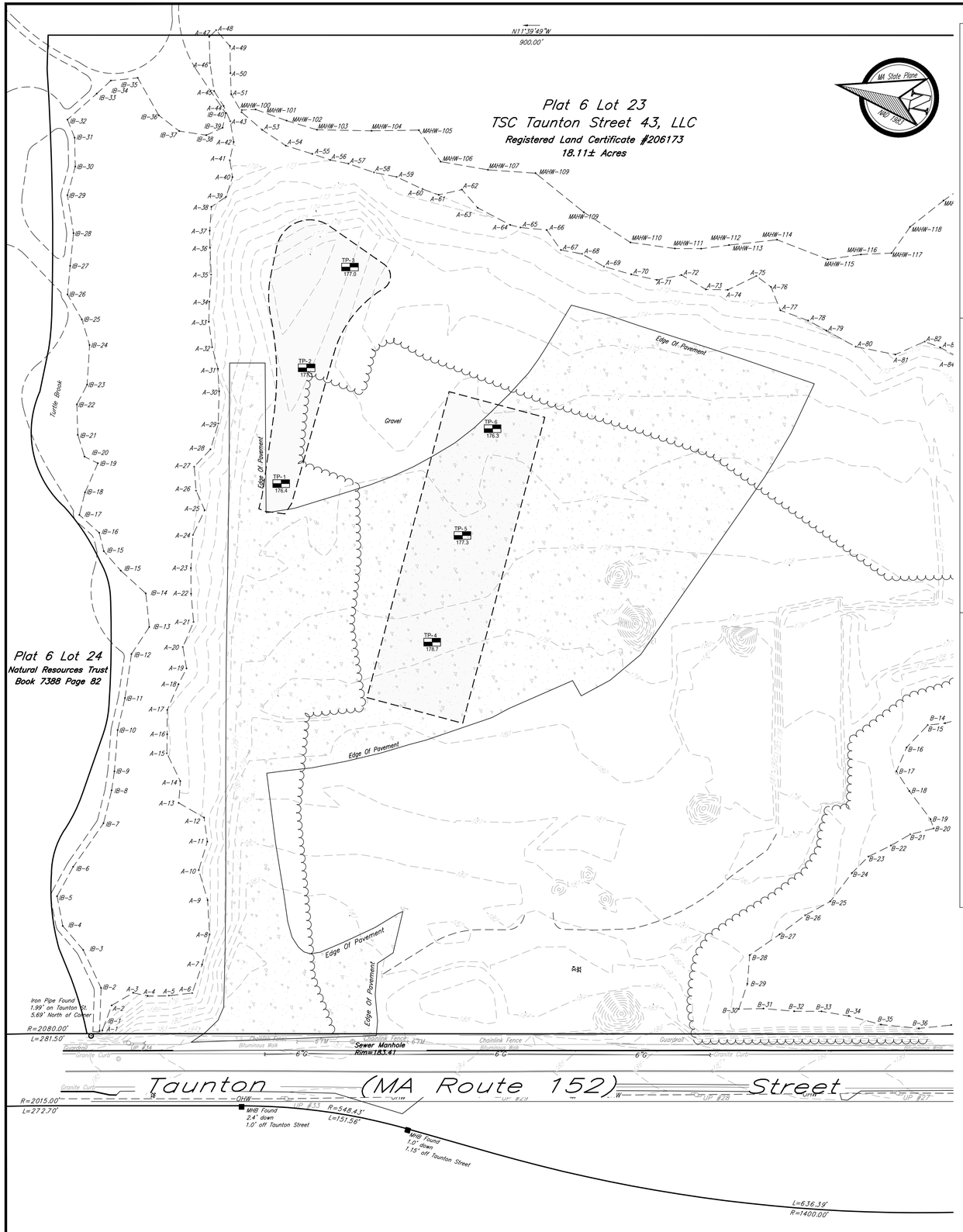
REV	DATE	DESCRIPTION

ISSUE TYPE: PERMIT SUBMISSION
ISSUE DATE: 3.04.2022
PROJECT NUMBER: 21018

DRAWN BY: AB
CHECKED BY: JA/DTB

SHEET TITLE: WATERSHED CATCH BASIN SUBCATCHMENT AREAS

SHEET NUMBER: SUBCAT



Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

EG=176.4
ESHGW=170.9

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-1 (Hole #) January 28, 2022 (Date) 9:15 AM (Time) Cloudy (Weather) (Latitude) (Longitude)

1. Land Use: Vacant lot; former drive-in (e.g., woodland, agricultural field, vacant lot, etc.); Evergreen and deciduous trees (Vegetation); Some stones (Surface Stones (e.g., cobbles, stones, boulders, etc.)); 2% (Slope (%))
Description of Location: Evergreen wooded area; north edge of developed site
2. Soil Parent Material: Lodgment till; Outwash plain (Landform); Plain (Position on Landscape (SU, SH, BS, FS, TS, Plain))
3. Distances from: Open Water Body 150 feet; Drainage Way >500 feet; Wetlands 70 feet; Property Line 150 feet; Drinking Water Well >500 feet; Other ____ feet
4. Unsuitable Materials Present: ☑ Yes ☐ No If Yes: ☑ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock
5. Groundwater Observed: ☑ Yes ☐ No If yes: 82" Depth to Weeping in Hole; Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features: Depth	Color	Percent	Coarse Fragments % by Volume: Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
0-10	Fill1	LS	10YR 2/2	N/A	Cnc : Dpt:	N/A	0	0	Gran	VFri	
10-36	Fill2	Med S	10YR 6/4	N/A	Cnc : Dpt:	N/A	15	Trace	BG	Fri	Rounded; roots to 36"
36-66	Fill3	SL	10YR 6/4	N/A	Cnc : Dpt:	N/A	10	Trace	Msav	Fri	Sub-ang agg; trace roots
66-84	C	SCL	10YR 6/2	66"	Cnc : 5YR 5/6 Dpt: 5YR 6/2	30	Trace	Trace	Msav	Fri	Moist; sticky
					Cnc : Dpt:						
					Cnc : Dpt:						

Additional Notes: Caving throughout

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Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

EG=178.7
ESHGW=176.7

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-4 (Hole #) January 28, 2022 (Date) 9:45 AM (Time) Cloudy (Weather) (Latitude) (Longitude)

1. Land Use: Vacant lot; former drive-in (e.g., woodland, agricultural field, vacant lot, etc.); Evergreen scrub (Vegetation); Some stones (Surface Stones (e.g., cobbles, stones, boulders, etc.)); 2% (Slope (%))
Description of Location: Paved area; former drive-in parking field
2. Soil Parent Material: Lodgment till; Outwash plain (Landform); Plain (Position on Landscape (SU, SH, BS, FS, TS, Plain))
3. Distances from: Open Water Body >250 feet; Drainage Way >500 feet; Wetlands >200 feet; Property Line >250 feet; Drinking Water Well >500 feet; Other ____ feet
4. Unsuitable Materials Present: ☑ Yes ☐ No If Yes: ☑ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock
5. Groundwater Observed: ☑ Yes ☐ No If yes: Depth to Weeping in Hole; 55" Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features: Depth	Color	Percent	Coarse Fragments % by Volume: Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
0-6	Fill1	N/A			Cnc : Dpt:						Asphalt pavement
6-24	Fill2	BL	10YR 6/6	N/A	Cnc : Dpt:	N/A	10	Trace	Msav	Fri	Buried elec wires @ 18"
24-36	Fill3	SCL	10YR 2/1	24"	Cnc : 5YR 5/6 Dpt: 5YR 6/2	25	10	10	Msav	Fri	Angular agg
36-67	B	FSL	10YR 6/4	36"	Cnc : 5YR 5/6 Dpt: 5YR 6/2	10	10	10	Msav	Fri	
					Cnc : Dpt:						
					Cnc : Dpt:						

Additional Notes:

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Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

EG=177.1
ESHGW=173.1

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-2 (Hole #) January 28, 2022 (Date) 8:45 AM (Time) Cloudy (Weather) (Latitude) (Longitude)

1. Land Use: Vacant lot; former drive-in (e.g., woodland, agricultural field, vacant lot, etc.); Evergreen and deciduous trees (Vegetation); Some stones (Surface Stones (e.g., cobbles, stones, boulders, etc.)); 2% (Slope (%))
Description of Location: Evergreen wooded area; north edge of developed site
2. Soil Parent Material: Lodgment till; Outwash plain (Landform); Plain (Position on Landscape (SU, SH, BS, FS, TS, Plain))
3. Distances from: Open Water Body 200 feet; Drainage Way >500 feet; Wetlands 80 feet; Property Line 200 feet; Drinking Water Well >500 feet; Other ____ feet
4. Unsuitable Materials Present: ☑ Yes ☐ No If Yes: ☑ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock
5. Groundwater Observed: ☑ Yes ☐ No If yes: ____ Depth to Weeping in Hole; 72" Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features: Depth	Color	Percent	Coarse Fragments % by Volume: Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
0-6	Fill1	LS	10YR 2/2	N/A	Cnc : Dpt:	N/A	Trace	0	Gran	VFri	
6-36	Fill2	LS	10YR 6/6	N/A	Cnc : Dpt:	N/A	Trace	Trace	SG	Fri	
36-48	Fill3	BL	10YR 6/3	48"	Cnc : 5YR 5/6 Dpt: 5YR 6/2	25	15	Trace	Msav	Fri	Well-graded; rounded agg
48-66	Fill4	CL	10YR 2/1	48"	Cnc : 5YR 5/6 Dpt: 5YR 6/2	25	Trace	Trace	Msav	Fri	Sticky; noodle, 1/2" ribbon; moist; trace roots
66-84	C	SCL	10YR 1/1	66"	Cnc : 5YR 5/6 Dpt: 5YR 6/2	25	Trace	15	Msav	VFri	Wet; sticky
					Cnc : Dpt:						

Additional Notes: Trace boulders w/in 2' of ground surface

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Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

EG=177.3
ESHGW N/O

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-5 (Hole #) January 28, 2022 (Date) 10:30 AM (Time) Cloudy (Weather) (Latitude) (Longitude)

1. Land Use: Vacant lot; former drive-in (e.g., woodland, agricultural field, vacant lot, etc.); Evergreen scrub (Vegetation); Some stones (Surface Stones (e.g., cobbles, stones, boulders, etc.)); 2% (Slope (%))
Description of Location: Paved area; former drive-in parking field
2. Soil Parent Material: Lodgment till; Outwash plain (Landform); Plain (Position on Landscape (SU, SH, BS, FS, TS, Plain))
3. Distances from: Open Water Body >250 feet; Drainage Way >500 feet; Wetlands >200 feet; Property Line >250 feet; Drinking Water Well >500 feet; Other ____ feet
4. Unsuitable Materials Present: ☑ Yes ☐ No If Yes: ☑ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☑ Bedrock
5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole; ____ Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features: Depth	Color	Percent	Coarse Fragments % by Volume: Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
0-2	Fill1	N/A			Cnc : Dpt:						Asphalt pavement
2-26	Fill2	LS	10YR 6/6	N/A	Cnc : Dpt:	N/A	15	Trace	SG	VFri	Refusal @ 24-26"
					Cnc : Dpt:						
					Cnc : Dpt:						
					Cnc : Dpt:						
					Cnc : Dpt:						

Additional Notes:

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Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

EG=177.0
ESHGW=173.0

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-3 (Hole #) January 28, 2022 (Date) 8:15 AM (Time) Cloudy (Weather) (Latitude) (Longitude)

1. Land Use: Vacant lot; former drive-in (e.g., woodland, agricultural field, vacant lot, etc.); Evergreen and deciduous trees (Vegetation); Some stones (Surface Stones (e.g., cobbles, stones, boulders, etc.)); 20% (Slope (%))
Description of Location: Bottom of man-made berm; northeast corner of developed site
2. Soil Parent Material: Lodgment till; Outwash plain (Landform); Plain (Position on Landscape (SU, SH, BS, FS, TS, Plain))
3. Distances from: Open Water Body >100 feet; Drainage Way >500 feet; Wetlands 85 feet; Property Line 200 feet; Drinking Water Well >500 feet; Other ____ feet
4. Unsuitable Materials Present: ☑ Yes ☐ No If Yes: ☑ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock
5. Groundwater Observed: ☑ Yes ☐ No If yes: ____ Depth to Weeping in Hole; 72" Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features: Depth	Color	Percent	Coarse Fragments % by Volume: Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
0-10	Fill1	LS	10YR 2/2	N/A	Cnc : Dpt:	N/A	Trace	0	Gran	VFri	
10-36	Fill2	Med S	10YR 6/6	N/A	Cnc : Dpt:	N/A	10	Trace	SG	Fri	
36-48	C1	SCL	10YR 2/1	N/A	Cnc : Dpt:	N/A	15	Trace	Msav	Fri	Angular agg; trace roots
48-66	C2	SCL	10YR 6/2	48"	Cnc : 5YR 5/6 Dpt: 5YR 6/2	10	25	25	Msav	Fri	Angular agg; sticky
66-84	C3	CL	10YR 1/1	66"	Cnc : 5YR 5/6 Dpt: 5YR 6/2	10	Trace	Trace	Msav	VFri	Saturated; very sticky
					Cnc : Dpt:						

Additional Notes: Caving throughout

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Commonwealth of Massachusetts
City/Town of

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

EG=176.3
ESHGW=172.8

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-6 (Hole #) January 28, 2022 (Date) 10:40 AM (Time) Cloudy (Weather) (Latitude) (Longitude)

1. Land Use: Vacant lot; former drive-in (e.g., woodland, agricultural field, vacant lot, etc.); Evergreen scrub (Vegetation); Some stones (Surface Stones (e.g., cobbles, stones, boulders, etc.)); 2% (Slope (%))
Description of Location: Paved area; former drive-in parking field
2. Soil Parent Material: Lodgment till; Outwash plain (Landform); Plain (Position on Landscape (SU, SH, BS, FS, TS, Plain))
3. Distances from: Open Water Body >250 feet; Drainage Way >500 feet; Wetlands >150 feet; Property Line >250 feet; Drinking Water Well >500 feet; Other ____ feet
4. Unsuitable Materials Present: ☑ Yes ☐ No If Yes: ☑ Disturbed Soil/Fill Material ☑ Weathered/Fractured Rock ☑ Bedrock
5. Groundwater Observed: ☐ Yes ☒ No If yes: ____ Depth to Weeping in Hole; ____ Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features: Depth	Color	Percent	Coarse Fragments % by Volume: Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
0-2	Fill1	N/A			Cnc : Dpt:						Asphalt pavement
2-24	Fill2	LS	10YR 6/6	N/A	Cnc : Dpt:	N/A	Trace	0	SG	VFri	Trace org; elec wire @ 18"
24-36	C1	SL	10YR 6/2	N/A	Cnc : Dpt:	N/A	10	50	SG	Fri	Fractured rock
36-60	C2	SCL	10YR 6/2	42"	Cnc : 5YR 5/6 Dpt: 5YR 6/2	25	10	Trace	Msav	Firm	Refusal varies 24" to 60"
					Cnc : Dpt:						
					Cnc : Dpt:						

Additional Notes:

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NOTES

1. TEST PIT LOCATIONS SHOWN HEREON WERE CONDUCTED ON JANUARY 28, 2022 BY HIGHPOINT ENGINEERING, INC. BACKHOE EXCAVATOR SUPPORT WAS PROVIDED BY ATL CONSTRUCTION CORP.
2. TEST PITS WERE CONDUCTED FOR PURPOSES OF SOIL TEXTURAL CLASSIFICATION AND DETERMINATION OF ESTIMATED SEASONAL HIGH GROUNDWATER ELEVATION TO SUPPORT STORMWATER MANAGEMENT SYSTEM DESIGN.
3. TEST PITS WERE WITNESSED BY THE TOWN OF PLAINVILLE BOARD OF HEALTH'S AGENT (GRAVES ENGINEERING).
4. SITE IS SUBJECT TO AN ACTIVITIES AND USE LIMITATION (AUL) ASSIGNED DEP RELEASE TRACKING NUMBER 4-0000877). TEST PIT EXCAVATION/BACKFILL AND SOIL EVALUATION ACTIVITIES WERE CONDUCTED ACCORDING TO A HEALTH AND SAFETY PLAN (HASP) PREPARED BY INLAND PROFESSIONAL CORP. (PROPERTY OWNER'S LICENSED SITE PROFESSIONAL (LSP) CONSULTANT) AND OVERSEEN BY SAME.

SYMBOL LEGEND	
TP-1 176.4	TEST PIT LOCATION
	PROPOSED DRAINAGE SYSTEM FOOTPRINT
	EXISTING PAVEMENT
	EXISTING TREELINE

50 0 25 50 100 200
GRAPHIC SCALE 1 inch = 50 ft.

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980 WASHINGTON ST., SUITE 216
DEDHAM, MA 02026
www.HighpointEng.com

CLIENT:
TSC Taunton Street 43, LLC
c/o The Shearwater Companies
175 Paramount Drive, Suite 100A
Raynham, MA 02767

CONSULTANT:

SEAL

PROPOSED INDUSTRIAL BUILDING

43 TAUNTON STREET
PLAINVILLE, MASSACHUSETTS
MAP 6, LOT 23

OWNER/APPLICANT: TSC TAUNTON STREET 43, LLC C/O THE SHEARWATER COMPANIES

REV	DATE	DESCRIPTION

ISSUE TYPE:
SOIL EVALUATION
ISSUE DATE:
JANUARY 30, 2022
PROJECT NUMBER:
21018

DRAWN BY: JJA
CHECKED BY: JJA

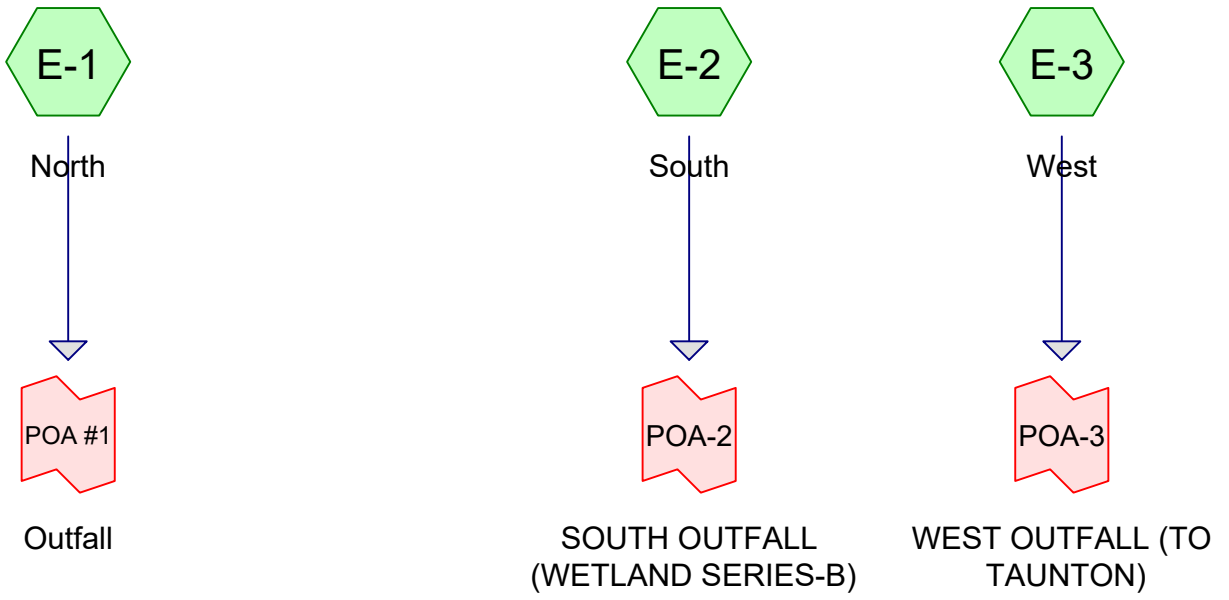
SHEET TITLE:
SOIL EVALUATION PLAN

SHEET NUMBER:
TP-001

ISSUED FOR : SOIL EVAL.

P:\Shearwater Companies (The)\21018 (43 Taunton St, Plainville T&M)\04_Design\Dwg\00_exhibit\test pits\21018-SOILEVAL.dwg

APPENDIX A – HYDROLOGIC CALCULATIONS



Subcat Reach Pond Link

Routing Diagram for 43 Taunton St Pre-Dev
Prepared by Highpoint Engineering, Inc., Printed 3/9/2022

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
175,872	89	Gravel roads, HSG C (E-1, E-2, E-3)
154,560	98	Paved parking, HSG C (E-1, E-3)
68,924	70	Woods, Good, HSG C (E-1, E-2, E-3)
399,356	**89**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
399,356	HSG C	E-1, E-2, E-3
0	HSG D	
0	Other	
399,356		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatchment Numbers
0	0	175,872	0	0	175,872	Gravel roads	E-1, E-2, E-3
0	0	154,560	0	0	154,560	Paved parking	E-1, E-3
0	0	68,924	0	0	68,924	Woods, Good	E-1, E-2, E-3
0	**0**	**399,356**	**0**	**0**	**399,356**	**TOTAL AREA**	

Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 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: North Runoff Area=315,045 sf 45.42% Impervious Runoff Depth=1.72"
Flow Length=733' Tc=7.6 min CN=90 Runoff=13.73 cfs 45,149 cf

Subcatchment E-2: South Runoff Area=67,511 sf 0.00% Impervious Runoff Depth=1.35"
Flow Length=708' Tc=9.8 min CN=85 Runoff=2.15 cfs 7,583 cf

Subcatchment E-3: West Runoff Area=16,800 sf 68.24% Impervious Runoff Depth=2.17"
Tc=5.0 min CN=95 Runoff=0.97 cfs 3,034 cf

Link POA #1: Outfall Inflow=13.73 cfs 45,149 cf
Primary=13.73 cfs 45,149 cf

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B) Inflow=2.15 cfs 7,583 cf
Primary=2.15 cfs 7,583 cf

Link POA-3: WEST OUTFALL (TO TAUNTON) Inflow=0.97 cfs 3,034 cf
Primary=0.97 cfs 3,034 cf

Total Runoff Area = 399,356 sf Runoff Volume = 55,766 cf Average Runoff Depth = 1.68"
61.30% Pervious = 244,796 sf 38.70% Impervious = 154,560 sf

Summary for Subcatchment E-1: North

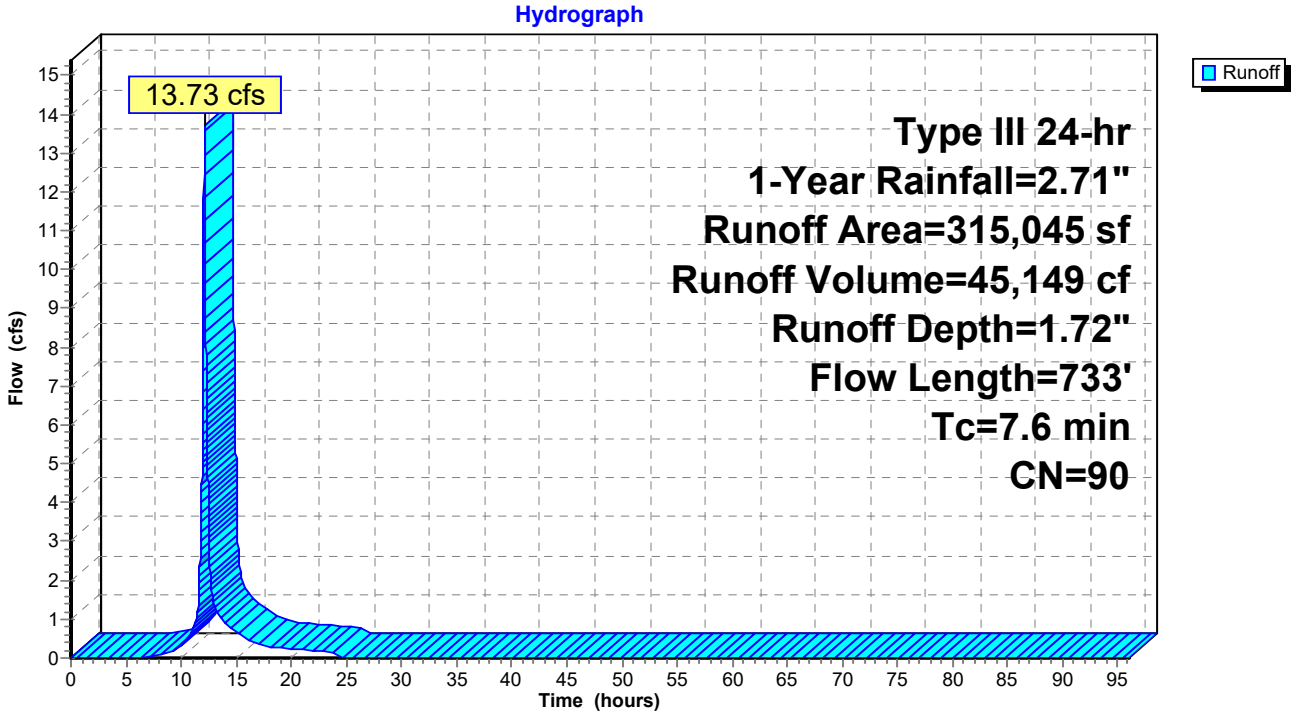
Runoff = 13.73 cfs @ 12.11 hrs, Volume= 45,149 cf, Depth= 1.72"
Routed to Link POA #1 : Outfall

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.71"

Area (sf)	CN	Description
143,096	98	Paved parking, HSG C
55,136	70	Woods, Good, HSG C
116,813	89	Gravel roads, HSG C
315,045	90	Weighted Average
171,949		54.58% Pervious Area
143,096		45.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	50	0.1600	0.83		**Sheet Flow,** Fallow n= 0.050 P2= 3.27"
2.0	262	0.0190	2.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.6	249	0.0160	2.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	83	0.0160	2.04		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.3	89	0.0169	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.6	733	Total			

Subcatchment E-1: North



Summary for Subcatchment E-2: South

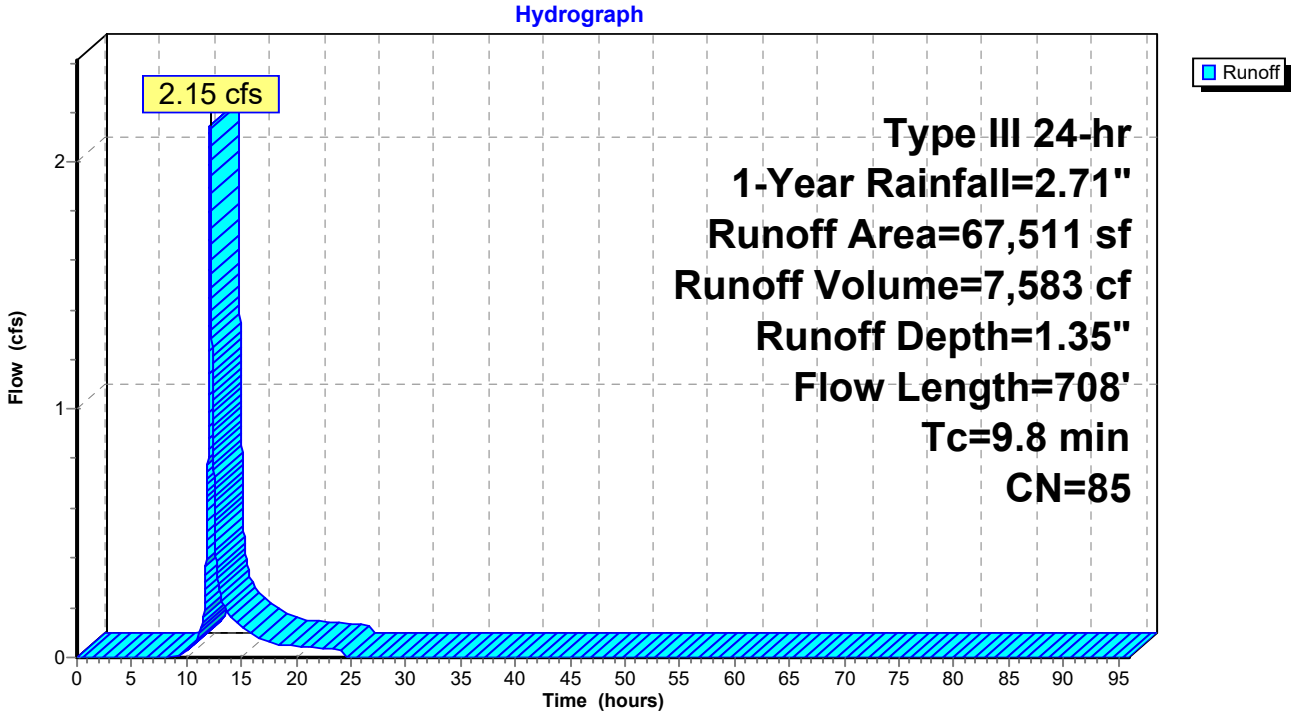
Runoff = 2.15 cfs @ 12.14 hrs, Volume= 7,583 cf, Depth= 1.35"
Routed to Link POA-2 : SOUTH OUTFALL (WETLAND SERIES-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.71"

Area (sf)	CN	Description
13,622	70	Woods, Good, HSG C
53,889	89	Gravel roads, HSG C
67,511	85	Weighted Average
67,511		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	50	0.1800	0.87		**Sheet Flow,** Fallow n= 0.050 P2= 3.27"
4.0	515	0.0180	2.16		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.8	143	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.8	708	Total			

Subcatchment E-2: South



Summary for Subcatchment E-3: West

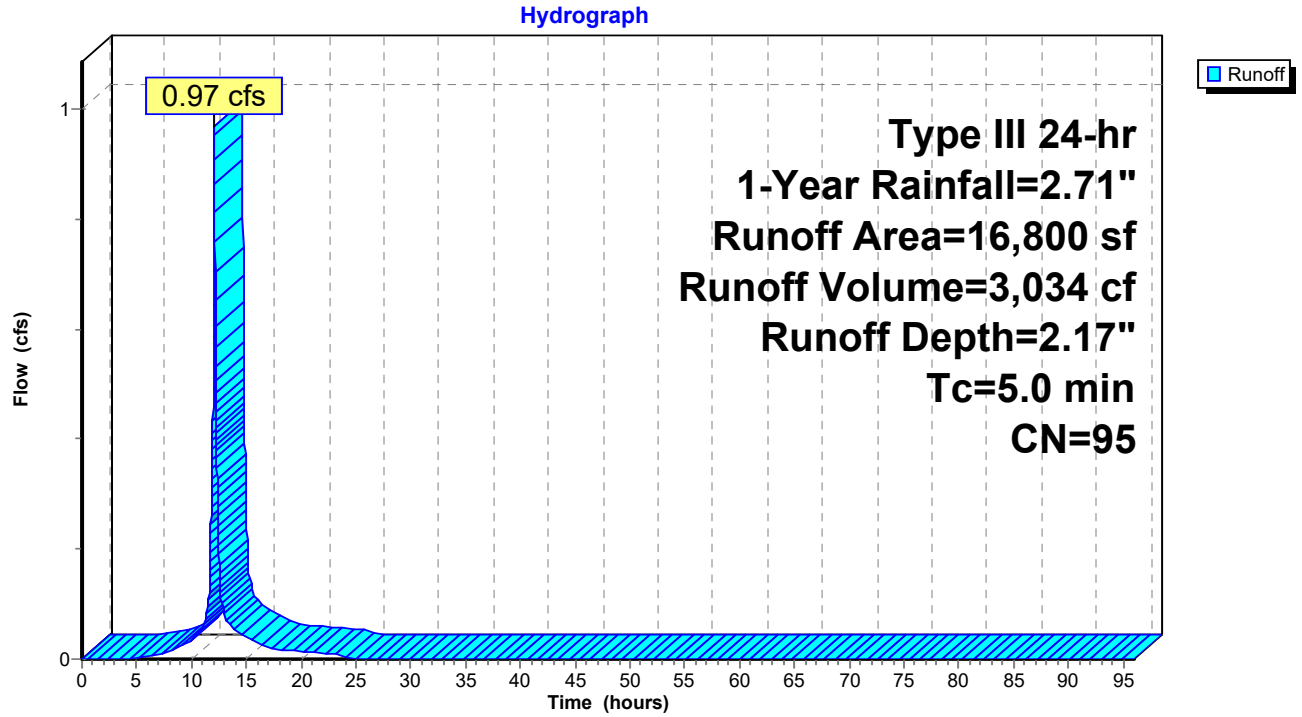
Runoff = 0.97 cfs @ 12.07 hrs, Volume= 3,034 cf, Depth= 2.17"
Routed to Link POA-3 : WEST OUTFALL (TO TAUNTON)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.71"

	Area (sf)	CN	Description
	11,464	98	Paved parking, HSG C
	166	70	Woods, Good, HSG C
*	5,170	89	Gravel roads, HSG C
	16,800	95	Weighted Average
	5,336		31.76% Pervious Area
	11,464		68.24% Impervious Area

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

Subcatchment E-3: West

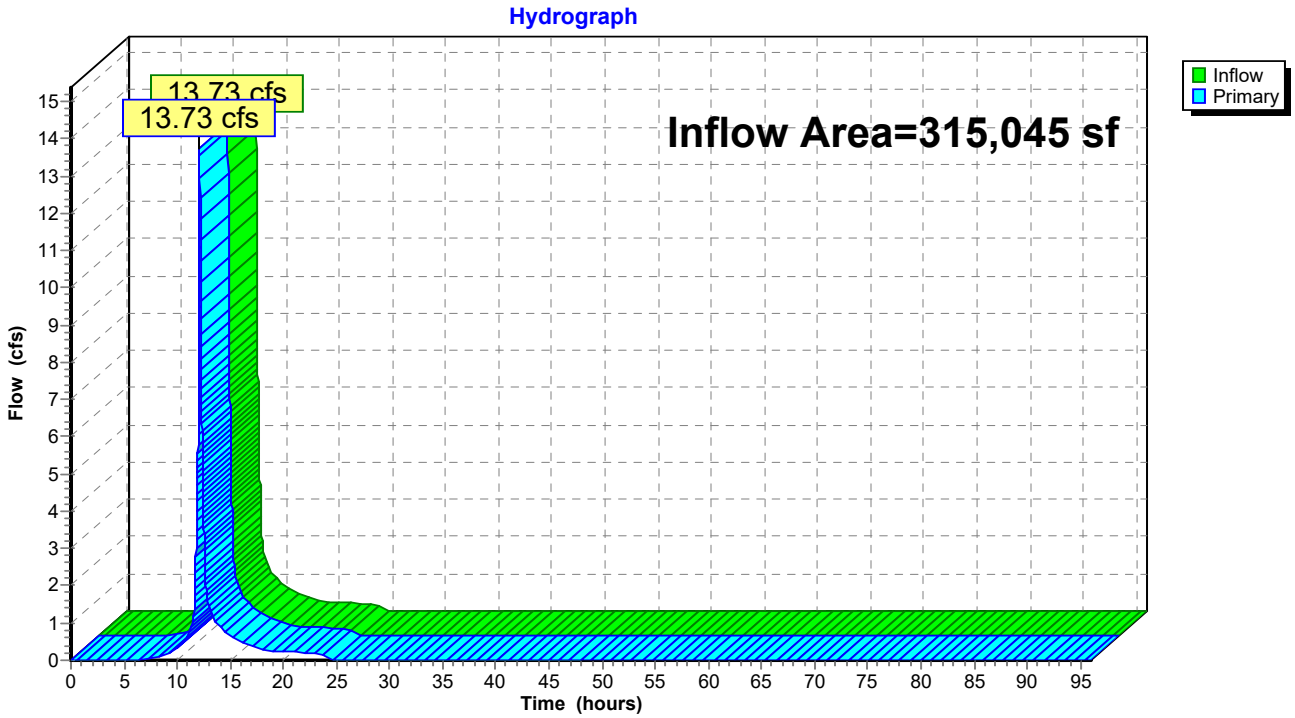


Summary for Link POA #1: Outfall

Inflow Area = 315,045 sf, 45.42% Impervious, Inflow Depth = 1.72" for 1-Year event
Inflow = 13.73 cfs @ 12.11 hrs, Volume= 45,149 cf
Primary = 13.73 cfs @ 12.11 hrs, Volume= 45,149 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA #1: Outfall

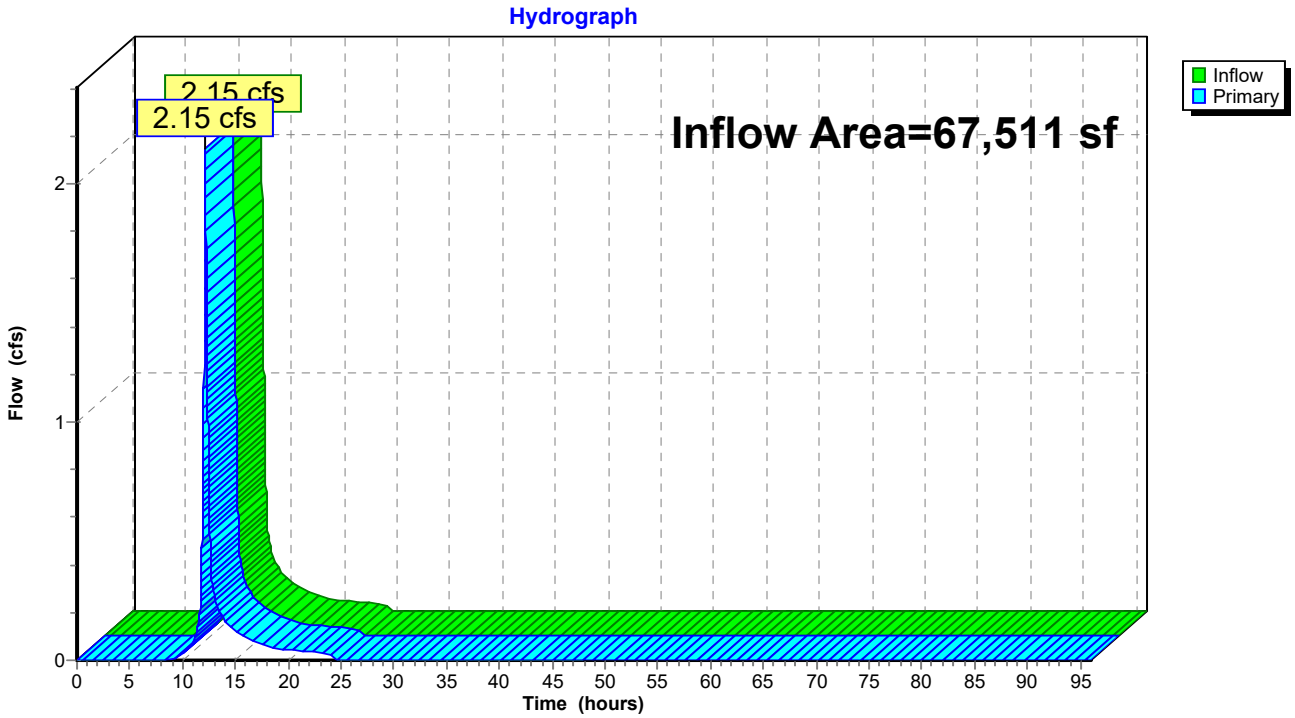


Summary for Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

Inflow Area = 67,511 sf, 0.00% Impervious, Inflow Depth = 1.35" for 1-Year event
Inflow = 2.15 cfs @ 12.14 hrs, Volume= 7,583 cf
Primary = 2.15 cfs @ 12.14 hrs, Volume= 7,583 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

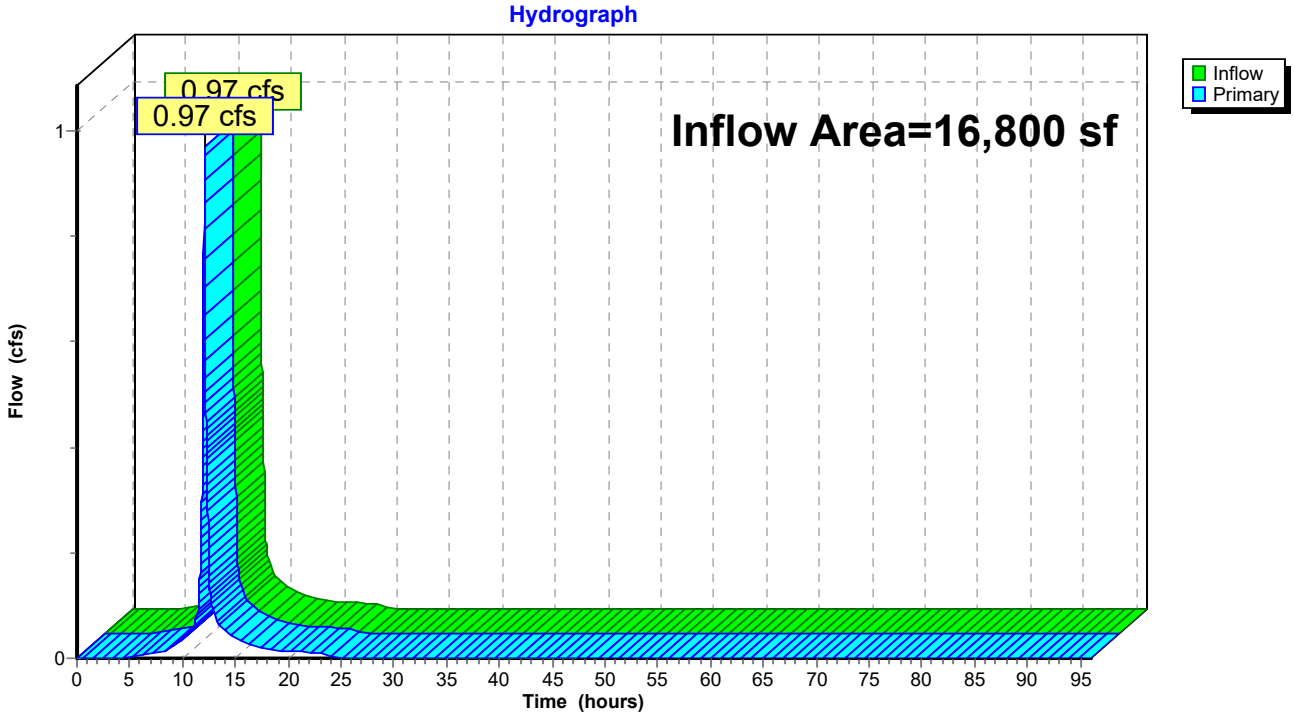


Summary for Link POA-3: WEST OUTFALL (TO TAUNTON)

Inflow Area = 16,800 sf, 68.24% Impervious, Inflow Depth = 2.17" for 1-Year event
Inflow = 0.97 cfs @ 12.07 hrs, Volume= 3,034 cf
Primary = 0.97 cfs @ 12.07 hrs, Volume= 3,034 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-3: WEST OUTFALL (TO TAUNTON)



Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 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: North Runoff Area=315,045 sf 45.42% Impervious Runoff Depth=2.23"
Flow Length=733' Tc=7.6 min CN=90 Runoff=17.71 cfs 58,638 cf

Subcatchment E-2: South Runoff Area=67,511 sf 0.00% Impervious Runoff Depth=1.82"
Flow Length=708' Tc=9.8 min CN=85 Runoff=2.91 cfs 10,225 cf

Subcatchment E-3: West Runoff Area=16,800 sf 68.24% Impervious Runoff Depth=2.71"
Tc=5.0 min CN=95 Runoff=1.20 cfs 3,799 cf

Link POA #1: Outfall Inflow=17.71 cfs 58,638 cf
Primary=17.71 cfs 58,638 cf

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B) Inflow=2.91 cfs 10,225 cf
Primary=2.91 cfs 10,225 cf

Link POA-3: WEST OUTFALL (TO TAUNTON) Inflow=1.20 cfs 3,799 cf
Primary=1.20 cfs 3,799 cf

Total Runoff Area = 399,356 sf Runoff Volume = 72,662 cf Average Runoff Depth = 2.18"
61.30% Pervious = 244,796 sf 38.70% Impervious = 154,560 sf

Summary for Subcatchment E-1: North

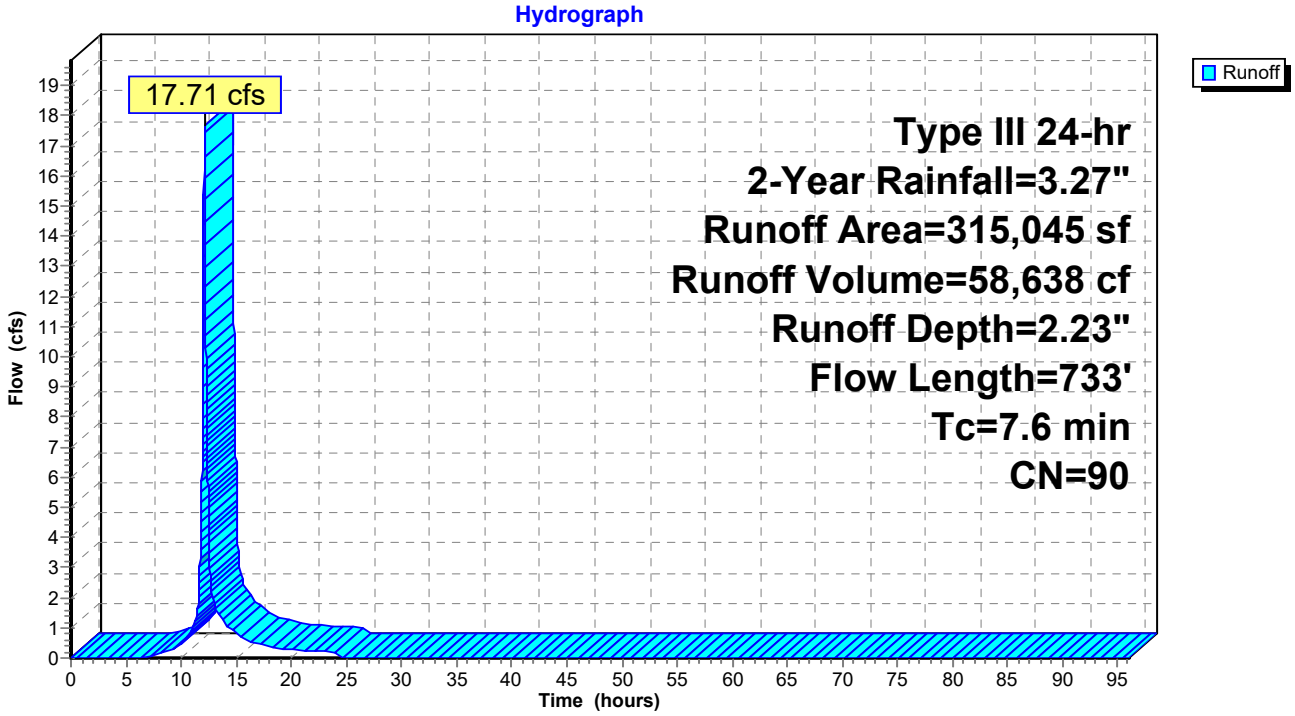
Runoff = 17.71 cfs @ 12.11 hrs, Volume= 58,638 cf, Depth= 2.23"
Routed to Link POA #1 : Outfall

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.27"

Area (sf)	CN	Description
143,096	98	Paved parking, HSG C
55,136	70	Woods, Good, HSG C
116,813	89	Gravel roads, HSG C
315,045	90	Weighted Average
171,949		54.58% Pervious Area
143,096		45.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	50	0.1600	0.83		**Sheet Flow,** Fallow n= 0.050 P2= 3.27"
2.0	262	0.0190	2.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.6	249	0.0160	2.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	83	0.0160	2.04		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.3	89	0.0169	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.6	733	Total			

Subcatchment E-1: North



Summary for Subcatchment E-2: South

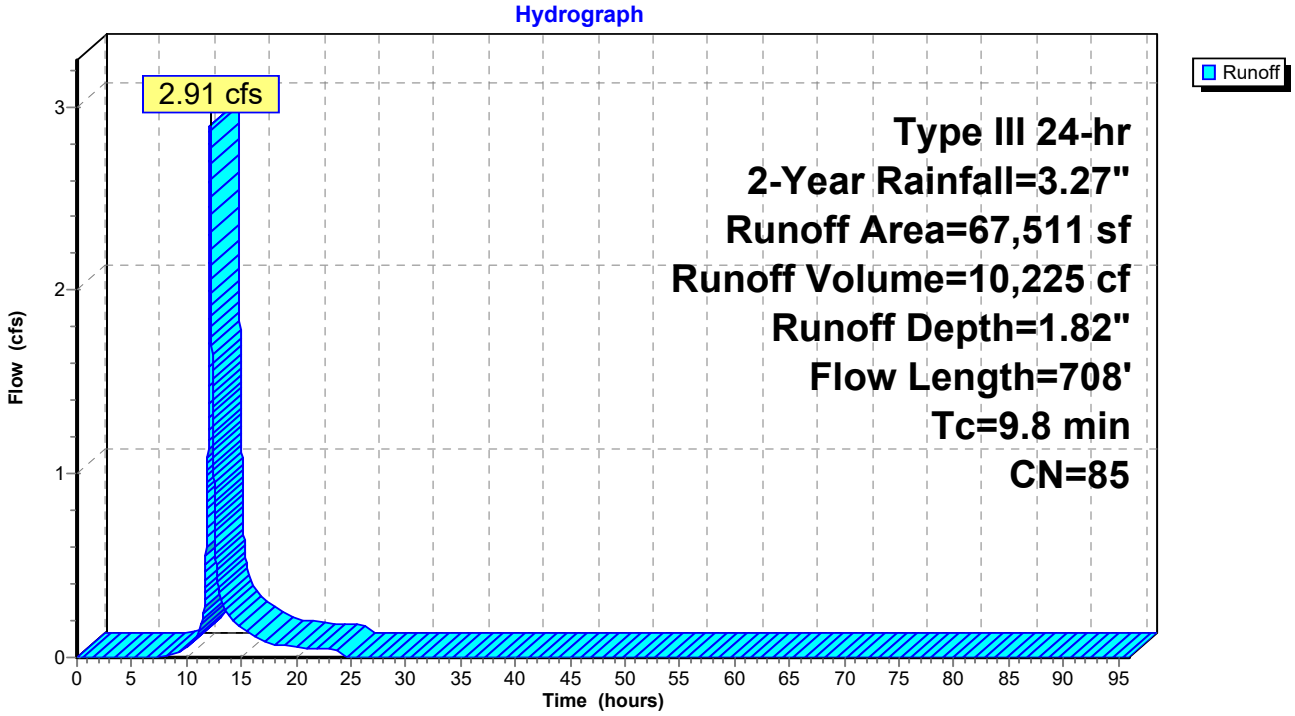
Runoff = 2.91 cfs @ 12.14 hrs, Volume= 10,225 cf, Depth= 1.82"
Routed to Link POA-2 : SOUTH OUTFALL (WETLAND SERIES-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.27"

Area (sf)	CN	Description
13,622	70	Woods, Good, HSG C
53,889	89	Gravel roads, HSG C
67,511	85	Weighted Average
67,511		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	50	0.1800	0.87		**Sheet Flow,** Fallow n= 0.050 P2= 3.27"
4.0	515	0.0180	2.16		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.8	143	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.8	708	Total			

Subcatchment E-2: South



Summary for Subcatchment E-3: West

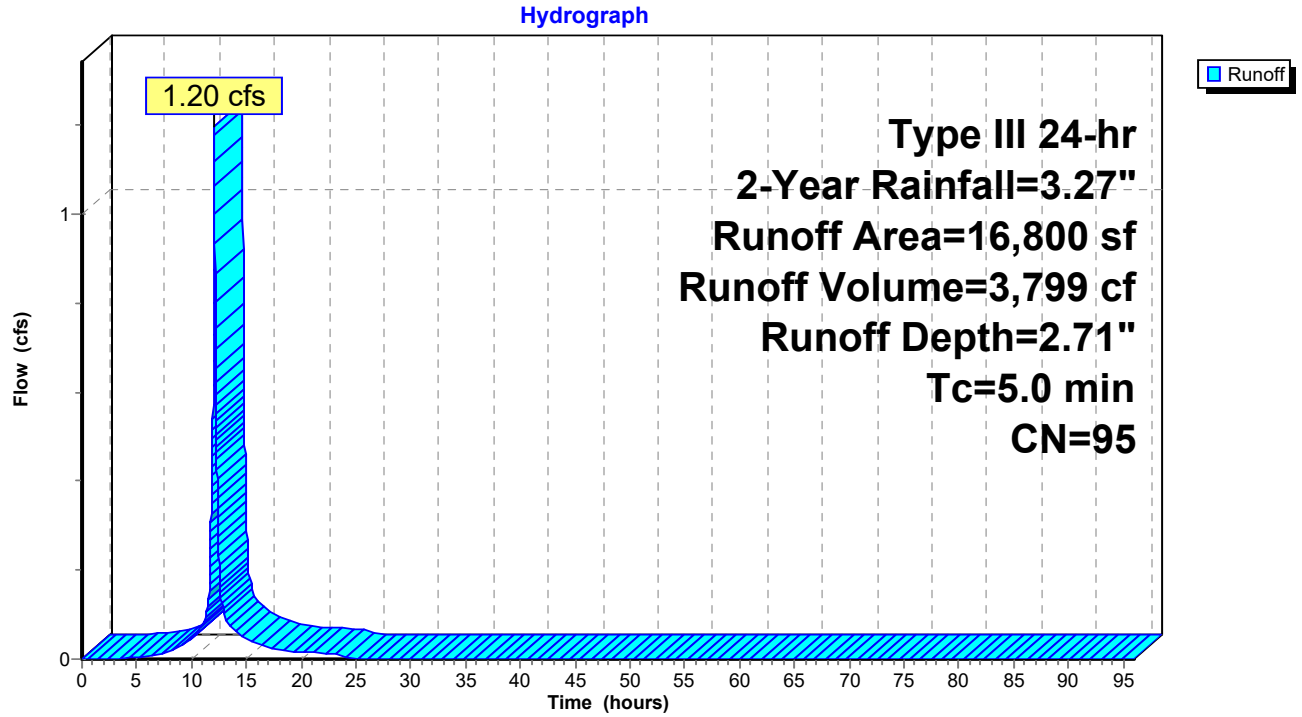
Runoff = 1.20 cfs @ 12.07 hrs, Volume= 3,799 cf, Depth= 2.71"
Routed to Link POA-3 : WEST OUTFALL (TO TAUNTON)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.27"

	Area (sf)	CN	Description
	11,464	98	Paved parking, HSG C
	166	70	Woods, Good, HSG C
*	5,170	89	Gravel roads, HSG C
	16,800	95	Weighted Average
	5,336		31.76% Pervious Area
	11,464		68.24% Impervious Area

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

Subcatchment E-3: West

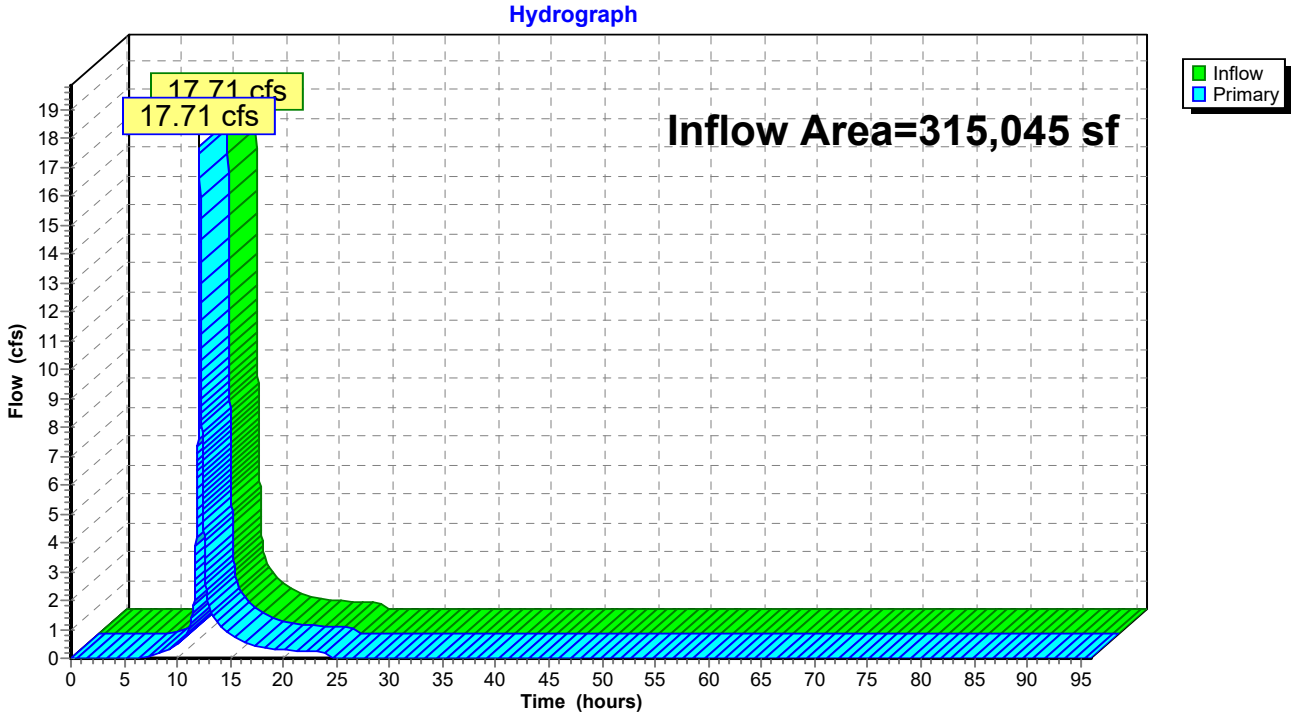


Summary for Link POA #1: Outfall

Inflow Area = 315,045 sf, 45.42% Impervious, Inflow Depth = 2.23" for 2-Year event
Inflow = 17.71 cfs @ 12.11 hrs, Volume= 58,638 cf
Primary = 17.71 cfs @ 12.11 hrs, Volume= 58,638 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA #1: Outfall

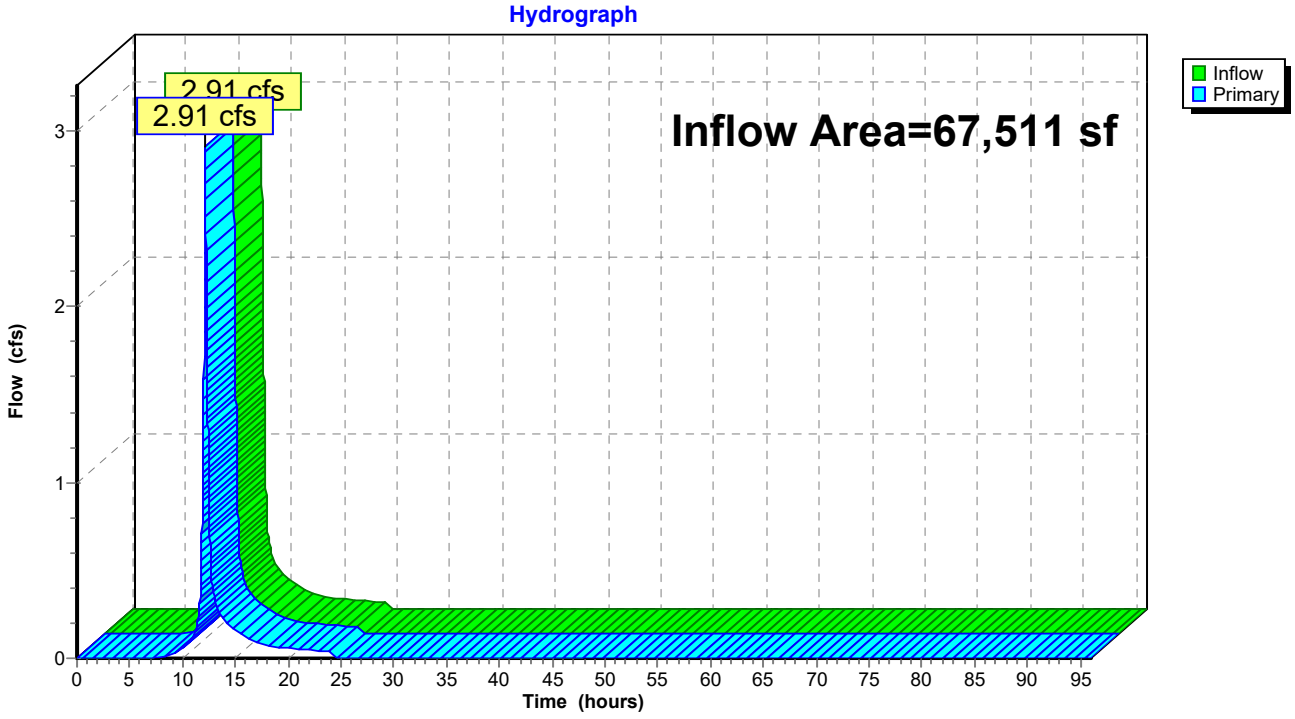


Summary for Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

Inflow Area = 67,511 sf, 0.00% Impervious, Inflow Depth = 1.82" for 2-Year event
Inflow = 2.91 cfs @ 12.14 hrs, Volume= 10,225 cf
Primary = 2.91 cfs @ 12.14 hrs, Volume= 10,225 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

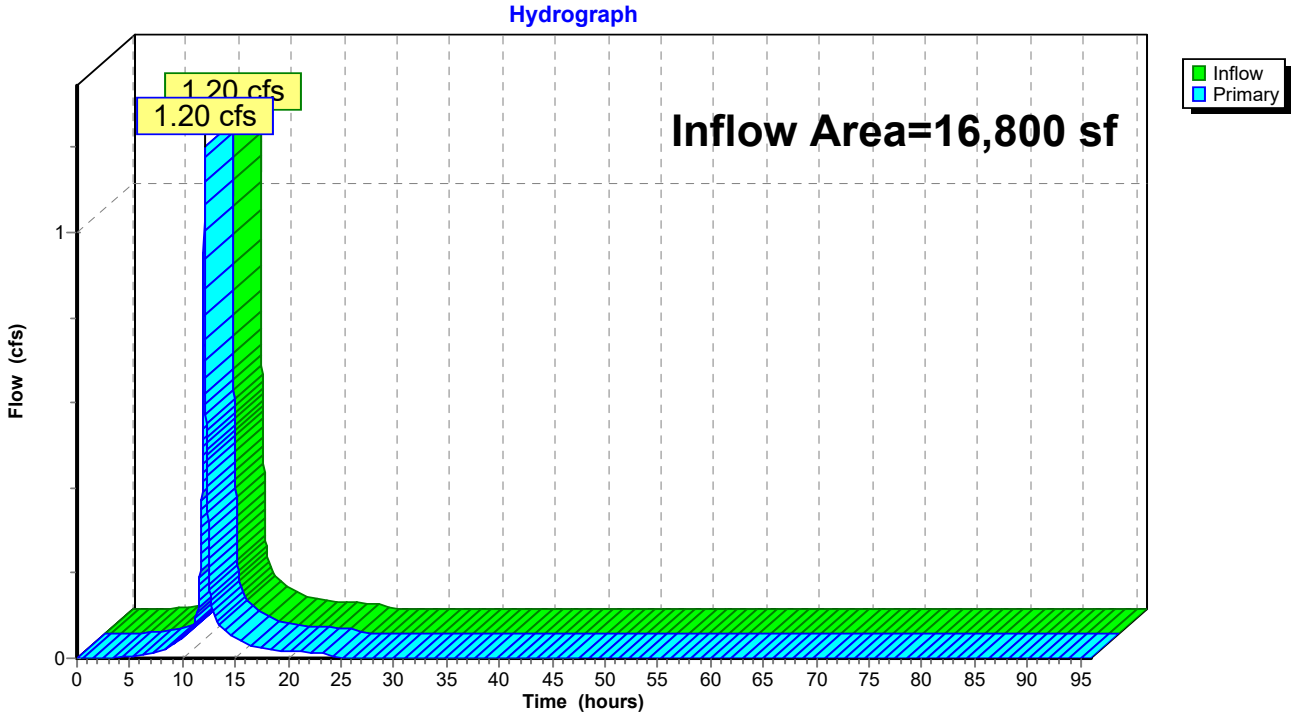


Summary for Link POA-3: WEST OUTFALL (TO TAUNTON)

Inflow Area = 16,800 sf, 68.24% Impervious, Inflow Depth = 2.71" for 2-Year event
Inflow = 1.20 cfs @ 12.07 hrs, Volume= 3,799 cf
Primary = 1.20 cfs @ 12.07 hrs, Volume= 3,799 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-3: WEST OUTFALL (TO TAUNTON)



Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 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: North Runoff Area=315,045 sf 45.42% Impervious Runoff Depth=3.82"
Flow Length=733' Tc=7.6 min CN=90 Runoff=29.60 cfs 100,249 cf

Subcatchment E-2: South Runoff Area=67,511 sf 0.00% Impervious Runoff Depth=3.31"
Flow Length=708' Tc=9.8 min CN=85 Runoff=5.25 cfs 18,637 cf

Subcatchment E-3: West Runoff Area=16,800 sf 68.24% Impervious Runoff Depth=4.36"
Tc=5.0 min CN=95 Runoff=1.88 cfs 6,104 cf

Link POA #1: Outfall Inflow=29.60 cfs 100,249 cf
Primary=29.60 cfs 100,249 cf

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B) Inflow=5.25 cfs 18,637 cf
Primary=5.25 cfs 18,637 cf

Link POA-3: WEST OUTFALL (TO TAUNTON) Inflow=1.88 cfs 6,104 cf
Primary=1.88 cfs 6,104 cf

Total Runoff Area = 399,356 sf Runoff Volume = 124,990 cf Average Runoff Depth = 3.76"
61.30% Pervious = 244,796 sf 38.70% Impervious = 154,560 sf

Summary for Subcatchment E-1: North

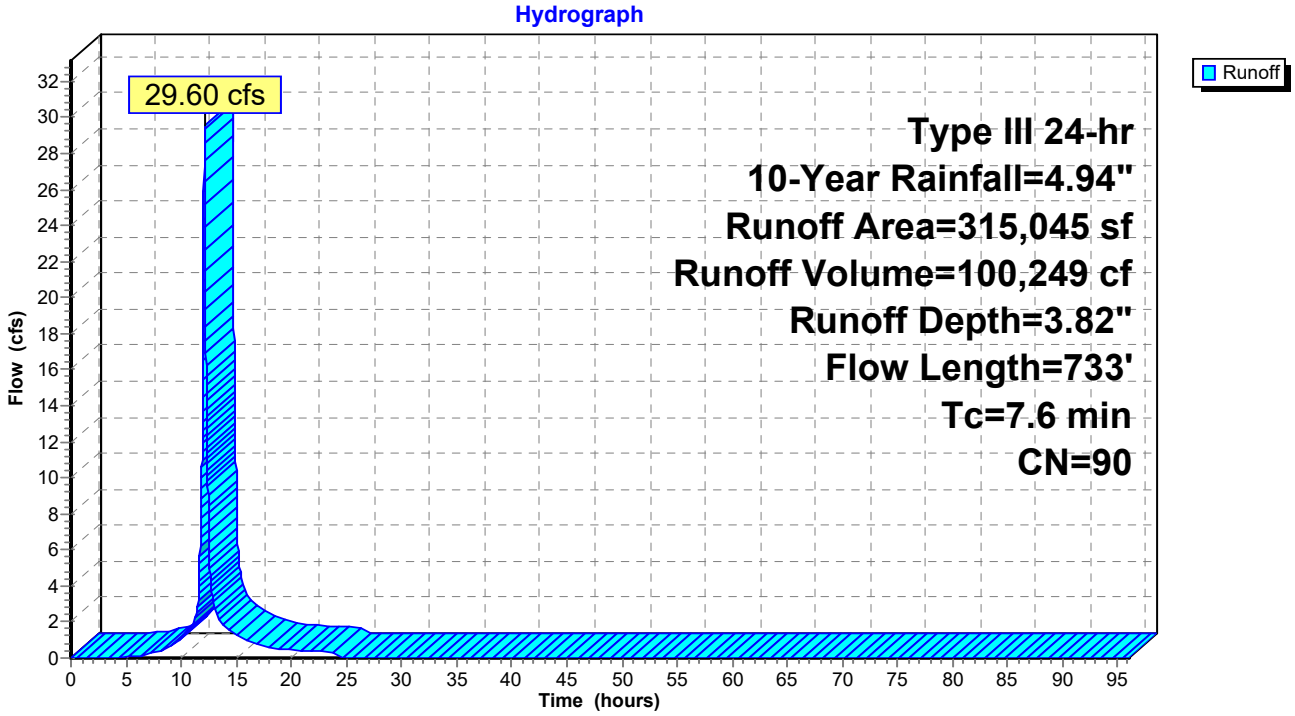
Runoff = 29.60 cfs @ 12.10 hrs, Volume= 100,249 cf, Depth= 3.82"
Routed to Link POA #1 : Outfall

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.94"

Area (sf)	CN	Description
143,096	98	Paved parking, HSG C
55,136	70	Woods, Good, HSG C
116,813	89	Gravel roads, HSG C
315,045	90	Weighted Average
171,949		54.58% Pervious Area
143,096		45.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	50	0.1600	0.83		**Sheet Flow,** Fallow n= 0.050 P2= 3.27"
2.0	262	0.0190	2.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.6	249	0.0160	2.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	83	0.0160	2.04		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.3	89	0.0169	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.6	733	Total			

Subcatchment E-1: North



Summary for Subcatchment E-2: South

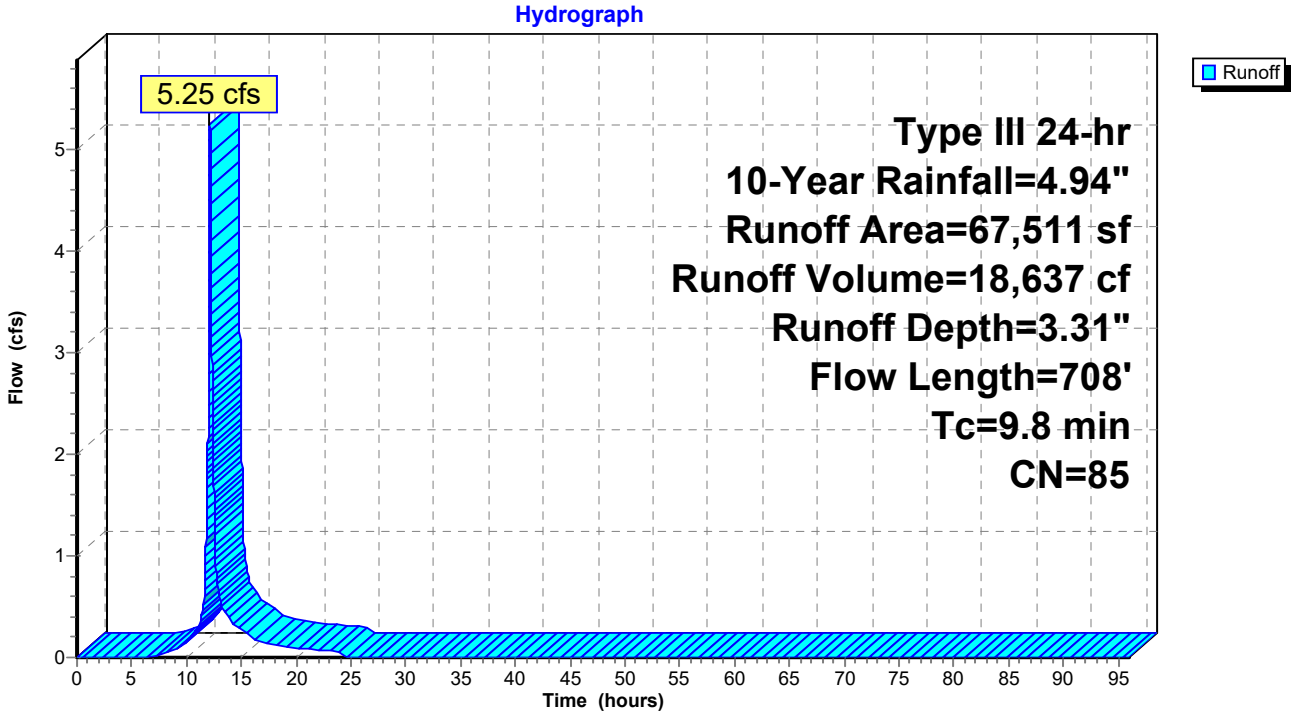
Runoff = 5.25 cfs @ 12.14 hrs, Volume= 18,637 cf, Depth= 3.31"
Routed to Link POA-2 : SOUTH OUTFALL (WETLAND SERIES-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.94"

Area (sf)	CN	Description
13,622	70	Woods, Good, HSG C
53,889	89	Gravel roads, HSG C
67,511	85	Weighted Average
67,511		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	50	0.1800	0.87		**Sheet Flow,** Fallow n= 0.050 P2= 3.27"
4.0	515	0.0180	2.16		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.8	143	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.8	708	Total			

Subcatchment E-2: South



Summary for Subcatchment E-3: West

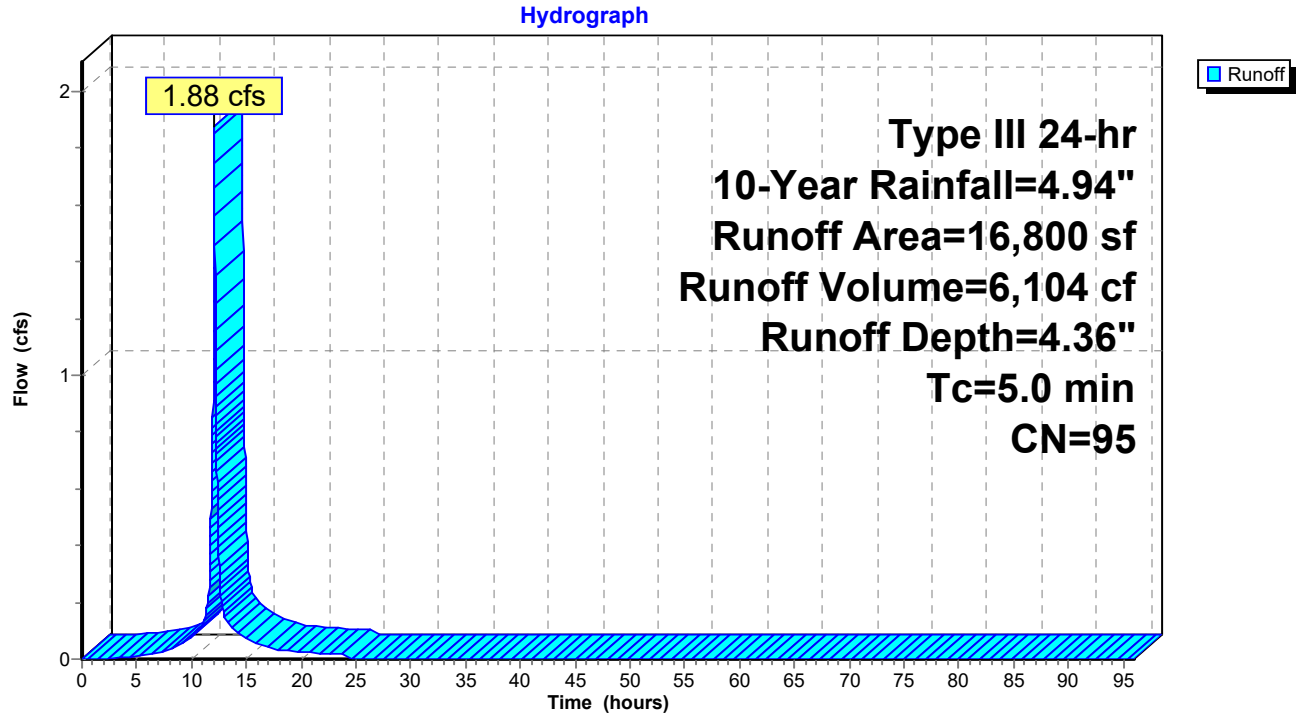
Runoff = 1.88 cfs @ 12.07 hrs, Volume= 6,104 cf, Depth= 4.36"
Routed to Link POA-3 : WEST OUTFALL (TO TAUNTON)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.94"

	Area (sf)	CN	Description
	11,464	98	Paved parking, HSG C
	166	70	Woods, Good, HSG C
*	5,170	89	Gravel roads, HSG C
	16,800	95	Weighted Average
	5,336		31.76% Pervious Area
	11,464		68.24% Impervious Area

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

Subcatchment E-3: West

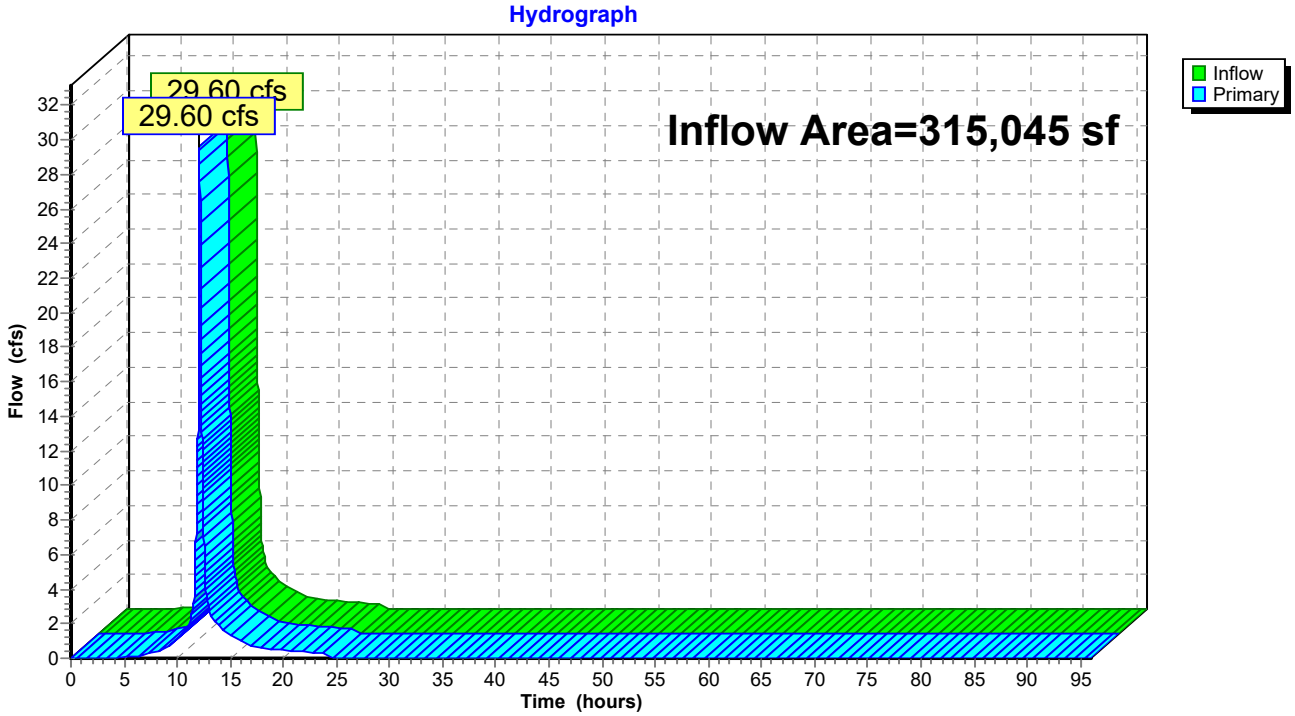


Summary for Link POA #1: Outfall

Inflow Area = 315,045 sf, 45.42% Impervious, Inflow Depth = 3.82" for 10-Year event
Inflow = 29.60 cfs @ 12.10 hrs, Volume= 100,249 cf
Primary = 29.60 cfs @ 12.10 hrs, Volume= 100,249 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA #1: Outfall

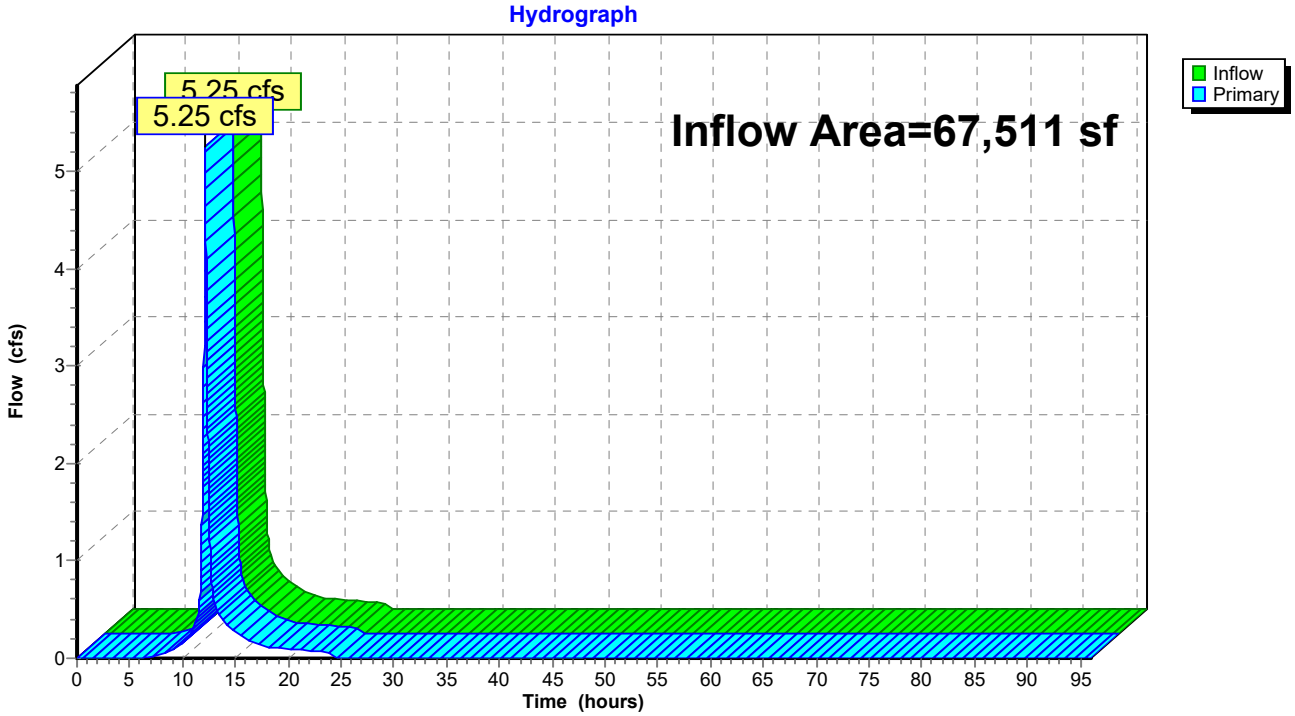


Summary for Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

Inflow Area = 67,511 sf, 0.00% Impervious, Inflow Depth = 3.31" for 10-Year event
Inflow = 5.25 cfs @ 12.14 hrs, Volume= 18,637 cf
Primary = 5.25 cfs @ 12.14 hrs, Volume= 18,637 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

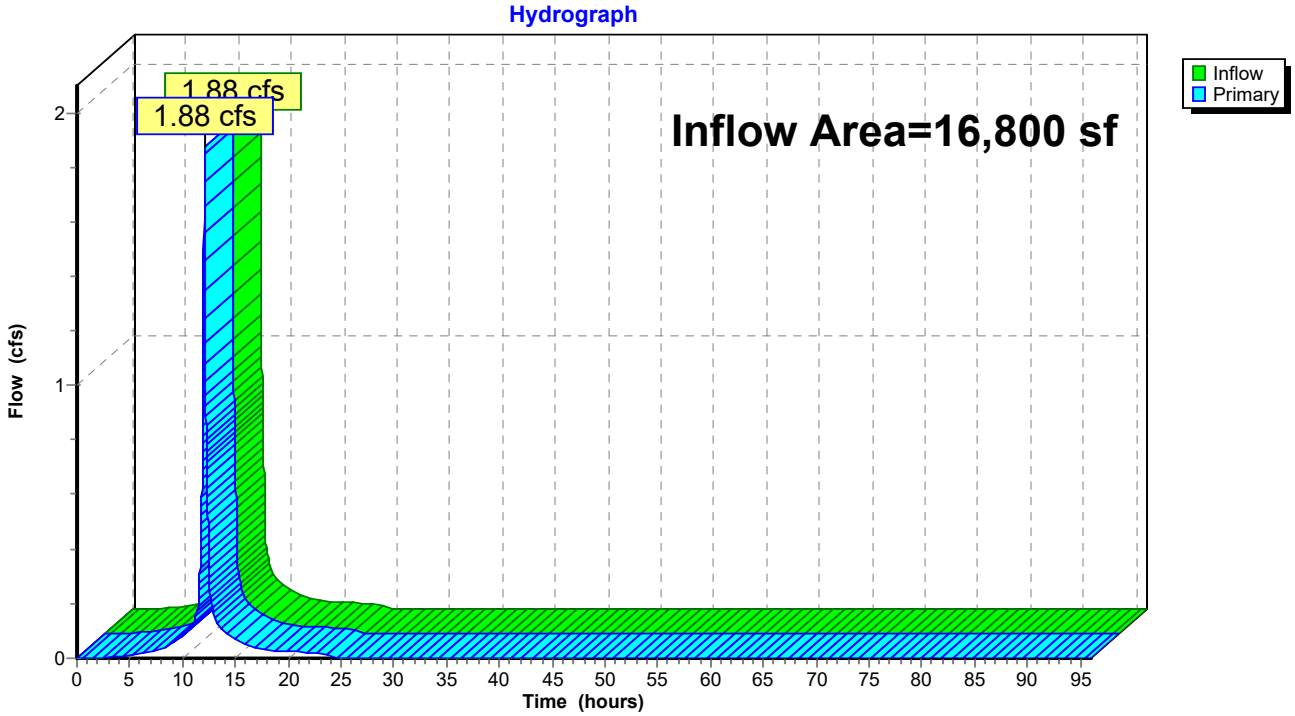


Summary for Link POA-3: WEST OUTFALL (TO TAUNTON)

Inflow Area = 16,800 sf, 68.24% Impervious, Inflow Depth = 4.36" for 10-Year event
Inflow = 1.88 cfs @ 12.07 hrs, Volume= 6,104 cf
Primary = 1.88 cfs @ 12.07 hrs, Volume= 6,104 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-3: WEST OUTFALL (TO TAUNTON)



Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 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: North Runoff Area=315,045 sf 45.42% Impervious Runoff Depth=5.10"
Flow Length=733' Tc=7.6 min CN=90 Runoff=38.93 cfs 133,877 cf

Subcatchment E-2: South Runoff Area=67,511 sf 0.00% Impervious Runoff Depth=4.55"
Flow Length=708' Tc=9.8 min CN=85 Runoff=7.12 cfs 25,588 cf

Subcatchment E-3: West Runoff Area=16,800 sf 68.24% Impervious Runoff Depth=5.67"
Tc=5.0 min CN=95 Runoff=2.41 cfs 7,938 cf

Link POA #1: Outfall Inflow=38.93 cfs 133,877 cf
Primary=38.93 cfs 133,877 cf

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B) Inflow=7.12 cfs 25,588 cf
Primary=7.12 cfs 25,588 cf

Link POA-3: WEST OUTFALL (TO TAUNTON) Inflow=2.41 cfs 7,938 cf
Primary=2.41 cfs 7,938 cf

Total Runoff Area = 399,356 sf Runoff Volume = 167,403 cf Average Runoff Depth = 5.03"
61.30% Pervious = 244,796 sf 38.70% Impervious = 154,560 sf

Summary for Subcatchment E-1: North

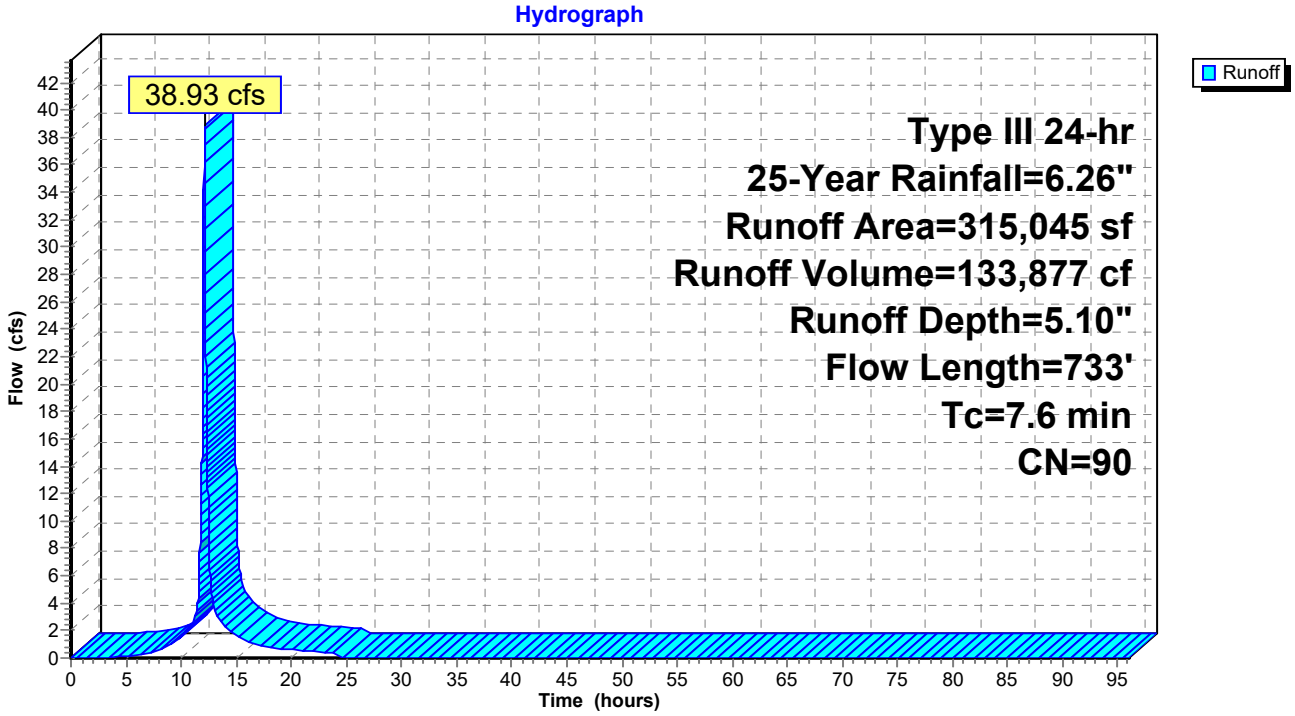
Runoff = 38.93 cfs @ 12.10 hrs, Volume= 133,877 cf, Depth= 5.10"
Routed to Link POA #1 : Outfall

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.26"

Area (sf)	CN	Description
143,096	98	Paved parking, HSG C
55,136	70	Woods, Good, HSG C
116,813	89	Gravel roads, HSG C
315,045	90	Weighted Average
171,949		54.58% Pervious Area
143,096		45.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	50	0.1600	0.83		**Sheet Flow,** Fallow n= 0.050 P2= 3.27"
2.0	262	0.0190	2.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.6	249	0.0160	2.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	83	0.0160	2.04		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.3	89	0.0169	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.6	733	Total			

Subcatchment E-1: North



Summary for Subcatchment E-2: South

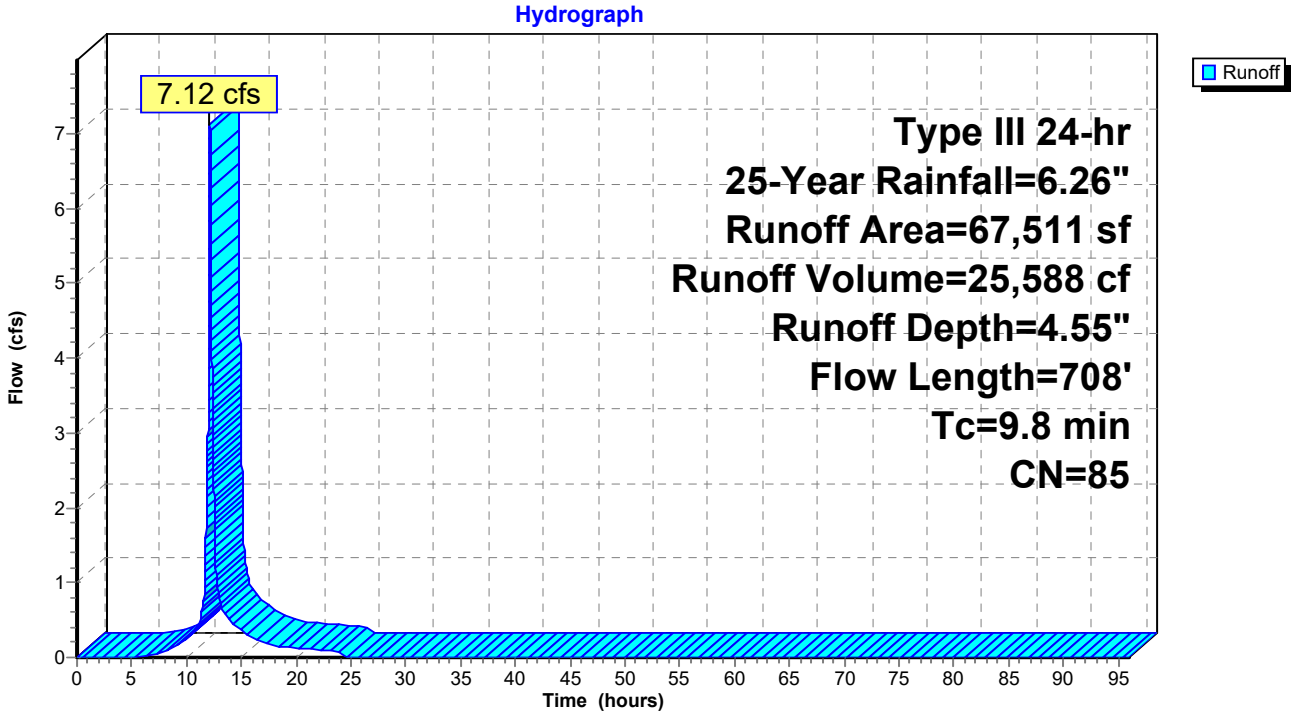
Runoff = 7.12 cfs @ 12.13 hrs, Volume= 25,588 cf, Depth= 4.55"
Routed to Link POA-2 : SOUTH OUTFALL (WETLAND SERIES-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.26"

Area (sf)	CN	Description
13,622	70	Woods, Good, HSG C
53,889	89	Gravel roads, HSG C
67,511	85	Weighted Average
67,511		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	50	0.1800	0.87		**Sheet Flow,** Fallow n= 0.050 P2= 3.27"
4.0	515	0.0180	2.16		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.8	143	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.8	708	Total			

Subcatchment E-2: South



Summary for Subcatchment E-3: West

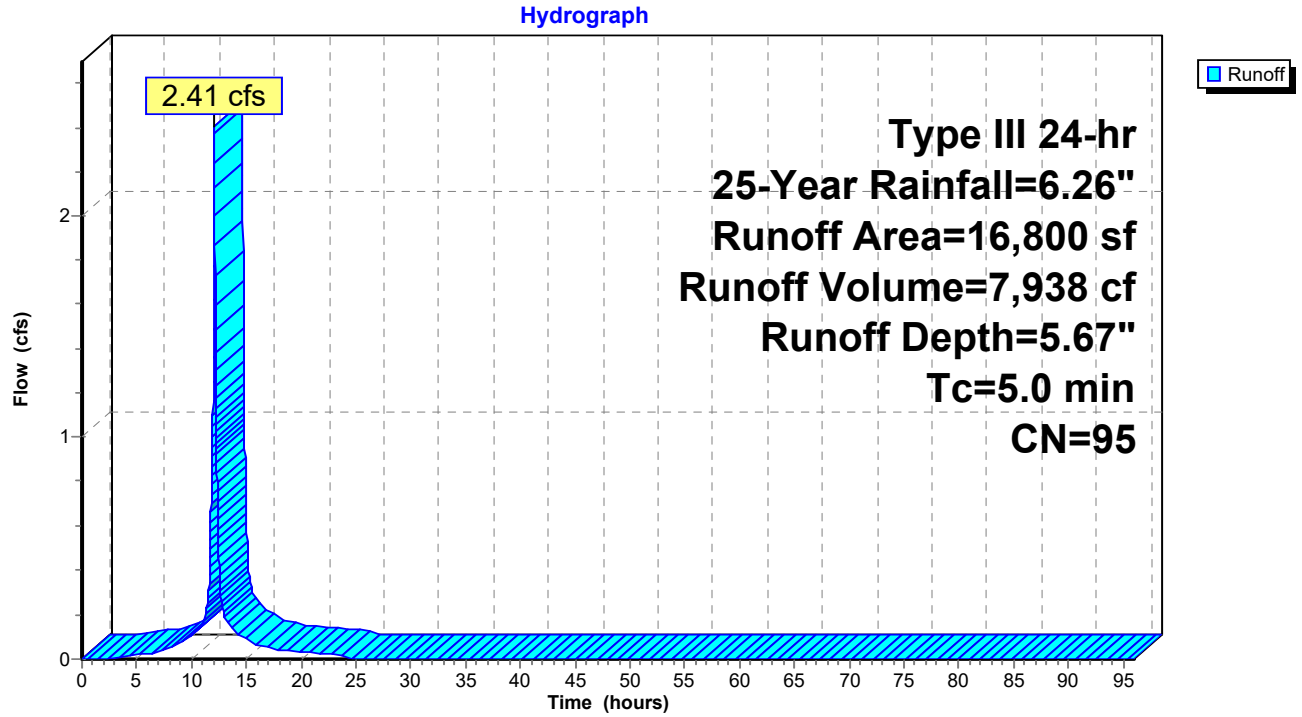
Runoff = 2.41 cfs @ 12.07 hrs, Volume= 7,938 cf, Depth= 5.67"
Routed to Link POA-3 : WEST OUTFALL (TO TAUNTON)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.26"

	Area (sf)	CN	Description
	11,464	98	Paved parking, HSG C
	166	70	Woods, Good, HSG C
*	5,170	89	Gravel roads, HSG C
	16,800	95	Weighted Average
	5,336		31.76% Pervious Area
	11,464		68.24% Impervious Area

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

Subcatchment E-3: West

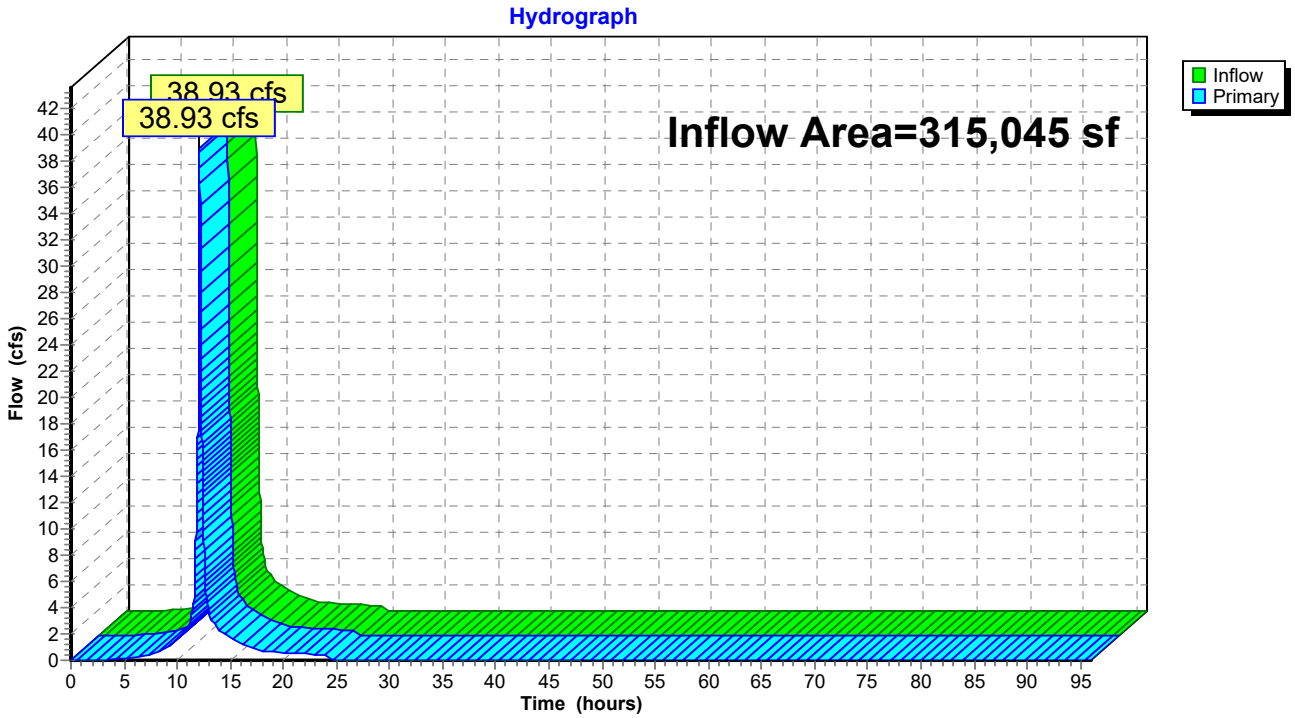


Summary for Link POA #1: Outfall

Inflow Area = 315,045 sf, 45.42% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 38.93 cfs @ 12.10 hrs, Volume= 133,877 cf
Primary = 38.93 cfs @ 12.10 hrs, Volume= 133,877 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA #1: Outfall

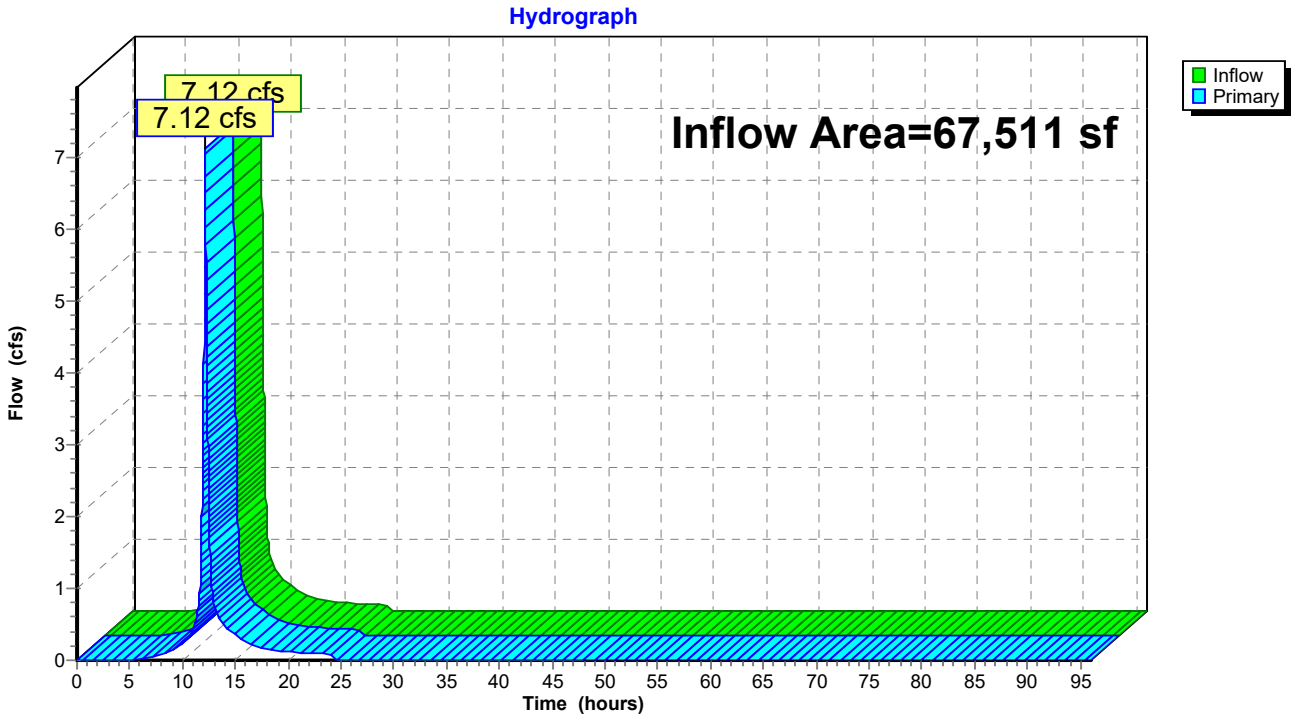


Summary for Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

Inflow Area = 67,511 sf, 0.00% Impervious, Inflow Depth = 4.55" for 25-Year event
Inflow = 7.12 cfs @ 12.13 hrs, Volume= 25,588 cf
Primary = 7.12 cfs @ 12.13 hrs, Volume= 25,588 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

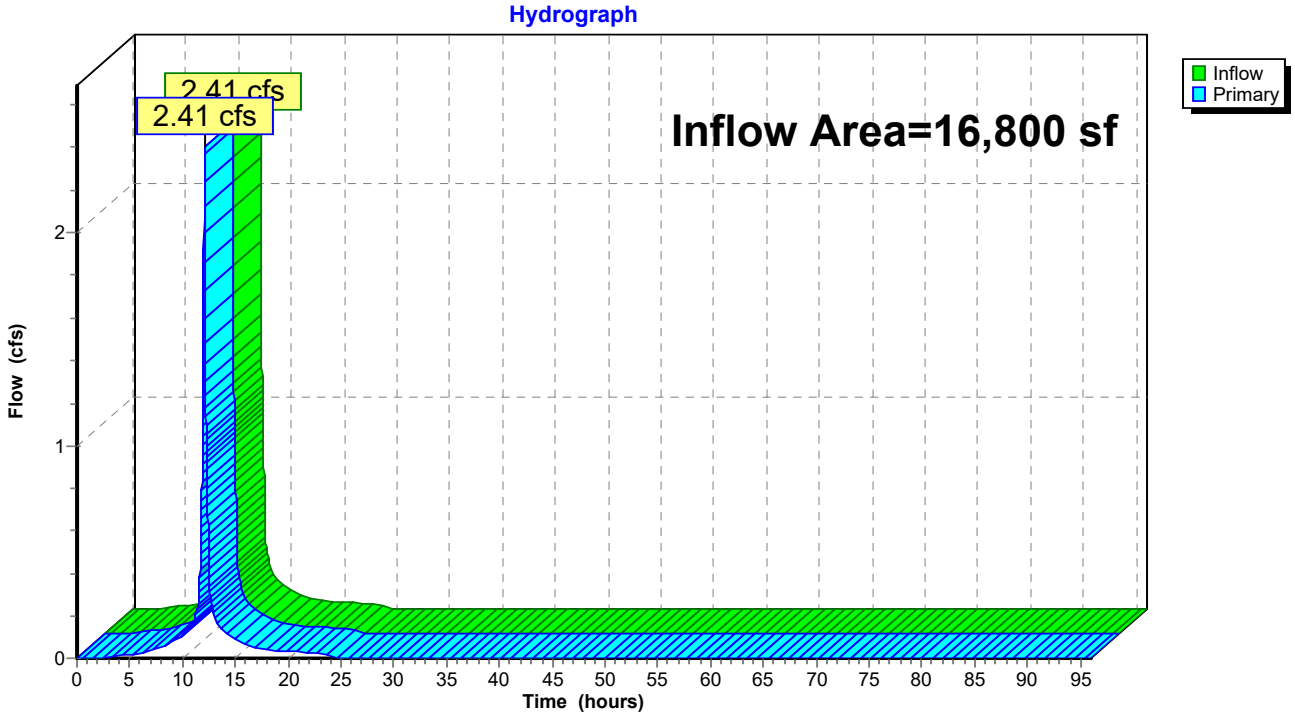


Summary for Link POA-3: WEST OUTFALL (TO TAUNTON)

Inflow Area = 16,800 sf, 68.24% Impervious, Inflow Depth = 5.67" for 25-Year event
Inflow = 2.41 cfs @ 12.07 hrs, Volume= 7,938 cf
Primary = 2.41 cfs @ 12.07 hrs, Volume= 7,938 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-3: WEST OUTFALL (TO TAUNTON)



Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 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: North Runoff Area=315,045 sf 45.42% Impervious Runoff Depth=7.78"
Flow Length=733' Tc=7.6 min CN=90 Runoff=58.00 cfs 204,297 cf

Subcatchment E-2: South Runoff Area=67,511 sf 0.00% Impervious Runoff Depth=7.17"
Flow Length=708' Tc=9.8 min CN=85 Runoff=10.99 cfs 40,348 cf

Subcatchment E-3: West Runoff Area=16,800 sf 68.24% Impervious Runoff Depth=8.39"
Tc=5.0 min CN=95 Runoff=3.49 cfs 11,743 cf

Link POA #1: Outfall Inflow=58.00 cfs 204,297 cf
Primary=58.00 cfs 204,297 cf

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B) Inflow=10.99 cfs 40,348 cf
Primary=10.99 cfs 40,348 cf

Link POA-3: WEST OUTFALL (TO TAUNTON) Inflow=3.49 cfs 11,743 cf
Primary=3.49 cfs 11,743 cf

Total Runoff Area = 399,356 sf Runoff Volume = 256,388 cf Average Runoff Depth = 7.70"
61.30% Pervious = 244,796 sf 38.70% Impervious = 154,560 sf

Summary for Subcatchment E-1: North

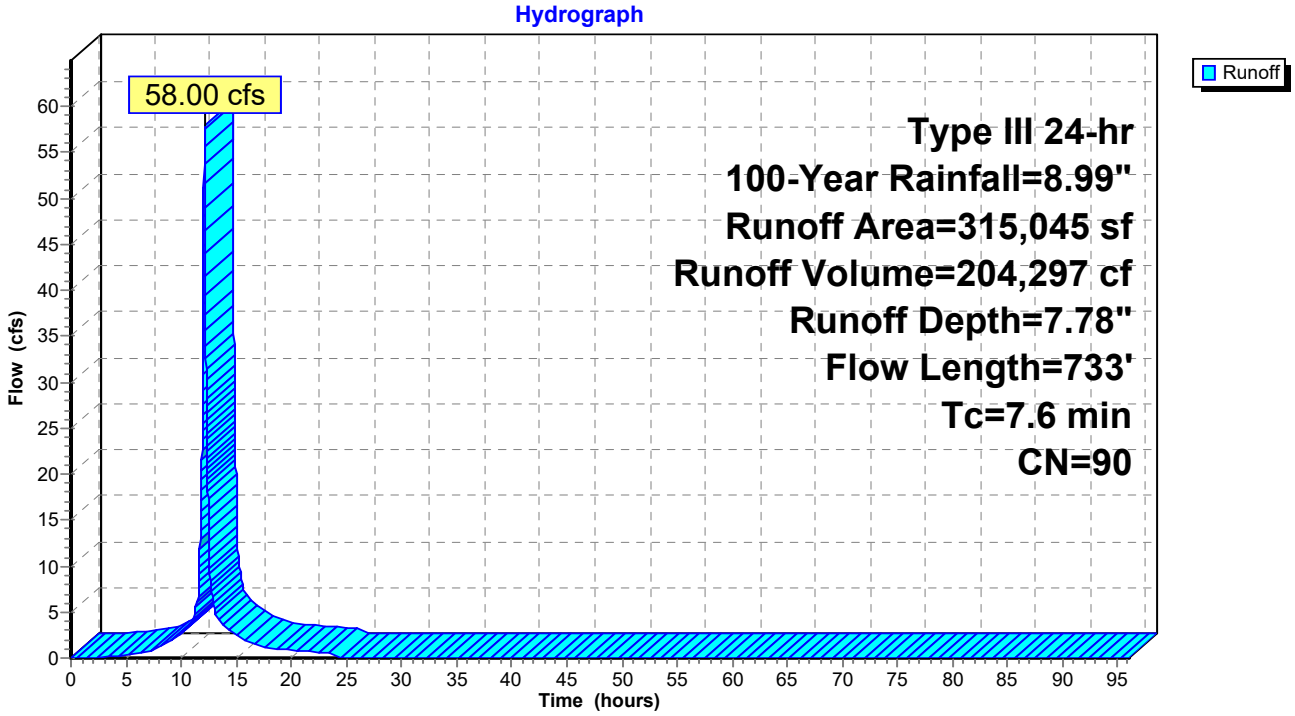
Runoff = 58.00 cfs @ 12.10 hrs, Volume= 204,297 cf, Depth= 7.78"
Routed to Link POA #1 : Outfall

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.99"

Area (sf)	CN	Description
143,096	98	Paved parking, HSG C
55,136	70	Woods, Good, HSG C
116,813	89	Gravel roads, HSG C
315,045	90	Weighted Average
171,949		54.58% Pervious Area
143,096		45.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	50	0.1600	0.83		**Sheet Flow,** Fallow n= 0.050 P2= 3.27"
2.0	262	0.0190	2.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.6	249	0.0160	2.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	83	0.0160	2.04		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.3	89	0.0169	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.6	733	Total			

Subcatchment E-1: North



Summary for Subcatchment E-2: South

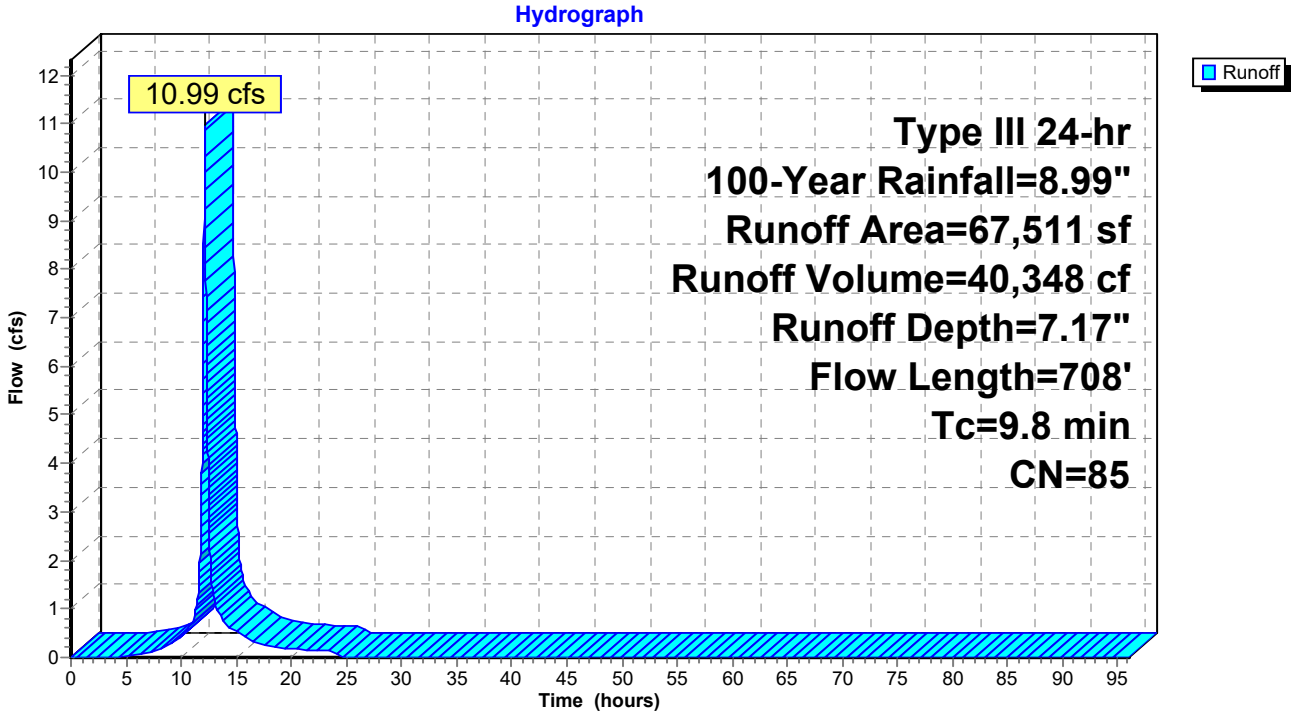
Runoff = 10.99 cfs @ 12.13 hrs, Volume= 40,348 cf, Depth= 7.17"
Routed to Link POA-2 : SOUTH OUTFALL (WETLAND SERIES-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.99"

Area (sf)	CN	Description
13,622	70	Woods, Good, HSG C
53,889	89	Gravel roads, HSG C
67,511	85	Weighted Average
67,511		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	50	0.1800	0.87		**Sheet Flow,** Fallow n= 0.050 P2= 3.27"
4.0	515	0.0180	2.16		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.8	143	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.8	708	Total			

Subcatchment E-2: South



Summary for Subcatchment E-3: West

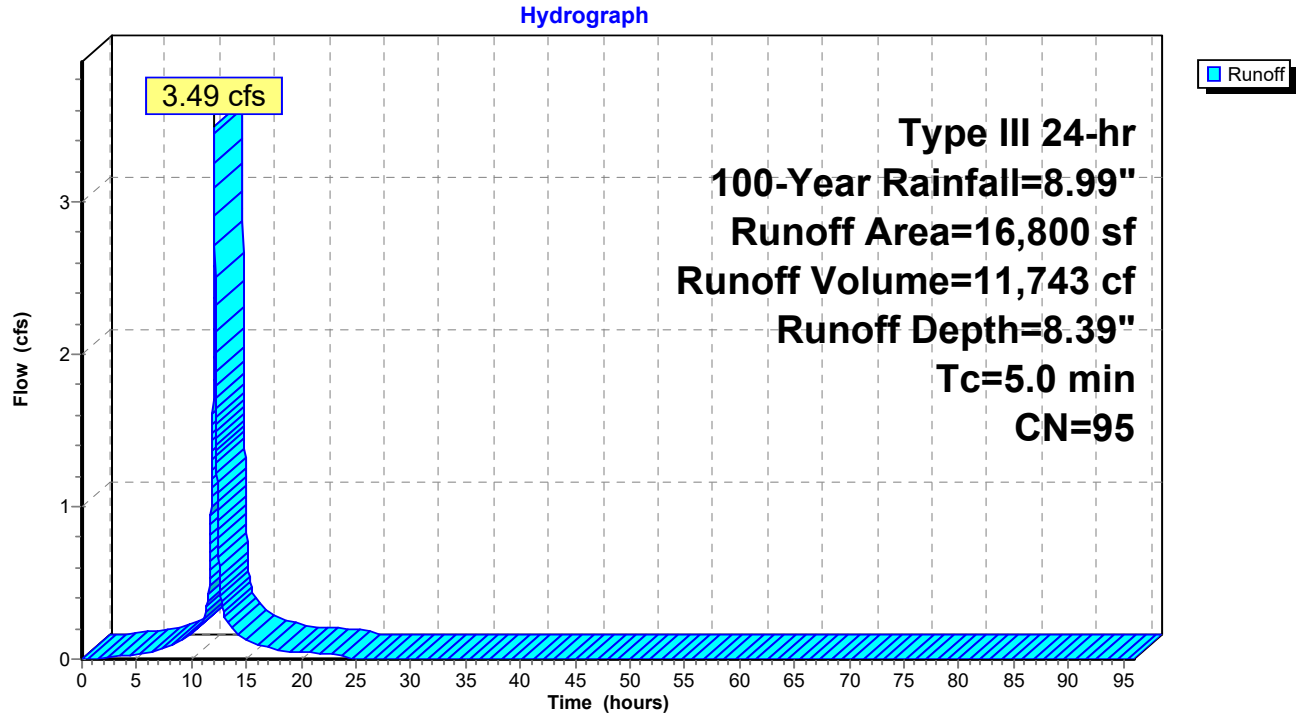
Runoff = 3.49 cfs @ 12.07 hrs, Volume= 11,743 cf, Depth= 8.39"
Routed to Link POA-3 : WEST OUTFALL (TO TAUNTON)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.99"

	Area (sf)	CN	Description
	11,464	98	Paved parking, HSG C
	166	70	Woods, Good, HSG C
*	5,170	89	Gravel roads, HSG C
	16,800	95	Weighted Average
	5,336		31.76% Pervious Area
	11,464		68.24% Impervious Area

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

Subcatchment E-3: West

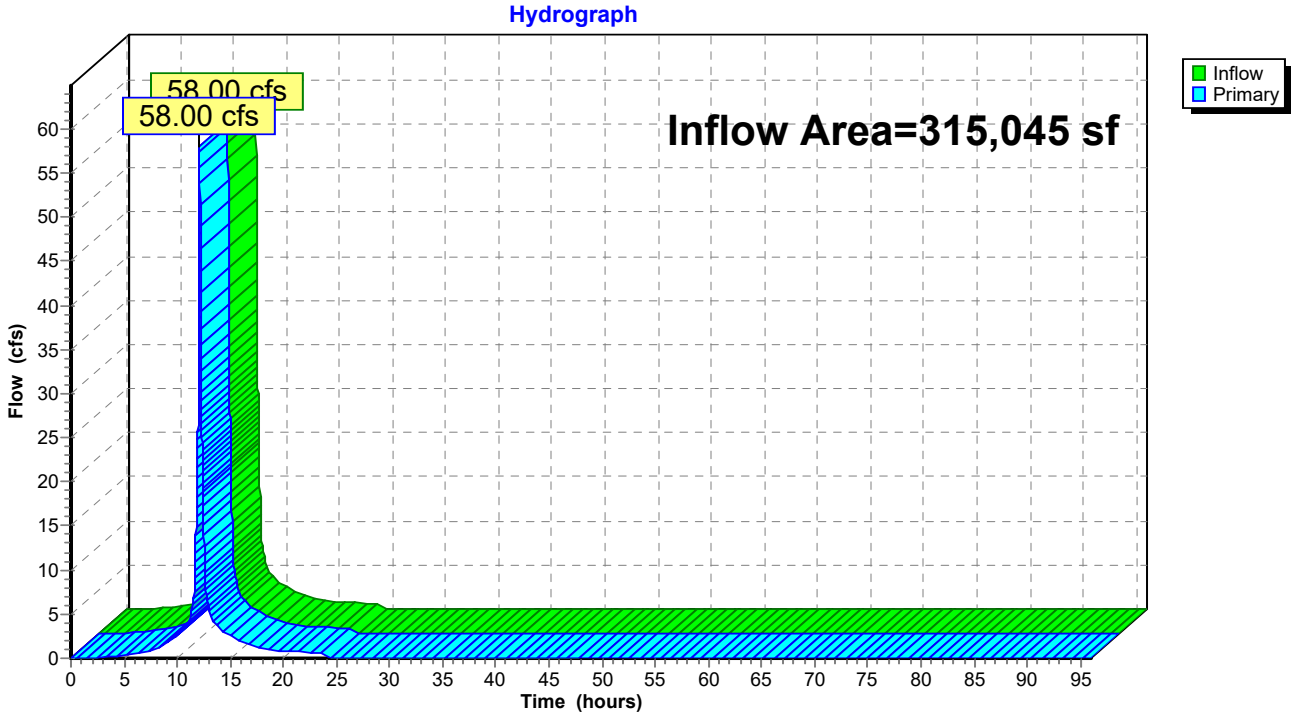


Summary for Link POA #1: Outfall

Inflow Area = 315,045 sf, 45.42% Impervious, Inflow Depth = 7.78" for 100-Year event
Inflow = 58.00 cfs @ 12.10 hrs, Volume= 204,297 cf
Primary = 58.00 cfs @ 12.10 hrs, Volume= 204,297 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA #1: Outfall

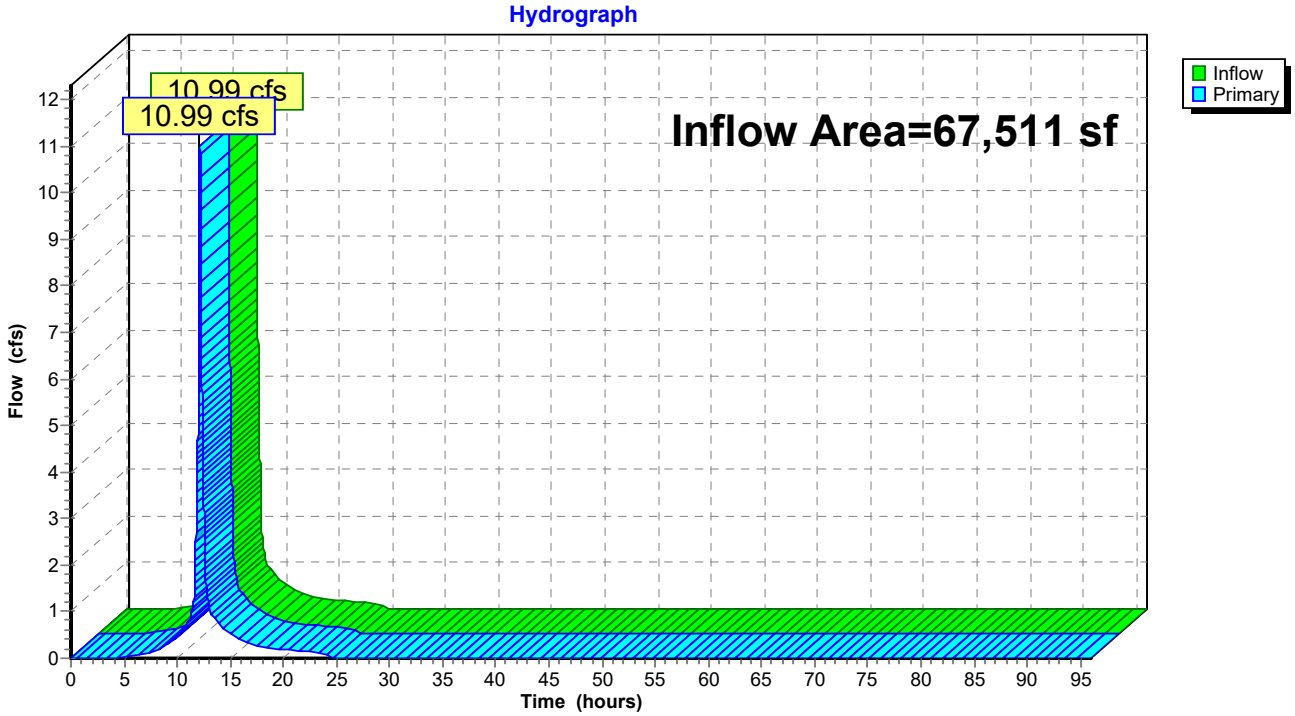


Summary for Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

Inflow Area = 67,511 sf, 0.00% Impervious, Inflow Depth = 7.17" for 100-Year event
Inflow = 10.99 cfs @ 12.13 hrs, Volume= 40,348 cf
Primary = 10.99 cfs @ 12.13 hrs, Volume= 40,348 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

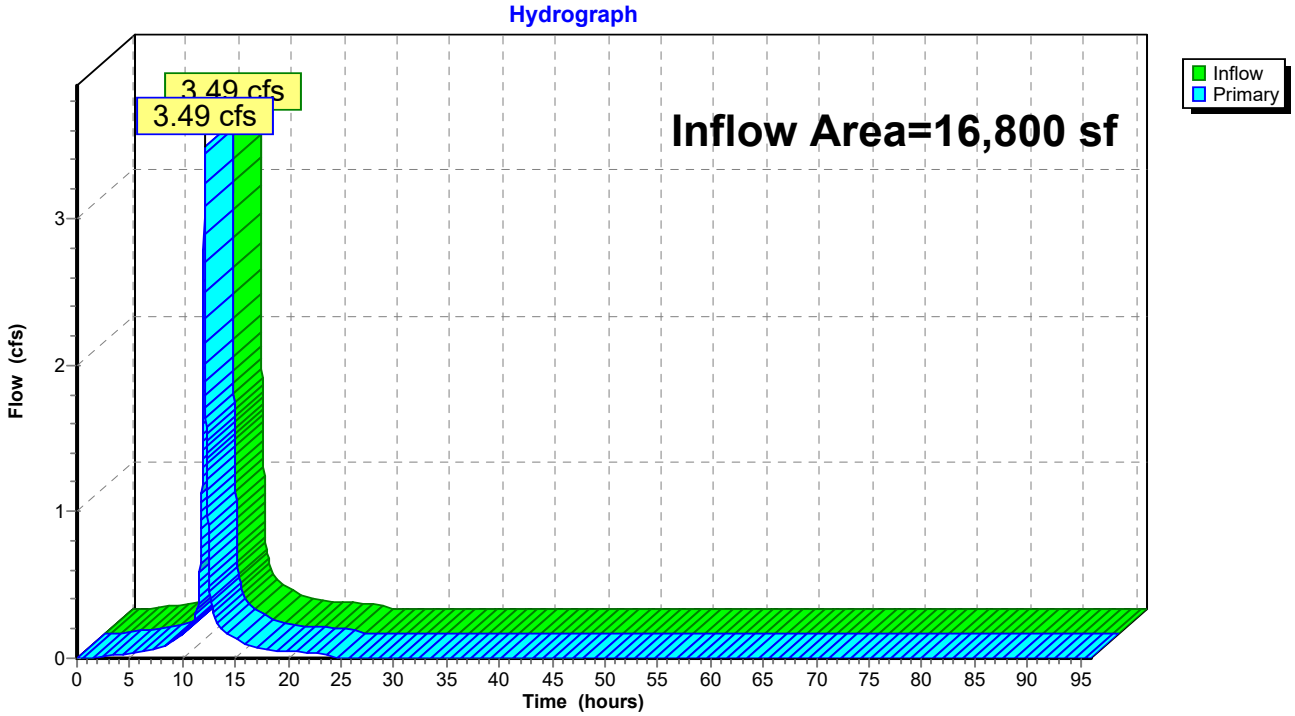


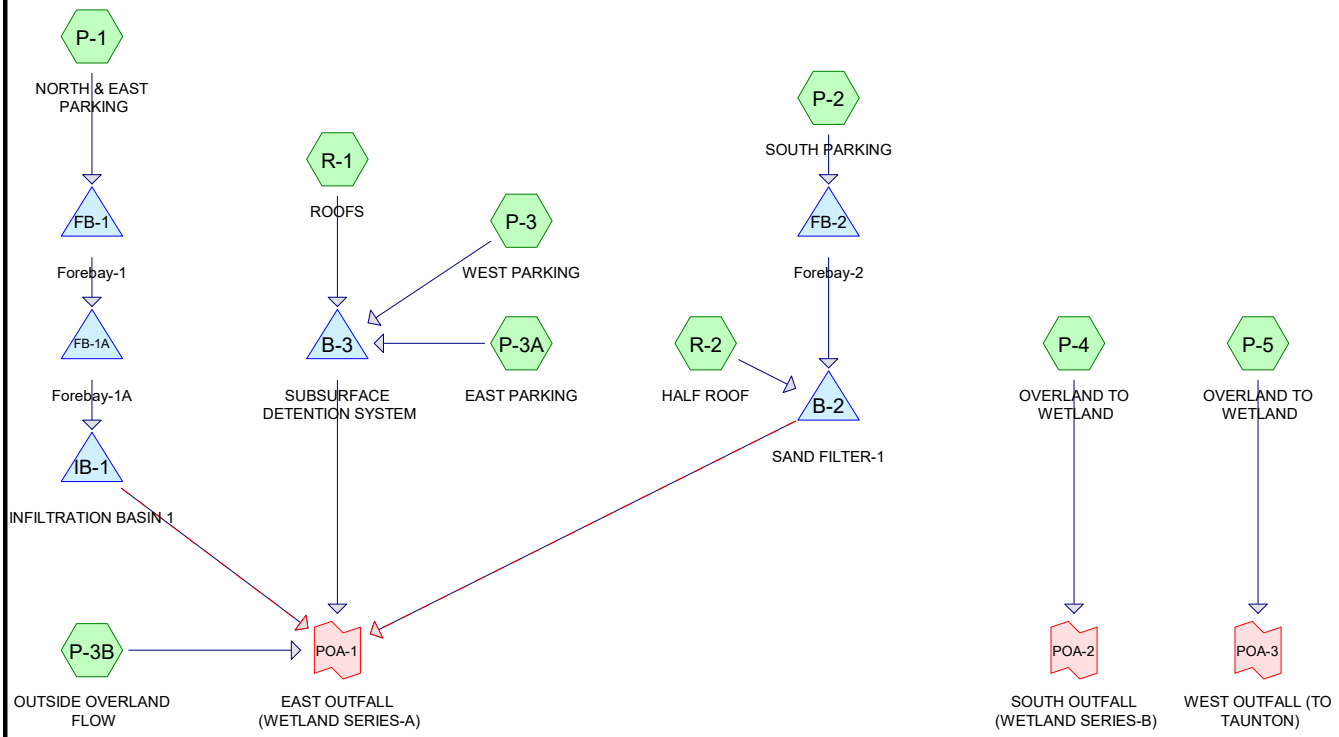
Summary for Link POA-3: WEST OUTFALL (TO TAUNTON)

Inflow Area = 16,800 sf, 68.24% Impervious, Inflow Depth = 8.39" for 100-Year event
Inflow = 3.49 cfs @ 12.07 hrs, Volume= 11,743 cf
Primary = 3.49 cfs @ 12.07 hrs, Volume= 11,743 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-3: WEST OUTFALL (TO TAUNTON)





Subcat Reach Pond Link

Routing Diagram for 43 Taunton St Post-Dev
Prepared by Highpoint Engineering, Inc., Printed 3/14/2022

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
99,293	74	>75% Grass cover, Good, HSG C (P-1, P-2, P-3, P-3B, P-4, P-5)
171,633	98	Paved parking, HSG C (P-1, P-2, P-3, P-3A)
100,053	98	Roofs, HSG C (R-1, R-2)
6,849	98	Unconnected pavement, HSG C (P-5)
9,135	98	Water Surface, 0% imp, HSG C (P-2)
12,393	98	Water Surface, HSG C (P-1)
399,356	**92**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
399,356	HSG C	P-1, P-2, P-3, P-3A, P-3B, P-4, P-5, R-1, R-2
0	HSG D	
0	Other	
399,356		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Su Nu
0	0	99,293	0	0	99,293	>75% Grass cover, Good	
0	0	171,633	0	0	171,633	Paved parking	
0	0	100,053	0	0	100,053	Roofs	
0	0	6,849	0	0	6,849	Unconnected pavement	
0	0	12,393	0	0	12,393	Water Surface	
0	0	9,135	0	0	9,135	Water Surface, 0% imp	
0	**0**	**399,356**	**0**	**0**	**399,356**	**TOTAL AREA**	

Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P-1: NORTH & EAST Runoff Area=108,403 sf 92.38% Impervious Runoff Depth=2.27"
Tc=5.0 min CN=96 Runoff=6.45 cfs 20,480 cf

Subcatchment P-2: SOUTH PARKING Runoff Area=39,922 sf 54.08% Impervious Runoff Depth=1.89"
Tc=5.0 min CN=92 Runoff=2.07 cfs 6,283 cf

Subcatchment P-3: WEST PARKING Runoff Area=68,527 sf 70.54% Impervious Runoff Depth=1.80"
Tc=5.0 min CN=91 Runoff=3.42 cfs 10,294 cf

Subcatchment P-3A: EAST PARKING Runoff Area=13,953 sf 100.00% Impervious Runoff Depth=2.48"
Tc=5.0 min CN=98 Runoff=0.87 cfs 2,883 cf

Subcatchment P-3B: OUTSIDE OVERLAND Runoff Area=39,502 sf 0.00% Impervious Runoff Depth=0.73"
Tc=5.0 min CN=74 Runoff=0.73 cfs 2,402 cf

Subcatchment P-4: OVERLAND TO Runoff Area=13,896 sf 0.00% Impervious Runoff Depth=0.73"
Tc=5.0 min CN=74 Runoff=0.26 cfs 845 cf

Subcatchment P-5: OVERLAND TO Runoff Area=15,100 sf 45.36% Impervious Runoff Depth=1.35"
Tc=5.0 min CN=85 Runoff=0.57 cfs 1,696 cf

Subcatchment R-1: ROOFS Runoff Area=53,577 sf 100.00% Impervious Runoff Depth=2.48"
Tc=5.0 min CN=98 Runoff=3.34 cfs 11,071 cf

Subcatchment R-2: HALF ROOF Runoff Area=46,476 sf 100.00% Impervious Runoff Depth=2.48"
Tc=5.0 min CN=98 Runoff=2.89 cfs 9,603 cf

Pond B-2: SAND FILTER-1 Peak Elev=177.45' Storage=5,478 cf Inflow=4.94 cfs 15,213 cf
Primary=1.11 cfs 15,200 cf Secondary=0.00 cfs 0 cf Outflow=1.11 cfs 15,200 cf

Pond B-3: SUBSURFACE DETENTION Peak Elev=177.25' Storage=5,287 cf Inflow=7.62 cfs 24,248 cf
Outflow=5.44 cfs 24,241 cf

Pond FB-1: Forebay-1 Peak Elev=177.54' Storage=1,571 cf Inflow=6.45 cfs 20,480 cf
Outflow=6.26 cfs 19,332 cf

Pond FB-1A: Forebay-1A Peak Elev=177.47' Storage=1,548 cf Inflow=6.26 cfs 19,332 cf
Outflow=6.22 cfs 18,102 cf

Pond FB-2: Forebay-2 Peak Elev=180.36' Storage=769 cf Inflow=2.07 cfs 6,283 cf
Outflow=2.06 cfs 5,610 cf

Pond IB-1: INFILTRATION BASIN 1 Peak Elev=176.56' Storage=8,610 cf Inflow=6.22 cfs 18,102 cf
Discarded=0.06 cfs 10,348 cf Primary=1.89 cfs 7,755 cf Secondary=0.00 cfs 0 cf Outflow=1.95 cfs 18,103 cf

Link POA-1: EAST OUTFALL (WETLAND SERIES-A) Inflow=7.01 cfs 49,599 cf
Primary=7.01 cfs 49,599 cf

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B) Inflow=0.26 cfs 845 cf
Primary=0.26 cfs 845 cf

Link POA-3: WEST OUTFALL (TO TAUNTON) Inflow=0.57 cfs 1,696 cf
Primary=0.57 cfs 1,696 cf

Total Runoff Area = 399,356 sf Runoff Volume = 65,557 cf Average Runoff Depth = 1.97"
27.15% Pervious = 108,428 sf 72.85% Impervious = 290,928 sf

Summary for Subcatchment P-1: NORTH & EAST PARKING

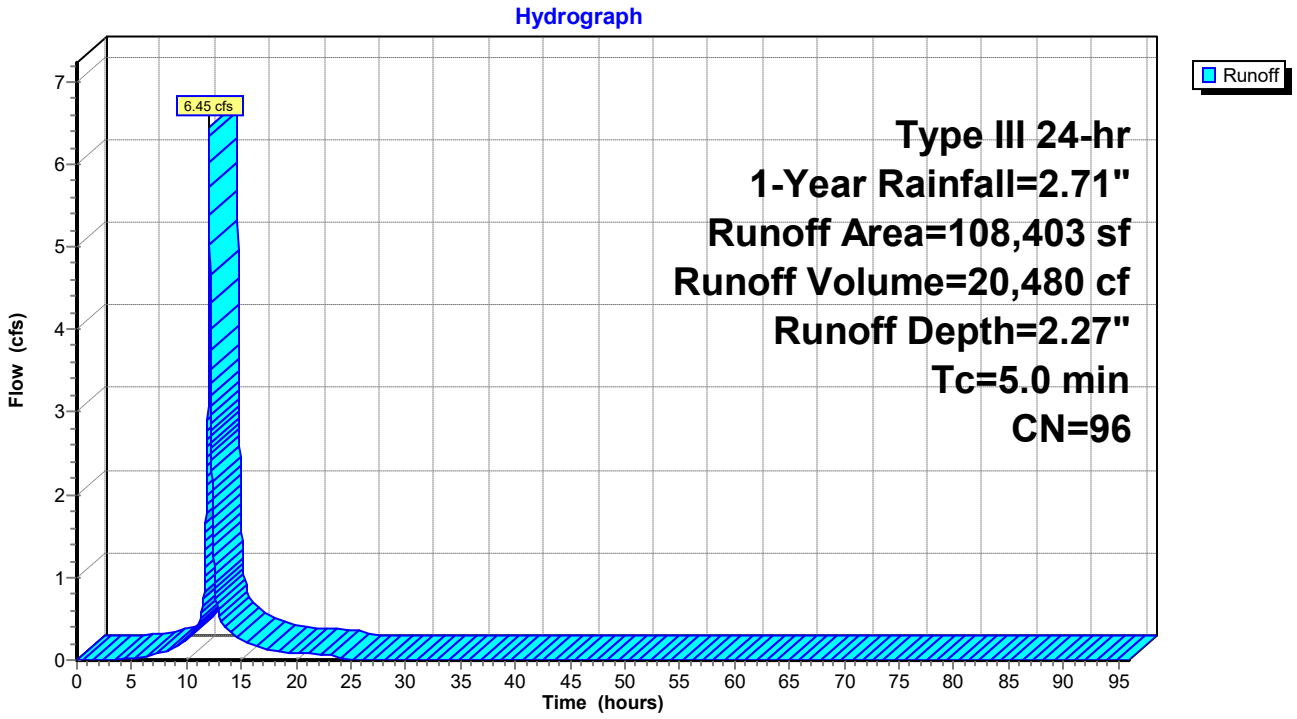
Runoff = 6.45 cfs @ 12.07 hrs, Volume= 20,480 cf, Depth= 2.27"
Routed to Pond FB-1 : Forebay-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.71"

Area (sf)	CN	Description
8,261	74	>75% Grass cover, Good, HSG C
87,749	98	Paved parking, HSG C
12,393	98	Water Surface, HSG C
108,403	96	Weighted Average
8,261		7.62% Pervious Area
100,142		92.38% Impervious Area

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

Subcatchment P-1: NORTH & EAST PARKING



Summary for Subcatchment P-2: SOUTH PARKING

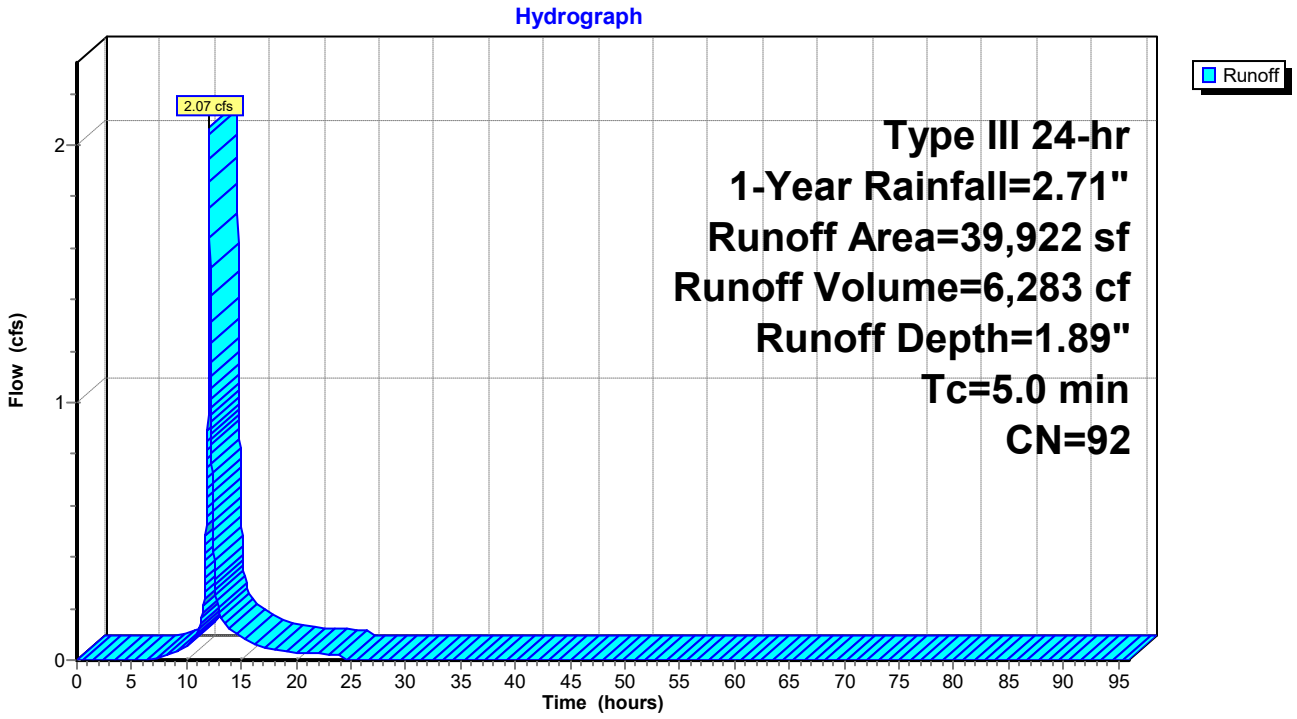
Runoff = 2.07 cfs @ 12.07 hrs, Volume= 6,283 cf, Depth= 1.89"
Routed to Pond FB-2 : Forebay-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.71"

Area (sf)	CN	Description
21,591	98	Paved parking, HSG C
9,196	74	>75% Grass cover, Good, HSG C
9,135	98	Water Surface, 0% imp, HSG C
39,922	92	Weighted Average
18,331		45.92% Pervious Area
21,591		54.08% Impervious Area

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

Subcatchment P-2: SOUTH PARKING



Summary for Subcatchment P-3: WEST PARKING

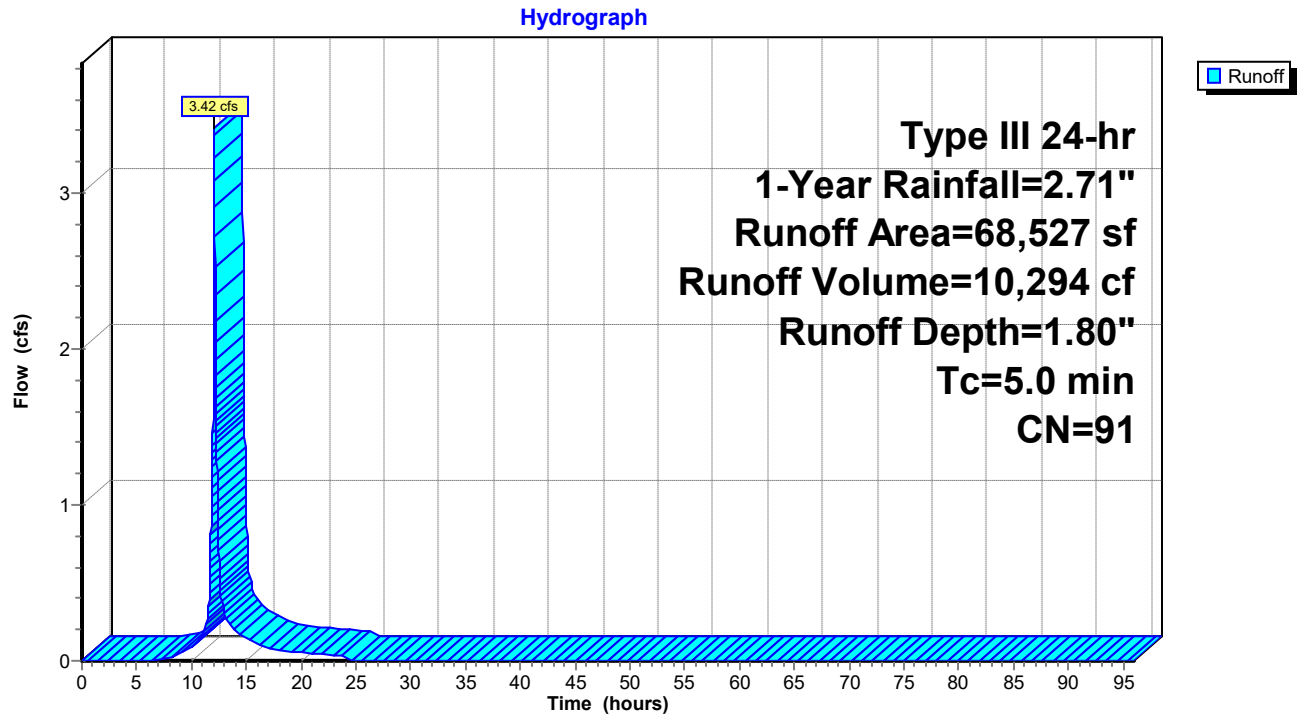
Runoff = 3.42 cfs @ 12.07 hrs, Volume= 10,294 cf, Depth= 1.80"
Routed to Pond B-3 : SUBSURFACE DETENTION SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.71"

Area (sf)	CN	Description
48,340	98	Paved parking, HSG C
20,187	74	>75% Grass cover, Good, HSG C
68,527	91	Weighted Average
20,187		29.46% Pervious Area
48,340		70.54% Impervious Area

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

Subcatchment P-3: WEST PARKING



Summary for Subcatchment P-3A: EAST PARKING

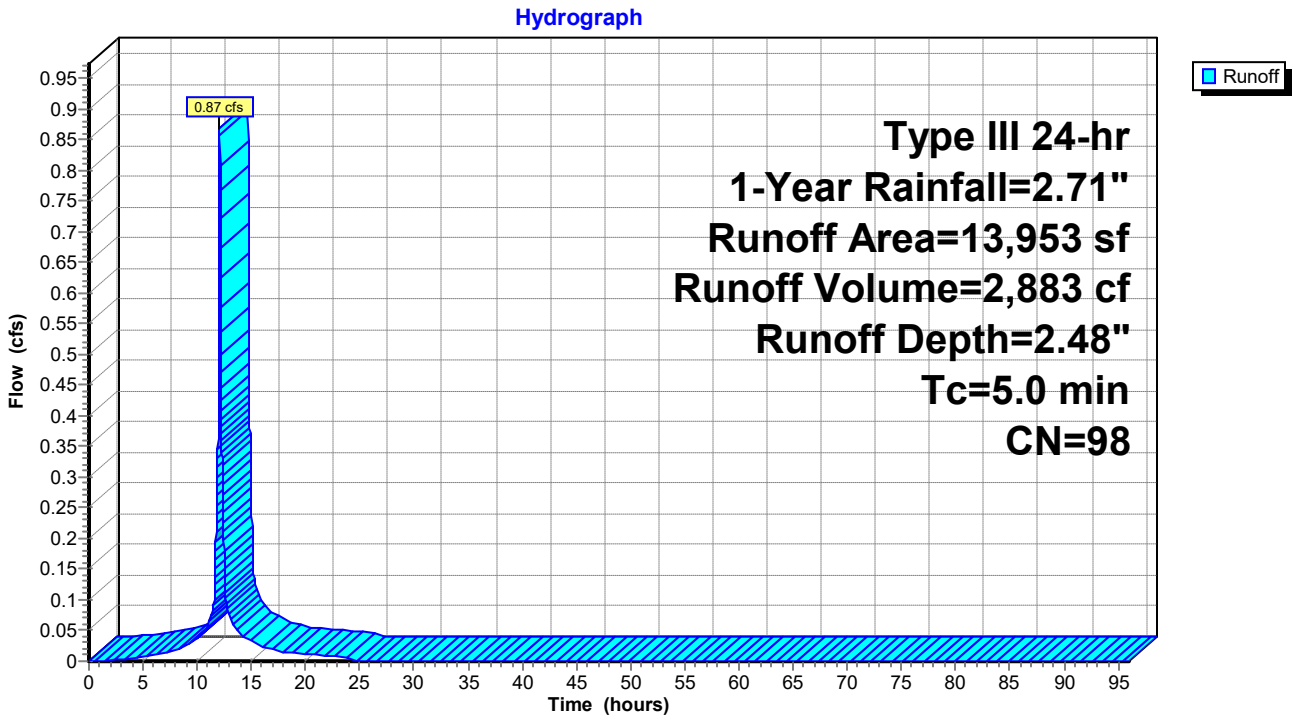
Runoff = 0.87 cfs @ 12.07 hrs, Volume= 2,883 cf, Depth= 2.48"
Routed to Pond B-3 : SUBSURFACE DETENTION SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.71"

Area (sf)	CN	Description
13,953	98	Paved parking, HSG C
13,953		100.00% Impervious Area

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

Subcatchment P-3A: EAST PARKING



Summary for Subcatchment P-3B: OUTSIDE OVERLAND FLOW

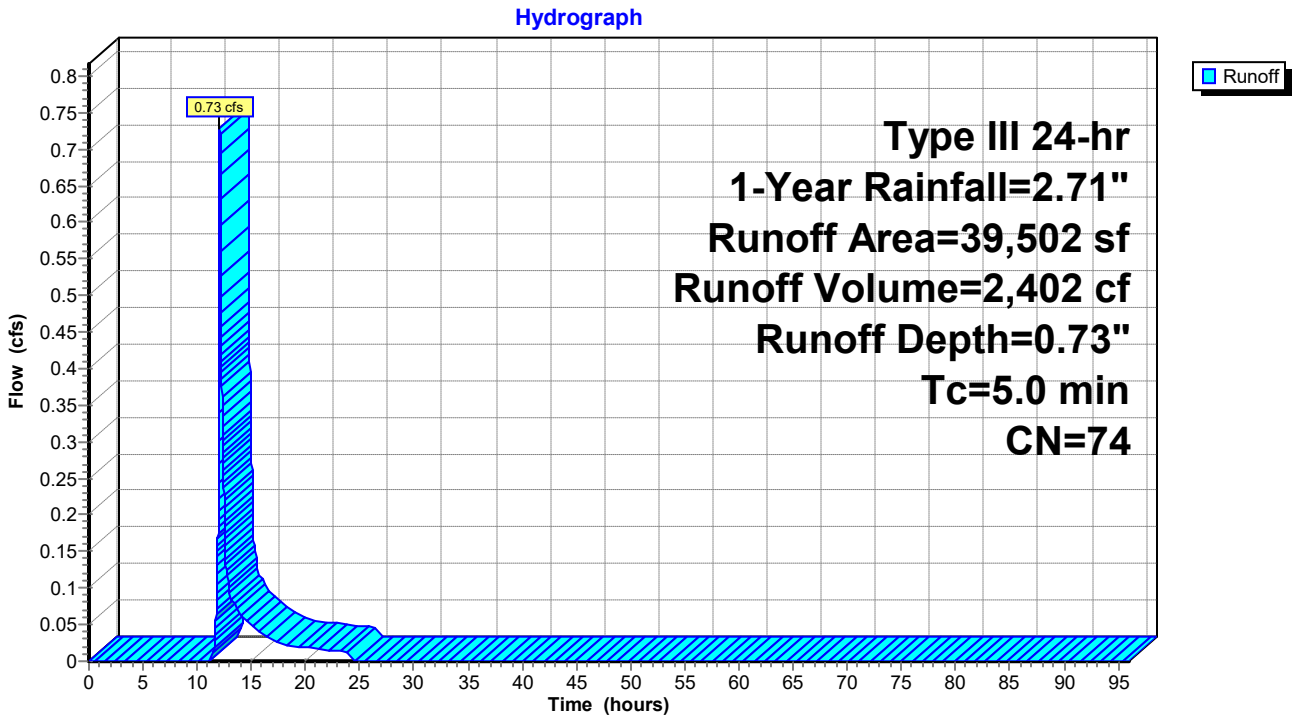
Runoff = 0.73 cfs @ 12.08 hrs, Volume= 2,402 cf, Depth= 0.73"
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.71"

Area (sf)	CN	Description
39,502	74	>75% Grass cover, Good, HSG C
39,502		100.00% Pervious Area

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

Subcatchment P-3B: OUTSIDE OVERLAND FLOW



Summary for Subcatchment P-4: OVERLAND TO WETLAND

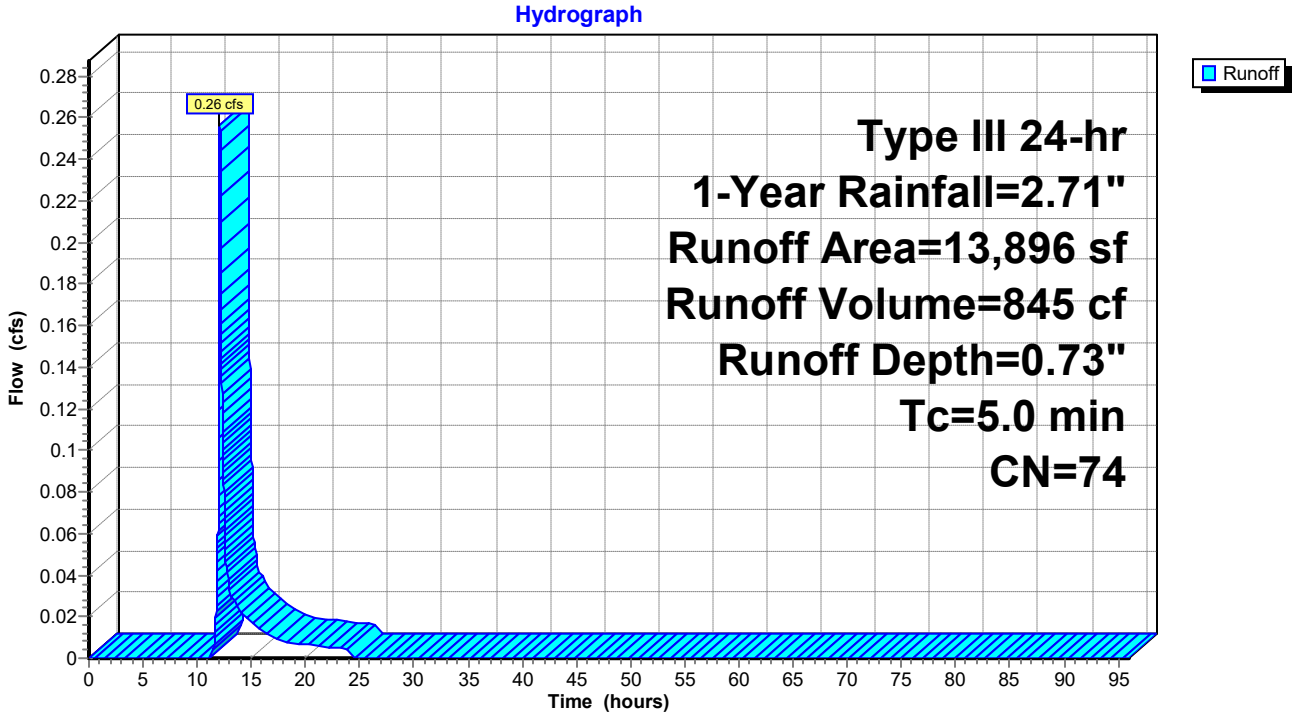
Runoff = 0.26 cfs @ 12.08 hrs, Volume= 845 cf, Depth= 0.73"
Routed to Link POA-2 : SOUTH OUTFALL (WETLAND SERIES-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.71"

Area (sf)	CN	Description
13,896	74	>75% Grass cover, Good, HSG C
13,896		100.00% Pervious Area

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

Subcatchment P-4: OVERLAND TO WETLAND



Summary for Subcatchment P-5: OVERLAND TO WETLAND

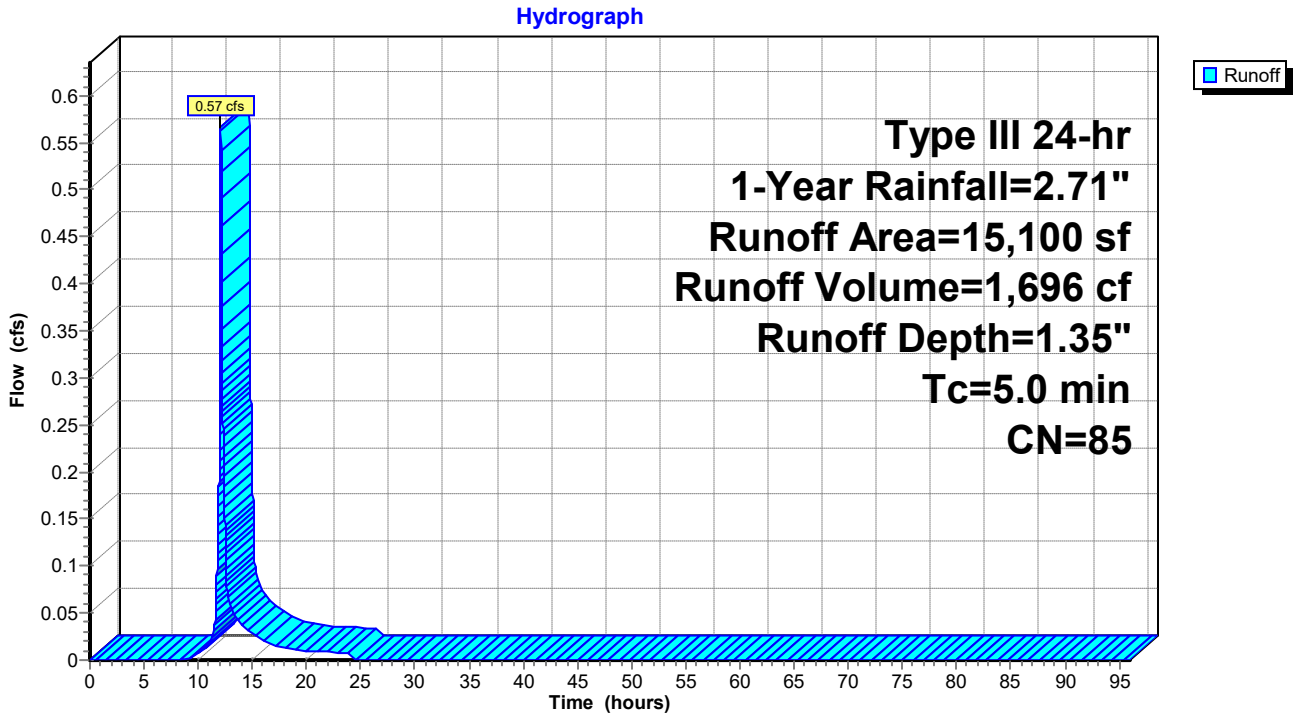
Runoff = 0.57 cfs @ 12.08 hrs, Volume= 1,696 cf, Depth= 1.35"
Routed to Link POA-3 : WEST OUTFALL (TO TAUNTON)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.71"

Area (sf)	CN	Description
8,251	74	>75% Grass cover, Good, HSG C
6,849	98	Unconnected pavement, HSG C
15,100	85	Weighted Average
8,251		54.64% Pervious Area
6,849		45.36% Impervious Area
6,849		100.00% Unconnected

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

Subcatchment P-5: OVERLAND TO WETLAND



Summary for Subcatchment R-1: ROOFS

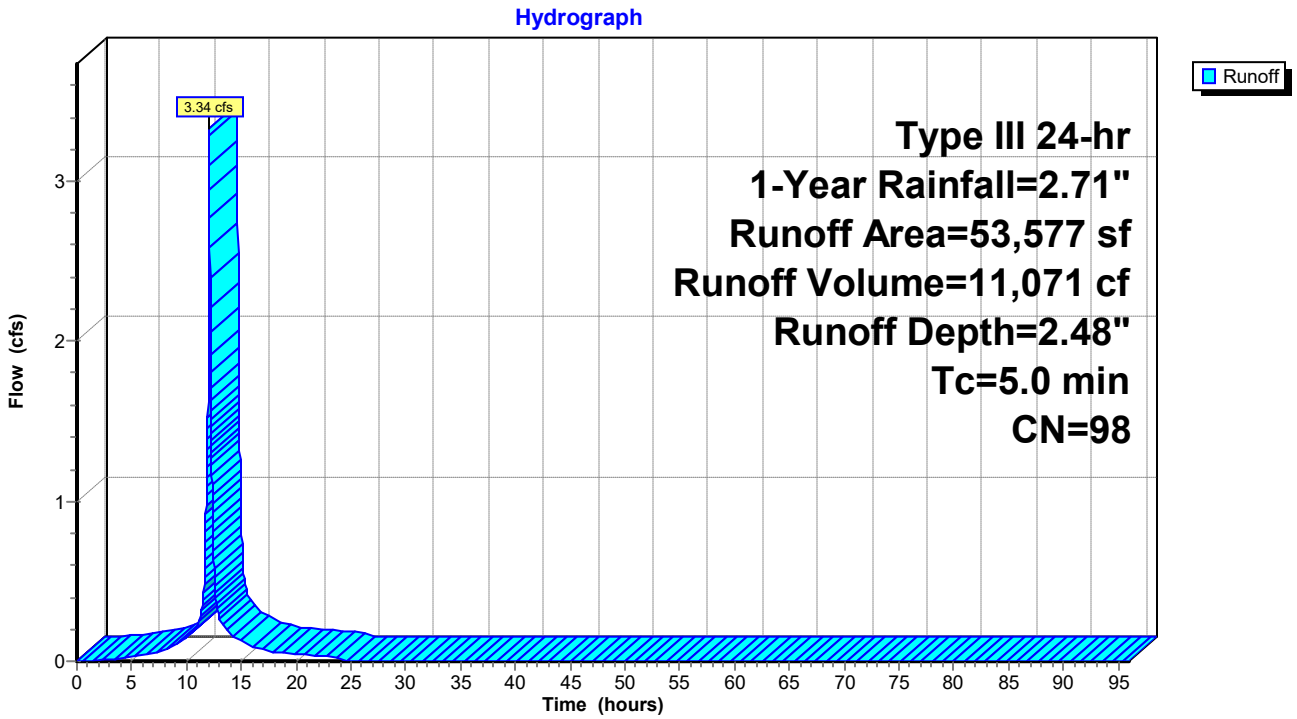
Runoff = 3.34 cfs @ 12.07 hrs, Volume= 11,071 cf, Depth= 2.48"
Routed to Pond B-3 : SUBSURFACE DETENTION SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.71"

Area (sf)	CN	Description
53,577	98	Roofs, HSG C
53,577		100.00% Impervious Area

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

Subcatchment R-1: ROOFS



Summary for Subcatchment R-2: HALF ROOF

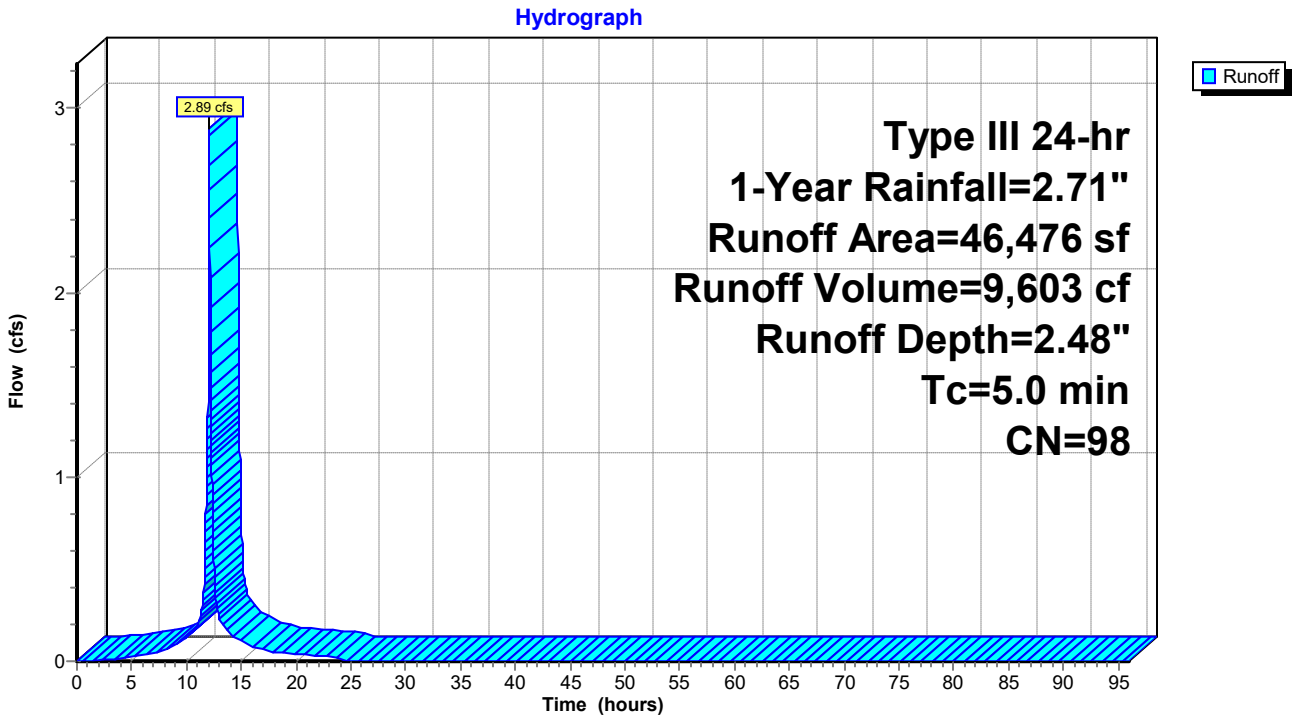
Runoff = 2.89 cfs @ 12.07 hrs, Volume= 9,603 cf, Depth= 2.48"
Routed to Pond B-2 : SAND FILTER-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.71"

Area (sf)	CN	Description
46,476	98	Roofs, HSG C
46,476		100.00% Impervious Area

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

Subcatchment R-2: HALF ROOF



Summary for Pond B-2: SAND FILTER-1

Inflow Area = 86,398 sf, 78.78% Impervious, Inflow Depth = 2.11" for 1-Year event
Inflow = 4.94 cfs @ 12.08 hrs, Volume= 15,213 cf
Outflow = 1.11 cfs @ 12.47 hrs, Volume= 15,200 cf, Atten= 78%, Lag= 23.8 min
Primary = 1.11 cfs @ 12.47 hrs, Volume= 15,200 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.45' @ 12.47 hrs Surf.Area= 16,926 sf Storage= 5,478 cf
Flood Elev= 181.00' Surf.Area= 26,925 sf Storage= 23,343 cf

Plug-Flow detention time= 91.0 min calculated for 15,200 cf (100% of inflow)
Center-of-Mass det. time= 90.4 min (875.6 - 785.2)

Volume	Invert	Avail.Storage	Storage Description
#1	180.00'	9,227 cf	**Basin (Prismatic)** Listed below (Recalc)
#2	176.50'	11,848 cf	**Sand Media (Prismatic)** Listed below (Recalc) 29,621 cf Overall x 40.0% Voids
#3	175.83'	2,268 cf	**Gravel (Prismatic)** Listed below (Recalc) 5,670 cf Overall x 40.0% Voids
		23,343 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
180.00	8,463	0	0
180.25	8,838	2,163	2,163
181.00	9,999	7,064	9,227

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.50	8,463	0	0
180.00	8,463	29,621	29,621

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.83	8,463	0	0
176.50	8,463	5,670	5,670

Device	Routing	Invert	Outlet Devices
#1	Primary	175.83'	**12.0" Round Culvert** L= 122.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 175.83' / 174.00' S= 0.0150 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	180.25'	**20.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65

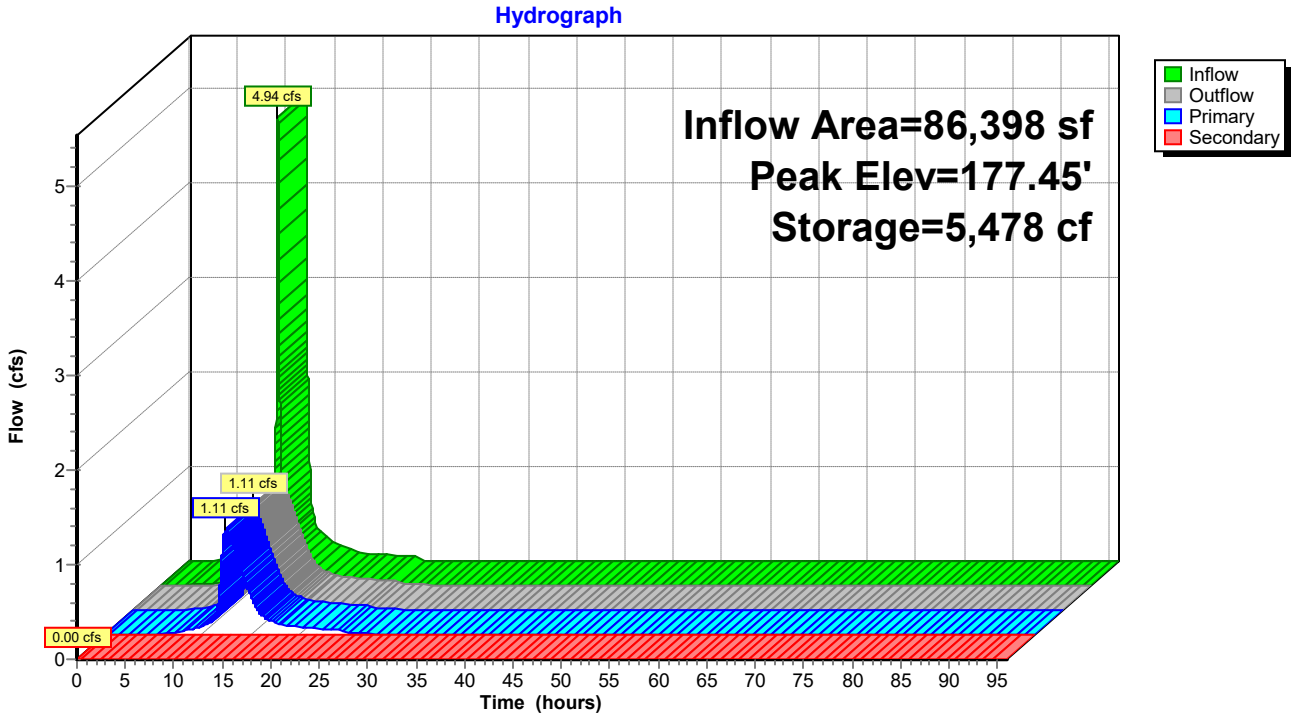
2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

#3 Device 1 175.83' **6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.11 cfs @ 12.47 hrs HW=177.45' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.11 cfs of 3.16 cfs potential flow)
└─**3=Orifice/Grate** (Orifice Controls 1.11 cfs @ 5.63 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=175.83' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-2: SAND FILTER-1



Summary for Pond B-3: SUBSURFACE DETENTION SYSTEM

Inflow Area = 136,057 sf, 85.16% Impervious, Inflow Depth = 2.14" for 1-Year event
Inflow = 7.62 cfs @ 12.07 hrs, Volume= 24,248 cf
Outflow = 5.44 cfs @ 12.14 hrs, Volume= 24,241 cf, Atten= 29%, Lag= 4.3 min
Primary = 5.44 cfs @ 12.14 hrs, Volume= 24,241 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.25' @ 12.14 hrs Surf.Area= 5,684 sf Storage= 5,287 cf
Flood Elev= 178.69' Surf.Area= 5,684 sf Storage= 9,665 cf

Plug-Flow detention time= 53.0 min calculated for 24,241 cf (100% of inflow)
Center-of-Mass det. time= 52.8 min (832.7 - 779.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	176.00'	3,543 cf	**19.75'W x 287.84'L x 2.69'H Field A** 15,311 cf Overall - 6,453 cf Embedded = 8,858 cf x 40.0% Voids
#2A	176.25'	6,130 cf	**ACF R-Tank HD 1** x 1452 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 1452 Chambers in 12 Rows
		9,673 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	176.00'	**30.0" Round Culvert** L= 86.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 176.00' / 173.56' S= 0.0284 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf
#2	Device 1	176.75'	**48.0" W x 6.0" H Vert. Rectangular Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	177.75'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	176.00'	**6.0" Vert. Low flow Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.44 cfs @ 12.14 hrs HW=177.25' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 5.44 cfs of 11.62 cfs potential flow)
  ├**2=Rectangular Orifice** (Orifice Controls 4.49 cfs @ 2.26 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Low flow Orifice** (Orifice Controls 0.94 cfs @ 4.81 fps)

Pond B-3: SUBSURFACE DETENTION SYSTEM - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)
Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf
Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

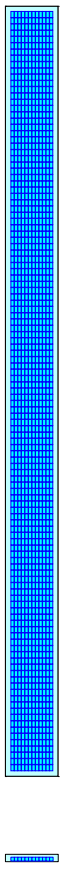
121 Chambers/Row x 2.35' Long = 283.84' Row Length +24.0" End Stone x 2 = 287.84' Base Length
12 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 19.75' Base Width
3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

1,452 Chambers x 4.2 cf = 6,130.1 cf Chamber Storage
1,452 Chambers x 4.4 cf = 6,452.7 cf Displacement

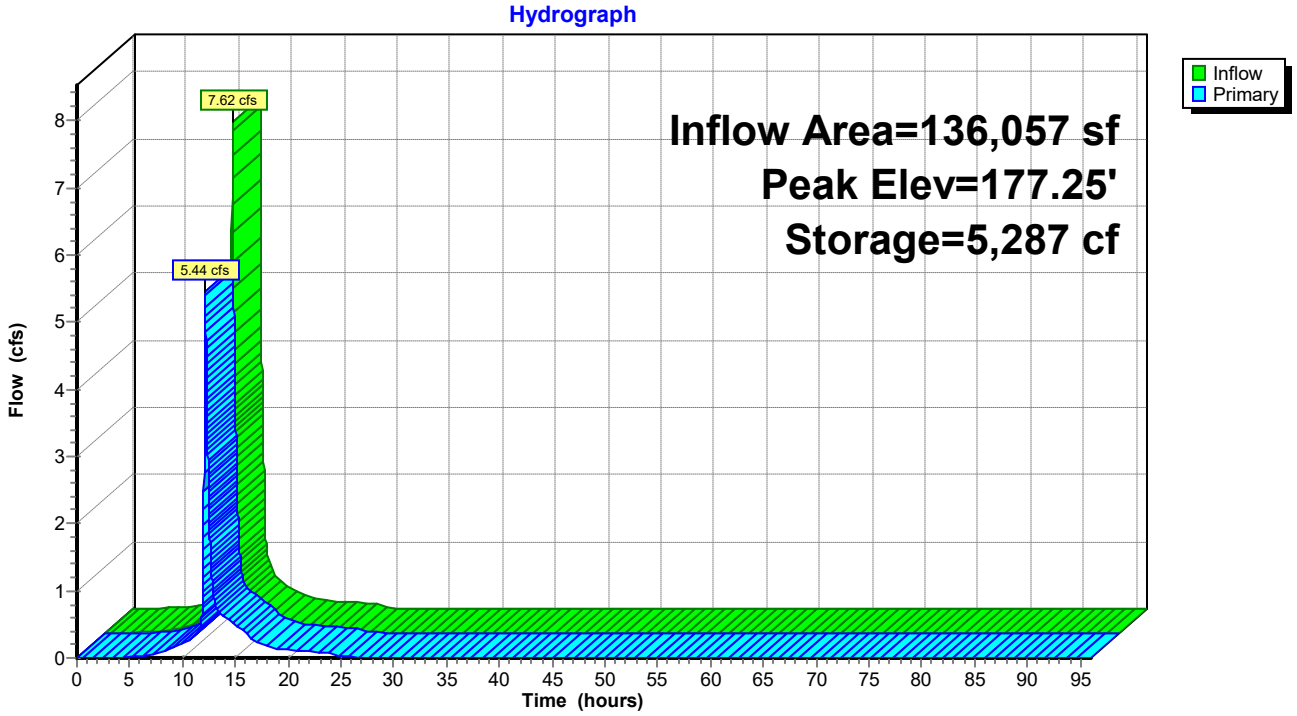
15,311.1 cf Field - 6,452.7 cf Chambers = 8,858.4 cf Stone x 40.0% Voids = 3,543.4 cf Stone Storage

Chamber Storage + Stone Storage = 9,673.4 cf = 0.222 af
Overall Storage Efficiency = 63.2%
Overall System Size = 287.84' x 19.75' x 2.69'

1,452 Chambers
567.1 cy Field
328.1 cy Stone



Pond B-3: SUBSURFACE DETENTION SYSTEM



Summary for Pond FB-1: Forebay-1

Inflow Area = 108,403 sf, 92.38% Impervious, Inflow Depth = 2.27" for 1-Year event
Inflow = 6.45 cfs @ 12.07 hrs, Volume= 20,480 cf
Outflow = 6.26 cfs @ 12.08 hrs, Volume= 19,332 cf, Atten= 3%, Lag= 0.7 min
Primary = 6.26 cfs @ 12.08 hrs, Volume= 19,332 cf
Routed to Pond FB-1A : Forebay-1A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.54' @ 12.09 hrs Surf.Area= 1,549 sf Storage= 1,571 cf
Flood Elev= 180.00' Surf.Area= 2,693 sf Storage= 6,786 cf

Plug-Flow detention time= 53.6 min calculated for 19,332 cf (94% of inflow)
Center-of-Mass det. time= 22.4 min (800.4 - 778.0)

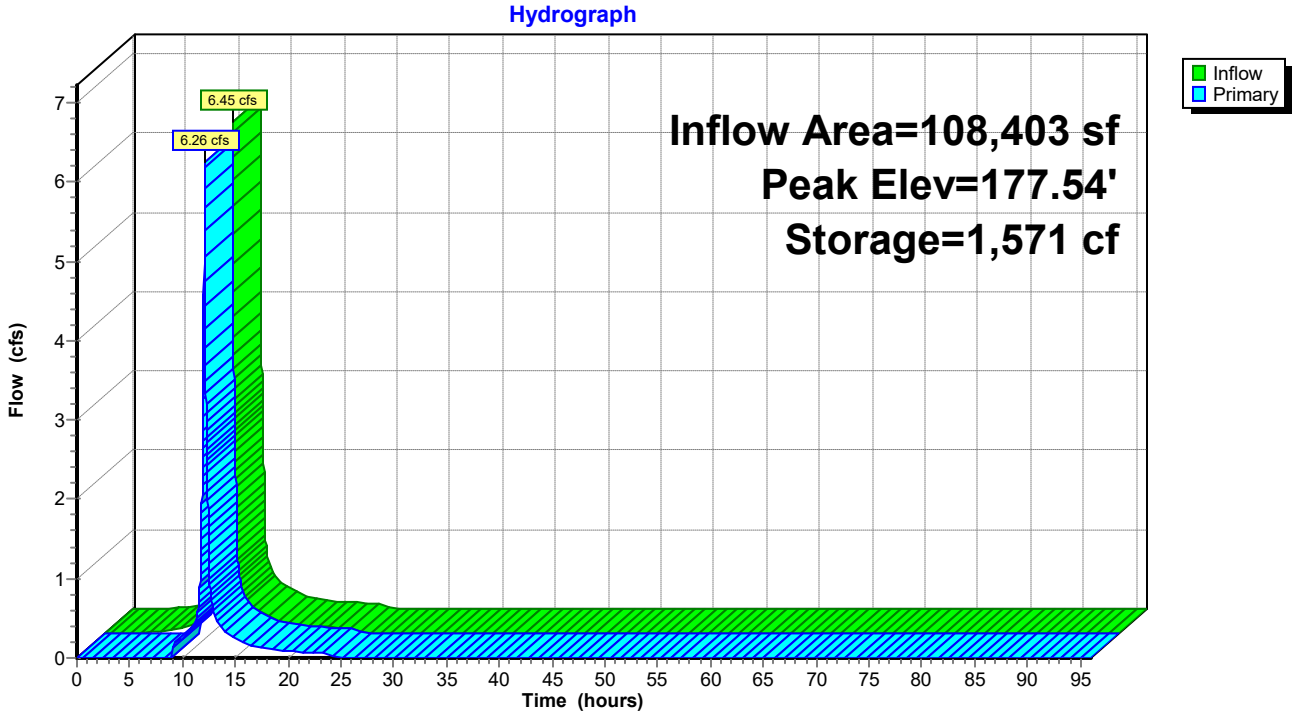
Volume	Invert	Avail.Storage	Storage Description
#1	176.00'	6,786 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.00	498	0	0
177.00	1,168	833	833
177.50	1,530	675	1,508
180.00	2,693	5,279	6,786

Device	Routing	Invert	Outlet Devices
#1	Primary	177.25'	**25.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=6.14 cfs @ 12.08 hrs HW=177.54' TW=177.47' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 6.14 cfs @ 0.85 fps)

Pond FB-1: Forebay-1



Summary for Pond FB-1A: Forebay-1A

Inflow Area = 108,403 sf, 92.38% Impervious, Inflow Depth = 2.14" for 1-Year event
Inflow = 6.26 cfs @ 12.08 hrs, Volume= 19,332 cf
Outflow = 6.22 cfs @ 12.09 hrs, Volume= 18,102 cf, Atten= 1%, Lag= 0.6 min
Primary = 6.22 cfs @ 12.09 hrs, Volume= 18,102 cf
Routed to Pond IB-1 : INFILTRATION BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.47' @ 12.09 hrs Surf.Area= 1,494 sf Storage= 1,548 cf
Flood Elev= 177.75' Surf.Area= 1,672 sf Storage= 1,986 cf

Plug-Flow detention time= 50.0 min calculated for 18,102 cf (94% of inflow)
Center-of-Mass det. time= 16.0 min (816.4 - 800.4)

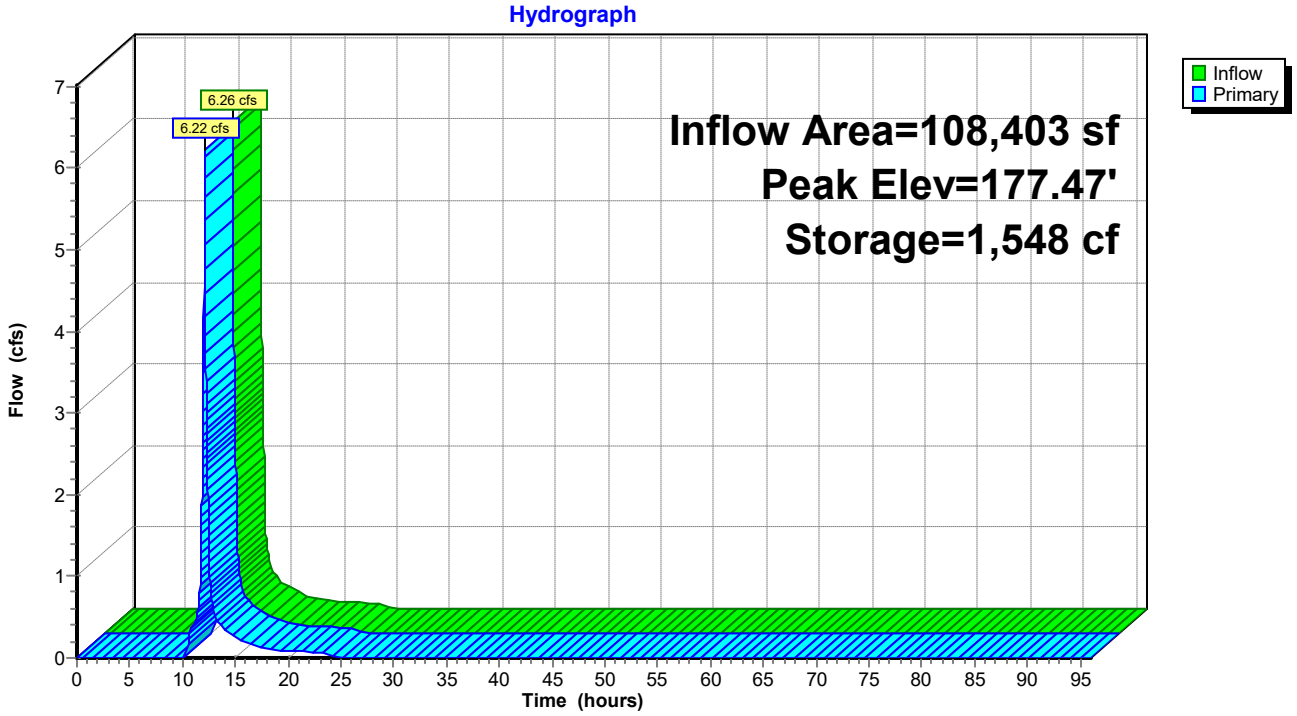
Volume	Invert	Avail.Storage	Storage Description
#1	176.00'	1,986 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.00	615	0	0
177.00	1,204	910	910
177.50	1,510	679	1,588
177.75	1,672	398	1,986

Device	Routing	Invert	Outlet Devices
#1	Primary	177.25'	**25.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=6.21 cfs @ 12.09 hrs HW=177.47' TW=176.22' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 6.21 cfs @ 1.11 fps)

Pond FB-1A: Forebay-1A



Summary for Pond FB-2: Forebay-2

Inflow Area = 39,922 sf, 54.08% Impervious, Inflow Depth = 1.89" for 1-Year event
Inflow = 2.07 cfs @ 12.07 hrs, Volume= 6,283 cf
Outflow = 2.06 cfs @ 12.08 hrs, Volume= 5,610 cf, Atten= 1%, Lag= 0.6 min
Primary = 2.06 cfs @ 12.08 hrs, Volume= 5,610 cf
Routed to Pond B-2 : SAND FILTER-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 180.36' @ 12.08 hrs Surf.Area= 945 sf Storage= 769 cf
Flood Elev= 181.00' Surf.Area= 1,438 sf Storage= 1,536 cf

Plug-Flow detention time= 78.0 min calculated for 5,610 cf (89% of inflow)
Center-of-Mass det. time= 26.9 min (829.9 - 803.0)

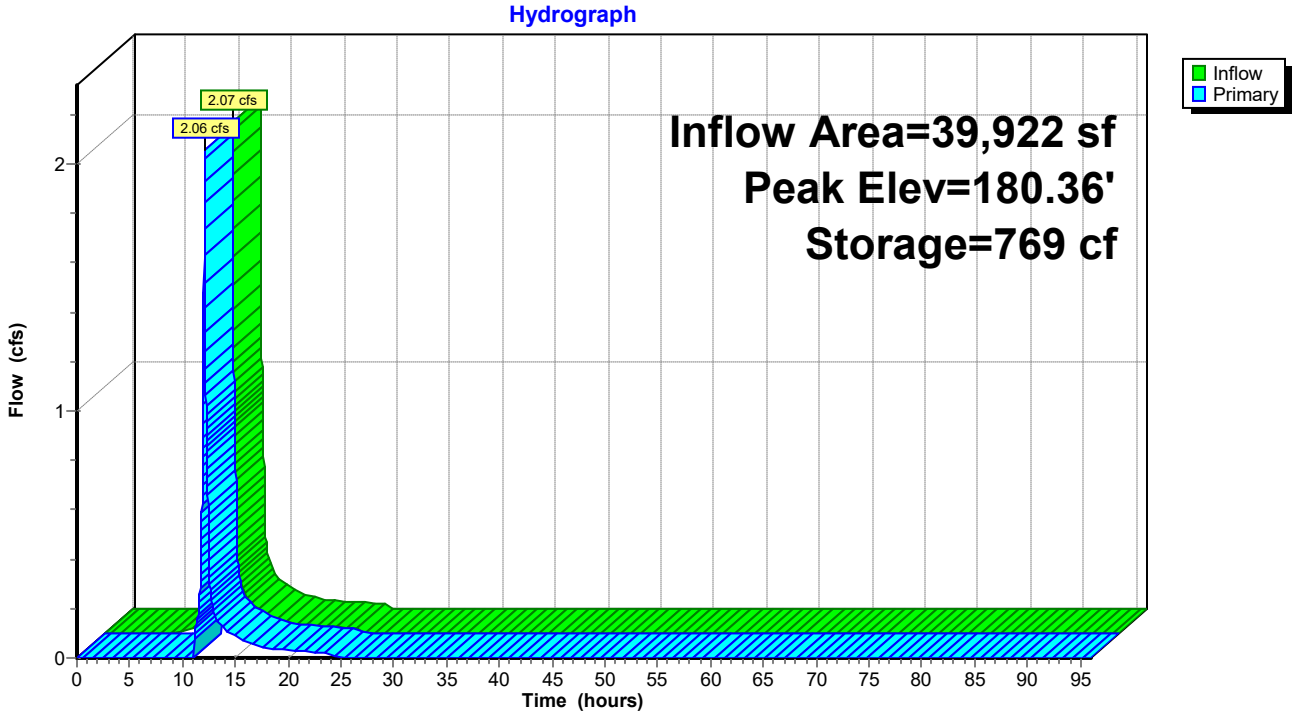
Volume	Invert	Avail.Storage	Storage Description
#1	179.00'	1,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
179.00	290	0	0
180.00	672	481	481
181.00	1,438	1,055	1,536

Device	Routing	Invert	Outlet Devices
#1	Primary	180.25'	**25.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=2.05 cfs @ 12.08 hrs HW=180.36' TW=176.91' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 2.05 cfs @ 0.78 fps)

Pond FB-2: Forebay-2



Summary for Pond IB-1: INFILTRATION BASIN 1

Inflow Area = 108,403 sf, 92.38% Impervious, Inflow Depth = 2.00" for 1-Year event
Inflow = 6.22 cfs @ 12.09 hrs, Volume= 18,102 cf
Outflow = 1.95 cfs @ 12.41 hrs, Volume= 18,103 cf, Atten= 69%, Lag= 18.8 min
Discarded = 0.06 cfs @ 12.41 hrs, Volume= 10,348 cf
Primary = 1.89 cfs @ 12.41 hrs, Volume= 7,755 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 176.56' @ 12.41 hrs Surf.Area= 9,091 sf Storage= 8,610 cf
Flood Elev= 178.10' Surf.Area= 12,034 sf Storage= 24,856 cf

Plug-Flow detention time= 837.1 min calculated for 18,101 cf (100% of inflow)
Center-of-Mass det. time= 837.3 min (1,653.7 - 816.4)

Volume	Invert	Avail.Storage	Storage Description
#1	175.50'	24,856 cf	**Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.50	7,184	0	0
176.00	8,064	3,812	3,812
177.00	9,900	8,982	12,794
178.00	11,837	10,869	23,663
178.10	12,034	1,194	24,856

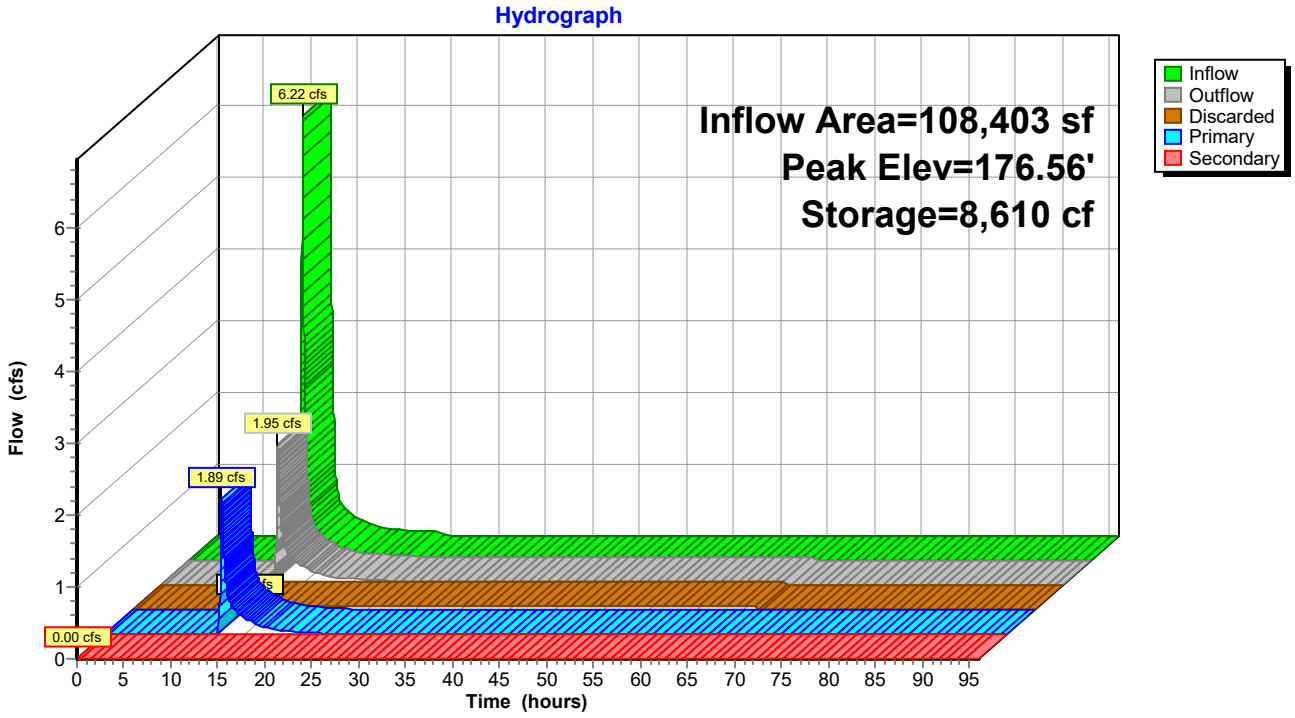
Device	Routing	Invert	Outlet Devices
#1	Discarded	175.50'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	174.25'	**24.0" Round Culvert** L= 27.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 174.25' / 173.98' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#3	Secondary	177.00'	**15.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#4	Device 2	176.45'	**2.0" x 48.0" Horiz. Orifice/Grate X 20.00** C= 0.600 in 48.0" x 48.0" Grate (83% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 12.41 hrs HW=176.56' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=1.89 cfs @ 12.41 hrs HW=176.56' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 1.89 cfs of 13.66 cfs potential flow)
└**4=Orifice/Grate** (Weir Controls 1.89 cfs @ 1.08 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=175.50' TW=0.00' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond IB-1: INFILTRATION BASIN 1

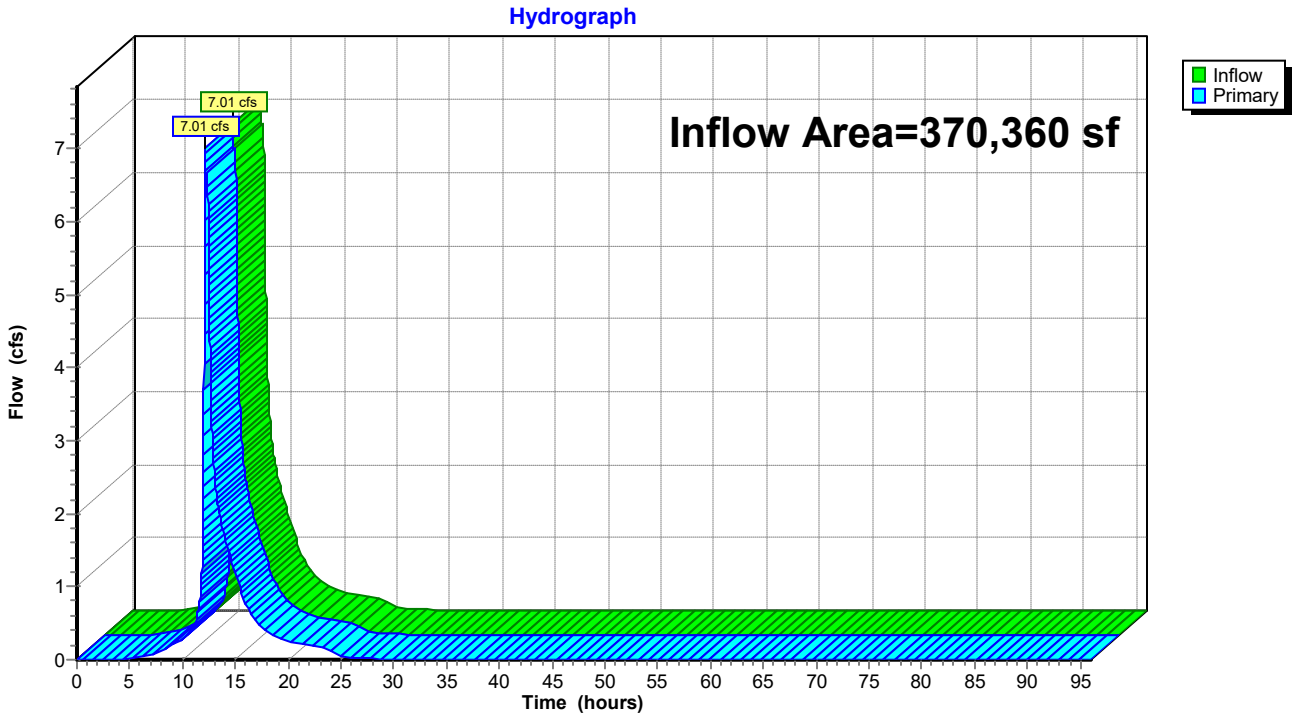


Summary for Link POA-1: EAST OUTFALL (WETLAND SERIES-A)

Inflow Area = 370,360 sf, 76.70% Impervious, Inflow Depth = 1.61" for 1-Year event
Inflow = 7.01 cfs @ 12.14 hrs, Volume= 49,599 cf
Primary = 7.01 cfs @ 12.14 hrs, Volume= 49,599 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-1: EAST OUTFALL (WETLAND SERIES-A)

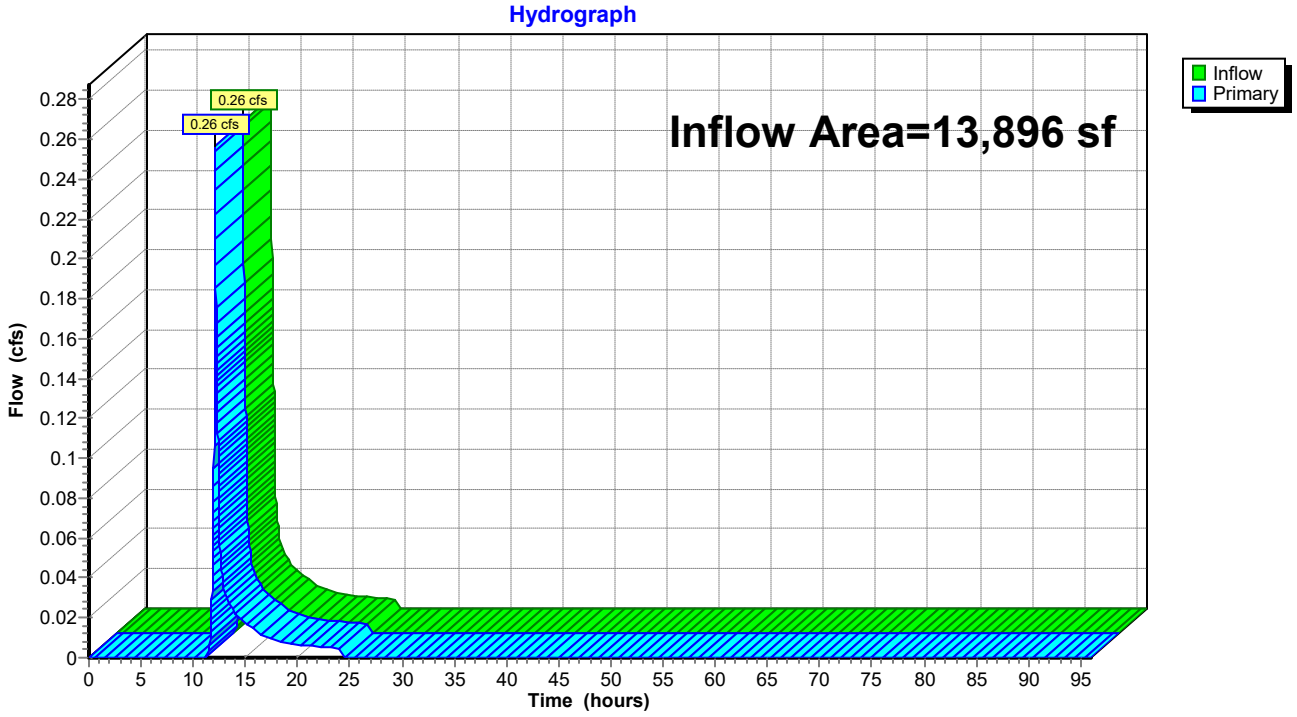


Summary for Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

Inflow Area = 13,896 sf, 0.00% Impervious, Inflow Depth = 0.73" for 1-Year event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 845 cf
Primary = 0.26 cfs @ 12.08 hrs, Volume= 845 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

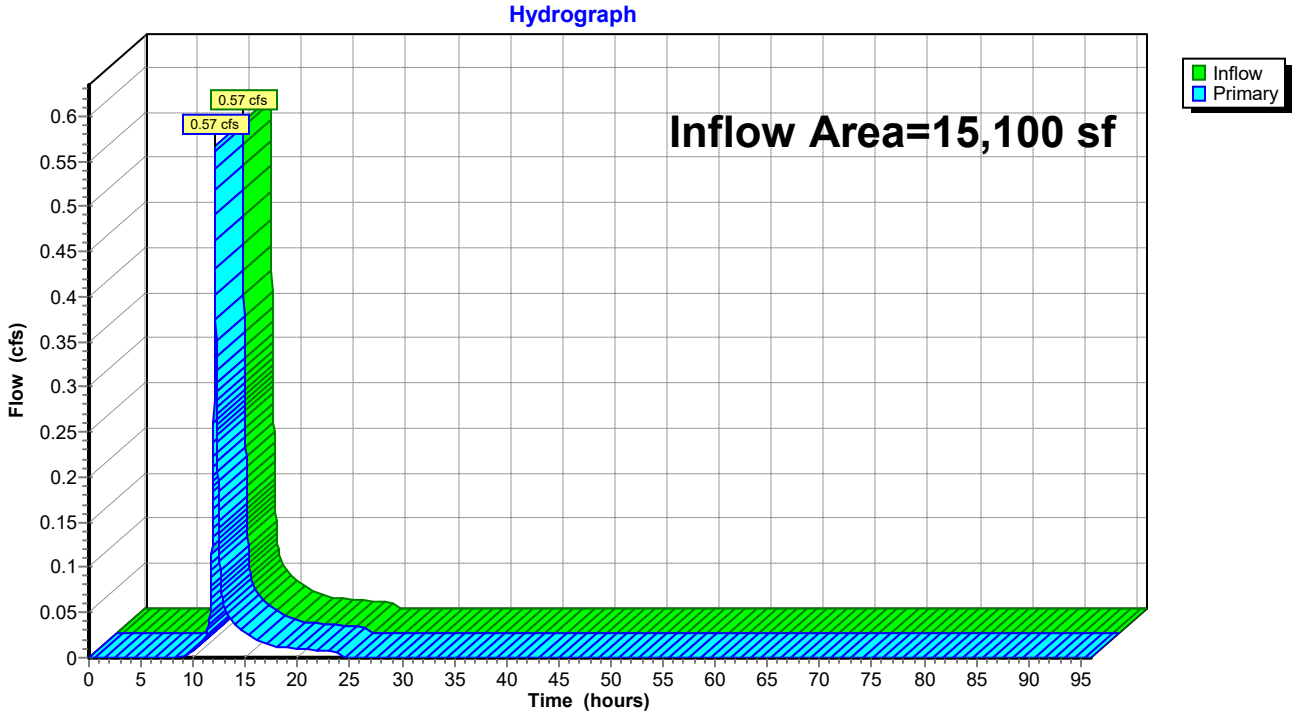


Summary for Link POA-3: WEST OUTFALL (TO TAUNTON)

Inflow Area = 15,100 sf, 45.36% Impervious, Inflow Depth = 1.35" for 1-Year event
Inflow = 0.57 cfs @ 12.08 hrs, Volume= 1,696 cf
Primary = 0.57 cfs @ 12.08 hrs, Volume= 1,696 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-3: WEST OUTFALL (TO TAUNTON)



Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P-1: NORTH & EAST Runoff Area=108,403 sf 92.38% Impervious Runoff Depth=2.82"
Tc=5.0 min CN=96 Runoff=7.92 cfs 25,458 cf

Subcatchment P-2: SOUTH PARKING Runoff Area=39,922 sf 54.08% Impervious Runoff Depth=2.42"
Tc=5.0 min CN=92 Runoff=2.63 cfs 8,042 cf

Subcatchment P-3: WEST PARKING Runoff Area=68,527 sf 70.54% Impervious Runoff Depth=2.32"
Tc=5.0 min CN=91 Runoff=4.36 cfs 13,272 cf

Subcatchment P-3A: EAST PARKING Runoff Area=13,953 sf 100.00% Impervious Runoff Depth=3.04"
Tc=5.0 min CN=98 Runoff=1.05 cfs 3,532 cf

Subcatchment P-3B: OUTSIDE OVERLAND Runoff Area=39,502 sf 0.00% Impervious Runoff Depth=1.08"
Tc=5.0 min CN=74 Runoff=1.14 cfs 3,568 cf

Subcatchment P-4: OVERLAND TO Runoff Area=13,896 sf 0.00% Impervious Runoff Depth=1.08"
Tc=5.0 min CN=74 Runoff=0.40 cfs 1,255 cf

Subcatchment P-5: OVERLAND TO Runoff Area=15,100 sf 45.36% Impervious Runoff Depth=1.82"
Tc=5.0 min CN=85 Runoff=0.77 cfs 2,287 cf

Subcatchment R-1: ROOFS Runoff Area=53,577 sf 100.00% Impervious Runoff Depth=3.04"
Tc=5.0 min CN=98 Runoff=4.05 cfs 13,560 cf

Subcatchment R-2: HALF ROOF Runoff Area=46,476 sf 100.00% Impervious Runoff Depth=3.04"
Tc=5.0 min CN=98 Runoff=3.51 cfs 11,763 cf

Pond B-2: SAND FILTER-1 Peak Elev=177.89' Storage=6,974 cf Inflow=6.10 cfs 19,132 cf
Primary=1.27 cfs 19,118 cf Secondary=0.00 cfs 0 cf Outflow=1.27 cfs 19,118 cf

Pond B-3: SUBSURFACE DETENTION Peak Elev=177.38' Storage=5,936 cf Inflow=9.46 cfs 30,364 cf
Outflow=6.86 cfs 30,357 cf

Pond FB-1: Forebay-1 Peak Elev=177.58' Storage=1,635 cf Inflow=7.92 cfs 25,458 cf
Outflow=7.71 cfs 24,311 cf

Pond FB-1A: Forebay-1A Peak Elev=177.50' Storage=1,595 cf Inflow=7.71 cfs 24,311 cf
Outflow=7.66 cfs 23,081 cf

Pond FB-2: Forebay-2 Peak Elev=180.37' Storage=786 cf Inflow=2.63 cfs 8,042 cf
Outflow=2.61 cfs 7,369 cf

Pond IB-1: INFILTRATION BASIN 1 Peak Elev=176.63' Storage=9,281 cf Inflow=7.66 cfs 23,081 cf
Discarded=0.06 cfs 10,495 cf Primary=4.08 cfs 12,586 cf Secondary=0.00 cfs 0 cf Outflow=4.14 cfs 23,081 cf

Link POA-1: EAST OUTFALL (WETLAND SERIES-A) Inflow=12.35 cfs 65,630 cf
Primary=12.35 cfs 65,630 cf

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B) Inflow=0.40 cfs 1,255 cf
Primary=0.40 cfs 1,255 cf

Link POA-3: WEST OUTFALL (TO TAUNTON) Inflow=0.77 cfs 2,287 cf
Primary=0.77 cfs 2,287 cf

Total Runoff Area = 399,356 sf Runoff Volume = 82,737 cf Average Runoff Depth = 2.49"
27.15% Pervious = 108,428 sf 72.85% Impervious = 290,928 sf

Summary for Subcatchment P-1: NORTH & EAST PARKING

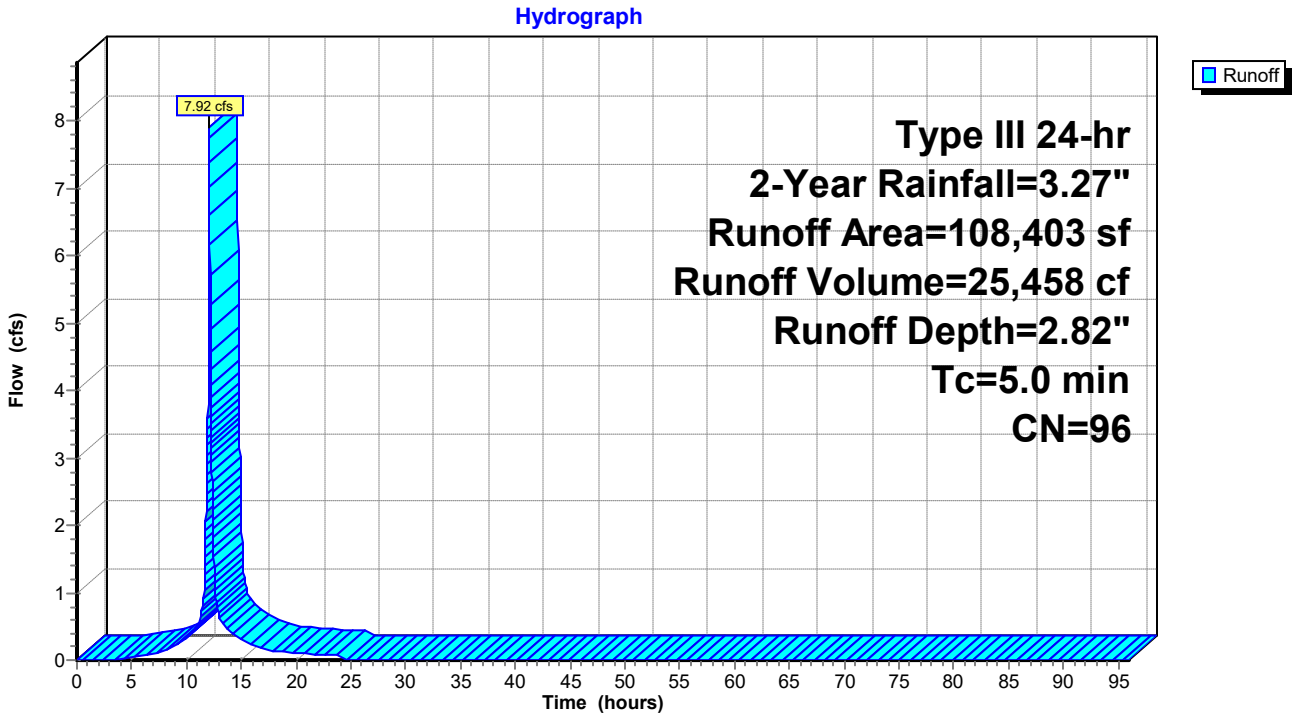
Runoff = 7.92 cfs @ 12.07 hrs, Volume= 25,458 cf, Depth= 2.82"
Routed to Pond FB-1 : Forebay-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.27"

Area (sf)	CN	Description
8,261	74	>75% Grass cover, Good, HSG C
87,749	98	Paved parking, HSG C
12,393	98	Water Surface, HSG C
108,403	96	Weighted Average
8,261		7.62% Pervious Area
100,142		92.38% Impervious Area

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

Subcatchment P-1: NORTH & EAST PARKING



Summary for Subcatchment P-2: SOUTH PARKING

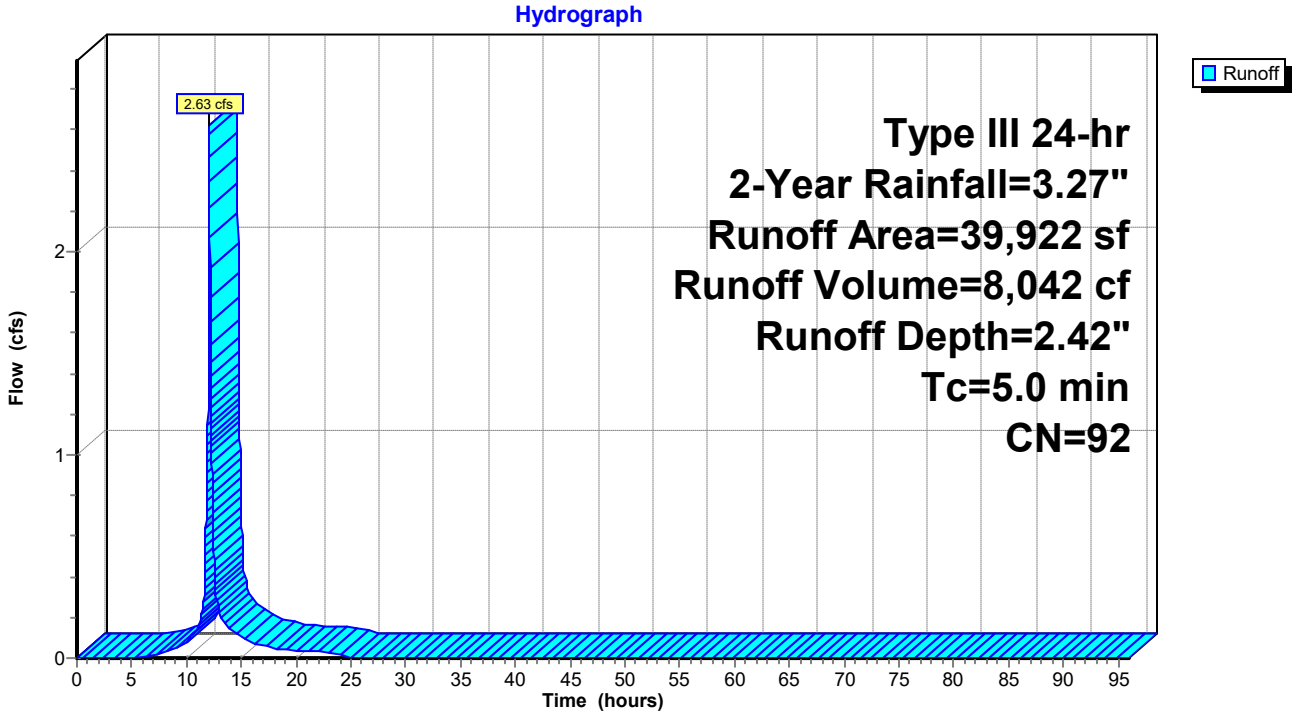
Runoff = 2.63 cfs @ 12.07 hrs, Volume= 8,042 cf, Depth= 2.42"
Routed to Pond FB-2 : Forebay-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.27"

Area (sf)	CN	Description
21,591	98	Paved parking, HSG C
9,196	74	>75% Grass cover, Good, HSG C
9,135	98	Water Surface, 0% imp, HSG C
39,922	92	Weighted Average
18,331		45.92% Pervious Area
21,591		54.08% Impervious Area

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

Subcatchment P-2: SOUTH PARKING



Summary for Subcatchment P-3: WEST PARKING

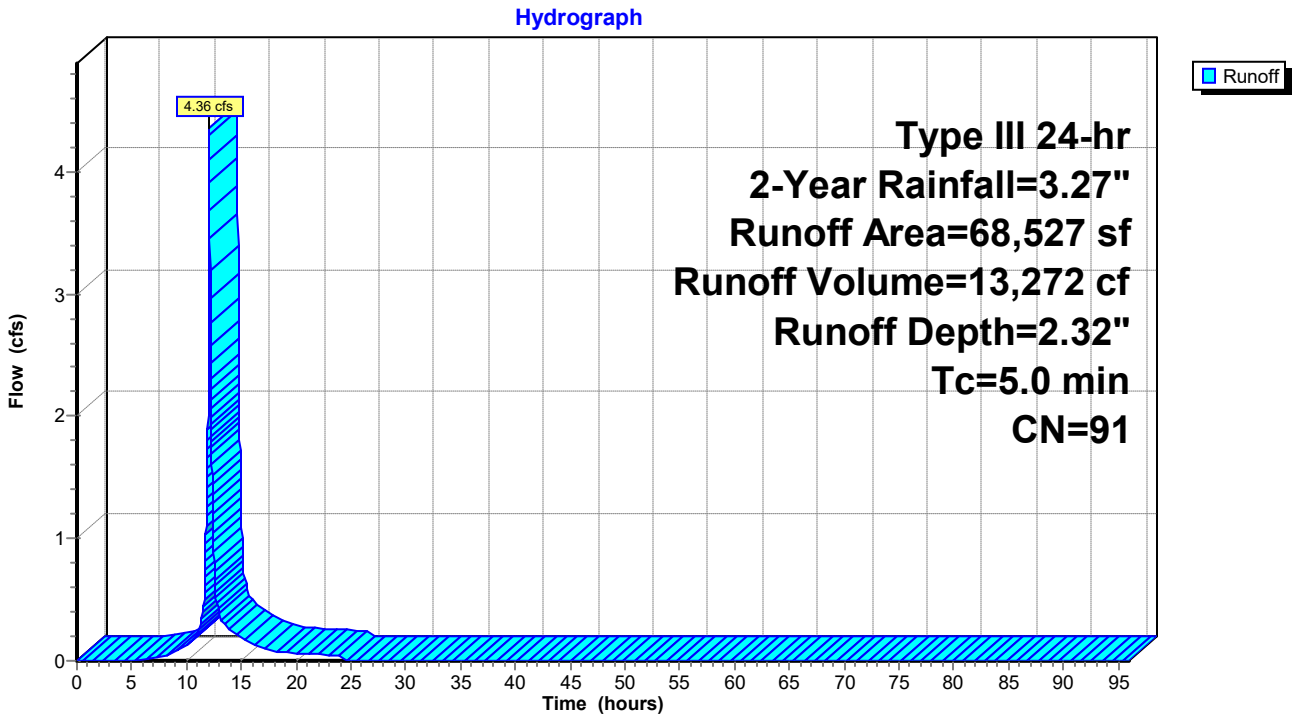
Runoff = 4.36 cfs @ 12.07 hrs, Volume= 13,272 cf, Depth= 2.32"
Routed to Pond B-3 : SUBSURFACE DETENTION SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.27"

Area (sf)	CN	Description
48,340	98	Paved parking, HSG C
20,187	74	>75% Grass cover, Good, HSG C
68,527	91	Weighted Average
20,187		29.46% Pervious Area
48,340		70.54% Impervious Area

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

Subcatchment P-3: WEST PARKING



Summary for Subcatchment P-3A: EAST PARKING

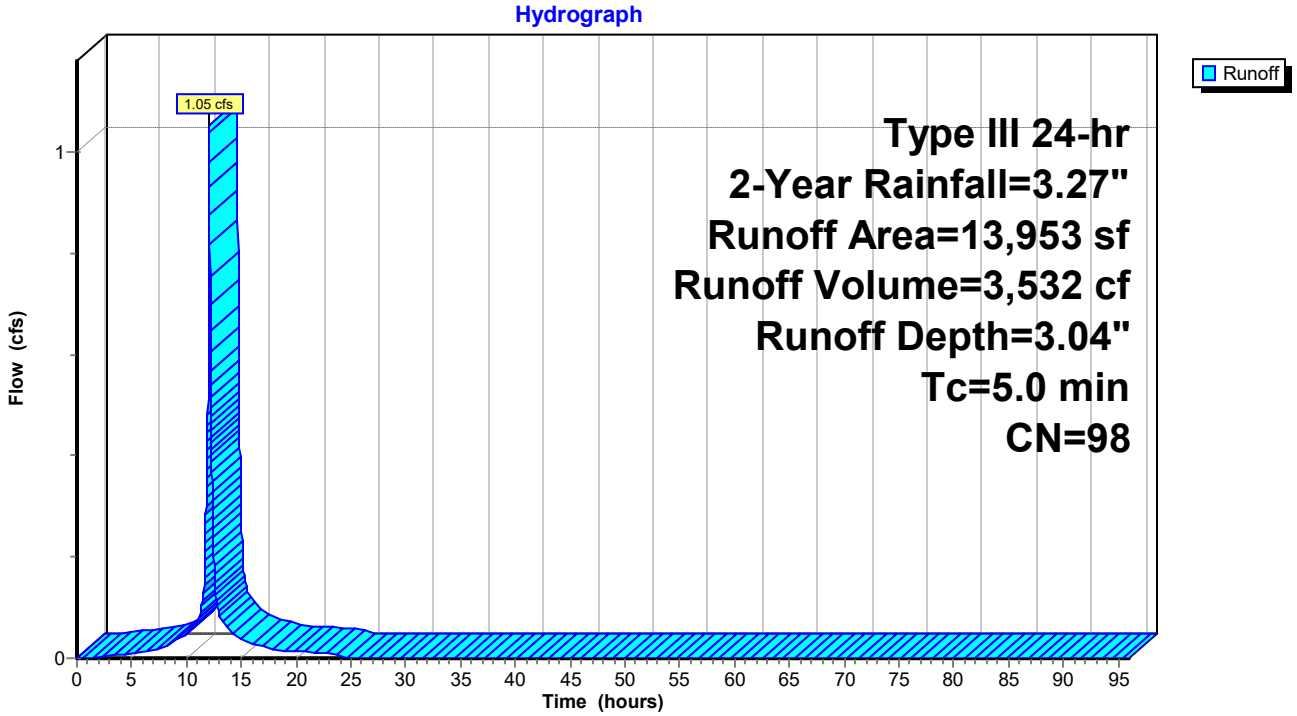
Runoff = 1.05 cfs @ 12.07 hrs, Volume= 3,532 cf, Depth= 3.04"
Routed to Pond B-3 : SUBSURFACE DETENTION SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.27"

Area (sf)	CN	Description
13,953	98	Paved parking, HSG C
13,953		100.00% Impervious Area

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

Subcatchment P-3A: EAST PARKING



Summary for Subcatchment P-3B: OUTSIDE OVERLAND FLOW

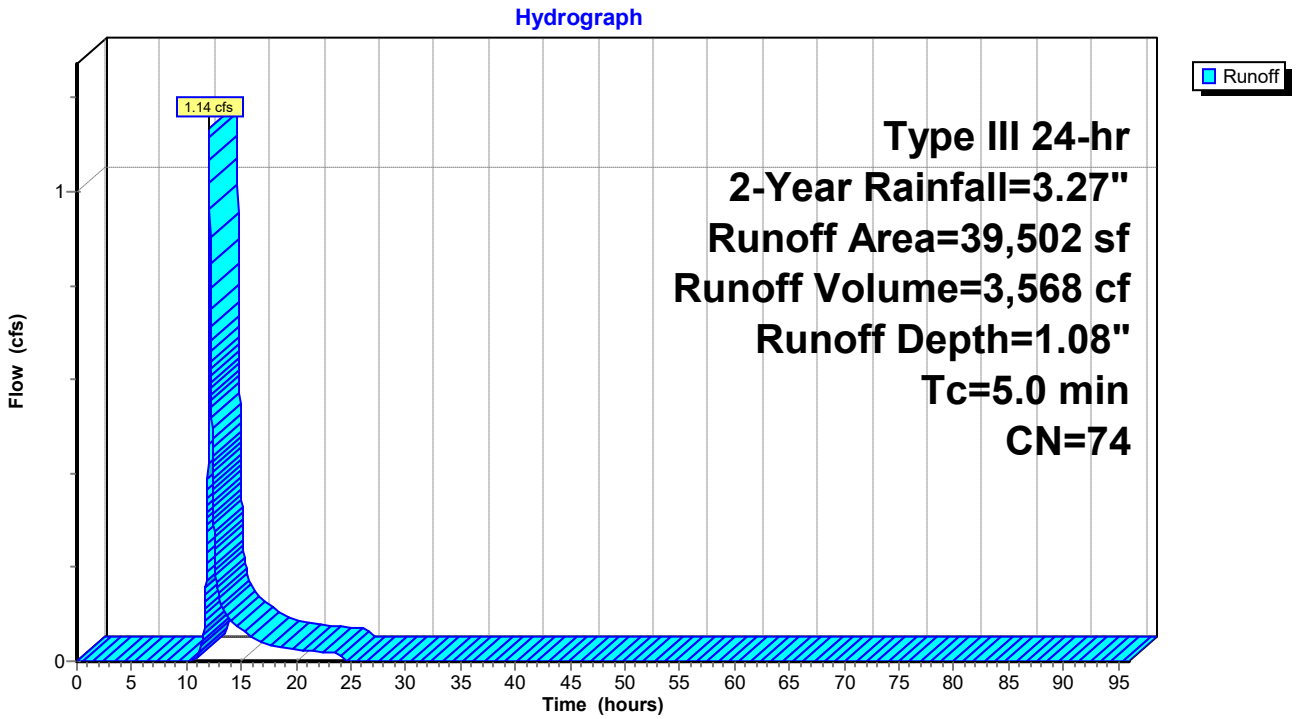
Runoff = 1.14 cfs @ 12.08 hrs, Volume= 3,568 cf, Depth= 1.08"
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.27"

Area (sf)	CN	Description
39,502	74	>75% Grass cover, Good, HSG C
39,502		100.00% Pervious Area

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

Subcatchment P-3B: OUTSIDE OVERLAND FLOW



Summary for Subcatchment P-4: OVERLAND TO WETLAND

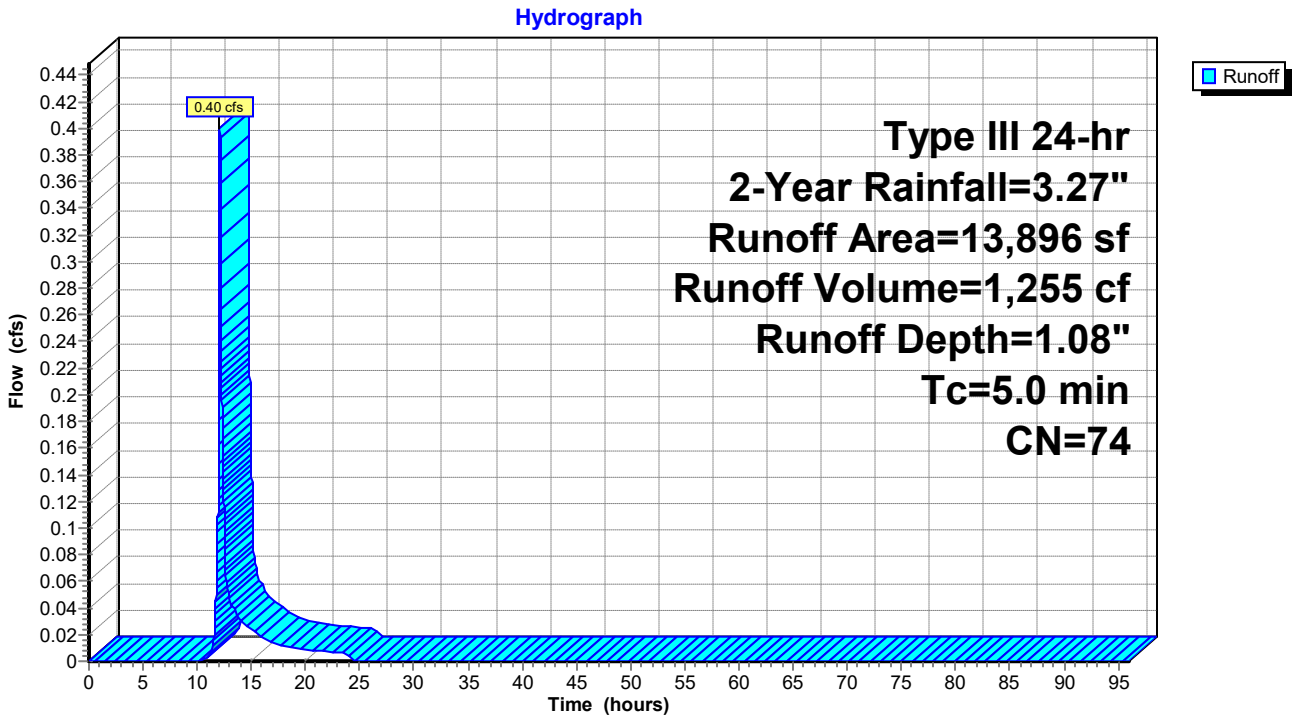
Runoff = 0.40 cfs @ 12.08 hrs, Volume= 1,255 cf, Depth= 1.08"
Routed to Link POA-2 : SOUTH OUTFALL (WETLAND SERIES-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.27"

Area (sf)	CN	Description
13,896	74	>75% Grass cover, Good, HSG C
13,896		100.00% Pervious Area

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

Subcatchment P-4: OVERLAND TO WETLAND



Summary for Subcatchment P-5: OVERLAND TO WETLAND

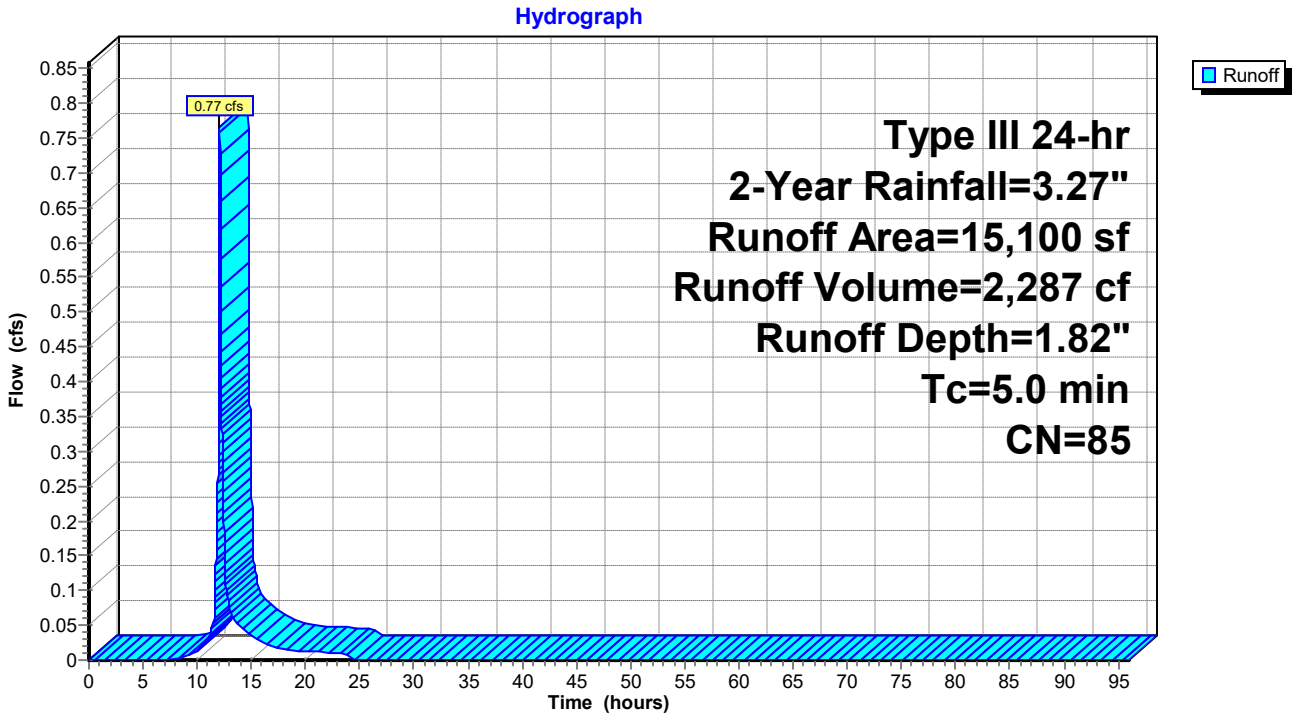
Runoff = 0.77 cfs @ 12.07 hrs, Volume= 2,287 cf, Depth= 1.82"
Routed to Link POA-3 : WEST OUTFALL (TO TAUNTON)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.27"

Area (sf)	CN	Description
8,251	74	>75% Grass cover, Good, HSG C
6,849	98	Unconnected pavement, HSG C
15,100	85	Weighted Average
8,251		54.64% Pervious Area
6,849		45.36% Impervious Area
6,849		100.00% Unconnected

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

Subcatchment P-5: OVERLAND TO WETLAND



Summary for Subcatchment R-1: ROOFS

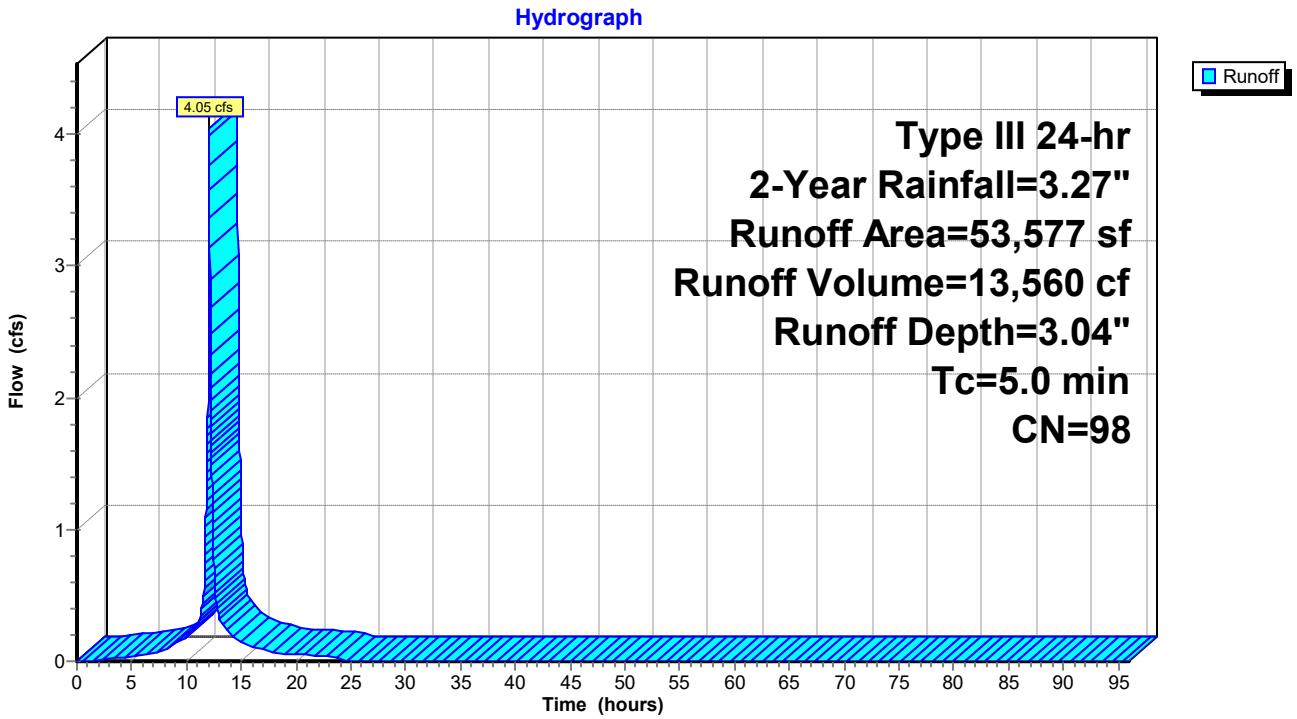
Runoff = 4.05 cfs @ 12.07 hrs, Volume= 13,560 cf, Depth= 3.04"
Routed to Pond B-3 : SUBSURFACE DETENTION SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.27"

Area (sf)	CN	Description
53,577	98	Roofs, HSG C
53,577		100.00% Impervious Area

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

Subcatchment R-1: ROOFS



Summary for Subcatchment R-2: HALF ROOF

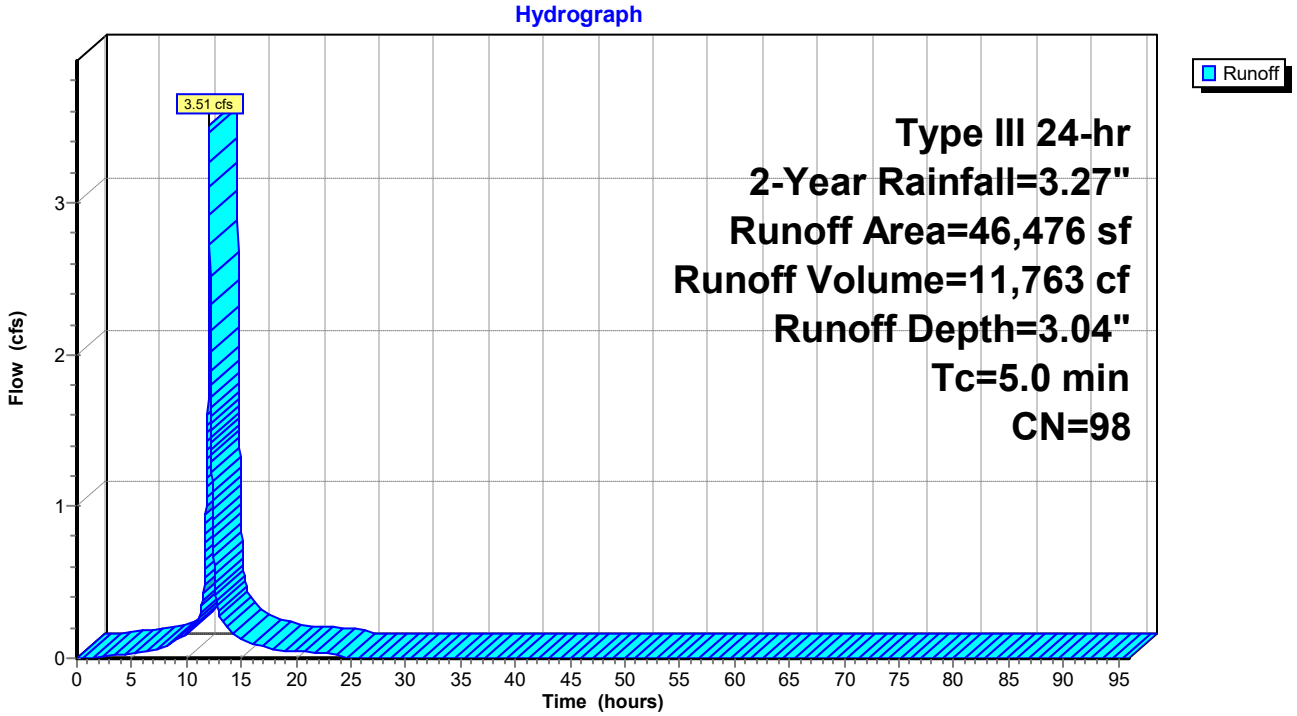
Runoff = 3.51 cfs @ 12.07 hrs, Volume= 11,763 cf, Depth= 3.04"
Routed to Pond B-2 : SAND FILTER-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.27"

Area (sf)	CN	Description
46,476	98	Roofs, HSG C
46,476		100.00% Impervious Area

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

Subcatchment R-2: HALF ROOF



Summary for Pond B-2: SAND FILTER-1

Inflow Area = 86,398 sf, 78.78% Impervious, Inflow Depth = 2.66" for 2-Year event
Inflow = 6.10 cfs @ 12.07 hrs, Volume= 19,132 cf
Outflow = 1.27 cfs @ 12.49 hrs, Volume= 19,118 cf, Atten= 79%, Lag= 24.7 min
Primary = 1.27 cfs @ 12.49 hrs, Volume= 19,118 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.89' @ 12.49 hrs Surf.Area= 16,926 sf Storage= 6,974 cf
Flood Elev= 181.00' Surf.Area= 26,925 sf Storage= 23,343 cf

Plug-Flow detention time= 89.8 min calculated for 19,118 cf (100% of inflow)
Center-of-Mass det. time= 89.3 min (869.4 - 780.1)

Volume	Invert	Avail.Storage	Storage Description
#1	180.00'	9,227 cf	**Basin (Prismatic)** Listed below (Recalc)
#2	176.50'	11,848 cf	**Sand Media (Prismatic)** Listed below (Recalc) 29,621 cf Overall x 40.0% Voids
#3	175.83'	2,268 cf	**Gravel (Prismatic)** Listed below (Recalc) 5,670 cf Overall x 40.0% Voids
		23,343 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
180.00	8,463	0	0
180.25	8,838	2,163	2,163
181.00	9,999	7,064	9,227

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.50	8,463	0	0
180.00	8,463	29,621	29,621

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.83	8,463	0	0
176.50	8,463	5,670	5,670

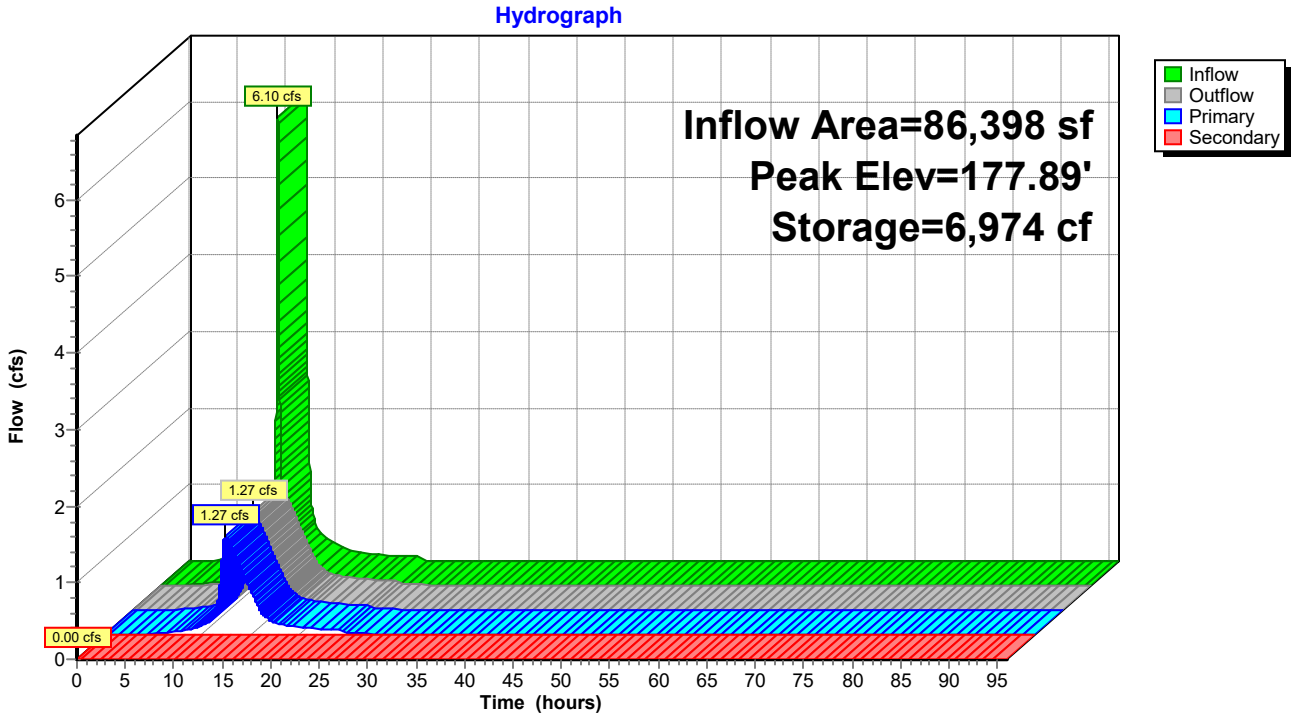
Device	Routing	Invert	Outlet Devices
#1	Primary	175.83'	**12.0" Round Culvert** L= 122.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 175.83' / 174.00' S= 0.0150 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	180.25'	**20.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65

2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3 Device 1 175.83' **6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.27 cfs @ 12.49 hrs HW=177.89' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.27 cfs of 3.73 cfs potential flow)
└─**3=Orifice/Grate** (Orifice Controls 1.27 cfs @ 6.48 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=175.83' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-2: SAND FILTER-1



Summary for Pond B-3: SUBSURFACE DETENTION SYSTEM

Inflow Area = 136,057 sf, 85.16% Impervious, Inflow Depth = 2.68" for 2-Year event
Inflow = 9.46 cfs @ 12.07 hrs, Volume= 30,364 cf
Outflow = 6.86 cfs @ 12.14 hrs, Volume= 30,357 cf, Atten= 28%, Lag= 4.2 min
Primary = 6.86 cfs @ 12.14 hrs, Volume= 30,357 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.38' @ 12.14 hrs Surf.Area= 5,684 sf Storage= 5,936 cf
Flood Elev= 178.69' Surf.Area= 5,684 sf Storage= 9,665 cf

Plug-Flow detention time= 49.0 min calculated for 30,357 cf (100% of inflow)
Center-of-Mass det. time= 48.9 min (823.9 - 775.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	176.00'	3,543 cf	**19.75'W x 287.84'L x 2.69'H Field A** 15,311 cf Overall - 6,453 cf Embedded = 8,858 cf x 40.0% Voids
#2A	176.25'	6,130 cf	**ACF R-Tank HD 1** x 1452 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 1452 Chambers in 12 Rows
		9,673 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	176.00'	**30.0" Round Culvert** L= 86.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 176.00' / 173.56' S= 0.0284 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf
#2	Device 1	176.75'	**48.0" W x 6.0" H Vert. Rectangular Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	177.75'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	176.00'	**6.0" Vert. Low flow Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.86 cfs @ 12.14 hrs HW=177.38' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 6.86 cfs of 13.97 cfs potential flow)
  ├**2=Rectangular Orifice** (Orifice Controls 5.85 cfs @ 2.93 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Low flow Orifice** (Orifice Controls 1.01 cfs @ 5.13 fps)

Pond B-3: SUBSURFACE DETENTION SYSTEM - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)
Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf
Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

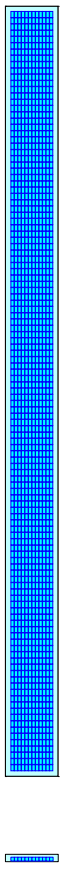
121 Chambers/Row x 2.35' Long = 283.84' Row Length +24.0" End Stone x 2 = 287.84' Base Length
12 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 19.75' Base Width
3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

1,452 Chambers x 4.2 cf = 6,130.1 cf Chamber Storage
1,452 Chambers x 4.4 cf = 6,452.7 cf Displacement

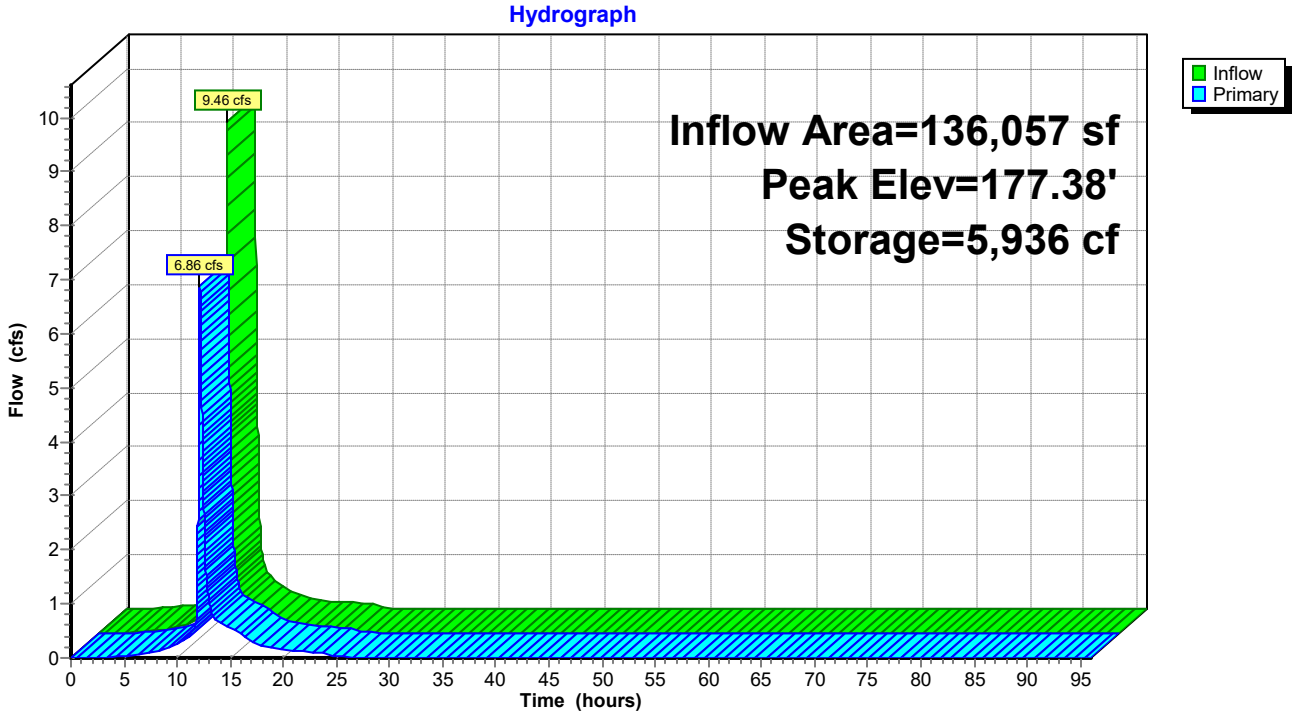
15,311.1 cf Field - 6,452.7 cf Chambers = 8,858.4 cf Stone x 40.0% Voids = 3,543.4 cf Stone Storage

Chamber Storage + Stone Storage = 9,673.4 cf = 0.222 af
Overall Storage Efficiency = 63.2%
Overall System Size = 287.84' x 19.75' x 2.69'

1,452 Chambers
567.1 cy Field
328.1 cy Stone



Pond B-3: SUBSURFACE DETENTION SYSTEM



Summary for Pond FB-1: Forebay-1

Inflow Area = 108,403 sf, 92.38% Impervious, Inflow Depth = 2.82" for 2-Year event
Inflow = 7.92 cfs @ 12.07 hrs, Volume= 25,458 cf
Outflow = 7.71 cfs @ 12.08 hrs, Volume= 24,311 cf, Atten= 3%, Lag= 0.7 min
Primary = 7.71 cfs @ 12.08 hrs, Volume= 24,311 cf
Routed to Pond FB-1A : Forebay-1A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.58' @ 12.09 hrs Surf.Area= 1,568 sf Storage= 1,635 cf
Flood Elev= 180.00' Surf.Area= 2,693 sf Storage= 6,786 cf

Plug-Flow detention time= 46.3 min calculated for 24,311 cf (95% of inflow)
Center-of-Mass det. time= 20.1 min (792.6 - 772.5)

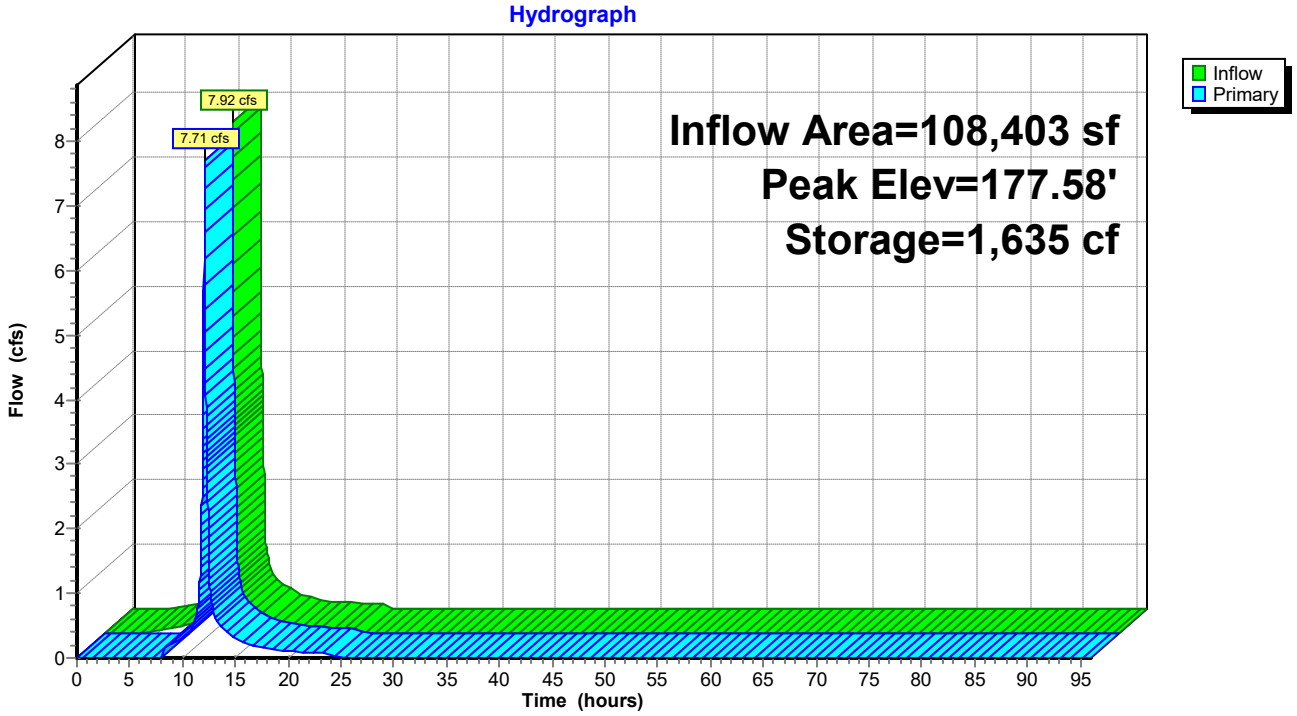
Volume	Invert	Avail.Storage	Storage Description
#1	176.00'	6,786 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.00	498	0	0
177.00	1,168	833	833
177.50	1,530	675	1,508
180.00	2,693	5,279	6,786

Device	Routing	Invert	Outlet Devices
#1	Primary	177.25'	**25.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=7.57 cfs @ 12.08 hrs HW=177.58' TW=177.50' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 7.57 cfs @ 0.92 fps)

Pond FB-1: Forebay-1



Summary for Pond FB-1A: Forebay-1A

Inflow Area = 108,403 sf, 92.38% Impervious, Inflow Depth = 2.69" for 2-Year event
Inflow = 7.71 cfs @ 12.08 hrs, Volume= 24,311 cf
Outflow = 7.66 cfs @ 12.09 hrs, Volume= 23,081 cf, Atten= 1%, Lag= 0.5 min
Primary = 7.66 cfs @ 12.09 hrs, Volume= 23,081 cf
Routed to Pond IB-1 : INFILTRATION BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.50' @ 12.09 hrs Surf.Area= 1,513 sf Storage= 1,595 cf
Flood Elev= 177.75' Surf.Area= 1,672 sf Storage= 1,986 cf

Plug-Flow detention time= 43.0 min calculated for 23,079 cf (95% of inflow)
Center-of-Mass det. time= 14.7 min (807.4 - 792.6)

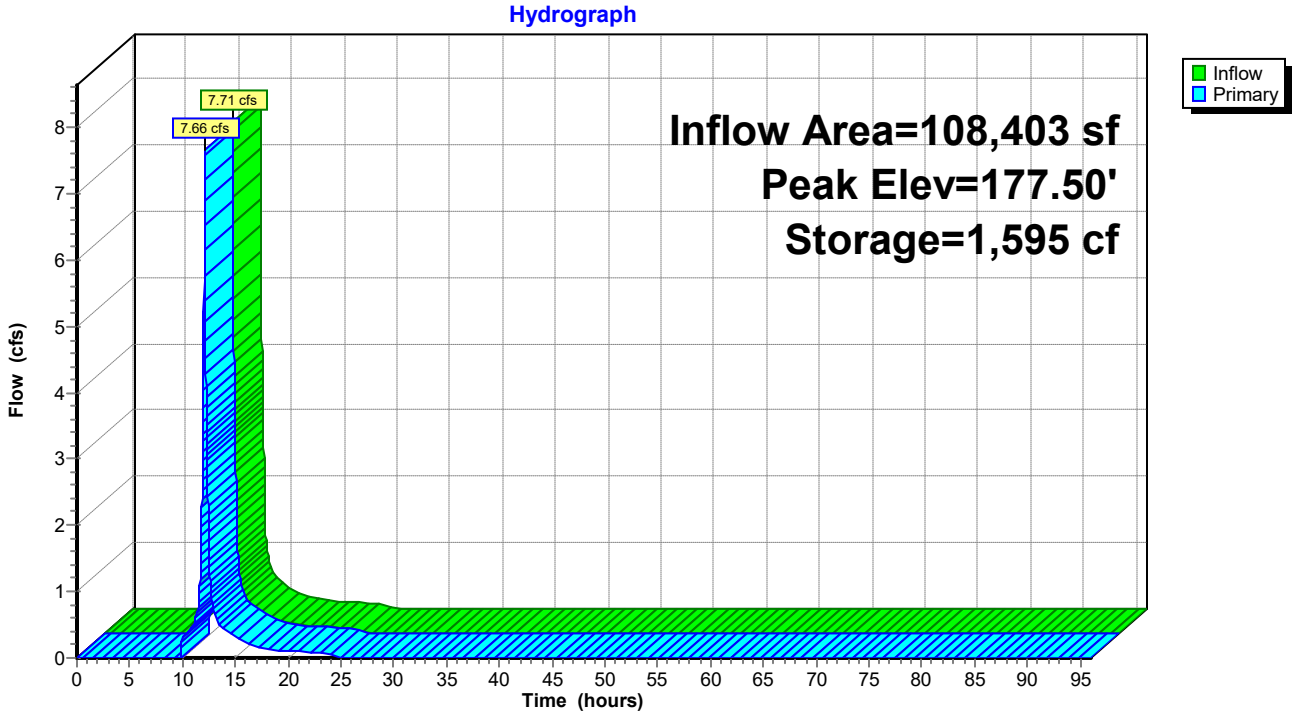
Volume	Invert	Avail.Storage	Storage Description
#1	176.00'	1,986 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.00	615	0	0
177.00	1,204	910	910
177.50	1,510	679	1,588
177.75	1,672	398	1,986

Device	Routing	Invert	Outlet Devices
#1	Primary	177.25'	**25.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=7.66 cfs @ 12.09 hrs HW=177.50' TW=176.48' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 7.66 cfs @ 1.20 fps)

Pond FB-1A: Forebay-1A



Summary for Pond FB-2: Forebay-2

Inflow Area = 39,922 sf, 54.08% Impervious, Inflow Depth = 2.42" for 2-Year event
Inflow = 2.63 cfs @ 12.07 hrs, Volume= 8,042 cf
Outflow = 2.61 cfs @ 12.08 hrs, Volume= 7,369 cf, Atten= 1%, Lag= 0.5 min
Primary = 2.61 cfs @ 12.08 hrs, Volume= 7,369 cf
Routed to Pond B-2 : SAND FILTER-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 180.37' @ 12.08 hrs Surf.Area= 959 sf Storage= 786 cf
Flood Elev= 181.00' Surf.Area= 1,438 sf Storage= 1,536 cf

Plug-Flow detention time= 66.6 min calculated for 7,369 cf (92% of inflow)
Center-of-Mass det. time= 24.1 min (820.1 - 796.1)

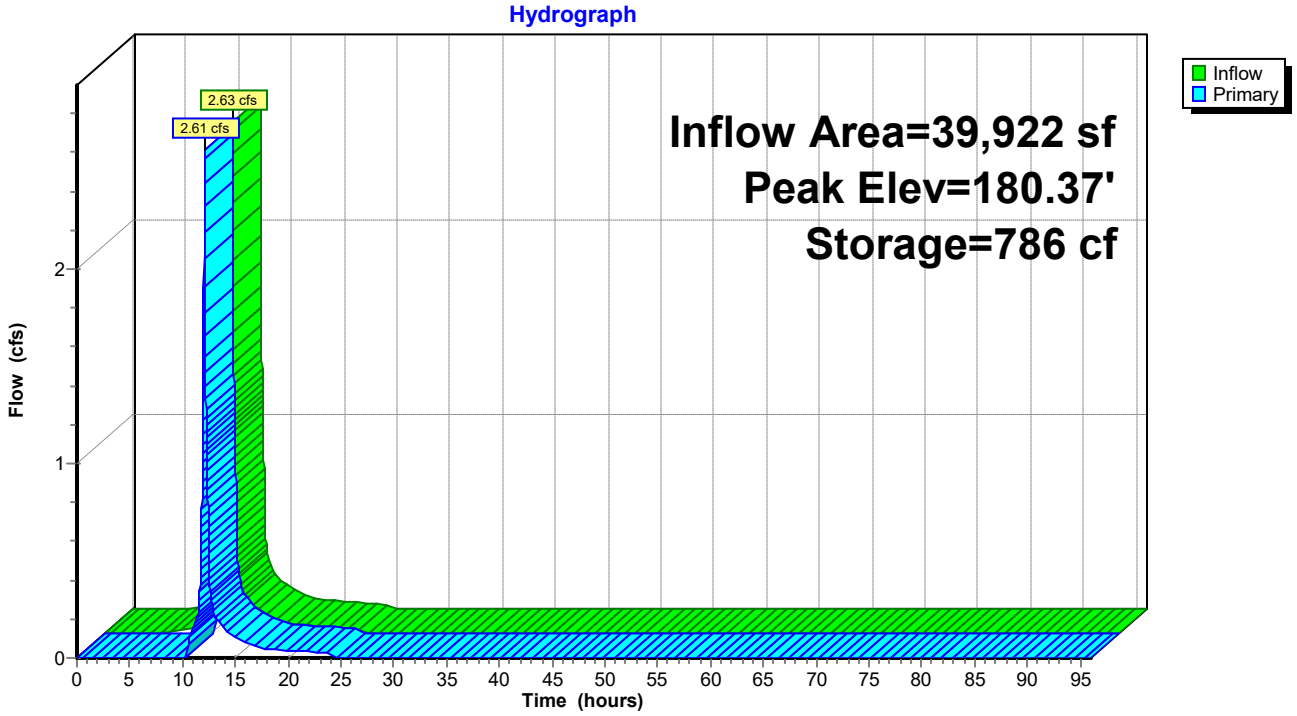
Volume	Invert	Avail.Storage	Storage Description
#1	179.00'	1,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
179.00	290	0	0
180.00	672	481	481
181.00	1,438	1,055	1,536

Device	Routing	Invert	Outlet Devices
#1	Primary	180.25'	**25.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=2.61 cfs @ 12.08 hrs HW=180.37' TW=177.19' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 2.61 cfs @ 0.84 fps)

Pond FB-2: Forebay-2



Summary for Pond IB-1: INFILTRATION BASIN 1

Inflow Area = 108,403 sf, 92.38% Impervious, Inflow Depth = 2.56" for 2-Year event
Inflow = 7.66 cfs @ 12.09 hrs, Volume= 23,081 cf
Outflow = 4.14 cfs @ 12.22 hrs, Volume= 23,081 cf, Atten= 46%, Lag= 7.6 min
Discarded = 0.06 cfs @ 12.22 hrs, Volume= 10,495 cf
Primary = 4.08 cfs @ 12.22 hrs, Volume= 12,586 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 176.63' @ 12.22 hrs Surf.Area= 9,225 sf Storage= 9,281 cf
Flood Elev= 178.10' Surf.Area= 12,034 sf Storage= 24,856 cf

Plug-Flow detention time= 665.6 min calculated for 23,079 cf (100% of inflow)
Center-of-Mass det. time= 665.8 min (1,473.2 - 807.4)

Volume	Invert	Avail.Storage	Storage Description
#1	175.50'	24,856 cf	**Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.50	7,184	0	0
176.00	8,064	3,812	3,812
177.00	9,900	8,982	12,794
178.00	11,837	10,869	23,663
178.10	12,034	1,194	24,856

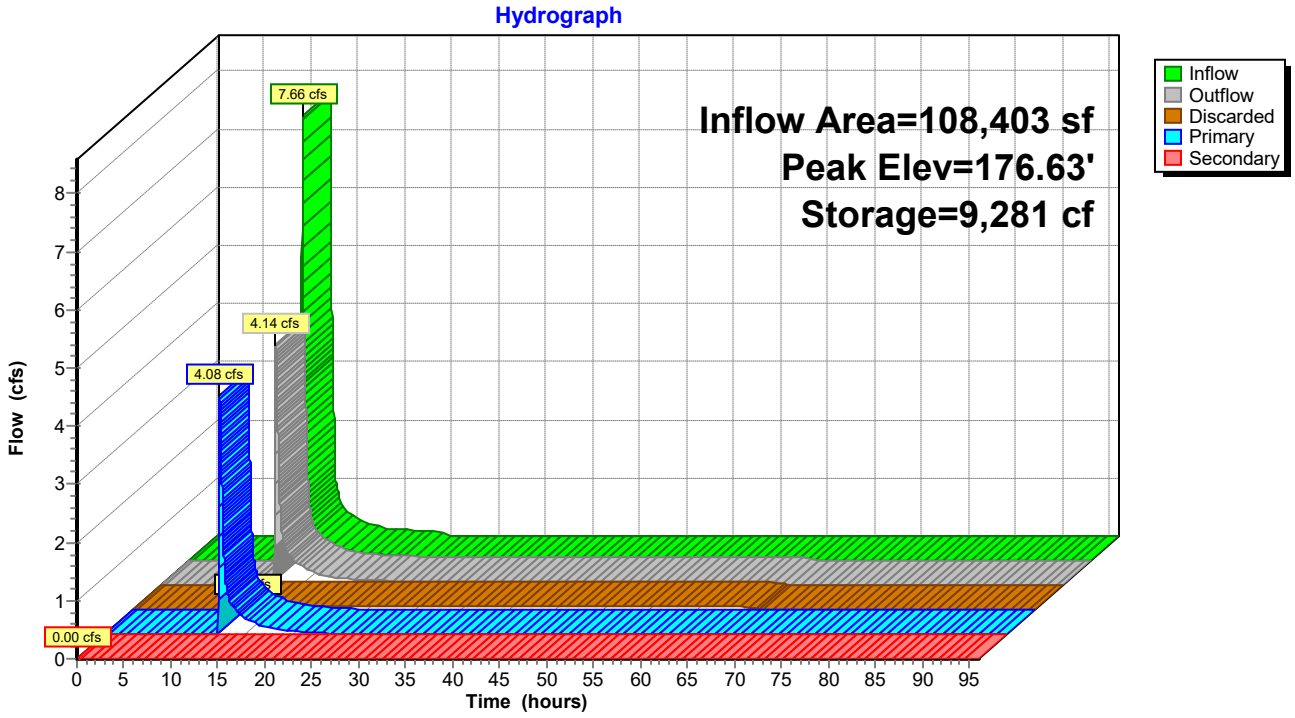
Device	Routing	Invert	Outlet Devices
#1	Discarded	175.50'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	174.25'	**24.0" Round Culvert** L= 27.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 174.25' / 173.98' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#3	Secondary	177.00'	**15.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#4	Device 2	176.45'	**2.0" x 48.0" Horiz. Orifice/Grate X 20.00** C= 0.600 in 48.0" x 48.0" Grate (83% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 12.22 hrs HW=176.63' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=4.08 cfs @ 12.22 hrs HW=176.63' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 4.08 cfs of 14.04 cfs potential flow)
└**4=Orifice/Grate** (Weir Controls 4.08 cfs @ 1.40 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=175.50' TW=0.00' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond IB-1: INFILTRATION BASIN 1

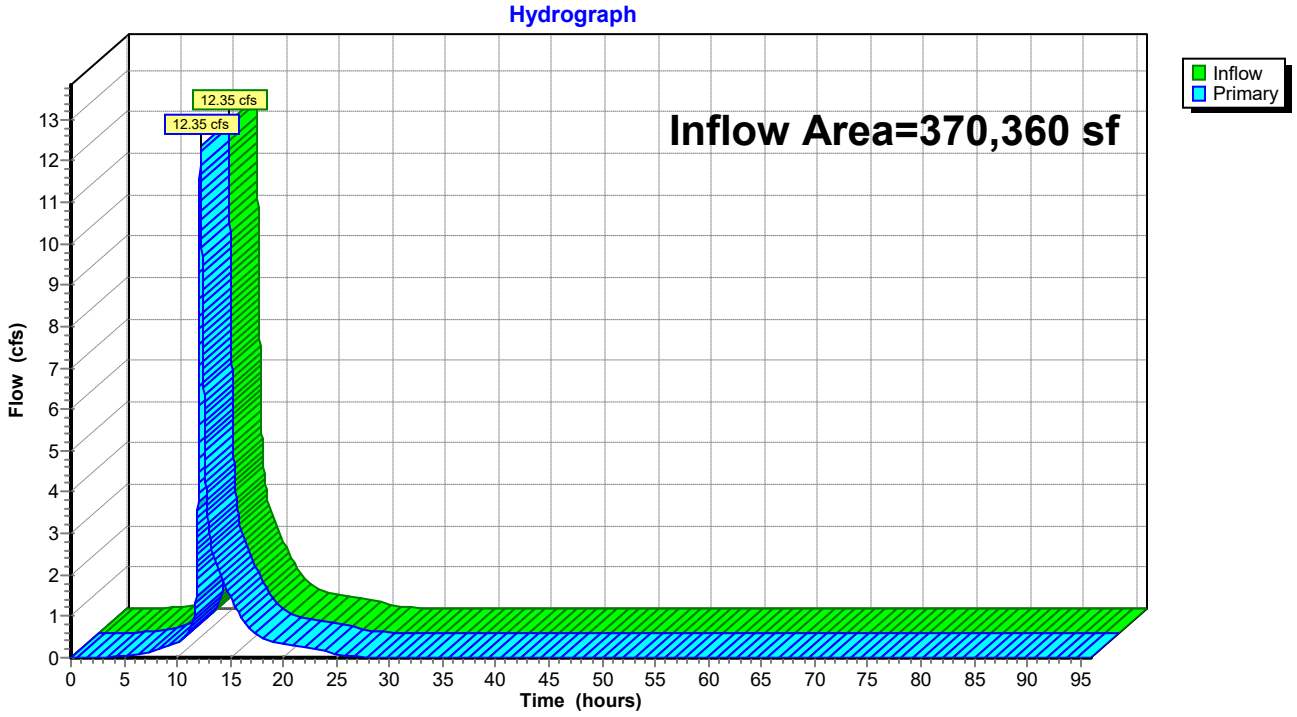


Summary for Link POA-1: EAST OUTFALL (WETLAND SERIES-A)

Inflow Area = 370,360 sf, 76.70% Impervious, Inflow Depth = 2.13" for 2-Year event
Inflow = 12.35 cfs @ 12.18 hrs, Volume= 65,630 cf
Primary = 12.35 cfs @ 12.18 hrs, Volume= 65,630 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-1: EAST OUTFALL (WETLAND SERIES-A)

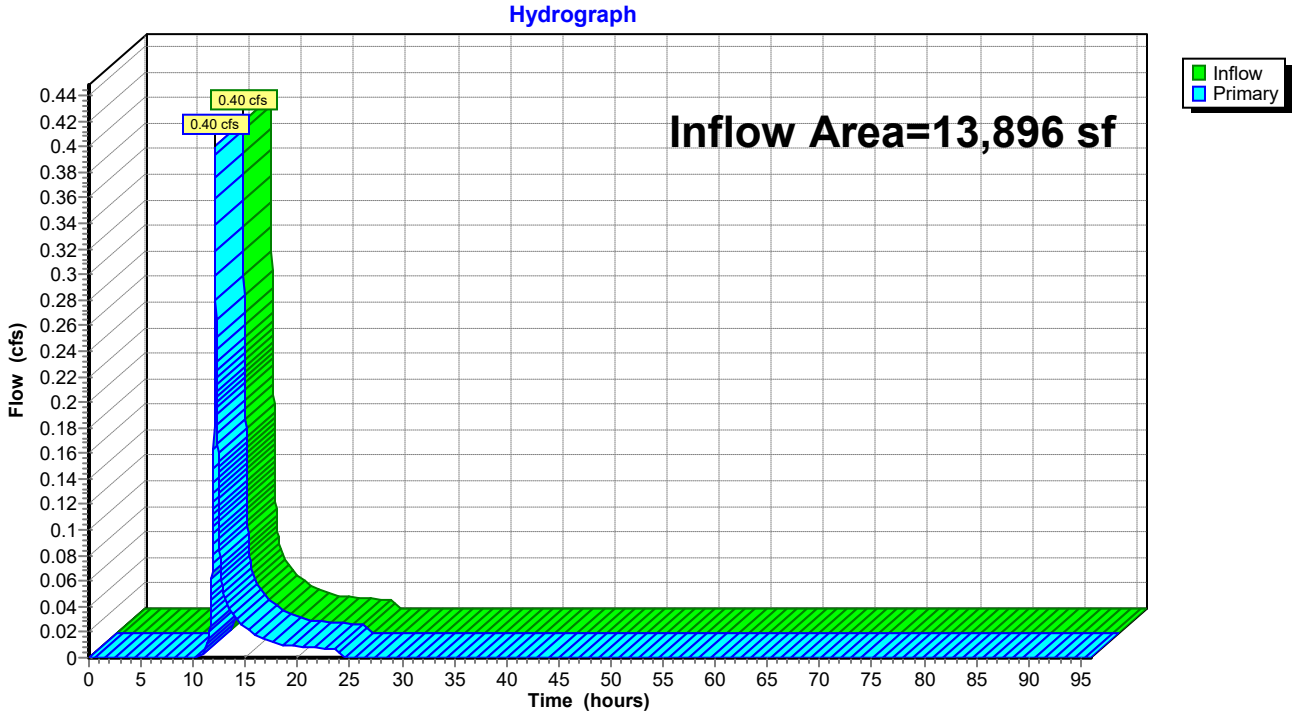


Summary for Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

Inflow Area = 13,896 sf, 0.00% Impervious, Inflow Depth = 1.08" for 2-Year event
Inflow = 0.40 cfs @ 12.08 hrs, Volume= 1,255 cf
Primary = 0.40 cfs @ 12.08 hrs, Volume= 1,255 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

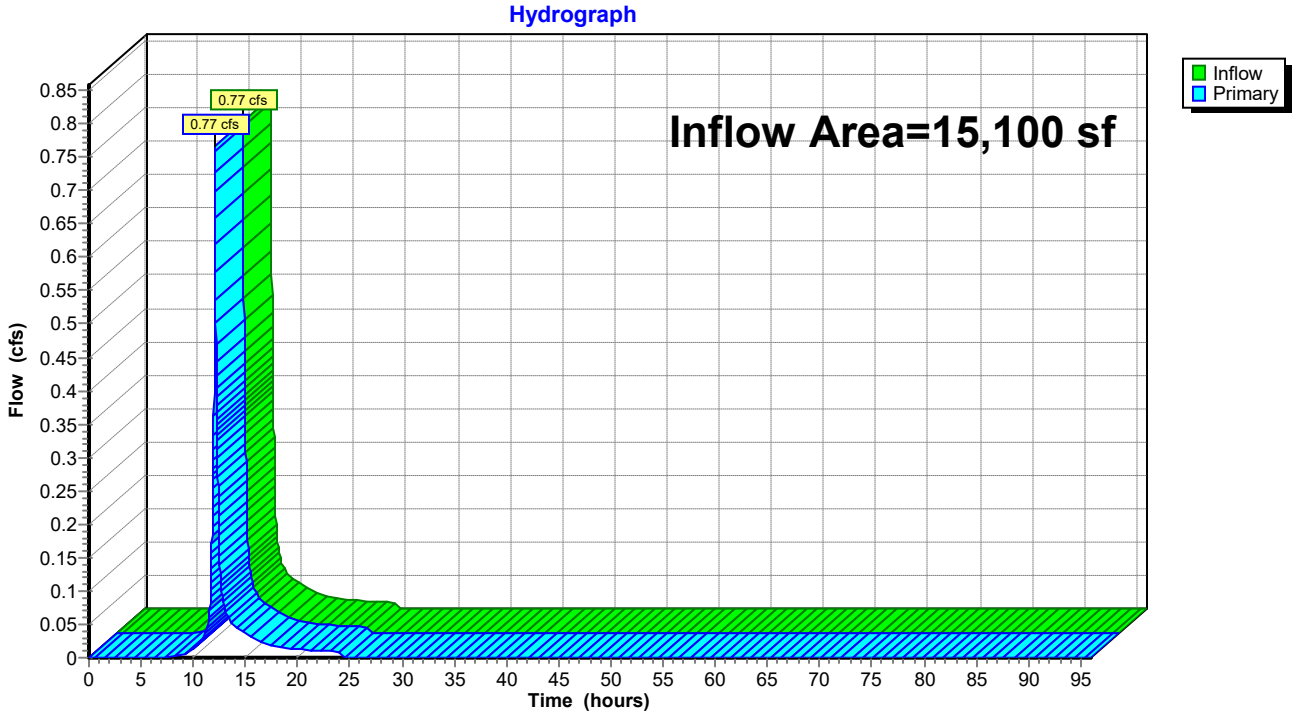


Summary for Link POA-3: WEST OUTFALL (TO TAUNTON)

Inflow Area = 15,100 sf, 45.36% Impervious, Inflow Depth = 1.82" for 2-Year event
Inflow = 0.77 cfs @ 12.07 hrs, Volume= 2,287 cf
Primary = 0.77 cfs @ 12.07 hrs, Volume= 2,287 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-3: WEST OUTFALL (TO TAUNTON)



Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P-1: NORTH & EAST Runoff Area=108,403 sf 92.38% Impervious Runoff Depth=4.47"
Tc=5.0 min CN=96 Runoff=12.25 cfs 40,407 cf

Subcatchment P-2: SOUTH PARKING Runoff Area=39,922 sf 54.08% Impervious Runoff Depth=4.03"
Tc=5.0 min CN=92 Runoff=4.26 cfs 13,409 cf

Subcatchment P-3: WEST PARKING Runoff Area=68,527 sf 70.54% Impervious Runoff Depth=3.92"
Tc=5.0 min CN=91 Runoff=7.19 cfs 22,408 cf

Subcatchment P-3A: EAST PARKING Runoff Area=13,953 sf 100.00% Impervious Runoff Depth=4.70"
Tc=5.0 min CN=98 Runoff=1.60 cfs 5,469 cf

Subcatchment P-3B: OUTSIDE OVERLAND Runoff Area=39,502 sf 0.00% Impervious Runoff Depth=2.32"
Tc=5.0 min CN=74 Runoff=2.54 cfs 7,626 cf

Subcatchment P-4: OVERLAND TO Runoff Area=13,896 sf 0.00% Impervious Runoff Depth=2.32"
Tc=5.0 min CN=74 Runoff=0.89 cfs 2,682 cf

Subcatchment P-5: OVERLAND TO Runoff Area=15,100 sf 45.36% Impervious Runoff Depth=3.31"
Tc=5.0 min CN=85 Runoff=1.38 cfs 4,168 cf

Subcatchment R-1: ROOFS Runoff Area=53,577 sf 100.00% Impervious Runoff Depth=4.70"
Tc=5.0 min CN=98 Runoff=6.16 cfs 20,999 cf

Subcatchment R-2: HALF ROOF Runoff Area=46,476 sf 100.00% Impervious Runoff Depth=4.70"
Tc=5.0 min CN=98 Runoff=5.34 cfs 18,216 cf

Pond B-2: SAND FILTER-1 Peak Elev=179.26' Storage=11,601 cf Inflow=9.57 cfs 30,952 cf
Primary=1.69 cfs 30,939 cf Secondary=0.00 cfs 0 cf Outflow=1.69 cfs 30,939 cf

Pond B-3: SUBSURFACE DETENTION Peak Elev=177.90' Storage=7,861 cf Inflow=14.94 cfs 48,875 cf
Outflow=11.21 cfs 48,869 cf

Pond FB-1: Forebay-1 Peak Elev=177.69' Storage=1,801 cf Inflow=12.25 cfs 40,407 cf
Outflow=12.00 cfs 39,259 cf

Pond FB-1A: Forebay-1A Peak Elev=177.59' Storage=1,721 cf Inflow=12.00 cfs 39,259 cf
Outflow=11.94 cfs 38,029 cf

Pond FB-2: Forebay-2 Peak Elev=180.42' Storage=833 cf Inflow=4.26 cfs 13,409 cf
Outflow=4.24 cfs 12,737 cf

Pond IB-1: INFILTRATION BASIN 1 Peak Elev=176.79' Storage=10,716 cf Inflow=11.94 cfs 38,029 cf
Discarded=0.06 cfs 10,836 cf Primary=10.18 cfs 27,193 cf Secondary=0.00 cfs 0 cf Outflow=10.24 cfs 38,029 cf

Link POA-1: EAST OUTFALL (WETLAND SERIES-A) Inflow=24.89 cfs 114,627 cf
Primary=24.89 cfs 114,627 cf

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B) Inflow=0.89 cfs 2,682 cf
Primary=0.89 cfs 2,682 cf

Link POA-3: WEST OUTFALL (TO TAUNTON) Inflow=1.38 cfs 4,168 cf
Primary=1.38 cfs 4,168 cf

Total Runoff Area = 399,356 sf Runoff Volume = 135,383 cf Average Runoff Depth = 4.07"
27.15% Pervious = 108,428 sf 72.85% Impervious = 290,928 sf

Summary for Subcatchment P-1: NORTH & EAST PARKING

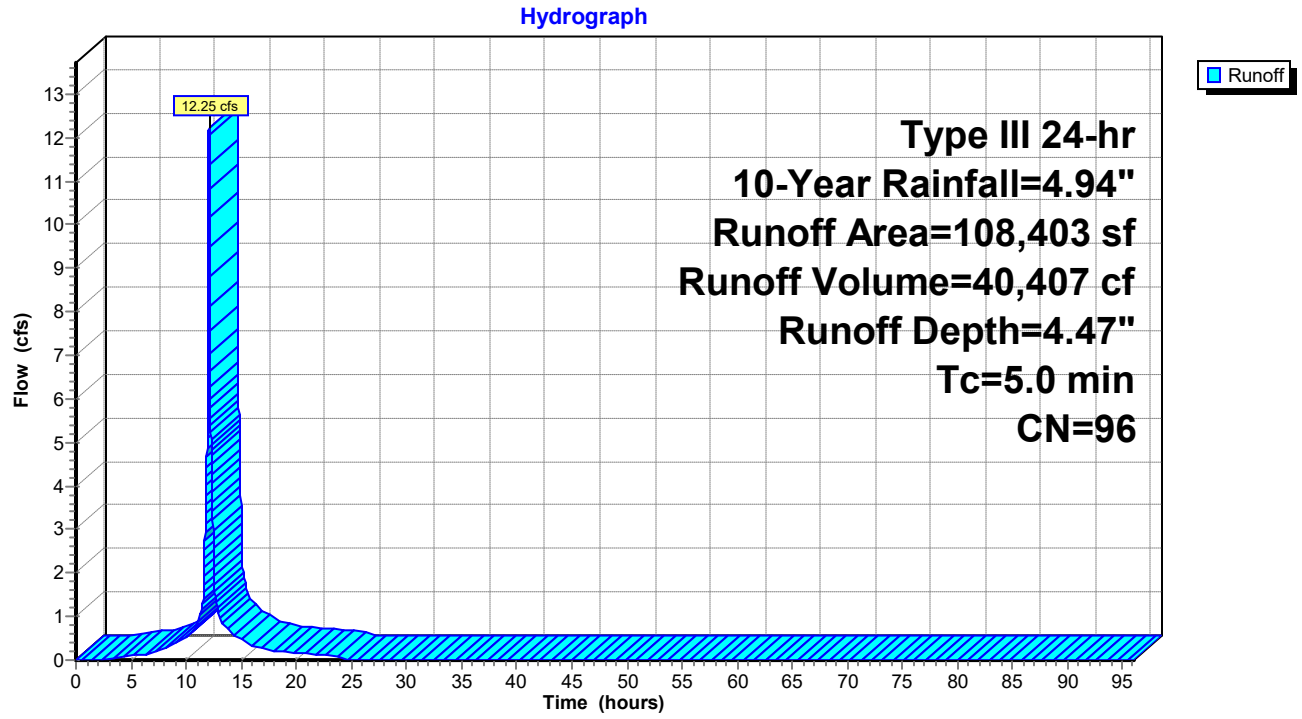
Runoff = 12.25 cfs @ 12.07 hrs, Volume= 40,407 cf, Depth= 4.47"
Routed to Pond FB-1 : Forebay-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.94"

Area (sf)	CN	Description
8,261	74	>75% Grass cover, Good, HSG C
87,749	98	Paved parking, HSG C
12,393	98	Water Surface, HSG C
108,403	96	Weighted Average
8,261		7.62% Pervious Area
100,142		92.38% Impervious Area

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

Subcatchment P-1: NORTH & EAST PARKING



Summary for Subcatchment P-2: SOUTH PARKING

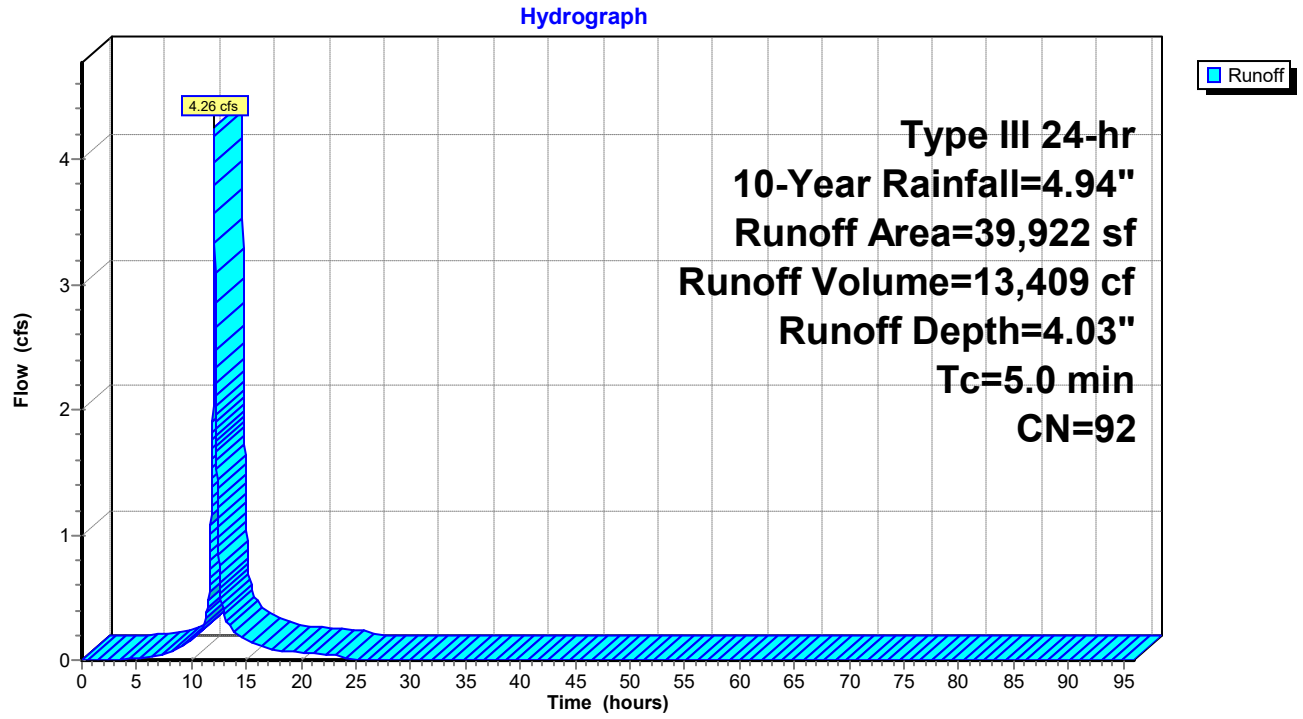
Runoff = 4.26 cfs @ 12.07 hrs, Volume= 13,409 cf, Depth= 4.03"
Routed to Pond FB-2 : Forebay-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.94"

Area (sf)	CN	Description
21,591	98	Paved parking, HSG C
9,196	74	>75% Grass cover, Good, HSG C
9,135	98	Water Surface, 0% imp, HSG C
39,922	92	Weighted Average
18,331		45.92% Pervious Area
21,591		54.08% Impervious Area

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

Subcatchment P-2: SOUTH PARKING



Summary for Subcatchment P-3: WEST PARKING

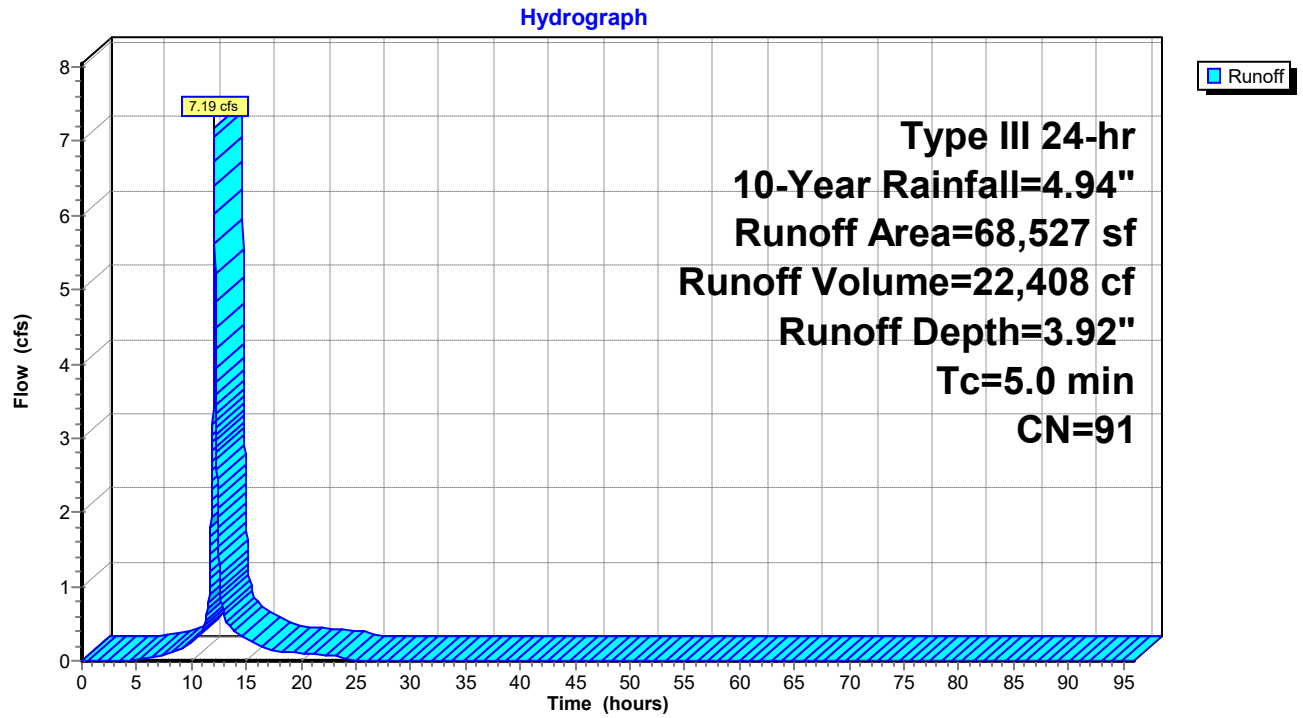
Runoff = 7.19 cfs @ 12.07 hrs, Volume= 22,408 cf, Depth= 3.92"
Routed to Pond B-3 : SUBSURFACE DETENTION SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.94"

Area (sf)	CN	Description
48,340	98	Paved parking, HSG C
20,187	74	>75% Grass cover, Good, HSG C
68,527	91	Weighted Average
20,187		29.46% Pervious Area
48,340		70.54% Impervious Area

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

Subcatchment P-3: WEST PARKING



Summary for Subcatchment P-3A: EAST PARKING

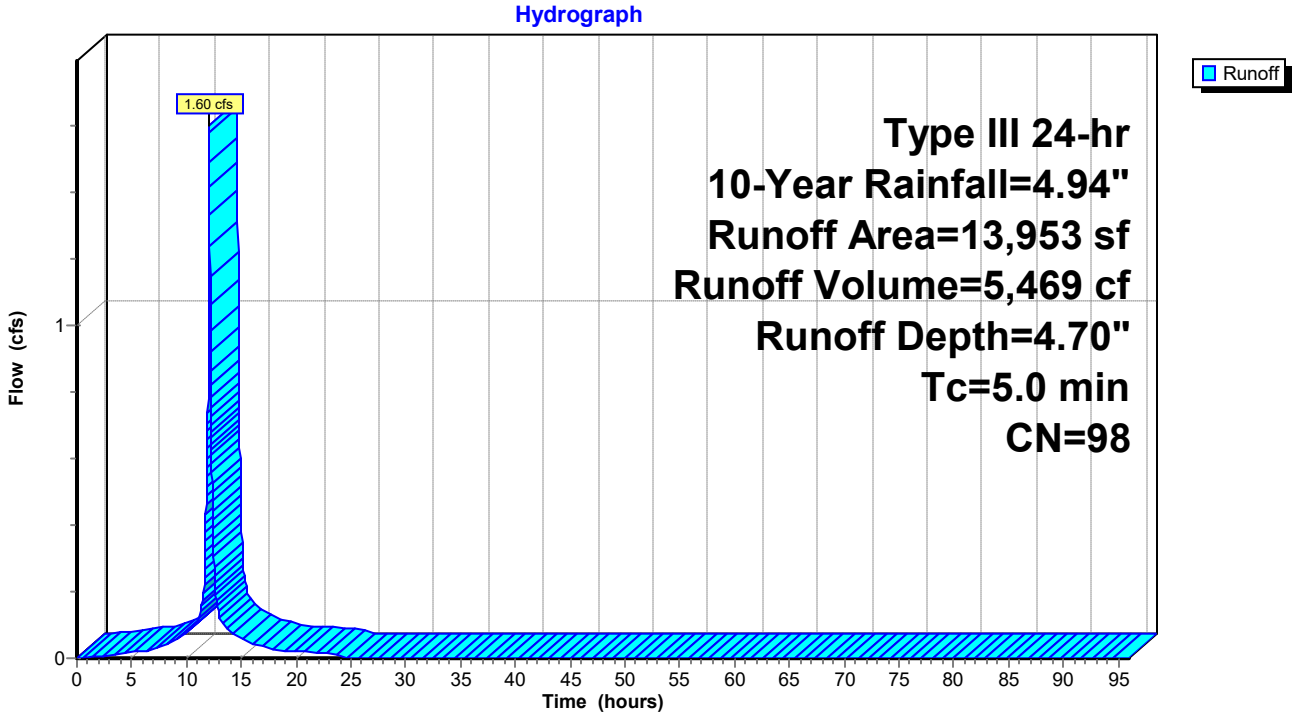
Runoff = 1.60 cfs @ 12.07 hrs, Volume= 5,469 cf, Depth= 4.70"
Routed to Pond B-3 : SUBSURFACE DETENTION SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.94"

Area (sf)	CN	Description
13,953	98	Paved parking, HSG C
13,953		100.00% Impervious Area

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

Subcatchment P-3A: EAST PARKING



Summary for Subcatchment P-3B: OUTSIDE OVERLAND FLOW

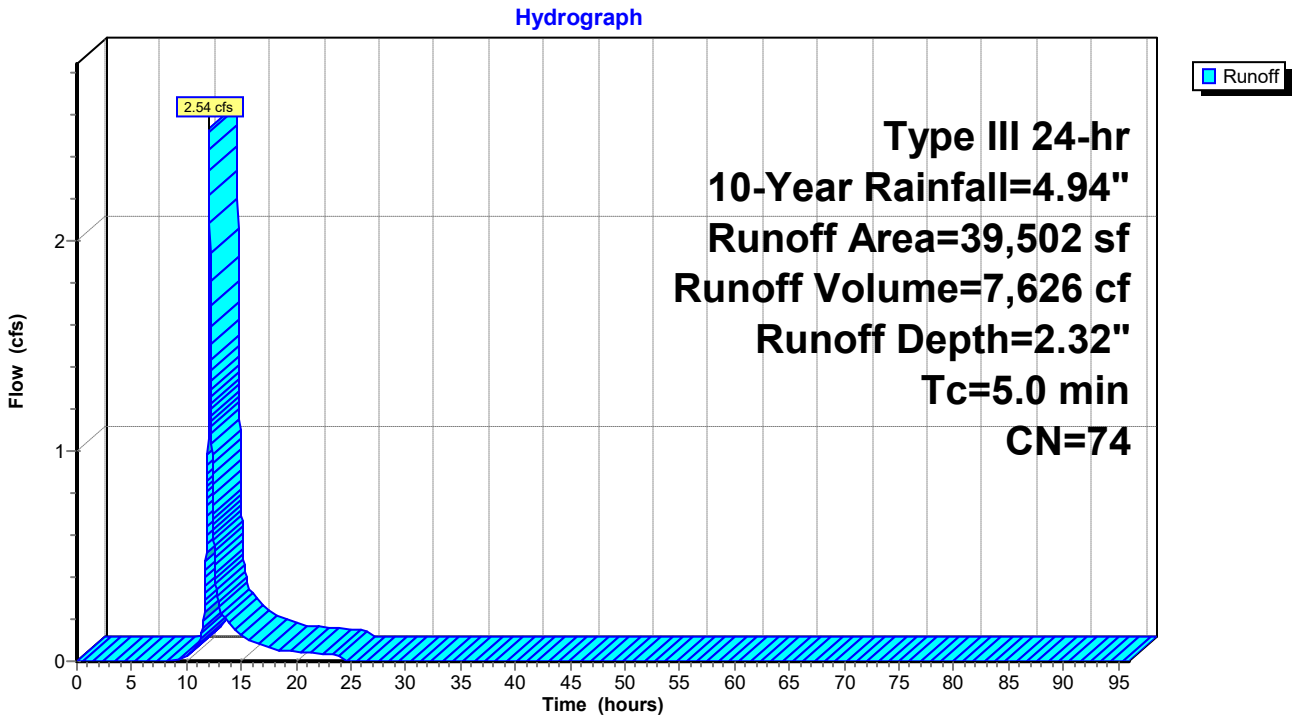
Runoff = 2.54 cfs @ 12.08 hrs, Volume= 7,626 cf, Depth= 2.32"
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.94"

Area (sf)	CN	Description
39,502	74	>75% Grass cover, Good, HSG C
39,502		100.00% Pervious Area

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

Subcatchment P-3B: OUTSIDE OVERLAND FLOW



Summary for Subcatchment P-4: OVERLAND TO WETLAND

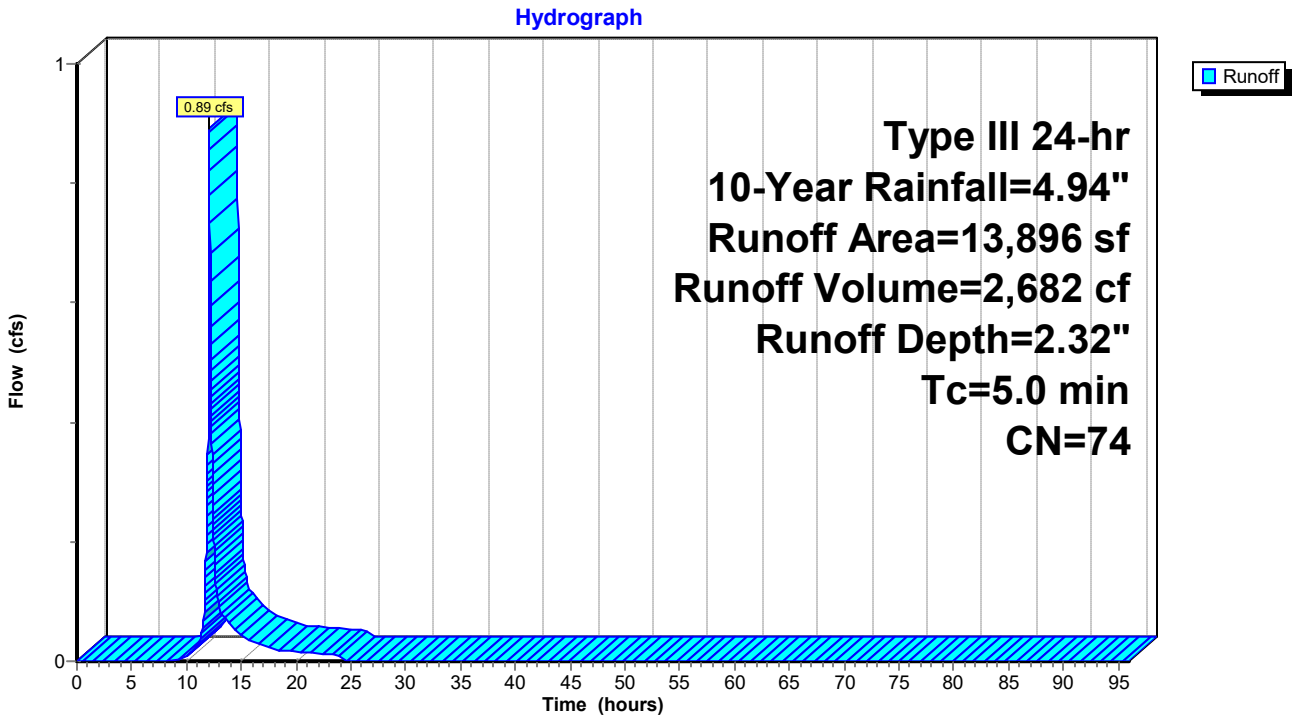
Runoff = 0.89 cfs @ 12.08 hrs, Volume= 2,682 cf, Depth= 2.32"
Routed to Link POA-2 : SOUTH OUTFALL (WETLAND SERIES-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.94"

Area (sf)	CN	Description
13,896	74	>75% Grass cover, Good, HSG C
13,896		100.00% Pervious Area

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

Subcatchment P-4: OVERLAND TO WETLAND



Summary for Subcatchment P-5: OVERLAND TO WETLAND

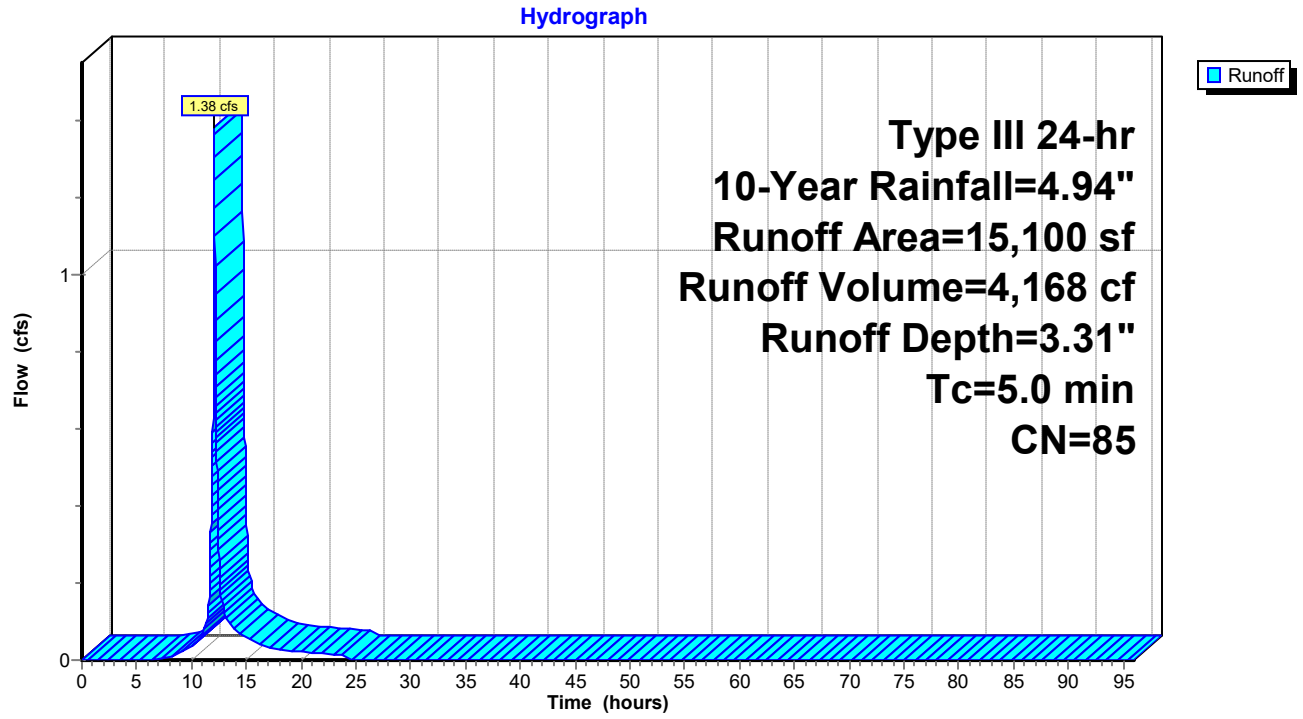
Runoff = 1.38 cfs @ 12.07 hrs, Volume= 4,168 cf, Depth= 3.31"
Routed to Link POA-3 : WEST OUTFALL (TO TAUNTON)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.94"

Area (sf)	CN	Description
8,251	74	>75% Grass cover, Good, HSG C
6,849	98	Unconnected pavement, HSG C
15,100	85	Weighted Average
8,251		54.64% Pervious Area
6,849		45.36% Impervious Area
6,849		100.00% Unconnected

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

Subcatchment P-5: OVERLAND TO WETLAND



Summary for Subcatchment R-1: ROOFS

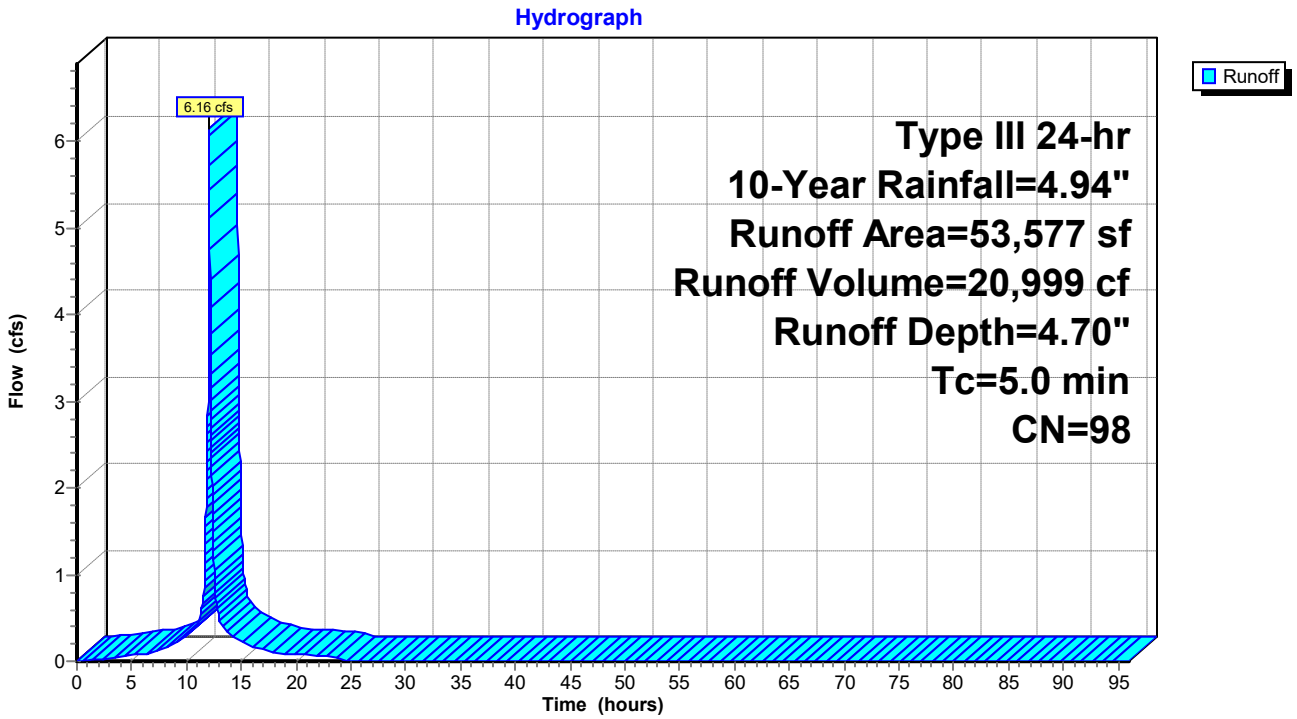
Runoff = 6.16 cfs @ 12.07 hrs, Volume= 20,999 cf, Depth= 4.70"
Routed to Pond B-3 : SUBSURFACE DETENTION SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.94"

Area (sf)	CN	Description
53,577	98	Roofs, HSG C
53,577		100.00% Impervious Area

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

Subcatchment R-1: ROOFS



Summary for Subcatchment R-2: HALF ROOF

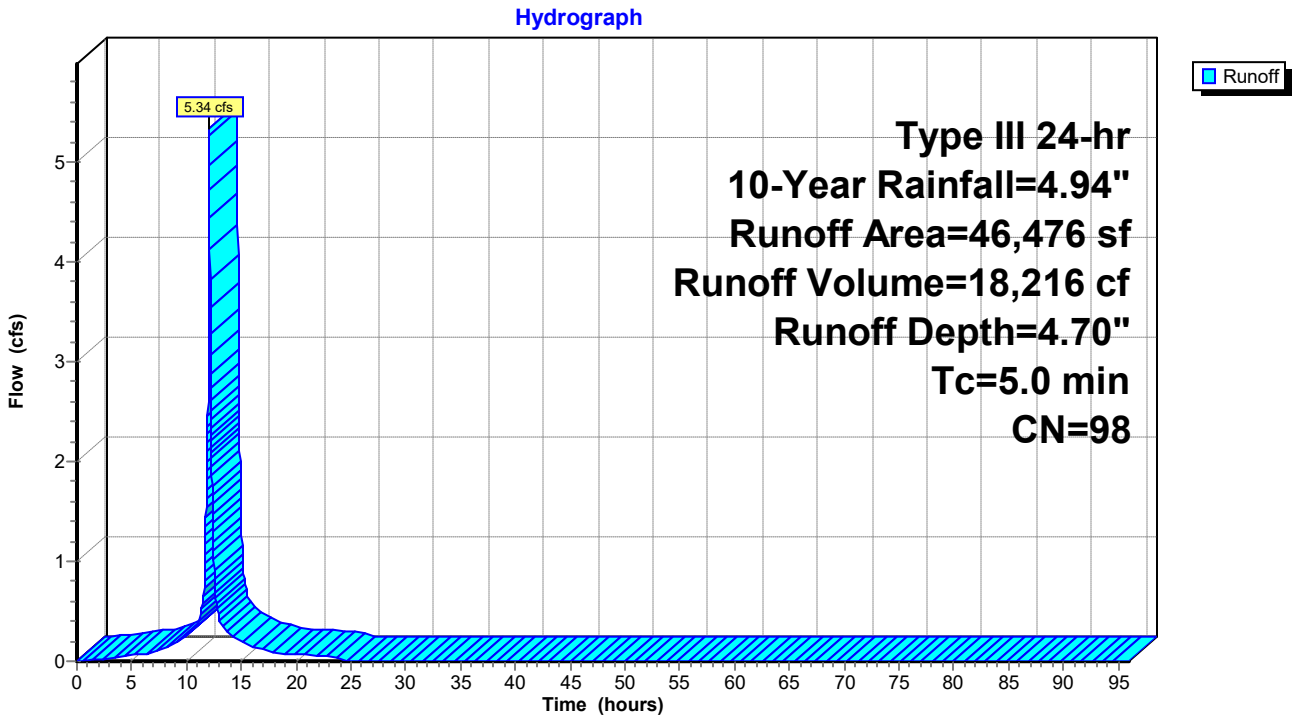
Runoff = 5.34 cfs @ 12.07 hrs, Volume= 18,216 cf, Depth= 4.70"
Routed to Pond B-2 : SAND FILTER-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.94"

Area (sf)	CN	Description
46,476	98	Roofs, HSG C
46,476		100.00% Impervious Area

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

Subcatchment R-2: HALF ROOF



Summary for Pond B-2: SAND FILTER-1

Inflow Area = 86,398 sf, 78.78% Impervious, Inflow Depth = 4.30" for 10-Year event
Inflow = 9.57 cfs @ 12.07 hrs, Volume= 30,952 cf
Outflow = 1.69 cfs @ 12.52 hrs, Volume= 30,939 cf, Atten= 82%, Lag= 26.7 min
Primary = 1.69 cfs @ 12.52 hrs, Volume= 30,939 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 179.26' @ 12.52 hrs Surf.Area= 16,926 sf Storage= 11,601 cf
Flood Elev= 181.00' Surf.Area= 26,925 sf Storage= 23,343 cf

Plug-Flow detention time= 92.9 min calculated for 30,939 cf (100% of inflow)
Center-of-Mass det. time= 92.6 min (862.1 - 769.4)

Volume	Invert	Avail.Storage	Storage Description
#1	180.00'	9,227 cf	**Basin (Prismatic)** Listed below (Recalc)
#2	176.50'	11,848 cf	**Sand Media (Prismatic)** Listed below (Recalc) 29,621 cf Overall x 40.0% Voids
#3	175.83'	2,268 cf	**Gravel (Prismatic)** Listed below (Recalc) 5,670 cf Overall x 40.0% Voids
		23,343 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
180.00	8,463	0	0
180.25	8,838	2,163	2,163
181.00	9,999	7,064	9,227

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.50	8,463	0	0
180.00	8,463	29,621	29,621

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.83	8,463	0	0
176.50	8,463	5,670	5,670

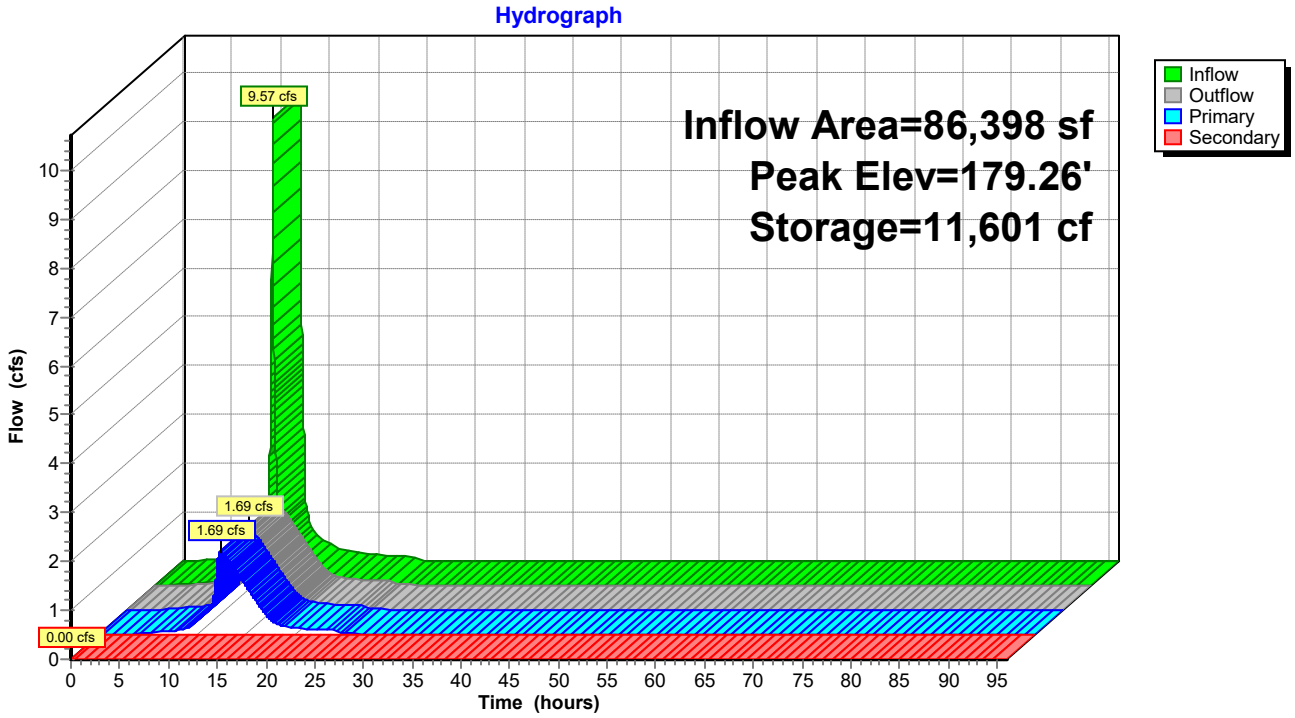
Device	Routing	Invert	Outlet Devices
#1	Primary	175.83'	**12.0" Round Culvert** L= 122.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 175.83' / 174.00' S= 0.0150 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	180.25'	**20.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65

2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3 Device 1 175.83' **6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.69 cfs @ 12.52 hrs HW=179.26' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.69 cfs of 5.11 cfs potential flow)
└─**3=Orifice/Grate** (Orifice Controls 1.69 cfs @ 8.58 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=175.83' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-2: SAND FILTER-1



Summary for Pond B-3: SUBSURFACE DETENTION SYSTEM

Inflow Area = 136,057 sf, 85.16% Impervious, Inflow Depth = 4.31" for 10-Year event
Inflow = 14.94 cfs @ 12.07 hrs, Volume= 48,875 cf
Outflow = 11.21 cfs @ 12.14 hrs, Volume= 48,869 cf, Atten= 25%, Lag= 3.9 min
Primary = 11.21 cfs @ 12.14 hrs, Volume= 48,869 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.90' @ 12.14 hrs Surf.Area= 5,684 sf Storage= 7,861 cf
Flood Elev= 178.69' Surf.Area= 5,684 sf Storage= 9,665 cf

Plug-Flow detention time= 42.0 min calculated for 48,864 cf (100% of inflow)
Center-of-Mass det. time= 42.2 min (807.4 - 765.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	176.00'	3,543 cf	**19.75'W x 287.84'L x 2.69'H Field A** 15,311 cf Overall - 6,453 cf Embedded = 8,858 cf x 40.0% Voids
#2A	176.25'	6,130 cf	**ACF R-Tank HD 1** x 1452 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 1452 Chambers in 12 Rows
		9,673 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	176.00'	**30.0" Round Culvert** L= 86.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 176.00' / 173.56' S= 0.0284 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf
#2	Device 1	176.75'	**48.0" W x 6.0" H Vert. Rectangular Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	177.75'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	176.00'	**6.0" Vert. Low flow Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=11.19 cfs @ 12.14 hrs HW=177.89' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 11.19 cfs of 23.38 cfs potential flow)
  - **2=Rectangular Orifice** (Orifice Controls 9.08 cfs @ 4.54 fps)
  - **3=Sharp-Crested Rectangular Weir** (Weir Controls 0.90 cfs @ 1.24 fps)
  - **4=Low flow Orifice** (Orifice Controls 1.21 cfs @ 6.18 fps)

Pond B-3: SUBSURFACE DETENTION SYSTEM - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)
Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf
Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

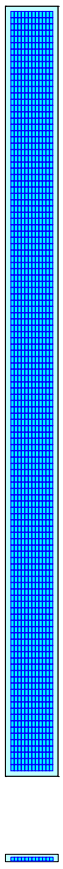
121 Chambers/Row x 2.35' Long = 283.84' Row Length +24.0" End Stone x 2 = 287.84' Base Length
12 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 19.75' Base Width
3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

1,452 Chambers x 4.2 cf = 6,130.1 cf Chamber Storage
1,452 Chambers x 4.4 cf = 6,452.7 cf Displacement

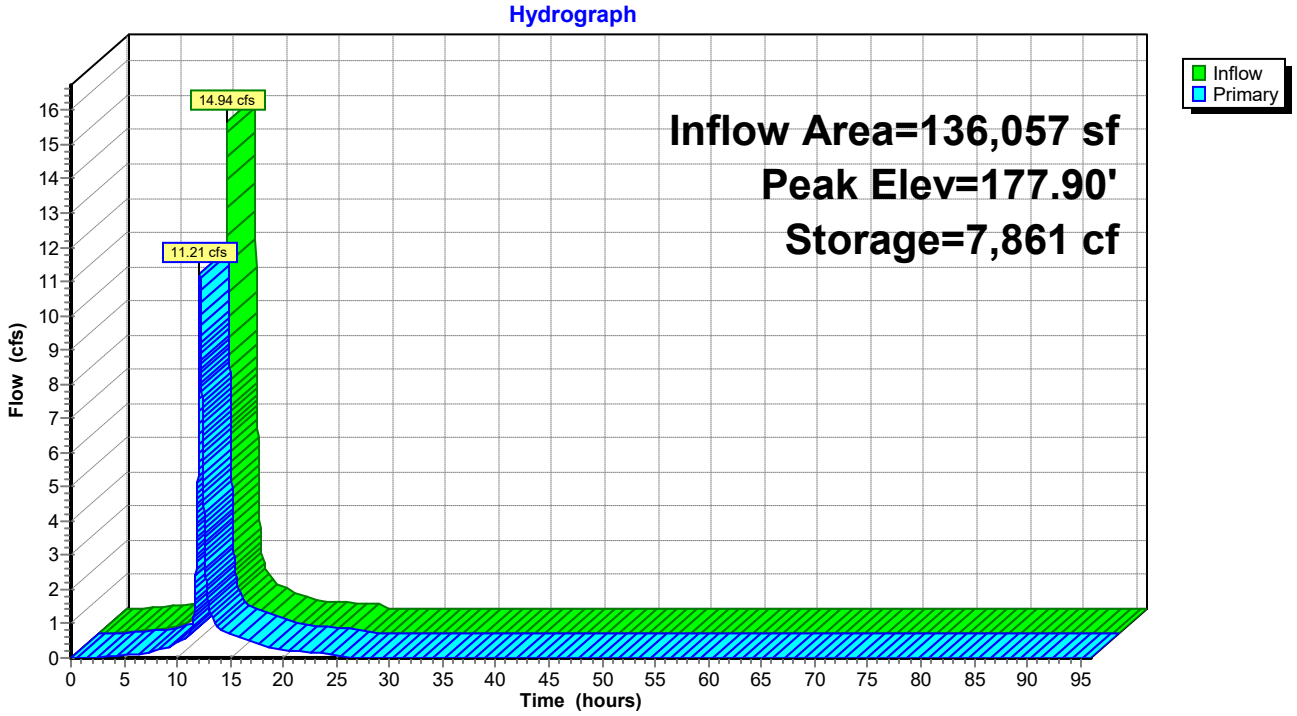
15,311.1 cf Field - 6,452.7 cf Chambers = 8,858.4 cf Stone x 40.0% Voids = 3,543.4 cf Stone Storage

Chamber Storage + Stone Storage = 9,673.4 cf = 0.222 af
Overall Storage Efficiency = 63.2%
Overall System Size = 287.84' x 19.75' x 2.69'

1,452 Chambers
567.1 cy Field
328.1 cy Stone



Pond B-3: SUBSURFACE DETENTION SYSTEM



Summary for Pond FB-1: Forebay-1

Inflow Area = 108,403 sf, 92.38% Impervious, Inflow Depth = 4.47" for 10-Year event
Inflow = 12.25 cfs @ 12.07 hrs, Volume= 40,407 cf
Outflow = 12.00 cfs @ 12.08 hrs, Volume= 39,259 cf, Atten= 2%, Lag= 0.6 min
Primary = 12.00 cfs @ 12.08 hrs, Volume= 39,259 cf
Routed to Pond FB-1A : Forebay-1A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.69' @ 12.09 hrs Surf.Area= 1,617 sf Storage= 1,801 cf
Flood Elev= 180.00' Surf.Area= 2,693 sf Storage= 6,786 cf

Plug-Flow detention time= 33.3 min calculated for 39,259 cf (97% of inflow)
Center-of-Mass det. time= 15.7 min (777.4 - 761.8)

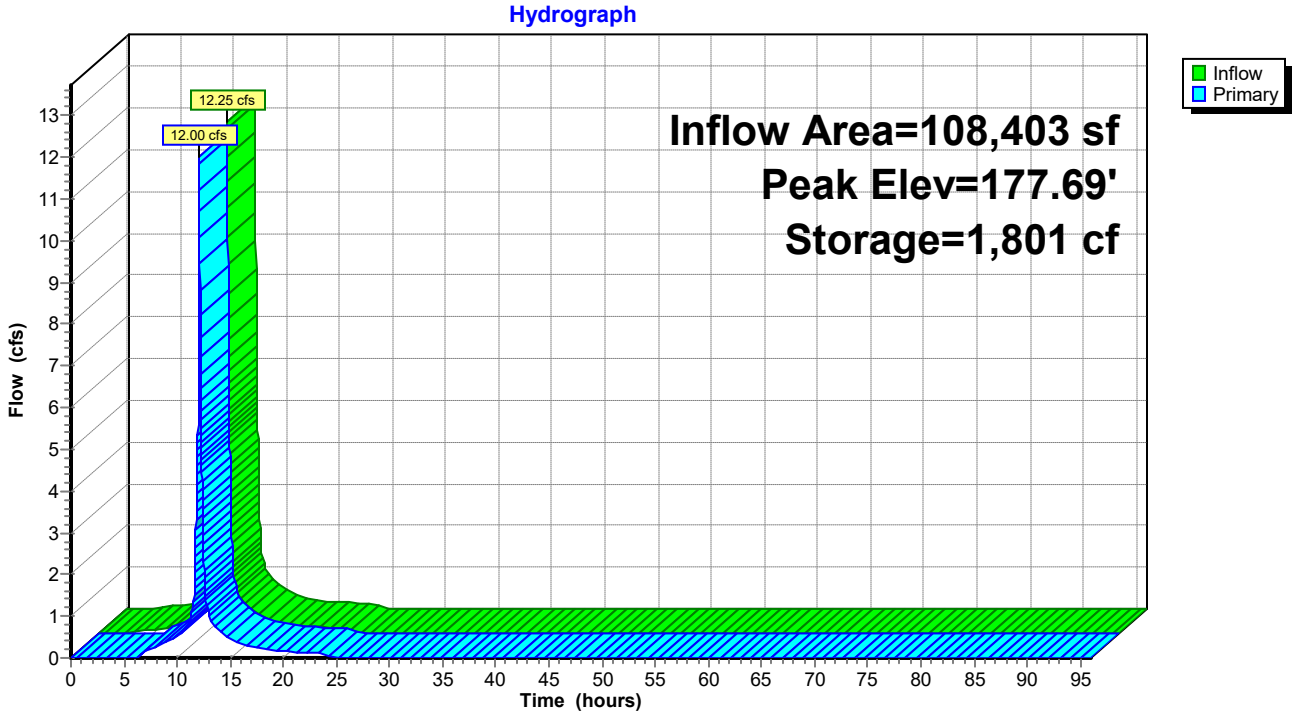
Volume	Invert	Avail.Storage	Storage Description
#1	176.00'	6,786 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.00	498	0	0
177.00	1,168	833	833
177.50	1,530	675	1,508
180.00	2,693	5,279	6,786

Device	Routing	Invert	Outlet Devices
#1	Primary	177.25'	**25.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=11.81 cfs @ 12.08 hrs HW=177.69' TW=177.59' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 11.81 cfs @ 1.08 fps)

Pond FB-1: Forebay-1



Summary for Pond FB-1A: Forebay-1A

Inflow Area = 108,403 sf, 92.38% Impervious, Inflow Depth = 4.35" for 10-Year event
Inflow = 12.00 cfs @ 12.08 hrs, Volume= 39,259 cf
Outflow = 11.94 cfs @ 12.09 hrs, Volume= 38,029 cf, Atten= 0%, Lag= 0.5 min
Primary = 11.94 cfs @ 12.09 hrs, Volume= 38,029 cf
Routed to Pond IB-1 : INFILTRATION BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.59' @ 12.09 hrs Surf.Area= 1,566 sf Storage= 1,721 cf
Flood Elev= 177.75' Surf.Area= 1,672 sf Storage= 1,986 cf

Plug-Flow detention time= 31.1 min calculated for 38,025 cf (97% of inflow)
Center-of-Mass det. time= 12.2 min (789.7 - 777.4)

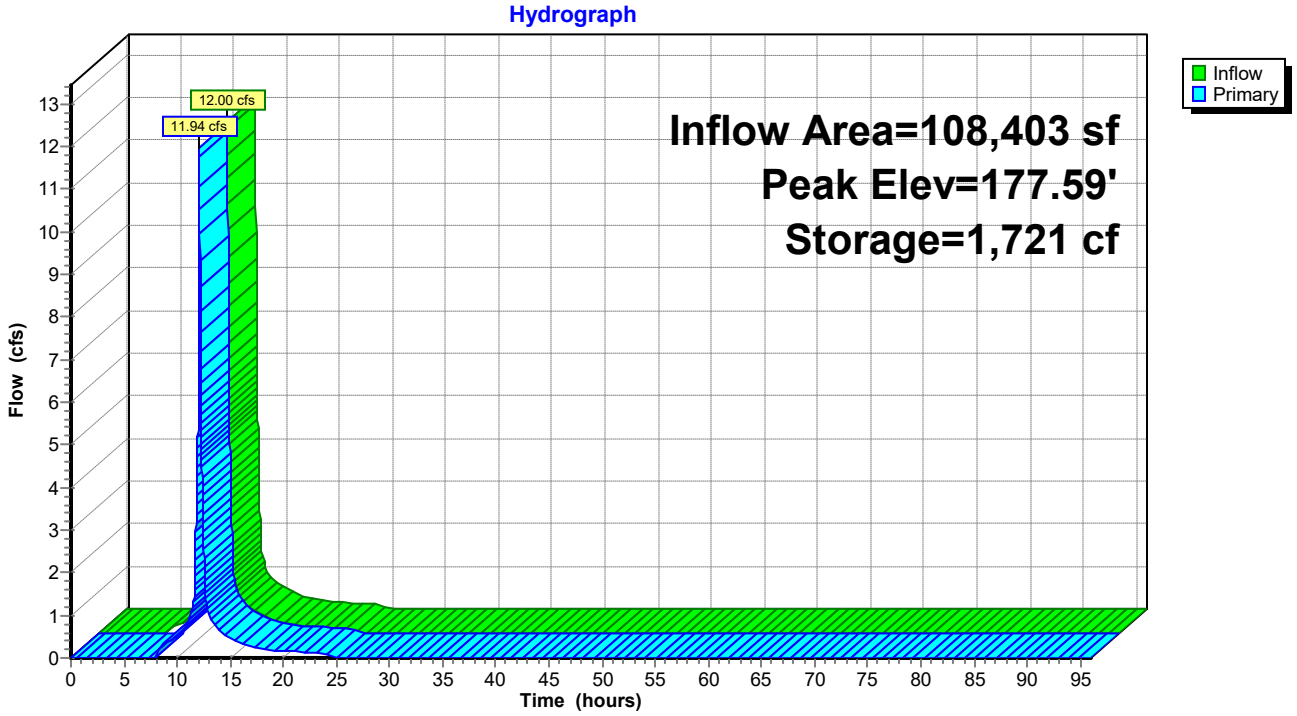
Volume	Invert	Avail.Storage	Storage Description
#1	176.00'	1,986 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.00	615	0	0
177.00	1,204	910	910
177.50	1,510	679	1,588
177.75	1,672	398	1,986

Device	Routing	Invert	Outlet Devices
#1	Primary	177.25'	**25.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=11.92 cfs @ 12.09 hrs HW=177.59' TW=176.76' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 11.92 cfs @ 1.42 fps)

Pond FB-1A: Forebay-1A



Summary for Pond FB-2: Forebay-2

Inflow Area = 39,922 sf, 54.08% Impervious, Inflow Depth = 4.03" for 10-Year event
Inflow = 4.26 cfs @ 12.07 hrs, Volume= 13,409 cf
Outflow = 4.24 cfs @ 12.08 hrs, Volume= 12,737 cf, Atten= 1%, Lag= 0.5 min
Primary = 4.24 cfs @ 12.08 hrs, Volume= 12,737 cf
Routed to Pond B-2 : SAND FILTER-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 180.42' @ 12.08 hrs Surf.Area= 995 sf Storage= 833 cf
Flood Elev= 181.00' Surf.Area= 1,438 sf Storage= 1,536 cf

Plug-Flow detention time= 47.3 min calculated for 12,737 cf (95% of inflow)
Center-of-Mass det. time= 19.0 min (801.1 - 782.2)

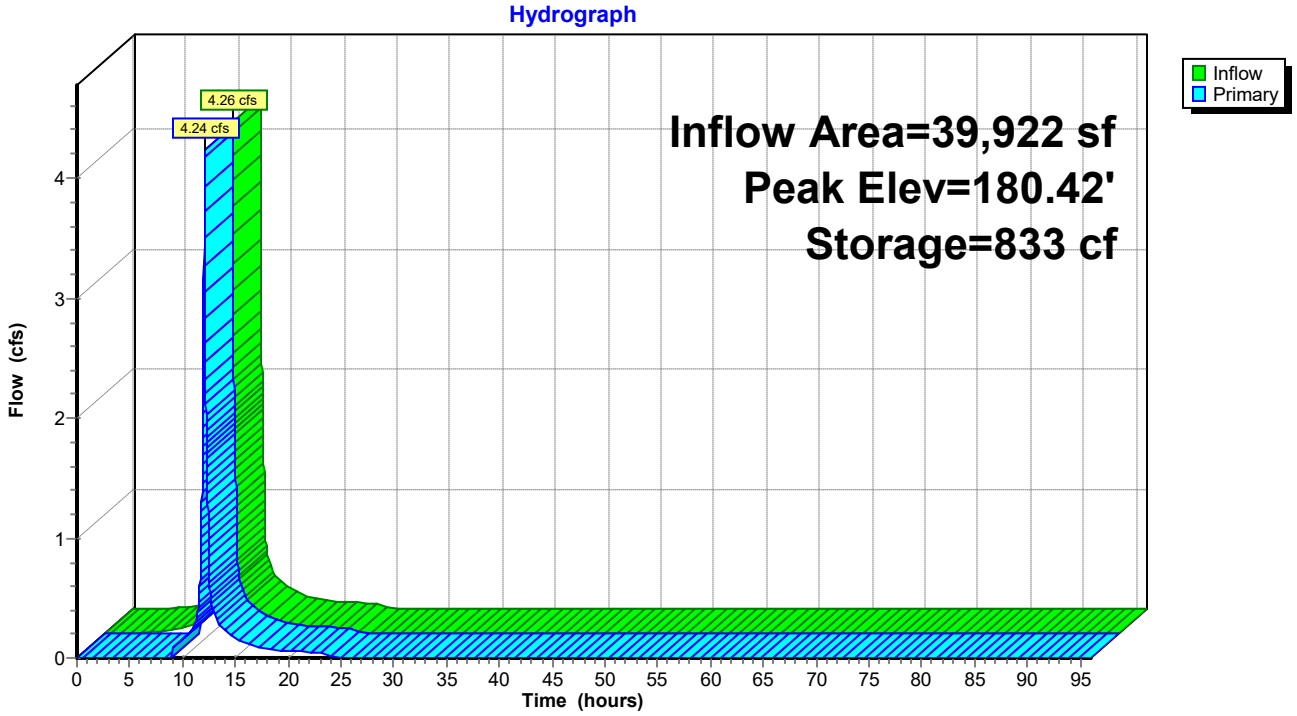
Volume	Invert	Avail.Storage	Storage Description
#1	179.00'	1,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
179.00	290	0	0
180.00	672	481	481
181.00	1,438	1,055	1,536

Device	Routing	Invert	Outlet Devices
#1	Primary	180.25'	**25.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=4.24 cfs @ 12.08 hrs HW=180.42' TW=178.03' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 4.24 cfs @ 0.99 fps)

Pond FB-2: Forebay-2



Summary for Pond IB-1: INFILTRATION BASIN 1

Inflow Area = 108,403 sf, 92.38% Impervious, Inflow Depth = 4.21" for 10-Year event
Inflow = 11.94 cfs @ 12.09 hrs, Volume= 38,029 cf
Outflow = 10.24 cfs @ 12.14 hrs, Volume= 38,029 cf, Atten= 14%, Lag= 2.9 min
Discarded = 0.06 cfs @ 12.14 hrs, Volume= 10,836 cf
Primary = 10.18 cfs @ 12.14 hrs, Volume= 27,193 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 176.79' @ 12.14 hrs Surf.Area= 9,507 sf Storage= 10,716 cf
Flood Elev= 178.10' Surf.Area= 12,034 sf Storage= 24,856 cf

Plug-Flow detention time= 420.6 min calculated for 38,026 cf (100% of inflow)
Center-of-Mass det. time= 420.8 min (1,210.5 - 789.7)

Volume	Invert	Avail.Storage	Storage Description
#1	175.50'	24,856 cf	**Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.50	7,184	0	0
176.00	8,064	3,812	3,812
177.00	9,900	8,982	12,794
178.00	11,837	10,869	23,663
178.10	12,034	1,194	24,856

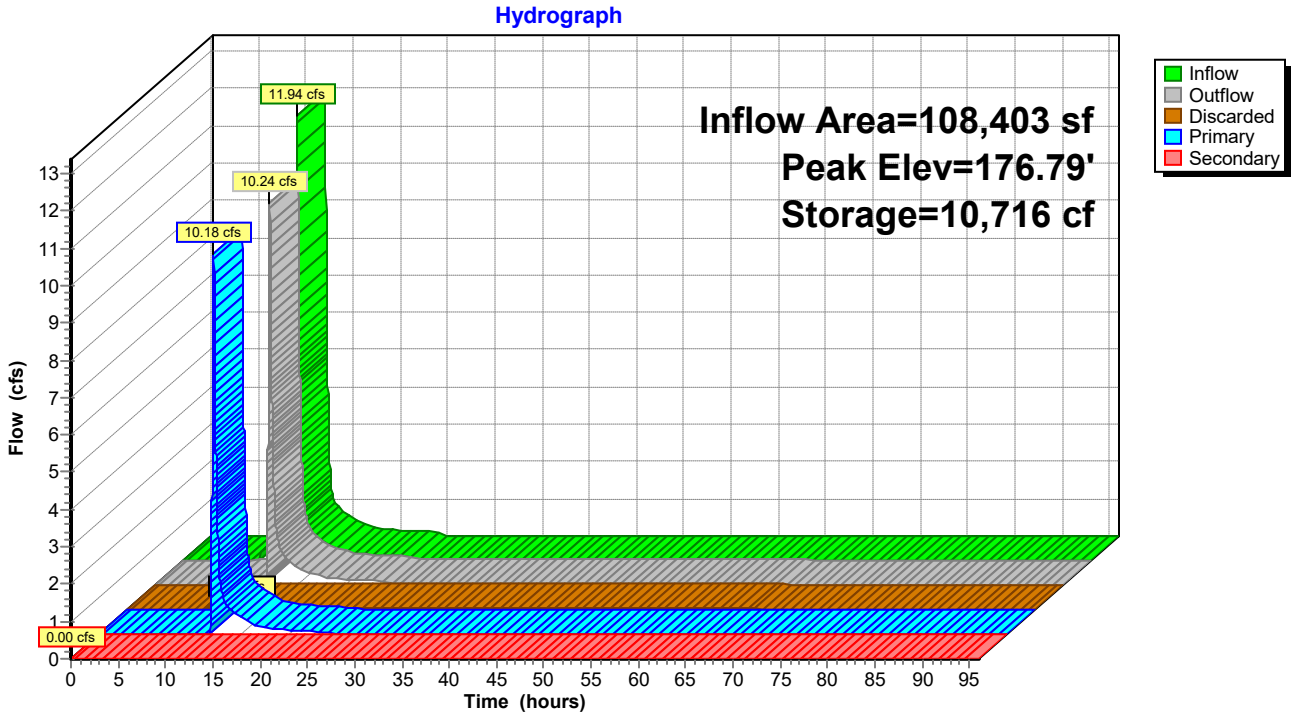
Device	Routing	Invert	Outlet Devices
#1	Discarded	175.50'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	174.25'	**24.0" Round Culvert** L= 27.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 174.25' / 173.98' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#3	Secondary	177.00'	**15.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#4	Device 2	176.45'	**2.0" x 48.0" Horiz. Orifice/Grate X 20.00** C= 0.600 in 48.0" x 48.0" Grate (83% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 12.14 hrs HW=176.79' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=10.17 cfs @ 12.14 hrs HW=176.79' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 10.17 cfs of 14.80 cfs potential flow)
└**4=Orifice/Grate** (Weir Controls 10.17 cfs @ 1.89 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=175.50' TW=0.00' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond IB-1: INFILTRATION BASIN 1

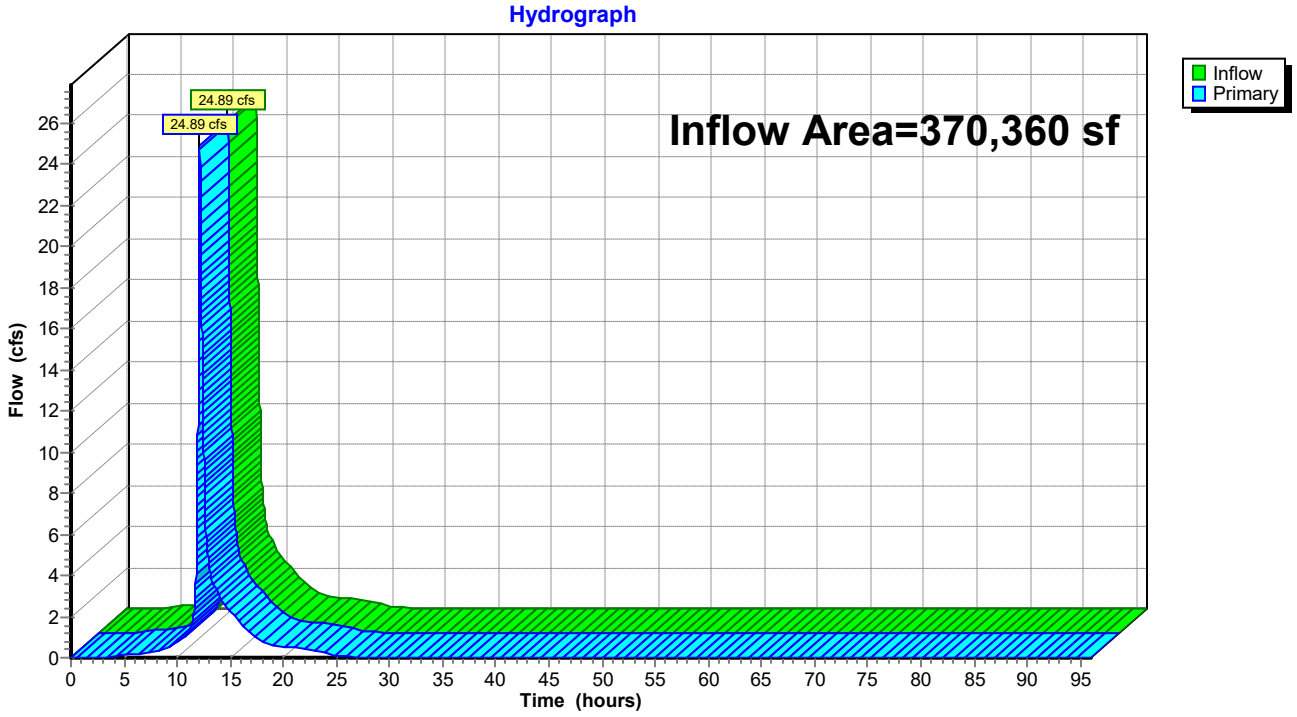


Summary for Link POA-1: EAST OUTFALL (WETLAND SERIES-A)

Inflow Area = 370,360 sf, 76.70% Impervious, Inflow Depth = 3.71" for 10-Year event
Inflow = 24.89 cfs @ 12.13 hrs, Volume= 114,627 cf
Primary = 24.89 cfs @ 12.13 hrs, Volume= 114,627 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-1: EAST OUTFALL (WETLAND SERIES-A)

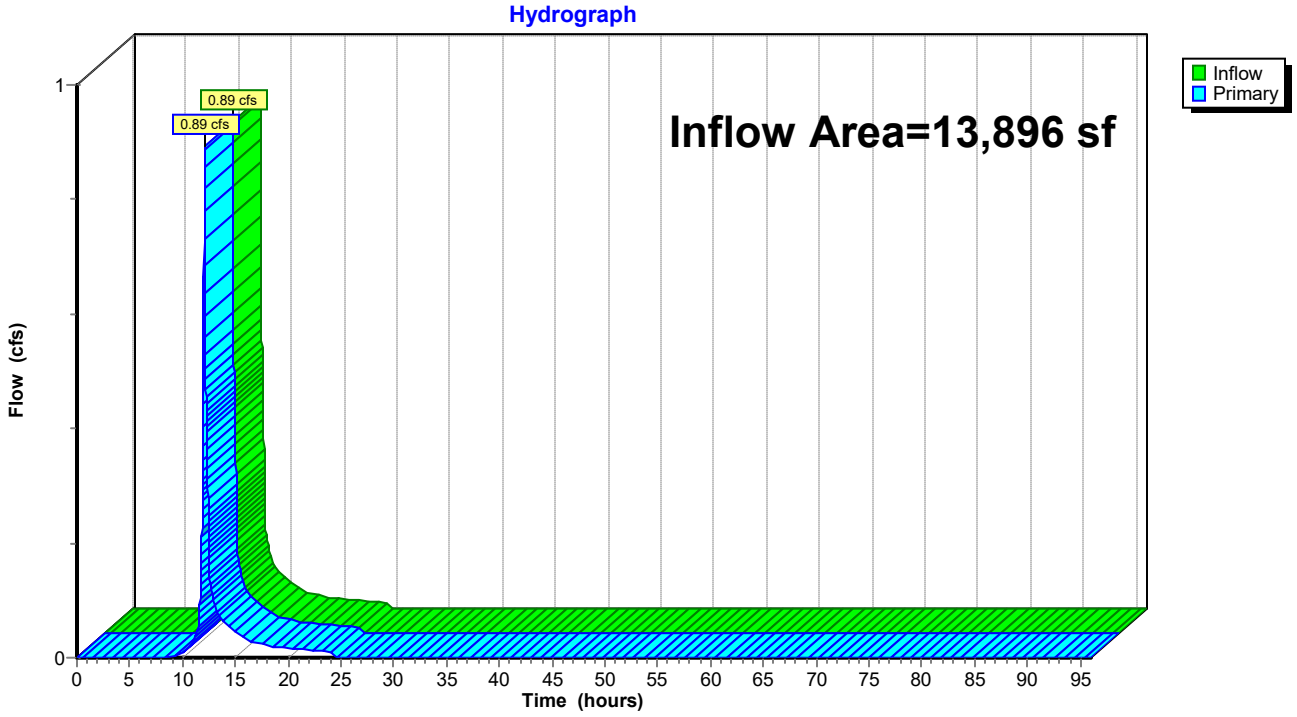


Summary for Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

Inflow Area = 13,896 sf, 0.00% Impervious, Inflow Depth = 2.32" for 10-Year event
Inflow = 0.89 cfs @ 12.08 hrs, Volume= 2,682 cf
Primary = 0.89 cfs @ 12.08 hrs, Volume= 2,682 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

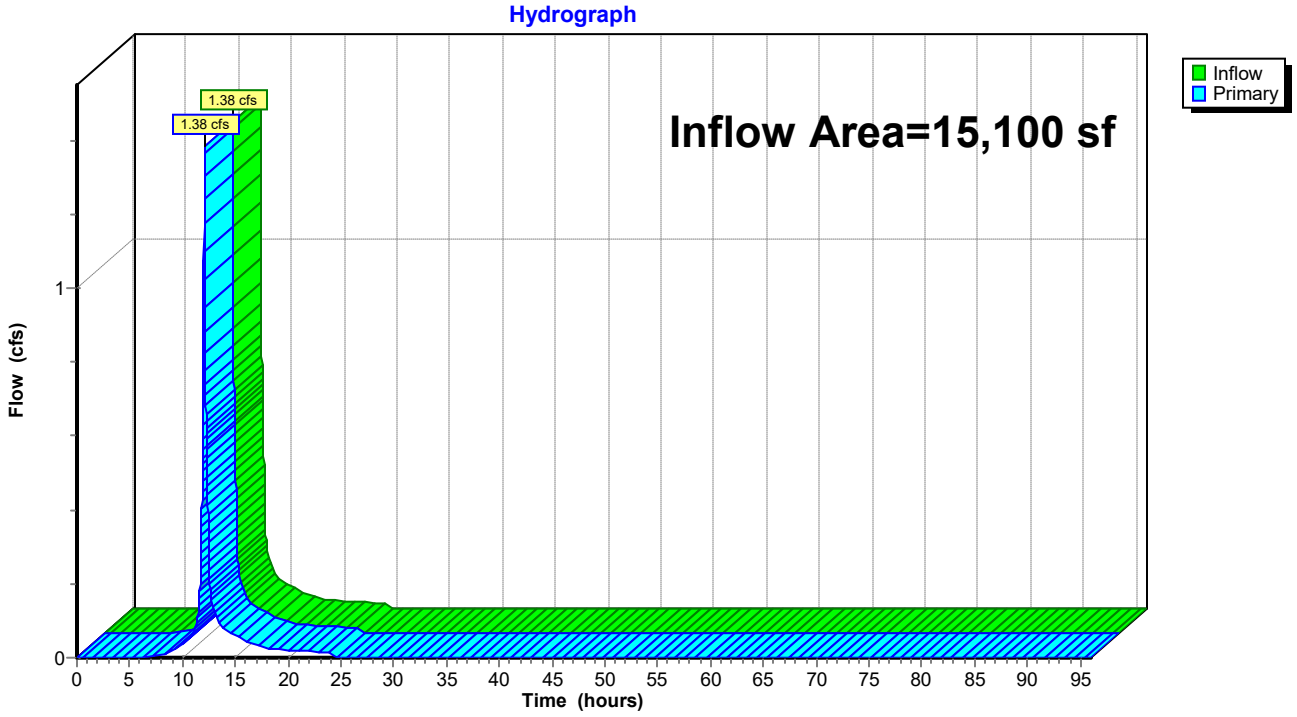


Summary for Link POA-3: WEST OUTFALL (TO TAUNTON)

Inflow Area = 15,100 sf, 45.36% Impervious, Inflow Depth = 3.31" for 10-Year event
Inflow = 1.38 cfs @ 12.07 hrs, Volume= 4,168 cf
Primary = 1.38 cfs @ 12.07 hrs, Volume= 4,168 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-3: WEST OUTFALL (TO TAUNTON)



Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P-1: NORTH & EAST Runoff Area=108,403 sf 92.38% Impervious Runoff Depth=5.79"
Tc=5.0 min CN=96 Runoff=15.65 cfs 52,271 cf

Subcatchment P-2: SOUTH PARKING Runoff Area=39,922 sf 54.08% Impervious Runoff Depth=5.33"
Tc=5.0 min CN=92 Runoff=5.54 cfs 17,716 cf

Subcatchment P-3: WEST PARKING Runoff Area=68,527 sf 70.54% Impervious Runoff Depth=5.21"
Tc=5.0 min CN=91 Runoff=9.39 cfs 29,763 cf

Subcatchment P-3A: EAST PARKING Runoff Area=13,953 sf 100.00% Impervious Runoff Depth=6.02"
Tc=5.0 min CN=98 Runoff=2.04 cfs 7,002 cf

Subcatchment P-3B: OUTSIDE OVERLAND Runoff Area=39,502 sf 0.00% Impervious Runoff Depth=3.40"
Tc=5.0 min CN=74 Runoff=3.75 cfs 11,208 cf

Subcatchment P-4: OVERLAND TO Runoff Area=13,896 sf 0.00% Impervious Runoff Depth=3.40"
Tc=5.0 min CN=74 Runoff=1.32 cfs 3,943 cf

Subcatchment P-5: OVERLAND TO Runoff Area=15,100 sf 45.36% Impervious Runoff Depth=4.55"
Tc=5.0 min CN=85 Runoff=1.87 cfs 5,723 cf

Subcatchment R-1: ROOFS Runoff Area=53,577 sf 100.00% Impervious Runoff Depth=6.02"
Tc=5.0 min CN=98 Runoff=7.82 cfs 26,885 cf

Subcatchment R-2: HALF ROOF Runoff Area=46,476 sf 100.00% Impervious Runoff Depth=6.02"
Tc=5.0 min CN=98 Runoff=6.78 cfs 23,322 cf

Pond B-2: SAND FILTER-1 Peak Elev=180.16' Storage=15,490 cf Inflow=12.29 cfs 40,365 cf
Primary=1.91 cfs 40,351 cf Secondary=0.00 cfs 0 cf Outflow=1.91 cfs 40,351 cf

Pond B-3: SUBSURFACE DETENTION Peak Elev=178.21' Storage=8,580 cf Inflow=19.25 cfs 63,650 cf
Outflow=16.96 cfs 63,643 cf

Pond FB-1: Forebay-1 Peak Elev=177.76' Storage=1,917 cf Inflow=15.65 cfs 52,271 cf
Outflow=15.37 cfs 51,124 cf

Pond FB-1A: Forebay-1A Peak Elev=177.64' Storage=1,809 cf Inflow=15.37 cfs 51,124 cf
Outflow=15.30 cfs 49,894 cf

Pond FB-2: Forebay-2 Peak Elev=180.45' Storage=866 cf Inflow=5.54 cfs 17,716 cf
Outflow=5.52 cfs 17,043 cf

Pond IB-1: INFILTRATION BASIN 1 Peak Elev=176.85' Storage=11,338 cf Inflow=15.30 cfs 49,894 cf
Discarded=0.06 cfs 11,054 cf Primary=13.28 cfs 38,841 cf Secondary=0.00 cfs 0 cf Outflow=13.34 cfs 49,895 cf

Link POA-1: EAST OUTFALL (WETLAND SERIES-A) Inflow=35.03 cfs 154,043 cf
Primary=35.03 cfs 154,043 cf

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B) Inflow=1.32 cfs 3,943 cf
Primary=1.32 cfs 3,943 cf

Link POA-3: WEST OUTFALL (TO TAUNTON) Inflow=1.87 cfs 5,723 cf
Primary=1.87 cfs 5,723 cf

Total Runoff Area = 399,356 sf Runoff Volume = 177,832 cf Average Runoff Depth = 5.34"
27.15% Pervious = 108,428 sf 72.85% Impervious = 290,928 sf

Summary for Subcatchment P-1: NORTH & EAST PARKING

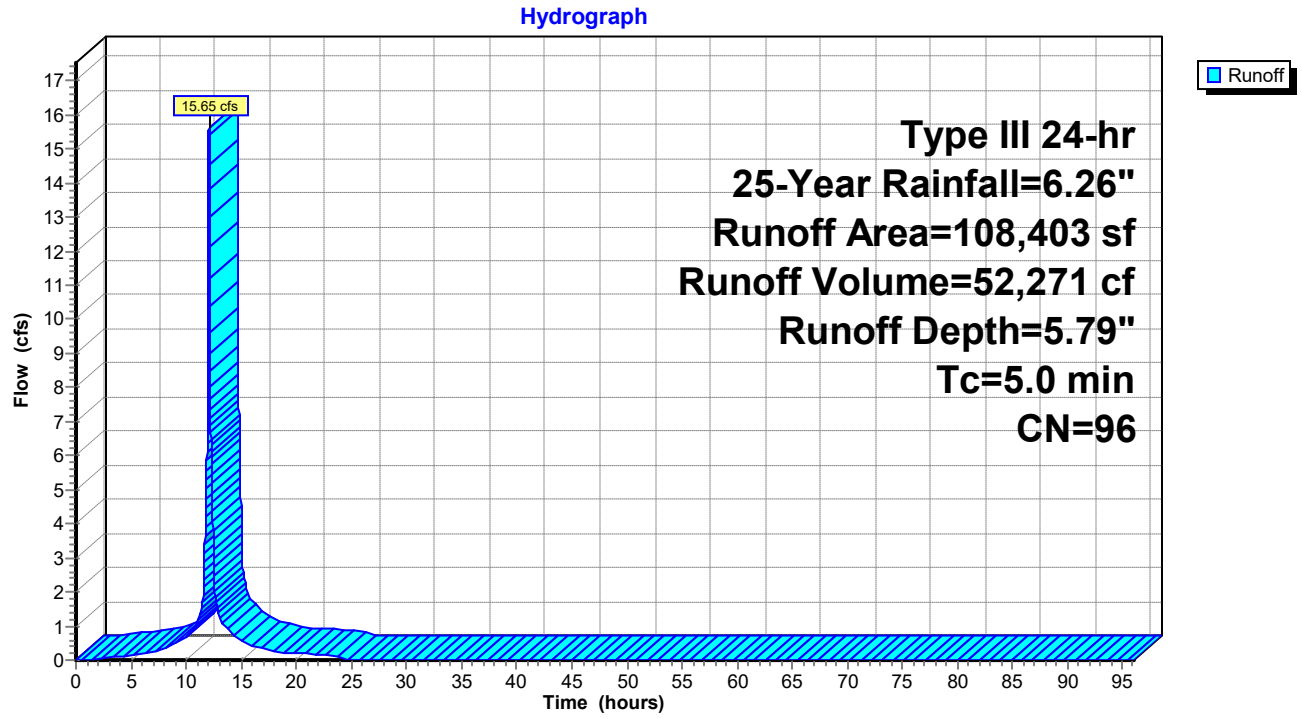
Runoff = 15.65 cfs @ 12.07 hrs, Volume= 52,271 cf, Depth= 5.79"
Routed to Pond FB-1 : Forebay-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.26"

Area (sf)	CN	Description
8,261	74	>75% Grass cover, Good, HSG C
87,749	98	Paved parking, HSG C
12,393	98	Water Surface, HSG C
108,403	96	Weighted Average
8,261		7.62% Pervious Area
100,142		92.38% Impervious Area

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

Subcatchment P-1: NORTH & EAST PARKING



Summary for Subcatchment P-2: SOUTH PARKING

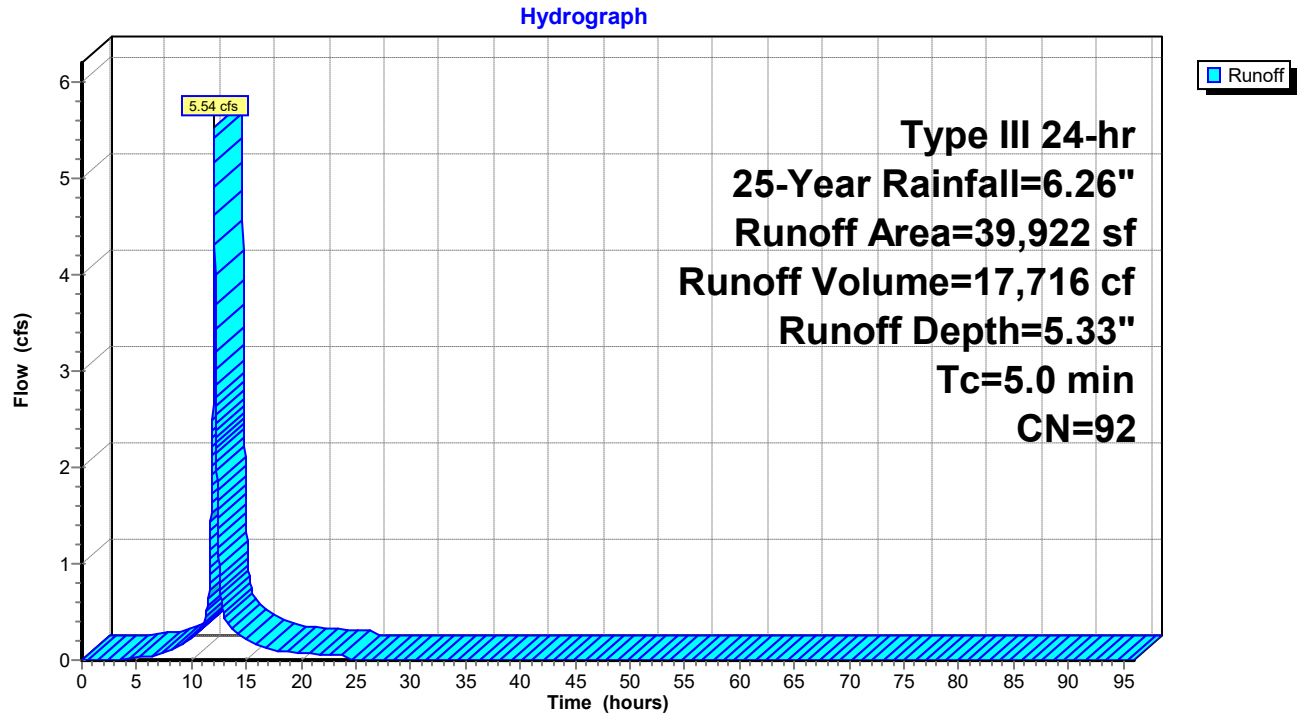
Runoff = 5.54 cfs @ 12.07 hrs, Volume= 17,716 cf, Depth= 5.33"
Routed to Pond FB-2 : Forebay-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.26"

Area (sf)	CN	Description
21,591	98	Paved parking, HSG C
9,196	74	>75% Grass cover, Good, HSG C
9,135	98	Water Surface, 0% imp, HSG C
39,922	92	Weighted Average
18,331		45.92% Pervious Area
21,591		54.08% Impervious Area

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

Subcatchment P-2: SOUTH PARKING



Summary for Subcatchment P-3: WEST PARKING

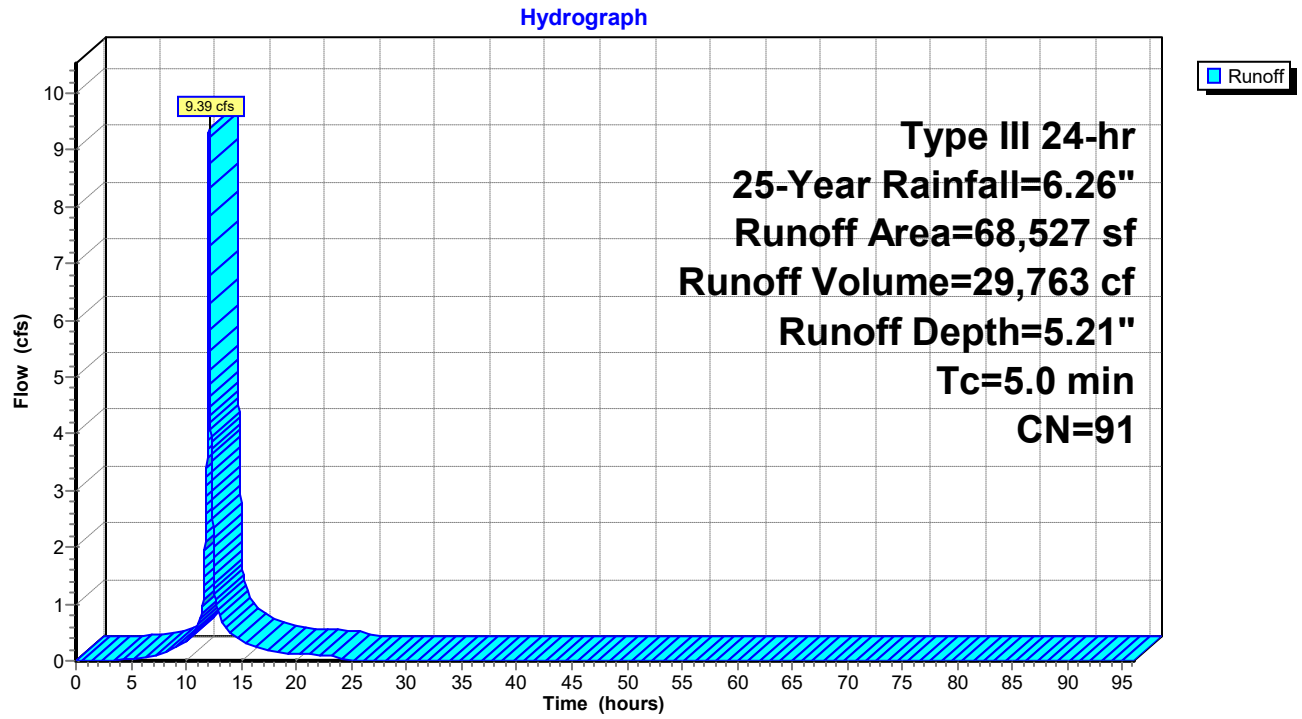
Runoff = 9.39 cfs @ 12.07 hrs, Volume= 29,763 cf, Depth= 5.21"
Routed to Pond B-3 : SUBSURFACE DETENTION SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.26"

Area (sf)	CN	Description
48,340	98	Paved parking, HSG C
20,187	74	>75% Grass cover, Good, HSG C
68,527	91	Weighted Average
20,187		29.46% Pervious Area
48,340		70.54% Impervious Area

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

Subcatchment P-3: WEST PARKING



Summary for Subcatchment P-3A: EAST PARKING

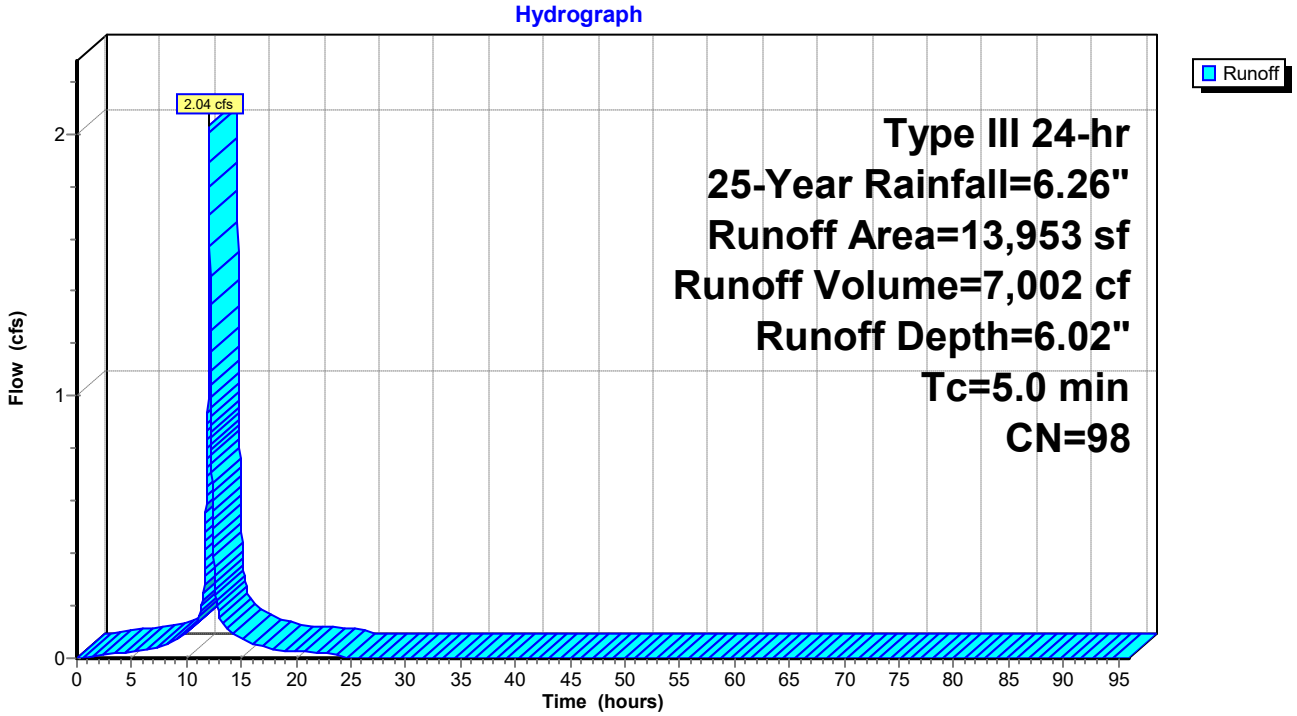
Runoff = 2.04 cfs @ 12.07 hrs, Volume= 7,002 cf, Depth= 6.02"
Routed to Pond B-3 : SUBSURFACE DETENTION SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.26"

Area (sf)	CN	Description
13,953	98	Paved parking, HSG C
13,953		100.00% Impervious Area

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

Subcatchment P-3A: EAST PARKING



Summary for Subcatchment P-3B: OUTSIDE OVERLAND FLOW

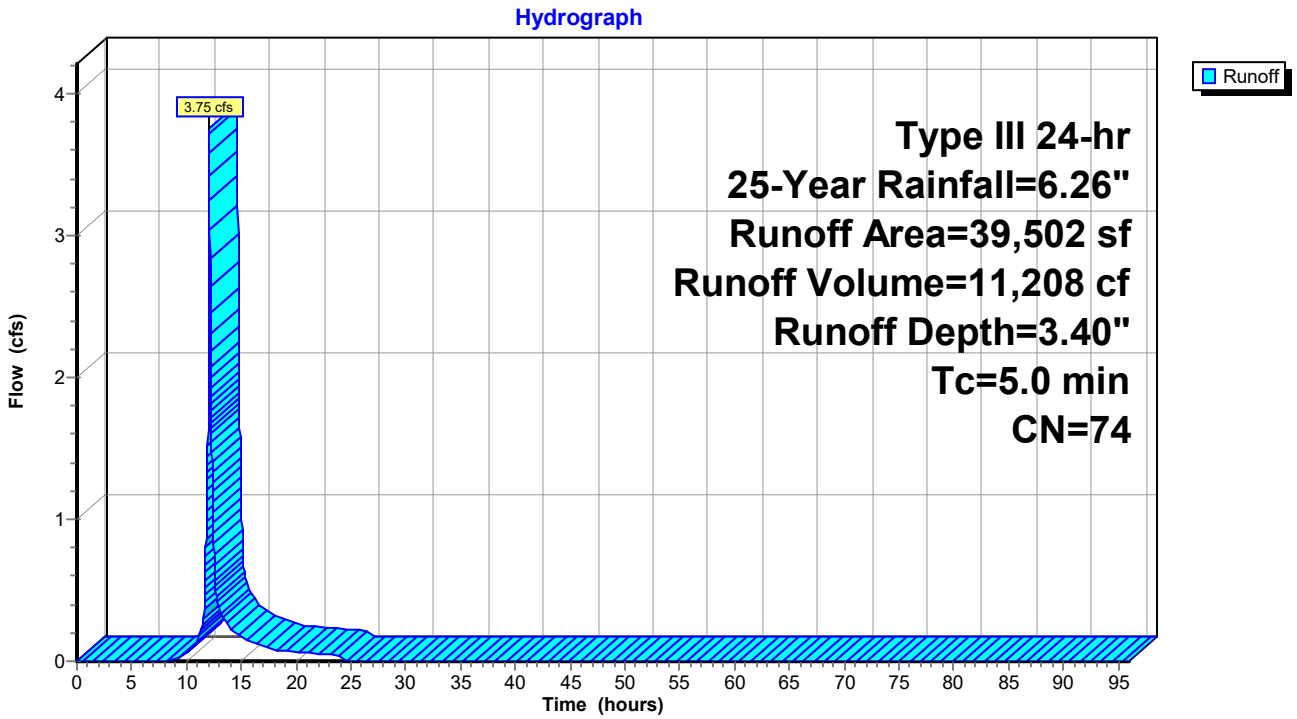
Runoff = 3.75 cfs @ 12.08 hrs, Volume= 11,208 cf, Depth= 3.40"
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.26"

Area (sf)	CN	Description
39,502	74	>75% Grass cover, Good, HSG C
39,502		100.00% Pervious Area

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

Subcatchment P-3B: OUTSIDE OVERLAND FLOW



Summary for Subcatchment P-4: OVERLAND TO WETLAND

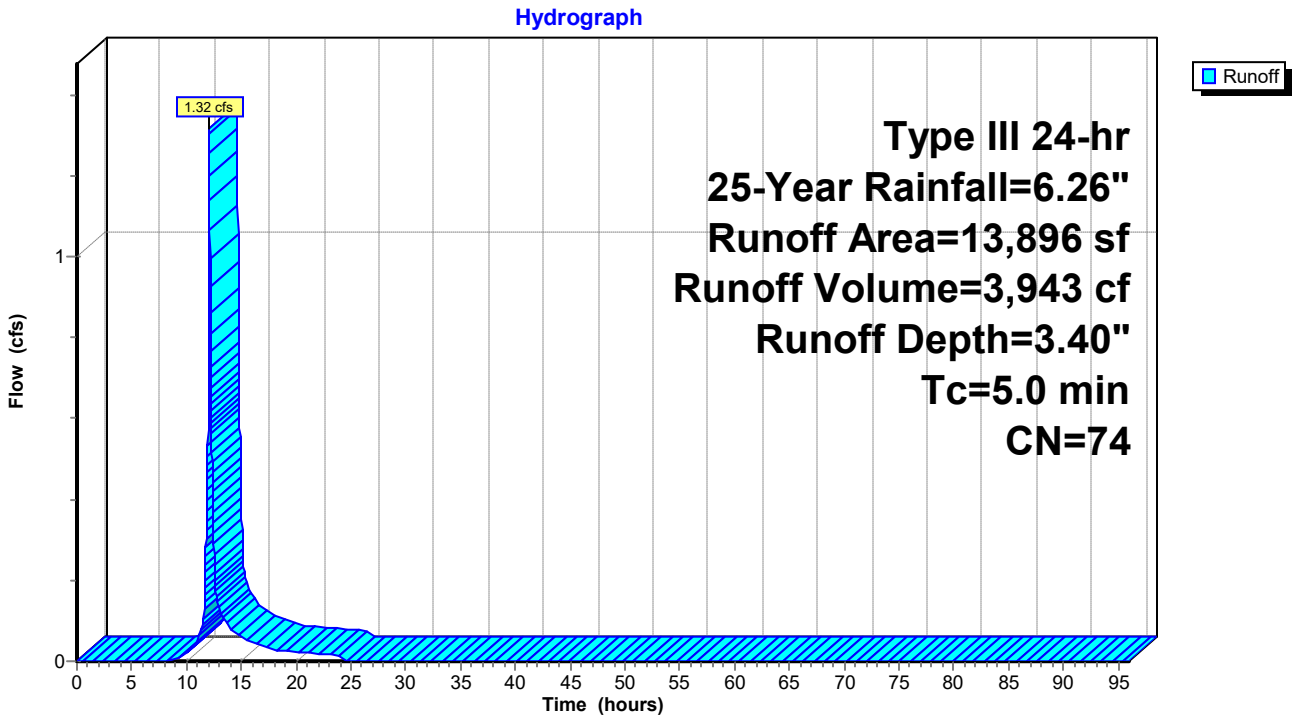
Runoff = 1.32 cfs @ 12.08 hrs, Volume= 3,943 cf, Depth= 3.40"
Routed to Link POA-2 : SOUTH OUTFALL (WETLAND SERIES-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.26"

Area (sf)	CN	Description
13,896	74	>75% Grass cover, Good, HSG C
13,896		100.00% Pervious Area

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

Subcatchment P-4: OVERLAND TO WETLAND



Summary for Subcatchment P-5: OVERLAND TO WETLAND

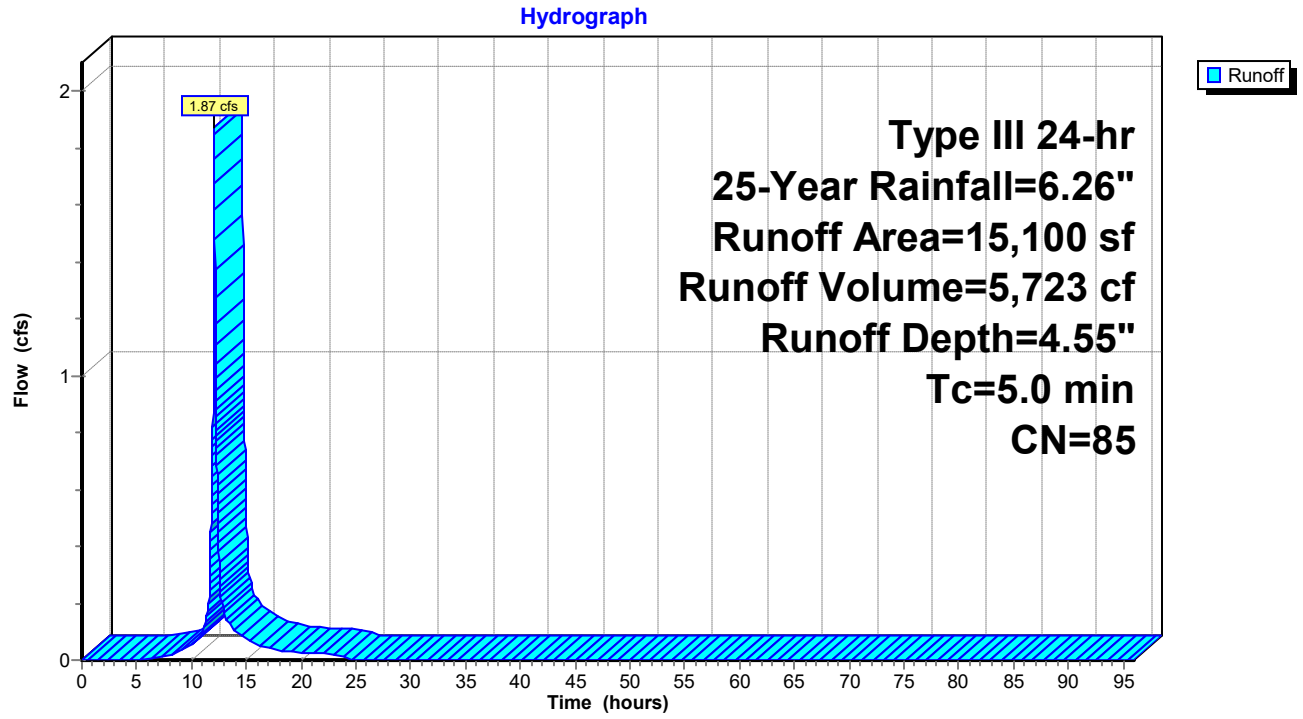
Runoff = 1.87 cfs @ 12.07 hrs, Volume= 5,723 cf, Depth= 4.55"
Routed to Link POA-3 : WEST OUTFALL (TO TAUNTON)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.26"

Area (sf)	CN	Description
8,251	74	>75% Grass cover, Good, HSG C
6,849	98	Unconnected pavement, HSG C
15,100	85	Weighted Average
8,251		54.64% Pervious Area
6,849		45.36% Impervious Area
6,849		100.00% Unconnected

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

Subcatchment P-5: OVERLAND TO WETLAND



Summary for Subcatchment R-1: ROOFS

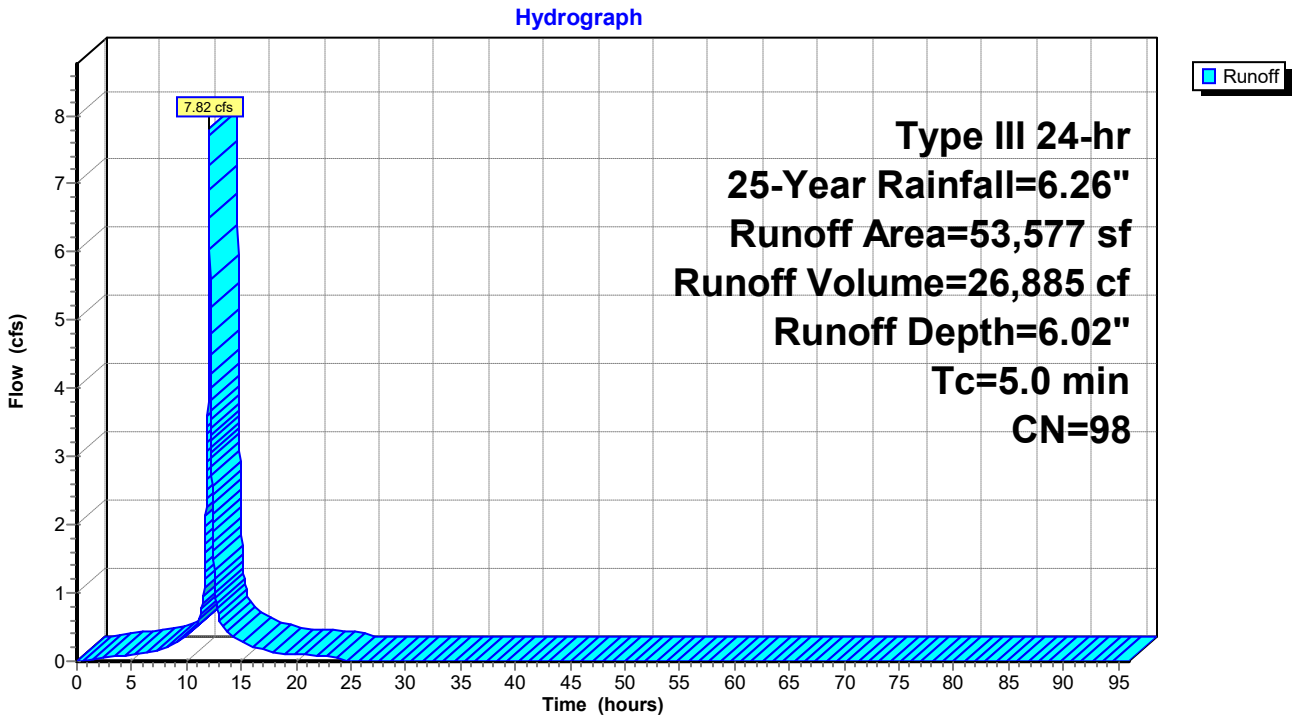
Runoff = 7.82 cfs @ 12.07 hrs, Volume= 26,885 cf, Depth= 6.02"
Routed to Pond B-3 : SUBSURFACE DETENTION SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.26"

Area (sf)	CN	Description
53,577	98	Roofs, HSG C
53,577		100.00% Impervious Area

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

Subcatchment R-1: ROOFS



Summary for Subcatchment R-2: HALF ROOF

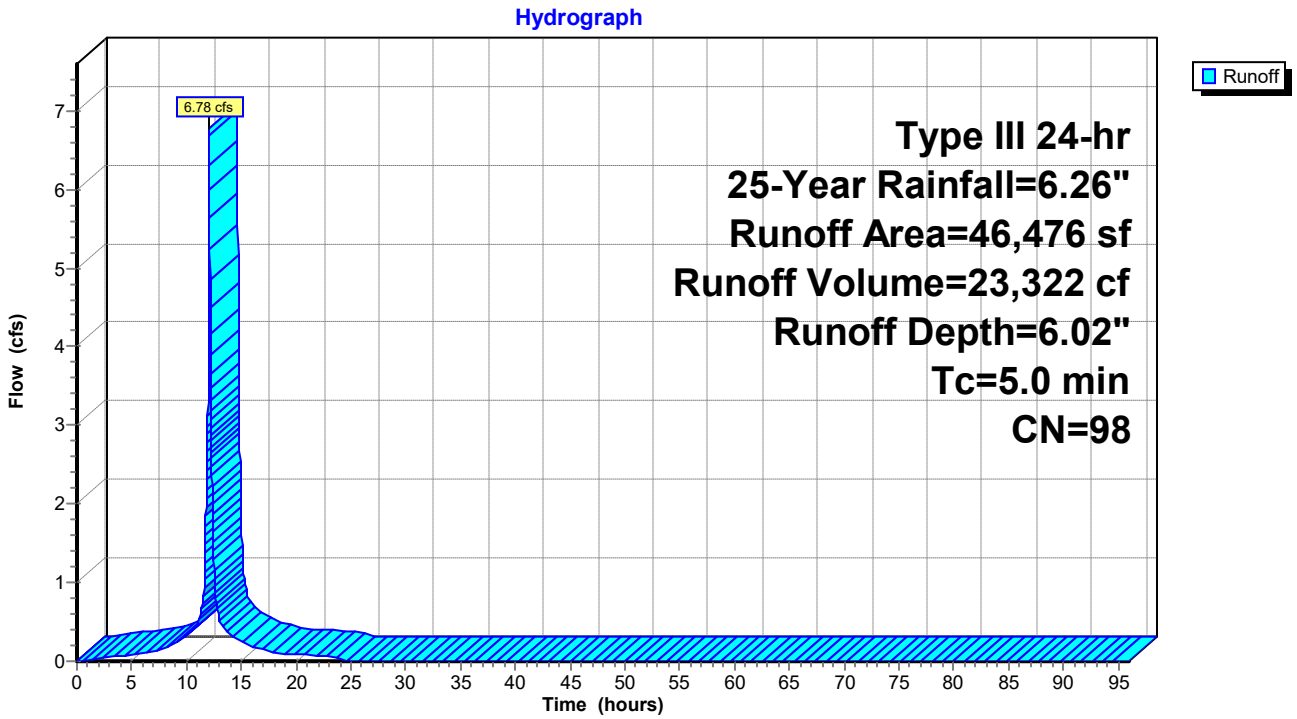
Runoff = 6.78 cfs @ 12.07 hrs, Volume= 23,322 cf, Depth= 6.02"
Routed to Pond B-2 : SAND FILTER-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.26"

Area (sf)	CN	Description
46,476	98	Roofs, HSG C
46,476		100.00% Impervious Area

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

Subcatchment R-2: HALF ROOF



Summary for Pond B-2: SAND FILTER-1

Inflow Area = 86,398 sf, 78.78% Impervious, Inflow Depth = 5.61" for 25-Year event
Inflow = 12.29 cfs @ 12.07 hrs, Volume= 40,365 cf
Outflow = 1.91 cfs @ 12.54 hrs, Volume= 40,351 cf, Atten= 84%, Lag= 28.2 min
Primary = 1.91 cfs @ 12.54 hrs, Volume= 40,351 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 180.16' @ 12.54 hrs Surf.Area= 25,629 sf Storage= 15,490 cf
Flood Elev= 181.00' Surf.Area= 26,925 sf Storage= 23,343 cf

Plug-Flow detention time= 98.9 min calculated for 40,351 cf (100% of inflow)
Center-of-Mass det. time= 98.6 min (862.4 - 763.8)

Volume	Invert	Avail.Storage	Storage Description
#1	180.00'	9,227 cf	**Basin (Prismatic)** Listed below (Recalc)
#2	176.50'	11,848 cf	**Sand Media (Prismatic)** Listed below (Recalc) 29,621 cf Overall x 40.0% Voids
#3	175.83'	2,268 cf	**Gravel (Prismatic)** Listed below (Recalc) 5,670 cf Overall x 40.0% Voids
		23,343 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
180.00	8,463	0	0
180.25	8,838	2,163	2,163
181.00	9,999	7,064	9,227

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.50	8,463	0	0
180.00	8,463	29,621	29,621

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.83	8,463	0	0
176.50	8,463	5,670	5,670

Device	Routing	Invert	Outlet Devices
#1	Primary	175.83'	**12.0" Round Culvert** L= 122.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 175.83' / 174.00' S= 0.0150 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	180.25'	**20.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65

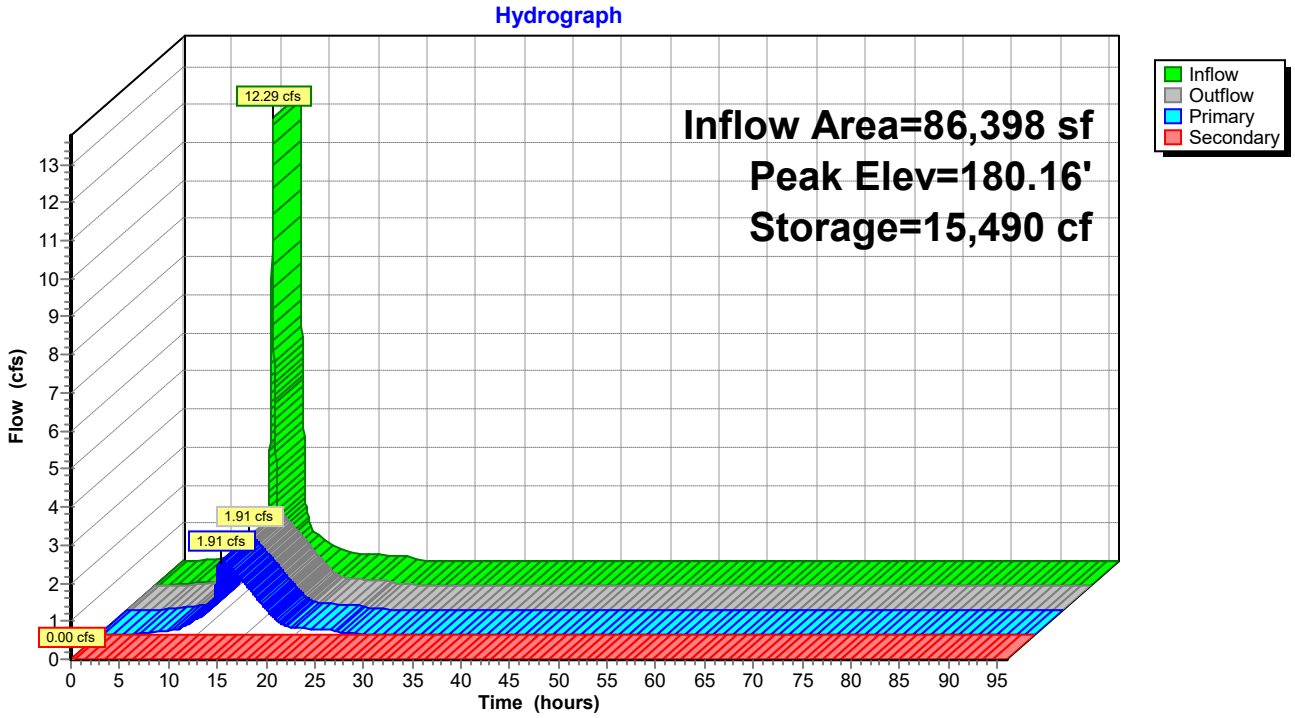
2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

#3 Device 1 175.83' **6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.91 cfs @ 12.54 hrs HW=180.16' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.91 cfs of 5.84 cfs potential flow)
└─**3=Orifice/Grate** (Orifice Controls 1.91 cfs @ 9.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=175.83' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-2: SAND FILTER-1



Summary for Pond B-3: SUBSURFACE DETENTION SYSTEM

Inflow Area = 136,057 sf, 85.16% Impervious, Inflow Depth = 5.61" for 25-Year event
Inflow = 19.25 cfs @ 12.07 hrs, Volume= 63,650 cf
Outflow = 16.96 cfs @ 12.11 hrs, Volume= 63,643 cf, Atten= 12%, Lag= 2.4 min
Primary = 16.96 cfs @ 12.11 hrs, Volume= 63,643 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 178.21' @ 12.11 hrs Surf.Area= 5,684 sf Storage= 8,580 cf
Flood Elev= 178.69' Surf.Area= 5,684 sf Storage= 9,665 cf

Plug-Flow detention time= 38.8 min calculated for 63,643 cf (100% of inflow)
Center-of-Mass det. time= 38.7 min (798.8 - 760.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	176.00'	3,543 cf	**19.75'W x 287.84'L x 2.69'H Field A** 15,311 cf Overall - 6,453 cf Embedded = 8,858 cf x 40.0% Voids
#2A	176.25'	6,130 cf	**ACF R-Tank HD 1** x 1452 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 1452 Chambers in 12 Rows
		9,673 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	176.00'	**30.0" Round Culvert** L= 86.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 176.00' / 173.56' S= 0.0284 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf
#2	Device 1	176.75'	**48.0" W x 6.0" H Vert. Rectangular Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	177.75'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	176.00'	**6.0" Vert. Low flow Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.94 cfs @ 12.11 hrs HW=178.21' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 16.94 cfs of 29.08 cfs potential flow)
  - **2=Rectangular Orifice** (Orifice Controls 10.58 cfs @ 5.29 fps)
  - **3=Sharp-Crested Rectangular Weir** (Weir Controls 5.04 cfs @ 2.22 fps)
  - **4=Low flow Orifice** (Orifice Controls 1.32 cfs @ 6.74 fps)

Pond B-3: SUBSURFACE DETENTION SYSTEM - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)
Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf
Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

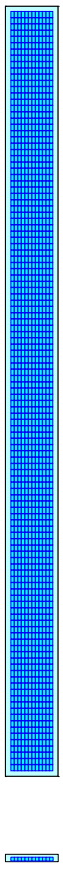
121 Chambers/Row x 2.35' Long = 283.84' Row Length +24.0" End Stone x 2 = 287.84' Base Length
12 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 19.75' Base Width
3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

1,452 Chambers x 4.2 cf = 6,130.1 cf Chamber Storage
1,452 Chambers x 4.4 cf = 6,452.7 cf Displacement

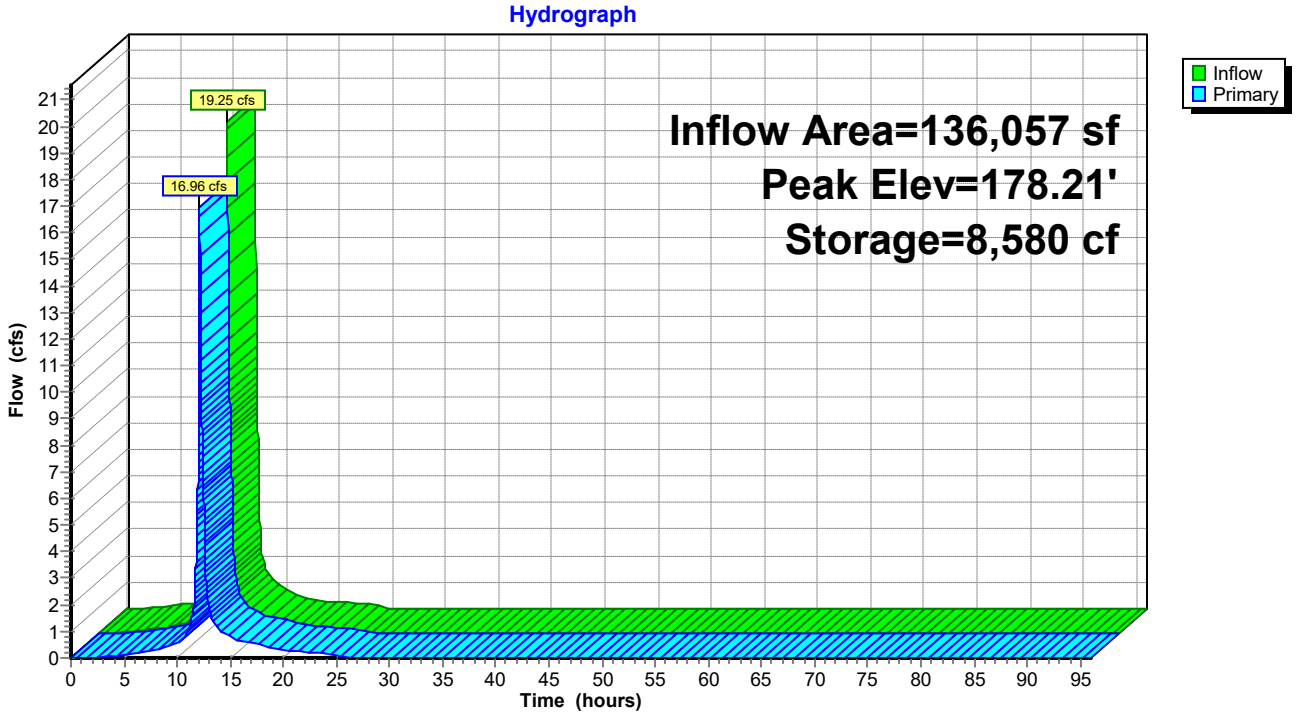
15,311.1 cf Field - 6,452.7 cf Chambers = 8,858.4 cf Stone x 40.0% Voids = 3,543.4 cf Stone Storage

Chamber Storage + Stone Storage = 9,673.4 cf = 0.222 af
Overall Storage Efficiency = 63.2%
Overall System Size = 287.84' x 19.75' x 2.69'

1,452 Chambers
567.1 cy Field
328.1 cy Stone



Pond B-3: SUBSURFACE DETENTION SYSTEM



Summary for Pond FB-1: Forebay-1

Inflow Area = 108,403 sf, 92.38% Impervious, Inflow Depth = 5.79" for 25-Year event
Inflow = 15.65 cfs @ 12.07 hrs, Volume= 52,271 cf
Outflow = 15.37 cfs @ 12.08 hrs, Volume= 51,124 cf, Atten= 2%, Lag= 0.5 min
Primary = 15.37 cfs @ 12.08 hrs, Volume= 51,124 cf
Routed to Pond FB-1A : Forebay-1A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.76' @ 12.09 hrs Surf.Area= 1,650 sf Storage= 1,917 cf
Flood Elev= 180.00' Surf.Area= 2,693 sf Storage= 6,786 cf

Plug-Flow detention time= 27.3 min calculated for 51,118 cf (98% of inflow)
Center-of-Mass det. time= 13.4 min (769.7 - 756.4)

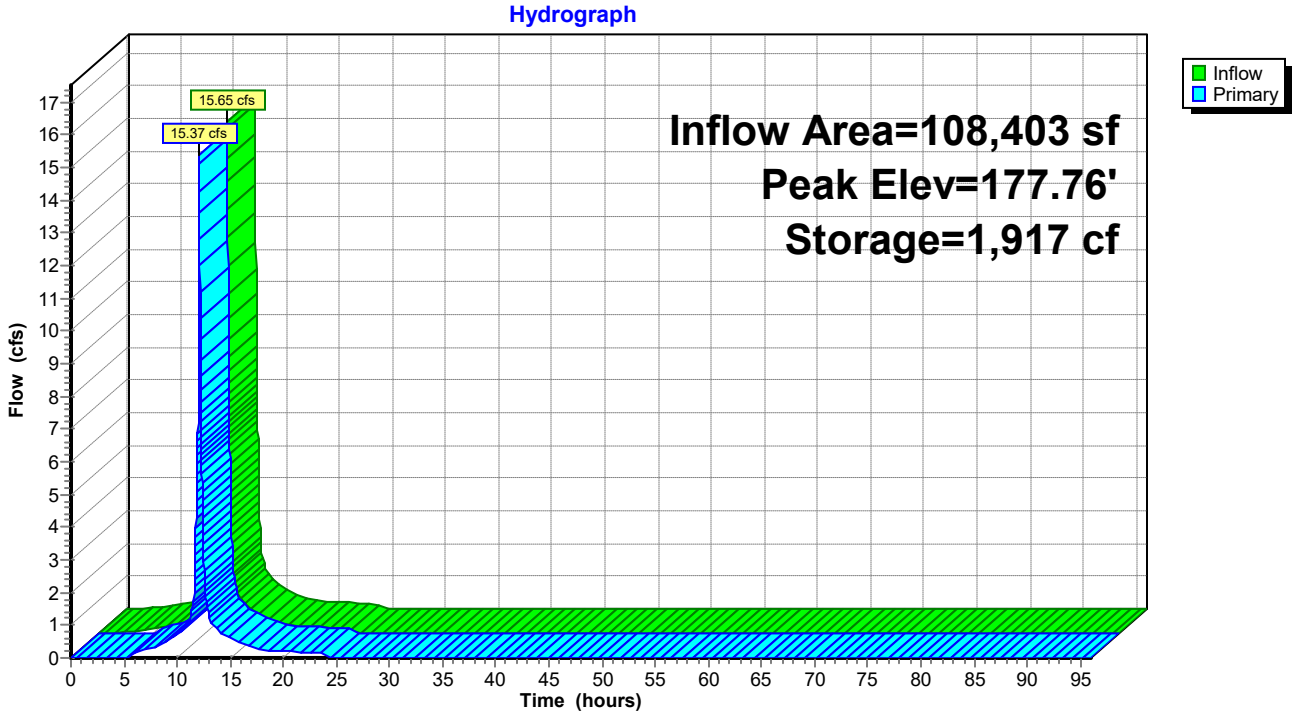
Volume	Invert	Avail.Storage	Storage Description
#1	176.00'	6,786 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.00	498	0	0
177.00	1,168	833	833
177.50	1,530	675	1,508
180.00	2,693	5,279	6,786

Device	Routing	Invert	Outlet Devices
#1	Primary	177.25'	**25.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=15.12 cfs @ 12.08 hrs HW=177.76' TW=177.64' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 15.12 cfs @ 1.20 fps)

Pond FB-1: Forebay-1



Summary for Pond FB-1A: Forebay-1A

Inflow Area = 108,403 sf, 92.38% Impervious, Inflow Depth = 5.66" for 25-Year event
Inflow = 15.37 cfs @ 12.08 hrs, Volume= 51,124 cf
Outflow = 15.30 cfs @ 12.09 hrs, Volume= 49,894 cf, Atten= 0%, Lag= 0.4 min
Primary = 15.30 cfs @ 12.09 hrs, Volume= 49,894 cf
Routed to Pond IB-1 : INFILTRATION BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.64' @ 12.09 hrs Surf.Area= 1,602 sf Storage= 1,809 cf
Flood Elev= 177.75' Surf.Area= 1,672 sf Storage= 1,986 cf

Plug-Flow detention time= 25.9 min calculated for 49,894 cf (98% of inflow)
Center-of-Mass det. time= 10.9 min (780.7 - 769.7)

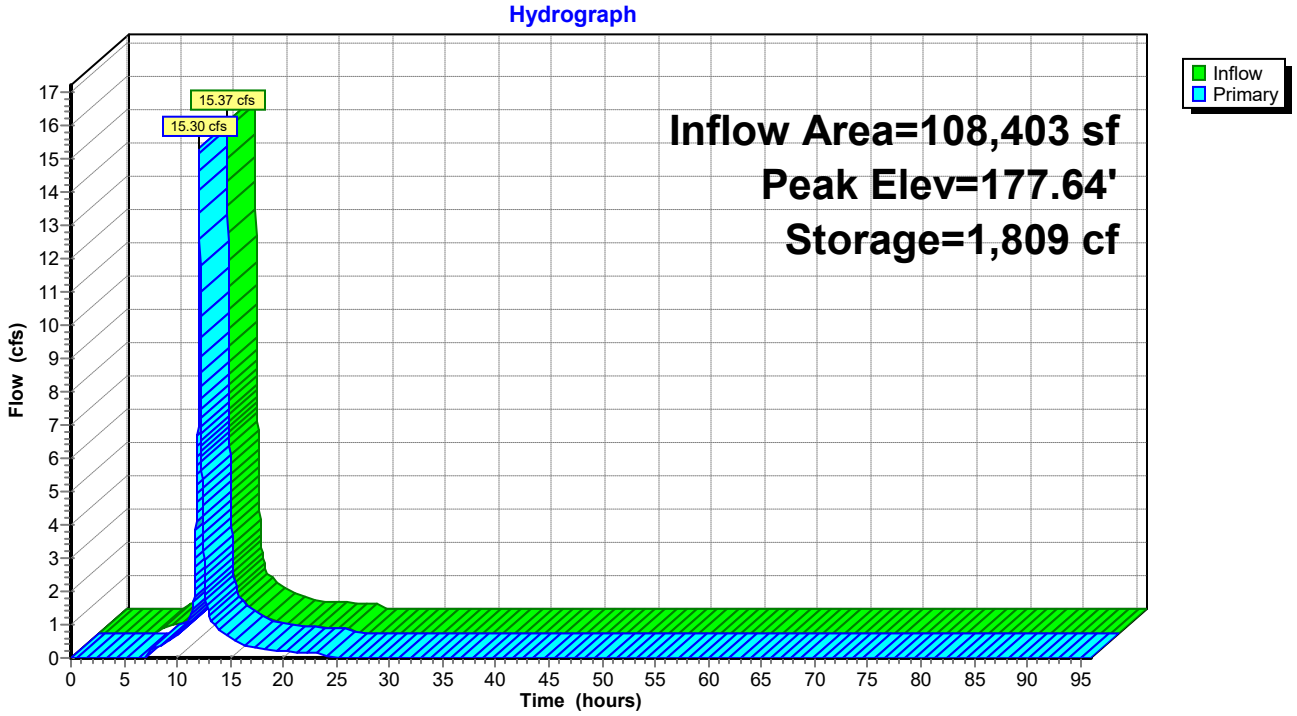
Volume	Invert	Avail.Storage	Storage Description
#1	176.00'	1,986 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.00	615	0	0
177.00	1,204	910	910
177.50	1,510	679	1,588
177.75	1,672	398	1,986

Device	Routing	Invert	Outlet Devices
#1	Primary	177.25'	**25.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=15.27 cfs @ 12.09 hrs HW=177.64' TW=176.82' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 15.27 cfs @ 1.56 fps)

Pond FB-1A: Forebay-1A



Summary for Pond FB-2: Forebay-2

Inflow Area = 39,922 sf, 54.08% Impervious, Inflow Depth = 5.33" for 25-Year event
Inflow = 5.54 cfs @ 12.07 hrs, Volume= 17,716 cf
Outflow = 5.52 cfs @ 12.08 hrs, Volume= 17,043 cf, Atten= 0%, Lag= 0.4 min
Primary = 5.52 cfs @ 12.08 hrs, Volume= 17,043 cf
Routed to Pond B-2 : SAND FILTER-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 180.45' @ 12.08 hrs Surf.Area= 1,020 sf Storage= 866 cf
Flood Elev= 181.00' Surf.Area= 1,438 sf Storage= 1,536 cf

Plug-Flow detention time= 39.1 min calculated for 17,043 cf (96% of inflow)
Center-of-Mass det. time= 16.5 min (791.5 - 775.0)

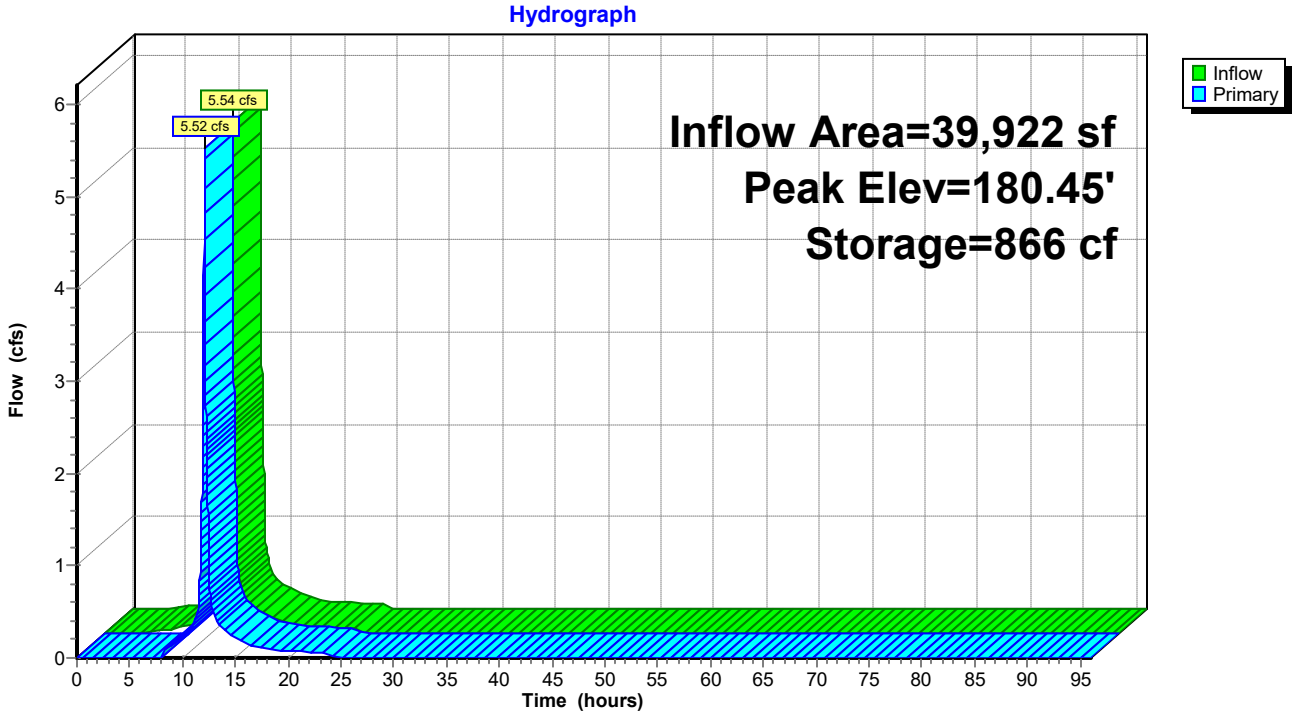
Volume	Invert	Avail.Storage	Storage Description
#1	179.00'	1,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
179.00	290	0	0
180.00	672	481	481
181.00	1,438	1,055	1,536

Device	Routing	Invert	Outlet Devices
#1	Primary	180.25'	**25.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=5.51 cfs @ 12.08 hrs HW=180.45' TW=178.73' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 5.51 cfs @ 1.08 fps)

Pond FB-2: Forebay-2



Summary for Pond IB-1: INFILTRATION BASIN 1

Inflow Area = 108,403 sf, 92.38% Impervious, Inflow Depth = 5.52" for 25-Year event
Inflow = 15.30 cfs @ 12.09 hrs, Volume= 49,894 cf
Outflow = 13.34 cfs @ 12.13 hrs, Volume= 49,895 cf, Atten= 13%, Lag= 2.7 min
Discarded = 0.06 cfs @ 12.13 hrs, Volume= 11,054 cf
Primary = 13.28 cfs @ 12.13 hrs, Volume= 38,841 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 176.85' @ 12.13 hrs Surf.Area= 9,626 sf Storage= 11,338 cf
Flood Elev= 178.10' Surf.Area= 12,034 sf Storage= 24,856 cf

Plug-Flow detention time= 330.5 min calculated for 49,889 cf (100% of inflow)
Center-of-Mass det. time= 330.7 min (1,111.4 - 780.7)

Volume	Invert	Avail.Storage	Storage Description
#1	175.50'	24,856 cf	**Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.50	7,184	0	0
176.00	8,064	3,812	3,812
177.00	9,900	8,982	12,794
178.00	11,837	10,869	23,663
178.10	12,034	1,194	24,856

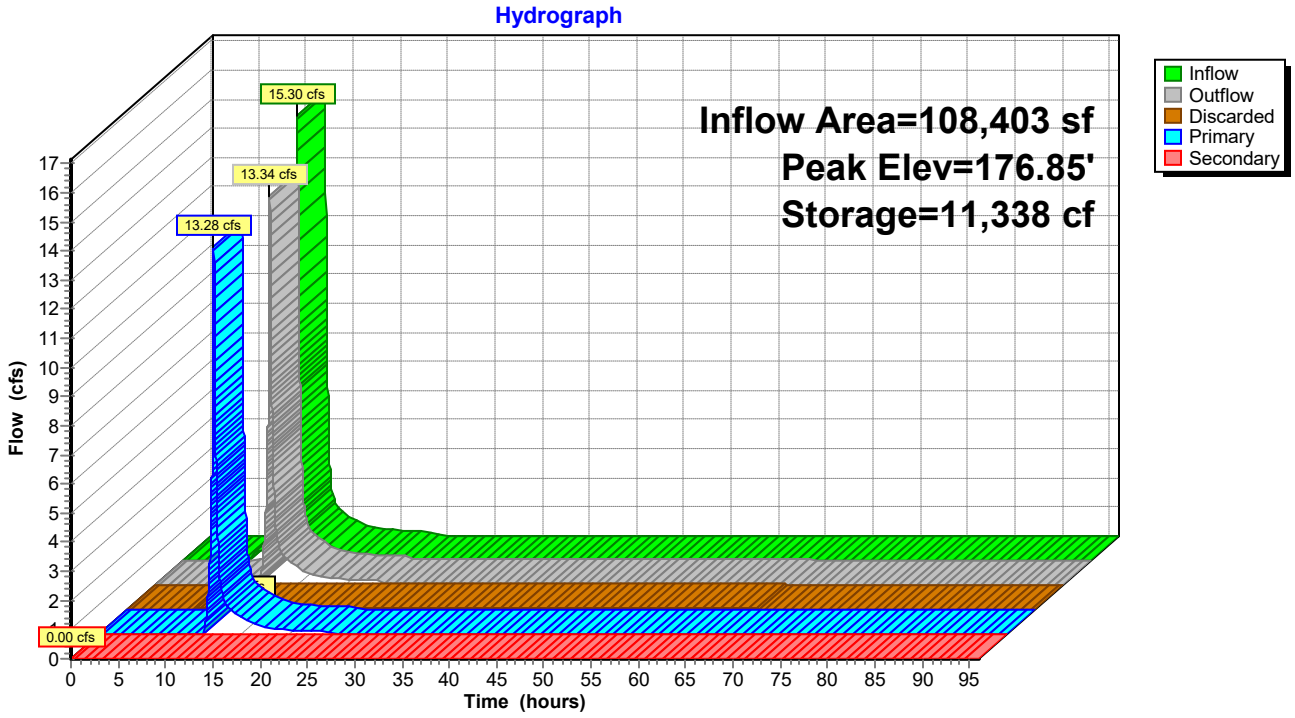
Device	Routing	Invert	Outlet Devices
#1	Discarded	175.50'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	174.25'	**24.0" Round Culvert** L= 27.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 174.25' / 173.98' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#3	Secondary	177.00'	**15.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#4	Device 2	176.45'	**2.0" x 48.0" Horiz. Orifice/Grate X 20.00** C= 0.600 in 48.0" x 48.0" Grate (83% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 12.13 hrs HW=176.85' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=13.28 cfs @ 12.13 hrs HW=176.85' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 13.28 cfs of 15.11 cfs potential flow)
└**4=Orifice/Grate** (Weir Controls 13.28 cfs @ 2.07 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=175.50' TW=0.00' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond IB-1: INFILTRATION BASIN 1

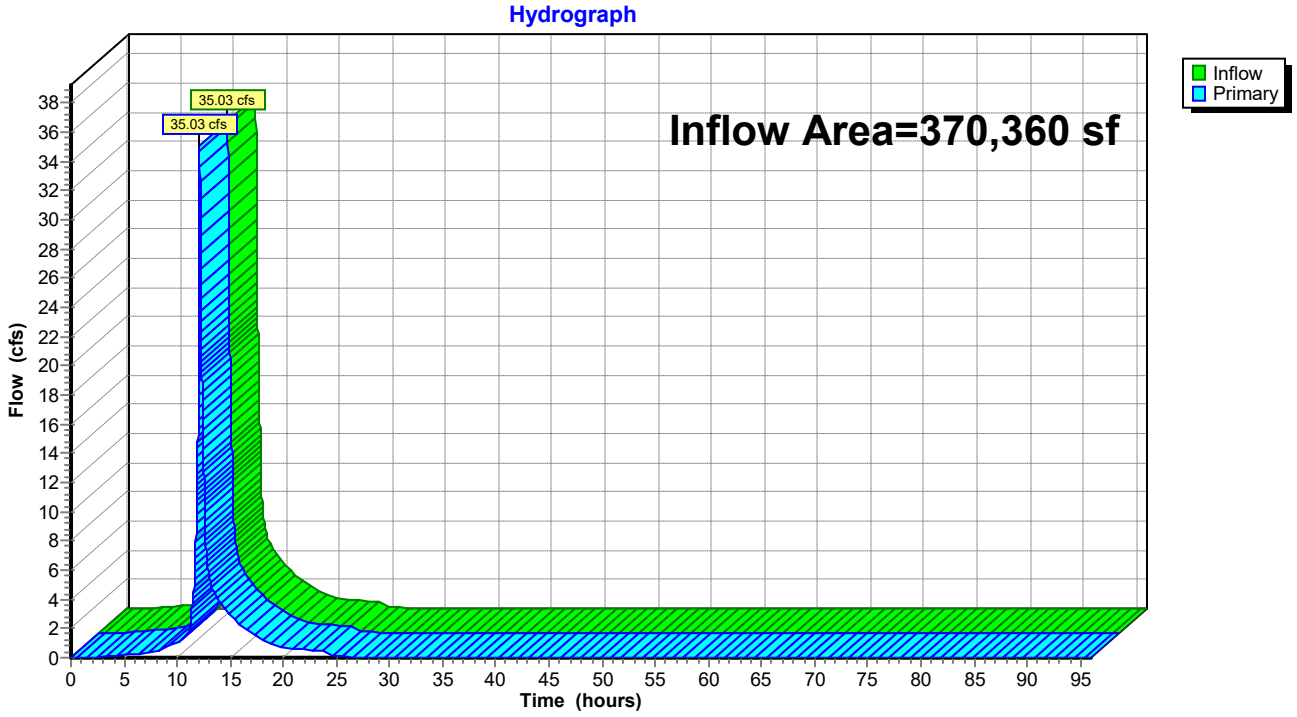


Summary for Link POA-1: EAST OUTFALL (WETLAND SERIES-A)

Inflow Area = 370,360 sf, 76.70% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 35.03 cfs @ 12.11 hrs, Volume= 154,043 cf
Primary = 35.03 cfs @ 12.11 hrs, Volume= 154,043 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-1: EAST OUTFALL (WETLAND SERIES-A)

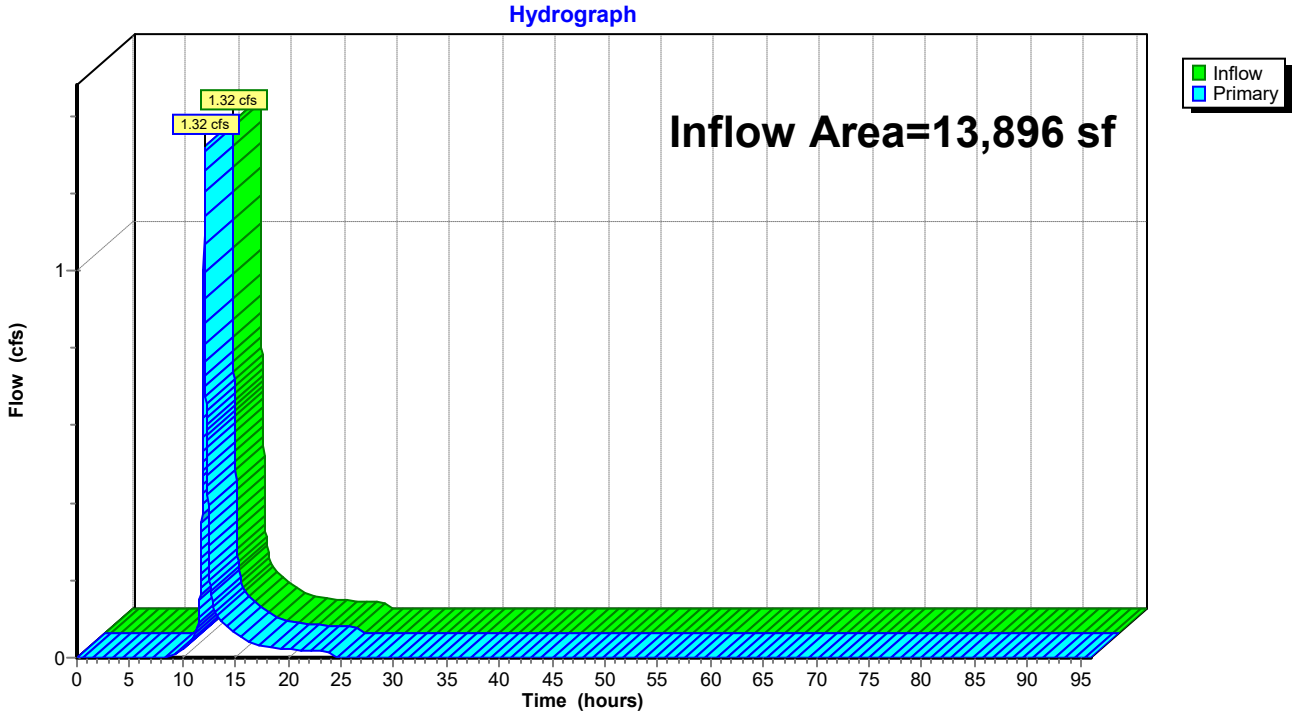


Summary for Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

Inflow Area = 13,896 sf, 0.00% Impervious, Inflow Depth = 3.40" for 25-Year event
Inflow = 1.32 cfs @ 12.08 hrs, Volume= 3,943 cf
Primary = 1.32 cfs @ 12.08 hrs, Volume= 3,943 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

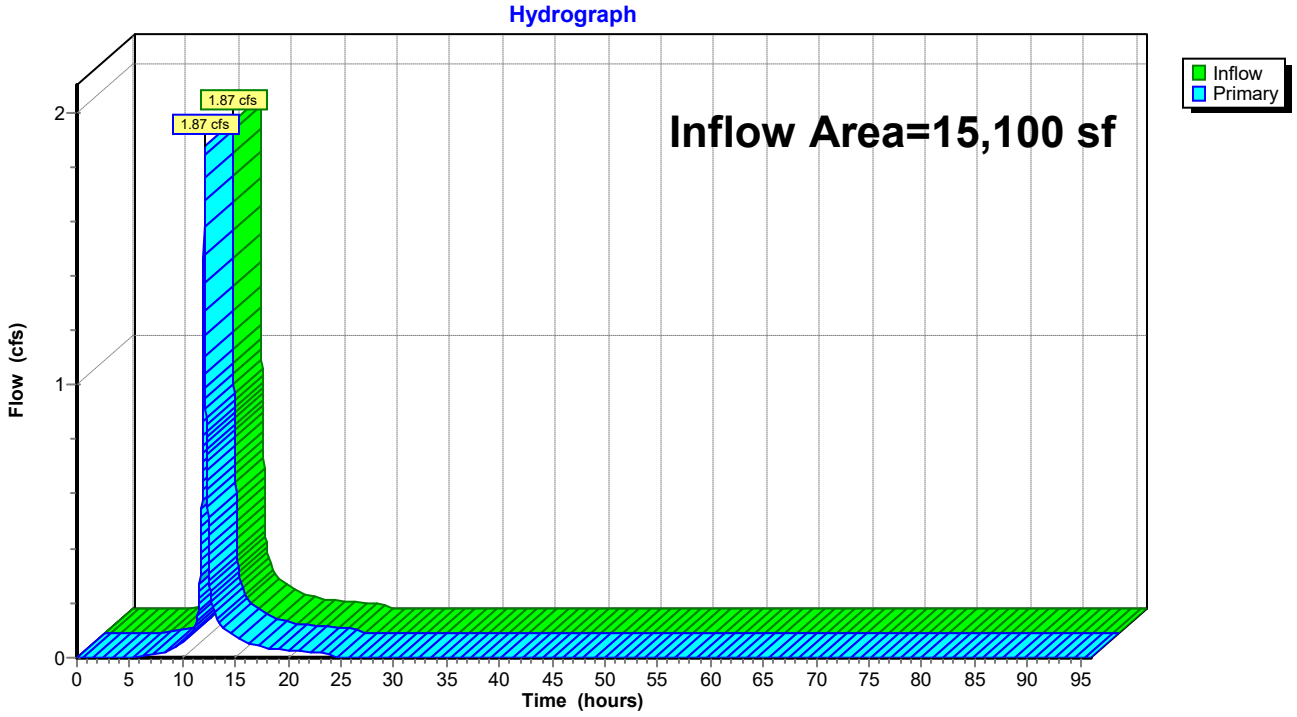


Summary for Link POA-3: WEST OUTFALL (TO TAUNTON)

Inflow Area = 15,100 sf, 45.36% Impervious, Inflow Depth = 4.55" for 25-Year event
Inflow = 1.87 cfs @ 12.07 hrs, Volume= 5,723 cf
Primary = 1.87 cfs @ 12.07 hrs, Volume= 5,723 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-3: WEST OUTFALL (TO TAUNTON)



Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P-1: NORTH & EAST Runoff Area=108,403 sf 92.38% Impervious Runoff Depth=8.51"
Tc=5.0 min CN=96 Runoff=22.64 cfs 76,863 cf

Subcatchment P-2: SOUTH PARKING Runoff Area=39,922 sf 54.08% Impervious Runoff Depth=8.02"
Tc=5.0 min CN=92 Runoff=8.16 cfs 26,696 cf

Subcatchment P-3: WEST PARKING Runoff Area=68,527 sf 70.54% Impervious Runoff Depth=7.90"
Tc=5.0 min CN=91 Runoff=13.91 cfs 45,132 cf

Subcatchment P-3A: EAST PARKING Runoff Area=13,953 sf 100.00% Impervious Runoff Depth=8.75"
Tc=5.0 min CN=98 Runoff=2.93 cfs 10,174 cf

Subcatchment P-3B: OUTSIDE OVERLAND Runoff Area=39,502 sf 0.00% Impervious Runoff Depth=5.82"
Tc=5.0 min CN=74 Runoff=6.38 cfs 19,158 cf

Subcatchment P-4: OVERLAND TO Runoff Area=13,896 sf 0.00% Impervious Runoff Depth=5.82"
Tc=5.0 min CN=74 Runoff=2.24 cfs 6,739 cf

Subcatchment P-5: OVERLAND TO Runoff Area=15,100 sf 45.36% Impervious Runoff Depth=7.17"
Tc=5.0 min CN=85 Runoff=2.89 cfs 9,024 cf

Subcatchment R-1: ROOFS Runoff Area=53,577 sf 100.00% Impervious Runoff Depth=8.75"
Tc=5.0 min CN=98 Runoff=11.25 cfs 39,065 cf

Subcatchment R-2: HALF ROOF Runoff Area=46,476 sf 100.00% Impervious Runoff Depth=8.75"
Tc=5.0 min CN=98 Runoff=9.76 cfs 33,887 cf

Pond B-2: SAND FILTER-1 Peak Elev=180.51' Storage=18,598 cf Inflow=17.88 cfs 59,911 cf
Primary=1.99 cfs 51,921 cf Secondary=6.20 cfs 7,976 cf Outflow=8.19 cfs 59,897 cf

Pond B-3: SUBSURFACE DETENTION Peak Elev=178.63' Storage=9,523 cf Inflow=28.09 cfs 94,370 cf
Outflow=26.69 cfs 94,364 cf

Pond FB-1: Forebay-1 Peak Elev=177.89' Storage=2,131 cf Inflow=22.64 cfs 76,863 cf
Outflow=22.28 cfs 75,716 cf

Pond FB-1A: Forebay-1A Peak Elev=177.74' Storage=1,969 cf Inflow=22.28 cfs 75,716 cf
Outflow=22.21 cfs 74,486 cf

Pond FB-2: Forebay-2 Peak Elev=180.53' Storage=941 cf Inflow=8.16 cfs 26,696 cf
Outflow=8.13 cfs 26,024 cf

Pond IB-1: INFILTRATION BASIN 1 Peak Elev=177.05' Storage=13,263 cf Inflow=22.21 cfs 74,486 cf
Discarded=0.06 cfs 11,394 cf Primary=16.01 cfs 63,018 cf Secondary=0.36 cfs 75 cf Outflow=16.43 cfs 74,487 cf

Link POA-1: EAST OUTFALL (WETLAND SERIES-A) Inflow=50.59 cfs 236,512 cf
Primary=50.59 cfs 236,512 cf

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B) Inflow=2.24 cfs 6,739 cf
Primary=2.24 cfs 6,739 cf

Link POA-3: WEST OUTFALL (TO TAUNTON) Inflow=2.89 cfs 9,024 cf
Primary=2.89 cfs 9,024 cf

Total Runoff Area = 399,356 sf Runoff Volume = 266,740 cf Average Runoff Depth = 8.02"
27.15% Pervious = 108,428 sf 72.85% Impervious = 290,928 sf

Summary for Subcatchment P-1: NORTH & EAST PARKING

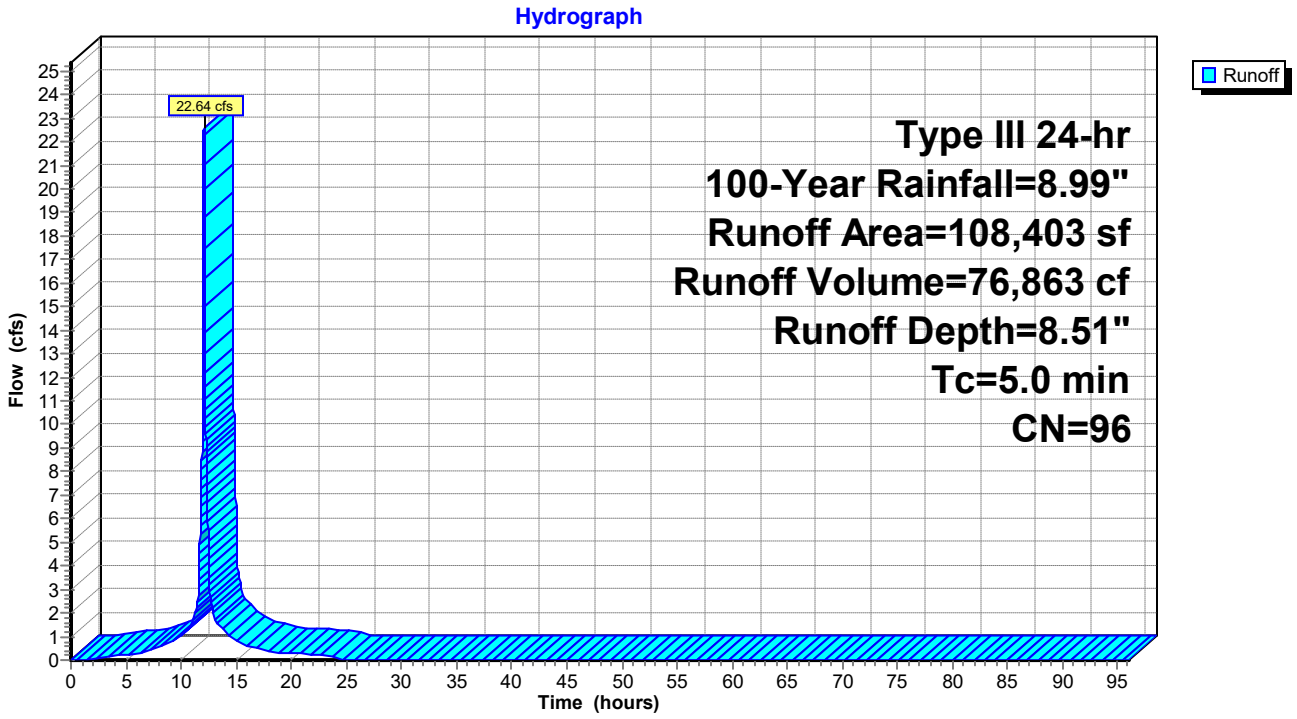
Runoff = 22.64 cfs @ 12.07 hrs, Volume= 76,863 cf, Depth= 8.51"
Routed to Pond FB-1 : Forebay-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.99"

Area (sf)	CN	Description
8,261	74	>75% Grass cover, Good, HSG C
87,749	98	Paved parking, HSG C
12,393	98	Water Surface, HSG C
108,403	96	Weighted Average
8,261		7.62% Pervious Area
100,142		92.38% Impervious Area

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

Subcatchment P-1: NORTH & EAST PARKING



Summary for Subcatchment P-2: SOUTH PARKING

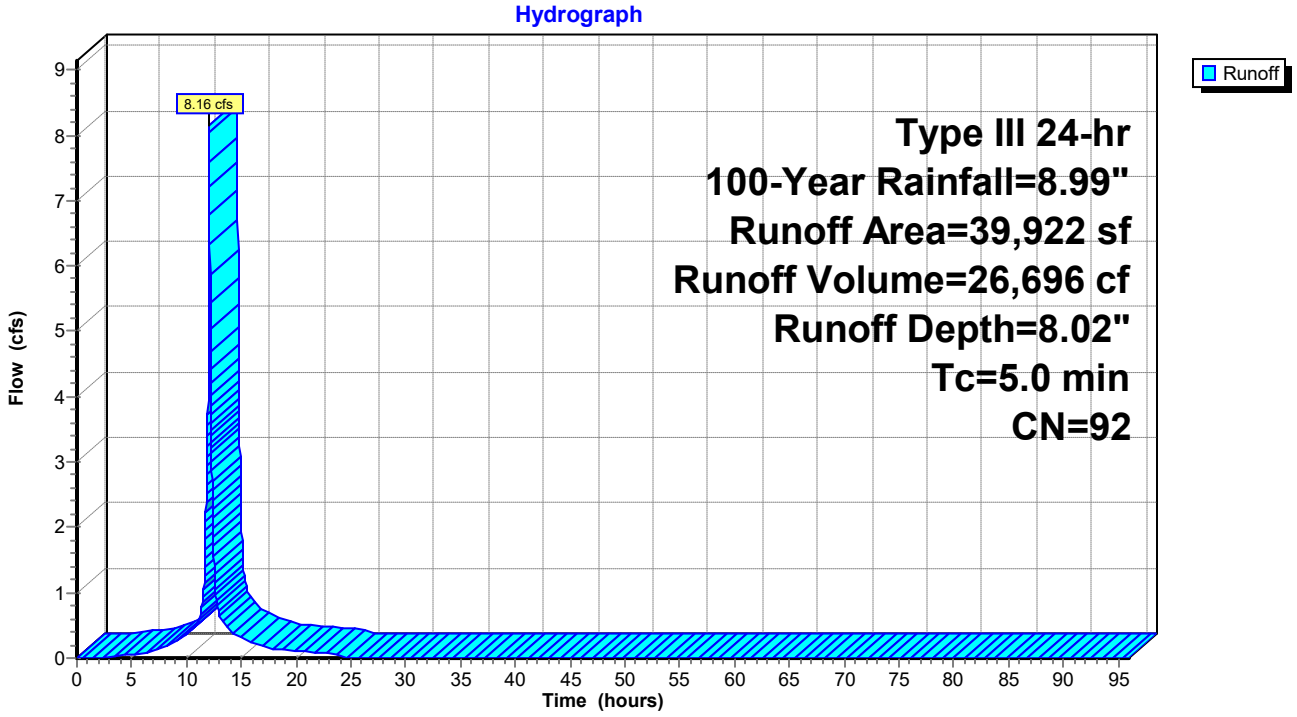
Runoff = 8.16 cfs @ 12.07 hrs, Volume= 26,696 cf, Depth= 8.02"
Routed to Pond FB-2 : Forebay-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.99"

Area (sf)	CN	Description
21,591	98	Paved parking, HSG C
9,196	74	>75% Grass cover, Good, HSG C
9,135	98	Water Surface, 0% imp, HSG C
39,922	92	Weighted Average
18,331		45.92% Pervious Area
21,591		54.08% Impervious Area

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

Subcatchment P-2: SOUTH PARKING



Summary for Subcatchment P-3: WEST PARKING

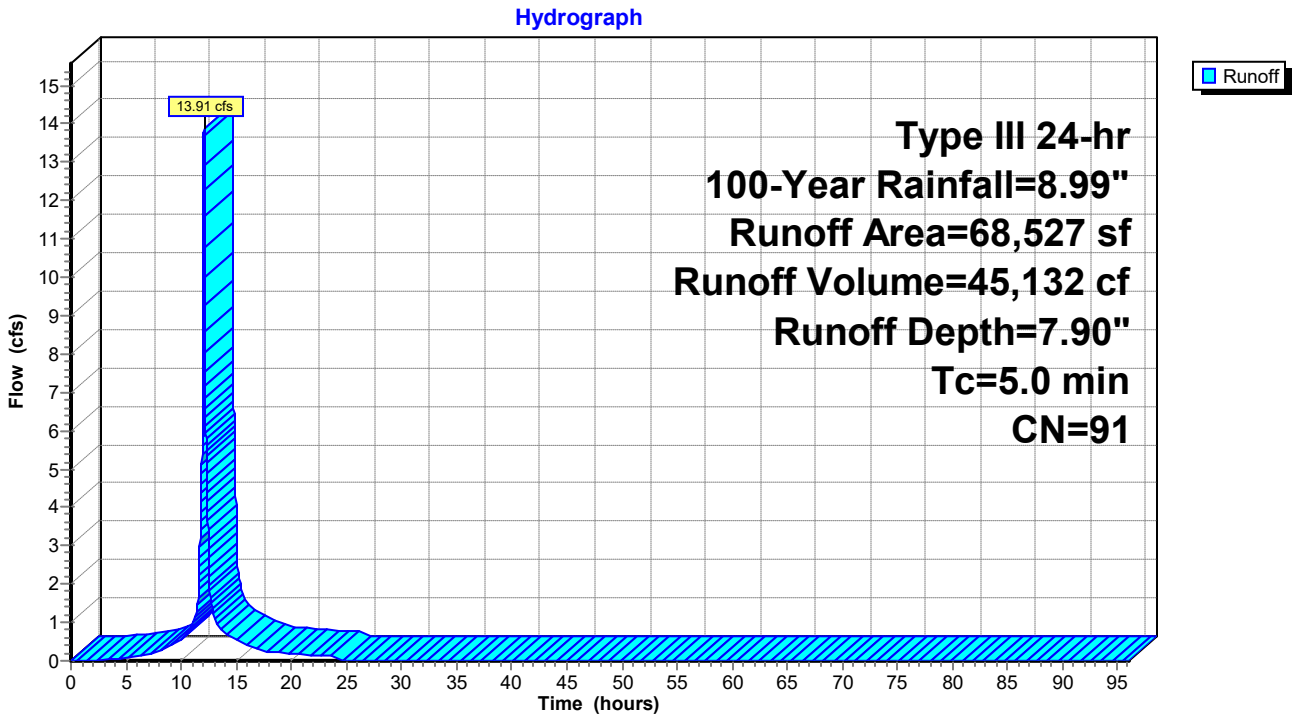
Runoff = 13.91 cfs @ 12.07 hrs, Volume= 45,132 cf, Depth= 7.90"
Routed to Pond B-3 : SUBSURFACE DETENTION SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.99"

Area (sf)	CN	Description
48,340	98	Paved parking, HSG C
20,187	74	>75% Grass cover, Good, HSG C
68,527	91	Weighted Average
20,187		29.46% Pervious Area
48,340		70.54% Impervious Area

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

Subcatchment P-3: WEST PARKING



Summary for Subcatchment P-3A: EAST PARKING

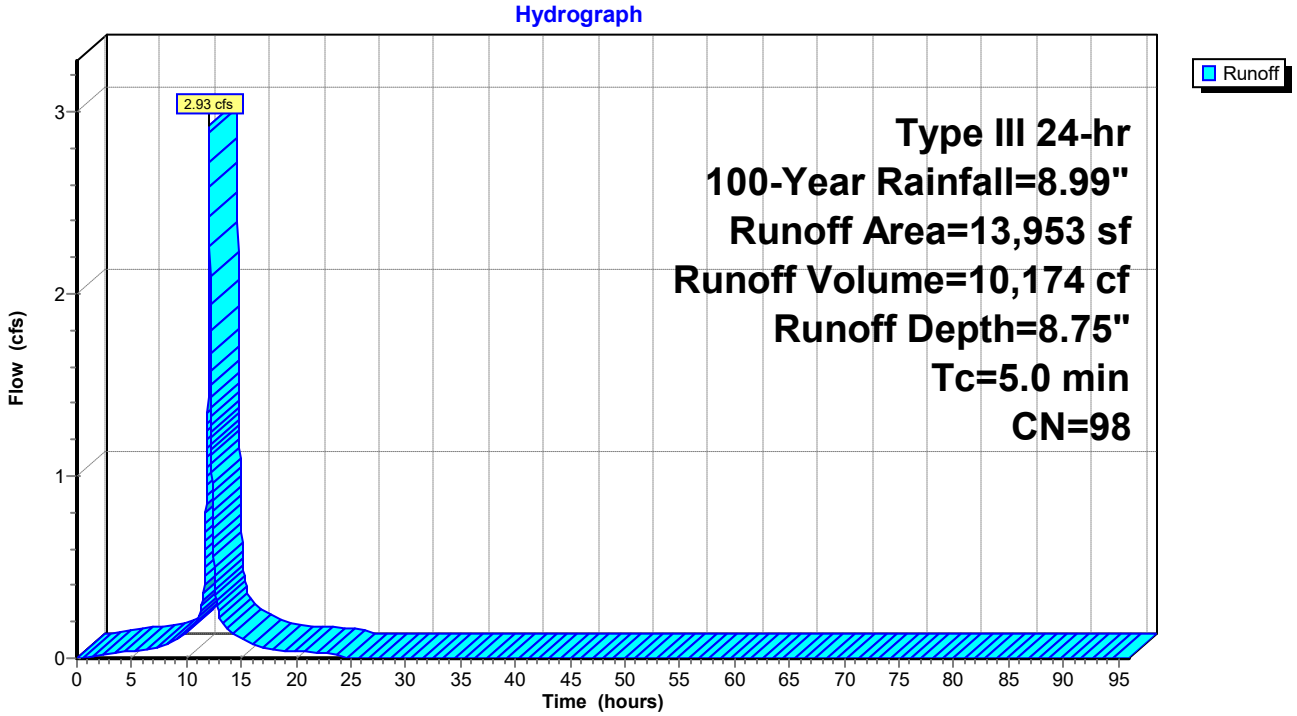
Runoff = 2.93 cfs @ 12.07 hrs, Volume= 10,174 cf, Depth= 8.75"
Routed to Pond B-3 : SUBSURFACE DETENTION SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.99"

Area (sf)	CN	Description
13,953	98	Paved parking, HSG C
13,953		100.00% Impervious Area

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

Subcatchment P-3A: EAST PARKING



Summary for Subcatchment P-3B: OUTSIDE OVERLAND FLOW

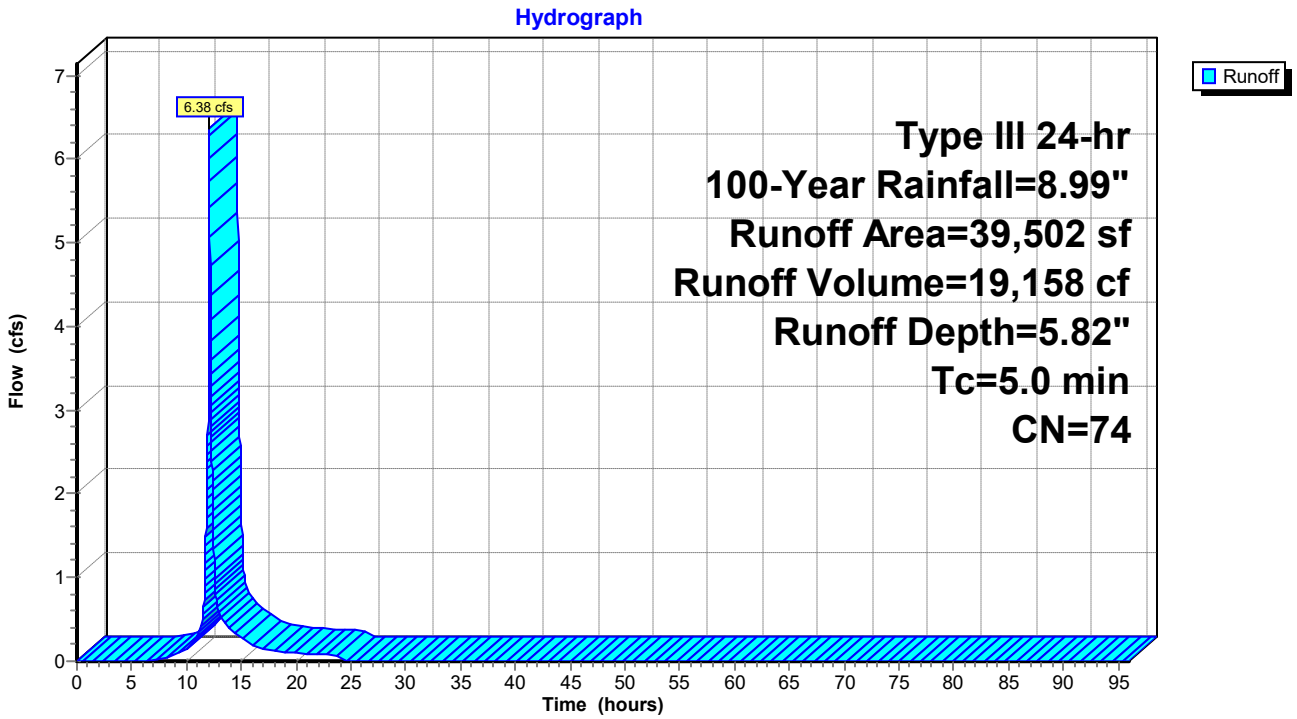
Runoff = 6.38 cfs @ 12.07 hrs, Volume= 19,158 cf, Depth= 5.82"
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.99"

Area (sf)	CN	Description
39,502	74	>75% Grass cover, Good, HSG C
39,502		100.00% Pervious Area

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

Subcatchment P-3B: OUTSIDE OVERLAND FLOW



Summary for Subcatchment P-4: OVERLAND TO WETLAND

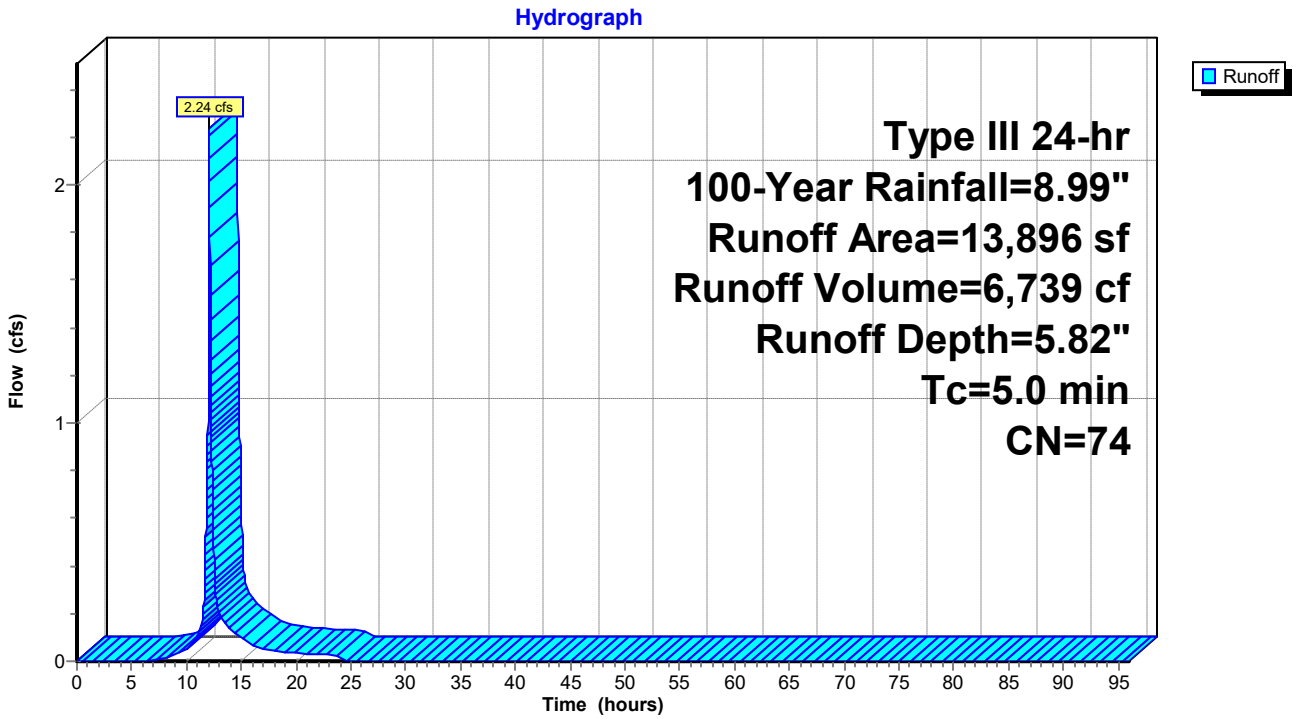
Runoff = 2.24 cfs @ 12.07 hrs, Volume= 6,739 cf, Depth= 5.82"
Routed to Link POA-2 : SOUTH OUTFALL (WETLAND SERIES-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.99"

Area (sf)	CN	Description
13,896	74	>75% Grass cover, Good, HSG C
13,896		100.00% Pervious Area

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

Subcatchment P-4: OVERLAND TO WETLAND



Summary for Subcatchment P-5: OVERLAND TO WETLAND

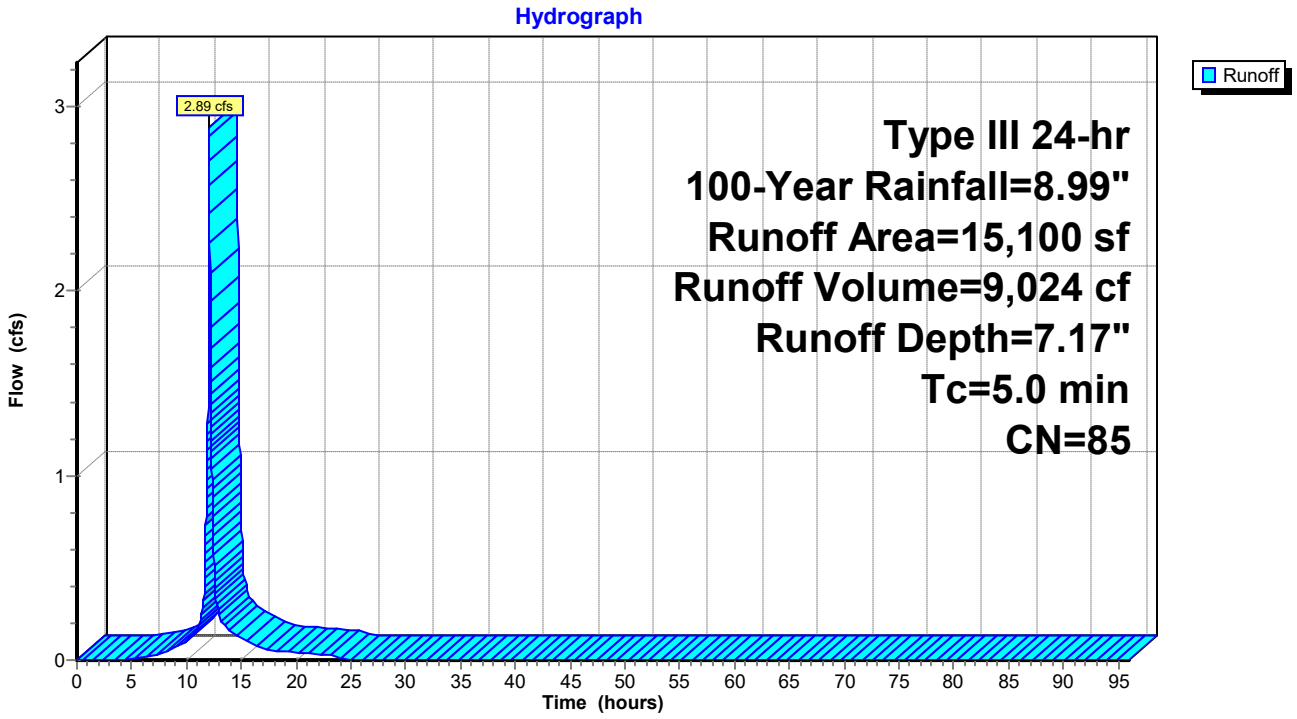
Runoff = 2.89 cfs @ 12.07 hrs, Volume= 9,024 cf, Depth= 7.17"
Routed to Link POA-3 : WEST OUTFALL (TO TAUNTON)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.99"

Area (sf)	CN	Description
8,251	74	>75% Grass cover, Good, HSG C
6,849	98	Unconnected pavement, HSG C
15,100	85	Weighted Average
8,251		54.64% Pervious Area
6,849		45.36% Impervious Area
6,849		100.00% Unconnected

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

Subcatchment P-5: OVERLAND TO WETLAND



Summary for Subcatchment R-1: ROOFS

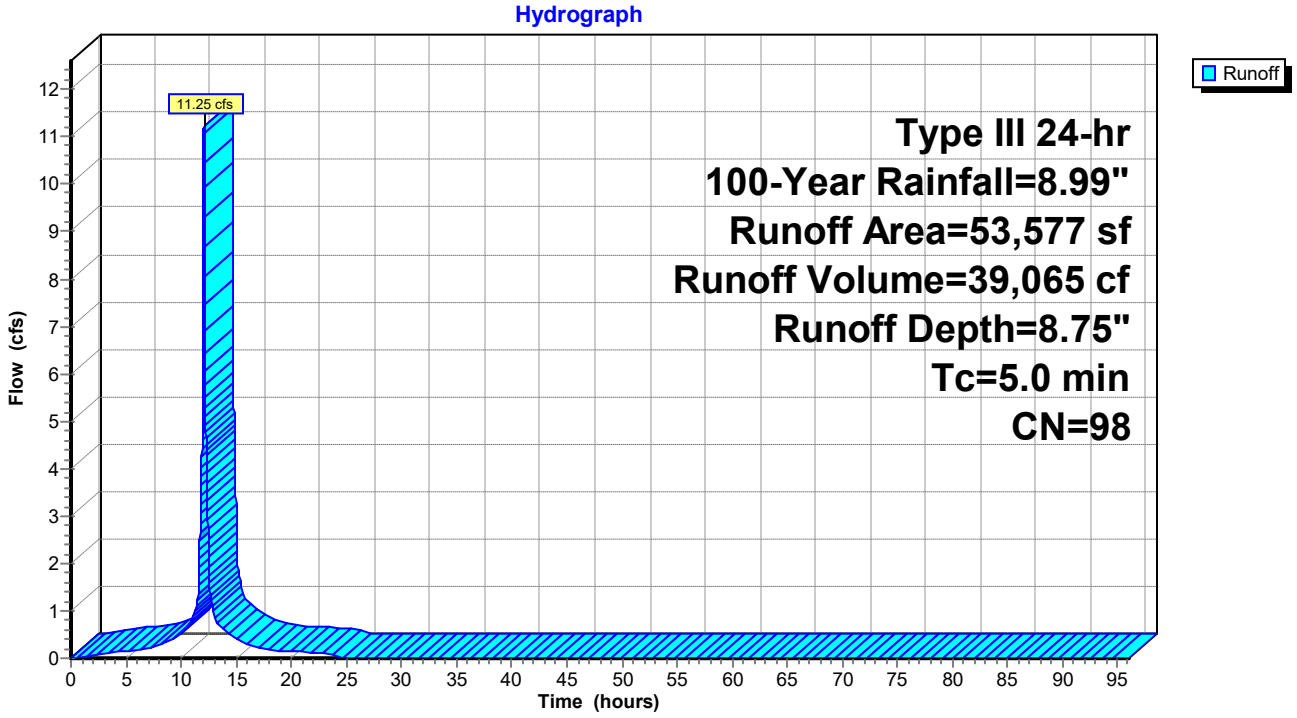
Runoff = 11.25 cfs @ 12.07 hrs, Volume= 39,065 cf, Depth= 8.75"
Routed to Pond B-3 : SUBSURFACE DETENTION SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.99"

Area (sf)	CN	Description
53,577	98	Roofs, HSG C
53,577		100.00% Impervious Area

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

Subcatchment R-1: ROOFS



Summary for Subcatchment R-2: HALF ROOF

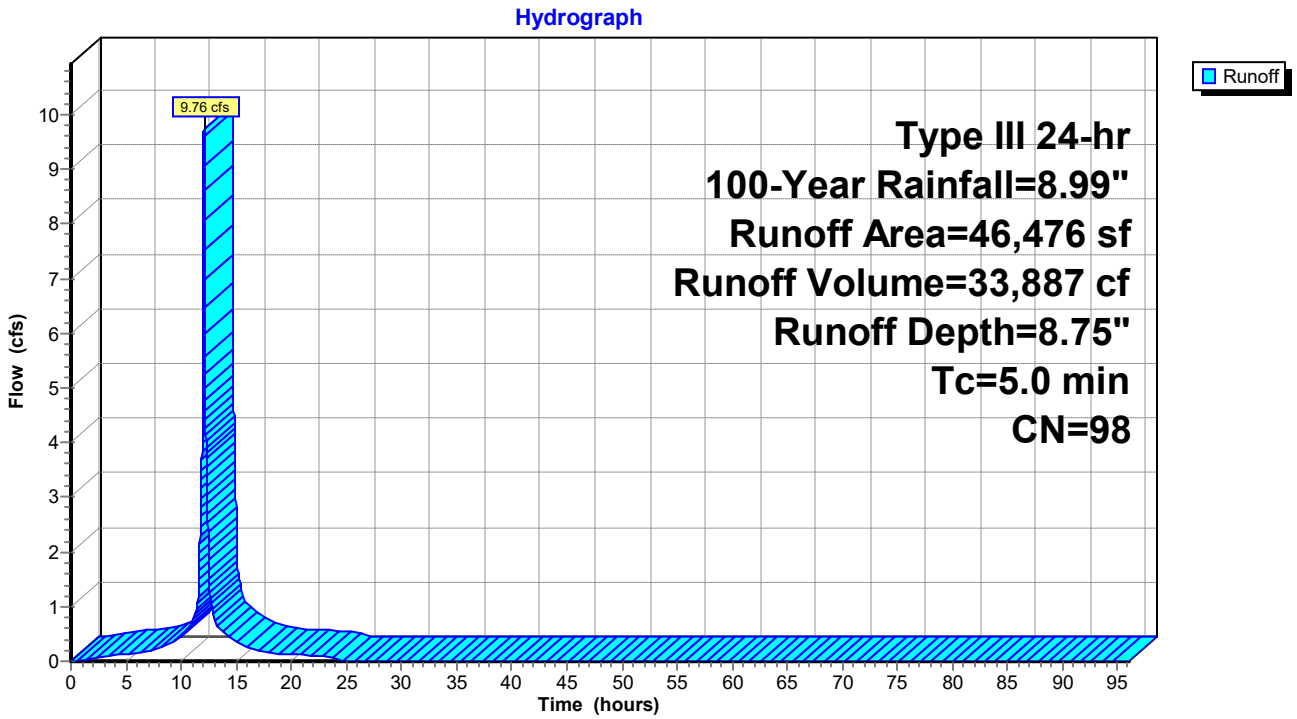
Runoff = 9.76 cfs @ 12.07 hrs, Volume= 33,887 cf, Depth= 8.75"
Routed to Pond B-2 : SAND FILTER-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.99"

Area (sf)	CN	Description
46,476	98	Roofs, HSG C
46,476		100.00% Impervious Area

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

Subcatchment R-2: HALF ROOF



Summary for Pond B-2: SAND FILTER-1

Inflow Area = 86,398 sf, 78.78% Impervious, Inflow Depth = 8.32" for 100-Year event
Inflow = 17.88 cfs @ 12.07 hrs, Volume= 59,911 cf
Outflow = 8.19 cfs @ 12.22 hrs, Volume= 59,897 cf, Atten= 54%, Lag= 8.8 min
Primary = 1.99 cfs @ 12.22 hrs, Volume= 51,921 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)
Secondary = 6.20 cfs @ 12.22 hrs, Volume= 7,976 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 180.51' @ 12.22 hrs Surf.Area= 26,161 sf Storage= 18,598 cf
Flood Elev= 181.00' Surf.Area= 26,925 sf Storage= 23,343 cf

Plug-Flow detention time= 88.0 min calculated for 59,891 cf (100% of inflow)
Center-of-Mass det. time= 88.2 min (844.3 - 756.0)

Volume	Invert	Avail.Storage	Storage Description
#1	180.00'	9,227 cf	**Basin (Prismatic)** Listed below (Recalc)
#2	176.50'	11,848 cf	**Sand Media (Prismatic)** Listed below (Recalc) 29,621 cf Overall x 40.0% Voids
#3	175.83'	2,268 cf	**Gravel (Prismatic)** Listed below (Recalc) 5,670 cf Overall x 40.0% Voids
		23,343 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
180.00	8,463	0	0
180.25	8,838	2,163	2,163
181.00	9,999	7,064	9,227

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.50	8,463	0	0
180.00	8,463	29,621	29,621

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.83	8,463	0	0
176.50	8,463	5,670	5,670

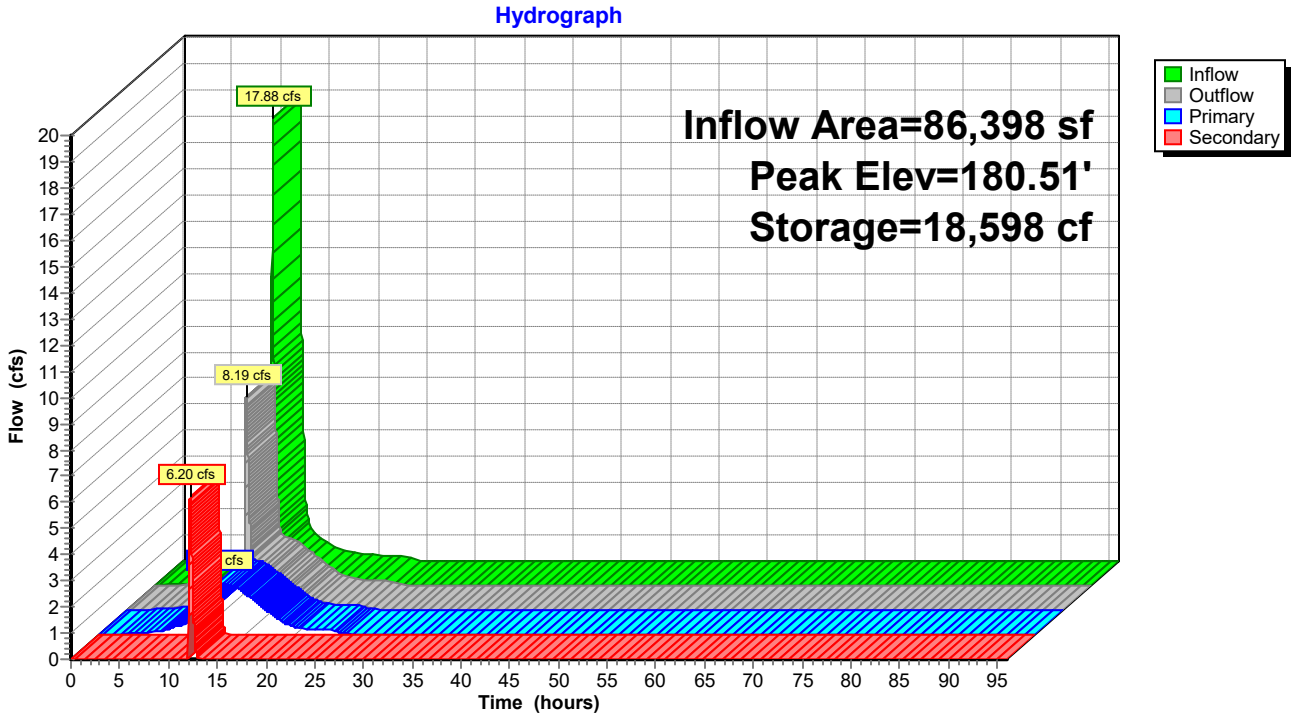
Device	Routing	Invert	Outlet Devices
#1	Primary	175.83'	**12.0" Round Culvert** L= 122.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 175.83' / 174.00' S= 0.0150 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	180.25'	**20.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65

2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3 Device 1 175.83' **6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.99 cfs @ 12.22 hrs HW=180.51' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.99 cfs of 6.10 cfs potential flow)
└─**3=Orifice/Grate** (Orifice Controls 1.99 cfs @ 10.13 fps)

Secondary OutFlow Max=6.20 cfs @ 12.22 hrs HW=180.51' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 6.20 cfs @ 1.21 fps)

Pond B-2: SAND FILTER-1



Summary for Pond B-3: SUBSURFACE DETENTION SYSTEM

Inflow Area = 136,057 sf, 85.16% Impervious, Inflow Depth = 8.32" for 100-Year event
Inflow = 28.09 cfs @ 12.07 hrs, Volume= 94,370 cf
Outflow = 26.69 cfs @ 12.09 hrs, Volume= 94,364 cf, Atten= 5%, Lag= 1.5 min
Primary = 26.69 cfs @ 12.09 hrs, Volume= 94,364 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 178.63' @ 12.09 hrs Surf.Area= 5,684 sf Storage= 9,523 cf
Flood Elev= 178.69' Surf.Area= 5,684 sf Storage= 9,665 cf

Plug-Flow detention time= 33.3 min calculated for 94,354 cf (100% of inflow)
Center-of-Mass det. time= 33.5 min (786.5 - 753.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	176.00'	3,543 cf	**19.75'W x 287.84'L x 2.69'H Field A** 15,311 cf Overall - 6,453 cf Embedded = 8,858 cf x 40.0% Voids
#2A	176.25'	6,130 cf	**ACF R-Tank HD 1** x 1452 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 1452 Chambers in 12 Rows
		9,673 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	176.00'	**30.0" Round Culvert** L= 86.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 176.00' / 173.56' S= 0.0284 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf
#2	Device 1	176.75'	**48.0" W x 6.0" H Vert. Rectangular Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	177.75'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	176.00'	**6.0" Vert. Low flow Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=26.64 cfs @ 12.09 hrs HW=178.63' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Passes 26.64 cfs of 34.65 cfs potential flow)
↑**2=Rectangular Orifice** (Orifice Controls 12.26 cfs @ 6.13 fps)
3=Sharp-Crested Rectangular Weir (Weir Controls 12.92 cfs @ 3.06 fps)
4=Low flow Orifice (Orifice Controls 1.46 cfs @ 7.42 fps)

Pond B-3: SUBSURFACE DETENTION SYSTEM - Chamber Wizard Field A

Chamber Model = ACF R-Tank HD 1 (ACF Environmental R-Tank HD)
Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf
Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf

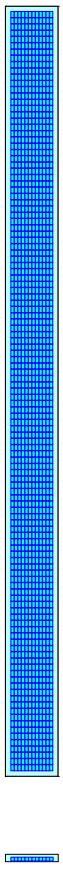
121 Chambers/Row x 2.35' Long = 283.84' Row Length +24.0" End Stone x 2 = 287.84' Base Length
12 Rows x 15.7" Wide + 24.0" Side Stone x 2 = 19.75' Base Width
3.0" Stone Base + 17.3" Chamber Height + 12.0" Stone Cover = 2.69' Field Height

1,452 Chambers x 4.2 cf = 6,130.1 cf Chamber Storage
1,452 Chambers x 4.4 cf = 6,452.7 cf Displacement

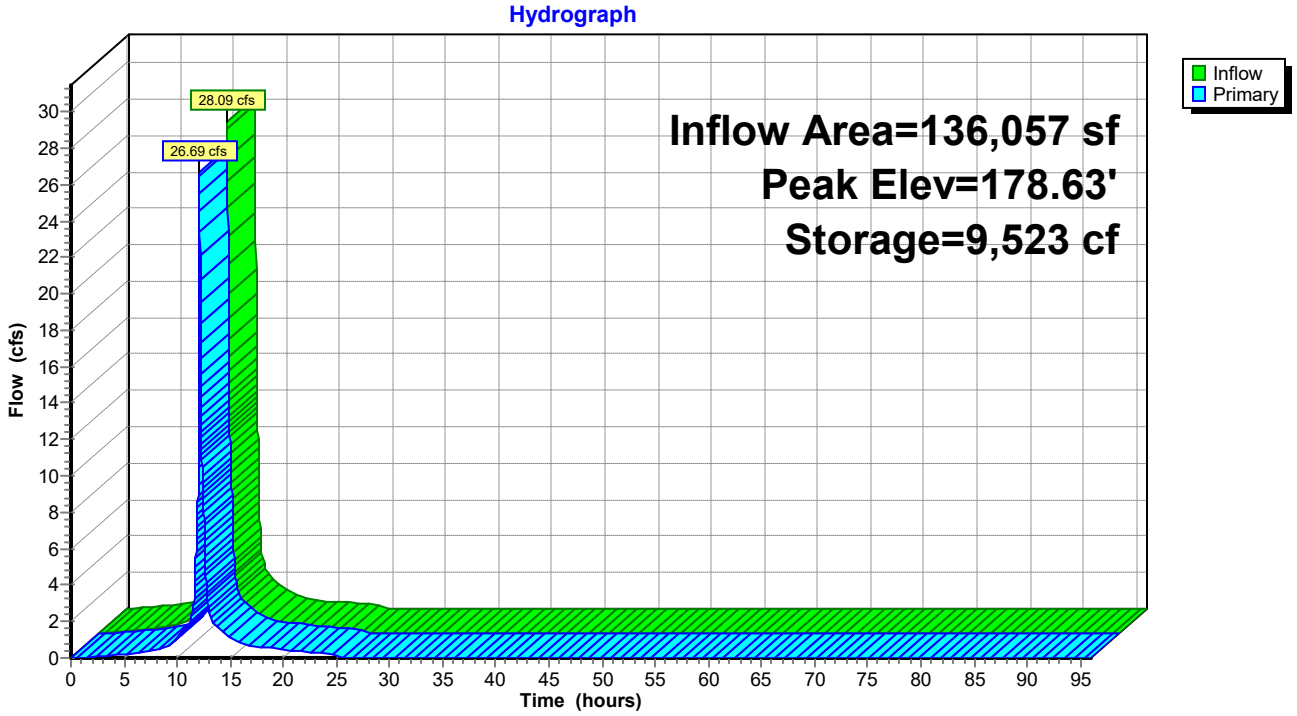
15,311.1 cf Field - 6,452.7 cf Chambers = 8,858.4 cf Stone x 40.0% Voids = 3,543.4 cf Stone Storage

Chamber Storage + Stone Storage = 9,673.4 cf = 0.222 af
Overall Storage Efficiency = 63.2%
Overall System Size = 287.84' x 19.75' x 2.69'

1,452 Chambers
567.1 cy Field
328.1 cy Stone



Pond B-3: SUBSURFACE DETENTION SYSTEM



Summary for Pond FB-1: Forebay-1

Inflow Area = 108,403 sf, 92.38% Impervious, Inflow Depth = 8.51" for 100-Year event
Inflow = 22.64 cfs @ 12.07 hrs, Volume= 76,863 cf
Outflow = 22.28 cfs @ 12.08 hrs, Volume= 75,716 cf, Atten= 2%, Lag= 0.5 min
Primary = 22.28 cfs @ 12.08 hrs, Volume= 75,716 cf
Routed to Pond FB-1A : Forebay-1A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.89' @ 12.09 hrs Surf.Area= 1,709 sf Storage= 2,131 cf
Flood Elev= 180.00' Surf.Area= 2,693 sf Storage= 6,786 cf

Plug-Flow detention time= 20.1 min calculated for 75,716 cf (99% of inflow)
Center-of-Mass det. time= 10.3 min (759.6 - 749.3)

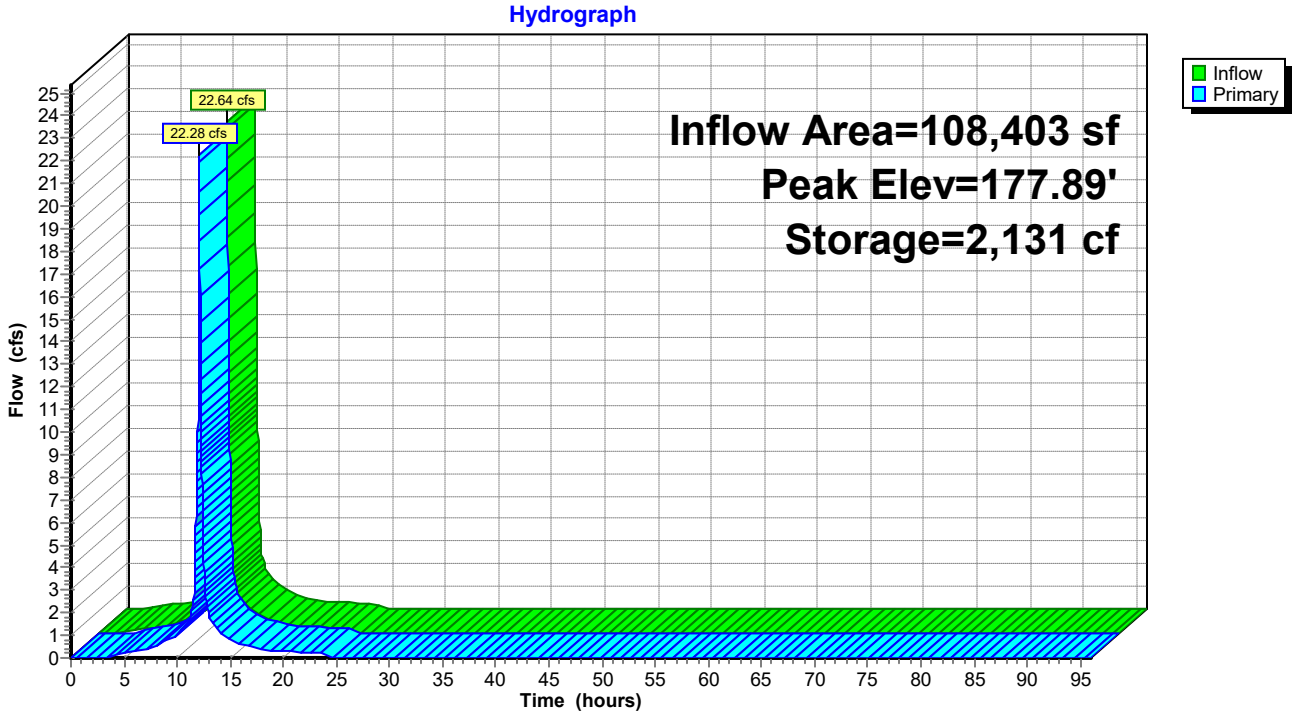
Volume	Invert	Avail.Storage	Storage Description
#1	176.00'	6,786 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.00	498	0	0
177.00	1,168	833	833
177.50	1,530	675	1,508
180.00	2,693	5,279	6,786

Device	Routing	Invert	Outlet Devices
#1	Primary	177.25'	**25.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=21.96 cfs @ 12.08 hrs HW=177.88' TW=177.74' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 21.96 cfs @ 1.39 fps)

Pond FB-1: Forebay-1



Summary for Pond FB-1A: Forebay-1A

Inflow Area = 108,403 sf, 92.38% Impervious, Inflow Depth = 8.38" for 100-Year event
Inflow = 22.28 cfs @ 12.08 hrs, Volume= 75,716 cf
Outflow = 22.21 cfs @ 12.08 hrs, Volume= 74,486 cf, Atten= 0%, Lag= 0.4 min
Primary = 22.21 cfs @ 12.08 hrs, Volume= 74,486 cf
Routed to Pond IB-1 : INFILTRATION BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.74' @ 12.08 hrs Surf.Area= 1,666 sf Storage= 1,969 cf
Flood Elev= 177.75' Surf.Area= 1,672 sf Storage= 1,986 cf

Plug-Flow detention time= 19.5 min calculated for 74,486 cf (98% of inflow)
Center-of-Mass det. time= 9.0 min (768.5 - 759.6)

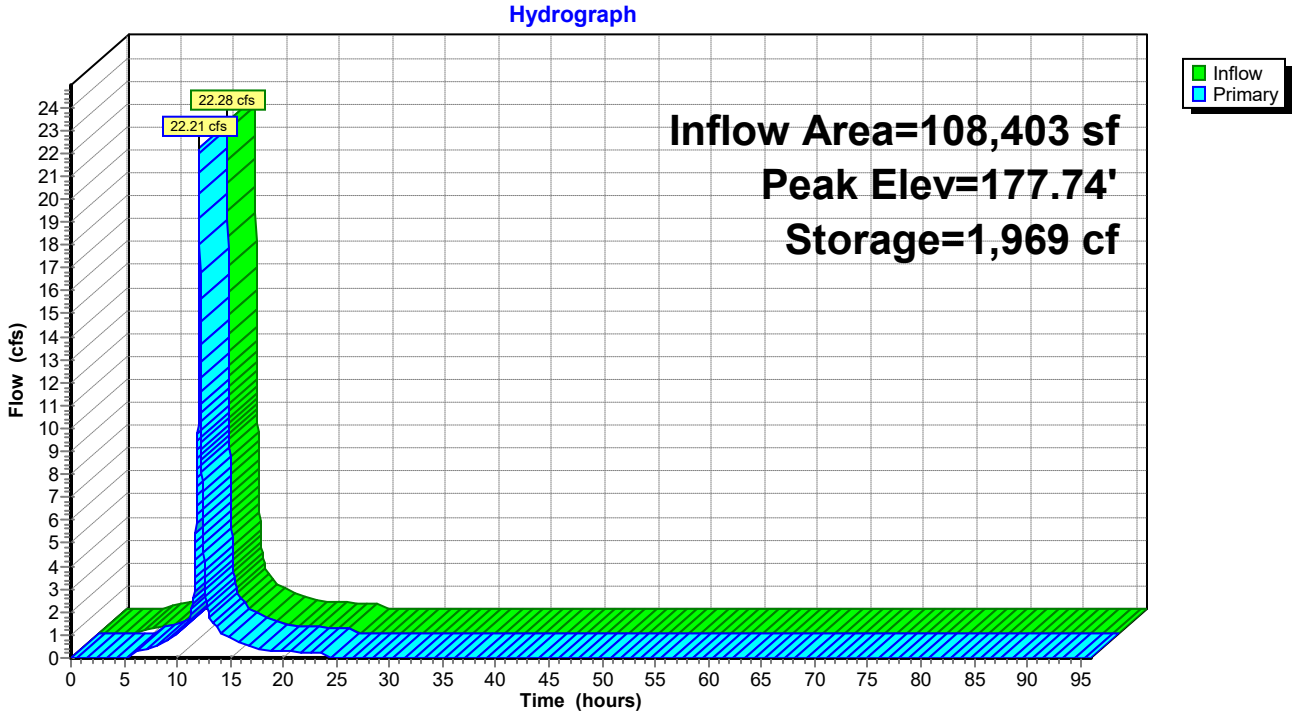
Volume	Invert	Avail.Storage	Storage Description
#1	176.00'	1,986 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.00	615	0	0
177.00	1,204	910	910
177.50	1,510	679	1,588
177.75	1,672	398	1,986

Device	Routing	Invert	Outlet Devices
#1	Primary	177.25'	**25.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=22.17 cfs @ 12.08 hrs HW=177.74' TW=176.95' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 22.17 cfs @ 1.81 fps)

Pond FB-1A: Forebay-1A



Summary for Pond FB-2: Forebay-2

Inflow Area = 39,922 sf, 54.08% Impervious, Inflow Depth = 8.02" for 100-Year event
Inflow = 8.16 cfs @ 12.07 hrs, Volume= 26,696 cf
Outflow = 8.13 cfs @ 12.08 hrs, Volume= 26,024 cf, Atten= 0%, Lag= 0.4 min
Primary = 8.13 cfs @ 12.08 hrs, Volume= 26,024 cf
Routed to Pond B-2 : SAND FILTER-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 180.53' @ 12.22 hrs Surf.Area= 1,075 sf Storage= 941 cf
Flood Elev= 181.00' Surf.Area= 1,438 sf Storage= 1,536 cf

Plug-Flow detention time= 28.9 min calculated for 26,021 cf (97% of inflow)
Center-of-Mass det. time= 13.2 min (778.3 - 765.1)

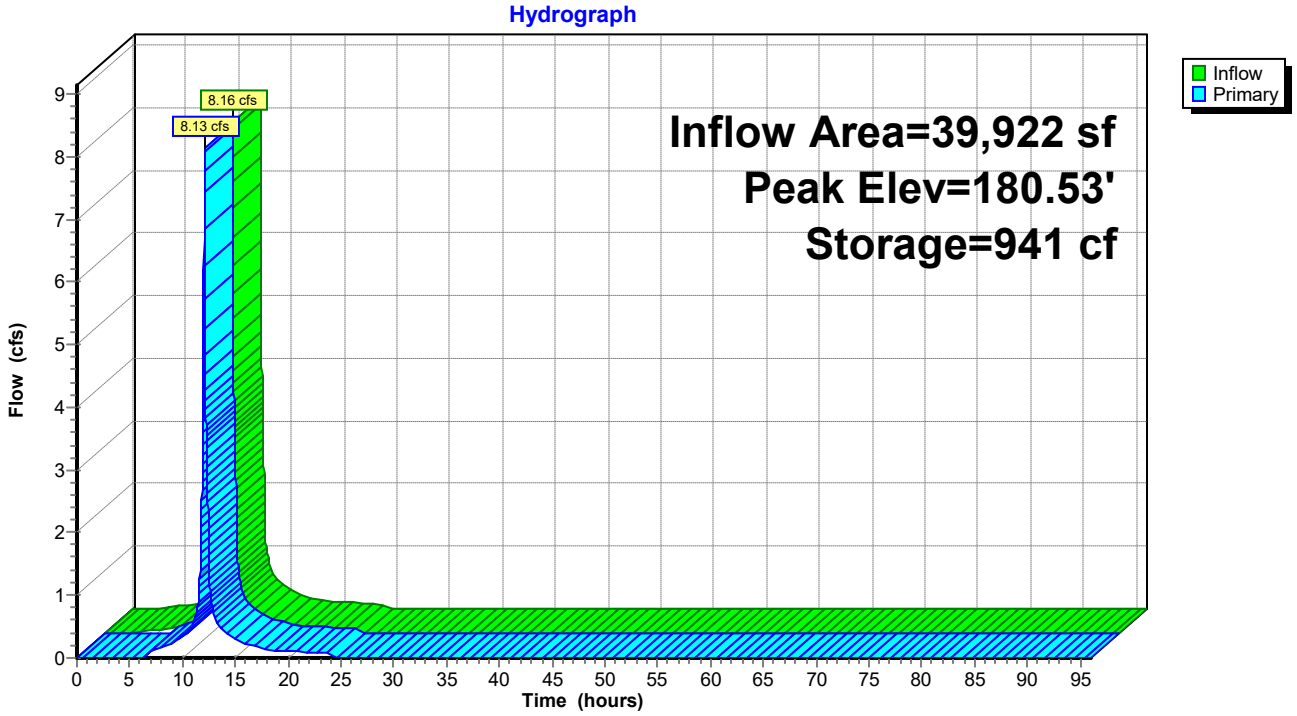
Volume	Invert	Avail.Storage	Storage Description
#1	179.00'	1,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
179.00	290	0	0
180.00	672	481	481
181.00	1,438	1,055	1,536

Device	Routing	Invert	Outlet Devices
#1	Primary	180.25'	**25.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=8.12 cfs @ 12.08 hrs HW=180.51' TW=180.10' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 8.12 cfs @ 1.24 fps)

Pond FB-2: Forebay-2



Summary for Pond IB-1: INFILTRATION BASIN 1

Inflow Area = 108,403 sf, 92.38% Impervious, Inflow Depth = 8.25" for 100-Year event
Inflow = 22.21 cfs @ 12.08 hrs, Volume= 74,486 cf
Outflow = 16.43 cfs @ 12.15 hrs, Volume= 74,487 cf, Atten= 26%, Lag= 4.1 min
Discarded = 0.06 cfs @ 12.15 hrs, Volume= 11,394 cf
Primary = 16.01 cfs @ 12.15 hrs, Volume= 63,018 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)
Secondary = 0.36 cfs @ 12.15 hrs, Volume= 75 cf
Routed to Link POA-1 : EAST OUTFALL (WETLAND SERIES-A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 177.05' @ 12.15 hrs Surf.Area= 9,991 sf Storage= 13,263 cf
Flood Elev= 178.10' Surf.Area= 12,034 sf Storage= 24,856 cf

Plug-Flow detention time= 232.9 min calculated for 74,479 cf (100% of inflow)
Center-of-Mass det. time= 233.2 min (1,001.7 - 768.5)

Volume	Invert	Avail.Storage	Storage Description
#1	175.50'	24,856 cf	**Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.50	7,184	0	0
176.00	8,064	3,812	3,812
177.00	9,900	8,982	12,794
178.00	11,837	10,869	23,663
178.10	12,034	1,194	24,856

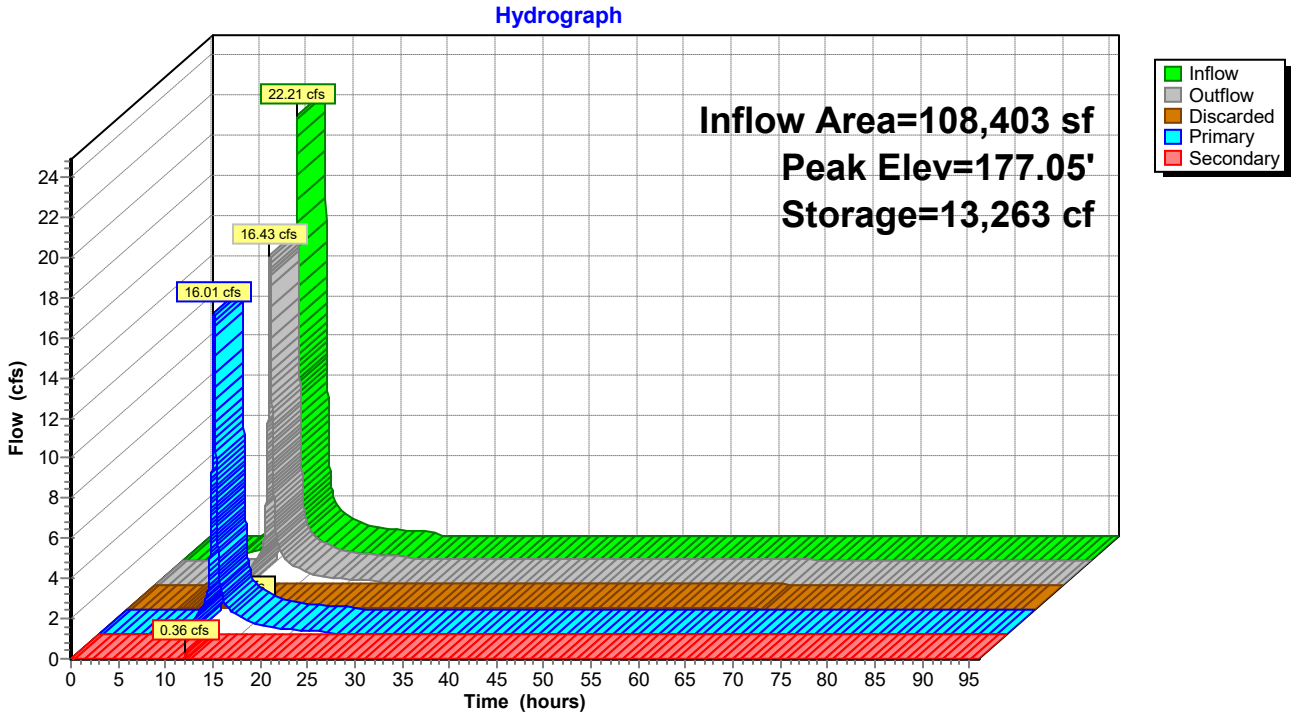
Device	Routing	Invert	Outlet Devices
#1	Discarded	175.50'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	174.25'	**24.0" Round Culvert** L= 27.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 174.25' / 173.98' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#3	Secondary	177.00'	**15.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#4	Device 2	176.45'	**2.0" x 48.0" Horiz. Orifice/Grate X 20.00** C= 0.600 in 48.0" x 48.0" Grate (83% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 12.15 hrs HW=177.05' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=16.01 cfs @ 12.15 hrs HW=177.05' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Inlet Controls 16.01 cfs @ 5.10 fps)
└**4=Orifice/Grate** (Passes 16.01 cfs of 24.12 cfs potential flow)

Secondary OutFlow Max=0.35 cfs @ 12.15 hrs HW=177.05' TW=0.00' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 0.35 cfs @ 0.51 fps)

Pond IB-1: INFILTRATION BASIN 1

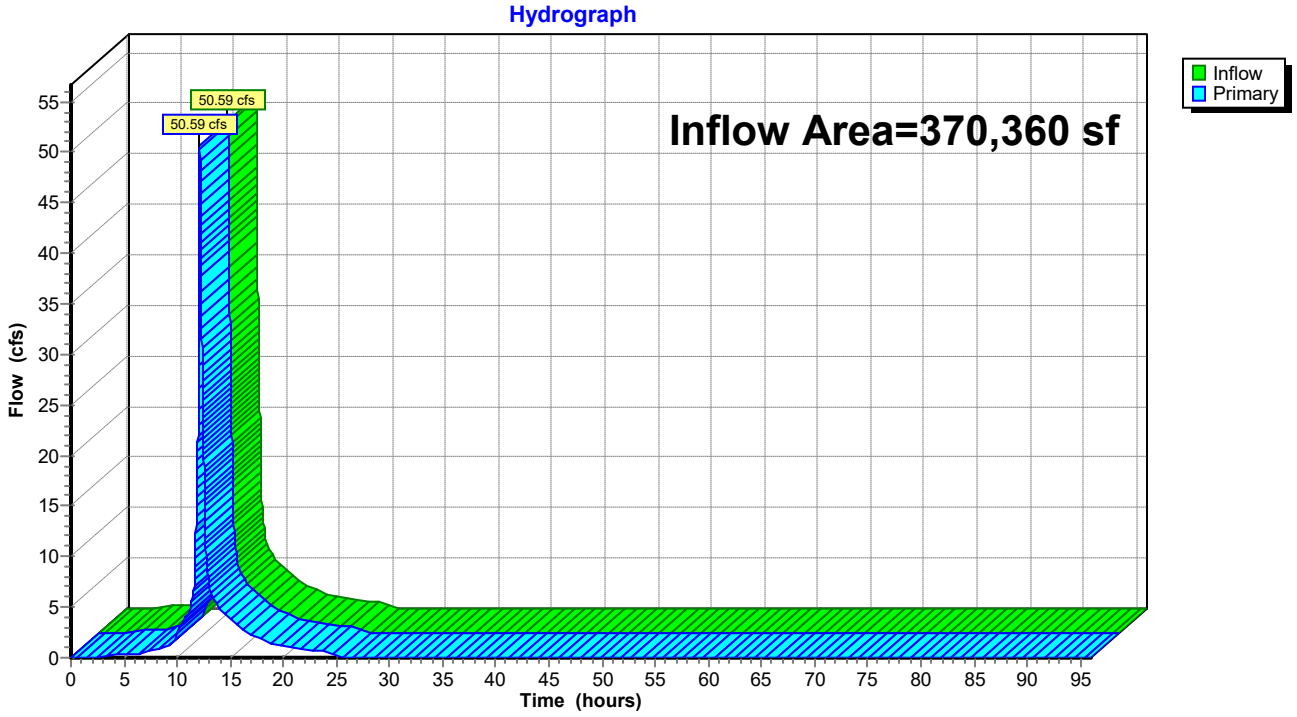


Summary for Link POA-1: EAST OUTFALL (WETLAND SERIES-A)

Inflow Area = 370,360 sf, 76.70% Impervious, Inflow Depth = 7.66" for 100-Year event
Inflow = 50.59 cfs @ 12.12 hrs, Volume= 236,512 cf
Primary = 50.59 cfs @ 12.12 hrs, Volume= 236,512 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-1: EAST OUTFALL (WETLAND SERIES-A)

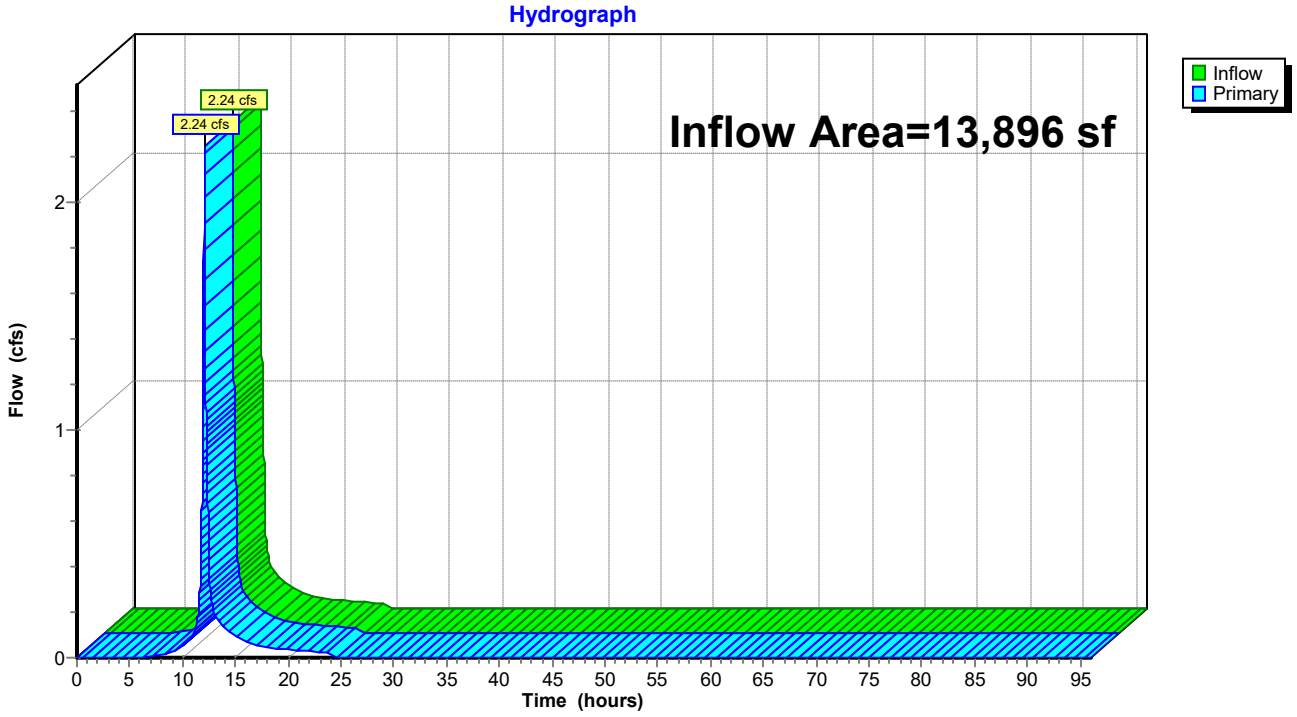


Summary for Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

Inflow Area = 13,896 sf, 0.00% Impervious, Inflow Depth = 5.82" for 100-Year event
Inflow = 2.24 cfs @ 12.07 hrs, Volume= 6,739 cf
Primary = 2.24 cfs @ 12.07 hrs, Volume= 6,739 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-2: SOUTH OUTFALL (WETLAND SERIES-B)

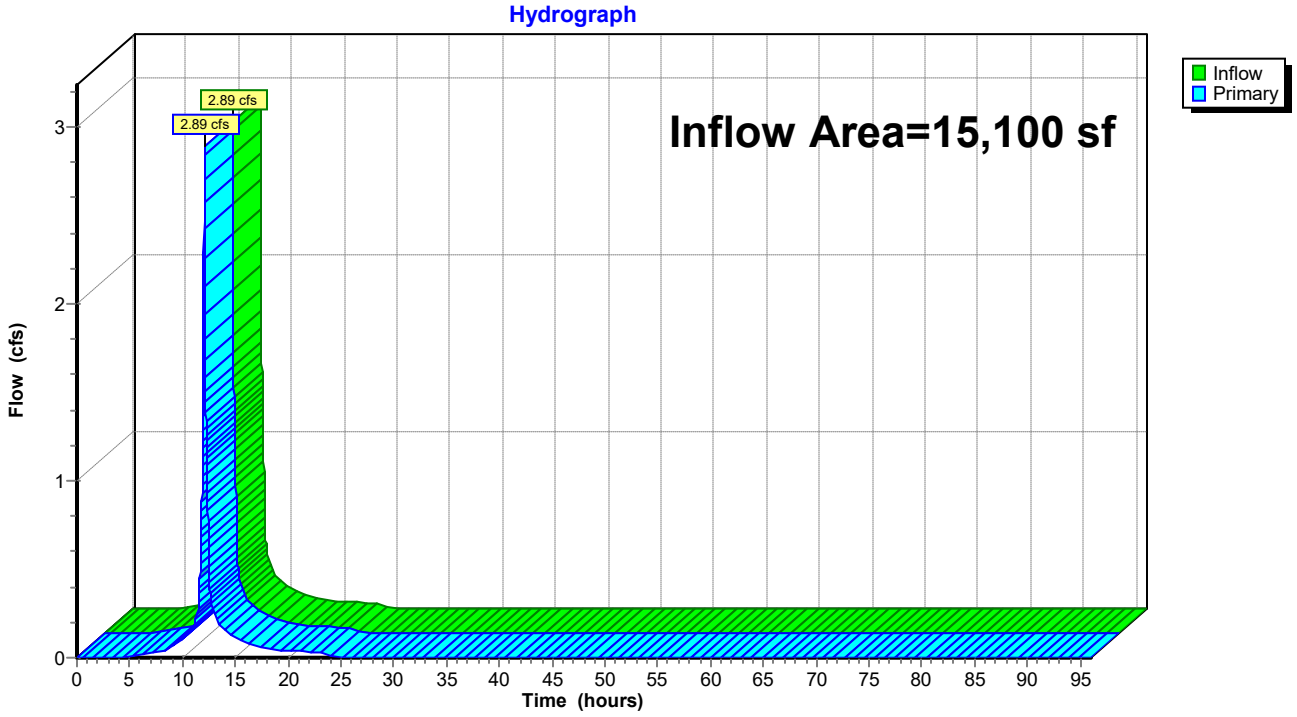


Summary for Link POA-3: WEST OUTFALL (TO TAUNTON)

Inflow Area = 15,100 sf, 45.36% Impervious, Inflow Depth = 7.17" for 100-Year event
Inflow = 2.89 cfs @ 12.07 hrs, Volume= 9,024 cf
Primary = 2.89 cfs @ 12.07 hrs, Volume= 9,024 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA-3: WEST OUTFALL (TO TAUNTON)



APPENDIX B – HYDRAULIC CALCULATIONS

WATER QUALITY VOLUME CALCULATIONS

This analysis is to evaluate water quality volume criteria according to "Volume 1 Chapter 1: Stormwater Management Standards." The proposed Sand Filter located at the southern portion of the site will provide the required water quality treatment for the tributary impervious area associated with Node "P-2"

Water Quality Volume Required (B 2: Sand Filter – South):

Paved Impervious Area (Excluding Roof Areas) = 21,591ft^2
Water Quality Volume Requirement = 1 inch over total impervious area
= (21,591 ft^2) x (1.0") x (1"/12")
= **1,799 ft^3**

Volume Provided in Infiltration BMPs:

B 2: Sand Filter – South = Volume below overflow weir elevation 180.25'
(Open Basin volume before infiltration)
= **2,163 ft^3 > 1,799 ft^3**

This analysis is to evaluate water quality volume criteria according to "Volume 1 Chapter 1: Stormwater Management Standards." The proposed Surface Infiltration Basin and filter located at the southern portion of the site will provide the required water quality treatment for the tributary impervious area associated with Node "P-1"

Water Quality Volume Required (IB 1: Infiltration Basin – North):

Paved Impervious Area (Excluding Roof Areas) = 87,749 ft^2
Water Quality Volume Requirement = 1 inch over total impervious area
= (87,749 ft^2) x (1.0") x (1"/12")
= **7,312 ft^3**

Volume Provided in Infiltration BMPs:

IB 1: Infiltration Basin – North = Volume below overflow weir elevation 176.45'
= **7,627 ft^3> 7,312 ft^3**

Stage-Area-Storage for Pond B-2: SAND FILTER-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
175.83	0	176.35	1,760	176.87	3,521
175.84	34	176.36	1,794	176.88	3,554
175.85	68	176.37	1,828	176.89	3,588
175.86	102	176.38	1,862	176.90	3,622
175.87	135	176.39	1,896	176.91	3,656
175.88	169	176.40	1,930	176.92	3,690
175.89	203	176.41	1,963	176.93	3,724
175.90	237	176.42	1,997	176.94	3,758
175.91	271	176.43	2,031	176.95	3,791
175.92	305	176.44	2,065	176.96	3,825
175.93	339	176.45	2,099	176.97	3,859
175.94	372	176.46	2,133	176.98	3,893
175.95	406	176.47	2,167	176.99	3,927
175.96	440	176.48	2,200	177.00	3,961
175.97	474	176.49	2,234	177.01	3,995
175.98	508	176.50	2,268	177.02	4,028
175.99	542	176.51	2,302	177.03	4,062
176.00	575	176.52	2,336	177.04	4,096
176.01	609	176.53	2,370	177.05	4,130
176.02	643	176.54	2,403	177.06	4,164
176.03	677	176.55	2,437	177.07	4,198
176.04	711	176.56	2,471	177.08	4,232
176.05	745	176.57	2,505	177.09	4,265
176.06	779	176.58	2,539	177.10	4,299
176.07	812	176.59	2,573	177.11	4,333
176.08	846	176.60	2,607	177.12	4,367
176.09	880	176.61	2,640	177.13	4,401
176.10	914	176.62	2,674	177.14	4,435
176.11	948	176.63	2,708	177.15	4,468
176.12	982	176.64	2,742	177.16	4,502
176.13	1,016	176.65	2,776	177.17	4,536
176.14	1,049	176.66	2,810	177.18	4,570
176.15	1,083	176.67	2,844	177.19	4,604
176.16	1,117	176.68	2,877	177.20	4,638
176.17	1,151	176.69	2,911	177.21	4,672
176.18	1,185	176.70	2,945	177.22	4,705
176.19	1,219	176.71	2,979	177.23	4,739
176.20	1,253	176.72	3,013	177.24	4,773
176.21	1,286	176.73	3,047	177.25	4,807
176.22	1,320	176.74	3,081	177.26	4,841
176.23	1,354	176.75	3,114	177.27	4,875
176.24	1,388	176.76	3,148	177.28	4,909
176.25	1,422	176.77	3,182	177.29	4,942
176.26	1,456	176.78	3,216	177.30	4,976
176.27	1,489	176.79	3,250	177.31	5,010
176.28	1,523	176.80	3,284	177.32	5,044
176.29	1,557	176.81	3,317	177.33	5,078
176.30	1,591	176.82	3,351	177.34	5,112
176.31	1,625	176.83	3,385	177.35	5,146
176.32	1,659	176.84	3,419	177.36	5,179
176.33	1,693	176.85	3,453	177.37	5,213
176.34	1,726	176.86	3,487	177.38	5,247

Stage-Area-Storage for Pond B-2: SAND FILTER-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
177.39	5,281	177.91	7,041	178.43	8,802
177.40	5,315	177.92	7,075	178.44	8,835
177.41	5,349	177.93	7,109	178.45	8,869
177.42	5,382	177.94	7,143	178.46	8,903
177.43	5,416	177.95	7,177	178.47	8,937
177.44	5,450	177.96	7,210	178.48	8,971
177.45	5,484	177.97	7,244	178.49	9,005
177.46	5,518	177.98	7,278	178.50	9,038
177.47	5,552	177.99	7,312	178.51	9,072
177.48	5,586	178.00	7,346	178.52	9,106
177.49	5,619	178.01	7,380	178.53	9,140
177.50	5,653	178.02	7,414	178.54	9,174
177.51	5,687	178.03	7,447	178.55	9,208
177.52	5,721	178.04	7,481	178.56	9,242
177.53	5,755	178.05	7,515	178.57	9,275
177.54	5,789	178.06	7,549	178.58	9,309
177.55	5,823	178.07	7,583	178.59	9,343
177.56	5,856	178.08	7,617	178.60	9,377
177.57	5,890	178.09	7,651	178.61	9,411
177.58	5,924	178.10	7,684	178.62	9,445
177.59	5,958	178.11	7,718	178.63	9,479
177.60	5,992	178.12	7,752	178.64	9,512
177.61	6,026	178.13	7,786	178.65	9,546
177.62	6,060	178.14	7,820	178.66	9,580
177.63	6,093	178.15	7,854	178.67	9,614
177.64	6,127	178.16	7,888	178.68	9,648
177.65	6,161	178.17	7,921	178.69	9,682
177.66	6,195	178.18	7,955	178.70	9,716
177.67	6,229	178.19	7,989	178.71	9,749
177.68	6,263	178.20	8,023	178.72	9,783
177.69	6,296	178.21	8,057	178.73	9,817
177.70	6,330	178.22	8,091	178.74	9,851
177.71	6,364	178.23	8,124	178.75	9,885
177.72	6,398	178.24	8,158	178.76	9,919
177.73	6,432	178.25	8,192	178.77	9,952
177.74	6,466	178.26	8,226	178.78	9,986
177.75	6,500	178.27	8,260	178.79	10,020
177.76	6,533	178.28	8,294	178.80	10,054
177.77	6,567	178.29	8,328	178.81	10,088
177.78	6,601	178.30	8,361	178.82	10,122
177.79	6,635	178.31	8,395	178.83	10,156
177.80	6,669	178.32	8,429	178.84	10,189
177.81	6,703	178.33	8,463	178.85	10,223
177.82	6,737	178.34	8,497	178.86	10,257
177.83	6,770	178.35	8,531	178.87	10,291
177.84	6,804	178.36	8,565	178.88	10,325
177.85	6,838	178.37	8,598	178.89	10,359
177.86	6,872	178.38	8,632	178.90	10,393
177.87	6,906	178.39	8,666	178.91	10,426
177.88	6,940	178.40	8,700	178.92	10,460
177.89	6,974	178.41	8,734	178.93	10,494
177.90	7,007	178.42	8,768	178.94	10,528

Stage-Area-Storage for Pond B-2: SAND FILTER-1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
178.95	10,562	179.47	12,322	179.99	14,082
178.96	10,596	179.48	12,356	180.00	14,116
178.97	10,630	179.49	12,390	180.01	14,201
178.98	10,663	179.50	12,424	180.02	14,286
178.99	10,697	179.51	12,458	180.03	14,371
179.00	10,731	179.52	12,491	180.04	14,456
179.01	10,765	179.53	12,525	180.05	14,541
179.02	10,799	179.54	12,559	180.06	14,627
179.03	10,833	179.55	12,593	180.07	14,712
179.04	10,866	179.56	12,627	180.08	14,798
179.05	10,900	179.57	12,661	180.09	14,884
179.06	10,934	179.58	12,695	180.10	14,970
179.07	10,968	179.59	12,728	180.11	15,056
179.08	11,002	179.60	12,762	180.12	15,143
179.09	11,036	179.61	12,796	180.13	15,229
179.10	11,070	179.62	12,830	180.14	15,316
179.11	11,103	179.63	12,864	180.15	15,403
179.12	11,137	179.64	12,898	180.16	15,490
179.13	11,171	179.65	12,931	180.17	15,577
179.14	11,205	179.66	12,965	180.18	15,664
179.15	11,239	179.67	12,999	180.19	15,751
179.16	11,273	179.68	13,033	180.20	15,839
179.17	11,307	179.69	13,067	180.21	15,927
179.18	11,340	179.70	13,101	180.22	16,014
179.19	11,374	179.71	13,135	180.23	16,102
179.20	11,408	179.72	13,168	180.24	16,191
179.21	11,442	179.73	13,202	180.25	16,279
179.22	11,476	179.74	13,236	180.26	16,367
179.23	11,510	179.75	13,270	180.27	16,456
179.24	11,544	179.76	13,304	180.28	16,545
179.25	11,577	179.77	13,338	180.29	16,634
179.26	11,611	179.78	13,372	180.30	16,723
179.27	11,645	179.79	13,405	180.31	16,812
179.28	11,679	179.80	13,439	180.32	16,901
179.29	11,713	179.81	13,473	180.33	16,991
179.30	11,747	179.82	13,507	180.34	17,081
179.31	11,780	179.83	13,541	180.35	17,170
179.32	11,814	179.84	13,575	180.36	17,260
179.33	11,848	179.85	13,609	180.37	17,351
179.34	11,882	179.86	13,642	180.38	17,441
179.35	11,916	179.87	13,676	180.39	17,531
179.36	11,950	179.88	13,710	180.40	17,622
179.37	11,984	179.89	13,744	180.41	17,713
179.38	12,017	179.90	13,778	180.42	17,804
179.39	12,051	179.91	13,812	180.43	17,895
179.40	12,085	179.92	13,845	180.44	17,986
179.41	12,119	179.93	13,879	180.45	18,077
179.42	12,153	179.94	13,913	180.46	18,169
179.43	12,187	179.95	13,947	180.47	18,261
179.44	12,221	179.96	13,981	180.48	18,353
179.45	12,254	179.97	14,015	180.49	18,445
179.46	12,288	179.98	14,049	180.50	18,537

Stage-Area-Storage for Pond B-2: SAND FILTER-1 (continued)

Elevation (feet)	Storage (cubic-feet)
180.51	18,629
180.52	18,722
180.53	18,814
180.54	18,907
180.55	19,000
180.56	19,093
180.57	19,186
180.58	19,280
180.59	19,373
180.60	19,467
180.61	19,561
180.62	19,655
180.63	19,749
180.64	19,843
180.65	19,938
180.66	20,033
180.67	20,127
180.68	20,222
180.69	20,317
180.70	20,413
180.71	20,508
180.72	20,604
180.73	20,699
180.74	20,795
180.75	20,891
180.76	20,988
180.77	21,084
180.78	21,180
180.79	21,277
180.80	21,374
180.81	21,471
180.82	21,568
180.83	21,665
180.84	21,763
180.85	21,860
180.86	21,958
180.87	22,056
180.88	22,154
180.89	22,252
180.90	22,351
180.91	22,449
180.92	22,548
180.93	22,647
180.94	22,746
180.95	22,845
180.96	22,944
180.97	23,044
180.98	23,143
180.99	23,243
181.00	**23,343**

Stage-Area-Storage for Pond IB-1: INFILTRATION BASIN 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
175.50	7,184	0	176.02	8,101	3,974
175.51	7,202	72	176.03	8,119	4,055
175.52	7,219	144	176.04	8,137	4,136
175.53	7,237	216	176.05	8,156	4,217
175.54	7,254	289	176.06	8,174	4,299
175.55	7,272	361	176.07	8,193	4,381
175.56	7,290	434	176.08	8,211	4,463
175.57	7,307	507	176.09	8,229	4,545
175.58	7,325	580	176.10	8,248	4,628
175.59	7,342	654	176.11	8,266	4,710
175.60	7,360	727	176.12	8,284	4,793
175.61	7,378	801	176.13	8,303	4,876
175.62	7,395	875	176.14	8,321	4,959
175.63	7,413	949	176.15	8,339	5,042
175.64	7,430	1,023	176.16	8,358	5,126
175.65	7,448	1,097	176.17	8,376	5,209
175.66	7,466	1,172	176.18	8,394	5,293
175.67	7,483	1,247	176.19	8,413	5,377
175.68	7,501	1,322	176.20	8,431	5,462
175.69	7,518	1,397	176.21	8,450	5,546
175.70	7,536	1,472	176.22	8,468	5,631
175.71	7,554	1,547	176.23	8,486	5,715
175.72	7,571	1,623	176.24	8,505	5,800
175.73	7,589	1,699	176.25	8,523	5,885
175.74	7,606	1,775	176.26	8,541	5,971
175.75	7,624	1,851	176.27	8,560	6,056
175.76	7,642	1,927	176.28	8,578	6,142
175.77	7,659	2,004	176.29	8,596	6,228
175.78	7,677	2,081	176.30	8,615	6,314
175.79	7,694	2,157	176.31	8,633	6,400
175.80	7,712	2,234	176.32	8,652	6,486
175.81	7,730	2,312	176.33	8,670	6,573
175.82	7,747	2,389	176.34	8,688	6,660
175.83	7,765	2,467	176.35	8,707	6,747
175.84	7,782	2,544	176.36	8,725	6,834
175.85	7,800	2,622	176.37	8,743	6,921
175.86	7,818	2,700	176.38	8,762	7,009
175.87	7,835	2,779	176.39	8,780	7,097
175.88	7,853	2,857	176.40	8,798	7,184
175.89	7,870	2,936	176.41	8,817	7,273
175.90	7,888	3,014	176.42	8,835	7,361
175.91	7,906	3,093	176.43	8,853	7,449
175.92	7,923	3,173	176.44	8,872	7,538
175.93	7,941	3,252	176.45	8,890	7,627
175.94	7,958	3,331	176.46	8,909	7,716
175.95	7,976	3,411	176.47	8,927	7,805
175.96	7,994	3,491	176.48	8,945	7,894
175.97	8,011	3,571	176.49	8,964	7,984
175.98	8,029	3,651	176.50	8,982	8,074
175.99	8,046	3,731	176.51	9,000	8,163
176.00	8,064	3,812	176.52	9,019	8,254
176.01	8,082	3,893	176.53	9,037	8,344

Stage-Area-Storage for Pond IB-1: INFILTRATION BASIN 1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
176.54	9,055	8,434	177.06	10,016	13,391
176.55	9,074	8,525	177.07	10,036	13,492
176.56	9,092	8,616	177.08	10,055	13,592
176.57	9,111	8,707	177.09	10,074	13,693
176.58	9,129	8,798	177.10	10,094	13,794
176.59	9,147	8,889	177.11	10,113	13,895
176.60	9,166	8,981	177.12	10,132	13,996
176.61	9,184	9,073	177.13	10,152	14,097
176.62	9,202	9,165	177.14	10,171	14,199
176.63	9,221	9,257	177.15	10,191	14,301
176.64	9,239	9,349	177.16	10,210	14,403
176.65	9,257	9,441	177.17	10,229	14,505
176.66	9,276	9,534	177.18	10,249	14,607
176.67	9,294	9,627	177.19	10,268	14,710
176.68	9,312	9,720	177.20	10,287	14,813
176.69	9,331	9,813	177.21	10,307	14,916
176.70	9,349	9,907	177.22	10,326	15,019
176.71	9,368	10,000	177.23	10,346	15,122
176.72	9,386	10,094	177.24	10,365	15,226
176.73	9,404	10,188	177.25	10,384	15,330
176.74	9,423	10,282	177.26	10,404	15,433
176.75	9,441	10,376	177.27	10,423	15,538
176.76	9,459	10,471	177.28	10,442	15,642
176.77	9,478	10,566	177.29	10,462	15,746
176.78	9,496	10,660	177.30	10,481	15,851
176.79	9,514	10,755	177.31	10,500	15,956
176.80	9,533	10,851	177.32	10,520	16,061
176.81	9,551	10,946	177.33	10,539	16,166
176.82	9,570	11,042	177.34	10,559	16,272
176.83	9,588	11,138	177.35	10,578	16,378
176.84	9,606	11,234	177.36	10,597	16,484
176.85	9,625	11,330	177.37	10,617	16,590
176.86	9,643	11,426	177.38	10,636	16,696
176.87	9,661	11,523	177.39	10,655	16,802
176.88	9,680	11,619	177.40	10,675	16,909
176.89	9,698	11,716	177.41	10,694	17,016
176.90	9,716	11,813	177.42	10,714	17,123
176.91	9,735	11,910	177.43	10,733	17,230
176.92	9,753	12,008	177.44	10,752	17,338
176.93	9,771	12,105	177.45	10,772	17,445
176.94	9,790	12,203	177.46	10,791	17,553
176.95	9,808	12,301	177.47	10,810	17,661
176.96	9,827	12,399	177.48	10,830	17,769
176.97	9,845	12,498	177.49	10,849	17,878
176.98	9,863	12,596	177.50	10,869	17,986
176.99	9,882	12,695	177.51	10,888	18,095
177.00	9,900	12,794	177.52	10,907	18,204
177.01	9,919	12,893	177.53	10,927	18,313
177.02	9,939	12,992	177.54	10,946	18,422
177.03	9,958	13,092	177.55	10,965	18,532
177.04	9,977	13,192	177.56	10,985	18,642
177.05	9,997	13,291	177.57	11,004	18,752

Stage-Area-Storage for Pond IB-1: INFILTRATION BASIN 1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
177.58	11,023	18,862
177.59	11,043	18,972
177.60	11,062	19,083
177.61	11,082	19,193
177.62	11,101	19,304
177.63	11,120	19,415
177.64	11,140	19,527
177.65	11,159	19,638
177.66	11,178	19,750
177.67	11,198	19,862
177.68	11,217	19,974
177.69	11,237	20,086
177.70	11,256	20,199
177.71	11,275	20,311
177.72	11,295	20,424
177.73	11,314	20,537
177.74	11,333	20,650
177.75	11,353	20,764
177.76	11,372	20,877
177.77	11,391	20,991
177.78	11,411	21,105
177.79	11,430	21,219
177.80	11,450	21,334
177.81	11,469	21,448
177.82	11,488	21,563
177.83	11,508	21,678
177.84	11,527	21,793
177.85	11,546	21,909
177.86	11,566	22,024
177.87	11,585	22,140
177.88	11,605	22,256
177.89	11,624	22,372
177.90	11,643	22,488
177.91	11,663	22,605
177.92	11,682	22,722
177.93	11,701	22,839
177.94	11,721	22,956
177.95	11,740	23,073
177.96	11,760	23,191
177.97	11,779	23,308
177.98	11,798	23,426
177.99	11,818	23,544
178.00	11,837	23,663
178.01	11,857	23,781
178.02	11,876	23,900
178.03	11,896	24,018
178.04	11,916	24,138
178.05	11,936	24,257
178.06	11,955	24,376
178.07	11,975	24,496
178.08	11,995	24,616
178.09	12,014	24,736
178.10	**12,034**	**24,856**

Project: Proposed Industrial Building
Location: Plainville, MA
Prepared For: Highpoint Engineering / Danell Batiste

Purpose: To calculate the water quality flow rate (WQF) over a given site area. In this situation the WQF is derived from the first 1" of runoff from the contributing impervious surface.

Reference: Massachusetts Dept. of Environmental Protection Wetlands Program / United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual

Procedure: Determine unit peak discharge using Figure 1 or 2. Figure 2 is in tabular form so is preferred. Using the tc, read the unit peak discharge (qu) from Figure 1 or Table in Figure 2. qu is expressed in the following units: cfs/mi^2/watershed inches (csm/in).

Compute Q Rate using the following equation:

$$Q = (qu)\ (A)\ (WQV)$$

where:

Q = flow rate associated with first 1" of runoff
qu = the unit peak discharge, in csm/in.
A = impervious surface drainage area (in square miles)
WQV = water quality volume in watershed inches (1" in this case)

Structure Name	Impv. (acres)	A (miles^2)	t_c (min)	t_c (hr)	WQV (in)	qu (csm/in.)	Q (cfs)
WQU 1	1.11	0.0017344	6.0	0.100	1.00	774.00	1.34
WQU 2	1.11	0.0017344	6.0	0.100	1.00	774.00	1.34

CONTECH ENGINEERED SOLUTIONS

CDS TECHNOLOGIES

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION
BASED ON THE RATIONAL RAINFALL METHOD

PROPOSED INDUSTRIAL BUILDING
PLAINVILLE, MA

Area	**1.11 ac**	Unit Site Designation	**WQU 2**
Weighted C	**0.9**	Rainfall Station #	**68**
t_c	**6 min**		
CDS Model	**2015-4**	CDS Treatment Capacity	**1.4 cfs**

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Total Flowrate (cfs)	Treated Flowrate (cfs)	Incremental Removal (%)
0.02	9.3%	9.3%	0.02	0.02	9.3
0.04	9.5%	18.8%	0.04	0.04	9.5
0.06	8.7%	27.5%	0.06	0.06	8.7
0.08	10.1%	37.6%	0.08	0.08	9.9
0.10	7.2%	44.8%	0.10	0.10	7.0
0.12	6.0%	50.8%	0.12	0.12	5.8
0.14	6.3%	57.1%	0.14	0.14	6.1
0.16	5.6%	62.7%	0.16	0.16	5.4
0.18	4.7%	67.4%	0.18	0.18	4.5
0.20	3.6%	71.0%	0.20	0.20	3.4
0.25	8.2%	79.1%	0.25	0.25	7.6
0.50	14.9%	94.0%	0.50	0.50	12.6
0.75	3.2%	97.3%	0.75	0.75	2.4
1.00	1.2%	98.5%	1.00	1.00	0.8
1.50	0.7%	99.2%	1.50	1.40	0.4
2.00	0.8%	100.0%	2.00	1.40	0.3
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
					93.7
				Removal Efficiency Adjustment[2] =	6.5%
				Predicted % Annual Rainfall Treated =	93.3%
				Predicted Net Annual Load Removal Efficiency =	**87.3%**

1 - Based on 10 years of rainfall data from NCDC station 736, Blue Hill, Norfolk County, MA

2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

CONTECH ENGINEERED SOLUTIONS

CDS TECHNOLOGIES

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION
BASED ON THE RATIONAL RAINFALL METHOD

PROPOSED INDUSTRIAL BUILDING
PLAINVILLE, MA

Area	**1.11 ac**	Unit Site Designation	**WQU 1**
Weighted C	**0.9**	Rainfall Station #	**68**
t_c	**6 min**		
CDS Model	**2015-4**	CDS Treatment Capacity	**1.4 cfs**

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Total Flowrate (cfs)	Treated Flowrate (cfs)	Incremental Removal (%)
0.02	9.3%	9.3%	0.02	0.02	9.3
0.04	9.5%	18.8%	0.04	0.04	9.5
0.06	8.7%	27.5%	0.06	0.06	8.7
0.08	10.1%	37.6%	0.08	0.08	9.9
0.10	7.2%	44.8%	0.10	0.10	7.0
0.12	6.0%	50.8%	0.12	0.12	5.8
0.14	6.3%	57.1%	0.14	0.14	6.1
0.16	5.6%	62.7%	0.16	0.16	5.4
0.18	4.7%	67.4%	0.18	0.18	4.5
0.20	3.6%	71.0%	0.20	0.20	3.4
0.25	8.2%	79.1%	0.25	0.25	7.6
0.50	14.9%	94.0%	0.50	0.50	12.6
0.75	3.2%	97.3%	0.75	0.75	2.4
1.00	1.2%	98.5%	1.00	1.00	0.8
1.50	0.7%	99.2%	1.50	1.40	0.4
2.00	0.8%	100.0%	2.00	1.40	0.3
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
					93.7
				Removal Efficiency Adjustment[2] =	6.5%
				Predicted % Annual Rainfall Treated =	93.3%
				Predicted Net Annual Load Removal Efficiency =	**87.3%**

1 - Based on 10 years of rainfall data from NCDC station 736, Blue Hill, Norfolk County, MA

2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

SEDIMENT FOREBAY SIZING CALCULATIONS

This analysis is to evaluate sizing criteria of all proposed sediment forebays according to "Volume 2 Chapter 2: Structural BMP Specifications for the Massachusetts Stormwater Handbook." The proposed sediment forebay will receive surface runoff prior to discharge to downstream infiltration BMPs.

Forebay [1]

Tributary Impervious Area	= 87,749 ft^2
Forebay Volume Required	= 0.1 inches per impervious acre
	= (87,749 ft^2) x (1 ac/43,560 ft^2) x (0.1/12)
	= 0.017 ac-ft
	= 731 ft^3
Forebay 1 Volume Provided	= Volume below spillway elevation 177.25 ft
	= **1,148 ft^3 > 731 ft^3**

Forebay [1A]

Tributary Impervious Area	= 87,749 ft^2
Forebay Volume Required	= 0.1 inches per impervious acre
	= (87,749 ft^2) x (1 ac/43,560 ft^2) x (0.1/12)
	= 0.017 ac-ft
	= 731 ft^3
Forebay 1A Volume Provided	= Volume below spillway elevation 177.75 ft
	= **1,230 ft^3 > 731 ft^3**

Forebay [2]

Tributary Impervious Area	= 21,591 ft^2
Forebay Volume Required	= 0.1 inches per impervious acre
	= (21,591 ft^2) x (1 ac/43,560 ft^2) x (0.1/12)
	= 0.004 ac-ft
	= 180 ft^3
Forebay 2 Volume Provided	= Volume below spillway elevation 180.25 ft
	= **673 ft^3 > 180 ft^3**

Stage-Area-Storage for Pond FB-1: Forebay-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
176.00	498	0	176.52	846	350
176.01	505	5	176.53	853	358
176.02	511	10	176.54	860	367
176.03	518	15	176.55	867	375
176.04	525	20	176.56	873	384
176.05	532	26	176.57	880	393
176.06	538	31	176.58	887	402
176.07	545	37	176.59	893	410
176.08	552	42	176.60	900	419
176.09	558	48	176.61	907	428
176.10	565	53	176.62	913	438
176.11	572	59	176.63	920	447
176.12	578	65	176.64	927	456
176.13	585	70	176.65	934	465
176.14	592	76	176.66	940	475
176.15	599	82	176.67	947	484
176.16	605	88	176.68	954	494
176.17	612	94	176.69	960	503
176.18	619	100	176.70	967	513
176.19	625	107	176.71	974	522
176.20	632	113	176.72	980	532
176.21	639	119	176.73	987	542
176.22	645	126	176.74	994	552
176.23	652	132	176.75	1,001	562
176.24	659	139	176.76	1,007	572
176.25	666	145	176.77	1,014	582
176.26	672	152	176.78	1,021	592
176.27	679	159	176.79	1,027	602
176.28	686	166	176.80	1,034	613
176.29	692	173	176.81	1,041	623
176.30	699	180	176.82	1,047	634
176.31	706	187	176.83	1,054	644
176.32	712	194	176.84	1,061	655
176.33	719	201	176.85	1,067	665
176.34	726	208	176.86	1,074	676
176.35	732	215	176.87	1,081	687
176.36	739	223	176.88	1,088	698
176.37	746	230	176.89	1,094	709
176.38	753	238	176.90	1,101	720
176.39	759	245	176.91	1,108	731
176.40	766	253	176.92	1,114	742
176.41	773	260	176.93	1,121	753
176.42	779	268	176.94	1,128	764
176.43	786	276	176.95	1,134	775
176.44	793	284	176.96	1,141	787
176.45	799	292	176.97	1,148	798
176.46	806	300	176.98	1,155	810
176.47	813	308	176.99	1,161	821
176.48	820	316	177.00	1,168	833
176.49	826	324	177.01	1,175	845
176.50	833	333	177.02	1,182	857
176.51	840	341	177.03	1,190	868

Stage-Area-Storage for Pond FB-1A: Forebay-1A

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
176.00	615	0	176.52	921	399
176.01	621	6	176.53	927	409
176.02	627	12	176.54	933	418
176.03	633	19	176.55	939	427
176.04	639	25	176.56	945	437
176.05	644	31	176.57	951	446
176.06	650	38	176.58	957	456
176.07	656	44	176.59	963	465
176.08	662	51	176.60	968	475
176.09	668	58	176.61	974	485
176.10	674	64	176.62	980	495
176.11	680	71	176.63	986	504
176.12	686	78	176.64	992	514
176.13	692	85	176.65	998	524
176.14	697	92	176.66	1,004	534
176.15	703	99	176.67	1,010	544
176.16	709	106	176.68	1,016	554
176.17	715	113	176.69	1,021	565
176.18	721	120	176.70	1,027	575
176.19	727	127	176.71	1,033	585
176.20	733	135	176.72	1,039	595
176.21	739	142	176.73	1,045	606
176.22	745	150	176.74	1,051	616
176.23	750	157	176.75	1,057	627
176.24	756	165	176.76	1,063	638
176.25	762	172	176.77	1,069	648
176.26	768	180	176.78	1,074	659
176.27	774	188	176.79	1,080	670
176.28	780	195	176.80	1,086	680
176.29	786	203	176.81	1,092	691
176.30	792	211	176.82	1,098	702
176.31	798	219	176.83	1,104	713
176.32	803	227	176.84	1,110	724
176.33	809	235	176.85	1,116	736
176.34	815	243	176.86	1,122	747
176.35	821	251	176.87	1,127	758
176.36	827	260	176.88	1,133	769
176.37	833	268	176.89	1,139	781
176.38	839	276	176.90	1,145	792
176.39	845	285	176.91	1,151	804
176.40	851	293	176.92	1,157	815
176.41	856	302	176.93	1,163	827
176.42	862	310	176.94	1,169	838
176.43	868	319	176.95	1,175	850
176.44	874	328	176.96	1,180	862
176.45	880	336	176.97	1,186	874
176.46	886	345	176.98	1,192	886
176.47	892	354	176.99	1,198	897
176.48	898	363	177.00	1,204	910
176.49	904	372	177.01	1,210	922
176.50	910	381	177.02	1,216	934
176.51	915	390	177.03	1,222	946

Stage-Area-Storage for Pond FB-2: Forebay-2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
179.00	290	0
179.02	298	6
179.04	305	12
179.06	313	18
179.08	321	24
179.10	328	31
179.12	336	38
179.14	343	44
179.16	351	51
179.18	359	58
179.20	366	66
179.22	374	73
179.24	382	81
179.26	389	88
179.28	397	96
179.30	405	104
179.32	412	112
179.34	420	121
179.36	428	129
179.38	435	138
179.40	443	147
179.42	450	155
179.44	458	165
179.46	466	174
179.48	473	183
179.50	481	193
179.52	489	202
179.54	496	212
179.56	504	222
179.58	512	232
179.60	519	243
179.62	527	253
179.64	534	264
179.66	542	275
179.68	550	286
179.70	557	297
179.72	565	308
179.74	573	319
179.76	580	331
179.78	588	342
179.80	596	354
179.82	603	366
179.84	611	378
179.86	619	391
179.88	626	403
179.90	634	416
179.92	641	428
179.94	649	441
179.96	657	454
179.98	664	468
180.00	672	481
180.02	687	495
180.04	703	508
180.06	718	523
180.08	733	537
180.10	749	552
180.12	764	567
180.14	779	583
180.16	795	598
180.18	810	614
180.20	825	631
180.22	841	647
180.24	856	664
180.26	871	682
180.28	886	699
180.30	902	717
180.32	917	735
180.34	932	754
180.36	948	773
180.38	963	792
180.40	978	811
180.42	994	831
180.44	1,009	851
180.46	1,024	871
180.48	1,040	892
180.50	1,055	913
180.52	1,070	934
180.54	1,086	956
180.56	1,101	977
180.58	1,116	1,000
180.60	1,132	1,022
180.62	1,147	1,045
180.64	1,162	1,068
180.66	1,178	1,091
180.68	1,193	1,115
180.70	1,208	1,139
180.72	1,224	1,163
180.74	1,239	1,188
180.76	1,254	1,213
180.78	1,269	1,238
180.80	1,285	1,264
180.82	1,300	1,290
180.84	1,315	1,316
180.86	1,331	1,342
180.88	1,346	1,369
180.90	1,361	1,396
180.92	1,377	1,423
180.94	1,392	1,451
180.96	1,407	1,479
180.98	1,423	1,507
181.00	**1,438**	**1,536**

INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: Drainage Run 1 Infiltration Basin

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Sediment Forebay	0.25	1.00	0.25	0.75
Sediment Forebay	0.25	0.75	0.19	0.56
Infiltration Basin	0.80	0.56	0.45	0.11
	0.00	0.11	0.00	0.11
	0.00	0.11	0.00	0.11

Total TSS Removal = 89%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 43 Taunton St
Prepared By: Danell Baptiste
Date: 3/11/2022

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: Drainage Run 2 CDS Unit WQU-1

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Contech CDS (WQU-1)	**0.87**	**0.75**	**0.65**	**0.10**

Total TSS Removal = **90%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 43 Taunton Street

Prepared By: Danell Baptiste

Date: 3/14/2022

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: Drainage Run 3 CDS Unit WQU-2

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Contech CDS (WQU-2)	**0.87**	**0.75**	**0.65**	**0.10**

Total TSS Removal = **90%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 43 Taunton Street

Prepared By: Danell Baptiste

Date: 3/14/2022

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Drainage Run 4 Sand Filter

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Sediment Forebay	0.25	1.00	0.25	0.75
Sand Filter	0.80	0.75	0.60	0.15
	0.00	0.15	0.00	0.15
	0.00	0.15	0.00	0.15
	0.00	0.15	0.00	0.15

Total TSS Removal = 85%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 43 Taunton St

Prepared By: Danell Baptiste

Date: 3/11/2021

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

GROUNDWATER RECHARGE CALCULATIONS

Review of the United States Department of Agricultural (USDA) Natural Resources Conservation Service (NRCS) indicates that the parent soils within the limit of Watersheds P-1, P-2, P-3, P-3A P-3B, P-4, P-5, R-1 & R-2 comprise 602 - Urban Land, situated between 52 - Freetown muck, 0 to 1 percent slopes (Hydrologic Soil Group "A/D") and 245D - Hinckley sandy loam, 3 to 8 percent slopes (Hydrologic Soil Group "A"). As a conservative estimate of the nature of the parent soils within the limit of the Watersheds, this report models the parent soils as (Hydrologic Soil Group "C").

The Massachusetts Stormwater Handbook determines the required recharge volume using a calculation of 0.25 inches of runoff for "C" soils multiplied by the total contributing impervious cover of the watersheds. Watersheds P-1, P-2, P-3, P-3A P-3B, P-4, P-5, R-1 & R-2 is comprised of walkways, paved parking, driveway, and building areas. Due to high groundwater reading on site, Subsurface Infiltration Basin (Node IB-2) is the only viable location to provide the required site recharge volume to satisfy MassDEP stormwater requirements. Recharge volumes from the aforementioned Sub-Watershed Nodes will be retained and infiltrated in Subsurface Infiltration Basin (Node IB-2)

A design infiltration rate of 0.27 inches per hour was conservatively used for the analysis based on the results of on-site soil testing performed on January 28, 2022.

The total site impervious cover is 278,535 ft^2, therefore:

Mass DEP Requirement

Required Recharge Volume = 0.25 inches x Total Impervious Area for "C" soils
= 0.25 inches x 278,535 ft^2 x (1/12 in/ft) = 5,803 ft^3

Total Required Recharge Volume for Overall Project = 5,803 ft^3

Recharge to Groundwater Provided

The required recharge volume is provided within the Infiltration Basin between the basin bottom at elevation 175.50' and the invert of the overflow weir at elevation 176.45'.

Volume Provided in Infiltration Basin = 7,627 ft^3

The total recharge volume provided exceeds the minimum recharge requirement for "C" soils.

Total Recharge Volume Provided = 5,803 ft^3
= 7,627 ft^3 > 5,803 ft^3

Hydrograph for Pond IB-1: INFILTRATION BASIN 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	175.50	0.00	0.00	0.00	0.00
2.00	0.00	0	175.50	0.00	0.00	0.00	0.00
4.00	0.00	0	175.50	0.00	0.00	0.00	0.00
6.00	0.29	311	175.54	0.05	0.05	0.00	0.00
8.00	0.52	2,830	175.88	0.05	0.05	0.00	0.00
10.00	1.03	7,899	176.48	0.33	0.06	0.28	0.00
12.00	**13.36**	**10,684**	**176.78**	**10.09**	**0.06**	**10.03**	**0.00**
14.00	**1.16**	**8,337**	**176.53**	**1.22**	**0.06**	**1.17**	**0.00**
16.00	0.62	8,079	176.50	0.65	0.06	0.60	0.00
18.00	0.37	7,936	176.48	0.39	0.06	0.34	0.00
20.00	0.30	7,878	176.48	0.30	0.06	0.25	0.00
22.00	0.25	7,841	176.47	0.25	0.06	0.19	0.00
24.00	0.20	7,802	176.47	0.20	0.06	0.14	0.00
26.00	0.00	7,371	176.42	0.06	0.06	0.00	0.00
28.00	0.00	6,975	176.38	0.05	0.05	0.00	0.00
30.00	0.00	6,583	176.33	0.05	0.05	0.00	0.00
32.00	0.00	6,195	176.29	0.05	0.05	0.00	0.00
34.00	0.00	5,810	176.24	0.05	0.05	0.00	0.00
36.00	0.00	5,429	176.20	0.05	0.05	0.00	0.00
38.00	0.00	5,052	176.15	0.05	0.05	0.00	0.00
40.00	0.00	4,679	176.11	0.05	0.05	0.00	0.00
42.00	0.00	4,309	176.06	0.05	0.05	0.00	0.00
44.00	0.00	3,943	176.02	0.05	0.05	0.00	0.00
46.00	0.00	3,580	175.97	0.05	0.05	0.00	0.00
48.00	0.00	3,222	175.93	0.05	0.05	0.00	0.00
50.00	0.00	2,866	175.88	0.05	0.05	0.00	0.00
52.00	0.00	2,515	175.84	0.05	0.05	0.00	0.00
54.00	0.00	2,167	175.79	0.05	0.05	0.00	0.00
56.00	0.00	1,822	175.75	0.05	0.05	0.00	0.00
58.00	0.00	1,481	175.70	0.05	0.05	0.00	0.00
60.00	0.00	1,144	175.66	0.05	0.05	0.00	0.00
62.00	0.00	810	175.61	0.05	0.05	0.00	0.00
64.00	0.00	479	175.57	0.05	0.05	0.00	0.00
66.00	0.00	153	175.52	0.05	0.05	0.00	0.00
68.00	0.00	0	175.50	0.00	0.00	0.00	0.00
70.00	0.00	0	175.50	0.00	0.00	0.00	0.00
72.00	0.00	0	175.50	0.00	0.00	0.00	0.00
74.00	0.00	0	175.50	0.00	0.00	0.00	0.00
76.00	0.00	0	175.50	0.00	0.00	0.00	0.00
78.00	0.00	0	175.50	0.00	0.00	0.00	0.00
80.00	0.00	0	175.50	0.00	0.00	0.00	0.00
82.00	0.00	0	175.50	0.00	0.00	0.00	0.00
84.00	0.00	0	175.50	0.00	0.00	0.00	0.00
86.00	0.00	0	175.50	0.00	0.00	0.00	0.00
88.00	0.00	0	175.50	0.00	0.00	0.00	0.00
90.00	0.00	0	175.50	0.00	0.00	0.00	0.00
92.00	0.00	0	175.50	0.00	0.00	0.00	0.00
94.00	0.00	0	175.50	0.00	0.00	0.00	0.00
96.00	0.00	0	175.50	0.00	0.00	0.00	0.00

Hydrograph for Pond B-3: SUBSURFACE DETENTION SYSTEM

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	176.00	0.00
2.00	0.09	243	176.11	0.03
4.00	0.21	575	176.25	0.17
6.00	0.33	949	176.33	0.27
8.00	0.60	1,682	176.49	0.46
10.00	1.24	3,412	176.85	1.15
12.00	**18.93**	**8,142**	**178.02**	**13.23**
14.00	**1.43**	**3,660**	**176.90**	**1.53**
16.00	0.76	3,162	176.80	0.84
18.00	0.46	2,535	176.67	0.61
20.00	0.37	1,678	176.48	0.46
22.00	0.31	1,224	176.39	0.35
24.00	0.24	966	176.33	0.27
26.00	0.00	216	176.10	0.03
28.00	0.00	112	176.05	0.01
30.00	0.00	75	176.03	0.00
32.00	0.00	57	176.02	0.00
34.00	0.00	45	176.02	0.00
36.00	0.00	38	176.02	0.00
38.00	0.00	32	176.01	0.00
40.00	0.00	28	176.01	0.00
42.00	0.00	25	176.01	0.00
44.00	0.00	23	176.01	0.00
46.00	0.00	21	176.01	0.00
48.00	0.00	19	176.01	0.00
50.00	0.00	17	176.01	0.00
52.00	0.00	16	176.01	0.00
54.00	0.00	15	176.01	0.00
56.00	0.00	14	176.01	0.00
58.00	0.00	13	176.01	0.00
60.00	0.00	13	176.01	0.00
62.00	0.00	12	176.01	0.00
64.00	0.00	11	176.00	0.00
66.00	0.00	11	176.00	0.00
68.00	0.00	10	176.00	0.00
70.00	0.00	10	176.00	0.00
72.00	0.00	9	176.00	0.00
74.00	0.00	9	176.00	0.00
76.00	0.00	9	176.00	0.00
78.00	0.00	8	176.00	0.00
80.00	0.00	8	176.00	0.00
82.00	0.00	8	176.00	0.00
84.00	0.00	7	176.00	0.00
86.00	0.00	7	176.00	0.00
88.00	0.00	7	176.00	0.00
90.00	0.00	7	176.00	0.00
92.00	0.00	7	176.00	0.00
94.00	0.00	6	176.00	0.00
96.00	0.00	6	176.00	0.00

Stage-Area-Storage for Pond B-2: SAND FILTER-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
175.83	0	176.35	1,760	176.87	3,521
175.84	34	176.36	1,794	176.88	3,554
175.85	68	176.37	1,828	176.89	3,588
175.86	102	176.38	1,862	176.90	3,622
175.87	135	176.39	1,896	176.91	3,656
175.88	169	176.40	1,930	176.92	3,690
175.89	203	176.41	1,963	176.93	3,724
175.90	237	176.42	1,997	176.94	3,758
175.91	271	176.43	2,031	176.95	3,791
175.92	305	176.44	2,065	176.96	3,825
175.93	339	176.45	2,099	176.97	3,859
175.94	372	176.46	2,133	176.98	3,893
175.95	406	176.47	2,167	176.99	3,927
175.96	440	176.48	2,200	177.00	3,961
175.97	474	176.49	2,234	177.01	3,995
175.98	508	176.50	2,268	177.02	4,028
175.99	542	176.51	2,302	177.03	4,062
176.00	575	176.52	2,336	177.04	4,096
176.01	609	176.53	2,370	177.05	4,130
176.02	643	176.54	2,403	177.06	4,164
176.03	677	176.55	2,437	177.07	4,198
176.04	711	176.56	2,471	177.08	4,232
176.05	745	176.57	2,505	177.09	4,265
176.06	779	176.58	2,539	177.10	4,299
176.07	812	176.59	2,573	177.11	4,333
176.08	846	176.60	2,607	177.12	4,367
176.09	880	176.61	2,640	177.13	4,401
176.10	914	176.62	2,674	177.14	4,435
176.11	948	176.63	2,708	177.15	4,468
176.12	982	176.64	2,742	177.16	4,502
176.13	1,016	176.65	2,776	177.17	4,536
176.14	1,049	176.66	2,810	177.18	4,570
176.15	1,083	176.67	2,844	177.19	4,604
176.16	1,117	176.68	2,877	177.20	4,638
176.17	1,151	176.69	2,911	177.21	4,672
176.18	1,185	176.70	2,945	177.22	4,705
176.19	1,219	176.71	2,979	177.23	4,739
176.20	1,253	176.72	3,013	177.24	4,773
176.21	1,286	176.73	3,047	177.25	4,807
176.22	1,320	176.74	3,081	177.26	4,841
176.23	1,354	176.75	3,114	177.27	4,875
176.24	1,388	176.76	3,148	177.28	4,909
176.25	1,422	176.77	3,182	177.29	4,942
176.26	1,456	176.78	3,216	177.30	4,976
176.27	1,489	176.79	3,250	177.31	5,010
176.28	1,523	176.80	3,284	177.32	5,044
176.29	1,557	176.81	3,317	177.33	5,078
176.30	1,591	176.82	3,351	177.34	5,112
176.31	1,625	176.83	3,385	177.35	5,146
176.32	1,659	176.84	3,419	177.36	5,179
176.33	1,693	176.85	3,453	177.37	5,213
176.34	1,726	176.86	3,487	177.38	5,247

OUTLET PROTECTION DESIGN FOR SINGLE-PIPE DISCHARGE FROM INFILTRATION BASIN NODE "IB-1"

The outlet control structure of the Infiltration Basin Node "IB-1" is designed with an 24-inch pipe discharging to the existing wetlands along the eastern property boundary at 13.28 cfs for the 25-Year Design Storm Event. The following method was used to determine the required length, width, and median stone size for the riprap lined apron at the end of the pipe.

Since the pipe does not discharge to a paved surface, a Minimum Tailwater Condition may be assumed. Plate 3.18-3 was reviewed to determine an apron length (L_a) and a median stone size (d_{50}). Using the pipe diameter of 24" and a discharge rate of approximately 13.28 cfs:

Minimum Apron Length (L_a)	**= 14 feet.**
Median Stone Size (d_{50})	**= 6 inches**
Upstream apron width	**= 3 x pipe diameter**
	= 3 x 2.0 feet = 6.0 feet
Downstream apron width	**= apron length + pipe diameter**
	= 14 feet + 2.0 feet = 16.0 feet

Refer to **Figure 1 – Plate 3.18-3 for Infiltration Basin Discharge** for graphical determination of median stone size and apron length.

OUTLET PROTECTION DESIGN FOR SINGLE-PIPE DISCHARGE FROM SUBSURFACE DETENTION SYSTEM NODE "B-3"

The outlet control structure of the Subsurface Detention System Node "B-3" is designed with an 30-inch pipe discharging to the existing wetlands along the eastern property boundary at 16.96 cfs. for the 25-Year Design Storm Event. The following method was used to determine the required length, width, and median stone size for the riprap lined apron at the end of the pipe.

Since the pipes do not discharge to a paved surface, a Minimum Tailwater Condition may be assumed. Plate 3.18-3, attached, was reviewed to determine an apron length (L_a) and a median stone size (d_{50}). Using the pipe diameter of 30" and a discharge rate of approximately 16.96 cfs:

Minimum Apron Length (L_a)	**= 16 feet**
Median Stone Size (d_{50})	**= 7 inches**
Upstream apron width	**= 3 x pipe diameter**
	= 3 x 2.5 feet = 7.50 feet
Downstream apron width	**= apron length + pipe diameter**
	= 16 feet + 2.5 feet = 18.5 feet

Refer to **Figure 2 – Plate 3.18-3 for Underground Detention System Discharge** for graphical determination of median stone size and apron length.

OUTLET PROTECTION DESIGN FOR SINGLE-PIPE DISCHARGE FROM SAND FILTER NODE "B-2"

The outlet control structure of the Sand Filter Node "B-2" is designed with an 12-inch pipe discharging to the existing wetlands along the eastern property boundary at 1.91 cfs for the 25-Year Design Storm Event. The following method was used to determine the required length, width, and median stone size for the riprap lined apron at the end of the pipe.

Since the pipe does not discharge to a paved surface, a Minimum Tailwater Condition may be assumed. Plate 3.18-3 was reviewed to determine an apron length (L_a) and a median stone size (d_{50}). Using the pipe diameter of 12" and a discharge rate of approximately 1.91 cfs:

Minimum Apron Length (L_a)	**= 6 feet.**
Median Stone Size (d_{50})	**= 6 inches**
Upstream apron width	**= 3 x pipe diameter**
	= 3 x 1.00 feet = 3.0 feet
Downstream apron width	**= apron length + pipe diameter**
	= 6 feet + 1.00 feet = 7.0 feet

Refer to **Figure 1 – Plate 3.18-3 for Sand Filter Discharge** for graphical determination of median stone size and apron length.

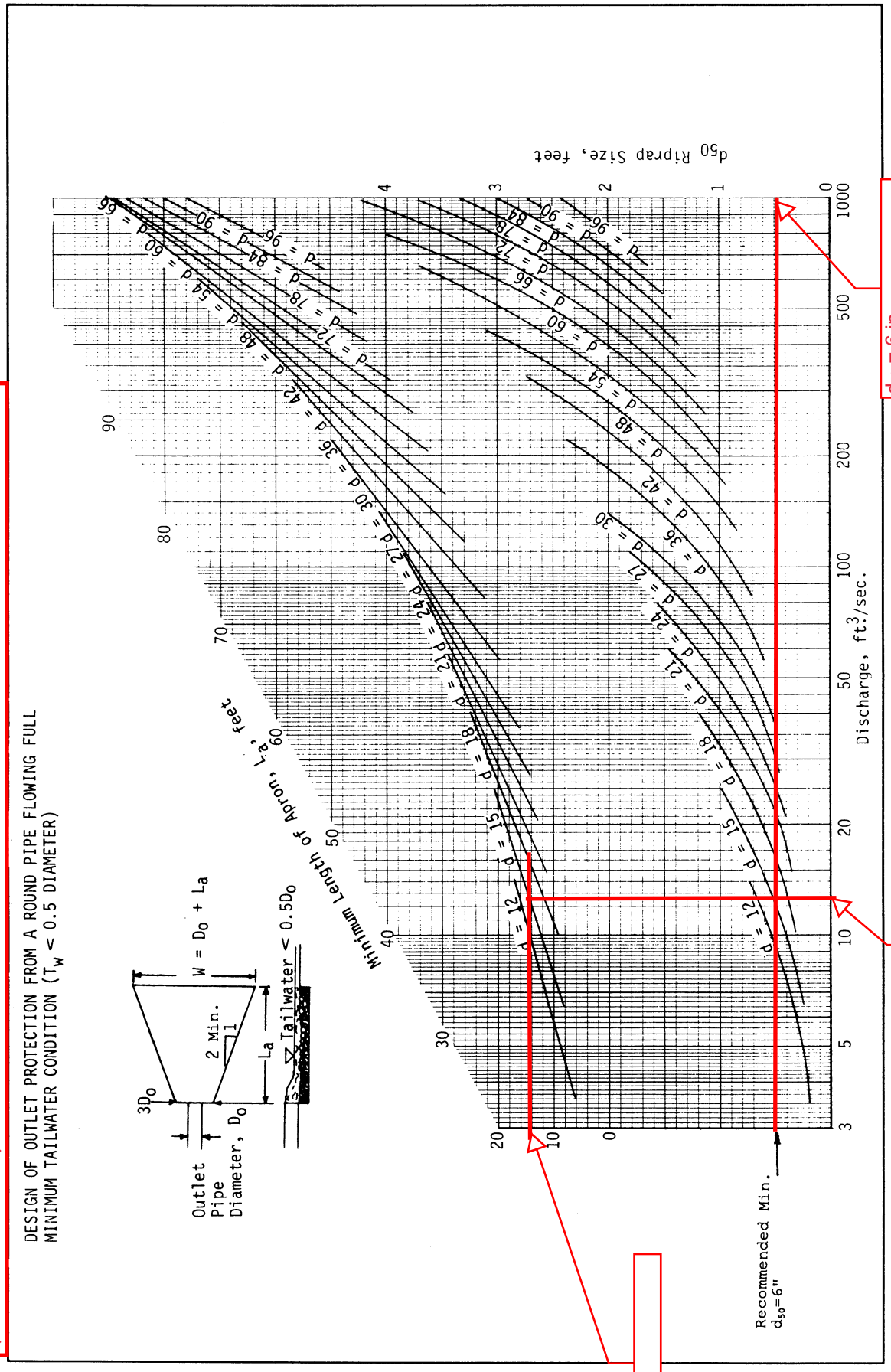


Figure [1] - Plate 3.18-3 for [Infiltration Basin Node "IB-1"] 13.28 cfs (25-Year Storm)

Source: USDA-SCS

Plate 3.18-3

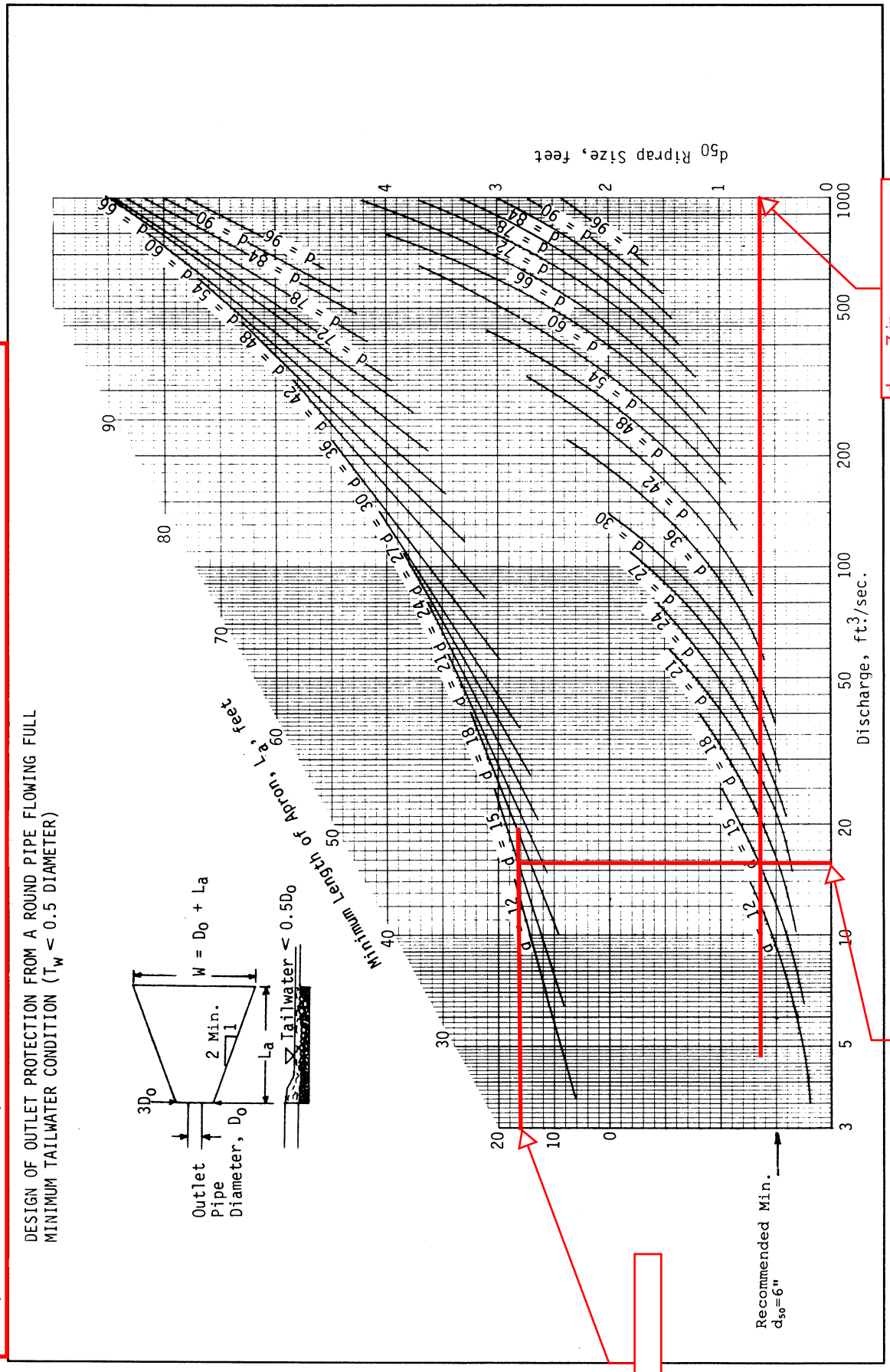


Figure [2] - Plate 3.18-3 for [Subsurface Detention System Node "B-13] 16.96 cfs (25-Year Storm)

Source: USDA-SCS

Plate 3.18-3

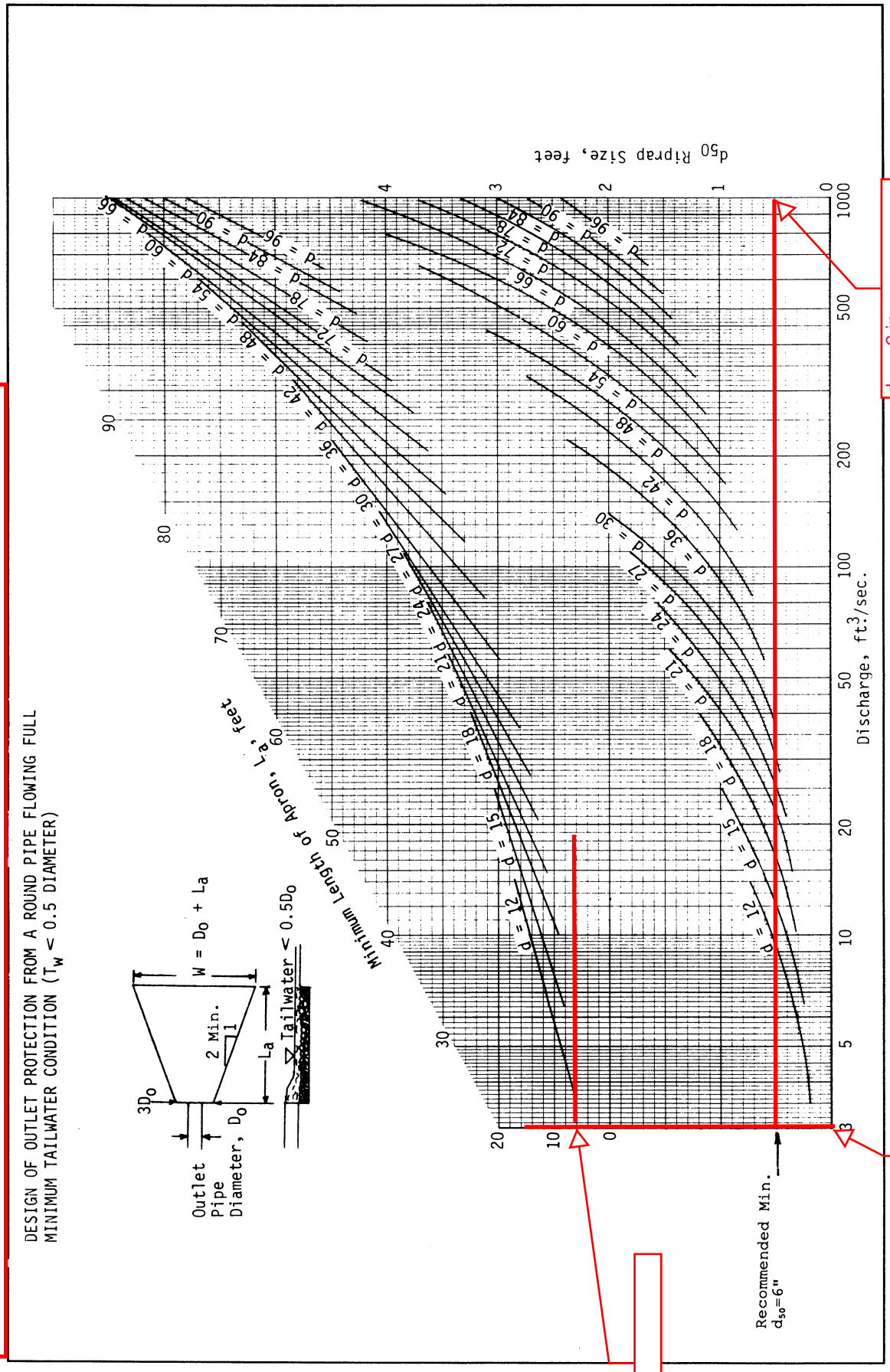


Figure [3] - Plate 3.18-3 for [Sand Filter Basin Node "B-2"] 1.91 cfs. (25-Year Storm)

Source: USDA-SCS

Plate 3.18-3

SUBCATCHMENT SUMMARY

SUBCAT NAME	GROUND COVER	AREA (SF)
CB1	WOODS	0
	OPEN	7306.3
	IMP	19913.6
	TOTAL	27219.9
CB2	WOODS	0
	OPEN	2977.2
	IMP	13446.3
	TOTAL	16423.5
CB3	WOODS	0
	OPEN	2938.7
	IMP	11438.4
	TOTAL	14377.1
CB4	WOODS	0
	OPEN	0
	IMP	3009.4
	TOTAL	3009.4
CB5	WOODS	0
	OPEN	0
	IMP	14122.92
	TOTAL	14122.92
ROOF-1	IMP	46545.6
	TOTAL	46545.6
ROOF-2	IMP	46545.6
	TOTAL	46545.6
ROOF-3	IMP	6993.2
	TOTAL	6993.2

HIGHPOINT ENGINEERING, INC.
DEDHAM EXECUTIVE CENTER
980 WASHINGTON STREET, SUITE 216
DEDHAM, MASSACHUSETTS 02026

Location: 43 Taunton Street Plainville, MA
Development: Proposed Industrial Building
Project No.: 21018
Storm Frequency: 25 Year Storm
Run: **2 Runs**

Date: 14-Mar-22
Revised:
Computed By: DTB
Checked By: JA

From	To	Drainage Area (s.f.)	C	Total C x A (acres)	Tc (min)	I(25) (in/hr)	Q = (CIA) (cfs)	Flow from others (cfs)	Total Q (cfs)	Min. Slope (ft/ft)	Pipe Material	Manning's n	Dia (in)	Q (full) (cfs)	V (full) (fps)	Q/Q(full) < 1?	INV. IN (ft)	INV. OUT (ft)	Length (ft)	Hydraulic Pipe Rad. (ft)	Hydraulic Radius (ft)	Area (ft2)	Perimeter (ft)
RUN #1																							
Subcat #1	CB #1	0	0.20																				
		7306	0.30																				
		19914	0.90																				
				0.46	5	6.00	2.77	0.00	2.77														
CB #1	DMH #1	0	0.20																				
		0	0.30																				
		0	0.90																				
				0.00	5	6.00	0.00	2.77	2.77	0.007	DIP	0.011	12	3.40	4.33	0.81	180.1	180.75	100	0.5	0.25	0.785	3.142
Subcat #2	CB #2	0	0.20																				
		2977	0.30																				
		13446	0.90																				
				0.30	5	6.00	1.79	0.00	1.79														
CB #2	DMH #1	0	0.20																				
		0	0.30																				
		0	0.90																				
				0.00	5	6.00	0.00	1.79	1.79	0.007	DIP	0.011	12	3.57	4.54	0.50	181.1	181.15	7	0.5	0.25	0.785	3.142
Subcat #3	CB #3	0	0.20																				
		2939	0.30																				
		11438	0.90																				
				0.26	5	6.00	1.54	0.00	1.54														
CB #3	DMH #2	0	0.20																				
		0	0.30																				
		0	0.90																				
				0.00	5	6.00	0.00	1.54	1.54	0.011	HDPE	0.012	12	4.14	5.27	0.37	179.22	179.3	7	0.5	0.25	0.785	3.142
Subcat #4	CB #4	0	0.20																				
		0	0.30																				
		3009	0.90																				
				0.06	5	6.00	0.37	0.00	0.37														
CB #4	DMH #3	0	0.20																				
		0	0.30																				
		0	0.90																				
				0.00	5	6.00	0.00	0.37	0.37	0.010	HDPE	0.012	12	3.87	4.93	0.10	178.54	178.62	8	0.5	0.25	0.785	3.142
DMH #1	DMH #2	0	0.20																				
		0	0.30																				

From	To	Drainage Area (s.f.)	C	Total C x A (acres)	Tc (min)	I(25) (in/hr)	Q = (CIA) (cfs)	Flow from others (cfs)	Total Q (cfs)	Min. Slope (ft/ft)	Pipe Material	Manning's n	Dia (in)	Q (full) (cfs)	V (full) (fps)	Q/Q(full) < 1?	INV. IN (ft)	INV. OUT (ft)	Length (ft)	Pipe Rad. (ft)	Hydraulic Radius (ft)	Area (ft2)	Perimeter (ft)
		0	0.90																				
				0.00	5	6.00	0.00	4.56	4.56	0.010	HDPE	0.012	15	6.90	5.62	0.66	179.22	180.1	91	0.625	0.3125	1.227	3.927
DMH #2	DMH #3	0	0.20																				
		0	0.30																				
		0	0.90																				
				0.00	5	6.00	0.00	6.10	6.10	0.010	HDPE	0.012	15	6.92	5.64	0.88	178.54	179.22	70	0.625	0.3125	1.227	3.927
DMH #3	DMH #4	0	0.20																				
		0	0.30																				
		0	0.90																				
				0.00	5	6.00	0.00	6.47	6.47	0.010	HDPE	0.012	15	7.02	5.72	0.92	177.45	178.54	109	0.625	0.3125	1.227	3.927
DMH #4	WQU-1	0	0.20																				
		0	0.30																				
		0	0.90																				
				0.00	5	6.00	0.00	6.47	6.47	0.010	HDPE	0.012	15	7.02	5.72	0.92	176.62	177.45	83	0.625	0.3125	1.227	3.927
WQU-1	UGS-1	0	0.20																				
		0	0.30																				
		0	0.90																				
				0.00	5	6.00	0.00	6.47	6.47	0.010	HDPE	0.012	15	7.02	5.72	0.92	176.36	176.45	9	0.625	0.3125	1.227	3.927
RUN #2																							
Subcat #5	CB #5	0	0.20																				
		0	0.30																				
		14123	0.90																				
				0.29	5	6.00	1.75	0.00	1.75														
CB #5	WQU-2	0	0.20																				
		0	0.30																				
		0	0.90																				
				0.00	5	6.00	0.00	1.75	1.75	0.010	HDPE	0.012	12	3.87	4.93	0.45	176.51	177.33	82	0.5	0.25	0.785	3.142
WQU-2	UGS-1	0	0.20																				
		0	0.30																				
		0	0.90																				
				0.00	5	6.00	0.00	1.75	1.75	0.005	HDPE	0.012	12	2.83	3.60	0.62	176.43	176.51	15	0.5	0.25	0.785	3.142

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.
Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

use consistent units (e.g. feet & days **or** inches & hours)

Input Values		
0.5300	***R***	**Recharge (infiltration) rate (feet/day)**
0.150	**Sy**	**Specific yield, Sy (dimensionless, between 0 and 1)**
5.36	**K**	**Horizontal hydraulic conductivity, Kh (feet/day)***
25.000	**x**	**1/2 length of basin (x direction, in feet)**
80.000	**y**	**1/2 width of basin (y direction, in feet)**
1.000	**t**	**duration of infiltration period (days)**
10.000	**hi(0)**	**initial thickness of saturated zone (feet)**

Conversion Table

inch/hour	feet/day
0.67	1.33
2.00	4.00

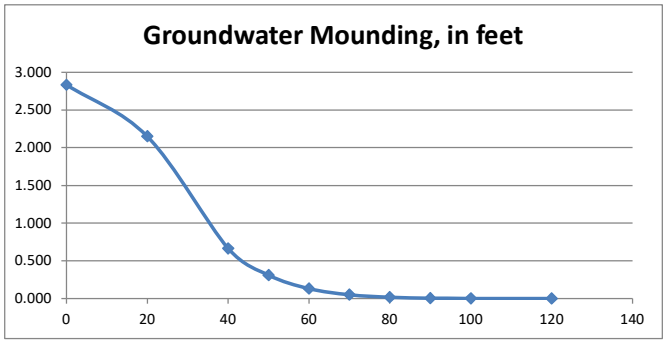
hours	days
36	1.50

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

12.833	**h(max)**	**maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
2.833	**Δh(max)**	**maximum groundwater mounding (beneath center of basin at end of infiltration period)**

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
2.833	**0**
2.151	**20**
0.666	**40**
0.311	**50**
0.132	**60**
0.051	**70**
0.018	**80**
0.006	**90**
0.003	**100**
0.001	**120**

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

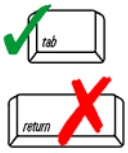
APPENDIX C – SUPPORTING INFORMATION

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

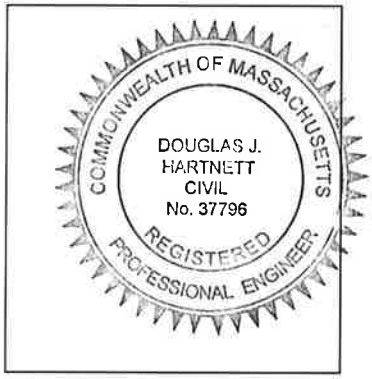
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



Signature and Date 03.24.2022

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☐ New development

☐ Redevelopment

☑ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- [x] No disturbance to any Wetland Resource Areas
- [x] Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- [ ] Reduced Impervious Area (Redevelopment Only)
- [x] Minimizing disturbance to existing trees and shrubs
- [ ] LID Site Design Credit Requested:
  - [ ] Credit 1
  - [ ] Credit 2
  - [ ] Credit 3
- [ ] Use of "country drainage" versus curb and gutter conveyance and pipe
- [ ] Bioretention Cells (includes Rain Gardens)
- [ ] Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- [ ] Treebox Filter
- [ ] Water Quality Swale
- [ ] Grass Channel
- [ ] Green Roof
- [x] Other (describe): sand filters

Standard 1: No New Untreated Discharges

- [x] No new untreated discharges
- [x] Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- [x] Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☑ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☑ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☑ Soil Analysis provided.

☑ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☑ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☑ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☑ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☑ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☑ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☑ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☑ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☑ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☑ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☑ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☑ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☑ The BMP is sized (and calculations provided) based on:

- ☑ The ½" or 1" Water Quality Volume or
- ☑ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☑ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☑ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☑ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☑ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☑ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☑ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☑ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☑ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☑ Name of the stormwater management system owners;
- ☑ Party responsible for operation and maintenance;
- ☑ Schedule for implementation of routine and non-routine maintenance tasks;
- ☑ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☐ Estimated operation and maintenance budget; and
- ☑ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☑ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☑ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	Massachusetts
Location	
Longitude	71.145 degrees West
Latitude	42.177 degrees North
Elevation	0 feet
Date/Time	Thu, 09 Dec 2021 09:30:55 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.55	0.72	0.90	1.13	**1yr**	0.77	1.07	1.31	1.67	2.12	2.71	2.99	**1yr**	2.40	2.88	3.34	3.98	4.70	**1yr**
2yr	0.36	0.55	0.69	0.91	1.14	1.43	**2yr**	0.98	1.32	1.66	2.08	2.60	3.27	3.64	**2yr**	2.89	3.50	4.00	4.76	5.40	**2yr**
5yr	0.43	0.67	0.85	1.13	1.45	1.84	**5yr**	1.25	1.66	2.14	2.67	3.33	4.13	4.64	**5yr**	3.66	4.47	5.10	6.03	6.74	**5yr**
10yr	0.50	0.78	0.99	1.34	1.74	2.22	**10yr**	1.50	1.97	2.58	3.23	4.00	4.94	5.60	**10yr**	4.37	5.38	6.14	7.22	7.98	**10yr**
25yr	0.59	0.94	1.20	1.66	2.22	2.86	**25yr**	1.91	2.47	3.33	4.16	5.13	6.26	7.16	**25yr**	5.54	6.88	7.83	9.17	9.99	**25yr**
50yr	0.69	1.11	1.42	1.98	2.67	3.46	**50yr**	2.30	2.94	4.03	5.02	6.17	7.50	8.63	**50yr**	6.63	8.30	9.43	10.99	11.83	**50yr**
100yr	0.80	1.29	1.66	2.36	3.21	4.19	**100yr**	2.77	3.49	4.89	6.08	7.44	8.99	10.41	**100yr**	7.95	10.01	11.35	13.17	14.03	**100yr**
200yr	0.93	1.51	1.96	2.80	3.87	5.07	**200yr**	3.34	4.15	5.92	7.36	8.97	10.78	12.57	**200yr**	9.54	12.08	13.67	15.79	16.64	**200yr**
500yr	1.13	1.87	2.43	3.54	4.96	6.53	**500yr**	4.28	5.21	7.64	9.47	11.50	13.74	16.13	**500yr**	12.16	15.51	17.50	20.09	20.86	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.61	0.75	0.90	**1yr**	0.65	0.88	1.01	1.39	1.85	2.48	2.73	**1yr**	2.19	2.63	3.10	3.61	4.27	**1yr**
2yr	0.34	0.53	0.65	0.89	1.09	1.29	**2yr**	0.94	1.27	1.48	1.97	2.55	3.20	3.54	**2yr**	2.83	3.41	3.87	4.63	5.26	**2yr**
5yr	0.39	0.60	0.75	1.02	1.30	1.56	**5yr**	1.13	1.52	1.77	2.32	2.97	3.87	4.32	**5yr**	3.42	4.16	4.74	5.66	6.31	**5yr**
10yr	0.44	0.67	0.83	1.16	1.50	1.78	**10yr**	1.30	1.74	2.01	2.62	3.34	4.46	5.02	**10yr**	3.95	4.83	5.47	6.51	7.24	**10yr**
25yr	0.50	0.76	0.95	1.36	1.79	2.10	**25yr**	1.54	2.05	2.39	3.09	3.88	5.43	6.13	**25yr**	4.80	5.89	6.61	7.93	8.70	**25yr**
50yr	0.55	0.84	1.05	1.51	2.03	2.38	**50yr**	1.75	2.33	2.72	3.49	4.36	6.30	7.13	**50yr**	5.57	6.85	7.62	9.20	10.00	**50yr**
100yr	0.62	0.93	1.16	1.68	2.31	2.71	**100yr**	1.99	2.65	3.09	3.94	4.89	7.32	8.27	**100yr**	6.48	7.95	8.78	10.70	11.50	**100yr**
200yr	0.68	1.02	1.29	1.87	2.61	3.09	**200yr**	2.25	3.02	3.51	4.46	5.48	8.53	9.62	**200yr**	7.55	9.25	10.10	12.43	13.25	**200yr**
500yr	0.77	1.15	1.48	2.15	3.05	3.65	**500yr**	2.64	3.57	4.15	5.24	6.37	10.48	11.72	**500yr**	9.27	11.27	12.14	15.21	15.99	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.32	0.49	0.60	0.81	1.00	1.20	**1yr**	0.86	1.17	1.36	1.82	2.36	2.93	3.24	**1yr**	2.59	3.12	3.61	4.29	5.07	**1yr**
2yr	0.38	0.58	0.72	0.97	1.19	1.40	**2yr**	1.03	1.37	1.61	2.12	2.74	3.37	3.76	**2yr**	2.98	3.62	4.16	4.92	5.56	**2yr**
5yr	0.49	0.75	0.93	1.27	1.62	1.85	**5yr**	1.40	1.81	2.12	2.75	3.51	4.40	4.99	**5yr**	3.89	4.80	5.49	6.44	7.22	**5yr**
10yr	0.60	0.92	1.14	1.59	2.05	2.30	**10yr**	1.77	2.25	2.62	3.35	4.24	5.39	6.21	**10yr**	4.77	5.97	6.81	8.01	8.80	**10yr**
25yr	0.79	1.20	1.50	2.14	2.81	3.06	**25yr**	2.42	3.00	3.48	4.35	5.45	7.07	8.31	**25yr**	6.25	7.99	9.04	10.58	11.44	**25yr**
50yr	0.97	1.48	1.85	2.65	3.57	3.81	**50yr**	3.08	3.72	4.32	5.29	6.58	8.68	10.36	**50yr**	7.68	9.96	11.24	13.08	13.97	**50yr**
100yr	1.21	1.83	2.30	3.32	4.55	4.75	**100yr**	3.93	4.64	5.35	6.43	7.96	10.66	12.92	**100yr**	9.44	12.42	14.00	16.15	17.02	**100yr**
200yr	1.50	2.26	2.87	4.15	5.79	5.91	**200yr**	5.00	5.78	6.65	7.83	9.61	13.10	16.13	**200yr**	11.59	15.51	17.44	19.94	20.75	**200yr**
500yr	2.03	3.02	3.89	5.65	8.04	7.87	**500yr**	6.93	7.69	8.85	10.18	12.36	17.21	21.66	**500yr**	15.23	20.82	23.36	26.34	26.98	**500yr**

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