STORMWATER MANAGEMENT ANALYSIS

Warehouse/Industrial Development| 100 & 200 Financial Park | Franklin, MA

Project Address:	100 & 200 Financial Park Franklin, MA 02038
Date Prepared:	March 11, 2023
Project Number:	22051
Prepared for:	Berkeley Partners 1 Washington Street | Suite 701 Boston, MA 02108
Prepared by:	**Highpoint Engineering Inc.** Dedham Executive Center 980 Washington Street, Suite 216 Dedham, MA 02026 www.highpointeng.com



TABLE OF CONTENTS

INTRODUCTION 2
METHODOLOGY 3
RAINFALL DATA 4
SOILS DATA 4
PRE-DEVELOPMENT CONDITIONS 5
POST-DEVELOPMENT CONDITIONS 5
STORMWATER MITIGATION 8
CONCLUSION 11

FIGURES
- USGS Map
- Soils Map
- Pre-Development Watershed Plan
- Post-Development Watershed Plan
- Sub-Catchment Area Plan

APPENDIX A **Hydrologic Calculations**
- Pre-Development HydroCAD Report
- Post-Development HydroCAD Report

APPENDIX B **Hydraulic Calculations**
- Rain Garden Sizing Calculation
- Groundwater Recharge Calculations
- Water Quality Volume Calculations
- Infiltration System Drawdown Analysis
- Pipe Flow Capacity Calculations
- TSS Removal Calculation
- Mounding Analysis

APPENDIX C **Supporting Information**
- Checklist for Stormwater Report
- Contech Water Quality Sizing
- National Engineering Field Handbook – Chapter 2: "Estimating Runoff and Peak Discharges"
- Downstream Receiving Waterbody Impairment Analysis
- "Preliminary Subsurface Assessment Report", prepared by McCardle Gannon Associates, Inc dated April 19,2023

APPENDIX D **Operation and Maintenance Plans**
- Construction-Phase Operation and Maintenance Plan
- Long-Term Operation and Maintenance Plan

INTRODUCTION

This analysis summarizes pre- and post-development stormwater impacts associated with the construction of a 220,000± GSF flex-warehouse and a 65,00± GSF flex warehouse (the Project) located at 100 & 200 Financial Park (the Subject Property) in Franklin, Massachusetts. The Subject Property is shown on the Town of Franklin Assessors' Map as Parcels #312-020-000-000 and #312-020-001-000 and identified as lots 5A and lots 5B of Financial Park.

The combined land area of the two lots making up the Subject Property is approximately 51.05 ± acres. The Subject Property is located within the Limited Industrial Zoning District (LI) and the Water Resource Overlay District. The Subject Property is bounded by Washington Street to the East, an existing warehouse located at 300 Financial Park to the South, Town of Franklin owned property to the West and open/pond to the North. The Subject Property is accessed via a single curb cut off Washington Street, acting as the main entrance to Financial Park.

The Subject Property currently supports a 180± KSF office building constructed circa 1980 by Digital Equipment Corp., which is now operated as a data center by Marsh McLennan Co. (MMC). Adjacent to that building is a 58,000± SF building operated today by Champagne Logistics; this building is to remain as part of the proposed Project. Surface parking to the Northwest and South serve both existing buildings as well as the adjacent building located at 300 Financial Park. The Subject Property contains a lined pond located to the North, just inside the ring road, providing stormwater detention and supplemental fire protection.

In its present condition, runoff from ground surfaces of the developed portion of the Subject Property flows in a predominantly Northwest direction and enters a series of catch basins located throughout the site, before discharging via two (2) existing - 36" reinforced-concrete pipes (RCP) to the onsite detention pond located to the North of the property. The detention pond provides a source of supplemental fire protection to the two existing buildings on site, while surplus stormwater exits the pond via an overflow structure and flows through a 12" reinforced-concrete pipe to the wetland located in the Northwest corner of the property. Runoff from the existing two roofs enters a roof drainage collection system and connects to the previously mentioned catch basin network before discharging via the two (2) – 36" pipes at the detention pond. Majority of the runoff produced by the existing open space made up of lawn/landscape ground covers surrounding the detention pond flow overland directly into the detention pond to the North.

Runoff from a portion of the site located just to the north of the MMC building flows overland until eventually reaching two separate drywells. Each of the drywells have two (2) grates spaced approximately twenty (20) feet apart. Both drywells are self-contained on site and do not provide any overflow outlets for stormwater runoff.

Work associated with the proposed Project includes:

- Installation of erosion control devices, demolition of existing 180± KSF office building, existing fire pump house, pavement, and utilities.
- Construction of 220,000± GSF flex-warehouse with associated two-story office building and a 65,000± GSF flex-warehouse with associated two-story office building.
- Construction of landscape and hardscape improvements, modifications to existing parking areas to accommodate new building footprints, heavy duty bituminous concrete within trucking limits, concrete walkways, new surface parking and loading areas, and overall utility upgrades.

- Construction of stormwater management improvements, including new sub-surface infiltration/detention systems, rain gardens, catch basins and water quality units with connections to existing on-site drainage prior to discharging to existing detention pond to mitigate peak runoff rates, mitigate impacts on water quality and promote groundwater recharge.
- Construction of all new utility infrastructure improvements, including gravity sewer, domestic and fire protection water services, gas service, underground electric, and telecommunication services.

For detailed information regarding existing site conditions and proposed development, refer to the plans entitled, "Warehouse/Industrial Development| 100/200 Financial Park | Franklin, Massachusetts," dated May 11, 2023 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, including:

- POA A (Pond – West): Existing detention pond.
- POA C (Wetland – West): Existing wetland resource area boundary to the West of the Site.
- POA D (Fire Pond): Existing detention/fire pond to the North of the Site.

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 Franklin Stormwater Management Plan dated December 23, 2022.

RAINFALL DATA

Peak stormwater discharges have been determined for total rainfall estimated for the 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 Appendix 1, Table 1.1, "Massachusetts rainfall data by town and county [inches]" of the Engineering Field Handbook – Chapter 2, March 2013. The rainfall depths for all storm events are outlined in Table 1.

Table 1. – Summary of Rainfall Data

Reference	Rainfall Recurrence Interval	24 Hour Rainfall Depth
"Massachusetts rainfall data by town and county [inches]" of the Engineering Field Handbook – Chapter 2, March 2013	2-Year Storm	3.22 inches
	10-Year Storm	4.86 inches
	25-Year Storm	6.15 inches
	100-Year Storm	8.80 inches

SOILS DATA

Based upon the USDA – NRCS Soil Conservation Service (SCS) Web Soil Survey for Norfolk County, 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)
245C: Hinckley Loamy Sand, 8-15% slopes	A
626B: Merrimac-Urban Land Complex, 0 to 8% slopes	A
253D: Hinckley Loamy Sand, 15 to 35% slopes	A
254B: Merrimac Fine Loamy Sand, 3 to 8% slopes	A
245B: Hinckley Loamy Sand, 3 to 8% slopes	A
653: Udorthents, Sandy	A
422B: Canton Fine Sandy Loam, 0 to 8% slopes	B
53: Freetown Muck, 0 to 1% slopes	B/D
71B: Ridgebury Fine Sandy Loam, 3 to 8% slopes	D
73A: Whitman fine Sandy Loam, 0 to 3% slopes	D

Refer to the Preliminary Subsurface Assessment Report prepared by McArdle Gannon Associates, Inc dated April 2023, included in Appendix C of this report, for further information regarding soil data and groundwater information.

PRE-DEVELOPMENT CONDITIONS

The portions of the Subject Property subject to this analysis comprise four (4) watershed areas as described below and analyzed at three (3) POAs described in the "Methodology" section in this report. Existing watershed areas include:

- EX-A – A 233,232 ft^2 area comprising of existing paved surface parking, associated existing access drives, and existing landscape area. Surface runoff flows overland and is collected in existing catch basins before flowing through water quality units. The stormwater flows thru a closed pipe drainage system prior to discharging into an existing stormwater pond to the West of the site.
- EX-C – A 82,149 ft^2 area consisting of existing roadway and adjacent landscape area. The stormwater runoff flows overland and is collected by two (2) existing catch basins. The stormwater flows through two closed pipes that discharge directly to the wetlands to the West of the site located outside of the ring road.
- EX-D – A 997,924 ft^2 area consisting of two existing building roof areas, associated surface parking lots, landscape areas, and access roadways. The roof runoff is collected via a closed pipe drainage system and discharges into the existing detention basin/Fire Pond to the North of the site. The paved surface runoff is collected via catch basins and routed to the detention basin/Fire Pond. A portion of the watershed consisting of lawn and landscape flows overland directly into the detention/fire pond.
- EX-E – A 104,917 ft^2 area made up of majority landscape area, an existing detached garage, and various walkways. The roof runoff is collected and discharged at the ground level. Surface runoff flows overland to two (2) drywells located on-site.

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

	EX-A	EX-C	EX-D	EX-E
Area	233,232 ft^2	82,149 ft^2	997,924 ft^2	104,917 ft^2
CN	59	60	73	48
T_c	7.2 min	8.7 min	9.3 min	5.0

POST-DEVELOPMENT CONDITIONS

The project proposes to construct two new flex-warehouse buildings with internal office space and associated site improvements, including the following:

- Installation of erosion control devices, demolition of existing 180± KSF office building, existing fire pump house, pavement, and utilities.
- Construction of 220,000± GSF flex-warehouse with associated two-story office building and a 65,000± GSF flex-warehouse with associated two-story office building.

- Construction of landscape and hardscape improvements including modifications to existing parking areas to accommodate new building footprints, heavy duty bituminous concrete within trucking limits, concrete walkways, pervious pavers, new surface parking and loading areas.
- Construction of stormwater management improvements, including new sub-surface infiltration/detention systems, rain gardens, catch basins and water quality units with connections to existing on-site drainage prior to discharging to existing detention/fire pond to mitigate peak runoff rates, mitigate impacts on water quality and promote groundwater recharge.
- Construction of utility infrastructure improvements, including site lighting improvements, new primary electrical and telecommunication, new fire protection and domestic water services, new gravity sewer connection to existing force main.

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 926,081 ft^2 (21.2± acres) as opposed to 707,894 ft^2 (16.3± acres) under existing conditions, thus resulting in a 218,187 ft^2 (5.0± acres) increase in impervious area.

The portions of the Subject Property affected by the Project are divided into nine (9) proposed watershed areas. The three (3) POAs remain unchanged.

- PR-A – A 161,213 ft^2 area comprising of existing paved surface parking, associated existing access drives, existing landscape area and a portion of proposed paved access drive. Surface runoff flows overland and is collected in existing catch basins before flowing through water quality units. The stormwater flows through a closed pipe drainage network prior to discharging into an existing stormwater pond to the West of the site.
- PR-C – A 55,783 ft^2 area consisting of existing roadway and adjacent landscape area. The stormwater runoff flows overland and is collected by two (2) existing catch basins. The stormwater flows through two closed pipes that discharge directly to the wetlands to the West of the site located outside of the ring road.
- PR-D1 – A 214,605 ft^2 area consisting of existing surface parking, existing access drives, the entirety of existing Building #3 roof area, a new loading area to the rear of existing Building #3, new concrete walkways, and both existing and new landscaped areas. The roof runoff from the southern half of new Building #2 will be collected via a roof drainage collection system to the south of the building and conveyed via closed pipe system to sub-surface infiltration system (SWM-7). The existing surface parking area, existing access driveways, and existing landscape area's stormwater will flow overland into existing catch basins and flow through existing water quality units before flowing into SWM-7 via reinforced-concrete pipes. The existing roof collection system to capture roof runoff from Building #3 will be maintained and re-used, the end of the collection system will be re-routed into SWM-7. The stormwater runoff produced by the new loading area and adjacent landscape area to the South of existing Building #3 will flow overland and into new catch basins, conveyed to a new water quality unit and the treated stormwater will be routed to SWM-7. SWM-7 will have an overflow outlet made up of two (2)- 18" HDPE pipes directed to SWM-1, SWM-1 will have two (2) – 18" HDPE pipes directed to SWM-4, SWM-4 will have three (3) – 24 HDPE pipes as an overflow connected to SWM-5, and SWM-5 will then have an outlet control manifold made of nine (9) – 24" HDPE pipes directed to a single 24" reinforced-concrete pipe. The stormwater will then be conveyed through a series of pipes before discharging to the exiting detention pond via an existing 36" pipe.

- PR-D2 – A 416,467 ft^2 area consisting of the Southern half of Building #1, the Northern half of Building #2, surface parking and access drive to the East, loading area between Buildings #1 and #2, concrete and pervious paved entrance walkways and associated landscaped areas. The runoff from both roof areas will be collected by separate roof collection systems and conveyed via reinforced concrete pipe to SWM-2. Runoff produced by the new surface parking, loading, concrete/pervious paver walkway and adjacent landscape areas will run overland and into new catch basins and conveyed by reinforced concrete pipes to a water quality unit prior to discharging into SWM-2. SWM-2 has an overflow outlet comprising of five (5) – 24" HDPE pipes discharging into SWM-3. SWM-3 is then routed to SWM-4 via four (4) – 24" HDPE pipes and finally to SWM-5, before discharging into the existing detention pond as previously mentioned.
- PR-D3 – A 108,531 ft^2 area consisting of the northern half of Building #1. The stormwater from this roof area is collected via a roof collection drainage system located on the northern side of the building and conveyed via reinforced concrete pipe to SWM-6. SWM-6 has an overflow outlet header consisting of three (3) – 12" pipes connected to a single 12" pipe. The 12" pipe is then routed to an existing 36" pipe that discharges to the existing detention pond.
- PR-D4 – A 37,021 ft^2 area consisting of existing roadway and access drive, a new surface parking area to the West of Building #3 with connecting concrete walkway and adjacent landscaped area. The stormwater runoff from this area flows overland and captured by new catch basins. The stormwater is directed to a water quality unit before flowing into SWM-4. Excess stormwater from SWM-4 is directed into SWM-5 and eventually flows through an overflow outlet to a closed pipe drainage network before being discharged to the existing detention pond via an existing 36" pipe.
- PR-D5 – A 50,834 ft^2 area consisting of existing surface parking modified to accommodate trailer storage, concrete walkway and associated landscaped area. The stormwater runoff from this area flows overland through a 10-foot-wide filter strip and into raingarden #1 via breaks in the precast concrete curb. Raingarden #1 is designed to provide stormwater surface storage and sub-surface storage via various soil medias and a 12" perforated underdrain. Raingarden #1 has two overflow grates where the excess stormwater is transported into SWM-4 before overflowing into SWM-5 and eventually discharging into the existing detention pond, as stated previously.
- PR-D6 – A 40,781 ft^2 area consisting of existing surface parking modified to accommodate a new access drive, concrete walkway and associated landscaped area. The stormwater runoff from this area flows overland through a 10-foot-wide filter strip and into raingarden #2 via breaks in the precast concrete curb. Raingarden #1 is designed to provide stormwater surface storage and sub-surface storage via various soil medias and 12" perforated underdrain. Raingarden #2 has two overflow grates where the excess stormwater is transported into SWM-5; the excess stormwater from SWM-5 is conveyed to the existing detention pond via reinforced concrete pipes.
- PR-D7 – A 332,987 area consisting of a large portion of the existing ring road, existing parking area to the Northwest modified to include a new access drive, new concrete walkways, building entrance steps and ramp, and associated landscaped areas surround the parking lot, ring road and detention pond. The stormwater runoff produced by portions of the existing ring road flow overland and are collected via an existing catch basin located to the North of the detention pond and is discharged directly into the pond. The runoff produced by the remaining pavement, concrete walkway, steps, and ramp flows overland and is collected via new catch basins and conveyed to a water quality unit via varying sized reinforced concrete pipes. From the water quality unit, the treated water is directed to the existing 36" pipe and discharged into the detention pond.

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

	Pr-A	PR-C	PR-D1	PR-D2	PR-D3	PR-D4	PR-D5	PR-D6	PR-D7
Area (ft^2)	161,213	55,783	214,605	416,467	108,531	37,021	50,834	40,781	332,987
CN	69	64	89	87	98	72	79	76	58
T_c	6.5 min	8.7 min	7.1 min	5.3 min	5.0 min	5.0 min	5.0 min	5.0 min	6.5 min

STORMWATER MITIGATION

The stormwater management improvements are 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 existing detention ponds and existing wetlands both to the north and west of the property. The R-Tank sub-surface infiltration/detention systems are designed to drain completely in less than 72 hours, are located outside lines of influence from building foundations, and are geometrically coordinated with other utility infrastructure.

The Project results in a 218,187 ft^2 (5.0± acres) net increase in impervious site area. The stormwater management system and BMPs proposed for the Project are designed to mitigate water quality and quantity impacts prior to discharge to the existing detention ponds and wetlands. The Project results in net decreases in peak runoff rates generated by all storm events up to and including the 100-year storm events for POA D.

POA C mitigates the peak rate for the 10-year, 25-year, and 100-year, however the peak rate is increased by 0.1 cfs for the 2-year storm event. This is caused by an overall watershed reduction of 26,366 ft^2 from EX-C to PR-C; of that 26,366 ft^2, 21,242 ft^2 is considered open space – good condition and the remaining 5,124 ft^2 being impervious. The large open space reduction from pre to post caused the remaining impervious cover to be accounted for more heavily in the weighted CN value calculation and therefore causing an increase in the weighted CN value pre vs. post from 60 to 64, respectfully.

POA A mitigates the 100-year storm event, yet increase for the 2-year, 10-year and 25-year by 1.76 cfs, 1.68 cfs and 1.04 cfs, for each respective storm event. The total analyzed area was reduced by 72,019 ft^2 from pre to post, however of that total area reduction, there was a 74,819 ft^2 open space – good condition deduction and an impervious area increase of 2,800 ft^2. The impervious area increase consists of the entrance drive leading from the existing access roadway to the loading area located to the South of Building 3. The difference in areas resulted in a CN value increase from 59 in pre-development conditions to 69 in post-development conditions, thus, causing the post development peak rate increases from pre to post.

In 1994 Sasaki designed the stormwater mitigation for the now-existing building and the surface parking lot. Sasaki designed POA A – Pond West to mitigate a proposed 1,317 car surface parking lot expansion, however after construction, what exists today, only approximately 42% of the lot was constructed. The 1994 Sasaki hydrology report indicates that the pond was designed to withstand a maximum inflow of 74 cfs, assuming the entire parking lot was constructed.

In 2016, HEI designed the drainage mitigation strategy for 300 Financial Park (a warehouse located directly to the South of the Project), routing excess stormwater to POA A – Pond North (POA A – Pond West, in this report). POA A – Pond North (known as Pond West in this report) in post development conditions was receiving an inflow of 51.60 cfs for the 100-year storm event. This is 22.4 cfs under the originally designed inflow value of 74.0 cfs.

For the current Project, POA A-Pond West is receiving 21.48 cfs for the 100-year storm event. This remains below the allowable value of 22.4 cfs, which was determined during the design of 300 Financial Park. Therefore, the increase in peak rates from pre to post is non-detrimental to the POA Pond.

The proposed closed drainage collection system is designed to adequately collect and convey the 25-year storm event as required and stated within the Town of Franklin Stormwater Management Regulations.

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 and hooded catch basins, four (4) and five (5) foot diameter drain manholes, and reinforced concrete pipe collection system.
- Roof drainage collection system to convey clean runoff from the proposed roof to the new underground detention/infiltration systems.
- Contech proprietary water quality units to treat the required 1” water quality volume prior to downstream discharge to the proposed underground infiltration systems and existing detention ponds and wetlands.
- Seven (7) underground infiltration systems comprising of ACF R-Tank SD chambers of varying heights embedded in crushed stone. These systems provide stormwater detention, infiltration, and controlled discharge to the existing detention/Fire Pond to the North and eventually the existing North wetlands.
- Two (2) rain gardens providing both surface and sub-surface water quality storage volume and infiltration through varying soil media. An overflow grate is provided and connected to the sub-surface R-tank systems.
- Preservation of numerous existing catch basins located on the south side of Building #2, within the limits of the existing surface parking lots and access drives.
- Preservation of the existing detention/Fire Pond to the North of the site, and the detention pond to the west.
- Addition of new landscape island and removal of existing paved parking areas within the limits of the existing surface parking lot to the Northeast of the site.
- Landscape improvements to the existing lawn in poor condition surround the detention/fire pond to the North of the site.

The increase in impervious area is mitigated via the implementation of the rain gardens and underground infiltration system. Table 5 summarizes the pre- and post-development peak rates of runoff at the POAs for the Project after implementation of the selected stormwater BMPs for the 2-year, 10-year, 25-year and 100-year rainfall events.

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

Design Storm	POA A: EXISTING POND - WEST		
	Pre-Dev	**Post-Dev**	**Change**
2 Year	1.20 cfs	2.96 cfs	+1.76 cfs(1)
10 Year	6.03 cfs	7.71 cfs	+1.68 cfs(1)
25 Year	10.95 cfs	11.99 cfs	+1.04 cfs(1)
100 Year	22.75 cfs	21.48 cfs	-1.27 cfs

Design Storm	POA C: EXISTING WETLAND – WEST		
	Pre-Dev	**Post-Dev**	**Change**
2 Year	0.48 cfs	0.58 cfs	+0.10 cfs
10 Year	2.16 cfs	1.90 cfs	-0.26 cfs
25 Year	3.86 cfs	3.16 cfs	-0.70 cfs
100 Year	7.87 cfs	6.05 cfs	-1.82 cfs

Design Storm	POA D: EXISTING FIRE POND		
	Pre-Dev	**Post-Dev**	**Change**
2 Year	22.31 cfs	8.03 cfs	-14.28 cfs
10 Year	51.57 cfs	19.84 cfs	-31.73 cfs
25 Year	77.02 cfs	55.32 cfs	-21.70 cfs
100 Year	132.13 cfs	119.73 cfs	-12.40 cfs

(1)- Refer to the Stormwater Mitigation portion of this document on page 8.

Refer to Appendix C for TSS removal rates for each treatment train. The proposed TSS removal rates meet the Massachusetts Stormwater Policy Guidelines and the Town of Franklin Stormwater Management – New Development minimum removal rate of 90% prior to surface discharge.

Construction-Phase and Long-Term Stormwater Operation and Maintenance Plans (O&M Plans) have been included in Appendix D of this report 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

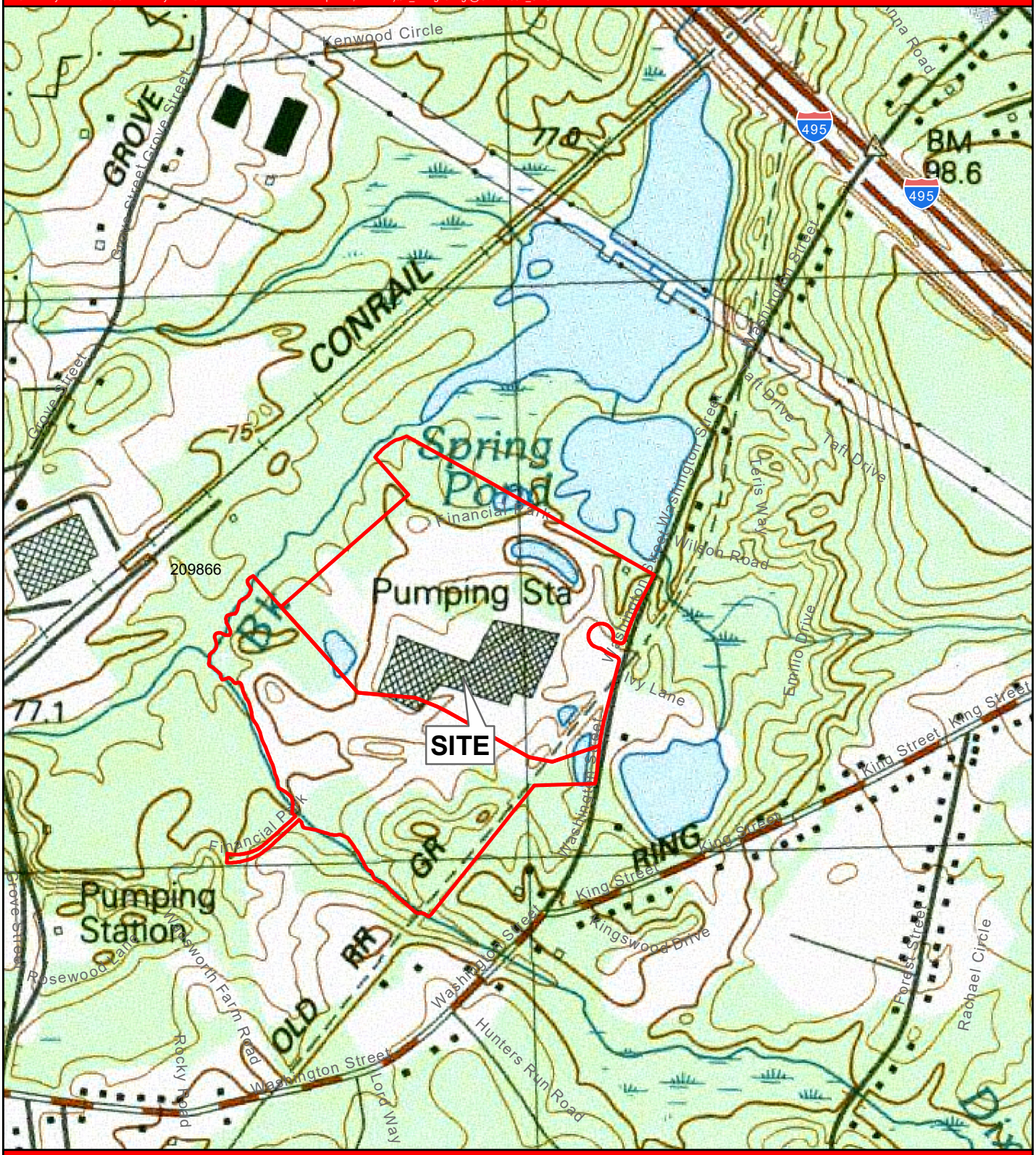
The Project will preserve the existing runoff patterns and off-site discharge locations of the Subject Property and will improve discharge conditions through implementation of stormwater infiltration BMPs and reducing the volume of uncontrolled and untreated off-site runoff. The Project will also implement water quality treatment measures while absence of existing BMPs 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 rate values for all three (3) POA's. POA D's peak discharge rate is mitigated for the 2, 10, 25, and 100-year, 24-hour storm event. POA C's peak discharge rate is mitigated for all storm events excluding the 2-year, 24-hour storm event. POA A's peak discharge rate is mitigated for only the 100-year, 24-hour storm event.
STANDARD **3**	Recharge	The required recharge volume for A-soils is provided within the seven-ACF R-Tank SD sub-surface infiltration/detention systems and the two-rain gardens.
STANDARD **4**	Water Quality	Contech water quality units and rain gardens have been sized to treat the full water quality and are designed to achieve a minimum 90% 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 a Critical Area. 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 new development. Stormwater management facilities and BMP designs are completed in full compliance with Massachusetts Stormwater Management Standards in accordance with DEP guidance.
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 in Appendix D.
STANDARD **10**	Prohibition of Illicit Discharges	A DRAFT No Illicit Discharge Compliance Statement is included in Appendix C.

FIGURES

P:\Berkeley Partners\22051 Berkeley - Lot 5 Warehouse-Industrial Development, Franklin\)04_Design\Dwg\@GIS\22051_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.

HIGHPOINT ENGINEERING, INC.
LAND PLANNING
PERMIT EXPEDITING
CIVIL ENGINEERING
CONSULTING

DEDHAM EXECUTIVE CENTER
980 WASHINGTON ST., SUITE 216
DEDHAM, MA 02026

www.HighpointEng.com

USGS MAP

100 & 200 Financial Park
Franklin, MA 02038

2/7/2023

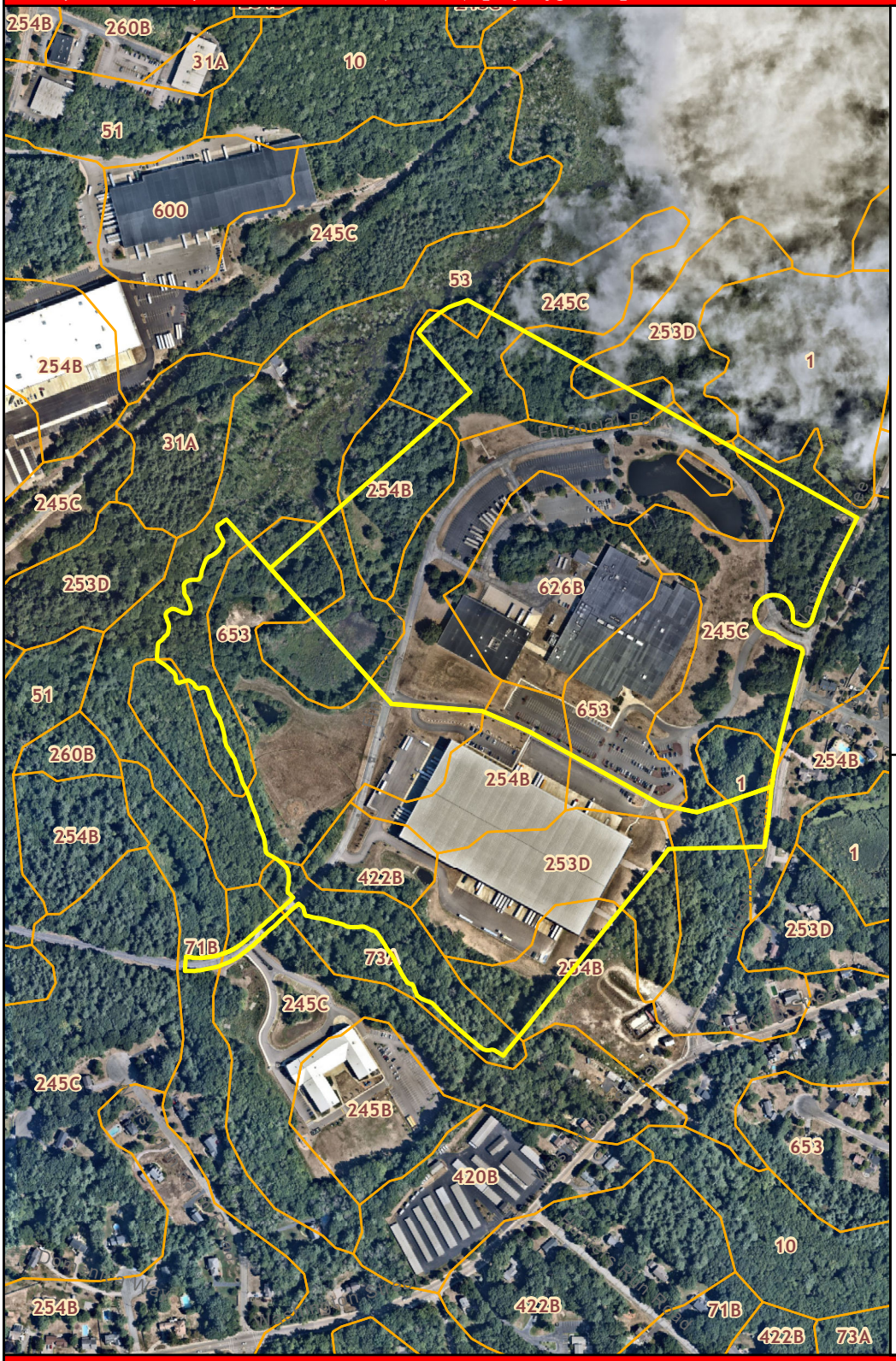
N
W E
S

0 410 820 1,640 Feet

1 in = 800 ft

Copyright (c) by Highpoint Engineering, Inc. All rights reserved.

P:\Berkeley Partners\22051 Berkeley - Lot 5 Warehouse-Industrial Development, Franklin\)04_Design\Dwg\@GIS\22051_SOILS.mxd



LEGEND

- Town Boundary
- Soils

MassDOT Roads

Road Type

- Multi-lane Hwy, not limited access
- Other Numbered Highway
- Major Road, Collector
- Minor Road, Arterial
- Subject Propety

SOIL SUMMARY:

653-Udorthents, Sandy (HSG: A)
71B-Ridgebury Fine Sandy Loam,
3-8% Slopes (HSG: D)
73A-Whitman Fine Sandy Loam
0-3% Slopes (HSG: D)
422B-Canton Fine Sandy Loam
0-8% Slopes (HSG:B)
245B-Hinckley Loamy Sand
3-8% Slopes (HSG:A)
254B-Merrimac Fine Loamy Sand
3-8% Slopes (HSG:A)
253D-Hinckley Loamy Sand
15-35% Slopes (HSG:A)
626B-Merrimac-Urban Land Complex
0-8% Slopes (HSG: A)
53-Freetown Muck
0-1% Slopes (HSG: B/D)
245C-Hinckley Loamy Sand
8-15% Slopes (HSG:A)
1- Water

Source: United States Department of Agriculture Natural Resources Conservation Service

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

HIGHPOINT ENGINEERING, INC.
LAND PLANNING
PERMIT EXPEDITING
CIVIL ENGINEERING
CONSULTING

DEDHAM EXECUTIVE CENTER
980 WASHINGTON ST., SUITE 216
DEDHAM, MA 02026

www.HighpointEng.com

SOILS MAP

100 Financial Park
Franklin, MA 02038
City/Town, MA ZIP

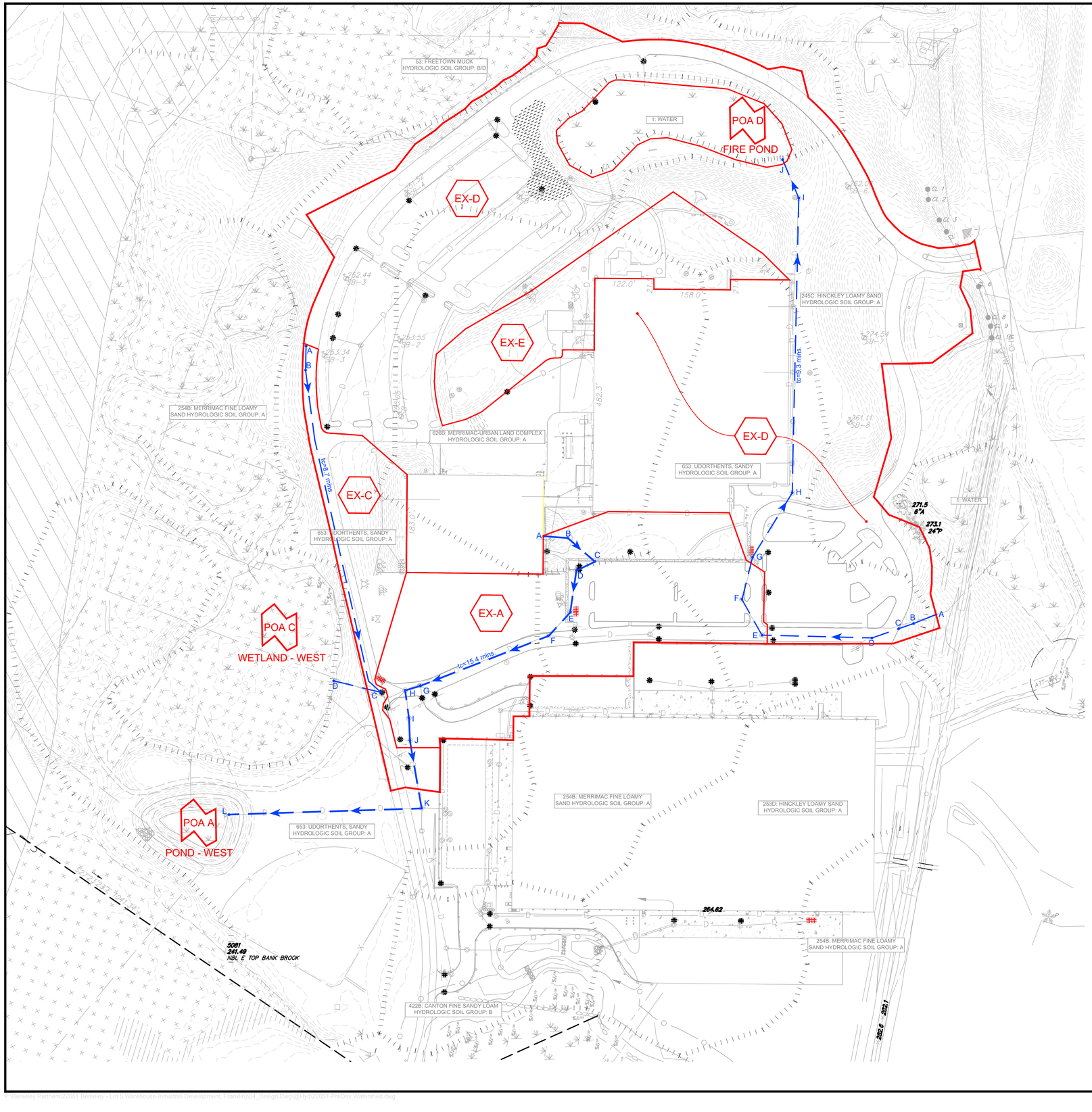
2/7/2023

N
W E
S

0 305 610 1,220 Feet

1 in = 600 ft

Copyright (c) by Highpoint Engineering, Inc. All rights reserved.



SYMBOL LEGEND

	WATERSHED BOUNDARY
	TIME OF CONCENTRATION
	TIME OF CONCENTRATION FLOW PATH
POA A	POINT OF ANALYSIS DESIGNATION
EX-1	WATERSHED DESIGNATION
	SOIL BOUNDARY

PRE-DEVELOPMENT WATERSHED SUMMARY

WATERSHED AREA: EX-A
- TOTAL AREA = 233,232 SF
- IMPERVIOUS = 80,020 SF
- PERVIOUS = 153,212 SF
- CURVE NUMBER (CN) = 59
- TIME OF CONCENTRATION (Tc) = 7.2 MIN.

WATERSHED AREA: EX-C
- TOTAL AREA = 82,149 SF
- IMPERVIOUS = 29,061 SF
- PERVIOUS = 53,088 SF
- CURVE NUMBER (CN) = 60
- TIME OF CONCENTRATION (Tc) = 8.7 MIN.

WATERSHED AREA: EX-D
- TOTAL AREA = 997,924 SF
- ROOF = 240,876 SF
- IMPERVIOUS = 341,183 SF
- PERVIOUS = 415,865 SF
- CURVE NUMBER (CN) = 73
- TIME OF CONCENTRATION (Tc) =9.3 MIN.

WATERSHED AREA: EX-E
- TOTAL AREA = 104,917 SF
- ROOF = 2,135 SF
- IMPERVIOUS = 14,619 SF
- PERVIOUS = 88,163 SF
- CURVE NUMBER (CN) = 48
- TIME OF CONCENTRATION (Tc) =5.0 MIN,

100 0 50 100 200 400
GRAPHIC SCALE 1 inch = 100 ft.

HIGHPOINT ENGINEERING, INC.
LAND PLANNING
PERMIT EXPEDITING
CIVIL ENGINEERING
CONSULTING
DEDHAM EXECUTIVE CENTER
280 WASHINGTON STREET, SUITE 216
DEDHAM, MA 02026
www.HighpointEng.com

CLIENT:
Berkeley Partners
1 Sansome Street | Suite 1500
San Francisco, CA 94101

CONSULTANT:

SEAL

WAREHOUSE/INDUSTRIAL DEVELOPMENT

100/200 FINANCIAL PARK
FRANKLIN, MA

OWNER/APPLICANT: BERKELEY PARTNERS

REV	DATE	DESCRIPTION

ISSUE TYPE: PERMIT SET
ISSUE DATE: 05/11/2023
PROJECT NUMBER: 22051

DRAWN BY: JMP
CHECKED BY: JJP/DJH

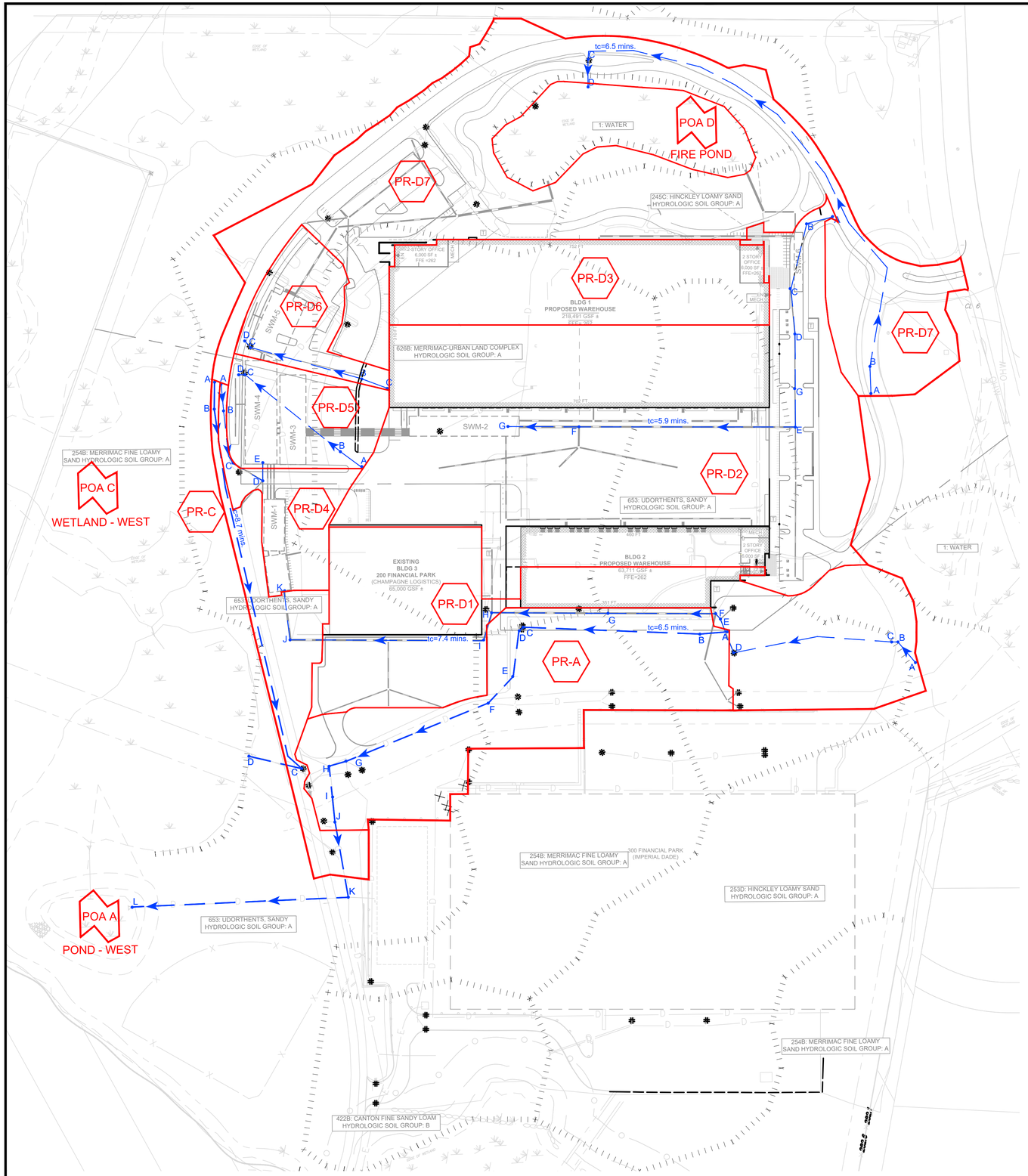
Copyright (c) by Highpoint Engineering, Inc.
All Rights Reserved.

SHEET TITLE:
PRE-DEV WATERSHED PLAN

SHEET NUMBER:
PRE-DEV

ISSUED FOR : **PERMIT**

P:\Berkeley Partners\22051 Berkeley - Lot 3 Warehouse-Industrial Development, Franklin\04_Design\Dwg\Hydro\22051-PreDev Watershed.dwg



POST-DEVELOPMENT WATERSHED SUMMARY

WATERSHED AREA: PR-A
- TOTAL AREA = 161,213 SF
- IMPERVIOUS = 82,820 SF
- PERVIOUS = 78,393 SF
- CURVE NUMBER (CN) = 69
- TIME OF CONCENTRATION (Tc) = 6.5 MIN.

WATERSHED AREA: PR-C
- TOTAL AREA = 55,783 SF
- IMPERVIOUS = 23,937 SF
- PERVIOUS = 31,846 SF
- CURVE NUMBER (CN) = 64
- TIME OF CONCENTRATION (Tc) = 8.7 MIN.

WATERSHED AREA: PR-D1
- TOTAL AREA = 214,605 SF
- ROOF = 85,033 SF
- IMPERVIOUS = 96,079 SF
- PERVIOUS = 33,493 SF
- CURVE NUMBER (CN) = 89
- TIME OF CONCENTRATION (Tc) = 7.1 MIN.

WATERSHED AREA: PR-D2
- TOTAL AREA = 416,467 SF
- ROOF = 141,868 SF
- IMPERVIOUS = 199,574 SF
- PERVIOUS = 75,025 SF
- CURVE NUMBER (CN) = 87
- TIME OF CONCENTRATION (Tc) = 5.3 MIN.

WATERSHED AREA: PR-D3
- TOTAL AREA = 108,531 SF
- ROOF =108,531 SF
- CURVE NUMBER (CN) = 98
- TIME OF CONCENTRATION (Tc) = 5.0 MIN.

WATERSHED AREA: PR-D4
- TOTAL AREA = 37,021 SF
- IMPERVIOUS = 20,670 SF
- PERVIOIUS = 16,351 SF
- CURVE NUMBER (CN) = 72
- TIME OF CONCENTRATION (Tc) = 5.0 MIN.

WATERSHED AREA: PR-D5
- TOTAL AREA = 50,834 SF
- IMPERVIOUS = 34,446 SF
- PERVIOUS = 16,388 SF
- CURVE NUMBER (CN) = 79
- TIME OF CONCENTRATION (Tc) = 5.0 MIN.

WATERSHED AREA: PR-D6
- TOTAL AREA = 40,781 SF
- IMPERVIOUS = 25,487 SF
- PERVIOUS = 15,294 SF
- CURVE NUMBER (CN) = 76
- TIME OF CONCENTRATION (Tc) = 5.0 MIN.

WATERSHED AREA: PR-D7
- TOTAL AREA = 332,987 SF
- IMPERVIOUS = 107,636 SF
- PERVIOUS = 225,351 SF
- CURVE NUMBER (CN) = 58
- TIME OF CONCENTRATION (Tc) = 6.5 MIN.

SYMBOL LEGEND

	WATERSHED BOUNDARY
	TIME OF CONCENTRATION
	TIME OF CONCENTRATION FLOW PATH
POA A	POINT OF ANALYSIS DESIGNATION
PR-A	WATERSHED DESIGNATION
	SOIL BOUNDARY

HIGHPOINT ENGINEERING, INC.
LAND PLANNING
PERMIT EXPEDITING
CIVIL ENGINEERING
CONSULTING
DEDHAM EXECUTIVE CENTER
980 WASHINGTON STREET, SUITE 216
DEDHAM, MA 02026
www.HighpointEng.com

CLIENT:
Berkeley Partners
1 WASHINGTON MALL | Suite 701
BOSTON, MA 02108

CONSULTANT:

SEAL

WAREHOUSE/INDUSTRIAL DEVELOPMENT

100/200 FINANCIAL PARK
FRANKLIN, MA

OWNER/APPLICANT: BERKELEY PARTNERS

REV DATE DESCRIPTION

ISSUE TYPE:
PERMIT SET
ISSUE DATE:
05/11/2023
PROJECT NUMBER:
22051

DRAWN BY: JMP
CHECKED BY: DJH

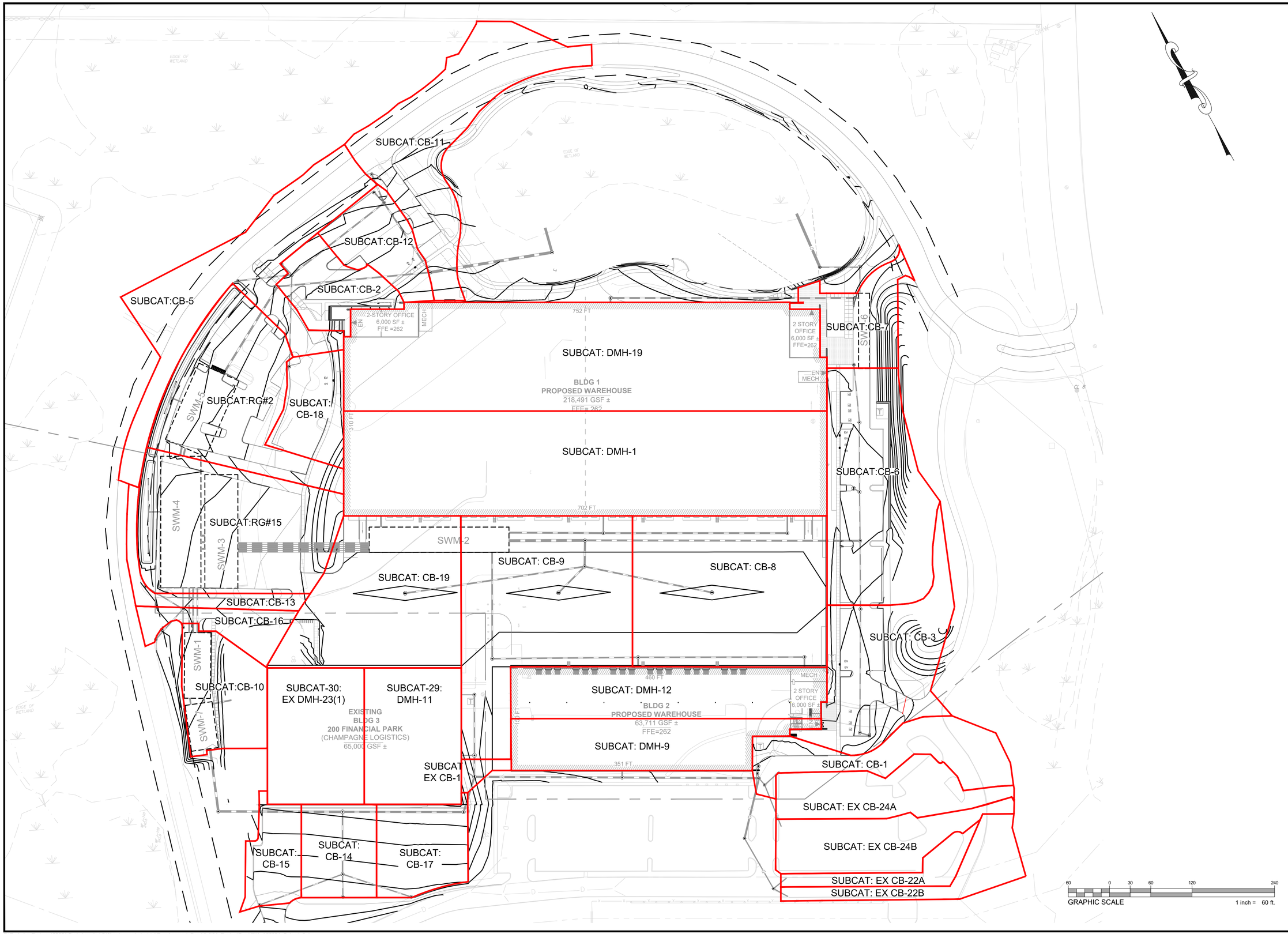
Copyright (c) by Highpoint Engineering, Inc.
All Rights Reserved.

SHEET TITLE:
POST-DEV WATERSHED PLAN

SHEET NUMBER:
POST-DEV

ISSUED FOR : PERMIT

P:\Berkeley Partners\22051 Berkeley - Lot 5 Warehouse-Industrial Development, Franklin\04_Design\Dwg\Hydro\22051_PostDev Watershed.dwg



HIGHPOINT ENGINEERING, INC.
LAND PLANNING
PERMIT EXPEDITING
CIVIL ENGINEERING
CONSULTING
DEDHAM EXECUTIVE CENTER
980 WASHINGTON STREET, SUITE 216
DEDHAM, MA 02026
www.HighpointEng.com

CLIENT:
Berkeley Partners
1 WASHINGTON MALL | Suite 701
BOSTON, MA 02108

CONSULTANT:

SEAL

WAREHOUSE / INDUSTRIAL DEVELOPMENT

100/200 FINANCIAL PARK
FRANKLIN, MA

OWNER/APPLICANT: BERKELEY PARTNERS

REV DATE DESCRIPTION

ISSUE TYPE:
PERMIT SET
ISSUE DATE:
05/11/2023
PROJECT NUMBER:
22051

DRAWN BY: JMP
CHECKED BY: DJH

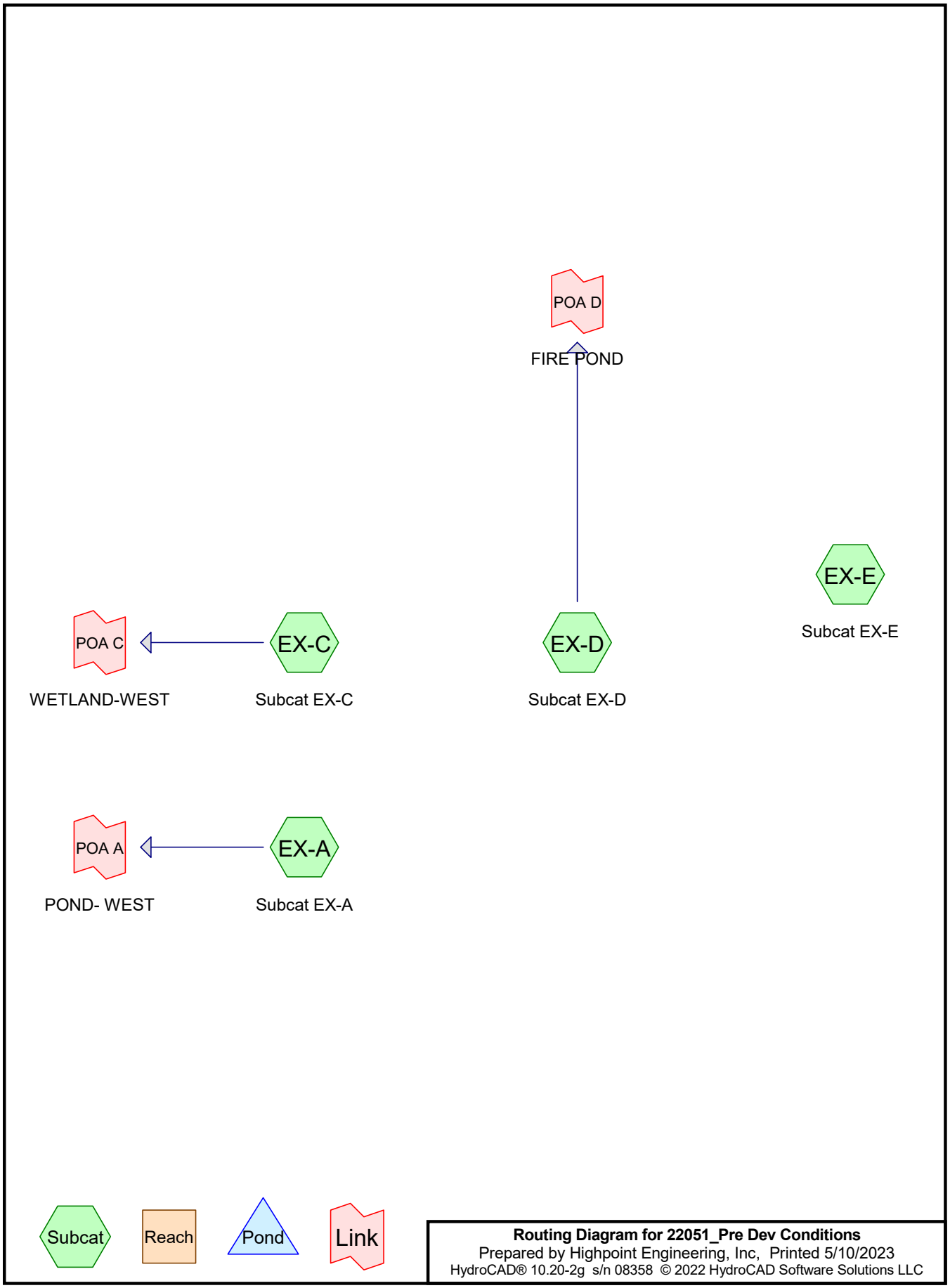
Copyright (c) by Highpoint Engineering, Inc.
All Rights Reserved.

SHEET TITLE:
PROPOSED SUBCATCHMENT PLAN

SHEET NUMBER:
SUBCAT

ISSUED FOR : PERMIT

APPENDIX A – HYDROLOGIC CALCULATIONS



Routing Diagram for 22051_Pre Dev Conditions
Prepared by Highpoint Engineering, Inc, Printed 5/10/2023
HydroCAD® 10.20-2g s/n 08358 © 2022 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
710,328	39	>75% Grass cover, Good, HSG A (EX-A, EX-C, EX-D, EX-E)
57,570	98	Champage Bldg (#200) (EX-D)
183,306	98	Office Bldg (#110) (EX-D)
2,135	98	Roof Area (EX-E)
464,883	98	Unconnected pavement, HSG A (EX-A, EX-C, EX-D, EX-E)
1,418,222	**68**	**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
710,328	0	0	0	0	710,328	>75% Grass cover, Good	
0	0	0	0	57,570	57,570	Champage Bldg (#200)	
0	0	0	0	183,306	183,306	Office Bldg (#110)	
0	0	0	0	2,135	2,135	Roof Area	
464,883	0	0	0	0	464,883	Unconnected pavement	
1,175,211	**0**	**0**	**0**	**243,011**	**1,418,222**	**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 EX-A: Subcat EX-A Runoff Area=233,232 sf 34.31% Impervious Runoff Depth=0.38"
Flow Length=1,283' Tc=7.2 min CN=59 Runoff=1.20 cfs 7,415.3 cf

Subcatchment EX-C: Subcat EX-C Runoff Area=82,149 sf 35.38% Impervious Runoff Depth=0.42"
Flow Length=837' Tc=8.7 min CN=60 Runoff=0.48 cfs 2,848.9 cf

Subcatchment EX-D: Subcat EX-D Runoff Area=997,924 sf 58.33% Impervious Runoff Depth=1.00"
Flow Length=1,008' Tc=9.3 min CN=73 Runoff=22.31 cfs 82,795.0 cf

Subcatchment EX-E: Subcat EX-E Runoff Area=104,917 sf 15.97% Impervious Runoff Depth=0.03"
Tc=5.0 min UI Adjusted CN=44 Runoff=0.01 cfs 296.8 cf

Link POA A: POND- WEST Inflow=1.20 cfs 7,415.3 cf
Primary=1.20 cfs 7,415.3 cf

Link POA C: WETLAND-WEST Inflow=0.48 cfs 2,848.9 cf
Primary=0.48 cfs 2,848.9 cf

Link POA D: FIRE POND Inflow=22.31 cfs 82,795.0 cf
Primary=22.31 cfs 82,795.0 cf

Total Runoff Area = 1,418,222 sf Runoff Volume = 93,356.0 cf Average Runoff Depth = 0.79"
50.09% Pervious = 710,328 sf 49.91% Impervious = 707,894 sf

Summary for Subcatchment EX-A: Subcat EX-A

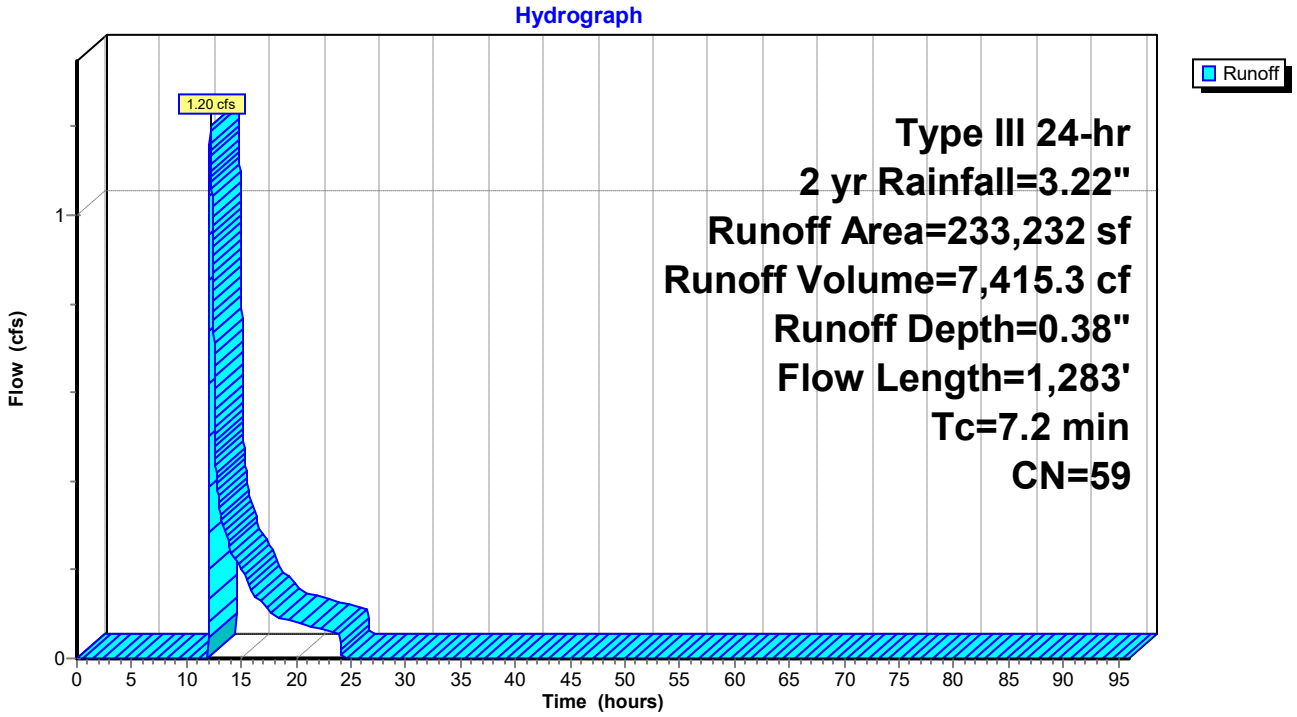
Runoff = 1.20 cfs @ 12.15 hrs, Volume= 7,415.3 cf, Depth= 0.38"
Routed to Link POA A : POND- WEST

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 yr Rainfall=3.22"

	Area (sf)	CN	Description
	80,020	98	Unconnected pavement, HSG A
*	153,212	39	>75% Grass cover, Good, HSG A
	233,232	59	Weighted Average
	153,212		65.69% Pervious Area
	80,020		34.31% Impervious Area
	80,020		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0700	0.25		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.22"
0.5	75	0.1133	2.36		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.5	43	0.0046	1.38		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	88	0.0110	6.52	8.01	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
0.1	66	0.0207	8.95	10.98	**Pipe Channel, E-F** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
0.6	285	0.0086	7.89	24.79	**Pipe Channel, F-G** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011
0.1	33	0.0137	9.96	31.29	**Pipe Channel, G-H** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011
0.2	56	0.0025	4.94	24.24	**Pipe Channel, H-I** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011
0.2	50	0.0024	4.84	23.75	**Pipe Channel, I-J** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011
0.3	141	0.0071	8.32	40.85	**Pipe Channel, J-K** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011
1.1	396	0.0029	6.01	42.45	**Pipe Channel, K-L** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
7.2	1,283	Total			

Subcatchment EX-A: Subcat EX-A



Hydrograph for Subcatchment EX-A: Subcat EX-A

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.22	0.38	0.00
1.00	0.03	0.00	0.00	53.00	3.22	0.38	0.00
2.00	0.06	0.00	0.00	54.00	3.22	0.38	0.00
3.00	0.10	0.00	0.00	55.00	3.22	0.38	0.00
4.00	0.14	0.00	0.00	56.00	3.22	0.38	0.00
5.00	0.18	0.00	0.00	57.00	3.22	0.38	0.00
6.00	0.23	0.00	0.00	58.00	3.22	0.38	0.00
7.00	0.29	0.00	0.00	59.00	3.22	0.38	0.00
8.00	0.37	0.00	0.00	60.00	3.22	0.38	0.00
9.00	0.47	0.00	0.00	61.00	3.22	0.38	0.00
10.00	0.61	0.00	0.00	62.00	3.22	0.38	0.00
11.00	0.80	0.00	0.00	63.00	3.22	0.38	0.00
12.00	1.61	0.01	**0.05**	64.00	3.22	0.38	0.00
13.00	2.41	0.13	**0.34**	65.00	3.22	0.38	0.00
14.00	2.61	0.18	0.25	66.00	3.22	0.38	0.00
15.00	2.75	0.22	0.20	67.00	3.22	0.38	0.00
16.00	2.85	0.25	0.15	68.00	3.22	0.38	0.00
17.00	2.93	0.28	0.12	69.00	3.22	0.38	0.00
18.00	2.99	0.30	0.10	70.00	3.22	0.38	0.00
19.00	3.04	0.32	0.09	71.00	3.22	0.38	0.00
20.00	3.08	0.33	0.08	72.00	3.22	0.38	0.00
21.00	3.12	0.35	0.07	73.00	3.22	0.38	0.00
22.00	3.16	0.36	0.07	74.00	3.22	0.38	0.00
23.00	3.19	0.37	0.06	75.00	3.22	0.38	0.00
24.00	**3.22**	**0.38**	0.06	76.00	3.22	0.38	0.00
25.00	3.22	0.38	0.00	77.00	3.22	0.38	0.00
26.00	3.22	0.38	0.00	78.00	3.22	0.38	0.00
27.00	3.22	0.38	0.00	79.00	3.22	0.38	0.00
28.00	3.22	0.38	0.00	80.00	3.22	0.38	0.00
29.00	3.22	0.38	0.00	81.00	3.22	0.38	0.00
30.00	3.22	0.38	0.00	82.00	3.22	0.38	0.00
31.00	3.22	0.38	0.00	83.00	3.22	0.38	0.00
32.00	3.22	0.38	0.00	84.00	3.22	0.38	0.00
33.00	3.22	0.38	0.00	85.00	3.22	0.38	0.00
34.00	3.22	0.38	0.00	86.00	3.22	0.38	0.00
35.00	3.22	0.38	0.00	87.00	3.22	0.38	0.00
36.00	3.22	0.38	0.00	88.00	3.22	0.38	0.00
37.00	3.22	0.38	0.00	89.00	3.22	0.38	0.00
38.00	3.22	0.38	0.00	90.00	3.22	0.38	0.00
39.00	3.22	0.38	0.00	91.00	3.22	0.38	0.00
40.00	3.22	0.38	0.00	92.00	3.22	0.38	0.00
41.00	3.22	0.38	0.00	93.00	3.22	0.38	0.00
42.00	3.22	0.38	0.00	94.00	3.22	0.38	0.00
43.00	3.22	0.38	0.00	95.00	3.22	0.38	0.00
44.00	3.22	0.38	0.00	96.00	3.22	0.38	0.00
45.00	3.22	0.38	0.00				
46.00	3.22	0.38	0.00				
47.00	3.22	0.38	0.00				
48.00	3.22	0.38	0.00				
49.00	3.22	0.38	0.00				
50.00	3.22	0.38	0.00				
51.00	3.22	0.38	0.00				

Summary for Subcatchment EX-C: Subcat EX-C

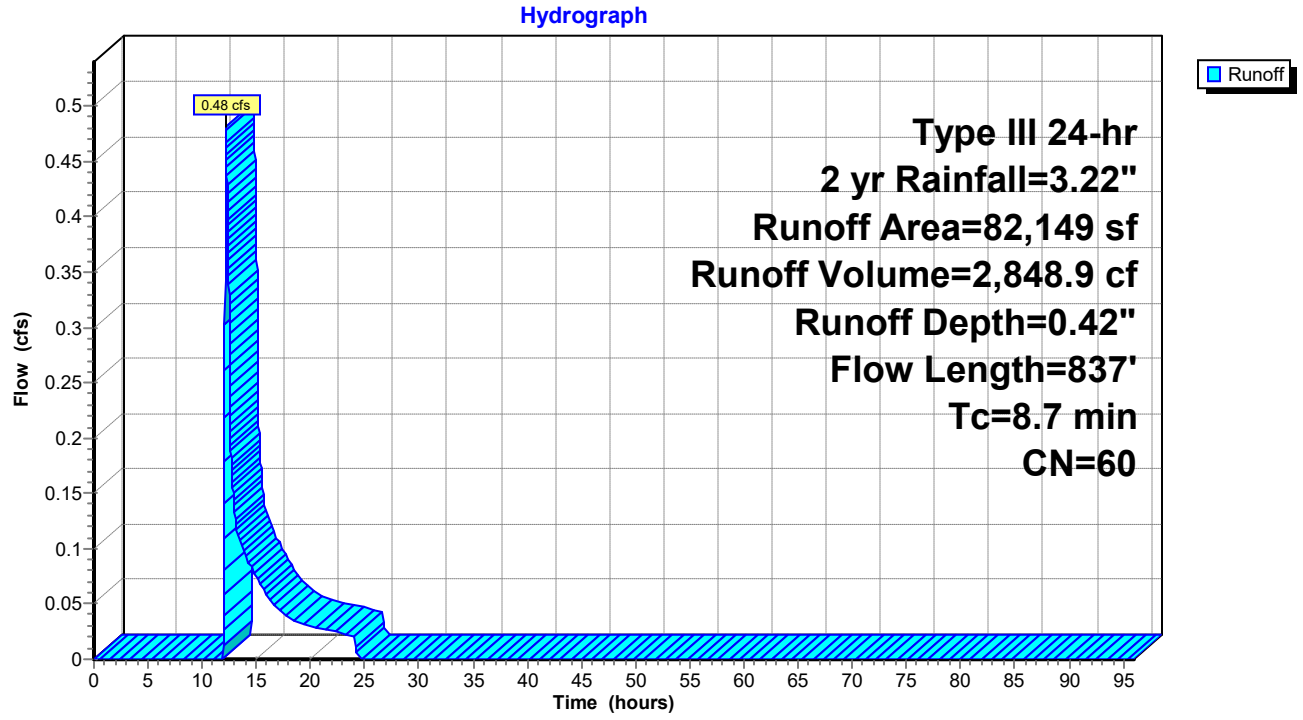
Runoff = 0.48 cfs @ 12.17 hrs, Volume= 2,848.9 cf, Depth= 0.42"
Routed to Link POA C : WETLAND-WEST

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 yr Rainfall=3.22"

Area (sf)	CN	Description
29,061	98	Unconnected pavement, HSG A
53,088	39	>75% Grass cover, Good, HSG A
82,149	60	Weighted Average
53,088		64.62% Pervious Area
29,061		35.38% Impervious Area
29,061		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	50	0.0020	0.48		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
6.2	686	0.0083	1.85		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.8	101	0.0017	2.21	1.74	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
8.7	837	Total			

Subcatchment EX-C: Subcat EX-C



Hydrograph for Subcatchment EX-C: Subcat EX-C

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.22	0.42	0.00
1.00	0.03	0.00	0.00	53.00	3.22	0.42	0.00
2.00	0.06	0.00	0.00	54.00	3.22	0.42	0.00
3.00	0.10	0.00	0.00	55.00	3.22	0.42	0.00
4.00	0.14	0.00	0.00	56.00	3.22	0.42	0.00
5.00	0.18	0.00	0.00	57.00	3.22	0.42	0.00
6.00	0.23	0.00	0.00	58.00	3.22	0.42	0.00
7.00	0.29	0.00	0.00	59.00	3.22	0.42	0.00
8.00	0.37	0.00	0.00	60.00	3.22	0.42	0.00
9.00	0.47	0.00	0.00	61.00	3.22	0.42	0.00
10.00	0.61	0.00	0.00	62.00	3.22	0.42	0.00
11.00	0.80	0.00	0.00	63.00	3.22	0.42	0.00
12.00	1.61	0.01	**0.03**	64.00	3.22	0.42	0.00
13.00	2.41	0.15	**0.13**	65.00	3.22	0.42	0.00
14.00	2.61	0.21	0.09	66.00	3.22	0.42	0.00
15.00	2.75	0.25	0.08	67.00	3.22	0.42	0.00
16.00	2.85	0.28	0.06	68.00	3.22	0.42	0.00
17.00	2.93	0.31	0.05	69.00	3.22	0.42	0.00
18.00	2.99	0.33	0.04	70.00	3.22	0.42	0.00
19.00	3.04	0.35	0.03	71.00	3.22	0.42	0.00
20.00	3.08	0.36	0.03	72.00	3.22	0.42	0.00
21.00	3.12	0.38	0.03	73.00	3.22	0.42	0.00
22.00	3.16	0.39	0.03	74.00	3.22	0.42	0.00
23.00	3.19	0.40	0.02	75.00	3.22	0.42	0.00
24.00	**3.22**	**0.42**	0.02	76.00	3.22	0.42	0.00
25.00	3.22	0.42	0.00	77.00	3.22	0.42	0.00
26.00	3.22	0.42	0.00	78.00	3.22	0.42	0.00
27.00	3.22	0.42	0.00	79.00	3.22	0.42	0.00
28.00	3.22	0.42	0.00	80.00	3.22	0.42	0.00
29.00	3.22	0.42	0.00	81.00	3.22	0.42	0.00
30.00	3.22	0.42	0.00	82.00	3.22	0.42	0.00
31.00	3.22	0.42	0.00	83.00	3.22	0.42	0.00
32.00	3.22	0.42	0.00	84.00	3.22	0.42	0.00
33.00	3.22	0.42	0.00	85.00	3.22	0.42	0.00
34.00	3.22	0.42	0.00	86.00	3.22	0.42	0.00
35.00	3.22	0.42	0.00	87.00	3.22	0.42	0.00
36.00	3.22	0.42	0.00	88.00	3.22	0.42	0.00
37.00	3.22	0.42	0.00	89.00	3.22	0.42	0.00
38.00	3.22	0.42	0.00	90.00	3.22	0.42	0.00
39.00	3.22	0.42	0.00	91.00	3.22	0.42	0.00
40.00	3.22	0.42	0.00	92.00	3.22	0.42	0.00
41.00	3.22	0.42	0.00	93.00	3.22	0.42	0.00
42.00	3.22	0.42	0.00	94.00	3.22	0.42	0.00
43.00	3.22	0.42	0.00	95.00	3.22	0.42	0.00
44.00	3.22	0.42	0.00	96.00	3.22	0.42	0.00
45.00	3.22	0.42	0.00				
46.00	3.22	0.42	0.00				
47.00	3.22	0.42	0.00				
48.00	3.22	0.42	0.00				
49.00	3.22	0.42	0.00				
50.00	3.22	0.42	0.00				
51.00	3.22	0.42	0.00				

Summary for Subcatchment EX-D: Subcat EX-D

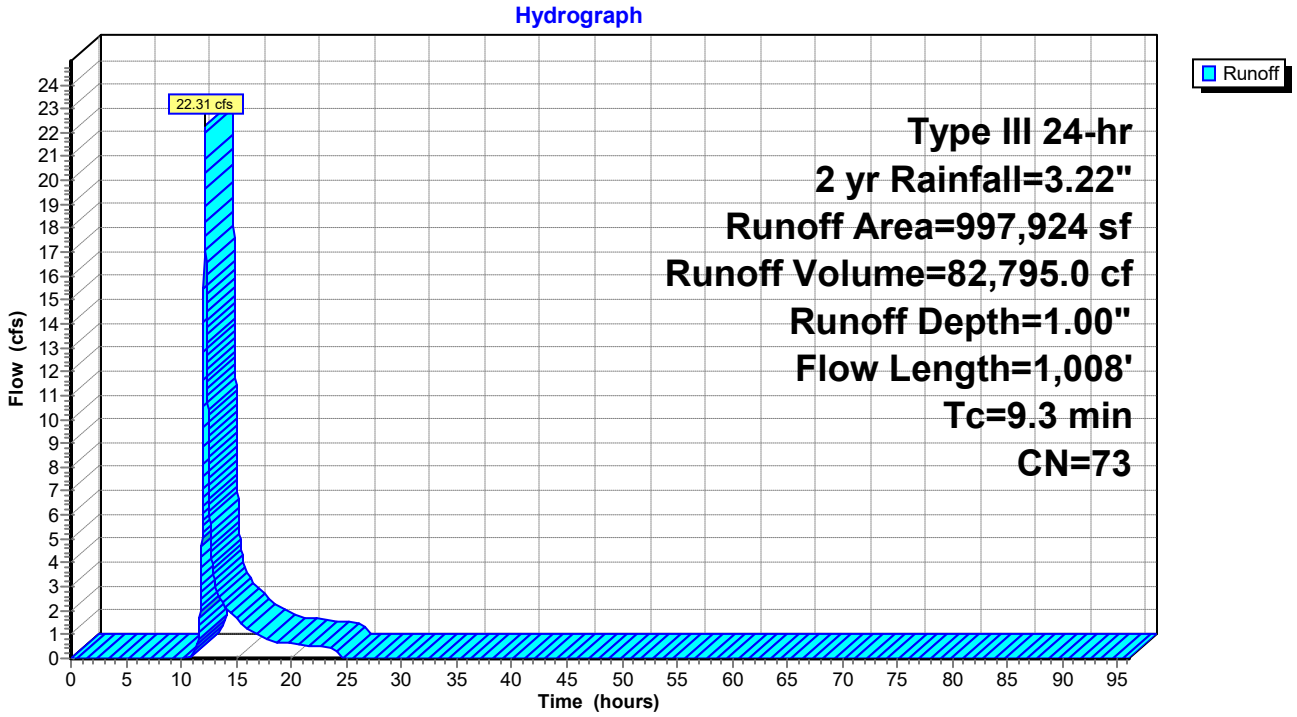
Runoff = 22.31 cfs @ 12.14 hrs, Volume= 82,795.0 cf, Depth= 1.00"
Routed to Link POA D : FIRE POND

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 yr Rainfall=3.22"

	Area (sf)	CN	Description
*	57,570	98	Champage Bldg (#200)
	341,183	98	Unconnected pavement, HSG A
	415,865	39	>75% Grass cover, Good, HSG A
*	183,306	98	Office Bldg (#110)
	997,924	73	Weighted Average
	415,865		41.67% Pervious Area
	582,059		58.33% Impervious Area
	341,183		58.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.22"
0.2	32	0.2180	3.27		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.3	58	0.0340	3.74		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.4	228	0.2197	9.52		**Shallow Concentrated Flow, D-E** Paved Kv= 20.3 fps
0.3	84	0.0090	5.09	3.99	**Pipe Channel, E-F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean
0.1	89	0.0680	25.75	126.41	**Pipe Channel, F-G** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011 Concrete pipe, straight & clean
0.4	157	0.0030	6.11	43.17	**Pipe Channel, G-H** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
0.4	224	0.0062	8.78	62.07	**Pipe Channel, H-I** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
0.1	86	0.0116	12.01	84.90	**Pipe Channel, I-J** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
9.3	1,008	Total			

Subcatchment EX-D: Subcat EX-D



Hydrograph for Subcatchment EX-D: Subcat EX-D

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.22	1.00	0.00
1.00	0.03	0.00	0.00	53.00	3.22	1.00	0.00
2.00	0.06	0.00	0.00	54.00	3.22	1.00	0.00
3.00	0.10	0.00	0.00	55.00	3.22	1.00	0.00
4.00	0.14	0.00	0.00	56.00	3.22	1.00	0.00
5.00	0.18	0.00	0.00	57.00	3.22	1.00	0.00
6.00	0.23	0.00	0.00	58.00	3.22	1.00	0.00
7.00	0.29	0.00	0.00	59.00	3.22	1.00	0.00
8.00	0.37	0.00	0.00	60.00	3.22	1.00	0.00
9.00	0.47	0.00	0.00	61.00	3.22	1.00	0.00
10.00	0.61	0.00	0.00	62.00	3.22	1.00	0.00
11.00	0.80	0.00	0.09	63.00	3.22	1.00	0.00
12.00	1.61	0.17	**8.85**	64.00	3.22	1.00	0.00
13.00	2.41	0.52	**3.33**	65.00	3.22	1.00	0.00
14.00	2.61	0.63	2.17	66.00	3.22	1.00	0.00
15.00	2.75	0.71	1.68	67.00	3.22	1.00	0.00
16.00	2.85	0.77	1.22	68.00	3.22	1.00	0.00
17.00	2.93	0.81	0.98	69.00	3.22	1.00	0.00
18.00	2.99	0.85	0.76	70.00	3.22	1.00	0.00
19.00	3.04	0.88	0.68	71.00	3.22	1.00	0.00
20.00	3.08	0.91	0.61	72.00	3.22	1.00	0.00
21.00	3.12	0.93	0.56	73.00	3.22	1.00	0.00
22.00	3.16	0.96	0.51	74.00	3.22	1.00	0.00
23.00	3.19	0.98	0.46	75.00	3.22	1.00	0.00
24.00	**3.22**	**1.00**	0.41	76.00	3.22	1.00	0.00
25.00	3.22	1.00	0.00	77.00	3.22	1.00	0.00
26.00	3.22	1.00	0.00	78.00	3.22	1.00	0.00
27.00	3.22	1.00	0.00	79.00	3.22	1.00	0.00
28.00	3.22	1.00	0.00	80.00	3.22	1.00	0.00
29.00	3.22	1.00	0.00	81.00	3.22	1.00	0.00
30.00	3.22	1.00	0.00	82.00	3.22	1.00	0.00
31.00	3.22	1.00	0.00	83.00	3.22	1.00	0.00
32.00	3.22	1.00	0.00	84.00	3.22	1.00	0.00
33.00	3.22	1.00	0.00	85.00	3.22	1.00	0.00
34.00	3.22	1.00	0.00	86.00	3.22	1.00	0.00
35.00	3.22	1.00	0.00	87.00	3.22	1.00	0.00
36.00	3.22	1.00	0.00	88.00	3.22	1.00	0.00
37.00	3.22	1.00	0.00	89.00	3.22	1.00	0.00
38.00	3.22	1.00	0.00	90.00	3.22	1.00	0.00
39.00	3.22	1.00	0.00	91.00	3.22	1.00	0.00
40.00	3.22	1.00	0.00	92.00	3.22	1.00	0.00
41.00	3.22	1.00	0.00	93.00	3.22	1.00	0.00
42.00	3.22	1.00	0.00	94.00	3.22	1.00	0.00
43.00	3.22	1.00	0.00	95.00	3.22	1.00	0.00
44.00	3.22	1.00	0.00	96.00	3.22	1.00	0.00
45.00	3.22	1.00	0.00				
46.00	3.22	1.00	0.00				
47.00	3.22	1.00	0.00				
48.00	3.22	1.00	0.00				
49.00	3.22	1.00	0.00				
50.00	3.22	1.00	0.00				
51.00	3.22	1.00	0.00				

Summary for Subcatchment EX-E: Subcat EX-E

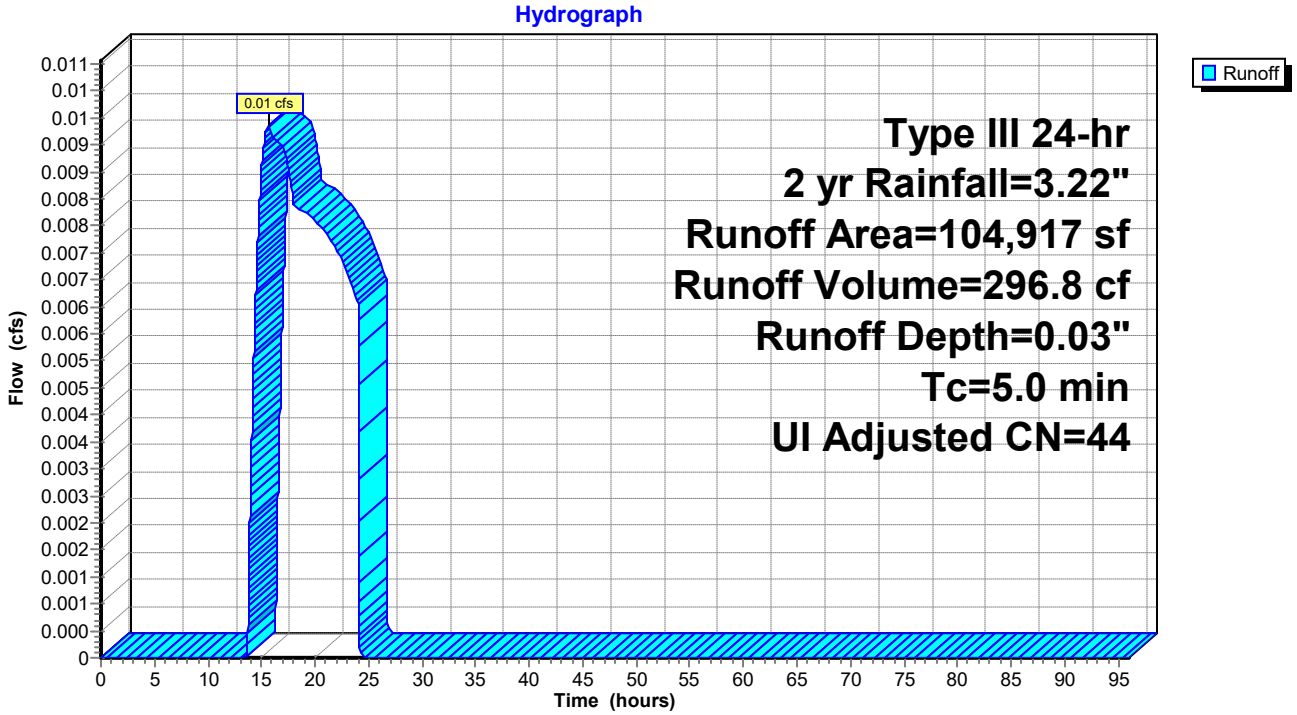
Runoff = 0.01 cfs @ 15.63 hrs, Volume= 296.8 cf, Depth= 0.03"

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 yr Rainfall=3.22"

	Area (sf)	CN	Adj	Description
*	2,135	98		Roof Area
	14,619	98		Unconnected pavement, HSG A
	88,163	39		>75% Grass cover, Good, HSG A
	104,917	48	44	Weighted Average, UI Adjusted
	88,163			84.03% Pervious Area
	16,754			15.97% Impervious Area
	14,619			87.26% Unconnected

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

Subcatchment EX-E: Subcat EX-E



Hydrograph for Subcatchment EX-E: Subcat EX-E

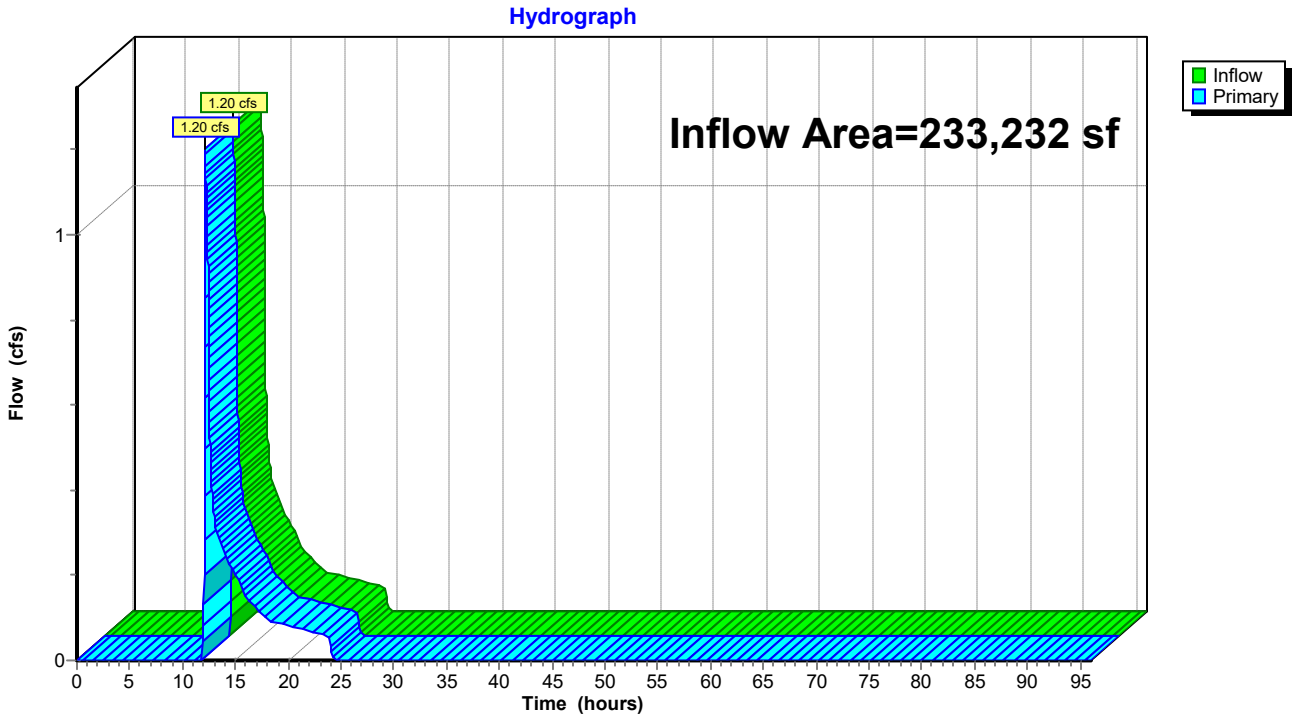
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.22	0.03	0.00
1.00	0.03	0.00	0.00	53.00	3.22	0.03	0.00
2.00	0.06	0.00	0.00	54.00	3.22	0.03	0.00
3.00	0.10	0.00	0.00	55.00	3.22	0.03	0.00
4.00	0.14	0.00	0.00	56.00	3.22	0.03	0.00
5.00	0.18	0.00	0.00	57.00	3.22	0.03	0.00
6.00	0.23	0.00	0.00	58.00	3.22	0.03	0.00
7.00	0.29	0.00	0.00	59.00	3.22	0.03	0.00
8.00	0.37	0.00	0.00	60.00	3.22	0.03	0.00
9.00	0.47	0.00	0.00	61.00	3.22	0.03	0.00
10.00	0.61	0.00	0.00	62.00	3.22	0.03	0.00
11.00	0.80	0.00	0.00	63.00	3.22	0.03	0.00
12.00	1.61	0.00	0.00	64.00	3.22	0.03	0.00
13.00	2.41	0.00	0.00	65.00	3.22	0.03	0.00
14.00	2.61	0.00	0.00	66.00	3.22	0.03	0.00
15.00	2.75	0.00	**0.01**	67.00	3.22	0.03	0.00
16.00	2.85	0.01	**0.01**	68.00	3.22	0.03	0.00
17.00	2.93	0.01	0.01	69.00	3.22	0.03	0.00
18.00	2.99	0.01	0.01	70.00	3.22	0.03	0.00
19.00	3.04	0.02	0.01	71.00	3.22	0.03	0.00
20.00	3.08	0.02	0.01	72.00	3.22	0.03	0.00
21.00	3.12	0.02	0.01	73.00	3.22	0.03	0.00
22.00	3.16	0.03	0.01	74.00	3.22	0.03	0.00
23.00	3.19	0.03	0.01	75.00	3.22	0.03	0.00
24.00	**3.22**	**0.03**	0.01	76.00	3.22	0.03	0.00
25.00	3.22	0.03	0.00	77.00	3.22	0.03	0.00
26.00	3.22	0.03	0.00	78.00	3.22	0.03	0.00
27.00	3.22	0.03	0.00	79.00	3.22	0.03	0.00
28.00	3.22	0.03	0.00	80.00	3.22	0.03	0.00
29.00	3.22	0.03	0.00	81.00	3.22	0.03	0.00
30.00	3.22	0.03	0.00	82.00	3.22	0.03	0.00
31.00	3.22	0.03	0.00	83.00	3.22	0.03	0.00
32.00	3.22	0.03	0.00	84.00	3.22	0.03	0.00
33.00	3.22	0.03	0.00	85.00	3.22	0.03	0.00
34.00	3.22	0.03	0.00	86.00	3.22	0.03	0.00
35.00	3.22	0.03	0.00	87.00	3.22	0.03	0.00
36.00	3.22	0.03	0.00	88.00	3.22	0.03	0.00
37.00	3.22	0.03	0.00	89.00	3.22	0.03	0.00
38.00	3.22	0.03	0.00	90.00	3.22	0.03	0.00
39.00	3.22	0.03	0.00	91.00	3.22	0.03	0.00
40.00	3.22	0.03	0.00	92.00	3.22	0.03	0.00
41.00	3.22	0.03	0.00	93.00	3.22	0.03	0.00
42.00	3.22	0.03	0.00	94.00	3.22	0.03	0.00
43.00	3.22	0.03	0.00	95.00	3.22	0.03	0.00
44.00	3.22	0.03	0.00	96.00	3.22	0.03	0.00
45.00	3.22	0.03	0.00				
46.00	3.22	0.03	0.00				
47.00	3.22	0.03	0.00				
48.00	3.22	0.03	0.00				
49.00	3.22	0.03	0.00				
50.00	3.22	0.03	0.00				
51.00	3.22	0.03	0.00				

Summary for Link POA A: POND- WEST

Inflow Area = 233,232 sf, 34.31% Impervious, Inflow Depth = 0.38" for 2 yr event
Inflow = 1.20 cfs @ 12.15 hrs, Volume= 7,415.3 cf
Primary = 1.20 cfs @ 12.15 hrs, Volume= 7,415.3 cf, Atten= 0%, Lag= 0.0 min

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

Link POA A: POND- WEST



Hydrograph for Link POA A: POND- WEST

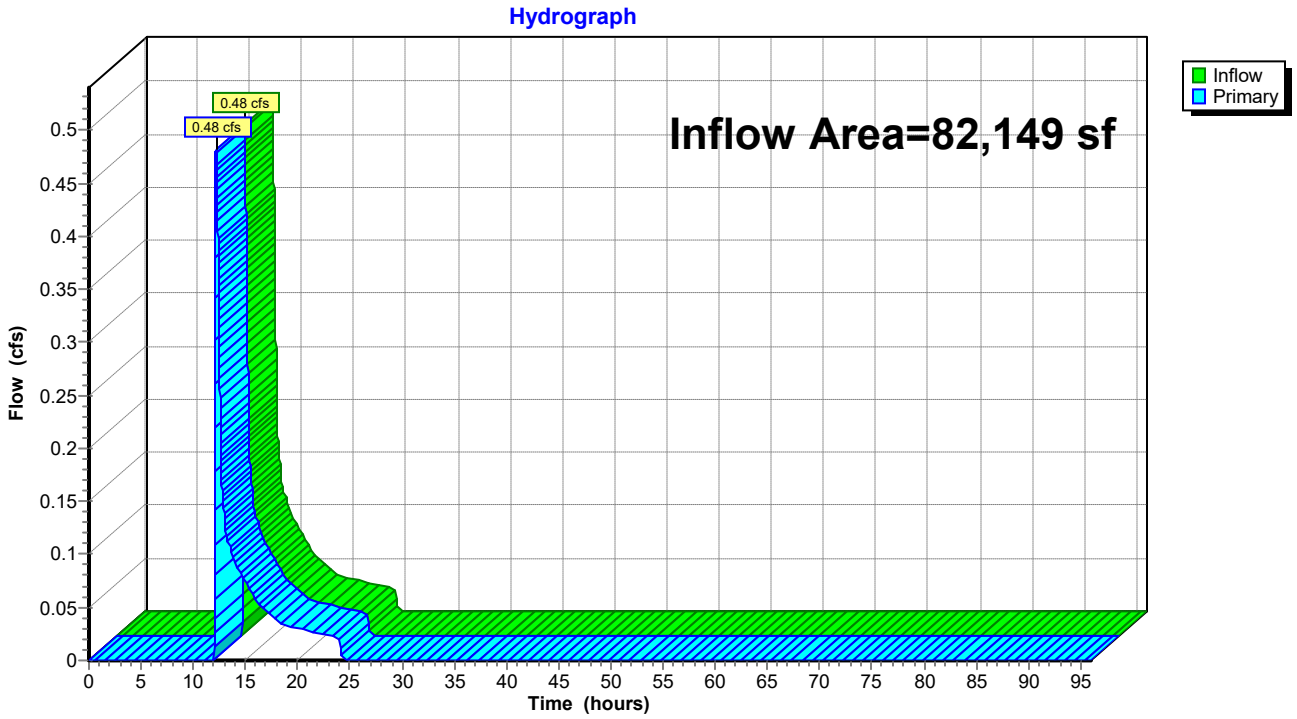
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
12.00	**0.05**	0.00	**0.05**	64.00	0.00	0.00	0.00
13.00	**0.34**	0.00	**0.34**	65.00	0.00	0.00	0.00
14.00	0.25	0.00	0.25	66.00	0.00	0.00	0.00
15.00	0.20	0.00	0.20	67.00	0.00	0.00	0.00
16.00	0.15	0.00	0.15	68.00	0.00	0.00	0.00
17.00	0.12	0.00	0.12	69.00	0.00	0.00	0.00
18.00	0.10	0.00	0.10	70.00	0.00	0.00	0.00
19.00	0.09	0.00	0.09	71.00	0.00	0.00	0.00
20.00	0.08	0.00	0.08	72.00	0.00	0.00	0.00
21.00	0.07	0.00	0.07	73.00	0.00	0.00	0.00
22.00	0.07	0.00	0.07	74.00	0.00	0.00	0.00
23.00	0.06	0.00	0.06	75.00	0.00	0.00	0.00
24.00	0.06	0.00	0.06	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA C: WETLAND-WEST

Inflow Area = 82,149 sf, 35.38% Impervious, Inflow Depth = 0.42" for 2 yr event
Inflow = 0.48 cfs @ 12.17 hrs, Volume= 2,848.9 cf
Primary = 0.48 cfs @ 12.17 hrs, Volume= 2,848.9 cf, Atten= 0%, Lag= 0.0 min

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

Link POA C: WETLAND-WEST



Hydrograph for Link POA C: WETLAND-WEST

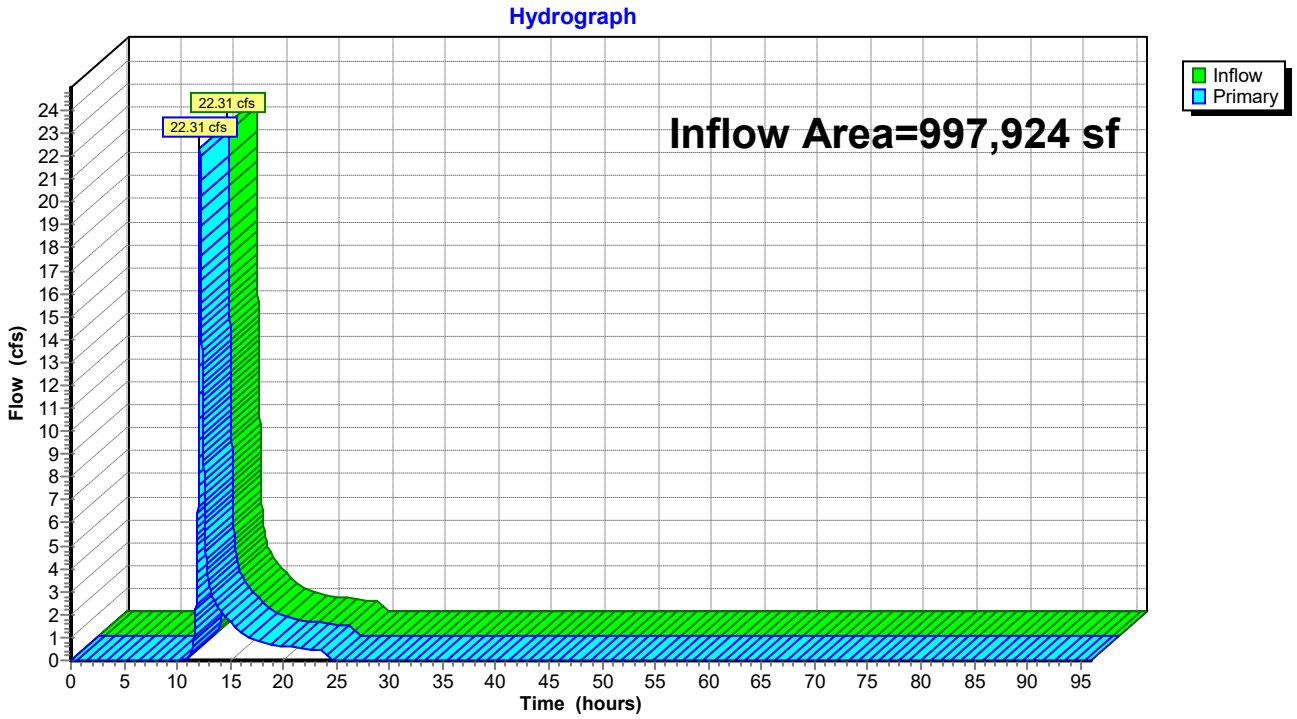
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
12.00	**0.03**	0.00	**0.03**	64.00	0.00	0.00	0.00
13.00	**0.13**	0.00	**0.13**	65.00	0.00	0.00	0.00
14.00	0.09	0.00	0.09	66.00	0.00	0.00	0.00
15.00	0.08	0.00	0.08	67.00	0.00	0.00	0.00
16.00	0.06	0.00	0.06	68.00	0.00	0.00	0.00
17.00	0.05	0.00	0.05	69.00	0.00	0.00	0.00
18.00	0.04	0.00	0.04	70.00	0.00	0.00	0.00
19.00	0.03	0.00	0.03	71.00	0.00	0.00	0.00
20.00	0.03	0.00	0.03	72.00	0.00	0.00	0.00
21.00	0.03	0.00	0.03	73.00	0.00	0.00	0.00
22.00	0.03	0.00	0.03	74.00	0.00	0.00	0.00
23.00	0.02	0.00	0.02	75.00	0.00	0.00	0.00
24.00	0.02	0.00	0.02	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA D: FIRE POND

Inflow Area = 997,924 sf, 58.33% Impervious, Inflow Depth = 1.00" for 2 yr event
Inflow = 22.31 cfs @ 12.14 hrs, Volume= 82,795.0 cf
Primary = 22.31 cfs @ 12.14 hrs, Volume= 82,795.0 cf, Atten= 0%, Lag= 0.0 min

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

Link POA D: FIRE POND



Hydrograph for Link POA D: FIRE POND

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.09	0.00	0.09	63.00	0.00	0.00	0.00
12.00	**8.85**	0.00	**8.85**	64.00	0.00	0.00	0.00
13.00	**3.33**	0.00	**3.33**	65.00	0.00	0.00	0.00
14.00	2.17	0.00	2.17	66.00	0.00	0.00	0.00
15.00	1.68	0.00	1.68	67.00	0.00	0.00	0.00
16.00	1.22	0.00	1.22	68.00	0.00	0.00	0.00
17.00	0.98	0.00	0.98	69.00	0.00	0.00	0.00
18.00	0.76	0.00	0.76	70.00	0.00	0.00	0.00
19.00	0.68	0.00	0.68	71.00	0.00	0.00	0.00
20.00	0.61	0.00	0.61	72.00	0.00	0.00	0.00
21.00	0.56	0.00	0.56	73.00	0.00	0.00	0.00
22.00	0.51	0.00	0.51	74.00	0.00	0.00	0.00
23.00	0.46	0.00	0.46	75.00	0.00	0.00	0.00
24.00	0.41	0.00	0.41	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

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 EX-A: Subcat EX-A Runoff Area=233,232 sf 34.31% Impervious Runoff Depth=1.16"
Flow Length=1,283' Tc=7.2 min CN=59 Runoff=6.03 cfs 22,463.1 cf

Subcatchment EX-C: Subcat EX-C Runoff Area=82,149 sf 35.38% Impervious Runoff Depth=1.22"
Flow Length=837' Tc=8.7 min CN=60 Runoff=2.16 cfs 8,352.8 cf

Subcatchment EX-D: Subcat EX-D Runoff Area=997,924 sf 58.33% Impervious Runoff Depth=2.17"
Flow Length=1,008' Tc=9.3 min CN=73 Runoff=51.57 cfs 180,560.4 cf

Subcatchment EX-E: Subcat EX-E Runoff Area=104,917 sf 15.97% Impervious Runoff Depth=0.36"
Tc=5.0 min UI Adjusted CN=44 Runoff=0.34 cfs 3,113.8 cf

Link POA A: POND- WEST Inflow=6.03 cfs 22,463.1 cf
Primary=6.03 cfs 22,463.1 cf

Link POA C: WETLAND-WEST Inflow=2.16 cfs 8,352.8 cf
Primary=2.16 cfs 8,352.8 cf

Link POA D: FIRE POND Inflow=51.57 cfs 180,560.4 cf
Primary=51.57 cfs 180,560.4 cf

Total Runoff Area = 1,418,222 sf Runoff Volume = 214,490.1 cf Average Runoff Depth = 1.81"
50.09% Pervious = 710,328 sf 49.91% Impervious = 707,894 sf

Summary for Subcatchment EX-A: Subcat EX-A

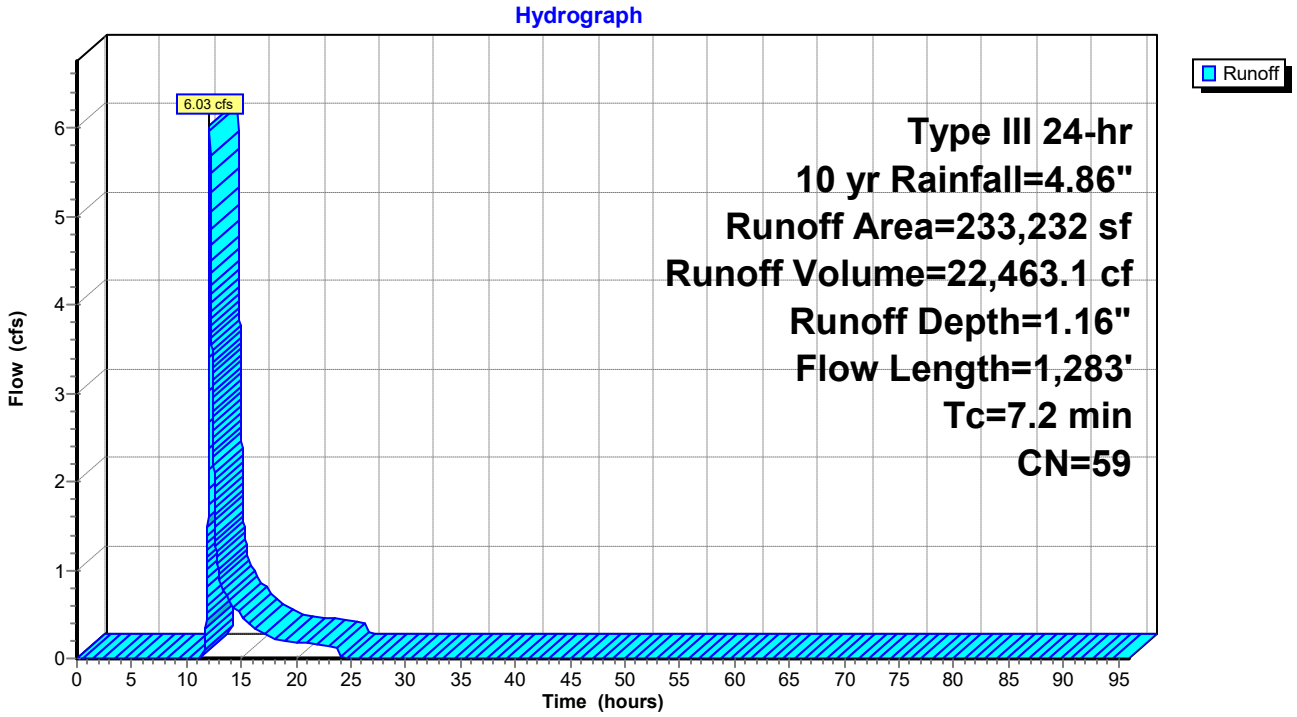
Runoff = 6.03 cfs @ 12.12 hrs, Volume= 22,463.1 cf, Depth= 1.16"
Routed to Link POA A : POND- WEST

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 yr Rainfall=4.86"

	Area (sf)	CN	Description
	80,020	98	Unconnected pavement, HSG A
*	153,212	39	>75% Grass cover, Good, HSG A
	233,232	59	Weighted Average
	153,212		65.69% Pervious Area
	80,020		34.31% Impervious Area
	80,020		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0700	0.25		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.22"
0.5	75	0.1133	2.36		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.5	43	0.0046	1.38		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	88	0.0110	6.52	8.01	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
0.1	66	0.0207	8.95	10.98	**Pipe Channel, E-F** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
0.6	285	0.0086	7.89	24.79	**Pipe Channel, F-G** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011
0.1	33	0.0137	9.96	31.29	**Pipe Channel, G-H** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011
0.2	56	0.0025	4.94	24.24	**Pipe Channel, H-I** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011
0.2	50	0.0024	4.84	23.75	**Pipe Channel, I-J** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011
0.3	141	0.0071	8.32	40.85	**Pipe Channel, J-K** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011
1.1	396	0.0029	6.01	42.45	**Pipe Channel, K-L** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
7.2	1,283	Total			

Subcatchment EX-A: Subcat EX-A



Hydrograph for Subcatchment EX-A: Subcat EX-A

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.86	1.16	0.00
1.00	0.05	0.00	0.00	53.00	4.86	1.16	0.00
2.00	0.10	0.00	0.00	54.00	4.86	1.16	0.00
3.00	0.15	0.00	0.00	55.00	4.86	1.16	0.00
4.00	0.21	0.00	0.00	56.00	4.86	1.16	0.00
5.00	0.28	0.00	0.00	57.00	4.86	1.16	0.00
6.00	0.35	0.00	0.00	58.00	4.86	1.16	0.00
7.00	0.44	0.00	0.00	59.00	4.86	1.16	0.00
8.00	0.55	0.00	0.00	60.00	4.86	1.16	0.00
9.00	0.71	0.00	0.00	61.00	4.86	1.16	0.00
10.00	0.92	0.00	0.00	62.00	4.86	1.16	0.00
11.00	1.22	0.00	0.00	63.00	4.86	1.16	0.00
12.00	2.43	0.14	**2.39**	64.00	4.86	1.16	0.00
13.00	3.64	0.55	**0.93**	65.00	4.86	1.16	0.00
14.00	3.94	0.69	0.63	66.00	4.86	1.16	0.00
15.00	4.15	0.79	0.49	67.00	4.86	1.16	0.00
16.00	4.31	0.86	0.36	68.00	4.86	1.16	0.00
17.00	4.42	0.92	0.29	69.00	4.86	1.16	0.00
18.00	4.51	0.97	0.23	70.00	4.86	1.16	0.00
19.00	4.58	1.01	0.20	71.00	4.86	1.16	0.00
20.00	4.65	1.04	0.19	72.00	4.86	1.16	0.00
21.00	4.71	1.07	0.17	73.00	4.86	1.16	0.00
22.00	4.77	1.10	0.16	74.00	4.86	1.16	0.00
23.00	4.82	1.13	0.14	75.00	4.86	1.16	0.00
24.00	**4.86**	**1.16**	0.13	76.00	4.86	1.16	0.00
25.00	4.86	1.16	0.00	77.00	4.86	1.16	0.00
26.00	4.86	1.16	0.00	78.00	4.86	1.16	0.00
27.00	4.86	1.16	0.00	79.00	4.86	1.16	0.00
28.00	4.86	1.16	0.00	80.00	4.86	1.16	0.00
29.00	4.86	1.16	0.00	81.00	4.86	1.16	0.00
30.00	4.86	1.16	0.00	82.00	4.86	1.16	0.00
31.00	4.86	1.16	0.00	83.00	4.86	1.16	0.00
32.00	4.86	1.16	0.00	84.00	4.86	1.16	0.00
33.00	4.86	1.16	0.00	85.00	4.86	1.16	0.00
34.00	4.86	1.16	0.00	86.00	4.86	1.16	0.00
35.00	4.86	1.16	0.00	87.00	4.86	1.16	0.00
36.00	4.86	1.16	0.00	88.00	4.86	1.16	0.00
37.00	4.86	1.16	0.00	89.00	4.86	1.16	0.00
38.00	4.86	1.16	0.00	90.00	4.86	1.16	0.00
39.00	4.86	1.16	0.00	91.00	4.86	1.16	0.00
40.00	4.86	1.16	0.00	92.00	4.86	1.16	0.00
41.00	4.86	1.16	0.00	93.00	4.86	1.16	0.00
42.00	4.86	1.16	0.00	94.00	4.86	1.16	0.00
43.00	4.86	1.16	0.00	95.00	4.86	1.16	0.00
44.00	4.86	1.16	0.00	96.00	4.86	1.16	0.00
45.00	4.86	1.16	0.00				
46.00	4.86	1.16	0.00				
47.00	4.86	1.16	0.00				
48.00	4.86	1.16	0.00				
49.00	4.86	1.16	0.00				
50.00	4.86	1.16	0.00				
51.00	4.86	1.16	0.00				

Summary for Subcatchment EX-C: Subcat EX-C

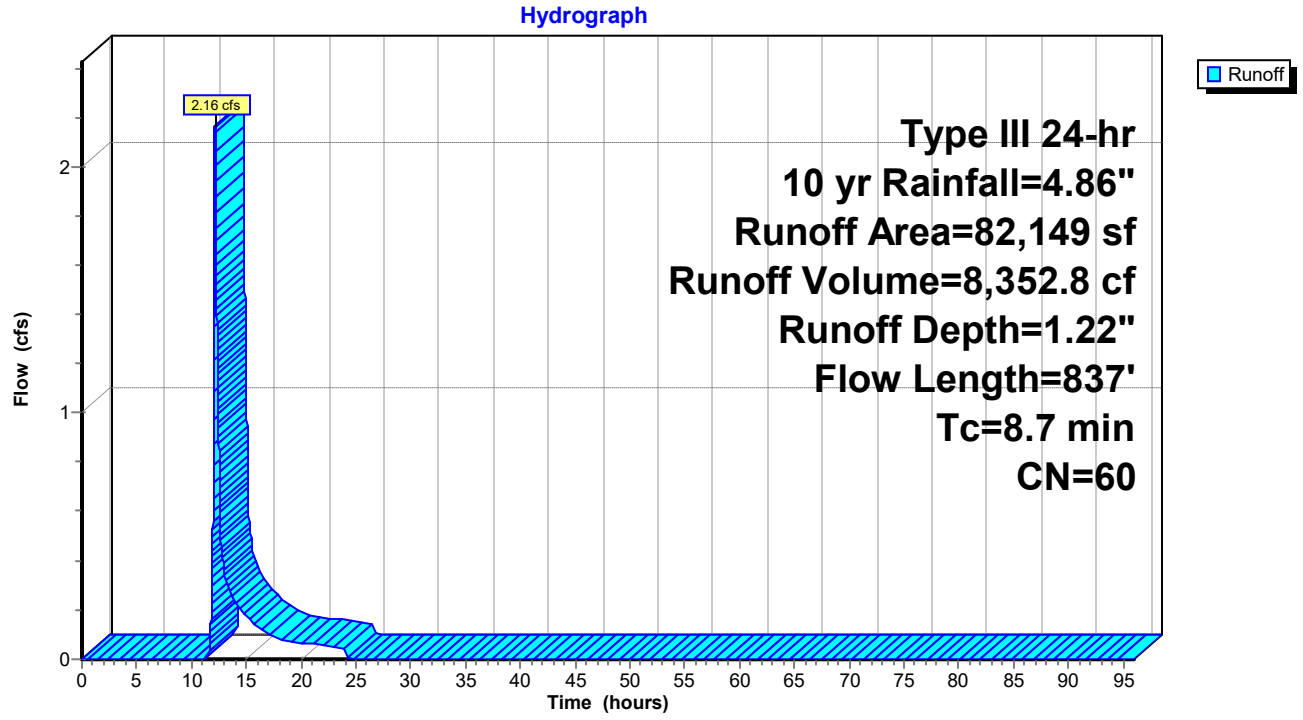
Runoff = 2.16 cfs @ 12.14 hrs, Volume= 8,352.8 cf, Depth= 1.22"
Routed to Link POA C : WETLAND-WEST

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 yr Rainfall=4.86"

Area (sf)	CN	Description
29,061	98	Unconnected pavement, HSG A
53,088	39	>75% Grass cover, Good, HSG A
82,149	60	Weighted Average
53,088		64.62% Pervious Area
29,061		35.38% Impervious Area
29,061		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	50	0.0020	0.48		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
6.2	686	0.0083	1.85		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.8	101	0.0017	2.21	1.74	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
8.7	837	Total			

Subcatchment EX-C: Subcat EX-C



Hydrograph for Subcatchment EX-C: Subcat EX-C

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.86	1.22	0.00
1.00	0.05	0.00	0.00	53.00	4.86	1.22	0.00
2.00	0.10	0.00	0.00	54.00	4.86	1.22	0.00
3.00	0.15	0.00	0.00	55.00	4.86	1.22	0.00
4.00	0.21	0.00	0.00	56.00	4.86	1.22	0.00
5.00	0.28	0.00	0.00	57.00	4.86	1.22	0.00
6.00	0.35	0.00	0.00	58.00	4.86	1.22	0.00
7.00	0.44	0.00	0.00	59.00	4.86	1.22	0.00
8.00	0.55	0.00	0.00	60.00	4.86	1.22	0.00
9.00	0.71	0.00	0.00	61.00	4.86	1.22	0.00
10.00	0.92	0.00	0.00	62.00	4.86	1.22	0.00
11.00	1.22	0.00	0.00	63.00	4.86	1.22	0.00
12.00	2.43	0.15	**0.79**	64.00	4.86	1.22	0.00
13.00	3.64	0.60	**0.35**	65.00	4.86	1.22	0.00
14.00	3.94	0.73	0.23	66.00	4.86	1.22	0.00
15.00	4.15	0.84	0.18	67.00	4.86	1.22	0.00
16.00	4.31	0.92	0.13	68.00	4.86	1.22	0.00
17.00	4.42	0.98	0.11	69.00	4.86	1.22	0.00
18.00	4.51	1.03	0.08	70.00	4.86	1.22	0.00
19.00	4.58	1.07	0.07	71.00	4.86	1.22	0.00
20.00	4.65	1.10	0.07	72.00	4.86	1.22	0.00
21.00	4.71	1.14	0.06	73.00	4.86	1.22	0.00
22.00	4.77	1.17	0.06	74.00	4.86	1.22	0.00
23.00	4.82	1.20	0.05	75.00	4.86	1.22	0.00
24.00	**4.86**	**1.22**	0.05	76.00	4.86	1.22	0.00
25.00	4.86	1.22	0.00	77.00	4.86	1.22	0.00
26.00	4.86	1.22	0.00	78.00	4.86	1.22	0.00
27.00	4.86	1.22	0.00	79.00	4.86	1.22	0.00
28.00	4.86	1.22	0.00	80.00	4.86	1.22	0.00
29.00	4.86	1.22	0.00	81.00	4.86	1.22	0.00
30.00	4.86	1.22	0.00	82.00	4.86	1.22	0.00
31.00	4.86	1.22	0.00	83.00	4.86	1.22	0.00
32.00	4.86	1.22	0.00	84.00	4.86	1.22	0.00
33.00	4.86	1.22	0.00	85.00	4.86	1.22	0.00
34.00	4.86	1.22	0.00	86.00	4.86	1.22	0.00
35.00	4.86	1.22	0.00	87.00	4.86	1.22	0.00
36.00	4.86	1.22	0.00	88.00	4.86	1.22	0.00
37.00	4.86	1.22	0.00	89.00	4.86	1.22	0.00
38.00	4.86	1.22	0.00	90.00	4.86	1.22	0.00
39.00	4.86	1.22	0.00	91.00	4.86	1.22	0.00
40.00	4.86	1.22	0.00	92.00	4.86	1.22	0.00
41.00	4.86	1.22	0.00	93.00	4.86	1.22	0.00
42.00	4.86	1.22	0.00	94.00	4.86	1.22	0.00
43.00	4.86	1.22	0.00	95.00	4.86	1.22	0.00
44.00	4.86	1.22	0.00	96.00	4.86	1.22	0.00
45.00	4.86	1.22	0.00				
46.00	4.86	1.22	0.00				
47.00	4.86	1.22	0.00				
48.00	4.86	1.22	0.00				
49.00	4.86	1.22	0.00				
50.00	4.86	1.22	0.00				
51.00	4.86	1.22	0.00				

Summary for Subcatchment EX-D: Subcat EX-D

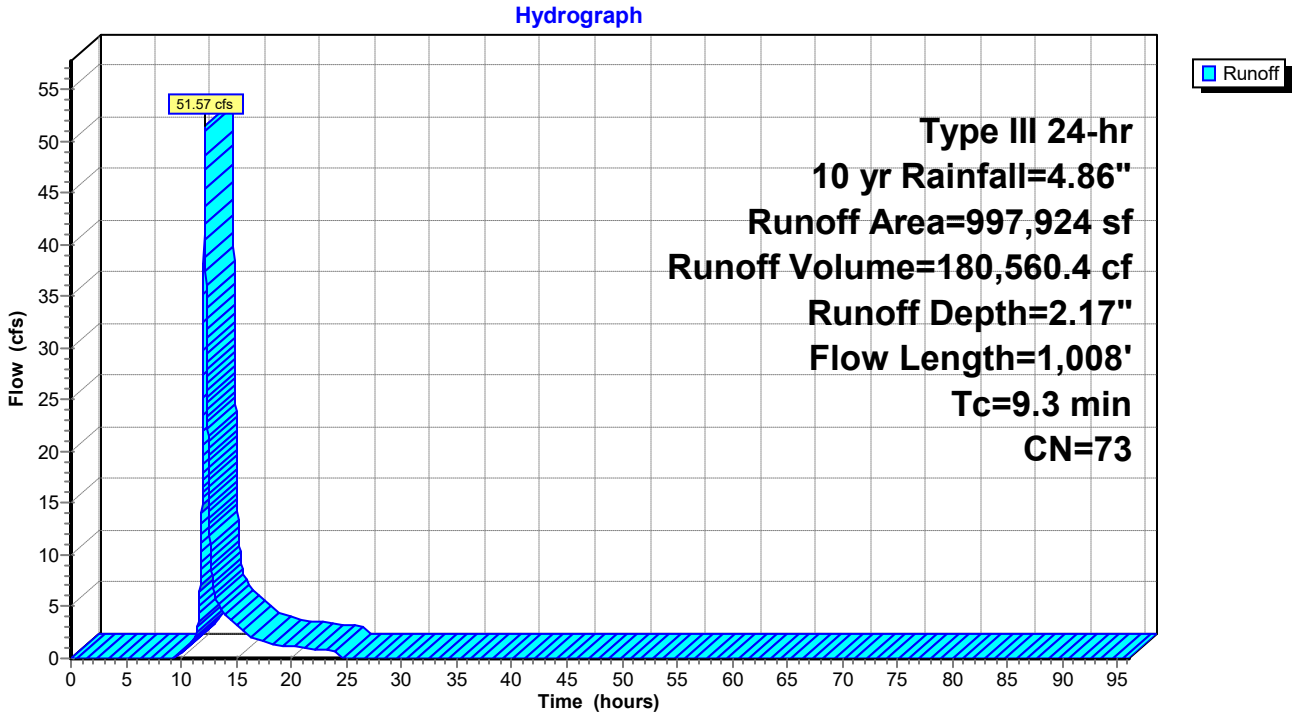
Runoff = 51.57 cfs @ 12.14 hrs, Volume= 180,560.4 cf, Depth= 2.17"
Routed to Link POA D : FIRE POND

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 yr Rainfall=4.86"

	Area (sf)	CN	Description
*	57,570	98	Champage Bldg (#200)
	341,183	98	Unconnected pavement, HSG A
	415,865	39	>75% Grass cover, Good, HSG A
*	183,306	98	Office Bldg (#110)
	997,924	73	Weighted Average
	415,865		41.67% Pervious Area
	582,059		58.33% Impervious Area
	341,183		58.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.22"
0.2	32	0.2180	3.27		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.3	58	0.0340	3.74		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.4	228	0.2197	9.52		**Shallow Concentrated Flow, D-E** Paved Kv= 20.3 fps
0.3	84	0.0090	5.09	3.99	**Pipe Channel, E-F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean
0.1	89	0.0680	25.75	126.41	**Pipe Channel, F-G** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011 Concrete pipe, straight & clean
0.4	157	0.0030	6.11	43.17	**Pipe Channel, G-H** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
0.4	224	0.0062	8.78	62.07	**Pipe Channel, H-I** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
0.1	86	0.0116	12.01	84.90	**Pipe Channel, I-J** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
9.3	1,008	Total			

Subcatchment EX-D: Subcat EX-D



Hydrograph for Subcatchment EX-D: Subcat EX-D

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.15	0.00	0.00
4.00	0.21	0.00	0.00
5.00	0.28	0.00	0.00
6.00	0.35	0.00	0.00
7.00	0.44	0.00	0.00
8.00	0.55	0.00	0.00
9.00	0.71	0.00	0.00
10.00	0.92	0.01	0.39
11.00	1.22	0.05	1.53
12.00	2.43	0.53	**23.51**
13.00	3.64	1.28	**6.59**
14.00	3.94	1.49	4.18
15.00	4.15	1.64	3.20
16.00	4.31	1.75	2.30
17.00	4.42	1.84	1.82
18.00	4.51	1.90	1.41
19.00	4.58	1.96	1.25
20.00	4.65	2.01	1.13
21.00	4.71	2.06	1.04
22.00	4.77	2.10	0.94
23.00	4.82	2.14	0.85
24.00	**4.86**	**2.17**	0.75
25.00	4.86	2.17	0.00
26.00	4.86	2.17	0.00
27.00	4.86	2.17	0.00
28.00	4.86	2.17	0.00
29.00	4.86	2.17	0.00
30.00	4.86	2.17	0.00
31.00	4.86	2.17	0.00
32.00	4.86	2.17	0.00
33.00	4.86	2.17	0.00
34.00	4.86	2.17	0.00
35.00	4.86	2.17	0.00
36.00	4.86	2.17	0.00
37.00	4.86	2.17	0.00
38.00	4.86	2.17	0.00
39.00	4.86	2.17	0.00
40.00	4.86	2.17	0.00
41.00	4.86	2.17	0.00
42.00	4.86	2.17	0.00
43.00	4.86	2.17	0.00
44.00	4.86	2.17	0.00
45.00	4.86	2.17	0.00
46.00	4.86	2.17	0.00
47.00	4.86	2.17	0.00
48.00	4.86	2.17	0.00
49.00	4.86	2.17	0.00
50.00	4.86	2.17	0.00
51.00	4.86	2.17	0.00
52.00	4.86	2.17	0.00
53.00	4.86	2.17	0.00
54.00	4.86	2.17	0.00
55.00	4.86	2.17	0.00
56.00	4.86	2.17	0.00
57.00	4.86	2.17	0.00
58.00	4.86	2.17	0.00
59.00	4.86	2.17	0.00
60.00	4.86	2.17	0.00
61.00	4.86	2.17	0.00
62.00	4.86	2.17	0.00
63.00	4.86	2.17	0.00
64.00	4.86	2.17	0.00
65.00	4.86	2.17	0.00
66.00	4.86	2.17	0.00
67.00	4.86	2.17	0.00
68.00	4.86	2.17	0.00
69.00	4.86	2.17	0.00
70.00	4.86	2.17	0.00
71.00	4.86	2.17	0.00
72.00	4.86	2.17	0.00
73.00	4.86	2.17	0.00
74.00	4.86	2.17	0.00
75.00	4.86	2.17	0.00
76.00	4.86	2.17	0.00
77.00	4.86	2.17	0.00
78.00	4.86	2.17	0.00
79.00	4.86	2.17	0.00
80.00	4.86	2.17	0.00
81.00	4.86	2.17	0.00
82.00	4.86	2.17	0.00
83.00	4.86	2.17	0.00
84.00	4.86	2.17	0.00
85.00	4.86	2.17	0.00
86.00	4.86	2.17	0.00
87.00	4.86	2.17	0.00
88.00	4.86	2.17	0.00
89.00	4.86	2.17	0.00
90.00	4.86	2.17	0.00
91.00	4.86	2.17	0.00
92.00	4.86	2.17	0.00
93.00	4.86	2.17	0.00
94.00	4.86	2.17	0.00
95.00	4.86	2.17	0.00
96.00	4.86	2.17	0.00

Summary for Subcatchment EX-E: Subcat EX-E

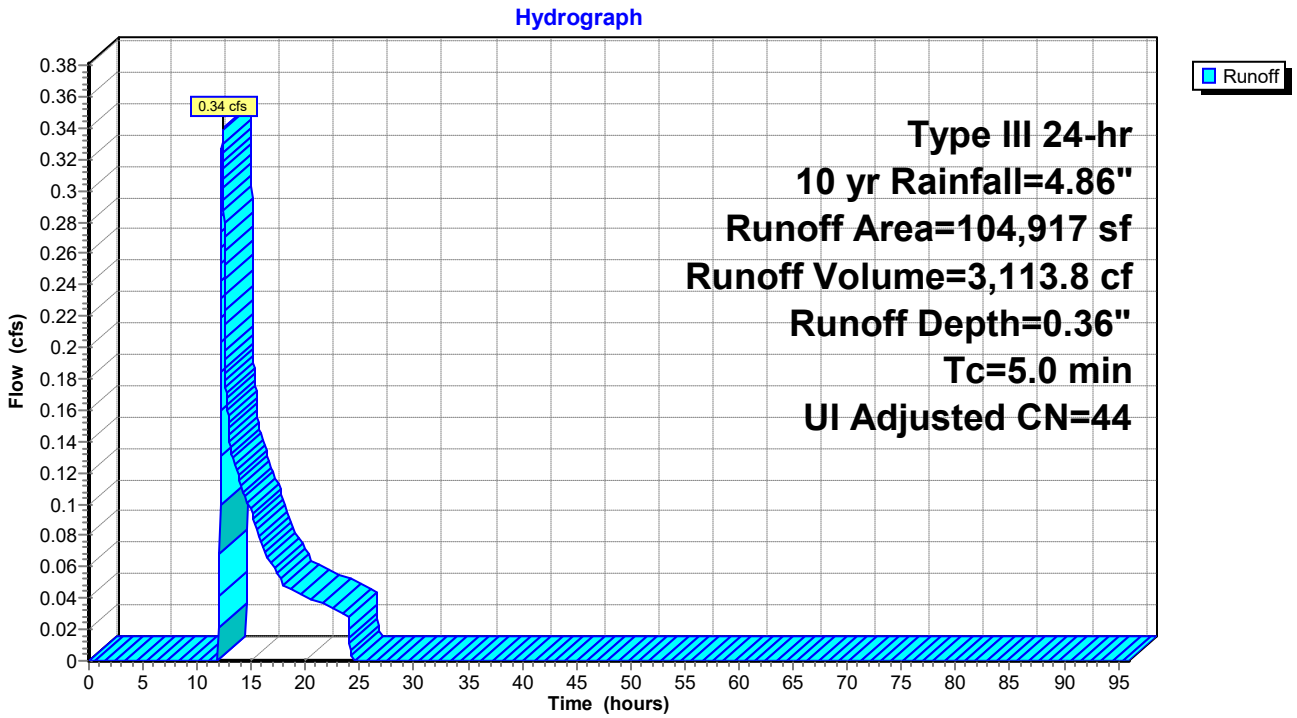
Runoff = 0.34 cfs @ 12.33 hrs, Volume= 3,113.8 cf, Depth= 0.36"

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 yr Rainfall=4.86"

	Area (sf)	CN	Adj	Description
*	2,135	98		Roof Area
	14,619	98		Unconnected pavement, HSG A
	88,163	39		>75% Grass cover, Good, HSG A
	104,917	48	44	Weighted Average, UI Adjusted
	88,163			84.03% Pervious Area
	16,754			15.97% Impervious Area
	14,619			87.26% Unconnected

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

Subcatchment EX-E: Subcat EX-E



Hydrograph for Subcatchment EX-E: Subcat EX-E

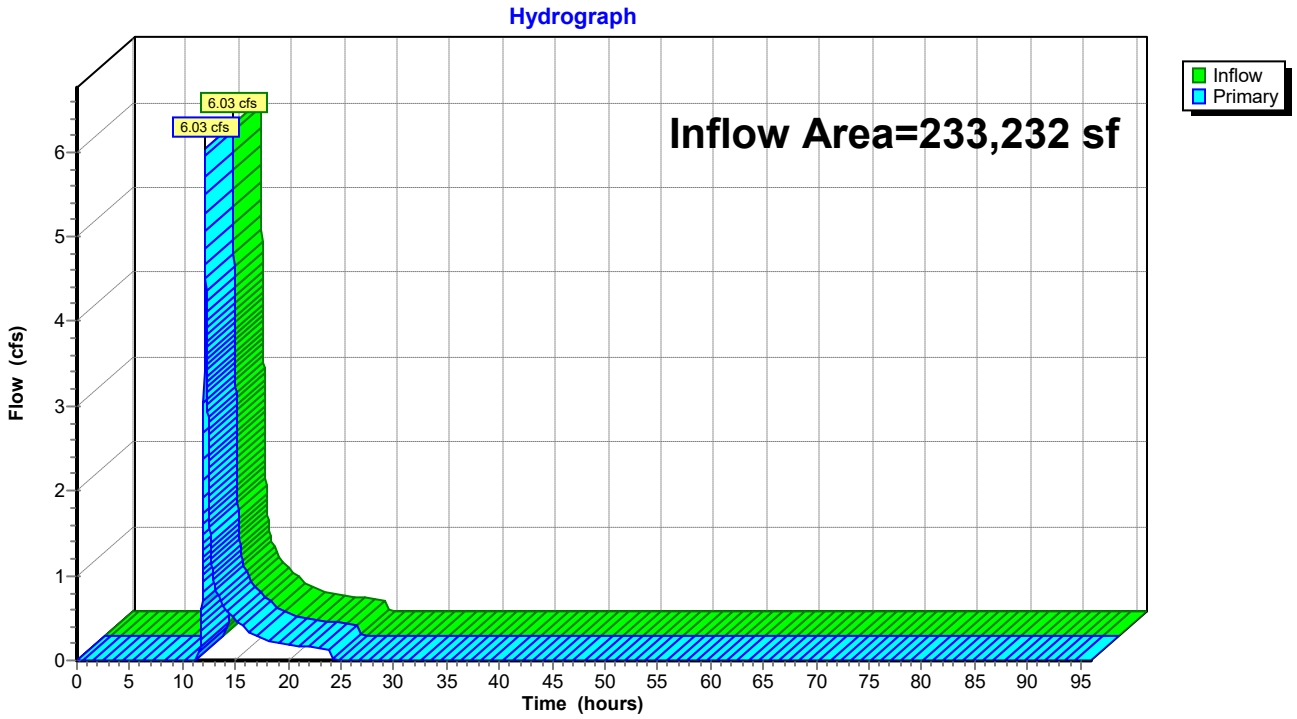
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.86	0.36	0.00
1.00	0.05	0.00	0.00	53.00	4.86	0.36	0.00
2.00	0.10	0.00	0.00	54.00	4.86	0.36	0.00
3.00	0.15	0.00	0.00	55.00	4.86	0.36	0.00
4.00	0.21	0.00	0.00	56.00	4.86	0.36	0.00
5.00	0.28	0.00	0.00	57.00	4.86	0.36	0.00
6.00	0.35	0.00	0.00	58.00	4.86	0.36	0.00
7.00	0.44	0.00	0.00	59.00	4.86	0.36	0.00
8.00	0.55	0.00	0.00	60.00	4.86	0.36	0.00
9.00	0.71	0.00	0.00	61.00	4.86	0.36	0.00
10.00	0.92	0.00	0.00	62.00	4.86	0.36	0.00
11.00	1.22	0.00	0.00	63.00	4.86	0.36	0.00
12.00	2.43	0.00	**0.00**	64.00	4.86	0.36	0.00
13.00	3.64	0.09	**0.14**	65.00	4.86	0.36	0.00
14.00	3.94	0.14	0.11	66.00	4.86	0.36	0.00
15.00	4.15	0.18	0.10	67.00	4.86	0.36	0.00
16.00	4.31	0.21	0.07	68.00	4.86	0.36	0.00
17.00	4.42	0.24	0.06	69.00	4.86	0.36	0.00
18.00	4.51	0.26	0.05	70.00	4.86	0.36	0.00
19.00	4.58	0.28	0.04	71.00	4.86	0.36	0.00
20.00	4.65	0.30	0.04	72.00	4.86	0.36	0.00
21.00	4.71	0.32	0.04	73.00	4.86	0.36	0.00
22.00	4.77	0.33	0.04	74.00	4.86	0.36	0.00
23.00	4.82	0.34	0.03	75.00	4.86	0.36	0.00
24.00	**4.86**	**0.36**	0.03	76.00	4.86	0.36	0.00
25.00	4.86	0.36	0.00	77.00	4.86	0.36	0.00
26.00	4.86	0.36	0.00	78.00	4.86	0.36	0.00
27.00	4.86	0.36	0.00	79.00	4.86	0.36	0.00
28.00	4.86	0.36	0.00	80.00	4.86	0.36	0.00
29.00	4.86	0.36	0.00	81.00	4.86	0.36	0.00
30.00	4.86	0.36	0.00	82.00	4.86	0.36	0.00
31.00	4.86	0.36	0.00	83.00	4.86	0.36	0.00
32.00	4.86	0.36	0.00	84.00	4.86	0.36	0.00
33.00	4.86	0.36	0.00	85.00	4.86	0.36	0.00
34.00	4.86	0.36	0.00	86.00	4.86	0.36	0.00
35.00	4.86	0.36	0.00	87.00	4.86	0.36	0.00
36.00	4.86	0.36	0.00	88.00	4.86	0.36	0.00
37.00	4.86	0.36	0.00	89.00	4.86	0.36	0.00
38.00	4.86	0.36	0.00	90.00	4.86	0.36	0.00
39.00	4.86	0.36	0.00	91.00	4.86	0.36	0.00
40.00	4.86	0.36	0.00	92.00	4.86	0.36	0.00
41.00	4.86	0.36	0.00	93.00	4.86	0.36	0.00
42.00	4.86	0.36	0.00	94.00	4.86	0.36	0.00
43.00	4.86	0.36	0.00	95.00	4.86	0.36	0.00
44.00	4.86	0.36	0.00	96.00	4.86	0.36	0.00
45.00	4.86	0.36	0.00				
46.00	4.86	0.36	0.00				
47.00	4.86	0.36	0.00				
48.00	4.86	0.36	0.00				
49.00	4.86	0.36	0.00				
50.00	4.86	0.36	0.00				
51.00	4.86	0.36	0.00				

Summary for Link POA A: POND- WEST

Inflow Area = 233,232 sf, 34.31% Impervious, Inflow Depth = 1.16" for 10 yr event
Inflow = 6.03 cfs @ 12.12 hrs, Volume= 22,463.1 cf
Primary = 6.03 cfs @ 12.12 hrs, Volume= 22,463.1 cf, Atten= 0%, Lag= 0.0 min

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

Link POA A: POND- WEST



Hydrograph for Link POA A: POND- WEST

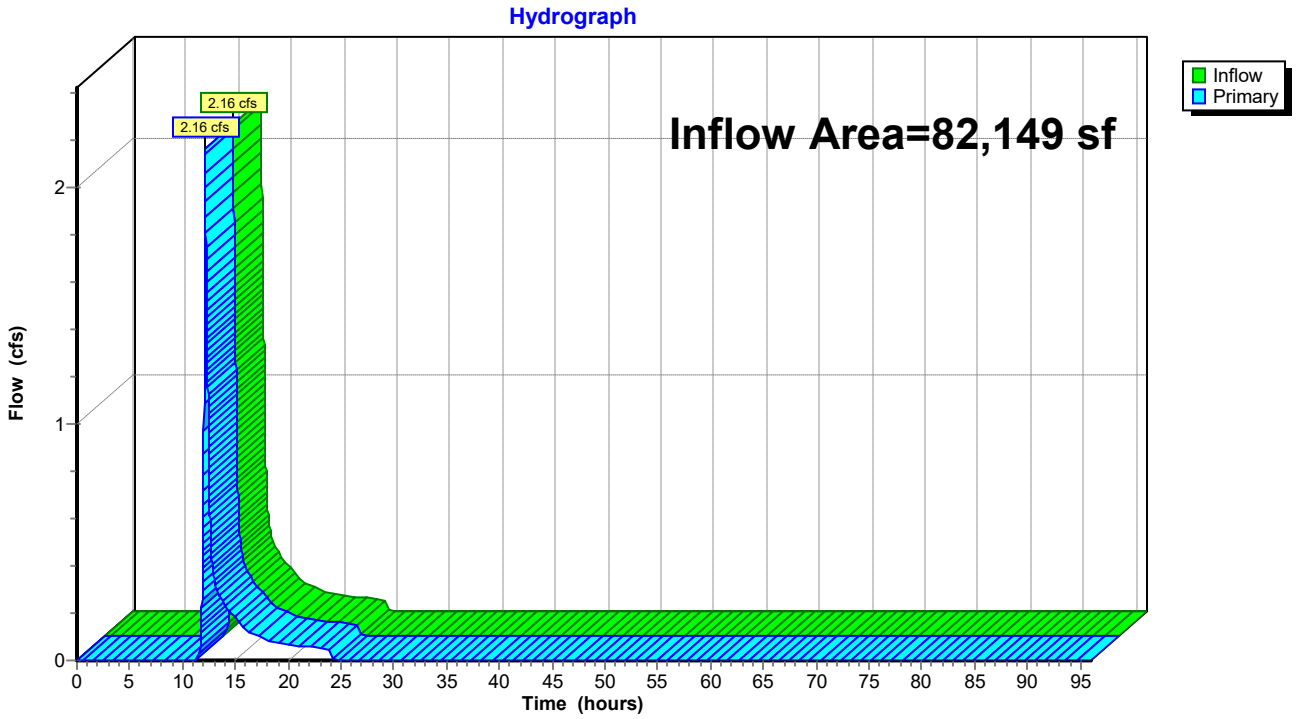
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
12.00	**2.39**	0.00	**2.39**	64.00	0.00	0.00	0.00
13.00	**0.93**	0.00	**0.93**	65.00	0.00	0.00	0.00
14.00	0.63	0.00	0.63	66.00	0.00	0.00	0.00
15.00	0.49	0.00	0.49	67.00	0.00	0.00	0.00
16.00	0.36	0.00	0.36	68.00	0.00	0.00	0.00
17.00	0.29	0.00	0.29	69.00	0.00	0.00	0.00
18.00	0.23	0.00	0.23	70.00	0.00	0.00	0.00
19.00	0.20	0.00	0.20	71.00	0.00	0.00	0.00
20.00	0.19	0.00	0.19	72.00	0.00	0.00	0.00
21.00	0.17	0.00	0.17	73.00	0.00	0.00	0.00
22.00	0.16	0.00	0.16	74.00	0.00	0.00	0.00
23.00	0.14	0.00	0.14	75.00	0.00	0.00	0.00
24.00	0.13	0.00	0.13	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA C: WETLAND-WEST

Inflow Area = 82,149 sf, 35.38% Impervious, Inflow Depth = 1.22" for 10 yr event
Inflow = 2.16 cfs @ 12.14 hrs, Volume= 8,352.8 cf
Primary = 2.16 cfs @ 12.14 hrs, Volume= 8,352.8 cf, Atten= 0%, Lag= 0.0 min

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

Link POA C: WETLAND-WEST



Hydrograph for Link POA C: WETLAND-WEST

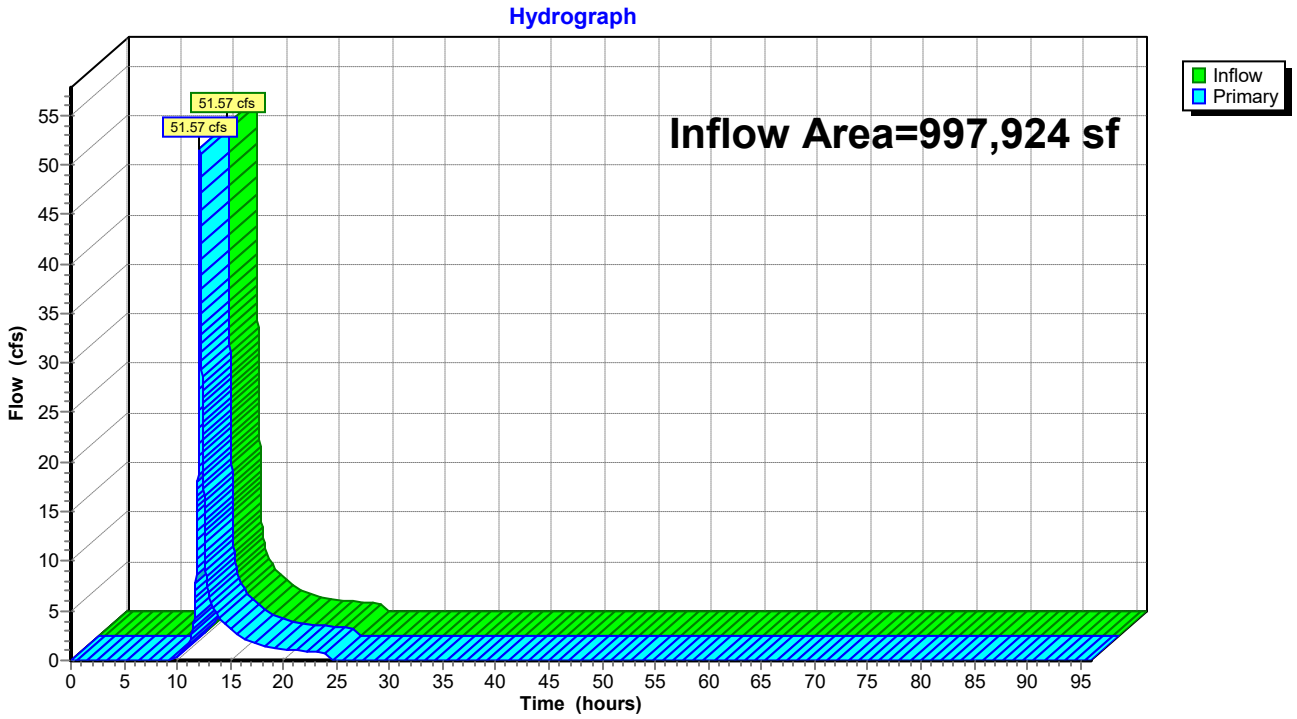
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
12.00	**0.79**	0.00	**0.79**	64.00	0.00	0.00	0.00
13.00	**0.35**	0.00	**0.35**	65.00	0.00	0.00	0.00
14.00	0.23	0.00	0.23	66.00	0.00	0.00	0.00
15.00	0.18	0.00	0.18	67.00	0.00	0.00	0.00
16.00	0.13	0.00	0.13	68.00	0.00	0.00	0.00
17.00	0.11	0.00	0.11	69.00	0.00	0.00	0.00
18.00	0.08	0.00	0.08	70.00	0.00	0.00	0.00
19.00	0.07	0.00	0.07	71.00	0.00	0.00	0.00
20.00	0.07	0.00	0.07	72.00	0.00	0.00	0.00
21.00	0.06	0.00	0.06	73.00	0.00	0.00	0.00
22.00	0.06	0.00	0.06	74.00	0.00	0.00	0.00
23.00	0.05	0.00	0.05	75.00	0.00	0.00	0.00
24.00	0.05	0.00	0.05	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA D: FIRE POND

Inflow Area = 997,924 sf, 58.33% Impervious, Inflow Depth = 2.17" for 10 yr event
Inflow = 51.57 cfs @ 12.14 hrs, Volume= 180,560.4 cf
Primary = 51.57 cfs @ 12.14 hrs, Volume= 180,560.4 cf, Atten= 0%, Lag= 0.0 min

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

Link POA D: FIRE POND



Hydrograph for Link POA D: FIRE POND

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.39	0.00	0.39	62.00	0.00	0.00	0.00
11.00	1.53	0.00	1.53	63.00	0.00	0.00	0.00
12.00	**23.51**	0.00	**23.51**	64.00	0.00	0.00	0.00
13.00	**6.59**	0.00	**6.59**	65.00	0.00	0.00	0.00
14.00	4.18	0.00	4.18	66.00	0.00	0.00	0.00
15.00	3.20	0.00	3.20	67.00	0.00	0.00	0.00
16.00	2.30	0.00	2.30	68.00	0.00	0.00	0.00
17.00	1.82	0.00	1.82	69.00	0.00	0.00	0.00
18.00	1.41	0.00	1.41	70.00	0.00	0.00	0.00
19.00	1.25	0.00	1.25	71.00	0.00	0.00	0.00
20.00	1.13	0.00	1.13	72.00	0.00	0.00	0.00
21.00	1.04	0.00	1.04	73.00	0.00	0.00	0.00
22.00	0.94	0.00	0.94	74.00	0.00	0.00	0.00
23.00	0.85	0.00	0.85	75.00	0.00	0.00	0.00
24.00	0.75	0.00	0.75	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

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 EX-A: Subcat EX-A Runoff Area=233,232 sf 34.31% Impervious Runoff Depth=1.94"
Flow Length=1,283' Tc=7.2 min CN=59 Runoff=10.95 cfs 37,611.4 cf

Subcatchment EX-C: Subcat EX-C Runoff Area=82,149 sf 35.38% Impervious Runoff Depth=2.02"
Flow Length=837' Tc=8.7 min CN=60 Runoff=3.86 cfs 13,830.8 cf

Subcatchment EX-D: Subcat EX-D Runoff Area=997,924 sf 58.33% Impervious Runoff Depth=3.21"
Flow Length=1,008' Tc=9.3 min CN=73 Runoff=77.02 cfs 267,232.1 cf

Subcatchment EX-E: Subcat EX-E Runoff Area=104,917 sf 15.97% Impervious Runoff Depth=0.80"
Tc=5.0 min UI Adjusted CN=44 Runoff=1.37 cfs 6,955.5 cf

Link POA A: POND- WEST Inflow=10.95 cfs 37,611.4 cf
Primary=10.95 cfs 37,611.4 cf

Link POA C: WETLAND-WEST Inflow=3.86 cfs 13,830.8 cf
Primary=3.86 cfs 13,830.8 cf

Link POA D: FIRE POND Inflow=77.02 cfs 267,232.1 cf
Primary=77.02 cfs 267,232.1 cf

Total Runoff Area = 1,418,222 sf Runoff Volume = 325,629.8 cf Average Runoff Depth = 2.76"
50.09% Pervious = 710,328 sf 49.91% Impervious = 707,894 sf

Summary for Subcatchment EX-A: Subcat EX-A

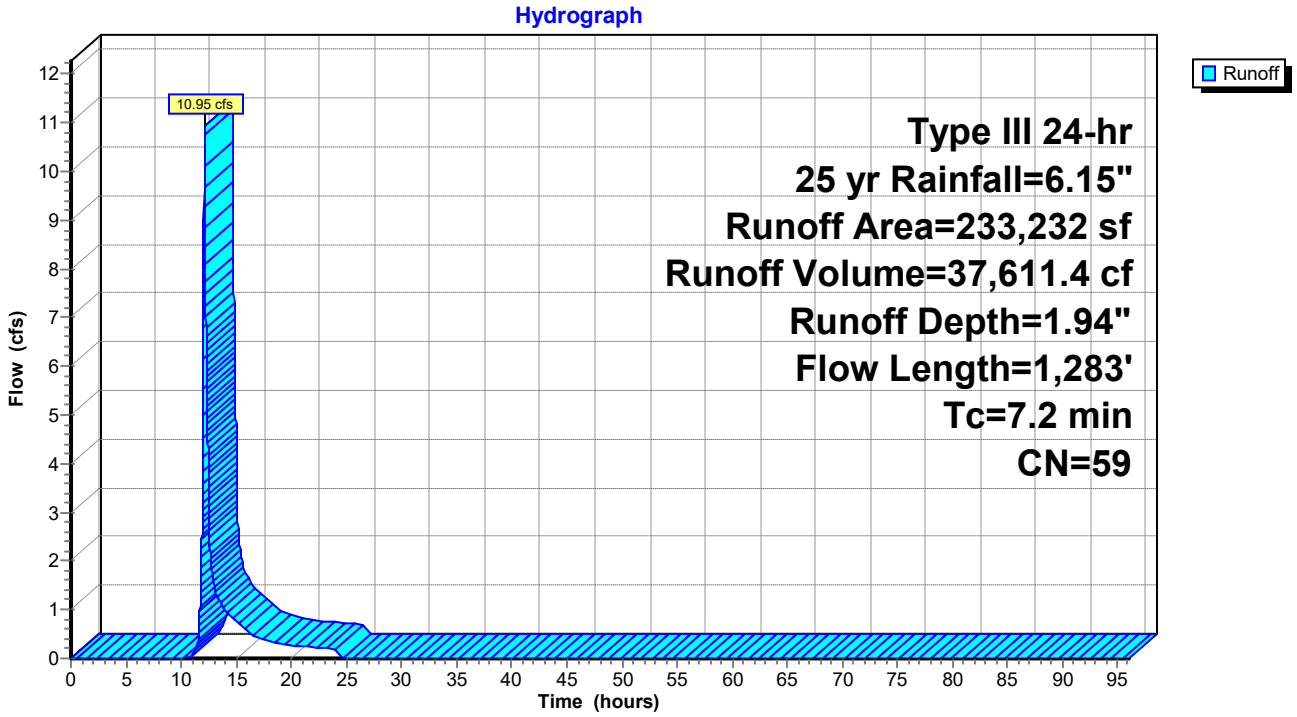
Runoff = 10.95 cfs @ 12.11 hrs, Volume= 37,611.4 cf, Depth= 1.94"
Routed to Link POA A : POND- WEST

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 yr Rainfall=6.15"

	Area (sf)	CN	Description
	80,020	98	Unconnected pavement, HSG A
*	153,212	39	>75% Grass cover, Good, HSG A
	233,232	59	Weighted Average
	153,212		65.69% Pervious Area
	80,020		34.31% Impervious Area
	80,020		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0700	0.25		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.22"
0.5	75	0.1133	2.36		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.5	43	0.0046	1.38		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	88	0.0110	6.52	8.01	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
0.1	66	0.0207	8.95	10.98	**Pipe Channel, E-F** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
0.6	285	0.0086	7.89	24.79	**Pipe Channel, F-G** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011
0.1	33	0.0137	9.96	31.29	**Pipe Channel, G-H** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011
0.2	56	0.0025	4.94	24.24	**Pipe Channel, H-I** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011
0.2	50	0.0024	4.84	23.75	**Pipe Channel, I-J** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011
0.3	141	0.0071	8.32	40.85	**Pipe Channel, J-K** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011
1.1	396	0.0029	6.01	42.45	**Pipe Channel, K-L** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
7.2	1,283	Total			

Subcatchment EX-A: Subcat EX-A



Hydrograph for Subcatchment EX-A: Subcat EX-A

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.19	0.00	0.00
4.00	0.26	0.00	0.00
5.00	0.35	0.00	0.00
6.00	0.44	0.00	0.00
7.00	0.56	0.00	0.00
8.00	0.70	0.00	0.00
9.00	0.90	0.00	0.00
10.00	1.16	0.00	0.00
11.00	1.54	0.00	0.07
12.00	3.07	0.33	**4.99**
13.00	4.61	1.02	**1.46**
14.00	4.99	1.23	0.97
15.00	5.25	1.38	0.75
16.00	5.45	1.50	0.54
17.00	5.59	1.58	0.44
18.00	5.71	1.65	0.34
19.00	5.80	1.71	0.30
20.00	5.89	1.77	0.28
21.00	5.96	1.81	0.25
22.00	6.03	1.86	0.23
23.00	6.09	1.90	0.21
24.00	**6.15**	**1.94**	0.19
25.00	6.15	1.94	0.00
26.00	6.15	1.94	0.00
27.00	6.15	1.94	0.00
28.00	6.15	1.94	0.00
29.00	6.15	1.94	0.00
30.00	6.15	1.94	0.00
31.00	6.15	1.94	0.00
32.00	6.15	1.94	0.00
33.00	6.15	1.94	0.00
34.00	6.15	1.94	0.00
35.00	6.15	1.94	0.00
36.00	6.15	1.94	0.00
37.00	6.15	1.94	0.00
38.00	6.15	1.94	0.00
39.00	6.15	1.94	0.00
40.00	6.15	1.94	0.00
41.00	6.15	1.94	0.00
42.00	6.15	1.94	0.00
43.00	6.15	1.94	0.00
44.00	6.15	1.94	0.00
45.00	6.15	1.94	0.00
46.00	6.15	1.94	0.00
47.00	6.15	1.94	0.00
48.00	6.15	1.94	0.00
49.00	6.15	1.94	0.00
50.00	6.15	1.94	0.00
51.00	6.15	1.94	0.00
52.00	6.15	1.94	0.00
53.00	6.15	1.94	0.00
54.00	6.15	1.94	0.00
55.00	6.15	1.94	0.00
56.00	6.15	1.94	0.00
57.00	6.15	1.94	0.00
58.00	6.15	1.94	0.00
59.00	6.15	1.94	0.00
60.00	6.15	1.94	0.00
61.00	6.15	1.94	0.00
62.00	6.15	1.94	0.00
63.00	6.15	1.94	0.00
64.00	6.15	1.94	0.00
65.00	6.15	1.94	0.00
66.00	6.15	1.94	0.00
67.00	6.15	1.94	0.00
68.00	6.15	1.94	0.00
69.00	6.15	1.94	0.00
70.00	6.15	1.94	0.00
71.00	6.15	1.94	0.00
72.00	6.15	1.94	0.00
73.00	6.15	1.94	0.00
74.00	6.15	1.94	0.00
75.00	6.15	1.94	0.00
76.00	6.15	1.94	0.00
77.00	6.15	1.94	0.00
78.00	6.15	1.94	0.00
79.00	6.15	1.94	0.00
80.00	6.15	1.94	0.00
81.00	6.15	1.94	0.00
82.00	6.15	1.94	0.00
83.00	6.15	1.94	0.00
84.00	6.15	1.94	0.00
85.00	6.15	1.94	0.00
86.00	6.15	1.94	0.00
87.00	6.15	1.94	0.00
88.00	6.15	1.94	0.00
89.00	6.15	1.94	0.00
90.00	6.15	1.94	0.00
91.00	6.15	1.94	0.00
92.00	6.15	1.94	0.00
93.00	6.15	1.94	0.00
94.00	6.15	1.94	0.00
95.00	6.15	1.94	0.00
96.00	6.15	1.94	0.00

Summary for Subcatchment EX-C: Subcat EX-C

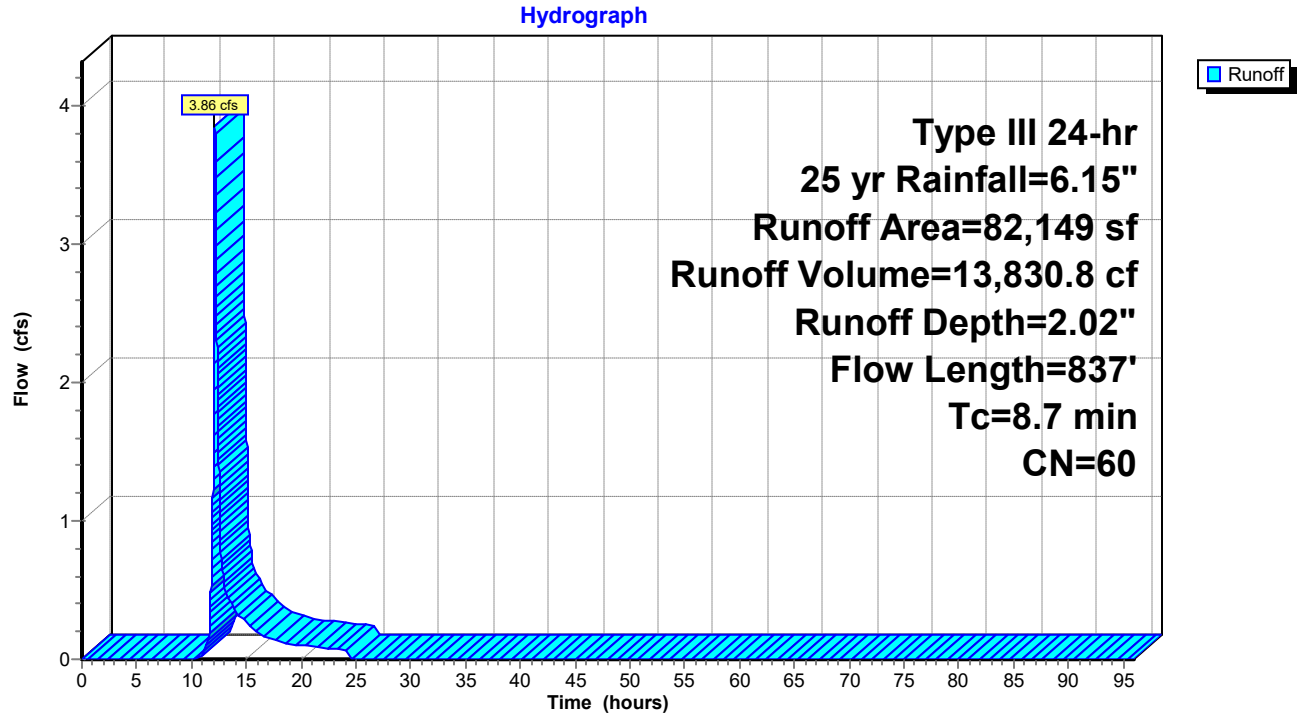
Runoff = 3.86 cfs @ 12.13 hrs, Volume= 13,830.8 cf, Depth= 2.02"
Routed to Link POA C : WETLAND-WEST

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 yr Rainfall=6.15"

Area (sf)	CN	Description
29,061	98	Unconnected pavement, HSG A
53,088	39	>75% Grass cover, Good, HSG A
82,149	60	Weighted Average
53,088		64.62% Pervious Area
29,061		35.38% Impervious Area
29,061		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	50	0.0020	0.48		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
6.2	686	0.0083	1.85		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.8	101	0.0017	2.21	1.74	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
8.7	837	Total			

Subcatchment EX-C: Subcat EX-C



Hydrograph for Subcatchment EX-C: Subcat EX-C

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.19	0.00	0.00
4.00	0.26	0.00	0.00
5.00	0.35	0.00	0.00
6.00	0.44	0.00	0.00
7.00	0.56	0.00	0.00
8.00	0.70	0.00	0.00
9.00	0.90	0.00	0.00
10.00	1.16	0.00	0.00
11.00	1.54	0.01	0.03
12.00	3.07	0.36	**1.62**
13.00	4.61	1.08	**0.54**
14.00	4.99	1.29	0.35
15.00	5.25	1.45	0.27
16.00	5.45	1.57	0.20
17.00	5.59	1.66	0.16
18.00	5.71	1.73	0.12
19.00	5.80	1.79	0.11
20.00	5.89	1.85	0.10
21.00	5.96	1.90	0.09
22.00	6.03	1.94	0.08
23.00	6.09	1.98	0.08
24.00	**6.15**	**2.02**	0.07
25.00	6.15	2.02	0.00
26.00	6.15	2.02	0.00
27.00	6.15	2.02	0.00
28.00	6.15	2.02	0.00
29.00	6.15	2.02	0.00
30.00	6.15	2.02	0.00
31.00	6.15	2.02	0.00
32.00	6.15	2.02	0.00
33.00	6.15	2.02	0.00
34.00	6.15	2.02	0.00
35.00	6.15	2.02	0.00
36.00	6.15	2.02	0.00
37.00	6.15	2.02	0.00
38.00	6.15	2.02	0.00
39.00	6.15	2.02	0.00
40.00	6.15	2.02	0.00
41.00	6.15	2.02	0.00
42.00	6.15	2.02	0.00
43.00	6.15	2.02	0.00
44.00	6.15	2.02	0.00
45.00	6.15	2.02	0.00
46.00	6.15	2.02	0.00
47.00	6.15	2.02	0.00
48.00	6.15	2.02	0.00
49.00	6.15	2.02	0.00
50.00	6.15	2.02	0.00
51.00	6.15	2.02	0.00
52.00	6.15	2.02	0.00
53.00	6.15	2.02	0.00
54.00	6.15	2.02	0.00
55.00	6.15	2.02	0.00
56.00	6.15	2.02	0.00
57.00	6.15	2.02	0.00
58.00	6.15	2.02	0.00
59.00	6.15	2.02	0.00
60.00	6.15	2.02	0.00
61.00	6.15	2.02	0.00
62.00	6.15	2.02	0.00
63.00	6.15	2.02	0.00
64.00	6.15	2.02	0.00
65.00	6.15	2.02	0.00
66.00	6.15	2.02	0.00
67.00	6.15	2.02	0.00
68.00	6.15	2.02	0.00
69.00	6.15	2.02	0.00
70.00	6.15	2.02	0.00
71.00	6.15	2.02	0.00
72.00	6.15	2.02	0.00
73.00	6.15	2.02	0.00
74.00	6.15	2.02	0.00
75.00	6.15	2.02	0.00
76.00	6.15	2.02	0.00
77.00	6.15	2.02	0.00
78.00	6.15	2.02	0.00
79.00	6.15	2.02	0.00
80.00	6.15	2.02	0.00
81.00	6.15	2.02	0.00
82.00	6.15	2.02	0.00
83.00	6.15	2.02	0.00
84.00	6.15	2.02	0.00
85.00	6.15	2.02	0.00
86.00	6.15	2.02	0.00
87.00	6.15	2.02	0.00
88.00	6.15	2.02	0.00
89.00	6.15	2.02	0.00
90.00	6.15	2.02	0.00
91.00	6.15	2.02	0.00
92.00	6.15	2.02	0.00
93.00	6.15	2.02	0.00
94.00	6.15	2.02	0.00
95.00	6.15	2.02	0.00
96.00	6.15	2.02	0.00

Summary for Subcatchment EX-D: Subcat EX-D

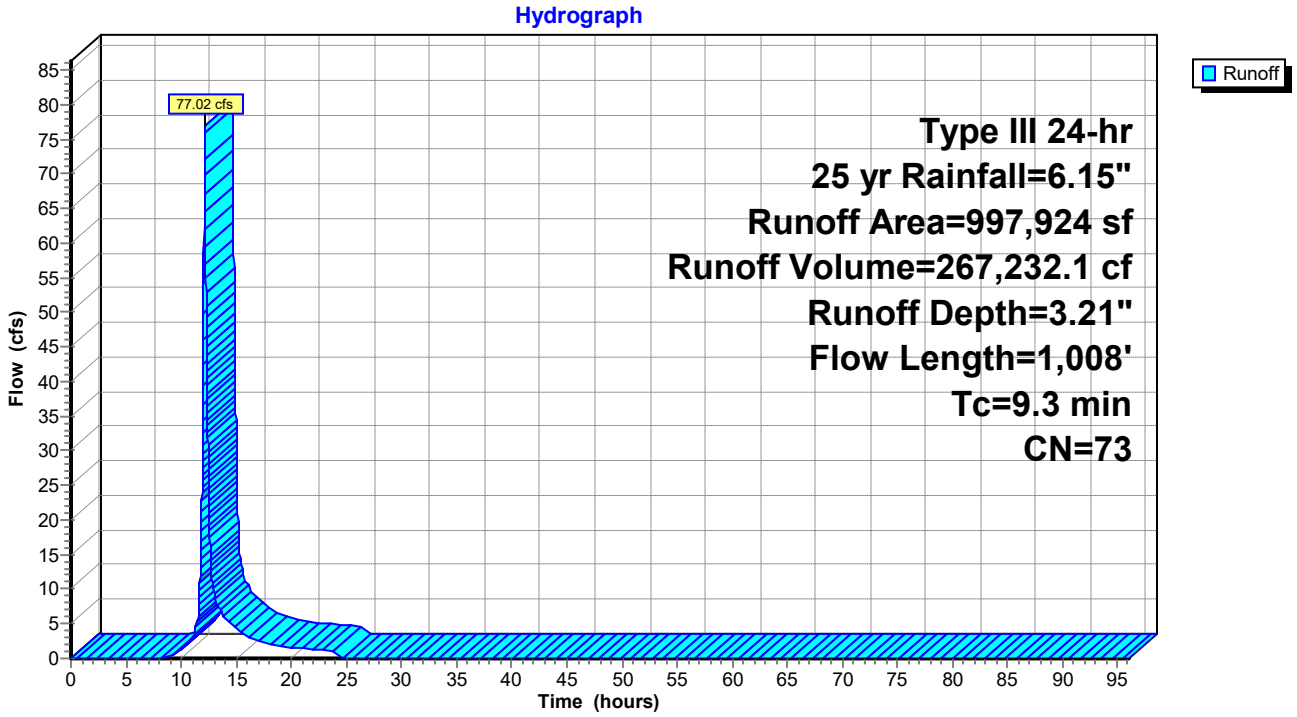
Runoff = 77.02 cfs @ 12.13 hrs, Volume= 267,232.1 cf, Depth= 3.21"
Routed to Link POA D : FIRE POND

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 yr Rainfall=6.15"

	Area (sf)	CN	Description
*	57,570	98	Champage Bldg (#200)
	341,183	98	Unconnected pavement, HSG A
	415,865	39	>75% Grass cover, Good, HSG A
*	183,306	98	Office Bldg (#110)
	997,924	73	Weighted Average
	415,865		41.67% Pervious Area
	582,059		58.33% Impervious Area
	341,183		58.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.22"
0.2	32	0.2180	3.27		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.3	58	0.0340	3.74		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.4	228	0.2197	9.52		**Shallow Concentrated Flow, D-E** Paved Kv= 20.3 fps
0.3	84	0.0090	5.09	3.99	**Pipe Channel, E-F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean
0.1	89	0.0680	25.75	126.41	**Pipe Channel, F-G** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011 Concrete pipe, straight & clean
0.4	157	0.0030	6.11	43.17	**Pipe Channel, G-H** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
0.4	224	0.0062	8.78	62.07	**Pipe Channel, H-I** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
0.1	86	0.0116	12.01	84.90	**Pipe Channel, I-J** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
9.3	1,008	Total			

Subcatchment EX-D: Subcat EX-D



Hydrograph for Subcatchment EX-D: Subcat EX-D

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	6.15	3.21	0.00
1.00	0.06	0.00	0.00	53.00	6.15	3.21	0.00
2.00	0.12	0.00	0.00	54.00	6.15	3.21	0.00
3.00	0.19	0.00	0.00	55.00	6.15	3.21	0.00
4.00	0.26	0.00	0.00	56.00	6.15	3.21	0.00
5.00	0.35	0.00	0.00	57.00	6.15	3.21	0.00
6.00	0.44	0.00	0.00	58.00	6.15	3.21	0.00
7.00	0.56	0.00	0.00	59.00	6.15	3.21	0.00
8.00	0.70	0.00	0.00	60.00	6.15	3.21	0.00
9.00	0.90	0.01	0.33	61.00	6.15	3.21	0.00
10.00	1.16	0.04	1.20	62.00	6.15	3.21	0.00
11.00	1.54	0.14	3.01	63.00	6.15	3.21	0.00
12.00	3.07	0.90	**36.73**	64.00	6.15	3.21	0.00
13.00	4.61	1.98	**9.26**	65.00	6.15	3.21	0.00
14.00	4.99	2.27	5.82	66.00	6.15	3.21	0.00
15.00	5.25	2.48	4.42	67.00	6.15	3.21	0.00
16.00	5.45	2.64	3.16	68.00	6.15	3.21	0.00
17.00	5.59	2.75	2.51	69.00	6.15	3.21	0.00
18.00	5.71	2.85	1.94	70.00	6.15	3.21	0.00
19.00	5.80	2.92	1.72	71.00	6.15	3.21	0.00
20.00	5.89	2.99	1.55	72.00	6.15	3.21	0.00
21.00	5.96	3.06	1.41	73.00	6.15	3.21	0.00
22.00	6.03	3.11	1.29	74.00	6.15	3.21	0.00
23.00	6.09	3.17	1.16	75.00	6.15	3.21	0.00
24.00	**6.15**	**3.21**	1.03	76.00	6.15	3.21	0.00
25.00	6.15	3.21	0.00	77.00	6.15	3.21	0.00
26.00	6.15	3.21	0.00	78.00	6.15	3.21	0.00
27.00	6.15	3.21	0.00	79.00	6.15	3.21	0.00
28.00	6.15	3.21	0.00	80.00	6.15	3.21	0.00
29.00	6.15	3.21	0.00	81.00	6.15	3.21	0.00
30.00	6.15	3.21	0.00	82.00	6.15	3.21	0.00
31.00	6.15	3.21	0.00	83.00	6.15	3.21	0.00
32.00	6.15	3.21	0.00	84.00	6.15	3.21	0.00
33.00	6.15	3.21	0.00	85.00	6.15	3.21	0.00
34.00	6.15	3.21	0.00	86.00	6.15	3.21	0.00
35.00	6.15	3.21	0.00	87.00	6.15	3.21	0.00
36.00	6.15	3.21	0.00	88.00	6.15	3.21	0.00
37.00	6.15	3.21	0.00	89.00	6.15	3.21	0.00
38.00	6.15	3.21	0.00	90.00	6.15	3.21	0.00
39.00	6.15	3.21	0.00	91.00	6.15	3.21	0.00
40.00	6.15	3.21	0.00	92.00	6.15	3.21	0.00
41.00	6.15	3.21	0.00	93.00	6.15	3.21	0.00
42.00	6.15	3.21	0.00	94.00	6.15	3.21	0.00
43.00	6.15	3.21	0.00	95.00	6.15	3.21	0.00
44.00	6.15	3.21	0.00	96.00	6.15	3.21	0.00
45.00	6.15	3.21	0.00				
46.00	6.15	3.21	0.00				
47.00	6.15	3.21	0.00				
48.00	6.15	3.21	0.00				
49.00	6.15	3.21	0.00				
50.00	6.15	3.21	0.00				
51.00	6.15	3.21	0.00				

Summary for Subcatchment EX-E: Subcat EX-E

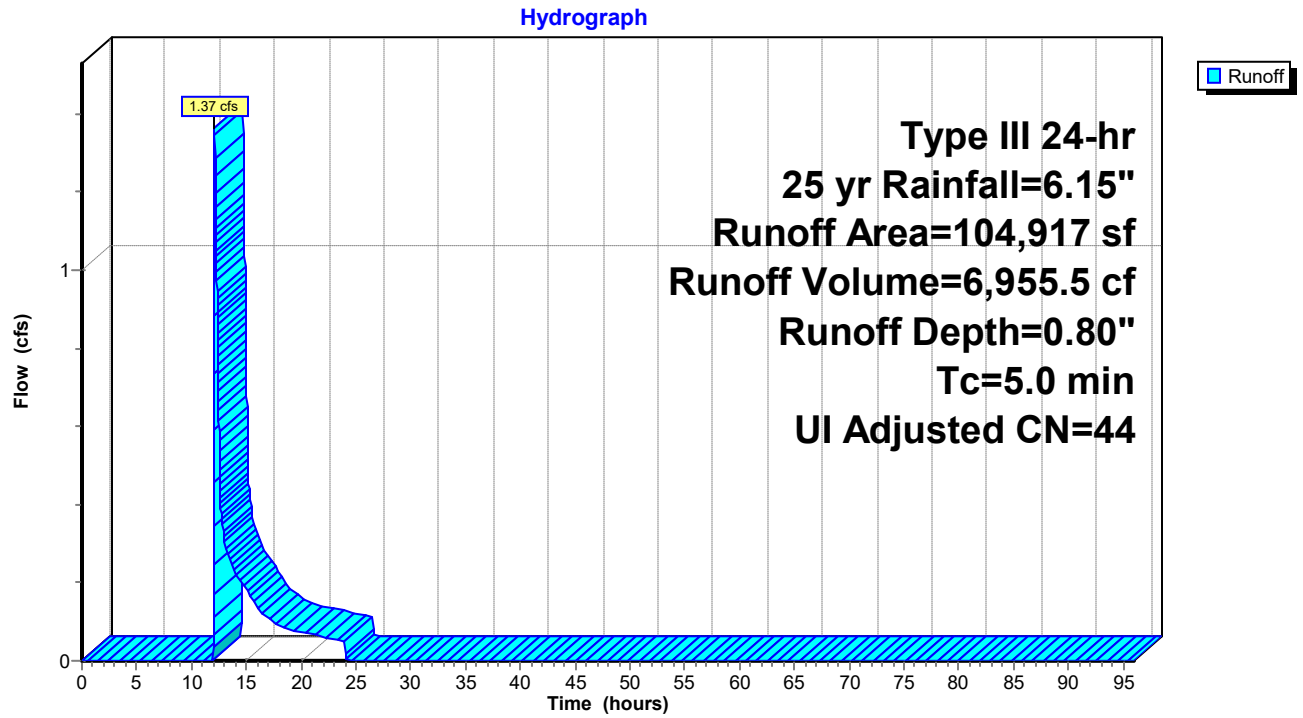
Runoff = 1.37 cfs @ 12.11 hrs, Volume= 6,955.5 cf, Depth= 0.80"

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 yr Rainfall=6.15"

	Area (sf)	CN	Adj	Description
*	2,135	98		Roof Area
	14,619	98		Unconnected pavement, HSG A
	88,163	39		>75% Grass cover, Good, HSG A
	104,917	48	44	Weighted Average, UI Adjusted
	88,163			84.03% Pervious Area
	16,754			15.97% Impervious Area
	14,619			87.26% Unconnected

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

Subcatchment EX-E: Subcat EX-E



Hydrograph for Subcatchment EX-E: Subcat EX-E

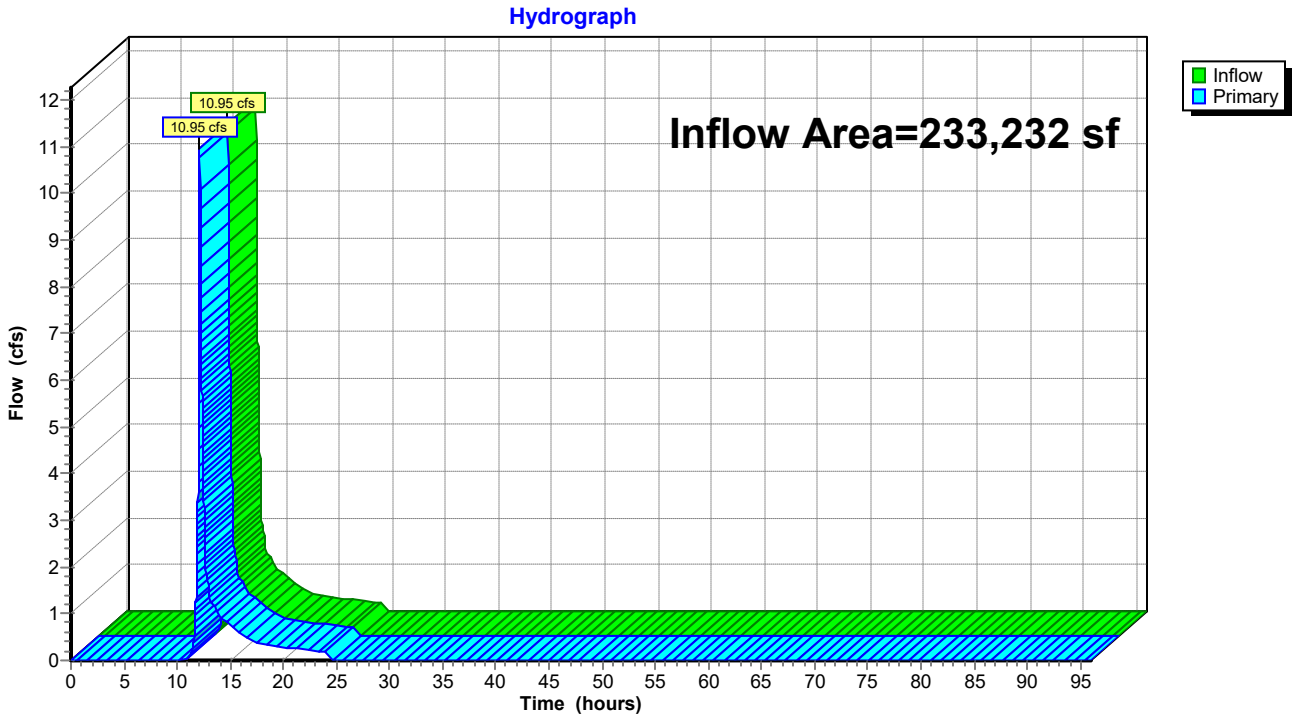
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.19	0.00	0.00
4.00	0.26	0.00	0.00
5.00	0.35	0.00	0.00
6.00	0.44	0.00	0.00
7.00	0.56	0.00	0.00
8.00	0.70	0.00	0.00
9.00	0.90	0.00	0.00
10.00	1.16	0.00	0.00
11.00	1.54	0.00	0.00
12.00	3.07	0.02	**0.25**
13.00	4.61	0.29	**0.31**
14.00	4.99	0.39	0.22
15.00	5.25	0.48	0.18
16.00	5.45	0.54	0.13
17.00	5.59	0.59	0.11
18.00	5.71	0.63	0.09
19.00	5.80	0.66	0.08
20.00	5.89	0.69	0.07
21.00	5.96	0.72	0.07
22.00	6.03	0.75	0.06
23.00	6.09	0.77	0.06
24.00	**6.15**	**0.80**	0.05
25.00	6.15	0.80	0.00
26.00	6.15	0.80	0.00
27.00	6.15	0.80	0.00
28.00	6.15	0.80	0.00
29.00	6.15	0.80	0.00
30.00	6.15	0.80	0.00
31.00	6.15	0.80	0.00
32.00	6.15	0.80	0.00
33.00	6.15	0.80	0.00
34.00	6.15	0.80	0.00
35.00	6.15	0.80	0.00
36.00	6.15	0.80	0.00
37.00	6.15	0.80	0.00
38.00	6.15	0.80	0.00
39.00	6.15	0.80	0.00
40.00	6.15	0.80	0.00
41.00	6.15	0.80	0.00
42.00	6.15	0.80	0.00
43.00	6.15	0.80	0.00
44.00	6.15	0.80	0.00
45.00	6.15	0.80	0.00
46.00	6.15	0.80	0.00
47.00	6.15	0.80	0.00
48.00	6.15	0.80	0.00
49.00	6.15	0.80	0.00
50.00	6.15	0.80	0.00
51.00	6.15	0.80	0.00
52.00	6.15	0.80	0.00
53.00	6.15	0.80	0.00
54.00	6.15	0.80	0.00
55.00	6.15	0.80	0.00
56.00	6.15	0.80	0.00
57.00	6.15	0.80	0.00
58.00	6.15	0.80	0.00
59.00	6.15	0.80	0.00
60.00	6.15	0.80	0.00
61.00	6.15	0.80	0.00
62.00	6.15	0.80	0.00
63.00	6.15	0.80	0.00
64.00	6.15	0.80	0.00
65.00	6.15	0.80	0.00
66.00	6.15	0.80	0.00
67.00	6.15	0.80	0.00
68.00	6.15	0.80	0.00
69.00	6.15	0.80	0.00
70.00	6.15	0.80	0.00
71.00	6.15	0.80	0.00
72.00	6.15	0.80	0.00
73.00	6.15	0.80	0.00
74.00	6.15	0.80	0.00
75.00	6.15	0.80	0.00
76.00	6.15	0.80	0.00
77.00	6.15	0.80	0.00
78.00	6.15	0.80	0.00
79.00	6.15	0.80	0.00
80.00	6.15	0.80	0.00
81.00	6.15	0.80	0.00
82.00	6.15	0.80	0.00
83.00	6.15	0.80	0.00
84.00	6.15	0.80	0.00
85.00	6.15	0.80	0.00
86.00	6.15	0.80	0.00
87.00	6.15	0.80	0.00
88.00	6.15	0.80	0.00
89.00	6.15	0.80	0.00
90.00	6.15	0.80	0.00
91.00	6.15	0.80	0.00
92.00	6.15	0.80	0.00
93.00	6.15	0.80	0.00
94.00	6.15	0.80	0.00
95.00	6.15	0.80	0.00
96.00	6.15	0.80	0.00

Summary for Link POA A: POND- WEST

Inflow Area = 233,232 sf, 34.31% Impervious, Inflow Depth = 1.94" for 25 yr event
Inflow = 10.95 cfs @ 12.11 hrs, Volume= 37,611.4 cf
Primary = 10.95 cfs @ 12.11 hrs, Volume= 37,611.4 cf, Atten= 0%, Lag= 0.0 min

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

Link POA A: POND- WEST



Hydrograph for Link POA A: POND- WEST

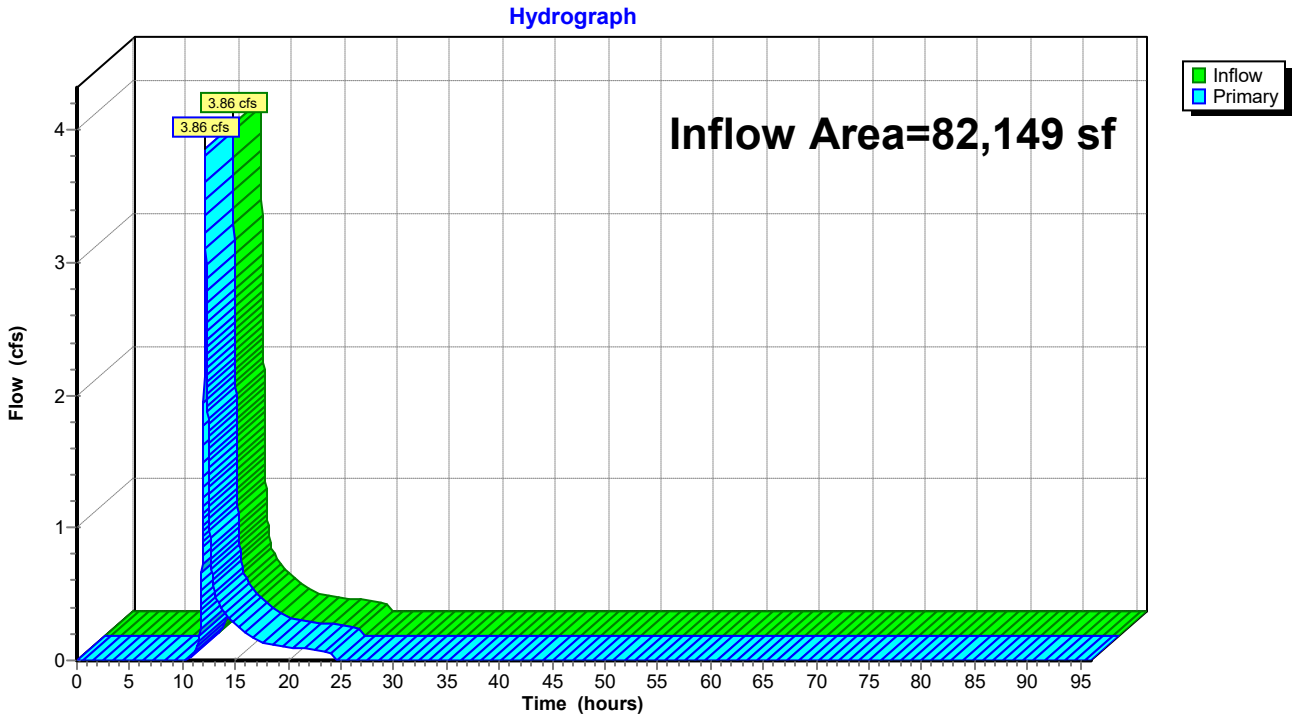
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.07	0.00	0.07	63.00	0.00	0.00	0.00
12.00	**4.99**	0.00	**4.99**	64.00	0.00	0.00	0.00
13.00	**1.46**	0.00	**1.46**	65.00	0.00	0.00	0.00
14.00	0.97	0.00	0.97	66.00	0.00	0.00	0.00
15.00	0.75	0.00	0.75	67.00	0.00	0.00	0.00
16.00	0.54	0.00	0.54	68.00	0.00	0.00	0.00
17.00	0.44	0.00	0.44	69.00	0.00	0.00	0.00
18.00	0.34	0.00	0.34	70.00	0.00	0.00	0.00
19.00	0.30	0.00	0.30	71.00	0.00	0.00	0.00
20.00	0.28	0.00	0.28	72.00	0.00	0.00	0.00
21.00	0.25	0.00	0.25	73.00	0.00	0.00	0.00
22.00	0.23	0.00	0.23	74.00	0.00	0.00	0.00
23.00	0.21	0.00	0.21	75.00	0.00	0.00	0.00
24.00	0.19	0.00	0.19	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA C: WETLAND-WEST

Inflow Area = 82,149 sf, 35.38% Impervious, Inflow Depth = 2.02" for 25 yr event
Inflow = 3.86 cfs @ 12.13 hrs, Volume= 13,830.8 cf
Primary = 3.86 cfs @ 12.13 hrs, Volume= 13,830.8 cf, Atten= 0%, Lag= 0.0 min

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

Link POA C: WETLAND-WEST



Hydrograph for Link POA C: WETLAND-WEST

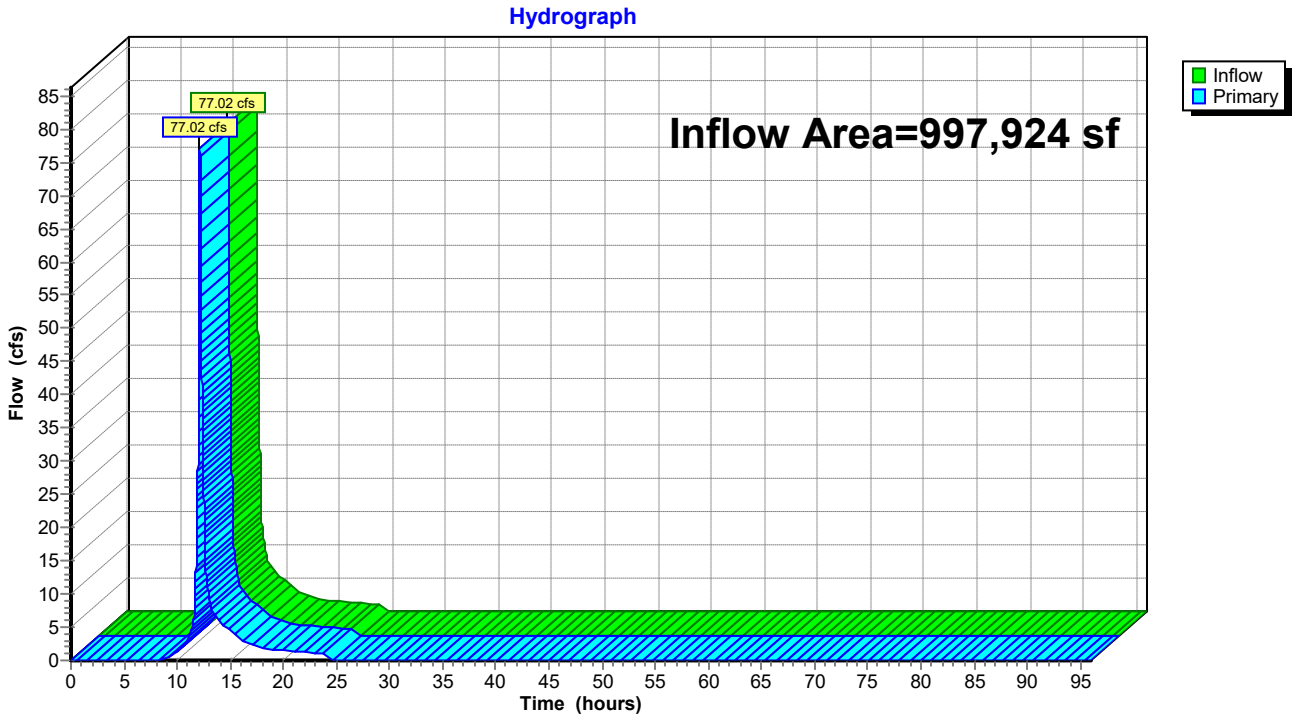
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.03	0.00	0.03	63.00	0.00	0.00	0.00
12.00	**1.62**	0.00	**1.62**	64.00	0.00	0.00	0.00
13.00	**0.54**	0.00	**0.54**	65.00	0.00	0.00	0.00
14.00	0.35	0.00	0.35	66.00	0.00	0.00	0.00
15.00	0.27	0.00	0.27	67.00	0.00	0.00	0.00
16.00	0.20	0.00	0.20	68.00	0.00	0.00	0.00
17.00	0.16	0.00	0.16	69.00	0.00	0.00	0.00
18.00	0.12	0.00	0.12	70.00	0.00	0.00	0.00
19.00	0.11	0.00	0.11	71.00	0.00	0.00	0.00
20.00	0.10	0.00	0.10	72.00	0.00	0.00	0.00
21.00	0.09	0.00	0.09	73.00	0.00	0.00	0.00
22.00	0.08	0.00	0.08	74.00	0.00	0.00	0.00
23.00	0.08	0.00	0.08	75.00	0.00	0.00	0.00
24.00	0.07	0.00	0.07	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA D: FIRE POND

Inflow Area = 997,924 sf, 58.33% Impervious, Inflow Depth = 3.21" for 25 yr event
Inflow = 77.02 cfs @ 12.13 hrs, Volume= 267,232.1 cf
Primary = 77.02 cfs @ 12.13 hrs, Volume= 267,232.1 cf, Atten= 0%, Lag= 0.0 min

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

Link POA D: FIRE POND



Hydrograph for Link POA D: FIRE POND

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.33	0.00	0.33	61.00	0.00	0.00	0.00
10.00	1.20	0.00	1.20	62.00	0.00	0.00	0.00
11.00	3.01	0.00	3.01	63.00	0.00	0.00	0.00
12.00	**36.73**	0.00	**36.73**	64.00	0.00	0.00	0.00
13.00	**9.26**	0.00	**9.26**	65.00	0.00	0.00	0.00
14.00	5.82	0.00	5.82	66.00	0.00	0.00	0.00
15.00	4.42	0.00	4.42	67.00	0.00	0.00	0.00
16.00	3.16	0.00	3.16	68.00	0.00	0.00	0.00
17.00	2.51	0.00	2.51	69.00	0.00	0.00	0.00
18.00	1.94	0.00	1.94	70.00	0.00	0.00	0.00
19.00	1.72	0.00	1.72	71.00	0.00	0.00	0.00
20.00	1.55	0.00	1.55	72.00	0.00	0.00	0.00
21.00	1.41	0.00	1.41	73.00	0.00	0.00	0.00
22.00	1.29	0.00	1.29	74.00	0.00	0.00	0.00
23.00	1.16	0.00	1.16	75.00	0.00	0.00	0.00
24.00	1.03	0.00	1.03	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

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 EX-A: Subcat EX-A Runoff Area=233,232 sf 34.31% Impervious Runoff Depth=3.82"
Flow Length=1,283' Tc=7.2 min CN=59 Runoff=22.75 cfs 74,324.0 cf

Subcatchment EX-C: Subcat EX-C Runoff Area=82,149 sf 35.38% Impervious Runoff Depth=3.94"
Flow Length=837' Tc=8.7 min CN=60 Runoff=7.87 cfs 27,004.1 cf

Subcatchment EX-D: Subcat EX-D Runoff Area=997,924 sf 58.33% Impervious Runoff Depth=5.53"
Flow Length=1,008' Tc=9.3 min CN=73 Runoff=132.13 cfs 459,461.3 cf

Subcatchment EX-E: Subcat EX-E Runoff Area=104,917 sf 15.97% Impervious Runoff Depth=2.06"
Tc=5.0 min UI Adjusted CN=44 Runoff=5.22 cfs 18,018.5 cf

Link POA A: POND- WEST Inflow=22.75 cfs 74,324.0 cf
Primary=22.75 cfs 74,324.0 cf

Link POA C: WETLAND-WEST Inflow=7.87 cfs 27,004.1 cf
Primary=7.87 cfs 27,004.1 cf

Link POA D: FIRE POND Inflow=132.13 cfs 459,461.3 cf
Primary=132.13 cfs 459,461.3 cf

Total Runoff Area = 1,418,222 sf Runoff Volume = 578,808.0 cf Average Runoff Depth = 4.90"
50.09% Pervious = 710,328 sf 49.91% Impervious = 707,894 sf

Summary for Subcatchment EX-A: Subcat EX-A

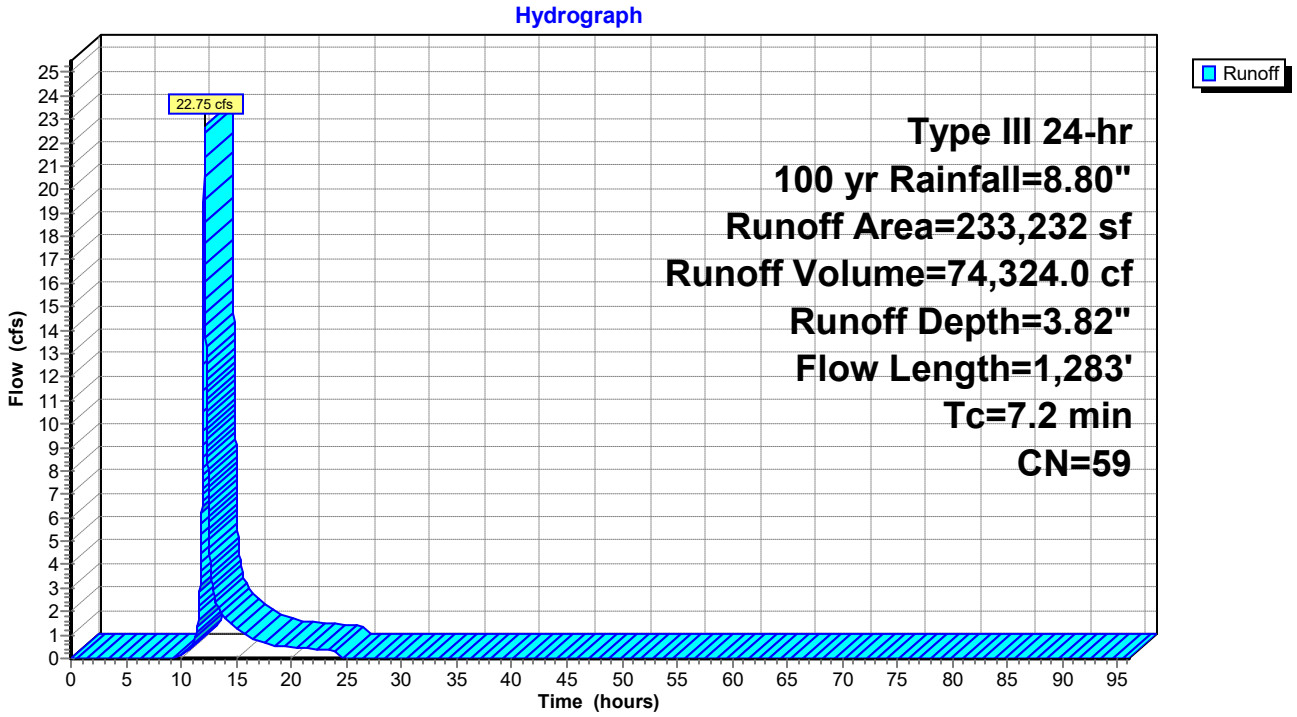
Runoff = 22.75 cfs @ 12.11 hrs, Volume= 74,324.0 cf, Depth= 3.82"
Routed to Link POA A : POND- WEST

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 yr Rainfall=8.80"

	Area (sf)	CN	Description
	80,020	98	Unconnected pavement, HSG A
*	153,212	39	>75% Grass cover, Good, HSG A
	233,232	59	Weighted Average
	153,212		65.69% Pervious Area
	80,020		34.31% Impervious Area
	80,020		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0700	0.25		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.22"
0.5	75	0.1133	2.36		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.5	43	0.0046	1.38		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	88	0.0110	6.52	8.01	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
0.1	66	0.0207	8.95	10.98	**Pipe Channel, E-F** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
0.6	285	0.0086	7.89	24.79	**Pipe Channel, F-G** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011
0.1	33	0.0137	9.96	31.29	**Pipe Channel, G-H** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011
0.2	56	0.0025	4.94	24.24	**Pipe Channel, H-I** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011
0.2	50	0.0024	4.84	23.75	**Pipe Channel, I-J** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011
0.3	141	0.0071	8.32	40.85	**Pipe Channel, J-K** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011
1.1	396	0.0029	6.01	42.45	**Pipe Channel, K-L** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
7.2	1,283	Total			

Subcatchment EX-A: Subcat EX-A



Hydrograph for Subcatchment EX-A: Subcat EX-A

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.80	3.82	0.00
1.00	0.09	0.00	0.00	53.00	8.80	3.82	0.00
2.00	0.18	0.00	0.00	54.00	8.80	3.82	0.00
3.00	0.27	0.00	0.00	55.00	8.80	3.82	0.00
4.00	0.38	0.00	0.00	56.00	8.80	3.82	0.00
5.00	0.50	0.00	0.00	57.00	8.80	3.82	0.00
6.00	0.63	0.00	0.00	58.00	8.80	3.82	0.00
7.00	0.80	0.00	0.00	59.00	8.80	3.82	0.00
8.00	1.00	0.00	0.00	60.00	8.80	3.82	0.00
9.00	1.28	0.00	0.00	61.00	8.80	3.82	0.00
10.00	1.66	0.01	0.14	62.00	8.80	3.82	0.00
11.00	2.20	0.08	0.61	63.00	8.80	3.82	0.00
12.00	4.40	0.91	**11.46**	64.00	8.80	3.82	0.00
13.00	6.60	2.23	**2.65**	65.00	8.80	3.82	0.00
14.00	7.14	2.60	1.71	66.00	8.80	3.82	0.00
15.00	7.52	2.87	1.32	67.00	8.80	3.82	0.00
16.00	7.80	3.07	0.94	68.00	8.80	3.82	0.00
17.00	8.00	3.23	0.75	69.00	8.80	3.82	0.00
18.00	8.17	3.35	0.58	70.00	8.80	3.82	0.00
19.00	8.30	3.45	0.52	71.00	8.80	3.82	0.00
20.00	8.42	3.54	0.47	72.00	8.80	3.82	0.00
21.00	8.53	3.62	0.43	73.00	8.80	3.82	0.00
22.00	8.63	3.69	0.39	74.00	8.80	3.82	0.00
23.00	8.72	3.76	0.35	75.00	8.80	3.82	0.00
24.00	**8.80**	**3.82**	0.31	76.00	8.80	3.82	0.00
25.00	8.80	3.82	0.00	77.00	8.80	3.82	0.00
26.00	8.80	3.82	0.00	78.00	8.80	3.82	0.00
27.00	8.80	3.82	0.00	79.00	8.80	3.82	0.00
28.00	8.80	3.82	0.00	80.00	8.80	3.82	0.00
29.00	8.80	3.82	0.00	81.00	8.80	3.82	0.00
30.00	8.80	3.82	0.00	82.00	8.80	3.82	0.00
31.00	8.80	3.82	0.00	83.00	8.80	3.82	0.00
32.00	8.80	3.82	0.00	84.00	8.80	3.82	0.00
33.00	8.80	3.82	0.00	85.00	8.80	3.82	0.00
34.00	8.80	3.82	0.00	86.00	8.80	3.82	0.00
35.00	8.80	3.82	0.00	87.00	8.80	3.82	0.00
36.00	8.80	3.82	0.00	88.00	8.80	3.82	0.00
37.00	8.80	3.82	0.00	89.00	8.80	3.82	0.00
38.00	8.80	3.82	0.00	90.00	8.80	3.82	0.00
39.00	8.80	3.82	0.00	91.00	8.80	3.82	0.00
40.00	8.80	3.82	0.00	92.00	8.80	3.82	0.00
41.00	8.80	3.82	0.00	93.00	8.80	3.82	0.00
42.00	8.80	3.82	0.00	94.00	8.80	3.82	0.00
43.00	8.80	3.82	0.00	95.00	8.80	3.82	0.00
44.00	8.80	3.82	0.00	96.00	8.80	3.82	0.00
45.00	8.80	3.82	0.00				
46.00	8.80	3.82	0.00				
47.00	8.80	3.82	0.00				
48.00	8.80	3.82	0.00				
49.00	8.80	3.82	0.00				
50.00	8.80	3.82	0.00				
51.00	8.80	3.82	0.00				

Summary for Subcatchment EX-C: Subcat EX-C

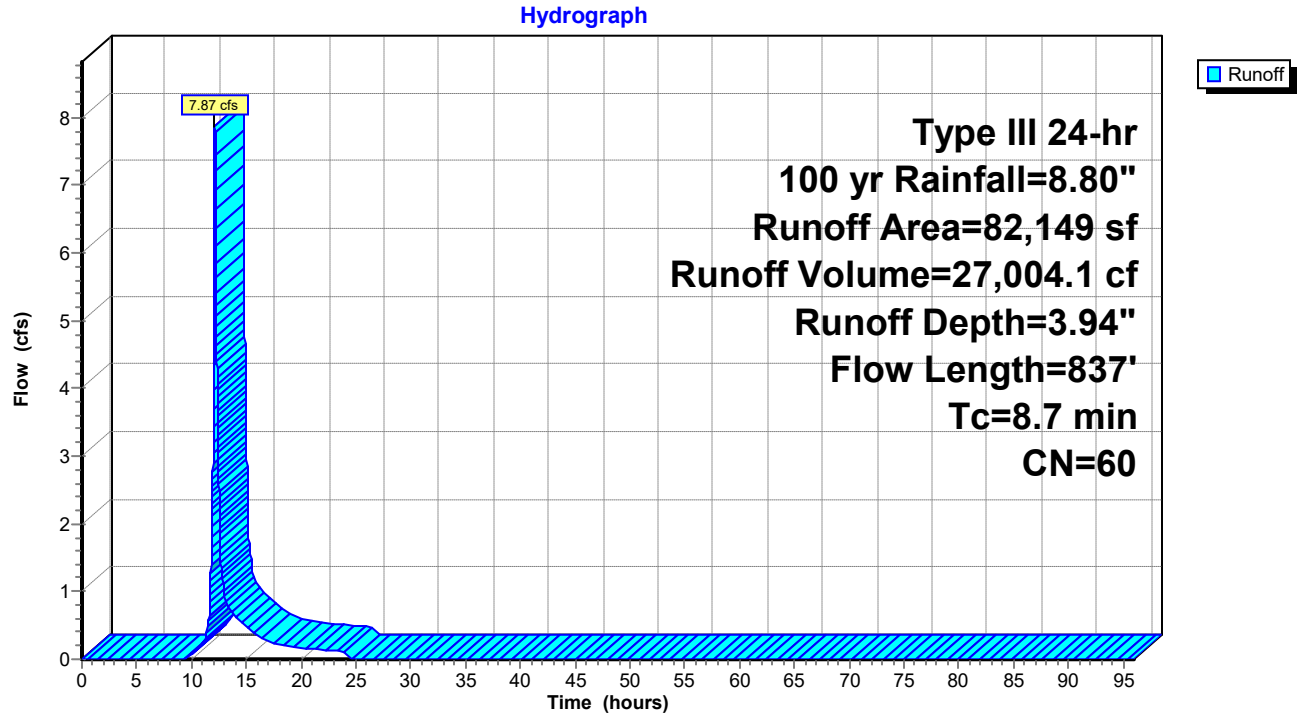
Runoff = 7.87 cfs @ 12.13 hrs, Volume= 27,004.1 cf, Depth= 3.94"
Routed to Link POA C : WETLAND-WEST

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 yr Rainfall=8.80"

Area (sf)	CN	Description
29,061	98	Unconnected pavement, HSG A
53,088	39	>75% Grass cover, Good, HSG A
82,149	60	Weighted Average
53,088		64.62% Pervious Area
29,061		35.38% Impervious Area
29,061		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	50	0.0020	0.48		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
6.2	686	0.0083	1.85		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.8	101	0.0017	2.21	1.74	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
8.7	837	Total			

Subcatchment EX-C: Subcat EX-C



Hydrograph for Subcatchment EX-C: Subcat EX-C

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.80	3.94	0.00
1.00	0.09	0.00	0.00	53.00	8.80	3.94	0.00
2.00	0.18	0.00	0.00	54.00	8.80	3.94	0.00
3.00	0.27	0.00	0.00	55.00	8.80	3.94	0.00
4.00	0.38	0.00	0.00	56.00	8.80	3.94	0.00
5.00	0.50	0.00	0.00	57.00	8.80	3.94	0.00
6.00	0.63	0.00	0.00	58.00	8.80	3.94	0.00
7.00	0.80	0.00	0.00	59.00	8.80	3.94	0.00
8.00	1.00	0.00	0.00	60.00	8.80	3.94	0.00
9.00	1.28	0.00	0.00	61.00	8.80	3.94	0.00
10.00	1.66	0.02	0.06	62.00	8.80	3.94	0.00
11.00	2.20	0.10	0.23	63.00	8.80	3.94	0.00
12.00	4.40	0.97	**3.69**	64.00	8.80	3.94	0.00
13.00	6.60	2.32	**0.98**	65.00	8.80	3.94	0.00
14.00	7.14	2.70	0.62	66.00	8.80	3.94	0.00
15.00	7.52	2.98	0.48	67.00	8.80	3.94	0.00
16.00	7.80	3.18	0.34	68.00	8.80	3.94	0.00
17.00	8.00	3.34	0.27	69.00	8.80	3.94	0.00
18.00	8.17	3.46	0.21	70.00	8.80	3.94	0.00
19.00	8.30	3.56	0.19	71.00	8.80	3.94	0.00
20.00	8.42	3.65	0.17	72.00	8.80	3.94	0.00
21.00	8.53	3.74	0.15	73.00	8.80	3.94	0.00
22.00	8.63	3.81	0.14	74.00	8.80	3.94	0.00
23.00	8.72	3.88	0.13	75.00	8.80	3.94	0.00
24.00	**8.80**	**3.94**	0.11	76.00	8.80	3.94	0.00
25.00	8.80	3.94	0.00	77.00	8.80	3.94	0.00
26.00	8.80	3.94	0.00	78.00	8.80	3.94	0.00
27.00	8.80	3.94	0.00	79.00	8.80	3.94	0.00
28.00	8.80	3.94	0.00	80.00	8.80	3.94	0.00
29.00	8.80	3.94	0.00	81.00	8.80	3.94	0.00
30.00	8.80	3.94	0.00	82.00	8.80	3.94	0.00
31.00	8.80	3.94	0.00	83.00	8.80	3.94	0.00
32.00	8.80	3.94	0.00	84.00	8.80	3.94	0.00
33.00	8.80	3.94	0.00	85.00	8.80	3.94	0.00
34.00	8.80	3.94	0.00	86.00	8.80	3.94	0.00
35.00	8.80	3.94	0.00	87.00	8.80	3.94	0.00
36.00	8.80	3.94	0.00	88.00	8.80	3.94	0.00
37.00	8.80	3.94	0.00	89.00	8.80	3.94	0.00
38.00	8.80	3.94	0.00	90.00	8.80	3.94	0.00
39.00	8.80	3.94	0.00	91.00	8.80	3.94	0.00
40.00	8.80	3.94	0.00	92.00	8.80	3.94	0.00
41.00	8.80	3.94	0.00	93.00	8.80	3.94	0.00
42.00	8.80	3.94	0.00	94.00	8.80	3.94	0.00
43.00	8.80	3.94	0.00	95.00	8.80	3.94	0.00
44.00	8.80	3.94	0.00	96.00	8.80	3.94	0.00
45.00	8.80	3.94	0.00				
46.00	8.80	3.94	0.00				
47.00	8.80	3.94	0.00				
48.00	8.80	3.94	0.00				
49.00	8.80	3.94	0.00				
50.00	8.80	3.94	0.00				
51.00	8.80	3.94	0.00				

Summary for Subcatchment EX-D: Subcat EX-D

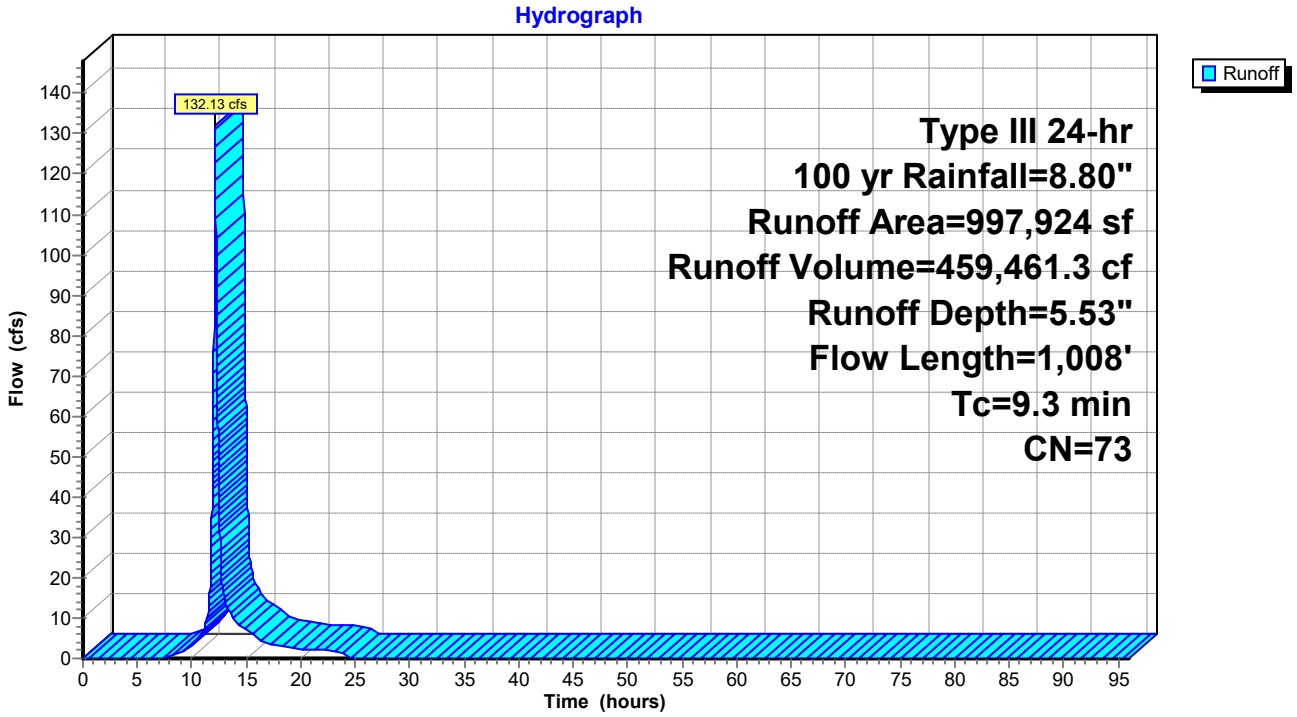
Runoff = 132.13 cfs @ 12.13 hrs, Volume= 459,461.3 cf, Depth= 5.53"
Routed to Link POA D : FIRE POND

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 yr Rainfall=8.80"

	Area (sf)	CN	Description
*	57,570	98	Champage Bldg (#200)
	341,183	98	Unconnected pavement, HSG A
	415,865	39	>75% Grass cover, Good, HSG A
*	183,306	98	Office Bldg (#110)
	997,924	73	Weighted Average
	415,865		41.67% Pervious Area
	582,059		58.33% Impervious Area
	341,183		58.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.22"
0.2	32	0.2180	3.27		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.3	58	0.0340	3.74		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.4	228	0.2197	9.52		**Shallow Concentrated Flow, D-E** Paved Kv= 20.3 fps
0.3	84	0.0090	5.09	3.99	**Pipe Channel, E-F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean
0.1	89	0.0680	25.75	126.41	**Pipe Channel, F-G** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011 Concrete pipe, straight & clean
0.4	157	0.0030	6.11	43.17	**Pipe Channel, G-H** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
0.4	224	0.0062	8.78	62.07	**Pipe Channel, H-I** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
0.1	86	0.0116	12.01	84.90	**Pipe Channel, I-J** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011
9.3	1,008	Total			

Subcatchment EX-D: Subcat EX-D



Hydrograph for Subcatchment EX-D: Subcat EX-D

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.80	5.53	0.00
1.00	0.09	0.00	0.00	53.00	8.80	5.53	0.00
2.00	0.18	0.00	0.00	54.00	8.80	5.53	0.00
3.00	0.27	0.00	0.00	55.00	8.80	5.53	0.00
4.00	0.38	0.00	0.00	56.00	8.80	5.53	0.00
5.00	0.50	0.00	0.00	57.00	8.80	5.53	0.00
6.00	0.63	0.00	0.00	58.00	8.80	5.53	0.00
7.00	0.80	0.00	0.07	59.00	8.80	5.53	0.00
8.00	1.00	0.02	0.59	60.00	8.80	5.53	0.00
9.00	1.28	0.07	1.62	61.00	8.80	5.53	0.00
10.00	1.66	0.18	3.30	62.00	8.80	5.53	0.00
11.00	2.20	0.41	6.61	63.00	8.80	5.53	0.00
12.00	4.40	1.82	**66.06**	64.00	8.80	5.53	0.00
13.00	6.60	3.59	**14.84**	65.00	8.80	5.53	0.00
14.00	7.14	4.05	9.22	66.00	8.80	5.53	0.00
15.00	7.52	4.38	6.96	67.00	8.80	5.53	0.00
16.00	7.80	4.63	4.95	68.00	8.80	5.53	0.00
17.00	8.00	4.81	3.91	69.00	8.80	5.53	0.00
18.00	8.17	4.96	3.02	70.00	8.80	5.53	0.00
19.00	8.30	5.08	2.67	71.00	8.80	5.53	0.00
20.00	8.42	5.19	2.40	72.00	8.80	5.53	0.00
21.00	8.53	5.28	2.19	73.00	8.80	5.53	0.00
22.00	8.63	5.37	1.99	74.00	8.80	5.53	0.00
23.00	8.72	5.45	1.79	75.00	8.80	5.53	0.00
24.00	**8.80**	**5.53**	1.59	76.00	8.80	5.53	0.00
25.00	8.80	5.53	0.00	77.00	8.80	5.53	0.00
26.00	8.80	5.53	0.00	78.00	8.80	5.53	0.00
27.00	8.80	5.53	0.00	79.00	8.80	5.53	0.00
28.00	8.80	5.53	0.00	80.00	8.80	5.53	0.00
29.00	8.80	5.53	0.00	81.00	8.80	5.53	0.00
30.00	8.80	5.53	0.00	82.00	8.80	5.53	0.00
31.00	8.80	5.53	0.00	83.00	8.80	5.53	0.00
32.00	8.80	5.53	0.00	84.00	8.80	5.53	0.00
33.00	8.80	5.53	0.00	85.00	8.80	5.53	0.00
34.00	8.80	5.53	0.00	86.00	8.80	5.53	0.00
35.00	8.80	5.53	0.00	87.00	8.80	5.53	0.00
36.00	8.80	5.53	0.00	88.00	8.80	5.53	0.00
37.00	8.80	5.53	0.00	89.00	8.80	5.53	0.00
38.00	8.80	5.53	0.00	90.00	8.80	5.53	0.00
39.00	8.80	5.53	0.00	91.00	8.80	5.53	0.00
40.00	8.80	5.53	0.00	92.00	8.80	5.53	0.00
41.00	8.80	5.53	0.00	93.00	8.80	5.53	0.00
42.00	8.80	5.53	0.00	94.00	8.80	5.53	0.00
43.00	8.80	5.53	0.00	95.00	8.80	5.53	0.00
44.00	8.80	5.53	0.00	96.00	8.80	5.53	0.00
45.00	8.80	5.53	0.00				
46.00	8.80	5.53	0.00				
47.00	8.80	5.53	0.00				
48.00	8.80	5.53	0.00				
49.00	8.80	5.53	0.00				
50.00	8.80	5.53	0.00				
51.00	8.80	5.53	0.00				

Summary for Subcatchment EX-E: Subcat EX-E

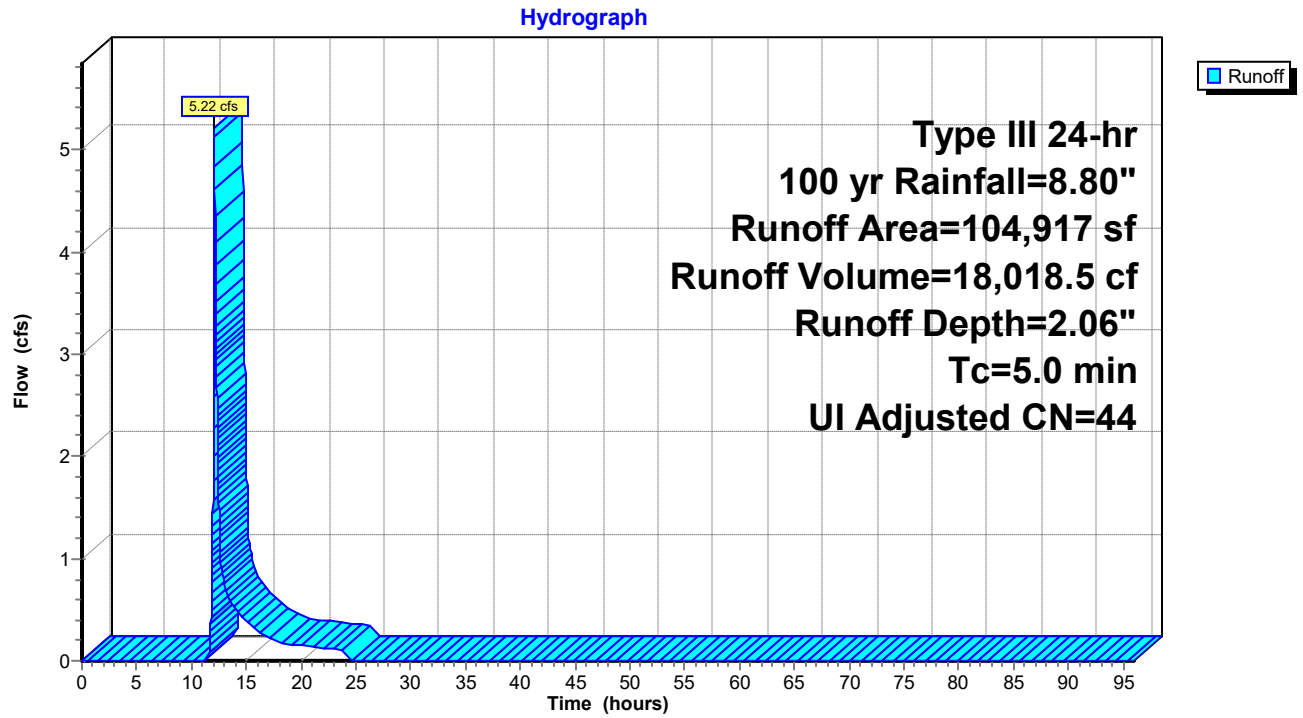
Runoff = 5.22 cfs @ 12.09 hrs, Volume= 18,018.5 cf, Depth= 2.06"

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 yr Rainfall=8.80"

	Area (sf)	CN	Adj	Description
*	2,135	98		Roof Area
	14,619	98		Unconnected pavement, HSG A
	88,163	39		>75% Grass cover, Good, HSG A
	104,917	48	44	Weighted Average, UI Adjusted
	88,163			84.03% Pervious Area
	16,754			15.97% Impervious Area
	14,619			87.26% Unconnected

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

Subcatchment EX-E: Subcat EX-E



Hydrograph for Subcatchment EX-E: Subcat EX-E

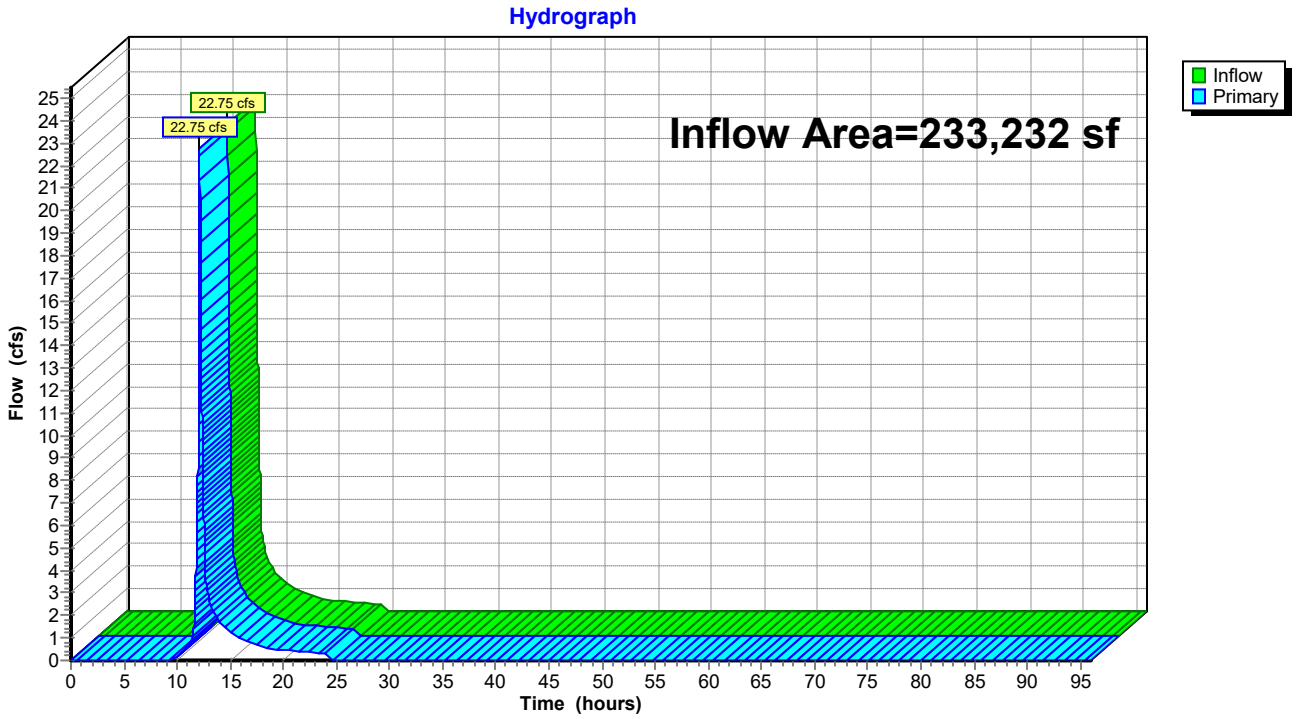
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.80	2.06	0.00
1.00	0.09	0.00	0.00	53.00	8.80	2.06	0.00
2.00	0.18	0.00	0.00	54.00	8.80	2.06	0.00
3.00	0.27	0.00	0.00	55.00	8.80	2.06	0.00
4.00	0.38	0.00	0.00	56.00	8.80	2.06	0.00
5.00	0.50	0.00	0.00	57.00	8.80	2.06	0.00
6.00	0.63	0.00	0.00	58.00	8.80	2.06	0.00
7.00	0.80	0.00	0.00	59.00	8.80	2.06	0.00
8.00	1.00	0.00	0.00	60.00	8.80	2.06	0.00
9.00	1.28	0.00	0.00	61.00	8.80	2.06	0.00
10.00	1.66	0.00	0.00	62.00	8.80	2.06	0.00
11.00	2.20	0.00	0.00	63.00	8.80	2.06	0.00
12.00	4.40	0.24	**2.60**	64.00	8.80	2.06	0.00
13.00	6.60	0.98	**0.72**	65.00	8.80	2.06	0.00
14.00	7.14	1.22	0.50	66.00	8.80	2.06	0.00
15.00	7.52	1.40	0.39	67.00	8.80	2.06	0.00
16.00	7.80	1.53	0.29	68.00	8.80	2.06	0.00
17.00	8.00	1.64	0.23	69.00	8.80	2.06	0.00
18.00	8.17	1.72	0.18	70.00	8.80	2.06	0.00
19.00	8.30	1.79	0.16	71.00	8.80	2.06	0.00
20.00	8.42	1.86	0.15	72.00	8.80	2.06	0.00
21.00	8.53	1.91	0.14	73.00	8.80	2.06	0.00
22.00	8.63	1.97	0.13	74.00	8.80	2.06	0.00
23.00	8.72	2.02	0.11	75.00	8.80	2.06	0.00
24.00	**8.80**	**2.06**	0.10	76.00	8.80	2.06	0.00
25.00	8.80	2.06	0.00	77.00	8.80	2.06	0.00
26.00	8.80	2.06	0.00	78.00	8.80	2.06	0.00
27.00	8.80	2.06	0.00	79.00	8.80	2.06	0.00
28.00	8.80	2.06	0.00	80.00	8.80	2.06	0.00
29.00	8.80	2.06	0.00	81.00	8.80	2.06	0.00
30.00	8.80	2.06	0.00	82.00	8.80	2.06	0.00
31.00	8.80	2.06	0.00	83.00	8.80	2.06	0.00
32.00	8.80	2.06	0.00	84.00	8.80	2.06	0.00
33.00	8.80	2.06	0.00	85.00	8.80	2.06	0.00
34.00	8.80	2.06	0.00	86.00	8.80	2.06	0.00
35.00	8.80	2.06	0.00	87.00	8.80	2.06	0.00
36.00	8.80	2.06	0.00	88.00	8.80	2.06	0.00
37.00	8.80	2.06	0.00	89.00	8.80	2.06	0.00
38.00	8.80	2.06	0.00	90.00	8.80	2.06	0.00
39.00	8.80	2.06	0.00	91.00	8.80	2.06	0.00
40.00	8.80	2.06	0.00	92.00	8.80	2.06	0.00
41.00	8.80	2.06	0.00	93.00	8.80	2.06	0.00
42.00	8.80	2.06	0.00	94.00	8.80	2.06	0.00
43.00	8.80	2.06	0.00	95.00	8.80	2.06	0.00
44.00	8.80	2.06	0.00	96.00	8.80	2.06	0.00
45.00	8.80	2.06	0.00				
46.00	8.80	2.06	0.00				
47.00	8.80	2.06	0.00				
48.00	8.80	2.06	0.00				
49.00	8.80	2.06	0.00				
50.00	8.80	2.06	0.00				
51.00	8.80	2.06	0.00				

Summary for Link POA A: POND- WEST

Inflow Area = 233,232 sf, 34.31% Impervious, Inflow Depth = 3.82" for 100 yr event
Inflow = 22.75 cfs @ 12.11 hrs, Volume= 74,324.0 cf
Primary = 22.75 cfs @ 12.11 hrs, Volume= 74,324.0 cf, Atten= 0%, Lag= 0.0 min

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

Link POA A: POND- WEST



Hydrograph for Link POA A: POND- WEST

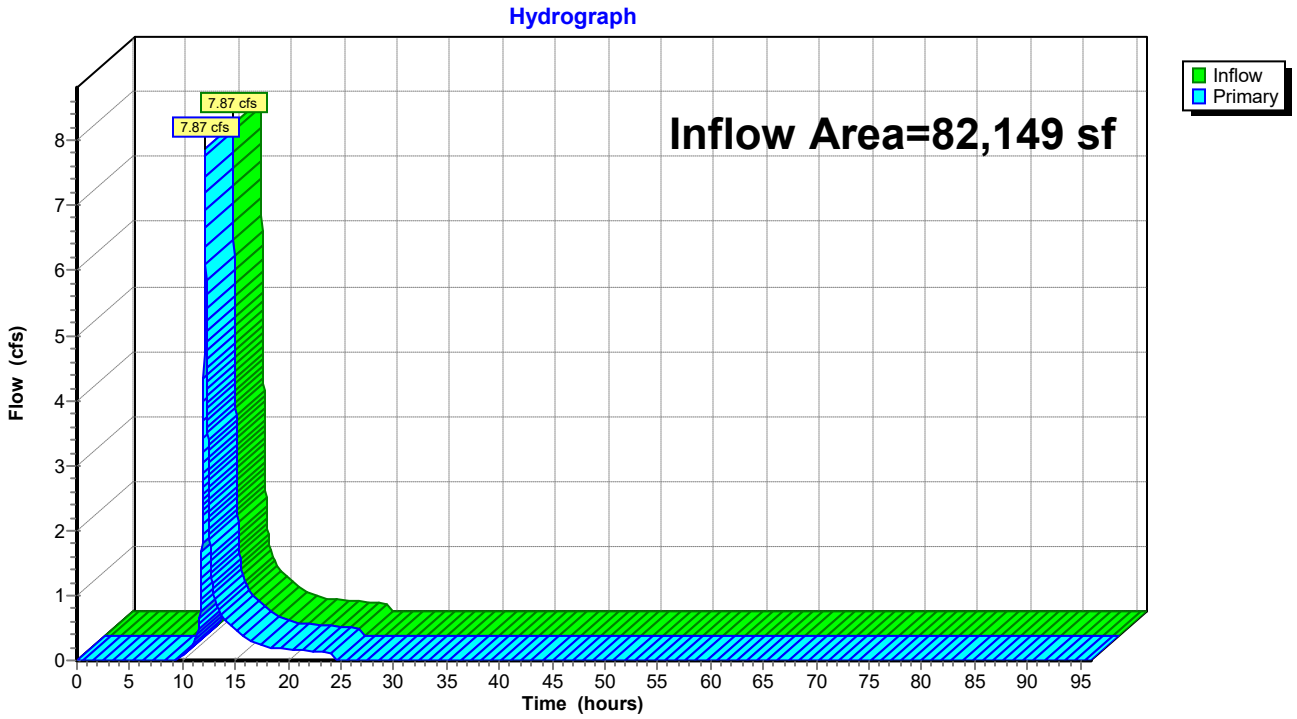
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.14	0.00	0.14	62.00	0.00	0.00	0.00
11.00	0.61	0.00	0.61	63.00	0.00	0.00	0.00
12.00	**11.46**	0.00	**11.46**	64.00	0.00	0.00	0.00
13.00	**2.65**	0.00	**2.65**	65.00	0.00	0.00	0.00
14.00	1.71	0.00	1.71	66.00	0.00	0.00	0.00
15.00	1.32	0.00	1.32	67.00	0.00	0.00	0.00
16.00	0.94	0.00	0.94	68.00	0.00	0.00	0.00
17.00	0.75	0.00	0.75	69.00	0.00	0.00	0.00
18.00	0.58	0.00	0.58	70.00	0.00	0.00	0.00
19.00	0.52	0.00	0.52	71.00	0.00	0.00	0.00
20.00	0.47	0.00	0.47	72.00	0.00	0.00	0.00
21.00	0.43	0.00	0.43	73.00	0.00	0.00	0.00
22.00	0.39	0.00	0.39	74.00	0.00	0.00	0.00
23.00	0.35	0.00	0.35	75.00	0.00	0.00	0.00
24.00	0.31	0.00	0.31	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA C: WETLAND-WEST

Inflow Area = 82,149 sf, 35.38% Impervious, Inflow Depth = 3.94" for 100 yr event
Inflow = 7.87 cfs @ 12.13 hrs, Volume= 27,004.1 cf
Primary = 7.87 cfs @ 12.13 hrs, Volume= 27,004.1 cf, Atten= 0%, Lag= 0.0 min

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

Link POA C: WETLAND-WEST



Hydrograph for Link POA C: WETLAND-WEST

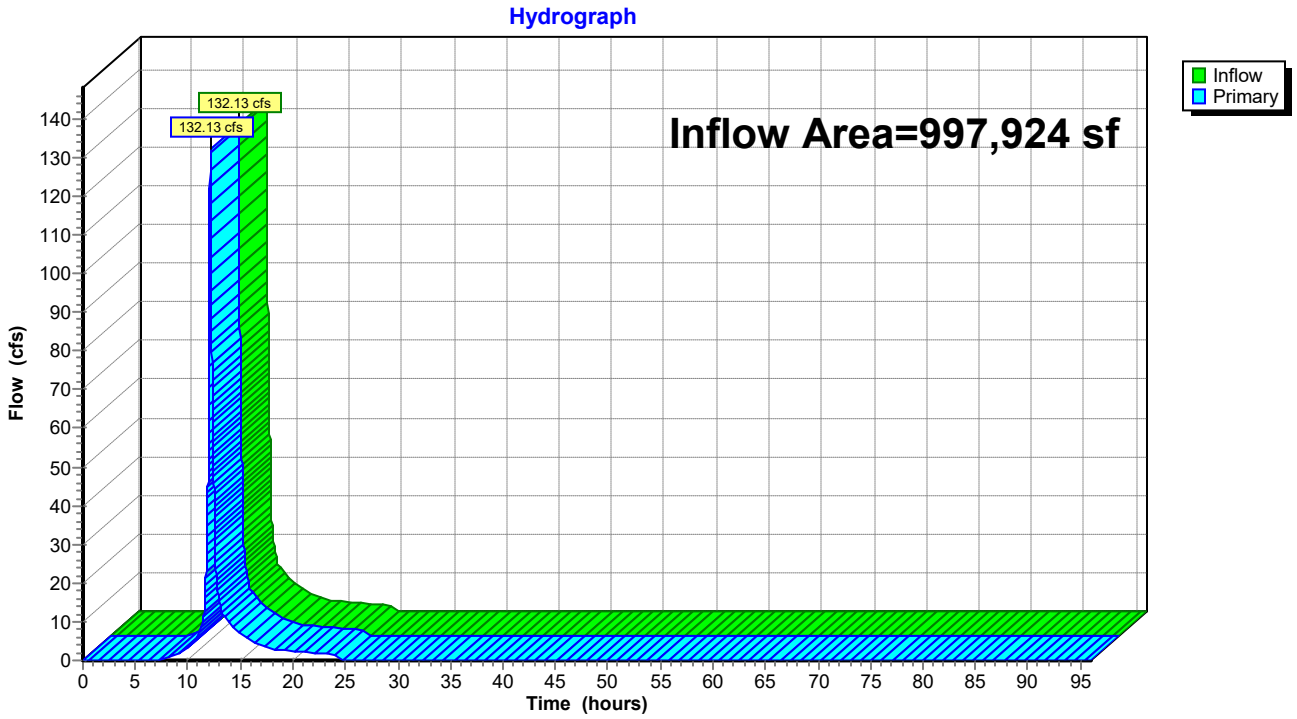
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.06	0.00	0.06	62.00	0.00	0.00	0.00
11.00	0.23	0.00	0.23	63.00	0.00	0.00	0.00
12.00	**3.69**	0.00	**3.69**	64.00	0.00	0.00	0.00
13.00	**0.98**	0.00	**0.98**	65.00	0.00	0.00	0.00
14.00	0.62	0.00	0.62	66.00	0.00	0.00	0.00
15.00	0.48	0.00	0.48	67.00	0.00	0.00	0.00
16.00	0.34	0.00	0.34	68.00	0.00	0.00	0.00
17.00	0.27	0.00	0.27	69.00	0.00	0.00	0.00
18.00	0.21	0.00	0.21	70.00	0.00	0.00	0.00
19.00	0.19	0.00	0.19	71.00	0.00	0.00	0.00
20.00	0.17	0.00	0.17	72.00	0.00	0.00	0.00
21.00	0.15	0.00	0.15	73.00	0.00	0.00	0.00
22.00	0.14	0.00	0.14	74.00	0.00	0.00	0.00
23.00	0.13	0.00	0.13	75.00	0.00	0.00	0.00
24.00	0.11	0.00	0.11	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA D: FIRE POND

Inflow Area = 997,924 sf, 58.33% Impervious, Inflow Depth = 5.53" for 100 yr event
Inflow = 132.13 cfs @ 12.13 hrs, Volume= 459,461.3 cf
Primary = 132.13 cfs @ 12.13 hrs, Volume= 459,461.3 cf, Atten= 0%, Lag= 0.0 min

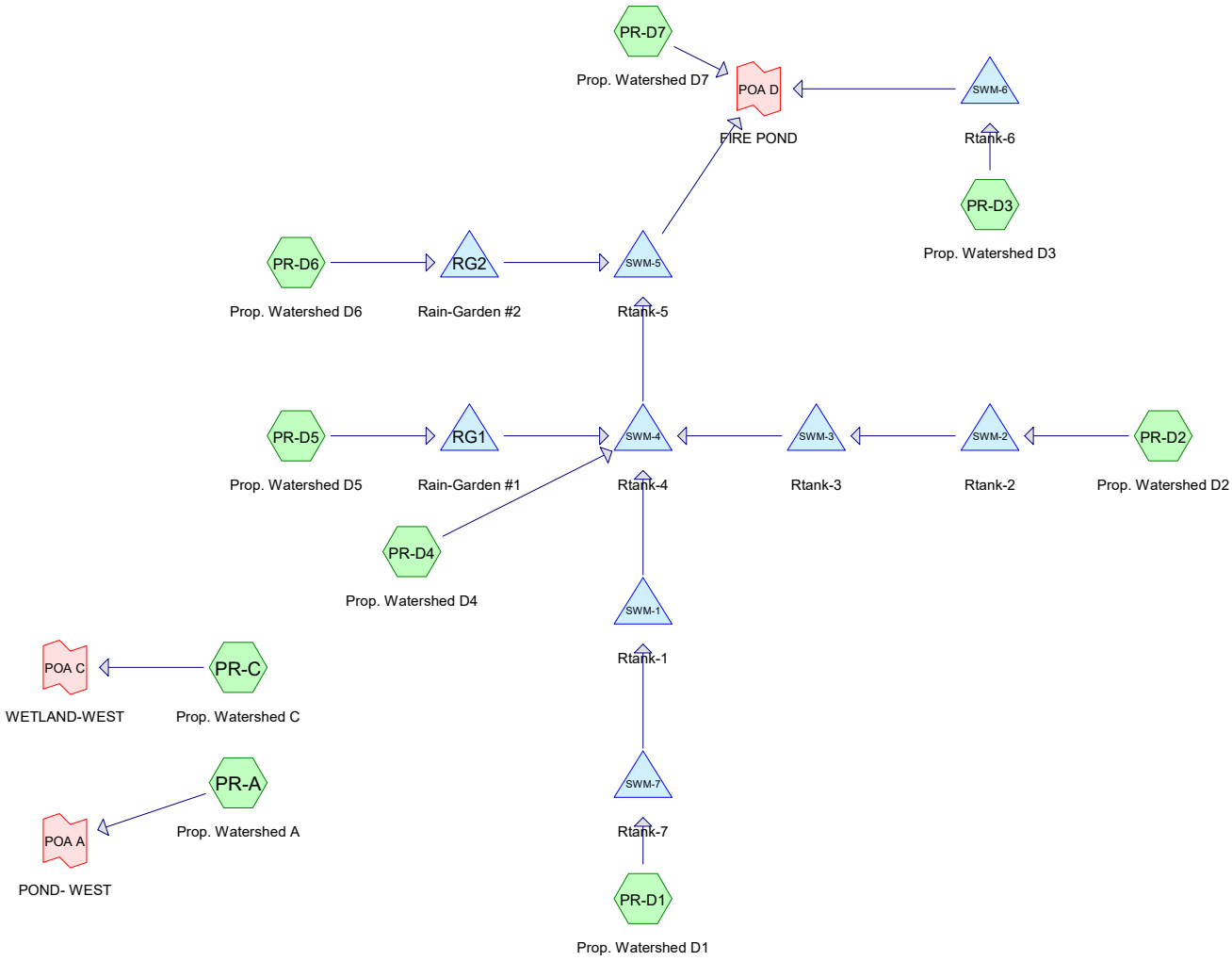
Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA D: FIRE POND



Hydrograph for Link POA D: FIRE POND

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.07	0.00	0.07	59.00	0.00	0.00	0.00
8.00	0.59	0.00	0.59	60.00	0.00	0.00	0.00
9.00	1.62	0.00	1.62	61.00	0.00	0.00	0.00
10.00	3.30	0.00	3.30	62.00	0.00	0.00	0.00
11.00	6.61	0.00	6.61	63.00	0.00	0.00	0.00
12.00	**66.06**	0.00	**66.06**	64.00	0.00	0.00	0.00
13.00	**14.84**	0.00	**14.84**	65.00	0.00	0.00	0.00
14.00	9.22	0.00	9.22	66.00	0.00	0.00	0.00
15.00	6.96	0.00	6.96	67.00	0.00	0.00	0.00
16.00	4.95	0.00	4.95	68.00	0.00	0.00	0.00
17.00	3.91	0.00	3.91	69.00	0.00	0.00	0.00
18.00	3.02	0.00	3.02	70.00	0.00	0.00	0.00
19.00	2.67	0.00	2.67	71.00	0.00	0.00	0.00
20.00	2.40	0.00	2.40	72.00	0.00	0.00	0.00
21.00	2.19	0.00	2.19	73.00	0.00	0.00	0.00
22.00	1.99	0.00	1.99	74.00	0.00	0.00	0.00
23.00	1.79	0.00	1.79	75.00	0.00	0.00	0.00
24.00	1.59	0.00	1.59	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				



Subcat Reach Pond Link

Routing Diagram for 22051_Post Dev Conditions
Prepared by Highpoint Engineering, Inc, Printed 5/11/2023
HydroCAD® 10.20-2g s/n 08358 © 2022 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
492,141	39	>75% Grass cover, Good, HSG A (PR-A, PR-C, PR-D1, PR-D2, PR-D4, PR-D5, PR-D6, PR-D7)
108,531	98	Building 1 - North (PR-D3)
107,416	98	Building 1 - South (PR-D2)
34,452	98	Building 2 - North (PR-D2)
28,837	98	Building 2 - South (PR-D1)
28,101	98	Building 3 - East (PR-D1)
28,095	98	Building 3 - West (PR-D1)
3,868	98	Conc walk (PR-D2)
314,602	98	Pavement (PR-D2, PR-D4, PR-D7)
4,480	90	Perv Pavers (PR-D2)
262,769	98	Unconnected pavement, HSG A (PR-A, PR-C, PR-D1, PR-D5, PR-D6)
4,930	98	Walkway Ramp/steps (PR-D7)
1,418,222	**78**	**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
492,141	0	0	0	0	492,141	>75% Grass cover, Good	
0	0	0	0	108,531	108,531	Building 1 - North	
0	0	0	0	107,416	107,416	Building 1 - South	
0	0	0	0	34,452	34,452	Building 2 - North	
0	0	0	0	28,837	28,837	Building 2 - South	
0	0	0	0	28,101	28,101	Building 3 - East	
0	0	0	0	28,095	28,095	Building 3 - West	
0	0	0	0	3,868	3,868	Conc walk	
0	0	0	0	314,602	314,602	Pavement	
0	0	0	0	4,480	4,480	Perv Pavers	
262,769	0	0	0	0	262,769	Unconnected pavement	
0	0	0	0	4,930	4,930	Walkway Ramp/steps	
754,910	**0**	**0**	**0**	**663,312**	**1,418,222**	**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 PR-A: Prop. Watershed A Runoff Area=161,213 sf 51.37% Impervious Runoff Depth=0.79"
Flow Length=1,502' Tc=6.5 min CN=69 Runoff=2.96 cfs 10,624.8 cf

Subcatchment PR-C: Prop. Watershed C Runoff Area=55,783 sf 42.91% Impervious Runoff Depth=0.57"
Flow Length=836' Tc=8.7 min CN=64 Runoff=0.58 cfs 2,642.8 cf

Subcatchment PR-D1: Prop. Watershed Runoff Area=214,605 sf 84.39% Impervious Runoff Depth=2.10"
Flow Length=1,308' Tc=7.1 min CN=89 Runoff=11.59 cfs 37,552.4 cf

Subcatchment PR-D2: Prop. Watershed Runoff Area=416,467 sf 80.91% Impervious Runoff Depth=1.93"
Flow Length=955' Tc=5.3 min CN=87 Runoff=22.19 cfs 67,071.3 cf

Subcatchment PR-D3: Prop. Watershed Runoff Area=108,531 sf 100.00% Impervious Runoff Depth=2.99"
Tc=5.0 min CN=98 Runoff=8.07 cfs 27,018.9 cf

Subcatchment PR-D4: Prop. Watershed D4 Runoff Area=37,021 sf 55.83% Impervious Runoff Depth=0.94"
Tc=5.0 min CN=72 Runoff=0.90 cfs 2,906.4 cf

Subcatchment PR-D5: Prop. Watershed D5 Runoff Area=50,834 sf 67.76% Impervious Runoff Depth=1.35"
Tc=5.0 min CN=79 Runoff=1.89 cfs 5,726.2 cf

Subcatchment PR-D6: Prop. Watershed D6 Runoff Area=40,781 sf 62.50% Impervious Runoff Depth=1.17"
Tc=5.0 min CN=76 Runoff=1.28 cfs 3,962.4 cf

Subcatchment PR-D7: Prop. Watershed Runoff Area=332,987 sf 32.32% Impervious Runoff Depth=0.35"
Flow Length=1,130' Tc=6.5 min CN=58 Runoff=1.43 cfs 9,664.2 cf

Pond RG1: Rain-Garden #1 Peak Elev=249.98' Storage=2,538.2 cf Inflow=1.89 cfs 5,726.2 cf
Discarded=0.17 cfs 5,726.2 cf Primary=0.00 cfs 0.0 cf Outflow=0.17 cfs 5,726.2 cf

Pond RG2: Rain-Garden #2 Peak Elev=249.21' Storage=1,803.4 cf Inflow=1.28 cfs 3,962.4 cf
Discarded=0.09 cfs 3,962.4 cf Primary=0.00 cfs 0.0 cf Outflow=0.09 cfs 3,962.4 cf

Pond SWM-1: Rtank-1 Peak Elev=247.12' Storage=11,055.6 cf Inflow=9.64 cfs 22,420.9 cf
Discarded=0.20 cfs 14,527.5 cf Primary=1.67 cfs 7,893.5 cf Outflow=1.87 cfs 22,420.9 cf

Pond SWM-2: Rtank-2 Peak Elev=251.12' Storage=6,467.7 cf Inflow=22.19 cfs 67,071.3 cf
Discarded=0.42 cfs 22,619.2 cf Primary=19.94 cfs 44,452.0 cf Outflow=20.36 cfs 67,071.3 cf

Pond SWM-3: Rtank-3 Peak Elev=247.61' Storage=23,863.5 cf Inflow=19.94 cfs 44,452.0 cf
Discarded=0.44 cfs 29,514.6 cf Primary=5.10 cfs 14,937.5 cf Outflow=5.54 cfs 44,452.0 cf

Pond SWM-4: Rtank-4 Peak Elev=244.79' Storage=16,216.5 cf Inflow=6.23 cfs 25,737.4 cf
Discarded=0.62 cfs 25,737.4 cf Primary=0.00 cfs 0.0 cf Outflow=0.62 cfs 25,737.4 cf

Pond SWM-5: Rtank-5 Peak Elev=245.00' Storage=0.0 cf Inflow=0.00 cfs 0.0 cf
Discarded=0.00 cfs 0.0 cf Primary=0.00 cfs 0.0 cf Outflow=0.00 cfs 0.0 cf

Pond SWM-6: Rtank-6 Peak Elev=259.23' Storage=4,264.5 cf Inflow=8.07 cfs 27,018.9 cf
Discarded=0.10 cfs 9,448.9 cf Primary=6.69 cfs 17,570.0 cf Outflow=6.79 cfs 27,018.9 cf

Pond SWM-7: Rtank-7 Peak Elev=247.78' Storage=9,510.6 cf Inflow=11.59 cfs 37,552.4 cf
Discarded=0.15 cfs 15,131.5 cf Primary=9.64 cfs 22,420.9 cf Outflow=9.79 cfs 37,552.4 cf

Link POA A: POND- WEST Inflow=2.96 cfs 10,624.8 cf
Primary=2.96 cfs 10,624.8 cf

Link POA C: WETLAND-WEST Inflow=0.58 cfs 2,642.8 cf
Primary=0.58 cfs 2,642.8 cf

Link POA D: FIRE POND Inflow=8.03 cfs 27,234.1 cf
Primary=8.03 cfs 27,234.1 cf

Total Runoff Area = 1,418,222 sf Runoff Volume = 167,169.5 cf Average Runoff Depth = 1.41"
35.02% Pervious = 496,621 sf 64.98% Impervious = 921,601 sf

Summary for Subcatchment PR-A: Prop. Watershed A

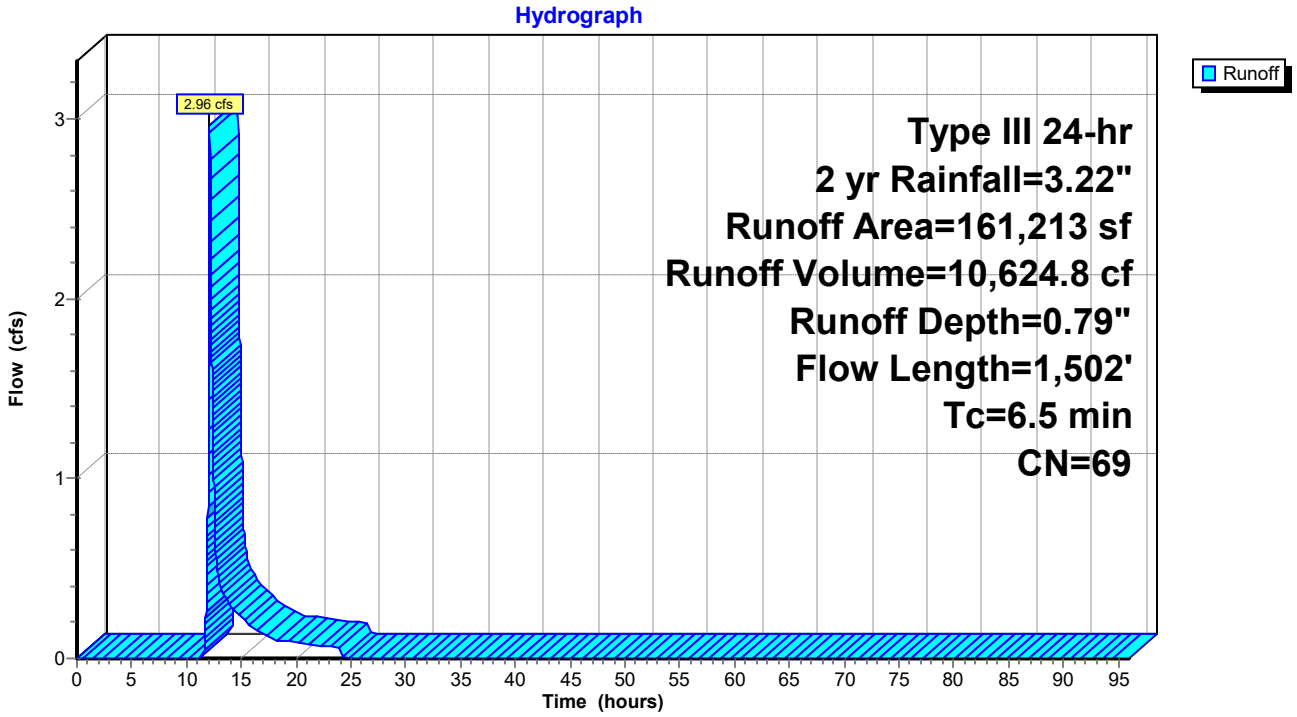
Runoff = 2.96 cfs @ 12.11 hrs, Volume= 10,624.8 cf, Depth= 0.79"
Routed to Link POA A : POND- WEST

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 yr Rainfall=3.22"

	Area (sf)	CN	Description
*	82,820	98	Unconnected pavement, HSG A
	78,393	39	>75% Grass cover, Good, HSG A
	161,213	69	Weighted Average
	78,393		48.63% Pervious Area
	82,820		51.37% Impervious Area
	82,820		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	50	0.0080	0.83		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
2.5	327	0.0120	2.22		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.3	10	0.0001	0.59	0.46	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
0.2	85	0.0110	7.18	8.81	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010 PVC, smooth interior
0.1	69	0.0180	9.18	11.27	**Pipe Channel, E-F** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010
0.6	284	0.0080	8.37	26.30	**Pipe Channel, F-G** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
0.0	31	0.0145	11.27	35.41	**Pipe Channel, G-H** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
0.2	58	0.0020	4.86	23.85	**Pipe Channel, H-I** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010
0.1	47	0.0025	5.43	26.66	**Pipe Channel, I-J** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010
0.6	140	0.0012	3.76	18.47	**Pipe Channel, J-K** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010
0.9	401	0.0040	7.76	54.84	**Pipe Channel, h-I** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.010
6.5	1,502	Total			

Subcatchment PR-A: Prop. Watershed A



Hydrograph for Subcatchment PR-A: Prop. Watershed A

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.10	0.00	0.00
4.00	0.14	0.00	0.00
5.00	0.18	0.00	0.00
6.00	0.23	0.00	0.00
7.00	0.29	0.00	0.00
8.00	0.37	0.00	0.00
9.00	0.47	0.00	0.00
10.00	0.61	0.00	0.00
11.00	0.80	0.00	0.00
12.00	1.61	0.10	**1.28**
13.00	2.41	0.38	**0.43**
14.00	2.61	0.47	0.29
15.00	2.75	0.54	0.23
16.00	2.85	0.59	0.17
17.00	2.93	0.63	0.14
18.00	2.99	0.66	0.11
19.00	3.04	0.69	0.10
20.00	3.08	0.71	0.09
21.00	3.12	0.74	0.08
22.00	3.16	0.76	0.07
23.00	3.19	0.77	0.07
24.00	**3.22**	**0.79**	0.06
25.00	3.22	0.79	0.00
26.00	3.22	0.79	0.00
27.00	3.22	0.79	0.00
28.00	3.22	0.79	0.00
29.00	3.22	0.79	0.00
30.00	3.22	0.79	0.00
31.00	3.22	0.79	0.00
32.00	3.22	0.79	0.00
33.00	3.22	0.79	0.00
34.00	3.22	0.79	0.00
35.00	3.22	0.79	0.00
36.00	3.22	0.79	0.00
37.00	3.22	0.79	0.00
38.00	3.22	0.79	0.00
39.00	3.22	0.79	0.00
40.00	3.22	0.79	0.00
41.00	3.22	0.79	0.00
42.00	3.22	0.79	0.00
43.00	3.22	0.79	0.00
44.00	3.22	0.79	0.00
45.00	3.22	0.79	0.00
46.00	3.22	0.79	0.00
47.00	3.22	0.79	0.00
48.00	3.22	0.79	0.00
49.00	3.22	0.79	0.00
50.00	3.22	0.79	0.00
51.00	3.22	0.79	0.00
52.00	3.22	0.79	0.00
53.00	3.22	0.79	0.00
54.00	3.22	0.79	0.00
55.00	3.22	0.79	0.00
56.00	3.22	0.79	0.00
57.00	3.22	0.79	0.00
58.00	3.22	0.79	0.00
59.00	3.22	0.79	0.00
60.00	3.22	0.79	0.00
61.00	3.22	0.79	0.00
62.00	3.22	0.79	0.00
63.00	3.22	0.79	0.00
64.00	3.22	0.79	0.00
65.00	3.22	0.79	0.00
66.00	3.22	0.79	0.00
67.00	3.22	0.79	0.00
68.00	3.22	0.79	0.00
69.00	3.22	0.79	0.00
70.00	3.22	0.79	0.00
71.00	3.22	0.79	0.00
72.00	3.22	0.79	0.00
73.00	3.22	0.79	0.00
74.00	3.22	0.79	0.00
75.00	3.22	0.79	0.00
76.00	3.22	0.79	0.00
77.00	3.22	0.79	0.00
78.00	3.22	0.79	0.00
79.00	3.22	0.79	0.00
80.00	3.22	0.79	0.00
81.00	3.22	0.79	0.00
82.00	3.22	0.79	0.00
83.00	3.22	0.79	0.00
84.00	3.22	0.79	0.00
85.00	3.22	0.79	0.00
86.00	3.22	0.79	0.00
87.00	3.22	0.79	0.00
88.00	3.22	0.79	0.00
89.00	3.22	0.79	0.00
90.00	3.22	0.79	0.00
91.00	3.22	0.79	0.00
92.00	3.22	0.79	0.00
93.00	3.22	0.79	0.00
94.00	3.22	0.79	0.00
95.00	3.22	0.79	0.00
96.00	3.22	0.79	0.00

Summary for Subcatchment PR-C: Prop. Watershed C

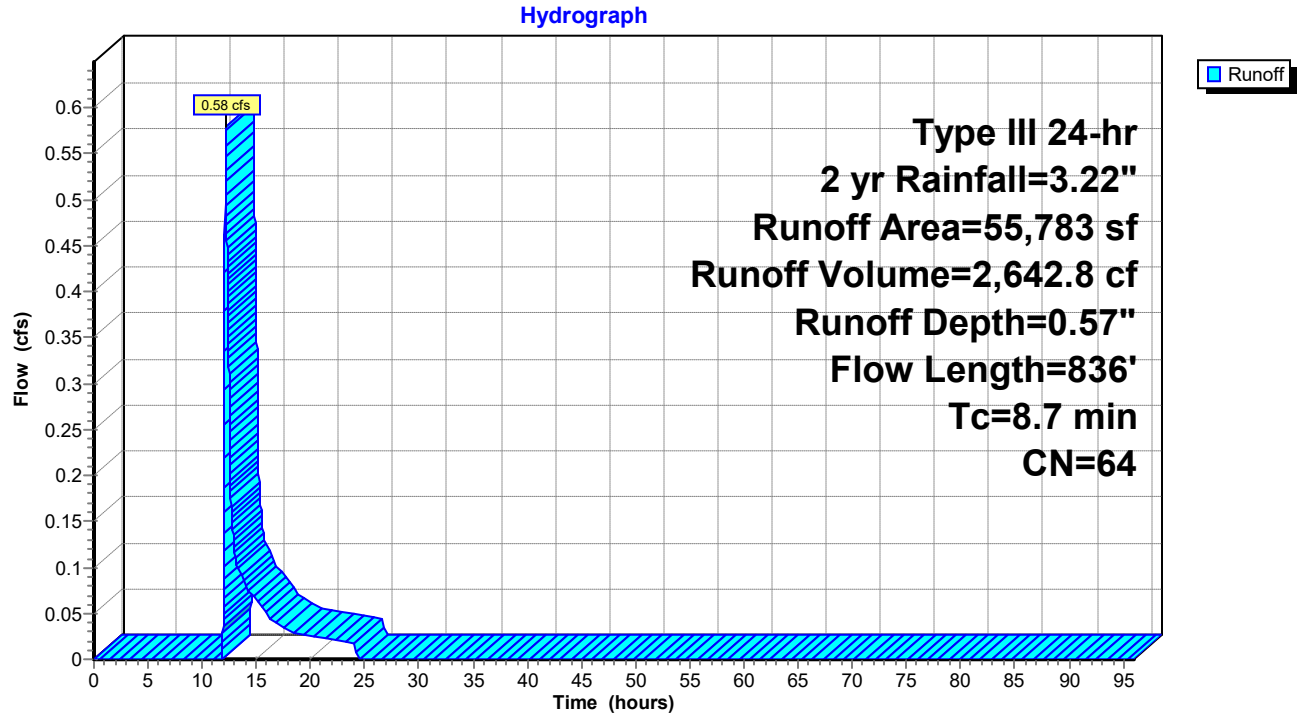
Runoff = 0.58 cfs @ 12.15 hrs, Volume= 2,642.8 cf, Depth= 0.57"
Routed to Link POA C : WETLAND-WEST

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 yr Rainfall=3.22"

	Area (sf)	CN	Description
*	23,937	98	Unconnected pavement, HSG A
	31,846	39	>75% Grass cover, Good, HSG A
	55,783	64	Weighted Average
	31,846		57.09% Pervious Area
	23,937		42.91% Impervious Area
	23,937		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	50	0.0020	0.48		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
6.2	686	0.0083	1.85		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.8	100	0.0017	2.21	1.74	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
8.7	836	Total			

Subcatchment PR-C: Prop. Watershed C



Hydrograph for Subcatchment PR-C: Prop. Watershed C

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.22	0.57	0.00
1.00	0.03	0.00	0.00	53.00	3.22	0.57	0.00
2.00	0.06	0.00	0.00	54.00	3.22	0.57	0.00
3.00	0.10	0.00	0.00	55.00	3.22	0.57	0.00
4.00	0.14	0.00	0.00	56.00	3.22	0.57	0.00
5.00	0.18	0.00	0.00	57.00	3.22	0.57	0.00
6.00	0.23	0.00	0.00	58.00	3.22	0.57	0.00
7.00	0.29	0.00	0.00	59.00	3.22	0.57	0.00
8.00	0.37	0.00	0.00	60.00	3.22	0.57	0.00
9.00	0.47	0.00	0.00	61.00	3.22	0.57	0.00
10.00	0.61	0.00	0.00	62.00	3.22	0.57	0.00
11.00	0.80	0.00	0.00	63.00	3.22	0.57	0.00
12.00	1.61	0.04	**0.14**	64.00	3.22	0.57	0.00
13.00	2.41	0.24	**0.12**	65.00	3.22	0.57	0.00
14.00	2.61	0.31	0.08	66.00	3.22	0.57	0.00
15.00	2.75	0.36	0.06	67.00	3.22	0.57	0.00
16.00	2.85	0.41	0.05	68.00	3.22	0.57	0.00
17.00	2.93	0.44	0.04	69.00	3.22	0.57	0.00
18.00	2.99	0.46	0.03	70.00	3.22	0.57	0.00
19.00	3.04	0.49	0.03	71.00	3.22	0.57	0.00
20.00	3.08	0.50	0.02	72.00	3.22	0.57	0.00
21.00	3.12	0.52	0.02	73.00	3.22	0.57	0.00
22.00	3.16	0.54	0.02	74.00	3.22	0.57	0.00
23.00	3.19	0.55	0.02	75.00	3.22	0.57	0.00
24.00	**3.22**	**0.57**	0.02	76.00	3.22	0.57	0.00
25.00	3.22	0.57	0.00	77.00	3.22	0.57	0.00
26.00	3.22	0.57	0.00	78.00	3.22	0.57	0.00
27.00	3.22	0.57	0.00	79.00	3.22	0.57	0.00
28.00	3.22	0.57	0.00	80.00	3.22	0.57	0.00
29.00	3.22	0.57	0.00	81.00	3.22	0.57	0.00
30.00	3.22	0.57	0.00	82.00	3.22	0.57	0.00
31.00	3.22	0.57	0.00	83.00	3.22	0.57	0.00
32.00	3.22	0.57	0.00	84.00	3.22	0.57	0.00
33.00	3.22	0.57	0.00	85.00	3.22	0.57	0.00
34.00	3.22	0.57	0.00	86.00	3.22	0.57	0.00
35.00	3.22	0.57	0.00	87.00	3.22	0.57	0.00
36.00	3.22	0.57	0.00	88.00	3.22	0.57	0.00
37.00	3.22	0.57	0.00	89.00	3.22	0.57	0.00
38.00	3.22	0.57	0.00	90.00	3.22	0.57	0.00
39.00	3.22	0.57	0.00	91.00	3.22	0.57	0.00
40.00	3.22	0.57	0.00	92.00	3.22	0.57	0.00
41.00	3.22	0.57	0.00	93.00	3.22	0.57	0.00
42.00	3.22	0.57	0.00	94.00	3.22	0.57	0.00
43.00	3.22	0.57	0.00	95.00	3.22	0.57	0.00
44.00	3.22	0.57	0.00	96.00	3.22	0.57	0.00
45.00	3.22	0.57	0.00				
46.00	3.22	0.57	0.00				
47.00	3.22	0.57	0.00				
48.00	3.22	0.57	0.00				
49.00	3.22	0.57	0.00				
50.00	3.22	0.57	0.00				
51.00	3.22	0.57	0.00				

Summary for Subcatchment PR-D1: Prop. Watershed D1

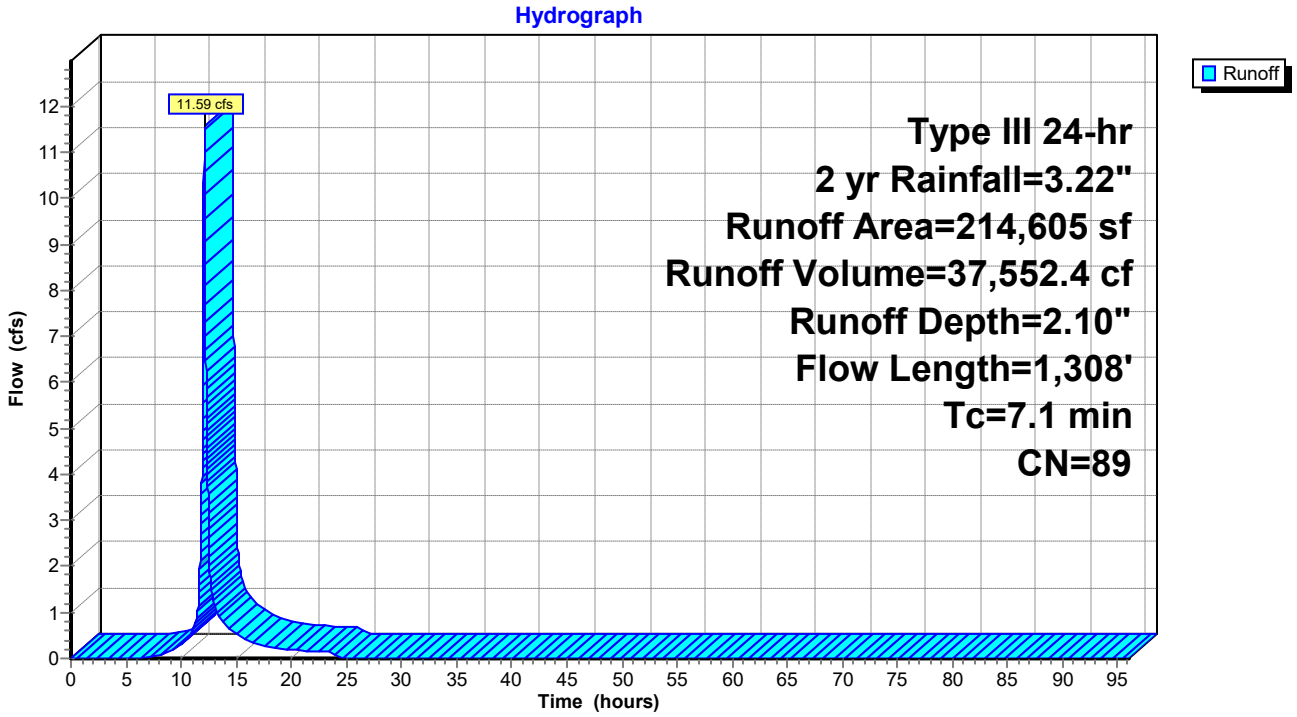
Runoff = 11.59 cfs @ 12.10 hrs, Volume= 37,552.4 cf, Depth= 2.10"
Routed to Pond SWM-7 : Rtank-7

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 yr Rainfall=3.22"

	Area (sf)	CN	Description
*	28,837	98	Building 2 - South
*	28,095	98	Building 3 - West
*	28,101	98	Building 3 - East
	96,079	98	Unconnected pavement, HSG A
	33,493	39	>75% Grass cover, Good, HSG A
	214,605	89	Weighted Average
	33,493		15.61% Pervious Area
	181,112		84.39% Impervious Area
	96,079		53.05% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	50	0.1600	0.34		**Sheet Flow, a-b** Grass: Short n= 0.150 P2= 3.22"
0.0	12	0.1250	5.69		**Shallow Concentrated Flow, b-c** Unpaved Kv= 16.1 fps
1.3	296	0.0350	3.80		**Shallow Concentrated Flow, c-d** Paved Kv= 20.3 fps
0.2	64	0.0100	4.54	3.56	**Pipe Channel, d-e** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
0.0	13	0.0160	5.74	4.51	**Pipe Channel, e-f** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
0.8	196	0.0046	4.03	7.12	**Pipe Channel, f-g** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
0.9	213	0.0047	4.08	7.20	**Pipe Channel, g-h** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
0.2	56	0.0054	5.29	16.62	**Pipe Channel, h-i** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
0.9	282	0.0050	5.09	16.00	**Pipe Channel, i-j** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
0.4	126	0.0048	4.99	15.67	**Pipe Channel, j-k** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
7.1	1,308	Total			

Subcatchment PR-D1: Prop. Watershed D1



Hydrograph for Subcatchment PR-D1: Prop. Watershed D1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.10	0.00	0.00
4.00	0.14	0.00	0.00
5.00	0.18	0.00	0.00
6.00	0.23	0.00	0.00
7.00	0.29	0.00	0.02
8.00	0.37	0.01	0.06
9.00	0.47	0.03	0.16
10.00	0.61	0.08	0.30
11.00	0.80	0.17	0.58
12.00	1.61	0.71	**6.44**
13.00	2.41	1.38	**1.15**
14.00	2.61	1.55	0.73
15.00	2.75	1.68	0.55
16.00	2.85	1.77	0.39
17.00	2.93	1.84	0.31
18.00	2.99	1.89	0.24
19.00	3.04	1.93	0.21
20.00	3.08	1.97	0.19
21.00	3.12	2.01	0.17
22.00	3.16	2.04	0.16
23.00	3.19	2.07	0.14
24.00	**3.22**	**2.10**	0.13
25.00	3.22	2.10	0.00
26.00	3.22	2.10	0.00
27.00	3.22	2.10	0.00
28.00	3.22	2.10	0.00
29.00	3.22	2.10	0.00
30.00	3.22	2.10	0.00
31.00	3.22	2.10	0.00
32.00	3.22	2.10	0.00
33.00	3.22	2.10	0.00
34.00	3.22	2.10	0.00
35.00	3.22	2.10	0.00
36.00	3.22	2.10	0.00
37.00	3.22	2.10	0.00
38.00	3.22	2.10	0.00
39.00	3.22	2.10	0.00
40.00	3.22	2.10	0.00
41.00	3.22	2.10	0.00
42.00	3.22	2.10	0.00
43.00	3.22	2.10	0.00
44.00	3.22	2.10	0.00
45.00	3.22	2.10	0.00
46.00	3.22	2.10	0.00
47.00	3.22	2.10	0.00
48.00	3.22	2.10	0.00
49.00	3.22	2.10	0.00
50.00	3.22	2.10	0.00
51.00	3.22	2.10	0.00
52.00	3.22	2.10	0.00
53.00	3.22	2.10	0.00
54.00	3.22	2.10	0.00
55.00	3.22	2.10	0.00
56.00	3.22	2.10	0.00
57.00	3.22	2.10	0.00
58.00	3.22	2.10	0.00
59.00	3.22	2.10	0.00
60.00	3.22	2.10	0.00
61.00	3.22	2.10	0.00
62.00	3.22	2.10	0.00
63.00	3.22	2.10	0.00
64.00	3.22	2.10	0.00
65.00	3.22	2.10	0.00
66.00	3.22	2.10	0.00
67.00	3.22	2.10	0.00
68.00	3.22	2.10	0.00
69.00	3.22	2.10	0.00
70.00	3.22	2.10	0.00
71.00	3.22	2.10	0.00
72.00	3.22	2.10	0.00
73.00	3.22	2.10	0.00
74.00	3.22	2.10	0.00
75.00	3.22	2.10	0.00
76.00	3.22	2.10	0.00
77.00	3.22	2.10	0.00
78.00	3.22	2.10	0.00
79.00	3.22	2.10	0.00
80.00	3.22	2.10	0.00
81.00	3.22	2.10	0.00
82.00	3.22	2.10	0.00
83.00	3.22	2.10	0.00
84.00	3.22	2.10	0.00
85.00	3.22	2.10	0.00
86.00	3.22	2.10	0.00
87.00	3.22	2.10	0.00
88.00	3.22	2.10	0.00
89.00	3.22	2.10	0.00
90.00	3.22	2.10	0.00
91.00	3.22	2.10	0.00
92.00	3.22	2.10	0.00
93.00	3.22	2.10	0.00
94.00	3.22	2.10	0.00
95.00	3.22	2.10	0.00
96.00	3.22	2.10	0.00

Summary for Subcatchment PR-D2: Prop. Watershed D2

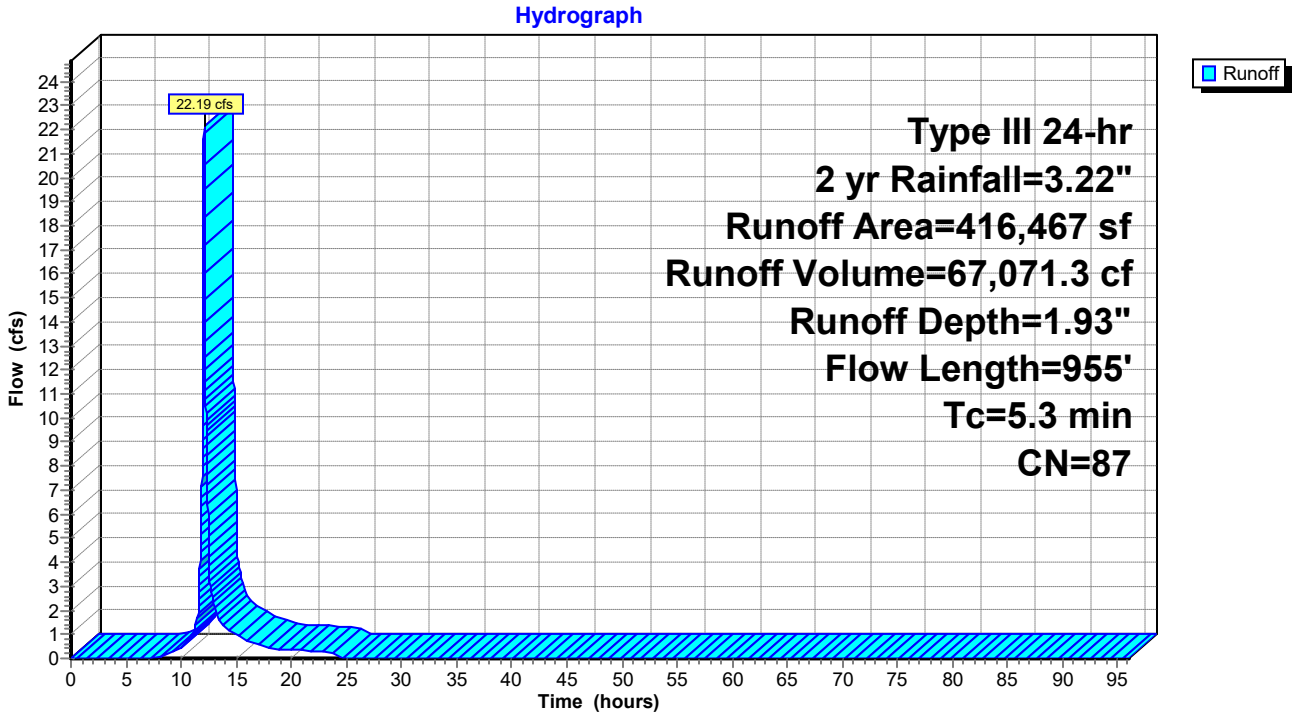
Runoff = 22.19 cfs @ 12.08 hrs, Volume= 67,071.3 cf, Depth= 1.93"
Routed to Pond SWM-2 : Rtank-2

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 yr Rainfall=3.22"

	Area (sf)	CN	Description
*	107,416	98	Building 1 - South
*	34,452	98	Building 2 - North
*	191,226	98	Pavement
*	3,868	98	Conc walk
*	4,480	90	Perv Pavers
	75,025	39	>75% Grass cover, Good, HSG A
	416,467	87	Weighted Average
	79,505		19.09% Pervious Area
	336,962		80.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	50	0.0020	0.48		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
1.0	124	0.0100	2.03		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.4	84	0.0071	3.82	3.00	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.4	99	0.0071	3.82	3.00	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.3	71	0.0070	3.80	2.98	**Pipe Channel, E-F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
1.4	396	0.0061	4.64	8.20	**Pipe Channel, F-G** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
0.1	131	0.0047	15.30	1,432.46	**Pipe Channel, G-H** 131.0" Round Area= 93.6 sf Perim= 34.3' r= 2.73' n= 0.013
5.3	955	Total			

Subcatchment PR-D2: Prop. Watershed D2



Hydrograph for Subcatchment PR-D2: Prop. Watershed D2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.22	1.93	0.00
1.00	0.03	0.00	0.00	53.00	3.22	1.93	0.00
2.00	0.06	0.00	0.00	54.00	3.22	1.93	0.00
3.00	0.10	0.00	0.00	55.00	3.22	1.93	0.00
4.00	0.14	0.00	0.00	56.00	3.22	1.93	0.00
5.00	0.18	0.00	0.00	57.00	3.22	1.93	0.00
6.00	0.23	0.00	0.00	58.00	3.22	1.93	0.00
7.00	0.29	0.00	0.00	59.00	3.22	1.93	0.00
8.00	0.37	0.00	0.06	60.00	3.22	1.93	0.00
9.00	0.47	0.02	0.21	61.00	3.22	1.93	0.00
10.00	0.61	0.05	0.45	62.00	3.22	1.93	0.00
11.00	0.80	0.13	0.95	63.00	3.22	1.93	0.00
12.00	1.61	0.61	**13.74**	64.00	3.22	1.93	0.00
13.00	2.41	1.24	**2.07**	65.00	3.22	1.93	0.00
14.00	2.61	1.40	1.34	66.00	3.22	1.93	0.00
15.00	2.75	1.52	1.02	67.00	3.22	1.93	0.00
16.00	2.85	1.61	0.72	68.00	3.22	1.93	0.00
17.00	2.93	1.68	0.58	69.00	3.22	1.93	0.00
18.00	2.99	1.73	0.44	70.00	3.22	1.93	0.00
19.00	3.04	1.77	0.40	71.00	3.22	1.93	0.00
20.00	3.08	1.81	0.36	72.00	3.22	1.93	0.00
21.00	3.12	1.85	0.33	73.00	3.22	1.93	0.00
22.00	3.16	1.88	0.30	74.00	3.22	1.93	0.00
23.00	3.19	1.91	0.27	75.00	3.22	1.93	0.00
24.00	**3.22**	**1.93**	0.24	76.00	3.22	1.93	0.00
25.00	3.22	1.93	0.00	77.00	3.22	1.93	0.00
26.00	3.22	1.93	0.00	78.00	3.22	1.93	0.00
27.00	3.22	1.93	0.00	79.00	3.22	1.93	0.00
28.00	3.22	1.93	0.00	80.00	3.22	1.93	0.00
29.00	3.22	1.93	0.00	81.00	3.22	1.93	0.00
30.00	3.22	1.93	0.00	82.00	3.22	1.93	0.00
31.00	3.22	1.93	0.00	83.00	3.22	1.93	0.00
32.00	3.22	1.93	0.00	84.00	3.22	1.93	0.00
33.00	3.22	1.93	0.00	85.00	3.22	1.93	0.00
34.00	3.22	1.93	0.00	86.00	3.22	1.93	0.00
35.00	3.22	1.93	0.00	87.00	3.22	1.93	0.00
36.00	3.22	1.93	0.00	88.00	3.22	1.93	0.00
37.00	3.22	1.93	0.00	89.00	3.22	1.93	0.00
38.00	3.22	1.93	0.00	90.00	3.22	1.93	0.00
39.00	3.22	1.93	0.00	91.00	3.22	1.93	0.00
40.00	3.22	1.93	0.00	92.00	3.22	1.93	0.00
41.00	3.22	1.93	0.00	93.00	3.22	1.93	0.00
42.00	3.22	1.93	0.00	94.00	3.22	1.93	0.00
43.00	3.22	1.93	0.00	95.00	3.22	1.93	0.00
44.00	3.22	1.93	0.00	96.00	3.22	1.93	0.00
45.00	3.22	1.93	0.00				
46.00	3.22	1.93	0.00				
47.00	3.22	1.93	0.00				
48.00	3.22	1.93	0.00				
49.00	3.22	1.93	0.00				
50.00	3.22	1.93	0.00				
51.00	3.22	1.93	0.00				

Summary for Subcatchment PR-D3: Prop. Watershed D3

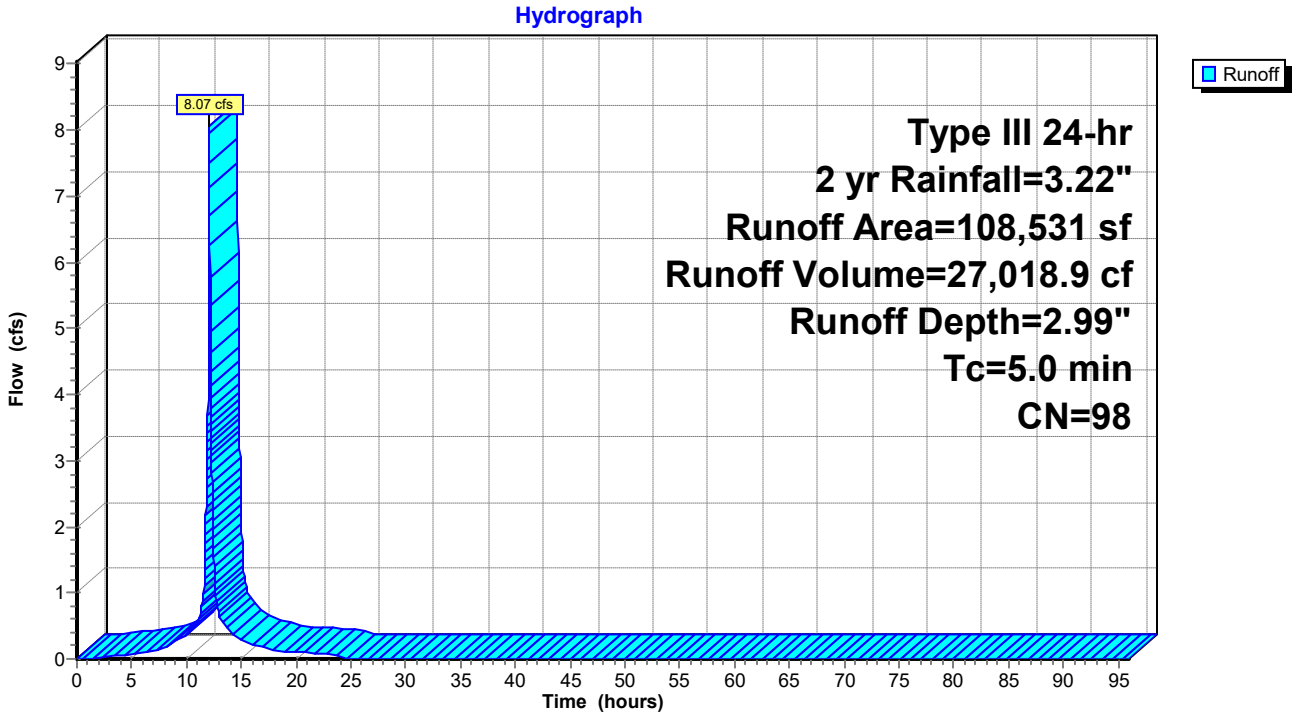
Runoff = 8.07 cfs @ 12.07 hrs, Volume= 27,018.9 cf, Depth= 2.99"
Routed to Pond SWM-6 : Rtank-6

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 yr Rainfall=3.22"

	Area (sf)	CN	Description
*	108,531	98	Building 1 - North
	108,531		100.00% Impervious Area

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

Subcatchment PR-D3: Prop. Watershed D3



Hydrograph for Subcatchment PR-D3: Prop. Watershed D3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.01
3.00	0.10	0.01	0.04
4.00	0.14	0.03	0.06
5.00	0.18	0.06	0.08
6.00	0.23	0.09	0.09
7.00	0.29	0.14	0.13
8.00	0.37	0.20	0.18
9.00	0.47	0.29	0.26
10.00	0.61	0.42	0.36
11.00	0.80	0.60	0.55
12.00	1.61	1.39	**5.44**
13.00	2.41	2.19	**0.64**
14.00	2.61	2.38	0.41
15.00	2.75	2.52	0.31
16.00	2.85	2.62	0.22
17.00	2.93	2.70	0.17
18.00	2.99	2.76	0.13
19.00	3.04	2.81	0.12
20.00	3.08	2.85	0.11
21.00	3.12	2.89	0.10
22.00	3.16	2.93	0.09
23.00	3.19	2.96	0.08
24.00	**3.22**	**2.99**	0.07
25.00	3.22	2.99	0.00
26.00	3.22	2.99	0.00
27.00	3.22	2.99	0.00
28.00	3.22	2.99	0.00
29.00	3.22	2.99	0.00
30.00	3.22	2.99	0.00
31.00	3.22	2.99	0.00
32.00	3.22	2.99	0.00
33.00	3.22	2.99	0.00
34.00	3.22	2.99	0.00
35.00	3.22	2.99	0.00
36.00	3.22	2.99	0.00
37.00	3.22	2.99	0.00
38.00	3.22	2.99	0.00
39.00	3.22	2.99	0.00
40.00	3.22	2.99	0.00
41.00	3.22	2.99	0.00
42.00	3.22	2.99	0.00
43.00	3.22	2.99	0.00
44.00	3.22	2.99	0.00
45.00	3.22	2.99	0.00
46.00	3.22	2.99	0.00
47.00	3.22	2.99	0.00
48.00	3.22	2.99	0.00
49.00	3.22	2.99	0.00
50.00	3.22	2.99	0.00
51.00	3.22	2.99	0.00
52.00	3.22	2.99	0.00
53.00	3.22	2.99	0.00
54.00	3.22	2.99	0.00
55.00	3.22	2.99	0.00
56.00	3.22	2.99	0.00
57.00	3.22	2.99	0.00
58.00	3.22	2.99	0.00
59.00	3.22	2.99	0.00
60.00	3.22	2.99	0.00
61.00	3.22	2.99	0.00
62.00	3.22	2.99	0.00
63.00	3.22	2.99	0.00
64.00	3.22	2.99	0.00
65.00	3.22	2.99	0.00
66.00	3.22	2.99	0.00
67.00	3.22	2.99	0.00
68.00	3.22	2.99	0.00
69.00	3.22	2.99	0.00
70.00	3.22	2.99	0.00
71.00	3.22	2.99	0.00
72.00	3.22	2.99	0.00
73.00	3.22	2.99	0.00
74.00	3.22	2.99	0.00
75.00	3.22	2.99	0.00
76.00	3.22	2.99	0.00
77.00	3.22	2.99	0.00
78.00	3.22	2.99	0.00
79.00	3.22	2.99	0.00
80.00	3.22	2.99	0.00
81.00	3.22	2.99	0.00
82.00	3.22	2.99	0.00
83.00	3.22	2.99	0.00
84.00	3.22	2.99	0.00
85.00	3.22	2.99	0.00
86.00	3.22	2.99	0.00
87.00	3.22	2.99	0.00
88.00	3.22	2.99	0.00
89.00	3.22	2.99	0.00
90.00	3.22	2.99	0.00
91.00	3.22	2.99	0.00
92.00	3.22	2.99	0.00
93.00	3.22	2.99	0.00
94.00	3.22	2.99	0.00
95.00	3.22	2.99	0.00
96.00	3.22	2.99	0.00

Summary for Subcatchment PR-D4: Prop. Watershed D4

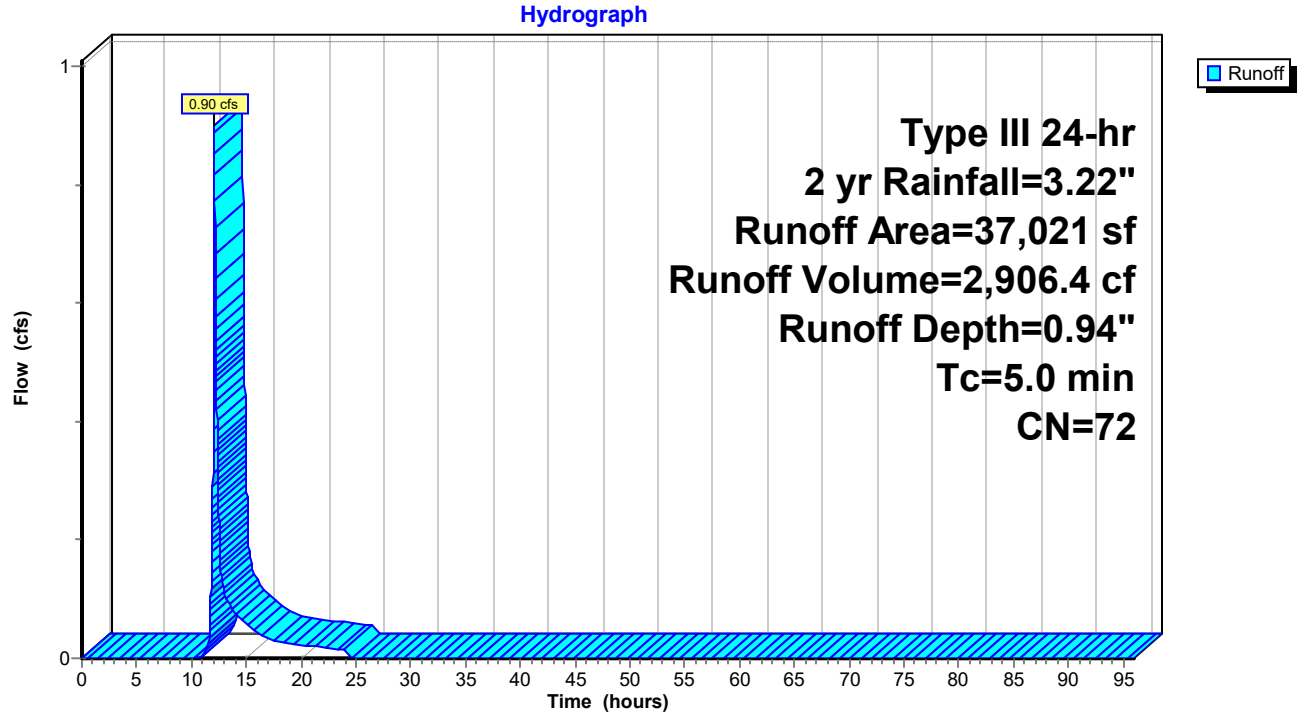
Runoff = 0.90 cfs @ 12.08 hrs, Volume= 2,906.4 cf, Depth= 0.94"
Routed to Pond SWM-4 : Rtank-4

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 yr Rainfall=3.22"

	Area (sf)	CN	Description
*	20,670	98	Pavement
	16,351	39	>75% Grass cover, Good, HSG A
	37,021	72	Weighted Average
	16,351		44.17% Pervious Area
	20,670		55.83% Impervious Area

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

Subcatchment PR-D4: Prop. Watershed D4



Hydrograph for Subcatchment PR-D4: Prop. Watershed D4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.10	0.00	0.00
4.00	0.14	0.00	0.00
5.00	0.18	0.00	0.00
6.00	0.23	0.00	0.00
7.00	0.29	0.00	0.00
8.00	0.37	0.00	0.00
9.00	0.47	0.00	0.00
10.00	0.61	0.00	0.00
11.00	0.80	0.00	0.00
12.00	1.61	0.15	**0.49**
13.00	2.41	0.49	**0.11**
14.00	2.61	0.59	0.08
15.00	2.75	0.66	0.06
16.00	2.85	0.72	0.04
17.00	2.93	0.77	0.03
18.00	2.99	0.80	0.03
19.00	3.04	0.83	0.02
20.00	3.08	0.86	0.02
21.00	3.12	0.88	0.02
22.00	3.16	0.90	0.02
23.00	3.19	0.92	0.02
24.00	**3.22**	**0.94**	0.01
25.00	3.22	0.94	0.00
26.00	3.22	0.94	0.00
27.00	3.22	0.94	0.00
28.00	3.22	0.94	0.00
29.00	3.22	0.94	0.00
30.00	3.22	0.94	0.00
31.00	3.22	0.94	0.00
32.00	3.22	0.94	0.00
33.00	3.22	0.94	0.00
34.00	3.22	0.94	0.00
35.00	3.22	0.94	0.00
36.00	3.22	0.94	0.00
37.00	3.22	0.94	0.00
38.00	3.22	0.94	0.00
39.00	3.22	0.94	0.00
40.00	3.22	0.94	0.00
41.00	3.22	0.94	0.00
42.00	3.22	0.94	0.00
43.00	3.22	0.94	0.00
44.00	3.22	0.94	0.00
45.00	3.22	0.94	0.00
46.00	3.22	0.94	0.00
47.00	3.22	0.94	0.00
48.00	3.22	0.94	0.00
49.00	3.22	0.94	0.00
50.00	3.22	0.94	0.00
51.00	3.22	0.94	0.00
52.00	3.22	0.94	0.00
53.00	3.22	0.94	0.00
54.00	3.22	0.94	0.00
55.00	3.22	0.94	0.00
56.00	3.22	0.94	0.00
57.00	3.22	0.94	0.00
58.00	3.22	0.94	0.00
59.00	3.22	0.94	0.00
60.00	3.22	0.94	0.00
61.00	3.22	0.94	0.00
62.00	3.22	0.94	0.00
63.00	3.22	0.94	0.00
64.00	3.22	0.94	0.00
65.00	3.22	0.94	0.00
66.00	3.22	0.94	0.00
67.00	3.22	0.94	0.00
68.00	3.22	0.94	0.00
69.00	3.22	0.94	0.00
70.00	3.22	0.94	0.00
71.00	3.22	0.94	0.00
72.00	3.22	0.94	0.00
73.00	3.22	0.94	0.00
74.00	3.22	0.94	0.00
75.00	3.22	0.94	0.00
76.00	3.22	0.94	0.00
77.00	3.22	0.94	0.00
78.00	3.22	0.94	0.00
79.00	3.22	0.94	0.00
80.00	3.22	0.94	0.00
81.00	3.22	0.94	0.00
82.00	3.22	0.94	0.00
83.00	3.22	0.94	0.00
84.00	3.22	0.94	0.00
85.00	3.22	0.94	0.00
86.00	3.22	0.94	0.00
87.00	3.22	0.94	0.00
88.00	3.22	0.94	0.00
89.00	3.22	0.94	0.00
90.00	3.22	0.94	0.00
91.00	3.22	0.94	0.00
92.00	3.22	0.94	0.00
93.00	3.22	0.94	0.00
94.00	3.22	0.94	0.00
95.00	3.22	0.94	0.00
96.00	3.22	0.94	0.00

Summary for Subcatchment PR-D5: Prop. Watershed D5

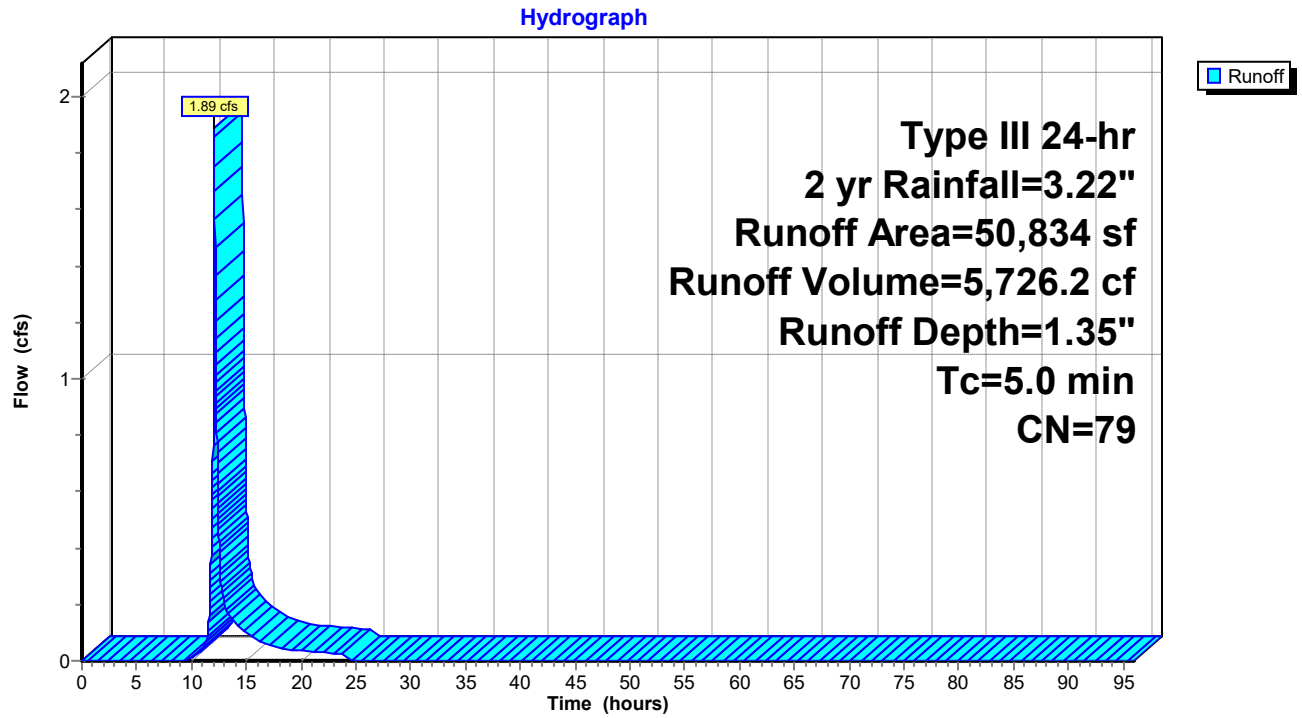
Runoff = 1.89 cfs @ 12.08 hrs, Volume= 5,726.2 cf, Depth= 1.35"
Routed to Pond RG1 : Rain-Garden #1

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 yr Rainfall=3.22"

Area (sf)	CN	Description
34,446	98	Unconnected pavement, HSG A
16,388	39	>75% Grass cover, Good, HSG A
50,834	79	Weighted Average
16,388		32.24% Pervious Area
34,446		67.76% Impervious Area
34,446		100.00% Unconnected

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

Subcatchment PR-D5: Prop. Watershed D5



Hydrograph for Subcatchment PR-D5: Prop. Watershed D5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.10	0.00	0.00
4.00	0.14	0.00	0.00
5.00	0.18	0.00	0.00
6.00	0.23	0.00	0.00
7.00	0.29	0.00	0.00
8.00	0.37	0.00	0.00
9.00	0.47	0.00	0.00
10.00	0.61	0.00	0.01
11.00	0.80	0.03	0.05
12.00	1.61	0.31	**1.13**
13.00	2.41	0.78	**0.20**
14.00	2.61	0.91	0.13
15.00	2.75	1.01	0.10
16.00	2.85	1.08	0.07
17.00	2.93	1.14	0.06
18.00	2.99	1.18	0.05
19.00	3.04	1.22	0.04
20.00	3.08	1.25	0.04
21.00	3.12	1.28	0.03
22.00	3.16	1.31	0.03
23.00	3.19	1.33	0.03
24.00	**3.22**	**1.35**	0.02
25.00	3.22	1.35	0.00
26.00	3.22	1.35	0.00
27.00	3.22	1.35	0.00
28.00	3.22	1.35	0.00
29.00	3.22	1.35	0.00
30.00	3.22	1.35	0.00
31.00	3.22	1.35	0.00
32.00	3.22	1.35	0.00
33.00	3.22	1.35	0.00
34.00	3.22	1.35	0.00
35.00	3.22	1.35	0.00
36.00	3.22	1.35	0.00
37.00	3.22	1.35	0.00
38.00	3.22	1.35	0.00
39.00	3.22	1.35	0.00
40.00	3.22	1.35	0.00
41.00	3.22	1.35	0.00
42.00	3.22	1.35	0.00
43.00	3.22	1.35	0.00
44.00	3.22	1.35	0.00
45.00	3.22	1.35	0.00
46.00	3.22	1.35	0.00
47.00	3.22	1.35	0.00
48.00	3.22	1.35	0.00
49.00	3.22	1.35	0.00
50.00	3.22	1.35	0.00
51.00	3.22	1.35	0.00
52.00	3.22	1.35	0.00
53.00	3.22	1.35	0.00
54.00	3.22	1.35	0.00
55.00	3.22	1.35	0.00
56.00	3.22	1.35	0.00
57.00	3.22	1.35	0.00
58.00	3.22	1.35	0.00
59.00	3.22	1.35	0.00
60.00	3.22	1.35	0.00
61.00	3.22	1.35	0.00
62.00	3.22	1.35	0.00
63.00	3.22	1.35	0.00
64.00	3.22	1.35	0.00
65.00	3.22	1.35	0.00
66.00	3.22	1.35	0.00
67.00	3.22	1.35	0.00
68.00	3.22	1.35	0.00
69.00	3.22	1.35	0.00
70.00	3.22	1.35	0.00
71.00	3.22	1.35	0.00
72.00	3.22	1.35	0.00
73.00	3.22	1.35	0.00
74.00	3.22	1.35	0.00
75.00	3.22	1.35	0.00
76.00	3.22	1.35	0.00
77.00	3.22	1.35	0.00
78.00	3.22	1.35	0.00
79.00	3.22	1.35	0.00
80.00	3.22	1.35	0.00
81.00	3.22	1.35	0.00
82.00	3.22	1.35	0.00
83.00	3.22	1.35	0.00
84.00	3.22	1.35	0.00
85.00	3.22	1.35	0.00
86.00	3.22	1.35	0.00
87.00	3.22	1.35	0.00
88.00	3.22	1.35	0.00
89.00	3.22	1.35	0.00
90.00	3.22	1.35	0.00
91.00	3.22	1.35	0.00
92.00	3.22	1.35	0.00
93.00	3.22	1.35	0.00
94.00	3.22	1.35	0.00
95.00	3.22	1.35	0.00
96.00	3.22	1.35	0.00

Summary for Subcatchment PR-D6: Prop. Watershed D6

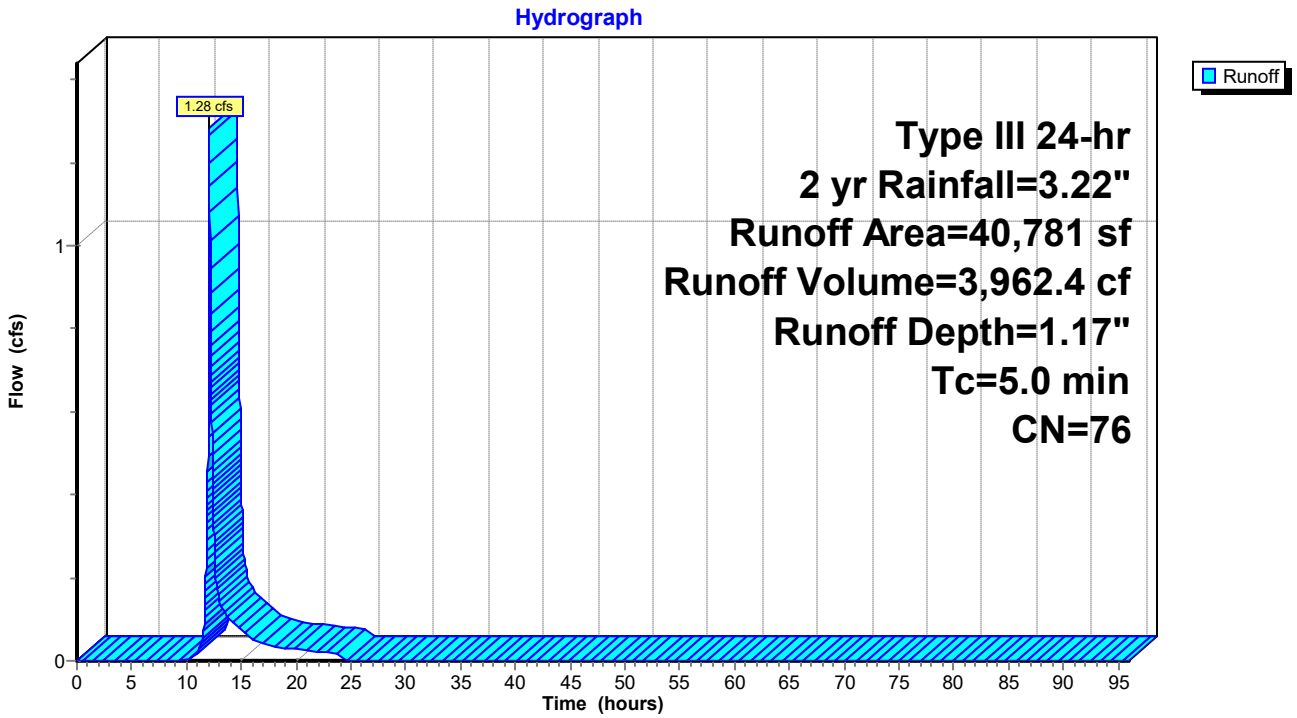
Runoff = 1.28 cfs @ 12.08 hrs, Volume= 3,962.4 cf, Depth= 1.17"
Routed to Pond RG2 : Rain-Garden #2

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 yr Rainfall=3.22"

Area (sf)	CN	Description
25,487	98	Unconnected pavement, HSG A
15,294	39	>75% Grass cover, Good, HSG A
40,781	76	Weighted Average
15,294		37.50% Pervious Area
25,487		62.50% Impervious Area
25,487		100.00% Unconnected

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

Subcatchment PR-D6: Prop. Watershed D6



Hydrograph for Subcatchment PR-D6: Prop. Watershed D6

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.10	0.00	0.00
4.00	0.14	0.00	0.00
5.00	0.18	0.00	0.00
6.00	0.23	0.00	0.00
7.00	0.29	0.00	0.00
8.00	0.37	0.00	0.00
9.00	0.47	0.00	0.00
10.00	0.61	0.00	0.00
11.00	0.80	0.01	0.02
12.00	1.61	0.23	**0.74**
13.00	2.41	0.64	**0.14**
14.00	2.61	0.76	0.10
15.00	2.75	0.85	0.07
16.00	2.85	0.92	0.05
17.00	2.93	0.97	0.04
18.00	2.99	1.01	0.03
19.00	3.04	1.04	0.03
20.00	3.08	1.07	0.03
21.00	3.12	1.10	0.02
22.00	3.16	1.12	0.02
23.00	3.19	1.15	0.02
24.00	**3.22**	**1.17**	0.02
25.00	3.22	1.17	0.00
26.00	3.22	1.17	0.00
27.00	3.22	1.17	0.00
28.00	3.22	1.17	0.00
29.00	3.22	1.17	0.00
30.00	3.22	1.17	0.00
31.00	3.22	1.17	0.00
32.00	3.22	1.17	0.00
33.00	3.22	1.17	0.00
34.00	3.22	1.17	0.00
35.00	3.22	1.17	0.00
36.00	3.22	1.17	0.00
37.00	3.22	1.17	0.00
38.00	3.22	1.17	0.00
39.00	3.22	1.17	0.00
40.00	3.22	1.17	0.00
41.00	3.22	1.17	0.00
42.00	3.22	1.17	0.00
43.00	3.22	1.17	0.00
44.00	3.22	1.17	0.00
45.00	3.22	1.17	0.00
46.00	3.22	1.17	0.00
47.00	3.22	1.17	0.00
48.00	3.22	1.17	0.00
49.00	3.22	1.17	0.00
50.00	3.22	1.17	0.00
51.00	3.22	1.17	0.00
52.00	3.22	1.17	0.00
53.00	3.22	1.17	0.00
54.00	3.22	1.17	0.00
55.00	3.22	1.17	0.00
56.00	3.22	1.17	0.00
57.00	3.22	1.17	0.00
58.00	3.22	1.17	0.00
59.00	3.22	1.17	0.00
60.00	3.22	1.17	0.00
61.00	3.22	1.17	0.00
62.00	3.22	1.17	0.00
63.00	3.22	1.17	0.00
64.00	3.22	1.17	0.00
65.00	3.22	1.17	0.00
66.00	3.22	1.17	0.00
67.00	3.22	1.17	0.00
68.00	3.22	1.17	0.00
69.00	3.22	1.17	0.00
70.00	3.22	1.17	0.00
71.00	3.22	1.17	0.00
72.00	3.22	1.17	0.00
73.00	3.22	1.17	0.00
74.00	3.22	1.17	0.00
75.00	3.22	1.17	0.00
76.00	3.22	1.17	0.00
77.00	3.22	1.17	0.00
78.00	3.22	1.17	0.00
79.00	3.22	1.17	0.00
80.00	3.22	1.17	0.00
81.00	3.22	1.17	0.00
82.00	3.22	1.17	0.00
83.00	3.22	1.17	0.00
84.00	3.22	1.17	0.00
85.00	3.22	1.17	0.00
86.00	3.22	1.17	0.00
87.00	3.22	1.17	0.00
88.00	3.22	1.17	0.00
89.00	3.22	1.17	0.00
90.00	3.22	1.17	0.00
91.00	3.22	1.17	0.00
92.00	3.22	1.17	0.00
93.00	3.22	1.17	0.00
94.00	3.22	1.17	0.00
95.00	3.22	1.17	0.00
96.00	3.22	1.17	0.00

Summary for Subcatchment PR-D7: Prop. Watershed D7

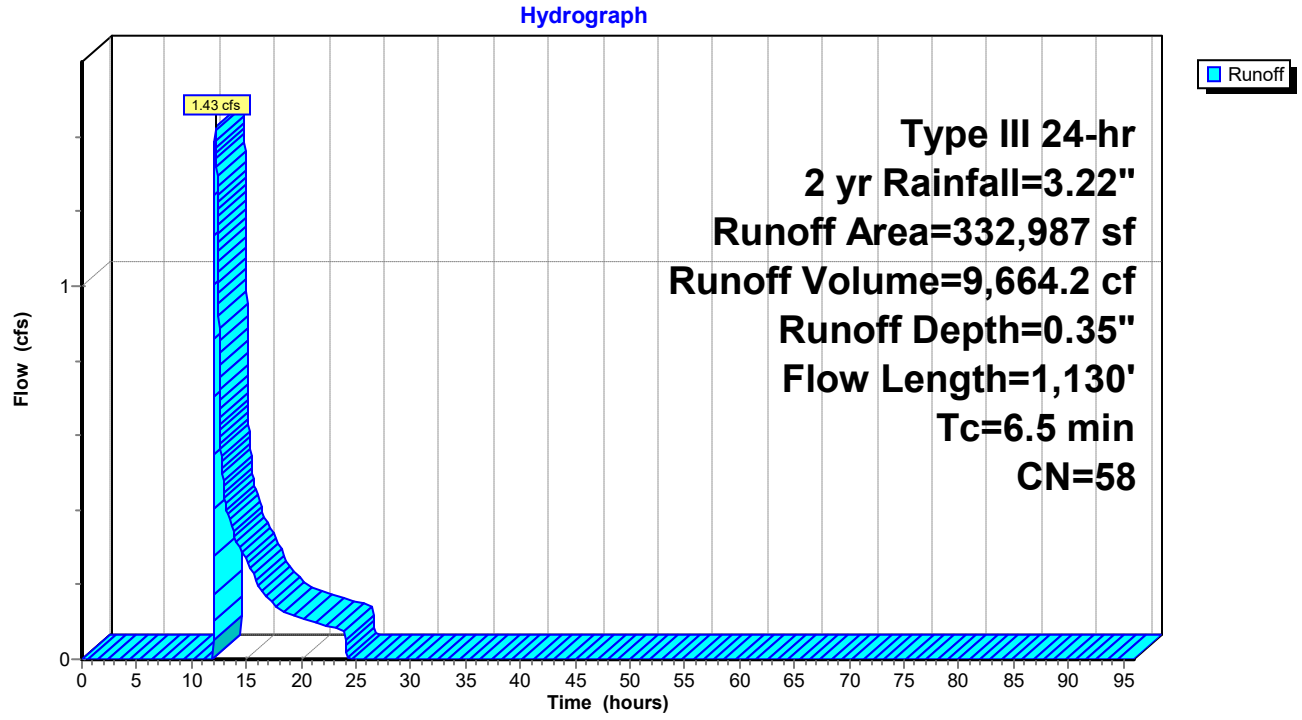
Runoff = 1.43 cfs @ 12.15 hrs, Volume= 9,664.2 cf, Depth= 0.35"
Routed to Link POA D : FIRE POND

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 yr Rainfall=3.22"

	Area (sf)	CN	Description
*	102,706	98	Pavement
*	4,930	98	Walkway Ramp/steps
	225,351	39	>75% Grass cover, Good, HSG A
	332,987	58	Weighted Average
	225,351		67.68% Pervious Area
	107,636		32.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.15		**Sheet Flow, a-b** Smooth surfaces n= 0.011 P2= 3.22"
5.7	1,030	0.0219	3.00		**Shallow Concentrated Flow, b-c** Paved Kv= 20.3 fps
0.1	50	0.0188	16.11	219.60	**Pipe Channel, c-d** 50.0" Round Area= 13.6 sf Perim= 13.1' r= 1.04' n= 0.013
6.5	1,130	Total			

Subcatchment PR-D7: Prop. Watershed D7



Hydrograph for Subcatchment PR-D7: Prop. Watershed D7

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.10	0.00	0.00
4.00	0.14	0.00	0.00
5.00	0.18	0.00	0.00
6.00	0.23	0.00	0.00
7.00	0.29	0.00	0.00
8.00	0.37	0.00	0.00
9.00	0.47	0.00	0.00
10.00	0.61	0.00	0.00
11.00	0.80	0.00	0.00
12.00	1.61	0.00	**0.02**
13.00	2.41	0.11	**0.44**
14.00	2.61	0.16	0.33
15.00	2.75	0.20	0.27
16.00	2.85	0.23	0.20
17.00	2.93	0.25	0.17
18.00	2.99	0.27	0.13
19.00	3.04	0.29	0.12
20.00	3.08	0.30	0.11
21.00	3.12	0.31	0.10
22.00	3.16	0.33	0.09
23.00	3.19	0.34	0.08
24.00	**3.22**	**0.35**	0.08
25.00	3.22	0.35	0.00
26.00	3.22	0.35	0.00
27.00	3.22	0.35	0.00
28.00	3.22	0.35	0.00
29.00	3.22	0.35	0.00
30.00	3.22	0.35	0.00
31.00	3.22	0.35	0.00
32.00	3.22	0.35	0.00
33.00	3.22	0.35	0.00
34.00	3.22	0.35	0.00
35.00	3.22	0.35	0.00
36.00	3.22	0.35	0.00
37.00	3.22	0.35	0.00
38.00	3.22	0.35	0.00
39.00	3.22	0.35	0.00
40.00	3.22	0.35	0.00
41.00	3.22	0.35	0.00
42.00	3.22	0.35	0.00
43.00	3.22	0.35	0.00
44.00	3.22	0.35	0.00
45.00	3.22	0.35	0.00
46.00	3.22	0.35	0.00
47.00	3.22	0.35	0.00
48.00	3.22	0.35	0.00
49.00	3.22	0.35	0.00
50.00	3.22	0.35	0.00
51.00	3.22	0.35	0.00
52.00	3.22	0.35	0.00
53.00	3.22	0.35	0.00
54.00	3.22	0.35	0.00
55.00	3.22	0.35	0.00
56.00	3.22	0.35	0.00
57.00	3.22	0.35	0.00
58.00	3.22	0.35	0.00
59.00	3.22	0.35	0.00
60.00	3.22	0.35	0.00
61.00	3.22	0.35	0.00
62.00	3.22	0.35	0.00
63.00	3.22	0.35	0.00
64.00	3.22	0.35	0.00
65.00	3.22	0.35	0.00
66.00	3.22	0.35	0.00
67.00	3.22	0.35	0.00
68.00	3.22	0.35	0.00
69.00	3.22	0.35	0.00
70.00	3.22	0.35	0.00
71.00	3.22	0.35	0.00
72.00	3.22	0.35	0.00
73.00	3.22	0.35	0.00
74.00	3.22	0.35	0.00
75.00	3.22	0.35	0.00
76.00	3.22	0.35	0.00
77.00	3.22	0.35	0.00
78.00	3.22	0.35	0.00
79.00	3.22	0.35	0.00
80.00	3.22	0.35	0.00
81.00	3.22	0.35	0.00
82.00	3.22	0.35	0.00
83.00	3.22	0.35	0.00
84.00	3.22	0.35	0.00
85.00	3.22	0.35	0.00
86.00	3.22	0.35	0.00
87.00	3.22	0.35	0.00
88.00	3.22	0.35	0.00
89.00	3.22	0.35	0.00
90.00	3.22	0.35	0.00
91.00	3.22	0.35	0.00
92.00	3.22	0.35	0.00
93.00	3.22	0.35	0.00
94.00	3.22	0.35	0.00
95.00	3.22	0.35	0.00
96.00	3.22	0.35	0.00

Summary for Pond RG1: Rain-Garden #1

Inflow Area = 50,834 sf, 67.76% Impervious, Inflow Depth = 1.35" for 2 yr event
Inflow = 1.89 cfs @ 12.08 hrs, Volume= 5,726.2 cf
Outflow = 0.17 cfs @ 13.29 hrs, Volume= 5,726.2 cf, Atten= 91%, Lag= 72.6 min
Discarded = 0.17 cfs @ 13.29 hrs, Volume= 5,726.2 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.0 cf
Routed to Pond SWM-4 : Rtank-4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 249.98' @ 13.29 hrs Surf.Area= 3,067 sf Storage= 2,538.2 cf

Plug-Flow detention time= 222.4 min calculated for 5,725.6 cf (100% of inflow)
Center-of-Mass det. time= 222.5 min (1,067.2 - 844.7)

Volume	Invert	Avail.Storage	Storage Description
#1	249.50'	2,641.0 cf	**Open Air Storage (Prismatic)** Listed below (Recalc)
#2	245.00'	1,417.2 cf	**Subsoil (Prismatic)** Listed below (Recalc)
#3	244.50'	187.7 cf	**12.0" Round Underdrain** Inside #4 L= 239.0'
#4	243.50'	307.3 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 956.0 cf Overall - 187.7 cf Embedded = 768.3 cf x 40.0% Voids
		4,553.2 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
249.50	1,081	0.0	0.0
250.00	1,522	650.8	650.8
250.50	1,985	876.8	1,527.5
251.00	2,469	1,113.5	2,641.0

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
245.00	1,081	0.0	0.0	0.0
245.01	1,081	40.0	4.3	4.3
246.24	1,081	40.0	531.9	536.2
246.25	1,081	25.0	2.7	538.9
249.24	1,081	25.0	808.0	1,346.9
249.25	1,081	25.0	2.7	1,349.6
249.50	1,081	25.0	67.6	1,417.2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.50	478	0.0	0.0
245.50	478	956.0	956.0

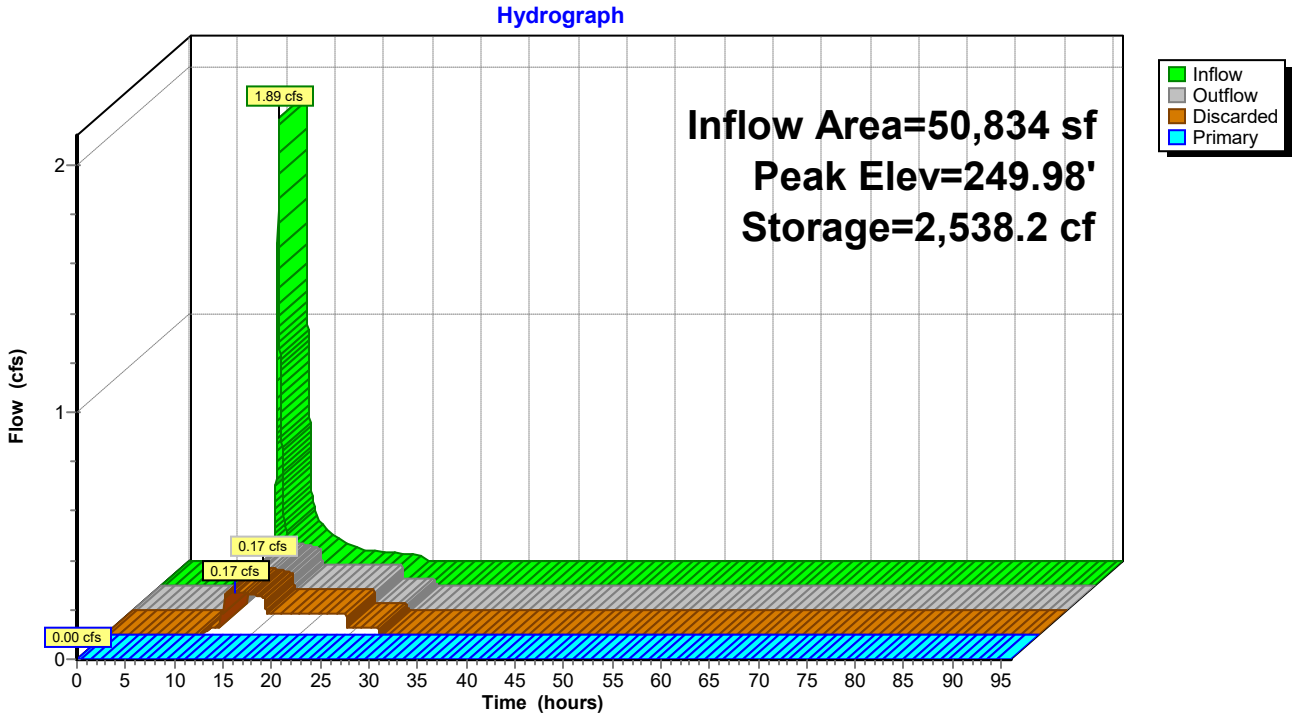
Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Filtration through media over Surface area**
#2	Device 3	250.50'	**15.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	247.50'	**12.0" Round Culvert** L= 18.0' Ke= 0.100 Inlet / Outlet Invert= 247.50' / 247.45' S= 0.0028 '/' Cc= 0.900

n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

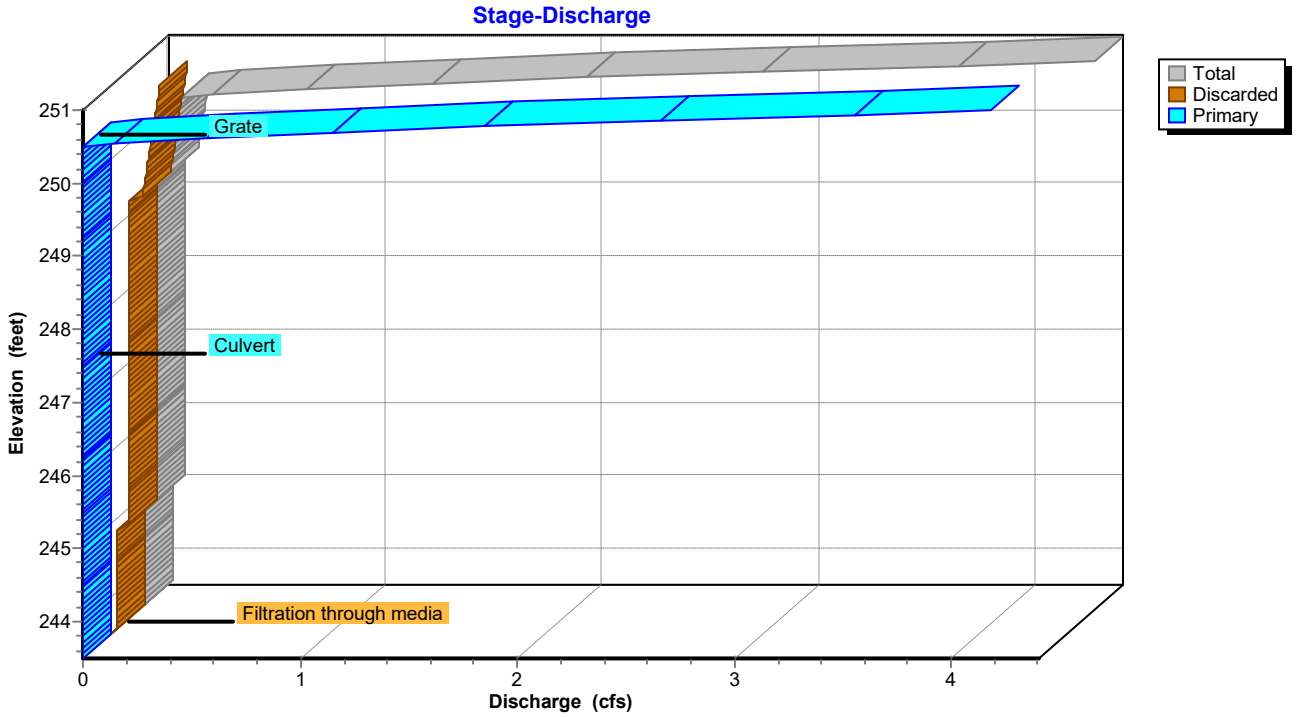
Discarded OutFlow Max=0.17 cfs @ 13.29 hrs HW=249.98' (Free Discharge)
└**1=Filtration through media** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=243.50' (Free Discharge)
└**3=Culvert** (Controls 0.00 cfs)
└**2=Grate** (Controls 0.00 cfs)

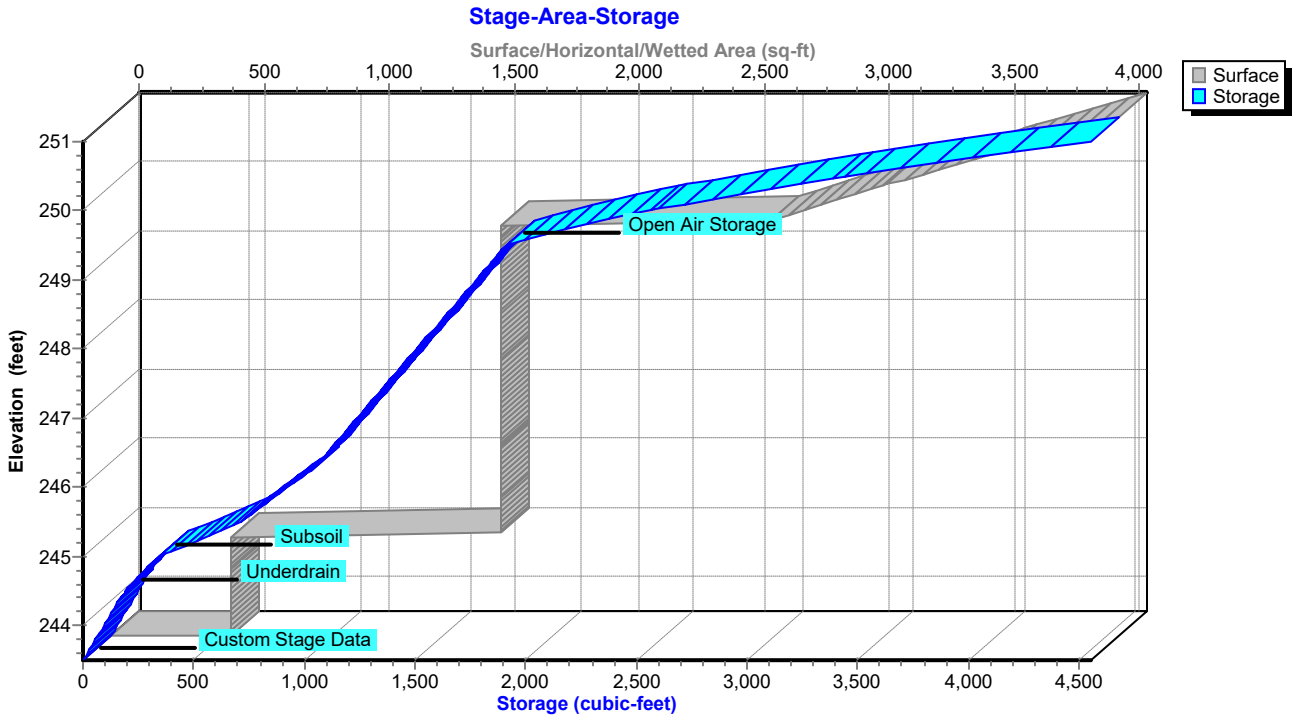
Pond RG1: Rain-Garden #1



Pond RG1: Rain-Garden #1



Pond RG1: Rain-Garden #1



Hydrograph for Pond RG1: Rain-Garden #1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	**0.00**
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.00	0.0	243.50	0.00	0.00	0.00
6.00	0.00	0.0	243.50	0.00	0.00	0.00
8.00	0.00	0.0	243.50	0.00	0.00	0.00
10.00	0.01	3.1	243.52	0.01	0.01	0.00
12.00	**1.13**	**690.9**	**245.47**	**0.09**	**0.09**	0.00
14.00	**0.13**	**2,490.2**	**249.95**	**0.17**	**0.17**	0.00
16.00	0.07	2,052.4	249.62	0.15	0.15	0.00
18.00	0.05	1,728.6	248.82	0.09	0.09	0.00
20.00	0.04	1,395.3	247.59	0.09	0.09	0.00
22.00	0.03	1,011.6	246.19	0.09	0.09	0.00
24.00	0.02	584.0	245.32	0.09	0.09	0.00
26.00	0.00	215.1	244.60	0.03	0.03	0.00
28.00	0.00	23.1	243.62	0.03	0.03	0.00
30.00	0.00	0.0	243.50	0.00	0.00	0.00
32.00	0.00	0.0	243.50	0.00	0.00	0.00
34.00	0.00	0.0	243.50	0.00	0.00	0.00
36.00	0.00	0.0	243.50	0.00	0.00	0.00
38.00	0.00	0.0	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond RG1: Rain-Garden #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	478	0.0
243.60	478	19.1
243.70	478	38.2
243.80	478	57.4
243.90	478	76.5
244.00	478	95.6
244.10	478	114.7
244.20	478	133.8
244.30	478	153.0
244.40	478	172.1
244.50	478	191.2
244.60	478	216.2
244.70	478	245.5
244.80	478	277.0
244.90	478	309.7
245.00	1,559	343.1
245.10	1,559	419.7
245.20	1,559	495.7
245.30	1,559	570.5
245.40	1,559	643.0
245.50	1,559	711.2
245.60	1,559	754.5
245.70	1,559	797.7
245.80	1,559	840.9
245.90	1,559	884.2
246.00	1,559	927.4
246.10	1,559	970.7
246.20	1,559	1,013.9
246.30	1,559	1,047.4
246.40	1,559	1,074.4
246.50	1,559	1,101.5
246.60	1,559	1,128.5
246.70	1,559	1,155.5
246.80	1,559	1,182.5
246.90	1,559	1,209.6
247.00	1,559	1,236.6
247.10	1,559	1,263.6
247.20	1,559	1,290.6
247.30	1,559	1,317.7
247.40	1,559	1,344.7
247.50	1,559	1,371.7
247.60	1,559	1,398.7
247.70	1,559	1,425.8
247.80	1,559	1,452.8
247.90	1,559	1,479.8
248.00	1,559	1,506.8
248.10	1,559	1,533.9
248.20	1,559	1,560.9
248.30	1,559	1,587.9
248.40	1,559	1,614.9
248.50	1,559	1,642.0
248.60	1,559	1,669.0
248.70	1,559	1,696.0
248.80	1,559	1,723.0
248.90	1,559	1,750.1
249.00	1,559	1,777.1
249.10	1,559	1,804.1
249.20	1,559	1,831.1
249.30	1,559	1,858.2
249.40	1,559	1,885.2
249.50	2,640	1,912.2
249.60	2,728	2,024.7
249.70	2,816	2,146.1
249.80	2,905	2,276.2
249.90	2,993	2,415.2
250.00	3,081	2,563.0
250.10	3,174	2,719.8
250.20	3,266	2,885.9
250.30	3,359	3,061.2
250.40	3,451	3,245.8
250.50	3,544	3,439.7
250.60	3,641	3,643.1
250.70	3,738	3,856.1
250.80	3,834	4,078.8
250.90	3,931	4,311.2
251.00	**4,028**	**4,553.2**

Summary for Pond RG2: Rain-Garden #2

Inflow Area = 40,781 sf, 62.50% Impervious, Inflow Depth = 1.17" for 2 yr event
Inflow = 1.28 cfs @ 12.08 hrs, Volume= 3,962.4 cf
Outflow = 0.09 cfs @ 12.04 hrs, Volume= 3,962.4 cf, Atten= 93%, Lag= 0.0 min
Discarded = 0.09 cfs @ 12.04 hrs, Volume= 3,962.4 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.0 cf
Routed to Pond SWM-5 : Rtank-5

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 249.21' @ 14.11 hrs Surf.Area= 1,654 sf Storage= 1,803.4 cf

Plug-Flow detention time= 230.0 min calculated for 3,962.0 cf (100% of inflow)
Center-of-Mass det. time= 230.1 min (1,084.3 - 854.3)

Volume	Invert	Avail.Storage	Storage Description
#1	250.00'	2,015.0 cf	**Open Air Storage (Prismatic)** Listed below (Recalc)
#2	245.50'	1,541.7 cf	**Subsoil (Prismatic)** Listed below (Recalc)
#3	244.50'	187.7 cf	**12.0" Round Underdrain** Inside #4 L= 239.0'
#4	243.50'	307.3 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 956.0 cf Overall - 187.7 cf Embedded = 768.3 cf x 40.0% Voids
		4,051.8 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
250.00	1,176	0.0	0.0
250.50	2,012	797.0	797.0
251.00	2,860	1,218.0	2,015.0

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
245.50	1,176	0.0	0.0	0.0
245.51	1,176	40.0	4.7	4.7
246.74	1,176	40.0	578.6	583.3
246.75	1,176	25.0	2.9	586.2
249.74	1,176	25.0	879.1	1,465.3
249.75	1,176	25.0	2.9	1,468.2
250.00	1,176	25.0	73.5	1,541.7

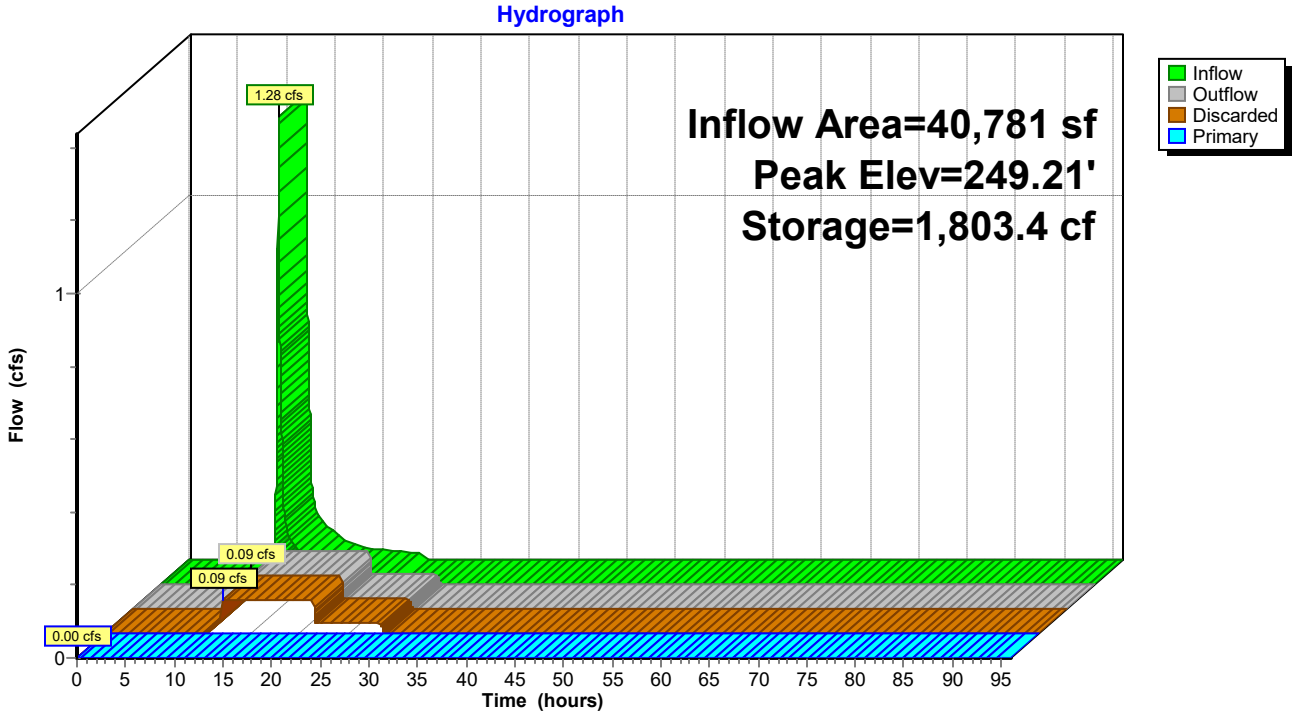
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.50	478	0.0	0.0
245.50	478	956.0	956.0

Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Filtration through media over Surface area**
#2	Device 3	250.50'	**15.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	247.50'	**12.0" Round Culvert** L= 18.0' Ke= 0.100 Inlet / Outlet Invert= 247.50' / 247.45' S= 0.0028 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

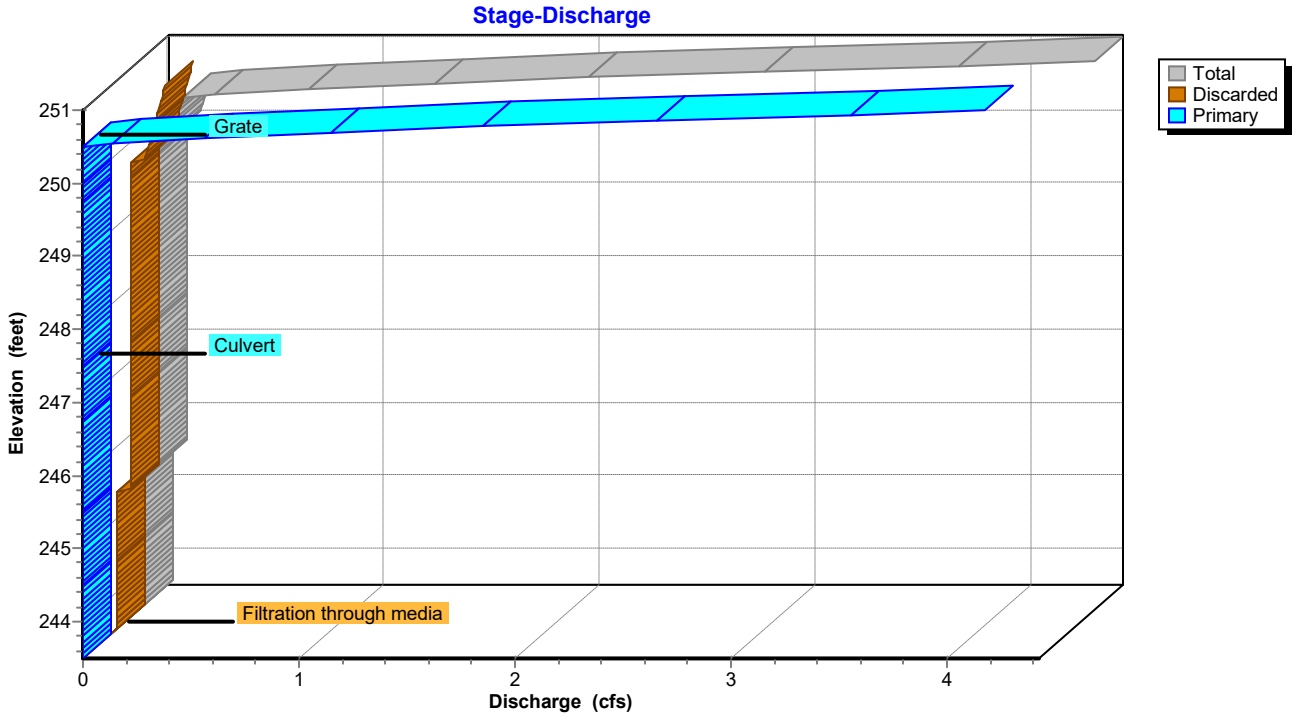
Discarded OutFlow Max=0.09 cfs @ 12.04 hrs HW=245.56' (Free Discharge)
└**1=Filtration through media** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=243.50' (Free Discharge)
└**3=Culvert** (Controls 0.00 cfs)
└**2=Grate** (Controls 0.00 cfs)

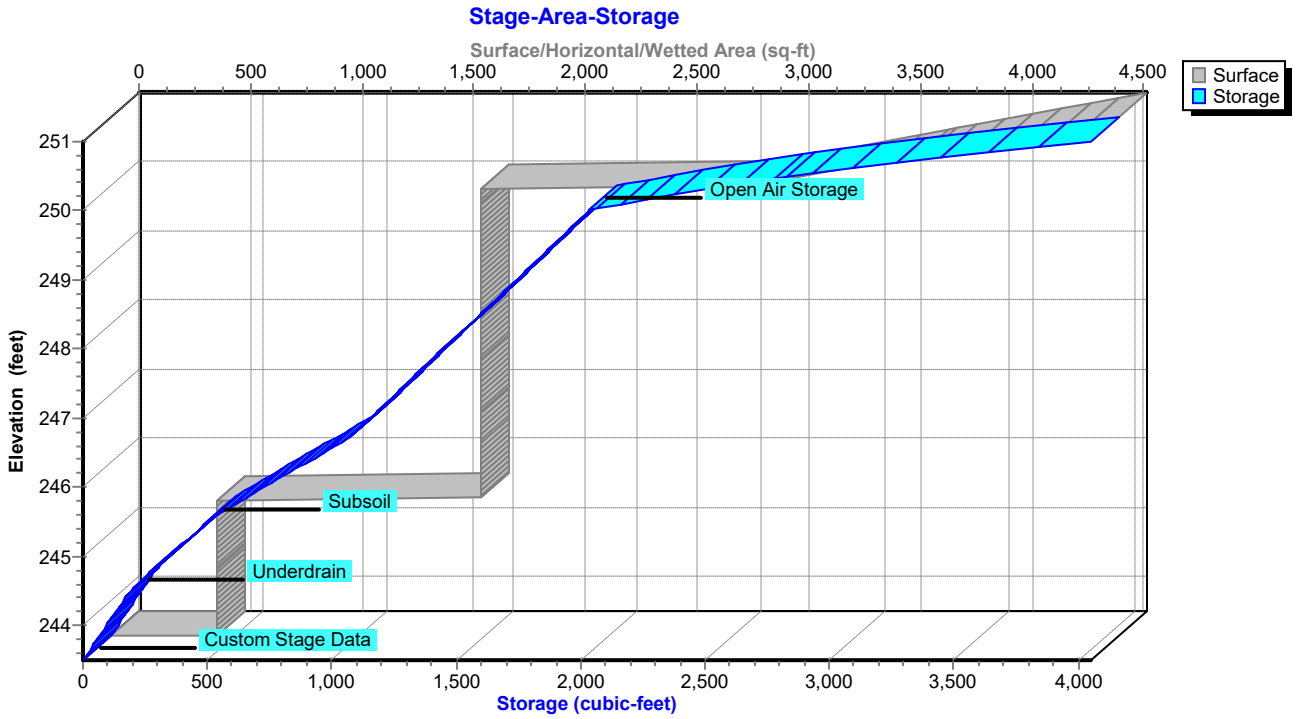
Pond RG2: Rain-Garden #2



Pond RG2: Rain-Garden #2



Pond RG2: Rain-Garden #2



Hydrograph for Pond RG2: Rain-Garden #2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	**0.00**
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.00	0.0	243.50	0.00	0.00	0.00
6.00	0.00	0.0	243.50	0.00	0.00	0.00
8.00	0.00	0.0	243.50	0.00	0.00	0.00
10.00	0.00	0.0	243.50	0.00	0.00	0.00
12.00	**0.74**	398.0	245.17	**0.03**	**0.03**	0.00
14.00	**0.10**	**1,802.8**	**249.20**	**0.09**	**0.09**	0.00
16.00	0.05	**1,674.6**	**248.77**	0.09	0.09	0.00
18.00	0.03	1,320.9	247.56	0.09	0.09	0.00
20.00	0.03	873.2	246.30	0.09	0.09	0.00
22.00	0.02	479.8	245.44	0.03	0.03	0.00
24.00	0.02	435.4	245.28	0.03	0.03	0.00
26.00	0.00	248.4	244.71	0.03	0.03	0.00
28.00	0.00	56.4	243.80	0.03	0.03	0.00
30.00	0.00	0.0	243.50	0.00	0.00	0.00
32.00	0.00	0.0	243.50	0.00	0.00	0.00
34.00	0.00	0.0	243.50	0.00	0.00	0.00
36.00	0.00	0.0	243.50	0.00	0.00	0.00
38.00	0.00	0.0	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond RG2: Rain-Garden #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	478	0.0
243.60	478	19.1
243.70	478	38.2
243.80	478	57.4
243.90	478	76.5
244.00	478	95.6
244.10	478	114.7
244.20	478	133.8
244.30	478	153.0
244.40	478	172.1
244.50	478	191.2
244.60	478	216.2
244.70	478	245.5
244.80	478	277.0
244.90	478	309.7
245.00	478	343.1
245.10	478	376.5
245.20	478	409.2
245.30	478	440.8
245.40	478	470.0
245.50	1,654	495.0
245.60	1,654	542.1
245.70	1,654	589.1
245.80	1,654	636.1
245.90	1,654	683.2
246.00	1,654	730.2
246.10	1,654	777.3
246.20	1,654	824.3
246.30	1,654	871.3
246.40	1,654	918.4
246.50	1,654	965.4
246.60	1,654	1,012.5
246.70	1,654	1,059.5
246.80	1,654	1,096.0
246.90	1,654	1,125.4
247.00	1,654	1,154.8
247.10	1,654	1,184.2
247.20	1,654	1,213.6
247.30	1,654	1,243.0
247.40	1,654	1,272.4
247.50	1,654	1,301.8
247.60	1,654	1,331.2
247.70	1,654	1,360.6
247.80	1,654	1,390.0
247.90	1,654	1,419.4
248.00	1,654	1,448.8
248.10	1,654	1,478.2
248.20	1,654	1,507.6
248.30	1,654	1,537.0
248.40	1,654	1,566.4
248.50	1,654	1,595.8
248.60	1,654	1,625.2
248.70	1,654	1,654.6
248.80	1,654	1,684.0
248.90	1,654	1,713.4
249.00	1,654	1,742.8
249.10	1,654	1,772.2
249.20	1,654	1,801.6
249.30	1,654	1,831.0
249.40	1,654	1,860.4
249.50	1,654	1,889.8
249.60	1,654	1,919.2
249.70	1,654	1,948.6
249.80	1,654	1,978.0
249.90	1,654	2,007.4
250.00	2,830	2,036.8
250.10	2,997	2,162.7
250.20	3,164	2,305.4
250.30	3,332	2,464.8
250.40	3,499	2,640.9
250.50	3,666	2,833.8
250.60	3,836	3,043.4
250.70	4,005	3,270.1
250.80	4,175	3,513.7
250.90	4,344	3,774.2
251.00	**4,514**	**4,051.8**

Summary for Pond SWM-1: Rtank-1

Inflow Area = 214,605 sf, 84.39% Impervious, Inflow Depth = 1.25" for 2 yr event
Inflow = 9.64 cfs @ 12.16 hrs, Volume= 22,420.9 cf
Outflow = 1.87 cfs @ 12.69 hrs, Volume= 22,420.9 cf, Atten= 81%, Lag= 32.0 min
Discarded = 0.20 cfs @ 12.04 hrs, Volume= 14,527.5 cf
Primary = 1.67 cfs @ 12.69 hrs, Volume= 7,893.5 cf
Routed to Pond SWM-4 : Rtank-4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 247.12' @ 12.69 hrs Surf.Area= 3,640 sf Storage= 11,055.6 cf

Plug-Flow detention time= 338.9 min calculated for 22,418.6 cf (100% of inflow)
Center-of-Mass det. time= 338.9 min (1,144.0 - 805.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	243.50'	3,180.7 cf	**38.12'W x 95.49'L x 7.81'H Field A** 28,434.6 cf Overall - 20,482.8 cf Embedded = 7,951.8 cf x 40.0% Voids
#2A	243.75'	19,458.6 cf	**ACF R-Tank SD 9** x 1014 Inside #1 Inside= 15.7"W x 78.7"H => 8.18 sf x 2.35'L = 19.2 cf Outside= 15.7"W x 78.7"H => 8.61 sf x 2.35'L = 20.2 cf 1014 Chambers in 26 Rows
		22,639.4 cf	Total Available Storage

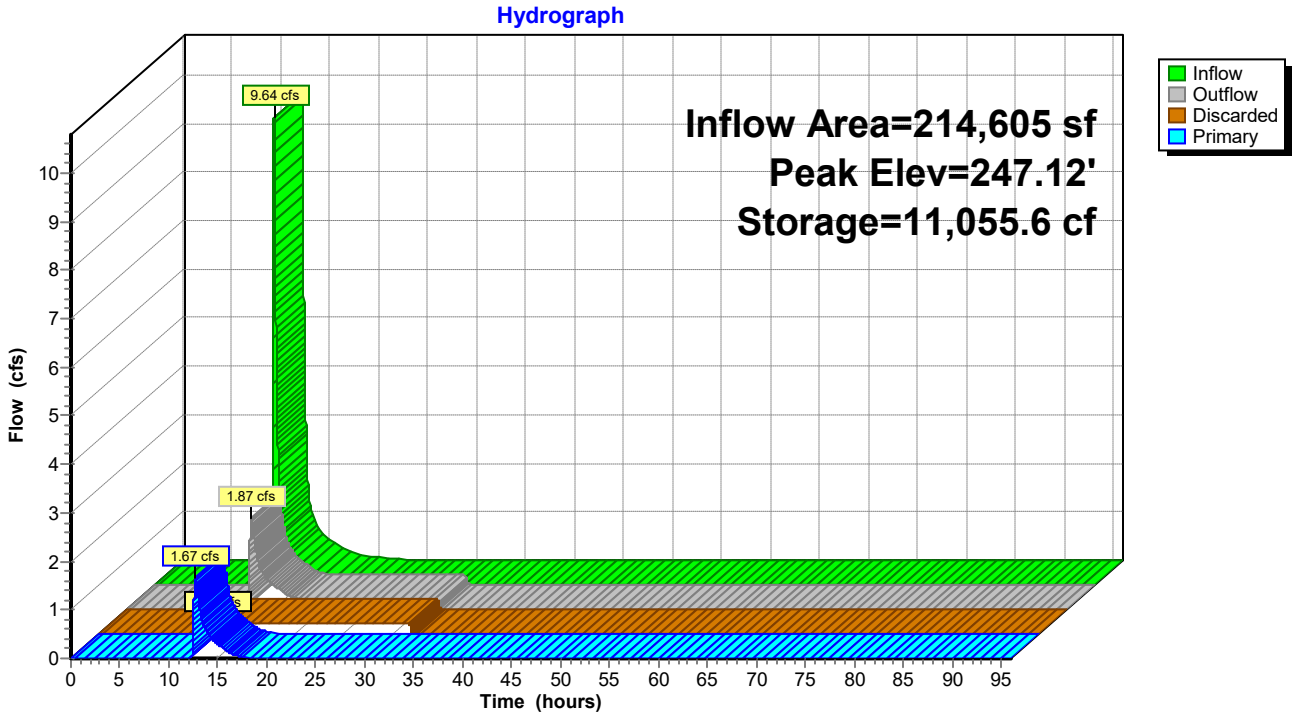
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.50'	**18.0" Round Culvert X 2.00** L= 70.0' Ke= 0.100 Inlet / Outlet Invert= 246.50' / 246.50' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

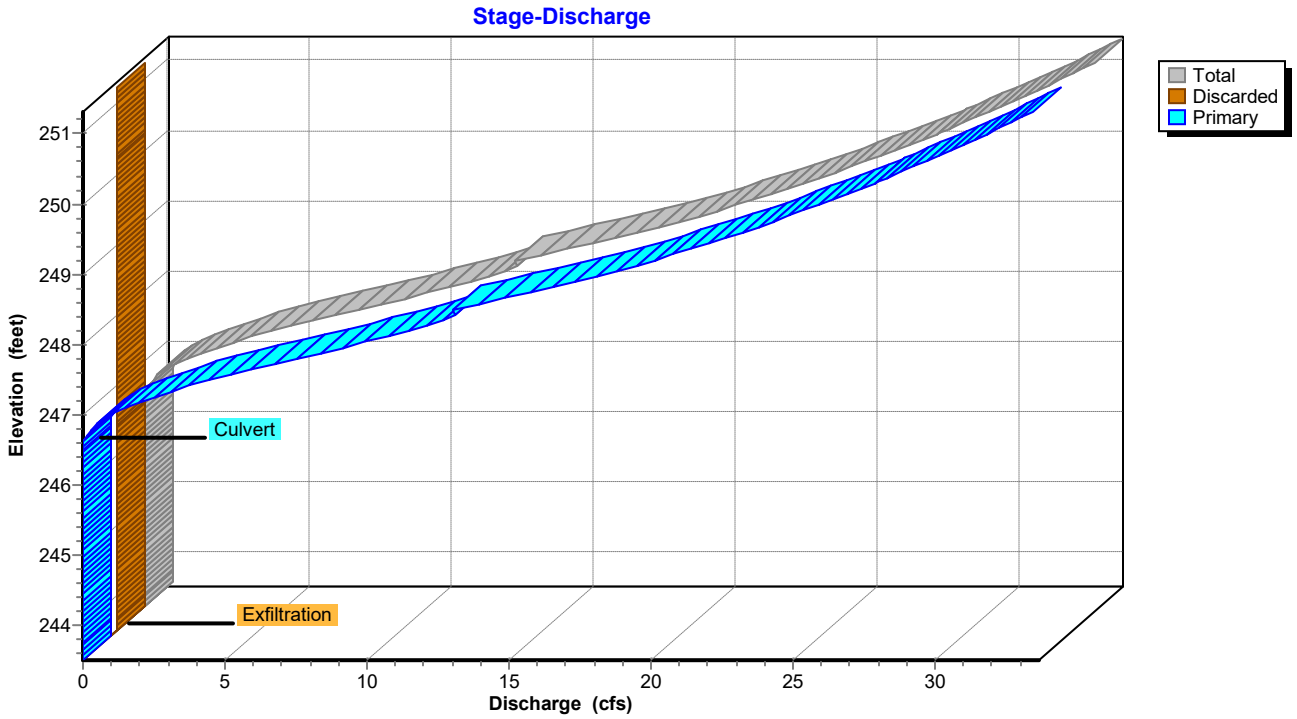
Discarded OutFlow Max=0.20 cfs @ 12.04 hrs HW=243.61' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=1.66 cfs @ 12.69 hrs HW=247.12' (Free Discharge)
↑**2=Culvert** (Barrel Controls 1.66 cfs @ 1.78 fps)

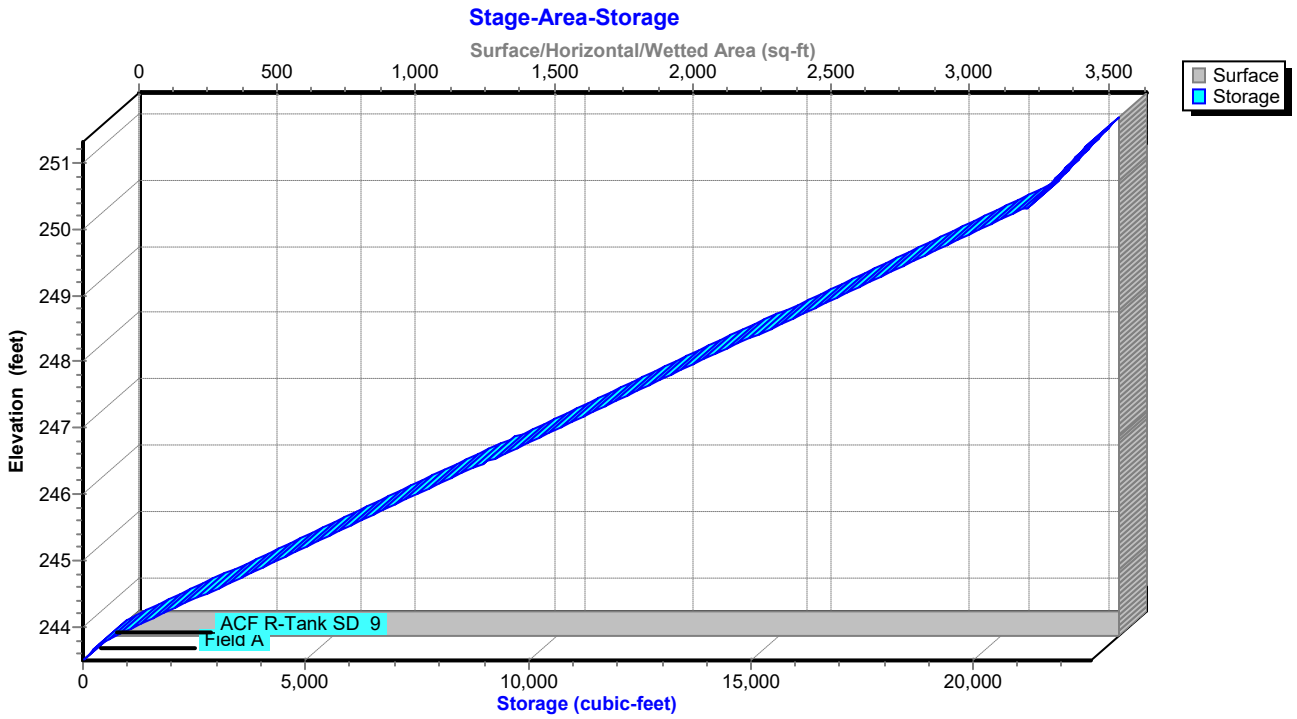
Pond SWM-1: Rtank-1



Pond SWM-1: Rtank-1



Pond SWM-1: Rtank-1



Hydrograph for Pond SWM-1: Rtank-1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	0.00
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.00	0.0	243.50	0.00	0.00	0.00
6.00	0.00	0.0	243.50	0.00	0.00	0.00
8.00	0.00	0.0	243.50	0.00	0.00	0.00
10.00	0.00	0.0	243.50	0.00	0.00	0.00
12.00	**0.24**	**6.6**	**243.50**	**0.01**	**0.01**	**0.00**
14.00	**0.63**	**10,268.6**	**246.87**	**0.71**	**0.20**	**0.51**
16.00	0.28	9,787.9	246.72	0.35	0.20	0.15
18.00	0.11	9,252.4	246.55	0.21	0.20	0.00
20.00	0.06	8,342.2	246.26	0.20	0.20	0.00
22.00	0.02	7,162.9	245.89	0.20	0.20	0.00
24.00	0.00	5,769.0	245.45	0.20	0.20	0.00
26.00	0.00	4,307.8	244.99	0.20	0.20	0.00
28.00	0.00	2,845.8	244.53	0.20	0.20	0.00
30.00	0.00	1,383.7	244.07	0.20	0.20	0.00
32.00	0.00	21.0	243.51	0.04	0.04	0.00
34.00	0.00	0.0	243.50	0.00	0.00	0.00
36.00	0.00	0.0	243.50	0.00	0.00	0.00
38.00	0.00	0.0	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-1: Rtank-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	**3,640**	0.0
243.60	3,640	145.6
243.70	3,640	291.2
243.80	3,640	522.6
243.90	3,640	839.9
244.00	3,640	1,157.2
244.10	3,640	1,474.5
244.20	3,640	1,791.8
244.30	3,640	2,109.1
244.40	3,640	2,426.4
244.50	3,640	2,743.7
244.60	3,640	3,060.9
244.70	3,640	3,378.2
244.80	3,640	3,695.5
244.90	3,640	4,012.8
245.00	3,640	4,330.1
245.10	3,640	4,647.4
245.20	3,640	4,964.7
245.30	3,640	5,281.9
245.40	3,640	5,599.2
245.50	3,640	5,916.5
245.60	3,640	6,233.8
245.70	3,640	6,551.1
245.80	3,640	6,868.4
245.90	3,640	7,185.7
246.00	3,640	7,503.0
246.10	3,640	7,820.2
246.20	3,640	8,137.5
246.30	3,640	8,454.8
246.40	3,640	8,772.1
246.50	3,640	9,089.4
246.60	3,640	9,406.7
246.70	3,640	9,724.0
246.80	3,640	10,041.3
246.90	3,640	10,358.5
247.00	3,640	10,675.8
247.10	3,640	10,993.1
247.20	3,640	11,310.4
247.30	3,640	11,627.7
247.40	3,640	11,945.0
247.50	3,640	12,262.3
247.60	3,640	12,579.5
247.70	3,640	12,896.8
247.80	3,640	13,214.1
247.90	3,640	13,531.4
248.00	3,640	13,848.7
248.10	3,640	14,166.0
248.20	3,640	14,483.3
248.30	3,640	14,800.6
248.40	3,640	15,117.8
248.50	3,640	15,435.1
248.60	3,640	15,752.4
248.70	3,640	16,069.7
248.80	3,640	16,387.0
248.90	3,640	16,704.3
249.00	3,640	17,021.6
249.10	3,640	17,338.9
249.20	3,640	17,656.1
249.30	3,640	17,973.4
249.40	3,640	18,290.7
249.50	3,640	18,608.0
249.60	3,640	18,925.3
249.70	3,640	19,242.6
249.80	3,640	19,559.9
249.90	3,640	19,877.1
250.00	3,640	20,194.4
250.10	3,640	20,511.7
250.20	3,640	20,829.0
250.30	3,640	21,146.3
250.40	3,640	21,311.9
250.50	3,640	21,457.5
250.60	3,640	21,603.1
250.70	3,640	21,748.7
250.80	3,640	21,894.3
250.90	3,640	22,039.9
251.00	3,640	22,185.5
251.10	3,640	22,331.1
251.20	3,640	22,476.7
251.30	3,640	**22,622.3**

Summary for Pond SWM-2: Rtank-2

Inflow Area = 416,467 sf, 80.91% Impervious, Inflow Depth = 1.93" for 2 yr event
Inflow = 22.19 cfs @ 12.08 hrs, Volume= 67,071.3 cf
Outflow = 20.36 cfs @ 12.11 hrs, Volume= 67,071.3 cf, Atten= 8%, Lag= 2.0 min
Discarded = 0.42 cfs @ 9.97 hrs, Volume= 22,619.2 cf
Primary = 19.94 cfs @ 12.11 hrs, Volume= 44,452.0 cf
Routed to Pond SWM-3 : Rtank-3

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 251.12' @ 12.11 hrs Surf.Area= 7,487 sf Storage= 6,467.7 cf

Plug-Flow detention time= 24.8 min calculated for 67,071.3 cf (100% of inflow)
Center-of-Mass det. time= 24.8 min (842.7 - 818.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	250.00'	5,132.0 cf	**36.81'W x 203.39'L x 4.92'H Field A** 36,867.9 cf Overall - 24,038.0 cf Embedded = 12,829.9 cf x 40.0% Voids
#2A	250.25'	22,836.1 cf	**ACF R-Tank SD 5** x 2125 Inside #1 Inside= 15.7"W x 44.1"H => 4.58 sf x 2.35'L = 10.7 cf Outside= 15.7"W x 44.1"H => 4.82 sf x 2.35'L = 11.3 cf 2125 Chambers in 25 Rows
		27,968.1 cf	Total Available Storage

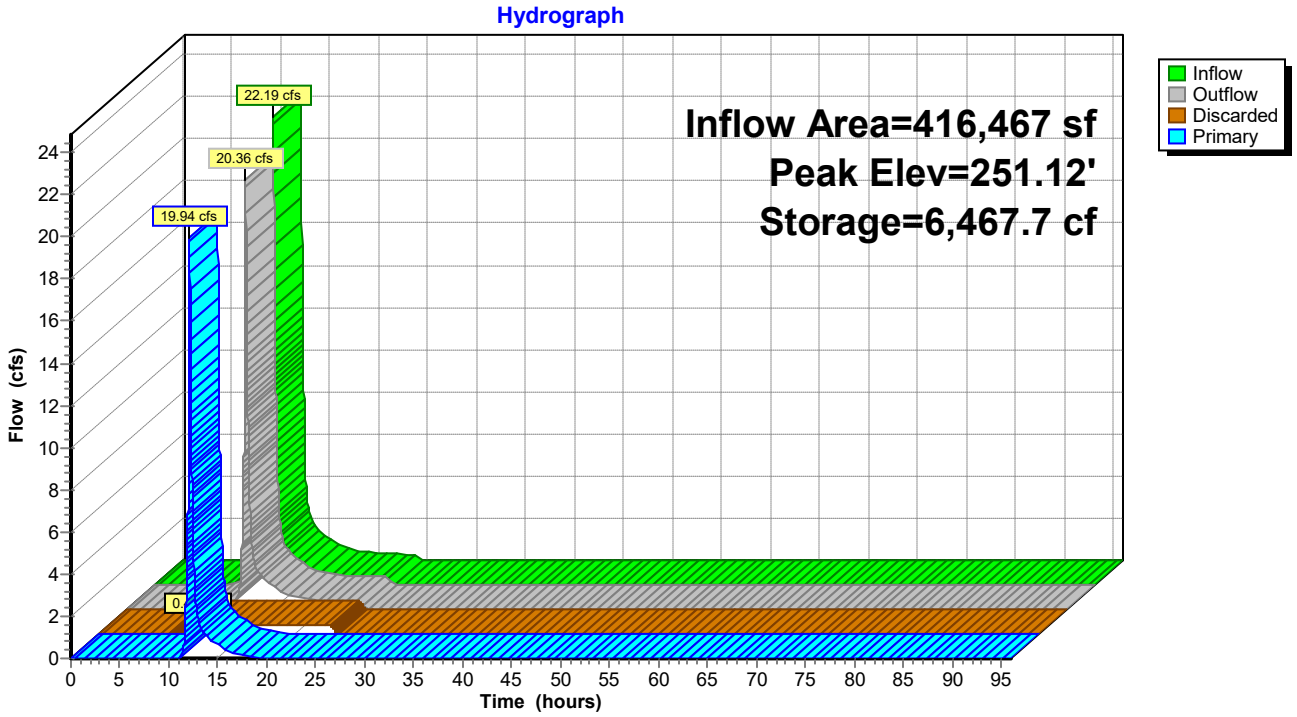
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	250.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	250.40'	**24.0" Round Culvert X 5.00** L= 195.0' Ke= 0.100 Inlet / Outlet Invert= 250.40' / 247.10' S= 0.0169 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

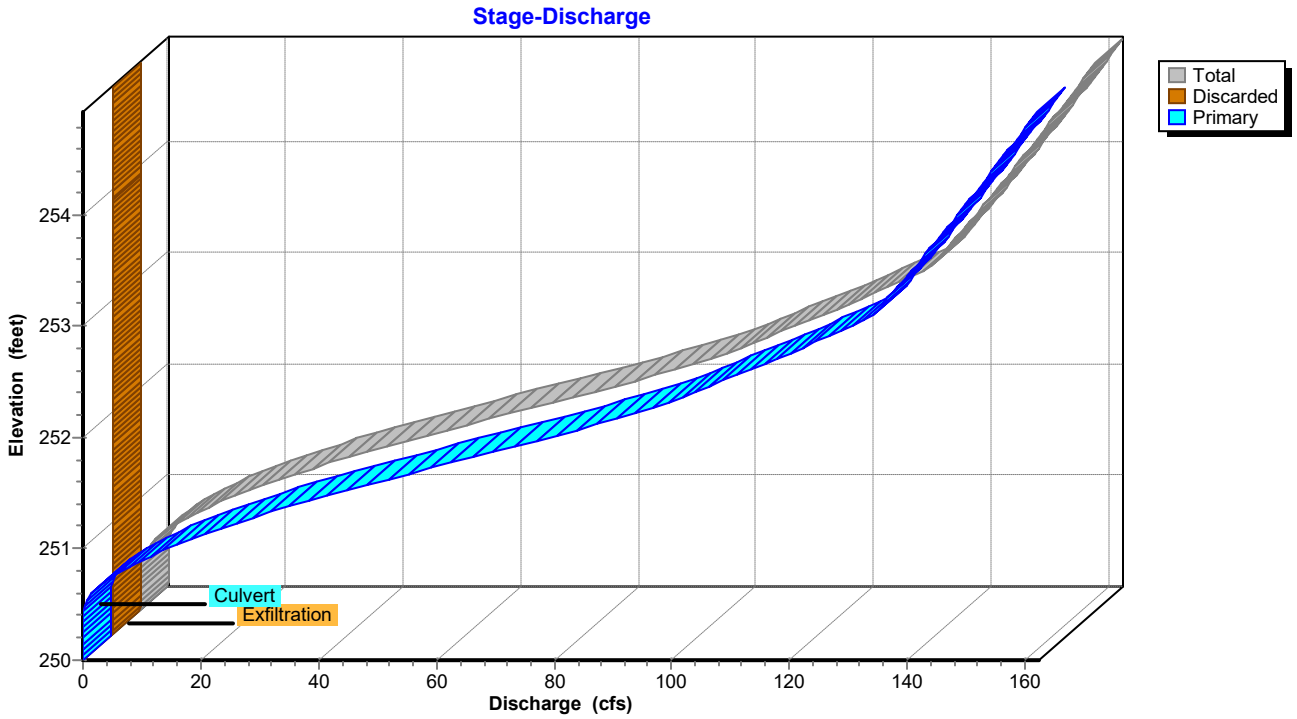
Discarded OutFlow Max=0.42 cfs @ 9.97 hrs HW=250.05' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=19.90 cfs @ 12.11 hrs HW=251.12' (Free Discharge)
↑**2=Culvert** (Inlet Controls 19.90 cfs @ 3.93 fps)

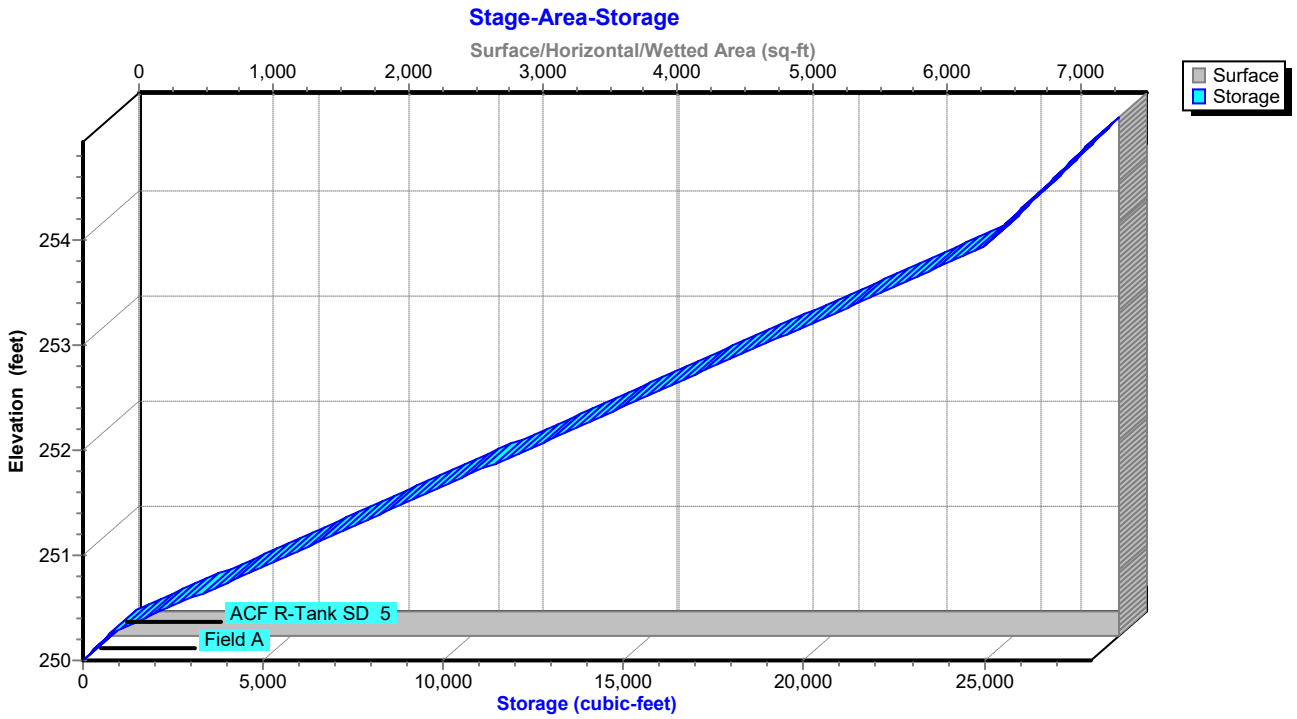
Pond SWM-2: Rtank-2



Pond SWM-2: Rtank-2



Pond SWM-2: Rtank-2



Hydrograph for Pond SWM-2: Rtank-2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	250.00	0.00	0.00	0.00
2.00	0.00	0.0	250.00	0.00	0.00	0.00
4.00	0.00	0.0	250.00	0.00	0.00	0.00
6.00	0.00	0.0	250.00	0.00	0.00	0.00
8.00	0.06	18.7	250.01	0.05	**0.05**	0.00
10.00	0.45	151.0	250.05	0.42	**0.42**	0.00
12.00	**13.74**	**4,939.7**	**250.89**	**9.96**	0.42	**9.54**
14.00	**1.34**	**2,766.0**	**250.56**	**1.41**	0.42	**1.00**
16.00	0.72	2,375.3	250.50	0.78	0.42	0.36
18.00	0.44	2,035.7	250.45	0.49	0.42	0.07
20.00	0.36	1,683.3	250.39	0.42	0.42	0.00
22.00	0.30	1,029.9	250.29	0.42	0.42	0.00
24.00	0.24	86.6	250.03	0.25	0.25	0.00
26.00	0.00	0.0	250.00	0.00	0.00	0.00
28.00	0.00	0.0	250.00	0.00	0.00	0.00
30.00	0.00	0.0	250.00	0.00	0.00	0.00
32.00	0.00	0.0	250.00	0.00	0.00	0.00
34.00	0.00	0.0	250.00	0.00	0.00	0.00
36.00	0.00	0.0	250.00	0.00	0.00	0.00
38.00	0.00	0.0	250.00	0.00	0.00	0.00
40.00	0.00	0.0	250.00	0.00	0.00	0.00
42.00	0.00	0.0	250.00	0.00	0.00	0.00
44.00	0.00	0.0	250.00	0.00	0.00	0.00
46.00	0.00	0.0	250.00	0.00	0.00	0.00
48.00	0.00	0.0	250.00	0.00	0.00	0.00
50.00	0.00	0.0	250.00	0.00	0.00	0.00
52.00	0.00	0.0	250.00	0.00	0.00	0.00
54.00	0.00	0.0	250.00	0.00	0.00	0.00
56.00	0.00	0.0	250.00	0.00	0.00	0.00
58.00	0.00	0.0	250.00	0.00	0.00	0.00
60.00	0.00	0.0	250.00	0.00	0.00	0.00
62.00	0.00	0.0	250.00	0.00	0.00	0.00
64.00	0.00	0.0	250.00	0.00	0.00	0.00
66.00	0.00	0.0	250.00	0.00	0.00	0.00
68.00	0.00	0.0	250.00	0.00	0.00	0.00
70.00	0.00	0.0	250.00	0.00	0.00	0.00
72.00	0.00	0.0	250.00	0.00	0.00	0.00
74.00	0.00	0.0	250.00	0.00	0.00	0.00
76.00	0.00	0.0	250.00	0.00	0.00	0.00
78.00	0.00	0.0	250.00	0.00	0.00	0.00
80.00	0.00	0.0	250.00	0.00	0.00	0.00
82.00	0.00	0.0	250.00	0.00	0.00	0.00
84.00	0.00	0.0	250.00	0.00	0.00	0.00
86.00	0.00	0.0	250.00	0.00	0.00	0.00
88.00	0.00	0.0	250.00	0.00	0.00	0.00
90.00	0.00	0.0	250.00	0.00	0.00	0.00
92.00	0.00	0.0	250.00	0.00	0.00	0.00
94.00	0.00	0.0	250.00	0.00	0.00	0.00
96.00	0.00	0.0	250.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-2: Rtank-2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
250.00	**7,487**	0.0
250.05	7,487	149.7
250.10	7,487	299.5
250.15	7,487	449.2
250.20	7,487	598.9
250.25	7,487	748.7
250.30	7,487	1,078.3
250.35	7,487	1,407.9
250.40	7,487	1,737.5
250.45	7,487	2,067.2
250.50	7,487	2,396.8
250.55	7,487	2,726.4
250.60	7,487	3,056.1
250.65	7,487	3,385.7
250.70	7,487	3,715.3
250.75	7,487	4,045.0
250.80	7,487	4,374.6
250.85	7,487	4,704.2
250.90	7,487	5,033.8
250.95	7,487	5,363.5
251.00	7,487	5,693.1
251.05	7,487	6,022.7
251.10	7,487	6,352.4
251.15	7,487	6,682.0
251.20	7,487	7,011.6
251.25	7,487	7,341.3
251.30	7,487	7,670.9
251.35	7,487	8,000.5
251.40	7,487	8,330.1
251.45	7,487	8,659.8
251.50	7,487	8,989.4
251.55	7,487	9,319.0
251.60	7,487	9,648.7
251.65	7,487	9,978.3
251.70	7,487	10,307.9
251.75	7,487	10,637.6
251.80	7,487	10,967.2
251.85	7,487	11,296.8
251.90	7,487	11,626.4
251.95	7,487	11,956.1
252.00	7,487	12,285.7
252.05	7,487	12,615.3
252.10	7,487	12,945.0
252.15	7,487	13,274.6
252.20	7,487	13,604.2
252.25	7,487	13,933.9
252.30	7,487	14,263.5
252.35	7,487	14,593.1
252.40	7,487	14,922.7
252.45	7,487	15,252.4
252.50	7,487	15,582.0
252.55	7,487	15,911.6
252.60	7,487	16,241.3
252.65	7,487	16,570.9
252.70	7,487	16,900.5
252.75	7,487	17,230.2
252.80	7,487	17,559.8
252.85	7,487	17,889.4
252.90	7,487	18,219.0
252.95	7,487	18,548.7
253.00	7,487	18,878.3
253.05	7,487	19,207.9
253.10	7,487	19,537.6
253.15	7,487	19,867.2
253.20	7,487	20,196.8
253.25	7,487	20,526.5
253.30	7,487	20,856.1
253.35	7,487	21,185.7
253.40	7,487	21,515.3
253.45	7,487	21,845.0
253.50	7,487	22,174.6
253.55	7,487	22,504.2
253.60	7,487	22,833.9
253.65	7,487	23,163.5
253.70	7,487	23,493.1
253.75	7,487	23,822.8
253.80	7,487	24,152.4
253.85	7,487	24,482.0
253.90	7,487	24,811.6
253.95	7,487	25,049.7
254.00	7,487	25,199.4
254.05	7,487	25,349.1
254.10	7,487	25,498.9
254.15	7,487	25,648.6
254.20	7,487	25,798.3
254.25	7,487	25,948.1
254.30	7,487	26,097.8
254.35	7,487	26,247.5
254.40	7,487	26,397.3
254.45	7,487	26,547.0
254.50	7,487	26,696.7
254.55	7,487	26,846.5
254.60	7,487	26,996.2
254.65	7,487	27,145.9
254.70	7,487	27,295.6
254.75	7,487	27,445.4
254.80	7,487	27,595.1
254.85	7,487	27,744.8
254.90	7,487	**27,894.6**

Summary for Pond SWM-3: Rtank-3

Inflow Area = 416,467 sf, 80.91% Impervious, Inflow Depth = 1.28" for 2 yr event
Inflow = 19.94 cfs @ 12.11 hrs, Volume= 44,452.0 cf
Outflow = 5.54 cfs @ 12.50 hrs, Volume= 44,452.0 cf, Atten= 72%, Lag= 23.5 min
Discarded = 0.44 cfs @ 11.58 hrs, Volume= 29,514.6 cf
Primary = 5.10 cfs @ 12.50 hrs, Volume= 14,937.5 cf
Routed to Pond SWM-4 : Rtank-4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 247.61' @ 12.50 hrs Surf.Area= 7,944 sf Storage= 23,863.5 cf

Plug-Flow detention time= 322.9 min calculated for 44,447.4 cf (100% of inflow)
Center-of-Mass det. time= 323.0 min (1,091.6 - 768.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	244.00'	6,520.8 cf	**47.99'W x 165.51'L x 6.37'H Field A** 50,587.1 cf Overall - 34,285.0 cf Embedded = 16,302.1 cf x 40.0% Voids
#2A	244.25'	32,570.8 cf	**ACF R-Tank SD 7** x 2176 Inside #1 Inside= 15.7"W x 61.4"H => 6.38 sf x 2.35'L = 15.0 cf Outside= 15.7"W x 61.4"H => 6.72 sf x 2.35'L = 15.8 cf 2176 Chambers in 32 Rows
		39,091.6 cf	Total Available Storage

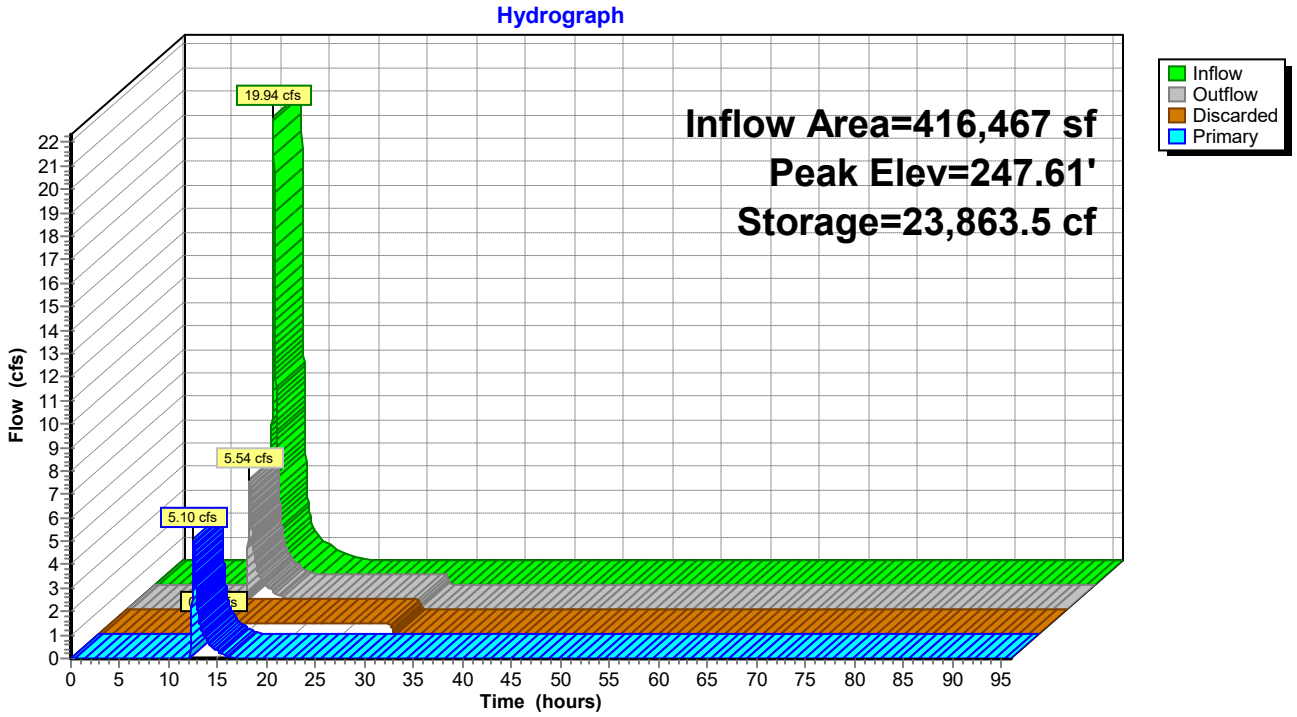
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	244.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	247.10'	**24.0" Round Culvert X 3.00** L= 6.0' Ke= 0.100 Inlet / Outlet Invert= 247.10' / 246.90' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

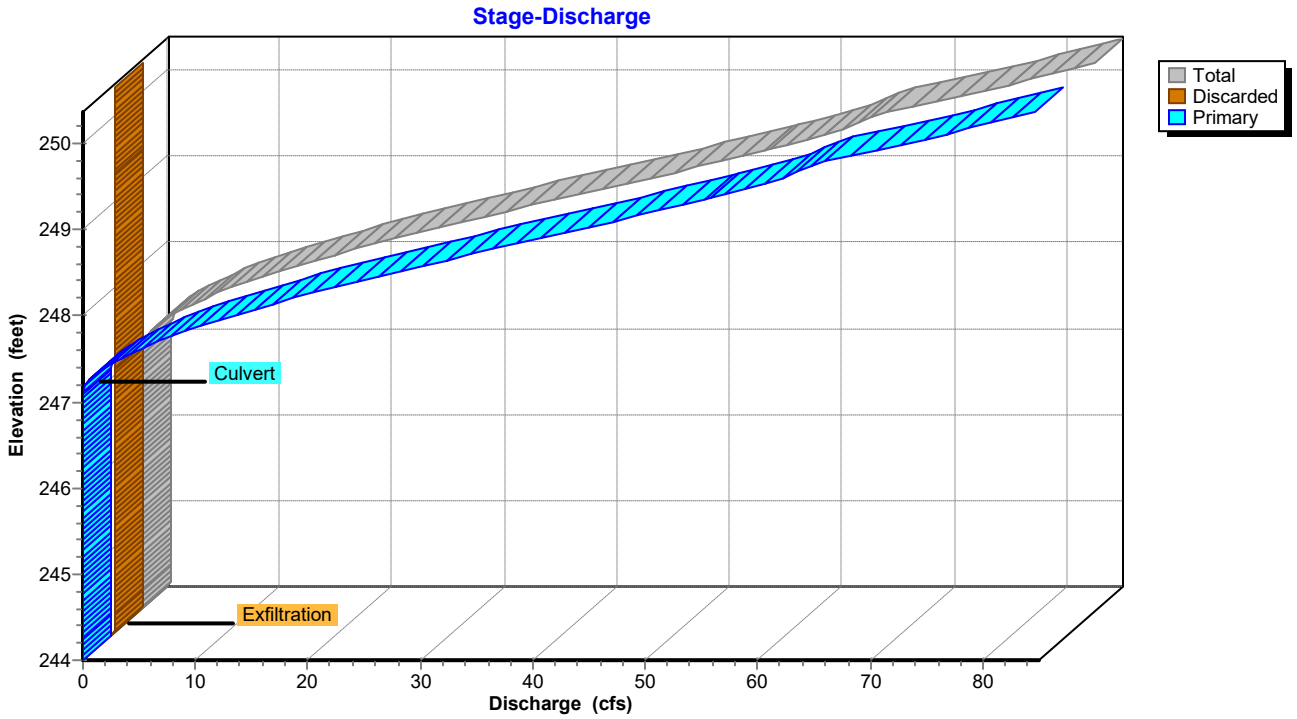
Discarded OutFlow Max=0.44 cfs @ 11.58 hrs HW=244.07' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.44 cfs)

Primary OutFlow Max=5.08 cfs @ 12.50 hrs HW=247.61' (Free Discharge)
↑**2=Culvert** (Barrel Controls 5.08 cfs @ 4.02 fps)

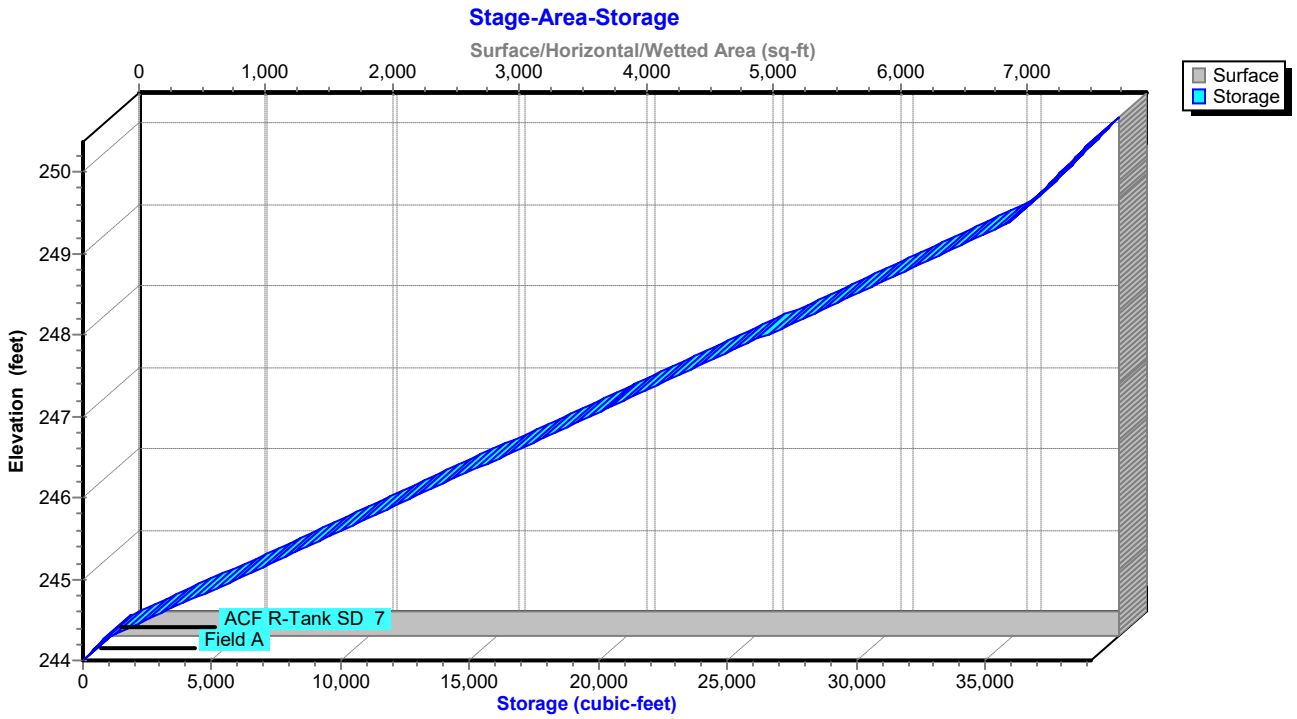
Pond SWM-3: Rtank-3



Pond SWM-3: Rtank-3



Pond SWM-3: Rtank-3



Hydrograph for Pond SWM-3: Rtank-3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	244.00	0.00	0.00	0.00
2.00	0.00	0.0	244.00	0.00	0.00	0.00
4.00	0.00	0.0	244.00	0.00	0.00	0.00
6.00	0.00	0.0	244.00	0.00	0.00	0.00
8.00	0.00	0.0	244.00	0.00	0.00	0.00
10.00	0.00	0.0	244.00	0.00	**0.00**	0.00
12.00	**9.54**	**5,515.3**	**244.94**	**0.44**	**0.44**	**0.00**
14.00	**1.00**	**21,487.8**	**247.27**	**1.14**	0.44	**0.70**
16.00	0.36	20,660.7	247.15	0.52	0.44	0.08
18.00	0.07	18,907.2	246.89	0.44	0.44	0.00
20.00	0.00	15,922.8	246.45	0.44	0.44	0.00
22.00	0.00	12,732.0	245.99	0.44	0.44	0.00
24.00	0.00	9,541.3	245.52	0.44	0.44	0.00
26.00	0.00	6,350.5	245.06	0.44	0.44	0.00
28.00	0.00	3,159.7	244.59	0.44	0.44	0.00
30.00	0.00	63.9	244.02	0.14	0.14	0.00
32.00	0.00	0.0	244.00	0.00	0.00	0.00
34.00	0.00	0.0	244.00	0.00	0.00	0.00
36.00	0.00	0.0	244.00	0.00	0.00	0.00
38.00	0.00	0.0	244.00	0.00	0.00	0.00
40.00	0.00	0.0	244.00	0.00	0.00	0.00
42.00	0.00	0.0	244.00	0.00	0.00	0.00
44.00	0.00	0.0	244.00	0.00	0.00	0.00
46.00	0.00	0.0	244.00	0.00	0.00	0.00
48.00	0.00	0.0	244.00	0.00	0.00	0.00
50.00	0.00	0.0	244.00	0.00	0.00	0.00
52.00	0.00	0.0	244.00	0.00	0.00	0.00
54.00	0.00	0.0	244.00	0.00	0.00	0.00
56.00	0.00	0.0	244.00	0.00	0.00	0.00
58.00	0.00	0.0	244.00	0.00	0.00	0.00
60.00	0.00	0.0	244.00	0.00	0.00	0.00
62.00	0.00	0.0	244.00	0.00	0.00	0.00
64.00	0.00	0.0	244.00	0.00	0.00	0.00
66.00	0.00	0.0	244.00	0.00	0.00	0.00
68.00	0.00	0.0	244.00	0.00	0.00	0.00
70.00	0.00	0.0	244.00	0.00	0.00	0.00
72.00	0.00	0.0	244.00	0.00	0.00	0.00
74.00	0.00	0.0	244.00	0.00	0.00	0.00
76.00	0.00	0.0	244.00	0.00	0.00	0.00
78.00	0.00	0.0	244.00	0.00	0.00	0.00
80.00	0.00	0.0	244.00	0.00	0.00	0.00
82.00	0.00	0.0	244.00	0.00	0.00	0.00
84.00	0.00	0.0	244.00	0.00	0.00	0.00
86.00	0.00	0.0	244.00	0.00	0.00	0.00
88.00	0.00	0.0	244.00	0.00	0.00	0.00
90.00	0.00	0.0	244.00	0.00	0.00	0.00
92.00	0.00	0.0	244.00	0.00	0.00	0.00
94.00	0.00	0.0	244.00	0.00	0.00	0.00
96.00	0.00	0.0	244.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-3: Rtank-3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
244.00	**7,944**	0.0
244.10	7,944	317.8
244.20	7,944	635.5
244.30	7,944	1,137.5
244.40	7,944	1,823.7
244.50	7,944	2,509.8
244.60	7,944	3,196.0
244.70	7,944	3,882.2
244.80	7,944	4,568.4
244.90	7,944	5,254.6
245.00	7,944	5,940.8
245.10	7,944	6,627.0
245.20	7,944	7,313.1
245.30	7,944	7,999.3
245.40	7,944	8,685.5
245.50	7,944	9,371.7
245.60	7,944	10,057.9
245.70	7,944	10,744.1
245.80	7,944	11,430.3
245.90	7,944	12,116.4
246.00	7,944	12,802.6
246.10	7,944	13,488.8
246.20	7,944	14,175.0
246.30	7,944	14,861.2
246.40	7,944	15,547.4
246.50	7,944	16,233.6
246.60	7,944	16,919.7
246.70	7,944	17,605.9
246.80	7,944	18,292.1
246.90	7,944	18,978.3
247.00	7,944	19,664.5
247.10	7,944	20,350.7
247.20	7,944	21,036.8
247.30	7,944	21,723.0
247.40	7,944	22,409.2
247.50	7,944	23,095.4
247.60	7,944	23,781.6
247.70	7,944	24,467.8
247.80	7,944	25,154.0
247.90	7,944	25,840.1
248.00	7,944	26,526.3
248.10	7,944	27,212.5
248.20	7,944	27,898.7
248.30	7,944	28,584.9
248.40	7,944	29,271.1
248.50	7,944	29,957.3
248.60	7,944	30,643.4
248.70	7,944	31,329.6
248.80	7,944	32,015.8
248.90	7,944	32,702.0
249.00	7,944	33,388.2
249.10	7,944	34,074.4
249.20	7,944	34,760.6
249.30	7,944	35,446.7
249.40	7,944	36,015.4
249.50	7,944	36,333.2
249.60	7,944	36,650.9
249.70	7,944	36,968.7
249.80	7,944	37,286.4
249.90	7,944	37,604.2
250.00	7,944	37,921.9
250.10	7,944	38,239.7
250.20	7,944	38,557.5
250.30	7,944	**38,875.2**

Summary for Pond SWM-4: Rtank-4

Inflow Area = 718,927 sf, 79.73% Impervious, Inflow Depth = 0.43" for 2 yr event
Inflow = 6.23 cfs @ 12.56 hrs, Volume= 25,737.4 cf
Outflow = 0.62 cfs @ 12.33 hrs, Volume= 25,737.4 cf, Atten= 90%, Lag= 0.0 min
Discarded = 0.62 cfs @ 12.33 hrs, Volume= 25,737.4 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.0 cf
Routed to Pond SWM-5 : Rtank-5

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 244.79' @ 15.06 hrs Surf.Area= 11,191 sf Storage= 16,216.5 cf

Plug-Flow detention time= 253.3 min calculated for 25,734.7 cf (100% of inflow)
Center-of-Mass det. time= 253.3 min (1,063.2 - 810.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	243.00'	9,012.6 cf	**58.49'W x 191.32'L x 7.09'H Field A** 79,342.0 cf Overall - 56,810.5 cf Embedded = 22,531.6 cf x 40.0% Voids
#2A	243.25'	53,969.9 cf	**ACF R-Tank SD 8** x 3160 Inside #1 Inside= 15.7"W x 70.1"H => 7.28 sf x 2.35'L = 17.1 cf Outside= 15.7"W x 70.1"H => 7.66 sf x 2.35'L = 18.0 cf 3160 Chambers in 40 Rows
		62,982.6 cf	Total Available Storage

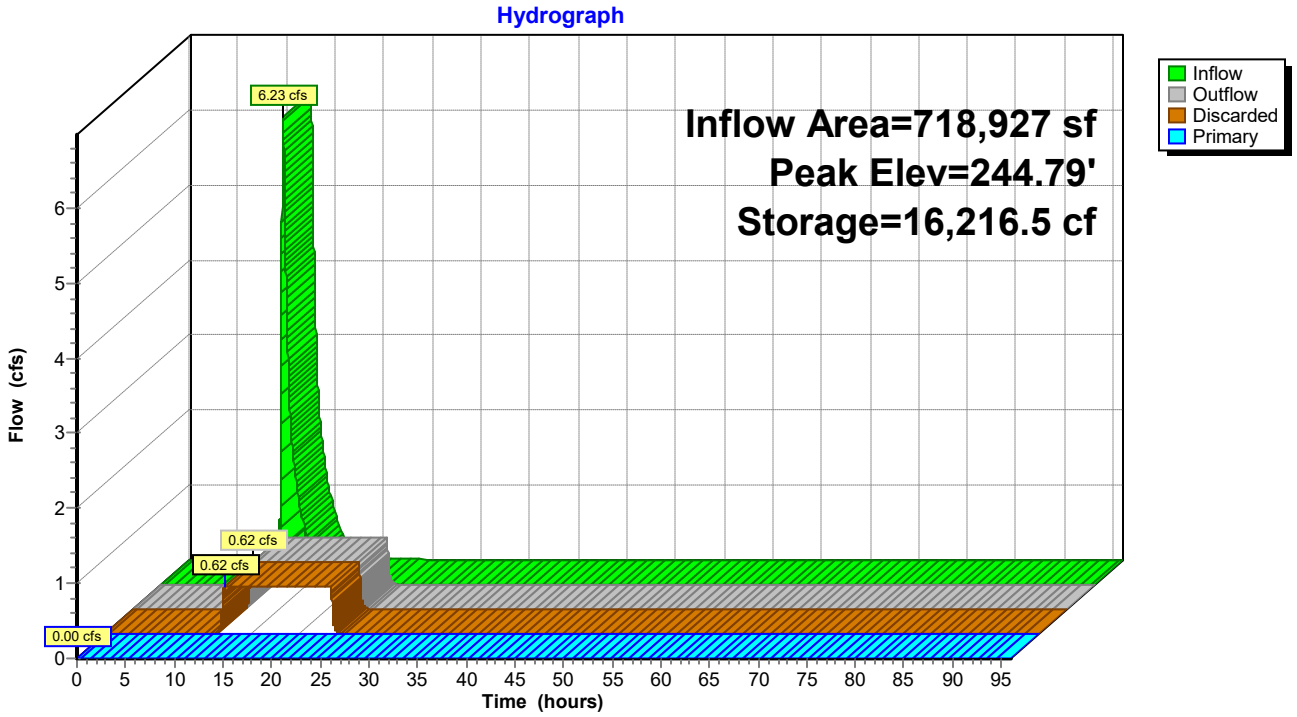
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	243.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.40'	**24.0" Round Culvert X 3.00** L= 50.0' Ke= 0.100 Inlet / Outlet Invert= 246.40' / 245.25' S= 0.0230 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

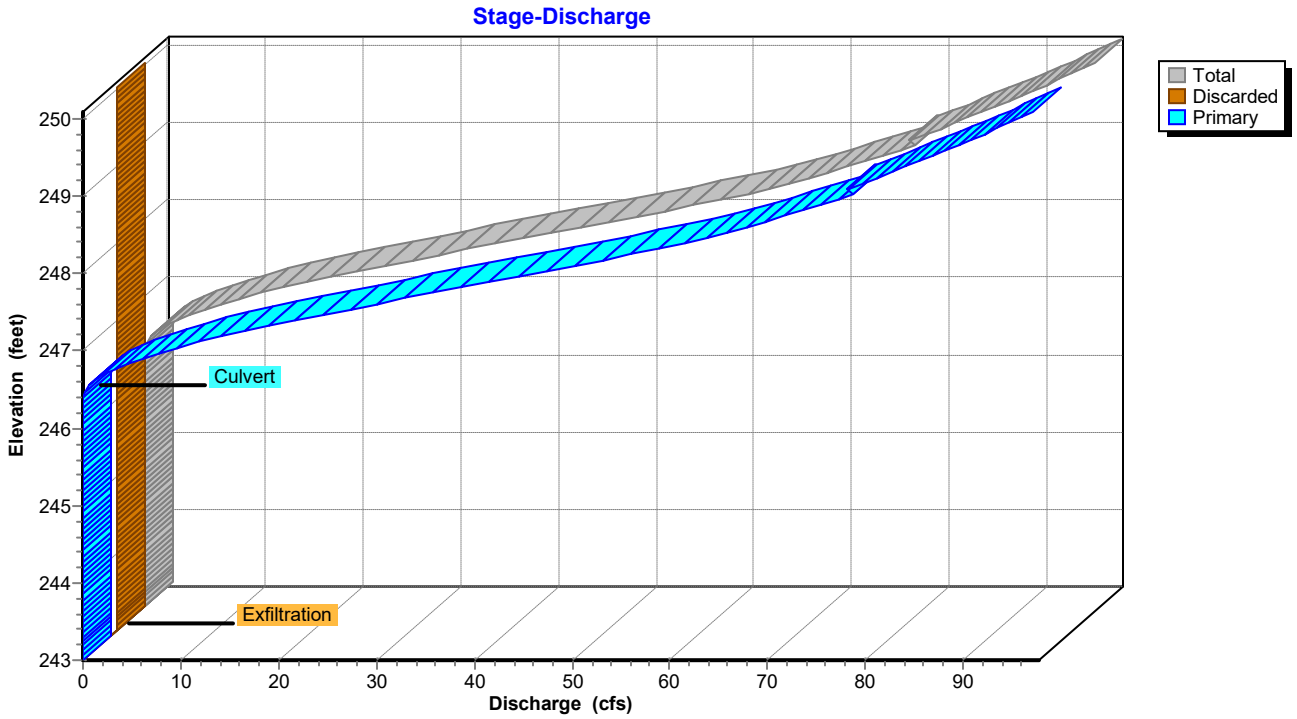
Discarded OutFlow Max=0.62 cfs @ 12.33 hrs HW=243.08' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.62 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=243.00' (Free Discharge)
↑**2=Culvert** (Controls 0.00 cfs)

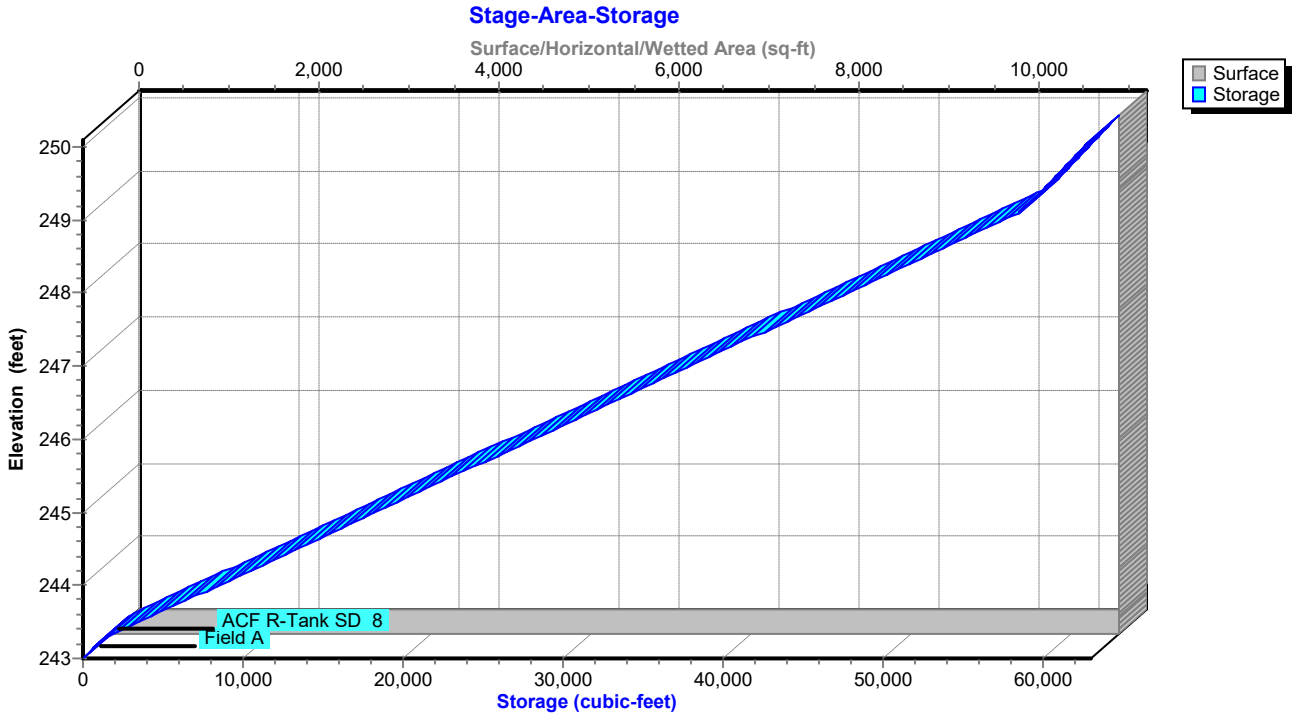
Pond SWM-4: Rtank-4



Pond SWM-4: Rtank-4



Pond SWM-4: Rtank-4



Hydrograph for Pond SWM-4: Rtank-4

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.00	0.00	0.00	**0.00**
2.00	0.00	0.0	243.00	0.00	0.00	0.00
4.00	0.00	0.0	243.00	0.00	0.00	0.00
6.00	0.00	0.0	243.00	0.00	0.00	0.00
8.00	0.00	0.0	243.00	0.00	0.00	0.00
10.00	0.00	0.0	243.00	0.00	0.00	0.00
12.00	**0.49**	116.9	243.03	**0.23**	**0.23**	0.00
14.00	**1.29**	**15,137.3**	**244.68**	**0.62**	**0.62**	0.00
16.00	0.27	**15,583.9**	**244.72**	0.62	0.62	0.00
18.00	0.03	11,796.1	244.34	0.62	0.62	0.00
20.00	0.02	7,477.5	243.90	0.62	0.62	0.00
22.00	0.02	3,127.5	243.45	0.62	0.62	0.00
24.00	0.01	9.6	243.00	0.02	0.02	0.00
26.00	0.00	0.0	243.00	0.00	0.00	0.00
28.00	0.00	0.0	243.00	0.00	0.00	0.00
30.00	0.00	0.0	243.00	0.00	0.00	0.00
32.00	0.00	0.0	243.00	0.00	0.00	0.00
34.00	0.00	0.0	243.00	0.00	0.00	0.00
36.00	0.00	0.0	243.00	0.00	0.00	0.00
38.00	0.00	0.0	243.00	0.00	0.00	0.00
40.00	0.00	0.0	243.00	0.00	0.00	0.00
42.00	0.00	0.0	243.00	0.00	0.00	0.00
44.00	0.00	0.0	243.00	0.00	0.00	0.00
46.00	0.00	0.0	243.00	0.00	0.00	0.00
48.00	0.00	0.0	243.00	0.00	0.00	0.00
50.00	0.00	0.0	243.00	0.00	0.00	0.00
52.00	0.00	0.0	243.00	0.00	0.00	0.00
54.00	0.00	0.0	243.00	0.00	0.00	0.00
56.00	0.00	0.0	243.00	0.00	0.00	0.00
58.00	0.00	0.0	243.00	0.00	0.00	0.00
60.00	0.00	0.0	243.00	0.00	0.00	0.00
62.00	0.00	0.0	243.00	0.00	0.00	0.00
64.00	0.00	0.0	243.00	0.00	0.00	0.00
66.00	0.00	0.0	243.00	0.00	0.00	0.00
68.00	0.00	0.0	243.00	0.00	0.00	0.00
70.00	0.00	0.0	243.00	0.00	0.00	0.00
72.00	0.00	0.0	243.00	0.00	0.00	0.00
74.00	0.00	0.0	243.00	0.00	0.00	0.00
76.00	0.00	0.0	243.00	0.00	0.00	0.00
78.00	0.00	0.0	243.00	0.00	0.00	0.00
80.00	0.00	0.0	243.00	0.00	0.00	0.00
82.00	0.00	0.0	243.00	0.00	0.00	0.00
84.00	0.00	0.0	243.00	0.00	0.00	0.00
86.00	0.00	0.0	243.00	0.00	0.00	0.00
88.00	0.00	0.0	243.00	0.00	0.00	0.00
90.00	0.00	0.0	243.00	0.00	0.00	0.00
92.00	0.00	0.0	243.00	0.00	0.00	0.00
94.00	0.00	0.0	243.00	0.00	0.00	0.00
96.00	0.00	0.0	243.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-4: Rtank-4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.00	**11,191**	0.0
243.10	11,191	447.6
243.20	11,191	895.3
243.30	11,191	1,610.4
243.40	11,191	2,593.1
243.50	11,191	3,575.8
243.60	11,191	4,558.4
243.70	11,191	5,541.1
243.80	11,191	6,523.8
243.90	11,191	7,506.5
244.00	11,191	8,489.1
244.10	11,191	9,471.8
244.20	11,191	10,454.5
244.30	11,191	11,437.2
244.40	11,191	12,419.8
244.50	11,191	13,402.5
244.60	11,191	14,385.2
244.70	11,191	15,367.9
244.80	11,191	16,350.5
244.90	11,191	17,333.2
245.00	11,191	18,315.9
245.10	11,191	19,298.6
245.20	11,191	20,281.2
245.30	11,191	21,263.9
245.40	11,191	22,246.6
245.50	11,191	23,229.3
245.60	11,191	24,211.9
245.70	11,191	25,194.6
245.80	11,191	26,177.3
245.90	11,191	27,159.9
246.00	11,191	28,142.6
246.10	11,191	29,125.3
246.20	11,191	30,108.0
246.30	11,191	31,090.6
246.40	11,191	32,073.3
246.50	11,191	33,056.0
246.60	11,191	34,038.7
246.70	11,191	35,021.3
246.80	11,191	36,004.0
246.90	11,191	36,986.7
247.00	11,191	37,969.4
247.10	11,191	38,952.0
247.20	11,191	39,934.7
247.30	11,191	40,917.4
247.40	11,191	41,900.1
247.50	11,191	42,882.7
247.60	11,191	43,865.4
247.70	11,191	44,848.1
247.80	11,191	45,830.8
247.90	11,191	46,813.4
248.00	11,191	47,796.1
248.10	11,191	48,778.8
248.20	11,191	49,761.4
248.30	11,191	50,744.1
248.40	11,191	51,726.8
248.50	11,191	52,709.5
248.60	11,191	53,692.1
248.70	11,191	54,674.8
248.80	11,191	55,657.5
248.90	11,191	56,640.2
249.00	11,191	57,622.8
249.10	11,191	58,551.5
249.20	11,191	58,999.1
249.30	11,191	59,446.7
249.40	11,191	59,894.4
249.50	11,191	60,342.0
249.60	11,191	60,789.6
249.70	11,191	61,237.3
249.80	11,191	61,684.9
249.90	11,191	62,132.5
250.00	11,191	**62,580.2**

Summary for Pond SWM-5: Rtank-5

Inflow Area = 759,708 sf, 78.80% Impervious, Inflow Depth = 0.00" for 2 yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.0 cf
Routed to Link POA D : FIRE POND

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 245.00' @ 0.00 hrs Surf.Area= 7,709 sf Storage= 0.0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1A	245.00'	5,740.0 cf	**63.74'W x 120.94'L x 5.65'H Field A** 43,529.3 cf Overall - 29,179.3 cf Embedded = 14,350.0 cf x 40.0% Voids
#2A	245.25'	27,720.3 cf	**ACF R-Tank SD 6** x 2156 Inside #1 Inside= 15.7"W x 52.8"H => 5.48 sf x 2.35'L = 12.9 cf Outside= 15.7"W x 52.8"H => 5.77 sf x 2.35'L = 13.5 cf 2156 Chambers in 44 Rows
		33,460.3 cf	Total Available Storage

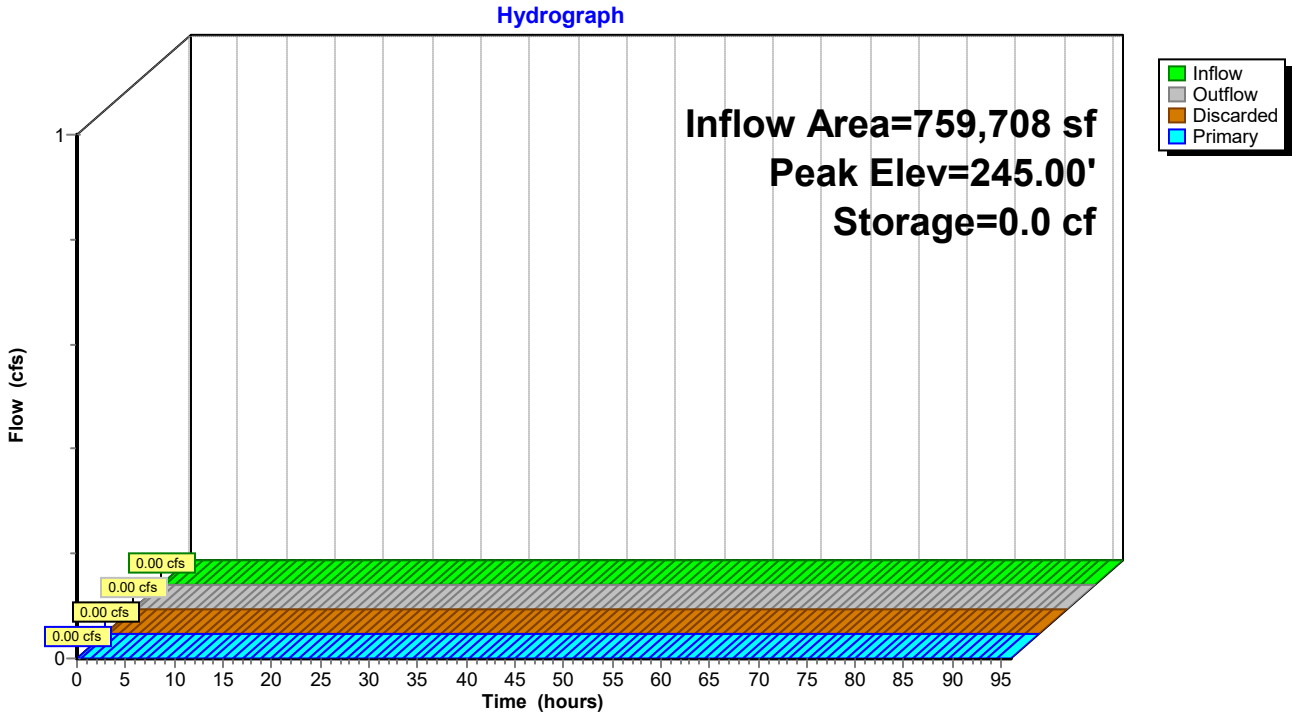
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	245.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.30'	**24.0" Vert. Orifice/Grate X 9.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	246.30'	**24.0" Round Culvert** L= 166.0' Ke= 0.100 Inlet / Outlet Invert= 246.30' / 245.40' S= 0.0054 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

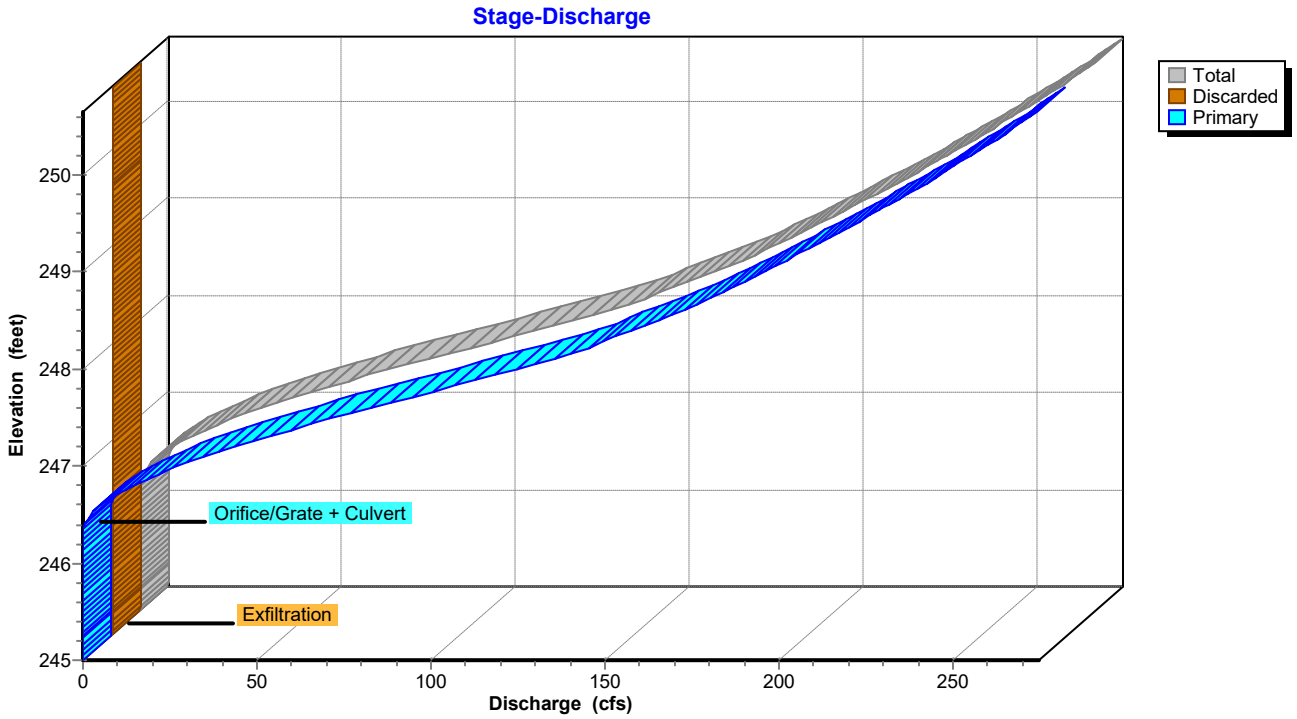
Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=245.00' (Free Discharge)
└**1=Exfiltration** (Passes 0.00 cfs of 0.43 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=245.00' (Free Discharge)
├**2=Orifice/Grate** (Controls 0.00 cfs)
└**3=Culvert** (Controls 0.00 cfs)

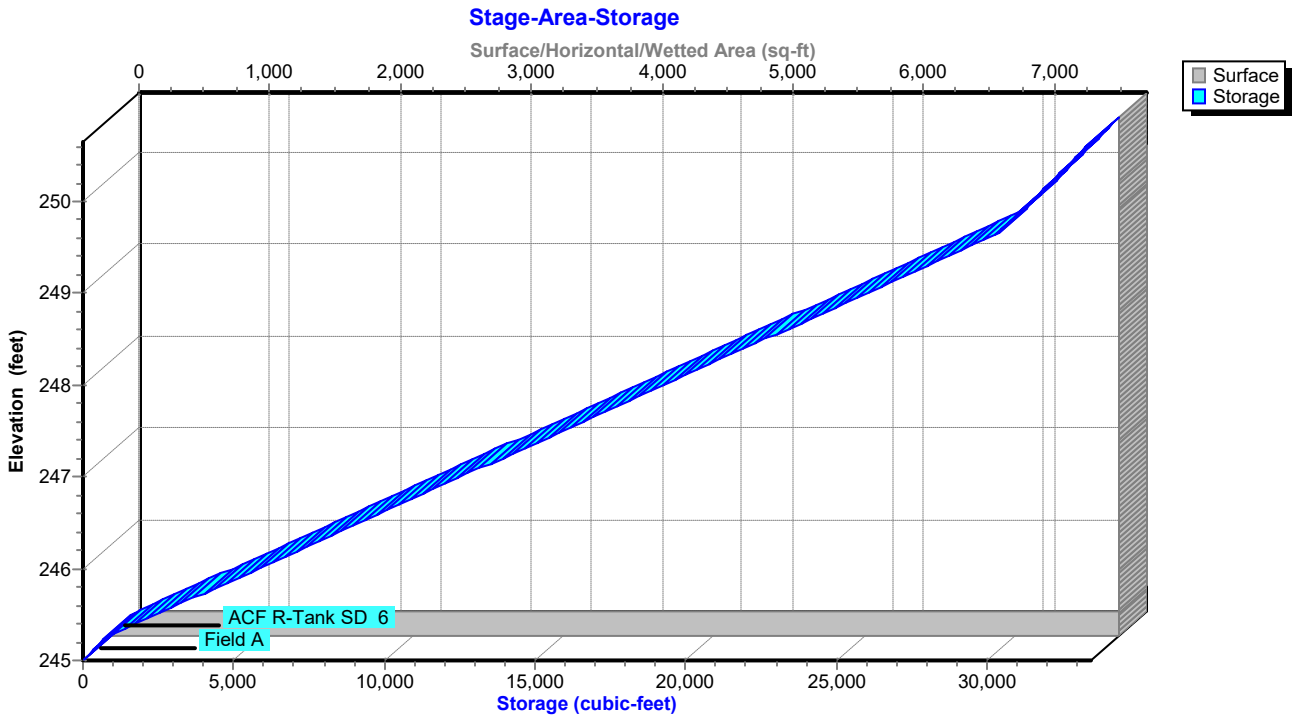
Pond SWM-5: Rtank-5



Pond SWM-5: Rtank-5



Pond SWM-5: Rtank-5



Hydrograph for Pond SWM-5: Rtank-5

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	**0.00**	**245.00**	**0.00**	**0.00**	**0.00**
2.00	0.00	245.00	0.00	0.00	0.00
4.00	0.00	245.00	0.00	0.00	0.00
6.00	0.00	245.00	0.00	0.00	0.00
8.00	0.00	245.00	0.00	0.00	0.00
10.00	0.00	245.00	0.00	0.00	0.00
12.00	0.00	245.00	0.00	0.00	0.00
14.00	0.00	245.00	0.00	0.00	0.00
16.00	0.00	245.00	0.00	0.00	0.00
18.00	0.00	245.00	0.00	0.00	0.00
20.00	0.00	245.00	0.00	0.00	0.00
22.00	0.00	245.00	0.00	0.00	0.00
24.00	0.00	245.00	0.00	0.00	0.00
26.00	0.00	245.00	0.00	0.00	0.00
28.00	0.00	245.00	0.00	0.00	0.00
30.00	0.00	245.00	0.00	0.00	0.00
32.00	0.00	245.00	0.00	0.00	0.00
34.00	0.00	245.00	0.00	0.00	0.00
36.00	0.00	245.00	0.00	0.00	0.00
38.00	0.00	245.00	0.00	0.00	0.00
40.00	0.00	245.00	0.00	0.00	0.00
42.00	0.00	245.00	0.00	0.00	0.00
44.00	0.00	245.00	0.00	0.00	0.00
46.00	0.00	245.00	0.00	0.00	0.00
48.00	0.00	245.00	0.00	0.00	0.00
50.00	0.00	245.00	0.00	0.00	0.00
52.00	0.00	245.00	0.00	0.00	0.00
54.00	0.00	245.00	0.00	0.00	0.00
56.00	0.00	245.00	0.00	0.00	0.00
58.00	0.00	245.00	0.00	0.00	0.00
60.00	0.00	245.00	0.00	0.00	0.00
62.00	0.00	245.00	0.00	0.00	0.00
64.00	0.00	245.00	0.00	0.00	0.00
66.00	0.00	245.00	0.00	0.00	0.00
68.00	0.00	245.00	0.00	0.00	0.00
70.00	0.00	245.00	0.00	0.00	0.00
72.00	0.00	245.00	0.00	0.00	0.00
74.00	0.00	245.00	0.00	0.00	0.00
76.00	0.00	245.00	0.00	0.00	0.00
78.00	0.00	245.00	0.00	0.00	0.00
80.00	0.00	245.00	0.00	0.00	0.00
82.00	0.00	245.00	0.00	0.00	0.00
84.00	0.00	245.00	0.00	0.00	0.00
86.00	0.00	245.00	0.00	0.00	0.00
88.00	0.00	245.00	0.00	0.00	0.00
90.00	0.00	245.00	0.00	0.00	0.00
92.00	0.00	245.00	0.00	0.00	0.00
94.00	0.00	245.00	0.00	0.00	0.00
96.00	0.00	245.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-5: Rtank-5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
245.00	**7,709**	0.0
245.10	7,709	308.4
245.20	7,709	616.7
245.30	7,709	1,107.6
245.40	7,709	1,781.1
245.50	7,709	2,454.5
245.60	7,709	3,127.9
245.70	7,709	3,801.3
245.80	7,709	4,474.7
245.90	7,709	5,148.2
246.00	7,709	5,821.6
246.10	7,709	6,495.0
246.20	7,709	7,168.4
246.30	7,709	7,841.8
246.40	7,709	8,515.2
246.50	7,709	9,188.7
246.60	7,709	9,862.1
246.70	7,709	10,535.5
246.80	7,709	11,208.9
246.90	7,709	11,882.3
247.00	7,709	12,555.8
247.10	7,709	13,229.2
247.20	7,709	13,902.6
247.30	7,709	14,576.0
247.40	7,709	15,249.4
247.50	7,709	15,922.9
247.60	7,709	16,596.3
247.70	7,709	17,269.7
247.80	7,709	17,943.1
247.90	7,709	18,616.5
248.00	7,709	19,289.9
248.10	7,709	19,963.4
248.20	7,709	20,636.8
248.30	7,709	21,310.2
248.40	7,709	21,983.6
248.50	7,709	22,657.0
248.60	7,709	23,330.5
248.70	7,709	24,003.9
248.80	7,709	24,677.3
248.90	7,709	25,350.7
249.00	7,709	26,024.1
249.10	7,709	26,697.6
249.20	7,709	27,371.0
249.30	7,709	28,044.4
249.40	7,709	28,717.8
249.50	7,709	29,391.2
249.60	7,709	30,064.7
249.70	7,709	30,542.1
249.80	7,709	30,850.5
249.90	7,709	31,158.9
250.00	7,709	31,467.3
250.10	7,709	31,775.6
250.20	7,709	32,084.0
250.30	7,709	32,392.4
250.40	7,709	32,700.7
250.50	7,709	33,009.1
250.60	7,709	**33,317.5**

Summary for Pond SWM-6: Rtank-6

Inflow Area = 108,531 sf,100.00% Impervious, Inflow Depth = 2.99" for 2 yr event
Inflow = 8.07 cfs @ 12.07 hrs, Volume= 27,018.9 cf
Outflow = 6.79 cfs @ 12.12 hrs, Volume= 27,018.9 cf, Atten= 16%, Lag= 2.9 min
Discarded = 0.10 cfs @ 6.20 hrs, Volume= 9,448.9 cf
Primary = 6.69 cfs @ 12.12 hrs, Volume= 17,570.0 cf
Routed to Link POA D : FIRE POND

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 259.23' @ 12.12 hrs Surf.Area= 1,732 sf Storage= 4,264.5 cf

Plug-Flow detention time= 105.3 min calculated for 27,016.1 cf (100% of inflow)
Center-of-Mass det. time= 105.3 min (860.6 - 755.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	256.00'	1,439.5 cf	**15.81'W x 109.56'L x 4.20'H Field A** 7,280.3 cf Overall - 3,681.4 cf Embedded = 3,598.9 cf x 40.0% Voids
#2A	256.25'	3,497.4 cf	**ACF R-Tank SD 4** x 405 Inside #1 Inside= 15.7"W x 35.4"H => 3.68 sf x 2.35'L = 8.6 cf Outside= 15.7"W x 35.4"H => 3.88 sf x 2.35'L = 9.1 cf 405 Chambers in 9 Rows
		4,936.9 cf	Total Available Storage

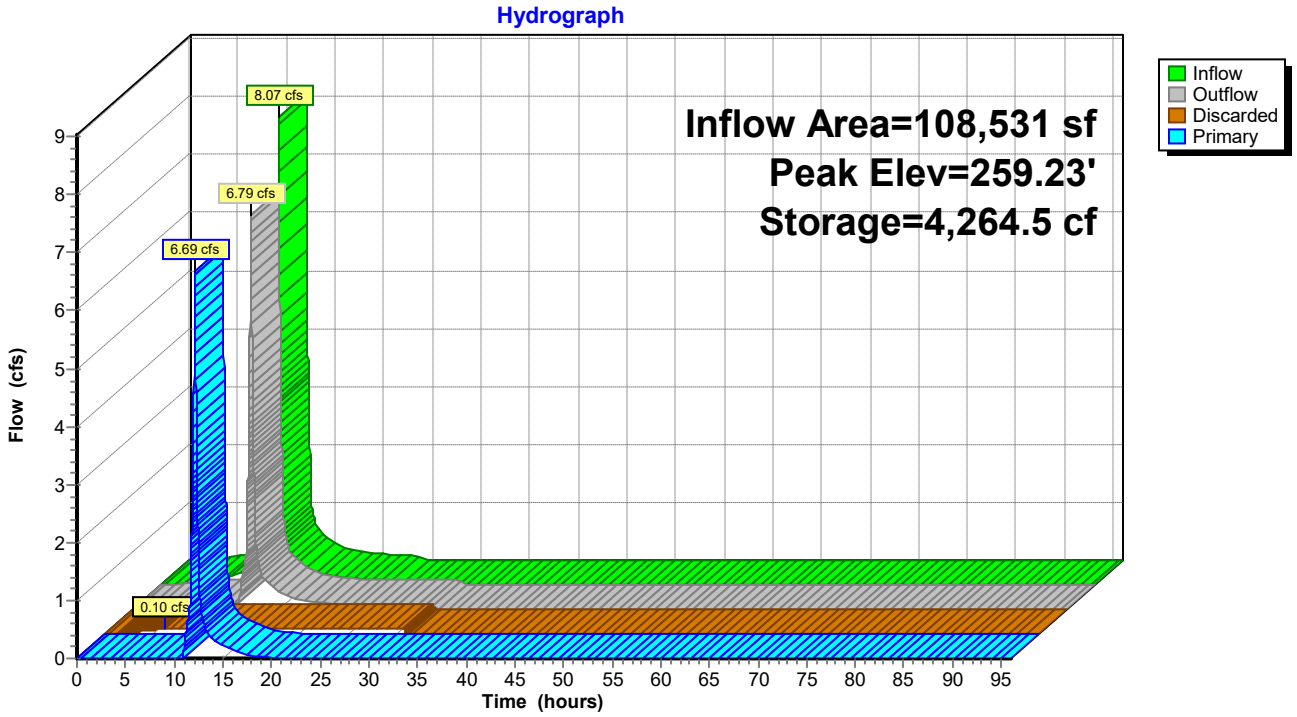
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	256.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	257.95'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	257.95'	**12.0" Vert. outlet** C= 0.600 Limited to weir flow at low heads

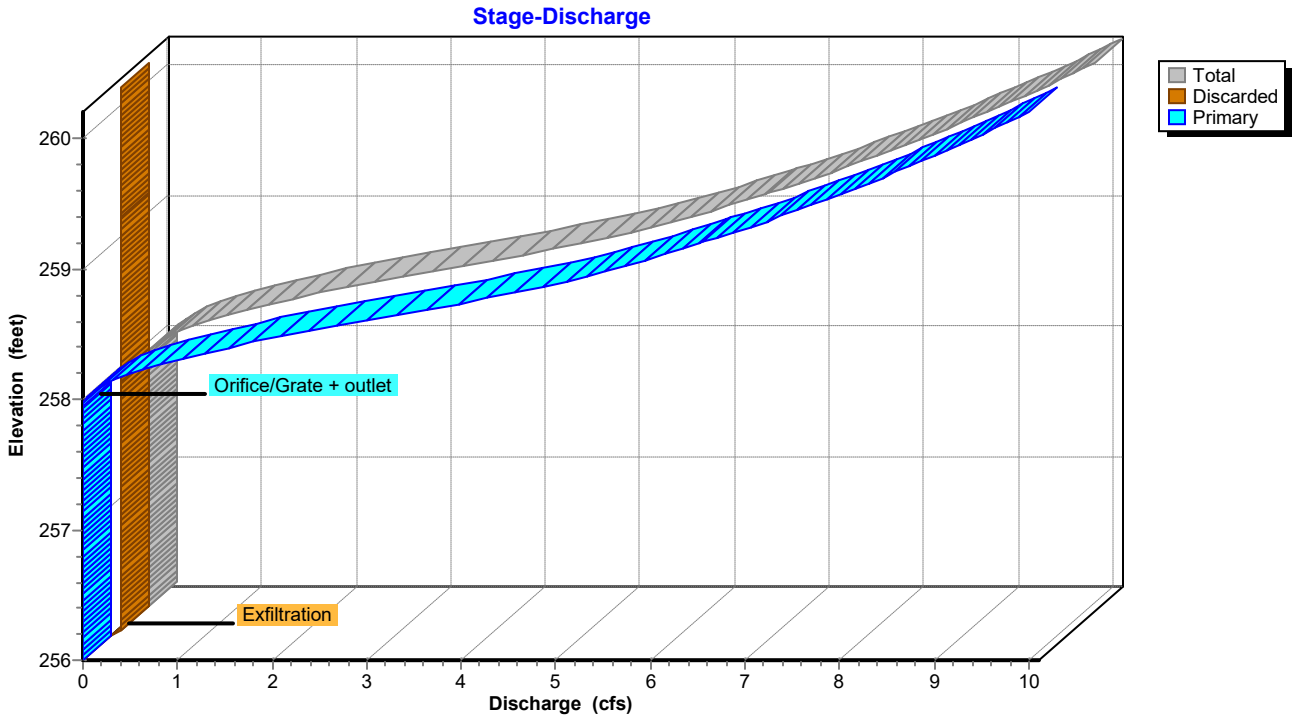
Discarded OutFlow Max=0.10 cfs @ 6.20 hrs HW=256.04' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=6.68 cfs @ 12.12 hrs HW=259.23' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 3.34 cfs @ 4.25 fps)
└**3=outlet** (Orifice Controls 3.34 cfs @ 4.25 fps)

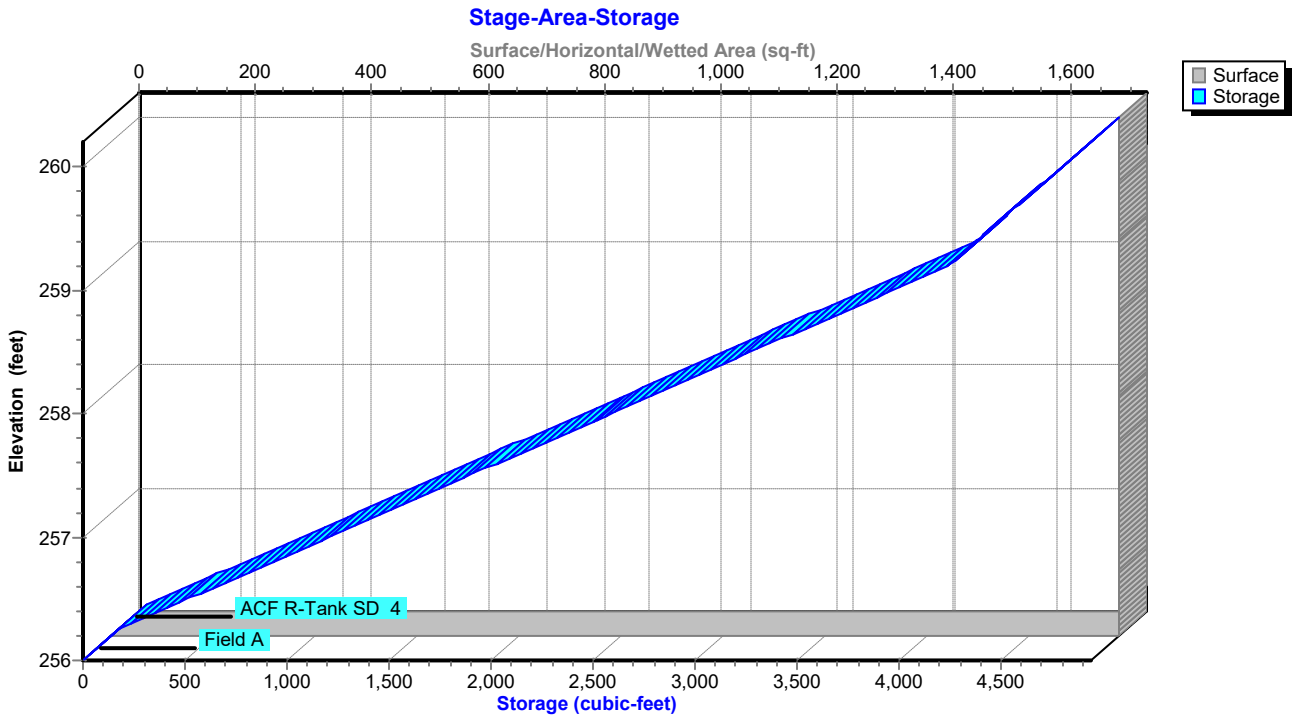
Pond SWM-6: Rtank-6



Pond SWM-6: Rtank-6



Pond SWM-6: Rtank-6



Hydrograph for Pond SWM-6: Rtank-6

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	256.00	0.00	0.00	0.00
2.00	0.01	3.9	256.01	0.01	0.01	0.00
4.00	0.06	16.2	256.02	0.05	0.05	0.00
6.00	0.09	27.7	256.04	0.09	**0.09**	0.00
8.00	0.18	290.7	256.34	0.10	**0.10**	0.00
10.00	0.36	1,504.8	257.22	0.10	0.10	0.00
12.00	**5.44**	**3,597.1**	**258.73**	**4.08**	0.10	**3.98**
14.00	**0.41**	**2,789.3**	**258.15**	**0.43**	0.10	**0.33**
16.00	0.22	2,686.8	258.07	0.23	0.10	0.14
18.00	0.13	2,614.3	258.02	0.14	0.10	0.05
20.00	0.11	2,566.8	257.99	0.11	0.10	0.01
22.00	0.09	2,520.3	257.95	0.10	0.10	0.00
24.00	0.07	2,388.0	257.86	0.10	0.10	0.00
26.00	0.00	1,711.4	257.37	0.10	0.10	0.00
28.00	0.00	1,015.6	256.86	0.10	0.10	0.00
30.00	0.00	319.8	256.36	0.10	0.10	0.00
32.00	0.00	0.0	256.00	0.00	0.00	0.00
34.00	0.00	0.0	256.00	0.00	0.00	0.00
36.00	0.00	0.0	256.00	0.00	0.00	0.00
38.00	0.00	0.0	256.00	0.00	0.00	0.00
40.00	0.00	0.0	256.00	0.00	0.00	0.00
42.00	0.00	0.0	256.00	0.00	0.00	0.00
44.00	0.00	0.0	256.00	0.00	0.00	0.00
46.00	0.00	0.0	256.00	0.00	0.00	0.00
48.00	0.00	0.0	256.00	0.00	0.00	0.00
50.00	0.00	0.0	256.00	0.00	0.00	0.00
52.00	0.00	0.0	256.00	0.00	0.00	0.00
54.00	0.00	0.0	256.00	0.00	0.00	0.00
56.00	0.00	0.0	256.00	0.00	0.00	0.00
58.00	0.00	0.0	256.00	0.00	0.00	0.00
60.00	0.00	0.0	256.00	0.00	0.00	0.00
62.00	0.00	0.0	256.00	0.00	0.00	0.00
64.00	0.00	0.0	256.00	0.00	0.00	0.00
66.00	0.00	0.0	256.00	0.00	0.00	0.00
68.00	0.00	0.0	256.00	0.00	0.00	0.00
70.00	0.00	0.0	256.00	0.00	0.00	0.00
72.00	0.00	0.0	256.00	0.00	0.00	0.00
74.00	0.00	0.0	256.00	0.00	0.00	0.00
76.00	0.00	0.0	256.00	0.00	0.00	0.00
78.00	0.00	0.0	256.00	0.00	0.00	0.00
80.00	0.00	0.0	256.00	0.00	0.00	0.00
82.00	0.00	0.0	256.00	0.00	0.00	0.00
84.00	0.00	0.0	256.00	0.00	0.00	0.00
86.00	0.00	0.0	256.00	0.00	0.00	0.00
88.00	0.00	0.0	256.00	0.00	0.00	0.00
90.00	0.00	0.0	256.00	0.00	0.00	0.00
92.00	0.00	0.0	256.00	0.00	0.00	0.00
94.00	0.00	0.0	256.00	0.00	0.00	0.00
96.00	0.00	0.0	256.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-6: Rtank-6

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
256.00	**1,732**	0.0
256.05	1,732	34.6
256.10	1,732	69.3
256.15	1,732	103.9
256.20	1,732	138.6
256.25	1,732	173.2
256.30	1,732	242.2
256.35	1,732	311.1
256.40	1,732	380.0
256.45	1,732	449.0
256.50	1,732	517.9
256.55	1,732	586.8
256.60	1,732	655.8
256.65	1,732	724.7
256.70	1,732	793.6
256.75	1,732	862.5
256.80	1,732	931.5
256.85	1,732	1,000.4
256.90	1,732	1,069.3
256.95	1,732	1,138.3
257.00	1,732	1,207.2
257.05	1,732	1,276.1
257.10	1,732	1,345.1
257.15	1,732	1,414.0
257.20	1,732	1,482.9
257.25	1,732	1,551.9
257.30	1,732	1,620.8
257.35	1,732	1,689.7
257.40	1,732	1,758.7
257.45	1,732	1,827.6
257.50	1,732	1,896.5
257.55	1,732	1,965.5
257.60	1,732	2,034.4
257.65	1,732	2,103.3
257.70	1,732	2,172.3
257.75	1,732	2,241.2
257.80	1,732	2,310.1
257.85	1,732	2,379.1
257.90	1,732	2,448.0
257.95	1,732	2,516.9
258.00	1,732	2,585.8
258.05	1,732	2,654.8
258.10	1,732	2,723.7
258.15	1,732	2,792.6
258.20	1,732	2,861.6
258.25	1,732	2,930.5
258.30	1,732	2,999.4
258.35	1,732	3,068.4
258.40	1,732	3,137.3
258.45	1,732	3,206.2
258.50	1,732	3,275.2
258.55	1,732	3,344.1
258.60	1,732	3,413.0
258.65	1,732	3,482.0
258.70	1,732	3,550.9
258.75	1,732	3,619.8
258.80	1,732	3,688.8
258.85	1,732	3,757.7
258.90	1,732	3,826.6
258.95	1,732	3,895.6
259.00	1,732	3,964.5
259.05	1,732	4,033.4
259.10	1,732	4,102.4
259.15	1,732	4,171.3
259.20	1,732	4,240.2
259.25	1,732	4,276.7
259.30	1,732	4,311.4
259.35	1,732	4,346.0
259.40	1,732	4,380.7
259.45	1,732	4,415.3
259.50	1,732	4,450.0
259.55	1,732	4,484.6
259.60	1,732	4,519.3
259.65	1,732	4,553.9
259.70	1,732	4,588.6
259.75	1,732	4,623.2
259.80	1,732	4,657.8
259.85	1,732	4,692.5
259.90	1,732	4,727.1
259.95	1,732	4,761.8
260.00	1,732	4,796.4
260.05	1,732	4,831.1
260.10	1,732	4,865.7
260.15	1,732	4,900.4
260.20	1,732	**4,935.0**

Summary for Pond SWM-7: Rtank-7

Inflow Area = 214,605 sf, 84.39% Impervious, Inflow Depth = 2.10" for 2 yr event
Inflow = 11.59 cfs @ 12.10 hrs, Volume= 37,552.4 cf
Outflow = 9.79 cfs @ 12.16 hrs, Volume= 37,552.4 cf, Atten= 16%, Lag= 3.3 min
Discarded = 0.15 cfs @ 9.09 hrs, Volume= 15,131.5 cf
Primary = 9.64 cfs @ 12.16 hrs, Volume= 22,420.9 cf
Routed to Pond SWM-1 : Rtank-1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 247.78' @ 12.16 hrs Surf.Area= 2,655 sf Storage= 9,510.6 cf

Plug-Flow detention time= 208.2 min calculated for 37,548.5 cf (100% of inflow)
Center-of-Mass det. time= 208.3 min (1,020.1 - 811.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	243.50'	2,406.6 cf	**39.43'W x 67.34'L x 7.81'H Field A** 20,742.3 cf Overall - 14,725.8 cf Embedded = 6,016.5 cf x 40.0% Voids
#2A	243.75'	13,989.5 cf	**ACF R-Tank SD 9** x 729 Inside #1 Inside= 15.7"W x 78.7"H => 8.18 sf x 2.35'L = 19.2 cf Outside= 15.7"W x 78.7"H => 8.61 sf x 2.35'L = 20.2 cf 729 Chambers in 27 Rows
		16,396.1 cf	Total Available Storage

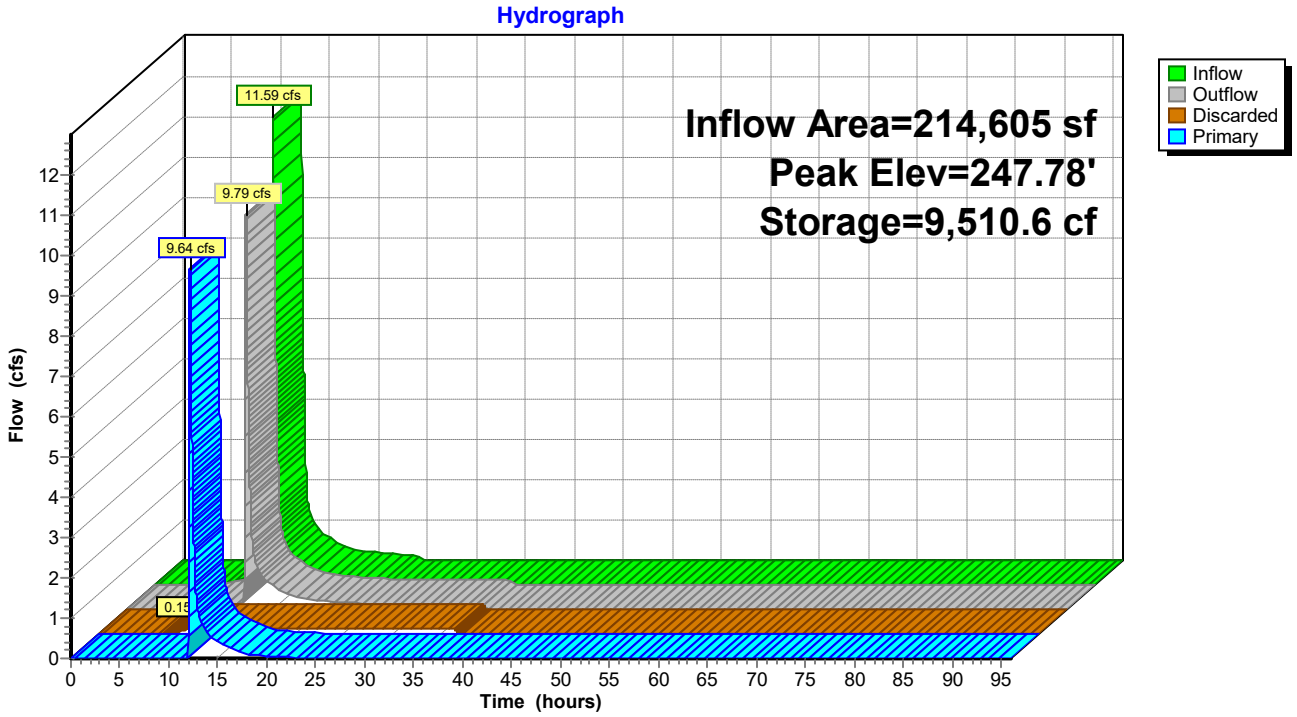
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.50'	**18.0" Round Culvert X 2.00** L= 10.0' Ke= 0.100 Inlet / Outlet Invert= 246.50' / 246.50' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

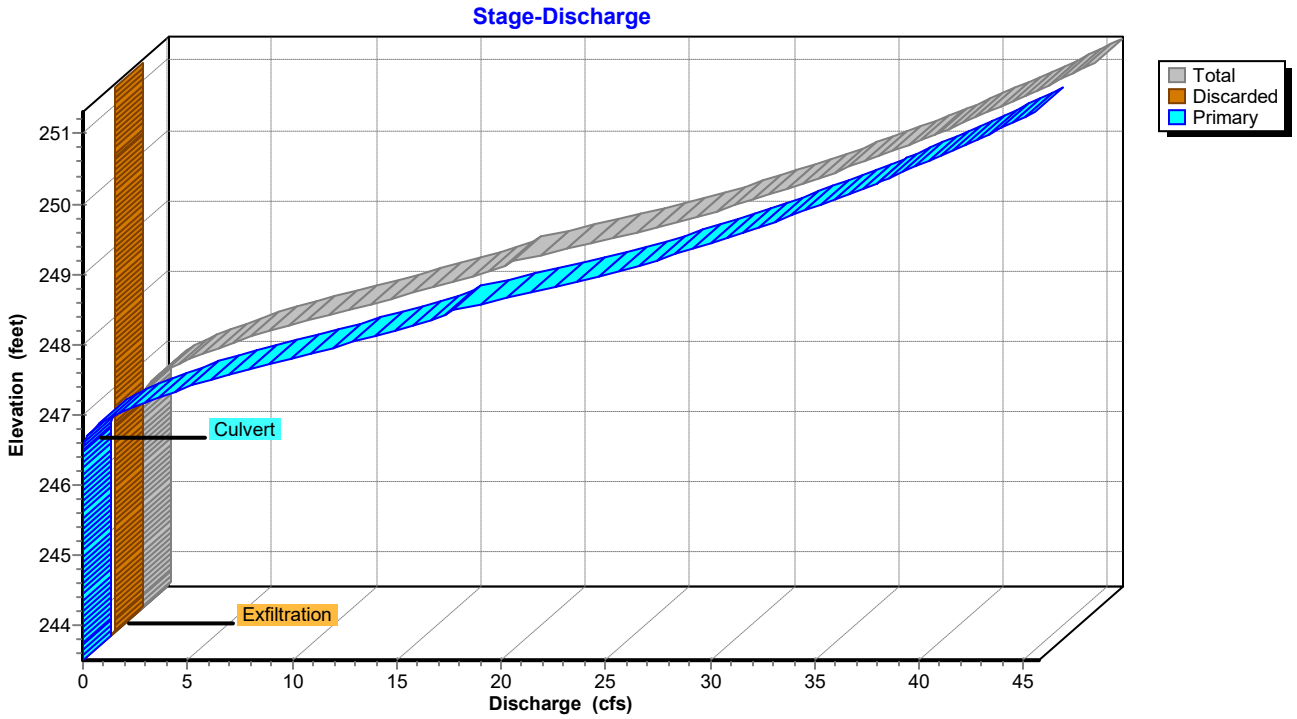
Discarded OutFlow Max=0.15 cfs @ 9.09 hrs HW=243.58' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.15 cfs)

Primary OutFlow Max=9.62 cfs @ 12.16 hrs HW=247.77' (Free Discharge)
↑**2=Culvert** (Barrel Controls 9.62 cfs @ 4.05 fps)

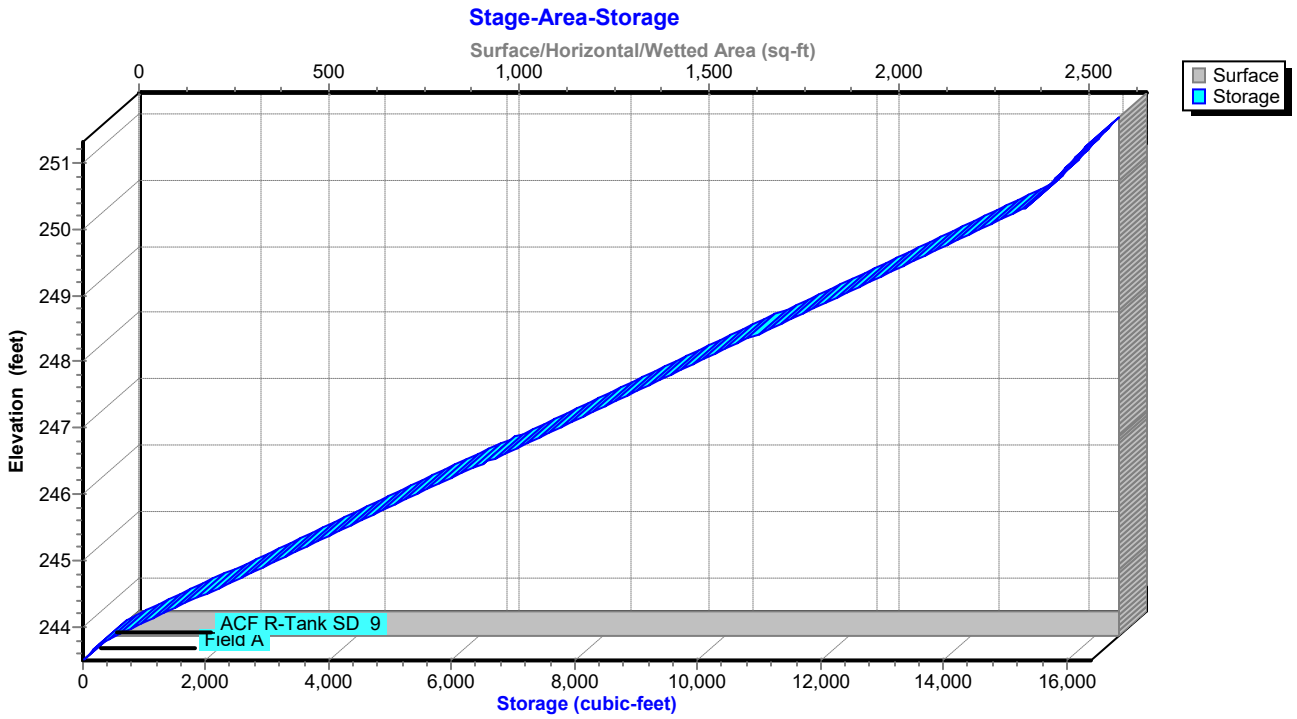
Pond SWM-7: Rtank-7



Pond SWM-7: Rtank-7



Pond SWM-7: Rtank-7



Hydrograph for Pond SWM-7: Rtank-7

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	0.00
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.00	0.0	243.50	0.00	0.00	0.00
6.00	0.00	0.0	243.50	0.00	0.00	0.00
8.00	0.06	31.5	243.53	0.06	**0.06**	0.00
10.00	0.30	346.5	243.79	0.15	**0.15**	0.00
12.00	**6.44**	**7,058.0**	**246.71**	**0.39**	0.15	**0.24**
14.00	**0.73**	**7,309.2**	**246.82**	**0.78**	0.15	**0.63**
16.00	0.39	7,081.2	246.72	0.42	0.15	0.28
18.00	0.24	6,914.5	246.65	0.26	0.15	0.11
20.00	0.19	6,824.2	246.61	0.21	0.15	0.06
22.00	0.16	6,731.6	246.57	0.17	0.15	0.02
24.00	0.13	6,621.2	246.52	0.15	0.15	0.00
26.00	0.00	5,603.3	246.07	0.15	0.15	0.00
28.00	0.00	4,536.8	245.61	0.15	0.15	0.00
30.00	0.00	3,470.2	245.15	0.15	0.15	0.00
32.00	0.00	2,403.7	244.68	0.15	0.15	0.00
34.00	0.00	1,337.1	244.22	0.15	0.15	0.00
36.00	0.00	270.6	243.75	0.15	0.15	0.00
38.00	0.00	0.0	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-7: Rtank-7

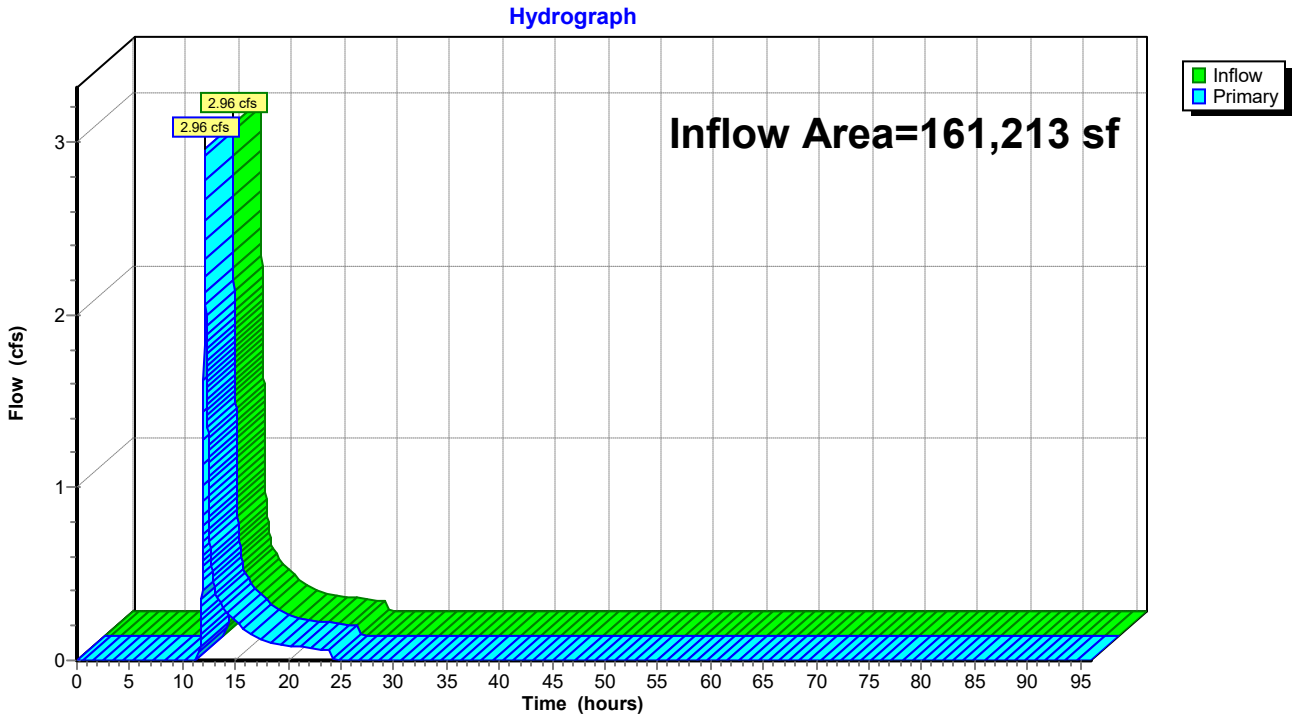
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	**2,655**	0.0
243.60	2,655	106.2
243.70	2,655	212.4
243.80	2,655	380.4
243.90	2,655	610.0
244.00	2,655	839.6
244.10	2,655	1,069.3
244.20	2,655	1,298.9
244.30	2,655	1,528.6
244.40	2,655	1,758.2
244.50	2,655	1,987.9
244.60	2,655	2,217.5
244.70	2,655	2,447.1
244.80	2,655	2,676.8
244.90	2,655	2,906.4
245.00	2,655	3,136.1
245.10	2,655	3,365.7
245.20	2,655	3,595.4
245.30	2,655	3,825.0
245.40	2,655	4,054.6
245.50	2,655	4,284.3
245.60	2,655	4,513.9
245.70	2,655	4,743.6
245.80	2,655	4,973.2
245.90	2,655	5,202.9
246.00	2,655	5,432.5
246.10	2,655	5,662.1
246.20	2,655	5,891.8
246.30	2,655	6,121.4
246.40	2,655	6,351.1
246.50	2,655	6,580.7
246.60	2,655	6,810.4
246.70	2,655	7,040.0
246.80	2,655	7,269.6
246.90	2,655	7,499.3
247.00	2,655	7,728.9
247.10	2,655	7,958.6
247.20	2,655	8,188.2
247.30	2,655	8,417.9
247.40	2,655	8,647.5
247.50	2,655	8,877.1
247.60	2,655	9,106.8
247.70	2,655	9,336.4
247.80	2,655	9,566.1
247.90	2,655	9,795.7
248.00	2,655	10,025.4
248.10	2,655	10,255.0
248.20	2,655	10,484.7
248.30	2,655	10,714.3
248.40	2,655	10,943.9
248.50	2,655	11,173.6
248.60	2,655	11,403.2
248.70	2,655	11,632.9
248.80	2,655	11,862.5
248.90	2,655	12,092.2
249.00	2,655	12,321.8
249.10	2,655	12,551.4
249.20	2,655	12,781.1
249.30	2,655	13,010.7
249.40	2,655	13,240.4
249.50	2,655	13,470.0
249.60	2,655	13,699.7
249.70	2,655	13,929.3
249.80	2,655	14,158.9
249.90	2,655	14,388.6
250.00	2,655	14,618.2
250.10	2,655	14,847.9
250.20	2,655	15,077.5
250.30	2,655	15,307.2
250.40	2,655	15,427.8
250.50	2,655	15,534.0
250.60	2,655	15,640.2
250.70	2,655	15,746.4
250.80	2,655	15,852.6
250.90	2,655	15,958.8
251.00	2,655	16,065.1
251.10	2,655	16,171.3
251.20	2,655	16,277.5
251.30	2,655	**16,383.7**

Summary for Link POA A: POND- WEST

Inflow Area = 161,213 sf, 51.37% Impervious, Inflow Depth = 0.79" for 2 yr event
Inflow = 2.96 cfs @ 12.11 hrs, Volume= 10,624.8 cf
Primary = 2.96 cfs @ 12.11 hrs, Volume= 10,624.8 cf, Atten= 0%, Lag= 0.0 min

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

Link POA A: POND- WEST



Hydrograph for Link POA A: POND- WEST

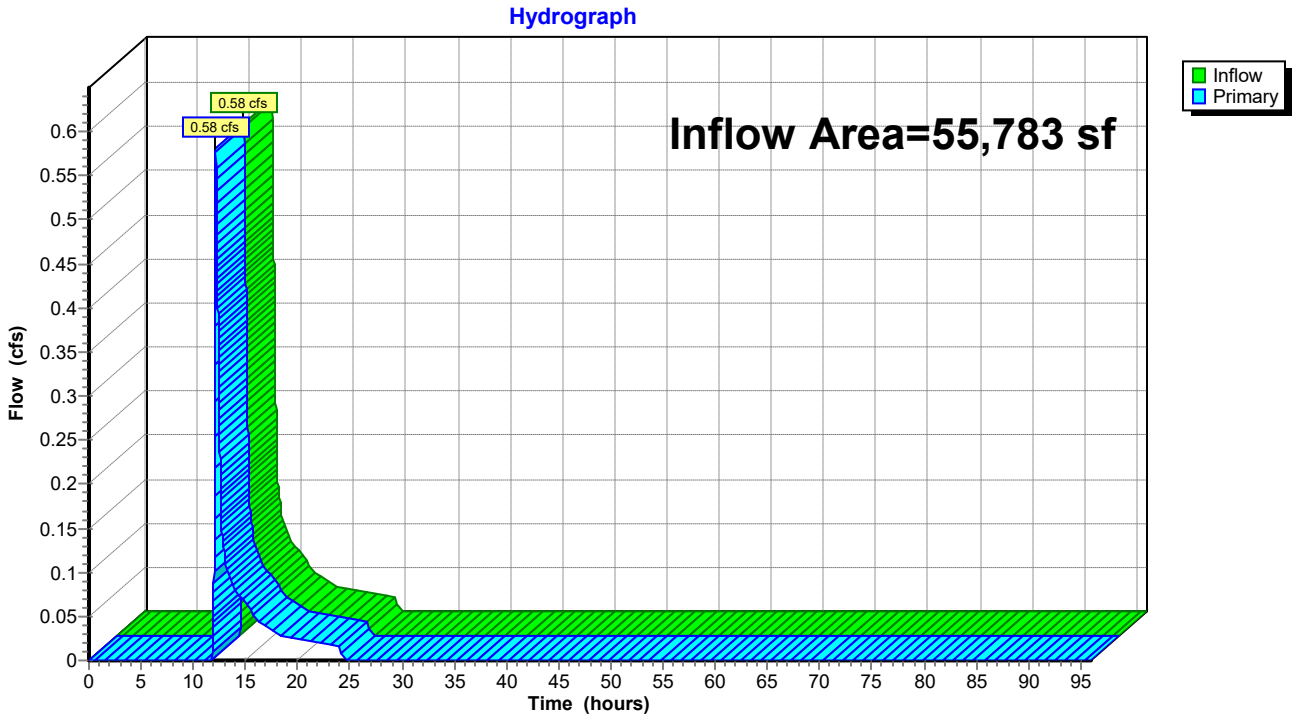
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
12.00	**1.28**	0.00	**1.28**	64.00	0.00	0.00	0.00
13.00	**0.43**	0.00	**0.43**	65.00	0.00	0.00	0.00
14.00	0.29	0.00	0.29	66.00	0.00	0.00	0.00
15.00	0.23	0.00	0.23	67.00	0.00	0.00	0.00
16.00	0.17	0.00	0.17	68.00	0.00	0.00	0.00
17.00	0.14	0.00	0.14	69.00	0.00	0.00	0.00
18.00	0.11	0.00	0.11	70.00	0.00	0.00	0.00
19.00	0.10	0.00	0.10	71.00	0.00	0.00	0.00
20.00	0.09	0.00	0.09	72.00	0.00	0.00	0.00
21.00	0.08	0.00	0.08	73.00	0.00	0.00	0.00
22.00	0.07	0.00	0.07	74.00	0.00	0.00	0.00
23.00	0.07	0.00	0.07	75.00	0.00	0.00	0.00
24.00	0.06	0.00	0.06	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA C: WETLAND-WEST

Inflow Area = 55,783 sf, 42.91% Impervious, Inflow Depth = 0.57" for 2 yr event
Inflow = 0.58 cfs @ 12.15 hrs, Volume= 2,642.8 cf
Primary = 0.58 cfs @ 12.15 hrs, Volume= 2,642.8 cf, Atten= 0%, Lag= 0.0 min

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

Link POA C: WETLAND-WEST



Hydrograph for Link POA C: WETLAND-WEST

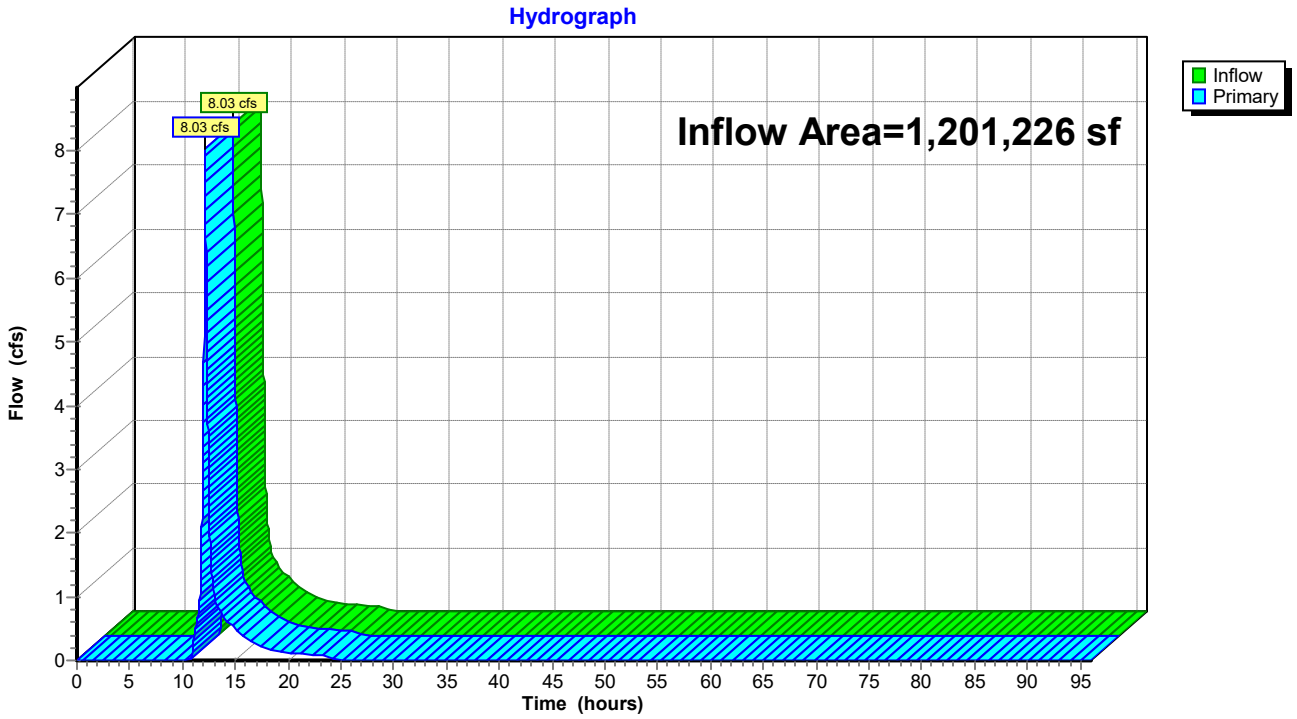
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
12.00	**0.14**	0.00	**0.14**	64.00	0.00	0.00	0.00
13.00	**0.12**	0.00	**0.12**	65.00	0.00	0.00	0.00
14.00	0.08	0.00	0.08	66.00	0.00	0.00	0.00
15.00	0.06	0.00	0.06	67.00	0.00	0.00	0.00
16.00	0.05	0.00	0.05	68.00	0.00	0.00	0.00
17.00	0.04	0.00	0.04	69.00	0.00	0.00	0.00
18.00	0.03	0.00	0.03	70.00	0.00	0.00	0.00
19.00	0.03	0.00	0.03	71.00	0.00	0.00	0.00
20.00	0.02	0.00	0.02	72.00	0.00	0.00	0.00
21.00	0.02	0.00	0.02	73.00	0.00	0.00	0.00
22.00	0.02	0.00	0.02	74.00	0.00	0.00	0.00
23.00	0.02	0.00	0.02	75.00	0.00	0.00	0.00
24.00	0.02	0.00	0.02	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA D: FIRE POND

Inflow Area = 1,201,226 sf, 67.83% Impervious, Inflow Depth = 0.27" for 2 yr event
Inflow = 8.03 cfs @ 12.12 hrs, Volume= 27,234.1 cf
Primary = 8.03 cfs @ 12.12 hrs, Volume= 27,234.1 cf, Atten= 0%, Lag= 0.0 min

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

Link POA D: FIRE POND



Hydrograph for Link POA D: FIRE POND

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.21	0.00	0.21	63.00	0.00	0.00	0.00
12.00	**4.00**	0.00	**4.00**	64.00	0.00	0.00	0.00
13.00	**1.05**	0.00	**1.05**	65.00	0.00	0.00	0.00
14.00	0.66	0.00	0.66	66.00	0.00	0.00	0.00
15.00	0.49	0.00	0.49	67.00	0.00	0.00	0.00
16.00	0.34	0.00	0.34	68.00	0.00	0.00	0.00
17.00	0.25	0.00	0.25	69.00	0.00	0.00	0.00
18.00	0.18	0.00	0.18	70.00	0.00	0.00	0.00
19.00	0.15	0.00	0.15	71.00	0.00	0.00	0.00
20.00	0.12	0.00	0.12	72.00	0.00	0.00	0.00
21.00	0.11	0.00	0.11	73.00	0.00	0.00	0.00
22.00	0.09	0.00	0.09	74.00	0.00	0.00	0.00
23.00	0.08	0.00	0.08	75.00	0.00	0.00	0.00
24.00	0.08	0.00	0.08	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

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 PR-A: Prop. Watershed A Runoff Area=161,213 sf 51.37% Impervious Runoff Depth=1.86"
Flow Length=1,502' Tc=6.5 min CN=69 Runoff=7.71 cfs 24,937.6 cf

Subcatchment PR-C: Prop. Watershed C Runoff Area=55,783 sf 42.91% Impervious Runoff Depth=1.49"
Flow Length=836' Tc=8.7 min CN=64 Runoff=1.90 cfs 6,928.3 cf

Subcatchment PR-D1: Prop. Watershed Runoff Area=214,605 sf 84.39% Impervious Runoff Depth=3.64"
Flow Length=1,308' Tc=7.1 min CN=89 Runoff=19.68 cfs 65,061.7 cf

Subcatchment PR-D2: Prop. Watershed Runoff Area=416,467 sf 80.91% Impervious Runoff Depth=3.44"
Flow Length=955' Tc=5.3 min CN=87 Runoff=38.82 cfs 119,235.3 cf

Subcatchment PR-D3: Prop. Watershed Runoff Area=108,531 sf 100.00% Impervious Runoff Depth=4.62"
Tc=5.0 min CN=98 Runoff=12.27 cfs 41,815.1 cf

Subcatchment PR-D4: Prop. Watershed D4 Runoff Area=37,021 sf 55.83% Impervious Runoff Depth=2.09"
Tc=5.0 min CN=72 Runoff=2.13 cfs 6,449.7 cf

Subcatchment PR-D5: Prop. Watershed D5 Runoff Area=50,834 sf 67.76% Impervious Runoff Depth=2.68"
Tc=5.0 min CN=79 Runoff=3.81 cfs 11,359.4 cf

Subcatchment PR-D6: Prop. Watershed D6 Runoff Area=40,781 sf 62.50% Impervious Runoff Depth=2.42"
Tc=5.0 min CN=76 Runoff=2.75 cfs 8,226.3 cf

Subcatchment PR-D7: Prop. Watershed Runoff Area=332,987 sf 32.32% Impervious Runoff Depth=1.09"
Flow Length=1,130' Tc=6.5 min CN=58 Runoff=8.18 cfs 30,319.2 cf

Pond RG1: Rain-Garden #1 Peak Elev=250.73' Storage=3,919.4 cf Inflow=3.81 cfs 11,359.4 cf
Discarded=0.21 cfs 8,686.9 cf Primary=1.42 cfs 2,672.5 cf Outflow=1.63 cfs 11,359.4 cf

Pond RG2: Rain-Garden #2 Peak Elev=250.64' Storage=3,131.7 cf Inflow=2.75 cfs 8,226.3 cf
Discarded=0.22 cfs 7,113.5 cf Primary=0.68 cfs 1,112.8 cf Outflow=0.90 cfs 8,226.3 cf

Pond SWM-1: Rtank-1 Peak Elev=248.25' Storage=14,646.4 cf Inflow=17.33 cfs 48,808.4 cf
Discarded=0.20 cfs 17,171.6 cf Primary=12.02 cfs 31,636.8 cf Outflow=12.23 cfs 48,808.4 cf

Pond SWM-2: Rtank-2 Peak Elev=251.40' Storage=8,302.5 cf Inflow=38.82 cfs 119,235.3 cf
Discarded=0.42 cfs 26,931.8 cf Primary=36.20 cfs 92,303.6 cf Outflow=36.62 cfs 119,235.3 cf

Pond SWM-3: Rtank-3 Peak Elev=248.45' Storage=29,613.2 cf Inflow=36.20 cfs 92,303.6 cf
Discarded=0.44 cfs 35,974.8 cf Primary=25.99 cfs 56,328.7 cf Outflow=26.44 cfs 92,303.6 cf

Pond SWM-4: Rtank-4 Peak Elev=247.27' Storage=40,611.4 cf Inflow=38.82 cfs 97,087.7 cf
Discarded=0.62 cfs 46,907.4 cf Primary=17.01 cfs 50,180.3 cf Outflow=17.63 cfs 97,087.7 cf

Pond SWM-5: Rtank-5 Peak Elev=246.78' Storage=11,064.1 cf Inflow=17.49 cfs 51,293.1 cf
Discarded=0.43 cfs 14,877.4 cf Primary=13.42 cfs 36,415.8 cf Outflow=13.85 cfs 51,293.1 cf

Pond SWM-6: Rtank-6 Peak Elev=260.87' Storage=4,936.9 cf Inflow=12.27 cfs 41,815.1 cf
Discarded=0.10 cfs 10,166.5 cf Primary=11.76 cfs 31,648.6 cf Outflow=11.86 cfs 41,815.1 cf

Pond SWM-7: Rtank-7 Peak Elev=248.42' Storage=10,996.2 cf Inflow=19.68 cfs 65,061.7 cf
Discarded=0.15 cfs 16,253.3 cf Primary=17.33 cfs 48,808.4 cf Outflow=17.48 cfs 65,061.7 cf

Link POA A: POND- WEST Inflow=7.71 cfs 24,937.6 cf
Primary=7.71 cfs 24,937.6 cf

Link POA C: WETLAND-WEST Inflow=1.90 cfs 6,928.3 cf
Primary=1.90 cfs 6,928.3 cf

Link POA D: FIRE POND Inflow=19.84 cfs 98,383.6 cf
Primary=19.84 cfs 98,383.6 cf

Total Runoff Area = 1,418,222 sf Runoff Volume = 314,332.6 cf Average Runoff Depth = 2.66"
35.02% Pervious = 496,621 sf 64.98% Impervious = 921,601 sf

Summary for Subcatchment PR-A: Prop. Watershed A

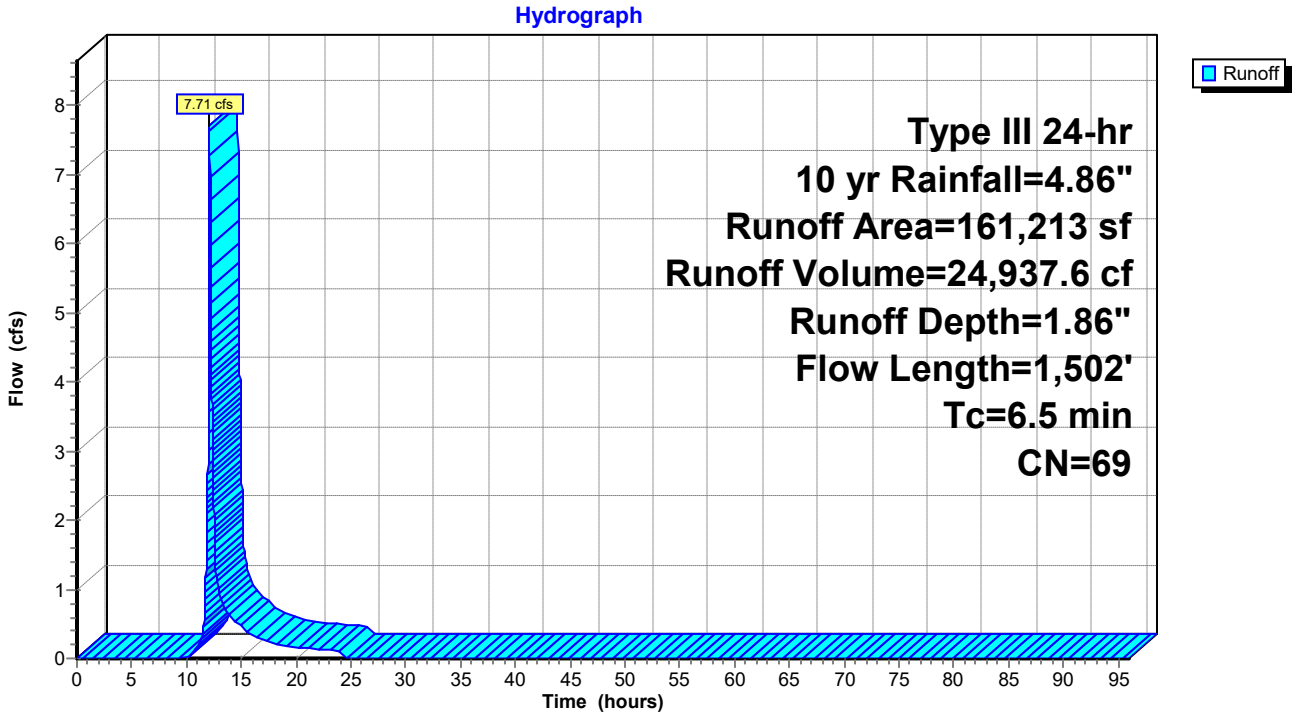
Runoff = 7.71 cfs @ 12.10 hrs, Volume= 24,937.6 cf, Depth= 1.86"
Routed to Link POA A : POND- WEST

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 yr Rainfall=4.86"

	Area (sf)	CN	Description
*	82,820	98	Unconnected pavement, HSG A
	78,393	39	>75% Grass cover, Good, HSG A
	161,213	69	Weighted Average
	78,393		48.63% Pervious Area
	82,820		51.37% Impervious Area
	82,820		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	50	0.0080	0.83		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
2.5	327	0.0120	2.22		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.3	10	0.0001	0.59	0.46	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
0.2	85	0.0110	7.18	8.81	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010 PVC, smooth interior
0.1	69	0.0180	9.18	11.27	**Pipe Channel, E-F** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010
0.6	284	0.0080	8.37	26.30	**Pipe Channel, F-G** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
0.0	31	0.0145	11.27	35.41	**Pipe Channel, G-H** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
0.2	58	0.0020	4.86	23.85	**Pipe Channel, H-I** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010
0.1	47	0.0025	5.43	26.66	**Pipe Channel, I-J** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010
0.6	140	0.0012	3.76	18.47	**Pipe Channel, J-K** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010
0.9	401	0.0040	7.76	54.84	**Pipe Channel, h-I** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.010
6.5	1,502	Total			

Subcatchment PR-A: Prop. Watershed A



Hydrograph for Subcatchment PR-A: Prop. Watershed A

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.86	1.86	0.00
1.00	0.05	0.00	0.00	53.00	4.86	1.86	0.00
2.00	0.10	0.00	0.00	54.00	4.86	1.86	0.00
3.00	0.15	0.00	0.00	55.00	4.86	1.86	0.00
4.00	0.21	0.00	0.00	56.00	4.86	1.86	0.00
5.00	0.28	0.00	0.00	57.00	4.86	1.86	0.00
6.00	0.35	0.00	0.00	58.00	4.86	1.86	0.00
7.00	0.44	0.00	0.00	59.00	4.86	1.86	0.00
8.00	0.55	0.00	0.00	60.00	4.86	1.86	0.00
9.00	0.71	0.00	0.00	61.00	4.86	1.86	0.00
10.00	0.92	0.00	0.00	62.00	4.86	1.86	0.00
11.00	1.22	0.02	0.15	63.00	4.86	1.86	0.00
12.00	2.43	0.39	**3.94**	64.00	4.86	1.86	0.00
13.00	3.64	1.04	**0.91**	65.00	4.86	1.86	0.00
14.00	3.94	1.23	0.60	66.00	4.86	1.86	0.00
15.00	4.15	1.37	0.46	67.00	4.86	1.86	0.00
16.00	4.31	1.47	0.33	68.00	4.86	1.86	0.00
17.00	4.42	1.55	0.27	69.00	4.86	1.86	0.00
18.00	4.51	1.61	0.21	70.00	4.86	1.86	0.00
19.00	4.58	1.66	0.19	71.00	4.86	1.86	0.00
20.00	4.65	1.71	0.17	72.00	4.86	1.86	0.00
21.00	4.71	1.75	0.15	73.00	4.86	1.86	0.00
22.00	4.77	1.79	0.14	74.00	4.86	1.86	0.00
23.00	4.82	1.82	0.13	75.00	4.86	1.86	0.00
24.00	**4.86**	**1.86**	0.11	76.00	4.86	1.86	0.00
25.00	4.86	1.86	0.00	77.00	4.86	1.86	0.00
26.00	4.86	1.86	0.00	78.00	4.86	1.86	0.00
27.00	4.86	1.86	0.00	79.00	4.86	1.86	0.00
28.00	4.86	1.86	0.00	80.00	4.86	1.86	0.00
29.00	4.86	1.86	0.00	81.00	4.86	1.86	0.00
30.00	4.86	1.86	0.00	82.00	4.86	1.86	0.00
31.00	4.86	1.86	0.00	83.00	4.86	1.86	0.00
32.00	4.86	1.86	0.00	84.00	4.86	1.86	0.00
33.00	4.86	1.86	0.00	85.00	4.86	1.86	0.00
34.00	4.86	1.86	0.00	86.00	4.86	1.86	0.00
35.00	4.86	1.86	0.00	87.00	4.86	1.86	0.00
36.00	4.86	1.86	0.00	88.00	4.86	1.86	0.00
37.00	4.86	1.86	0.00	89.00	4.86	1.86	0.00
38.00	4.86	1.86	0.00	90.00	4.86	1.86	0.00
39.00	4.86	1.86	0.00	91.00	4.86	1.86	0.00
40.00	4.86	1.86	0.00	92.00	4.86	1.86	0.00
41.00	4.86	1.86	0.00	93.00	4.86	1.86	0.00
42.00	4.86	1.86	0.00	94.00	4.86	1.86	0.00
43.00	4.86	1.86	0.00	95.00	4.86	1.86	0.00
44.00	4.86	1.86	0.00	96.00	4.86	1.86	0.00
45.00	4.86	1.86	0.00				
46.00	4.86	1.86	0.00				
47.00	4.86	1.86	0.00				
48.00	4.86	1.86	0.00				
49.00	4.86	1.86	0.00				
50.00	4.86	1.86	0.00				
51.00	4.86	1.86	0.00				

Summary for Subcatchment PR-C: Prop. Watershed C

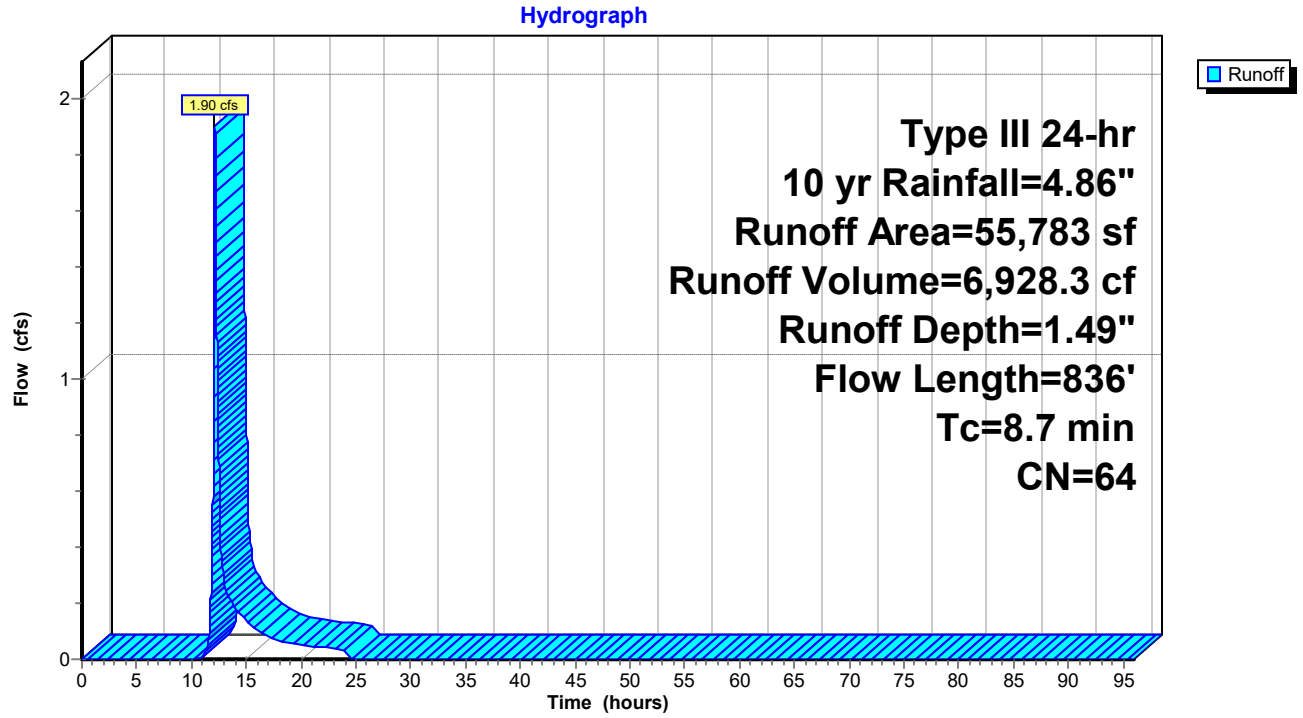
Runoff = 1.90 cfs @ 12.13 hrs, Volume= 6,928.3 cf, Depth= 1.49"
Routed to Link POA C : WETLAND-WEST

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 yr Rainfall=4.86"

	Area (sf)	CN	Description
*	23,937	98	Unconnected pavement, HSG A
	31,846	39	>75% Grass cover, Good, HSG A
	55,783	64	Weighted Average
	31,846		57.09% Pervious Area
	23,937		42.91% Impervious Area
	23,937		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	50	0.0020	0.48		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
6.2	686	0.0083	1.85		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.8	100	0.0017	2.21	1.74	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
8.7	836	Total			

Subcatchment PR-C: Prop. Watershed C



Hydrograph for Subcatchment PR-C: Prop. Watershed C

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.86	1.49	0.00
1.00	0.05	0.00	0.00	53.00	4.86	1.49	0.00
2.00	0.10	0.00	0.00	54.00	4.86	1.49	0.00
3.00	0.15	0.00	0.00	55.00	4.86	1.49	0.00
4.00	0.21	0.00	0.00	56.00	4.86	1.49	0.00
5.00	0.28	0.00	0.00	57.00	4.86	1.49	0.00
6.00	0.35	0.00	0.00	58.00	4.86	1.49	0.00
7.00	0.44	0.00	0.00	59.00	4.86	1.49	0.00
8.00	0.55	0.00	0.00	60.00	4.86	1.49	0.00
9.00	0.71	0.00	0.00	61.00	4.86	1.49	0.00
10.00	0.92	0.00	0.00	62.00	4.86	1.49	0.00
11.00	1.22	0.00	0.01	63.00	4.86	1.49	0.00
12.00	2.43	0.25	**0.78**	64.00	4.86	1.49	0.00
13.00	3.64	0.78	**0.28**	65.00	4.86	1.49	0.00
14.00	3.94	0.94	0.18	66.00	4.86	1.49	0.00
15.00	4.15	1.06	0.14	67.00	4.86	1.49	0.00
16.00	4.31	1.15	0.10	68.00	4.86	1.49	0.00
17.00	4.42	1.22	0.08	69.00	4.86	1.49	0.00
18.00	4.51	1.27	0.06	70.00	4.86	1.49	0.00
19.00	4.58	1.32	0.06	71.00	4.86	1.49	0.00
20.00	4.65	1.36	0.05	72.00	4.86	1.49	0.00
21.00	4.71	1.40	0.05	73.00	4.86	1.49	0.00
22.00	4.77	1.43	0.04	74.00	4.86	1.49	0.00
23.00	4.82	1.46	0.04	75.00	4.86	1.49	0.00
24.00	**4.86**	**1.49**	0.03	76.00	4.86	1.49	0.00
25.00	4.86	1.49	0.00	77.00	4.86	1.49	0.00
26.00	4.86	1.49	0.00	78.00	4.86	1.49	0.00
27.00	4.86	1.49	0.00	79.00	4.86	1.49	0.00
28.00	4.86	1.49	0.00	80.00	4.86	1.49	0.00
29.00	4.86	1.49	0.00	81.00	4.86	1.49	0.00
30.00	4.86	1.49	0.00	82.00	4.86	1.49	0.00
31.00	4.86	1.49	0.00	83.00	4.86	1.49	0.00
32.00	4.86	1.49	0.00	84.00	4.86	1.49	0.00
33.00	4.86	1.49	0.00	85.00	4.86	1.49	0.00
34.00	4.86	1.49	0.00	86.00	4.86	1.49	0.00
35.00	4.86	1.49	0.00	87.00	4.86	1.49	0.00
36.00	4.86	1.49	0.00	88.00	4.86	1.49	0.00
37.00	4.86	1.49	0.00	89.00	4.86	1.49	0.00
38.00	4.86	1.49	0.00	90.00	4.86	1.49	0.00
39.00	4.86	1.49	0.00	91.00	4.86	1.49	0.00
40.00	4.86	1.49	0.00	92.00	4.86	1.49	0.00
41.00	4.86	1.49	0.00	93.00	4.86	1.49	0.00
42.00	4.86	1.49	0.00	94.00	4.86	1.49	0.00
43.00	4.86	1.49	0.00	95.00	4.86	1.49	0.00
44.00	4.86	1.49	0.00	96.00	4.86	1.49	0.00
45.00	4.86	1.49	0.00				
46.00	4.86	1.49	0.00				
47.00	4.86	1.49	0.00				
48.00	4.86	1.49	0.00				
49.00	4.86	1.49	0.00				
50.00	4.86	1.49	0.00				
51.00	4.86	1.49	0.00				

Summary for Subcatchment PR-D1: Prop. Watershed D1

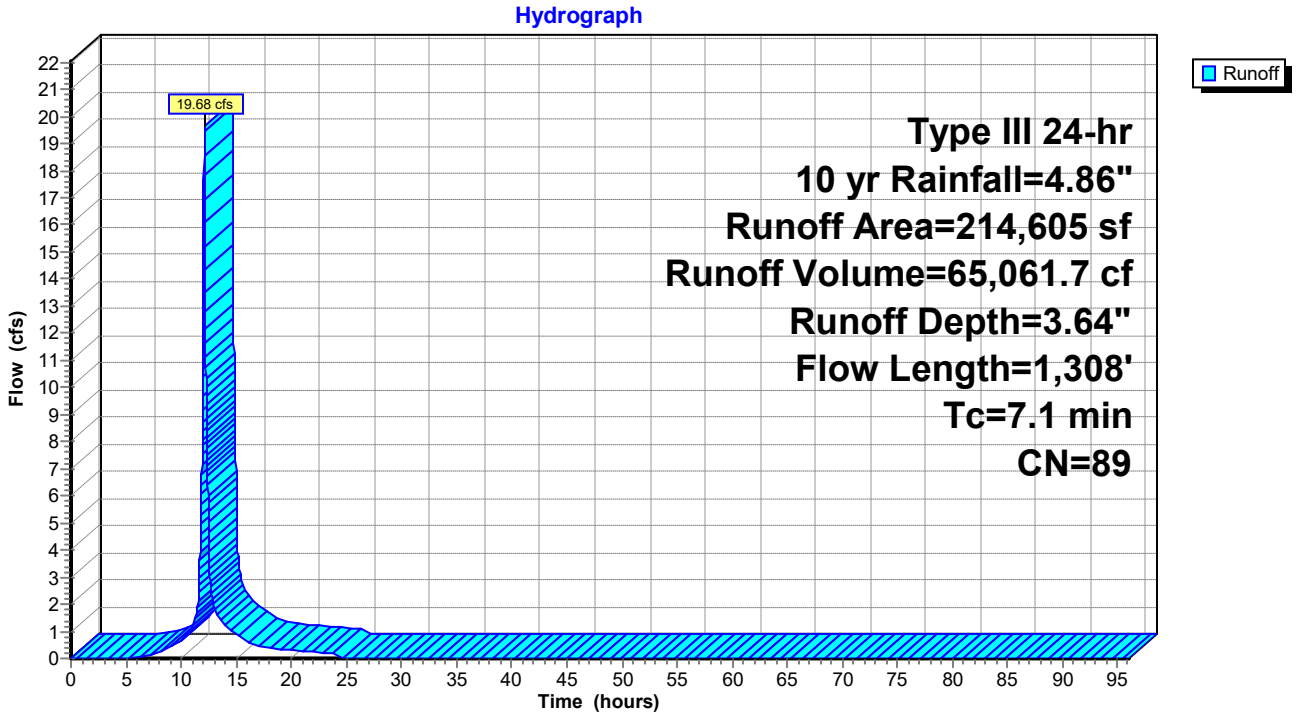
Runoff = 19.68 cfs @ 12.10 hrs, Volume= 65,061.7 cf, Depth= 3.64"
Routed to Pond SWM-7 : Rtank-7

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 yr Rainfall=4.86"

	Area (sf)	CN	Description
*	28,837	98	Building 2 - South
*	28,095	98	Building 3 - West
*	28,101	98	Building 3 - East
	96,079	98	Unconnected pavement, HSG A
	33,493	39	>75% Grass cover, Good, HSG A
	214,605	89	Weighted Average
	33,493		15.61% Pervious Area
	181,112		84.39% Impervious Area
	96,079		53.05% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	50	0.1600	0.34		**Sheet Flow, a-b** Grass: Short n= 0.150 P2= 3.22"
0.0	12	0.1250	5.69		**Shallow Concentrated Flow, b-c** Unpaved Kv= 16.1 fps
1.3	296	0.0350	3.80		**Shallow Concentrated Flow, c-d** Paved Kv= 20.3 fps
0.2	64	0.0100	4.54	3.56	**Pipe Channel, d-e** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
0.0	13	0.0160	5.74	4.51	**Pipe Channel, e-f** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
0.8	196	0.0046	4.03	7.12	**Pipe Channel, f-g** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
0.9	213	0.0047	4.08	7.20	**Pipe Channel, g-h** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
0.2	56	0.0054	5.29	16.62	**Pipe Channel, h-i** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
0.9	282	0.0050	5.09	16.00	**Pipe Channel, i-j** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
0.4	126	0.0048	4.99	15.67	**Pipe Channel, j-k** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
7.1	1,308	Total			

Subcatchment PR-D1: Prop. Watershed D1



Hydrograph for Subcatchment PR-D1: Prop. Watershed D1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.86	3.64	0.00
1.00	0.05	0.00	0.00	53.00	4.86	3.64	0.00
2.00	0.10	0.00	0.00	54.00	4.86	3.64	0.00
3.00	0.15	0.00	0.00	55.00	4.86	3.64	0.00
4.00	0.21	0.00	0.00	56.00	4.86	3.64	0.00
5.00	0.28	0.00	0.01	57.00	4.86	3.64	0.00
6.00	0.35	0.01	0.05	58.00	4.86	3.64	0.00
7.00	0.44	0.03	0.12	59.00	4.86	3.64	0.00
8.00	0.55	0.06	0.21	60.00	4.86	3.64	0.00
9.00	0.71	0.13	0.40	61.00	4.86	3.64	0.00
10.00	0.92	0.24	0.66	62.00	4.86	3.64	0.00
11.00	1.22	0.43	1.15	63.00	4.86	3.64	0.00
12.00	2.43	1.39	**11.22**	64.00	4.86	3.64	0.00
13.00	3.64	2.49	**1.86**	65.00	4.86	3.64	0.00
14.00	3.94	2.77	1.17	66.00	4.86	3.64	0.00
15.00	4.15	2.97	0.88	67.00	4.86	3.64	0.00
16.00	4.31	3.11	0.62	68.00	4.86	3.64	0.00
17.00	4.42	3.22	0.49	69.00	4.86	3.64	0.00
18.00	4.51	3.30	0.38	70.00	4.86	3.64	0.00
19.00	4.58	3.38	0.34	71.00	4.86	3.64	0.00
20.00	4.65	3.44	0.30	72.00	4.86	3.64	0.00
21.00	4.71	3.50	0.28	73.00	4.86	3.64	0.00
22.00	4.77	3.55	0.25	74.00	4.86	3.64	0.00
23.00	4.82	3.60	0.22	75.00	4.86	3.64	0.00
24.00	**4.86**	**3.64**	0.20	76.00	4.86	3.64	0.00
25.00	4.86	3.64	0.00	77.00	4.86	3.64	0.00
26.00	4.86	3.64	0.00	78.00	4.86	3.64	0.00
27.00	4.86	3.64	0.00	79.00	4.86	3.64	0.00
28.00	4.86	3.64	0.00	80.00	4.86	3.64	0.00
29.00	4.86	3.64	0.00	81.00	4.86	3.64	0.00
30.00	4.86	3.64	0.00	82.00	4.86	3.64	0.00
31.00	4.86	3.64	0.00	83.00	4.86	3.64	0.00
32.00	4.86	3.64	0.00	84.00	4.86	3.64	0.00
33.00	4.86	3.64	0.00	85.00	4.86	3.64	0.00
34.00	4.86	3.64	0.00	86.00	4.86	3.64	0.00
35.00	4.86	3.64	0.00	87.00	4.86	3.64	0.00
36.00	4.86	3.64	0.00	88.00	4.86	3.64	0.00
37.00	4.86	3.64	0.00	89.00	4.86	3.64	0.00
38.00	4.86	3.64	0.00	90.00	4.86	3.64	0.00
39.00	4.86	3.64	0.00	91.00	4.86	3.64	0.00
40.00	4.86	3.64	0.00	92.00	4.86	3.64	0.00
41.00	4.86	3.64	0.00	93.00	4.86	3.64	0.00
42.00	4.86	3.64	0.00	94.00	4.86	3.64	0.00
43.00	4.86	3.64	0.00	95.00	4.86	3.64	0.00
44.00	4.86	3.64	0.00	96.00	4.86	3.64	0.00
45.00	4.86	3.64	0.00				
46.00	4.86	3.64	0.00				
47.00	4.86	3.64	0.00				
48.00	4.86	3.64	0.00				
49.00	4.86	3.64	0.00				
50.00	4.86	3.64	0.00				
51.00	4.86	3.64	0.00				

Summary for Subcatchment PR-D2: Prop. Watershed D2

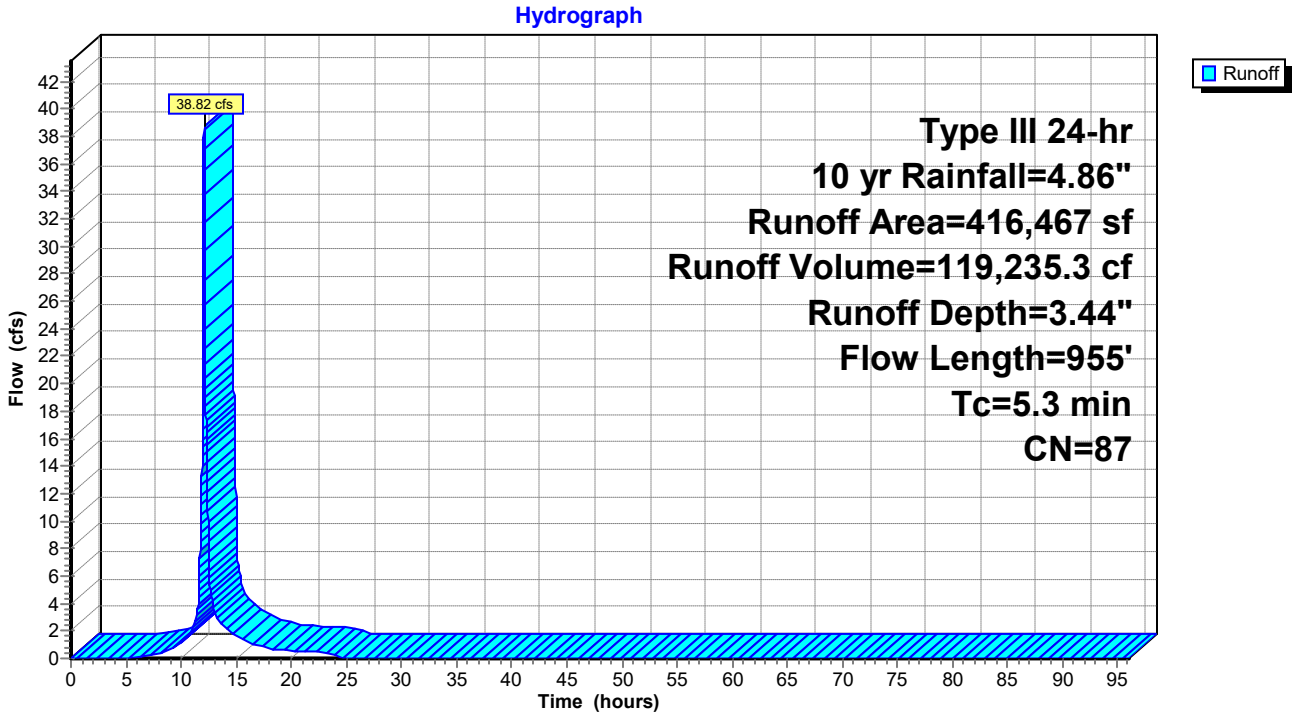
Runoff = 38.82 cfs @ 12.08 hrs, Volume= 119,235.3 cf, Depth= 3.44"
Routed to Pond SWM-2 : Rtank-2

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 yr Rainfall=4.86"

	Area (sf)	CN	Description
*	107,416	98	Building 1 - South
*	34,452	98	Building 2 - North
*	191,226	98	Pavement
*	3,868	98	Conc walk
*	4,480	90	Perv Pavers
	75,025	39	>75% Grass cover, Good, HSG A
	416,467	87	Weighted Average
	79,505		19.09% Pervious Area
	336,962		80.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	50	0.0020	0.48		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
1.0	124	0.0100	2.03		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.4	84	0.0071	3.82	3.00	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.4	99	0.0071	3.82	3.00	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.3	71	0.0070	3.80	2.98	**Pipe Channel, E-F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
1.4	396	0.0061	4.64	8.20	**Pipe Channel, F-G** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
0.1	131	0.0047	15.30	1,432.46	**Pipe Channel, G-H** 131.0" Round Area= 93.6 sf Perim= 34.3' r= 2.73' n= 0.013
5.3	955	Total			

Subcatchment PR-D2: Prop. Watershed D2



Hydrograph for Subcatchment PR-D2: Prop. Watershed D2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.15	0.00	0.00
4.00	0.21	0.00	0.00
5.00	0.28	0.00	0.00
6.00	0.35	0.00	0.04
7.00	0.44	0.01	0.15
8.00	0.55	0.04	0.31
9.00	0.71	0.09	0.64
10.00	0.92	0.18	1.11
11.00	1.22	0.35	2.02
12.00	2.43	1.25	**24.69**
13.00	3.64	2.31	**3.41**
14.00	3.94	2.58	2.18
15.00	4.15	2.78	1.66
16.00	4.31	2.92	1.17
17.00	4.42	3.02	0.93
18.00	4.51	3.11	0.72
19.00	4.58	3.18	0.64
20.00	4.65	3.24	0.57
21.00	4.71	3.30	0.52
22.00	4.77	3.35	0.48
23.00	4.82	3.39	0.43
24.00	**4.86**	**3.44**	0.38
25.00	4.86	3.44	0.00
26.00	4.86	3.44	0.00
27.00	4.86	3.44	0.00
28.00	4.86	3.44	0.00
29.00	4.86	3.44	0.00
30.00	4.86	3.44	0.00
31.00	4.86	3.44	0.00
32.00	4.86	3.44	0.00
33.00	4.86	3.44	0.00
34.00	4.86	3.44	0.00
35.00	4.86	3.44	0.00
36.00	4.86	3.44	0.00
37.00	4.86	3.44	0.00
38.00	4.86	3.44	0.00
39.00	4.86	3.44	0.00
40.00	4.86	3.44	0.00
41.00	4.86	3.44	0.00
42.00	4.86	3.44	0.00
43.00	4.86	3.44	0.00
44.00	4.86	3.44	0.00
45.00	4.86	3.44	0.00
46.00	4.86	3.44	0.00
47.00	4.86	3.44	0.00
48.00	4.86	3.44	0.00
49.00	4.86	3.44	0.00
50.00	4.86	3.44	0.00
51.00	4.86	3.44	0.00
52.00	4.86	3.44	0.00
53.00	4.86	3.44	0.00
54.00	4.86	3.44	0.00
55.00	4.86	3.44	0.00
56.00	4.86	3.44	0.00
57.00	4.86	3.44	0.00
58.00	4.86	3.44	0.00
59.00	4.86	3.44	0.00
60.00	4.86	3.44	0.00
61.00	4.86	3.44	0.00
62.00	4.86	3.44	0.00
63.00	4.86	3.44	0.00
64.00	4.86	3.44	0.00
65.00	4.86	3.44	0.00
66.00	4.86	3.44	0.00
67.00	4.86	3.44	0.00
68.00	4.86	3.44	0.00
69.00	4.86	3.44	0.00
70.00	4.86	3.44	0.00
71.00	4.86	3.44	0.00
72.00	4.86	3.44	0.00
73.00	4.86	3.44	0.00
74.00	4.86	3.44	0.00
75.00	4.86	3.44	0.00
76.00	4.86	3.44	0.00
77.00	4.86	3.44	0.00
78.00	4.86	3.44	0.00
79.00	4.86	3.44	0.00
80.00	4.86	3.44	0.00
81.00	4.86	3.44	0.00
82.00	4.86	3.44	0.00
83.00	4.86	3.44	0.00
84.00	4.86	3.44	0.00
85.00	4.86	3.44	0.00
86.00	4.86	3.44	0.00
87.00	4.86	3.44	0.00
88.00	4.86	3.44	0.00
89.00	4.86	3.44	0.00
90.00	4.86	3.44	0.00
91.00	4.86	3.44	0.00
92.00	4.86	3.44	0.00
93.00	4.86	3.44	0.00
94.00	4.86	3.44	0.00
95.00	4.86	3.44	0.00
96.00	4.86	3.44	0.00

Summary for Subcatchment PR-D3: Prop. Watershed D3

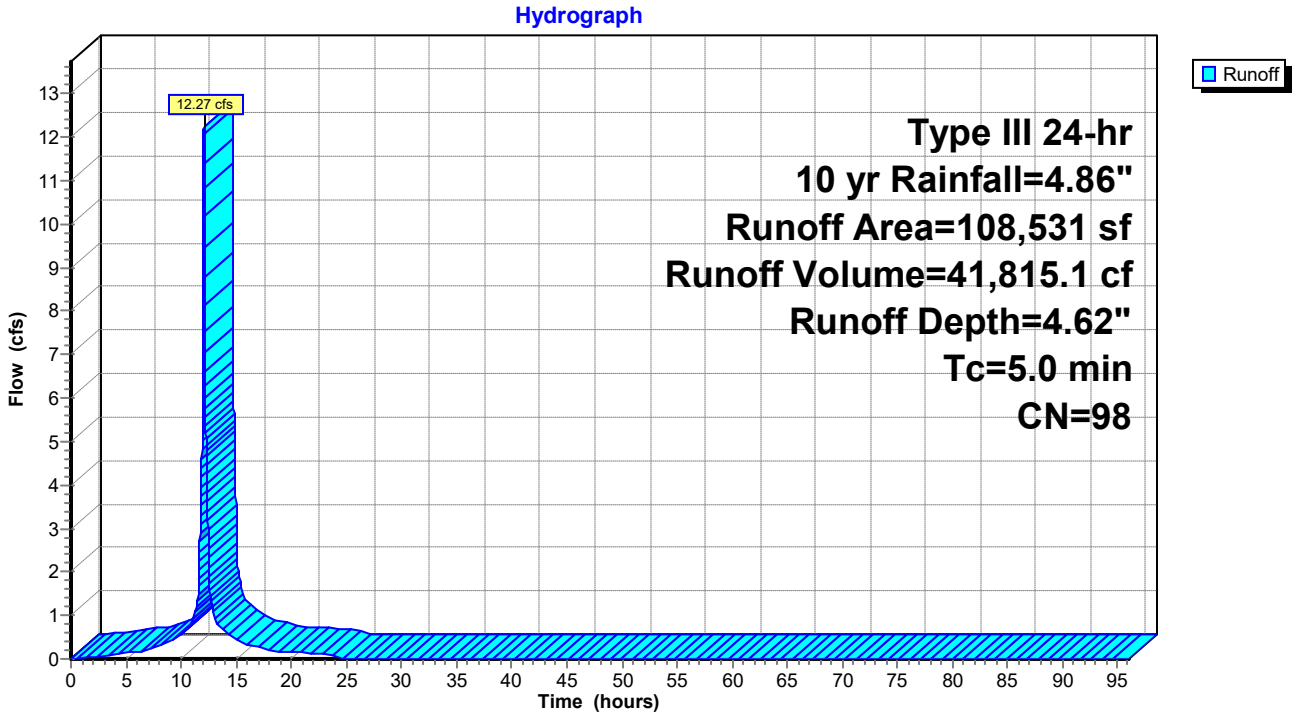
Runoff = 12.27 cfs @ 12.07 hrs, Volume= 41,815.1 cf, Depth= 4.62"
Routed to Pond SWM-6 : Rtank-6

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 yr Rainfall=4.86"

	Area (sf)	CN	Description
*	108,531	98	Building 1 - North
	108,531		100.00% Impervious Area

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

Subcatchment PR-D3: Prop. Watershed D3



Hydrograph for Subcatchment PR-D3: Prop. Watershed D3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.01	0.04
3.00	0.15	0.04	0.08
4.00	0.21	0.08	0.11
5.00	0.28	0.13	0.14
6.00	0.35	0.19	0.16
7.00	0.44	0.26	0.22
8.00	0.55	0.37	0.29
9.00	0.71	0.51	0.42
10.00	0.92	0.71	0.57
11.00	1.22	1.00	0.85
12.00	2.43	2.20	**8.29**
13.00	3.64	3.41	**0.98**
14.00	3.94	3.71	0.62
15.00	4.15	3.92	0.47
16.00	4.31	4.07	0.33
17.00	4.42	4.18	0.26
18.00	4.51	4.27	0.20
19.00	4.58	4.35	0.18
20.00	4.65	4.41	0.16
21.00	4.71	4.48	0.15
22.00	4.77	4.53	0.13
23.00	4.82	4.58	0.12
24.00	**4.86**	**4.62**	0.10
25.00	4.86	4.62	0.00
26.00	4.86	4.62	0.00
27.00	4.86	4.62	0.00
28.00	4.86	4.62	0.00
29.00	4.86	4.62	0.00
30.00	4.86	4.62	0.00
31.00	4.86	4.62	0.00
32.00	4.86	4.62	0.00
33.00	4.86	4.62	0.00
34.00	4.86	4.62	0.00
35.00	4.86	4.62	0.00
36.00	4.86	4.62	0.00
37.00	4.86	4.62	0.00
38.00	4.86	4.62	0.00
39.00	4.86	4.62	0.00
40.00	4.86	4.62	0.00
41.00	4.86	4.62	0.00
42.00	4.86	4.62	0.00
43.00	4.86	4.62	0.00
44.00	4.86	4.62	0.00
45.00	4.86	4.62	0.00
46.00	4.86	4.62	0.00
47.00	4.86	4.62	0.00
48.00	4.86	4.62	0.00
49.00	4.86	4.62	0.00
50.00	4.86	4.62	0.00
51.00	4.86	4.62	0.00
52.00	4.86	4.62	0.00
53.00	4.86	4.62	0.00
54.00	4.86	4.62	0.00
55.00	4.86	4.62	0.00
56.00	4.86	4.62	0.00
57.00	4.86	4.62	0.00
58.00	4.86	4.62	0.00
59.00	4.86	4.62	0.00
60.00	4.86	4.62	0.00
61.00	4.86	4.62	0.00
62.00	4.86	4.62	0.00
63.00	4.86	4.62	0.00
64.00	4.86	4.62	0.00
65.00	4.86	4.62	0.00
66.00	4.86	4.62	0.00
67.00	4.86	4.62	0.00
68.00	4.86	4.62	0.00
69.00	4.86	4.62	0.00
70.00	4.86	4.62	0.00
71.00	4.86	4.62	0.00
72.00	4.86	4.62	0.00
73.00	4.86	4.62	0.00
74.00	4.86	4.62	0.00
75.00	4.86	4.62	0.00
76.00	4.86	4.62	0.00
77.00	4.86	4.62	0.00
78.00	4.86	4.62	0.00
79.00	4.86	4.62	0.00
80.00	4.86	4.62	0.00
81.00	4.86	4.62	0.00
82.00	4.86	4.62	0.00
83.00	4.86	4.62	0.00
84.00	4.86	4.62	0.00
85.00	4.86	4.62	0.00
86.00	4.86	4.62	0.00
87.00	4.86	4.62	0.00
88.00	4.86	4.62	0.00
89.00	4.86	4.62	0.00
90.00	4.86	4.62	0.00
91.00	4.86	4.62	0.00
92.00	4.86	4.62	0.00
93.00	4.86	4.62	0.00
94.00	4.86	4.62	0.00
95.00	4.86	4.62	0.00
96.00	4.86	4.62	0.00

Summary for Subcatchment PR-D4: Prop. Watershed D4

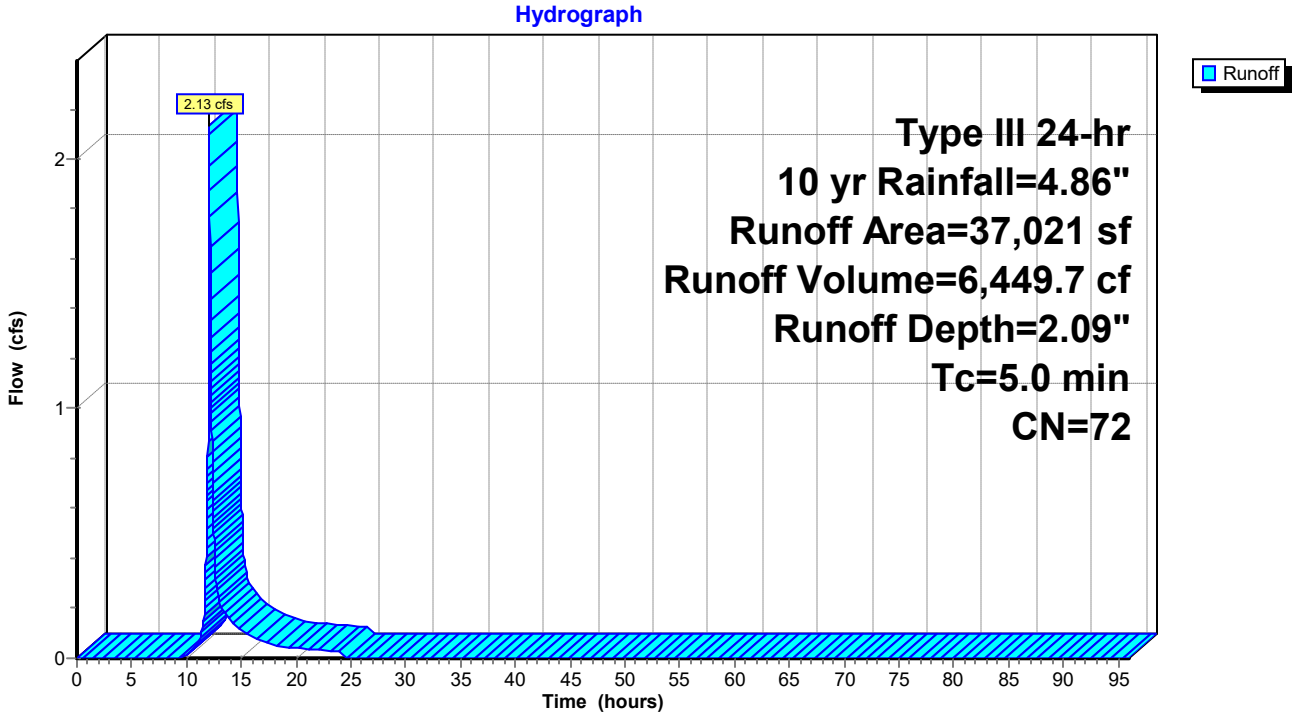
Runoff = 2.13 cfs @ 12.08 hrs, Volume= 6,449.7 cf, Depth= 2.09"
Routed to Pond SWM-4 : Rtank-4

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 yr Rainfall=4.86"

	Area (sf)	CN	Description
*	20,670	98	Pavement
	16,351	39	>75% Grass cover, Good, HSG A
	37,021	72	Weighted Average
	16,351		44.17% Pervious Area
	20,670		55.83% Impervious Area

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

Subcatchment PR-D4: Prop. Watershed D4



Hydrograph for Subcatchment PR-D4: Prop. Watershed D4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.15	0.00	0.00
4.00	0.21	0.00	0.00
5.00	0.28	0.00	0.00
6.00	0.35	0.00	0.00
7.00	0.44	0.00	0.00
8.00	0.55	0.00	0.00
9.00	0.71	0.00	0.00
10.00	0.92	0.00	0.01
11.00	1.22	0.04	0.05
12.00	2.43	0.49	**1.28**
13.00	3.64	1.22	**0.22**
14.00	3.94	1.42	0.15
15.00	4.15	1.57	0.11
16.00	4.31	1.68	0.08
17.00	4.42	1.76	0.07
18.00	4.51	1.83	0.05
19.00	4.58	1.88	0.05
20.00	4.65	1.93	0.04
21.00	4.71	1.98	0.04
22.00	4.77	2.02	0.03
23.00	4.82	2.06	0.03
24.00	**4.86**	**2.09**	0.03
25.00	4.86	2.09	0.00
26.00	4.86	2.09	0.00
27.00	4.86	2.09	0.00
28.00	4.86	2.09	0.00
29.00	4.86	2.09	0.00
30.00	4.86	2.09	0.00
31.00	4.86	2.09	0.00
32.00	4.86	2.09	0.00
33.00	4.86	2.09	0.00
34.00	4.86	2.09	0.00
35.00	4.86	2.09	0.00
36.00	4.86	2.09	0.00
37.00	4.86	2.09	0.00
38.00	4.86	2.09	0.00
39.00	4.86	2.09	0.00
40.00	4.86	2.09	0.00
41.00	4.86	2.09	0.00
42.00	4.86	2.09	0.00
43.00	4.86	2.09	0.00
44.00	4.86	2.09	0.00
45.00	4.86	2.09	0.00
46.00	4.86	2.09	0.00
47.00	4.86	2.09	0.00
48.00	4.86	2.09	0.00
49.00	4.86	2.09	0.00
50.00	4.86	2.09	0.00
51.00	4.86	2.09	0.00
52.00	4.86	2.09	0.00
53.00	4.86	2.09	0.00
54.00	4.86	2.09	0.00
55.00	4.86	2.09	0.00
56.00	4.86	2.09	0.00
57.00	4.86	2.09	0.00
58.00	4.86	2.09	0.00
59.00	4.86	2.09	0.00
60.00	4.86	2.09	0.00
61.00	4.86	2.09	0.00
62.00	4.86	2.09	0.00
63.00	4.86	2.09	0.00
64.00	4.86	2.09	0.00
65.00	4.86	2.09	0.00
66.00	4.86	2.09	0.00
67.00	4.86	2.09	0.00
68.00	4.86	2.09	0.00
69.00	4.86	2.09	0.00
70.00	4.86	2.09	0.00
71.00	4.86	2.09	0.00
72.00	4.86	2.09	0.00
73.00	4.86	2.09	0.00
74.00	4.86	2.09	0.00
75.00	4.86	2.09	0.00
76.00	4.86	2.09	0.00
77.00	4.86	2.09	0.00
78.00	4.86	2.09	0.00
79.00	4.86	2.09	0.00
80.00	4.86	2.09	0.00
81.00	4.86	2.09	0.00
82.00	4.86	2.09	0.00
83.00	4.86	2.09	0.00
84.00	4.86	2.09	0.00
85.00	4.86	2.09	0.00
86.00	4.86	2.09	0.00
87.00	4.86	2.09	0.00
88.00	4.86	2.09	0.00
89.00	4.86	2.09	0.00
90.00	4.86	2.09	0.00
91.00	4.86	2.09	0.00
92.00	4.86	2.09	0.00
93.00	4.86	2.09	0.00
94.00	4.86	2.09	0.00
95.00	4.86	2.09	0.00
96.00	4.86	2.09	0.00

Summary for Subcatchment PR-D5: Prop. Watershed D5

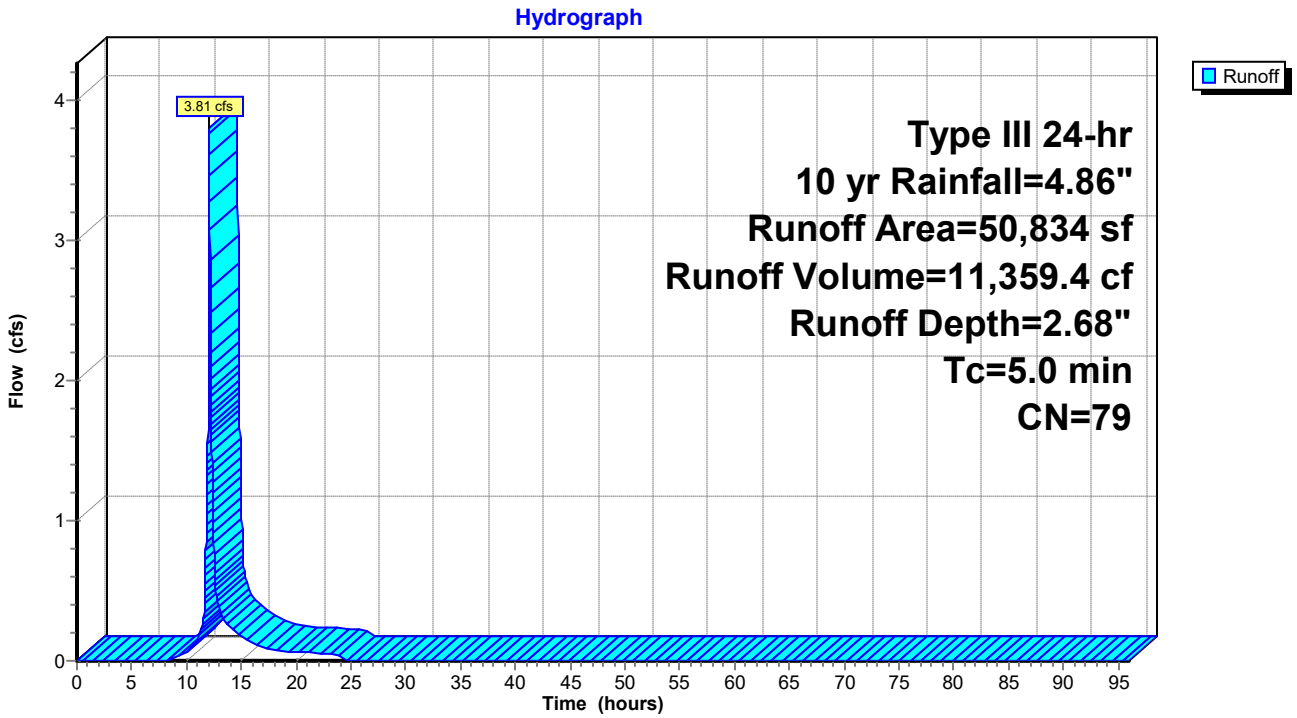
Runoff = 3.81 cfs @ 12.07 hrs, Volume= 11,359.4 cf, Depth= 2.68"
Routed to Pond RG1 : Rain-Garden #1

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 yr Rainfall=4.86"

Area (sf)	CN	Description
34,446	98	Unconnected pavement, HSG A
16,388	39	>75% Grass cover, Good, HSG A
50,834	79	Weighted Average
16,388		32.24% Pervious Area
34,446		67.76% Impervious Area
34,446		100.00% Unconnected

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

Subcatchment PR-D5: Prop. Watershed D5



Hydrograph for Subcatchment PR-D5: Prop. Watershed D5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.86	2.68	0.00
1.00	0.05	0.00	0.00	53.00	4.86	2.68	0.00
2.00	0.10	0.00	0.00	54.00	4.86	2.68	0.00
3.00	0.15	0.00	0.00	55.00	4.86	2.68	0.00
4.00	0.21	0.00	0.00	56.00	4.86	2.68	0.00
5.00	0.28	0.00	0.00	57.00	4.86	2.68	0.00
6.00	0.35	0.00	0.00	58.00	4.86	2.68	0.00
7.00	0.44	0.00	0.00	59.00	4.86	2.68	0.00
8.00	0.55	0.00	0.00	60.00	4.86	2.68	0.00
9.00	0.71	0.01	0.02	61.00	4.86	2.68	0.00
10.00	0.92	0.05	0.06	62.00	4.86	2.68	0.00
11.00	1.22	0.14	0.15	63.00	4.86	2.68	0.00
12.00	2.43	0.79	**2.38**	64.00	4.86	2.68	0.00
13.00	3.64	1.68	**0.36**	65.00	4.86	2.68	0.00
14.00	3.94	1.92	0.23	66.00	4.86	2.68	0.00
15.00	4.15	2.09	0.18	67.00	4.86	2.68	0.00
16.00	4.31	2.21	0.13	68.00	4.86	2.68	0.00
17.00	4.42	2.31	0.10	69.00	4.86	2.68	0.00
18.00	4.51	2.38	0.08	70.00	4.86	2.68	0.00
19.00	4.58	2.45	0.07	71.00	4.86	2.68	0.00
20.00	4.65	2.50	0.06	72.00	4.86	2.68	0.00
21.00	4.71	2.55	0.06	73.00	4.86	2.68	0.00
22.00	4.77	2.60	0.05	74.00	4.86	2.68	0.00
23.00	4.82	2.64	0.05	75.00	4.86	2.68	0.00
24.00	**4.86**	**2.68**	0.04	76.00	4.86	2.68	0.00
25.00	4.86	2.68	0.00	77.00	4.86	2.68	0.00
26.00	4.86	2.68	0.00	78.00	4.86	2.68	0.00
27.00	4.86	2.68	0.00	79.00	4.86	2.68	0.00
28.00	4.86	2.68	0.00	80.00	4.86	2.68	0.00
29.00	4.86	2.68	0.00	81.00	4.86	2.68	0.00
30.00	4.86	2.68	0.00	82.00	4.86	2.68	0.00
31.00	4.86	2.68	0.00	83.00	4.86	2.68	0.00
32.00	4.86	2.68	0.00	84.00	4.86	2.68	0.00
33.00	4.86	2.68	0.00	85.00	4.86	2.68	0.00
34.00	4.86	2.68	0.00	86.00	4.86	2.68	0.00
35.00	4.86	2.68	0.00	87.00	4.86	2.68	0.00
36.00	4.86	2.68	0.00	88.00	4.86	2.68	0.00
37.00	4.86	2.68	0.00	89.00	4.86	2.68	0.00
38.00	4.86	2.68	0.00	90.00	4.86	2.68	0.00
39.00	4.86	2.68	0.00	91.00	4.86	2.68	0.00
40.00	4.86	2.68	0.00	92.00	4.86	2.68	0.00
41.00	4.86	2.68	0.00	93.00	4.86	2.68	0.00
42.00	4.86	2.68	0.00	94.00	4.86	2.68	0.00
43.00	4.86	2.68	0.00	95.00	4.86	2.68	0.00
44.00	4.86	2.68	0.00	96.00	4.86	2.68	0.00
45.00	4.86	2.68	0.00				
46.00	4.86	2.68	0.00				
47.00	4.86	2.68	0.00				
48.00	4.86	2.68	0.00				
49.00	4.86	2.68	0.00				
50.00	4.86	2.68	0.00				
51.00	4.86	2.68	0.00				

Summary for Subcatchment PR-D6: Prop. Watershed D6

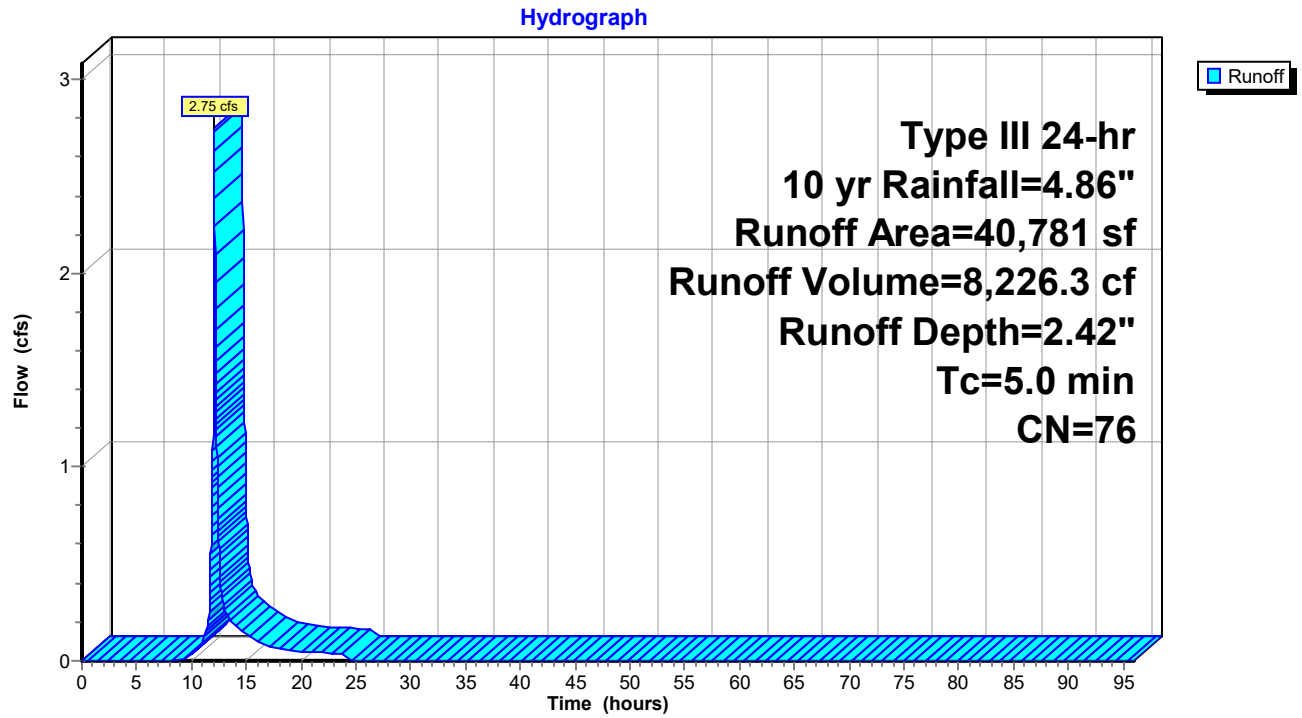
Runoff = 2.75 cfs @ 12.08 hrs, Volume= 8,226.3 cf, Depth= 2.42"
Routed to Pond RG2 : Rain-Garden #2

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 yr Rainfall=4.86"

Area (sf)	CN	Description
25,487	98	Unconnected pavement, HSG A
15,294	39	>75% Grass cover, Good, HSG A
40,781	76	Weighted Average
15,294		37.50% Pervious Area
25,487		62.50% Impervious Area
25,487		100.00% Unconnected

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

Subcatchment PR-D6: Prop. Watershed D6



Hydrograph for Subcatchment PR-D6: Prop. Watershed D6

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.86	2.42	0.00
1.00	0.05	0.00	0.00	53.00	4.86	2.42	0.00
2.00	0.10	0.00	0.00	54.00	4.86	2.42	0.00
3.00	0.15	0.00	0.00	55.00	4.86	2.42	0.00
4.00	0.21	0.00	0.00	56.00	4.86	2.42	0.00
5.00	0.28	0.00	0.00	57.00	4.86	2.42	0.00
6.00	0.35	0.00	0.00	58.00	4.86	2.42	0.00
7.00	0.44	0.00	0.00	59.00	4.86	2.42	0.00
8.00	0.55	0.00	0.00	60.00	4.86	2.42	0.00
9.00	0.71	0.00	0.01	61.00	4.86	2.42	0.00
10.00	0.92	0.02	0.03	62.00	4.86	2.42	0.00
11.00	1.22	0.09	0.09	63.00	4.86	2.42	0.00
12.00	2.43	0.65	**1.69**	64.00	4.86	2.42	0.00
13.00	3.64	1.47	**0.27**	65.00	4.86	2.42	0.00
14.00	3.94	1.69	0.18	66.00	4.86	2.42	0.00
15.00	4.15	1.86	0.14	67.00	4.86	2.42	0.00
16.00	4.31	1.98	0.10	68.00	4.86	2.42	0.00
17.00	4.42	2.07	0.08	69.00	4.86	2.42	0.00
18.00	4.51	2.14	0.06	70.00	4.86	2.42	0.00
19.00	4.58	2.20	0.05	71.00	4.86	2.42	0.00
20.00	4.65	2.25	0.05	72.00	4.86	2.42	0.00
21.00	4.71	2.30	0.04	73.00	4.86	2.42	0.00
22.00	4.77	2.34	0.04	74.00	4.86	2.42	0.00
23.00	4.82	2.38	0.04	75.00	4.86	2.42	0.00
24.00	**4.86**	**2.42**	0.03	76.00	4.86	2.42	0.00
25.00	4.86	2.42	0.00	77.00	4.86	2.42	0.00
26.00	4.86	2.42	0.00	78.00	4.86	2.42	0.00
27.00	4.86	2.42	0.00	79.00	4.86	2.42	0.00
28.00	4.86	2.42	0.00	80.00	4.86	2.42	0.00
29.00	4.86	2.42	0.00	81.00	4.86	2.42	0.00
30.00	4.86	2.42	0.00	82.00	4.86	2.42	0.00
31.00	4.86	2.42	0.00	83.00	4.86	2.42	0.00
32.00	4.86	2.42	0.00	84.00	4.86	2.42	0.00
33.00	4.86	2.42	0.00	85.00	4.86	2.42	0.00
34.00	4.86	2.42	0.00	86.00	4.86	2.42	0.00
35.00	4.86	2.42	0.00	87.00	4.86	2.42	0.00
36.00	4.86	2.42	0.00	88.00	4.86	2.42	0.00
37.00	4.86	2.42	0.00	89.00	4.86	2.42	0.00
38.00	4.86	2.42	0.00	90.00	4.86	2.42	0.00
39.00	4.86	2.42	0.00	91.00	4.86	2.42	0.00
40.00	4.86	2.42	0.00	92.00	4.86	2.42	0.00
41.00	4.86	2.42	0.00	93.00	4.86	2.42	0.00
42.00	4.86	2.42	0.00	94.00	4.86	2.42	0.00
43.00	4.86	2.42	0.00	95.00	4.86	2.42	0.00
44.00	4.86	2.42	0.00	96.00	4.86	2.42	0.00
45.00	4.86	2.42	0.00				
46.00	4.86	2.42	0.00				
47.00	4.86	2.42	0.00				
48.00	4.86	2.42	0.00				
49.00	4.86	2.42	0.00				
50.00	4.86	2.42	0.00				
51.00	4.86	2.42	0.00				

Summary for Subcatchment PR-D7: Prop. Watershed D7

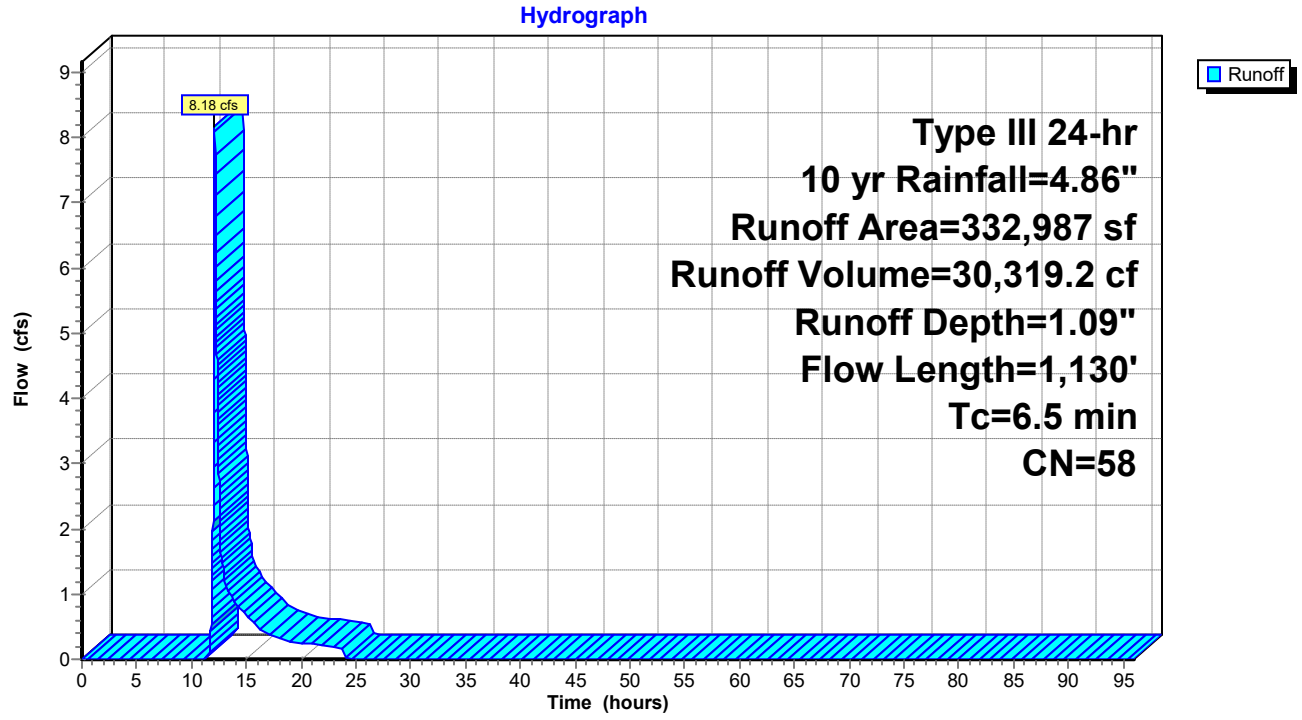
Runoff = 8.18 cfs @ 12.11 hrs, Volume= 30,319.2 cf, Depth= 1.09"
Routed to Link POA D : FIRE POND

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 yr Rainfall=4.86"

	Area (sf)	CN	Description
*	102,706	98	Pavement
*	4,930	98	Walkway Ramp/steps
	225,351	39	>75% Grass cover, Good, HSG A
	332,987	58	Weighted Average
	225,351		67.68% Pervious Area
	107,636		32.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.15		**Sheet Flow, a-b** Smooth surfaces n= 0.011 P2= 3.22"
5.7	1,030	0.0219	3.00		**Shallow Concentrated Flow, b-c** Paved Kv= 20.3 fps
0.1	50	0.0188	16.11	219.60	**Pipe Channel, c-d** 50.0" Round Area= 13.6 sf Perim= 13.1' r= 1.04' n= 0.013
6.5	1,130	Total			

Subcatchment PR-D7: Prop. Watershed D7



Hydrograph for Subcatchment PR-D7: Prop. Watershed D7

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.86	1.09	0.00
1.00	0.05	0.00	0.00	53.00	4.86	1.09	0.00
2.00	0.10	0.00	0.00	54.00	4.86	1.09	0.00
3.00	0.15	0.00	0.00	55.00	4.86	1.09	0.00
4.00	0.21	0.00	0.00	56.00	4.86	1.09	0.00
5.00	0.28	0.00	0.00	57.00	4.86	1.09	0.00
6.00	0.35	0.00	0.00	58.00	4.86	1.09	0.00
7.00	0.44	0.00	0.00	59.00	4.86	1.09	0.00
8.00	0.55	0.00	0.00	60.00	4.86	1.09	0.00
9.00	0.71	0.00	0.00	61.00	4.86	1.09	0.00
10.00	0.92	0.00	0.00	62.00	4.86	1.09	0.00
11.00	1.22	0.00	0.00	63.00	4.86	1.09	0.00
12.00	2.43	0.12	**3.33**	64.00	4.86	1.09	0.00
13.00	3.64	0.51	**1.25**	65.00	4.86	1.09	0.00
14.00	3.94	0.64	0.85	66.00	4.86	1.09	0.00
15.00	4.15	0.73	0.68	67.00	4.86	1.09	0.00
16.00	4.31	0.81	0.49	68.00	4.86	1.09	0.00
17.00	4.42	0.86	0.40	69.00	4.86	1.09	0.00
18.00	4.51	0.91	0.31	70.00	4.86	1.09	0.00
19.00	4.58	0.95	0.28	71.00	4.86	1.09	0.00
20.00	4.65	0.98	0.26	72.00	4.86	1.09	0.00
21.00	4.71	1.01	0.24	73.00	4.86	1.09	0.00
22.00	4.77	1.04	0.22	74.00	4.86	1.09	0.00
23.00	4.82	1.07	0.19	75.00	4.86	1.09	0.00
24.00	**4.86**	**1.09**	0.17	76.00	4.86	1.09	0.00
25.00	4.86	1.09	0.00	77.00	4.86	1.09	0.00
26.00	4.86	1.09	0.00	78.00	4.86	1.09	0.00
27.00	4.86	1.09	0.00	79.00	4.86	1.09	0.00
28.00	4.86	1.09	0.00	80.00	4.86	1.09	0.00
29.00	4.86	1.09	0.00	81.00	4.86	1.09	0.00
30.00	4.86	1.09	0.00	82.00	4.86	1.09	0.00
31.00	4.86	1.09	0.00	83.00	4.86	1.09	0.00
32.00	4.86	1.09	0.00	84.00	4.86	1.09	0.00
33.00	4.86	1.09	0.00	85.00	4.86	1.09	0.00
34.00	4.86	1.09	0.00	86.00	4.86	1.09	0.00
35.00	4.86	1.09	0.00	87.00	4.86	1.09	0.00
36.00	4.86	1.09	0.00	88.00	4.86	1.09	0.00
37.00	4.86	1.09	0.00	89.00	4.86	1.09	0.00
38.00	4.86	1.09	0.00	90.00	4.86	1.09	0.00
39.00	4.86	1.09	0.00	91.00	4.86	1.09	0.00
40.00	4.86	1.09	0.00	92.00	4.86	1.09	0.00
41.00	4.86	1.09	0.00	93.00	4.86	1.09	0.00
42.00	4.86	1.09	0.00	94.00	4.86	1.09	0.00
43.00	4.86	1.09	0.00	95.00	4.86	1.09	0.00
44.00	4.86	1.09	0.00	96.00	4.86	1.09	0.00
45.00	4.86	1.09	0.00				
46.00	4.86	1.09	0.00				
47.00	4.86	1.09	0.00				
48.00	4.86	1.09	0.00				
49.00	4.86	1.09	0.00				
50.00	4.86	1.09	0.00				
51.00	4.86	1.09	0.00				

Summary for Pond RG1: Rain-Garden #1

Inflow Area = 50,834 sf, 67.76% Impervious, Inflow Depth = 2.68" for 10 yr event
Inflow = 3.81 cfs @ 12.07 hrs, Volume= 11,359.4 cf
Outflow = 1.63 cfs @ 12.28 hrs, Volume= 11,359.4 cf, Atten= 57%, Lag= 12.1 min
Discarded = 0.21 cfs @ 12.28 hrs, Volume= 8,686.9 cf
Primary = 1.42 cfs @ 12.28 hrs, Volume= 2,672.5 cf
Routed to Pond SWM-4 : Rtank-4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 250.73' @ 12.28 hrs Surf.Area= 3,766 sf Storage= 3,919.4 cf

Plug-Flow detention time= 190.6 min calculated for 11,358.2 cf (100% of inflow)
Center-of-Mass det. time= 190.6 min (1,015.4 - 824.8)

Volume	Invert	Avail.Storage	Storage Description
#1	249.50'	2,641.0 cf	**Open Air Storage (Prismatic)** Listed below (Recalc)
#2	245.00'	1,417.2 cf	**Subsoil (Prismatic)** Listed below (Recalc)
#3	244.50'	187.7 cf	**12.0" Round Underdrain** Inside #4 L= 239.0'
#4	243.50'	307.3 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 956.0 cf Overall - 187.7 cf Embedded = 768.3 cf x 40.0% Voids
		4,553.2 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
249.50	1,081	0.0	0.0
250.00	1,522	650.8	650.8
250.50	1,985	876.8	1,527.5
251.00	2,469	1,113.5	2,641.0

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
245.00	1,081	0.0	0.0	0.0
245.01	1,081	40.0	4.3	4.3
246.24	1,081	40.0	531.9	536.2
246.25	1,081	25.0	2.7	538.9
249.24	1,081	25.0	808.0	1,346.9
249.25	1,081	25.0	2.7	1,349.6
249.50	1,081	25.0	67.6	1,417.2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.50	478	0.0	0.0
245.50	478	956.0	956.0

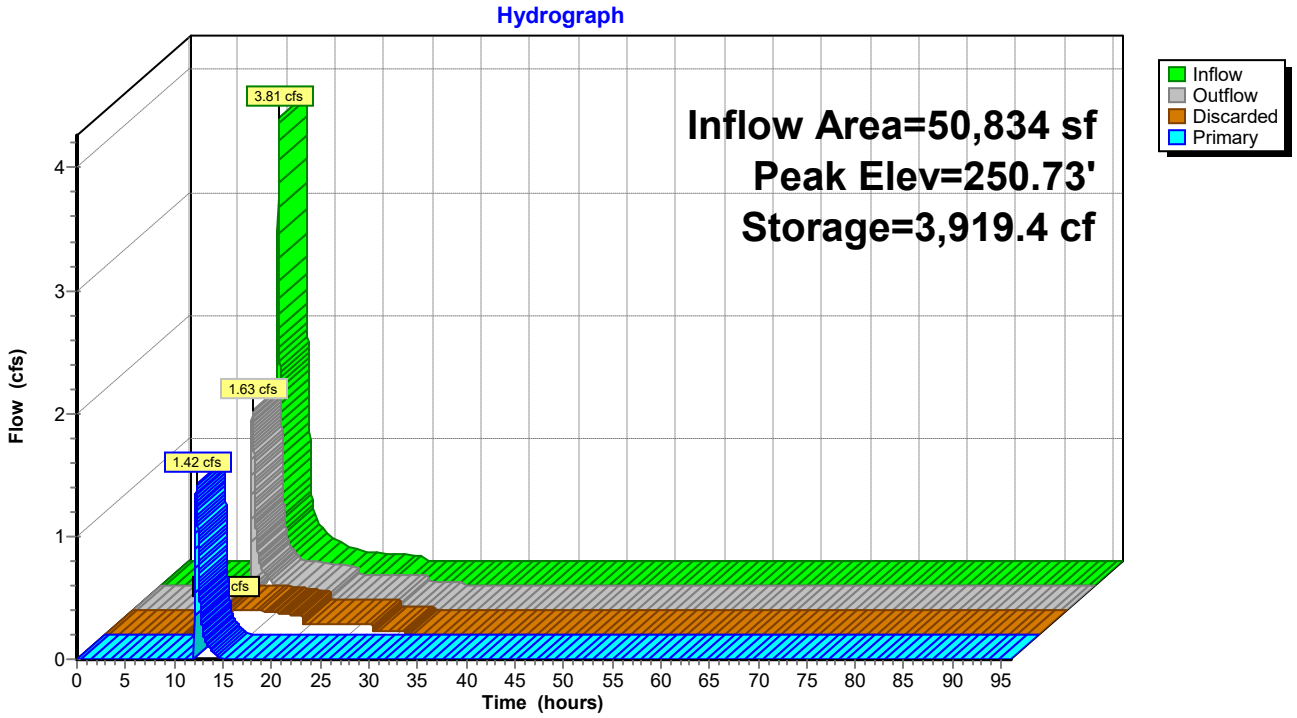
Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Filtration through media over Surface area**
#2	Device 3	250.50'	**15.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	247.50'	**12.0" Round Culvert** L= 18.0' Ke= 0.100 Inlet / Outlet Invert= 247.50' / 247.45' S= 0.0028 '/' Cc= 0.900

n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

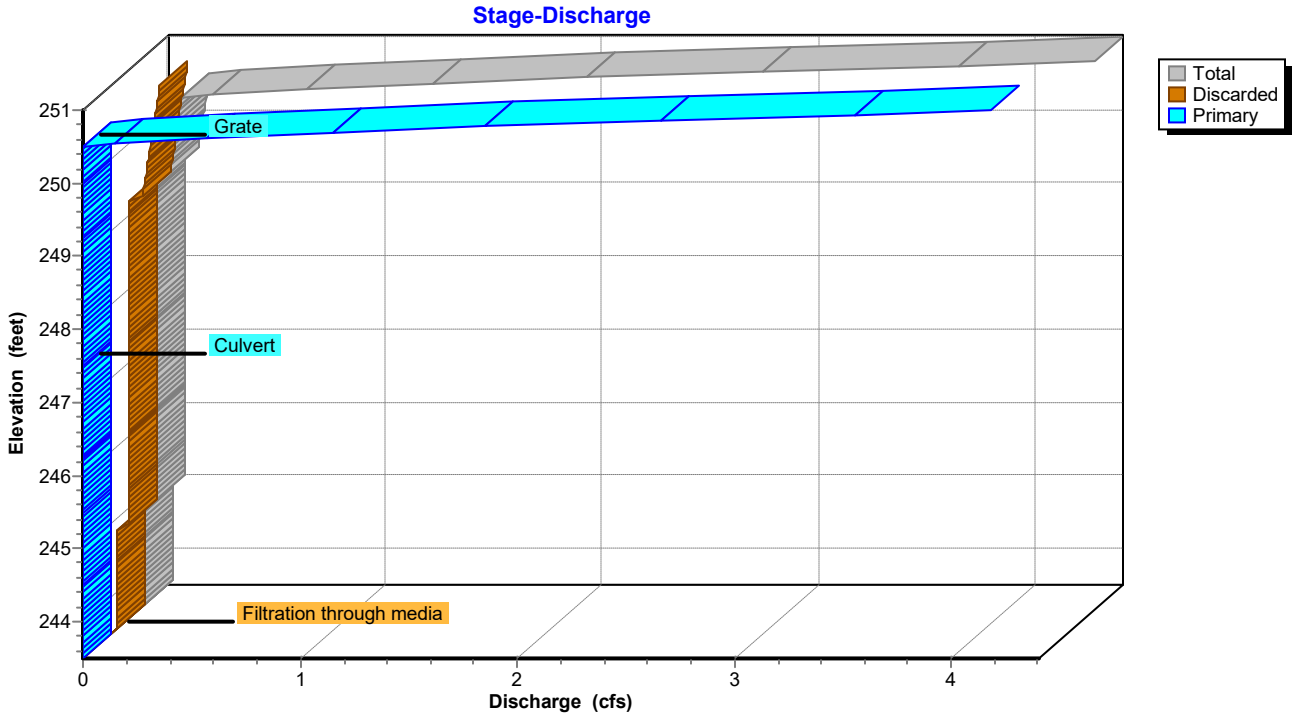
Discarded OutFlow Max=0.21 cfs @ 12.28 hrs HW=250.73' (Free Discharge)
└**1=Filtration through media** (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=1.41 cfs @ 12.28 hrs HW=250.73' (Free Discharge)
└**3=Culvert** (Passes 1.41 cfs of 7.76 cfs potential flow)
└**2=Grate** (Weir Controls 1.41 cfs @ 1.56 fps)

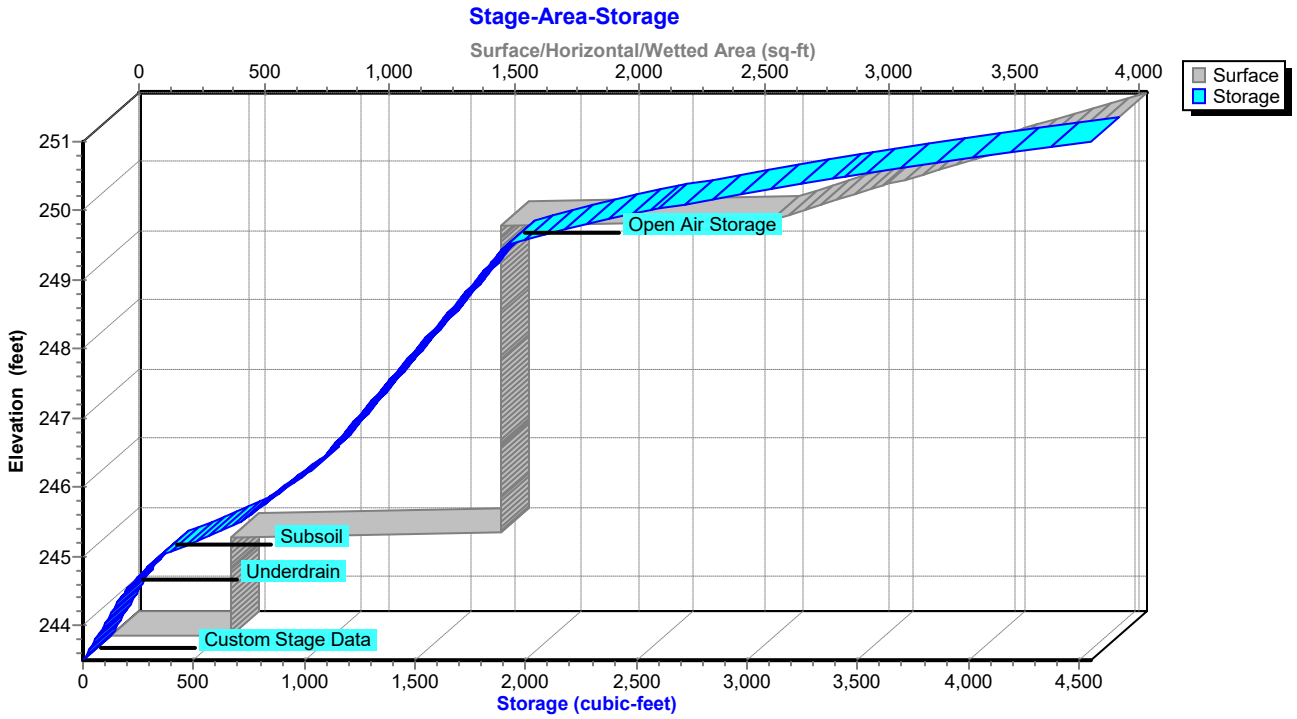
Pond RG1: Rain-Garden #1



Pond RG1: Rain-Garden #1



Pond RG1: Rain-Garden #1



Hydrograph for Pond RG1: Rain-Garden #1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	0.00
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.00	0.0	243.50	0.00	0.00	0.00
6.00	0.00	0.0	243.50	0.00	0.00	0.00
8.00	0.00	0.2	243.50	0.00	0.00	0.00
10.00	0.06	68.1	243.86	0.03	0.03	0.00
12.00	**2.38**	**1,940.6**	**249.53**	**0.15**	**0.15**	**0.00**
14.00	**0.23**	**3,478.9**	**250.52**	**0.25**	**0.20**	**0.06**
16.00	0.13	3,280.9	250.42	0.19	0.19	0.00
18.00	0.08	2,680.8	250.08	0.18	0.18	0.00
20.00	0.06	2,007.7	249.59	0.15	0.15	0.00
22.00	0.05	1,721.0	248.79	0.09	0.09	0.00
24.00	0.04	1,435.9	247.74	0.09	0.09	0.00
26.00	0.00	821.4	245.75	0.09	0.09	0.00
28.00	0.00	285.8	244.83	0.03	0.03	0.00
30.00	0.00	93.8	243.99	0.03	0.03	0.00
32.00	0.00	0.0	243.50	0.00	0.00	0.00
34.00	0.00	0.0	243.50	0.00	0.00	0.00
36.00	0.00	0.0	243.50	0.00	0.00	0.00
38.00	0.00	0.0	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond RG1: Rain-Garden #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	478	0.0
243.60	478	19.1
243.70	478	38.2
243.80	478	57.4
243.90	478	76.5
244.00	478	95.6
244.10	478	114.7
244.20	478	133.8
244.30	478	153.0
244.40	478	172.1
244.50	478	191.2
244.60	478	216.2
244.70	478	245.5
244.80	478	277.0
244.90	478	309.7
245.00	1,559	343.1
245.10	1,559	419.7
245.20	1,559	495.7
245.30	1,559	570.5
245.40	1,559	643.0
245.50	1,559	711.2
245.60	1,559	754.5
245.70	1,559	797.7
245.80	1,559	840.9
245.90	1,559	884.2
246.00	1,559	927.4
246.10	1,559	970.7
246.20	1,559	1,013.9
246.30	1,559	1,047.4
246.40	1,559	1,074.4
246.50	1,559	1,101.5
246.60	1,559	1,128.5
246.70	1,559	1,155.5
246.80	1,559	1,182.5
246.90	1,559	1,209.6
247.00	1,559	1,236.6
247.10	1,559	1,263.6
247.20	1,559	1,290.6
247.30	1,559	1,317.7
247.40	1,559	1,344.7
247.50	1,559	1,371.7
247.60	1,559	1,398.7
247.70	1,559	1,425.8
247.80	1,559	1,452.8
247.90	1,559	1,479.8
248.00	1,559	1,506.8
248.10	1,559	1,533.9
248.20	1,559	1,560.9
248.30	1,559	1,587.9
248.40	1,559	1,614.9
248.50	1,559	1,642.0
248.60	1,559	1,669.0
248.70	1,559	1,696.0
248.80	1,559	1,723.0
248.90	1,559	1,750.1
249.00	1,559	1,777.1
249.10	1,559	1,804.1
249.20	1,559	1,831.1
249.30	1,559	1,858.2
249.40	1,559	1,885.2
249.50	2,640	1,912.2
249.60	2,728	2,024.7
249.70	2,816	2,146.1
249.80	2,905	2,276.2
249.90	2,993	2,415.2
250.00	3,081	2,563.0
250.10	3,174	2,719.8
250.20	3,266	2,885.9
250.30	3,359	3,061.2
250.40	3,451	3,245.8
250.50	3,544	3,439.7
250.60	3,641	3,643.1
250.70	3,738	3,856.1
250.80	3,834	4,078.8
250.90	3,931	4,311.2
251.00	**4,028**	**4,553.2**

Summary for Pond RG2: Rain-Garden #2

Inflow Area = 40,781 sf, 62.50% Impervious, Inflow Depth = 2.42" for 10 yr event
Inflow = 2.75 cfs @ 12.08 hrs, Volume= 8,226.3 cf
Outflow = 0.90 cfs @ 12.39 hrs, Volume= 8,226.3 cf, Atten= 67%, Lag= 19.0 min
Discarded = 0.22 cfs @ 12.39 hrs, Volume= 7,113.5 cf
Primary = 0.68 cfs @ 12.39 hrs, Volume= 1,112.8 cf
Routed to Pond SWM-5 : Rtank-5

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 250.64' @ 12.39 hrs Surf.Area= 3,903 sf Storage= 3,131.7 cf

Plug-Flow detention time= 195.8 min calculated for 8,225.5 cf (100% of inflow)
Center-of-Mass det. time= 195.8 min (1,028.5 - 832.7)

Volume	Invert	Avail.Storage	Storage Description
#1	250.00'	2,015.0 cf	**Open Air Storage (Prismatic)** Listed below (Recalc)
#2	245.50'	1,541.7 cf	**Subsoil (Prismatic)** Listed below (Recalc)
#3	244.50'	187.7 cf	**12.0" Round Underdrain** Inside #4 L= 239.0'
#4	243.50'	307.3 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 956.0 cf Overall - 187.7 cf Embedded = 768.3 cf x 40.0% Voids
		4,051.8 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
250.00	1,176	0.0	0.0
250.50	2,012	797.0	797.0
251.00	2,860	1,218.0	2,015.0

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
245.50	1,176	0.0	0.0	0.0
245.51	1,176	40.0	4.7	4.7
246.74	1,176	40.0	578.6	583.3
246.75	1,176	25.0	2.9	586.2
249.74	1,176	25.0	879.1	1,465.3
249.75	1,176	25.0	2.9	1,468.2
250.00	1,176	25.0	73.5	1,541.7

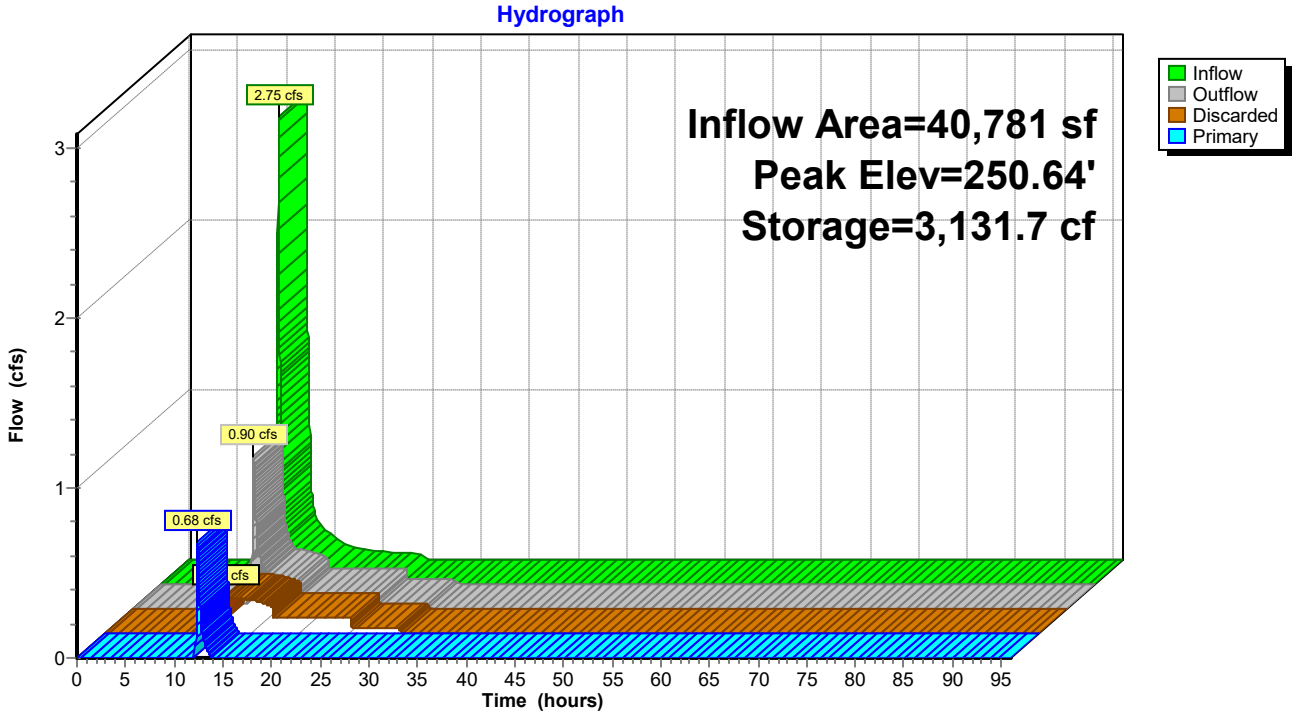
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.50	478	0.0	0.0
245.50	478	956.0	956.0

Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Filtration through media over Surface area**
#2	Device 3	250.50'	**15.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	247.50'	**12.0" Round Culvert** L= 18.0' Ke= 0.100 Inlet / Outlet Invert= 247.50' / 247.45' S= 0.0028 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

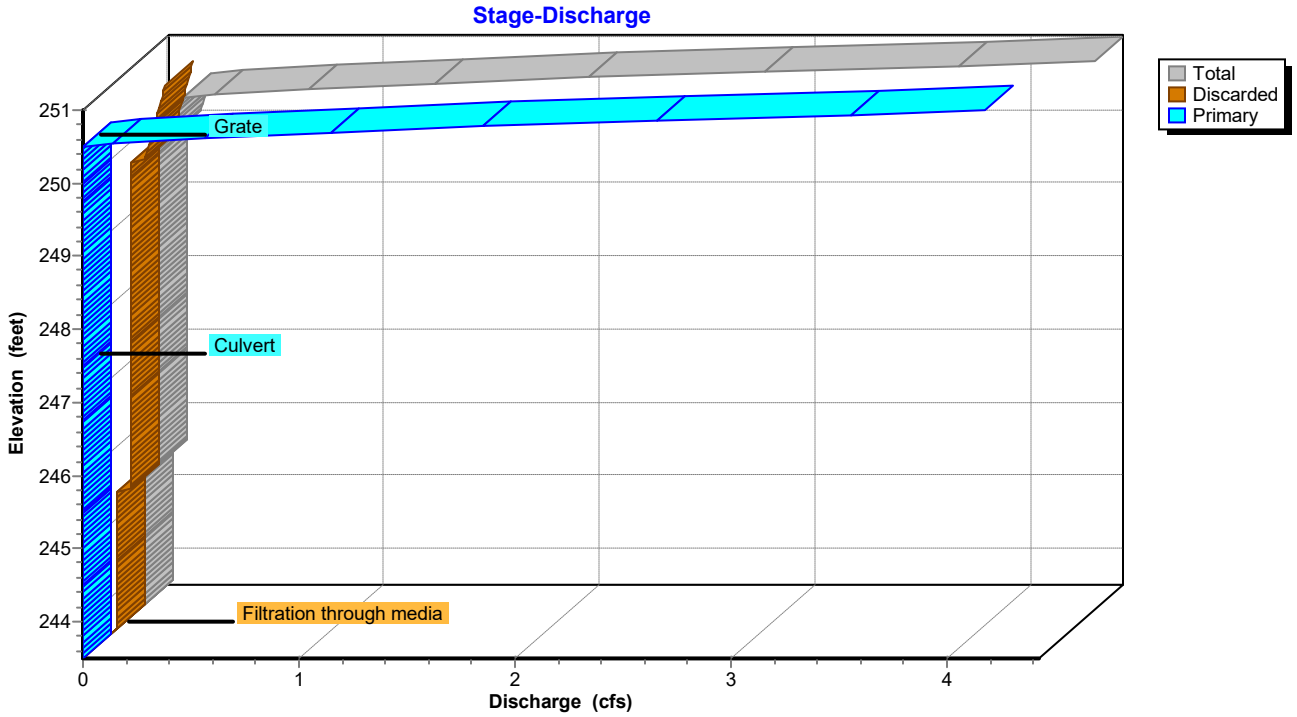
Discarded OutFlow Max=0.22 cfs @ 12.39 hrs HW=250.64' (Free Discharge)
└**1=Filtration through media** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.67 cfs @ 12.39 hrs HW=250.64' (Free Discharge)
└**3=Culvert** (Passes 0.67 cfs of 7.60 cfs potential flow)
└**2=Grate** (Weir Controls 0.67 cfs @ 1.22 fps)

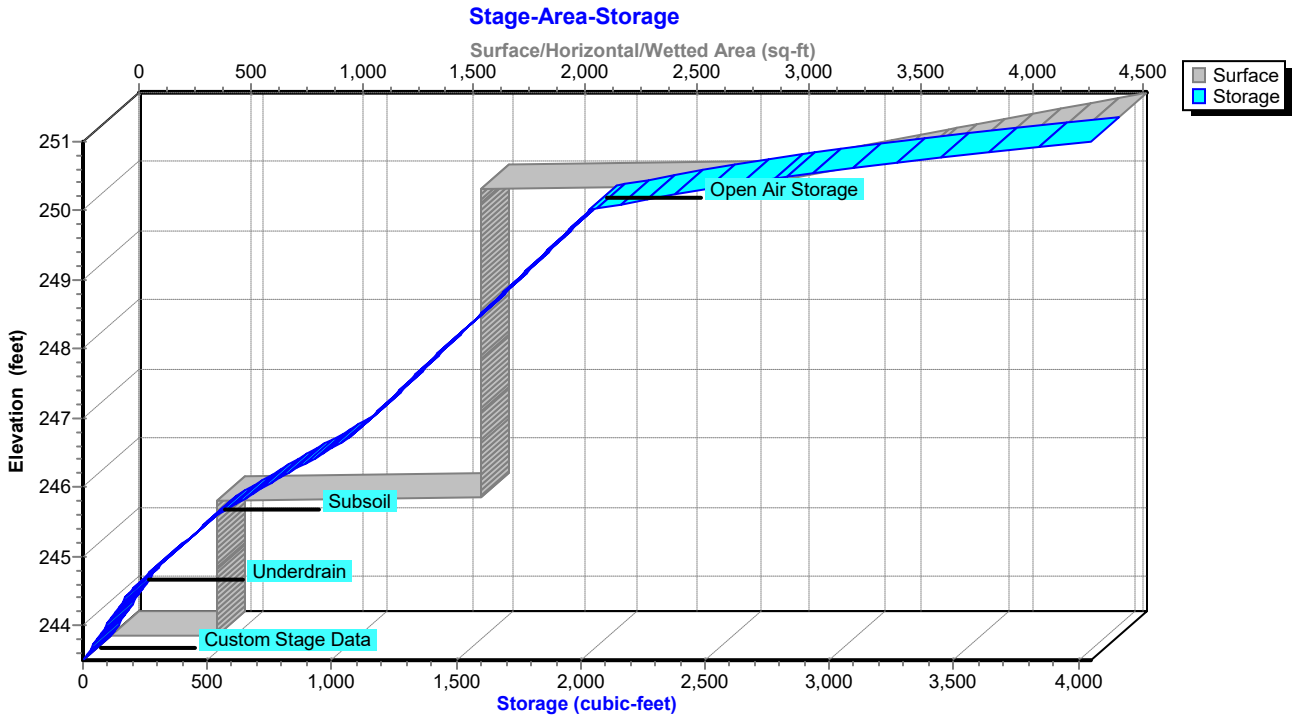
Pond RG2: Rain-Garden #2



Pond RG2: Rain-Garden #2



Pond RG2: Rain-Garden #2



Hydrograph for Pond RG2: Rain-Garden #2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	0.00
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.00	0.0	243.50	0.00	0.00	0.00
6.00	0.00	0.0	243.50	0.00	0.00	0.00
8.00	0.00	0.0	243.50	0.00	0.00	0.00
10.00	0.03	15.6	243.58	0.03	0.03	0.00
12.00	**1.69**	**1,270.7**	**247.39**	**0.09**	**0.09**	**0.00**
14.00	**0.18**	**2,822.6**	**250.49**	**0.20**	**0.20**	**0.00**
16.00	0.10	2,398.9	250.26	0.18	0.18	0.00
18.00	0.06	1,954.5	249.72	0.09	0.09	0.00
20.00	0.05	1,677.6	248.78	0.09	0.09	0.00
22.00	0.04	1,333.0	247.61	0.09	0.09	0.00
24.00	0.03	930.0	246.42	0.09	0.09	0.00
26.00	0.00	425.5	245.25	0.03	0.03	0.00
28.00	0.00	233.5	244.66	0.03	0.03	0.00
30.00	0.00	41.5	243.72	0.03	0.03	0.00
32.00	0.00	0.0	243.50	0.00	0.00	0.00
34.00	0.00	0.0	243.50	0.00	0.00	0.00
36.00	0.00	0.0	243.50	0.00	0.00	0.00
38.00	0.00	0.0	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond RG2: Rain-Garden #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	478	0.0
243.60	478	19.1
243.70	478	38.2
243.80	478	57.4
243.90	478	76.5
244.00	478	95.6
244.10	478	114.7
244.20	478	133.8
244.30	478	153.0
244.40	478	172.1
244.50	478	191.2
244.60	478	216.2
244.70	478	245.5
244.80	478	277.0
244.90	478	309.7
245.00	478	343.1
245.10	478	376.5
245.20	478	409.2
245.30	478	440.8
245.40	478	470.0
245.50	1,654	495.0
245.60	1,654	542.1
245.70	1,654	589.1
245.80	1,654	636.1
245.90	1,654	683.2
246.00	1,654	730.2
246.10	1,654	777.3
246.20	1,654	824.3
246.30	1,654	871.3
246.40	1,654	918.4
246.50	1,654	965.4
246.60	1,654	1,012.5
246.70	1,654	1,059.5
246.80	1,654	1,096.0
246.90	1,654	1,125.4
247.00	1,654	1,154.8
247.10	1,654	1,184.2
247.20	1,654	1,213.6
247.30	1,654	1,243.0
247.40	1,654	1,272.4
247.50	1,654	1,301.8
247.60	1,654	1,331.2
247.70	1,654	1,360.6
247.80	1,654	1,390.0
247.90	1,654	1,419.4
248.00	1,654	1,448.8
248.10	1,654	1,478.2
248.20	1,654	1,507.6
248.30	1,654	1,537.0
248.40	1,654	1,566.4
248.50	1,654	1,595.8
248.60	1,654	1,625.2
248.70	1,654	1,654.6
248.80	1,654	1,684.0
248.90	1,654	1,713.4
249.00	1,654	1,742.8
249.10	1,654	1,772.2
249.20	1,654	1,801.6
249.30	1,654	1,831.0
249.40	1,654	1,860.4
249.50	1,654	1,889.8
249.60	1,654	1,919.2
249.70	1,654	1,948.6
249.80	1,654	1,978.0
249.90	1,654	2,007.4
250.00	2,830	2,036.8
250.10	2,997	2,162.7
250.20	3,164	2,305.4
250.30	3,332	2,464.8
250.40	3,499	2,640.9
250.50	3,666	2,833.8
250.60	3,836	3,043.4
250.70	4,005	3,270.1
250.80	4,175	3,513.7
250.90	4,344	3,774.2
251.00	**4,514**	**4,051.8**

Summary for Pond SWM-1: Rtank-1

Inflow Area = 214,605 sf, 84.39% Impervious, Inflow Depth = 2.73" for 10 yr event
Inflow = 17.33 cfs @ 12.14 hrs, Volume= 48,808.4 cf
Outflow = 12.23 cfs @ 12.26 hrs, Volume= 48,808.4 cf, Atten= 29%, Lag= 7.1 min
Discarded = 0.20 cfs @ 11.57 hrs, Volume= 17,171.6 cf
Primary = 12.02 cfs @ 12.26 hrs, Volume= 31,636.8 cf
Routed to Pond SWM-4 : Rtank-4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 248.25' @ 12.26 hrs Surf.Area= 3,640 sf Storage= 14,646.4 cf

Plug-Flow detention time= 200.6 min calculated for 48,808.4 cf (100% of inflow)
Center-of-Mass det. time= 200.6 min (1,006.5 - 805.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	243.50'	3,180.7 cf	**38.12'W x 95.49'L x 7.81'H Field A** 28,434.6 cf Overall - 20,482.8 cf Embedded = 7,951.8 cf x 40.0% Voids
#2A	243.75'	19,458.6 cf	**ACF R-Tank SD 9** x 1014 Inside #1 Inside= 15.7"W x 78.7"H => 8.18 sf x 2.35'L = 19.2 cf Outside= 15.7"W x 78.7"H => 8.61 sf x 2.35'L = 20.2 cf 1014 Chambers in 26 Rows
		22,639.4 cf	Total Available Storage

Storage Group A created with Chamber Wizard

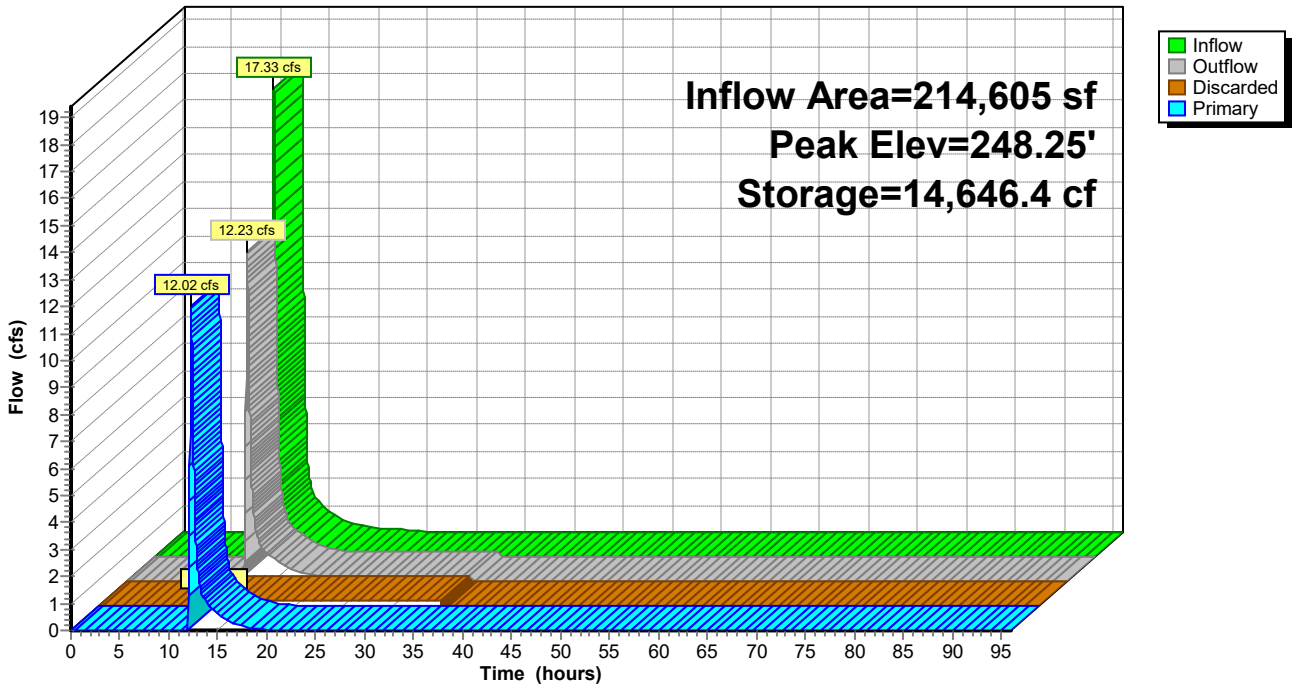
Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.50'	**18.0" Round Culvert X 2.00** L= 70.0' Ke= 0.100 Inlet / Outlet Invert= 246.50' / 246.50' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Discarded OutFlow Max=0.20 cfs @ 11.57 hrs HW=243.58' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=12.02 cfs @ 12.26 hrs HW=248.25' (Free Discharge)
↑**2=Culvert** (Barrel Controls 12.02 cfs @ 3.67 fps)

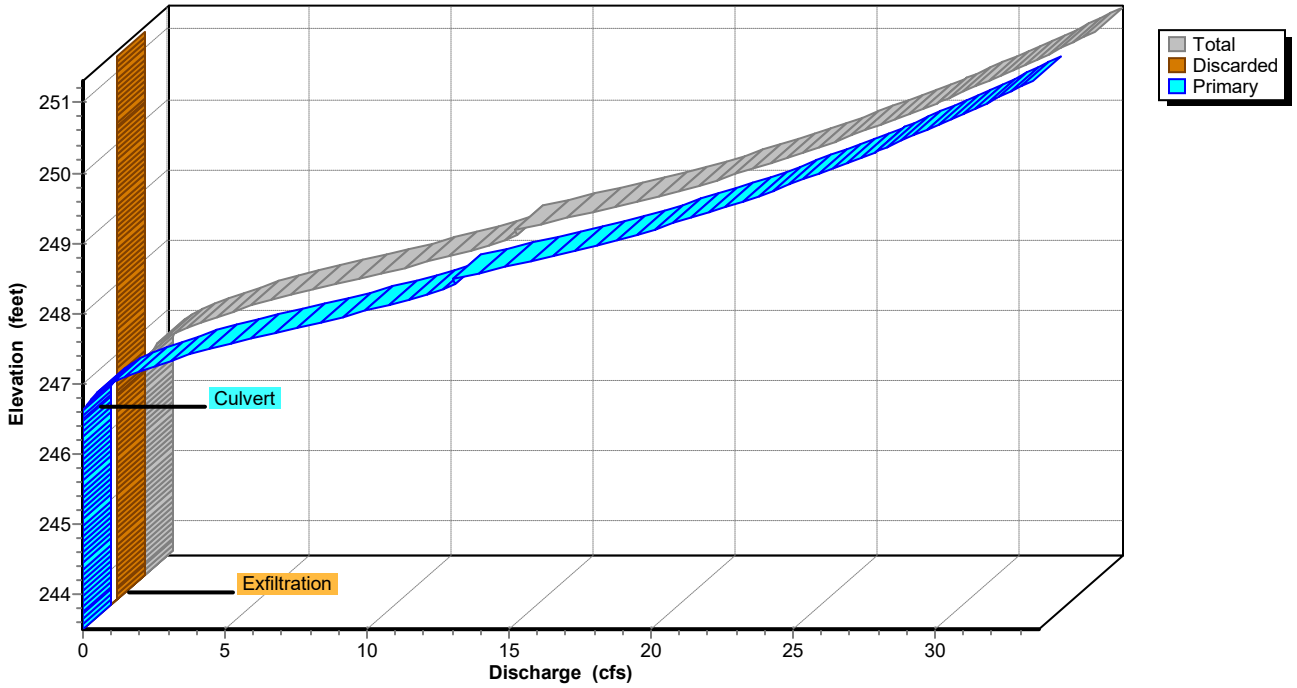
Pond SWM-1: Rtank-1

Hydrograph

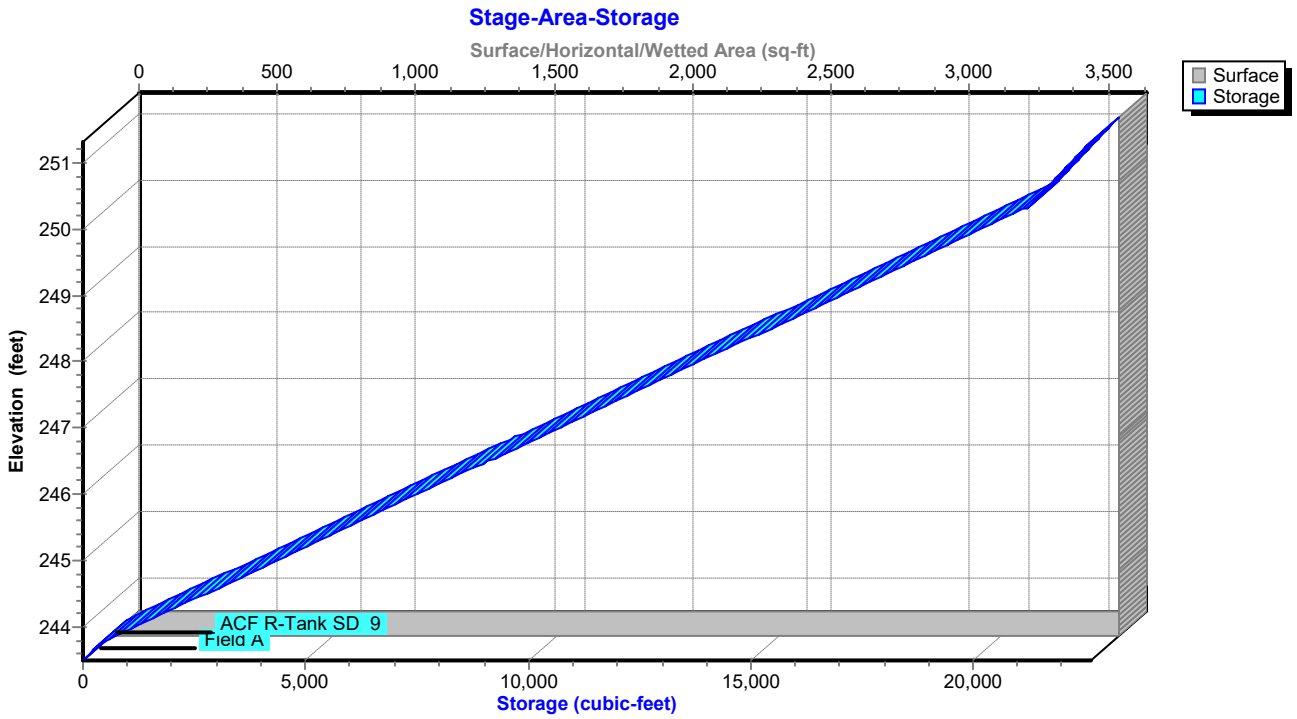


Pond SWM-1: Rtank-1

Stage-Discharge



Pond SWM-1: Rtank-1



Hydrograph for Pond SWM-1: Rtank-1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	0.00
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.00	0.0	243.50	0.00	0.00	0.00
6.00	0.00	0.0	243.50	0.00	0.00	0.00
8.00	0.00	0.0	243.50	0.00	0.00	0.00
10.00	0.00	0.0	243.50	0.00	**0.00**	0.00
12.00	**8.64**	**5,970.3**	**245.52**	**0.20**	**0.20**	**0.00**
14.00	**1.08**	**10,643.6**	**246.99**	**1.18**	0.20	**0.98**
16.00	0.51	10,136.4	246.83	0.59	0.20	0.39
18.00	0.25	9,719.1	246.70	0.31	0.20	0.11
20.00	0.17	9,343.9	246.58	0.22	0.20	0.02
22.00	0.11	8,845.8	246.42	0.20	0.20	0.00
24.00	0.06	8,000.3	246.16	0.20	0.20	0.00
26.00	0.00	6,592.2	245.71	0.20	0.20	0.00
28.00	0.00	5,130.2	245.25	0.20	0.20	0.00
30.00	0.00	3,668.1	244.79	0.20	0.20	0.00
32.00	0.00	2,206.0	244.33	0.20	0.20	0.00
34.00	0.00	744.0	243.87	0.20	0.20	0.00
36.00	0.00	0.1	243.50	0.00	0.00	0.00
38.00	0.00	0.0	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-1: Rtank-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	**3,640**	0.0
243.60	3,640	145.6
243.70	3,640	291.2
243.80	3,640	522.6
243.90	3,640	839.9
244.00	3,640	1,157.2
244.10	3,640	1,474.5
244.20	3,640	1,791.8
244.30	3,640	2,109.1
244.40	3,640	2,426.4
244.50	3,640	2,743.7
244.60	3,640	3,060.9
244.70	3,640	3,378.2
244.80	3,640	3,695.5
244.90	3,640	4,012.8
245.00	3,640	4,330.1
245.10	3,640	4,647.4
245.20	3,640	4,964.7
245.30	3,640	5,281.9
245.40	3,640	5,599.2
245.50	3,640	5,916.5
245.60	3,640	6,233.8
245.70	3,640	6,551.1
245.80	3,640	6,868.4
245.90	3,640	7,185.7
246.00	3,640	7,503.0
246.10	3,640	7,820.2
246.20	3,640	8,137.5
246.30	3,640	8,454.8
246.40	3,640	8,772.1
246.50	3,640	9,089.4
246.60	3,640	9,406.7
246.70	3,640	9,724.0
246.80	3,640	10,041.3
246.90	3,640	10,358.5
247.00	3,640	10,675.8
247.10	3,640	10,993.1
247.20	3,640	11,310.4
247.30	3,640	11,627.7
247.40	3,640	11,945.0
247.50	3,640	12,262.3
247.60	3,640	12,579.5
247.70	3,640	12,896.8
247.80	3,640	13,214.1
247.90	3,640	13,531.4
248.00	3,640	13,848.7
248.10	3,640	14,166.0
248.20	3,640	14,483.3
248.30	3,640	14,800.6
248.40	3,640	15,117.8
248.50	3,640	15,435.1
248.60	3,640	15,752.4
248.70	3,640	16,069.7
248.80	3,640	16,387.0
248.90	3,640	16,704.3
249.00	3,640	17,021.6
249.10	3,640	17,338.9
249.20	3,640	17,656.1
249.30	3,640	17,973.4
249.40	3,640	18,290.7
249.50	3,640	18,608.0
249.60	3,640	18,925.3
249.70	3,640	19,242.6
249.80	3,640	19,559.9
249.90	3,640	19,877.1
250.00	3,640	20,194.4
250.10	3,640	20,511.7
250.20	3,640	20,829.0
250.30	3,640	21,146.3
250.40	3,640	21,311.9
250.50	3,640	21,457.5
250.60	3,640	21,603.1
250.70	3,640	21,748.7
250.80	3,640	21,894.3
250.90	3,640	22,039.9
251.00	3,640	22,185.5
251.10	3,640	22,331.1
251.20	3,640	22,476.7
251.30	3,640	**22,622.3**

Summary for Pond SWM-2: Rtank-2

Inflow Area = 416,467 sf, 80.91% Impervious, Inflow Depth = 3.44" for 10 yr event
Inflow = 38.82 cfs @ 12.08 hrs, Volume= 119,235.3 cf
Outflow = 36.62 cfs @ 12.10 hrs, Volume= 119,235.3 cf, Atten= 6%, Lag= 1.6 min
Discarded = 0.42 cfs @ 8.48 hrs, Volume= 26,931.8 cf
Primary = 36.20 cfs @ 12.10 hrs, Volume= 92,303.6 cf
Routed to Pond SWM-3 : Rtank-3

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 251.40' @ 12.10 hrs Surf.Area= 7,487 sf Storage= 8,302.5 cf

Plug-Flow detention time= 20.6 min calculated for 119,222.9 cf (100% of inflow)
Center-of-Mass det. time= 20.6 min (822.3 - 801.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	250.00'	5,132.0 cf	**36.81'W x 203.39'L x 4.92'H Field A** 36,867.9 cf Overall - 24,038.0 cf Embedded = 12,829.9 cf x 40.0% Voids
#2A	250.25'	22,836.1 cf	**ACF R-Tank SD 5** x 2125 Inside #1 Inside= 15.7"W x 44.1"H => 4.58 sf x 2.35'L = 10.7 cf Outside= 15.7"W x 44.1"H => 4.82 sf x 2.35'L = 11.3 cf 2125 Chambers in 25 Rows
		27,968.1 cf	Total Available Storage

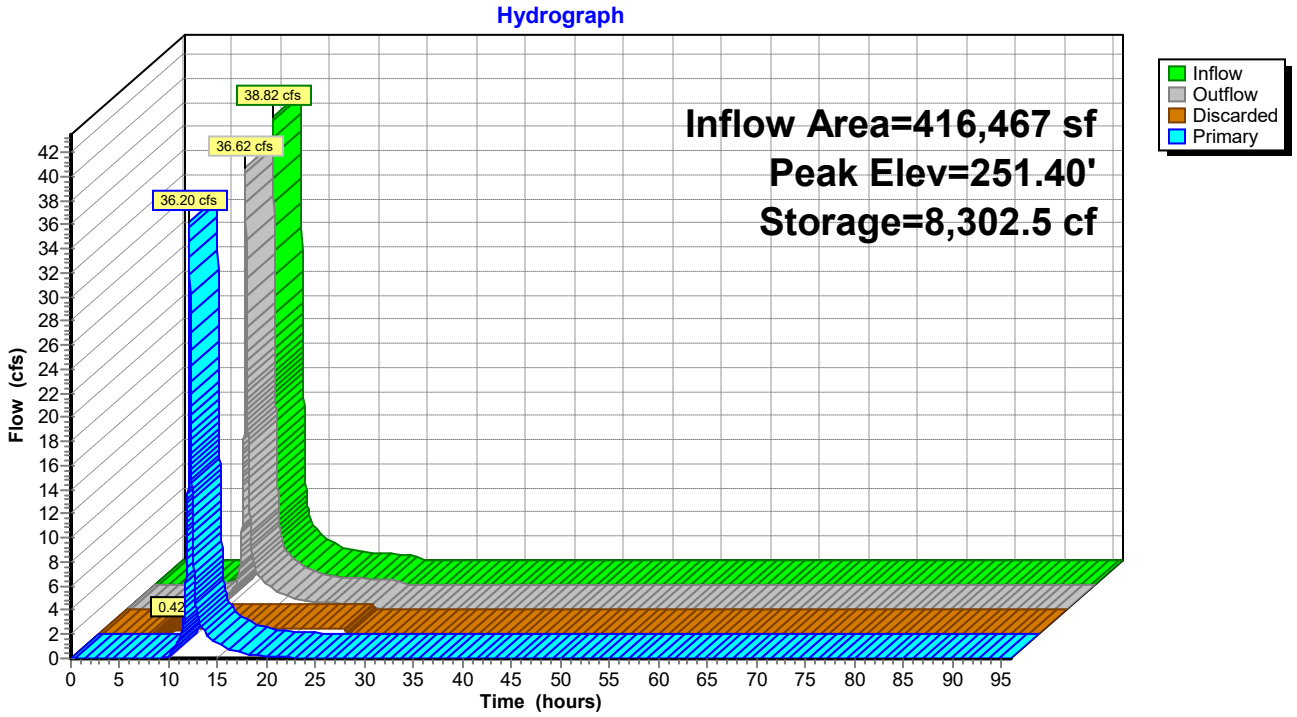
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	250.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	250.40'	**24.0" Round Culvert X 5.00** L= 195.0' Ke= 0.100 Inlet / Outlet Invert= 250.40' / 247.10' S= 0.0169 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

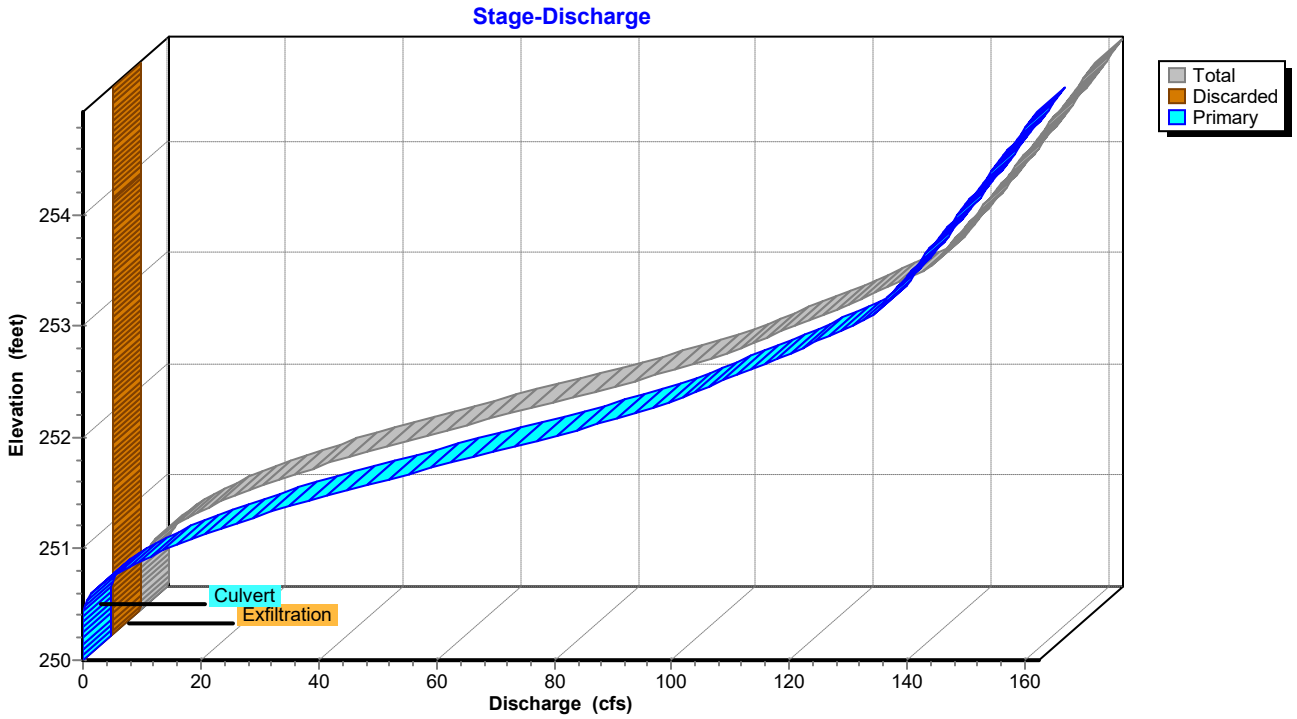
Discarded OutFlow Max=0.42 cfs @ 8.48 hrs HW=250.05' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=36.13 cfs @ 12.10 hrs HW=251.39' (Free Discharge)
↑**2=Culvert** (Inlet Controls 36.13 cfs @ 4.63 fps)

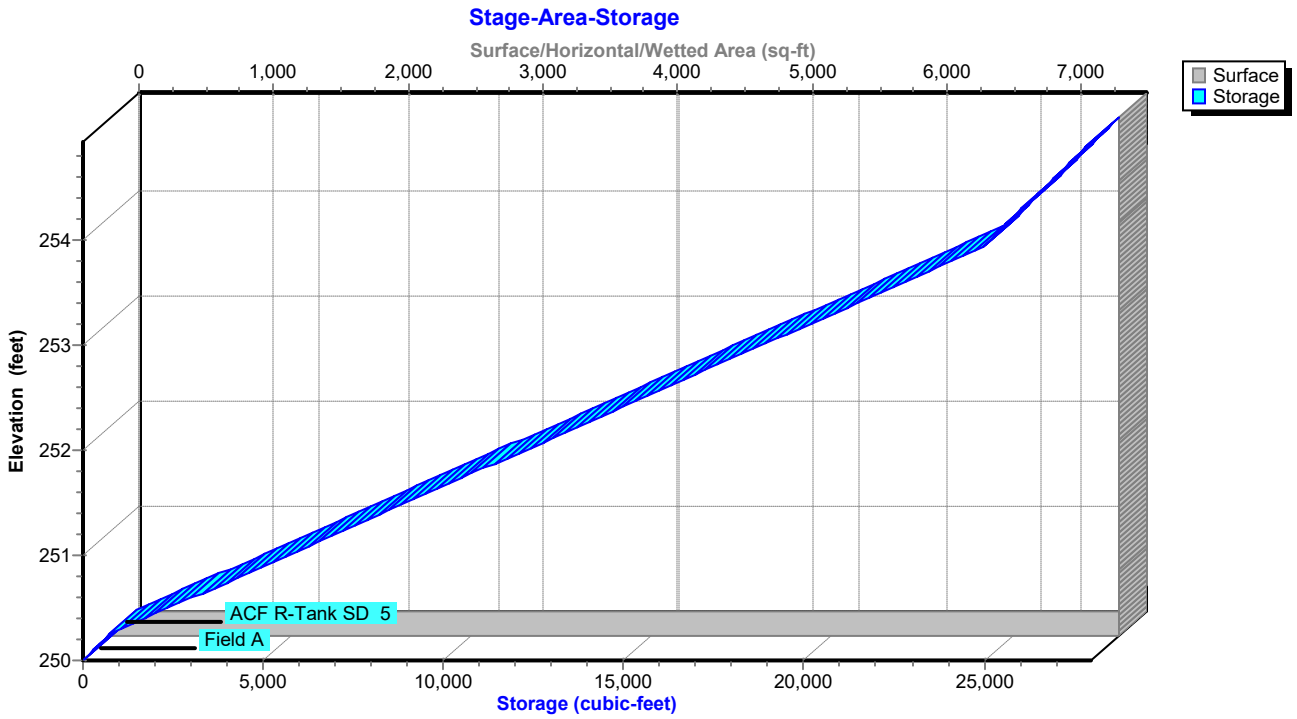
Pond SWM-2: Rtank-2



Pond SWM-2: Rtank-2



Pond SWM-2: Rtank-2



Hydrograph for Pond SWM-2: Rtank-2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	250.00	0.00	0.00	0.00
2.00	0.00	0.0	250.00	0.00	0.00	0.00
4.00	0.00	0.0	250.00	0.00	0.00	0.00
6.00	0.04	12.5	250.00	0.04	0.04	0.00
8.00	0.31	104.5	250.03	0.30	**0.30**	0.00
10.00	1.11	1,977.6	250.44	0.47	**0.42**	0.05
12.00	**24.69**	**6,324.2**	**251.10**	**19.25**	0.42	**18.83**
14.00	**2.18**	**3,128.9**	**250.61**	**2.28**	0.42	**1.87**
16.00	1.17	2,681.1	250.54	1.23	0.42	0.82
18.00	0.72	2,360.0	250.49	0.76	0.42	0.34
20.00	0.57	2,169.8	250.47	0.60	0.42	0.18
22.00	0.48	2,038.5	250.45	0.49	0.42	0.08
24.00	0.38	1,787.6	250.41	0.43	0.42	0.01
26.00	0.00	0.0	250.00	0.00	0.00	0.00
28.00	0.00	0.0	250.00	0.00	0.00	0.00
30.00	0.00	0.0	250.00	0.00	0.00	0.00
32.00	0.00	0.0	250.00	0.00	0.00	0.00
34.00	0.00	0.0	250.00	0.00	0.00	0.00
36.00	0.00	0.0	250.00	0.00	0.00	0.00
38.00	0.00	0.0	250.00	0.00	0.00	0.00
40.00	0.00	0.0	250.00	0.00	0.00	0.00
42.00	0.00	0.0	250.00	0.00	0.00	0.00
44.00	0.00	0.0	250.00	0.00	0.00	0.00
46.00	0.00	0.0	250.00	0.00	0.00	0.00
48.00	0.00	0.0	250.00	0.00	0.00	0.00
50.00	0.00	0.0	250.00	0.00	0.00	0.00
52.00	0.00	0.0	250.00	0.00	0.00	0.00
54.00	0.00	0.0	250.00	0.00	0.00	0.00
56.00	0.00	0.0	250.00	0.00	0.00	0.00
58.00	0.00	0.0	250.00	0.00	0.00	0.00
60.00	0.00	0.0	250.00	0.00	0.00	0.00
62.00	0.00	0.0	250.00	0.00	0.00	0.00
64.00	0.00	0.0	250.00	0.00	0.00	0.00
66.00	0.00	0.0	250.00	0.00	0.00	0.00
68.00	0.00	0.0	250.00	0.00	0.00	0.00
70.00	0.00	0.0	250.00	0.00	0.00	0.00
72.00	0.00	0.0	250.00	0.00	0.00	0.00
74.00	0.00	0.0	250.00	0.00	0.00	0.00
76.00	0.00	0.0	250.00	0.00	0.00	0.00
78.00	0.00	0.0	250.00	0.00	0.00	0.00
80.00	0.00	0.0	250.00	0.00	0.00	0.00
82.00	0.00	0.0	250.00	0.00	0.00	0.00
84.00	0.00	0.0	250.00	0.00	0.00	0.00
86.00	0.00	0.0	250.00	0.00	0.00	0.00
88.00	0.00	0.0	250.00	0.00	0.00	0.00
90.00	0.00	0.0	250.00	0.00	0.00	0.00
92.00	0.00	0.0	250.00	0.00	0.00	0.00
94.00	0.00	0.0	250.00	0.00	0.00	0.00
96.00	0.00	0.0	250.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-2: Rtank-2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
250.00	**7,487**	0.0
250.05	7,487	149.7
250.10	7,487	299.5
250.15	7,487	449.2
250.20	7,487	598.9
250.25	7,487	748.7
250.30	7,487	1,078.3
250.35	7,487	1,407.9
250.40	7,487	1,737.5
250.45	7,487	2,067.2
250.50	7,487	2,396.8
250.55	7,487	2,726.4
250.60	7,487	3,056.1
250.65	7,487	3,385.7
250.70	7,487	3,715.3
250.75	7,487	4,045.0
250.80	7,487	4,374.6
250.85	7,487	4,704.2
250.90	7,487	5,033.8
250.95	7,487	5,363.5
251.00	7,487	5,693.1
251.05	7,487	6,022.7
251.10	7,487	6,352.4
251.15	7,487	6,682.0
251.20	7,487	7,011.6
251.25	7,487	7,341.3
251.30	7,487	7,670.9
251.35	7,487	8,000.5
251.40	7,487	8,330.1
251.45	7,487	8,659.8
251.50	7,487	8,989.4
251.55	7,487	9,319.0
251.60	7,487	9,648.7
251.65	7,487	9,978.3
251.70	7,487	10,307.9
251.75	7,487	10,637.6
251.80	7,487	10,967.2
251.85	7,487	11,296.8
251.90	7,487	11,626.4
251.95	7,487	11,956.1
252.00	7,487	12,285.7
252.05	7,487	12,615.3
252.10	7,487	12,945.0
252.15	7,487	13,274.6
252.20	7,487	13,604.2
252.25	7,487	13,933.9
252.30	7,487	14,263.5
252.35	7,487	14,593.1
252.40	7,487	14,922.7
252.45	7,487	15,252.4
252.50	7,487	15,582.0
252.55	7,487	15,911.6
252.60	7,487	16,241.3
252.65	7,487	16,570.9
252.70	7,487	16,900.5
252.75	7,487	17,230.2
252.80	7,487	17,559.8
252.85	7,487	17,889.4
252.90	7,487	18,219.0
252.95	7,487	18,548.7
253.00	7,487	18,878.3
253.05	7,487	19,207.9
253.10	7,487	19,537.6
253.15	7,487	19,867.2
253.20	7,487	20,196.8
253.25	7,487	20,526.5
253.30	7,487	20,856.1
253.35	7,487	21,185.7
253.40	7,487	21,515.3
253.45	7,487	21,845.0
253.50	7,487	22,174.6
253.55	7,487	22,504.2
253.60	7,487	22,833.9
253.65	7,487	23,163.5
253.70	7,487	23,493.1
253.75	7,487	23,822.8
253.80	7,487	24,152.4
253.85	7,487	24,482.0
253.90	7,487	24,811.6
253.95	7,487	25,049.7
254.00	7,487	25,199.4
254.05	7,487	25,349.1
254.10	7,487	25,498.9
254.15	7,487	25,648.6
254.20	7,487	25,798.3
254.25	7,487	25,948.1
254.30	7,487	26,097.8
254.35	7,487	26,247.5
254.40	7,487	26,397.3
254.45	7,487	26,547.0
254.50	7,487	26,696.7
254.55	7,487	26,846.5
254.60	7,487	26,996.2
254.65	7,487	27,145.9
254.70	7,487	27,295.6
254.75	7,487	27,445.4
254.80	7,487	27,595.1
254.85	7,487	27,744.8
254.90	7,487	**27,894.6**

Summary for Pond SWM-3: Rtank-3

Inflow Area = 416,467 sf, 80.91% Impervious, Inflow Depth = 2.66" for 10 yr event
Inflow = 36.20 cfs @ 12.10 hrs, Volume= 92,303.6 cf
Outflow = 26.44 cfs @ 12.18 hrs, Volume= 92,303.6 cf, Atten= 27%, Lag= 4.8 min
Discarded = 0.44 cfs @ 10.36 hrs, Volume= 35,974.8 cf
Primary = 25.99 cfs @ 12.18 hrs, Volume= 56,328.7 cf
Routed to Pond SWM-4 : Rtank-4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 248.45' @ 12.18 hrs Surf.Area= 7,944 sf Storage= 29,613.2 cf

Plug-Flow detention time= 199.9 min calculated for 92,294.0 cf (100% of inflow)
Center-of-Mass det. time= 200.0 min (977.0 - 777.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	244.00'	6,520.8 cf	**47.99'W x 165.51'L x 6.37'H Field A** 50,587.1 cf Overall - 34,285.0 cf Embedded = 16,302.1 cf x 40.0% Voids
#2A	244.25'	32,570.8 cf	**ACF R-Tank SD 7** x 2176 Inside #1 Inside= 15.7"W x 61.4"H => 6.38 sf x 2.35'L = 15.0 cf Outside= 15.7"W x 61.4"H => 6.72 sf x 2.35'L = 15.8 cf 2176 Chambers in 32 Rows
		39,091.6 cf	Total Available Storage

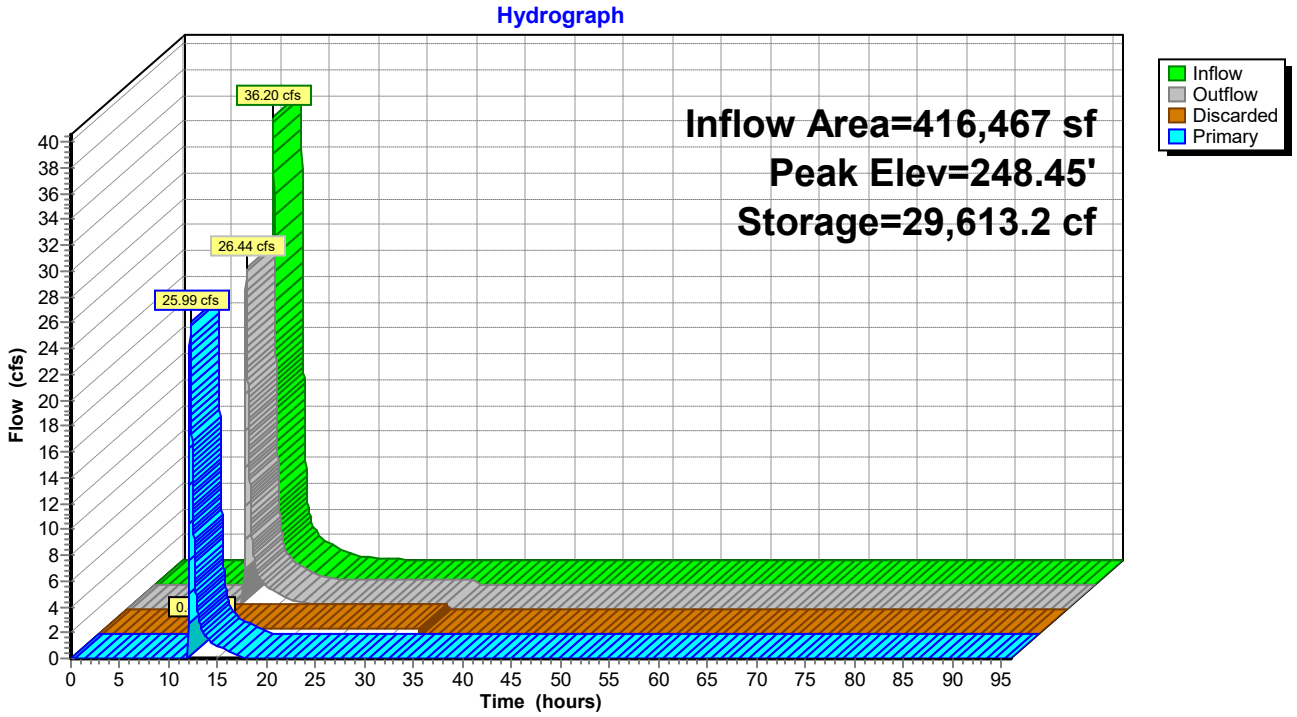
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	244.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	247.10'	**24.0" Round Culvert X 3.00** L= 6.0' Ke= 0.100 Inlet / Outlet Invert= 247.10' / 246.90' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

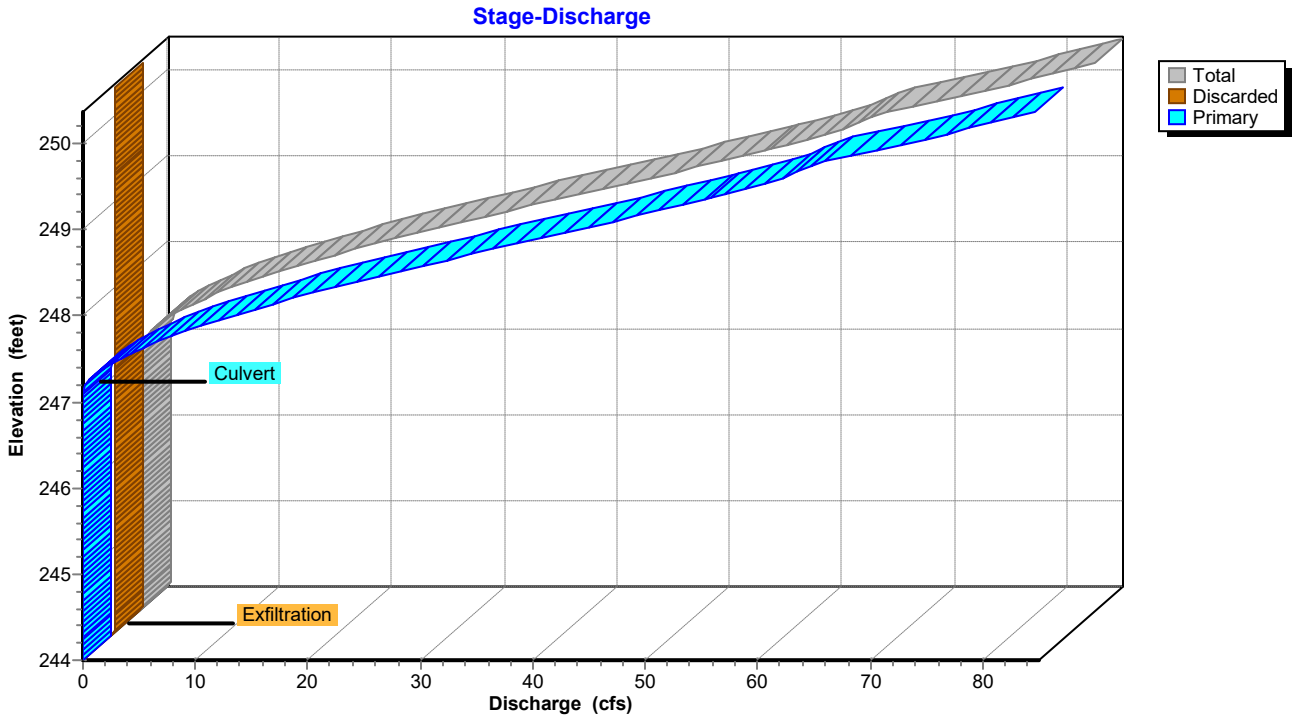
Discarded OutFlow Max=0.44 cfs @ 10.36 hrs HW=244.07' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.44 cfs)

Primary OutFlow Max=25.96 cfs @ 12.18 hrs HW=248.45' (Free Discharge)
↑**2=Culvert** (Barrel Controls 25.96 cfs @ 5.43 fps)

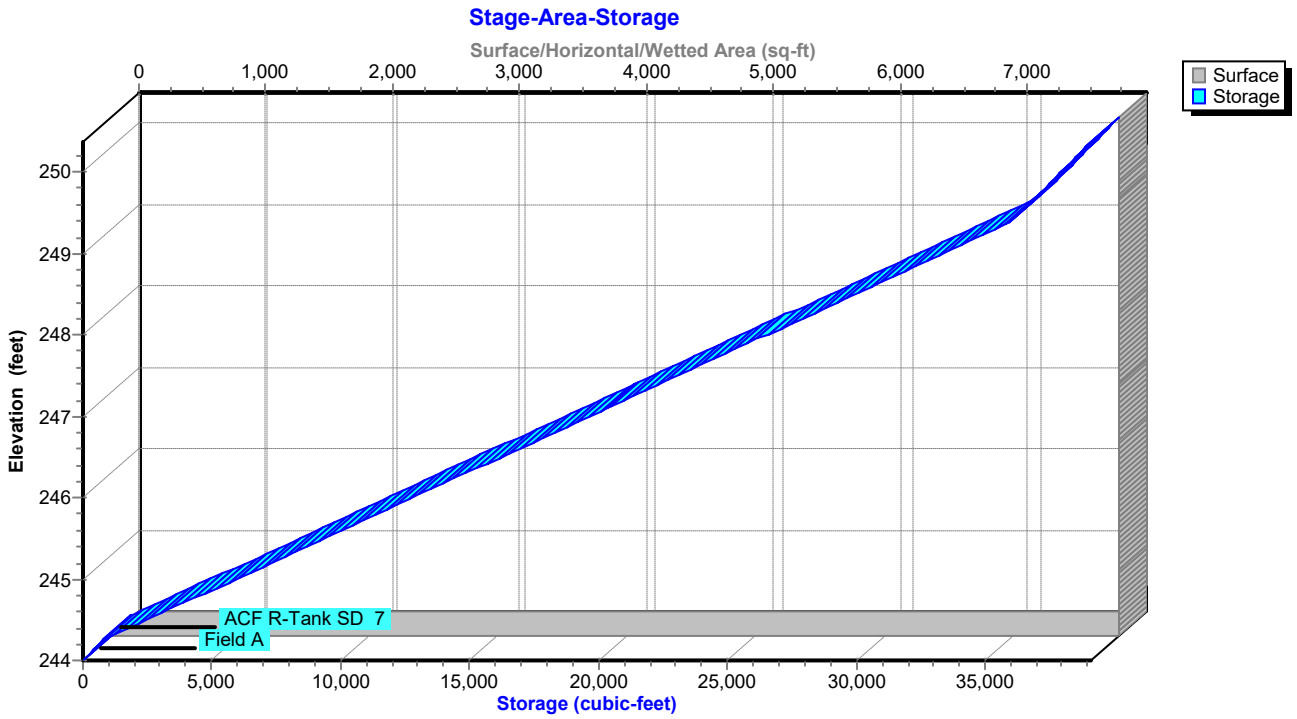
Pond SWM-3: Rtank-3



Pond SWM-3: Rtank-3



Pond SWM-3: Rtank-3



Hydrograph for Pond SWM-3: Rtank-3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	244.00	0.00	0.00	0.00
2.00	0.00	0.0	244.00	0.00	0.00	0.00
4.00	0.00	0.0	244.00	0.00	0.00	0.00
6.00	0.00	0.0	244.00	0.00	0.00	0.00
8.00	0.00	0.0	244.00	0.00	0.00	0.00
10.00	0.05	7.7	244.00	0.02	**0.02**	0.00
12.00	**18.83**	**17,669.6**	**246.71**	**0.44**	**0.44**	**0.00**
14.00	**1.87**	**22,157.0**	**247.36**	**2.04**	0.44	**1.60**
16.00	0.82	21,303.8	247.24	0.95	0.44	0.50
18.00	0.34	20,538.4	247.13	0.47	0.44	0.03
20.00	0.18	19,123.0	246.92	0.44	0.44	0.00
22.00	0.08	16,834.5	246.59	0.44	0.44	0.00
24.00	0.01	13,962.6	246.17	0.44	0.44	0.00
26.00	0.00	10,774.4	245.70	0.44	0.44	0.00
28.00	0.00	7,583.6	245.24	0.44	0.44	0.00
30.00	0.00	4,392.8	244.77	0.44	0.44	0.00
32.00	0.00	1,202.1	244.31	0.44	0.44	0.00
34.00	0.00	0.0	244.00	0.00	0.00	0.00
36.00	0.00	0.0	244.00	0.00	0.00	0.00
38.00	0.00	0.0	244.00	0.00	0.00	0.00
40.00	0.00	0.0	244.00	0.00	0.00	0.00
42.00	0.00	0.0	244.00	0.00	0.00	0.00
44.00	0.00	0.0	244.00	0.00	0.00	0.00
46.00	0.00	0.0	244.00	0.00	0.00	0.00
48.00	0.00	0.0	244.00	0.00	0.00	0.00
50.00	0.00	0.0	244.00	0.00	0.00	0.00
52.00	0.00	0.0	244.00	0.00	0.00	0.00
54.00	0.00	0.0	244.00	0.00	0.00	0.00
56.00	0.00	0.0	244.00	0.00	0.00	0.00
58.00	0.00	0.0	244.00	0.00	0.00	0.00
60.00	0.00	0.0	244.00	0.00	0.00	0.00
62.00	0.00	0.0	244.00	0.00	0.00	0.00
64.00	0.00	0.0	244.00	0.00	0.00	0.00
66.00	0.00	0.0	244.00	0.00	0.00	0.00
68.00	0.00	0.0	244.00	0.00	0.00	0.00
70.00	0.00	0.0	244.00	0.00	0.00	0.00
72.00	0.00	0.0	244.00	0.00	0.00	0.00
74.00	0.00	0.0	244.00	0.00	0.00	0.00
76.00	0.00	0.0	244.00	0.00	0.00	0.00
78.00	0.00	0.0	244.00	0.00	0.00	0.00
80.00	0.00	0.0	244.00	0.00	0.00	0.00
82.00	0.00	0.0	244.00	0.00	0.00	0.00
84.00	0.00	0.0	244.00	0.00	0.00	0.00
86.00	0.00	0.0	244.00	0.00	0.00	0.00
88.00	0.00	0.0	244.00	0.00	0.00	0.00
90.00	0.00	0.0	244.00	0.00	0.00	0.00
92.00	0.00	0.0	244.00	0.00	0.00	0.00
94.00	0.00	0.0	244.00	0.00	0.00	0.00
96.00	0.00	0.0	244.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-3: Rtank-3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
244.00	**7,944**	0.0
244.10	7,944	317.8
244.20	7,944	635.5
244.30	7,944	1,137.5
244.40	7,944	1,823.7
244.50	7,944	2,509.8
244.60	7,944	3,196.0
244.70	7,944	3,882.2
244.80	7,944	4,568.4
244.90	7,944	5,254.6
245.00	7,944	5,940.8
245.10	7,944	6,627.0
245.20	7,944	7,313.1
245.30	7,944	7,999.3
245.40	7,944	8,685.5
245.50	7,944	9,371.7
245.60	7,944	10,057.9
245.70	7,944	10,744.1
245.80	7,944	11,430.3
245.90	7,944	12,116.4
246.00	7,944	12,802.6
246.10	7,944	13,488.8
246.20	7,944	14,175.0
246.30	7,944	14,861.2
246.40	7,944	15,547.4
246.50	7,944	16,233.6
246.60	7,944	16,919.7
246.70	7,944	17,605.9
246.80	7,944	18,292.1
246.90	7,944	18,978.3
247.00	7,944	19,664.5
247.10	7,944	20,350.7
247.20	7,944	21,036.8
247.30	7,944	21,723.0
247.40	7,944	22,409.2
247.50	7,944	23,095.4
247.60	7,944	23,781.6
247.70	7,944	24,467.8
247.80	7,944	25,154.0
247.90	7,944	25,840.1
248.00	7,944	26,526.3
248.10	7,944	27,212.5
248.20	7,944	27,898.7
248.30	7,944	28,584.9
248.40	7,944	29,271.1
248.50	7,944	29,957.3
248.60	7,944	30,643.4
248.70	7,944	31,329.6
248.80	7,944	32,015.8
248.90	7,944	32,702.0
249.00	7,944	33,388.2
249.10	7,944	34,074.4
249.20	7,944	34,760.6
249.30	7,944	35,446.7
249.40	7,944	36,015.4
249.50	7,944	36,333.2
249.60	7,944	36,650.9
249.70	7,944	36,968.7
249.80	7,944	37,286.4
249.90	7,944	37,604.2
250.00	7,944	37,921.9
250.10	7,944	38,239.7
250.20	7,944	38,557.5
250.30	7,944	**38,875.2**

Summary for Pond SWM-4: Rtank-4

Inflow Area = 718,927 sf, 79.73% Impervious, Inflow Depth = 1.62" for 10 yr event
Inflow = 38.82 cfs @ 12.21 hrs, Volume= 97,087.7 cf
Outflow = 17.63 cfs @ 12.54 hrs, Volume= 97,087.7 cf, Atten= 55%, Lag= 20.0 min
Discarded = 0.62 cfs @ 12.00 hrs, Volume= 46,907.4 cf
Primary = 17.01 cfs @ 12.54 hrs, Volume= 50,180.3 cf
Routed to Pond SWM-5 : Rtank-5

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 247.27' @ 12.54 hrs Surf.Area= 11,191 sf Storage= 40,611.4 cf

Plug-Flow detention time= 268.6 min calculated for 97,077.6 cf (100% of inflow)
Center-of-Mass det. time= 268.6 min (1,055.8 - 787.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	243.00'	9,012.6 cf	**58.49'W x 191.32'L x 7.09'H Field A** 79,342.0 cf Overall - 56,810.5 cf Embedded = 22,531.6 cf x 40.0% Voids
#2A	243.25'	53,969.9 cf	**ACF R-Tank SD 8** x 3160 Inside #1 Inside= 15.7"W x 70.1"H => 7.28 sf x 2.35'L = 17.1 cf Outside= 15.7"W x 70.1"H => 7.66 sf x 2.35'L = 18.0 cf 3160 Chambers in 40 Rows
		62,982.6 cf	Total Available Storage

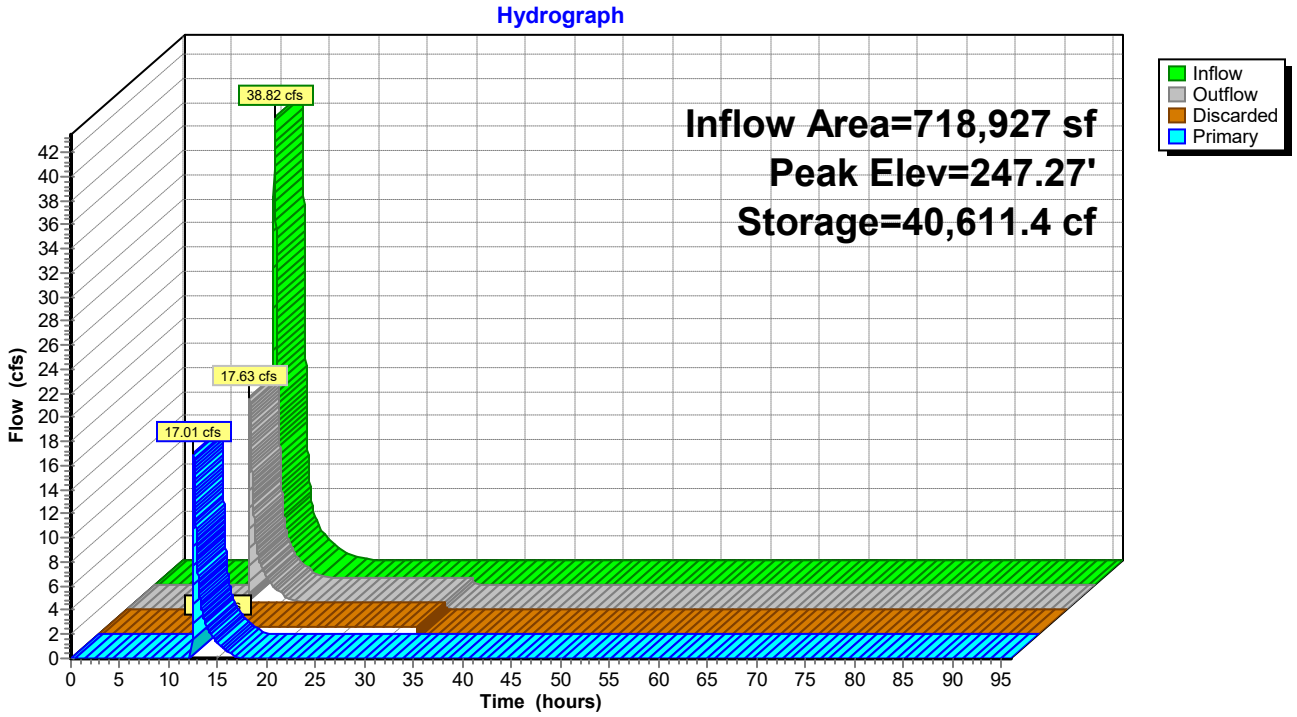
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	243.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.40'	**24.0" Round Culvert X 3.00** L= 50.0' Ke= 0.100 Inlet / Outlet Invert= 246.40' / 245.25' S= 0.0230 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

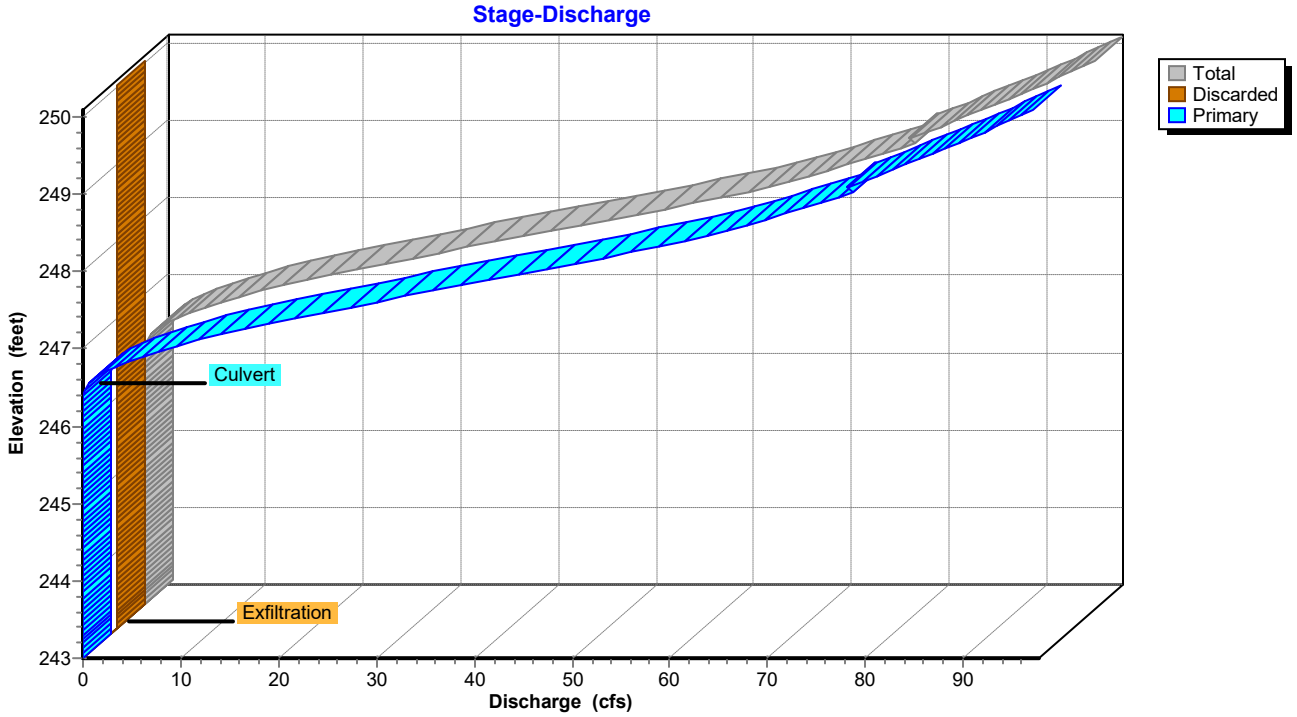
Discarded OutFlow Max=0.62 cfs @ 12.00 hrs HW=243.08' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.62 cfs)

Primary OutFlow Max=16.99 cfs @ 12.54 hrs HW=247.27' (Free Discharge)
↑—**2=Culvert** (Inlet Controls 16.99 cfs @ 4.33 fps)

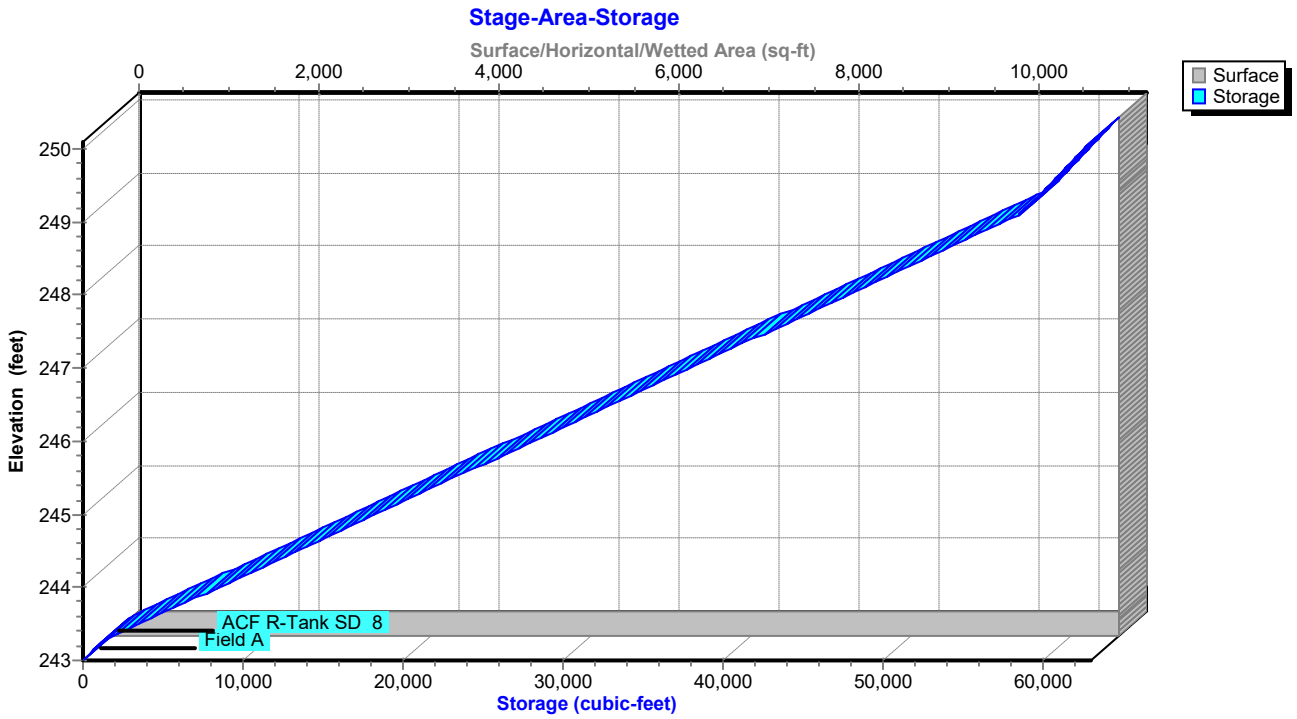
Pond SWM-4: Rtank-4



Pond SWM-4: Rtank-4



Pond SWM-4: Rtank-4



Hydrograph for Pond SWM-4: Rtank-4

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.00	0.00	0.00	0.00
2.00	0.00	0.0	243.00	0.00	0.00	0.00
4.00	0.00	0.0	243.00	0.00	0.00	0.00
6.00	0.00	0.0	243.00	0.00	0.00	0.00
8.00	0.00	0.0	243.00	0.00	0.00	0.00
10.00	0.01	4.5	243.00	0.01	0.01	0.00
12.00	**1.28**	**338.1**	**243.08**	**0.62**	**0.62**	**0.00**
14.00	**2.78**	**35,133.1**	**246.71**	**3.07**	0.62	**2.45**
16.00	0.97	33,517.5	246.55	1.18	0.62	0.56
18.00	0.19	31,499.4	246.34	0.62	0.62	0.00
20.00	0.06	27,706.3	245.96	0.62	0.62	0.00
22.00	0.03	23,501.7	245.53	0.62	0.62	0.00
24.00	0.03	19,227.7	245.09	0.62	0.62	0.00
26.00	0.00	14,740.2	244.64	0.62	0.62	0.00
28.00	0.00	10,245.2	244.18	0.62	0.62	0.00
30.00	0.00	5,750.2	243.72	0.62	0.62	0.00
32.00	0.00	1,255.2	243.26	0.62	0.62	0.00
34.00	0.00	0.0	243.00	0.00	0.00	0.00
36.00	0.00	0.0	243.00	0.00	0.00	0.00
38.00	0.00	0.0	243.00	0.00	0.00	0.00
40.00	0.00	0.0	243.00	0.00	0.00	0.00
42.00	0.00	0.0	243.00	0.00	0.00	0.00
44.00	0.00	0.0	243.00	0.00	0.00	0.00
46.00	0.00	0.0	243.00	0.00	0.00	0.00
48.00	0.00	0.0	243.00	0.00	0.00	0.00
50.00	0.00	0.0	243.00	0.00	0.00	0.00
52.00	0.00	0.0	243.00	0.00	0.00	0.00
54.00	0.00	0.0	243.00	0.00	0.00	0.00
56.00	0.00	0.0	243.00	0.00	0.00	0.00
58.00	0.00	0.0	243.00	0.00	0.00	0.00
60.00	0.00	0.0	243.00	0.00	0.00	0.00
62.00	0.00	0.0	243.00	0.00	0.00	0.00
64.00	0.00	0.0	243.00	0.00	0.00	0.00
66.00	0.00	0.0	243.00	0.00	0.00	0.00
68.00	0.00	0.0	243.00	0.00	0.00	0.00
70.00	0.00	0.0	243.00	0.00	0.00	0.00
72.00	0.00	0.0	243.00	0.00	0.00	0.00
74.00	0.00	0.0	243.00	0.00	0.00	0.00
76.00	0.00	0.0	243.00	0.00	0.00	0.00
78.00	0.00	0.0	243.00	0.00	0.00	0.00
80.00	0.00	0.0	243.00	0.00	0.00	0.00
82.00	0.00	0.0	243.00	0.00	0.00	0.00
84.00	0.00	0.0	243.00	0.00	0.00	0.00
86.00	0.00	0.0	243.00	0.00	0.00	0.00
88.00	0.00	0.0	243.00	0.00	0.00	0.00
90.00	0.00	0.0	243.00	0.00	0.00	0.00
92.00	0.00	0.0	243.00	0.00	0.00	0.00
94.00	0.00	0.0	243.00	0.00	0.00	0.00
96.00	0.00	0.0	243.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-4: Rtank-4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.00	**11,191**	0.0
243.10	11,191	447.6
243.20	11,191	895.3
243.30	11,191	1,610.4
243.40	11,191	2,593.1
243.50	11,191	3,575.8
243.60	11,191	4,558.4
243.70	11,191	5,541.1
243.80	11,191	6,523.8
243.90	11,191	7,506.5
244.00	11,191	8,489.1
244.10	11,191	9,471.8
244.20	11,191	10,454.5
244.30	11,191	11,437.2
244.40	11,191	12,419.8
244.50	11,191	13,402.5
244.60	11,191	14,385.2
244.70	11,191	15,367.9
244.80	11,191	16,350.5
244.90	11,191	17,333.2
245.00	11,191	18,315.9
245.10	11,191	19,298.6
245.20	11,191	20,281.2
245.30	11,191	21,263.9
245.40	11,191	22,246.6
245.50	11,191	23,229.3
245.60	11,191	24,211.9
245.70	11,191	25,194.6
245.80	11,191	26,177.3
245.90	11,191	27,159.9
246.00	11,191	28,142.6
246.10	11,191	29,125.3
246.20	11,191	30,108.0
246.30	11,191	31,090.6
246.40	11,191	32,073.3
246.50	11,191	33,056.0
246.60	11,191	34,038.7
246.70	11,191	35,021.3
246.80	11,191	36,004.0
246.90	11,191	36,986.7
247.00	11,191	37,969.4
247.10	11,191	38,952.0
247.20	11,191	39,934.7
247.30	11,191	40,917.4
247.40	11,191	41,900.1
247.50	11,191	42,882.7
247.60	11,191	43,865.4
247.70	11,191	44,848.1
247.80	11,191	45,830.8
247.90	11,191	46,813.4
248.00	11,191	47,796.1
248.10	11,191	48,778.8
248.20	11,191	49,761.4
248.30	11,191	50,744.1
248.40	11,191	51,726.8
248.50	11,191	52,709.5
248.60	11,191	53,692.1
248.70	11,191	54,674.8
248.80	11,191	55,657.5
248.90	11,191	56,640.2
249.00	11,191	57,622.8
249.10	11,191	58,551.5
249.20	11,191	58,999.1
249.30	11,191	59,446.7
249.40	11,191	59,894.4
249.50	11,191	60,342.0
249.60	11,191	60,789.6
249.70	11,191	61,237.3
249.80	11,191	61,684.9
249.90	11,191	62,132.5
250.00	11,191	**62,580.2**

Summary for Pond SWM-5: Rtank-5

Inflow Area = 759,708 sf, 78.80% Impervious, Inflow Depth = 0.81" for 10 yr event
Inflow = 17.49 cfs @ 12.54 hrs, Volume= 51,293.1 cf
Outflow = 13.85 cfs @ 12.68 hrs, Volume= 51,293.1 cf, Atten= 21%, Lag= 8.2 min
Discarded = 0.43 cfs @ 12.38 hrs, Volume= 14,877.4 cf
Primary = 13.42 cfs @ 12.68 hrs, Volume= 36,415.8 cf
Routed to Link POA D : FIRE POND

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 246.78' @ 12.68 hrs Surf.Area= 7,709 sf Storage= 11,064.1 cf

Plug-Flow detention time= 68.8 min calculated for 51,287.8 cf (100% of inflow)
Center-of-Mass det. time= 68.8 min (870.0 - 801.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	245.00'	5,740.0 cf	**63.74'W x 120.94'L x 5.65'H Field A** 43,529.3 cf Overall - 29,179.3 cf Embedded = 14,350.0 cf x 40.0% Voids
#2A	245.25'	27,720.3 cf	**ACF R-Tank SD 6** x 2156 Inside #1 Inside= 15.7"W x 52.8"H => 5.48 sf x 2.35'L = 12.9 cf Outside= 15.7"W x 52.8"H => 5.77 sf x 2.35'L = 13.5 cf 2156 Chambers in 44 Rows
		33,460.3 cf	Total Available Storage

Storage Group A created with Chamber Wizard

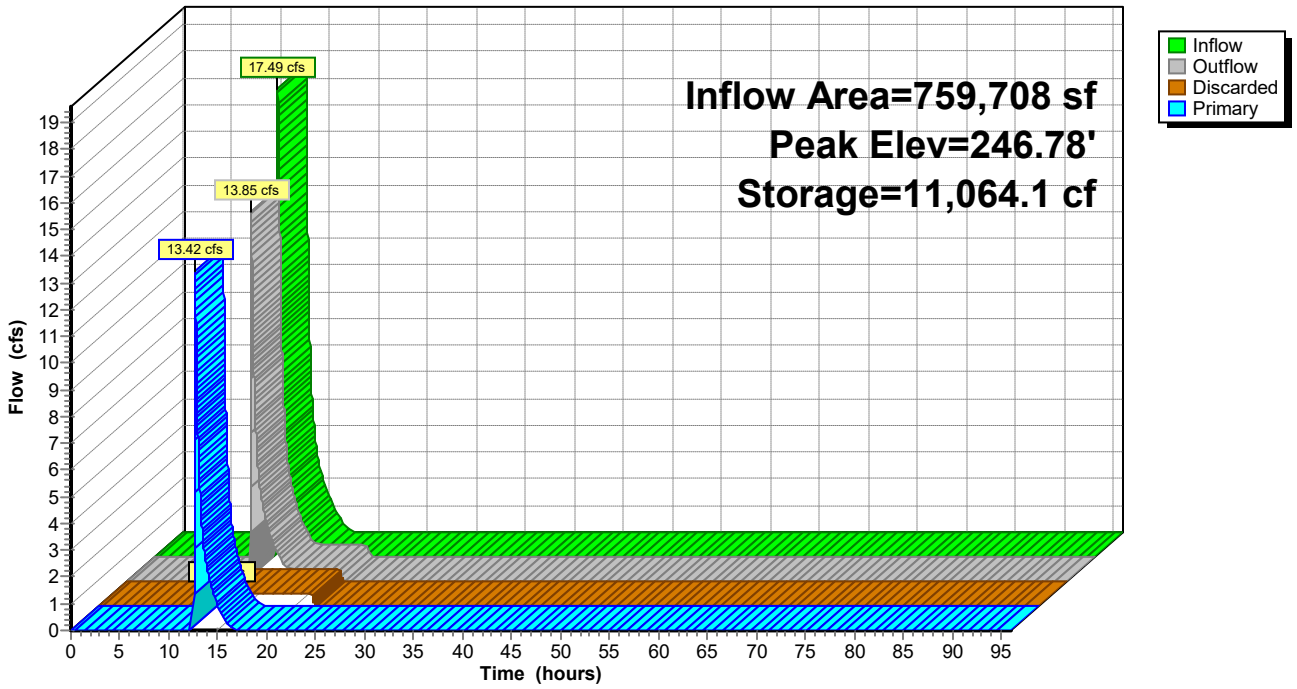
Device	Routing	Invert	Outlet Devices
#1	Discarded	245.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.30'	**24.0" Vert. Orifice/Grate X 9.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	246.30'	**24.0" Round Culvert** L= 166.0' Ke= 0.100 Inlet / Outlet Invert= 246.30' / 245.40' S= 0.0054 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Discarded OutFlow Max=0.43 cfs @ 12.38 hrs HW=245.07' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.43 cfs)

Primary OutFlow Max=13.37 cfs @ 12.68 hrs HW=246.78' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 12.23 cfs @ 2.35 fps)
└**3=Culvert** (Barrel Controls 1.15 cfs @ 2.99 fps)

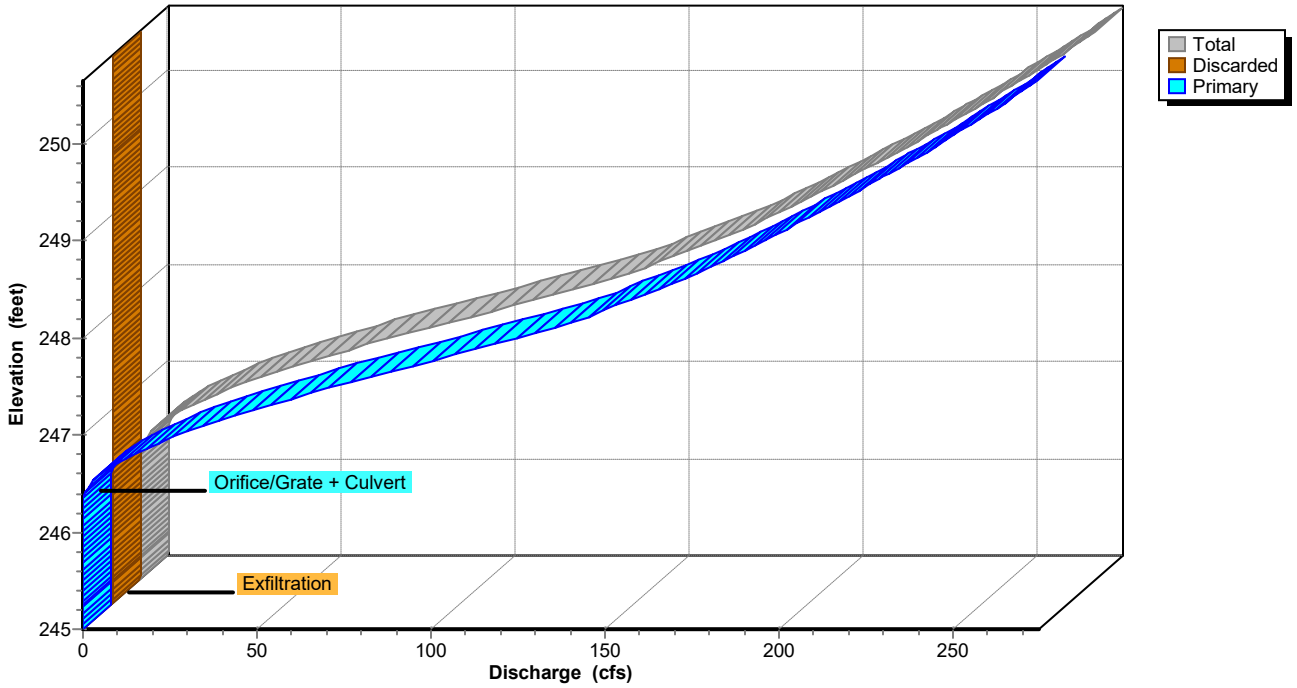
Pond SWM-5: Rtank-5

Hydrograph

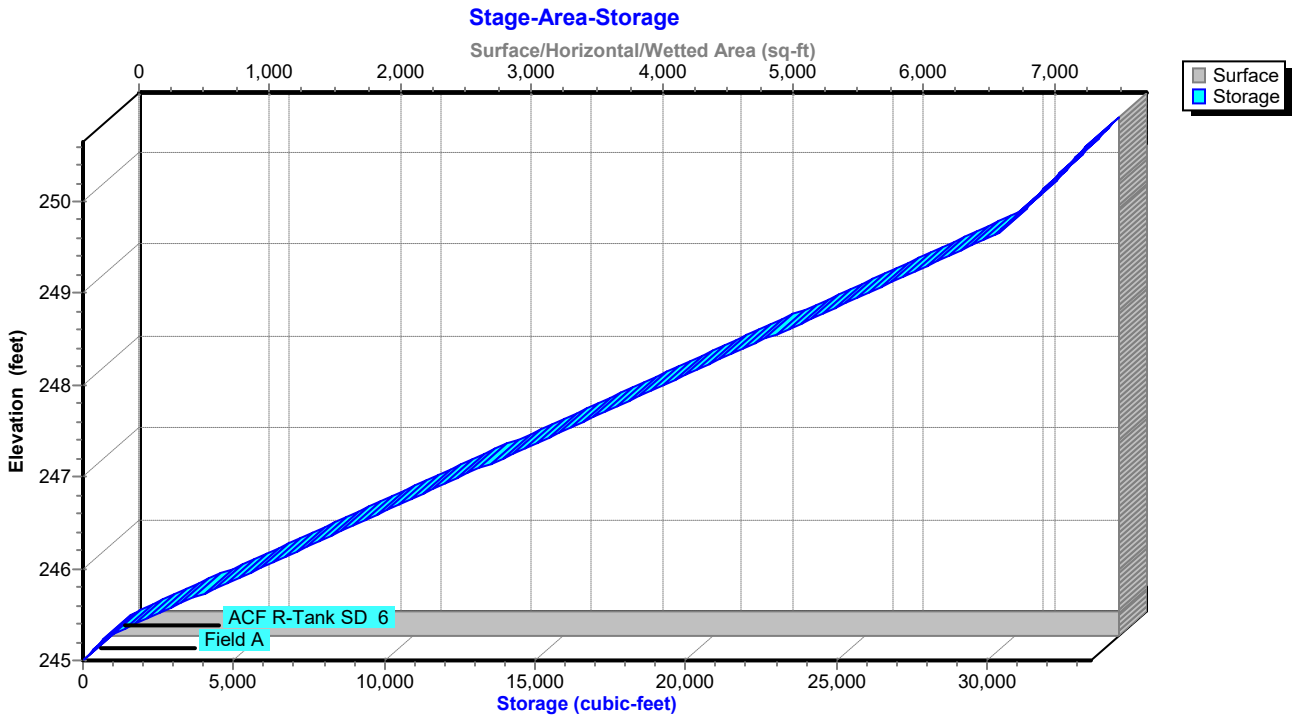


Pond SWM-5: Rtank-5

Stage-Discharge



Pond SWM-5: Rtank-5



Hydrograph for Pond SWM-5: Rtank-5

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	245.00	0.00	0.00	0.00
2.00	0.00	0.0	245.00	0.00	0.00	0.00
4.00	0.00	0.0	245.00	0.00	0.00	0.00
6.00	0.00	0.0	245.00	0.00	0.00	0.00
8.00	0.00	0.0	245.00	0.00	0.00	0.00
10.00	0.00	0.0	245.00	0.00	0.00	0.00
12.00	**0.00**	**0.0**	**245.00**	**0.00**	**0.00**	**0.00**
14.00	**2.45**	**9,098.9**	**246.49**	**2.59**	**0.43**	**2.16**
16.00	0.56	8,260.9	246.36	0.69	0.43	0.26
18.00	0.00	6,079.1	246.04	0.43	0.43	0.00
20.00	0.00	2,982.5	245.58	0.43	0.43	0.00
22.00	0.00	33.3	245.01	0.08	0.08	0.00
24.00	0.00	0.0	245.00	0.00	0.00	0.00
26.00	0.00	0.0	245.00	0.00	0.00	0.00
28.00	0.00	0.0	245.00	0.00	0.00	0.00
30.00	0.00	0.0	245.00	0.00	0.00	0.00
32.00	0.00	0.0	245.00	0.00	0.00	0.00
34.00	0.00	0.0	245.00	0.00	0.00	0.00
36.00	0.00	0.0	245.00	0.00	0.00	0.00
38.00	0.00	0.0	245.00	0.00	0.00	0.00
40.00	0.00	0.0	245.00	0.00	0.00	0.00
42.00	0.00	0.0	245.00	0.00	0.00	0.00
44.00	0.00	0.0	245.00	0.00	0.00	0.00
46.00	0.00	0.0	245.00	0.00	0.00	0.00
48.00	0.00	0.0	245.00	0.00	0.00	0.00
50.00	0.00	0.0	245.00	0.00	0.00	0.00
52.00	0.00	0.0	245.00	0.00	0.00	0.00
54.00	0.00	0.0	245.00	0.00	0.00	0.00
56.00	0.00	0.0	245.00	0.00	0.00	0.00
58.00	0.00	0.0	245.00	0.00	0.00	0.00
60.00	0.00	0.0	245.00	0.00	0.00	0.00
62.00	0.00	0.0	245.00	0.00	0.00	0.00
64.00	0.00	0.0	245.00	0.00	0.00	0.00
66.00	0.00	0.0	245.00	0.00	0.00	0.00
68.00	0.00	0.0	245.00	0.00	0.00	0.00
70.00	0.00	0.0	245.00	0.00	0.00	0.00
72.00	0.00	0.0	245.00	0.00	0.00	0.00
74.00	0.00	0.0	245.00	0.00	0.00	0.00
76.00	0.00	0.0	245.00	0.00	0.00	0.00
78.00	0.00	0.0	245.00	0.00	0.00	0.00
80.00	0.00	0.0	245.00	0.00	0.00	0.00
82.00	0.00	0.0	245.00	0.00	0.00	0.00
84.00	0.00	0.0	245.00	0.00	0.00	0.00
86.00	0.00	0.0	245.00	0.00	0.00	0.00
88.00	0.00	0.0	245.00	0.00	0.00	0.00
90.00	0.00	0.0	245.00	0.00	0.00	0.00
92.00	0.00	0.0	245.00	0.00	0.00	0.00
94.00	0.00	0.0	245.00	0.00	0.00	0.00
96.00	0.00	0.0	245.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-5: Rtank-5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
245.00	**7,709**	0.0
245.10	7,709	308.4
245.20	7,709	616.7
245.30	7,709	1,107.6
245.40	7,709	1,781.1
245.50	7,709	2,454.5
245.60	7,709	3,127.9
245.70	7,709	3,801.3
245.80	7,709	4,474.7
245.90	7,709	5,148.2
246.00	7,709	5,821.6
246.10	7,709	6,495.0
246.20	7,709	7,168.4
246.30	7,709	7,841.8
246.40	7,709	8,515.2
246.50	7,709	9,188.7
246.60	7,709	9,862.1
246.70	7,709	10,535.5
246.80	7,709	11,208.9
246.90	7,709	11,882.3
247.00	7,709	12,555.8
247.10	7,709	13,229.2
247.20	7,709	13,902.6
247.30	7,709	14,576.0
247.40	7,709	15,249.4
247.50	7,709	15,922.9
247.60	7,709	16,596.3
247.70	7,709	17,269.7
247.80	7,709	17,943.1
247.90	7,709	18,616.5
248.00	7,709	19,289.9
248.10	7,709	19,963.4
248.20	7,709	20,636.8
248.30	7,709	21,310.2
248.40	7,709	21,983.6
248.50	7,709	22,657.0
248.60	7,709	23,330.5
248.70	7,709	24,003.9
248.80	7,709	24,677.3
248.90	7,709	25,350.7
249.00	7,709	26,024.1
249.10	7,709	26,697.6
249.20	7,709	27,371.0
249.30	7,709	28,044.4
249.40	7,709	28,717.8
249.50	7,709	29,391.2
249.60	7,709	30,064.7
249.70	7,709	30,542.1
249.80	7,709	30,850.5
249.90	7,709	31,158.9
250.00	7,709	31,467.3
250.10	7,709	31,775.6
250.20	7,709	32,084.0
250.30	7,709	32,392.4
250.40	7,709	32,700.7
250.50	7,709	33,009.1
250.60	7,709	**33,317.5**

Summary for Pond SWM-6: Rtank-6

Inflow Area = 108,531 sf,100.00% Impervious, Inflow Depth = 4.62" for 10 yr event
Inflow = 12.27 cfs @ 12.07 hrs, Volume= 41,815.1 cf
Outflow = 11.86 cfs @ 12.10 hrs, Volume= 41,815.1 cf, Atten= 3%, Lag= 1.6 min
Discarded = 0.10 cfs @ 3.68 hrs, Volume= 10,166.5 cf
Primary = 11.76 cfs @ 12.10 hrs, Volume= 31,648.6 cf
Routed to Link POA D : FIRE POND

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 260.87' @ 12.10 hrs Surf.Area= 1,732 sf Storage= 4,936.9 cf

Plug-Flow detention time= 78.9 min calculated for 41,810.8 cf (100% of inflow)
Center-of-Mass det. time= 79.0 min (826.5 - 747.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	256.00'	1,439.5 cf	**15.81'W x 109.56'L x 4.20'H Field A** 7,280.3 cf Overall - 3,681.4 cf Embedded = 3,598.9 cf x 40.0% Voids
#2A	256.25'	3,497.4 cf	**ACF R-Tank SD 4** x 405 Inside #1 Inside= 15.7"W x 35.4"H => 3.68 sf x 2.35'L = 8.6 cf Outside= 15.7"W x 35.4"H => 3.88 sf x 2.35'L = 9.1 cf 405 Chambers in 9 Rows
		4,936.9 cf	Total Available Storage

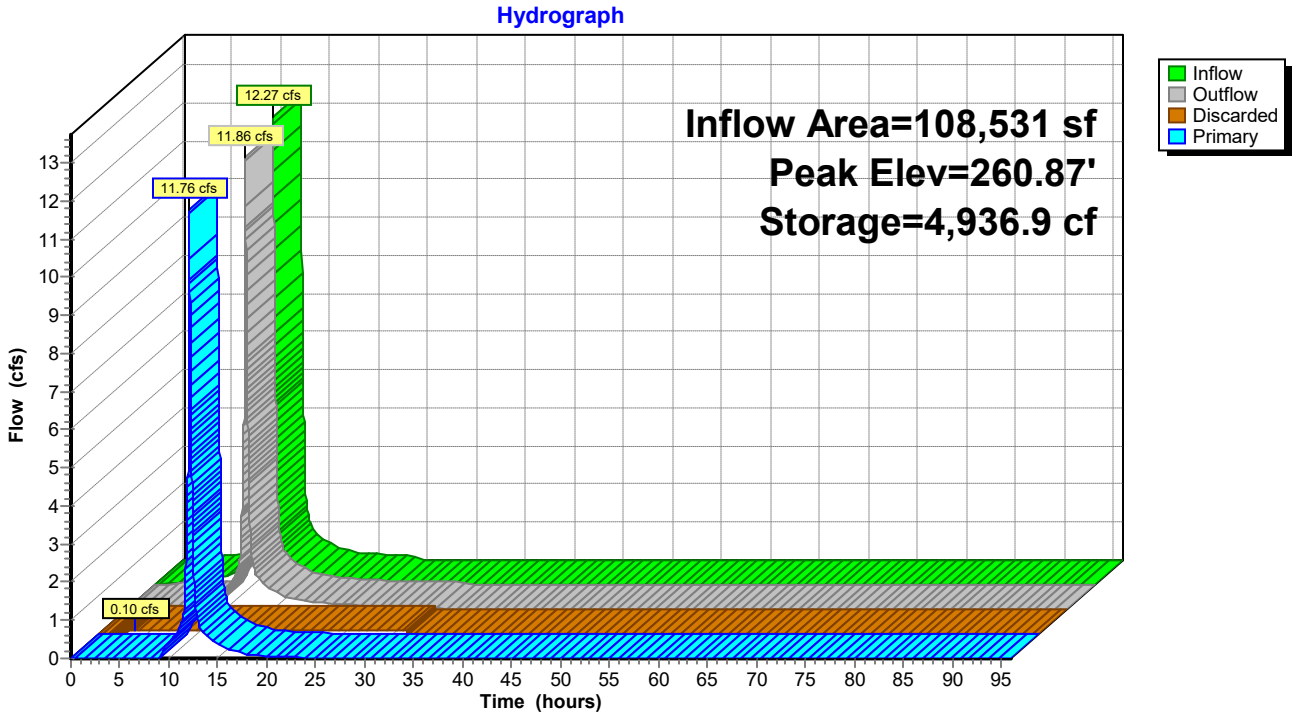
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	256.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	257.95'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	257.95'	**12.0" Vert. outlet** C= 0.600 Limited to weir flow at low heads

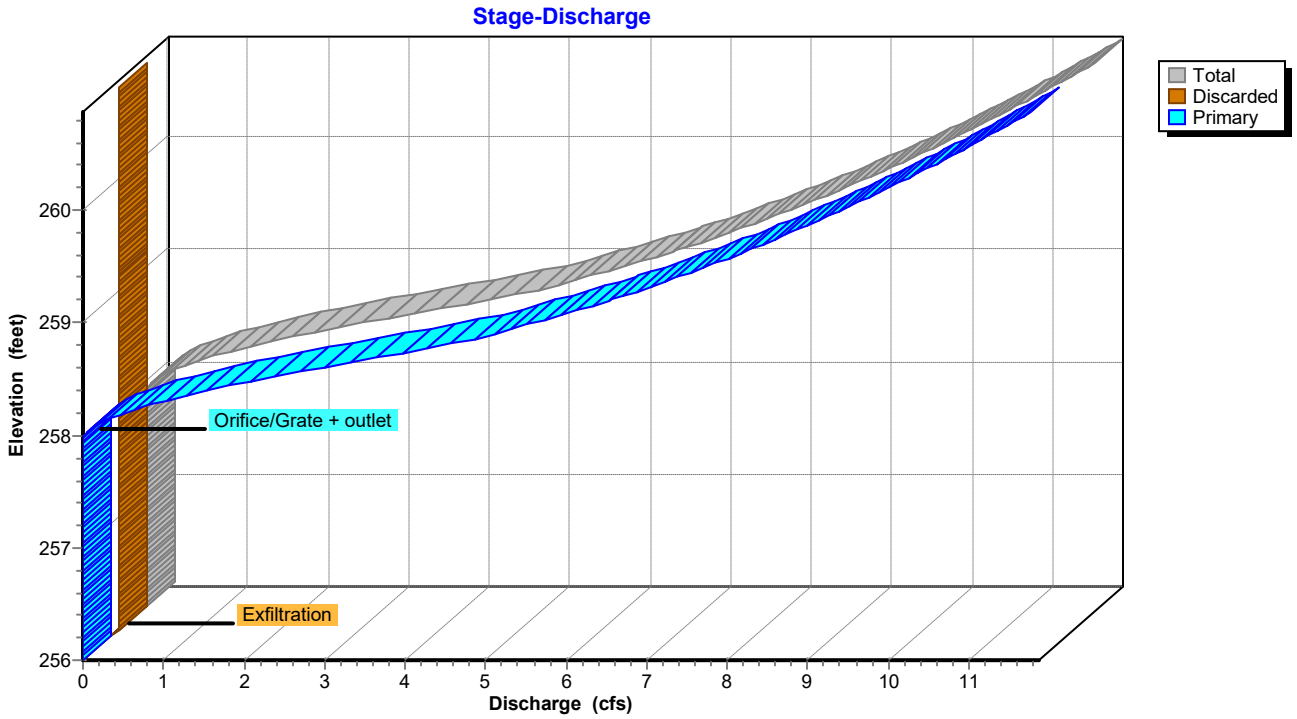
Discarded OutFlow Max=0.10 cfs @ 3.68 hrs HW=256.04' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=11.59 cfs @ 12.10 hrs HW=260.80' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 5.79 cfs @ 7.38 fps)
└**3=outlet** (Orifice Controls 5.79 cfs @ 7.38 fps)

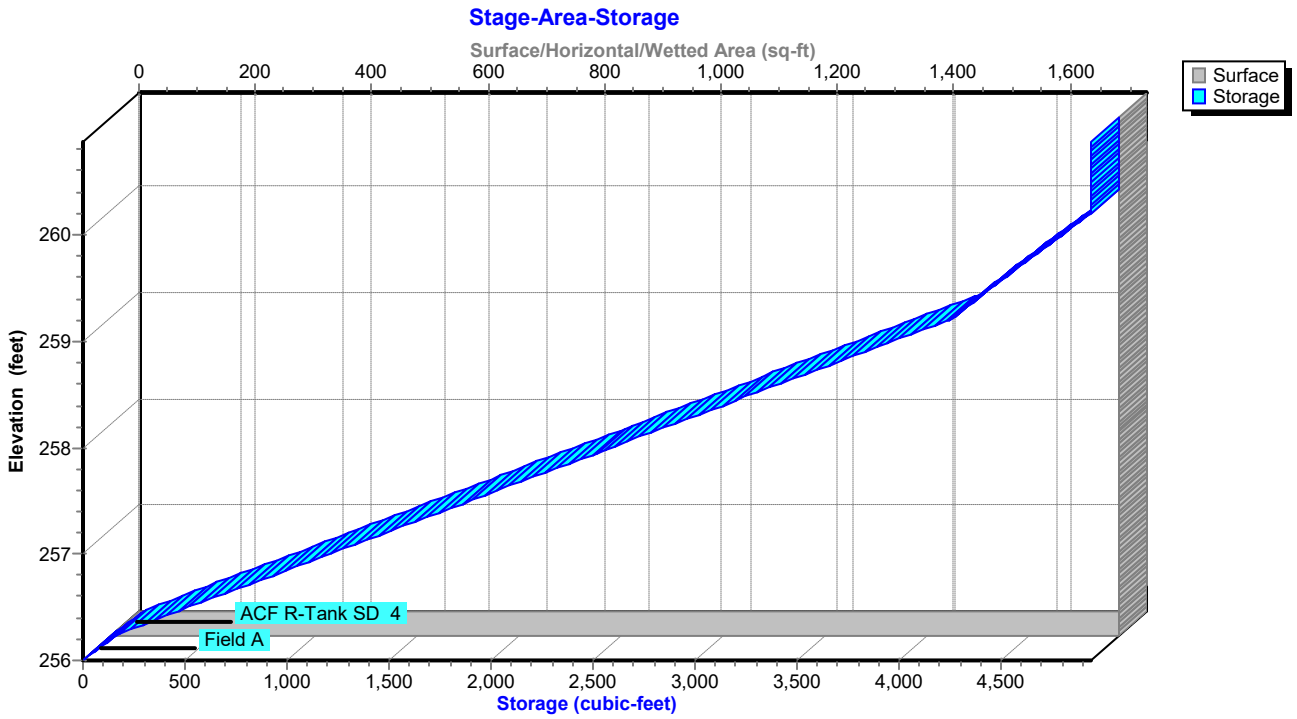
Pond SWM-6: Rtank-6



Pond SWM-6: Rtank-6



Pond SWM-6: Rtank-6



Hydrograph for Pond SWM-6: Rtank-6

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	256.00	0.00	0.00	0.00
2.00	0.04	12.8	256.02	0.04	**0.04**	0.00
4.00	0.11	37.7	256.05	0.10	**0.10**	0.00
6.00	0.16	323.7	256.36	0.10	0.10	0.00
8.00	0.29	1,230.3	257.02	0.10	0.10	0.00
10.00	0.57	2,835.6	258.18	0.55	0.10	0.45
12.00	**8.29**	**4,015.5**	**259.04**	**5.89**	0.10	**5.79**
14.00	**0.62**	**2,869.9**	**258.21**	**0.65**	0.10	**0.55**
16.00	0.33	2,750.2	258.12	0.35	0.10	0.25
18.00	0.20	2,673.0	258.06	0.21	0.10	0.11
20.00	0.16	2,634.3	258.04	0.16	0.10	0.07
22.00	0.13	2,608.3	258.02	0.14	0.10	0.04
24.00	0.10	2,566.3	257.99	0.11	0.10	0.01
26.00	0.00	1,893.9	257.50	0.10	0.10	0.00
28.00	0.00	1,198.1	256.99	0.10	0.10	0.00
30.00	0.00	502.3	256.49	0.10	0.10	0.00
32.00	0.00	0.0	256.00	0.00	0.00	0.00
34.00	0.00	0.0	256.00	0.00	0.00	0.00
36.00	0.00	0.0	256.00	0.00	0.00	0.00
38.00	0.00	0.0	256.00	0.00	0.00	0.00
40.00	0.00	0.0	256.00	0.00	0.00	0.00
42.00	0.00	0.0	256.00	0.00	0.00	0.00
44.00	0.00	0.0	256.00	0.00	0.00	0.00
46.00	0.00	0.0	256.00	0.00	0.00	0.00
48.00	0.00	0.0	256.00	0.00	0.00	0.00
50.00	0.00	0.0	256.00	0.00	0.00	0.00
52.00	0.00	0.0	256.00	0.00	0.00	0.00
54.00	0.00	0.0	256.00	0.00	0.00	0.00
56.00	0.00	0.0	256.00	0.00	0.00	0.00
58.00	0.00	0.0	256.00	0.00	0.00	0.00
60.00	0.00	0.0	256.00	0.00	0.00	0.00
62.00	0.00	0.0	256.00	0.00	0.00	0.00
64.00	0.00	0.0	256.00	0.00	0.00	0.00
66.00	0.00	0.0	256.00	0.00	0.00	0.00
68.00	0.00	0.0	256.00	0.00	0.00	0.00
70.00	0.00	0.0	256.00	0.00	0.00	0.00
72.00	0.00	0.0	256.00	0.00	0.00	0.00
74.00	0.00	0.0	256.00	0.00	0.00	0.00
76.00	0.00	0.0	256.00	0.00	0.00	0.00
78.00	0.00	0.0	256.00	0.00	0.00	0.00
80.00	0.00	0.0	256.00	0.00	0.00	0.00
82.00	0.00	0.0	256.00	0.00	0.00	0.00
84.00	0.00	0.0	256.00	0.00	0.00	0.00
86.00	0.00	0.0	256.00	0.00	0.00	0.00
88.00	0.00	0.0	256.00	0.00	0.00	0.00
90.00	0.00	0.0	256.00	0.00	0.00	0.00
92.00	0.00	0.0	256.00	0.00	0.00	0.00
94.00	0.00	0.0	256.00	0.00	0.00	0.00
96.00	0.00	0.0	256.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-6: Rtank-6

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
256.00	**1,732**	0.0
256.05	1,732	34.6
256.10	1,732	69.3
256.15	1,732	103.9
256.20	1,732	138.6
256.25	1,732	173.2
256.30	1,732	242.2
256.35	1,732	311.1
256.40	1,732	380.0
256.45	1,732	449.0
256.50	1,732	517.9
256.55	1,732	586.8
256.60	1,732	655.8
256.65	1,732	724.7
256.70	1,732	793.6
256.75	1,732	862.5
256.80	1,732	931.5
256.85	1,732	1,000.4
256.90	1,732	1,069.3
256.95	1,732	1,138.3
257.00	1,732	1,207.2
257.05	1,732	1,276.1
257.10	1,732	1,345.1
257.15	1,732	1,414.0
257.20	1,732	1,482.9
257.25	1,732	1,551.9
257.30	1,732	1,620.8
257.35	1,732	1,689.7
257.40	1,732	1,758.7
257.45	1,732	1,827.6
257.50	1,732	1,896.5
257.55	1,732	1,965.5
257.60	1,732	2,034.4
257.65	1,732	2,103.3
257.70	1,732	2,172.3
257.75	1,732	2,241.2
257.80	1,732	2,310.1
257.85	1,732	2,379.1
257.90	1,732	2,448.0
257.95	1,732	2,516.9
258.00	1,732	2,585.8
258.05	1,732	2,654.8
258.10	1,732	2,723.7
258.15	1,732	2,792.6
258.20	1,732	2,861.6
258.25	1,732	2,930.5
258.30	1,732	2,999.4
258.35	1,732	3,068.4
258.40	1,732	3,137.3
258.45	1,732	3,206.2
258.50	1,732	3,275.2
258.55	1,732	3,344.1
258.60	1,732	3,413.0
258.65	1,732	3,482.0
258.70	1,732	3,550.9
258.75	1,732	3,619.8
258.80	1,732	3,688.8
258.85	1,732	3,757.7
258.90	1,732	3,826.6
258.95	1,732	3,895.6
259.00	1,732	3,964.5
259.05	1,732	4,033.4
259.10	1,732	4,102.4
259.15	1,732	4,171.3
259.20	1,732	4,240.2
259.25	1,732	4,276.7
259.30	1,732	4,311.4
259.35	1,732	4,346.0
259.40	1,732	4,380.7
259.45	1,732	4,415.3
259.50	1,732	4,450.0
259.55	1,732	4,484.6
259.60	1,732	4,519.3
259.65	1,732	4,553.9
259.70	1,732	4,588.6
259.75	1,732	4,623.2
259.80	1,732	4,657.8
259.85	1,732	4,692.5
259.90	1,732	4,727.1
259.95	1,732	4,761.8
260.00	1,732	4,796.4
260.05	1,732	4,831.1
260.10	1,732	4,865.7
260.15	1,732	4,900.4
260.20	1,732	**4,935.0**
260.25	1,732	**4,936.9**
260.30	1,732	4,936.9
260.35	1,732	4,936.9
260.40	1,732	4,936.9
260.45	1,732	4,936.9
260.50	1,732	4,936.9
260.55	1,732	4,936.9
260.60	1,732	4,936.9
260.65	1,732	4,936.9
260.70	1,732	4,936.9
260.75	1,732	4,936.9
260.80	1,732	4,936.9
260.85	1,732	4,936.9

Summary for Pond SWM-7: Rtank-7

Inflow Area = 214,605 sf, 84.39% Impervious, Inflow Depth = 3.64" for 10 yr event
Inflow = 19.68 cfs @ 12.10 hrs, Volume= 65,061.7 cf
Outflow = 17.48 cfs @ 12.14 hrs, Volume= 65,061.7 cf, Atten= 11%, Lag= 2.7 min
Discarded = 0.15 cfs @ 7.50 hrs, Volume= 16,253.3 cf
Primary = 17.33 cfs @ 12.14 hrs, Volume= 48,808.4 cf
Routed to Pond SWM-1 : Rtank-1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 248.42' @ 12.14 hrs Surf.Area= 2,655 sf Storage= 10,996.2 cf

Plug-Flow detention time= 132.4 min calculated for 65,054.9 cf (100% of inflow)
Center-of-Mass det. time= 132.4 min (928.8 - 796.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	243.50'	2,406.6 cf	**39.43'W x 67.34'L x 7.81'H Field A** 20,742.3 cf Overall - 14,725.8 cf Embedded = 6,016.5 cf x 40.0% Voids
#2A	243.75'	13,989.5 cf	**ACF R-Tank SD 9** x 729 Inside #1 Inside= 15.7"W x 78.7"H => 8.18 sf x 2.35'L = 19.2 cf Outside= 15.7"W x 78.7"H => 8.61 sf x 2.35'L = 20.2 cf 729 Chambers in 27 Rows
		16,396.1 cf	Total Available Storage

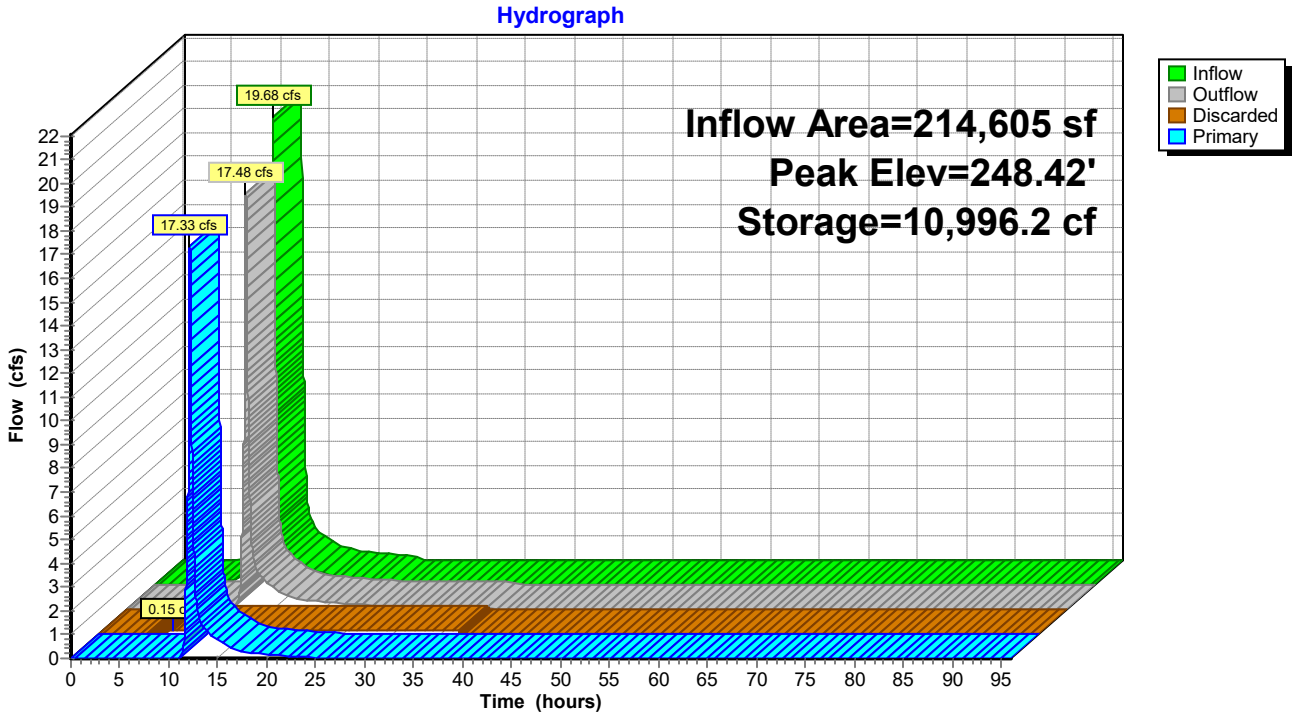
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.50'	**18.0" Round Culvert X 2.00** L= 10.0' Ke= 0.100 Inlet / Outlet Invert= 246.50' / 246.50' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

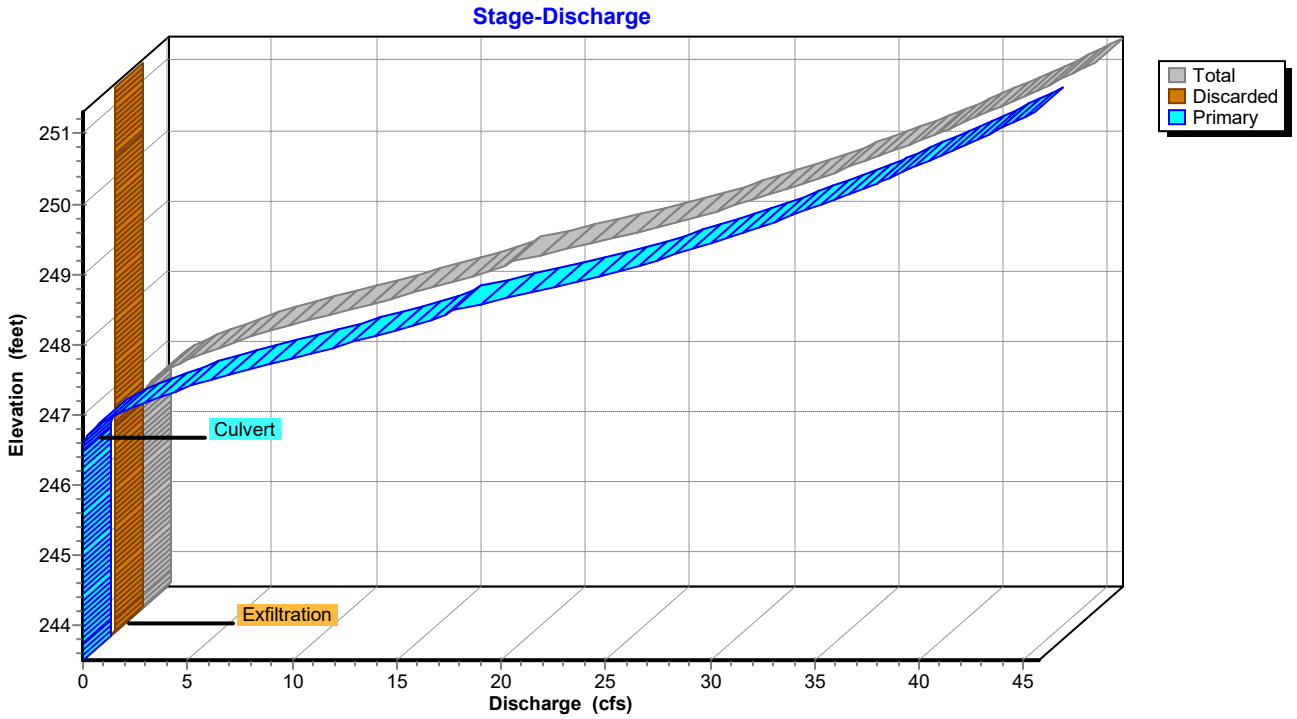
Discarded OutFlow Max=0.15 cfs @ 7.50 hrs HW=243.58' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.15 cfs)

Primary OutFlow Max=17.31 cfs @ 12.14 hrs HW=248.42' (Free Discharge)
↑**2=Culvert** (Barrel Controls 17.31 cfs @ 4.96 fps)

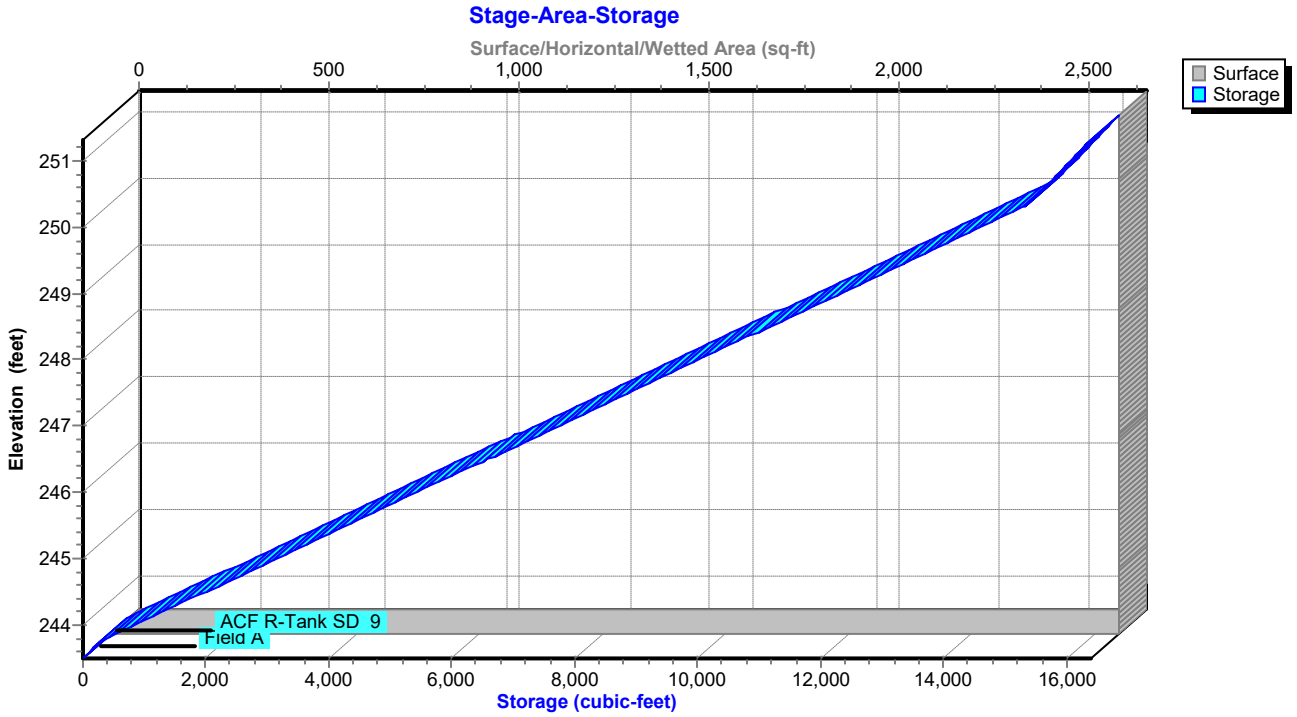
Pond SWM-7: Rtank-7



Pond SWM-7: Rtank-7



Pond SWM-7: Rtank-7



Hydrograph for Pond SWM-7: Rtank-7

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	0.00
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.00	0.0	243.50	0.00	0.00	0.00
6.00	0.05	25.6	243.52	0.05	**0.05**	0.00
8.00	0.21	153.7	243.64	0.15	**0.15**	0.00
10.00	0.66	2,044.2	244.52	0.15	0.15	0.00
12.00	**11.22**	**9,330.6**	**247.70**	**8.79**	0.15	**8.64**
14.00	**1.17**	**7,523.9**	**246.91**	**1.23**	0.15	**1.08**
16.00	0.62	7,247.1	246.79	0.66	0.15	0.51
18.00	0.38	7,065.7	246.71	0.40	0.15	0.25
20.00	0.30	6,974.1	246.67	0.31	0.15	0.17
22.00	0.25	6,910.7	246.64	0.26	0.15	0.11
24.00	0.20	6,845.1	246.62	0.21	0.15	0.06
26.00	0.00	5,802.7	246.16	0.15	0.15	0.00
28.00	0.00	4,736.1	245.70	0.15	0.15	0.00
30.00	0.00	3,669.6	245.23	0.15	0.15	0.00
32.00	0.00	2,603.1	244.77	0.15	0.15	0.00
34.00	0.00	1,536.5	244.30	0.15	0.15	0.00
36.00	0.00	470.0	243.84	0.15	0.15	0.00
38.00	0.00	0.0	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-7: Rtank-7

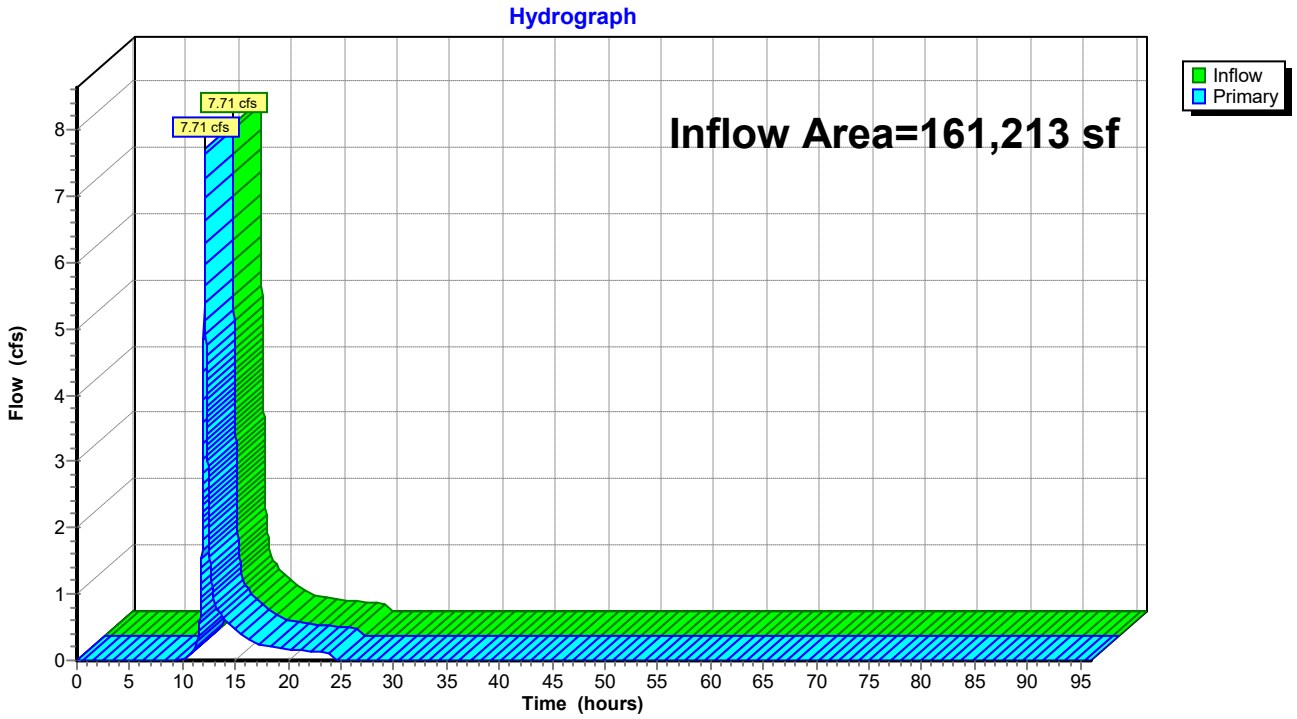
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	**2,655**	0.0
243.60	2,655	106.2
243.70	2,655	212.4
243.80	2,655	380.4
243.90	2,655	610.0
244.00	2,655	839.6
244.10	2,655	1,069.3
244.20	2,655	1,298.9
244.30	2,655	1,528.6
244.40	2,655	1,758.2
244.50	2,655	1,987.9
244.60	2,655	2,217.5
244.70	2,655	2,447.1
244.80	2,655	2,676.8
244.90	2,655	2,906.4
245.00	2,655	3,136.1
245.10	2,655	3,365.7
245.20	2,655	3,595.4
245.30	2,655	3,825.0
245.40	2,655	4,054.6
245.50	2,655	4,284.3
245.60	2,655	4,513.9
245.70	2,655	4,743.6
245.80	2,655	4,973.2
245.90	2,655	5,202.9
246.00	2,655	5,432.5
246.10	2,655	5,662.1
246.20	2,655	5,891.8
246.30	2,655	6,121.4
246.40	2,655	6,351.1
246.50	2,655	6,580.7
246.60	2,655	6,810.4
246.70	2,655	7,040.0
246.80	2,655	7,269.6
246.90	2,655	7,499.3
247.00	2,655	7,728.9
247.10	2,655	7,958.6
247.20	2,655	8,188.2
247.30	2,655	8,417.9
247.40	2,655	8,647.5
247.50	2,655	8,877.1
247.60	2,655	9,106.8
247.70	2,655	9,336.4
247.80	2,655	9,566.1
247.90	2,655	9,795.7
248.00	2,655	10,025.4
248.10	2,655	10,255.0
248.20	2,655	10,484.7
248.30	2,655	10,714.3
248.40	2,655	10,943.9
248.50	2,655	11,173.6
248.60	2,655	11,403.2
248.70	2,655	11,632.9
248.80	2,655	11,862.5
248.90	2,655	12,092.2
249.00	2,655	12,321.8
249.10	2,655	12,551.4
249.20	2,655	12,781.1
249.30	2,655	13,010.7
249.40	2,655	13,240.4
249.50	2,655	13,470.0
249.60	2,655	13,699.7
249.70	2,655	13,929.3
249.80	2,655	14,158.9
249.90	2,655	14,388.6
250.00	2,655	14,618.2
250.10	2,655	14,847.9
250.20	2,655	15,077.5
250.30	2,655	15,307.2
250.40	2,655	15,427.8
250.50	2,655	15,534.0
250.60	2,655	15,640.2
250.70	2,655	15,746.4
250.80	2,655	15,852.6
250.90	2,655	15,958.8
251.00	2,655	16,065.1
251.10	2,655	16,171.3
251.20	2,655	16,277.5
251.30	2,655	**16,383.7**

Summary for Link POA A: POND- WEST

Inflow Area = 161,213 sf, 51.37% Impervious, Inflow Depth = 1.86" for 10 yr event
Inflow = 7.71 cfs @ 12.10 hrs, Volume= 24,937.6 cf
Primary = 7.71 cfs @ 12.10 hrs, Volume= 24,937.6 cf, Atten= 0%, Lag= 0.0 min

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

Link POA A: POND- WEST



Hydrograph for Link POA A: POND- WEST

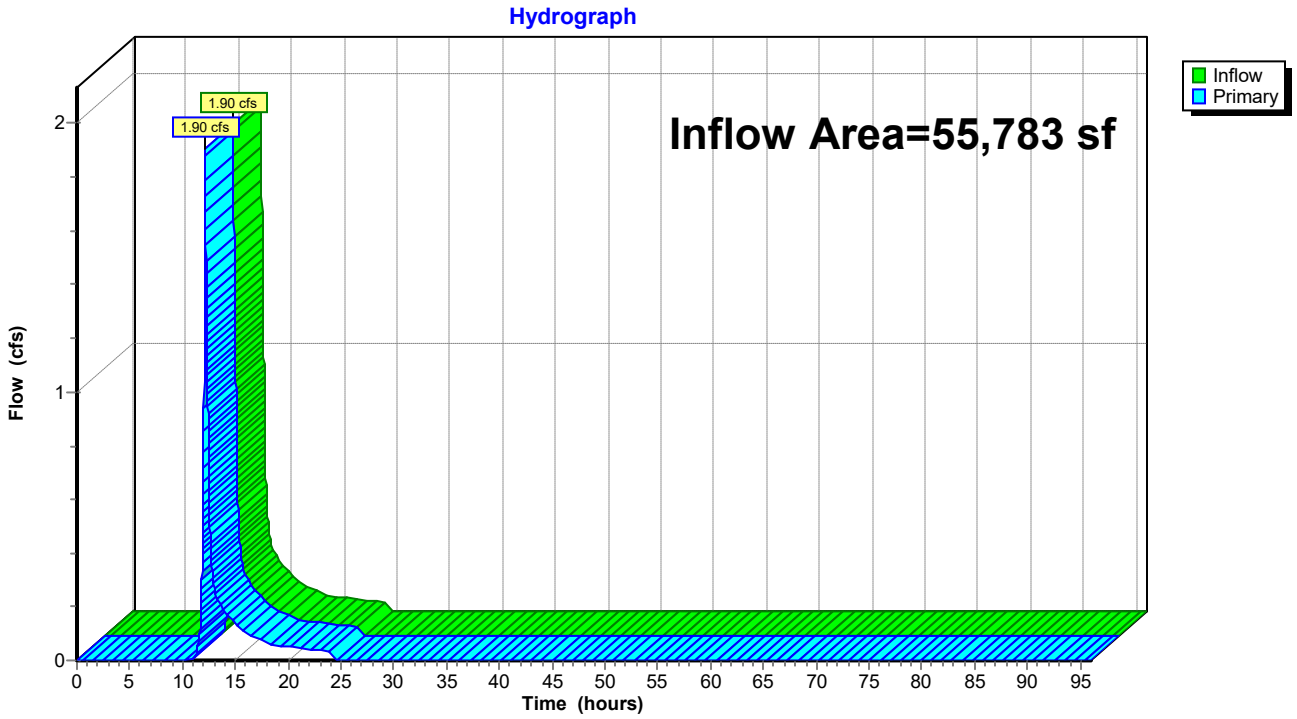
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.15	0.00	0.15	63.00	0.00	0.00	0.00
12.00	**3.94**	0.00	**3.94**	64.00	0.00	0.00	0.00
13.00	**0.91**	0.00	**0.91**	65.00	0.00	0.00	0.00
14.00	0.60	0.00	0.60	66.00	0.00	0.00	0.00
15.00	0.46	0.00	0.46	67.00	0.00	0.00	0.00
16.00	0.33	0.00	0.33	68.00	0.00	0.00	0.00
17.00	0.27	0.00	0.27	69.00	0.00	0.00	0.00
18.00	0.21	0.00	0.21	70.00	0.00	0.00	0.00
19.00	0.19	0.00	0.19	71.00	0.00	0.00	0.00
20.00	0.17	0.00	0.17	72.00	0.00	0.00	0.00
21.00	0.15	0.00	0.15	73.00	0.00	0.00	0.00
22.00	0.14	0.00	0.14	74.00	0.00	0.00	0.00
23.00	0.13	0.00	0.13	75.00	0.00	0.00	0.00
24.00	0.11	0.00	0.11	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA C: WETLAND-WEST

Inflow Area = 55,783 sf, 42.91% Impervious, Inflow Depth = 1.49" for 10 yr event
Inflow = 1.90 cfs @ 12.13 hrs, Volume= 6,928.3 cf
Primary = 1.90 cfs @ 12.13 hrs, Volume= 6,928.3 cf, Atten= 0%, Lag= 0.0 min

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

Link POA C: WETLAND-WEST



Hydrograph for Link POA C: WETLAND-WEST

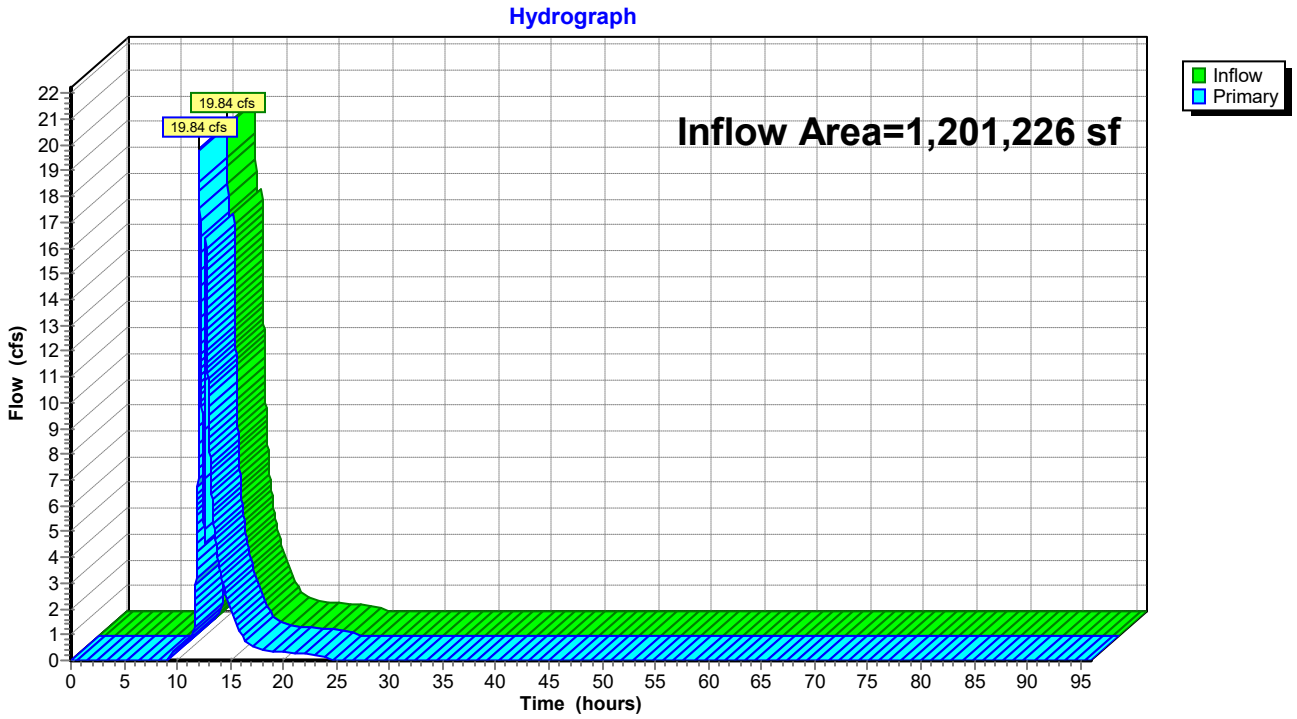
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.01	0.00	0.01	63.00	0.00	0.00	0.00
12.00	**0.78**	0.00	**0.78**	64.00	0.00	0.00	0.00
13.00	**0.28**	0.00	**0.28**	65.00	0.00	0.00	0.00
14.00	0.18	0.00	0.18	66.00	0.00	0.00	0.00
15.00	0.14	0.00	0.14	67.00	0.00	0.00	0.00
16.00	0.10	0.00	0.10	68.00	0.00	0.00	0.00
17.00	0.08	0.00	0.08	69.00	0.00	0.00	0.00
18.00	0.06	0.00	0.06	70.00	0.00	0.00	0.00
19.00	0.06	0.00	0.06	71.00	0.00	0.00	0.00
20.00	0.05	0.00	0.05	72.00	0.00	0.00	0.00
21.00	0.05	0.00	0.05	73.00	0.00	0.00	0.00
22.00	0.04	0.00	0.04	74.00	0.00	0.00	0.00
23.00	0.04	0.00	0.04	75.00	0.00	0.00	0.00
24.00	0.03	0.00	0.03	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA D: FIRE POND

Inflow Area = 1,201,226 sf, 67.83% Impervious, Inflow Depth = 0.98" for 10 yr event
Inflow = 19.84 cfs @ 12.10 hrs, Volume= 98,383.6 cf
Primary = 19.84 cfs @ 12.10 hrs, Volume= 98,383.6 cf, Atten= 0%, Lag= 0.0 min

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

Link POA D: FIRE POND



Hydrograph for Link POA D: FIRE POND

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.45	0.00	0.45	62.00	0.00	0.00	0.00
11.00	0.73	0.00	0.73	63.00	0.00	0.00	0.00
12.00	**9.13**	0.00	**9.13**	64.00	0.00	0.00	0.00
13.00	**9.12**	0.00	**9.12**	65.00	0.00	0.00	0.00
14.00	3.56	0.00	3.56	66.00	0.00	0.00	0.00
15.00	1.98	0.00	1.98	67.00	0.00	0.00	0.00
16.00	1.00	0.00	1.00	68.00	0.00	0.00	0.00
17.00	0.57	0.00	0.57	69.00	0.00	0.00	0.00
18.00	0.43	0.00	0.43	70.00	0.00	0.00	0.00
19.00	0.37	0.00	0.37	71.00	0.00	0.00	0.00
20.00	0.32	0.00	0.32	72.00	0.00	0.00	0.00
21.00	0.29	0.00	0.29	73.00	0.00	0.00	0.00
22.00	0.25	0.00	0.25	74.00	0.00	0.00	0.00
23.00	0.22	0.00	0.22	75.00	0.00	0.00	0.00
24.00	0.19	0.00	0.19	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

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 PR-A: Prop. Watershed A Runoff Area=161,213 sf 51.37% Impervious Runoff Depth=2.83"
Flow Length=1,502' Tc=6.5 min CN=69 Runoff=11.99 cfs 38,021.6 cf

Subcatchment PR-C: Prop. Watershed C Runoff Area=55,783 sf 42.91% Impervious Runoff Depth=2.37"
Flow Length=836' Tc=8.7 min CN=64 Runoff=3.16 cfs 11,021.6 cf

Subcatchment PR-D1: Prop. Watershed Runoff Area=214,605 sf 84.39% Impervious Runoff Depth=4.88"
Flow Length=1,308' Tc=7.1 min CN=89 Runoff=26.01 cfs 87,287.7 cf

Subcatchment PR-D2: Prop. Watershed Runoff Area=416,467 sf 80.91% Impervious Runoff Depth=4.66"
Flow Length=955' Tc=5.3 min CN=87 Runoff=51.96 cfs 161,758.1 cf

Subcatchment PR-D3: Prop. Watershed Runoff Area=108,531 sf 100.00% Impervious Runoff Depth=5.91"
Tc=5.0 min CN=98 Runoff=15.56 cfs 53,466.9 cf

Subcatchment PR-D4: Prop. Watershed D4 Runoff Area=37,021 sf 55.83% Impervious Runoff Depth=3.12"
Tc=5.0 min CN=72 Runoff=3.22 cfs 9,614.2 cf

Subcatchment PR-D5: Prop. Watershed D5 Runoff Area=50,834 sf 67.76% Impervious Runoff Depth=3.81"
Tc=5.0 min CN=79 Runoff=5.39 cfs 16,156.2 cf

Subcatchment PR-D6: Prop. Watershed D6 Runoff Area=40,781 sf 62.50% Impervious Runoff Depth=3.51"
Tc=5.0 min CN=76 Runoff=3.99 cfs 11,928.1 cf

Subcatchment PR-D7: Prop. Watershed Runoff Area=332,987 sf 32.32% Impervious Runoff Depth=1.85"
Flow Length=1,130' Tc=6.5 min CN=58 Runoff=15.19 cfs 51,362.1 cf

Pond RG1: Rain-Garden #1 Peak Elev=250.95' Storage=4,437.1 cf Inflow=5.39 cfs 16,156.2 cf
Discarded=0.22 cfs 9,867.2 cf Primary=3.79 cfs 6,289.0 cf Outflow=4.01 cfs 16,156.2 cf

Pond RG2: Rain-Garden #2 Peak Elev=250.81' Storage=3,532.7 cf Inflow=3.99 cfs 11,928.1 cf
Discarded=0.23 cfs 8,281.3 cf Primary=2.20 cfs 3,646.7 cf Outflow=2.44 cfs 11,928.1 cf

Pond SWM-1: Rtank-1 Peak Elev=249.04' Storage=17,157.5 cf Inflow=23.47 cfs 70,440.0 cf
Discarded=0.20 cfs 18,716.3 cf Primary=18.77 cfs 51,723.7 cf Outflow=18.98 cfs 70,440.0 cf

Pond SWM-2: Rtank-2 Peak Elev=251.59' Storage=9,552.7 cf Inflow=51.96 cfs 161,758.1 cf
Discarded=0.42 cfs 28,715.7 cf Primary=49.03 cfs 133,042.4 cf Outflow=49.44 cfs 161,758.1 cf

Pond SWM-3: Rtank-3 Peak Elev=248.94' Storage=32,967.8 cf Inflow=49.03 cfs 133,042.4 cf
Discarded=0.44 cfs 40,507.6 cf Primary=41.94 cfs 92,534.8 cf Outflow=42.39 cfs 133,042.4 cf

Pond SWM-4: Rtank-4 Peak Elev=247.93' Storage=47,151.7 cf Inflow=64.78 cfs 160,161.6 cf
Discarded=0.62 cfs 50,325.3 cf Primary=43.33 cfs 109,836.4 cf Outflow=43.95 cfs 160,161.6 cf

Pond SWM-5: Rtank-5 Peak Elev=247.19' Storage=13,821.7 cf Inflow=44.90 cfs 113,483.1 cf
Discarded=0.43 cfs 16,700.8 cf Primary=42.73 cfs 96,782.3 cf Outflow=43.16 cfs 113,483.1 cf

Pond SWM-6: Rtank-6 Peak Elev=264.87' Storage=4,936.9 cf Inflow=15.56 cfs 53,466.9 cf
Discarded=0.10 cfs 10,387.3 cf Primary=19.16 cfs 43,079.6 cf Outflow=19.26 cfs 53,466.9 cf

Pond SWM-7: Rtank-7 Peak Elev=248.88' Storage=12,043.8 cf Inflow=26.01 cfs 87,287.7 cf
Discarded=0.15 cfs 16,847.7 cf Primary=23.47 cfs 70,440.0 cf Outflow=23.62 cfs 87,287.7 cf

Link POA A: POND- WEST Inflow=11.99 cfs 38,021.6 cf
Primary=11.99 cfs 38,021.6 cf

Link POA C: WETLAND-WEST Inflow=3.16 cfs 11,021.6 cf
Primary=3.16 cfs 11,021.6 cf

Link POA D: FIRE POND Inflow=55.32 cfs 191,224.1 cf
Primary=55.32 cfs 191,224.1 cf

Total Runoff Area = 1,418,222 sf Runoff Volume = 440,616.6 cf Average Runoff Depth = 3.73"
35.02% Pervious = 496,621 sf 64.98% Impervious = 921,601 sf

Summary for Subcatchment PR-A: Prop. Watershed A

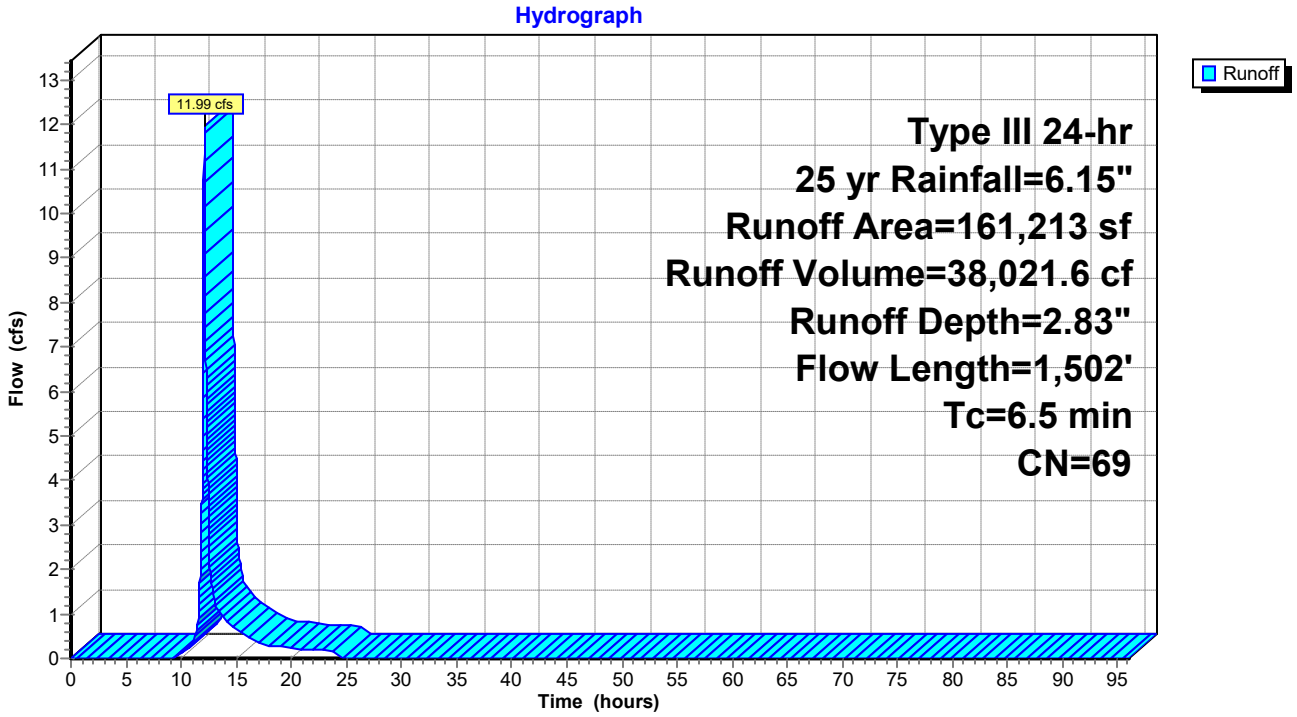
Runoff = 11.99 cfs @ 12.10 hrs, Volume= 38,021.6 cf, Depth= 2.83"
Routed to Link POA A : POND- WEST

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 yr Rainfall=6.15"

	Area (sf)	CN	Description
*	82,820	98	Unconnected pavement, HSG A
	78,393	39	>75% Grass cover, Good, HSG A
	161,213	69	Weighted Average
	78,393		48.63% Pervious Area
	82,820		51.37% Impervious Area
	82,820		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	50	0.0080	0.83		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
2.5	327	0.0120	2.22		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.3	10	0.0001	0.59	0.46	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
0.2	85	0.0110	7.18	8.81	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010 PVC, smooth interior
0.1	69	0.0180	9.18	11.27	**Pipe Channel, E-F** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010
0.6	284	0.0080	8.37	26.30	**Pipe Channel, F-G** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
0.0	31	0.0145	11.27	35.41	**Pipe Channel, G-H** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
0.2	58	0.0020	4.86	23.85	**Pipe Channel, H-I** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010
0.1	47	0.0025	5.43	26.66	**Pipe Channel, I-J** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010
0.6	140	0.0012	3.76	18.47	**Pipe Channel, J-K** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010
0.9	401	0.0040	7.76	54.84	**Pipe Channel, h-I** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.010
6.5	1,502	Total			

Subcatchment PR-A: Prop. Watershed A



Hydrograph for Subcatchment PR-A: Prop. Watershed A

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.19	0.00	0.00
4.00	0.26	0.00	0.00
5.00	0.35	0.00	0.00
6.00	0.44	0.00	0.00
7.00	0.56	0.00	0.00
8.00	0.70	0.00	0.00
9.00	0.90	0.00	0.00
10.00	1.16	0.01	0.11
11.00	1.54	0.08	0.36
12.00	3.07	0.71	**6.42**
13.00	4.61	1.68	**1.31**
14.00	4.99	1.95	0.85
15.00	5.25	2.14	0.66
16.00	5.45	2.29	0.47
17.00	5.59	2.40	0.38
18.00	5.71	2.49	0.29
19.00	5.80	2.56	0.26
20.00	5.89	2.62	0.23
21.00	5.96	2.68	0.21
22.00	6.03	2.74	0.19
23.00	6.09	2.79	0.18
24.00	**6.15**	**2.83**	0.16
25.00	6.15	2.83	0.00
26.00	6.15	2.83	0.00
27.00	6.15	2.83	0.00
28.00	6.15	2.83	0.00
29.00	6.15	2.83	0.00
30.00	6.15	2.83	0.00
31.00	6.15	2.83	0.00
32.00	6.15	2.83	0.00
33.00	6.15	2.83	0.00
34.00	6.15	2.83	0.00
35.00	6.15	2.83	0.00
36.00	6.15	2.83	0.00
37.00	6.15	2.83	0.00
38.00	6.15	2.83	0.00
39.00	6.15	2.83	0.00
40.00	6.15	2.83	0.00
41.00	6.15	2.83	0.00
42.00	6.15	2.83	0.00
43.00	6.15	2.83	0.00
44.00	6.15	2.83	0.00
45.00	6.15	2.83	0.00
46.00	6.15	2.83	0.00
47.00	6.15	2.83	0.00
48.00	6.15	2.83	0.00
49.00	6.15	2.83	0.00
50.00	6.15	2.83	0.00
51.00	6.15	2.83	0.00
52.00	6.15	2.83	0.00
53.00	6.15	2.83	0.00
54.00	6.15	2.83	0.00
55.00	6.15	2.83	0.00
56.00	6.15	2.83	0.00
57.00	6.15	2.83	0.00
58.00	6.15	2.83	0.00
59.00	6.15	2.83	0.00
60.00	6.15	2.83	0.00
61.00	6.15	2.83	0.00
62.00	6.15	2.83	0.00
63.00	6.15	2.83	0.00
64.00	6.15	2.83	0.00
65.00	6.15	2.83	0.00
66.00	6.15	2.83	0.00
67.00	6.15	2.83	0.00
68.00	6.15	2.83	0.00
69.00	6.15	2.83	0.00
70.00	6.15	2.83	0.00
71.00	6.15	2.83	0.00
72.00	6.15	2.83	0.00
73.00	6.15	2.83	0.00
74.00	6.15	2.83	0.00
75.00	6.15	2.83	0.00
76.00	6.15	2.83	0.00
77.00	6.15	2.83	0.00
78.00	6.15	2.83	0.00
79.00	6.15	2.83	0.00
80.00	6.15	2.83	0.00
81.00	6.15	2.83	0.00
82.00	6.15	2.83	0.00
83.00	6.15	2.83	0.00
84.00	6.15	2.83	0.00
85.00	6.15	2.83	0.00
86.00	6.15	2.83	0.00
87.00	6.15	2.83	0.00
88.00	6.15	2.83	0.00
89.00	6.15	2.83	0.00
90.00	6.15	2.83	0.00
91.00	6.15	2.83	0.00
92.00	6.15	2.83	0.00
93.00	6.15	2.83	0.00
94.00	6.15	2.83	0.00
95.00	6.15	2.83	0.00
96.00	6.15	2.83	0.00

Summary for Subcatchment PR-C: Prop. Watershed C

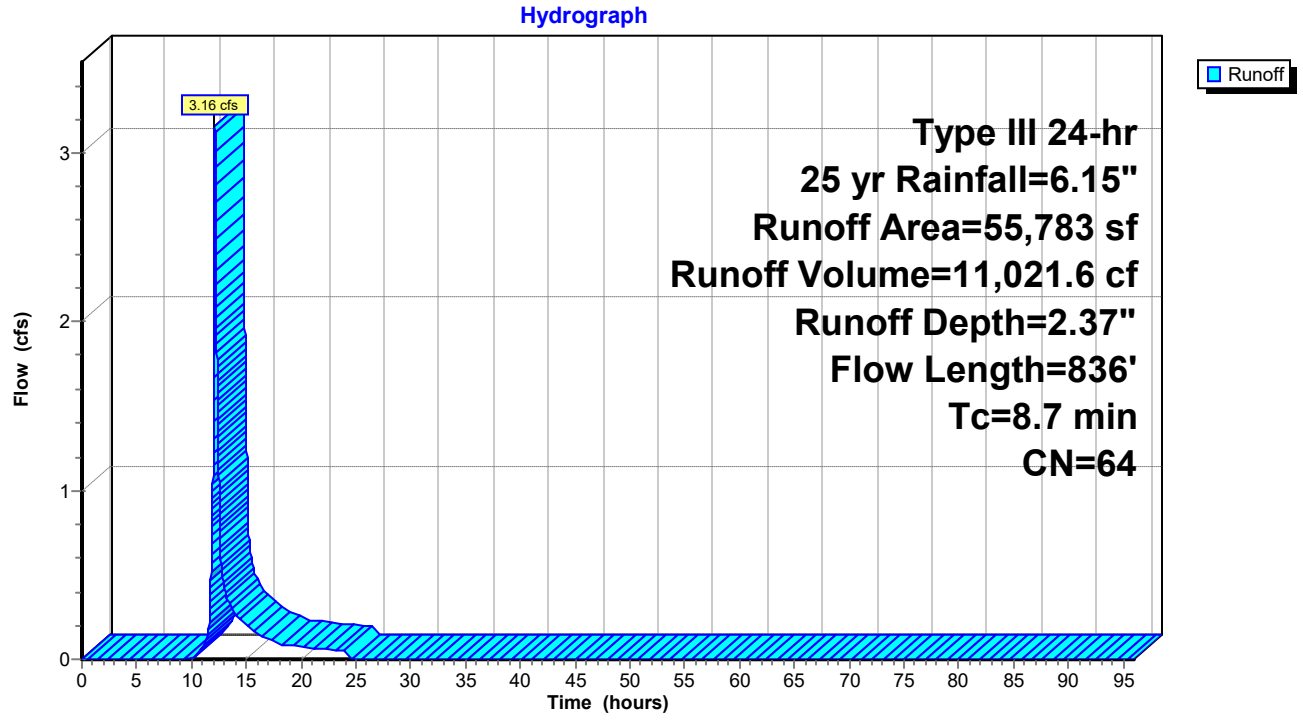
Runoff = 3.16 cfs @ 12.13 hrs, Volume= 11,021.6 cf, Depth= 2.37"
Routed to Link POA C : WETLAND-WEST

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 yr Rainfall=6.15"

	Area (sf)	CN	Description
*	23,937	98	Unconnected pavement, HSG A
	31,846	39	>75% Grass cover, Good, HSG A
	55,783	64	Weighted Average
	31,846		57.09% Pervious Area
	23,937		42.91% Impervious Area
	23,937		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	50	0.0020	0.48		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
6.2	686	0.0083	1.85		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.8	100	0.0017	2.21	1.74	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
8.7	836	Total			

Subcatchment PR-C: Prop. Watershed C



Hydrograph for Subcatchment PR-C: Prop. Watershed C

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.19	0.00	0.00
4.00	0.26	0.00	0.00
5.00	0.35	0.00	0.00
6.00	0.44	0.00	0.00
7.00	0.56	0.00	0.00
8.00	0.70	0.00	0.00
9.00	0.90	0.00	0.00
10.00	1.16	0.00	0.00
11.00	1.54	0.03	0.06
12.00	3.07	0.50	**1.41**
13.00	4.61	1.33	**0.42**
14.00	4.99	1.57	0.27
15.00	5.25	1.75	0.21
16.00	5.45	1.88	0.15
17.00	5.59	1.98	0.12
18.00	5.71	2.06	0.09
19.00	5.80	2.12	0.08
20.00	5.89	2.18	0.07
21.00	5.96	2.24	0.07
22.00	6.03	2.29	0.06
23.00	6.09	2.33	0.06
24.00	**6.15**	**2.37**	0.05
25.00	6.15	2.37	0.00
26.00	6.15	2.37	0.00
27.00	6.15	2.37	0.00
28.00	6.15	2.37	0.00
29.00	6.15	2.37	0.00
30.00	6.15	2.37	0.00
31.00	6.15	2.37	0.00
32.00	6.15	2.37	0.00
33.00	6.15	2.37	0.00
34.00	6.15	2.37	0.00
35.00	6.15	2.37	0.00
36.00	6.15	2.37	0.00
37.00	6.15	2.37	0.00
38.00	6.15	2.37	0.00
39.00	6.15	2.37	0.00
40.00	6.15	2.37	0.00
41.00	6.15	2.37	0.00
42.00	6.15	2.37	0.00
43.00	6.15	2.37	0.00
44.00	6.15	2.37	0.00
45.00	6.15	2.37	0.00
46.00	6.15	2.37	0.00
47.00	6.15	2.37	0.00
48.00	6.15	2.37	0.00
49.00	6.15	2.37	0.00
50.00	6.15	2.37	0.00
51.00	6.15	2.37	0.00
52.00	6.15	2.37	0.00
53.00	6.15	2.37	0.00
54.00	6.15	2.37	0.00
55.00	6.15	2.37	0.00
56.00	6.15	2.37	0.00
57.00	6.15	2.37	0.00
58.00	6.15	2.37	0.00
59.00	6.15	2.37	0.00
60.00	6.15	2.37	0.00
61.00	6.15	2.37	0.00
62.00	6.15	2.37	0.00
63.00	6.15	2.37	0.00
64.00	6.15	2.37	0.00
65.00	6.15	2.37	0.00
66.00	6.15	2.37	0.00
67.00	6.15	2.37	0.00
68.00	6.15	2.37	0.00
69.00	6.15	2.37	0.00
70.00	6.15	2.37	0.00
71.00	6.15	2.37	0.00
72.00	6.15	2.37	0.00
73.00	6.15	2.37	0.00
74.00	6.15	2.37	0.00
75.00	6.15	2.37	0.00
76.00	6.15	2.37	0.00
77.00	6.15	2.37	0.00
78.00	6.15	2.37	0.00
79.00	6.15	2.37	0.00
80.00	6.15	2.37	0.00
81.00	6.15	2.37	0.00
82.00	6.15	2.37	0.00
83.00	6.15	2.37	0.00
84.00	6.15	2.37	0.00
85.00	6.15	2.37	0.00
86.00	6.15	2.37	0.00
87.00	6.15	2.37	0.00
88.00	6.15	2.37	0.00
89.00	6.15	2.37	0.00
90.00	6.15	2.37	0.00
91.00	6.15	2.37	0.00
92.00	6.15	2.37	0.00
93.00	6.15	2.37	0.00
94.00	6.15	2.37	0.00
95.00	6.15	2.37	0.00
96.00	6.15	2.37	0.00

Summary for Subcatchment PR-D1: Prop. Watershed D1

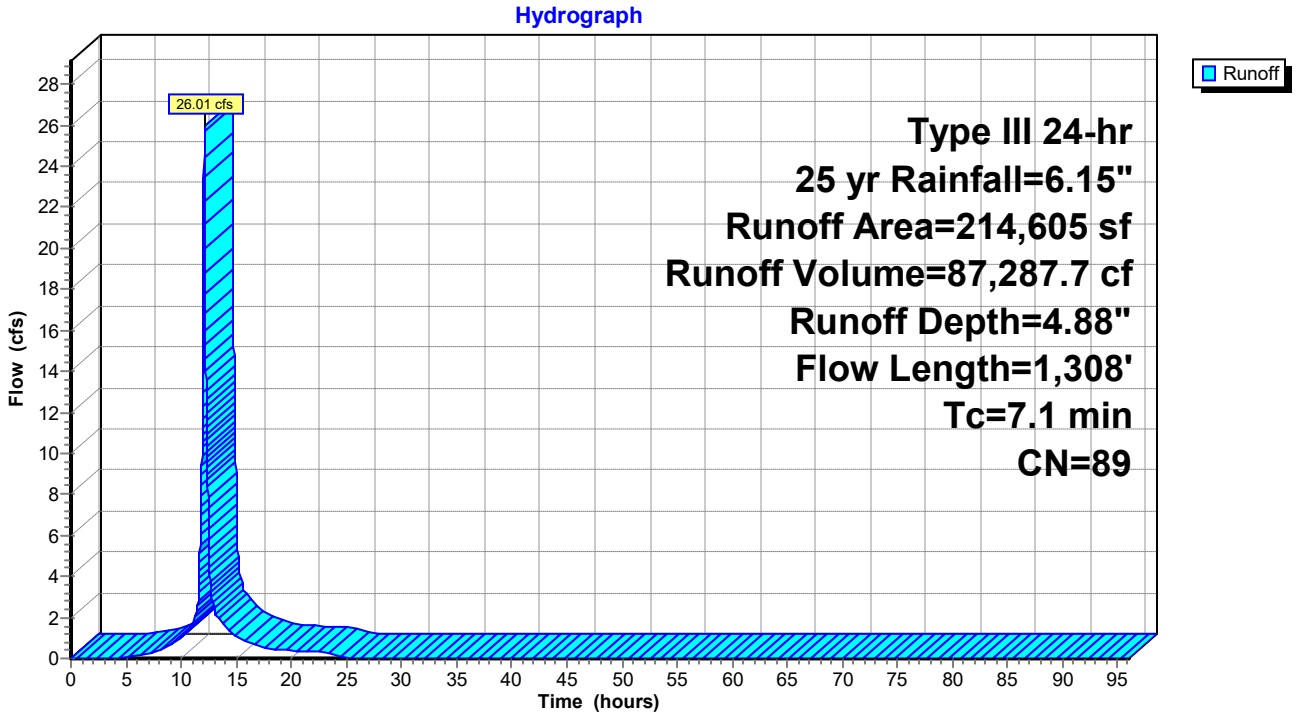
Runoff = 26.01 cfs @ 12.10 hrs, Volume= 87,287.7 cf, Depth= 4.88"
Routed to Pond SWM-7 : Rtank-7

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 yr Rainfall=6.15"

	Area (sf)	CN	Description
*	28,837	98	Building 2 - South
*	28,095	98	Building 3 - West
*	28,101	98	Building 3 - East
	96,079	98	Unconnected pavement, HSG A
	33,493	39	>75% Grass cover, Good, HSG A
	214,605	89	Weighted Average
	33,493		15.61% Pervious Area
	181,112		84.39% Impervious Area
	96,079		53.05% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	50	0.1600	0.34		**Sheet Flow, a-b** Grass: Short n= 0.150 P2= 3.22"
0.0	12	0.1250	5.69		**Shallow Concentrated Flow, b-c** Unpaved Kv= 16.1 fps
1.3	296	0.0350	3.80		**Shallow Concentrated Flow, c-d** Paved Kv= 20.3 fps
0.2	64	0.0100	4.54	3.56	**Pipe Channel, d-e** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
0.0	13	0.0160	5.74	4.51	**Pipe Channel, e-f** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
0.8	196	0.0046	4.03	7.12	**Pipe Channel, f-g** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
0.9	213	0.0047	4.08	7.20	**Pipe Channel, g-h** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
0.2	56	0.0054	5.29	16.62	**Pipe Channel, h-i** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
0.9	282	0.0050	5.09	16.00	**Pipe Channel, i-j** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
0.4	126	0.0048	4.99	15.67	**Pipe Channel, j-k** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
7.1	1,308	Total			

Subcatchment PR-D1: Prop. Watershed D1



Hydrograph for Subcatchment PR-D1: Prop. Watershed D1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.19	0.00	0.00
4.00	0.26	0.00	0.01
5.00	0.35	0.01	0.06
6.00	0.44	0.03	0.12
7.00	0.56	0.06	0.22
8.00	0.70	0.12	0.35
9.00	0.90	0.22	0.62
10.00	1.16	0.39	0.96
11.00	1.54	0.66	1.61
12.00	3.07	1.97	**14.99**
13.00	4.61	3.40	**2.41**
14.00	4.99	3.76	1.51
15.00	5.25	4.02	1.14
16.00	5.45	4.20	0.80
17.00	5.59	4.34	0.64
18.00	5.71	4.45	0.49
19.00	5.80	4.54	0.43
20.00	5.89	4.62	0.39
21.00	5.96	4.70	0.35
22.00	6.03	4.77	0.32
23.00	6.09	4.83	0.29
24.00	**6.15**	**4.88**	0.26
25.00	6.15	4.88	0.00
26.00	6.15	4.88	0.00
27.00	6.15	4.88	0.00
28.00	6.15	4.88	0.00
29.00	6.15	4.88	0.00
30.00	6.15	4.88	0.00
31.00	6.15	4.88	0.00
32.00	6.15	4.88	0.00
33.00	6.15	4.88	0.00
34.00	6.15	4.88	0.00
35.00	6.15	4.88	0.00
36.00	6.15	4.88	0.00
37.00	6.15	4.88	0.00
38.00	6.15	4.88	0.00
39.00	6.15	4.88	0.00
40.00	6.15	4.88	0.00
41.00	6.15	4.88	0.00
42.00	6.15	4.88	0.00
43.00	6.15	4.88	0.00
44.00	6.15	4.88	0.00
45.00	6.15	4.88	0.00
46.00	6.15	4.88	0.00
47.00	6.15	4.88	0.00
48.00	6.15	4.88	0.00
49.00	6.15	4.88	0.00
50.00	6.15	4.88	0.00
51.00	6.15	4.88	0.00
52.00	6.15	4.88	0.00
53.00	6.15	4.88	0.00
54.00	6.15	4.88	0.00
55.00	6.15	4.88	0.00
56.00	6.15	4.88	0.00
57.00	6.15	4.88	0.00
58.00	6.15	4.88	0.00
59.00	6.15	4.88	0.00
60.00	6.15	4.88	0.00
61.00	6.15	4.88	0.00
62.00	6.15	4.88	0.00
63.00	6.15	4.88	0.00
64.00	6.15	4.88	0.00
65.00	6.15	4.88	0.00
66.00	6.15	4.88	0.00
67.00	6.15	4.88	0.00
68.00	6.15	4.88	0.00
69.00	6.15	4.88	0.00
70.00	6.15	4.88	0.00
71.00	6.15	4.88	0.00
72.00	6.15	4.88	0.00
73.00	6.15	4.88	0.00
74.00	6.15	4.88	0.00
75.00	6.15	4.88	0.00
76.00	6.15	4.88	0.00
77.00	6.15	4.88	0.00
78.00	6.15	4.88	0.00
79.00	6.15	4.88	0.00
80.00	6.15	4.88	0.00
81.00	6.15	4.88	0.00
82.00	6.15	4.88	0.00
83.00	6.15	4.88	0.00
84.00	6.15	4.88	0.00
85.00	6.15	4.88	0.00
86.00	6.15	4.88	0.00
87.00	6.15	4.88	0.00
88.00	6.15	4.88	0.00
89.00	6.15	4.88	0.00
90.00	6.15	4.88	0.00
91.00	6.15	4.88	0.00
92.00	6.15	4.88	0.00
93.00	6.15	4.88	0.00
94.00	6.15	4.88	0.00
95.00	6.15	4.88	0.00
96.00	6.15	4.88	0.00

Summary for Subcatchment PR-D2: Prop. Watershed D2

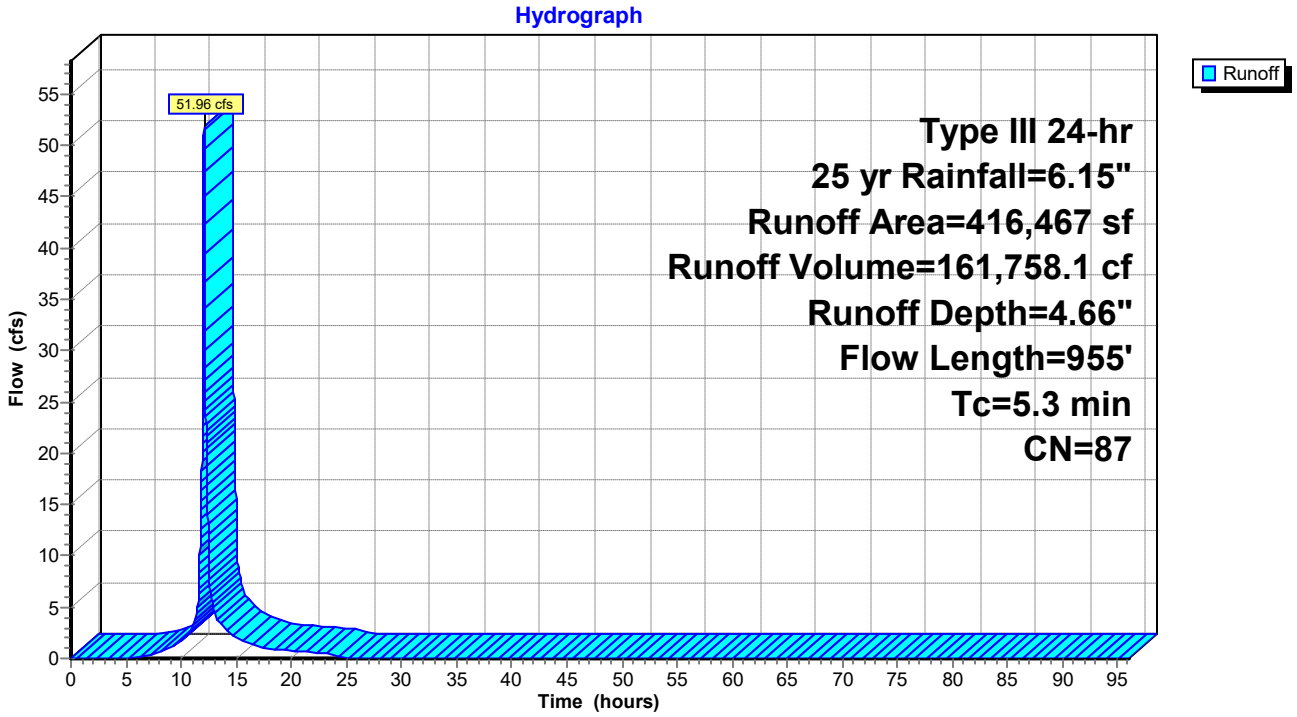
Runoff = 51.96 cfs @ 12.08 hrs, Volume= 161,758.1 cf, Depth= 4.66"
Routed to Pond SWM-2 : Rtank-2

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 yr Rainfall=6.15"

	Area (sf)	CN	Description
*	107,416	98	Building 1 - South
*	34,452	98	Building 2 - North
*	191,226	98	Pavement
*	3,868	98	Conc walk
*	4,480	90	Perv Pavers
	75,025	39	>75% Grass cover, Good, HSG A
	416,467	87	Weighted Average
	79,505		19.09% Pervious Area
	336,962		80.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	50	0.0020	0.48		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
1.0	124	0.0100	2.03		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.4	84	0.0071	3.82	3.00	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.4	99	0.0071	3.82	3.00	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.3	71	0.0070	3.80	2.98	**Pipe Channel, E-F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
1.4	396	0.0061	4.64	8.20	**Pipe Channel, F-G** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
0.1	131	0.0047	15.30	1,432.46	**Pipe Channel, G-H** 131.0" Round Area= 93.6 sf Perim= 34.3' r= 2.73' n= 0.013
5.3	955	Total			

Subcatchment PR-D2: Prop. Watershed D2



Hydrograph for Subcatchment PR-D2: Prop. Watershed D2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.19	0.00	0.00
4.00	0.26	0.00	0.00
5.00	0.35	0.00	0.05
6.00	0.44	0.01	0.15
7.00	0.56	0.04	0.32
8.00	0.70	0.09	0.56
9.00	0.90	0.17	1.04
10.00	1.16	0.32	1.68
11.00	1.54	0.56	2.92
12.00	3.07	1.80	**33.39**
13.00	4.61	3.20	**4.45**
14.00	4.99	3.56	2.84
15.00	5.25	3.81	2.16
16.00	5.45	3.99	1.52
17.00	5.59	4.13	1.21
18.00	5.71	4.24	0.93
19.00	5.80	4.33	0.83
20.00	5.89	4.41	0.74
21.00	5.96	4.48	0.68
22.00	6.03	4.55	0.62
23.00	6.09	4.61	0.55
24.00	**6.15**	**4.66**	0.49
25.00	6.15	4.66	0.00
26.00	6.15	4.66	0.00
27.00	6.15	4.66	0.00
28.00	6.15	4.66	0.00
29.00	6.15	4.66	0.00
30.00	6.15	4.66	0.00
31.00	6.15	4.66	0.00
32.00	6.15	4.66	0.00
33.00	6.15	4.66	0.00
34.00	6.15	4.66	0.00
35.00	6.15	4.66	0.00
36.00	6.15	4.66	0.00
37.00	6.15	4.66	0.00
38.00	6.15	4.66	0.00
39.00	6.15	4.66	0.00
40.00	6.15	4.66	0.00
41.00	6.15	4.66	0.00
42.00	6.15	4.66	0.00
43.00	6.15	4.66	0.00
44.00	6.15	4.66	0.00
45.00	6.15	4.66	0.00
46.00	6.15	4.66	0.00
47.00	6.15	4.66	0.00
48.00	6.15	4.66	0.00
49.00	6.15	4.66	0.00
50.00	6.15	4.66	0.00
51.00	6.15	4.66	0.00
52.00	6.15	4.66	0.00
53.00	6.15	4.66	0.00
54.00	6.15	4.66	0.00
55.00	6.15	4.66	0.00
56.00	6.15	4.66	0.00
57.00	6.15	4.66	0.00
58.00	6.15	4.66	0.00
59.00	6.15	4.66	0.00
60.00	6.15	4.66	0.00
61.00	6.15	4.66	0.00
62.00	6.15	4.66	0.00
63.00	6.15	4.66	0.00
64.00	6.15	4.66	0.00
65.00	6.15	4.66	0.00
66.00	6.15	4.66	0.00
67.00	6.15	4.66	0.00
68.00	6.15	4.66	0.00
69.00	6.15	4.66	0.00
70.00	6.15	4.66	0.00
71.00	6.15	4.66	0.00
72.00	6.15	4.66	0.00
73.00	6.15	4.66	0.00
74.00	6.15	4.66	0.00
75.00	6.15	4.66	0.00
76.00	6.15	4.66	0.00
77.00	6.15	4.66	0.00
78.00	6.15	4.66	0.00
79.00	6.15	4.66	0.00
80.00	6.15	4.66	0.00
81.00	6.15	4.66	0.00
82.00	6.15	4.66	0.00
83.00	6.15	4.66	0.00
84.00	6.15	4.66	0.00
85.00	6.15	4.66	0.00
86.00	6.15	4.66	0.00
87.00	6.15	4.66	0.00
88.00	6.15	4.66	0.00
89.00	6.15	4.66	0.00
90.00	6.15	4.66	0.00
91.00	6.15	4.66	0.00
92.00	6.15	4.66	0.00
93.00	6.15	4.66	0.00
94.00	6.15	4.66	0.00
95.00	6.15	4.66	0.00
96.00	6.15	4.66	0.00

Summary for Subcatchment PR-D3: Prop. Watershed D3

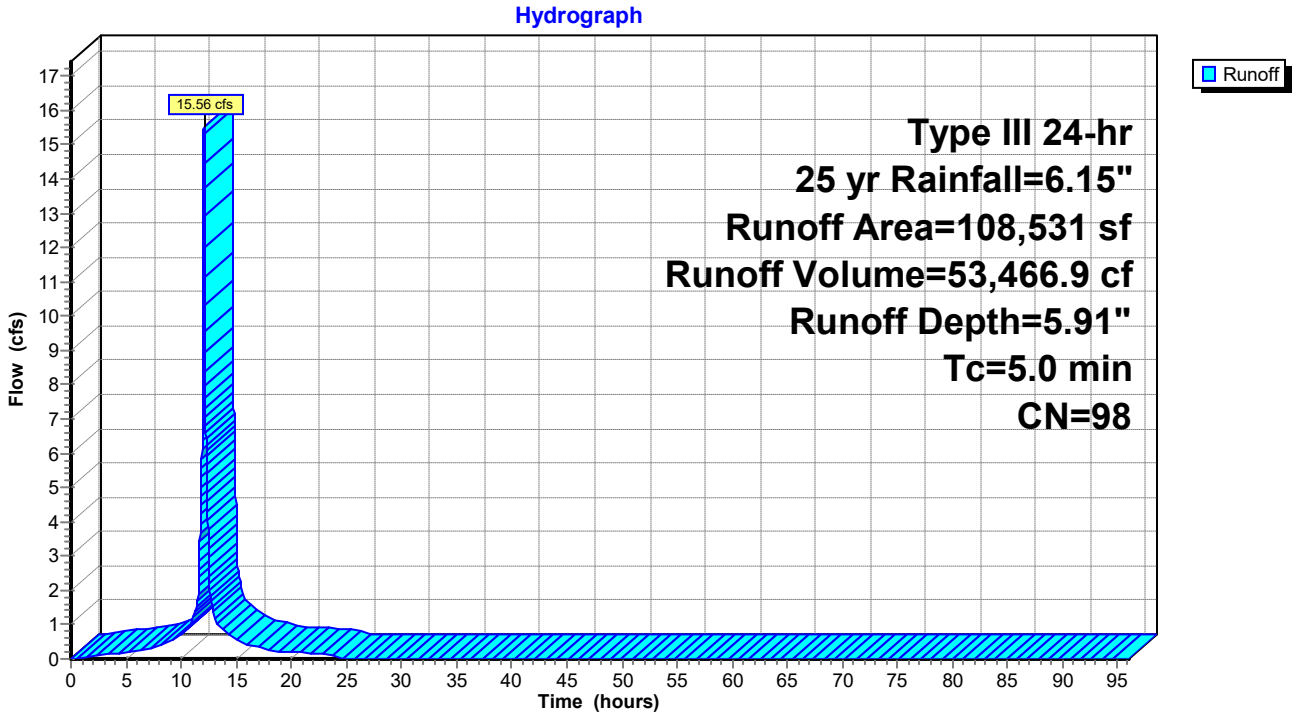
Runoff = 15.56 cfs @ 12.07 hrs, Volume= 53,466.9 cf, Depth= 5.91"
Routed to Pond SWM-6 : Rtank-6

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 yr Rainfall=6.15"

	Area (sf)	CN	Description
*	108,531	98	Building 1 - North
	108,531		100.00% Impervious Area

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

Subcatchment PR-D3: Prop. Watershed D3



Hydrograph for Subcatchment PR-D3: Prop. Watershed D3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.02
2.00	0.12	0.02	0.07
3.00	0.19	0.06	0.12
4.00	0.26	0.12	0.15
5.00	0.35	0.19	0.19
6.00	0.44	0.27	0.22
7.00	0.56	0.37	0.29
8.00	0.70	0.50	0.37
9.00	0.90	0.69	0.54
10.00	1.16	0.95	0.73
11.00	1.54	1.32	1.08
12.00	3.07	2.84	**10.52**
13.00	4.61	4.38	**1.24**
14.00	4.99	4.75	0.78
15.00	5.25	5.02	0.59
16.00	5.45	5.21	0.41
17.00	5.59	5.36	0.33
18.00	5.71	5.47	0.25
19.00	5.80	5.56	0.23
20.00	5.89	5.65	0.20
21.00	5.96	5.72	0.18
22.00	6.03	5.79	0.17
23.00	6.09	5.86	0.15
24.00	**6.15**	**5.91**	0.13
25.00	6.15	5.91	0.00
26.00	6.15	5.91	0.00
27.00	6.15	5.91	0.00
28.00	6.15	5.91	0.00
29.00	6.15	5.91	0.00
30.00	6.15	5.91	0.00
31.00	6.15	5.91	0.00
32.00	6.15	5.91	0.00
33.00	6.15	5.91	0.00
34.00	6.15	5.91	0.00
35.00	6.15	5.91	0.00
36.00	6.15	5.91	0.00
37.00	6.15	5.91	0.00
38.00	6.15	5.91	0.00
39.00	6.15	5.91	0.00
40.00	6.15	5.91	0.00
41.00	6.15	5.91	0.00
42.00	6.15	5.91	0.00
43.00	6.15	5.91	0.00
44.00	6.15	5.91	0.00
45.00	6.15	5.91	0.00
46.00	6.15	5.91	0.00
47.00	6.15	5.91	0.00
48.00	6.15	5.91	0.00
49.00	6.15	5.91	0.00
50.00	6.15	5.91	0.00
51.00	6.15	5.91	0.00
52.00	6.15	5.91	0.00
53.00	6.15	5.91	0.00
54.00	6.15	5.91	0.00
55.00	6.15	5.91	0.00
56.00	6.15	5.91	0.00
57.00	6.15	5.91	0.00
58.00	6.15	5.91	0.00
59.00	6.15	5.91	0.00
60.00	6.15	5.91	0.00
61.00	6.15	5.91	0.00
62.00	6.15	5.91	0.00
63.00	6.15	5.91	0.00
64.00	6.15	5.91	0.00
65.00	6.15	5.91	0.00
66.00	6.15	5.91	0.00
67.00	6.15	5.91	0.00
68.00	6.15	5.91	0.00
69.00	6.15	5.91	0.00
70.00	6.15	5.91	0.00
71.00	6.15	5.91	0.00
72.00	6.15	5.91	0.00
73.00	6.15	5.91	0.00
74.00	6.15	5.91	0.00
75.00	6.15	5.91	0.00
76.00	6.15	5.91	0.00
77.00	6.15	5.91	0.00
78.00	6.15	5.91	0.00
79.00	6.15	5.91	0.00
80.00	6.15	5.91	0.00
81.00	6.15	5.91	0.00
82.00	6.15	5.91	0.00
83.00	6.15	5.91	0.00
84.00	6.15	5.91	0.00
85.00	6.15	5.91	0.00
86.00	6.15	5.91	0.00
87.00	6.15	5.91	0.00
88.00	6.15	5.91	0.00
89.00	6.15	5.91	0.00
90.00	6.15	5.91	0.00
91.00	6.15	5.91	0.00
92.00	6.15	5.91	0.00
93.00	6.15	5.91	0.00
94.00	6.15	5.91	0.00
95.00	6.15	5.91	0.00
96.00	6.15	5.91	0.00

Summary for Subcatchment PR-D4: Prop. Watershed D4

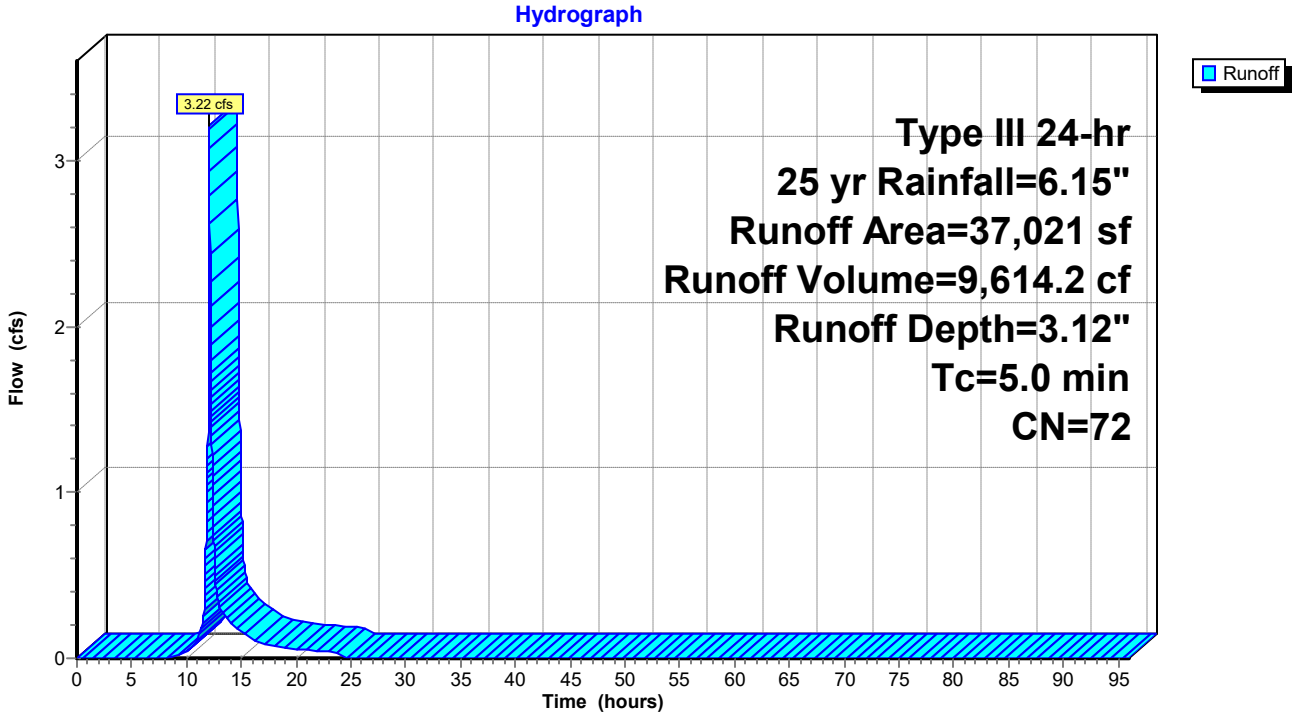
Runoff = 3.22 cfs @ 12.08 hrs, Volume= 9,614.2 cf, Depth= 3.12"
Routed to Pond SWM-4 : Rtank-4

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 yr Rainfall=6.15"

	Area (sf)	CN	Description
*	20,670	98	Pavement
	16,351	39	>75% Grass cover, Good, HSG A
	37,021	72	Weighted Average
	16,351		44.17% Pervious Area
	20,670		55.83% Impervious Area

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

Subcatchment PR-D4: Prop. Watershed D4



Hydrograph for Subcatchment PR-D4: Prop. Watershed D4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	6.15	3.12	0.00
1.00	0.06	0.00	0.00	53.00	6.15	3.12	0.00
2.00	0.12	0.00	0.00	54.00	6.15	3.12	0.00
3.00	0.19	0.00	0.00	55.00	6.15	3.12	0.00
4.00	0.26	0.00	0.00	56.00	6.15	3.12	0.00
5.00	0.35	0.00	0.00	57.00	6.15	3.12	0.00
6.00	0.44	0.00	0.00	58.00	6.15	3.12	0.00
7.00	0.56	0.00	0.00	59.00	6.15	3.12	0.00
8.00	0.70	0.00	0.00	60.00	6.15	3.12	0.00
9.00	0.90	0.00	0.01	61.00	6.15	3.12	0.00
10.00	1.16	0.03	0.04	62.00	6.15	3.12	0.00
11.00	1.54	0.12	0.11	63.00	6.15	3.12	0.00
12.00	3.07	0.85	**1.99**	64.00	6.15	3.12	0.00
13.00	4.61	1.90	**0.31**	65.00	6.15	3.12	0.00
14.00	4.99	2.19	0.21	66.00	6.15	3.12	0.00
15.00	5.25	2.39	0.16	67.00	6.15	3.12	0.00
16.00	5.45	2.55	0.11	68.00	6.15	3.12	0.00
17.00	5.59	2.66	0.09	69.00	6.15	3.12	0.00
18.00	5.71	2.76	0.07	70.00	6.15	3.12	0.00
19.00	5.80	2.83	0.06	71.00	6.15	3.12	0.00
20.00	5.89	2.90	0.06	72.00	6.15	3.12	0.00
21.00	5.96	2.96	0.05	73.00	6.15	3.12	0.00
22.00	6.03	3.02	0.05	74.00	6.15	3.12	0.00
23.00	6.09	3.07	0.04	75.00	6.15	3.12	0.00
24.00	**6.15**	**3.12**	0.04	76.00	6.15	3.12	0.00
25.00	6.15	3.12	0.00	77.00	6.15	3.12	0.00
26.00	6.15	3.12	0.00	78.00	6.15	3.12	0.00
27.00	6.15	3.12	0.00	79.00	6.15	3.12	0.00
28.00	6.15	3.12	0.00	80.00	6.15	3.12	0.00
29.00	6.15	3.12	0.00	81.00	6.15	3.12	0.00
30.00	6.15	3.12	0.00	82.00	6.15	3.12	0.00
31.00	6.15	3.12	0.00	83.00	6.15	3.12	0.00
32.00	6.15	3.12	0.00	84.00	6.15	3.12	0.00
33.00	6.15	3.12	0.00	85.00	6.15	3.12	0.00
34.00	6.15	3.12	0.00	86.00	6.15	3.12	0.00
35.00	6.15	3.12	0.00	87.00	6.15	3.12	0.00
36.00	6.15	3.12	0.00	88.00	6.15	3.12	0.00
37.00	6.15	3.12	0.00	89.00	6.15	3.12	0.00
38.00	6.15	3.12	0.00	90.00	6.15	3.12	0.00
39.00	6.15	3.12	0.00	91.00	6.15	3.12	0.00
40.00	6.15	3.12	0.00	92.00	6.15	3.12	0.00
41.00	6.15	3.12	0.00	93.00	6.15	3.12	0.00
42.00	6.15	3.12	0.00	94.00	6.15	3.12	0.00
43.00	6.15	3.12	0.00	95.00	6.15	3.12	0.00
44.00	6.15	3.12	0.00	96.00	6.15	3.12	0.00
45.00	6.15	3.12	0.00				
46.00	6.15	3.12	0.00				
47.00	6.15	3.12	0.00				
48.00	6.15	3.12	0.00				
49.00	6.15	3.12	0.00				
50.00	6.15	3.12	0.00				
51.00	6.15	3.12	0.00				

Summary for Subcatchment PR-D5: Prop. Watershed D5

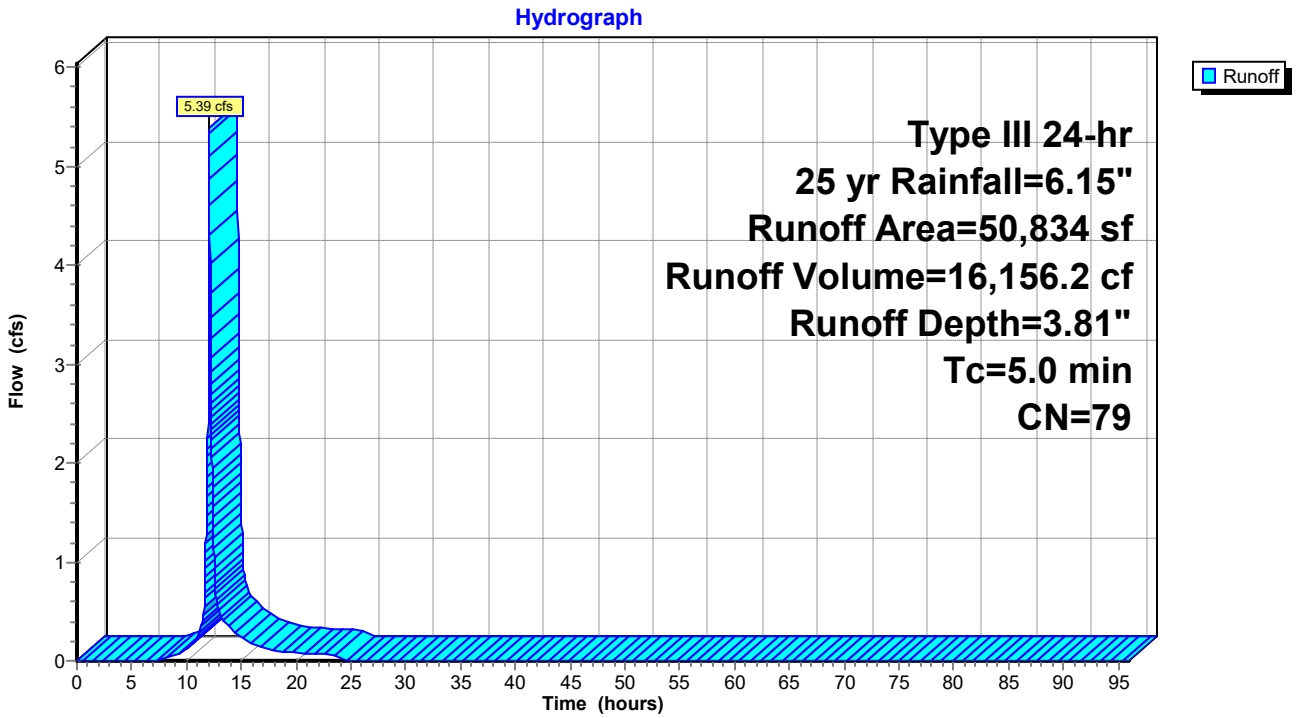
Runoff = 5.39 cfs @ 12.07 hrs, Volume= 16,156.2 cf, Depth= 3.81"
Routed to Pond RG1 : Rain-Garden #1

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 yr Rainfall=6.15"

Area (sf)	CN	Description
34,446	98	Unconnected pavement, HSG A
16,388	39	>75% Grass cover, Good, HSG A
50,834	79	Weighted Average
16,388		32.24% Pervious Area
34,446		67.76% Impervious Area
34,446		100.00% Unconnected

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

Subcatchment PR-D5: Prop. Watershed D5



Hydrograph for Subcatchment PR-D5: Prop. Watershed D5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.19	0.00	0.00
4.00	0.26	0.00	0.00
5.00	0.35	0.00	0.00
6.00	0.44	0.00	0.00
7.00	0.56	0.00	0.00
8.00	0.70	0.01	0.02
9.00	0.90	0.04	0.06
10.00	1.16	0.12	0.12
11.00	1.54	0.28	0.24
12.00	3.07	1.24	**3.44**
13.00	4.61	2.47	**0.49**
14.00	4.99	2.79	0.32
15.00	5.25	3.02	0.24
16.00	5.45	3.19	0.17
17.00	5.59	3.32	0.14
18.00	5.71	3.42	0.10
19.00	5.80	3.50	0.09
20.00	5.89	3.58	0.08
21.00	5.96	3.65	0.08
22.00	6.03	3.71	0.07
23.00	6.09	3.76	0.06
24.00	**6.15**	**3.81**	0.06
25.00	6.15	3.81	0.00
26.00	6.15	3.81	0.00
27.00	6.15	3.81	0.00
28.00	6.15	3.81	0.00
29.00	6.15	3.81	0.00
30.00	6.15	3.81	0.00
31.00	6.15	3.81	0.00
32.00	6.15	3.81	0.00
33.00	6.15	3.81	0.00
34.00	6.15	3.81	0.00
35.00	6.15	3.81	0.00
36.00	6.15	3.81	0.00
37.00	6.15	3.81	0.00
38.00	6.15	3.81	0.00
39.00	6.15	3.81	0.00
40.00	6.15	3.81	0.00
41.00	6.15	3.81	0.00
42.00	6.15	3.81	0.00
43.00	6.15	3.81	0.00
44.00	6.15	3.81	0.00
45.00	6.15	3.81	0.00
46.00	6.15	3.81	0.00
47.00	6.15	3.81	0.00
48.00	6.15	3.81	0.00
49.00	6.15	3.81	0.00
50.00	6.15	3.81	0.00
51.00	6.15	3.81	0.00
52.00	6.15	3.81	0.00
53.00	6.15	3.81	0.00
54.00	6.15	3.81	0.00
55.00	6.15	3.81	0.00
56.00	6.15	3.81	0.00
57.00	6.15	3.81	0.00
58.00	6.15	3.81	0.00
59.00	6.15	3.81	0.00
60.00	6.15	3.81	0.00
61.00	6.15	3.81	0.00
62.00	6.15	3.81	0.00
63.00	6.15	3.81	0.00
64.00	6.15	3.81	0.00
65.00	6.15	3.81	0.00
66.00	6.15	3.81	0.00
67.00	6.15	3.81	0.00
68.00	6.15	3.81	0.00
69.00	6.15	3.81	0.00
70.00	6.15	3.81	0.00
71.00	6.15	3.81	0.00
72.00	6.15	3.81	0.00
73.00	6.15	3.81	0.00
74.00	6.15	3.81	0.00
75.00	6.15	3.81	0.00
76.00	6.15	3.81	0.00
77.00	6.15	3.81	0.00
78.00	6.15	3.81	0.00
79.00	6.15	3.81	0.00
80.00	6.15	3.81	0.00
81.00	6.15	3.81	0.00
82.00	6.15	3.81	0.00
83.00	6.15	3.81	0.00
84.00	6.15	3.81	0.00
85.00	6.15	3.81	0.00
86.00	6.15	3.81	0.00
87.00	6.15	3.81	0.00
88.00	6.15	3.81	0.00
89.00	6.15	3.81	0.00
90.00	6.15	3.81	0.00
91.00	6.15	3.81	0.00
92.00	6.15	3.81	0.00
93.00	6.15	3.81	0.00
94.00	6.15	3.81	0.00
95.00	6.15	3.81	0.00
96.00	6.15	3.81	0.00

Summary for Subcatchment PR-D6: Prop. Watershed D6

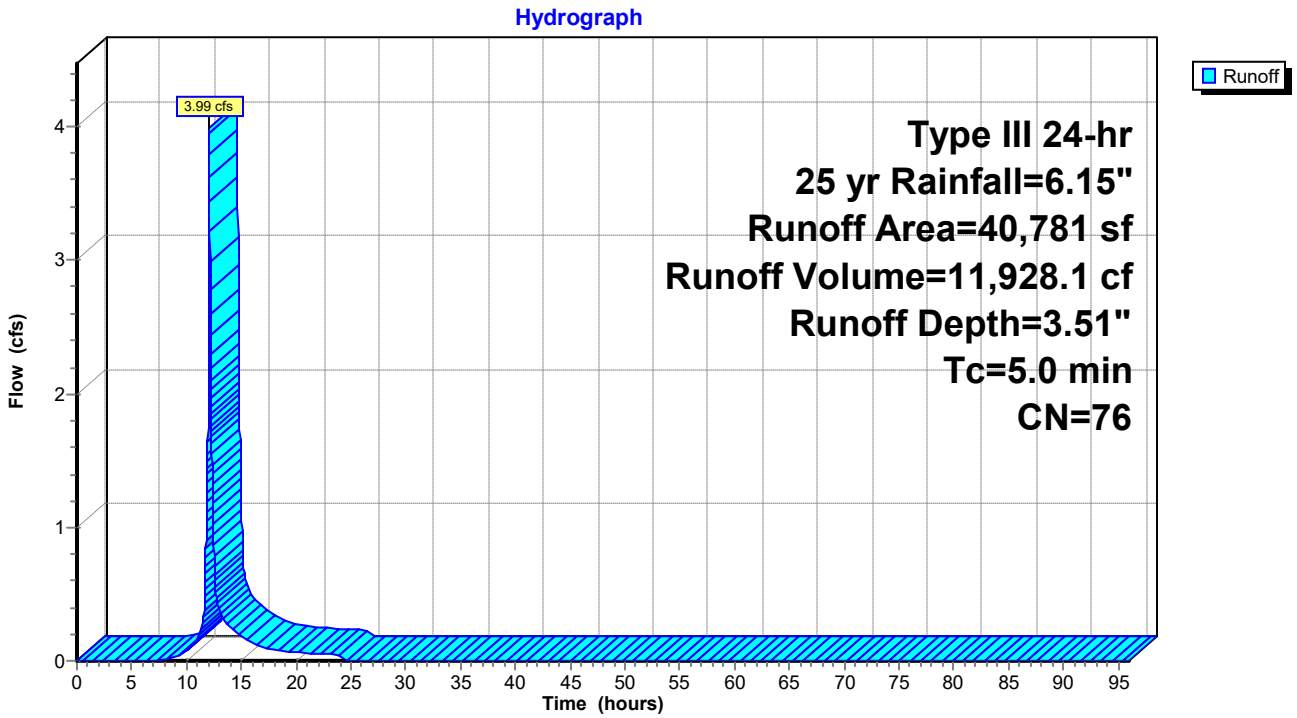
Runoff = 3.99 cfs @ 12.07 hrs, Volume= 11,928.1 cf, Depth= 3.51"
Routed to Pond RG2 : Rain-Garden #2

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 yr Rainfall=6.15"

Area (sf)	CN	Description
25,487	98	Unconnected pavement, HSG A
15,294	39	>75% Grass cover, Good, HSG A
40,781	76	Weighted Average
15,294		37.50% Pervious Area
25,487		62.50% Impervious Area
25,487		100.00% Unconnected

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

Subcatchment PR-D6: Prop. Watershed D6



Hydrograph for Subcatchment PR-D6: Prop. Watershed D6

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.19	0.00	0.00
4.00	0.26	0.00	0.00
5.00	0.35	0.00	0.00
6.00	0.44	0.00	0.00
7.00	0.56	0.00	0.00
8.00	0.70	0.00	0.01
9.00	0.90	0.02	0.03
10.00	1.16	0.08	0.07
11.00	1.54	0.20	0.16
12.00	3.07	1.07	**2.52**
13.00	4.61	2.22	**0.37**
14.00	4.99	2.53	0.24
15.00	5.25	2.75	0.19
16.00	5.45	2.91	0.13
17.00	5.59	3.03	0.11
18.00	5.71	3.13	0.08
19.00	5.80	3.21	0.07
20.00	5.89	3.28	0.07
21.00	5.96	3.35	0.06
22.00	6.03	3.41	0.05
23.00	6.09	3.46	0.05
24.00	**6.15**	**3.51**	0.04
25.00	6.15	3.51	0.00
26.00	6.15	3.51	0.00
27.00	6.15	3.51	0.00
28.00	6.15	3.51	0.00
29.00	6.15	3.51	0.00
30.00	6.15	3.51	0.00
31.00	6.15	3.51	0.00
32.00	6.15	3.51	0.00
33.00	6.15	3.51	0.00
34.00	6.15	3.51	0.00
35.00	6.15	3.51	0.00
36.00	6.15	3.51	0.00
37.00	6.15	3.51	0.00
38.00	6.15	3.51	0.00
39.00	6.15	3.51	0.00
40.00	6.15	3.51	0.00
41.00	6.15	3.51	0.00
42.00	6.15	3.51	0.00
43.00	6.15	3.51	0.00
44.00	6.15	3.51	0.00
45.00	6.15	3.51	0.00
46.00	6.15	3.51	0.00
47.00	6.15	3.51	0.00
48.00	6.15	3.51	0.00
49.00	6.15	3.51	0.00
50.00	6.15	3.51	0.00
51.00	6.15	3.51	0.00
52.00	6.15	3.51	0.00
53.00	6.15	3.51	0.00
54.00	6.15	3.51	0.00
55.00	6.15	3.51	0.00
56.00	6.15	3.51	0.00
57.00	6.15	3.51	0.00
58.00	6.15	3.51	0.00
59.00	6.15	3.51	0.00
60.00	6.15	3.51	0.00
61.00	6.15	3.51	0.00
62.00	6.15	3.51	0.00
63.00	6.15	3.51	0.00
64.00	6.15	3.51	0.00
65.00	6.15	3.51	0.00
66.00	6.15	3.51	0.00
67.00	6.15	3.51	0.00
68.00	6.15	3.51	0.00
69.00	6.15	3.51	0.00
70.00	6.15	3.51	0.00
71.00	6.15	3.51	0.00
72.00	6.15	3.51	0.00
73.00	6.15	3.51	0.00
74.00	6.15	3.51	0.00
75.00	6.15	3.51	0.00
76.00	6.15	3.51	0.00
77.00	6.15	3.51	0.00
78.00	6.15	3.51	0.00
79.00	6.15	3.51	0.00
80.00	6.15	3.51	0.00
81.00	6.15	3.51	0.00
82.00	6.15	3.51	0.00
83.00	6.15	3.51	0.00
84.00	6.15	3.51	0.00
85.00	6.15	3.51	0.00
86.00	6.15	3.51	0.00
87.00	6.15	3.51	0.00
88.00	6.15	3.51	0.00
89.00	6.15	3.51	0.00
90.00	6.15	3.51	0.00
91.00	6.15	3.51	0.00
92.00	6.15	3.51	0.00
93.00	6.15	3.51	0.00
94.00	6.15	3.51	0.00
95.00	6.15	3.51	0.00
96.00	6.15	3.51	0.00

Summary for Subcatchment PR-D7: Prop. Watershed D7

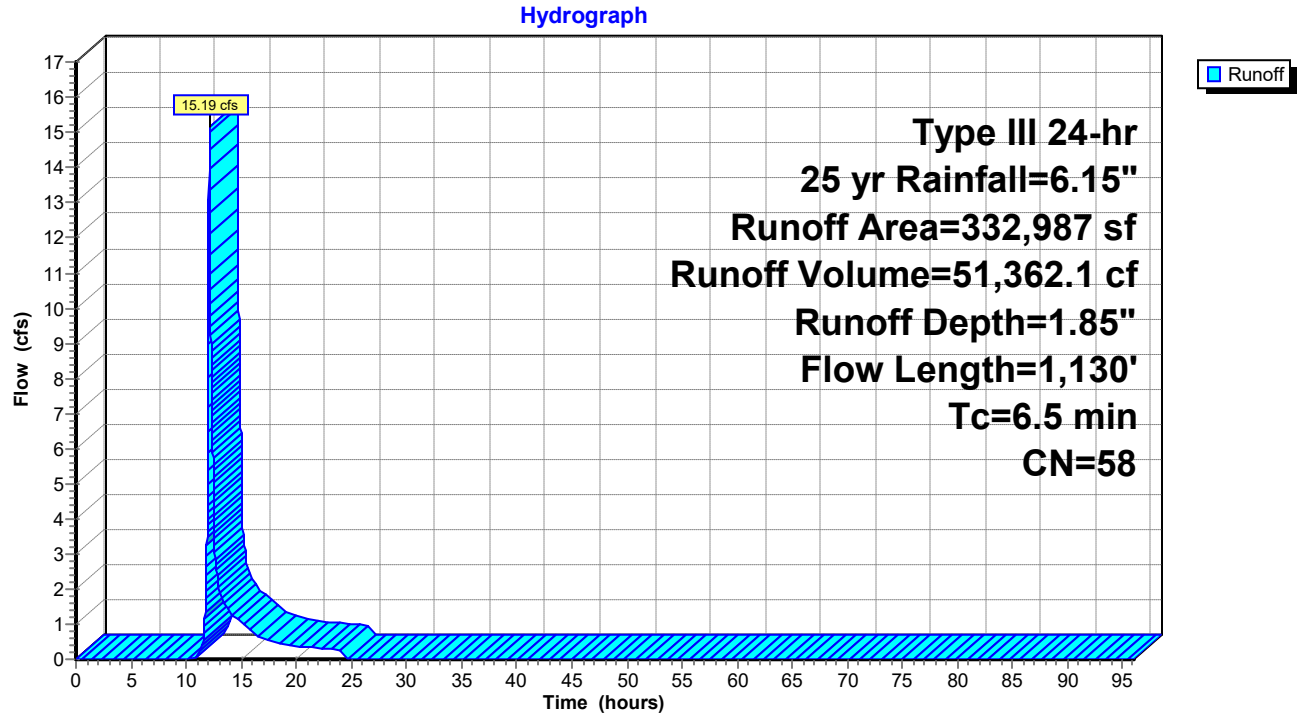
Runoff = 15.19 cfs @ 12.10 hrs, Volume= 51,362.1 cf, Depth= 1.85"
Routed to Link POA D : FIRE POND

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 yr Rainfall=6.15"

	Area (sf)	CN	Description
*	102,706	98	Pavement
*	4,930	98	Walkway Ramp/steps
	225,351	39	>75% Grass cover, Good, HSG A
	332,987	58	Weighted Average
	225,351		67.68% Pervious Area
	107,636		32.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.15		**Sheet Flow, a-b** Smooth surfaces n= 0.011 P2= 3.22"
5.7	1,030	0.0219	3.00		**Shallow Concentrated Flow, b-c** Paved Kv= 20.3 fps
0.1	50	0.0188	16.11	219.60	**Pipe Channel, c-d** 50.0" Round Area= 13.6 sf Perim= 13.1' r= 1.04' n= 0.013
6.5	1,130	Total			

Subcatchment PR-D7: Prop. Watershed D7



Hydrograph for Subcatchment PR-D7: Prop. Watershed D7

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.19	0.00	0.00
4.00	0.26	0.00	0.00
5.00	0.35	0.00	0.00
6.00	0.44	0.00	0.00
7.00	0.56	0.00	0.00
8.00	0.70	0.00	0.00
9.00	0.90	0.00	0.00
10.00	1.16	0.00	0.00
11.00	1.54	0.00	0.04
12.00	3.07	0.30	**7.20**
13.00	4.61	0.96	**1.99**
14.00	4.99	1.16	1.33
15.00	5.25	1.31	1.04
16.00	5.45	1.42	0.75
17.00	5.59	1.51	0.61
18.00	5.71	1.58	0.47
19.00	5.80	1.63	0.42
20.00	5.89	1.69	0.38
21.00	5.96	1.73	0.35
22.00	6.03	1.78	0.32
23.00	6.09	1.82	0.29
24.00	**6.15**	**1.85**	0.26
25.00	6.15	1.85	0.00
26.00	6.15	1.85	0.00
27.00	6.15	1.85	0.00
28.00	6.15	1.85	0.00
29.00	6.15	1.85	0.00
30.00	6.15	1.85	0.00
31.00	6.15	1.85	0.00
32.00	6.15	1.85	0.00
33.00	6.15	1.85	0.00
34.00	6.15	1.85	0.00
35.00	6.15	1.85	0.00
36.00	6.15	1.85	0.00
37.00	6.15	1.85	0.00
38.00	6.15	1.85	0.00
39.00	6.15	1.85	0.00
40.00	6.15	1.85	0.00
41.00	6.15	1.85	0.00
42.00	6.15	1.85	0.00
43.00	6.15	1.85	0.00
44.00	6.15	1.85	0.00
45.00	6.15	1.85	0.00
46.00	6.15	1.85	0.00
47.00	6.15	1.85	0.00
48.00	6.15	1.85	0.00
49.00	6.15	1.85	0.00
50.00	6.15	1.85	0.00
51.00	6.15	1.85	0.00
52.00	6.15	1.85	0.00
53.00	6.15	1.85	0.00
54.00	6.15	1.85	0.00
55.00	6.15	1.85	0.00
56.00	6.15	1.85	0.00
57.00	6.15	1.85	0.00
58.00	6.15	1.85	0.00
59.00	6.15	1.85	0.00
60.00	6.15	1.85	0.00
61.00	6.15	1.85	0.00
62.00	6.15	1.85	0.00
63.00	6.15	1.85	0.00
64.00	6.15	1.85	0.00
65.00	6.15	1.85	0.00
66.00	6.15	1.85	0.00
67.00	6.15	1.85	0.00
68.00	6.15	1.85	0.00
69.00	6.15	1.85	0.00
70.00	6.15	1.85	0.00
71.00	6.15	1.85	0.00
72.00	6.15	1.85	0.00
73.00	6.15	1.85	0.00
74.00	6.15	1.85	0.00
75.00	6.15	1.85	0.00
76.00	6.15	1.85	0.00
77.00	6.15	1.85	0.00
78.00	6.15	1.85	0.00
79.00	6.15	1.85	0.00
80.00	6.15	1.85	0.00
81.00	6.15	1.85	0.00
82.00	6.15	1.85	0.00
83.00	6.15	1.85	0.00
84.00	6.15	1.85	0.00
85.00	6.15	1.85	0.00
86.00	6.15	1.85	0.00
87.00	6.15	1.85	0.00
88.00	6.15	1.85	0.00
89.00	6.15	1.85	0.00
90.00	6.15	1.85	0.00
91.00	6.15	1.85	0.00
92.00	6.15	1.85	0.00
93.00	6.15	1.85	0.00
94.00	6.15	1.85	0.00
95.00	6.15	1.85	0.00
96.00	6.15	1.85	0.00

Summary for Pond RG1: Rain-Garden #1

Inflow Area = 50,834 sf, 67.76% Impervious, Inflow Depth = 3.81" for 25 yr event
Inflow = 5.39 cfs @ 12.07 hrs, Volume= 16,156.2 cf
Outflow = 4.01 cfs @ 12.14 hrs, Volume= 16,156.2 cf, Atten= 26%, Lag= 4.0 min
Discarded = 0.22 cfs @ 12.14 hrs, Volume= 9,867.2 cf
Primary = 3.79 cfs @ 12.14 hrs, Volume= 6,289.0 cf
Routed to Pond SWM-4 : Rtank-4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 250.95' @ 12.14 hrs Surf.Area= 3,982 sf Storage= 4,437.1 cf

Plug-Flow detention time= 153.3 min calculated for 16,154.6 cf (100% of inflow)
Center-of-Mass det. time= 153.3 min (968.0 - 814.7)

Volume	Invert	Avail.Storage	Storage Description
#1	249.50'	2,641.0 cf	**Open Air Storage (Prismatic)** Listed below (Recalc)
#2	245.00'	1,417.2 cf	**Subsoil (Prismatic)** Listed below (Recalc)
#3	244.50'	187.7 cf	**12.0" Round Underdrain** Inside #4 L= 239.0'
#4	243.50'	307.3 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 956.0 cf Overall - 187.7 cf Embedded = 768.3 cf x 40.0% Voids
		4,553.2 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
249.50	1,081	0.0	0.0
250.00	1,522	650.8	650.8
250.50	1,985	876.8	1,527.5
251.00	2,469	1,113.5	2,641.0

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
245.00	1,081	0.0	0.0	0.0
245.01	1,081	40.0	4.3	4.3
246.24	1,081	40.0	531.9	536.2
246.25	1,081	25.0	2.7	538.9
249.24	1,081	25.0	808.0	1,346.9
249.25	1,081	25.0	2.7	1,349.6
249.50	1,081	25.0	67.6	1,417.2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.50	478	0.0	0.0
245.50	478	956.0	956.0

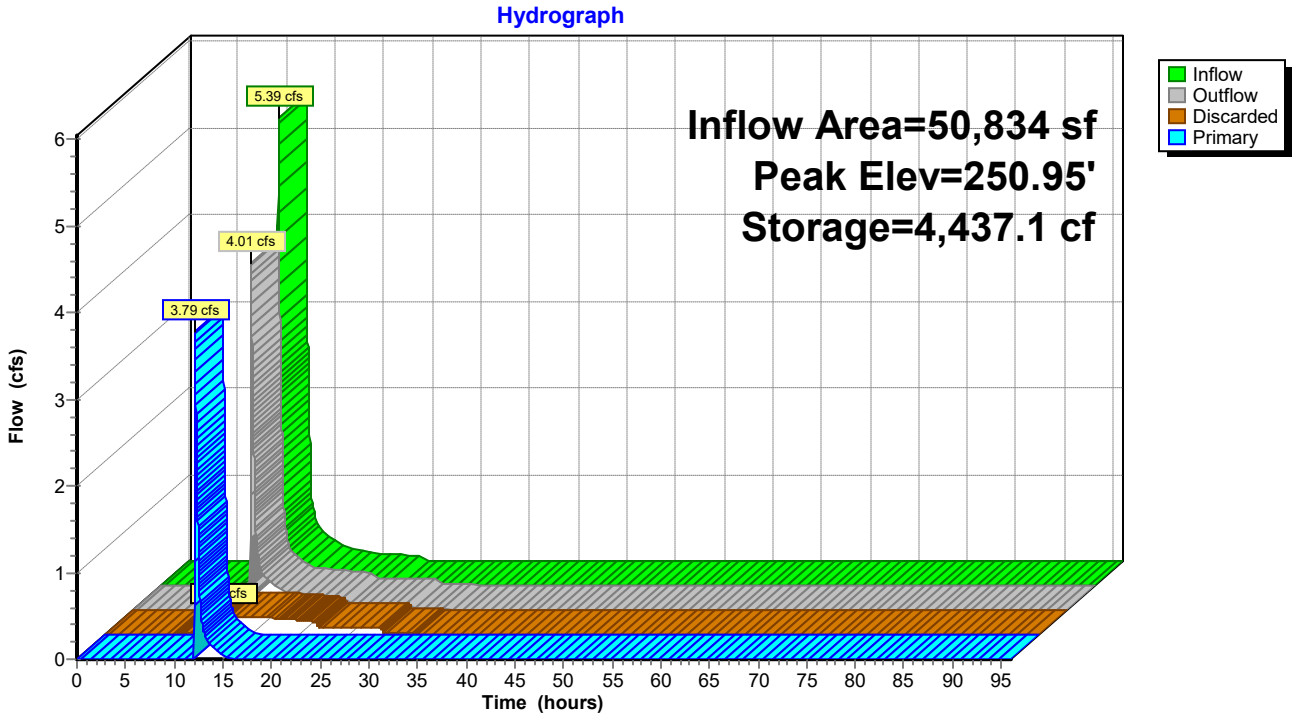
Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Filtration through media over Surface area**
#2	Device 3	250.50'	**15.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	247.50'	**12.0" Round Culvert** L= 18.0' Ke= 0.100 Inlet / Outlet Invert= 247.50' / 247.45' S= 0.0028 '/' Cc= 0.900

n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

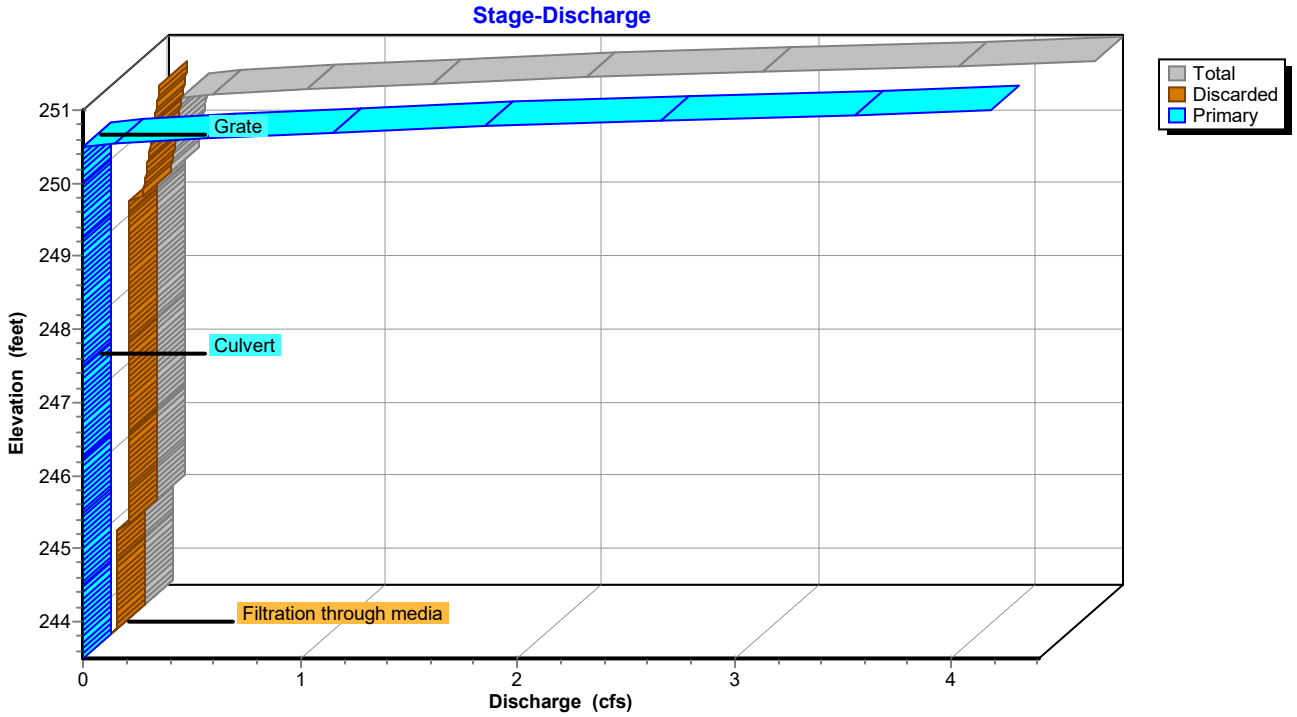
Discarded OutFlow Max=0.22 cfs @ 12.14 hrs HW=250.95' (Free Discharge)
└**1=Filtration through media** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=3.91 cfs @ 12.14 hrs HW=250.95' (Free Discharge)
└**3=Culvert** (Passes 3.91 cfs of 8.13 cfs potential flow)
└**2=Grate** (Weir Controls 3.91 cfs @ 2.20 fps)

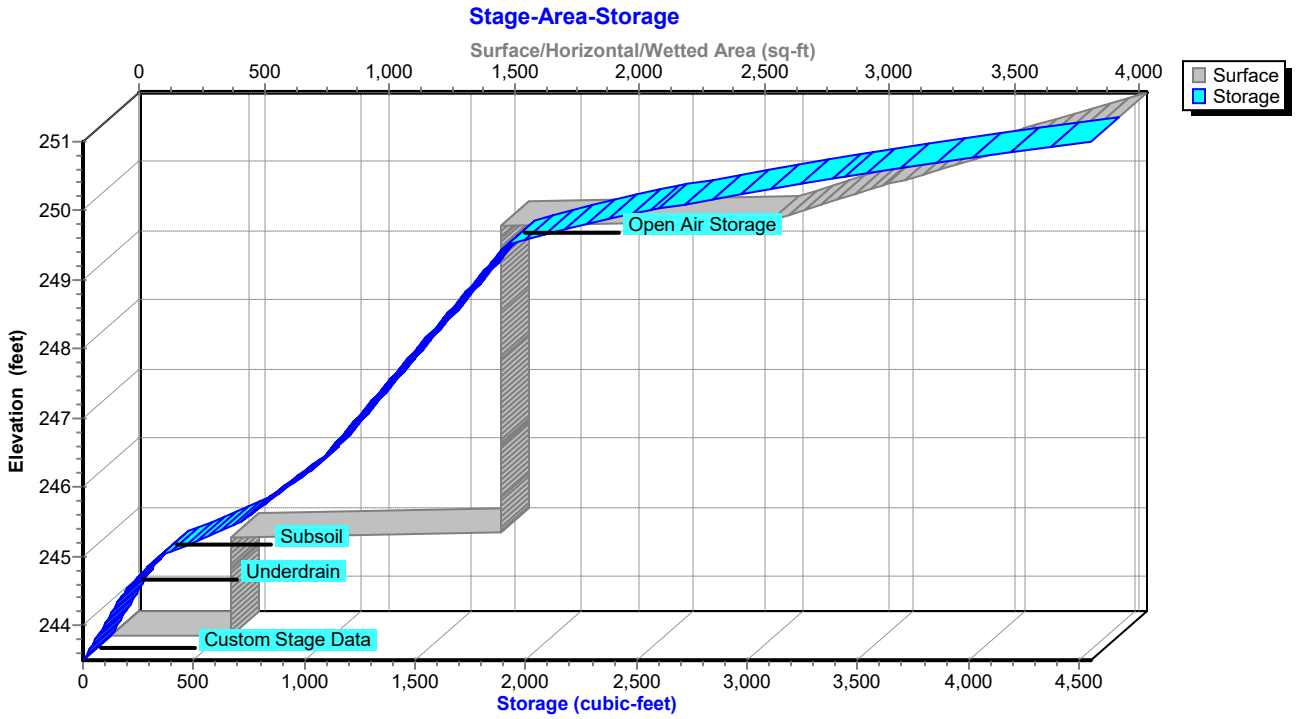
Pond RG1: Rain-Garden #1



Pond RG1: Rain-Garden #1



Pond RG1: Rain-Garden #1



Hydrograph for Pond RG1: Rain-Garden #1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	0.00
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.00	0.0	243.50	0.00	0.00	0.00
6.00	0.00	0.0	243.50	0.00	0.00	0.00
8.00	0.02	9.1	243.55	0.02	0.02	0.00
10.00	0.12	266.0	244.77	0.03	0.03	0.00
12.00	**3.44**	**3,159.1**	**250.35**	**0.19**	**0.19**	**0.00**
14.00	**0.32**	**3,534.5**	**250.55**	**0.34**	**0.20**	**0.14**
16.00	0.17	3,426.0	250.49	0.20	0.20	0.00
18.00	0.10	3,020.3	250.28	0.19	0.19	0.00
20.00	0.08	2,422.3	249.90	0.17	0.17	0.00
22.00	0.07	1,887.6	249.41	0.09	0.09	0.00
24.00	0.06	1,714.4	248.77	0.09	0.09	0.00
26.00	0.00	1,103.6	246.51	0.09	0.09	0.00
28.00	0.00	477.4	245.18	0.09	0.09	0.00
30.00	0.00	180.3	244.44	0.03	0.03	0.00
32.00	0.00	2.3	243.51	0.00	0.00	0.00
34.00	0.00	0.0	243.50	0.00	0.00	0.00
36.00	0.00	0.0	243.50	0.00	0.00	0.00
38.00	0.00	0.0	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond RG1: Rain-Garden #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	478	0.0
243.60	478	19.1
243.70	478	38.2
243.80	478	57.4
243.90	478	76.5
244.00	478	95.6
244.10	478	114.7
244.20	478	133.8
244.30	478	153.0
244.40	478	172.1
244.50	478	191.2
244.60	478	216.2
244.70	478	245.5
244.80	478	277.0
244.90	478	309.7
245.00	1,559	343.1
245.10	1,559	419.7
245.20	1,559	495.7
245.30	1,559	570.5
245.40	1,559	643.0
245.50	1,559	711.2
245.60	1,559	754.5
245.70	1,559	797.7
245.80	1,559	840.9
245.90	1,559	884.2
246.00	1,559	927.4
246.10	1,559	970.7
246.20	1,559	1,013.9
246.30	1,559	1,047.4
246.40	1,559	1,074.4
246.50	1,559	1,101.5
246.60	1,559	1,128.5
246.70	1,559	1,155.5
246.80	1,559	1,182.5
246.90	1,559	1,209.6
247.00	1,559	1,236.6
247.10	1,559	1,263.6
247.20	1,559	1,290.6
247.30	1,559	1,317.7
247.40	1,559	1,344.7
247.50	1,559	1,371.7
247.60	1,559	1,398.7
247.70	1,559	1,425.8
247.80	1,559	1,452.8
247.90	1,559	1,479.8
248.00	1,559	1,506.8
248.10	1,559	1,533.9
248.20	1,559	1,560.9
248.30	1,559	1,587.9
248.40	1,559	1,614.9
248.50	1,559	1,642.0
248.60	1,559	1,669.0
248.70	1,559	1,696.0
248.80	1,559	1,723.0
248.90	1,559	1,750.1
249.00	1,559	1,777.1
249.10	1,559	1,804.1
249.20	1,559	1,831.1
249.30	1,559	1,858.2
249.40	1,559	1,885.2
249.50	2,640	1,912.2
249.60	2,728	2,024.7
249.70	2,816	2,146.1
249.80	2,905	2,276.2
249.90	2,993	2,415.2
250.00	3,081	2,563.0
250.10	3,174	2,719.8
250.20	3,266	2,885.9
250.30	3,359	3,061.2
250.40	3,451	3,245.8
250.50	3,544	3,439.7
250.60	3,641	3,643.1
250.70	3,738	3,856.1
250.80	3,834	4,078.8
250.90	3,931	4,311.2
251.00	**4,028**	**4,553.2**

Summary for Pond RG2: Rain-Garden #2

Inflow Area = 40,781 sf, 62.50% Impervious, Inflow Depth = 3.51" for 25 yr event
Inflow = 3.99 cfs @ 12.07 hrs, Volume= 11,928.1 cf
Outflow = 2.44 cfs @ 12.17 hrs, Volume= 11,928.1 cf, Atten= 39%, Lag= 5.8 min
Discarded = 0.23 cfs @ 12.17 hrs, Volume= 8,281.3 cf
Primary = 2.20 cfs @ 12.17 hrs, Volume= 3,646.7 cf
Routed to Pond SWM-5 : Rtank-5

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 250.81' @ 12.17 hrs Surf.Area= 4,188 sf Storage= 3,532.7 cf

Plug-Flow detention time= 160.3 min calculated for 11,926.8 cf (100% of inflow)
Center-of-Mass det. time= 160.3 min (982.3 - 822.0)

Volume	Invert	Avail.Storage	Storage Description
#1	250.00'	2,015.0 cf	**Open Air Storage (Prismatic)** Listed below (Recalc)
#2	245.50'	1,541.7 cf	**Subsoil (Prismatic)** Listed below (Recalc)
#3	244.50'	187.7 cf	**12.0" Round Underdrain** Inside #4 L= 239.0'
#4	243.50'	307.3 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 956.0 cf Overall - 187.7 cf Embedded = 768.3 cf x 40.0% Voids
		4,051.8 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
250.00	1,176	0.0	0.0
250.50	2,012	797.0	797.0
251.00	2,860	1,218.0	2,015.0

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
245.50	1,176	0.0	0.0	0.0
245.51	1,176	40.0	4.7	4.7
246.74	1,176	40.0	578.6	583.3
246.75	1,176	25.0	2.9	586.2
249.74	1,176	25.0	879.1	1,465.3
249.75	1,176	25.0	2.9	1,468.2
250.00	1,176	25.0	73.5	1,541.7

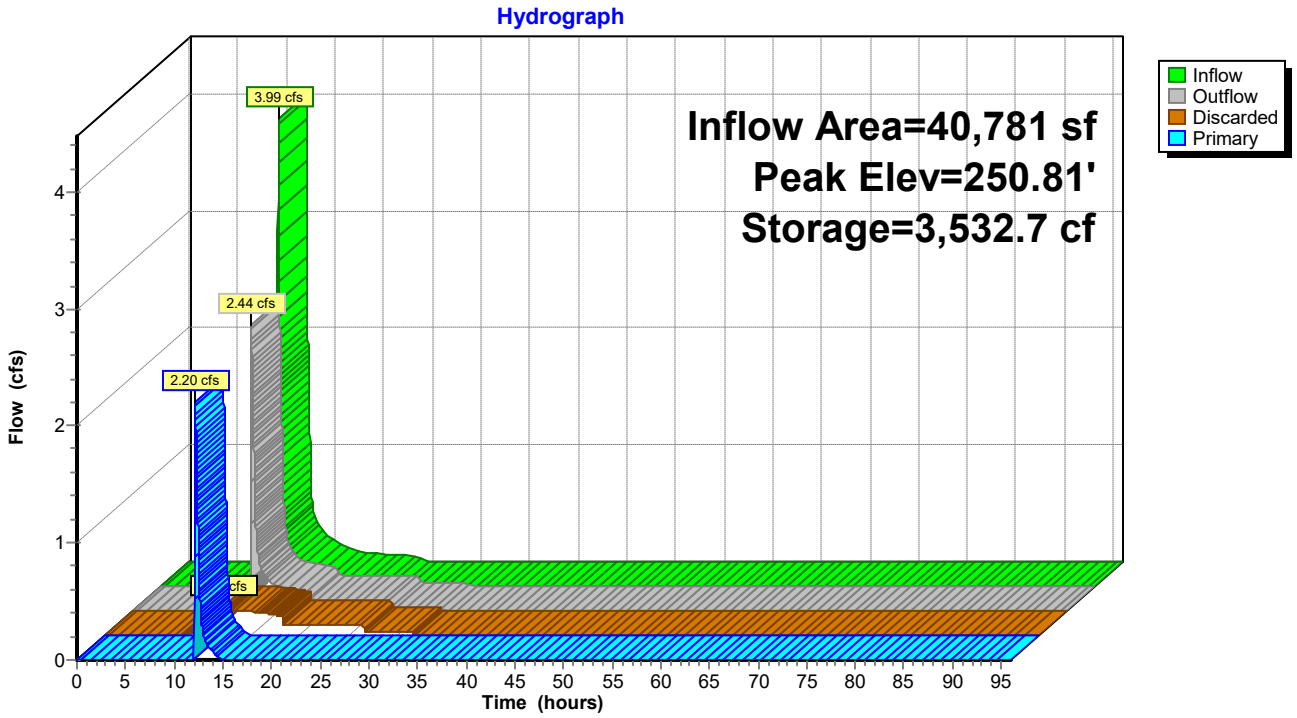
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.50	478	0.0	0.0
245.50	478	956.0	956.0

Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Filtration through media over Surface area**
#2	Device 3	250.50'	**15.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	247.50'	**12.0" Round Culvert** L= 18.0' Ke= 0.100 Inlet / Outlet Invert= 247.50' / 247.45' S= 0.0028 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

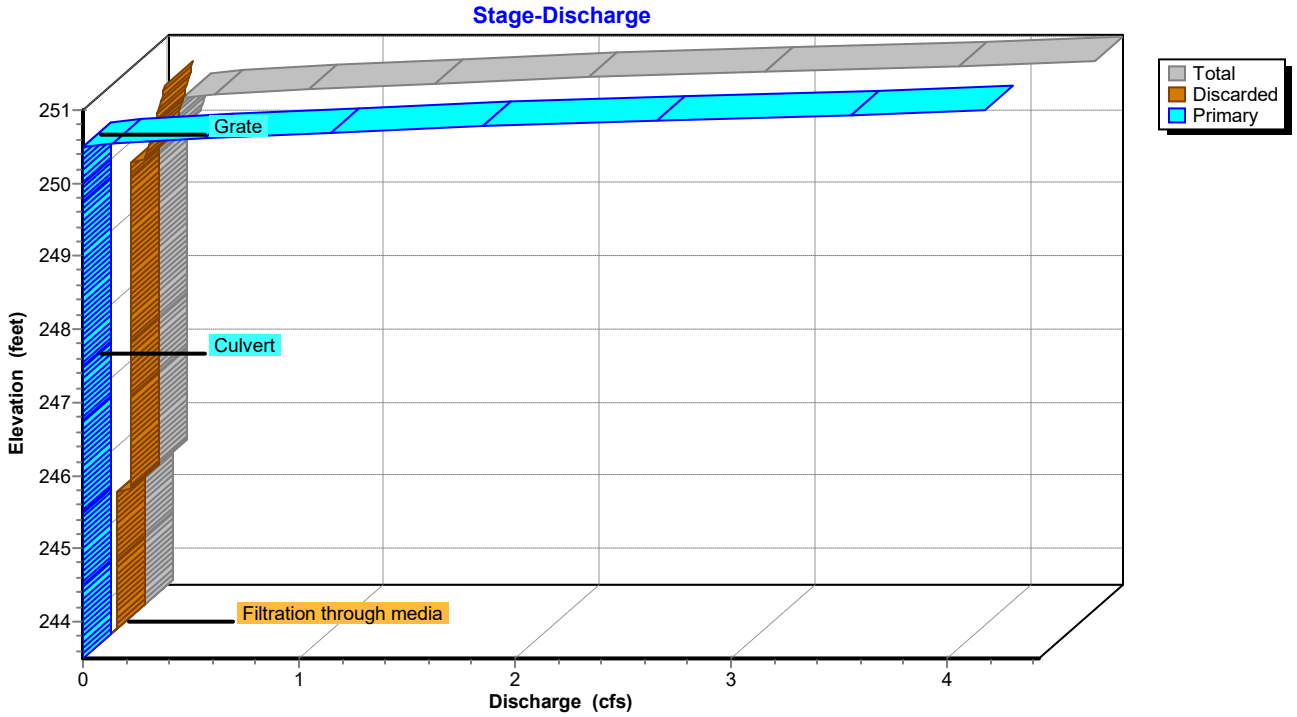
Discarded OutFlow Max=0.23 cfs @ 12.17 hrs HW=250.81' (Free Discharge)
└**1=Filtration through media** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=2.19 cfs @ 12.17 hrs HW=250.81' (Free Discharge)
└**3=Culvert** (Passes 2.19 cfs of 7.89 cfs potential flow)
└**2=Grate** (Weir Controls 2.19 cfs @ 1.81 fps)

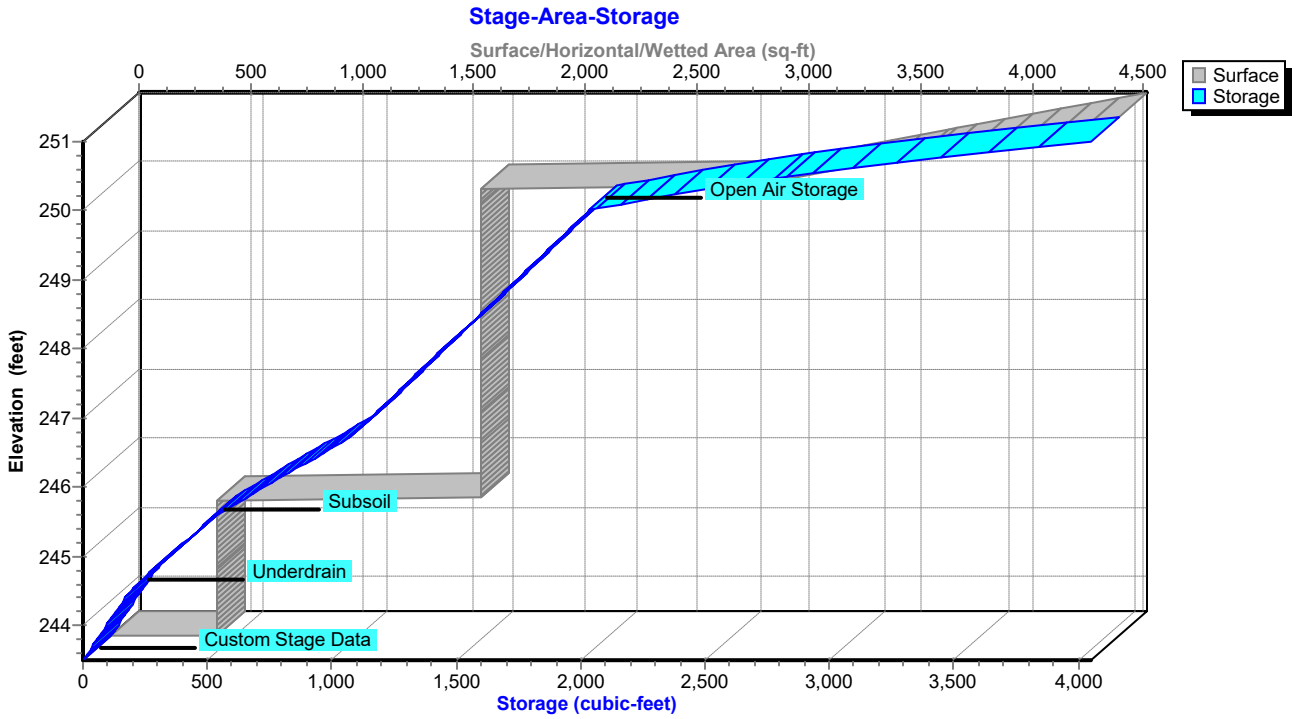
Pond RG2: Rain-Garden #2



Pond RG2: Rain-Garden #2



Pond RG2: Rain-Garden #2



Hydrograph for Pond RG2: Rain-Garden #2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	0.00
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.00	0.0	243.50	0.00	0.00	0.00
6.00	0.00	0.0	243.50	0.00	0.00	0.00
8.00	0.01	1.8	243.51	0.00	0.00	0.00
10.00	0.07	95.7	244.00	0.03	0.03	0.00
12.00	**2.52**	**2,162.0**	**250.10**	**0.17**	**0.17**	**0.00**
14.00	**0.24**	**2,874.8**	**250.52**	**0.26**	**0.21**	**0.06**
16.00	0.13	2,673.7	250.42	0.20	0.20	0.00
18.00	0.08	2,121.2	250.07	0.16	0.16	0.00
20.00	0.07	1,900.0	249.53	0.09	0.09	0.00
22.00	0.05	1,666.4	248.74	0.09	0.09	0.00
24.00	0.04	1,353.4	247.68	0.09	0.09	0.00
26.00	0.00	701.0	245.94	0.09	0.09	0.00
28.00	0.00	356.8	245.04	0.03	0.03	0.00
30.00	0.00	164.8	244.36	0.03	0.03	0.00
32.00	0.00	0.8	243.50	0.00	0.00	0.00
34.00	0.00	0.0	243.50	0.00	0.00	0.00
36.00	0.00	0.0	243.50	0.00	0.00	0.00
38.00	0.00	0.0	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond RG2: Rain-Garden #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	478	0.0
243.60	478	19.1
243.70	478	38.2
243.80	478	57.4
243.90	478	76.5
244.00	478	95.6
244.10	478	114.7
244.20	478	133.8
244.30	478	153.0
244.40	478	172.1
244.50	478	191.2
244.60	478	216.2
244.70	478	245.5
244.80	478	277.0
244.90	478	309.7
245.00	478	343.1
245.10	478	376.5
245.20	478	409.2
245.30	478	440.8
245.40	478	470.0
245.50	1,654	495.0
245.60	1,654	542.1
245.70	1,654	589.1
245.80	1,654	636.1
245.90	1,654	683.2
246.00	1,654	730.2
246.10	1,654	777.3
246.20	1,654	824.3
246.30	1,654	871.3
246.40	1,654	918.4
246.50	1,654	965.4
246.60	1,654	1,012.5
246.70	1,654	1,059.5
246.80	1,654	1,096.0
246.90	1,654	1,125.4
247.00	1,654	1,154.8
247.10	1,654	1,184.2
247.20	1,654	1,213.6
247.30	1,654	1,243.0
247.40	1,654	1,272.4
247.50	1,654	1,301.8
247.60	1,654	1,331.2
247.70	1,654	1,360.6
247.80	1,654	1,390.0
247.90	1,654	1,419.4
248.00	1,654	1,448.8
248.10	1,654	1,478.2
248.20	1,654	1,507.6
248.30	1,654	1,537.0
248.40	1,654	1,566.4
248.50	1,654	1,595.8
248.60	1,654	1,625.2
248.70	1,654	1,654.6
248.80	1,654	1,684.0
248.90	1,654	1,713.4
249.00	1,654	1,742.8
249.10	1,654	1,772.2
249.20	1,654	1,801.6
249.30	1,654	1,831.0
249.40	1,654	1,860.4
249.50	1,654	1,889.8
249.60	1,654	1,919.2
249.70	1,654	1,948.6
249.80	1,654	1,978.0
249.90	1,654	2,007.4
250.00	2,830	2,036.8
250.10	2,997	2,162.7
250.20	3,164	2,305.4
250.30	3,332	2,464.8
250.40	3,499	2,640.9
250.50	3,666	2,833.8
250.60	3,836	3,043.4
250.70	4,005	3,270.1
250.80	4,175	3,513.7
250.90	4,344	3,774.2
251.00	**4,514**	**4,051.8**

Summary for Pond SWM-1: Rtank-1

Inflow Area = 214,605 sf, 84.39% Impervious, Inflow Depth = 3.94" for 25 yr event
Inflow = 23.47 cfs @ 12.14 hrs, Volume= 70,440.0 cf
Outflow = 18.98 cfs @ 12.21 hrs, Volume= 70,440.0 cf, Atten= 19%, Lag= 4.5 min
Discarded = 0.20 cfs @ 10.87 hrs, Volume= 18,716.3 cf
Primary = 18.77 cfs @ 12.21 hrs, Volume= 51,723.7 cf
Routed to Pond SWM-4 : Rtank-4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 249.04' @ 12.21 hrs Surf.Area= 3,640 sf Storage= 17,157.5 cf

Plug-Flow detention time= 156.5 min calculated for 70,432.7 cf (100% of inflow)
Center-of-Mass det. time= 156.6 min (959.6 - 803.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	243.50'	3,180.7 cf	**38.12'W x 95.49'L x 7.81'H Field A** 28,434.6 cf Overall - 20,482.8 cf Embedded = 7,951.8 cf x 40.0% Voids
#2A	243.75'	19,458.6 cf	**ACF R-Tank SD 9** x 1014 Inside #1 Inside= 15.7"W x 78.7"H => 8.18 sf x 2.35'L = 19.2 cf Outside= 15.7"W x 78.7"H => 8.61 sf x 2.35'L = 20.2 cf 1014 Chambers in 26 Rows
		22,639.4 cf	Total Available Storage

Storage Group A created with Chamber Wizard

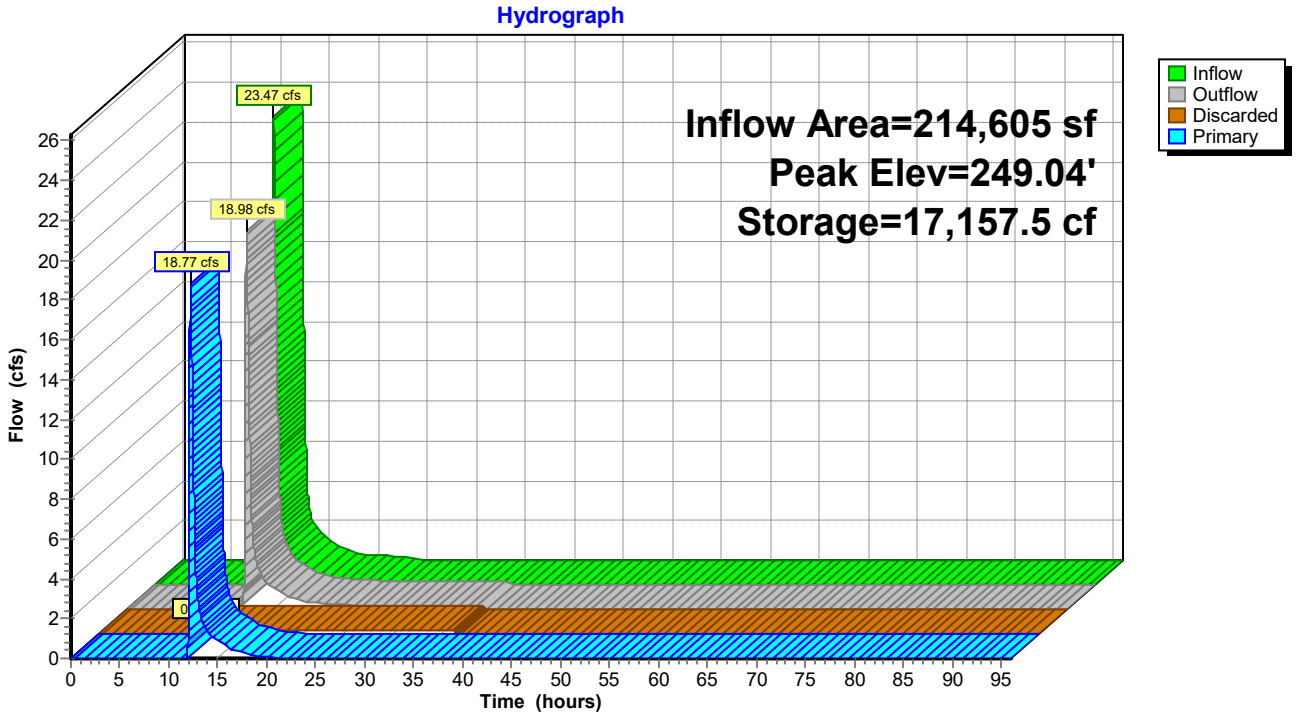
Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.50'	**18.0" Round Culvert X 2.00** L= 70.0' Ke= 0.100 Inlet / Outlet Invert= 246.50' / 246.50' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Discarded OutFlow Max=0.20 cfs @ 10.87 hrs HW=243.58' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=18.76 cfs @ 12.21 hrs HW=249.04' (Free Discharge)
↑**2=Culvert** (Barrel Controls 18.76 cfs @ 5.31 fps)

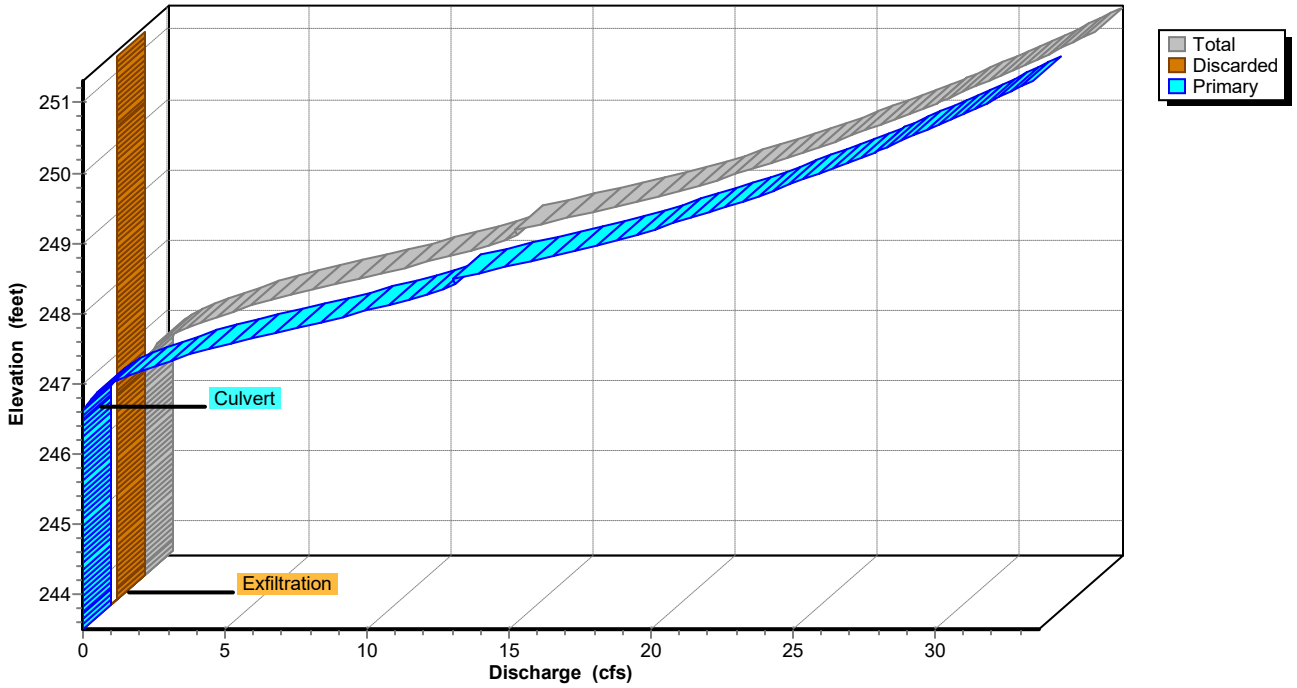
Pond SWM-1: Rtank-1

Hydrograph

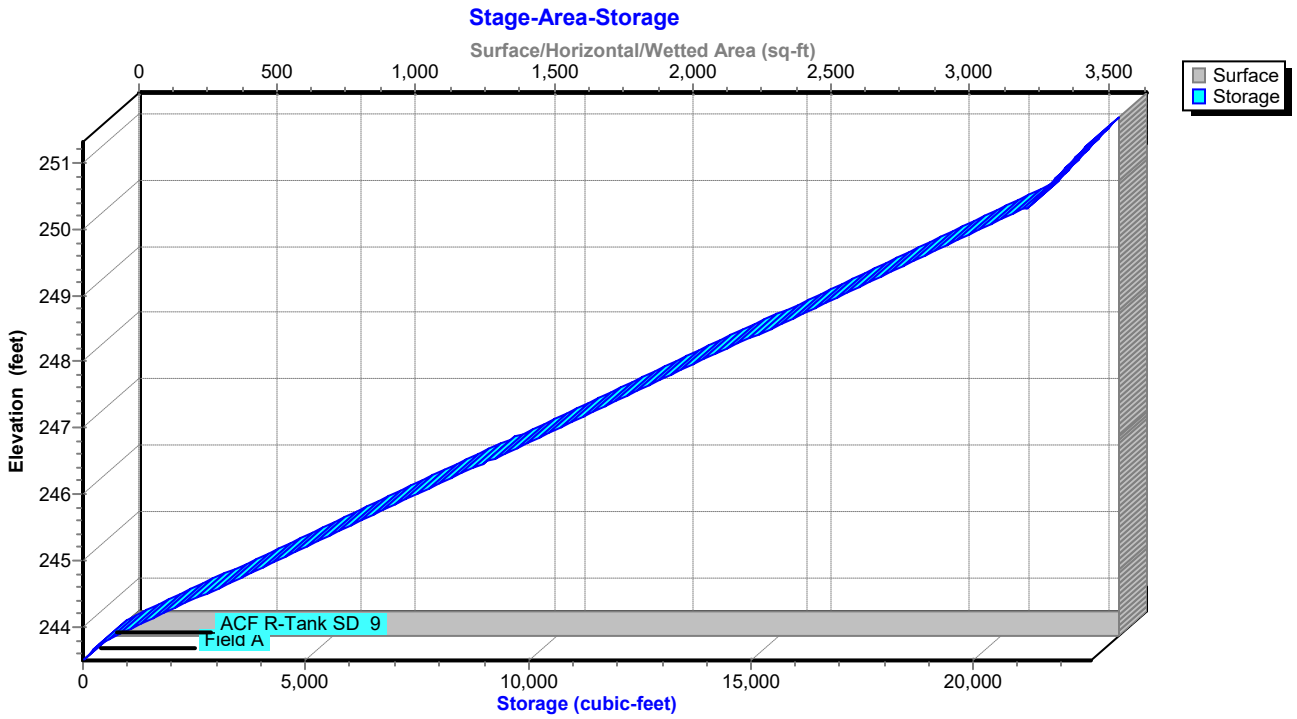


Pond SWM-1: Rtank-1

Stage-Discharge



Pond SWM-1: Rtank-1



Hydrograph for Pond SWM-1: Rtank-1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	0.00
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.00	0.0	243.50	0.00	0.00	0.00
6.00	0.00	0.0	243.50	0.00	0.00	0.00
8.00	0.00	0.0	243.50	0.00	0.00	0.00
10.00	0.00	0.0	243.50	0.00	**0.00**	0.00
12.00	**11.78**	**12,061.7**	**247.44**	**4.24**	**0.20**	**4.03**
14.00	**1.43**	**10,872.9**	**247.06**	**1.54**	0.20	**1.34**
16.00	0.70	10,328.1	246.89	0.78	0.20	0.58
18.00	0.37	9,924.3	246.76	0.43	0.20	0.22
20.00	0.25	9,634.3	246.67	0.28	0.20	0.08
22.00	0.18	9,396.3	246.60	0.23	0.20	0.02
24.00	0.12	8,977.3	246.46	0.20	0.20	0.00
26.00	0.00	7,616.2	246.04	0.20	0.20	0.00
28.00	0.00	6,154.1	245.57	0.20	0.20	0.00
30.00	0.00	4,692.1	245.11	0.20	0.20	0.00
32.00	0.00	3,230.0	244.65	0.20	0.20	0.00
34.00	0.00	1,767.9	244.19	0.20	0.20	0.00
36.00	0.00	305.9	243.71	0.20	0.20	0.00
38.00	0.00	0.0	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-1: Rtank-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	**3,640**	0.0
243.60	3,640	145.6
243.70	3,640	291.2
243.80	3,640	522.6
243.90	3,640	839.9
244.00	3,640	1,157.2
244.10	3,640	1,474.5
244.20	3,640	1,791.8
244.30	3,640	2,109.1
244.40	3,640	2,426.4
244.50	3,640	2,743.7
244.60	3,640	3,060.9
244.70	3,640	3,378.2
244.80	3,640	3,695.5
244.90	3,640	4,012.8
245.00	3,640	4,330.1
245.10	3,640	4,647.4
245.20	3,640	4,964.7
245.30	3,640	5,281.9
245.40	3,640	5,599.2
245.50	3,640	5,916.5
245.60	3,640	6,233.8
245.70	3,640	6,551.1
245.80	3,640	6,868.4
245.90	3,640	7,185.7
246.00	3,640	7,503.0
246.10	3,640	7,820.2
246.20	3,640	8,137.5
246.30	3,640	8,454.8
246.40	3,640	8,772.1
246.50	3,640	9,089.4
246.60	3,640	9,406.7
246.70	3,640	9,724.0
246.80	3,640	10,041.3
246.90	3,640	10,358.5
247.00	3,640	10,675.8
247.10	3,640	10,993.1
247.20	3,640	11,310.4
247.30	3,640	11,627.7
247.40	3,640	11,945.0
247.50	3,640	12,262.3
247.60	3,640	12,579.5
247.70	3,640	12,896.8
247.80	3,640	13,214.1
247.90	3,640	13,531.4
248.00	3,640	13,848.7
248.10	3,640	14,166.0
248.20	3,640	14,483.3
248.30	3,640	14,800.6
248.40	3,640	15,117.8
248.50	3,640	15,435.1
248.60	3,640	15,752.4
248.70	3,640	16,069.7
248.80	3,640	16,387.0
248.90	3,640	16,704.3
249.00	3,640	17,021.6
249.10	3,640	17,338.9
249.20	3,640	17,656.1
249.30	3,640	17,973.4
249.40	3,640	18,290.7
249.50	3,640	18,608.0
249.60	3,640	18,925.3
249.70	3,640	19,242.6
249.80	3,640	19,559.9
249.90	3,640	19,877.1
250.00	3,640	20,194.4
250.10	3,640	20,511.7
250.20	3,640	20,829.0
250.30	3,640	21,146.3
250.40	3,640	21,311.9
250.50	3,640	21,457.5
250.60	3,640	21,603.1
250.70	3,640	21,748.7
250.80	3,640	21,894.3
250.90	3,640	22,039.9
251.00	3,640	22,185.5
251.10	3,640	22,331.1
251.20	3,640	22,476.7
251.30	3,640	**22,622.3**

Summary for Pond SWM-2: Rtank-2

Inflow Area = 416,467 sf, 80.91% Impervious, Inflow Depth = 4.66" for 25 yr event
Inflow = 51.96 cfs @ 12.08 hrs, Volume= 161,758.1 cf
Outflow = 49.44 cfs @ 12.10 hrs, Volume= 161,758.1 cf, Atten= 5%, Lag= 1.5 min
Discarded = 0.42 cfs @ 7.53 hrs, Volume= 28,715.7 cf
Primary = 49.03 cfs @ 12.10 hrs, Volume= 133,042.4 cf
Routed to Pond SWM-3 : Rtank-3

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 251.59' @ 12.10 hrs Surf.Area= 7,487 sf Storage= 9,552.7 cf

Plug-Flow detention time= 17.5 min calculated for 161,741.3 cf (100% of inflow)
Center-of-Mass det. time= 17.5 min (810.6 - 793.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	250.00'	5,132.0 cf	**36.81'W x 203.39'L x 4.92'H Field A** 36,867.9 cf Overall - 24,038.0 cf Embedded = 12,829.9 cf x 40.0% Voids
#2A	250.25'	22,836.1 cf	**ACF R-Tank SD 5** x 2125 Inside #1 Inside= 15.7"W x 44.1"H => 4.58 sf x 2.35'L = 10.7 cf Outside= 15.7"W x 44.1"H => 4.82 sf x 2.35'L = 11.3 cf 2125 Chambers in 25 Rows
		27,968.1 cf	Total Available Storage

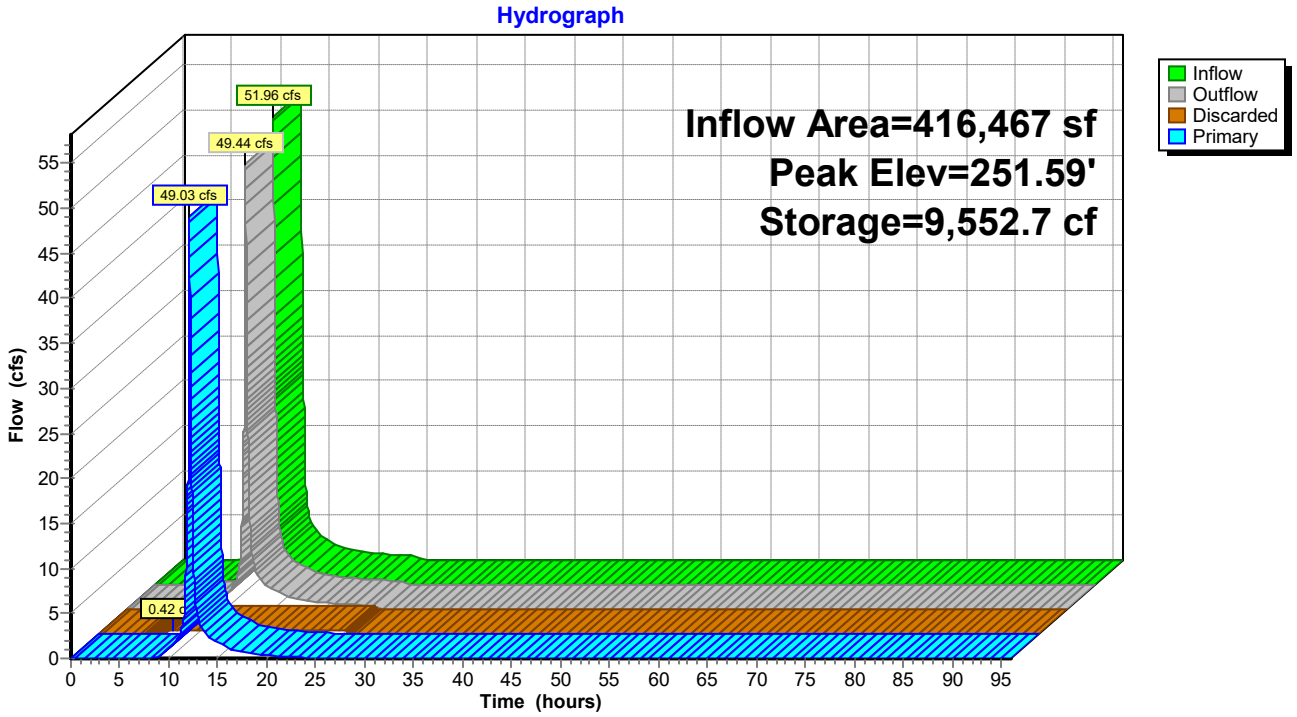
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	250.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	250.40'	**24.0" Round Culvert X 5.00** L= 195.0' Ke= 0.100 Inlet / Outlet Invert= 250.40' / 247.10' S= 0.0169 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

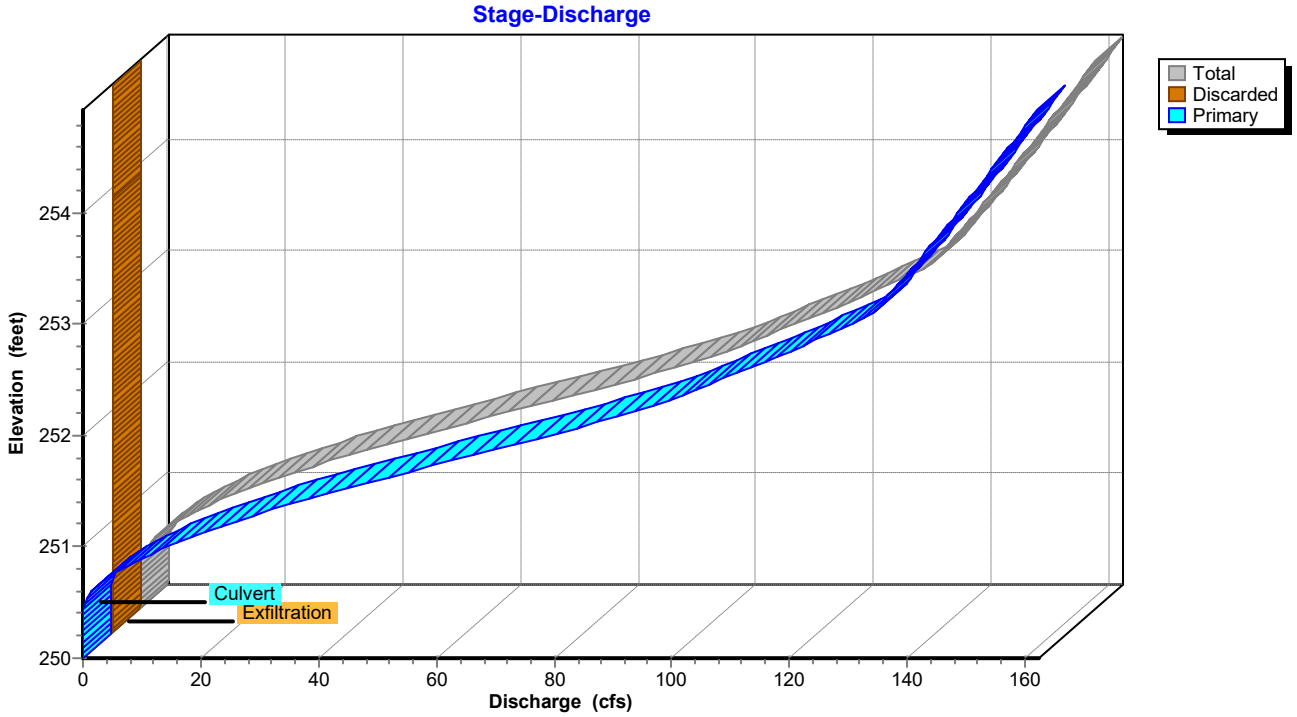
Discarded OutFlow Max=0.42 cfs @ 7.53 hrs HW=250.05' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=48.99 cfs @ 12.10 hrs HW=251.58' (Free Discharge)
↑**2=Culvert** (Inlet Controls 48.99 cfs @ 5.05 fps)

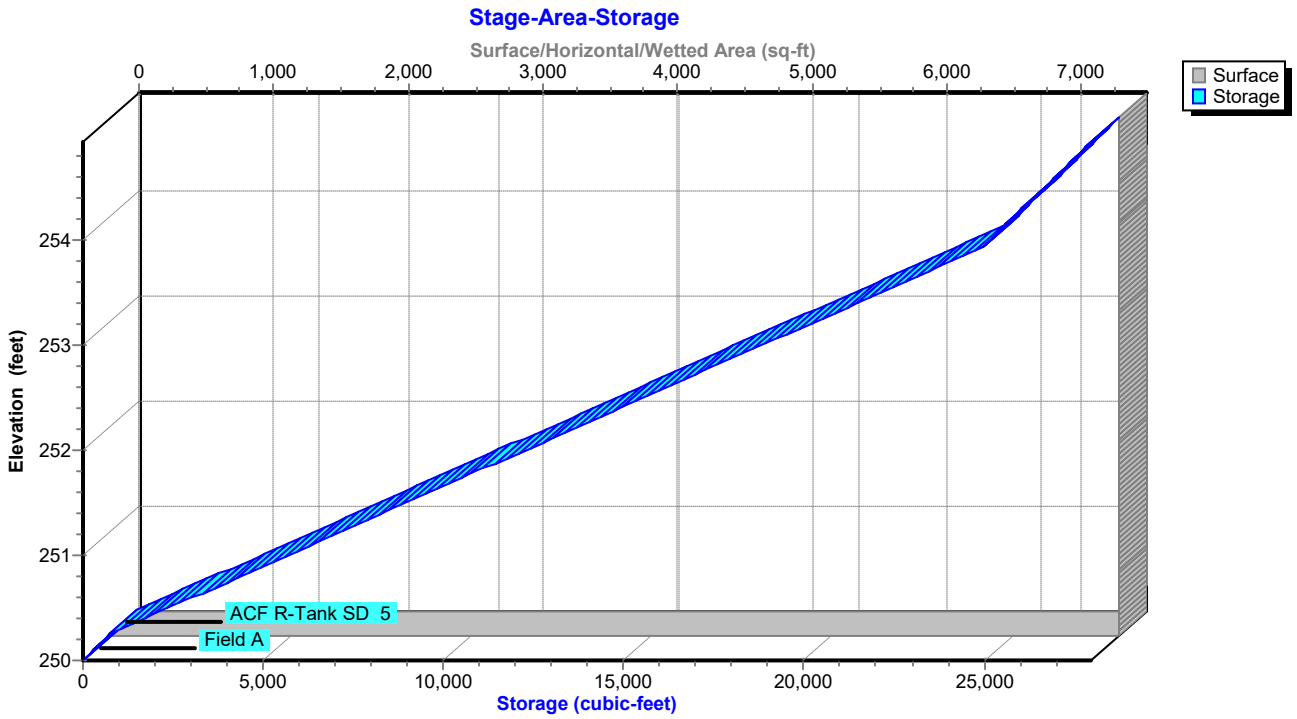
Pond SWM-2: Rtank-2



Pond SWM-2: Rtank-2



Pond SWM-2: Rtank-2



Hydrograph for Pond SWM-2: Rtank-2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	250.00	0.00	0.00	0.00
2.00	0.00	0.0	250.00	0.00	0.00	0.00
4.00	0.00	0.0	250.00	0.00	0.00	0.00
6.00	0.15	49.4	250.02	0.14	**0.14**	0.00
8.00	0.56	289.0	250.10	0.42	**0.42**	0.00
10.00	1.68	2,845.7	250.57	1.59	0.42	1.17
12.00	**33.39**	**7,237.9**	**251.23**	**26.73**	0.42	**26.32**
14.00	**2.84**	**3,358.5**	**250.65**	**2.95**	0.42	**2.53**
16.00	1.52	2,851.9	250.57	1.60	0.42	1.18
18.00	0.93	2,512.8	250.52	0.98	0.42	0.56
20.00	0.74	2,361.6	250.49	0.76	0.42	0.34
22.00	0.62	2,220.2	250.47	0.64	0.42	0.22
24.00	0.49	2,060.5	250.45	0.51	0.42	0.09
26.00	0.00	0.2	250.00	0.00	0.00	0.00
28.00	0.00	0.0	250.00	0.00	0.00	0.00
30.00	0.00	0.0	250.00	0.00	0.00	0.00
32.00	0.00	0.0	250.00	0.00	0.00	0.00
34.00	0.00	0.0	250.00	0.00	0.00	0.00
36.00	0.00	0.0	250.00	0.00	0.00	0.00
38.00	0.00	0.0	250.00	0.00	0.00	0.00
40.00	0.00	0.0	250.00	0.00	0.00	0.00
42.00	0.00	0.0	250.00	0.00	0.00	0.00
44.00	0.00	0.0	250.00	0.00	0.00	0.00
46.00	0.00	0.0	250.00	0.00	0.00	0.00
48.00	0.00	0.0	250.00	0.00	0.00	0.00
50.00	0.00	0.0	250.00	0.00	0.00	0.00
52.00	0.00	0.0	250.00	0.00	0.00	0.00
54.00	0.00	0.0	250.00	0.00	0.00	0.00
56.00	0.00	0.0	250.00	0.00	0.00	0.00
58.00	0.00	0.0	250.00	0.00	0.00	0.00
60.00	0.00	0.0	250.00	0.00	0.00	0.00
62.00	0.00	0.0	250.00	0.00	0.00	0.00
64.00	0.00	0.0	250.00	0.00	0.00	0.00
66.00	0.00	0.0	250.00	0.00	0.00	0.00
68.00	0.00	0.0	250.00	0.00	0.00	0.00
70.00	0.00	0.0	250.00	0.00	0.00	0.00
72.00	0.00	0.0	250.00	0.00	0.00	0.00
74.00	0.00	0.0	250.00	0.00	0.00	0.00
76.00	0.00	0.0	250.00	0.00	0.00	0.00
78.00	0.00	0.0	250.00	0.00	0.00	0.00
80.00	0.00	0.0	250.00	0.00	0.00	0.00
82.00	0.00	0.0	250.00	0.00	0.00	0.00
84.00	0.00	0.0	250.00	0.00	0.00	0.00
86.00	0.00	0.0	250.00	0.00	0.00	0.00
88.00	0.00	0.0	250.00	0.00	0.00	0.00
90.00	0.00	0.0	250.00	0.00	0.00	0.00
92.00	0.00	0.0	250.00	0.00	0.00	0.00
94.00	0.00	0.0	250.00	0.00	0.00	0.00
96.00	0.00	0.0	250.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-2: Rtank-2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
250.00	**7,487**	0.0
250.05	7,487	149.7
250.10	7,487	299.5
250.15	7,487	449.2
250.20	7,487	598.9
250.25	7,487	748.7
250.30	7,487	1,078.3
250.35	7,487	1,407.9
250.40	7,487	1,737.5
250.45	7,487	2,067.2
250.50	7,487	2,396.8
250.55	7,487	2,726.4
250.60	7,487	3,056.1
250.65	7,487	3,385.7
250.70	7,487	3,715.3
250.75	7,487	4,045.0
250.80	7,487	4,374.6
250.85	7,487	4,704.2
250.90	7,487	5,033.8
250.95	7,487	5,363.5
251.00	7,487	5,693.1
251.05	7,487	6,022.7
251.10	7,487	6,352.4
251.15	7,487	6,682.0
251.20	7,487	7,011.6
251.25	7,487	7,341.3
251.30	7,487	7,670.9
251.35	7,487	8,000.5
251.40	7,487	8,330.1
251.45	7,487	8,659.8
251.50	7,487	8,989.4
251.55	7,487	9,319.0
251.60	7,487	9,648.7
251.65	7,487	9,978.3
251.70	7,487	10,307.9
251.75	7,487	10,637.6
251.80	7,487	10,967.2
251.85	7,487	11,296.8
251.90	7,487	11,626.4
251.95	7,487	11,956.1
252.00	7,487	12,285.7
252.05	7,487	12,615.3
252.10	7,487	12,945.0
252.15	7,487	13,274.6
252.20	7,487	13,604.2
252.25	7,487	13,933.9
252.30	7,487	14,263.5
252.35	7,487	14,593.1
252.40	7,487	14,922.7
252.45	7,487	15,252.4
252.50	7,487	15,582.0
252.55	7,487	15,911.6
252.60	7,487	16,241.3
252.65	7,487	16,570.9
252.70	7,487	16,900.5
252.75	7,487	17,230.2
252.80	7,487	17,559.8
252.85	7,487	17,889.4
252.90	7,487	18,219.0
252.95	7,487	18,548.7
253.00	7,487	18,878.3
253.05	7,487	19,207.9
253.10	7,487	19,537.6
253.15	7,487	19,867.2
253.20	7,487	20,196.8
253.25	7,487	20,526.5
253.30	7,487	20,856.1
253.35	7,487	21,185.7
253.40	7,487	21,515.3
253.45	7,487	21,845.0
253.50	7,487	22,174.6
253.55	7,487	22,504.2
253.60	7,487	22,833.9
253.65	7,487	23,163.5
253.70	7,487	23,493.1
253.75	7,487	23,822.8
253.80	7,487	24,152.4
253.85	7,487	24,482.0
253.90	7,487	24,811.6
253.95	7,487	25,049.7
254.00	7,487	25,199.4
254.05	7,487	25,349.1
254.10	7,487	25,498.9
254.15	7,487	25,648.6
254.20	7,487	25,798.3
254.25	7,487	25,948.1
254.30	7,487	26,097.8
254.35	7,487	26,247.5
254.40	7,487	26,397.3
254.45	7,487	26,547.0
254.50	7,487	26,696.7
254.55	7,487	26,846.5
254.60	7,487	26,996.2
254.65	7,487	27,145.9
254.70	7,487	27,295.6
254.75	7,487	27,445.4
254.80	7,487	27,595.1
254.85	7,487	27,744.8
254.90	7,487	**27,894.6**

Summary for Pond SWM-3: Rtank-3

Inflow Area = 416,467 sf, 80.91% Impervious, Inflow Depth = 3.83" for 25 yr event
Inflow = 49.03 cfs @ 12.10 hrs, Volume= 133,042.4 cf
Outflow = 42.39 cfs @ 12.15 hrs, Volume= 133,042.4 cf, Atten= 14%, Lag= 2.9 min
Discarded = 0.44 cfs @ 9.51 hrs, Volume= 40,507.6 cf
Primary = 41.94 cfs @ 12.15 hrs, Volume= 92,534.8 cf
Routed to Pond SWM-4 : Rtank-4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 248.94' @ 12.15 hrs Surf.Area= 7,944 sf Storage= 32,967.8 cf

Plug-Flow detention time= 163.3 min calculated for 133,028.6 cf (100% of inflow)
Center-of-Mass det. time= 163.3 min (943.4 - 780.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	244.00'	6,520.8 cf	**47.99'W x 165.51'L x 6.37'H Field A** 50,587.1 cf Overall - 34,285.0 cf Embedded = 16,302.1 cf x 40.0% Voids
#2A	244.25'	32,570.8 cf	**ACF R-Tank SD 7** x 2176 Inside #1 Inside= 15.7"W x 61.4"H => 6.38 sf x 2.35'L = 15.0 cf Outside= 15.7"W x 61.4"H => 6.72 sf x 2.35'L = 15.8 cf 2176 Chambers in 32 Rows
		39,091.6 cf	Total Available Storage

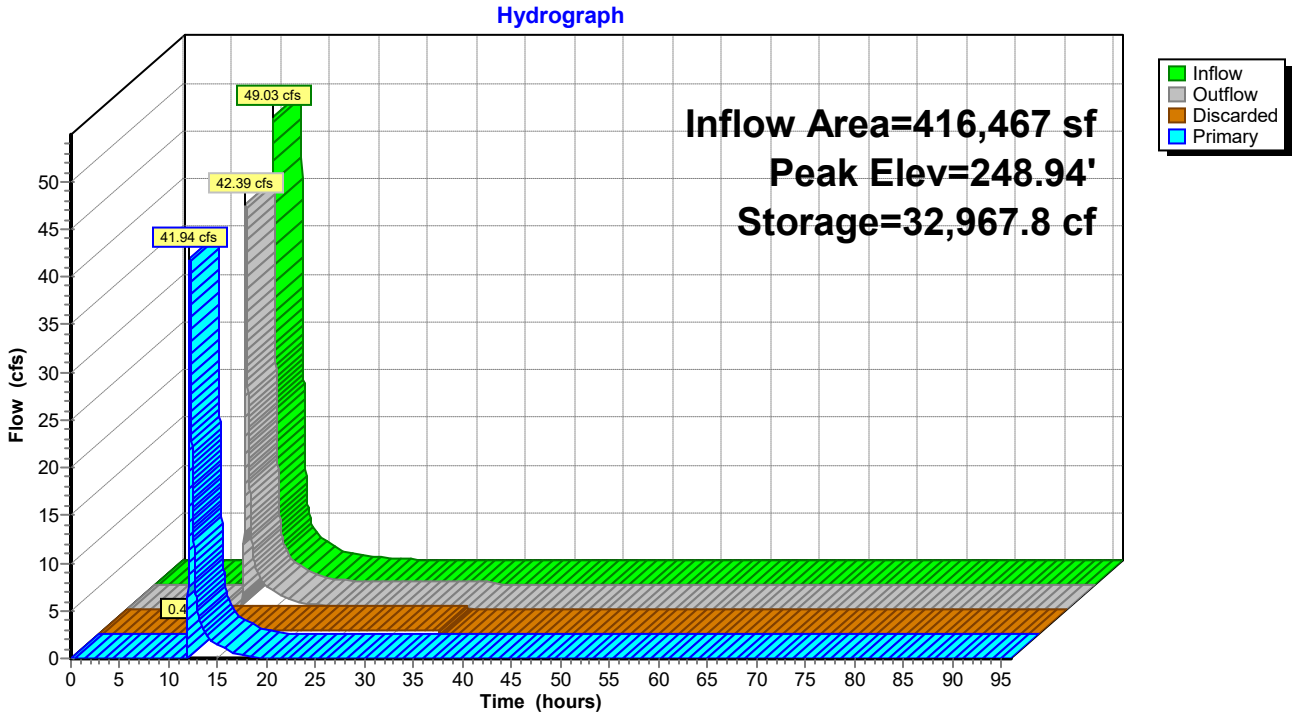
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	244.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	247.10'	**24.0" Round Culvert X 3.00** L= 6.0' Ke= 0.100 Inlet / Outlet Invert= 247.10' / 246.90' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

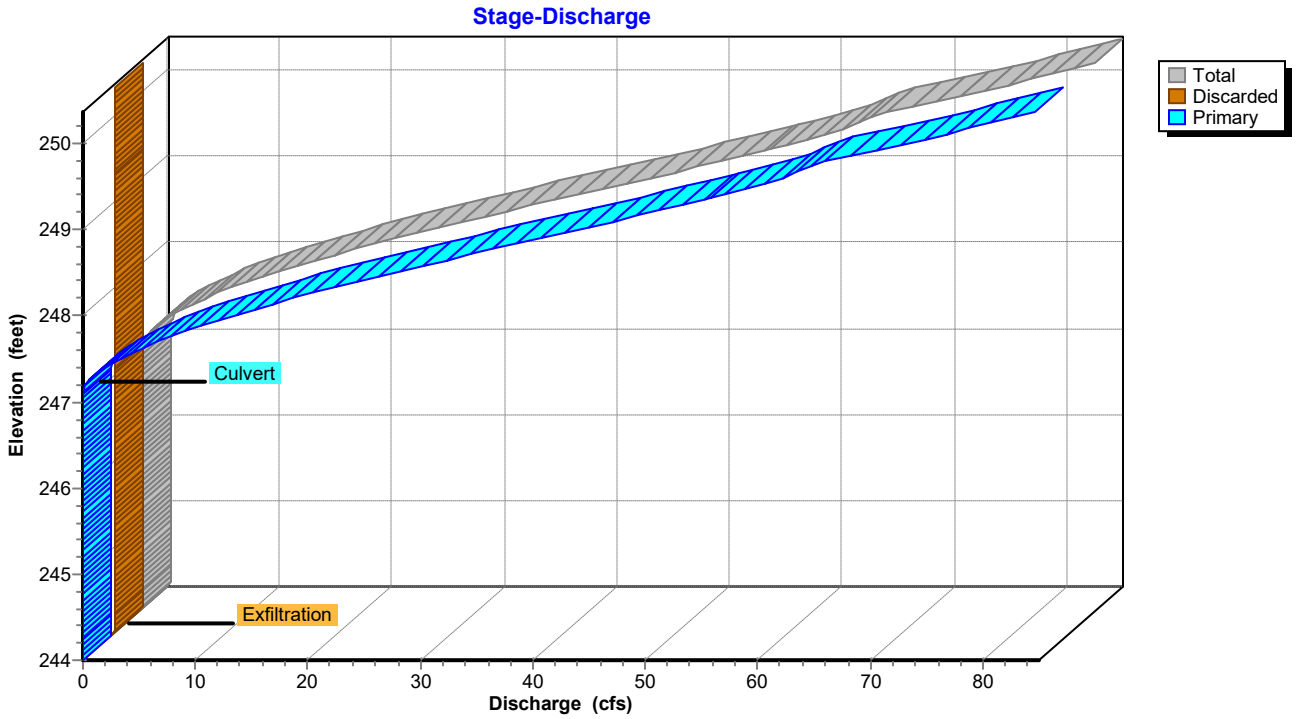
Discarded OutFlow Max=0.44 cfs @ 9.51 hrs HW=244.06' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.44 cfs)

Primary OutFlow Max=41.94 cfs @ 12.15 hrs HW=248.94' (Free Discharge)
↑**2=Culvert** (Barrel Controls 41.94 cfs @ 6.05 fps)

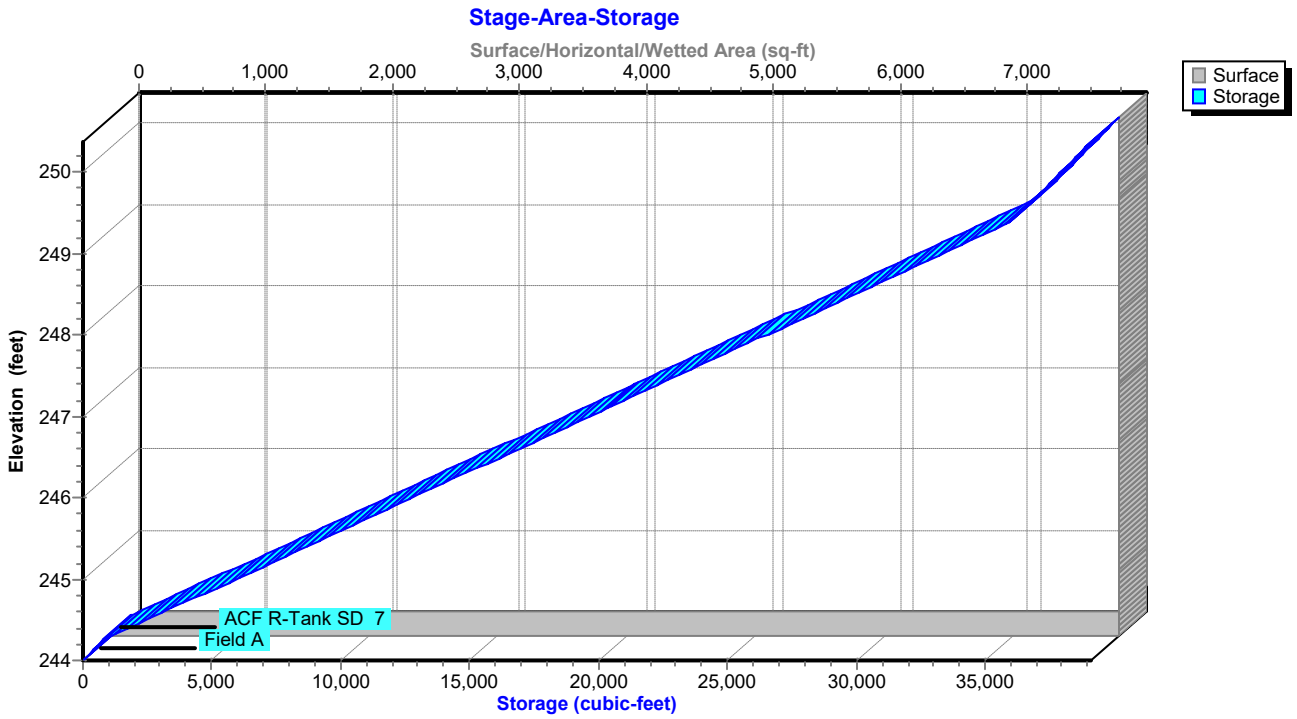
Pond SWM-3: Rtank-3



Pond SWM-3: Rtank-3



Pond SWM-3: Rtank-3



Hydrograph for Pond SWM-3: Rtank-3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	244.00	0.00	0.00	0.00
2.00	0.00	0.0	244.00	0.00	0.00	0.00
4.00	0.00	0.0	244.00	0.00	0.00	0.00
6.00	0.00	0.0	244.00	0.00	0.00	0.00
8.00	0.00	0.0	244.00	0.00	**0.00**	0.00
10.00	1.17	1,093.9	244.29	0.44	**0.44**	0.00
12.00	**26.32**	**26,808.0**	**248.04**	**14.79**	0.44	**14.35**
14.00	**2.53**	**22,567.0**	**247.42**	**2.73**	0.44	**2.29**
16.00	1.18	21,638.3	247.29	1.32	0.44	0.88
18.00	0.56	20,957.7	247.19	0.65	0.44	0.21
20.00	0.34	20,336.4	247.10	0.44	0.44	0.00
22.00	0.22	19,165.4	246.93	0.44	0.44	0.00
24.00	0.09	17,100.6	246.63	0.44	0.44	0.00
26.00	0.00	13,958.5	246.17	0.44	0.44	0.00
28.00	0.00	10,767.7	245.70	0.44	0.44	0.00
30.00	0.00	7,577.0	245.24	0.44	0.44	0.00
32.00	0.00	4,386.2	244.77	0.44	0.44	0.00
34.00	0.00	1,195.4	244.31	0.44	0.44	0.00
36.00	0.00	0.0	244.00	0.00	0.00	0.00
38.00	0.00	0.0	244.00	0.00	0.00	0.00
40.00	0.00	0.0	244.00	0.00	0.00	0.00
42.00	0.00	0.0	244.00	0.00	0.00	0.00
44.00	0.00	0.0	244.00	0.00	0.00	0.00
46.00	0.00	0.0	244.00	0.00	0.00	0.00
48.00	0.00	0.0	244.00	0.00	0.00	0.00
50.00	0.00	0.0	244.00	0.00	0.00	0.00
52.00	0.00	0.0	244.00	0.00	0.00	0.00
54.00	0.00	0.0	244.00	0.00	0.00	0.00
56.00	0.00	0.0	244.00	0.00	0.00	0.00
58.00	0.00	0.0	244.00	0.00	0.00	0.00
60.00	0.00	0.0	244.00	0.00	0.00	0.00
62.00	0.00	0.0	244.00	0.00	0.00	0.00
64.00	0.00	0.0	244.00	0.00	0.00	0.00
66.00	0.00	0.0	244.00	0.00	0.00	0.00
68.00	0.00	0.0	244.00	0.00	0.00	0.00
70.00	0.00	0.0	244.00	0.00	0.00	0.00
72.00	0.00	0.0	244.00	0.00	0.00	0.00
74.00	0.00	0.0	244.00	0.00	0.00	0.00
76.00	0.00	0.0	244.00	0.00	0.00	0.00
78.00	0.00	0.0	244.00	0.00	0.00	0.00
80.00	0.00	0.0	244.00	0.00	0.00	0.00
82.00	0.00	0.0	244.00	0.00	0.00	0.00
84.00	0.00	0.0	244.00	0.00	0.00	0.00
86.00	0.00	0.0	244.00	0.00	0.00	0.00
88.00	0.00	0.0	244.00	0.00	0.00	0.00
90.00	0.00	0.0	244.00	0.00	0.00	0.00
92.00	0.00	0.0	244.00	0.00	0.00	0.00
94.00	0.00	0.0	244.00	0.00	0.00	0.00
96.00	0.00	0.0	244.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-3: Rtank-3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
244.00	**7,944**	0.0
244.10	7,944	317.8
244.20	7,944	635.5
244.30	7,944	1,137.5
244.40	7,944	1,823.7
244.50	7,944	2,509.8
244.60	7,944	3,196.0
244.70	7,944	3,882.2
244.80	7,944	4,568.4
244.90	7,944	5,254.6
245.00	7,944	5,940.8
245.10	7,944	6,627.0
245.20	7,944	7,313.1
245.30	7,944	7,999.3
245.40	7,944	8,685.5
245.50	7,944	9,371.7
245.60	7,944	10,057.9
245.70	7,944	10,744.1
245.80	7,944	11,430.3
245.90	7,944	12,116.4
246.00	7,944	12,802.6
246.10	7,944	13,488.8
246.20	7,944	14,175.0
246.30	7,944	14,861.2
246.40	7,944	15,547.4
246.50	7,944	16,233.6
246.60	7,944	16,919.7
246.70	7,944	17,605.9
246.80	7,944	18,292.1
246.90	7,944	18,978.3
247.00	7,944	19,664.5
247.10	7,944	20,350.7
247.20	7,944	21,036.8
247.30	7,944	21,723.0
247.40	7,944	22,409.2
247.50	7,944	23,095.4
247.60	7,944	23,781.6
247.70	7,944	24,467.8
247.80	7,944	25,154.0
247.90	7,944	25,840.1
248.00	7,944	26,526.3
248.10	7,944	27,212.5
248.20	7,944	27,898.7
248.30	7,944	28,584.9
248.40	7,944	29,271.1
248.50	7,944	29,957.3
248.60	7,944	30,643.4
248.70	7,944	31,329.6
248.80	7,944	32,015.8
248.90	7,944	32,702.0
249.00	7,944	33,388.2
249.10	7,944	34,074.4
249.20	7,944	34,760.6
249.30	7,944	35,446.7
249.40	7,944	36,015.4
249.50	7,944	36,333.2
249.60	7,944	36,650.9
249.70	7,944	36,968.7
249.80	7,944	37,286.4
249.90	7,944	37,604.2
250.00	7,944	37,921.9
250.10	7,944	38,239.7
250.20	7,944	38,557.5
250.30	7,944	**38,875.2**

Summary for Pond SWM-4: Rtank-4

Inflow Area = 718,927 sf, 79.73% Impervious, Inflow Depth = 2.67" for 25 yr event
Inflow = 64.78 cfs @ 12.16 hrs, Volume= 160,161.6 cf
Outflow = 43.95 cfs @ 12.33 hrs, Volume= 160,161.6 cf, Atten= 32%, Lag= 9.9 min
Discarded = 0.62 cfs @ 11.87 hrs, Volume= 50,325.3 cf
Primary = 43.33 cfs @ 12.33 hrs, Volume= 109,836.4 cf
Routed to Pond SWM-5 : Rtank-5

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 247.93' @ 12.33 hrs Surf.Area= 11,191 sf Storage= 47,151.7 cf

Plug-Flow detention time= 182.6 min calculated for 160,161.6 cf (100% of inflow)
Center-of-Mass det. time= 182.6 min (967.7 - 785.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	243.00'	9,012.6 cf	**58.49'W x 191.32'L x 7.09'H Field A** 79,342.0 cf Overall - 56,810.5 cf Embedded = 22,531.6 cf x 40.0% Voids
#2A	243.25'	53,969.9 cf	**ACF R-Tank SD 8** x 3160 Inside #1 Inside= 15.7"W x 70.1"H => 7.28 sf x 2.35'L = 17.1 cf Outside= 15.7"W x 70.1"H => 7.66 sf x 2.35'L = 18.0 cf 3160 Chambers in 40 Rows
		62,982.6 cf	Total Available Storage

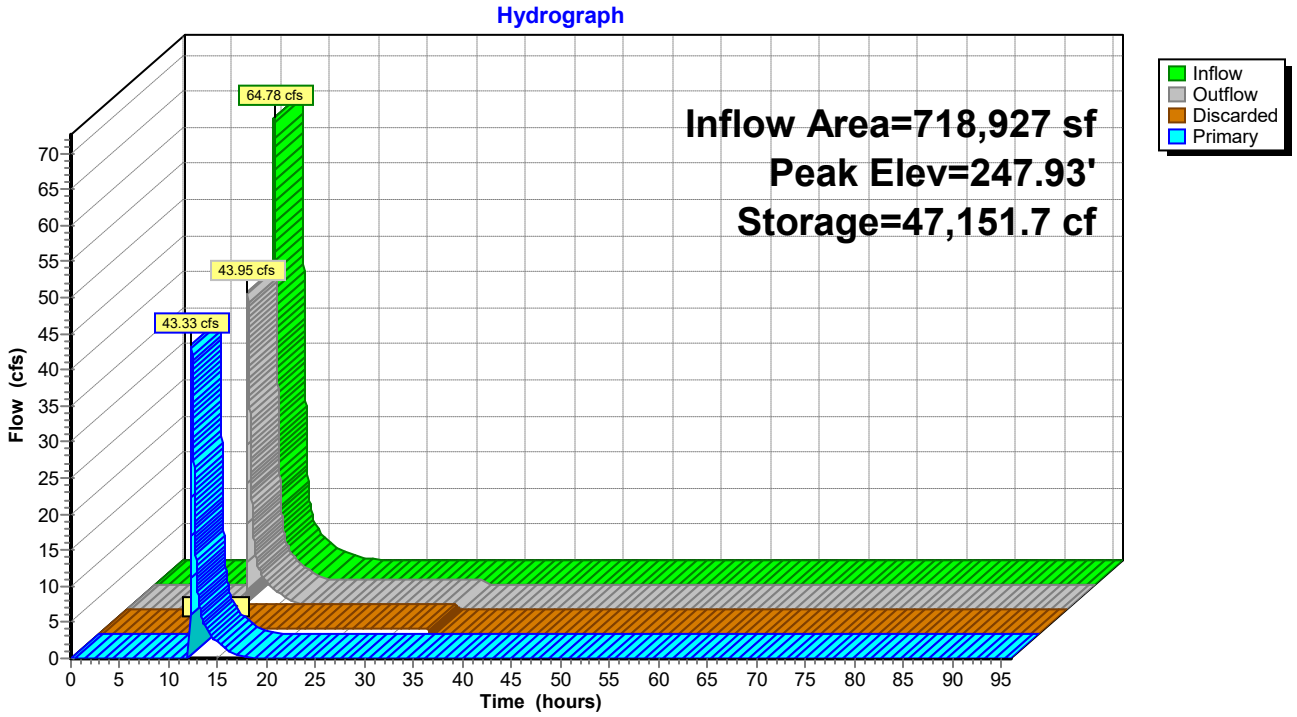
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	243.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.40'	**24.0" Round Culvert X 3.00** L= 50.0' Ke= 0.100 Inlet / Outlet Invert= 246.40' / 245.25' S= 0.0230 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

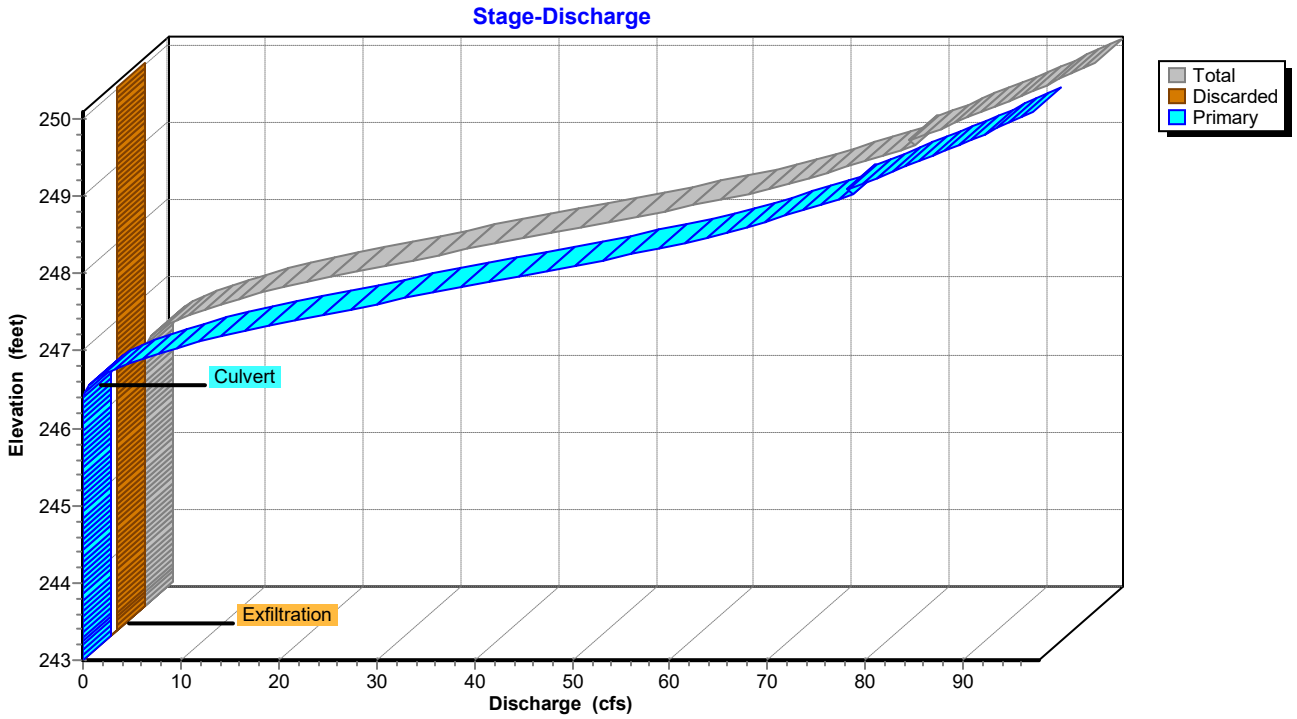
Discarded OutFlow Max=0.62 cfs @ 11.87 hrs HW=243.07' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.62 cfs)

Primary OutFlow Max=43.31 cfs @ 12.33 hrs HW=247.93' (Free Discharge)
↑**2=Culvert** (Barrel Controls 43.31 cfs @ 7.72 fps)

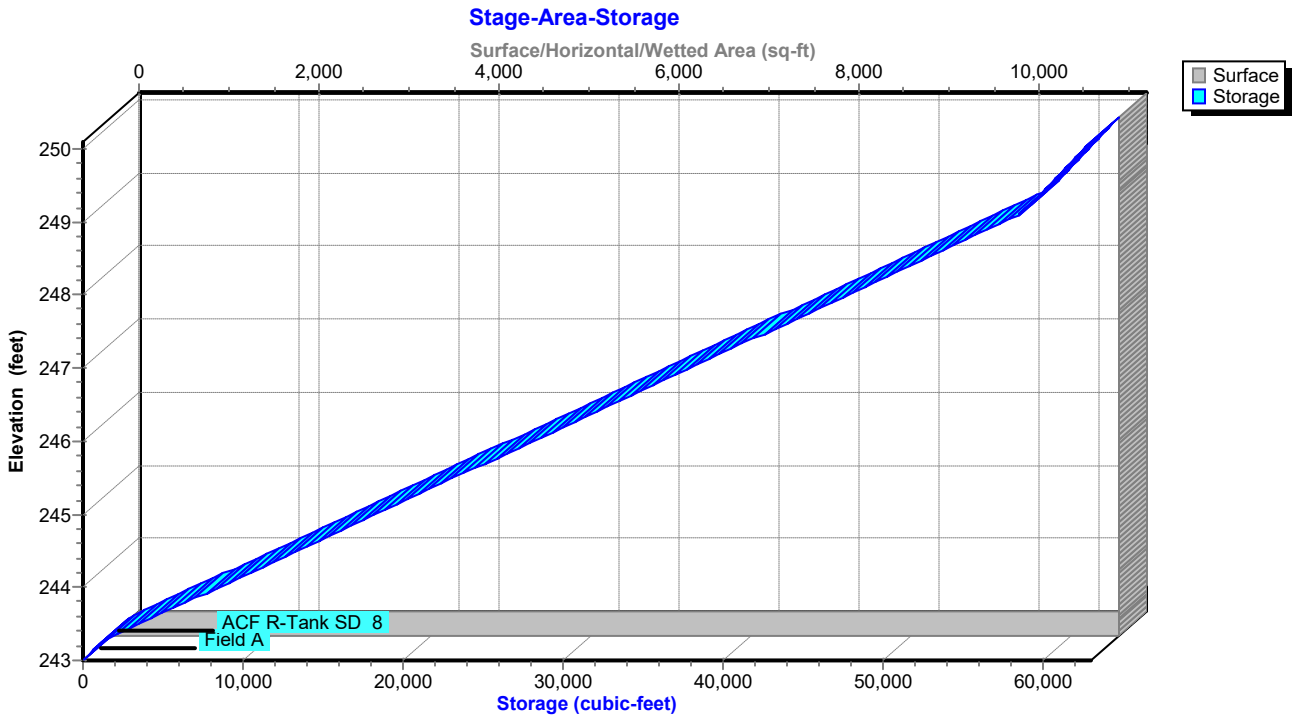
Pond SWM-4: Rtank-4



Pond SWM-4: Rtank-4



Pond SWM-4: Rtank-4



Hydrograph for Pond SWM-4: Rtank-4

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.00	0.00	0.00	0.00
2.00	0.00	0.0	243.00	0.00	0.00	0.00
4.00	0.00	0.0	243.00	0.00	0.00	0.00
6.00	0.00	0.0	243.00	0.00	0.00	0.00
8.00	0.00	0.0	243.00	0.00	0.00	0.00
10.00	0.04	18.3	243.00	0.04	**0.04**	0.00
12.00	**20.37**	**3,997.1**	**243.54**	**0.62**	**0.62**	**0.00**
14.00	**3.97**	**35,845.6**	**246.78**	**4.29**	0.62	**3.66**
16.00	1.57	34,169.8	246.61	1.78	0.62	1.16
18.00	0.50	32,677.6	246.46	0.74	0.62	0.11
20.00	0.14	30,012.5	246.19	0.62	0.62	0.00
22.00	0.07	26,219.5	245.80	0.62	0.62	0.00
24.00	0.04	22,073.1	245.38	0.62	0.62	0.00
26.00	0.00	17,588.5	244.93	0.62	0.62	0.00
28.00	0.00	13,093.5	244.47	0.62	0.62	0.00
30.00	0.00	8,598.5	244.01	0.62	0.62	0.00
32.00	0.00	4,103.5	243.55	0.62	0.62	0.00
34.00	0.00	34.0	243.01	0.07	0.07	0.00
36.00	0.00	0.0	243.00	0.00	0.00	0.00
38.00	0.00	0.0	243.00	0.00	0.00	0.00
40.00	0.00	0.0	243.00	0.00	0.00	0.00
42.00	0.00	0.0	243.00	0.00	0.00	0.00
44.00	0.00	0.0	243.00	0.00	0.00	0.00
46.00	0.00	0.0	243.00	0.00	0.00	0.00
48.00	0.00	0.0	243.00	0.00	0.00	0.00
50.00	0.00	0.0	243.00	0.00	0.00	0.00
52.00	0.00	0.0	243.00	0.00	0.00	0.00
54.00	0.00	0.0	243.00	0.00	0.00	0.00
56.00	0.00	0.0	243.00	0.00	0.00	0.00
58.00	0.00	0.0	243.00	0.00	0.00	0.00
60.00	0.00	0.0	243.00	0.00	0.00	0.00
62.00	0.00	0.0	243.00	0.00	0.00	0.00
64.00	0.00	0.0	243.00	0.00	0.00	0.00
66.00	0.00	0.0	243.00	0.00	0.00	0.00
68.00	0.00	0.0	243.00	0.00	0.00	0.00
70.00	0.00	0.0	243.00	0.00	0.00	0.00
72.00	0.00	0.0	243.00	0.00	0.00	0.00
74.00	0.00	0.0	243.00	0.00	0.00	0.00
76.00	0.00	0.0	243.00	0.00	0.00	0.00
78.00	0.00	0.0	243.00	0.00	0.00	0.00
80.00	0.00	0.0	243.00	0.00	0.00	0.00
82.00	0.00	0.0	243.00	0.00	0.00	0.00
84.00	0.00	0.0	243.00	0.00	0.00	0.00
86.00	0.00	0.0	243.00	0.00	0.00	0.00
88.00	0.00	0.0	243.00	0.00	0.00	0.00
90.00	0.00	0.0	243.00	0.00	0.00	0.00
92.00	0.00	0.0	243.00	0.00	0.00	0.00
94.00	0.00	0.0	243.00	0.00	0.00	0.00
96.00	0.00	0.0	243.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-4: Rtank-4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.00	**11,191**	0.0
243.10	11,191	447.6
243.20	11,191	895.3
243.30	11,191	1,610.4
243.40	11,191	2,593.1
243.50	11,191	3,575.8
243.60	11,191	4,558.4
243.70	11,191	5,541.1
243.80	11,191	6,523.8
243.90	11,191	7,506.5
244.00	11,191	8,489.1
244.10	11,191	9,471.8
244.20	11,191	10,454.5
244.30	11,191	11,437.2
244.40	11,191	12,419.8
244.50	11,191	13,402.5
244.60	11,191	14,385.2
244.70	11,191	15,367.9
244.80	11,191	16,350.5
244.90	11,191	17,333.2
245.00	11,191	18,315.9
245.10	11,191	19,298.6
245.20	11,191	20,281.2
245.30	11,191	21,263.9
245.40	11,191	22,246.6
245.50	11,191	23,229.3
245.60	11,191	24,211.9
245.70	11,191	25,194.6
245.80	11,191	26,177.3
245.90	11,191	27,159.9
246.00	11,191	28,142.6
246.10	11,191	29,125.3
246.20	11,191	30,108.0
246.30	11,191	31,090.6
246.40	11,191	32,073.3
246.50	11,191	33,056.0
246.60	11,191	34,038.7
246.70	11,191	35,021.3
246.80	11,191	36,004.0
246.90	11,191	36,986.7
247.00	11,191	37,969.4
247.10	11,191	38,952.0
247.20	11,191	39,934.7
247.30	11,191	40,917.4
247.40	11,191	41,900.1
247.50	11,191	42,882.7
247.60	11,191	43,865.4
247.70	11,191	44,848.1
247.80	11,191	45,830.8
247.90	11,191	46,813.4
248.00	11,191	47,796.1
248.10	11,191	48,778.8
248.20	11,191	49,761.4
248.30	11,191	50,744.1
248.40	11,191	51,726.8
248.50	11,191	52,709.5
248.60	11,191	53,692.1
248.70	11,191	54,674.8
248.80	11,191	55,657.5
248.90	11,191	56,640.2
249.00	11,191	57,622.8
249.10	11,191	58,551.5
249.20	11,191	58,999.1
249.30	11,191	59,446.7
249.40	11,191	59,894.4
249.50	11,191	60,342.0
249.60	11,191	60,789.6
249.70	11,191	61,237.3
249.80	11,191	61,684.9
249.90	11,191	62,132.5
250.00	11,191	**62,580.2**

Summary for Pond SWM-5: Rtank-5

Inflow Area = 759,708 sf, 78.80% Impervious, Inflow Depth = 1.79" for 25 yr event
Inflow = 44.90 cfs @ 12.32 hrs, Volume= 113,483.1 cf
Outflow = 43.16 cfs @ 12.37 hrs, Volume= 113,483.1 cf, Atten= 4%, Lag= 2.9 min
Discarded = 0.43 cfs @ 12.13 hrs, Volume= 16,700.8 cf
Primary = 42.73 cfs @ 12.37 hrs, Volume= 96,782.3 cf
Routed to Link POA D : FIRE POND

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 247.19' @ 12.37 hrs Surf.Area= 7,709 sf Storage= 13,821.7 cf

Plug-Flow detention time= 37.9 min calculated for 113,483.1 cf (100% of inflow)
Center-of-Mass det. time= 37.9 min (825.9 - 788.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	245.00'	5,740.0 cf	**63.74'W x 120.94'L x 5.65'H Field A** 43,529.3 cf Overall - 29,179.3 cf Embedded = 14,350.0 cf x 40.0% Voids
#2A	245.25'	27,720.3 cf	**ACF R-Tank SD 6** x 2156 Inside #1 Inside= 15.7"W x 52.8"H => 5.48 sf x 2.35'L = 12.9 cf Outside= 15.7"W x 52.8"H => 5.77 sf x 2.35'L = 13.5 cf 2156 Chambers in 44 Rows
		33,460.3 cf	Total Available Storage

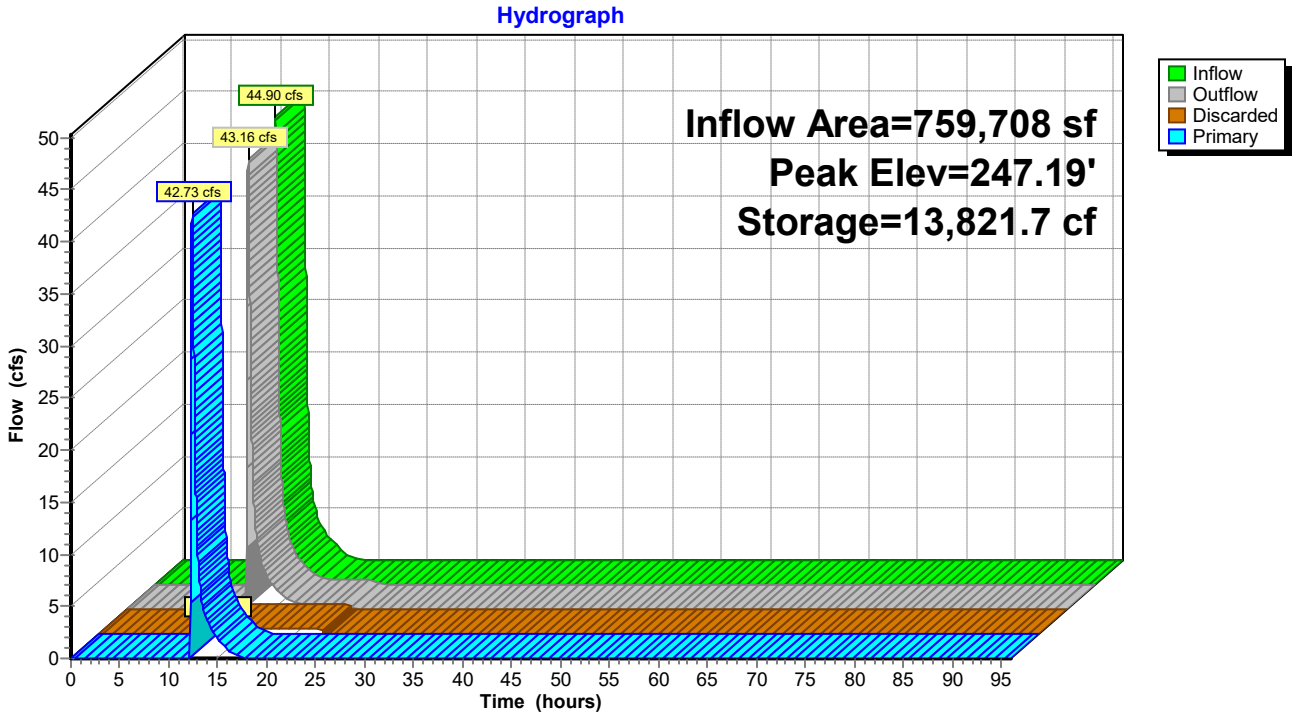
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	245.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.30'	**24.0" Vert. Orifice/Grate X 9.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	246.30'	**24.0" Round Culvert** L= 166.0' Ke= 0.100 Inlet / Outlet Invert= 246.30' / 245.40' S= 0.0054 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

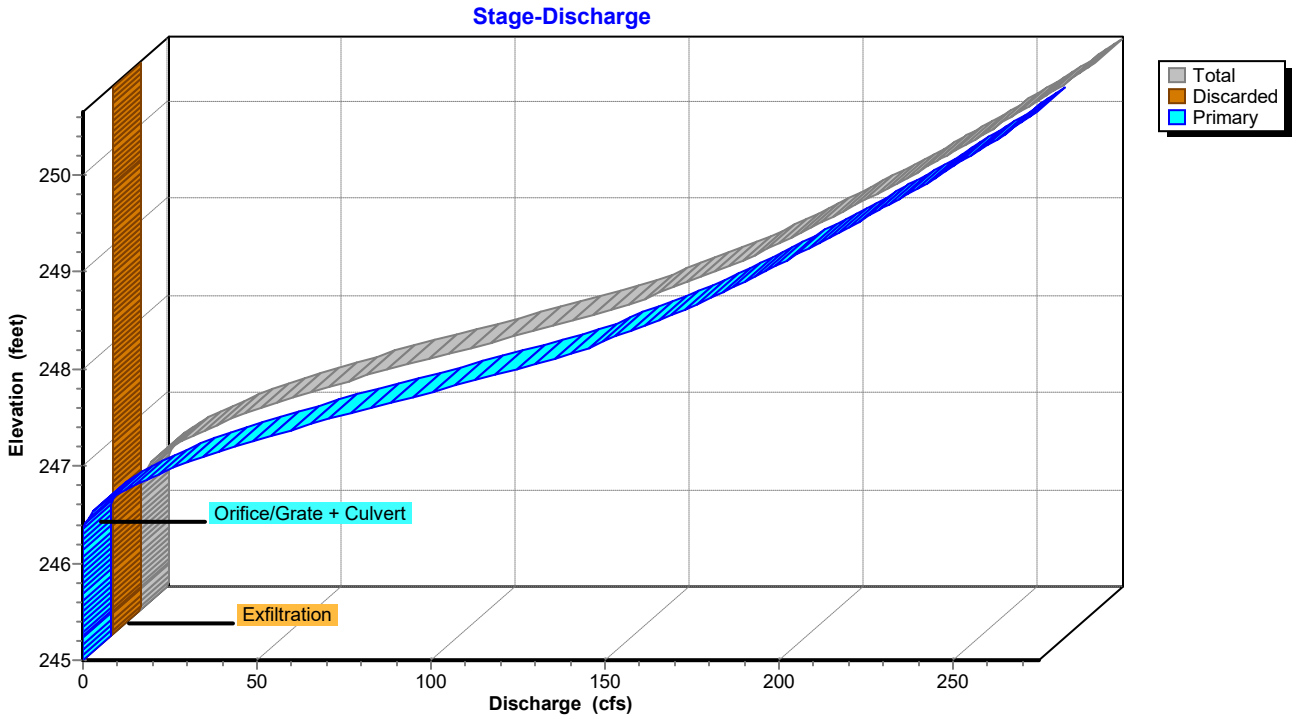
Discarded OutFlow Max=0.43 cfs @ 12.13 hrs HW=245.07' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.43 cfs)

Primary OutFlow Max=42.67 cfs @ 12.37 hrs HW=247.19' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 38.87 cfs @ 3.21 fps)
└**3=Culvert** (Barrel Controls 3.81 cfs @ 4.16 fps)

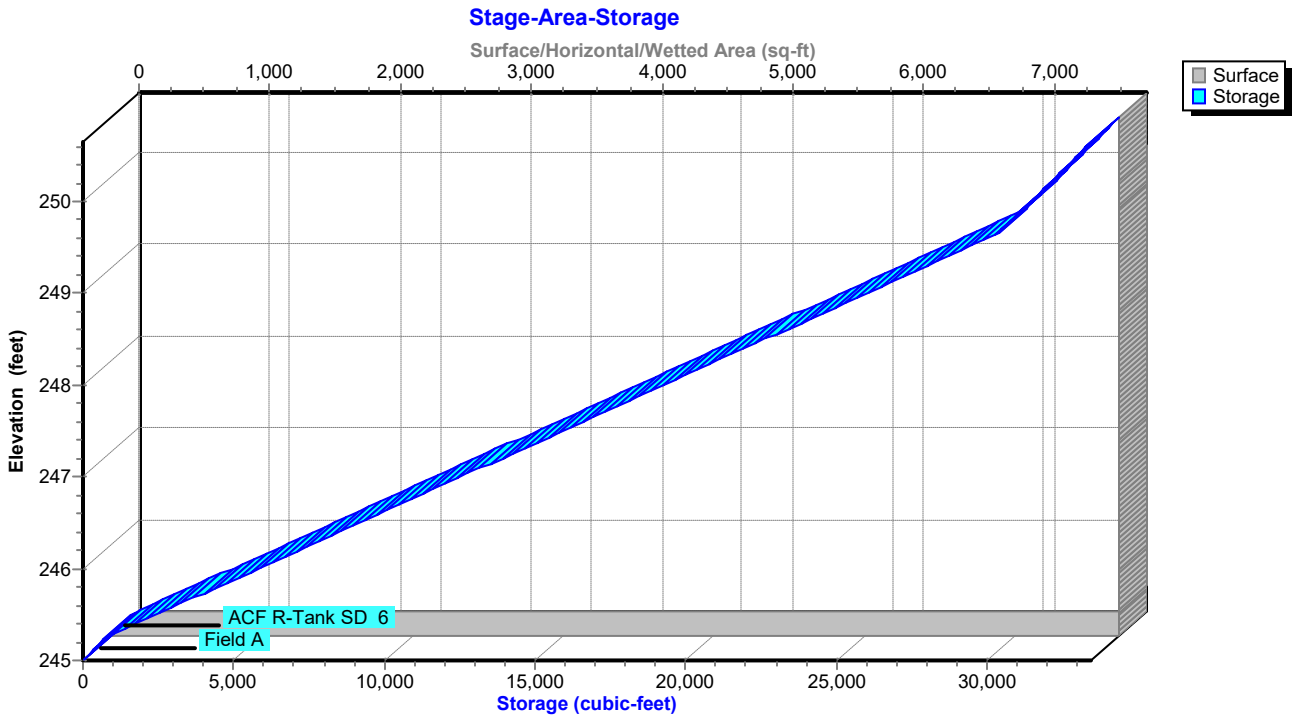
Pond SWM-5: Rtank-5



Pond SWM-5: Rtank-5



Pond SWM-5: Rtank-5



Hydrograph for Pond SWM-5: Rtank-5

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	245.00	0.00	0.00	0.00
2.00	0.00	0.0	245.00	0.00	0.00	0.00
4.00	0.00	0.0	245.00	0.00	0.00	0.00
6.00	0.00	0.0	245.00	0.00	0.00	0.00
8.00	0.00	0.0	245.00	0.00	0.00	0.00
10.00	0.00	0.0	245.00	0.00	0.00	0.00
12.00	**0.00**	**0.0**	**245.00**	**0.00**	**0.00**	**0.00**
14.00	**3.72**	**9,439.5**	**246.54**	**3.87**	**0.43**	**3.44**
16.00	1.16	8,620.2	246.42	1.26	0.43	0.83
18.00	0.11	7,445.5	246.24	0.43	0.43	0.00
20.00	0.00	4,472.3	245.80	0.43	0.43	0.00
22.00	0.00	1,375.7	245.34	0.43	0.43	0.00
24.00	0.00	0.0	245.00	0.00	0.00	0.00
26.00	0.00	0.0	245.00	0.00	0.00	0.00
28.00	0.00	0.0	245.00	0.00	0.00	0.00
30.00	0.00	0.0	245.00	0.00	0.00	0.00
32.00	0.00	0.0	245.00	0.00	0.00	0.00
34.00	0.00	0.0	245.00	0.00	0.00	0.00
36.00	0.00	0.0	245.00	0.00	0.00	0.00
38.00	0.00	0.0	245.00	0.00	0.00	0.00
40.00	0.00	0.0	245.00	0.00	0.00	0.00
42.00	0.00	0.0	245.00	0.00	0.00	0.00
44.00	0.00	0.0	245.00	0.00	0.00	0.00
46.00	0.00	0.0	245.00	0.00	0.00	0.00
48.00	0.00	0.0	245.00	0.00	0.00	0.00
50.00	0.00	0.0	245.00	0.00	0.00	0.00
52.00	0.00	0.0	245.00	0.00	0.00	0.00
54.00	0.00	0.0	245.00	0.00	0.00	0.00
56.00	0.00	0.0	245.00	0.00	0.00	0.00
58.00	0.00	0.0	245.00	0.00	0.00	0.00
60.00	0.00	0.0	245.00	0.00	0.00	0.00
62.00	0.00	0.0	245.00	0.00	0.00	0.00
64.00	0.00	0.0	245.00	0.00	0.00	0.00
66.00	0.00	0.0	245.00	0.00	0.00	0.00
68.00	0.00	0.0	245.00	0.00	0.00	0.00
70.00	0.00	0.0	245.00	0.00	0.00	0.00
72.00	0.00	0.0	245.00	0.00	0.00	0.00
74.00	0.00	0.0	245.00	0.00	0.00	0.00
76.00	0.00	0.0	245.00	0.00	0.00	0.00
78.00	0.00	0.0	245.00	0.00	0.00	0.00
80.00	0.00	0.0	245.00	0.00	0.00	0.00
82.00	0.00	0.0	245.00	0.00	0.00	0.00
84.00	0.00	0.0	245.00	0.00	0.00	0.00
86.00	0.00	0.0	245.00	0.00	0.00	0.00
88.00	0.00	0.0	245.00	0.00	0.00	0.00
90.00	0.00	0.0	245.00	0.00	0.00	0.00
92.00	0.00	0.0	245.00	0.00	0.00	0.00
94.00	0.00	0.0	245.00	0.00	0.00	0.00
96.00	0.00	0.0	245.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-5: Rtank-5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
245.00	**7,709**	0.0
245.10	7,709	308.4
245.20	7,709	616.7
245.30	7,709	1,107.6
245.40	7,709	1,781.1
245.50	7,709	2,454.5
245.60	7,709	3,127.9
245.70	7,709	3,801.3
245.80	7,709	4,474.7
245.90	7,709	5,148.2
246.00	7,709	5,821.6
246.10	7,709	6,495.0
246.20	7,709	7,168.4
246.30	7,709	7,841.8
246.40	7,709	8,515.2
246.50	7,709	9,188.7
246.60	7,709	9,862.1
246.70	7,709	10,535.5
246.80	7,709	11,208.9
246.90	7,709	11,882.3
247.00	7,709	12,555.8
247.10	7,709	13,229.2
247.20	7,709	13,902.6
247.30	7,709	14,576.0
247.40	7,709	15,249.4
247.50	7,709	15,922.9
247.60	7,709	16,596.3
247.70	7,709	17,269.7
247.80	7,709	17,943.1
247.90	7,709	18,616.5
248.00	7,709	19,289.9
248.10	7,709	19,963.4
248.20	7,709	20,636.8
248.30	7,709	21,310.2
248.40	7,709	21,983.6
248.50	7,709	22,657.0
248.60	7,709	23,330.5
248.70	7,709	24,003.9
248.80	7,709	24,677.3
248.90	7,709	25,350.7
249.00	7,709	26,024.1
249.10	7,709	26,697.6
249.20	7,709	27,371.0
249.30	7,709	28,044.4
249.40	7,709	28,717.8
249.50	7,709	29,391.2
249.60	7,709	30,064.7
249.70	7,709	30,542.1
249.80	7,709	30,850.5
249.90	7,709	31,158.9
250.00	7,709	31,467.3
250.10	7,709	31,775.6
250.20	7,709	32,084.0
250.30	7,709	32,392.4
250.40	7,709	32,700.7
250.50	7,709	33,009.1
250.60	7,709	**33,317.5**

Summary for Pond SWM-6: Rtank-6

Inflow Area = 108,531 sf,100.00% Impervious, Inflow Depth = 5.91" for 25 yr event
Inflow = 15.56 cfs @ 12.07 hrs, Volume= 53,466.9 cf
Outflow = 19.26 cfs @ 12.07 hrs, Volume= 53,466.9 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.10 cfs @ 2.72 hrs, Volume= 10,387.3 cf
Primary = 19.16 cfs @ 12.07 hrs, Volume= 43,079.6 cf
Routed to Link POA D : FIRE POND

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 264.87' @ 12.07 hrs Surf.Area= 1,732 sf Storage= 4,936.9 cf

Plug-Flow detention time= 66.8 min calculated for 53,461.3 cf (100% of inflow)
Center-of-Mass det. time= 66.8 min (810.7 - 743.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	256.00'	1,439.5 cf	**15.81'W x 109.56'L x 4.20'H Field A** 7,280.3 cf Overall - 3,681.4 cf Embedded = 3,598.9 cf x 40.0% Voids
#2A	256.25'	3,497.4 cf	**ACF R-Tank SD 4** x 405 Inside #1 Inside= 15.7"W x 35.4"H => 3.68 sf x 2.35'L = 8.6 cf Outside= 15.7"W x 35.4"H => 3.88 sf x 2.35'L = 9.1 cf 405 Chambers in 9 Rows
		4,936.9 cf	Total Available Storage

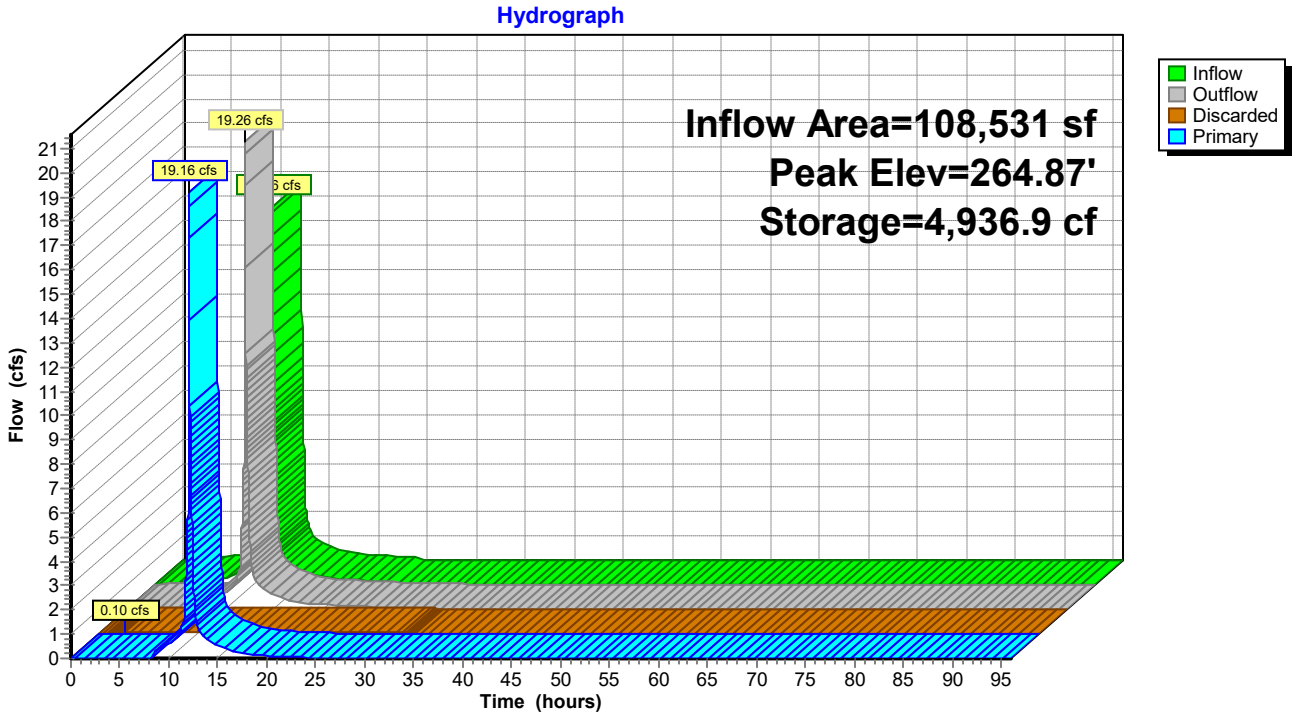
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	256.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	257.95'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	257.95'	**12.0" Vert. outlet** C= 0.600 Limited to weir flow at low heads

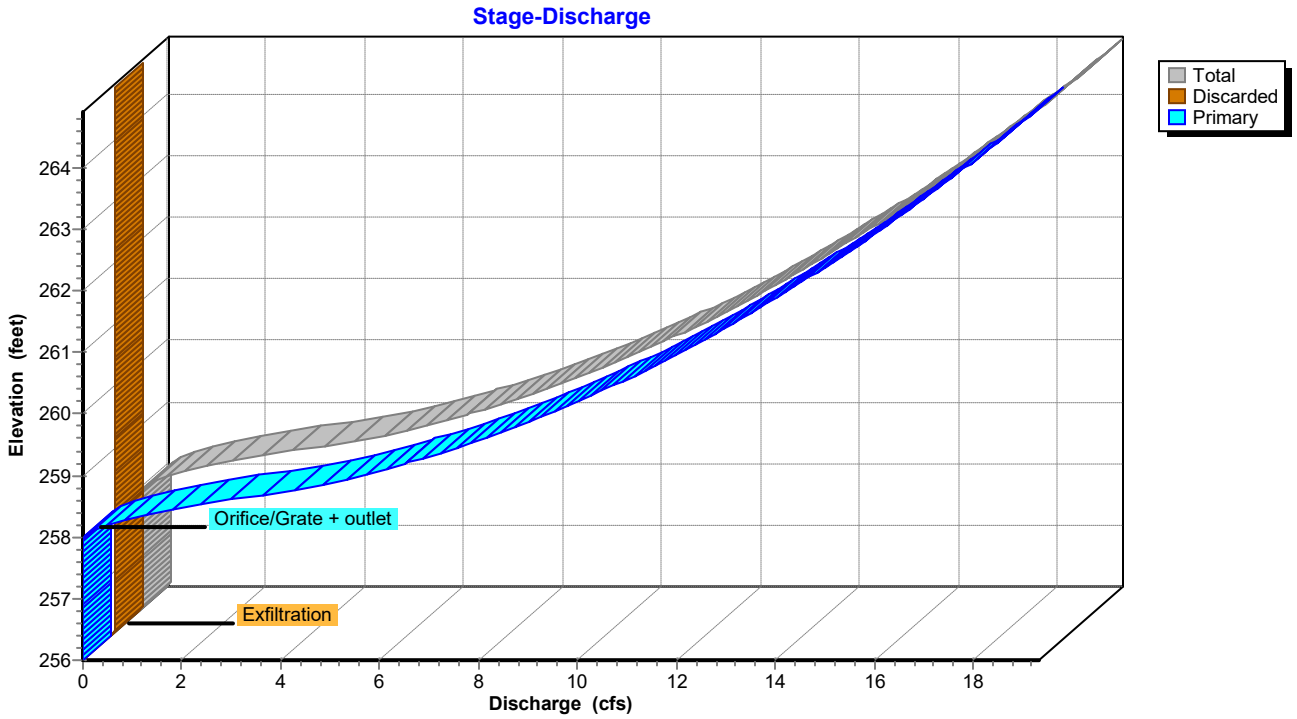
Discarded OutFlow Max=0.10 cfs @ 2.72 hrs HW=256.08' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=19.16 cfs @ 12.07 hrs HW=264.87' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 9.58 cfs @ 12.20 fps)
└**3=outlet** (Orifice Controls 9.58 cfs @ 12.20 fps)

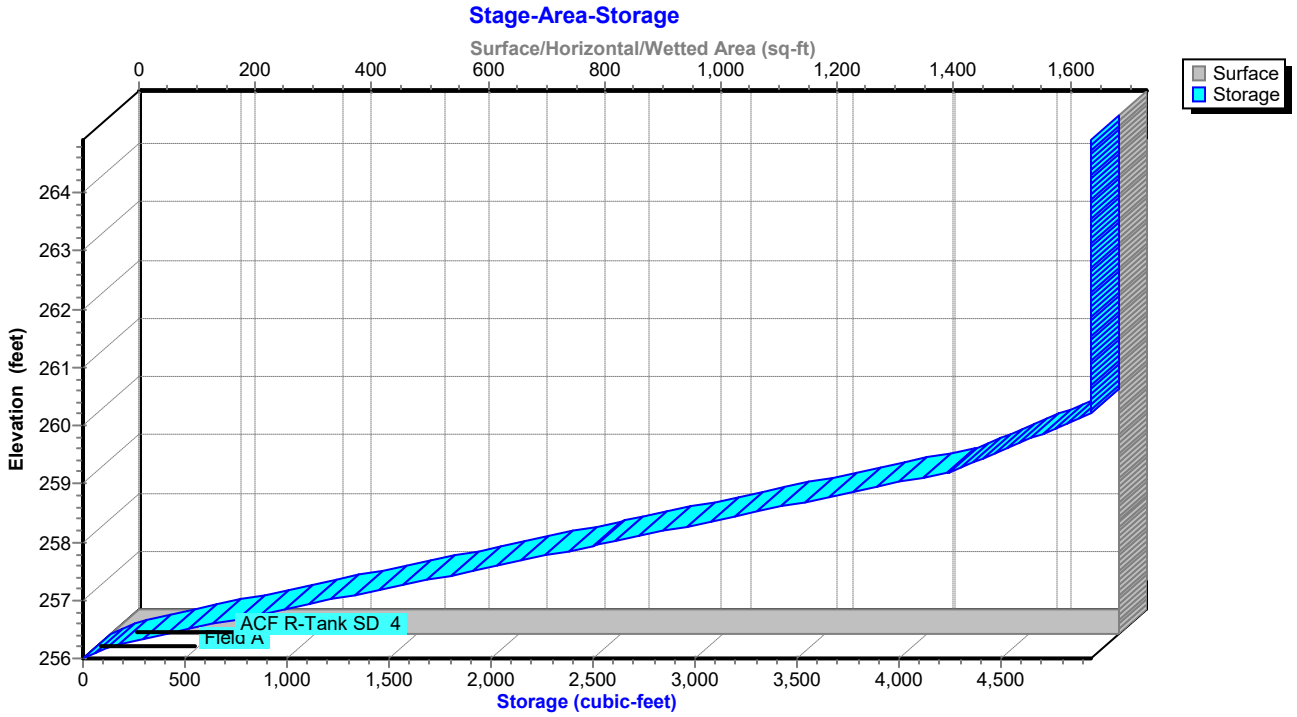
Pond SWM-6: Rtank-6



Pond SWM-6: Rtank-6



Pond SWM-6: Rtank-6



Hydrograph for Pond SWM-6: Rtank-6

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	256.00	0.00	0.00	0.00
2.00	0.07	40.1	256.06	0.07	**0.07**	0.00
4.00	0.15	205.9	256.27	0.10	**0.10**	0.00
6.00	0.22	846.1	256.74	0.10	0.10	0.00
8.00	0.37	2,256.9	257.76	0.10	0.10	0.00
10.00	0.73	2,887.9	258.22	0.71	0.10	0.61
12.00	**10.52**	**4,405.5**	**259.44**	**7.61**	0.10	**7.51**
14.00	**0.78**	**2,922.0**	**258.24**	**0.82**	0.10	**0.72**
16.00	0.41	2,786.7	258.15	0.44	0.10	0.34
18.00	0.25	2,705.7	258.09	0.27	0.10	0.17
20.00	0.20	2,661.2	258.05	0.21	0.10	0.11
22.00	0.17	2,634.5	258.04	0.17	0.10	0.07
24.00	0.13	2,609.0	258.02	0.14	0.10	0.04
26.00	0.00	1,924.6	257.52	0.10	0.10	0.00
28.00	0.00	1,228.8	257.02	0.10	0.10	0.00
30.00	0.00	533.0	256.51	0.10	0.10	0.00
32.00	0.00	1.3	256.00	0.00	0.00	0.00
34.00	0.00	0.0	256.00	0.00	0.00	0.00
36.00	0.00	0.0	256.00	0.00	0.00	0.00
38.00	0.00	0.0	256.00	0.00	0.00	0.00
40.00	0.00	0.0	256.00	0.00	0.00	0.00
42.00	0.00	0.0	256.00	0.00	0.00	0.00
44.00	0.00	0.0	256.00	0.00	0.00	0.00
46.00	0.00	0.0	256.00	0.00	0.00	0.00
48.00	0.00	0.0	256.00	0.00	0.00	0.00
50.00	0.00	0.0	256.00	0.00	0.00	0.00
52.00	0.00	0.0	256.00	0.00	0.00	0.00
54.00	0.00	0.0	256.00	0.00	0.00	0.00
56.00	0.00	0.0	256.00	0.00	0.00	0.00
58.00	0.00	0.0	256.00	0.00	0.00	0.00
60.00	0.00	0.0	256.00	0.00	0.00	0.00
62.00	0.00	0.0	256.00	0.00	0.00	0.00
64.00	0.00	0.0	256.00	0.00	0.00	0.00
66.00	0.00	0.0	256.00	0.00	0.00	0.00
68.00	0.00	0.0	256.00	0.00	0.00	0.00
70.00	0.00	0.0	256.00	0.00	0.00	0.00
72.00	0.00	0.0	256.00	0.00	0.00	0.00
74.00	0.00	0.0	256.00	0.00	0.00	0.00
76.00	0.00	0.0	256.00	0.00	0.00	0.00
78.00	0.00	0.0	256.00	0.00	0.00	0.00
80.00	0.00	0.0	256.00	0.00	0.00	0.00
82.00	0.00	0.0	256.00	0.00	0.00	0.00
84.00	0.00	0.0	256.00	0.00	0.00	0.00
86.00	0.00	0.0	256.00	0.00	0.00	0.00
88.00	0.00	0.0	256.00	0.00	0.00	0.00
90.00	0.00	0.0	256.00	0.00	0.00	0.00
92.00	0.00	0.0	256.00	0.00	0.00	0.00
94.00	0.00	0.0	256.00	0.00	0.00	0.00
96.00	0.00	0.0	256.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-6: Rtank-6

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
256.00	**1,732**	0.0
256.10	1,732	69.3
256.20	1,732	138.6
256.30	1,732	242.2
256.40	1,732	380.0
256.50	1,732	517.9
256.60	1,732	655.8
256.70	1,732	793.6
256.80	1,732	931.5
256.90	1,732	1,069.3
257.00	1,732	1,207.2
257.10	1,732	1,345.1
257.20	1,732	1,482.9
257.30	1,732	1,620.8
257.40	1,732	1,758.7
257.50	1,732	1,896.5
257.60	1,732	2,034.4
257.70	1,732	2,172.3
257.80	1,732	2,310.1
257.90	1,732	2,448.0
258.00	1,732	2,585.8
258.10	1,732	2,723.7
258.20	1,732	2,861.6
258.30	1,732	2,999.4
258.40	1,732	3,137.3
258.50	1,732	3,275.2
258.60	1,732	3,413.0
258.70	1,732	3,550.9
258.80	1,732	3,688.8
258.90	1,732	3,826.6
259.00	1,732	3,964.5
259.10	1,732	4,102.4
259.20	1,732	4,240.2
259.30	1,732	4,311.4
259.40	1,732	4,380.7
259.50	1,732	4,450.0
259.60	1,732	4,519.3
259.70	1,732	4,588.6
259.80	1,732	4,657.8
259.90	1,732	4,727.1
260.00	1,732	4,796.4
260.10	1,732	4,865.7
260.20	1,732	**4,935.0**
260.30	1,732	**4,936.9**
260.40	1,732	4,936.9
260.50	1,732	4,936.9
260.60	1,732	4,936.9
260.70	1,732	4,936.9
260.80	1,732	4,936.9
260.90	1,732	4,936.9
261.00	1,732	4,936.9
261.10	1,732	4,936.9
261.20	1,732	4,936.9
261.30	1,732	4,936.9
261.40	1,732	4,936.9
261.50	1,732	4,936.9
261.60	1,732	4,936.9
261.70	1,732	4,936.9
261.80	1,732	4,936.9
261.90	1,732	4,936.9
262.00	1,732	4,936.9
262.10	1,732	4,936.9
262.20	1,732	4,936.9
262.30	1,732	4,936.9
262.40	1,732	4,936.9
262.50	1,732	4,936.9
262.60	1,732	4,936.9
262.70	1,732	4,936.9
262.80	1,732	4,936.9
262.90	1,732	4,936.9
263.00	1,732	4,936.9
263.10	1,732	4,936.9
263.20	1,732	4,936.9
263.30	1,732	4,936.9
263.40	1,732	4,936.9
263.50	1,732	4,936.9
263.60	1,732	4,936.9
263.70	1,732	4,936.9
263.80	1,732	4,936.9
263.90	1,732	4,936.9
264.00	1,732	4,936.9
264.10	1,732	4,936.9
264.20	1,732	4,936.9
264.30	1,732	4,936.9
264.40	1,732	4,936.9
264.50	1,732	4,936.9
264.60	1,732	4,936.9
264.70	1,732	4,936.9
264.80	1,732	4,936.9
264.90	1,732	4,936.9

Summary for Pond SWM-7: Rtank-7

Inflow Area = 214,605 sf, 84.39% Impervious, Inflow Depth = 4.88" for 25 yr event
Inflow = 26.01 cfs @ 12.10 hrs, Volume= 87,287.7 cf
Outflow = 23.62 cfs @ 12.14 hrs, Volume= 87,287.7 cf, Atten= 9%, Lag= 2.4 min
Discarded = 0.15 cfs @ 6.52 hrs, Volume= 16,847.7 cf
Primary = 23.47 cfs @ 12.14 hrs, Volume= 70,440.0 cf
Routed to Pond SWM-1 : Rtank-1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 248.88' @ 12.14 hrs Surf.Area= 2,655 sf Storage= 12,043.8 cf

Plug-Flow detention time= 104.7 min calculated for 87,278.6 cf (100% of inflow)
Center-of-Mass det. time= 104.8 min (893.1 - 788.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	243.50'	2,406.6 cf	**39.43'W x 67.34'L x 7.81'H Field A** 20,742.3 cf Overall - 14,725.8 cf Embedded = 6,016.5 cf x 40.0% Voids
#2A	243.75'	13,989.5 cf	**ACF R-Tank SD 9** x 729 Inside #1 Inside= 15.7"W x 78.7"H => 8.18 sf x 2.35'L = 19.2 cf Outside= 15.7"W x 78.7"H => 8.61 sf x 2.35'L = 20.2 cf 729 Chambers in 27 Rows
		16,396.1 cf	Total Available Storage

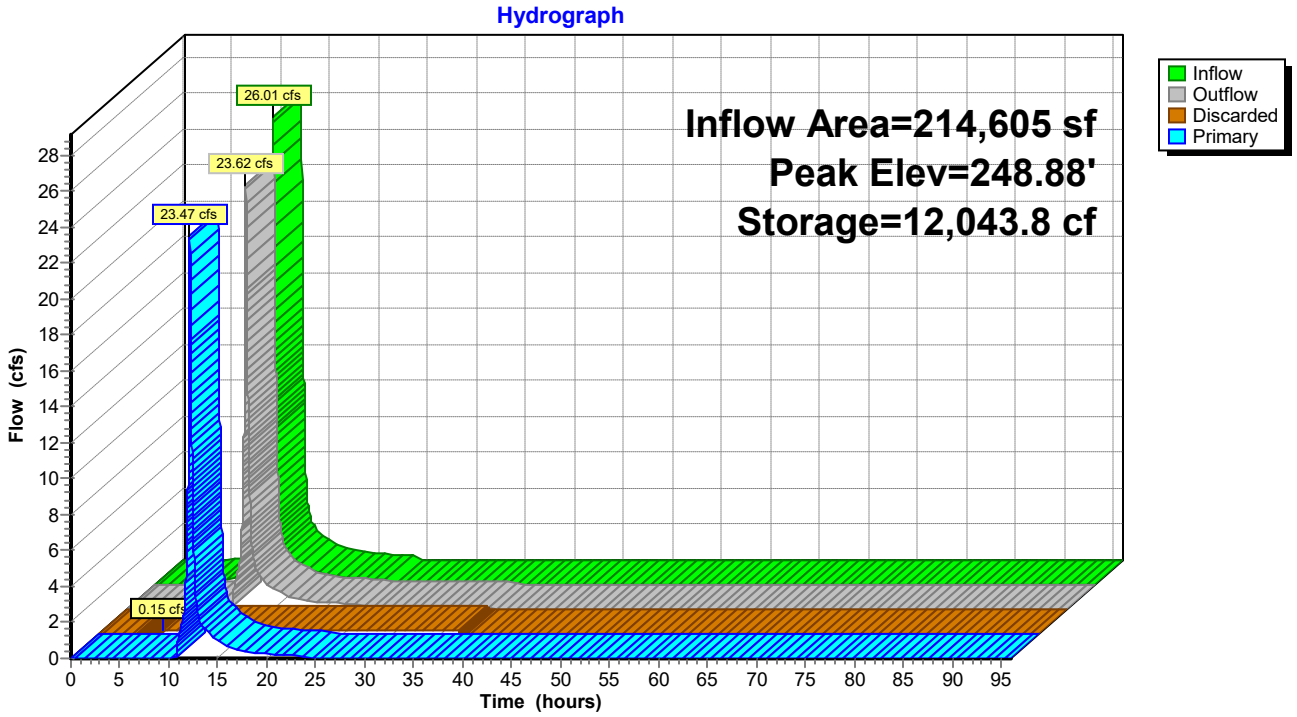
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.50'	**18.0" Round Culvert X 2.00** L= 10.0' Ke= 0.100 Inlet / Outlet Invert= 246.50' / 246.50' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

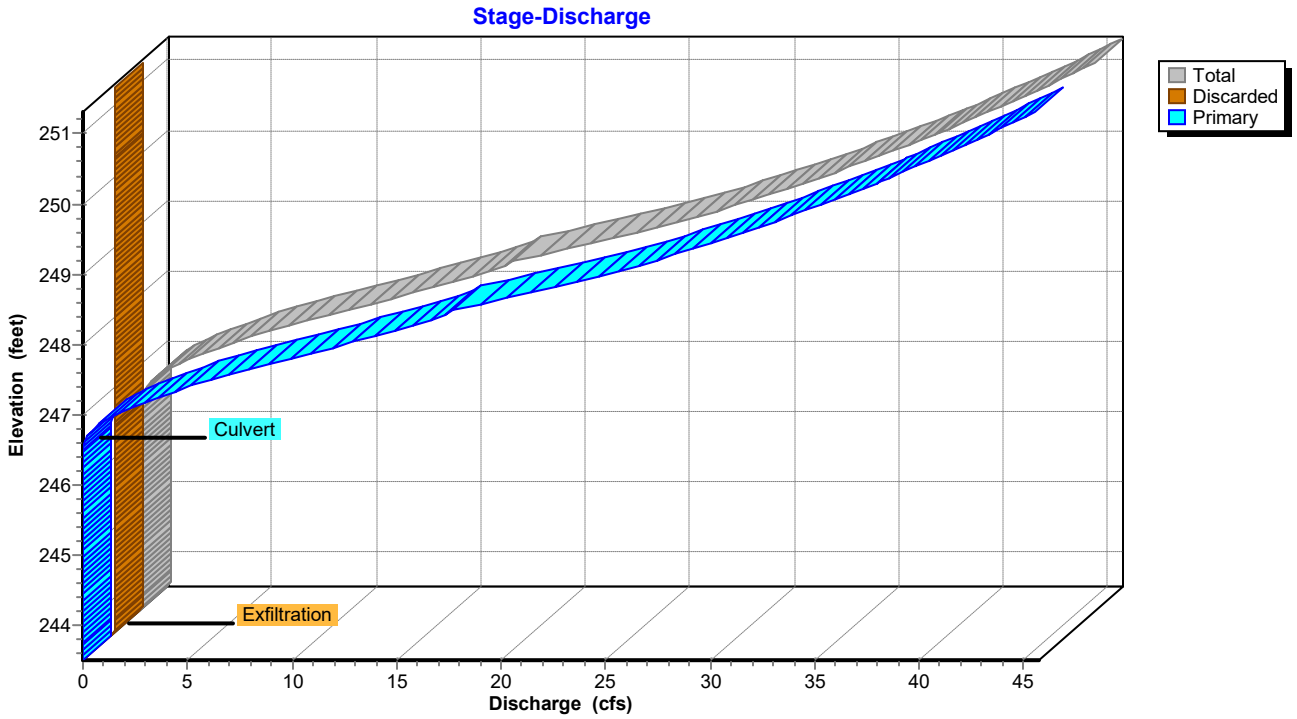
Discarded OutFlow Max=0.15 cfs @ 6.52 hrs HW=243.58' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.15 cfs)

Primary OutFlow Max=23.47 cfs @ 12.14 hrs HW=248.88' (Free Discharge)
↑**2=Culvert** (Barrel Controls 23.47 cfs @ 6.64 fps)

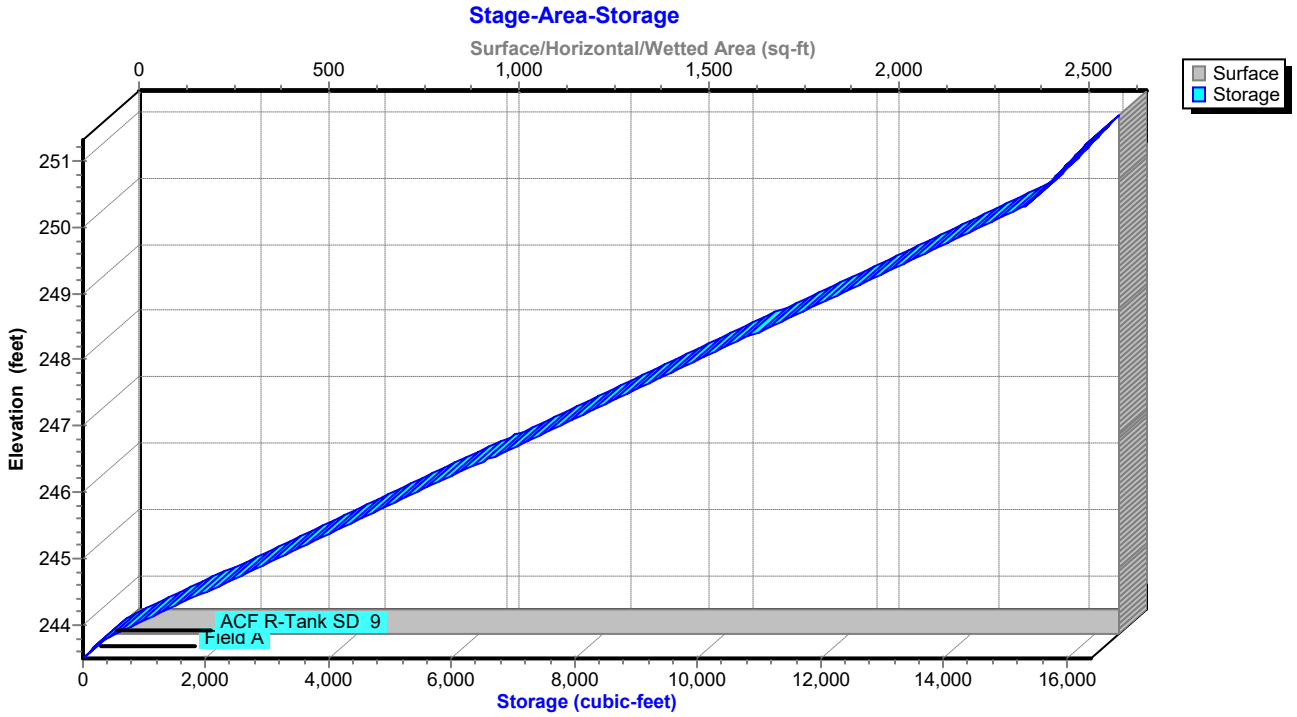
Pond SWM-7: Rtank-7



Pond SWM-7: Rtank-7



Pond SWM-7: Rtank-7



Hydrograph for Pond SWM-7: Rtank-7

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	0.00
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.01	1.0	243.50	0.00	0.00	0.00
6.00	0.12	60.6	243.56	0.11	**0.11**	0.00
8.00	0.35	642.0	243.91	0.15	**0.15**	0.00
10.00	0.96	4,113.5	245.43	0.15	0.15	0.00
12.00	**14.99**	**9,890.9**	**247.94**	**11.93**	0.15	**11.78**
14.00	**1.51**	**7,659.8**	**246.97**	**1.58**	0.15	**1.43**
16.00	0.80	7,349.5	246.83	0.85	0.15	0.70
18.00	0.49	7,150.1	246.75	0.52	0.15	0.37
20.00	0.39	7,062.6	246.71	0.40	0.15	0.25
22.00	0.32	6,996.1	246.68	0.33	0.15	0.18
24.00	0.26	6,919.4	246.65	0.27	0.15	0.12
26.00	0.00	5,852.3	246.18	0.15	0.15	0.00
28.00	0.00	4,785.8	245.72	0.15	0.15	0.00
30.00	0.00	3,719.2	245.25	0.15	0.15	0.00
32.00	0.00	2,652.7	244.79	0.15	0.15	0.00
34.00	0.00	1,586.1	244.33	0.15	0.15	0.00
36.00	0.00	519.6	243.86	0.15	0.15	0.00
38.00	0.00	0.0	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-7: Rtank-7

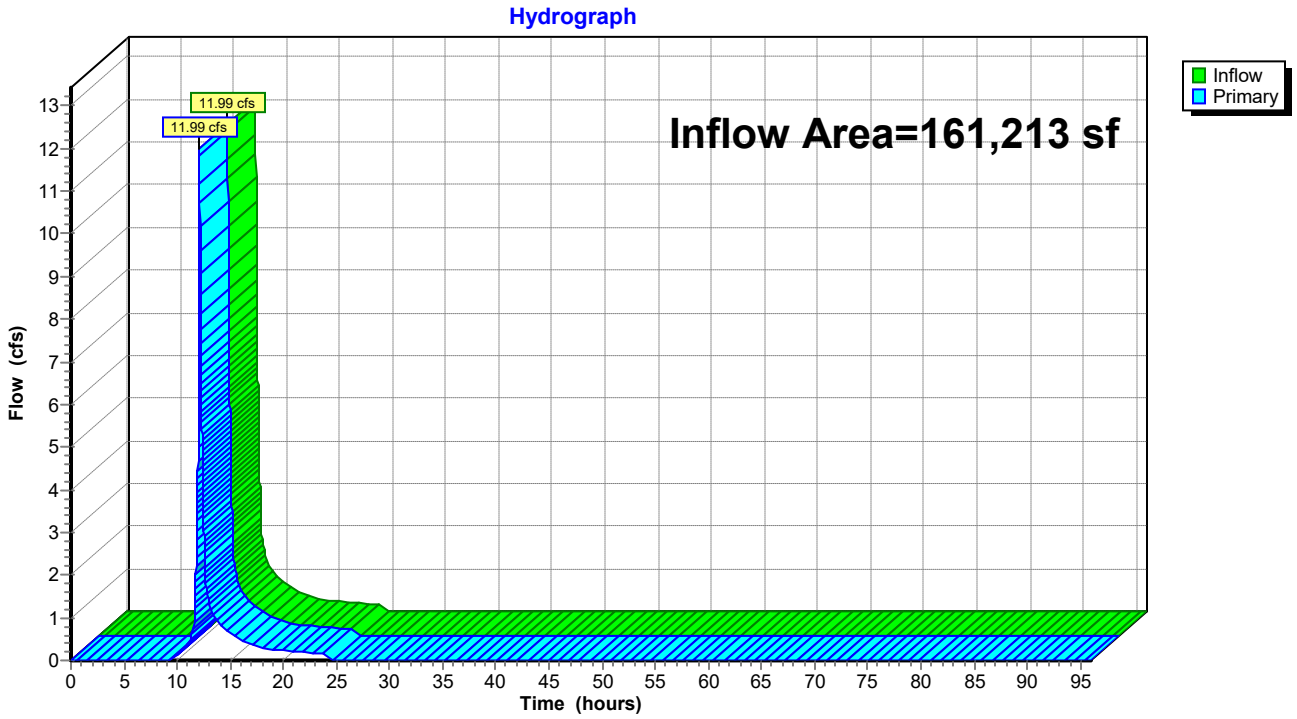
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	**2,655**	0.0
243.60	2,655	106.2
243.70	2,655	212.4
243.80	2,655	380.4
243.90	2,655	610.0
244.00	2,655	839.6
244.10	2,655	1,069.3
244.20	2,655	1,298.9
244.30	2,655	1,528.6
244.40	2,655	1,758.2
244.50	2,655	1,987.9
244.60	2,655	2,217.5
244.70	2,655	2,447.1
244.80	2,655	2,676.8
244.90	2,655	2,906.4
245.00	2,655	3,136.1
245.10	2,655	3,365.7
245.20	2,655	3,595.4
245.30	2,655	3,825.0
245.40	2,655	4,054.6
245.50	2,655	4,284.3
245.60	2,655	4,513.9
245.70	2,655	4,743.6
245.80	2,655	4,973.2
245.90	2,655	5,202.9
246.00	2,655	5,432.5
246.10	2,655	5,662.1
246.20	2,655	5,891.8
246.30	2,655	6,121.4
246.40	2,655	6,351.1
246.50	2,655	6,580.7
246.60	2,655	6,810.4
246.70	2,655	7,040.0
246.80	2,655	7,269.6
246.90	2,655	7,499.3
247.00	2,655	7,728.9
247.10	2,655	7,958.6
247.20	2,655	8,188.2
247.30	2,655	8,417.9
247.40	2,655	8,647.5
247.50	2,655	8,877.1
247.60	2,655	9,106.8
247.70	2,655	9,336.4
247.80	2,655	9,566.1
247.90	2,655	9,795.7
248.00	2,655	10,025.4
248.10	2,655	10,255.0
248.20	2,655	10,484.7
248.30	2,655	10,714.3
248.40	2,655	10,943.9
248.50	2,655	11,173.6
248.60	2,655	11,403.2
248.70	2,655	11,632.9
248.80	2,655	11,862.5
248.90	2,655	12,092.2
249.00	2,655	12,321.8
249.10	2,655	12,551.4
249.20	2,655	12,781.1
249.30	2,655	13,010.7
249.40	2,655	13,240.4
249.50	2,655	13,470.0
249.60	2,655	13,699.7
249.70	2,655	13,929.3
249.80	2,655	14,158.9
249.90	2,655	14,388.6
250.00	2,655	14,618.2
250.10	2,655	14,847.9
250.20	2,655	15,077.5
250.30	2,655	15,307.2
250.40	2,655	15,427.8
250.50	2,655	15,534.0
250.60	2,655	15,640.2
250.70	2,655	15,746.4
250.80	2,655	15,852.6
250.90	2,655	15,958.8
251.00	2,655	16,065.1
251.10	2,655	16,171.3
251.20	2,655	16,277.5
251.30	2,655	**16,383.7**

Summary for Link POA A: POND- WEST

Inflow Area = 161,213 sf, 51.37% Impervious, Inflow Depth = 2.83" for 25 yr event
Inflow = 11.99 cfs @ 12.10 hrs, Volume= 38,021.6 cf
Primary = 11.99 cfs @ 12.10 hrs, Volume= 38,021.6 cf, Atten= 0%, Lag= 0.0 min

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

Link POA A: POND- WEST



Hydrograph for Link POA A: POND- WEST

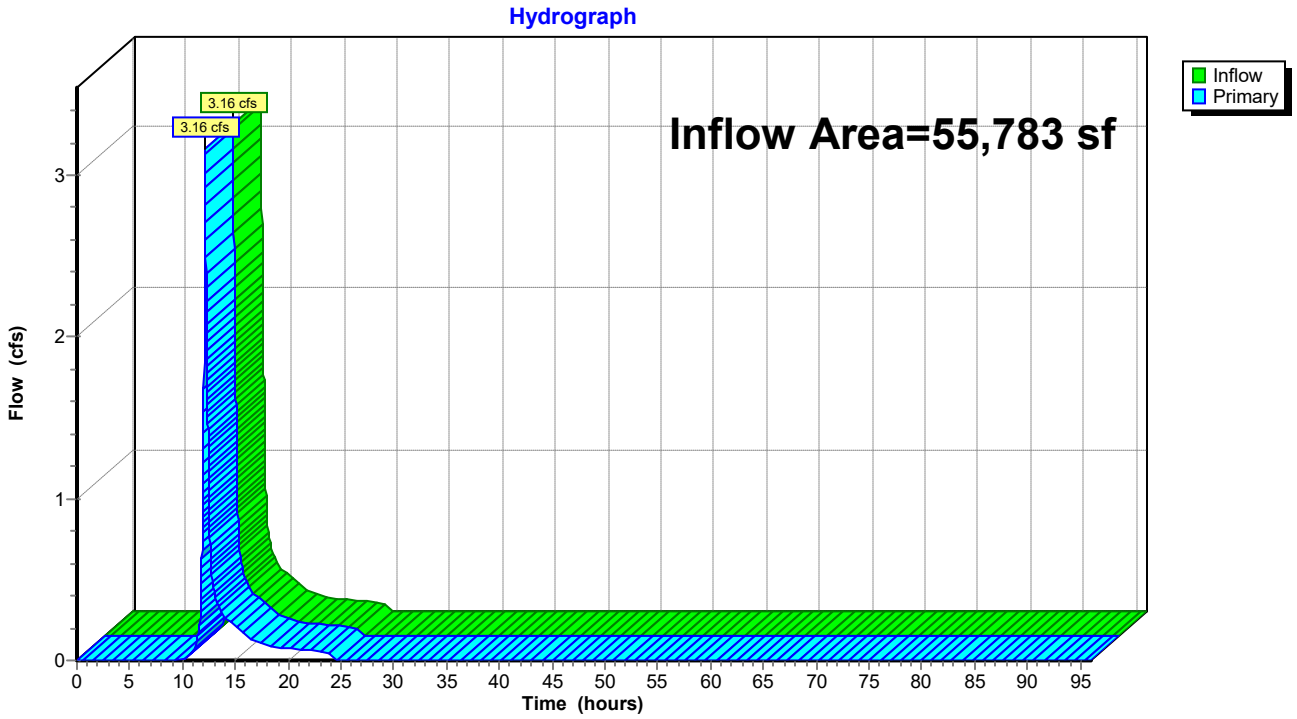
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.11	0.00	0.11	62.00	0.00	0.00	0.00
11.00	0.36	0.00	0.36	63.00	0.00	0.00	0.00
12.00	**6.42**	0.00	**6.42**	64.00	0.00	0.00	0.00
13.00	**1.31**	0.00	**1.31**	65.00	0.00	0.00	0.00
14.00	0.85	0.00	0.85	66.00	0.00	0.00	0.00
15.00	0.66	0.00	0.66	67.00	0.00	0.00	0.00
16.00	0.47	0.00	0.47	68.00	0.00	0.00	0.00
17.00	0.38	0.00	0.38	69.00	0.00	0.00	0.00
18.00	0.29	0.00	0.29	70.00	0.00	0.00	0.00
19.00	0.26	0.00	0.26	71.00	0.00	0.00	0.00
20.00	0.23	0.00	0.23	72.00	0.00	0.00	0.00
21.00	0.21	0.00	0.21	73.00	0.00	0.00	0.00
22.00	0.19	0.00	0.19	74.00	0.00	0.00	0.00
23.00	0.18	0.00	0.18	75.00	0.00	0.00	0.00
24.00	0.16	0.00	0.16	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA C: WETLAND-WEST

Inflow Area = 55,783 sf, 42.91% Impervious, Inflow Depth = 2.37" for 25 yr event
Inflow = 3.16 cfs @ 12.13 hrs, Volume= 11,021.6 cf
Primary = 3.16 cfs @ 12.13 hrs, Volume= 11,021.6 cf, Atten= 0%, Lag= 0.0 min

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

Link POA C: WETLAND-WEST



Hydrograph for Link POA C: WETLAND-WEST

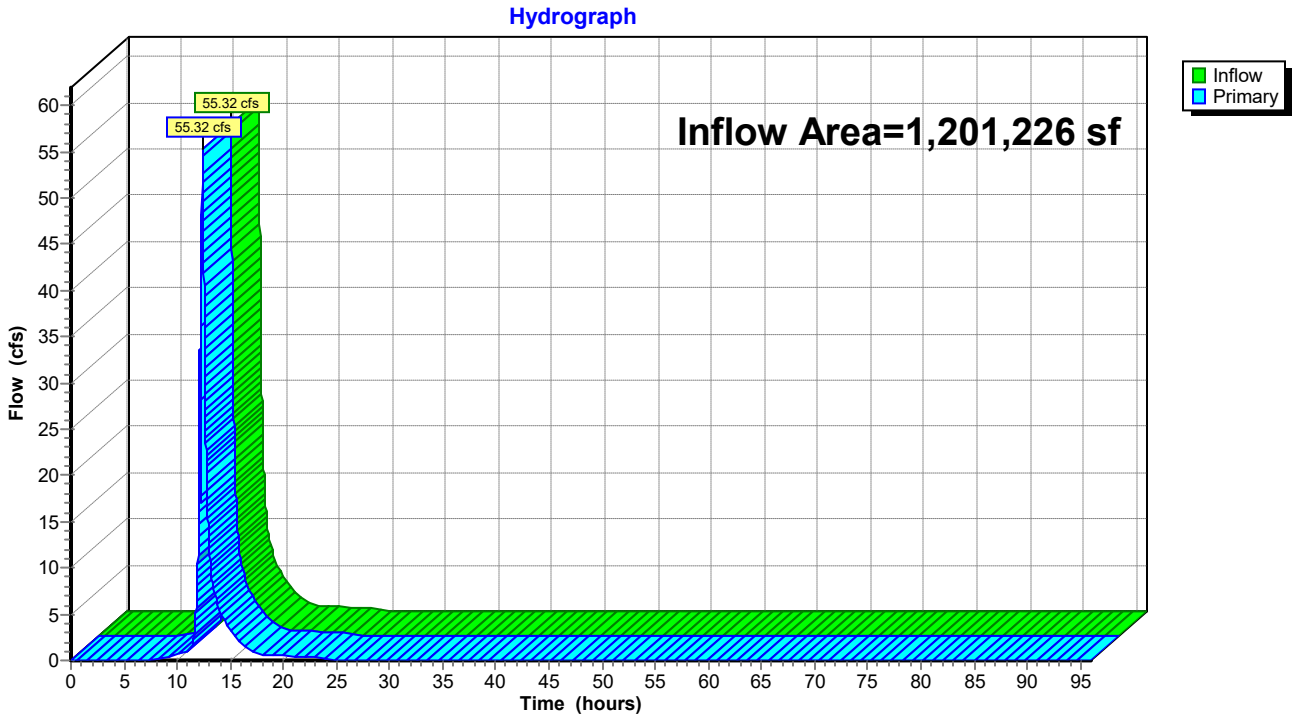
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.06	0.00	0.06	63.00	0.00	0.00	0.00
12.00	**1.41**	0.00	**1.41**	64.00	0.00	0.00	0.00
13.00	**0.42**	0.00	**0.42**	65.00	0.00	0.00	0.00
14.00	0.27	0.00	0.27	66.00	0.00	0.00	0.00
15.00	0.21	0.00	0.21	67.00	0.00	0.00	0.00
16.00	0.15	0.00	0.15	68.00	0.00	0.00	0.00
17.00	0.12	0.00	0.12	69.00	0.00	0.00	0.00
18.00	0.09	0.00	0.09	70.00	0.00	0.00	0.00
19.00	0.08	0.00	0.08	71.00	0.00	0.00	0.00
20.00	0.07	0.00	0.07	72.00	0.00	0.00	0.00
21.00	0.07	0.00	0.07	73.00	0.00	0.00	0.00
22.00	0.06	0.00	0.06	74.00	0.00	0.00	0.00
23.00	0.06	0.00	0.06	75.00	0.00	0.00	0.00
24.00	0.05	0.00	0.05	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA D: FIRE POND

Inflow Area = 1,201,226 sf, 67.83% Impervious, Inflow Depth = 1.91" for 25 yr event
Inflow = 55.32 cfs @ 12.36 hrs, Volume= 191,224.1 cf
Primary = 55.32 cfs @ 12.36 hrs, Volume= 191,224.1 cf, Atten= 0%, Lag= 0.0 min

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

Link POA D: FIRE POND



Hydrograph for Link POA D: FIRE POND

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.42	0.00	0.42	61.00	0.00	0.00	0.00
10.00	0.61	0.00	0.61	62.00	0.00	0.00	0.00
11.00	1.00	0.00	1.00	63.00	0.00	0.00	0.00
12.00	**14.70**	0.00	**14.70**	64.00	0.00	0.00	0.00
13.00	**12.38**	0.00	**12.38**	65.00	0.00	0.00	0.00
14.00	5.49	0.00	5.49	66.00	0.00	0.00	0.00
15.00	3.36	0.00	3.36	67.00	0.00	0.00	0.00
16.00	1.92	0.00	1.92	68.00	0.00	0.00	0.00
17.00	1.02	0.00	1.02	69.00	0.00	0.00	0.00
18.00	0.64	0.00	0.64	70.00	0.00	0.00	0.00
19.00	0.56	0.00	0.56	71.00	0.00	0.00	0.00
20.00	0.49	0.00	0.49	72.00	0.00	0.00	0.00
21.00	0.44	0.00	0.44	73.00	0.00	0.00	0.00
22.00	0.40	0.00	0.40	74.00	0.00	0.00	0.00
23.00	0.35	0.00	0.35	75.00	0.00	0.00	0.00
24.00	0.30	0.00	0.30	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

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 PR-A: Prop. Watershed A Runoff Area=161,213 sf 51.37% Impervious Runoff Depth=5.04"
Flow Length=1,502' Tc=6.5 min CN=69 Runoff=21.48 cfs 67,672.7 cf

Subcatchment PR-C: Prop. Watershed C Runoff Area=55,783 sf 42.91% Impervious Runoff Depth=4.43"
Flow Length=836' Tc=8.7 min CN=64 Runoff=6.05 cfs 20,588.5 cf

Subcatchment PR-D1: Prop. Watershed Runoff Area=214,605 sf 84.39% Impervious Runoff Depth=7.47"
Flow Length=1,308' Tc=7.1 min CN=89 Runoff=38.89 cfs 133,643.6 cf

Subcatchment PR-D2: Prop. Watershed Runoff Area=416,467 sf 80.91% Impervious Runoff Depth=7.23"
Flow Length=955' Tc=5.3 min CN=87 Runoff=78.72 cfs 250,931.0 cf

Subcatchment PR-D3: Prop. Watershed Runoff Area=108,531 sf 100.00% Impervious Runoff Depth=8.56"
Tc=5.0 min CN=98 Runoff=22.31 cfs 77,416.5 cf

Subcatchment PR-D4: Prop. Watershed D4 Runoff Area=37,021 sf 55.83% Impervious Runoff Depth=5.40"
Tc=5.0 min CN=72 Runoff=5.57 cfs 16,668.8 cf

Subcatchment PR-D5: Prop. Watershed D5 Runoff Area=50,834 sf 67.76% Impervious Runoff Depth=6.26"
Tc=5.0 min CN=79 Runoff=8.72 cfs 26,504.9 cf

Subcatchment PR-D6: Prop. Watershed D6 Runoff Area=40,781 sf 62.50% Impervious Runoff Depth=5.89"
Tc=5.0 min CN=76 Runoff=6.64 cfs 20,020.0 cf

Subcatchment PR-D7: Prop. Watershed Runoff Area=332,987 sf 32.32% Impervious Runoff Depth=3.70"
Flow Length=1,130' Tc=6.5 min CN=58 Runoff=32.15 cfs 102,772.5 cf

Pond RG1: Rain-Garden #1 Peak Elev=253.10' Storage=4,553.2 cf Inflow=8.72 cfs 26,504.9 cf
Discarded=0.22 cfs 11,840.4 cf Primary=9.53 cfs 14,664.5 cf Outflow=9.75 cfs 26,504.9 cf

Pond RG2: Rain-Garden #2 Peak Elev=252.03' Storage=4,051.8 cf Inflow=6.64 cfs 20,020.0 cf
Discarded=0.25 cfs 10,198.8 cf Primary=7.29 cfs 9,821.2 cf Outflow=7.55 cfs 20,020.0 cf

Pond SWM-1: Rtank-1 Peak Elev=250.29' Storage=21,121.3 cf Inflow=34.24 cfs 115,948.3 cf
Discarded=0.20 cfs 20,323.4 cf Primary=27.83 cfs 95,624.9 cf Outflow=28.04 cfs 115,948.3 cf

Pond SWM-2: Rtank-2 Peak Elev=251.94' Storage=11,904.5 cf Inflow=78.72 cfs 250,931.0 cf
Discarded=0.42 cfs 31,260.6 cf Primary=74.93 cfs 219,670.4 cf Outflow=75.35 cfs 250,931.0 cf

Pond SWM-3: Rtank-3 Peak Elev=249.85' Storage=37,454.0 cf Inflow=74.93 cfs 219,670.4 cf
Discarded=0.44 cfs 45,992.8 cf Primary=68.11 cfs 173,677.6 cf Outflow=68.55 cfs 219,670.4 cf

Pond SWM-4: Rtank-4 Peak Elev=249.50' Storage=60,347.3 cf Inflow=103.92 cfs 300,635.9 cf
Discarded=0.62 cfs 58,319.3 cf Primary=86.45 cfs 242,316.5 cf Outflow=87.07 cfs 300,635.9 cf

Pond SWM-5: Rtank-5 Peak Elev=247.66' Storage=16,988.6 cf Inflow=90.21 cfs 252,137.8 cf
Discarded=0.43 cfs 19,957.5 cf Primary=89.24 cfs 232,180.2 cf Outflow=89.67 cfs 252,137.8 cf

Pond SWM-6: Rtank-6 Peak Elev=267.70' Storage=4,936.9 cf Inflow=22.31 cfs 77,416.5 cf
Discarded=0.10 cfs 10,639.5 cf Primary=23.00 cfs 66,777.0 cf Outflow=23.10 cfs 77,416.5 cf

Pond SWM-7: Rtank-7 Peak Elev=249.87' Storage=14,320.1 cf Inflow=38.89 cfs 133,643.6 cf
Discarded=0.15 cfs 17,695.3 cf Primary=34.24 cfs 115,948.3 cf Outflow=34.39 cfs 133,643.6 cf

Link POA A: POND- WEST Inflow=21.48 cfs 67,672.7 cf
Primary=21.48 cfs 67,672.7 cf

Link POA C: WETLAND-WEST Inflow=6.05 cfs 20,588.5 cf
Primary=6.05 cfs 20,588.5 cf

Link POA D: FIRE POND Inflow=119.73 cfs 401,729.7 cf
Primary=119.73 cfs 401,729.7 cf

Total Runoff Area = 1,418,222 sf Runoff Volume = 716,218.7 cf Average Runoff Depth = 6.06"
35.02% Pervious = 496,621 sf 64.98% Impervious = 921,601 sf

Summary for Subcatchment PR-A: Prop. Watershed A

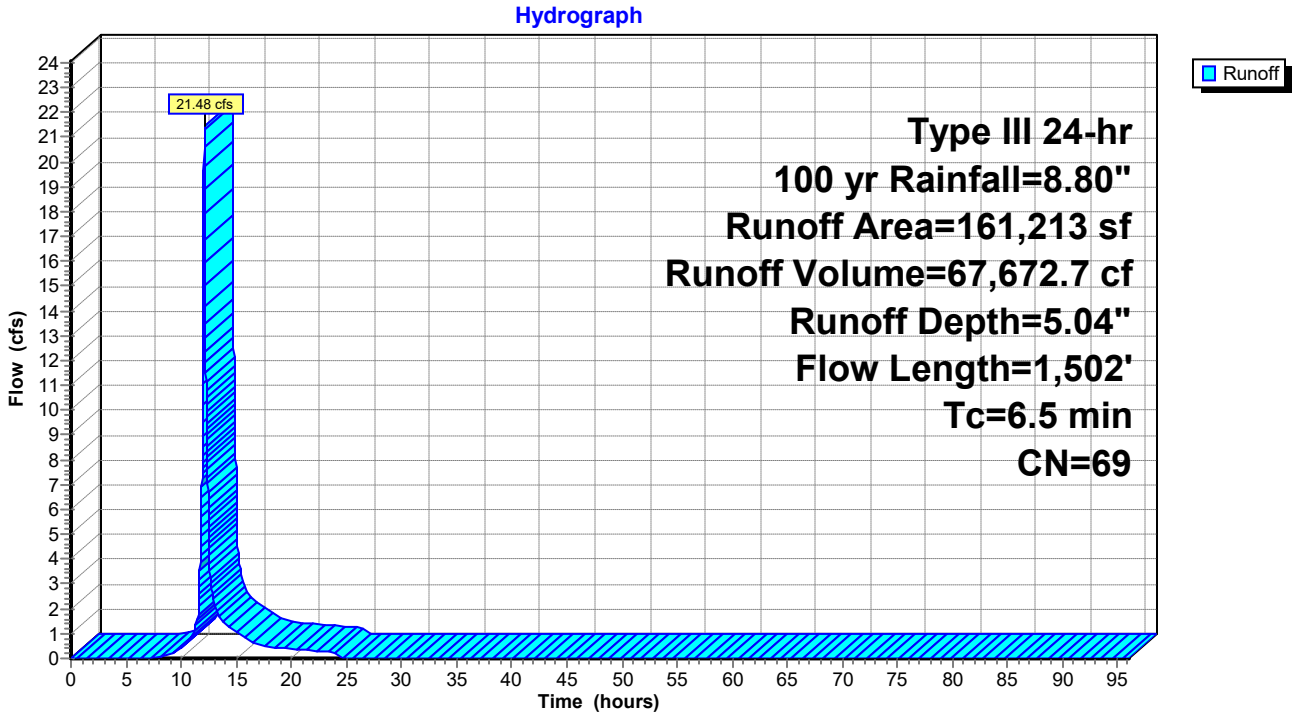
Runoff = 21.48 cfs @ 12.10 hrs, Volume= 67,672.7 cf, Depth= 5.04"
Routed to Link POA A : POND- WEST

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 yr Rainfall=8.80"

	Area (sf)	CN	Description
*	82,820	98	Unconnected pavement, HSG A
	78,393	39	>75% Grass cover, Good, HSG A
	161,213	69	Weighted Average
	78,393		48.63% Pervious Area
	82,820		51.37% Impervious Area
	82,820		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	50	0.0080	0.83		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
2.5	327	0.0120	2.22		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.3	10	0.0001	0.59	0.46	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
0.2	85	0.0110	7.18	8.81	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010 PVC, smooth interior
0.1	69	0.0180	9.18	11.27	**Pipe Channel, E-F** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010
0.6	284	0.0080	8.37	26.30	**Pipe Channel, F-G** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
0.0	31	0.0145	11.27	35.41	**Pipe Channel, G-H** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010
0.2	58	0.0020	4.86	23.85	**Pipe Channel, H-I** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010
0.1	47	0.0025	5.43	26.66	**Pipe Channel, I-J** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010
0.6	140	0.0012	3.76	18.47	**Pipe Channel, J-K** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010
0.9	401	0.0040	7.76	54.84	**Pipe Channel, h-I** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.010
6.5	1,502	Total			

Subcatchment PR-A: Prop. Watershed A



Hydrograph for Subcatchment PR-A: Prop. Watershed A

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.09	0.00	0.00
2.00	0.18	0.00	0.00
3.00	0.27	0.00	0.00
4.00	0.38	0.00	0.00
5.00	0.50	0.00	0.00
6.00	0.63	0.00	0.00
7.00	0.80	0.00	0.00
8.00	1.00	0.00	0.03
9.00	1.28	0.03	0.17
10.00	1.66	0.11	0.41
11.00	2.20	0.29	0.89
12.00	4.40	1.53	**12.05**
13.00	6.60	3.19	**2.17**
14.00	7.14	3.63	1.39
15.00	7.52	3.94	1.06
16.00	7.80	4.18	0.75
17.00	8.00	4.35	0.60
18.00	8.17	4.49	0.46
19.00	8.30	4.61	0.41
20.00	8.42	4.71	0.37
21.00	8.53	4.80	0.34
22.00	8.63	4.89	0.31
23.00	8.72	4.97	0.28
24.00	**8.80**	**5.04**	0.25
25.00	8.80	5.04	0.00
26.00	8.80	5.04	0.00
27.00	8.80	5.04	0.00
28.00	8.80	5.04	0.00
29.00	8.80	5.04	0.00
30.00	8.80	5.04	0.00
31.00	8.80	5.04	0.00
32.00	8.80	5.04	0.00
33.00	8.80	5.04	0.00
34.00	8.80	5.04	0.00
35.00	8.80	5.04	0.00
36.00	8.80	5.04	0.00
37.00	8.80	5.04	0.00
38.00	8.80	5.04	0.00
39.00	8.80	5.04	0.00
40.00	8.80	5.04	0.00
41.00	8.80	5.04	0.00
42.00	8.80	5.04	0.00
43.00	8.80	5.04	0.00
44.00	8.80	5.04	0.00
45.00	8.80	5.04	0.00
46.00	8.80	5.04	0.00
47.00	8.80	5.04	0.00
48.00	8.80	5.04	0.00
49.00	8.80	5.04	0.00
50.00	8.80	5.04	0.00
51.00	8.80	5.04	0.00
52.00	8.80	5.04	0.00
53.00	8.80	5.04	0.00
54.00	8.80	5.04	0.00
55.00	8.80	5.04	0.00
56.00	8.80	5.04	0.00
57.00	8.80	5.04	0.00
58.00	8.80	5.04	0.00
59.00	8.80	5.04	0.00
60.00	8.80	5.04	0.00
61.00	8.80	5.04	0.00
62.00	8.80	5.04	0.00
63.00	8.80	5.04	0.00
64.00	8.80	5.04	0.00
65.00	8.80	5.04	0.00
66.00	8.80	5.04	0.00
67.00	8.80	5.04	0.00
68.00	8.80	5.04	0.00
69.00	8.80	5.04	0.00
70.00	8.80	5.04	0.00
71.00	8.80	5.04	0.00
72.00	8.80	5.04	0.00
73.00	8.80	5.04	0.00
74.00	8.80	5.04	0.00
75.00	8.80	5.04	0.00
76.00	8.80	5.04	0.00
77.00	8.80	5.04	0.00
78.00	8.80	5.04	0.00
79.00	8.80	5.04	0.00
80.00	8.80	5.04	0.00
81.00	8.80	5.04	0.00
82.00	8.80	5.04	0.00
83.00	8.80	5.04	0.00
84.00	8.80	5.04	0.00
85.00	8.80	5.04	0.00
86.00	8.80	5.04	0.00
87.00	8.80	5.04	0.00
88.00	8.80	5.04	0.00
89.00	8.80	5.04	0.00
90.00	8.80	5.04	0.00
91.00	8.80	5.04	0.00
92.00	8.80	5.04	0.00
93.00	8.80	5.04	0.00
94.00	8.80	5.04	0.00
95.00	8.80	5.04	0.00
96.00	8.80	5.04	0.00

Summary for Subcatchment PR-C: Prop. Watershed C

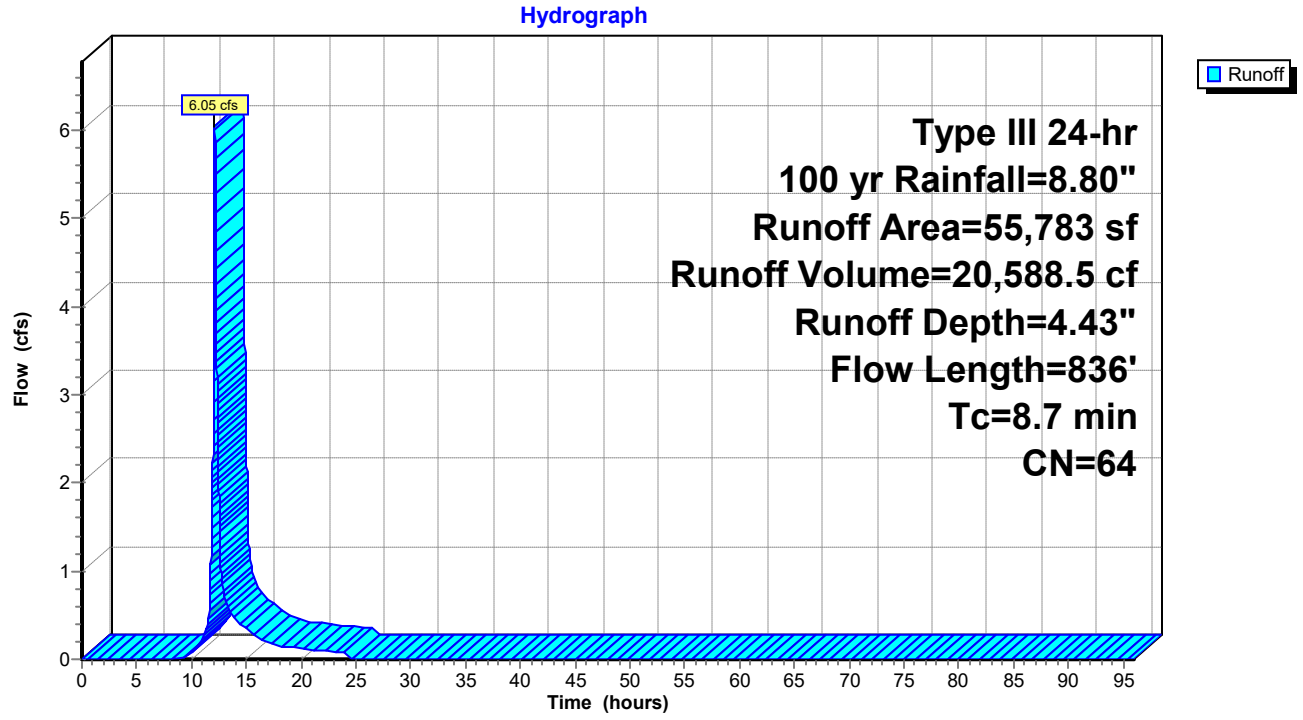
Runoff = 6.05 cfs @ 12.13 hrs, Volume= 20,588.5 cf, Depth= 4.43"
Routed to Link POA C : WETLAND-WEST

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 yr Rainfall=8.80"

	Area (sf)	CN	Description
*	23,937	98	Unconnected pavement, HSG A
	31,846	39	>75% Grass cover, Good, HSG A
	55,783	64	Weighted Average
	31,846		57.09% Pervious Area
	23,937		42.91% Impervious Area
	23,937		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	50	0.0020	0.48		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
6.2	686	0.0083	1.85		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.8	100	0.0017	2.21	1.74	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
8.7	836	Total			

Subcatchment PR-C: Prop. Watershed C



Hydrograph for Subcatchment PR-C: Prop. Watershed C

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.09	0.00	0.00
2.00	0.18	0.00	0.00
3.00	0.27	0.00	0.00
4.00	0.38	0.00	0.00
5.00	0.50	0.00	0.00
6.00	0.63	0.00	0.00
7.00	0.80	0.00	0.00
8.00	1.00	0.00	0.00
9.00	1.28	0.00	0.02
10.00	1.66	0.05	0.08
11.00	2.20	0.17	0.22
12.00	4.40	1.21	**2.92**
13.00	6.60	2.70	**0.72**
14.00	7.14	3.11	0.45
15.00	7.52	3.40	0.35
16.00	7.80	3.62	0.25
17.00	8.00	3.78	0.20
18.00	8.17	3.91	0.15
19.00	8.30	4.02	0.13
20.00	8.42	4.12	0.12
21.00	8.53	4.21	0.11
22.00	8.63	4.29	0.10
23.00	8.72	4.36	0.09
24.00	**8.80**	**4.43**	0.08
25.00	8.80	4.43	0.00
26.00	8.80	4.43	0.00
27.00	8.80	4.43	0.00
28.00	8.80	4.43	0.00
29.00	8.80	4.43	0.00
30.00	8.80	4.43	0.00
31.00	8.80	4.43	0.00
32.00	8.80	4.43	0.00
33.00	8.80	4.43	0.00
34.00	8.80	4.43	0.00
35.00	8.80	4.43	0.00
36.00	8.80	4.43	0.00
37.00	8.80	4.43	0.00
38.00	8.80	4.43	0.00
39.00	8.80	4.43	0.00
40.00	8.80	4.43	0.00
41.00	8.80	4.43	0.00
42.00	8.80	4.43	0.00
43.00	8.80	4.43	0.00
44.00	8.80	4.43	0.00
45.00	8.80	4.43	0.00
46.00	8.80	4.43	0.00
47.00	8.80	4.43	0.00
48.00	8.80	4.43	0.00
49.00	8.80	4.43	0.00
50.00	8.80	4.43	0.00
51.00	8.80	4.43	0.00
52.00	8.80	4.43	0.00
53.00	8.80	4.43	0.00
54.00	8.80	4.43	0.00
55.00	8.80	4.43	0.00
56.00	8.80	4.43	0.00
57.00	8.80	4.43	0.00
58.00	8.80	4.43	0.00
59.00	8.80	4.43	0.00
60.00	8.80	4.43	0.00
61.00	8.80	4.43	0.00
62.00	8.80	4.43	0.00
63.00	8.80	4.43	0.00
64.00	8.80	4.43	0.00
65.00	8.80	4.43	0.00
66.00	8.80	4.43	0.00
67.00	8.80	4.43	0.00
68.00	8.80	4.43	0.00
69.00	8.80	4.43	0.00
70.00	8.80	4.43	0.00
71.00	8.80	4.43	0.00
72.00	8.80	4.43	0.00
73.00	8.80	4.43	0.00
74.00	8.80	4.43	0.00
75.00	8.80	4.43	0.00
76.00	8.80	4.43	0.00
77.00	8.80	4.43	0.00
78.00	8.80	4.43	0.00
79.00	8.80	4.43	0.00
80.00	8.80	4.43	0.00
81.00	8.80	4.43	0.00
82.00	8.80	4.43	0.00
83.00	8.80	4.43	0.00
84.00	8.80	4.43	0.00
85.00	8.80	4.43	0.00
86.00	8.80	4.43	0.00
87.00	8.80	4.43	0.00
88.00	8.80	4.43	0.00
89.00	8.80	4.43	0.00
90.00	8.80	4.43	0.00
91.00	8.80	4.43	0.00
92.00	8.80	4.43	0.00
93.00	8.80	4.43	0.00
94.00	8.80	4.43	0.00
95.00	8.80	4.43	0.00
96.00	8.80	4.43	0.00

Summary for Subcatchment PR-D1: Prop. Watershed D1

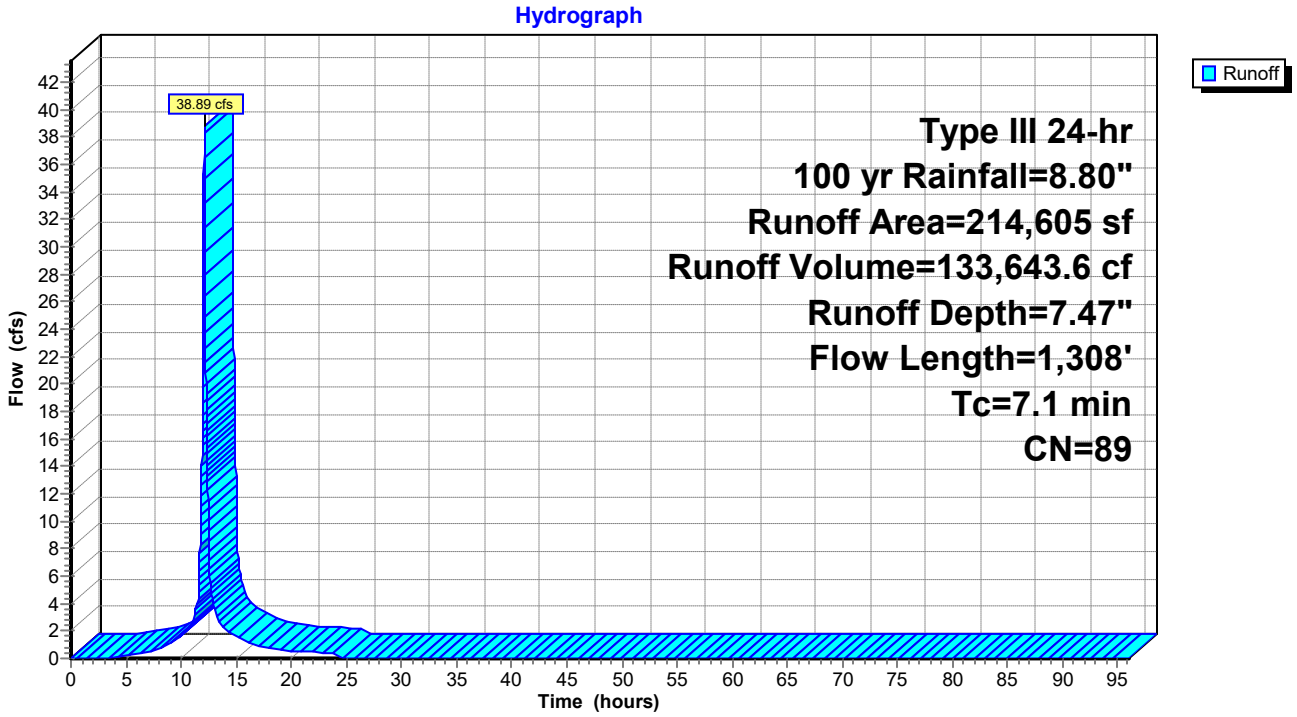
Runoff = 38.89 cfs @ 12.10 hrs, Volume= 133,643.6 cf, Depth= 7.47"
Routed to Pond SWM-7 : Rtank-7

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 yr Rainfall=8.80"

	Area (sf)	CN	Description
*	28,837	98	Building 2 - South
*	28,095	98	Building 3 - West
*	28,101	98	Building 3 - East
	96,079	98	Unconnected pavement, HSG A
	33,493	39	>75% Grass cover, Good, HSG A
	214,605	89	Weighted Average
	33,493		15.61% Pervious Area
	181,112		84.39% Impervious Area
	96,079		53.05% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	50	0.1600	0.34		**Sheet Flow, a-b** Grass: Short n= 0.150 P2= 3.22"
0.0	12	0.1250	5.69		**Shallow Concentrated Flow, b-c** Unpaved Kv= 16.1 fps
1.3	296	0.0350	3.80		**Shallow Concentrated Flow, c-d** Paved Kv= 20.3 fps
0.2	64	0.0100	4.54	3.56	**Pipe Channel, d-e** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
0.0	13	0.0160	5.74	4.51	**Pipe Channel, e-f** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
0.8	196	0.0046	4.03	7.12	**Pipe Channel, f-g** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
0.9	213	0.0047	4.08	7.20	**Pipe Channel, g-h** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
0.2	56	0.0054	5.29	16.62	**Pipe Channel, h-i** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
0.9	282	0.0050	5.09	16.00	**Pipe Channel, i-j** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
0.4	126	0.0048	4.99	15.67	**Pipe Channel, j-k** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
7.1	1,308	Total			

Subcatchment PR-D1: Prop. Watershed D1



Hydrograph for Subcatchment PR-D1: Prop. Watershed D1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.09	0.00	0.00
2.00	0.18	0.00	0.00
3.00	0.27	0.00	0.01
4.00	0.38	0.01	0.09
5.00	0.50	0.04	0.19
6.00	0.63	0.09	0.28
7.00	0.80	0.17	0.46
8.00	1.00	0.29	0.67
9.00	1.28	0.47	1.10
10.00	1.66	0.76	1.62
11.00	2.20	1.20	2.59
12.00	4.40	3.20	**22.68**
13.00	6.60	5.32	**3.53**
14.00	7.14	5.84	2.20
15.00	7.52	6.21	1.66
16.00	7.80	6.49	1.17
17.00	8.00	6.69	0.92
18.00	8.17	6.85	0.71
19.00	8.30	6.98	0.63
20.00	8.42	7.10	0.57
21.00	8.53	7.21	0.52
22.00	8.63	7.31	0.47
23.00	8.72	7.39	0.42
24.00	**8.80**	**7.47**	0.37
25.00	8.80	7.47	0.00
26.00	8.80	7.47	0.00
27.00	8.80	7.47	0.00
28.00	8.80	7.47	0.00
29.00	8.80	7.47	0.00
30.00	8.80	7.47	0.00
31.00	8.80	7.47	0.00
32.00	8.80	7.47	0.00
33.00	8.80	7.47	0.00
34.00	8.80	7.47	0.00
35.00	8.80	7.47	0.00
36.00	8.80	7.47	0.00
37.00	8.80	7.47	0.00
38.00	8.80	7.47	0.00
39.00	8.80	7.47	0.00
40.00	8.80	7.47	0.00
41.00	8.80	7.47	0.00
42.00	8.80	7.47	0.00
43.00	8.80	7.47	0.00
44.00	8.80	7.47	0.00
45.00	8.80	7.47	0.00
46.00	8.80	7.47	0.00
47.00	8.80	7.47	0.00
48.00	8.80	7.47	0.00
49.00	8.80	7.47	0.00
50.00	8.80	7.47	0.00
51.00	8.80	7.47	0.00
52.00	8.80	7.47	0.00
53.00	8.80	7.47	0.00
54.00	8.80	7.47	0.00
55.00	8.80	7.47	0.00
56.00	8.80	7.47	0.00
57.00	8.80	7.47	0.00
58.00	8.80	7.47	0.00
59.00	8.80	7.47	0.00
60.00	8.80	7.47	0.00
61.00	8.80	7.47	0.00
62.00	8.80	7.47	0.00
63.00	8.80	7.47	0.00
64.00	8.80	7.47	0.00
65.00	8.80	7.47	0.00
66.00	8.80	7.47	0.00
67.00	8.80	7.47	0.00
68.00	8.80	7.47	0.00
69.00	8.80	7.47	0.00
70.00	8.80	7.47	0.00
71.00	8.80	7.47	0.00
72.00	8.80	7.47	0.00
73.00	8.80	7.47	0.00
74.00	8.80	7.47	0.00
75.00	8.80	7.47	0.00
76.00	8.80	7.47	0.00
77.00	8.80	7.47	0.00
78.00	8.80	7.47	0.00
79.00	8.80	7.47	0.00
80.00	8.80	7.47	0.00
81.00	8.80	7.47	0.00
82.00	8.80	7.47	0.00
83.00	8.80	7.47	0.00
84.00	8.80	7.47	0.00
85.00	8.80	7.47	0.00
86.00	8.80	7.47	0.00
87.00	8.80	7.47	0.00
88.00	8.80	7.47	0.00
89.00	8.80	7.47	0.00
90.00	8.80	7.47	0.00
91.00	8.80	7.47	0.00
92.00	8.80	7.47	0.00
93.00	8.80	7.47	0.00
94.00	8.80	7.47	0.00
95.00	8.80	7.47	0.00
96.00	8.80	7.47	0.00

Summary for Subcatchment PR-D2: Prop. Watershed D2

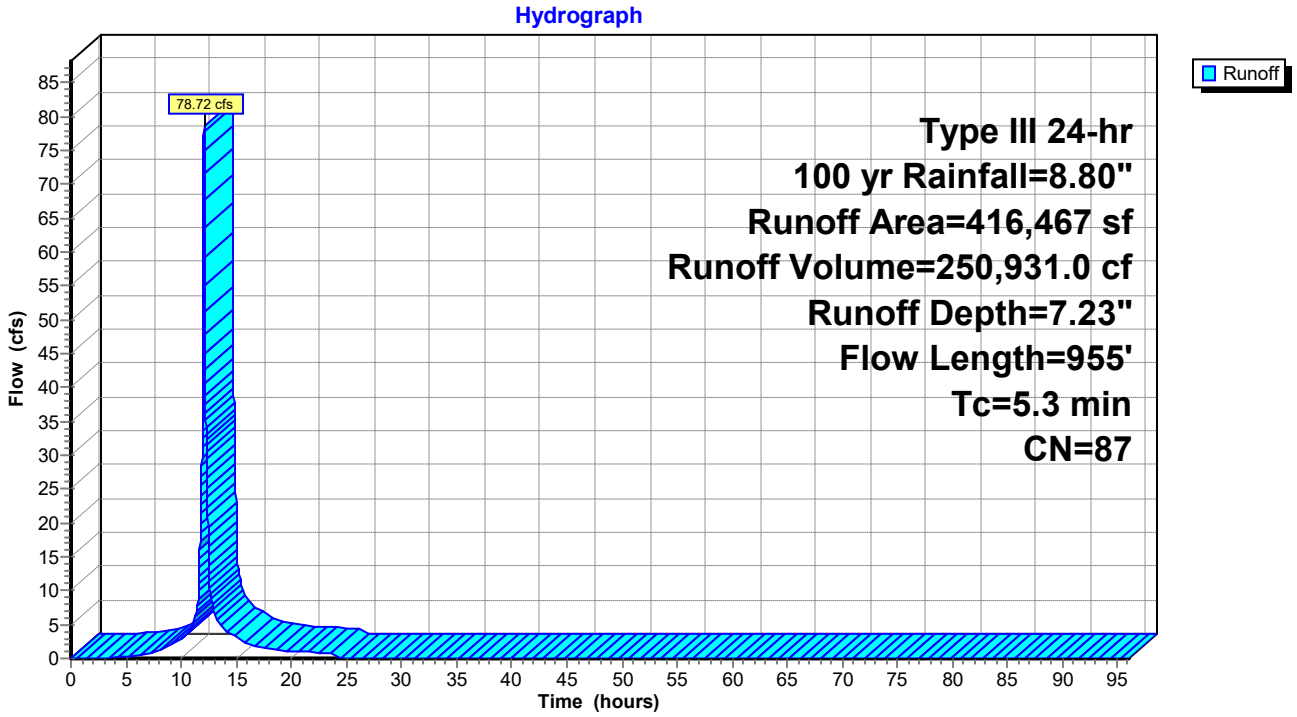
Runoff = 78.72 cfs @ 12.08 hrs, Volume= 250,931.0 cf, Depth= 7.23"
Routed to Pond SWM-2 : Rtank-2

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 yr Rainfall=8.80"

	Area (sf)	CN	Description
*	107,416	98	Building 1 - South
*	34,452	98	Building 2 - North
*	191,226	98	Pavement
*	3,868	98	Conc walk
*	4,480	90	Perv Pavers
	75,025	39	>75% Grass cover, Good, HSG A
	416,467	87	Weighted Average
	79,505		19.09% Pervious Area
	336,962		80.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	50	0.0020	0.48		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.22"
1.0	124	0.0100	2.03		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.4	84	0.0071	3.82	3.00	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.4	99	0.0071	3.82	3.00	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.3	71	0.0070	3.80	2.98	**Pipe Channel, E-F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
1.4	396	0.0061	4.64	8.20	**Pipe Channel, F-G** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
0.1	131	0.0047	15.30	1,432.46	**Pipe Channel, G-H** 131.0" Round Area= 93.6 sf Perim= 34.3' r= 2.73' n= 0.013
5.3	955	Total			

Subcatchment PR-D2: Prop. Watershed D2



Hydrograph for Subcatchment PR-D2: Prop. Watershed D2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.09	0.00	0.00
2.00	0.18	0.00	0.00
3.00	0.27	0.00	0.00
4.00	0.38	0.00	0.10
5.00	0.50	0.02	0.26
6.00	0.63	0.06	0.44
7.00	0.80	0.12	0.75
8.00	1.00	0.23	1.15
9.00	1.28	0.39	1.95
10.00	1.66	0.65	2.94
11.00	2.20	1.06	4.82
12.00	4.40	3.01	**51.19**
13.00	6.60	5.09	**6.58**
14.00	7.14	5.61	4.18
15.00	7.52	5.98	3.17
16.00	7.80	6.25	2.22
17.00	8.00	6.45	1.77
18.00	8.17	6.61	1.36
19.00	8.30	6.74	1.21
20.00	8.42	6.86	1.09
21.00	8.53	6.97	0.99
22.00	8.63	7.06	0.90
23.00	8.72	7.15	0.81
24.00	**8.80**	**7.23**	0.71
25.00	8.80	7.23	0.00
26.00	8.80	7.23	0.00
27.00	8.80	7.23	0.00
28.00	8.80	7.23	0.00
29.00	8.80	7.23	0.00
30.00	8.80	7.23	0.00
31.00	8.80	7.23	0.00
32.00	8.80	7.23	0.00
33.00	8.80	7.23	0.00
34.00	8.80	7.23	0.00
35.00	8.80	7.23	0.00
36.00	8.80	7.23	0.00
37.00	8.80	7.23	0.00
38.00	8.80	7.23	0.00
39.00	8.80	7.23	0.00
40.00	8.80	7.23	0.00
41.00	8.80	7.23	0.00
42.00	8.80	7.23	0.00
43.00	8.80	7.23	0.00
44.00	8.80	7.23	0.00
45.00	8.80	7.23	0.00
46.00	8.80	7.23	0.00
47.00	8.80	7.23	0.00
48.00	8.80	7.23	0.00
49.00	8.80	7.23	0.00
50.00	8.80	7.23	0.00
51.00	8.80	7.23	0.00
52.00	8.80	7.23	0.00
53.00	8.80	7.23	0.00
54.00	8.80	7.23	0.00
55.00	8.80	7.23	0.00
56.00	8.80	7.23	0.00
57.00	8.80	7.23	0.00
58.00	8.80	7.23	0.00
59.00	8.80	7.23	0.00
60.00	8.80	7.23	0.00
61.00	8.80	7.23	0.00
62.00	8.80	7.23	0.00
63.00	8.80	7.23	0.00
64.00	8.80	7.23	0.00
65.00	8.80	7.23	0.00
66.00	8.80	7.23	0.00
67.00	8.80	7.23	0.00
68.00	8.80	7.23	0.00
69.00	8.80	7.23	0.00
70.00	8.80	7.23	0.00
71.00	8.80	7.23	0.00
72.00	8.80	7.23	0.00
73.00	8.80	7.23	0.00
74.00	8.80	7.23	0.00
75.00	8.80	7.23	0.00
76.00	8.80	7.23	0.00
77.00	8.80	7.23	0.00
78.00	8.80	7.23	0.00
79.00	8.80	7.23	0.00
80.00	8.80	7.23	0.00
81.00	8.80	7.23	0.00
82.00	8.80	7.23	0.00
83.00	8.80	7.23	0.00
84.00	8.80	7.23	0.00
85.00	8.80	7.23	0.00
86.00	8.80	7.23	0.00
87.00	8.80	7.23	0.00
88.00	8.80	7.23	0.00
89.00	8.80	7.23	0.00
90.00	8.80	7.23	0.00
91.00	8.80	7.23	0.00
92.00	8.80	7.23	0.00
93.00	8.80	7.23	0.00
94.00	8.80	7.23	0.00
95.00	8.80	7.23	0.00
96.00	8.80	7.23	0.00

Summary for Subcatchment PR-D3: Prop. Watershed D3

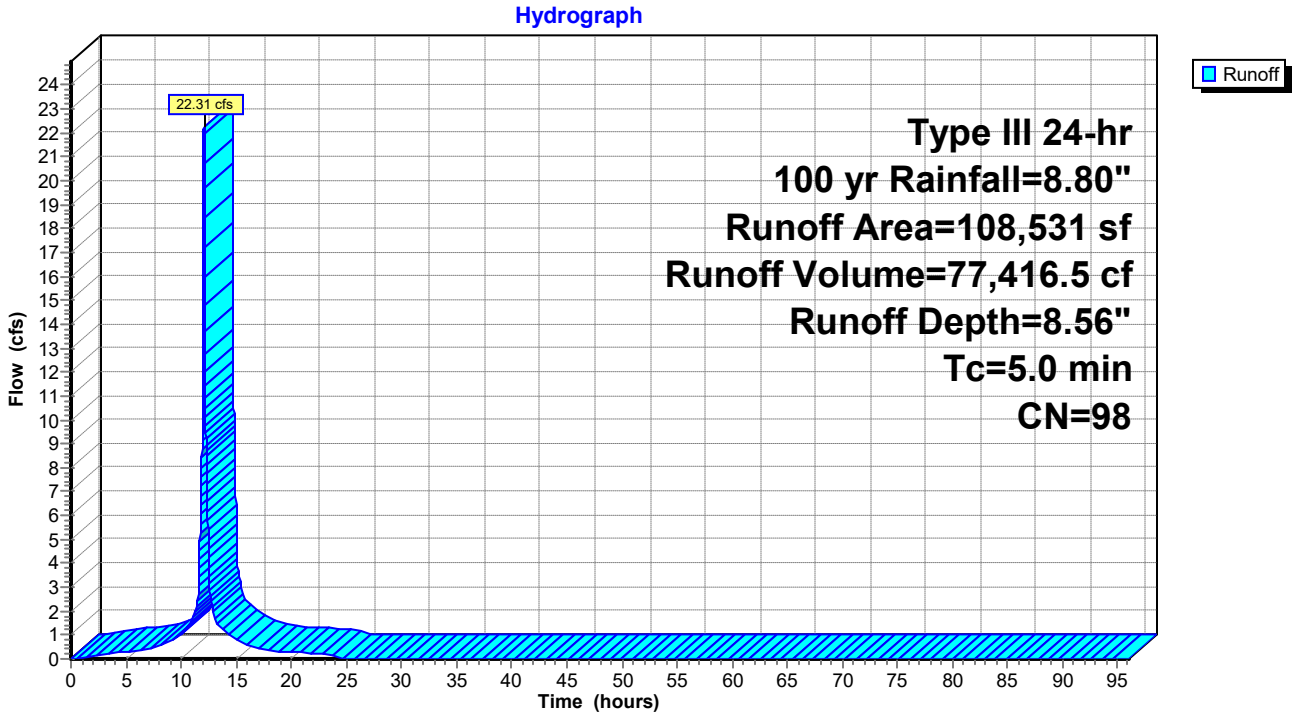
Runoff = 22.31 cfs @ 12.07 hrs, Volume= 77,416.5 cf, Depth= 8.56"
Routed to Pond SWM-6 : Rtank-6

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 yr Rainfall=8.80"

	Area (sf)	CN	Description
*	108,531	98	Building 1 - North
	108,531		100.00% Impervious Area

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

Subcatchment PR-D3: Prop. Watershed D3



Hydrograph for Subcatchment PR-D3: Prop. Watershed D3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.80	8.56	0.00
1.00	0.09	0.01	0.07	53.00	8.80	8.56	0.00
2.00	0.18	0.05	0.14	54.00	8.80	8.56	0.00
3.00	0.27	0.12	0.19	55.00	8.80	8.56	0.00
4.00	0.38	0.21	0.24	56.00	8.80	8.56	0.00
5.00	0.50	0.32	0.29	57.00	8.80	8.56	0.00
6.00	0.63	0.44	0.33	58.00	8.80	8.56	0.00
7.00	0.80	0.59	0.43	59.00	8.80	8.56	0.00
8.00	1.00	0.79	0.55	60.00	8.80	8.56	0.00
9.00	1.28	1.07	0.79	61.00	8.80	8.56	0.00
10.00	1.66	1.44	1.05	62.00	8.80	8.56	0.00
11.00	2.20	1.97	1.56	63.00	8.80	8.56	0.00
12.00	4.40	4.16	**15.09**	64.00	8.80	8.56	0.00
13.00	6.60	6.36	**1.77**	65.00	8.80	8.56	0.00
14.00	7.14	6.90	1.12	66.00	8.80	8.56	0.00
15.00	7.52	7.28	0.85	67.00	8.80	8.56	0.00
16.00	7.80	7.56	0.59	68.00	8.80	8.56	0.00
17.00	8.00	7.76	0.47	69.00	8.80	8.56	0.00
18.00	8.17	7.93	0.36	70.00	8.80	8.56	0.00
19.00	8.30	8.06	0.32	71.00	8.80	8.56	0.00
20.00	8.42	8.18	0.29	72.00	8.80	8.56	0.00
21.00	8.53	8.29	0.26	73.00	8.80	8.56	0.00
22.00	8.63	8.39	0.24	74.00	8.80	8.56	0.00
23.00	8.72	8.48	0.21	75.00	8.80	8.56	0.00
24.00	**8.80**	**8.56**	0.19	76.00	8.80	8.56	0.00
25.00	8.80	8.56	0.00	77.00	8.80	8.56	0.00
26.00	8.80	8.56	0.00	78.00	8.80	8.56	0.00
27.00	8.80	8.56	0.00	79.00	8.80	8.56	0.00
28.00	8.80	8.56	0.00	80.00	8.80	8.56	0.00
29.00	8.80	8.56	0.00	81.00	8.80	8.56	0.00
30.00	8.80	8.56	0.00	82.00	8.80	8.56	0.00
31.00	8.80	8.56	0.00	83.00	8.80	8.56	0.00
32.00	8.80	8.56	0.00	84.00	8.80	8.56	0.00
33.00	8.80	8.56	0.00	85.00	8.80	8.56	0.00
34.00	8.80	8.56	0.00	86.00	8.80	8.56	0.00
35.00	8.80	8.56	0.00	87.00	8.80	8.56	0.00
36.00	8.80	8.56	0.00	88.00	8.80	8.56	0.00
37.00	8.80	8.56	0.00	89.00	8.80	8.56	0.00
38.00	8.80	8.56	0.00	90.00	8.80	8.56	0.00
39.00	8.80	8.56	0.00	91.00	8.80	8.56	0.00
40.00	8.80	8.56	0.00	92.00	8.80	8.56	0.00
41.00	8.80	8.56	0.00	93.00	8.80	8.56	0.00
42.00	8.80	8.56	0.00	94.00	8.80	8.56	0.00
43.00	8.80	8.56	0.00	95.00	8.80	8.56	0.00
44.00	8.80	8.56	0.00	96.00	8.80	8.56	0.00
45.00	8.80	8.56	0.00				
46.00	8.80	8.56	0.00				
47.00	8.80	8.56	0.00				
48.00	8.80	8.56	0.00				
49.00	8.80	8.56	0.00				
50.00	8.80	8.56	0.00				
51.00	8.80	8.56	0.00				

Summary for Subcatchment PR-D4: Prop. Watershed D4

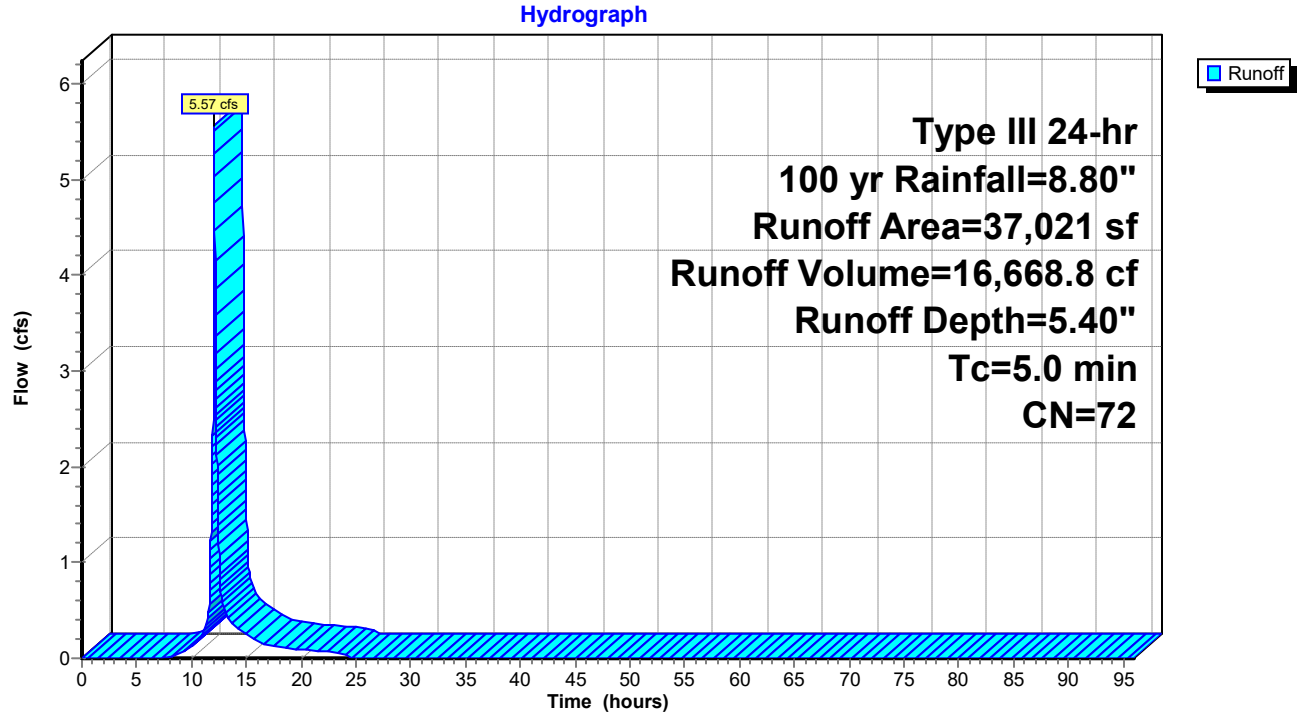
Runoff = 5.57 cfs @ 12.07 hrs, Volume= 16,668.8 cf, Depth= 5.40"
Routed to Pond SWM-4 : Rtank-4

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 yr Rainfall=8.80"

	Area (sf)	CN	Description
*	20,670	98	Pavement
	16,351	39	>75% Grass cover, Good, HSG A
	37,021	72	Weighted Average
	16,351		44.17% Pervious Area
	20,670		55.83% Impervious Area

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

Subcatchment PR-D4: Prop. Watershed D4



Hydrograph for Subcatchment PR-D4: Prop. Watershed D4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.80	5.40	0.00
1.00	0.09	0.00	0.00	53.00	8.80	5.40	0.00
2.00	0.18	0.00	0.00	54.00	8.80	5.40	0.00
3.00	0.27	0.00	0.00	55.00	8.80	5.40	0.00
4.00	0.38	0.00	0.00	56.00	8.80	5.40	0.00
5.00	0.50	0.00	0.00	57.00	8.80	5.40	0.00
6.00	0.63	0.00	0.00	58.00	8.80	5.40	0.00
7.00	0.80	0.00	0.00	59.00	8.80	5.40	0.00
8.00	1.00	0.01	0.02	60.00	8.80	5.40	0.00
9.00	1.28	0.06	0.06	61.00	8.80	5.40	0.00
10.00	1.66	0.16	0.12	62.00	8.80	5.40	0.00
11.00	2.20	0.38	0.24	63.00	8.80	5.40	0.00
12.00	4.40	1.75	**3.55**	64.00	8.80	5.40	0.00
13.00	6.60	3.49	**0.51**	65.00	8.80	5.40	0.00
14.00	7.14	3.95	0.33	66.00	8.80	5.40	0.00
15.00	7.52	4.27	0.25	67.00	8.80	5.40	0.00
16.00	7.80	4.52	0.18	68.00	8.80	5.40	0.00
17.00	8.00	4.70	0.14	69.00	8.80	5.40	0.00
18.00	8.17	4.84	0.11	70.00	8.80	5.40	0.00
19.00	8.30	4.96	0.10	71.00	8.80	5.40	0.00
20.00	8.42	5.07	0.09	72.00	8.80	5.40	0.00
21.00	8.53	5.16	0.08	73.00	8.80	5.40	0.00
22.00	8.63	5.25	0.07	74.00	8.80	5.40	0.00
23.00	8.72	5.33	0.07	75.00	8.80	5.40	0.00
24.00	**8.80**	**5.40**	0.06	76.00	8.80	5.40	0.00
25.00	8.80	5.40	0.00	77.00	8.80	5.40	0.00
26.00	8.80	5.40	0.00	78.00	8.80	5.40	0.00
27.00	8.80	5.40	0.00	79.00	8.80	5.40	0.00
28.00	8.80	5.40	0.00	80.00	8.80	5.40	0.00
29.00	8.80	5.40	0.00	81.00	8.80	5.40	0.00
30.00	8.80	5.40	0.00	82.00	8.80	5.40	0.00
31.00	8.80	5.40	0.00	83.00	8.80	5.40	0.00
32.00	8.80	5.40	0.00	84.00	8.80	5.40	0.00
33.00	8.80	5.40	0.00	85.00	8.80	5.40	0.00
34.00	8.80	5.40	0.00	86.00	8.80	5.40	0.00
35.00	8.80	5.40	0.00	87.00	8.80	5.40	0.00
36.00	8.80	5.40	0.00	88.00	8.80	5.40	0.00
37.00	8.80	5.40	0.00	89.00	8.80	5.40	0.00
38.00	8.80	5.40	0.00	90.00	8.80	5.40	0.00
39.00	8.80	5.40	0.00	91.00	8.80	5.40	0.00
40.00	8.80	5.40	0.00	92.00	8.80	5.40	0.00
41.00	8.80	5.40	0.00	93.00	8.80	5.40	0.00
42.00	8.80	5.40	0.00	94.00	8.80	5.40	0.00
43.00	8.80	5.40	0.00	95.00	8.80	5.40	0.00
44.00	8.80	5.40	0.00	96.00	8.80	5.40	0.00
45.00	8.80	5.40	0.00				
46.00	8.80	5.40	0.00				
47.00	8.80	5.40	0.00				
48.00	8.80	5.40	0.00				
49.00	8.80	5.40	0.00				
50.00	8.80	5.40	0.00				
51.00	8.80	5.40	0.00				

Summary for Subcatchment PR-D5: Prop. Watershed D5

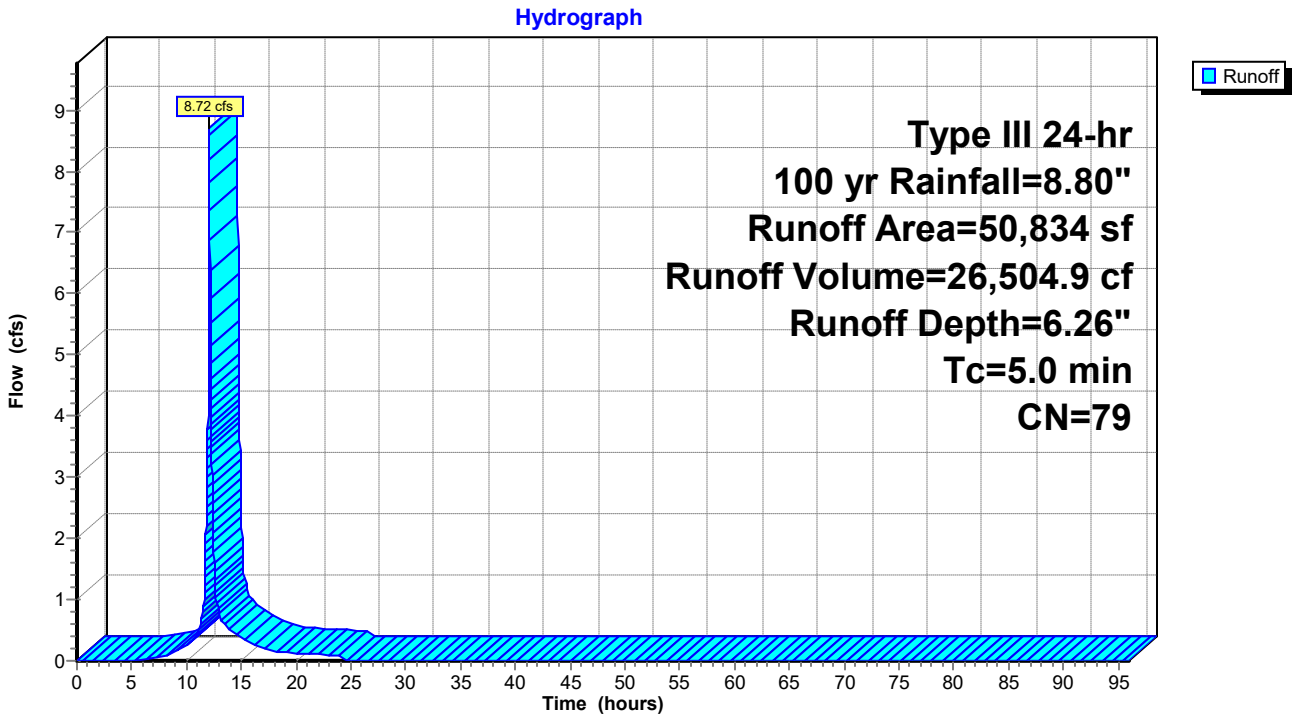
Runoff = 8.72 cfs @ 12.07 hrs, Volume= 26,504.9 cf, Depth= 6.26"
Routed to Pond RG1 : Rain-Garden #1

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 yr Rainfall=8.80"

Area (sf)	CN	Description
34,446	98	Unconnected pavement, HSG A
16,388	39	>75% Grass cover, Good, HSG A
50,834	79	Weighted Average
16,388		32.24% Pervious Area
34,446		67.76% Impervious Area
34,446		100.00% Unconnected

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

Subcatchment PR-D5: Prop. Watershed D5



Hydrograph for Subcatchment PR-D5: Prop. Watershed D5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.80	6.26	0.00
1.00	0.09	0.00	0.00	53.00	8.80	6.26	0.00
2.00	0.18	0.00	0.00	54.00	8.80	6.26	0.00
3.00	0.27	0.00	0.00	55.00	8.80	6.26	0.00
4.00	0.38	0.00	0.00	56.00	8.80	6.26	0.00
5.00	0.50	0.00	0.00	57.00	8.80	6.26	0.00
6.00	0.63	0.00	0.01	58.00	8.80	6.26	0.00
7.00	0.80	0.02	0.04	59.00	8.80	6.26	0.00
8.00	1.00	0.07	0.07	60.00	8.80	6.26	0.00
9.00	1.28	0.17	0.15	61.00	8.80	6.26	0.00
10.00	1.66	0.34	0.25	62.00	8.80	6.26	0.00
11.00	2.20	0.64	0.45	63.00	8.80	6.26	0.00
12.00	4.40	2.29	**5.68**	64.00	8.80	6.26	0.00
13.00	6.60	4.22	**0.75**	65.00	8.80	6.26	0.00
14.00	7.14	4.71	0.48	66.00	8.80	6.26	0.00
15.00	7.52	5.06	0.37	67.00	8.80	6.26	0.00
16.00	7.80	5.32	0.26	68.00	8.80	6.26	0.00
17.00	8.00	5.51	0.21	69.00	8.80	6.26	0.00
18.00	8.17	5.66	0.16	70.00	8.80	6.26	0.00
19.00	8.30	5.79	0.14	71.00	8.80	6.26	0.00
20.00	8.42	5.90	0.13	72.00	8.80	6.26	0.00
21.00	8.53	6.00	0.12	73.00	8.80	6.26	0.00
22.00	8.63	6.10	0.11	74.00	8.80	6.26	0.00
23.00	8.72	6.18	0.09	75.00	8.80	6.26	0.00
24.00	**8.80**	**6.26**	0.08	76.00	8.80	6.26	0.00
25.00	8.80	6.26	0.00	77.00	8.80	6.26	0.00
26.00	8.80	6.26	0.00	78.00	8.80	6.26	0.00
27.00	8.80	6.26	0.00	79.00	8.80	6.26	0.00
28.00	8.80	6.26	0.00	80.00	8.80	6.26	0.00
29.00	8.80	6.26	0.00	81.00	8.80	6.26	0.00
30.00	8.80	6.26	0.00	82.00	8.80	6.26	0.00
31.00	8.80	6.26	0.00	83.00	8.80	6.26	0.00
32.00	8.80	6.26	0.00	84.00	8.80	6.26	0.00
33.00	8.80	6.26	0.00	85.00	8.80	6.26	0.00
34.00	8.80	6.26	0.00	86.00	8.80	6.26	0.00
35.00	8.80	6.26	0.00	87.00	8.80	6.26	0.00
36.00	8.80	6.26	0.00	88.00	8.80	6.26	0.00
37.00	8.80	6.26	0.00	89.00	8.80	6.26	0.00
38.00	8.80	6.26	0.00	90.00	8.80	6.26	0.00
39.00	8.80	6.26	0.00	91.00	8.80	6.26	0.00
40.00	8.80	6.26	0.00	92.00	8.80	6.26	0.00
41.00	8.80	6.26	0.00	93.00	8.80	6.26	0.00
42.00	8.80	6.26	0.00	94.00	8.80	6.26	0.00
43.00	8.80	6.26	0.00	95.00	8.80	6.26	0.00
44.00	8.80	6.26	0.00	96.00	8.80	6.26	0.00
45.00	8.80	6.26	0.00				
46.00	8.80	6.26	0.00				
47.00	8.80	6.26	0.00				
48.00	8.80	6.26	0.00				
49.00	8.80	6.26	0.00				
50.00	8.80	6.26	0.00				
51.00	8.80	6.26	0.00				

Summary for Subcatchment PR-D6: Prop. Watershed D6

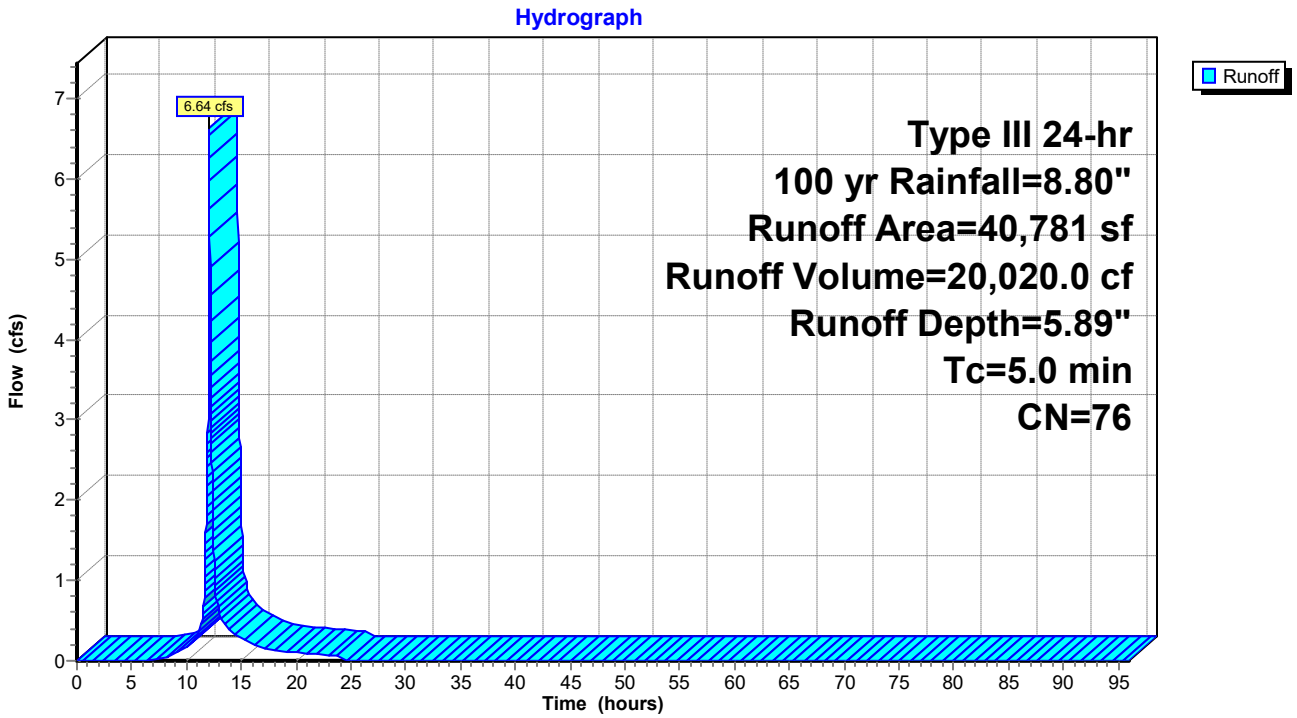
Runoff = 6.64 cfs @ 12.07 hrs, Volume= 20,020.0 cf, Depth= 5.89"
Routed to Pond RG2 : Rain-Garden #2

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 yr Rainfall=8.80"

Area (sf)	CN	Description
25,487	98	Unconnected pavement, HSG A
15,294	39	>75% Grass cover, Good, HSG A
40,781	76	Weighted Average
15,294		37.50% Pervious Area
25,487		62.50% Impervious Area
25,487		100.00% Unconnected

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

Subcatchment PR-D6: Prop. Watershed D6



Hydrograph for Subcatchment PR-D6: Prop. Watershed D6

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.09	0.00	0.00
2.00	0.18	0.00	0.00
3.00	0.27	0.00	0.00
4.00	0.38	0.00	0.00
5.00	0.50	0.00	0.00
6.00	0.63	0.00	0.00
7.00	0.80	0.01	0.02
8.00	1.00	0.04	0.04
9.00	1.28	0.11	0.09
10.00	1.66	0.25	0.17
11.00	2.20	0.52	0.32
12.00	4.40	2.05	**4.29**
13.00	6.60	3.90	**0.58**
14.00	7.14	4.38	0.38
15.00	7.52	4.72	0.29
16.00	7.80	4.97	0.20
17.00	8.00	5.16	0.16
18.00	8.17	5.31	0.12
19.00	8.30	5.43	0.11
20.00	8.42	5.54	0.10
21.00	8.53	5.64	0.09
22.00	8.63	5.73	0.08
23.00	8.72	5.82	0.07
24.00	**8.80**	**5.89**	0.07
25.00	8.80	5.89	0.00
26.00	8.80	5.89	0.00
27.00	8.80	5.89	0.00
28.00	8.80	5.89	0.00
29.00	8.80	5.89	0.00
30.00	8.80	5.89	0.00
31.00	8.80	5.89	0.00
32.00	8.80	5.89	0.00
33.00	8.80	5.89	0.00
34.00	8.80	5.89	0.00
35.00	8.80	5.89	0.00
36.00	8.80	5.89	0.00
37.00	8.80	5.89	0.00
38.00	8.80	5.89	0.00
39.00	8.80	5.89	0.00
40.00	8.80	5.89	0.00
41.00	8.80	5.89	0.00
42.00	8.80	5.89	0.00
43.00	8.80	5.89	0.00
44.00	8.80	5.89	0.00
45.00	8.80	5.89	0.00
46.00	8.80	5.89	0.00
47.00	8.80	5.89	0.00
48.00	8.80	5.89	0.00
49.00	8.80	5.89	0.00
50.00	8.80	5.89	0.00
51.00	8.80	5.89	0.00
52.00	8.80	5.89	0.00
53.00	8.80	5.89	0.00
54.00	8.80	5.89	0.00
55.00	8.80	5.89	0.00
56.00	8.80	5.89	0.00
57.00	8.80	5.89	0.00
58.00	8.80	5.89	0.00
59.00	8.80	5.89	0.00
60.00	8.80	5.89	0.00
61.00	8.80	5.89	0.00
62.00	8.80	5.89	0.00
63.00	8.80	5.89	0.00
64.00	8.80	5.89	0.00
65.00	8.80	5.89	0.00
66.00	8.80	5.89	0.00
67.00	8.80	5.89	0.00
68.00	8.80	5.89	0.00
69.00	8.80	5.89	0.00
70.00	8.80	5.89	0.00
71.00	8.80	5.89	0.00
72.00	8.80	5.89	0.00
73.00	8.80	5.89	0.00
74.00	8.80	5.89	0.00
75.00	8.80	5.89	0.00
76.00	8.80	5.89	0.00
77.00	8.80	5.89	0.00
78.00	8.80	5.89	0.00
79.00	8.80	5.89	0.00
80.00	8.80	5.89	0.00
81.00	8.80	5.89	0.00
82.00	8.80	5.89	0.00
83.00	8.80	5.89	0.00
84.00	8.80	5.89	0.00
85.00	8.80	5.89	0.00
86.00	8.80	5.89	0.00
87.00	8.80	5.89	0.00
88.00	8.80	5.89	0.00
89.00	8.80	5.89	0.00
90.00	8.80	5.89	0.00
91.00	8.80	5.89	0.00
92.00	8.80	5.89	0.00
93.00	8.80	5.89	0.00
94.00	8.80	5.89	0.00
95.00	8.80	5.89	0.00
96.00	8.80	5.89	0.00

Summary for Subcatchment PR-D7: Prop. Watershed D7

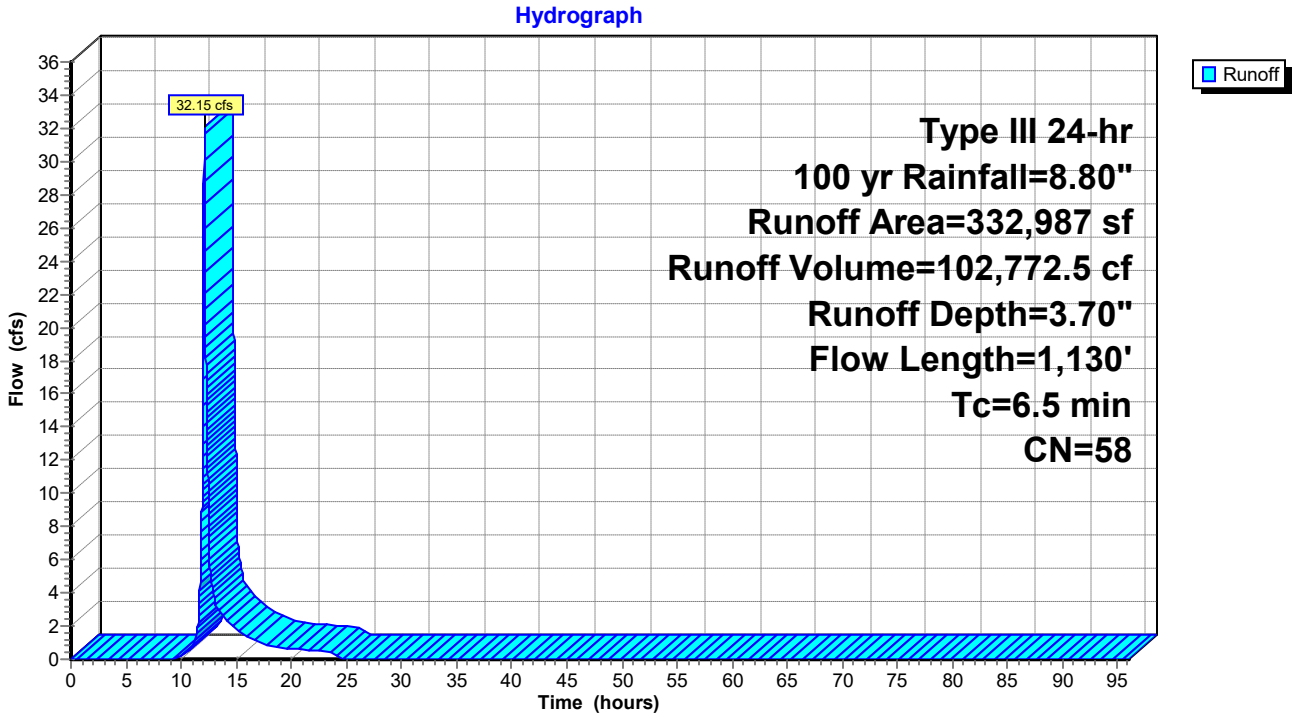
Runoff = 32.15 cfs @ 12.10 hrs, Volume= 102,772.5 cf, Depth= 3.70"
Routed to Link POA D : FIRE POND

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 yr Rainfall=8.80"

	Area (sf)	CN	Description
*	102,706	98	Pavement
*	4,930	98	Walkway Ramp/steps
	225,351	39	>75% Grass cover, Good, HSG A
	332,987	58	Weighted Average
	225,351		67.68% Pervious Area
	107,636		32.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.15		**Sheet Flow, a-b** Smooth surfaces n= 0.011 P2= 3.22"
5.7	1,030	0.0219	3.00		**Shallow Concentrated Flow, b-c** Paved Kv= 20.3 fps
0.1	50	0.0188	16.11	219.60	**Pipe Channel, c-d** 50.0" Round Area= 13.6 sf Perim= 13.1' r= 1.04' n= 0.013
6.5	1,130	Total			

Subcatchment PR-D7: Prop. Watershed D7



Hydrograph for Subcatchment PR-D7: Prop. Watershed D7

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.09	0.00	0.00
2.00	0.18	0.00	0.00
3.00	0.27	0.00	0.00
4.00	0.38	0.00	0.00
5.00	0.50	0.00	0.00
6.00	0.63	0.00	0.00
7.00	0.80	0.00	0.00
8.00	1.00	0.00	0.00
9.00	1.28	0.00	0.00
10.00	1.66	0.01	0.15
11.00	2.20	0.07	0.80
12.00	4.40	0.85	**16.86**
13.00	6.60	2.14	**3.65**
14.00	7.14	2.50	2.39
15.00	7.52	2.77	1.84
16.00	7.80	2.97	1.32
17.00	8.00	3.11	1.06
18.00	8.17	3.23	0.82
19.00	8.30	3.33	0.73
20.00	8.42	3.42	0.66
21.00	8.53	3.50	0.60
22.00	8.63	3.58	0.55
23.00	8.72	3.64	0.50
24.00	**8.80**	**3.70**	0.44
25.00	8.80	3.70	0.00
26.00	8.80	3.70	0.00
27.00	8.80	3.70	0.00
28.00	8.80	3.70	0.00
29.00	8.80	3.70	0.00
30.00	8.80	3.70	0.00
31.00	8.80	3.70	0.00
32.00	8.80	3.70	0.00
33.00	8.80	3.70	0.00
34.00	8.80	3.70	0.00
35.00	8.80	3.70	0.00
36.00	8.80	3.70	0.00
37.00	8.80	3.70	0.00
38.00	8.80	3.70	0.00
39.00	8.80	3.70	0.00
40.00	8.80	3.70	0.00
41.00	8.80	3.70	0.00
42.00	8.80	3.70	0.00
43.00	8.80	3.70	0.00
44.00	8.80	3.70	0.00
45.00	8.80	3.70	0.00
46.00	8.80	3.70	0.00
47.00	8.80	3.70	0.00
48.00	8.80	3.70	0.00
49.00	8.80	3.70	0.00
50.00	8.80	3.70	0.00
51.00	8.80	3.70	0.00
52.00	8.80	3.70	0.00
53.00	8.80	3.70	0.00
54.00	8.80	3.70	0.00
55.00	8.80	3.70	0.00
56.00	8.80	3.70	0.00
57.00	8.80	3.70	0.00
58.00	8.80	3.70	0.00
59.00	8.80	3.70	0.00
60.00	8.80	3.70	0.00
61.00	8.80	3.70	0.00
62.00	8.80	3.70	0.00
63.00	8.80	3.70	0.00
64.00	8.80	3.70	0.00
65.00	8.80	3.70	0.00
66.00	8.80	3.70	0.00
67.00	8.80	3.70	0.00
68.00	8.80	3.70	0.00
69.00	8.80	3.70	0.00
70.00	8.80	3.70	0.00
71.00	8.80	3.70	0.00
72.00	8.80	3.70	0.00
73.00	8.80	3.70	0.00
74.00	8.80	3.70	0.00
75.00	8.80	3.70	0.00
76.00	8.80	3.70	0.00
77.00	8.80	3.70	0.00
78.00	8.80	3.70	0.00
79.00	8.80	3.70	0.00
80.00	8.80	3.70	0.00
81.00	8.80	3.70	0.00
82.00	8.80	3.70	0.00
83.00	8.80	3.70	0.00
84.00	8.80	3.70	0.00
85.00	8.80	3.70	0.00
86.00	8.80	3.70	0.00
87.00	8.80	3.70	0.00
88.00	8.80	3.70	0.00
89.00	8.80	3.70	0.00
90.00	8.80	3.70	0.00
91.00	8.80	3.70	0.00
92.00	8.80	3.70	0.00
93.00	8.80	3.70	0.00
94.00	8.80	3.70	0.00
95.00	8.80	3.70	0.00
96.00	8.80	3.70	0.00

Summary for Pond RG1: Rain-Garden #1

Inflow Area = 50,834 sf, 67.76% Impervious, Inflow Depth = 6.26" for 100 yr event
Inflow = 8.72 cfs @ 12.07 hrs, Volume= 26,504.9 cf
Outflow = 9.75 cfs @ 12.07 hrs, Volume= 26,504.9 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.22 cfs @ 12.02 hrs, Volume= 11,840.4 cf
Primary = 9.53 cfs @ 12.07 hrs, Volume= 14,664.5 cf
Routed to Pond SWM-4 : Rtank-4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 253.10' @ 12.07 hrs Surf.Area= 4,028 sf Storage= 4,553.2 cf

Plug-Flow detention time= 113.2 min calculated for 26,502.2 cf (100% of inflow)
Center-of-Mass det. time= 113.2 min (913.9 - 800.7)

Volume	Invert	Avail.Storage	Storage Description
#1	249.50'	2,641.0 cf	**Open Air Storage (Prismatic)** Listed below (Recalc)
#2	245.00'	1,417.2 cf	**Subsoil (Prismatic)** Listed below (Recalc)
#3	244.50'	187.7 cf	**12.0" Round Underdrain** Inside #4 L= 239.0'
#4	243.50'	307.3 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 956.0 cf Overall - 187.7 cf Embedded = 768.3 cf x 40.0% Voids
		4,553.2 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
249.50	1,081	0.0	0.0
250.00	1,522	650.8	650.8
250.50	1,985	876.8	1,527.5
251.00	2,469	1,113.5	2,641.0

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
245.00	1,081	0.0	0.0	0.0
245.01	1,081	40.0	4.3	4.3
246.24	1,081	40.0	531.9	536.2
246.25	1,081	25.0	2.7	538.9
249.24	1,081	25.0	808.0	1,346.9
249.25	1,081	25.0	2.7	1,349.6
249.50	1,081	25.0	67.6	1,417.2

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.50	478	0.0	0.0
245.50	478	956.0	956.0

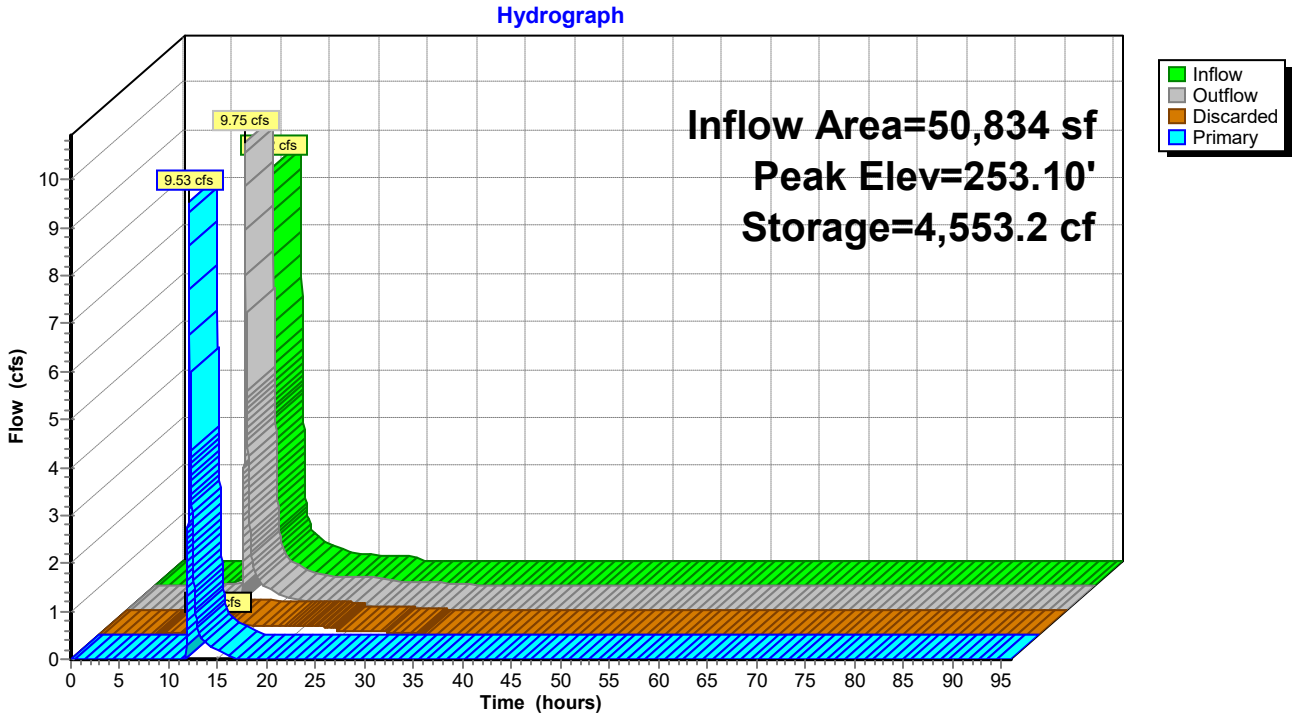
Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Filtration through media over Surface area**
#2	Device 3	250.50'	**15.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	247.50'	**12.0" Round Culvert** L= 18.0' Ke= 0.100 Inlet / Outlet Invert= 247.50' / 247.45' S= 0.0028 '/' Cc= 0.900

n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

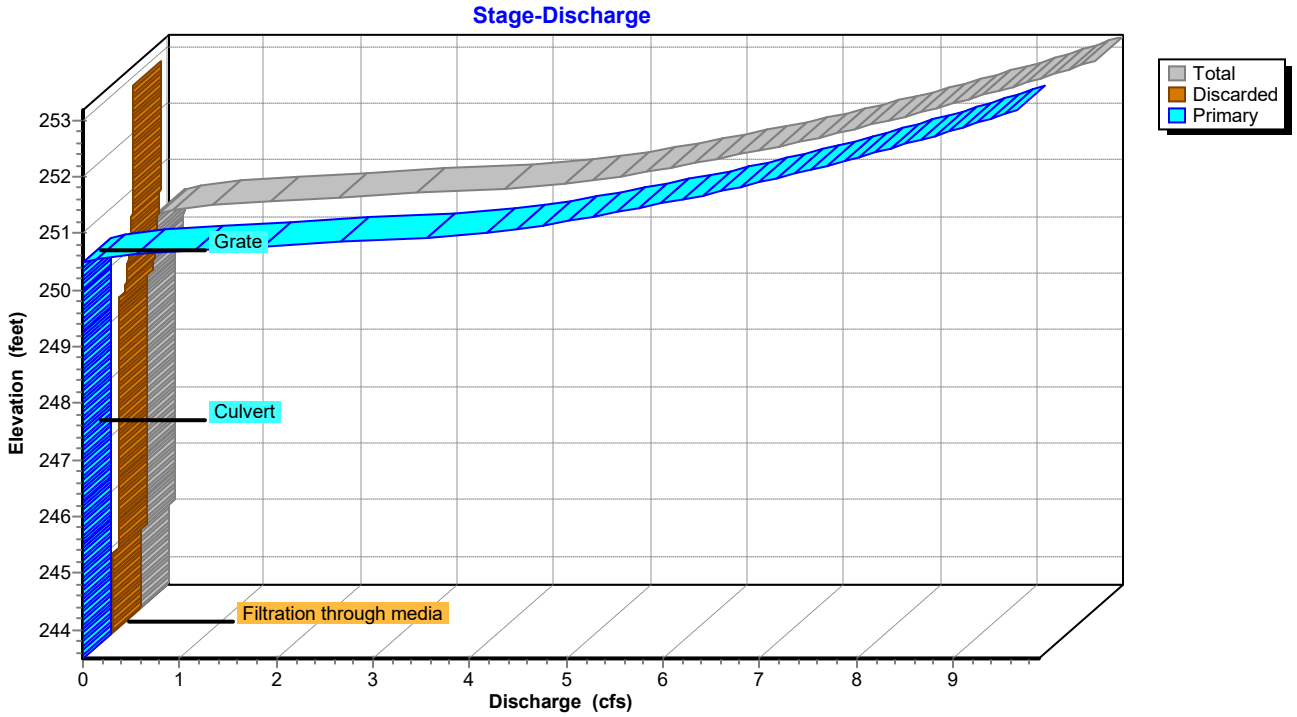
Discarded OutFlow Max=0.22 cfs @ 12.02 hrs HW=251.38' (Free Discharge)
└**1=Filtration through media** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=9.51 cfs @ 12.07 hrs HW=253.09' (Free Discharge)
└**3=Culvert** (Passes 9.51 cfs of 11.07 cfs potential flow)
└**2=Grate** (Orifice Controls 9.51 cfs @ 7.75 fps)

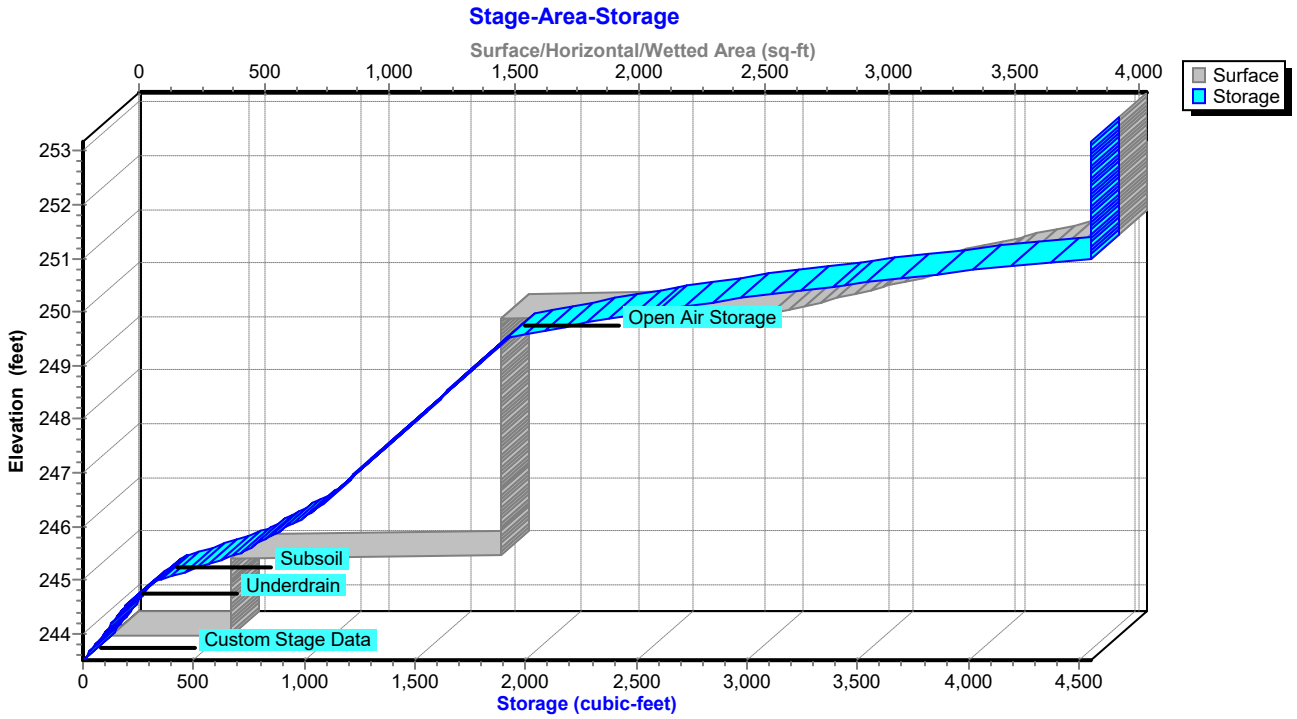
Pond RG1: Rain-Garden #1



Pond RG1: Rain-Garden #1



Pond RG1: Rain-Garden #1



Hydrograph for Pond RG1: Rain-Garden #1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	0.00
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.00	0.0	243.50	0.00	0.00	0.00
6.00	0.01	4.5	243.52	0.01	0.01	0.00
8.00	0.07	110.9	244.08	0.03	0.03	0.00
10.00	0.25	749.9	245.59	0.09	0.09	0.00
12.00	**5.68**	**4,431.3**	**250.95**	**3.99**	**0.22**	**3.76**
14.00	**0.48**	**3,598.7**	**250.58**	**0.51**	**0.20**	**0.30**
16.00	0.26	3,495.5	250.53	0.28	0.20	0.08
18.00	0.16	3,385.9	250.47	0.20	0.20	0.00
20.00	0.13	3,024.8	250.28	0.19	0.19	0.00
22.00	0.11	2,568.6	250.00	0.17	0.17	0.00
24.00	0.08	2,071.7	249.64	0.15	0.15	0.00
26.00	0.00	1,386.3	247.55	0.09	0.09	0.00
28.00	0.00	760.1	245.61	0.09	0.09	0.00
30.00	0.00	267.0	244.77	0.03	0.03	0.00
32.00	0.00	75.0	243.89	0.03	0.03	0.00
34.00	0.00	0.0	243.50	0.00	0.00	0.00
36.00	0.00	0.0	243.50	0.00	0.00	0.00
38.00	0.00	0.0	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond RG1: Rain-Garden #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	478	0.0
243.60	478	19.1
243.70	478	38.2
243.80	478	57.4
243.90	478	76.5
244.00	478	95.6
244.10	478	114.7
244.20	478	133.8
244.30	478	153.0
244.40	478	172.1
244.50	478	191.2
244.60	478	216.2
244.70	478	245.5
244.80	478	277.0
244.90	478	309.7
245.00	1,559	343.1
245.10	1,559	419.7
245.20	1,559	495.7
245.30	1,559	570.5
245.40	1,559	643.0
245.50	1,559	711.2
245.60	1,559	754.5
245.70	1,559	797.7
245.80	1,559	840.9
245.90	1,559	884.2
246.00	1,559	927.4
246.10	1,559	970.7
246.20	1,559	1,013.9
246.30	1,559	1,047.4
246.40	1,559	1,074.4
246.50	1,559	1,101.5
246.60	1,559	1,128.5
246.70	1,559	1,155.5
246.80	1,559	1,182.5
246.90	1,559	1,209.6
247.00	1,559	1,236.6
247.10	1,559	1,263.6
247.20	1,559	1,290.6
247.30	1,559	1,317.7
247.40	1,559	1,344.7
247.50	1,559	1,371.7
247.60	1,559	1,398.7
247.70	1,559	1,425.8
247.80	1,559	1,452.8
247.90	1,559	1,479.8
248.00	1,559	1,506.8
248.10	1,559	1,533.9
248.20	1,559	1,560.9
248.30	1,559	1,587.9
248.40	1,559	1,614.9
248.50	1,559	1,642.0
248.60	1,559	1,669.0
248.70	1,559	1,696.0
248.80	1,559	1,723.0
248.90	1,559	1,750.1
249.00	1,559	1,777.1
249.10	1,559	1,804.1
249.20	1,559	1,831.1
249.30	1,559	1,858.2
249.40	1,559	1,885.2
249.50	2,640	1,912.2
249.60	2,728	2,024.7
249.70	2,816	2,146.1
249.80	2,905	2,276.2
249.90	2,993	2,415.2
250.00	3,081	2,563.0
250.10	3,174	2,719.8
250.20	3,266	2,885.9
250.30	3,359	3,061.2
250.40	3,451	3,245.8
250.50	3,544	3,439.7
250.60	3,641	3,643.1
250.70	3,738	3,856.1
250.80	3,834	4,078.8
250.90	3,931	4,311.2
251.00	**4,028**	**4,553.2**
251.10	4,028	4,553.2
251.20	4,028	4,553.2
251.30	4,028	4,553.2
251.40	4,028	4,553.2
251.50	4,028	4,553.2
251.60	4,028	4,553.2
251.70	4,028	4,553.2
251.80	4,028	4,553.2
251.90	4,028	4,553.2
252.00	4,028	4,553.2
252.10	4,028	4,553.2
252.20	4,028	4,553.2
252.30	4,028	4,553.2
252.40	4,028	4,553.2
252.50	4,028	4,553.2
252.60	4,028	4,553.2
252.70	4,028	4,553.2
252.80	4,028	4,553.2
252.90	4,028	4,553.2
253.00	4,028	4,553.2
253.10	4,028	4,553.2

Summary for Pond RG2: Rain-Garden #2

Inflow Area = 40,781 sf, 62.50% Impervious, Inflow Depth = 5.89" for 100 yr event
Inflow = 6.64 cfs @ 12.07 hrs, Volume= 20,020.0 cf
Outflow = 7.55 cfs @ 12.07 hrs, Volume= 20,020.0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.25 cfs @ 12.07 hrs, Volume= 10,198.8 cf
Primary = 7.29 cfs @ 12.07 hrs, Volume= 9,821.2 cf
Routed to Pond SWM-5 : Rtank-5

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 252.03' @ 12.07 hrs Surf.Area= 4,514 sf Storage= 4,051.8 cf

Plug-Flow detention time= 118.7 min calculated for 20,017.9 cf (100% of inflow)
Center-of-Mass det. time= 118.7 min (926.0 - 807.3)

Volume	Invert	Avail.Storage	Storage Description
#1	250.00'	2,015.0 cf	**Open Air Storage (Prismatic)** Listed below (Recalc)
#2	245.50'	1,541.7 cf	**Subsoil (Prismatic)** Listed below (Recalc)
#3	244.50'	187.7 cf	**12.0" Round Underdrain** Inside #4 L= 239.0'
#4	243.50'	307.3 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 956.0 cf Overall - 187.7 cf Embedded = 768.3 cf x 40.0% Voids
		4,051.8 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
250.00	1,176	0.0	0.0
250.50	2,012	797.0	797.0
251.00	2,860	1,218.0	2,015.0

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
245.50	1,176	0.0	0.0	0.0
245.51	1,176	40.0	4.7	4.7
246.74	1,176	40.0	578.6	583.3
246.75	1,176	25.0	2.9	586.2
249.74	1,176	25.0	879.1	1,465.3
249.75	1,176	25.0	2.9	1,468.2
250.00	1,176	25.0	73.5	1,541.7

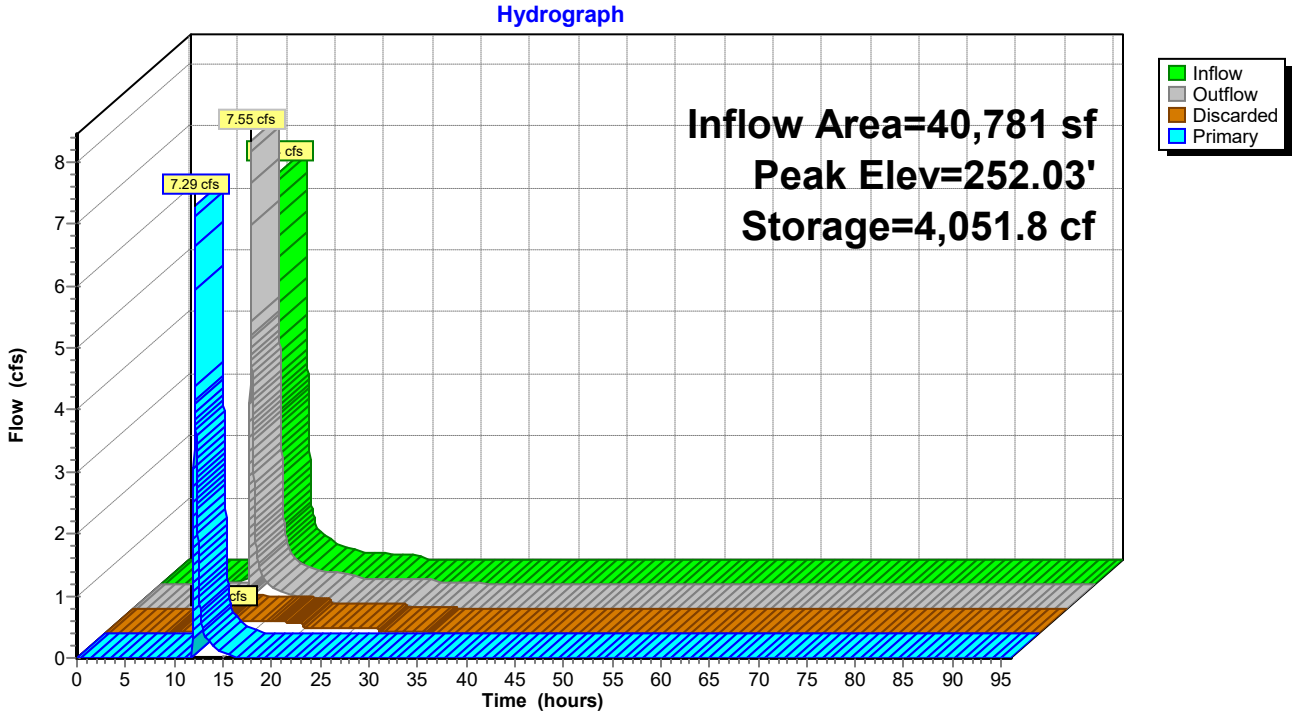
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.50	478	0.0	0.0
245.50	478	956.0	956.0

Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Filtration through media over Surface area**
#2	Device 3	250.50'	**15.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	247.50'	**12.0" Round Culvert** L= 18.0' Ke= 0.100 Inlet / Outlet Invert= 247.50' / 247.45' S= 0.0028 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.79 sf

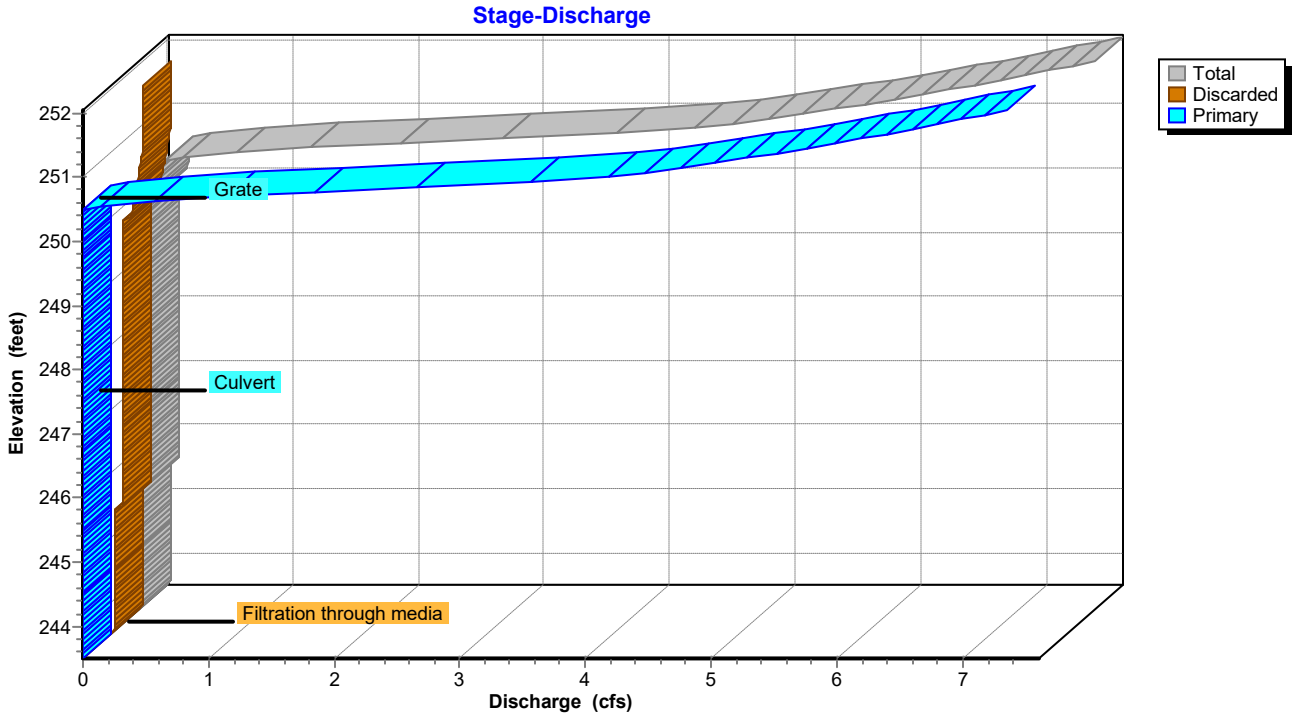
Discarded OutFlow Max=0.25 cfs @ 12.07 hrs HW=252.02' (Free Discharge)
└**1=Filtration through media** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=7.29 cfs @ 12.07 hrs HW=252.02' (Free Discharge)
└**3=Culvert** (Passes 7.29 cfs of 9.71 cfs potential flow)
└**2=Grate** (Orifice Controls 7.29 cfs @ 5.94 fps)

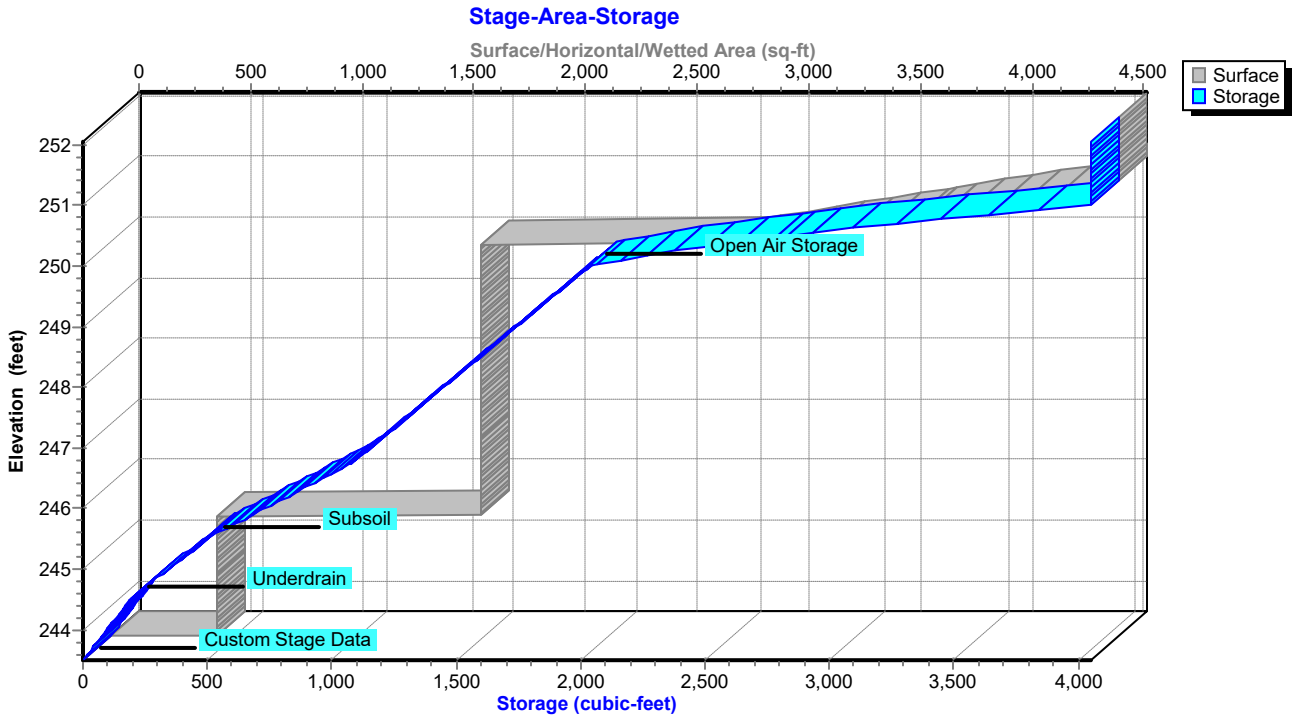
Pond RG2: Rain-Garden #2



Pond RG2: Rain-Garden #2



Pond RG2: Rain-Garden #2



Hydrograph for Pond RG2: Rain-Garden #2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	0.00
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.00	0.0	243.50	0.00	0.00	0.00
6.00	0.00	0.0	243.50	0.00	0.00	0.00
8.00	0.04	25.9	243.64	0.03	0.03	0.00
10.00	0.17	510.4	245.53	0.09	0.09	0.00
12.00	**4.29**	**3,609.8**	**250.84**	**2.76**	**0.24**	**2.52**
14.00	**0.38**	**2,952.4**	**250.56**	**0.40**	**0.21**	**0.19**
16.00	0.20	2,843.7	250.50	0.22	0.20	0.01
18.00	0.12	2,563.9	250.36	0.19	0.19	0.00
20.00	0.10	2,088.7	250.04	0.16	0.16	0.00
22.00	0.08	2,003.0	249.89	0.09	0.09	0.00
24.00	0.07	1,873.7	249.45	0.09	0.09	0.00
26.00	0.00	1,227.6	247.25	0.09	0.09	0.00
28.00	0.00	563.2	245.64	0.09	0.09	0.00
30.00	0.00	316.9	244.92	0.03	0.03	0.00
32.00	0.00	124.9	244.15	0.03	0.03	0.00
34.00	0.00	0.0	243.50	0.00	0.00	0.00
36.00	0.00	0.0	243.50	0.00	0.00	0.00
38.00	0.00	0.0	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond RG2: Rain-Garden #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	478	0.0
243.60	478	19.1
243.70	478	38.2
243.80	478	57.4
243.90	478	76.5
244.00	478	95.6
244.10	478	114.7
244.20	478	133.8
244.30	478	153.0
244.40	478	172.1
244.50	478	191.2
244.60	478	216.2
244.70	478	245.5
244.80	478	277.0
244.90	478	309.7
245.00	478	343.1
245.10	478	376.5
245.20	478	409.2
245.30	478	440.8
245.40	478	470.0
245.50	1,654	495.0
245.60	1,654	542.1
245.70	1,654	589.1
245.80	1,654	636.1
245.90	1,654	683.2
246.00	1,654	730.2
246.10	1,654	777.3
246.20	1,654	824.3
246.30	1,654	871.3
246.40	1,654	918.4
246.50	1,654	965.4
246.60	1,654	1,012.5
246.70	1,654	1,059.5
246.80	1,654	1,096.0
246.90	1,654	1,125.4
247.00	1,654	1,154.8
247.10	1,654	1,184.2
247.20	1,654	1,213.6
247.30	1,654	1,243.0
247.40	1,654	1,272.4
247.50	1,654	1,301.8
247.60	1,654	1,331.2
247.70	1,654	1,360.6
247.80	1,654	1,390.0
247.90	1,654	1,419.4
248.00	1,654	1,448.8
248.10	1,654	1,478.2
248.20	1,654	1,507.6
248.30	1,654	1,537.0
248.40	1,654	1,566.4
248.50	1,654	1,595.8
248.60	1,654	1,625.2
248.70	1,654	1,654.6
248.80	1,654	1,684.0
248.90	1,654	1,713.4
249.00	1,654	1,742.8
249.10	1,654	1,772.2
249.20	1,654	1,801.6
249.30	1,654	1,831.0
249.40	1,654	1,860.4
249.50	1,654	1,889.8
249.60	1,654	1,919.2
249.70	1,654	1,948.6
249.80	1,654	1,978.0
249.90	1,654	2,007.4
250.00	2,830	2,036.8
250.10	2,997	2,162.7
250.20	3,164	2,305.4
250.30	3,332	2,464.8
250.40	3,499	2,640.9
250.50	3,666	2,833.8
250.60	3,836	3,043.4
250.70	4,005	3,270.1
250.80	4,175	3,513.7
250.90	4,344	3,774.2
251.00	**4,514**	**4,051.8**
251.10	4,514	4,051.8
251.20	4,514	4,051.8
251.30	4,514	4,051.8
251.40	4,514	4,051.8
251.50	4,514	4,051.8
251.60	4,514	4,051.8
251.70	4,514	4,051.8
251.80	4,514	4,051.8
251.90	4,514	4,051.8
252.00	4,514	4,051.8

Summary for Pond SWM-1: Rtank-1

Inflow Area = 214,605 sf, 84.39% Impervious, Inflow Depth = 6.48" for 100 yr event
Inflow = 34.24 cfs @ 12.14 hrs, Volume= 115,948.3 cf
Outflow = 28.04 cfs @ 12.23 hrs, Volume= 115,948.3 cf, Atten= 18%, Lag= 5.1 min
Discarded = 0.20 cfs @ 9.56 hrs, Volume= 20,323.4 cf
Primary = 27.83 cfs @ 12.23 hrs, Volume= 95,624.9 cf
Routed to Pond SWM-4 : Rtank-4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 250.29' @ 12.23 hrs Surf.Area= 3,640 sf Storage= 21,121.3 cf

Plug-Flow detention time= 108.5 min calculated for 115,936.2 cf (100% of inflow)
Center-of-Mass det. time= 108.6 min (903.4 - 794.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	243.50'	3,180.7 cf	**38.12'W x 95.49'L x 7.81'H Field A** 28,434.6 cf Overall - 20,482.8 cf Embedded = 7,951.8 cf x 40.0% Voids
#2A	243.75'	19,458.6 cf	**ACF R-Tank SD 9** x 1014 Inside #1 Inside= 15.7"W x 78.7"H => 8.18 sf x 2.35'L = 19.2 cf Outside= 15.7"W x 78.7"H => 8.61 sf x 2.35'L = 20.2 cf 1014 Chambers in 26 Rows
		22,639.4 cf	Total Available Storage

Storage Group A created with Chamber Wizard

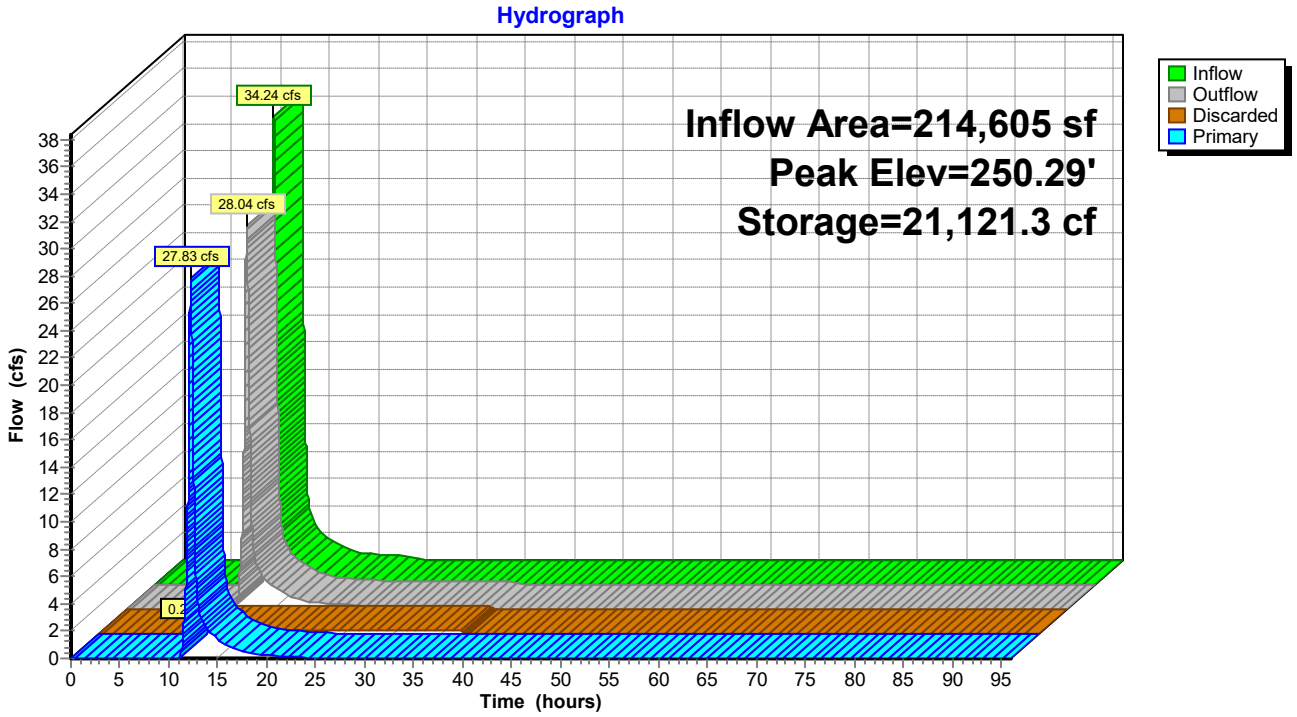
Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.50'	**18.0" Round Culvert X 2.00** L= 70.0' Ke= 0.100 Inlet / Outlet Invert= 246.50' / 246.50' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Discarded OutFlow Max=0.20 cfs @ 9.56 hrs HW=243.59' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=27.83 cfs @ 12.23 hrs HW=250.29' (Free Discharge)
↑**2=Culvert** (Barrel Controls 27.83 cfs @ 7.87 fps)

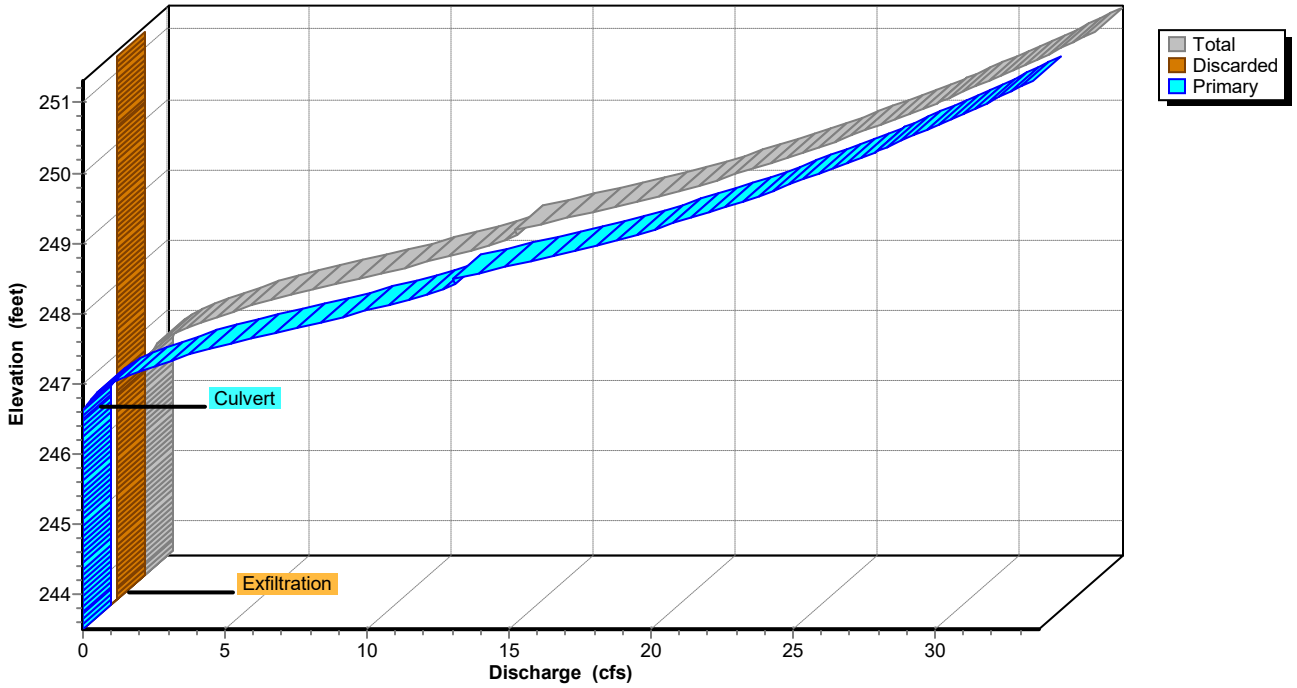
Pond SWM-1: Rtank-1

Hydrograph

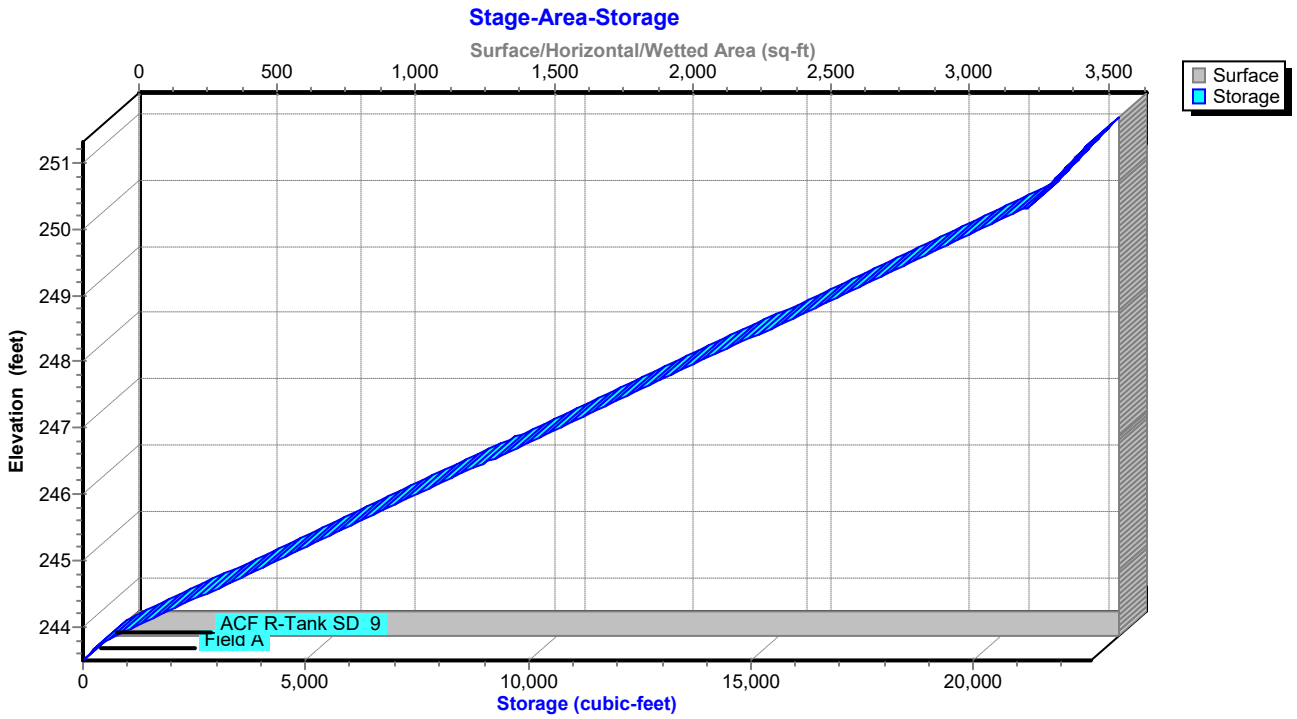


Pond SWM-1: Rtank-1

Stage-Discharge



Pond SWM-1: Rtank-1



Hydrograph for Pond SWM-1: Rtank-1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	0.00
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.00	0.0	243.50	0.00	0.00	0.00
6.00	0.00	0.0	243.50	0.00	0.00	0.00
8.00	0.00	0.0	243.50	0.00	**0.00**	0.00
10.00	1.40	1,605.3	244.14	0.20	**0.20**	0.00
12.00	**17.41**	**15,106.8**	**248.40**	**13.19**	0.20	**12.99**
14.00	**2.14**	**11,258.5**	**247.18**	**2.27**	0.20	**2.07**
16.00	1.08	10,634.4	246.99	1.17	0.20	0.97
18.00	0.59	10,208.1	246.85	0.65	0.20	0.45
20.00	0.43	9,970.4	246.78	0.45	0.20	0.25
22.00	0.33	9,795.2	246.72	0.35	0.20	0.15
24.00	0.23	9,588.7	246.66	0.27	0.20	0.07
26.00	0.00	8,257.2	246.24	0.20	0.20	0.00
28.00	0.00	6,795.1	245.78	0.20	0.20	0.00
30.00	0.00	5,333.1	245.32	0.20	0.20	0.00
32.00	0.00	3,871.0	244.86	0.20	0.20	0.00
34.00	0.00	2,408.9	244.39	0.20	0.20	0.00
36.00	0.00	946.9	243.93	0.20	0.20	0.00
38.00	0.00	0.5	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-1: Rtank-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	**3,640**	0.0
243.60	3,640	145.6
243.70	3,640	291.2
243.80	3,640	522.6
243.90	3,640	839.9
244.00	3,640	1,157.2
244.10	3,640	1,474.5
244.20	3,640	1,791.8
244.30	3,640	2,109.1
244.40	3,640	2,426.4
244.50	3,640	2,743.7
244.60	3,640	3,060.9
244.70	3,640	3,378.2
244.80	3,640	3,695.5
244.90	3,640	4,012.8
245.00	3,640	4,330.1
245.10	3,640	4,647.4
245.20	3,640	4,964.7
245.30	3,640	5,281.9
245.40	3,640	5,599.2
245.50	3,640	5,916.5
245.60	3,640	6,233.8
245.70	3,640	6,551.1
245.80	3,640	6,868.4
245.90	3,640	7,185.7
246.00	3,640	7,503.0
246.10	3,640	7,820.2
246.20	3,640	8,137.5
246.30	3,640	8,454.8
246.40	3,640	8,772.1
246.50	3,640	9,089.4
246.60	3,640	9,406.7
246.70	3,640	9,724.0
246.80	3,640	10,041.3
246.90	3,640	10,358.5
247.00	3,640	10,675.8
247.10	3,640	10,993.1
247.20	3,640	11,310.4
247.30	3,640	11,627.7
247.40	3,640	11,945.0
247.50	3,640	12,262.3
247.60	3,640	12,579.5
247.70	3,640	12,896.8
247.80	3,640	13,214.1
247.90	3,640	13,531.4
248.00	3,640	13,848.7
248.10	3,640	14,166.0
248.20	3,640	14,483.3
248.30	3,640	14,800.6
248.40	3,640	15,117.8
248.50	3,640	15,435.1
248.60	3,640	15,752.4
248.70	3,640	16,069.7
248.80	3,640	16,387.0
248.90	3,640	16,704.3
249.00	3,640	17,021.6
249.10	3,640	17,338.9
249.20	3,640	17,656.1
249.30	3,640	17,973.4
249.40	3,640	18,290.7
249.50	3,640	18,608.0
249.60	3,640	18,925.3
249.70	3,640	19,242.6
249.80	3,640	19,559.9
249.90	3,640	19,877.1
250.00	3,640	20,194.4
250.10	3,640	20,511.7
250.20	3,640	20,829.0
250.30	3,640	21,146.3
250.40	3,640	21,311.9
250.50	3,640	21,457.5
250.60	3,640	21,603.1
250.70	3,640	21,748.7
250.80	3,640	21,894.3
250.90	3,640	22,039.9
251.00	3,640	22,185.5
251.10	3,640	22,331.1
251.20	3,640	22,476.7
251.30	3,640	**22,622.3**

Summary for Pond SWM-2: Rtank-2

Inflow Area = 416,467 sf, 80.91% Impervious, Inflow Depth = 7.23" for 100 yr event
Inflow = 78.72 cfs @ 12.08 hrs, Volume= 250,931.0 cf
Outflow = 75.35 cfs @ 12.10 hrs, Volume= 250,931.0 cf, Atten= 4%, Lag= 1.4 min
Discarded = 0.42 cfs @ 6.00 hrs, Volume= 31,260.6 cf
Primary = 74.93 cfs @ 12.10 hrs, Volume= 219,670.4 cf
Routed to Pond SWM-3 : Rtank-3

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 251.94' @ 12.10 hrs Surf.Area= 7,487 sf Storage= 11,904.5 cf

Plug-Flow detention time= 13.7 min calculated for 250,904.9 cf (100% of inflow)
Center-of-Mass det. time= 13.7 min (795.0 - 781.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	250.00'	5,132.0 cf	**36.81'W x 203.39'L x 4.92'H Field A** 36,867.9 cf Overall - 24,038.0 cf Embedded = 12,829.9 cf x 40.0% Voids
#2A	250.25'	22,836.1 cf	**ACF R-Tank SD 5** x 2125 Inside #1 Inside= 15.7"W x 44.1"H => 4.58 sf x 2.35'L = 10.7 cf Outside= 15.7"W x 44.1"H => 4.82 sf x 2.35'L = 11.3 cf 2125 Chambers in 25 Rows
		27,968.1 cf	Total Available Storage

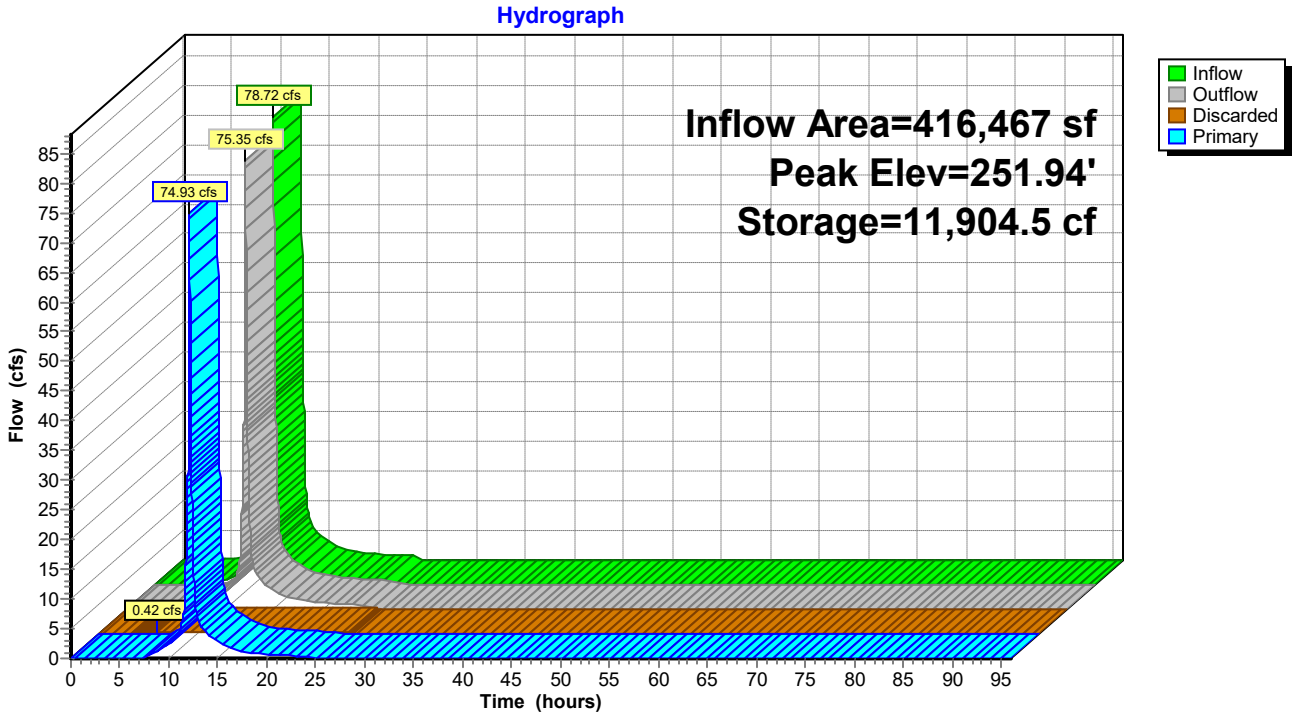
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	250.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	250.40'	**24.0" Round Culvert X 5.00** L= 195.0' Ke= 0.100 Inlet / Outlet Invert= 250.40' / 247.10' S= 0.0169 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

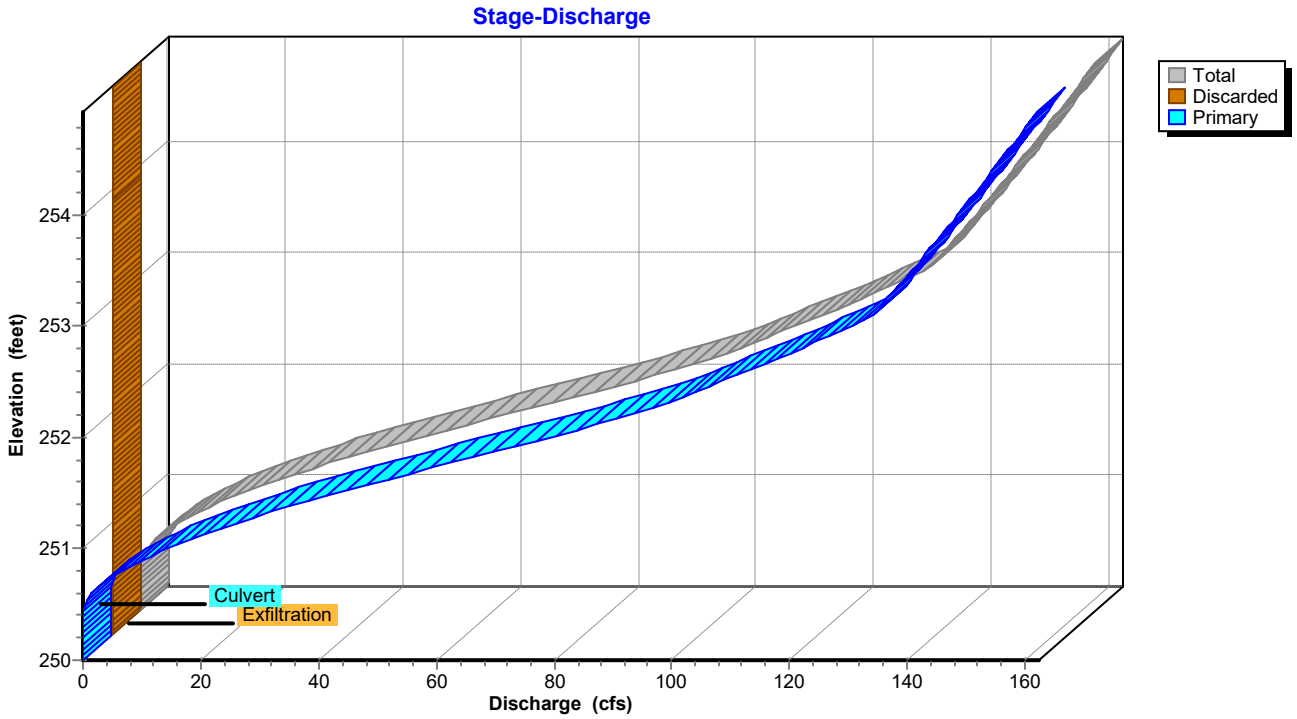
Discarded OutFlow Max=0.42 cfs @ 6.00 hrs HW=250.05' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=74.87 cfs @ 12.10 hrs HW=251.94' (Free Discharge)
↑—**2=Culvert** (Inlet Controls 74.87 cfs @ 5.76 fps)

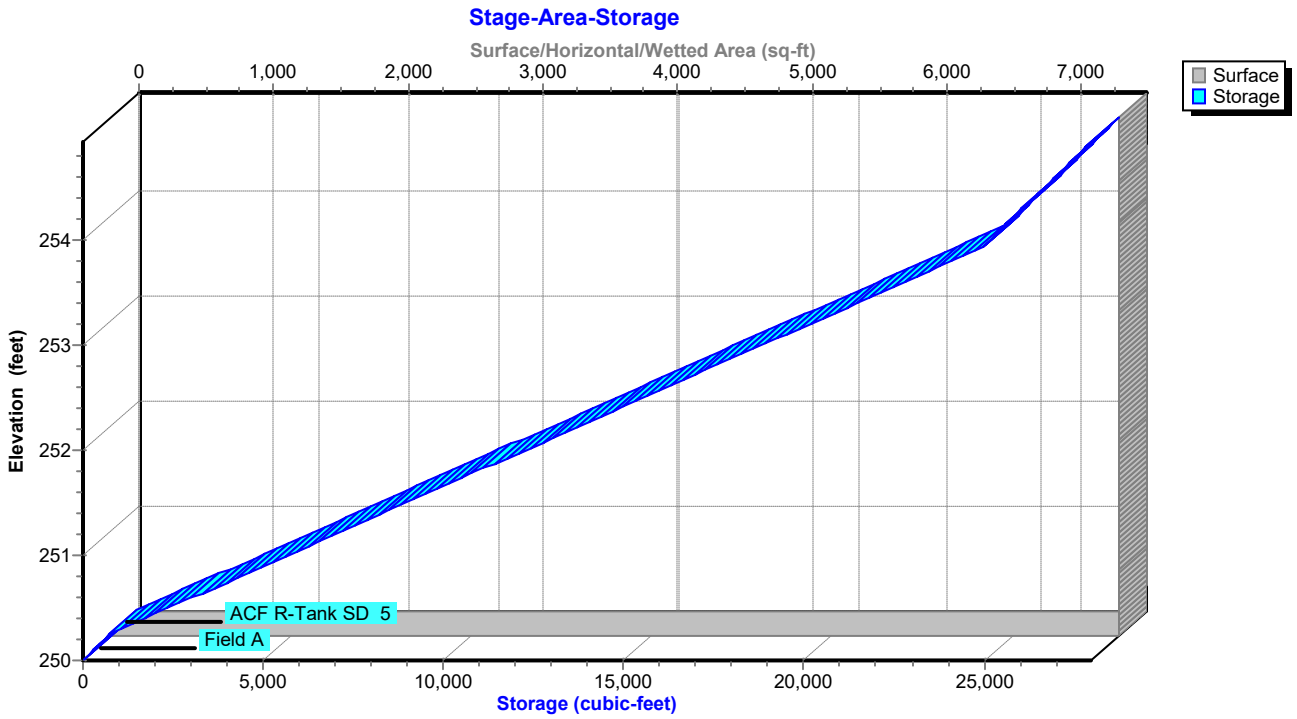
Pond SWM-2: Rtank-2



Pond SWM-2: Rtank-2



Pond SWM-2: Rtank-2



Hydrograph for Pond SWM-2: Rtank-2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	250.00	0.00	0.00	0.00
2.00	0.00	0.0	250.00	0.00	0.00	0.00
4.00	0.10	28.5	250.01	0.08	0.08	0.00
6.00	0.44	147.9	250.05	0.42	**0.42**	0.00
8.00	1.15	2,411.7	250.50	0.83	0.42	0.41
10.00	2.94	3,323.8	250.64	2.84	0.42	2.42
12.00	**51.19**	**8,859.0**	**251.48**	**42.19**	0.42	**41.77**
14.00	**4.18**	**3,749.9**	**250.71**	**4.32**	0.42	**3.91**
16.00	2.22	3,140.2	250.61	2.32	0.42	1.90
18.00	1.36	2,763.7	250.56	1.41	0.42	0.99
20.00	1.09	2,601.3	250.53	1.11	0.42	0.69
22.00	0.90	2,468.8	250.51	0.92	0.42	0.50
24.00	0.71	2,341.2	250.49	0.73	0.42	0.32
26.00	0.00	0.6	250.00	0.00	0.00	0.00
28.00	0.00	0.0	250.00	0.00	0.00	0.00
30.00	0.00	0.0	250.00	0.00	0.00	0.00
32.00	0.00	0.0	250.00	0.00	0.00	0.00
34.00	0.00	0.0	250.00	0.00	0.00	0.00
36.00	0.00	0.0	250.00	0.00	0.00	0.00
38.00	0.00	0.0	250.00	0.00	0.00	0.00
40.00	0.00	0.0	250.00	0.00	0.00	0.00
42.00	0.00	0.0	250.00	0.00	0.00	0.00
44.00	0.00	0.0	250.00	0.00	0.00	0.00
46.00	0.00	0.0	250.00	0.00	0.00	0.00
48.00	0.00	0.0	250.00	0.00	0.00	0.00
50.00	0.00	0.0	250.00	0.00	0.00	0.00
52.00	0.00	0.0	250.00	0.00	0.00	0.00
54.00	0.00	0.0	250.00	0.00	0.00	0.00
56.00	0.00	0.0	250.00	0.00	0.00	0.00
58.00	0.00	0.0	250.00	0.00	0.00	0.00
60.00	0.00	0.0	250.00	0.00	0.00	0.00
62.00	0.00	0.0	250.00	0.00	0.00	0.00
64.00	0.00	0.0	250.00	0.00	0.00	0.00
66.00	0.00	0.0	250.00	0.00	0.00	0.00
68.00	0.00	0.0	250.00	0.00	0.00	0.00
70.00	0.00	0.0	250.00	0.00	0.00	0.00
72.00	0.00	0.0	250.00	0.00	0.00	0.00
74.00	0.00	0.0	250.00	0.00	0.00	0.00
76.00	0.00	0.0	250.00	0.00	0.00	0.00
78.00	0.00	0.0	250.00	0.00	0.00	0.00
80.00	0.00	0.0	250.00	0.00	0.00	0.00
82.00	0.00	0.0	250.00	0.00	0.00	0.00
84.00	0.00	0.0	250.00	0.00	0.00	0.00
86.00	0.00	0.0	250.00	0.00	0.00	0.00
88.00	0.00	0.0	250.00	0.00	0.00	0.00
90.00	0.00	0.0	250.00	0.00	0.00	0.00
92.00	0.00	0.0	250.00	0.00	0.00	0.00
94.00	0.00	0.0	250.00	0.00	0.00	0.00
96.00	0.00	0.0	250.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-2: Rtank-2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
250.00	**7,487**	0.0
250.05	7,487	149.7
250.10	7,487	299.5
250.15	7,487	449.2
250.20	7,487	598.9
250.25	7,487	748.7
250.30	7,487	1,078.3
250.35	7,487	1,407.9
250.40	7,487	1,737.5
250.45	7,487	2,067.2
250.50	7,487	2,396.8
250.55	7,487	2,726.4
250.60	7,487	3,056.1
250.65	7,487	3,385.7
250.70	7,487	3,715.3
250.75	7,487	4,045.0
250.80	7,487	4,374.6
250.85	7,487	4,704.2
250.90	7,487	5,033.8
250.95	7,487	5,363.5
251.00	7,487	5,693.1
251.05	7,487	6,022.7
251.10	7,487	6,352.4
251.15	7,487	6,682.0
251.20	7,487	7,011.6
251.25	7,487	7,341.3
251.30	7,487	7,670.9
251.35	7,487	8,000.5
251.40	7,487	8,330.1
251.45	7,487	8,659.8
251.50	7,487	8,989.4
251.55	7,487	9,319.0
251.60	7,487	9,648.7
251.65	7,487	9,978.3
251.70	7,487	10,307.9
251.75	7,487	10,637.6
251.80	7,487	10,967.2
251.85	7,487	11,296.8
251.90	7,487	11,626.4
251.95	7,487	11,956.1
252.00	7,487	12,285.7
252.05	7,487	12,615.3
252.10	7,487	12,945.0
252.15	7,487	13,274.6
252.20	7,487	13,604.2
252.25	7,487	13,933.9
252.30	7,487	14,263.5
252.35	7,487	14,593.1
252.40	7,487	14,922.7
252.45	7,487	15,252.4
252.50	7,487	15,582.0
252.55	7,487	15,911.6
252.60	7,487	16,241.3
252.65	7,487	16,570.9
252.70	7,487	16,900.5
252.75	7,487	17,230.2
252.80	7,487	17,559.8
252.85	7,487	17,889.4
252.90	7,487	18,219.0
252.95	7,487	18,548.7
253.00	7,487	18,878.3
253.05	7,487	19,207.9
253.10	7,487	19,537.6
253.15	7,487	19,867.2
253.20	7,487	20,196.8
253.25	7,487	20,526.5
253.30	7,487	20,856.1
253.35	7,487	21,185.7
253.40	7,487	21,515.3
253.45	7,487	21,845.0
253.50	7,487	22,174.6
253.55	7,487	22,504.2
253.60	7,487	22,833.9
253.65	7,487	23,163.5
253.70	7,487	23,493.1
253.75	7,487	23,822.8
253.80	7,487	24,152.4
253.85	7,487	24,482.0
253.90	7,487	24,811.6
253.95	7,487	25,049.7
254.00	7,487	25,199.4
254.05	7,487	25,349.1
254.10	7,487	25,498.9
254.15	7,487	25,648.6
254.20	7,487	25,798.3
254.25	7,487	25,948.1
254.30	7,487	26,097.8
254.35	7,487	26,247.5
254.40	7,487	26,397.3
254.45	7,487	26,547.0
254.50	7,487	26,696.7
254.55	7,487	26,846.5
254.60	7,487	26,996.2
254.65	7,487	27,145.9
254.70	7,487	27,295.6
254.75	7,487	27,445.4
254.80	7,487	27,595.1
254.85	7,487	27,744.8
254.90	7,487	**27,894.6**

Summary for Pond SWM-3: Rtank-3

Inflow Area = 416,467 sf, 80.91% Impervious, Inflow Depth = 6.33" for 100 yr event
Inflow = 74.93 cfs @ 12.10 hrs, Volume= 219,670.4 cf
Outflow = 68.55 cfs @ 12.14 hrs, Volume= 219,670.4 cf, Atten= 9%, Lag= 2.2 min
Discarded = 0.44 cfs @ 8.15 hrs, Volume= 45,992.8 cf
Primary = 68.11 cfs @ 12.14 hrs, Volume= 173,677.6 cf
Routed to Pond SWM-4 : Rtank-4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 249.85' @ 12.14 hrs Surf.Area= 7,944 sf Storage= 37,454.0 cf

Plug-Flow detention time= 119.8 min calculated for 219,647.6 cf (100% of inflow)
Center-of-Mass det. time= 119.8 min (898.6 - 778.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	244.00'	6,520.8 cf	**47.99'W x 165.51'L x 6.37'H Field A** 50,587.1 cf Overall - 34,285.0 cf Embedded = 16,302.1 cf x 40.0% Voids
#2A	244.25'	32,570.8 cf	**ACF R-Tank SD 7** x 2176 Inside #1 Inside= 15.7"W x 61.4"H => 6.38 sf x 2.35'L = 15.0 cf Outside= 15.7"W x 61.4"H => 6.72 sf x 2.35'L = 15.8 cf 2176 Chambers in 32 Rows
		39,091.6 cf	Total Available Storage

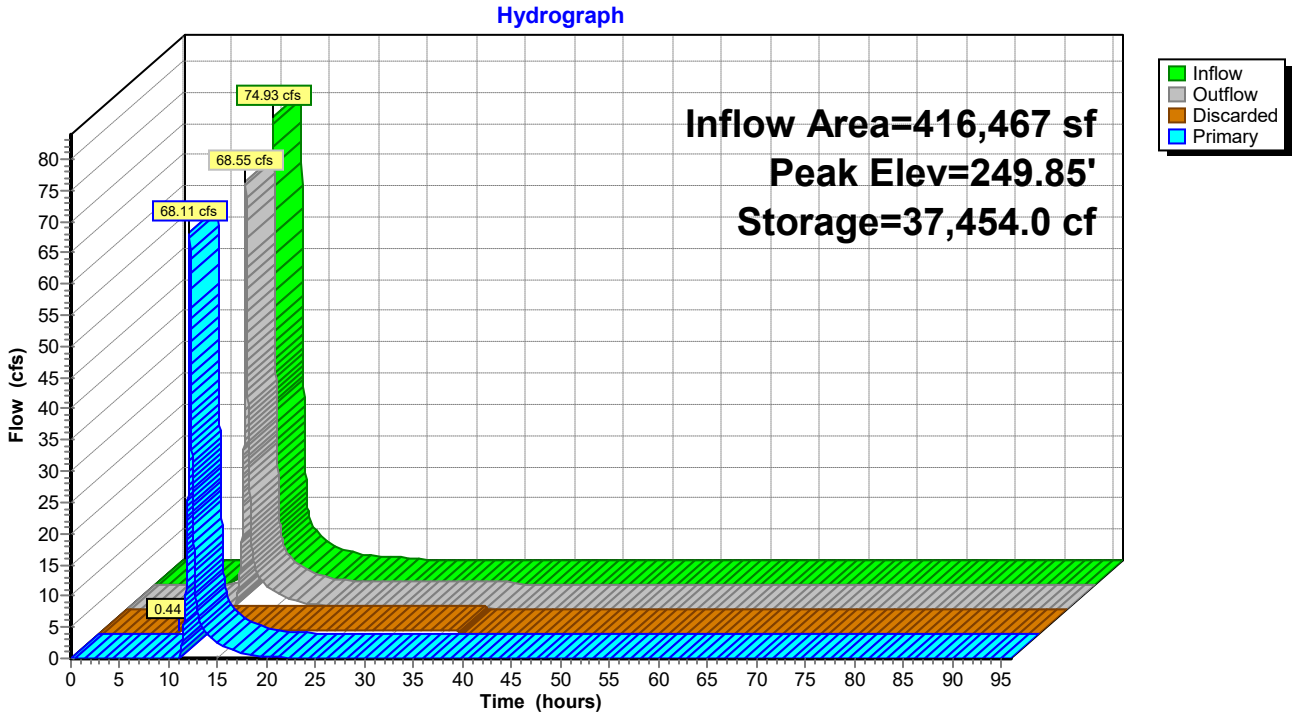
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	244.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	247.10'	**24.0" Round Culvert X 3.00** L= 6.0' Ke= 0.100 Inlet / Outlet Invert= 247.10' / 246.90' S= 0.0333 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

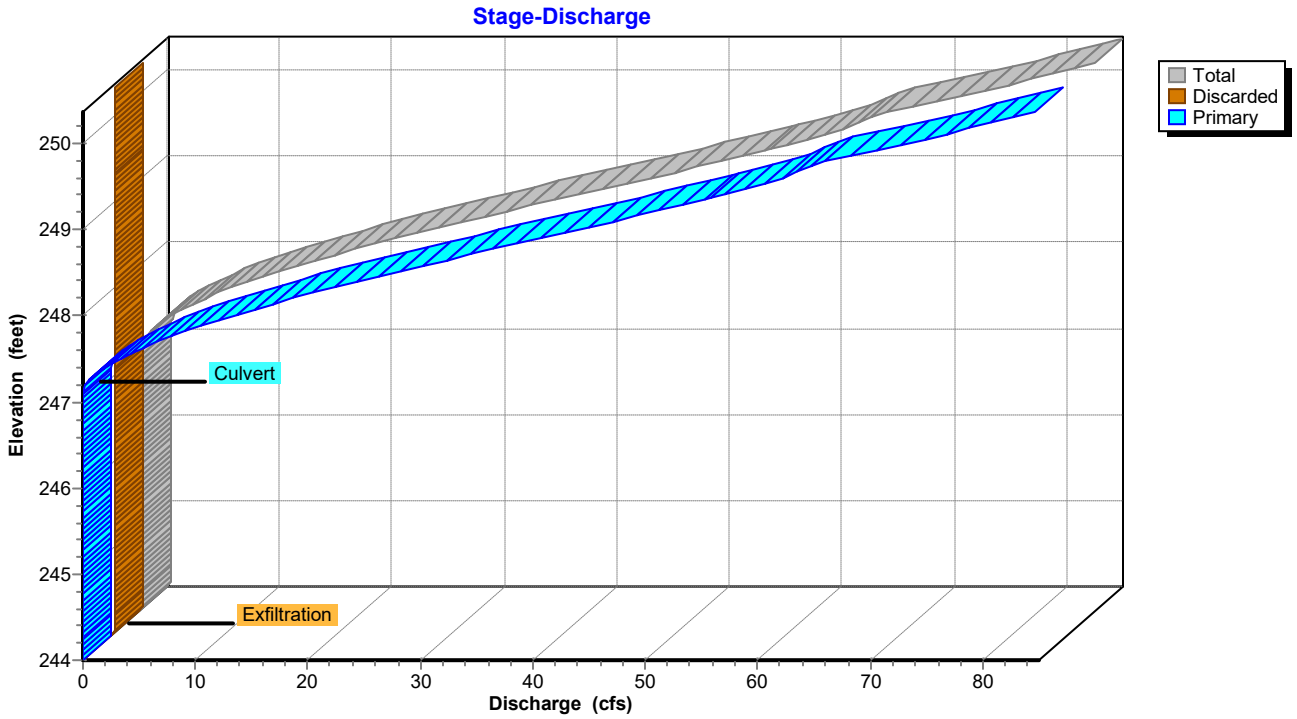
Discarded OutFlow Max=0.44 cfs @ 8.15 hrs HW=244.06' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.44 cfs)

Primary OutFlow Max=67.98 cfs @ 12.14 hrs HW=249.85' (Free Discharge)
↑**2=Culvert** (Barrel Controls 67.98 cfs @ 7.21 fps)

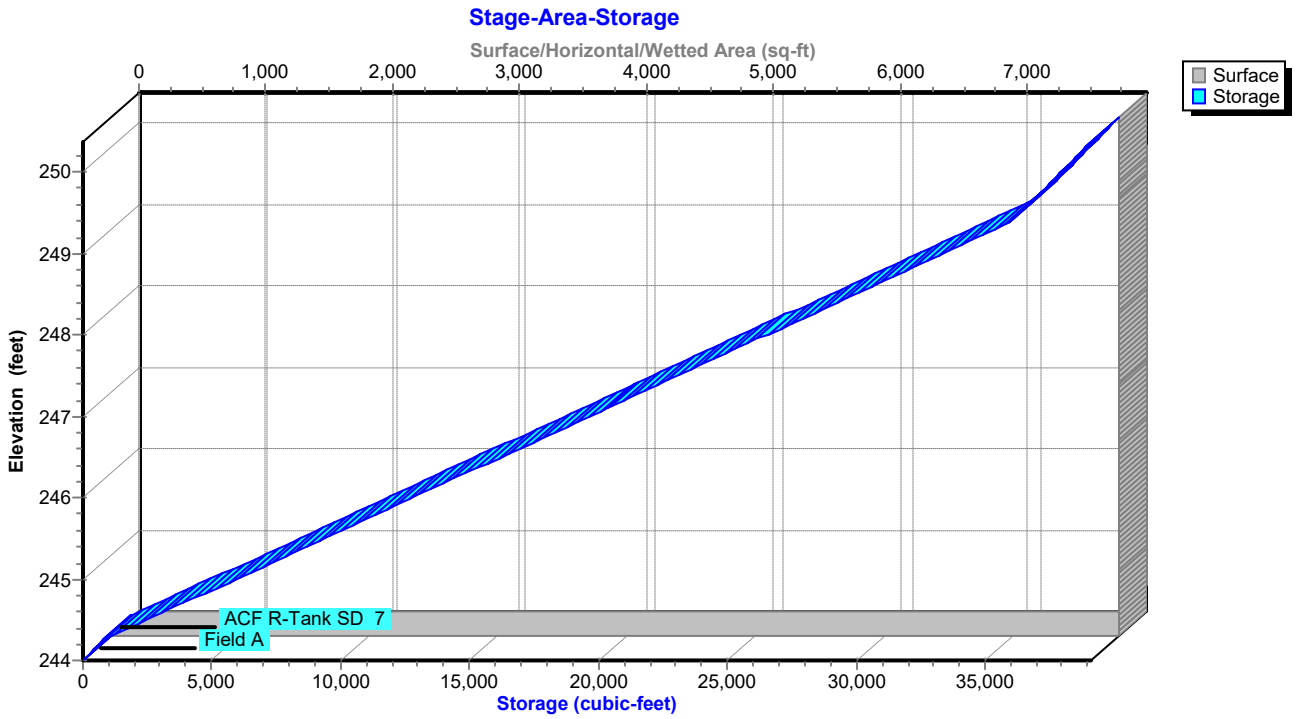
Pond SWM-3: Rtank-3



Pond SWM-3: Rtank-3



Pond SWM-3: Rtank-3



Hydrograph for Pond SWM-3: Rtank-3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	244.00	0.00	0.00	0.00
2.00	0.00	0.0	244.00	0.00	0.00	0.00
4.00	0.00	0.0	244.00	0.00	0.00	0.00
6.00	0.00	0.0	244.00	0.00	0.00	0.00
8.00	0.41	112.7	244.04	0.25	**0.25**	0.00
10.00	2.42	7,289.9	245.20	0.44	**0.44**	0.00
12.00	**41.77**	**30,831.5**	**248.63**	**32.08**	0.44	**31.63**
14.00	**3.91**	**23,270.0**	**247.53**	**4.15**	0.44	**3.70**
16.00	1.90	22,169.7	247.37	2.06	0.44	1.62
18.00	0.99	21,441.7	247.26	1.09	0.44	0.65
20.00	0.69	21,051.6	247.20	0.73	0.44	0.29
22.00	0.50	20,749.6	247.16	0.56	0.44	0.11
24.00	0.32	20,207.4	247.08	0.44	0.44	0.00
26.00	0.00	17,218.5	246.64	0.44	0.44	0.00
28.00	0.00	14,027.7	246.18	0.44	0.44	0.00
30.00	0.00	10,836.9	245.71	0.44	0.44	0.00
32.00	0.00	7,646.2	245.25	0.44	0.44	0.00
34.00	0.00	4,455.4	244.78	0.44	0.44	0.00
36.00	0.00	1,264.6	244.32	0.44	0.44	0.00
38.00	0.00	0.0	244.00	0.00	0.00	0.00
40.00	0.00	0.0	244.00	0.00	0.00	0.00
42.00	0.00	0.0	244.00	0.00	0.00	0.00
44.00	0.00	0.0	244.00	0.00	0.00	0.00
46.00	0.00	0.0	244.00	0.00	0.00	0.00
48.00	0.00	0.0	244.00	0.00	0.00	0.00
50.00	0.00	0.0	244.00	0.00	0.00	0.00
52.00	0.00	0.0	244.00	0.00	0.00	0.00
54.00	0.00	0.0	244.00	0.00	0.00	0.00
56.00	0.00	0.0	244.00	0.00	0.00	0.00
58.00	0.00	0.0	244.00	0.00	0.00	0.00
60.00	0.00	0.0	244.00	0.00	0.00	0.00
62.00	0.00	0.0	244.00	0.00	0.00	0.00
64.00	0.00	0.0	244.00	0.00	0.00	0.00
66.00	0.00	0.0	244.00	0.00	0.00	0.00
68.00	0.00	0.0	244.00	0.00	0.00	0.00
70.00	0.00	0.0	244.00	0.00	0.00	0.00
72.00	0.00	0.0	244.00	0.00	0.00	0.00
74.00	0.00	0.0	244.00	0.00	0.00	0.00
76.00	0.00	0.0	244.00	0.00	0.00	0.00
78.00	0.00	0.0	244.00	0.00	0.00	0.00
80.00	0.00	0.0	244.00	0.00	0.00	0.00
82.00	0.00	0.0	244.00	0.00	0.00	0.00
84.00	0.00	0.0	244.00	0.00	0.00	0.00
86.00	0.00	0.0	244.00	0.00	0.00	0.00
88.00	0.00	0.0	244.00	0.00	0.00	0.00
90.00	0.00	0.0	244.00	0.00	0.00	0.00
92.00	0.00	0.0	244.00	0.00	0.00	0.00
94.00	0.00	0.0	244.00	0.00	0.00	0.00
96.00	0.00	0.0	244.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-3: Rtank-3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
244.00	**7,944**	0.0
244.10	7,944	317.8
244.20	7,944	635.5
244.30	7,944	1,137.5
244.40	7,944	1,823.7
244.50	7,944	2,509.8
244.60	7,944	3,196.0
244.70	7,944	3,882.2
244.80	7,944	4,568.4
244.90	7,944	5,254.6
245.00	7,944	5,940.8
245.10	7,944	6,627.0
245.20	7,944	7,313.1
245.30	7,944	7,999.3
245.40	7,944	8,685.5
245.50	7,944	9,371.7
245.60	7,944	10,057.9
245.70	7,944	10,744.1
245.80	7,944	11,430.3
245.90	7,944	12,116.4
246.00	7,944	12,802.6
246.10	7,944	13,488.8
246.20	7,944	14,175.0
246.30	7,944	14,861.2
246.40	7,944	15,547.4
246.50	7,944	16,233.6
246.60	7,944	16,919.7
246.70	7,944	17,605.9
246.80	7,944	18,292.1
246.90	7,944	18,978.3
247.00	7,944	19,664.5
247.10	7,944	20,350.7
247.20	7,944	21,036.8
247.30	7,944	21,723.0
247.40	7,944	22,409.2
247.50	7,944	23,095.4
247.60	7,944	23,781.6
247.70	7,944	24,467.8
247.80	7,944	25,154.0
247.90	7,944	25,840.1
248.00	7,944	26,526.3
248.10	7,944	27,212.5
248.20	7,944	27,898.7
248.30	7,944	28,584.9
248.40	7,944	29,271.1
248.50	7,944	29,957.3
248.60	7,944	30,643.4
248.70	7,944	31,329.6
248.80	7,944	32,015.8
248.90	7,944	32,702.0
249.00	7,944	33,388.2
249.10	7,944	34,074.4
249.20	7,944	34,760.6
249.30	7,944	35,446.7
249.40	7,944	36,015.4
249.50	7,944	36,333.2
249.60	7,944	36,650.9
249.70	7,944	36,968.7
249.80	7,944	37,286.4
249.90	7,944	37,604.2
250.00	7,944	37,921.9
250.10	7,944	38,239.7
250.20	7,944	38,557.5
250.30	7,944	**38,875.2**

Summary for Pond SWM-4: Rtank-4

Inflow Area = 718,927 sf, 79.73% Impervious, Inflow Depth = 5.02" for 100 yr event
Inflow = 103.92 cfs @ 12.13 hrs, Volume= 300,635.9 cf
Outflow = 87.07 cfs @ 12.22 hrs, Volume= 300,635.9 cf, Atten= 16%, Lag= 5.4 min
Discarded = 0.62 cfs @ 11.30 hrs, Volume= 58,319.3 cf
Primary = 86.45 cfs @ 12.22 hrs, Volume= 242,316.5 cf
Routed to Pond SWM-5 : Rtank-5

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 249.50' @ 12.22 hrs Surf.Area= 11,191 sf Storage= 60,347.3 cf

Plug-Flow detention time= 121.1 min calculated for 300,604.6 cf (100% of inflow)
Center-of-Mass det. time= 121.2 min (908.1 - 786.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	243.00'	9,012.6 cf	**58.49'W x 191.32'L x 7.09'H Field A** 79,342.0 cf Overall - 56,810.5 cf Embedded = 22,531.6 cf x 40.0% Voids
#2A	243.25'	53,969.9 cf	**ACF R-Tank SD 8** x 3160 Inside #1 Inside= 15.7"W x 70.1"H => 7.28 sf x 2.35'L = 17.1 cf Outside= 15.7"W x 70.1"H => 7.66 sf x 2.35'L = 18.0 cf 3160 Chambers in 40 Rows
		62,982.6 cf	Total Available Storage

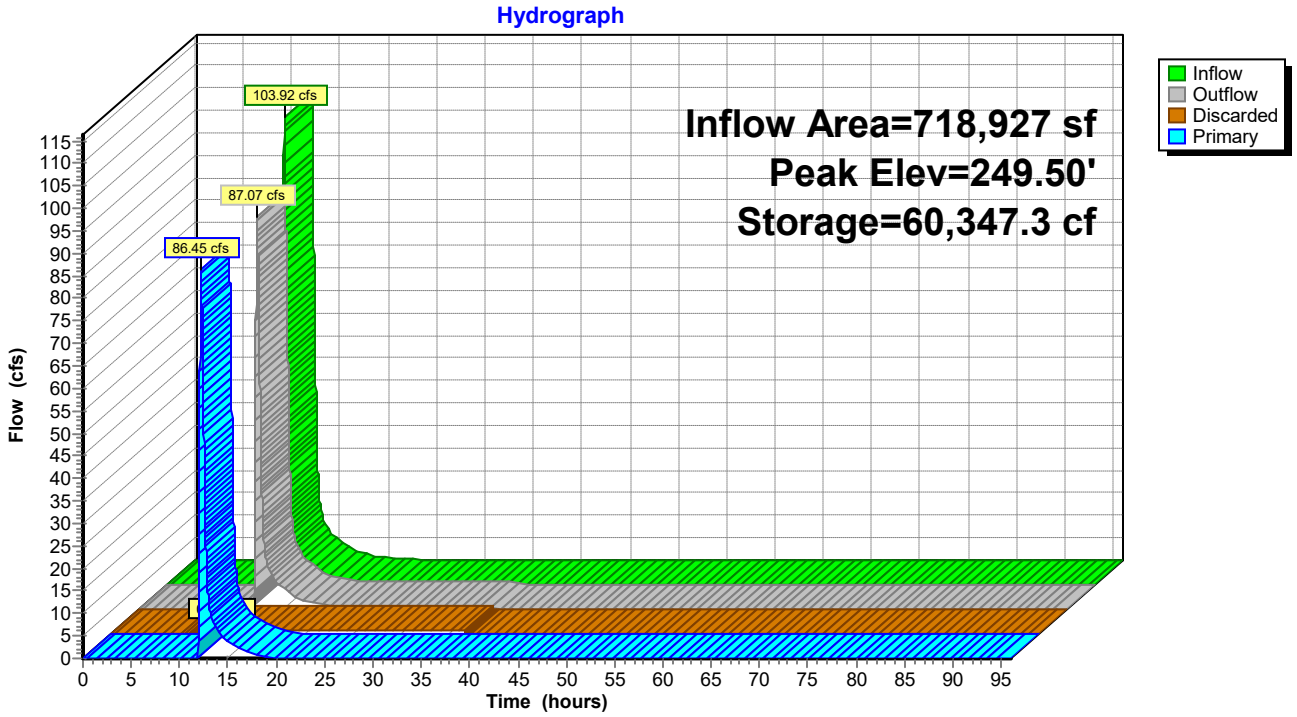
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	243.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.40'	**24.0" Round Culvert X 3.00** L= 50.0' Ke= 0.100 Inlet / Outlet Invert= 246.40' / 245.25' S= 0.0230 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

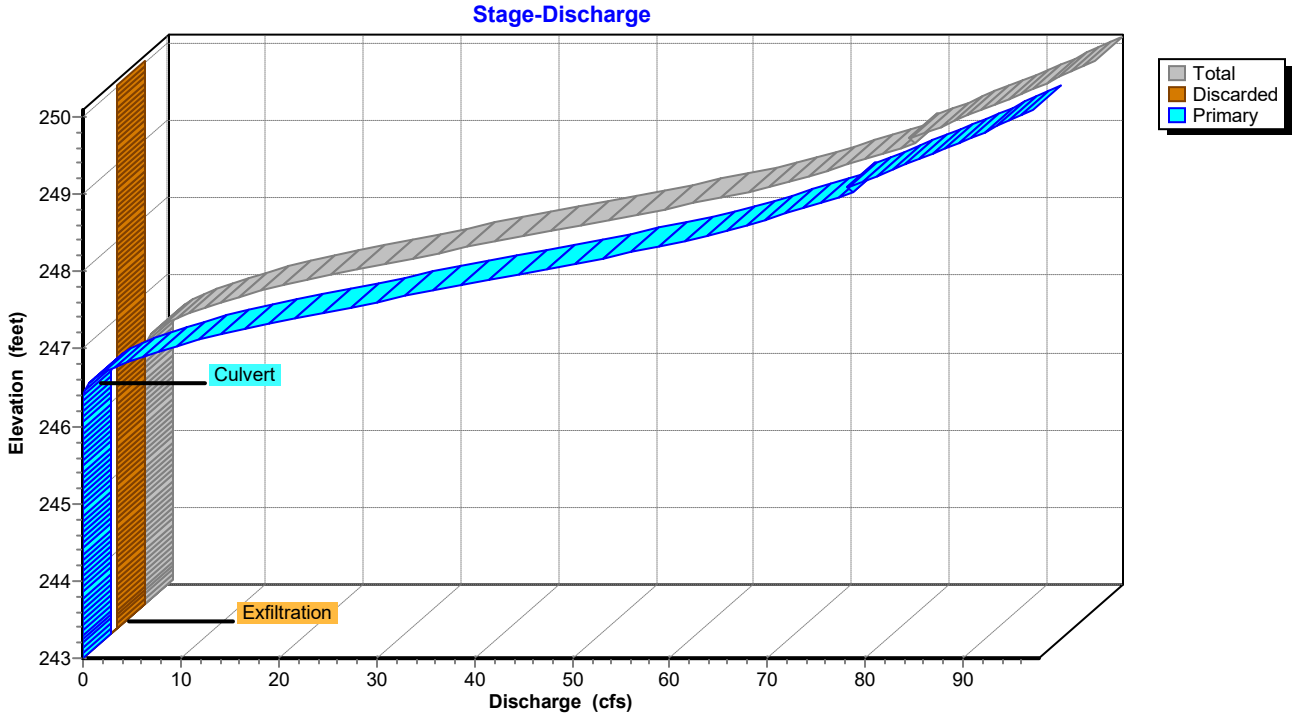
Discarded OutFlow Max=0.62 cfs @ 11.30 hrs HW=243.07' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.62 cfs)

Primary OutFlow Max=86.43 cfs @ 12.22 hrs HW=249.50' (Free Discharge)
↑**2=Culvert** (Barrel Controls 86.43 cfs @ 9.17 fps)

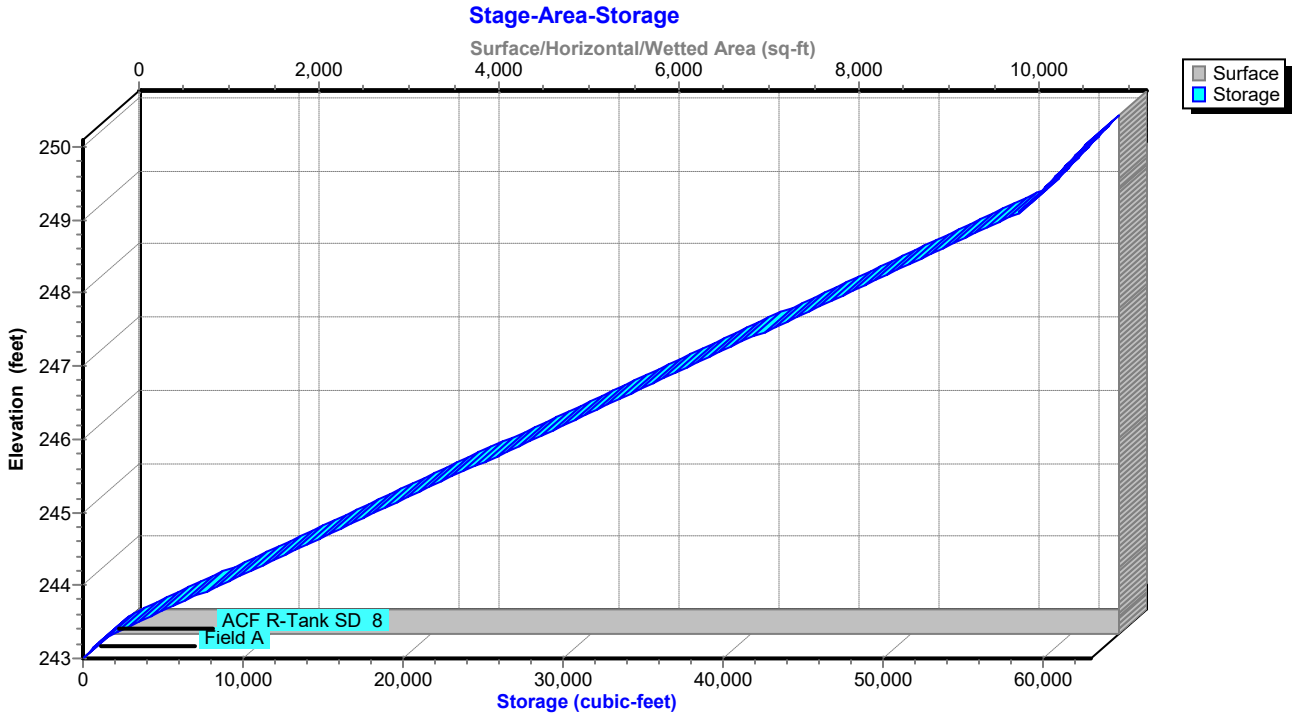
Pond SWM-4: Rtank-4



Pond SWM-4: Rtank-4



Pond SWM-4: Rtank-4



Hydrograph for Pond SWM-4: Rtank-4

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.00	0.00	0.00	0.00
2.00	0.00	0.0	243.00	0.00	0.00	0.00
4.00	0.00	0.0	243.00	0.00	0.00	0.00
6.00	0.00	0.0	243.00	0.00	0.00	0.00
8.00	0.02	8.2	243.00	0.02	0.02	0.00
10.00	0.12	55.4	243.01	0.11	**0.11**	0.00
12.00	**51.94**	**41,138.3**	**247.32**	**19.57**	**0.62**	**18.94**
14.00	**6.40**	**37,024.9**	**246.90**	**6.77**	0.62	**6.14**
16.00	2.84	35,147.8	246.71	3.10	0.62	2.47
18.00	1.20	33,742.9	246.57	1.39	0.62	0.77
20.00	0.63	32,727.6	246.47	0.75	0.62	0.12
22.00	0.33	31,358.5	246.33	0.62	0.62	0.00
24.00	0.12	28,372.8	246.02	0.62	0.62	0.00
26.00	0.00	23,978.4	245.58	0.62	0.62	0.00
28.00	0.00	19,483.4	245.12	0.62	0.62	0.00
30.00	0.00	14,988.4	244.66	0.62	0.62	0.00
32.00	0.00	10,493.4	244.20	0.62	0.62	0.00
34.00	0.00	5,998.4	243.75	0.62	0.62	0.00
36.00	0.00	1,503.4	243.29	0.62	0.62	0.00
38.00	0.00	0.0	243.00	0.00	0.00	0.00
40.00	0.00	0.0	243.00	0.00	0.00	0.00
42.00	0.00	0.0	243.00	0.00	0.00	0.00
44.00	0.00	0.0	243.00	0.00	0.00	0.00
46.00	0.00	0.0	243.00	0.00	0.00	0.00
48.00	0.00	0.0	243.00	0.00	0.00	0.00
50.00	0.00	0.0	243.00	0.00	0.00	0.00
52.00	0.00	0.0	243.00	0.00	0.00	0.00
54.00	0.00	0.0	243.00	0.00	0.00	0.00
56.00	0.00	0.0	243.00	0.00	0.00	0.00
58.00	0.00	0.0	243.00	0.00	0.00	0.00
60.00	0.00	0.0	243.00	0.00	0.00	0.00
62.00	0.00	0.0	243.00	0.00	0.00	0.00
64.00	0.00	0.0	243.00	0.00	0.00	0.00
66.00	0.00	0.0	243.00	0.00	0.00	0.00
68.00	0.00	0.0	243.00	0.00	0.00	0.00
70.00	0.00	0.0	243.00	0.00	0.00	0.00
72.00	0.00	0.0	243.00	0.00	0.00	0.00
74.00	0.00	0.0	243.00	0.00	0.00	0.00
76.00	0.00	0.0	243.00	0.00	0.00	0.00
78.00	0.00	0.0	243.00	0.00	0.00	0.00
80.00	0.00	0.0	243.00	0.00	0.00	0.00
82.00	0.00	0.0	243.00	0.00	0.00	0.00
84.00	0.00	0.0	243.00	0.00	0.00	0.00
86.00	0.00	0.0	243.00	0.00	0.00	0.00
88.00	0.00	0.0	243.00	0.00	0.00	0.00
90.00	0.00	0.0	243.00	0.00	0.00	0.00
92.00	0.00	0.0	243.00	0.00	0.00	0.00
94.00	0.00	0.0	243.00	0.00	0.00	0.00
96.00	0.00	0.0	243.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-4: Rtank-4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.00	**11,191**	0.0
243.10	11,191	447.6
243.20	11,191	895.3
243.30	11,191	1,610.4
243.40	11,191	2,593.1
243.50	11,191	3,575.8
243.60	11,191	4,558.4
243.70	11,191	5,541.1
243.80	11,191	6,523.8
243.90	11,191	7,506.5
244.00	11,191	8,489.1
244.10	11,191	9,471.8
244.20	11,191	10,454.5
244.30	11,191	11,437.2
244.40	11,191	12,419.8
244.50	11,191	13,402.5
244.60	11,191	14,385.2
244.70	11,191	15,367.9
244.80	11,191	16,350.5
244.90	11,191	17,333.2
245.00	11,191	18,315.9
245.10	11,191	19,298.6
245.20	11,191	20,281.2
245.30	11,191	21,263.9
245.40	11,191	22,246.6
245.50	11,191	23,229.3
245.60	11,191	24,211.9
245.70	11,191	25,194.6
245.80	11,191	26,177.3
245.90	11,191	27,159.9
246.00	11,191	28,142.6
246.10	11,191	29,125.3
246.20	11,191	30,108.0
246.30	11,191	31,090.6
246.40	11,191	32,073.3
246.50	11,191	33,056.0
246.60	11,191	34,038.7
246.70	11,191	35,021.3
246.80	11,191	36,004.0
246.90	11,191	36,986.7
247.00	11,191	37,969.4
247.10	11,191	38,952.0
247.20	11,191	39,934.7
247.30	11,191	40,917.4
247.40	11,191	41,900.1
247.50	11,191	42,882.7
247.60	11,191	43,865.4
247.70	11,191	44,848.1
247.80	11,191	45,830.8
247.90	11,191	46,813.4
248.00	11,191	47,796.1
248.10	11,191	48,778.8
248.20	11,191	49,761.4
248.30	11,191	50,744.1
248.40	11,191	51,726.8
248.50	11,191	52,709.5
248.60	11,191	53,692.1
248.70	11,191	54,674.8
248.80	11,191	55,657.5
248.90	11,191	56,640.2
249.00	11,191	57,622.8
249.10	11,191	58,551.5
249.20	11,191	58,999.1
249.30	11,191	59,446.7
249.40	11,191	59,894.4
249.50	11,191	60,342.0
249.60	11,191	60,789.6
249.70	11,191	61,237.3
249.80	11,191	61,684.9
249.90	11,191	62,132.5
250.00	11,191	**62,580.2**

Summary for Pond SWM-5: Rtank-5

Inflow Area = 759,708 sf, 78.80% Impervious, Inflow Depth = 3.98" for 100 yr event
Inflow = 90.21 cfs @ 12.22 hrs, Volume= 252,137.8 cf
Outflow = 89.67 cfs @ 12.24 hrs, Volume= 252,137.8 cf, Atten= 1%, Lag= 1.2 min
Discarded = 0.43 cfs @ 11.94 hrs, Volume= 19,957.5 cf
Primary = 89.24 cfs @ 12.24 hrs, Volume= 232,180.2 cf
Routed to Link POA D : FIRE POND

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 247.66' @ 12.24 hrs Surf.Area= 7,709 sf Storage= 16,988.6 cf

Plug-Flow detention time= 22.3 min calculated for 252,111.5 cf (100% of inflow)
Center-of-Mass det. time= 22.4 min (805.8 - 783.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	245.00'	5,740.0 cf	**63.74'W x 120.94'L x 5.65'H Field A** 43,529.3 cf Overall - 29,179.3 cf Embedded = 14,350.0 cf x 40.0% Voids
#2A	245.25'	27,720.3 cf	**ACF R-Tank SD 6** x 2156 Inside #1 Inside= 15.7"W x 52.8"H => 5.48 sf x 2.35'L = 12.9 cf Outside= 15.7"W x 52.8"H => 5.77 sf x 2.35'L = 13.5 cf 2156 Chambers in 44 Rows
		33,460.3 cf	Total Available Storage

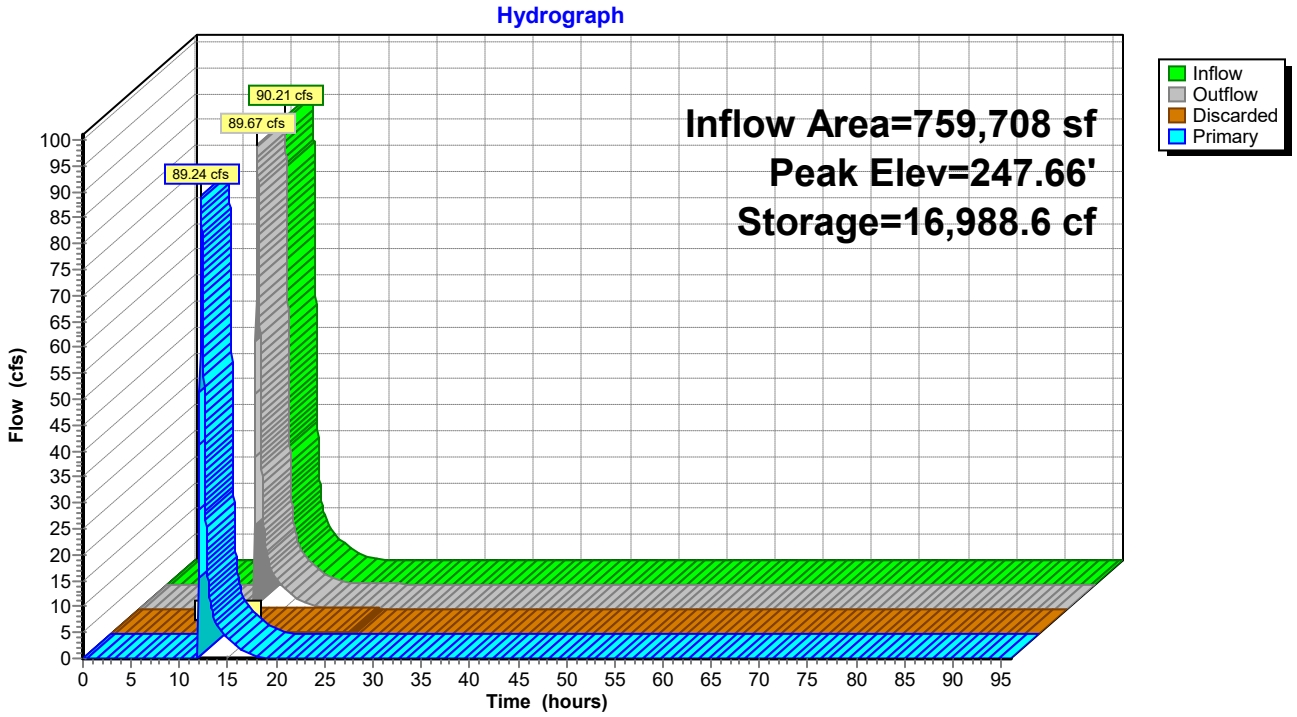
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	245.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.30'	**24.0" Vert. Orifice/Grate X 9.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	246.30'	**24.0" Round Culvert** L= 166.0' Ke= 0.100 Inlet / Outlet Invert= 246.30' / 245.40' S= 0.0054 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

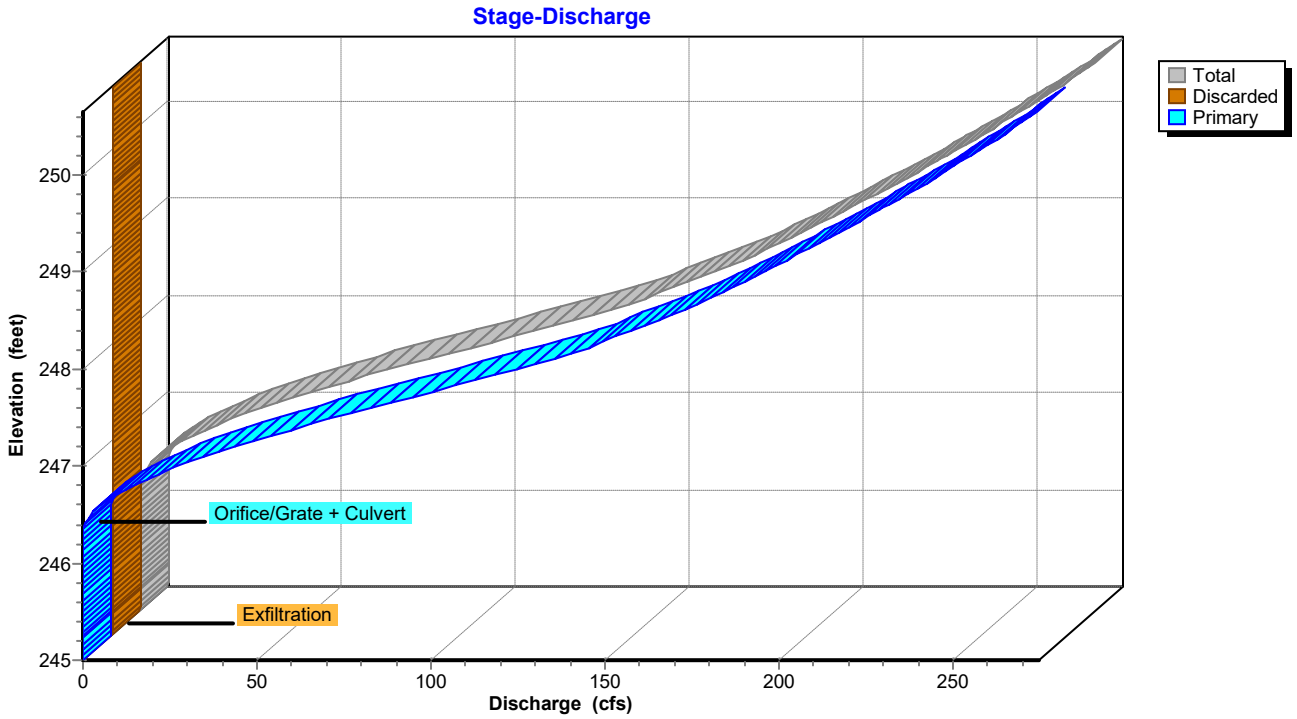
Discarded OutFlow Max=0.43 cfs @ 11.94 hrs HW=245.07' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.43 cfs)

Primary OutFlow Max=89.22 cfs @ 12.24 hrs HW=247.66' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 81.10 cfs @ 3.97 fps)
└**3=Culvert** (Barrel Controls 8.11 cfs @ 5.04 fps)

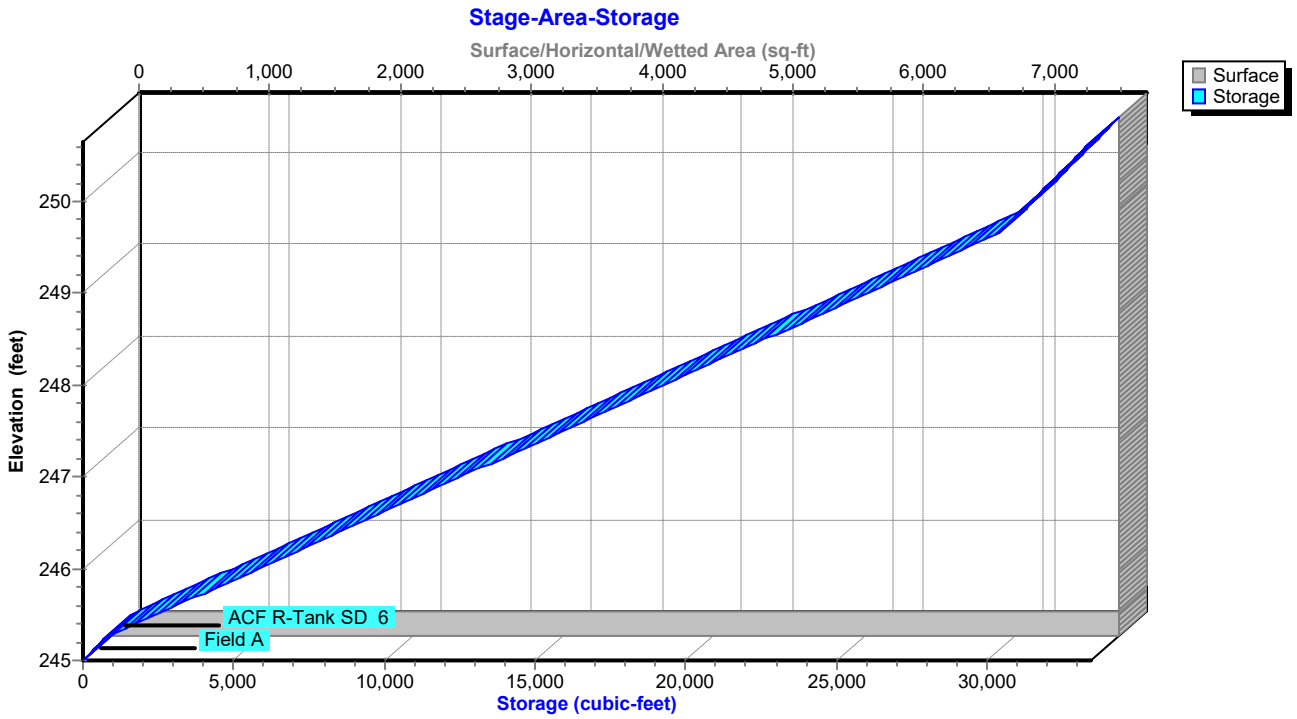
Pond SWM-5: Rtank-5



Pond SWM-5: Rtank-5



Pond SWM-5: Rtank-5



Hydrograph for Pond SWM-5: Rtank-5

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	245.00	0.00	0.00	0.00
2.00	0.00	0.0	245.00	0.00	0.00	0.00
4.00	0.00	0.0	245.00	0.00	0.00	0.00
6.00	0.00	0.0	245.00	0.00	0.00	0.00
8.00	0.00	0.0	245.00	0.00	0.00	0.00
10.00	0.00	0.0	245.00	0.00	**0.00**	0.00
12.00	**21.47**	**2,236.1**	**245.47**	**0.43**	**0.43**	**0.00**
14.00	**6.33**	**9,980.6**	**246.62**	**6.51**	0.43	**6.08**
16.00	2.49	9,104.7	246.49	2.61	0.43	2.18
18.00	0.77	8,385.7	246.38	0.88	0.43	0.45
20.00	0.12	7,154.5	246.20	0.43	0.43	0.00
22.00	0.00	4,316.3	245.78	0.43	0.43	0.00
24.00	0.00	1,219.8	245.32	0.43	0.43	0.00
26.00	0.00	0.0	245.00	0.00	0.00	0.00
28.00	0.00	0.0	245.00	0.00	0.00	0.00
30.00	0.00	0.0	245.00	0.00	0.00	0.00
32.00	0.00	0.0	245.00	0.00	0.00	0.00
34.00	0.00	0.0	245.00	0.00	0.00	0.00
36.00	0.00	0.0	245.00	0.00	0.00	0.00
38.00	0.00	0.0	245.00	0.00	0.00	0.00
40.00	0.00	0.0	245.00	0.00	0.00	0.00
42.00	0.00	0.0	245.00	0.00	0.00	0.00
44.00	0.00	0.0	245.00	0.00	0.00	0.00
46.00	0.00	0.0	245.00	0.00	0.00	0.00
48.00	0.00	0.0	245.00	0.00	0.00	0.00
50.00	0.00	0.0	245.00	0.00	0.00	0.00
52.00	0.00	0.0	245.00	0.00	0.00	0.00
54.00	0.00	0.0	245.00	0.00	0.00	0.00
56.00	0.00	0.0	245.00	0.00	0.00	0.00
58.00	0.00	0.0	245.00	0.00	0.00	0.00
60.00	0.00	0.0	245.00	0.00	0.00	0.00
62.00	0.00	0.0	245.00	0.00	0.00	0.00
64.00	0.00	0.0	245.00	0.00	0.00	0.00
66.00	0.00	0.0	245.00	0.00	0.00	0.00
68.00	0.00	0.0	245.00	0.00	0.00	0.00
70.00	0.00	0.0	245.00	0.00	0.00	0.00
72.00	0.00	0.0	245.00	0.00	0.00	0.00
74.00	0.00	0.0	245.00	0.00	0.00	0.00
76.00	0.00	0.0	245.00	0.00	0.00	0.00
78.00	0.00	0.0	245.00	0.00	0.00	0.00
80.00	0.00	0.0	245.00	0.00	0.00	0.00
82.00	0.00	0.0	245.00	0.00	0.00	0.00
84.00	0.00	0.0	245.00	0.00	0.00	0.00
86.00	0.00	0.0	245.00	0.00	0.00	0.00
88.00	0.00	0.0	245.00	0.00	0.00	0.00
90.00	0.00	0.0	245.00	0.00	0.00	0.00
92.00	0.00	0.0	245.00	0.00	0.00	0.00
94.00	0.00	0.0	245.00	0.00	0.00	0.00
96.00	0.00	0.0	245.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-5: Rtank-5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
245.00	**7,709**	0.0
245.10	7,709	308.4
245.20	7,709	616.7
245.30	7,709	1,107.6
245.40	7,709	1,781.1
245.50	7,709	2,454.5
245.60	7,709	3,127.9
245.70	7,709	3,801.3
245.80	7,709	4,474.7
245.90	7,709	5,148.2
246.00	7,709	5,821.6
246.10	7,709	6,495.0
246.20	7,709	7,168.4
246.30	7,709	7,841.8
246.40	7,709	8,515.2
246.50	7,709	9,188.7
246.60	7,709	9,862.1
246.70	7,709	10,535.5
246.80	7,709	11,208.9
246.90	7,709	11,882.3
247.00	7,709	12,555.8
247.10	7,709	13,229.2
247.20	7,709	13,902.6
247.30	7,709	14,576.0
247.40	7,709	15,249.4
247.50	7,709	15,922.9
247.60	7,709	16,596.3
247.70	7,709	17,269.7
247.80	7,709	17,943.1
247.90	7,709	18,616.5
248.00	7,709	19,289.9
248.10	7,709	19,963.4
248.20	7,709	20,636.8
248.30	7,709	21,310.2
248.40	7,709	21,983.6
248.50	7,709	22,657.0
248.60	7,709	23,330.5
248.70	7,709	24,003.9
248.80	7,709	24,677.3
248.90	7,709	25,350.7
249.00	7,709	26,024.1
249.10	7,709	26,697.6
249.20	7,709	27,371.0
249.30	7,709	28,044.4
249.40	7,709	28,717.8
249.50	7,709	29,391.2
249.60	7,709	30,064.7
249.70	7,709	30,542.1
249.80	7,709	30,850.5
249.90	7,709	31,158.9
250.00	7,709	31,467.3
250.10	7,709	31,775.6
250.20	7,709	32,084.0
250.30	7,709	32,392.4
250.40	7,709	32,700.7
250.50	7,709	33,009.1
250.60	7,709	**33,317.5**

Summary for Pond SWM-6: Rtank-6

Inflow Area = 108,531 sf,100.00% Impervious, Inflow Depth = 8.56" for 100 yr event
Inflow = 22.31 cfs @ 12.07 hrs, Volume= 77,416.5 cf
Outflow = 23.10 cfs @ 12.06 hrs, Volume= 77,416.5 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.10 cfs @ 1.50 hrs, Volume= 10,639.5 cf
Primary = 23.00 cfs @ 12.06 hrs, Volume= 66,777.0 cf
Routed to Link POA D : FIRE POND

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 267.70' @ 12.06 hrs Surf.Area= 1,732 sf Storage= 4,936.9 cf

Plug-Flow detention time= 51.4 min calculated for 77,408.4 cf (100% of inflow)
Center-of-Mass det. time= 51.4 min (790.6 - 739.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	256.00'	1,439.5 cf	**15.81'W x 109.56'L x 4.20'H Field A** 7,280.3 cf Overall - 3,681.4 cf Embedded = 3,598.9 cf x 40.0% Voids
#2A	256.25'	3,497.4 cf	**ACF R-Tank SD 4** x 405 Inside #1 Inside= 15.7"W x 35.4"H => 3.68 sf x 2.35'L = 8.6 cf Outside= 15.7"W x 35.4"H => 3.88 sf x 2.35'L = 9.1 cf 405 Chambers in 9 Rows
		4,936.9 cf	Total Available Storage

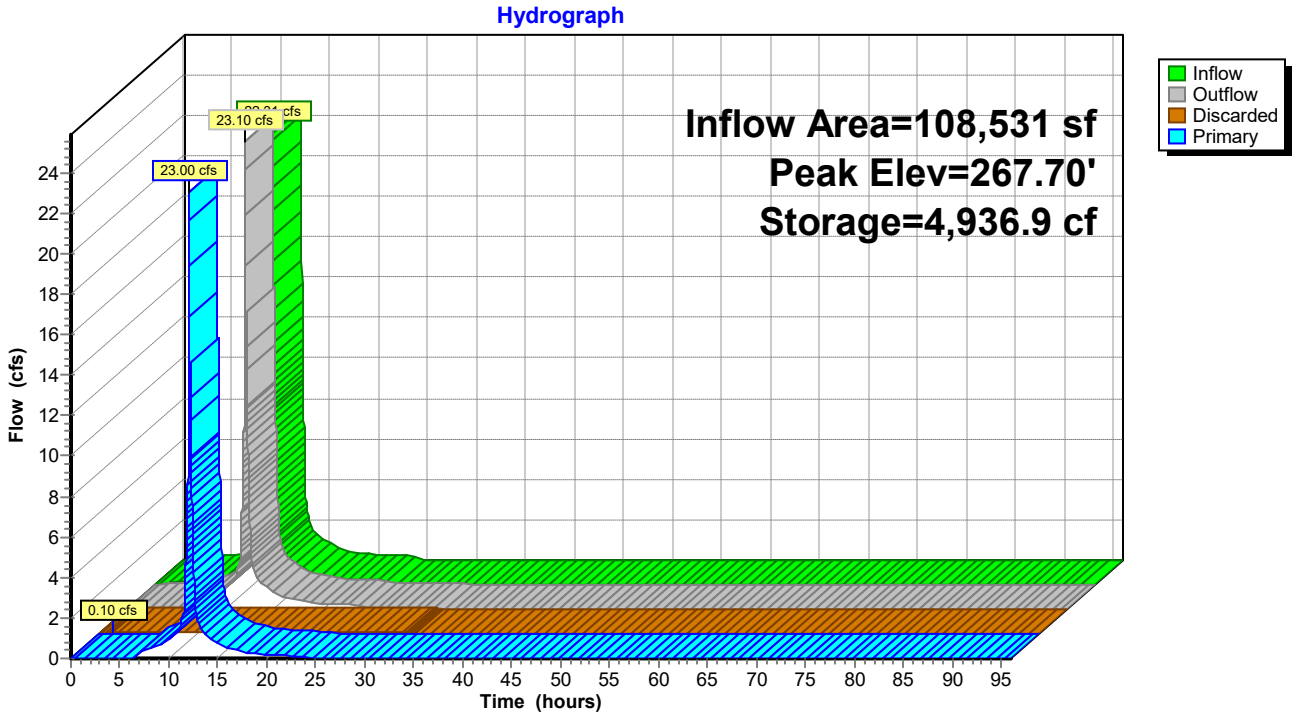
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	256.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	257.95'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	257.95'	**12.0" Vert. outlet** C= 0.600 Limited to weir flow at low heads

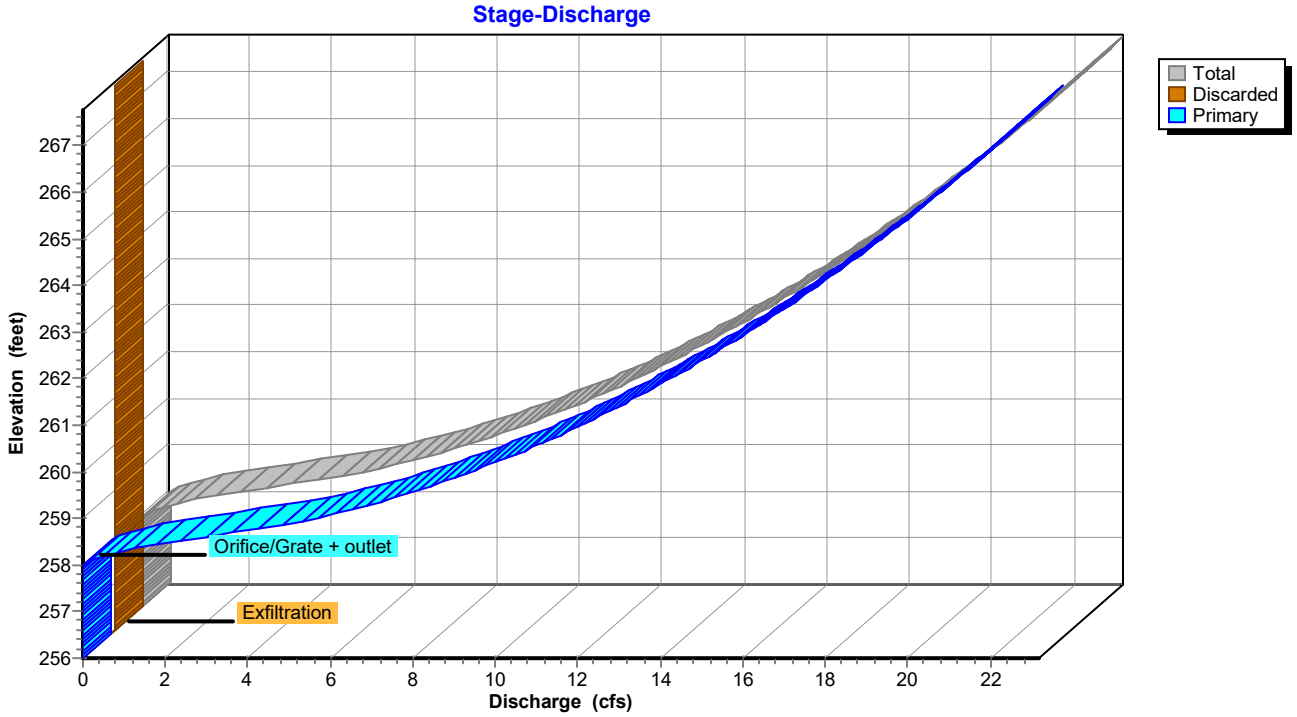
Discarded OutFlow Max=0.10 cfs @ 1.50 hrs HW=256.08' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=23.00 cfs @ 12.06 hrs HW=267.70' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 11.50 cfs @ 14.64 fps)
└**3=outlet** (Orifice Controls 11.50 cfs @ 14.64 fps)

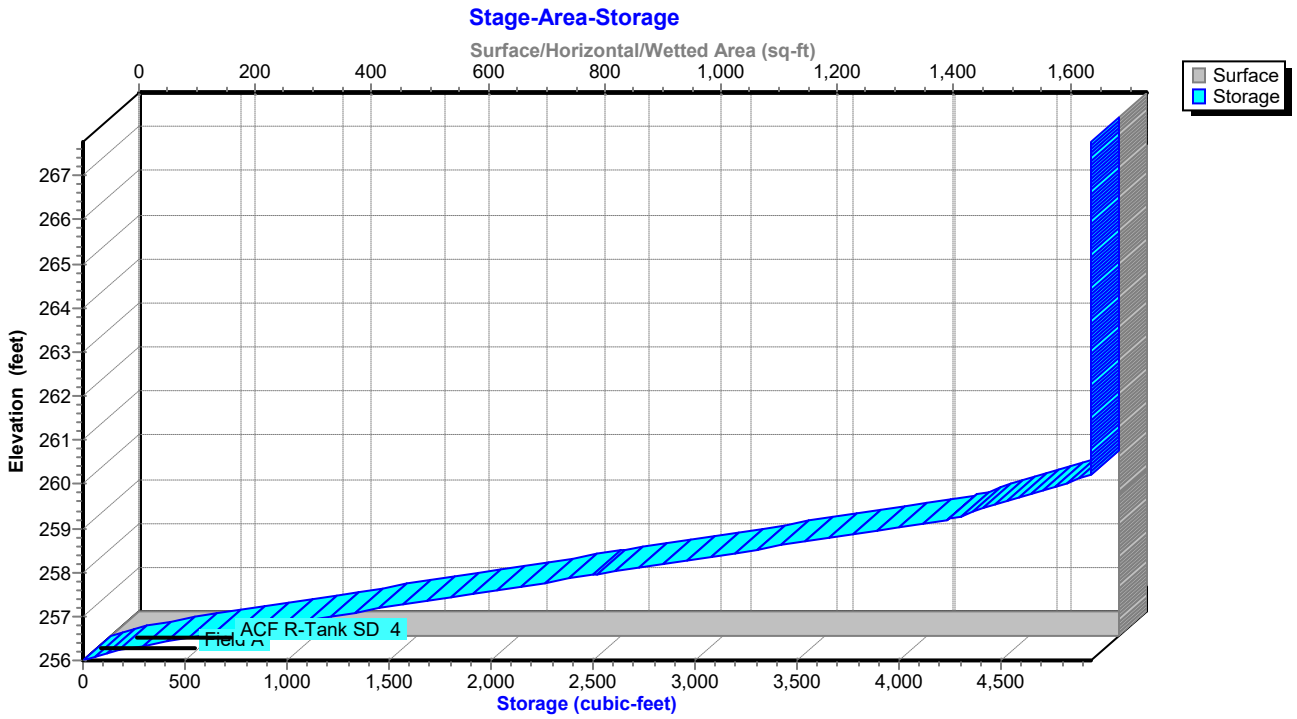
Pond SWM-6: Rtank-6



Pond SWM-6: Rtank-6



Pond SWM-6: Rtank-6



Hydrograph for Pond SWM-6: Rtank-6

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	256.00	0.00	**0.00**	0.00
2.00	0.14	109.6	256.16	0.10	**0.10**	0.00
4.00	0.24	800.1	256.70	0.10	0.10	0.00
6.00	0.33	2,166.3	257.70	0.10	0.10	0.00
8.00	0.55	2,829.4	258.18	0.53	0.10	0.44
10.00	1.05	**2,983.7**	258.29	1.03	0.10	0.93
12.00	**15.09**	**4,936.9**	**262.92**	**16.08**	0.10	**15.99**
14.00	**1.12**	3,017.0	**258.31**	**1.16**	0.10	**1.06**
16.00	0.59	2,858.5	258.20	0.62	0.10	0.52
18.00	0.36	2,760.4	258.13	0.38	0.10	0.28
20.00	0.29	2,725.1	258.10	0.29	0.10	0.20
22.00	0.24	2,688.6	258.07	0.24	0.10	0.15
24.00	0.19	2,652.2	258.05	0.19	0.10	0.10
26.00	0.00	1,951.0	257.54	0.10	0.10	0.00
28.00	0.00	1,255.2	257.03	0.10	0.10	0.00
30.00	0.00	559.4	256.53	0.10	0.10	0.00
32.00	0.00	2.1	256.00	0.00	0.00	0.00
34.00	0.00	0.0	256.00	0.00	0.00	0.00
36.00	0.00	0.0	256.00	0.00	0.00	0.00
38.00	0.00	0.0	256.00	0.00	0.00	0.00
40.00	0.00	0.0	256.00	0.00	0.00	0.00
42.00	0.00	0.0	256.00	0.00	0.00	0.00
44.00	0.00	0.0	256.00	0.00	0.00	0.00
46.00	0.00	0.0	256.00	0.00	0.00	0.00
48.00	0.00	0.0	256.00	0.00	0.00	0.00
50.00	0.00	0.0	256.00	0.00	0.00	0.00
52.00	0.00	0.0	256.00	0.00	0.00	0.00
54.00	0.00	0.0	256.00	0.00	0.00	0.00
56.00	0.00	0.0	256.00	0.00	0.00	0.00
58.00	0.00	0.0	256.00	0.00	0.00	0.00
60.00	0.00	0.0	256.00	0.00	0.00	0.00
62.00	0.00	0.0	256.00	0.00	0.00	0.00
64.00	0.00	0.0	256.00	0.00	0.00	0.00
66.00	0.00	0.0	256.00	0.00	0.00	0.00
68.00	0.00	0.0	256.00	0.00	0.00	0.00
70.00	0.00	0.0	256.00	0.00	0.00	0.00
72.00	0.00	0.0	256.00	0.00	0.00	0.00
74.00	0.00	0.0	256.00	0.00	0.00	0.00
76.00	0.00	0.0	256.00	0.00	0.00	0.00
78.00	0.00	0.0	256.00	0.00	0.00	0.00
80.00	0.00	0.0	256.00	0.00	0.00	0.00
82.00	0.00	0.0	256.00	0.00	0.00	0.00
84.00	0.00	0.0	256.00	0.00	0.00	0.00
86.00	0.00	0.0	256.00	0.00	0.00	0.00
88.00	0.00	0.0	256.00	0.00	0.00	0.00
90.00	0.00	0.0	256.00	0.00	0.00	0.00
92.00	0.00	0.0	256.00	0.00	0.00	0.00
94.00	0.00	0.0	256.00	0.00	0.00	0.00
96.00	0.00	0.0	256.00	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-6: Rtank-6

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
256.00	**1,732**	0.0
256.20	1,732	138.6
256.40	1,732	380.0
256.60	1,732	655.8
256.80	1,732	931.5
257.00	1,732	1,207.2
257.20	1,732	1,482.9
257.40	1,732	1,758.7
257.60	1,732	2,034.4
257.80	1,732	2,310.1
258.00	1,732	2,585.8
258.20	1,732	2,861.6
258.40	1,732	3,137.3
258.60	1,732	3,413.0
258.80	1,732	3,688.8
259.00	1,732	3,964.5
259.20	1,732	4,240.2
259.40	1,732	4,380.7
259.60	1,732	4,519.3
259.80	1,732	4,657.8
260.00	1,732	4,796.4
260.20	1,732	**4,935.0**
260.40	1,732	**4,936.9**
260.60	1,732	4,936.9
260.80	1,732	4,936.9
261.00	1,732	4,936.9
261.20	1,732	4,936.9
261.40	1,732	4,936.9
261.60	1,732	4,936.9
261.80	1,732	4,936.9
262.00	1,732	4,936.9
262.20	1,732	4,936.9
262.40	1,732	4,936.9
262.60	1,732	4,936.9
262.80	1,732	4,936.9
263.00	1,732	4,936.9
263.20	1,732	4,936.9
263.40	1,732	4,936.9
263.60	1,732	4,936.9
263.80	1,732	4,936.9
264.00	1,732	4,936.9
264.20	1,732	4,936.9
264.40	1,732	4,936.9
264.60	1,732	4,936.9
264.80	1,732	4,936.9
265.00	1,732	4,936.9
265.20	1,732	4,936.9
265.40	1,732	4,936.9
265.60	1,732	4,936.9
265.80	1,732	4,936.9
266.00	1,732	4,936.9
266.20	1,732	4,936.9
266.40	1,732	4,936.9
266.60	1,732	4,936.9
266.80	1,732	4,936.9
267.00	1,732	4,936.9
267.20	1,732	4,936.9
267.40	1,732	4,936.9
267.60	1,732	4,936.9

Summary for Pond SWM-7: Rtank-7

Inflow Area = 214,605 sf, 84.39% Impervious, Inflow Depth = 7.47" for 100 yr event
Inflow = 38.89 cfs @ 12.10 hrs, Volume= 133,643.6 cf
Outflow = 34.39 cfs @ 12.14 hrs, Volume= 133,643.6 cf, Atten= 12%, Lag= 2.7 min
Discarded = 0.15 cfs @ 4.75 hrs, Volume= 17,695.3 cf
Primary = 34.24 cfs @ 12.14 hrs, Volume= 115,948.3 cf
Routed to Pond SWM-1 : Rtank-1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 249.87' @ 12.14 hrs Surf.Area= 2,655 sf Storage= 14,320.1 cf

Plug-Flow detention time= 75.1 min calculated for 133,629.7 cf (100% of inflow)
Center-of-Mass det. time= 75.2 min (852.4 - 777.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	243.50'	2,406.6 cf	**39.43'W x 67.34'L x 7.81'H Field A** 20,742.3 cf Overall - 14,725.8 cf Embedded = 6,016.5 cf x 40.0% Voids
#2A	243.75'	13,989.5 cf	**ACF R-Tank SD 9** x 729 Inside #1 Inside= 15.7"W x 78.7"H => 8.18 sf x 2.35'L = 19.2 cf Outside= 15.7"W x 78.7"H => 8.61 sf x 2.35'L = 20.2 cf 729 Chambers in 27 Rows
		16,396.1 cf	Total Available Storage

Storage Group A created with Chamber Wizard

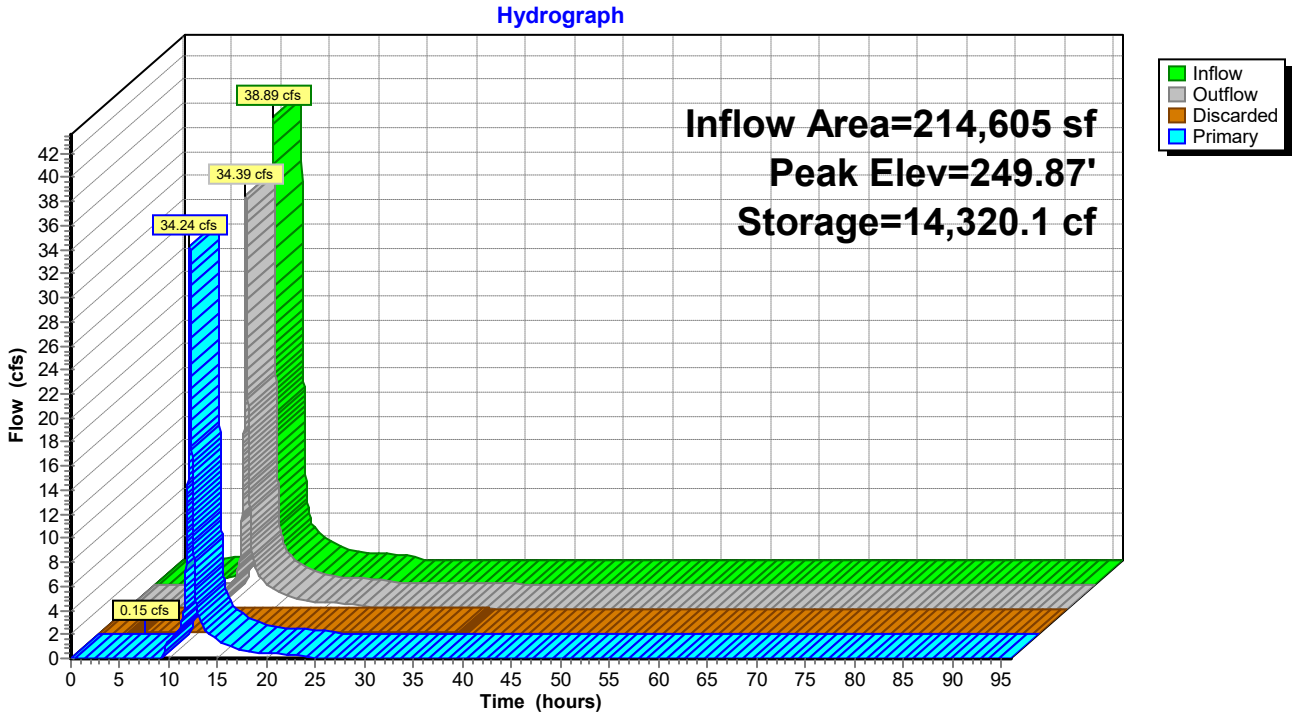
Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	246.50'	**18.0" Round Culvert X 2.00** L= 10.0' Ke= 0.100 Inlet / Outlet Invert= 246.50' / 246.50' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Discarded OutFlow Max=0.15 cfs @ 4.75 hrs HW=243.58' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.15 cfs)

Primary OutFlow Max=34.22 cfs @ 12.14 hrs HW=249.87' (Free Discharge)
↑—**2=Culvert** (Barrel Controls 34.22 cfs @ 9.68 fps)

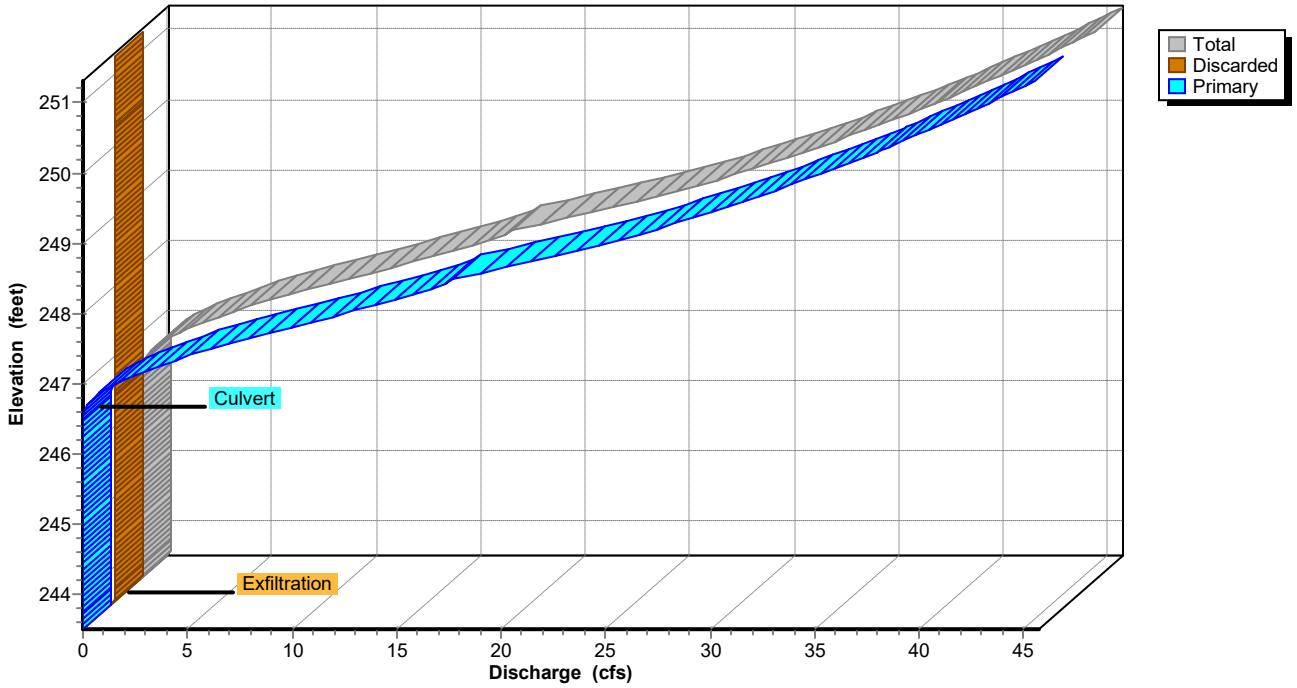
Pond SWM-7: Rtank-7

Hydrograph

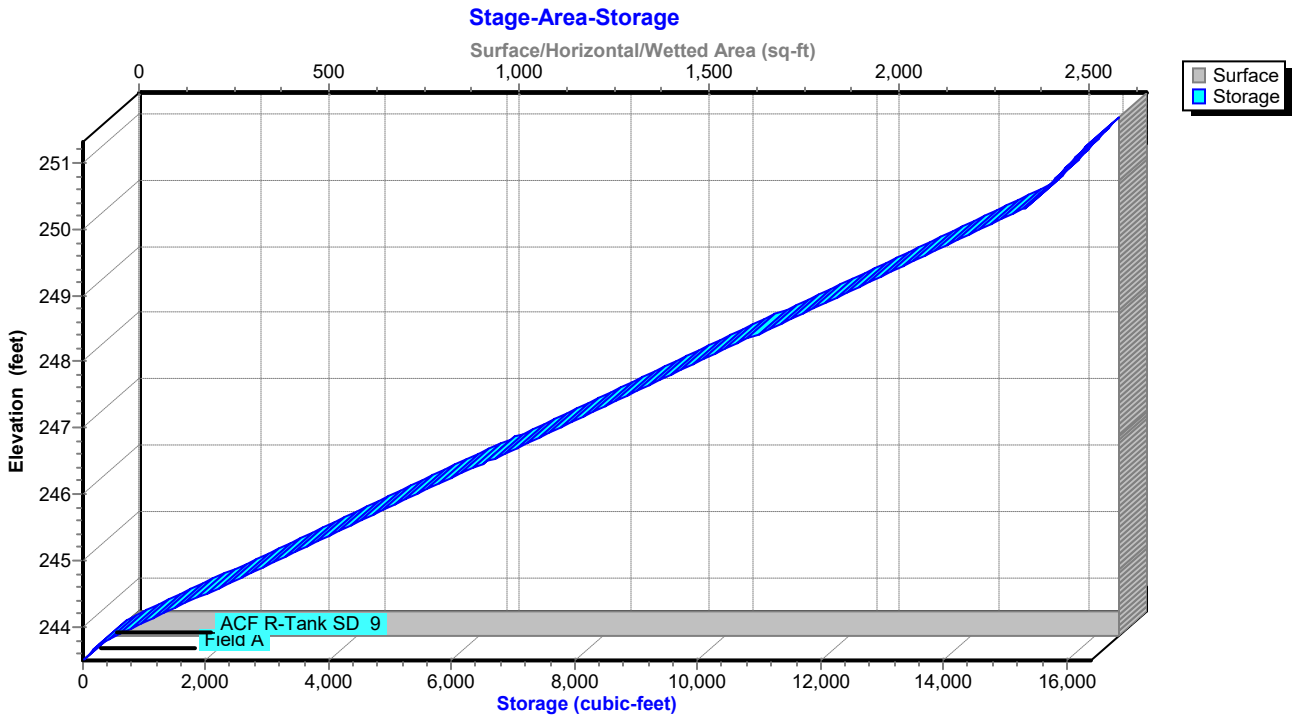


Pond SWM-7: Rtank-7

Stage-Discharge



Pond SWM-7: Rtank-7



Hydrograph for Pond SWM-7: Rtank-7

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.0	243.50	0.00	0.00	0.00
2.00	0.00	0.0	243.50	0.00	0.00	0.00
4.00	0.09	45.1	243.54	0.08	**0.08**	0.00
6.00	0.28	416.7	243.82	0.15	**0.15**	0.00
8.00	0.67	2,679.0	244.80	0.15	0.15	0.00
10.00	1.62	7,649.6	246.97	1.55	0.15	1.40
12.00	**22.68**	**11,036.4**	**248.44**	**17.56**	0.15	**17.41**
14.00	**2.20**	**7,897.9**	**247.07**	**2.29**	0.15	**2.14**
16.00	1.17	7,522.1	246.91	1.23	0.15	1.08
18.00	0.71	7,290.8	246.81	0.74	0.15	0.59
20.00	0.57	7,194.3	246.77	0.58	0.15	0.43
22.00	0.47	7,120.4	246.74	0.48	0.15	0.33
24.00	0.37	7,049.9	246.70	0.38	0.15	0.23
26.00	0.00	5,914.0	246.21	0.15	0.15	0.00
28.00	0.00	4,847.5	245.75	0.15	0.15	0.00
30.00	0.00	3,781.0	245.28	0.15	0.15	0.00
32.00	0.00	2,714.4	244.82	0.15	0.15	0.00
34.00	0.00	1,647.9	244.35	0.15	0.15	0.00
36.00	0.00	581.3	243.89	0.15	0.15	0.00
38.00	0.00	0.1	243.50	0.00	0.00	0.00
40.00	0.00	0.0	243.50	0.00	0.00	0.00
42.00	0.00	0.0	243.50	0.00	0.00	0.00
44.00	0.00	0.0	243.50	0.00	0.00	0.00
46.00	0.00	0.0	243.50	0.00	0.00	0.00
48.00	0.00	0.0	243.50	0.00	0.00	0.00
50.00	0.00	0.0	243.50	0.00	0.00	0.00
52.00	0.00	0.0	243.50	0.00	0.00	0.00
54.00	0.00	0.0	243.50	0.00	0.00	0.00
56.00	0.00	0.0	243.50	0.00	0.00	0.00
58.00	0.00	0.0	243.50	0.00	0.00	0.00
60.00	0.00	0.0	243.50	0.00	0.00	0.00
62.00	0.00	0.0	243.50	0.00	0.00	0.00
64.00	0.00	0.0	243.50	0.00	0.00	0.00
66.00	0.00	0.0	243.50	0.00	0.00	0.00
68.00	0.00	0.0	243.50	0.00	0.00	0.00
70.00	0.00	0.0	243.50	0.00	0.00	0.00
72.00	0.00	0.0	243.50	0.00	0.00	0.00
74.00	0.00	0.0	243.50	0.00	0.00	0.00
76.00	0.00	0.0	243.50	0.00	0.00	0.00
78.00	0.00	0.0	243.50	0.00	0.00	0.00
80.00	0.00	0.0	243.50	0.00	0.00	0.00
82.00	0.00	0.0	243.50	0.00	0.00	0.00
84.00	0.00	0.0	243.50	0.00	0.00	0.00
86.00	0.00	0.0	243.50	0.00	0.00	0.00
88.00	0.00	0.0	243.50	0.00	0.00	0.00
90.00	0.00	0.0	243.50	0.00	0.00	0.00
92.00	0.00	0.0	243.50	0.00	0.00	0.00
94.00	0.00	0.0	243.50	0.00	0.00	0.00
96.00	0.00	0.0	243.50	0.00	0.00	0.00

Stage-Area-Storage for Pond SWM-7: Rtank-7

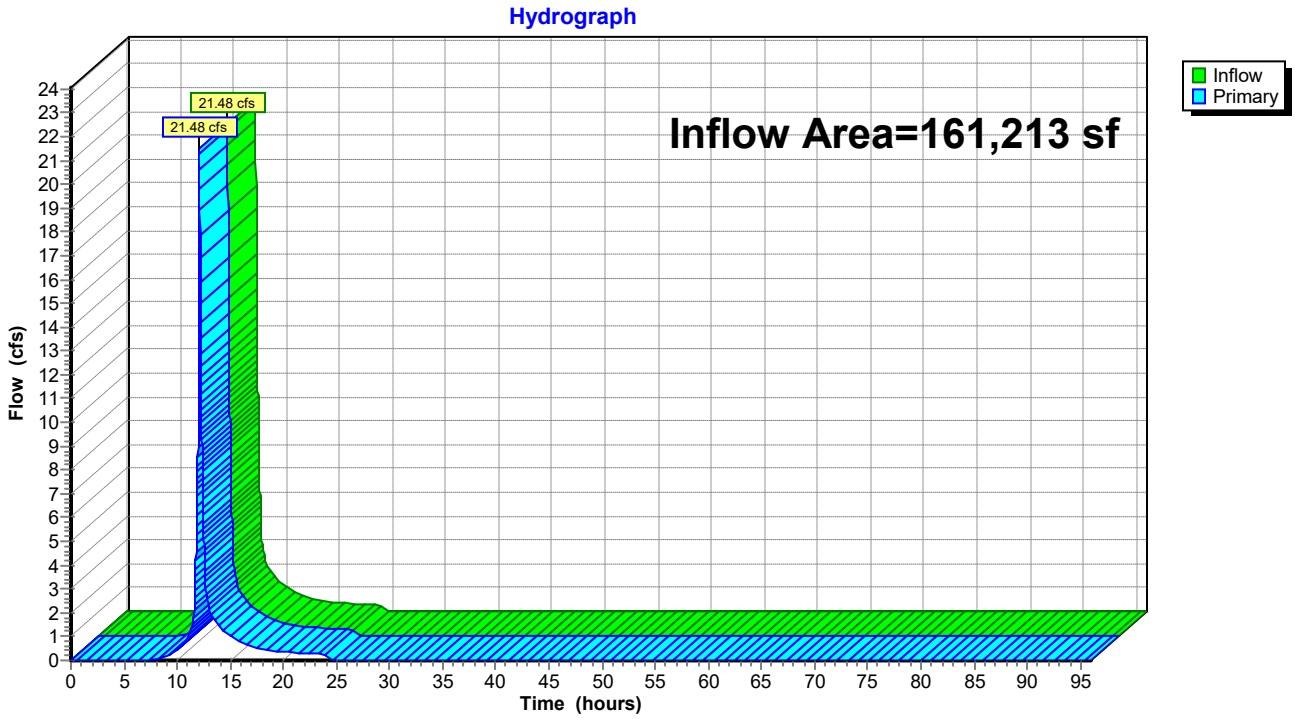
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
243.50	**2,655**	0.0
243.60	2,655	106.2
243.70	2,655	212.4
243.80	2,655	380.4
243.90	2,655	610.0
244.00	2,655	839.6
244.10	2,655	1,069.3
244.20	2,655	1,298.9
244.30	2,655	1,528.6
244.40	2,655	1,758.2
244.50	2,655	1,987.9
244.60	2,655	2,217.5
244.70	2,655	2,447.1
244.80	2,655	2,676.8
244.90	2,655	2,906.4
245.00	2,655	3,136.1
245.10	2,655	3,365.7
245.20	2,655	3,595.4
245.30	2,655	3,825.0
245.40	2,655	4,054.6
245.50	2,655	4,284.3
245.60	2,655	4,513.9
245.70	2,655	4,743.6
245.80	2,655	4,973.2
245.90	2,655	5,202.9
246.00	2,655	5,432.5
246.10	2,655	5,662.1
246.20	2,655	5,891.8
246.30	2,655	6,121.4
246.40	2,655	6,351.1
246.50	2,655	6,580.7
246.60	2,655	6,810.4
246.70	2,655	7,040.0
246.80	2,655	7,269.6
246.90	2,655	7,499.3
247.00	2,655	7,728.9
247.10	2,655	7,958.6
247.20	2,655	8,188.2
247.30	2,655	8,417.9
247.40	2,655	8,647.5
247.50	2,655	8,877.1
247.60	2,655	9,106.8
247.70	2,655	9,336.4
247.80	2,655	9,566.1
247.90	2,655	9,795.7
248.00	2,655	10,025.4
248.10	2,655	10,255.0
248.20	2,655	10,484.7
248.30	2,655	10,714.3
248.40	2,655	10,943.9
248.50	2,655	11,173.6
248.60	2,655	11,403.2
248.70	2,655	11,632.9
248.80	2,655	11,862.5
248.90	2,655	12,092.2
249.00	2,655	12,321.8
249.10	2,655	12,551.4
249.20	2,655	12,781.1
249.30	2,655	13,010.7
249.40	2,655	13,240.4
249.50	2,655	13,470.0
249.60	2,655	13,699.7
249.70	2,655	13,929.3
249.80	2,655	14,158.9
249.90	2,655	14,388.6
250.00	2,655	14,618.2
250.10	2,655	14,847.9
250.20	2,655	15,077.5
250.30	2,655	15,307.2
250.40	2,655	15,427.8
250.50	2,655	15,534.0
250.60	2,655	15,640.2
250.70	2,655	15,746.4
250.80	2,655	15,852.6
250.90	2,655	15,958.8
251.00	2,655	16,065.1
251.10	2,655	16,171.3
251.20	2,655	16,277.5
251.30	2,655	**16,383.7**

Summary for Link POA A: POND- WEST

Inflow Area = 161,213 sf, 51.37% Impervious, Inflow Depth = 5.04" for 100 yr event
Inflow = 21.48 cfs @ 12.10 hrs, Volume= 67,672.7 cf
Primary = 21.48 cfs @ 12.10 hrs, Volume= 67,672.7 cf, Atten= 0%, Lag= 0.0 min

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

Link POA A: POND- WEST



Hydrograph for Link POA A: POND- WEST

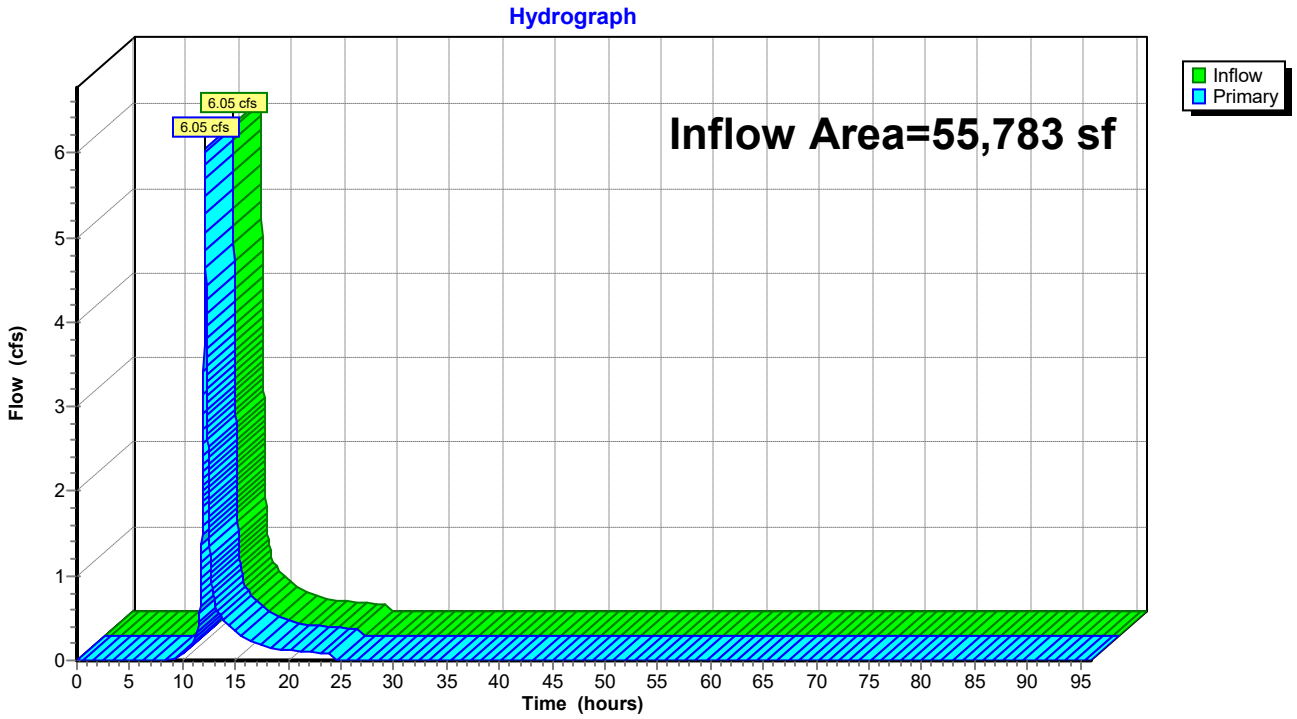
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.03	0.00	0.03	60.00	0.00	0.00	0.00
9.00	0.17	0.00	0.17	61.00	0.00	0.00	0.00
10.00	0.41	0.00	0.41	62.00	0.00	0.00	0.00
11.00	0.89	0.00	0.89	63.00	0.00	0.00	0.00
12.00	**12.05**	0.00	**12.05**	64.00	0.00	0.00	0.00
13.00	**2.17**	0.00	**2.17**	65.00	0.00	0.00	0.00
14.00	1.39	0.00	1.39	66.00	0.00	0.00	0.00
15.00	1.06	0.00	1.06	67.00	0.00	0.00	0.00
16.00	0.75	0.00	0.75	68.00	0.00	0.00	0.00
17.00	0.60	0.00	0.60	69.00	0.00	0.00	0.00
18.00	0.46	0.00	0.46	70.00	0.00	0.00	0.00
19.00	0.41	0.00	0.41	71.00	0.00	0.00	0.00
20.00	0.37	0.00	0.37	72.00	0.00	0.00	0.00
21.00	0.34	0.00	0.34	73.00	0.00	0.00	0.00
22.00	0.31	0.00	0.31	74.00	0.00	0.00	0.00
23.00	0.28	0.00	0.28	75.00	0.00	0.00	0.00
24.00	0.25	0.00	0.25	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA C: WETLAND-WEST

Inflow Area = 55,783 sf, 42.91% Impervious, Inflow Depth = 4.43" for 100 yr event
Inflow = 6.05 cfs @ 12.13 hrs, Volume= 20,588.5 cf
Primary = 6.05 cfs @ 12.13 hrs, Volume= 20,588.5 cf, Atten= 0%, Lag= 0.0 min

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

Link POA C: WETLAND-WEST



Hydrograph for Link POA C: WETLAND-WEST

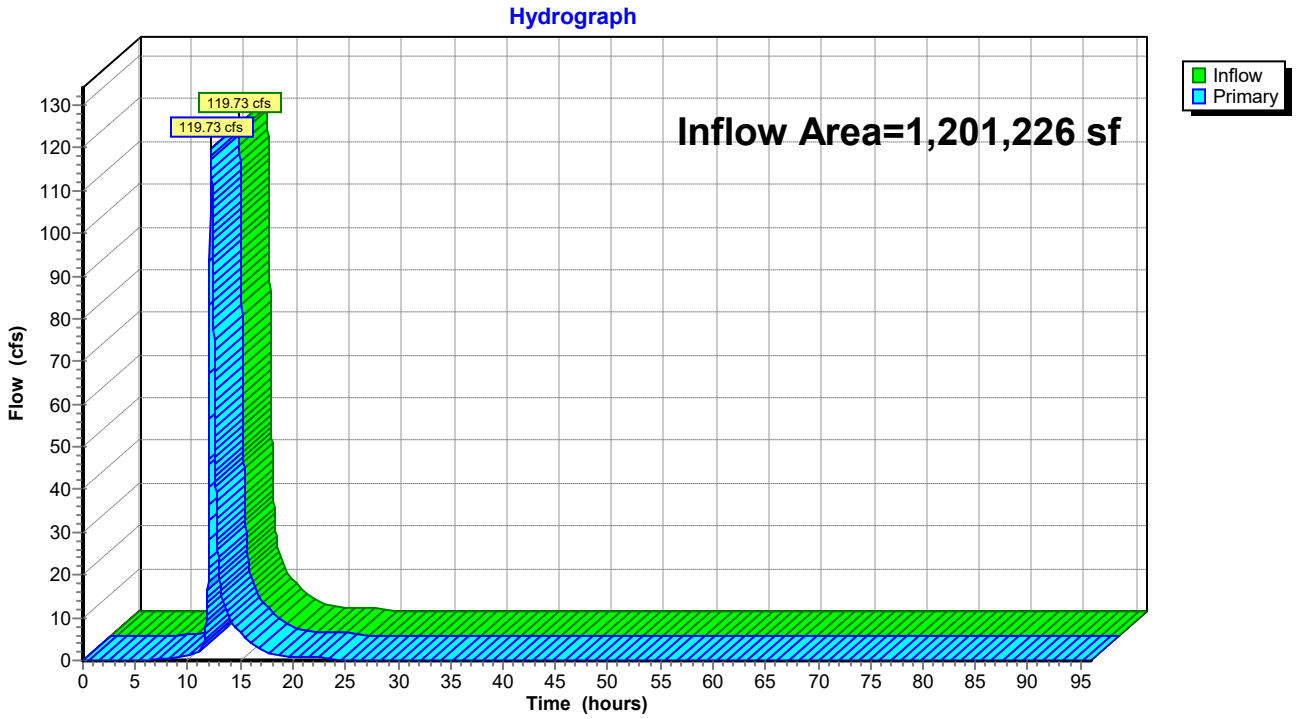
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.02	0.00	0.02	61.00	0.00	0.00	0.00
10.00	0.08	0.00	0.08	62.00	0.00	0.00	0.00
11.00	0.22	0.00	0.22	63.00	0.00	0.00	0.00
12.00	**2.92**	0.00	**2.92**	64.00	0.00	0.00	0.00
13.00	**0.72**	0.00	**0.72**	65.00	0.00	0.00	0.00
14.00	0.45	0.00	0.45	66.00	0.00	0.00	0.00
15.00	0.35	0.00	0.35	67.00	0.00	0.00	0.00
16.00	0.25	0.00	0.25	68.00	0.00	0.00	0.00
17.00	0.20	0.00	0.20	69.00	0.00	0.00	0.00
18.00	0.15	0.00	0.15	70.00	0.00	0.00	0.00
19.00	0.13	0.00	0.13	71.00	0.00	0.00	0.00
20.00	0.12	0.00	0.12	72.00	0.00	0.00	0.00
21.00	0.11	0.00	0.11	73.00	0.00	0.00	0.00
22.00	0.10	0.00	0.10	74.00	0.00	0.00	0.00
23.00	0.09	0.00	0.09	75.00	0.00	0.00	0.00
24.00	0.08	0.00	0.08	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link POA D: FIRE POND

Inflow Area = 1,201,226 sf, 67.83% Impervious, Inflow Depth = 4.01" for 100 yr event
Inflow = 119.73 cfs @ 12.14 hrs, Volume= 401,729.7 cf
Primary = 119.73 cfs @ 12.14 hrs, Volume= 401,729.7 cf, Atten= 0%, Lag= 0.0 min

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

Link POA D: FIRE POND



Hydrograph for Link POA D: FIRE POND

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.32	0.00	0.32	59.00	0.00	0.00	0.00
8.00	0.44	0.00	0.44	60.00	0.00	0.00	0.00
9.00	0.67	0.00	0.67	61.00	0.00	0.00	0.00
10.00	1.08	0.00	1.08	62.00	0.00	0.00	0.00
11.00	2.23	0.00	2.23	63.00	0.00	0.00	0.00
12.00	**32.85**	0.00	**32.85**	64.00	0.00	0.00	0.00
13.00	**19.16**	0.00	**19.16**	65.00	0.00	0.00	0.00
14.00	9.53	0.00	9.53	66.00	0.00	0.00	0.00
15.00	6.36	0.00	6.36	67.00	0.00	0.00	0.00
16.00	4.02	0.00	4.02	68.00	0.00	0.00	0.00
17.00	2.49	0.00	2.49	69.00	0.00	0.00	0.00
18.00	1.54	0.00	1.54	70.00	0.00	0.00	0.00
19.00	1.02	0.00	1.02	71.00	0.00	0.00	0.00
20.00	0.86	0.00	0.86	72.00	0.00	0.00	0.00
21.00	0.78	0.00	0.78	73.00	0.00	0.00	0.00
22.00	0.70	0.00	0.70	74.00	0.00	0.00	0.00
23.00	0.62	0.00	0.62	75.00	0.00	0.00	0.00
24.00	0.54	0.00	0.54	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

APPENDIX B – HYDRAULIC CALCULATIONS

RAIN GARDEN SIZING CALCULATIONS

This analysis is to evaluate sizing criteria of all proposed rain gardens according to "Volume 2 Chapter 2: Structural BMP Specifications for the Massachusetts Stormwater Handbook." The proposed rain gardens will receive surface runoff prior to discharge to downstream infiltration BMPs.

Raingarden #1 (RG#1):

Tributary Impervious Area	=34,446 ft^2
Rain Garden Volume Required	= 1.0 inches per impervious acre
	= (34,446 ft^2) x (1 ft/12 inches) x (1 inch)
	= 2,870.5 ft^3
Forebay 1 Volume Provided	= Volume below overflow grate elevation 250.50 ft
	= **3,439 ft^3 > 2870.5 ft^3**

Raingarden #2 (RG#2):

Tributary Impervious Area	=25,487 ft^2
Rain Garden Volume Required	= 1.0 inches per impervious acre
	= (25,487 ft^2) x (1 ft/12 inches) x (1 inch)
	= 2,123.92 ft^3
Forebay 1 Volume Provided	= Volume below overflow grate elevation 250.50 ft
	= **2,833 ft^3 > 2,123.92 ft^3**

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 PR-A, PR-C, PR-D1, PR-D2, PR-D3, PR-D4, PR-D5, PR-D6, and PR-D7 comprising of many different soil types all of which are Hydrologic Soil Group A, refer to the Soils Map included in the Figures portion of this report.

The Massachusetts Stormwater Handbook determines the required recharge volume using a calculation of 0.60 inches of runoff for "A" soils multiplied by the total contributing impervious cover of the watersheds. Watersheds PR-D1 PR-D2, and PR-D3 comprise of impervious surface parking areas, access driveways, walkways, landscaped areas and roofs. PR-A, PR-C, PR-D5, PR-6 and PR-7 comprise of all the same excluding roof areas. Runoff from these watersheds flow to overland to a combination of catch basin and surface drainage before reaching various BMP's including six (6) sub-surface infiltration systems and two surface rain gardens.

A design infiltration rate of 2.41 inches per hour was conservatively used for the analysis based on the results of on-site soil testing performed on March 16, 2023.
The total impervious cover of Watersheds PR-A, PR-C, PR-D1, PR-D2, PR-D3, PR-D4, PR-D5, PR-D6 and PR-D7 is 926,081 ft², therefore:

Mass DEP Requirement

Required Recharge Volume = 0.60 inches x Total Impervious Area for "A" soils
= 0.60 inches x 926,081 ft² x (1/12 in/ft) = 46,304.05 ft³

Total Required Recharge Volume for Overall Project = 46,305 ft³

Recharge to Groundwater Provided

The required recharge volume is provided within the six (6) sub-surface infiltration systems comprised of varying ACF R-Tank SD models and two (2) surface infiltrating rain gardens.

- SWM-1 consists of ACR R-Tank SD-9 chambers having a bottom of chamber elevation of 243.75 and an invert out of 246.50. The **Volume Provided in SWM-1 = 9,089 ft³**
- SWM-2 consists of ACR R-Tank SD-5 chambers having a bottom of chamber elevation of 250.25 and an invert out of 250.40. The **Volume Provided in SWM-2 = 1,737 ft³**
- SWM-3 consists of ACR R-Tank SD-7 chambers having a bottom of chamber elevation of 244.25 and an invert out of 247.10. The **Volume Provided in SWM-3 = 20,350 ft³**
- SWM-4 consists of ACR R-Tank SD-8 chambers having a bottom of chamber elevation of 243.25 and an invert out of 246.40. The **Volume Provided in SWM-4 = 15,547 ft³**
- SWM-5 consists of ACR R-Tank SD-6 chambers having a bottom of chamber elevation of 245.25 and an invert out of 246.30 . The **Volume Provided in SWM-5 = 7,841 ft³**
- SWM-6 consists of ACR R-Tank SD-4 chambers having a bottom of chamber elevation of 256.25 and an invert out of 257.95. The **Volume Provided in SWM-6 = 2,516 ft³**
- SWM-7 consists of ACR R-Tank SD-9 chambers having a bottom of chamber elevation of 243.50 and an invert out of 246.50. The **Volume Provided in SWM-6 = 6,580 ft³**
- RG #1 consists of surface stormwater storage, sub-surface soil media designed to filter and store stormwater, a 12" perforated underdrain and an overflow grate at elevation 250.50. The **Volume Provided in RG#1 = 3,439 ft³**
- RG #1 consists of surface stormwater storage, sub-surface soil media designed to filter and store stormwater, a 12" perforated underdrain and an overflow grate at elevation 250.50. The **Volume Provided in RG#2 = 2,833 ft³**

The total recharge volume provided exceeds the minimum recharge requirement for "A" soils.

Total Recharge Volume Provided = 69,932 ft³
= 69,932 ft³ > 46,305 ft³

WATER QUALITY VOLUME CALCULATIONS

This analysis is to evaluate water quality volume criteria according to "Volume 1 Chapter 1: Stormwater Management Standards." The Project comprises six (6) ACF R-Tank SD sub-surface infiltration systems and two (2) surface infiltrating rain gardens.

Water Quality Volume Required:

Paved Impervious Area (Excluding Roof Areas)	= 590,649 ft^2
Water Quality Volume Requirement	= 1 inch over total impervious area
	= x (1/12)
	= **49,220.75 ft^3**
	= **49,221 ft^3**

Water Quality Volume Provided in Infiltration BMPs:

SWM-1: ACF R-Tank SD-9	= Volume below elevation 246.50 = 9,089 ft^3 [Source: HydroCAD]
SWM-2: ACF R-Tank SD-5	= Volume below elevation 250.40 = 1,737 ft^3 [Source: HydroCAD]
SWM-3: ACF R-Tank SD-7	= Volume below elevation 247.10 = 20,350 ft^3 [Source: HydroCAD]
SWM-4: ACF R-Tank SD-8	= Volume below elevation 246.40 = 15,547 ft^3 [Source: HydroCAD]
SWM-5: ACF R-Tank SD-6	= Volume below elevation 246.30 = 7,841 ft^3 [Source: HydroCAD]
SWM-6: ACF R-Tank SD-4	= Volume below elevation 257.95 = 2,516 ft^3 [Source: HydroCAD]
SWM-7: ACF R-Tank SD-9	= Volume below elevation 246.50 = 6,580 ft^3 [Source: HydroCAD]
RG#1: Rain Garden	= Volume below elevation 250.50 = 3,439 ft^3 [Source: HydroCAD]
RG#2: Rain Garden	= Volume below elevation 250.50 = 2,833 ft^3 [Source: HydroCAD]

Total Volume Provided	= **69,932 ft^3**
	= **69,932 ft^3 > 49,221 ft^3**

DRAWDOWN ANALYSIS

Drawdown Time:		T	= V / (K*A)
	where	T	= drawdown time (hours)
		V	= volume below outlet (ft^3)
		K	= hydraulic conductivity (ft/hr)
			= (2.41 in/hr) * (1 ft/12 in)
			= 0.2 ft/hr
		A	= bottom area of infiltration system (ft^2)
SWM-1: ACF R-Tank SD-9		V	=9,089ft^3
		K	= 0.20 ft/hr
		A	= 3,640 ft^2
		T	= (9,089 ft^3) / (0.20 ft/hr)(3,640 ft^2)
			= **12.5 hours** < 72 hours
SWM-2: ACF R-Tank SD-5		V	=1,737 ft^3
		K	= 0.20 ft/hr
		A	= 7,486 ft^2
		T	= (1,737 ft^3) / (0.20 ft/hr)(7,486 ft^2)
			= **1.16 hours** < 72 hours
SWM-3: ACF R-Tank SD-7		V	=20,350 ft^3
		K	= 0.20 ft/hr
		A	= 7,942 ft^2
		T	= (20,350 ft^3) / (0.20 ft/hr)(7,942 ft^2)
			= **12.80 hours** < 72 hours
SWM-4: ACF R-Tank SD-8		V	=15,547 ft^3
		K	= 0.20 ft/hr
		A	= 11.190 ft^2
		T	= (15,547 ft^3) / (0.20 ft/hr)(11,190 ft^2)
			= **6.95 hours** < 72 hours
SWM-5: ACF R-Tank SD-6		V	=7,841 ft^3
		K	= 0.20 ft/hr
		A	= 7,708 ft^2
		T	= (7,841 ft^3) / (0.20 ft/hr)(7,708 ft^2)
			= **5.1 hours** < 72 hours

SWM-6: ACF R-Tank SD-4	V	=2,516 ft^3
	K	= 0.20 ft/hr
	A	= 1,732 ft^2
	T	= (2,516 ft^3) / (0.20 ft/hr)(1,732 ft^2)
		= **7.3 hours** < 72 hours
SWM-7: ACF R-Tank SD-9	V	=6,580 ft^3
	K	= 0.20 ft/hr
	A	= 2,655 ft^2
	T	= (6,580 ft^3) / (0.20 ft/hr)(2,655 ft^2)
		= **12.39 hours** < 72 hours
RG #1: Raingarden #1	V	=3,439 ft^3
	K	= 0.20 ft/hr
	A	= 1,081 ft^2
	T	= (3,439 ft^3) / (0.20 ft/hr)(1,081 ft^2)
		= **15.9 hours** < 72 hours
RG #2: Raingarden #2	V	=2,833 ft^3
	K	= 0.20 ft/hr
	A	= 1,176 ft^2
	T	= (2,833ft^3) / (0.20 ft/hr)(1,176 ft^2)
		= **12.0 hours** < 72 hours

HIGHPOINT

Warehouse|Industrial Developement
100 and 200 Financial Park
Storm Pipe Analysis

Date Calculated: 05-09-2023
Calculated by: JMP
Strorm Event : 25-Year

From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Pipe Diameter	Manning's Roughness	Initial Flow	Peak Flow	Time of Peak Flow Occurrence	Max Flow Velocity	Travel Time	Design Flow Capacity	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged	Max Flow Depth	Reported Condition
		(ft)	(ft)	(ft)	(%)	(inches)		(cfs)	(cfs)	(days hh:mm)	(ft/sec)	(min)	(cfs)			(min)	(ft)	
Bldg 1 - North	DMH-19	7.01	258.45	258.40	0.7100	24.000	0.0130	0.00	17.97	0 00:05	8.23	0.01	291.09	0.06	0.75	0.00	1.48	Calculated
Bldg 1 - South 1	SWM-2_IN(4)	17.33	252.50	252.10	2.3100	18.000	0.0130	0.00	0.00	0 00:00	0.00		15.96	0.00	0.12	0.00	0.19	Calculated
Bldg 1 - South 2	DMH-8	24.47	252.20	252.00	0.8200	18.000	0.0130	0.00	0.00	0 00:00	0.00		76.57	0.00	0.34	0.00	0.51	Calculated
Bldg 1 - South 3	DMH-1	24.73	253.50	253.30	0.8100	18.000	0.0130	0.00	8.86	0 00:03	7.17	0.06	86.33	0.10	0.86	0.00	1.29	Calculated
Bldg 2 - North 2	DMH-13	13.99	253.00	252.90	0.7100	18.000	0.0130	0.00	0.14	0 00:03	0.88	0.26	8.88	0.02	0.47	0.00	0.70	Calculated
Bldg 2 - North 3	DMH-12	12.38	254.30	254.20	0.8100	18.000	0.0130	0.00	4.43	0 00:05	3.69	0.06	9.44	0.47	0.64	0.00	0.96	Calculated
Bldg 2 - South	DMH-9	10.00	250.60	250.50	1.0000	18.000	0.0130	0.00	3.68	0 00:05	3.41	0.05	10.50	0.35	0.84	0.00	1.25	Calculated
CB-1	EX. WQI-25	11.32	254.20	253.95	2.2100	12.000	0.0120	0.00	1.93	0 00:05	5.05	0.04	5.74	0.34	0.49	0.00	0.49	Calculated
CB-10	WQU-2	26.63	248.20	247.70	1.8800	12.000	0.0120	0.00	1.53	0 00:05	3.51	0.13	5.29	0.29	0.65	0.00	0.65	Calculated
CB-11	WQU-1	45.50	245.60	245.10	1.1000	18.000	0.0130	0.00	2.97	0 00:05	3.48	0.22	11.01	0.27	0.88	0.00	1.32	Calculated
CB-12	WQU-1	21.15	248.20	248.00	0.9500	12.000	0.0130	0.00	1.54	0 00:05	3.73	0.09	3.46	0.44	0.52	0.00	0.52	Calculated
CB-13	WQU-2	63.57	248.20	247.70	0.7900	12.000	0.0130	0.00	0.81	0 00:05	1.94	0.55	3.16	0.26	0.62	0.00	0.62	Calculated
CB-14	WQU-3	33.10	248.90	248.60	0.9100	12.000	0.0130	0.00	1.87	0 00:05	4.55	0.12	5.54	0.34	0.57	0.00	0.57	Calculated
CB-15	WQU-3	128.71	249.30	248.60	0.5400	12.000	0.0130	0.00	1.30	0 00:05	2.99	0.72	3.14	0.41	0.56	0.00	0.56	Calculated
CB-16	WQU-2	59.08	248.20	247.70	0.8500	15.000	0.0130	0.00	0.82	0 00:05	1.88	0.52	5.94	0.14	0.49	0.00	0.61	Calculated
CB-17	WQU-3	105.25	249.30	248.60	0.6700	12.000	0.0130	0.00	2.10	0 00:05	3.99	0.44	3.47	0.61	0.64	0.00	0.64	Calculated
CB-18	DMH-14	133.60	248.00	246.50	1.1200	12.000	0.0130	0.00	1.39	0 00:05	2.81	0.79	3.78	0.37	0.63	0.00	0.63	Calculated
CB-19	DMH-15	259.00	253.25	252.20	0.4100	18.000	0.0130	0.00	5.62	0 00:05	4.04	1.07	12.56	0.45	0.73	0.00	1.10	Calculated
CB-2	DMH-14	21.74	246.60	246.40	0.9200	12.000	0.0130	0.00	1.54	0 00:05	2.75	0.13	3.42	0.45	0.89	0.00	0.89	Calculated
CB-3	DMH-5	13.82	258.00	257.80	1.4500	12.000	0.0130	0.00	2.81	0 00:10	4.78	0.05	4.29	0.66	0.70	0.00	0.70	Calculated
CB-5	DMH-14	78.69	247.20	246.80	0.5100	15.000	0.0130	0.00	3.77	0 00:05	4.00	0.33	4.61	0.82	0.72	0.00	0.90	Calculated
CB-6	DMH-21	10.13	255.20	255.10	0.9900	12.000	0.0130	0.00	3.43	0 00:05	4.47	0.04	5.01	0.68	0.96	0.00	0.96	Calculated
CB-7	DMH-23	84.21	256.80	256.20	0.7100	12.000	0.0130	0.00	1.45	0 00:05	3.40	0.41	3.78	0.38	0.61	0.00	0.61	Calculated
CB-8	DMH-15	177.48	252.90	252.20	0.3900	18.000	0.0130	0.00	7.59	0 00:05	5.68	0.52	15.17	0.50	0.76	0.00	1.14	Calculated
CB-9	DMH-15	61.96	252.50	252.20	0.4800	18.000	0.0130	0.00	6.65	0 00:05	5.13	0.20	25.67	0.26	0.69	0.00	1.03	Calculated
DMH-10	DMH-6	51.62	249.30	249.00	0.5800	24.000	0.0130	0.00	13.40	0 00:06	5.18	0.17	17.25	0.78	0.78	0.00	1.55	Calculated
DMH-11	DMH-18	86.09	252.60	252.00	0.7000	15.000	0.0130	0.00	3.50	0 00:05	4.29	0.33	5.39	0.65	0.63	0.00	0.79	Calculated
DMH-12	DMH-13	239.85	254.10	252.90	0.5000	18.000	0.0130	0.00	4.03	0 00:05	4.16	0.96	7.43	0.54	0.54	0.00	0.81	Calculated
DMH-13	DMH-17	210.66	252.80	251.80	0.4700	18.000	0.0130	0.00	3.83	0 00:06	4.00	0.88	7.24	0.53	0.53	0.00	0.80	Calculated
DMH-14	WQU-1	169.96	246.30	245.10	0.7100	18.000	0.0130	0.00	6.49	0 00:05	4.16	0.68	8.83	0.74	0.85	0.00	1.28	Calculated
DMH-15	WQU-4	40.33	252.10	251.80	0.7400	24.000	0.0130	0.00	19.83	0 00:05	6.65	0.10	19.51	1.02	0.93	0.00	1.85	> CAPACITY
DMH-16	WQU-4	395.97	253.70	251.80	0.4800	24.000	0.0130	0.00	5.78	0 00:07	3.74	1.76	15.67	0.37	0.63	0.00	1.26	Calculated
DMH-17	SWM-2_IN(3)	154.29	251.70	251.00	0.4500	18.000	0.0130	0.00	3.76	0 00:07	3.92	0.66	7.08	0.53	0.53	0.00	0.80	Calculated
DMH-18	DMH-10	26.72	251.90	251.70	0.7500	18.000	0.0130	0.00	3.50	0 00:05	4.15	0.11	9.09	0.39	0.48	0.00	0.72	Calculated
DMH-19	SWM-6_IN	360.47	258.30	256.50	0.5000	24.000	0.0130	0.00	12.64	0 00:05	4.02	1.49	15.99	0.79	1.00	1.00	2.00	SURCHARGED
DMH-1	DMH-8	267.59	253.10	251.90	0.4500	24.000	0.0130	0.00	8.92	0 00:05	4.84	0.92	15.77	0.57	0.57	0.00	1.14	Calculated
DMH-20	DMH-22	180.67	247.90	247.05	0.4700	30.000	0.0130	0.00	17.64	0 00:07	3.76	0.80	28.13	0.63	0.91	0.00	2.28	Calculated
DMH-21	DMH-16	71.02	255.00	254.50	0.7000	12.000	0.0130	0.00	4.52	0 00:06	6.58	0.18	5.18	0.87	0.83	0.00	0.83	Calculated
DMH-22	SWM-1_IN(1)	90.00	246.90	246.40	0.5600	36.000	0.0130	0.00	29.25	0 00:00	5.13	0.29	49.71	0.59	0.99	0.00	2.94	Calculated
DMH-23	DMH-21	99.21	255.80	255.10	0.7100	12.000	0.0130	0.00	1.24	0 00:06	1.83	0.90	1.79	0.69	0.88	0.00	0.87	Calculated
DMH-24	DMH-7	178.20	243.70	241.00	1.5200	36.000	0.0130	0.00	9.77	0 00:06	2.14	1.39	82.10	0.12	0.63	0.00	1.87	Calculated
DMH-25	EX. DMH-9	58.12	251.00	250.00	1.7200	18.000	0.0130	0.00	3.50	0 00:00	5.92	0.16	13.78	0.25	0.38	0.00	0.56	Calculated
DMH-3	DMH-24	216.98	245.30	243.80	0.6900	18.000	0.0130	0.00	4.62	0 00:00	4.89	0.74	8.73	0.53	0.55	0.00	0.82	Calculated
DMH-4	DMH-16	95.20	256.20	255.40	0.8400	12.000	0.0130	0.00	2.65	0 00:11	4.28	0.37	3.27	0.81	0.74	0.00	0.74	Calculated
DMH-5	DMH-4	179.94	257.50	256.30	0.6700	12.000	0.0130	0.00	2.67	0 00:10	4.09	0.73	2.91	0.92	0.78	0.00	0.78	Calculated
DMH-6	DMH-20	176.17	248.90	248.00	0.5100	30.000	0.0130	0.00	13.27	0 00:07	3.74	0.79	29.32	0.45	0.69	0.00	1.73	Calculated
DMH-7	EX.SPLASHPAD-1	35.84	240.17	240.00	0.4700	36.000	0.0120	0.00	57.82	0 00:00	8.77	0.07	49.76	1.16	1.00	1440.00	3.00	SURCHARGED
DMH-8	SWM-2_IN(1)	158.05	251.80	251.00	0.5100	24.000	0.0130	0.00	8.86	0 00:07	4.83	0.55	16.09	0.55	0.57	0.00	1.13	Calculated

DMH-9	DMH-10	213.02	250.40	249.40	0.4700	24.000	0.0130	0.00	10.45	0	00:06	4.15	0.86	15.50	0.67	0.76	0.00	1.51	Calculated
Ex. Bldg 3 - NE	DMH-11	16.91	256.00	254.30	10.0500	8.040	0.0120	0.00	0.00	0	00:00	0.00		4.15	0.00	0.00	0.00	0.00	Calculated
Ex. Bldg 3 - SE	DMH-18	18.96	256.00	255.00	5.2700	9.960	0.0120	0.00	0.00	0	00:00	0.00		5.45	0.00	0.00	0.00	0.00	Calculated
EX. CB-1	DMH-10	11.69	254.00	253.89	0.9400	12.000	0.0120	0.00	0.09	0	00:05	1.19	0.16	3.74	0.02	0.15	0.00	0.15	Calculated
EX. WQI-22	EX-CB-22A	24.30	255.75	255.29	1.8900	12.000	0.0130	0.00	0.69	0	00:05	2.09	0.19	1.59	0.44	0.44	0.00	0.44	Calculated
EX. CB-22B	EX. WQI-22	23.54	255.75	255.54	0.8900	12.000	0.0130	0.00	0.99	0	00:05	2.82	0.14	3.37	0.29	0.48	0.00	0.48	Calculated
EX. CB-24A	EX. WQI-24	26.69	255.00	254.75	0.9400	12.000	0.0130	0.00	2.29	0	00:05	3.40	0.13	3.45	0.66	0.80	0.00	0.80	Calculated
EX. CB-24B	EX. WQI-24	63.14	255.00	254.36	1.0100	12.000	0.0150	0.00	2.33	0	00:05	2.97	0.35	3.11	0.75	1.00	0.00	1.00	SURCHARGED
EX. DMH-23	EX. DMH 25	87.08	251.77	251.53	0.2800	24.000	0.0130	0.00	1.69	0	00:06	1.52	0.95	11.88	0.14	0.45	0.00	0.90	Calculated
EX. DMH 23(1)	SWM-1_IN(2)	43.73	249.00	248.55	1.0300	18.000	0.0130	0.00	3.56	0	00:05	3.09	0.24	10.66	0.33	0.62	0.00	0.93	Calculated
EX. DMH 25	DMH-9	198.92	251.40	250.50	0.4500	24.000	0.0130	0.00	7.71	0	00:06	3.94	0.84	15.22	0.51	0.60	0.00	1.19	Calculated
EX. DMH-9	EX.SPLASHPAD-2	84.80	241.00	240.00	1.1800	36.000	0.0130	0.00	39.51	0	00:00	5.81	0.24	72.43	0.55	1.00	1432.00	3.00	SURCHARGED
EX. WQI-24	EX. DMH 25	8.83	254.11	253.90	2.3800	12.000	0.0130	0.00	4.55	0	00:05	6.41	0.02	5.49	0.83	0.85	0.00	0.85	Calculated
EX. WQI-25	EX. DMH 25	6.75	253.70	253.60	1.4800	12.000	0.0130	0.00	1.92	0	00:05	4.25	0.03	4.34	0.44	0.56	0.00	0.56	Calculated
EX. WQI-22	EX. DMH-23	82.47	255.29	254.64	0.7900	12.000	0.0130	0.00	1.65	0	00:05	3.81	0.36	3.16	0.52	0.54	0.00	0.54	Calculated
WQU-2	SWM-4_IN(2)	32.63	247.60	247.30	0.9200	12.000	0.0130	0.00	2.93	0	00:05	4.19	0.13	3.42	0.86	0.83	0.00	0.83	Calculated
SWM-5_OUT	DMH-3	158.34	246.30	245.40	0.5700	18.000	0.0130	42.64	6.17	0	00:00	4.07	0.65	7.92	0.78	0.80	0.00	0.99	Calculated
SWM-6 OUT	DMH-25	34.86	257.95	257.60	1.0000	12.000	0.0130	19.16	2.76	0	00:00	3.96	0.15	3.57	0.77	0.83	0.00	0.83	Calculated
WQU-1	DMH-24	121.09	245.00	243.90	0.9100	18.000	0.0130	0.00	9.76	0	00:06	5.86	0.34	10.01	0.97	0.90	0.00	1.35	Calculated
WQU-3	DMH-20	90.63	248.50	248.00	0.5500	15.000	0.0130	0.00	4.97	0	00:05	4.88	0.31	10.73	0.46	0.77	0.00	0.97	Calculated
WQU-4	SWM-2_IN(2)	131.43	251.70	250.50	0.9100	36.000	0.0130	0.00	24.23	0	00:06	6.11	0.36	48.68	0.50	0.55	0.00	1.65	Calculated

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: 100& 200 FINANCIAL PARK - FRANKLIN, MA

TSS Removal Calculation Worksheet

BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
DEEP SUMP & HOODED CATCH BASIN	0.25	**1.00**	0.25	0.75
WQU-1: CONTECH CASCADE CS-4	0.88	0.75	0.66	0.09

Total TSS Removal = 91.0%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 22051

Prepared By: JMP

Date: 05-09-2023

*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: 100 & 200 FINANCIAL PARK - FRANKLIN,MA

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 & HOODED CATCH BASIN	0.25	**1.00**	0.25	0.75
WQU-2: CONTECH CDS2015-5	0.86	0.75	0.64	0.11
SUB-SURFACE INFILTRATION SYSTEM (SWM-4)	0.80	0.11	0.08	0.03

Total TSS Removal = 97.0%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 22051
Prepared By: JMP
Date: 05-09-2023

*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: 100 & 200 FINANCIAL PARK - FRANKLIN,MA

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 & HOODED CATCH BASIN	0.25	**1.00**	0.25	0.75
WQU-3: CONTECH CDS2015-4	0.81	0.75	0.61	0.14
SUB-SURFACE INFILTRATION SYSTEM (SWM-1)	0.80	0.14	0.11	0.03

Total TSS Removal = 97.0%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 22051
Prepared By: JJMPP
Date: 05-09-2023

*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: 100 & 200 FINANCIAL PARK - FRANKLIN,MA

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 & HOODED CATCH BASIN	0.25	**1.00**	0.25	0.75
WQU-4: CASCADE CS-6	0.81	0.75	0.61	0.14
SUB-SURFACE INFILTRATION SYSTEM (SWM-2)	0.81	0.14	0.11	0.03

Total TSS Removal = 97.0%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 22051
Prepared By: JMP
Date: 05-09-2023

*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

Mass. Dept. of Environmental Protection

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: 100 & 200 Financial Park, Franklin MA

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)
Rain Garden	**0.90**	**1.00**	**0.90**	**0.10**
Subsurface Infiltration Structure	**0.80**	**0.10**	**0.08**	**0.02**
	0.00	**0.02**	**0.00**	**0.02**
	0.00	**0.02**	**0.00**	**0.02**
	0.00	**0.02**	**0.00**	**0.02**

Total TSS Removal = **98%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 22051
Prepared By: JMP
Date: 4/21/2023

*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

USD-1

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		
4.8000	***R***	**Recharge (infiltration) rate (feet/day)**
0.800	**Sy**	**Specific yield, Sy (dimensionless, between 0 and 1)**
50.00	**K**	**Horizontal hydraulic conductivity, Kh (feet/day)***
47.750	**x**	**1/2 length of basin (x direction, in feet)**
19.060	**y**	**1/2 width of basin (y direction, in feet)**
0.800	**t**	**duration of infiltration period (days)**
20.000	**hi(0)**	**initial thickness of saturated zone (feet)**

Conversion Table

inch/hour	feet/day
0.67	1.33
2.00	4.00

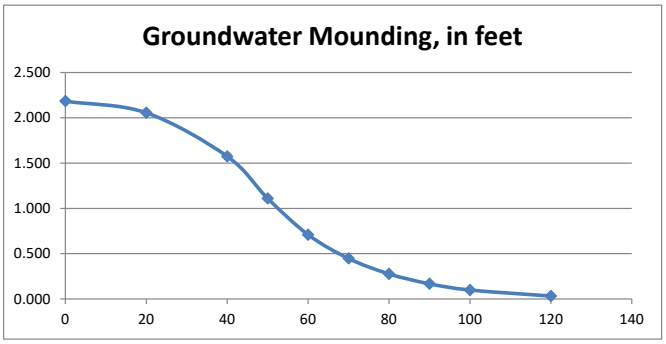
hours	days
36	1.50

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).

22.184	**h(max)**	**maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
2.184	**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
2.184	**0**
2.055	**20**
1.575	**40**
1.110	**50**
0.710	**60**
0.447	**70**
0.277	**80**
0.168	**90**
0.099	**100**
0.032	**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.

USD-2

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		
4.8000	***R***	**Recharge (infiltration) rate (feet/day)**
0.800	**Sy**	**Specific yield, Sy (dimensionless, between 0 and 1)**
50.00	**K**	**Horizontal hydraulic conductivity, Kh (feet/day)***
101.700	**x**	**1/2 length of basin (x direction, in feet)**
18.400	**y**	**1/2 width of basin (y direction, in feet)**
0.800	**t**	**duration of infiltration period (days)**
20.000	**hi(0)**	**initial thickness of saturated zone (feet)**

Conversion Table

inch/hour	feet/day
0.67	1.33
2.00	4.00

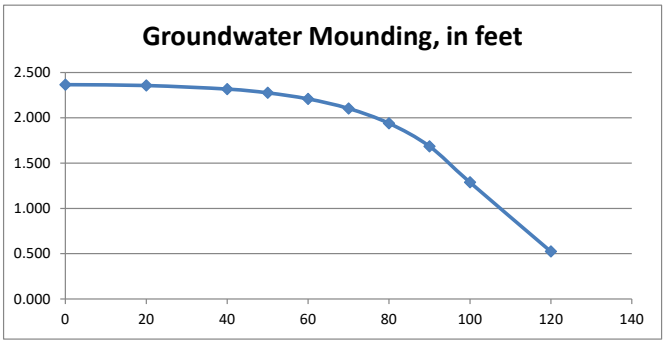
hours	days
36	1.50

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).

22.366	**h(max)**	**maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
2.366	**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
2.366	0
2.356	20
2.317	40
2.276	50
2.209	60
2.103	70
1.939	80
1.685	90
1.288	100
0.524	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.

USD-3

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)

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).

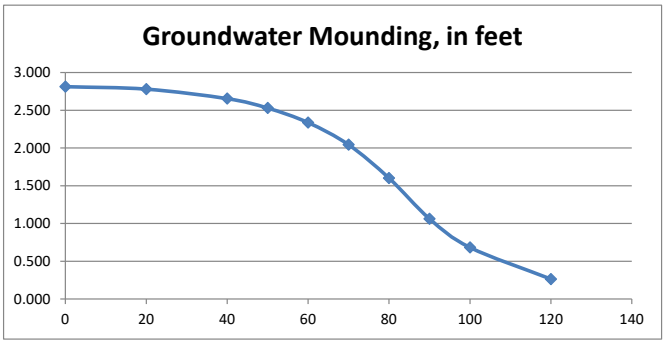
Input Values

4.8000	***R***	**Recharge (infiltration) rate (feet/day)**
0.800	**Sy**	**Specific yield, Sy (dimensionless, between 0 and 1)**
50.00	**K**	**Horizontal hydraulic conductivity, Kh (feet/day)***
82.750	**x**	**1/2 length of basin (x direction, in feet)**
24.000	**y**	**1/2 width of basin (y direction, in feet)**
0.800	**t**	**duration of infiltration period (days)**
20.000	**hi(0)**	**initial thickness of saturated zone (feet)**

22.812	**h(max)**	**maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
2.812	**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
2.812	0
2.780	20
2.654	40
2.529	50
2.336	60
2.043	70
1.601	80
1.063	90
0.683	100
0.264	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.

USD-4

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		
4.8000	***R***	**Recharge (infiltration) rate (feet/day)**
0.800	**Sy**	**Specific yield, Sy (dimensionless, between 0 and 1)**
50.00	**K**	**Horizontal hydraulic conductivity, Kh (feet/day)***
95.660	**x**	**1/2 length of basin (x direction, in feet)**
29.250	**y**	**1/2 width of basin (y direction, in feet)**
0.800	**t**	**duration of infiltration period (days)**
20.000	**hi(0)**	**initial thickness of saturated zone (feet)**

Conversion Table

inch/hour	feet/day
0.67	1.33
2.00	4.00

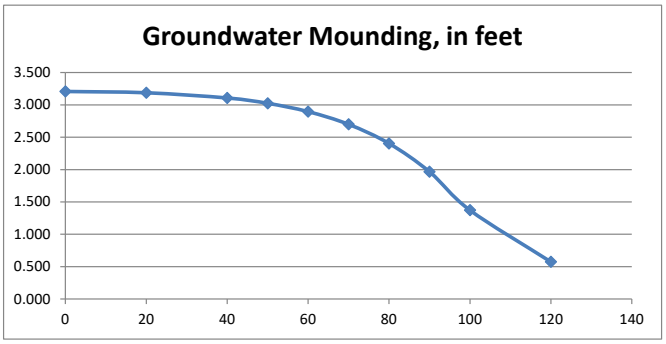
hours	days
36	1.50

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).

23.207	**h(max)**	**maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
3.207	**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
3.207	0
3.187	20
3.107	40
3.024	50
2.896	60
2.699	70
2.404	80
1.966	90
1.372	100
0.573	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.

USD-5

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		
4.8000	***R***	**Recharge (infiltration) rate (feet/day)**
0.800	**Sy**	**Specific yield, Sy (dimensionless, between 0 and 1)**
50.00	**K**	**Horizontal hydraulic conductivity, Kh (feet/day)***
60.470	**x**	**1/2 length of basin (x direction, in feet)**
31.870	**y**	**1/2 width of basin (y direction, in feet)**
0.800	**t**	**duration of infiltration period (days)**
20.000	**hi(0)**	**initial thickness of saturated zone (feet)**

Conversion Table

inch/hour	feet/day
0.67	1.33
2.00	4.00

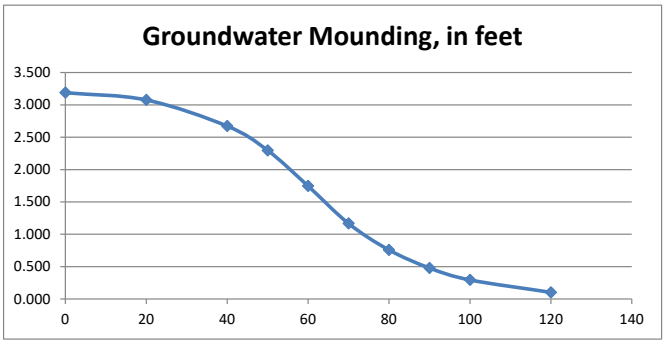
hours	days
36	1.50

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).

23.188	**h(max)**	**maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
3.188	**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
3.188	**0**
3.076	**20**
2.672	**40**
2.296	**50**
1.745	**60**
1.166	**70**
0.757	**80**
0.479	**90**
0.294	**100**
0.102	**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.

USD-6

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		
4.8000	***R***	**Recharge (infiltration) rate (feet/day)**
0.800	**Sy**	**Specific yield, Sy (dimensionless, between 0 and 1)**
50.00	**K**	**Horizontal hydraulic conductivity, Kh (feet/day)***
54.780	**x**	**1/2 length of basin (x direction, in feet)**
7.900	**y**	**1/2 width of basin (y direction, in feet)**
0.800	**t**	**duration of infiltration period (days)**
20.000	**hi(0)**	**initial thickness of saturated zone (feet)**

Conversion Table

inch/hour	feet/day
0.67	1.33
2.00	4.00

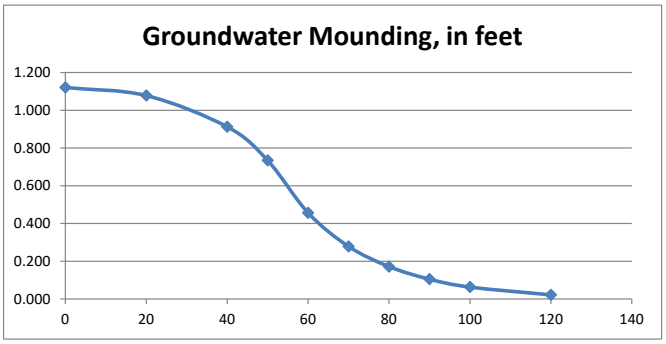
hours	days
36	1.50

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).

21.121	**h(max)**	**maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
1.121	**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
1.121	0
1.078	20
0.912	40
0.734	50
0.456	60
0.278	70
0.172	80
0.105	90
0.063	100
0.022	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.

USD-7

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		
4.8000	***R***	**Recharge (infiltration) rate (feet/day)**
0.800	**Sy**	**Specific yield, Sy (dimensionless, between 0 and 1)**
50.00	**K**	**Horizontal hydraulic conductivity, Kh (feet/day)***
37.670	**x**	**1/2 length of basin (x direction, in feet)**
19.700	**y**	**1/2 width of basin (y direction, in feet)**
0.800	**t**	**duration of infiltration period (days)**
20.000	**hi(0)**	**initial thickness of saturated zone (feet)**

Conversion Table

inch/hour	feet/day
0.67	1.33
2.00	4.00

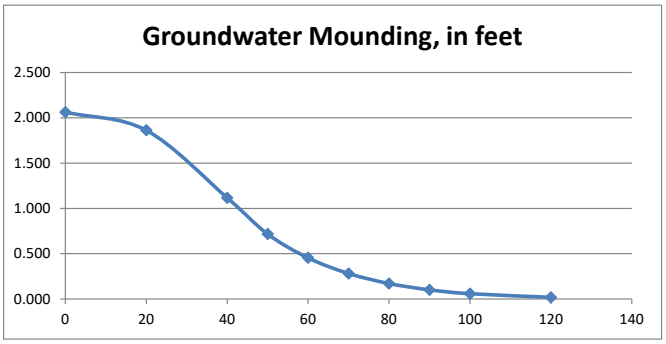
hours	days
36	1.50

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).

22.062	**h(max)**	**maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
2.062	**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
2.062	**0**
1.862	**20**
1.117	**40**
0.717	**50**
0.453	**60**
0.281	**70**
0.171	**80**
0.101	**90**
0.058	**100**
0.018	**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.

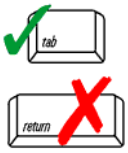
APPENDIX C – SUPPORTING INFORMATION

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.

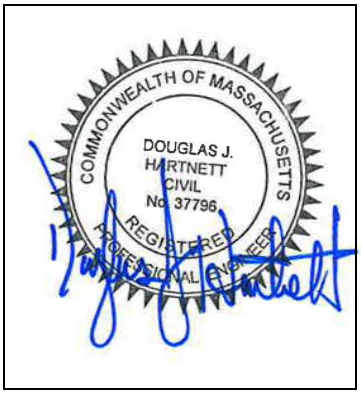
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the 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 05-11-2023

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
- [ ] Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- [ ] Reduced Impervious Area (Redevelopment Only)
- [ ] 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
- [X] Bioretention Cells (includes Rain Gardens)
- [ ] Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- [ ] Treebox Filter
- [ ] Water Quality Swale
- [ ] Grass Channel
- [ ] Green Roof
- [ ] Other (describe): _____

Standard 1: No New Untreated Discharges

- [ ] No new untreated discharges
- [ ] Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- [ ] 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.

Project: Warehouse Industrial Development
Location: Franklin, MA
Prepared For: Highpoint Engineering

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	1.64	0.0025628	6.0	0.100	1.00	774.00	1.98
WQU 2	0.47	0.0007414	6.0	0.100	1.00	774.00	0.57
WQU 3	0.91	0.0014192	6.0	0.100	1.00	774.00	1.10
WQU 4	4.79	0.0074852	6.0	0.100	1.00	774.00	5.79

The WQf sizing calculation selects the minimum size CDS/Cascade/StormCeptor model capable of operating at the computed WQf peak flowrate prior to bypassing. It assumes free discharge of the WQf through the unit and ignores the routing effect of any upstream storm drain piping. As with all hydrodynamic separators, there will be some impact to the Hydraulic Gradient of the corresponding drainage system, and evaluation of this impact should be considered in the design.

Estimated Net Annual Solids Load Reduction
Based on the Rational Rainfall Method

CONTECH ENGINEERED SOLUTIONS

CASCADE separator™

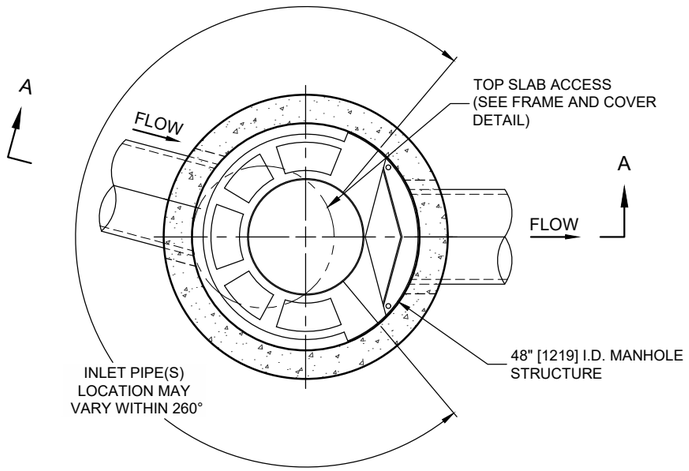
WAREHOUSE INDUSTRIAL DEV
FRANKLIN, MA
WQU 1

AREA	1.64	acres	CASCADE MODEL	CS-4	
WEIGHTED C	0.95		PARTICLE SIZE	110	microns
TC	6.00	minutes	RAINFALL STATION	68	

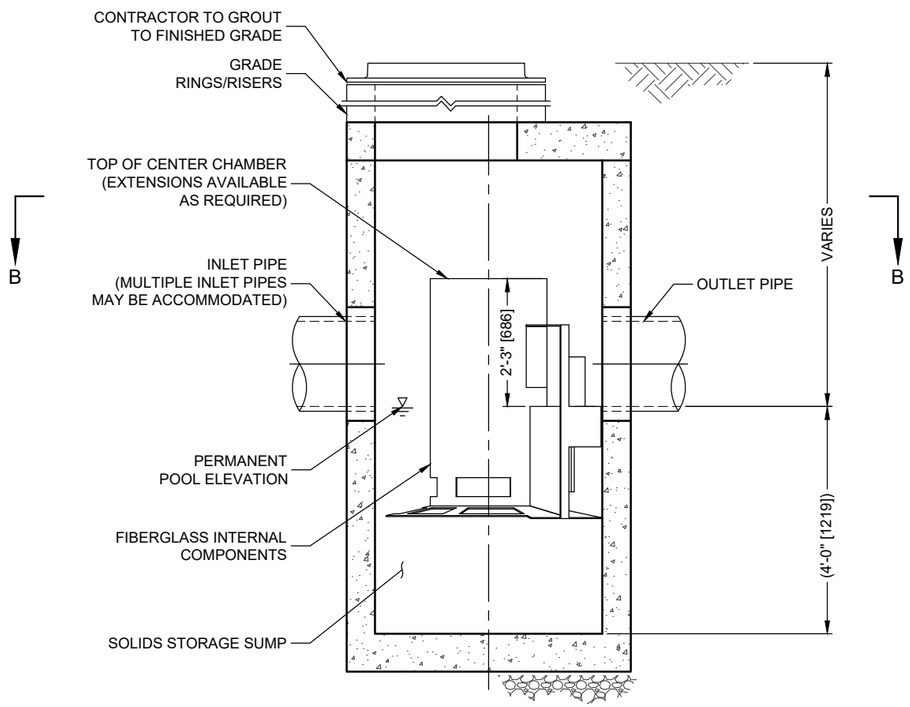
Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Hydraulic Loading Rate (gpm/ft2)	Removal Efficiency (%)	Incremental Removal (%)
0.02	9.3%	1.11	100.0	9.3
0.04	9.5%	2.23	100.0	9.5
0.06	8.7%	3.34	100.0	8.7
0.08	10.1%	4.45	100.0	10.1
0.10	7.2%	5.56	100.0	7.2
0.12	6.0%	6.68	100.0	6.0
0.14	6.3%	7.79	100.0	6.3
0.16	5.6%	8.90	100.0	5.6
0.18	4.7%	10.02	100.0	4.7
0.20	3.6%	11.13	100.0	3.6
0.25	8.2%	13.91	98.8	8.1
0.50	14.9%	27.82	85.7	12.8
0.75	3.2%	41.74	72.7	2.3
1.00	1.2%	55.65	59.6	0.7
1.50	0.7%	76.08	36.8	0.3
2.00	0.8%	76.08	27.6	0.2
				95.4
			Removal Efficiency Adjustment[2] =	6.5%
			Predicted % Annual Rainfall Treated =	93.2%
			Predicted Net Annual Load Removal Efficiency =	88.9%

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.



PLAN VIEW B-B
NOT TO SCALE



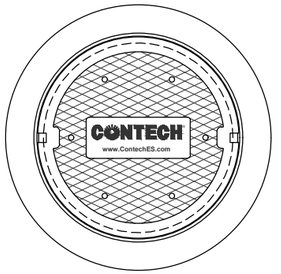
ELEVATION A-A
NOT TO SCALE

CASCADE
separator™

CASCADE SEPARATOR DESIGN NOTES

CS-4 RATED TREATMENT CAPACITY IS 2.0 CFS, OR PER LOCAL REGULATIONS.
THE STANDARD CS-4 CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES



FRAME AND COVER
(DIAMETER VARIES)
NOT TO SCALE

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			
WATER QUALITY FLOW RATE (cfs [L/s])			
PEAK FLOW RATE (cfs [L/s])			
RETURN PERIOD OF PEAK FLOW (yrs)			
RIM ELEVATION			
PIPE DATA:	INVERT	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			

NOTES / SPECIAL REQUIREMENTS:

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CASCADE SEPARATOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. CASCADE SEPARATOR STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2' [610], AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. CASCADE SEPARATOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. ALTERNATE UNITS ARE SHOWN IN MILLIMETERS [mm].

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CASCADE SEPARATOR MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH
ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CS-4
CASCADE SEPARATOR
STANDARD DETAIL

I:\STORMWATER\JURISDICTIONS\USA\MA_SDE DESIGN TOOLS_STANDARD DETAILS\CASCADE\CS-4-DTL.DWG 4/16/2020 10:56 AM

CONTECH ENGINEERED SOLUTIONS

CDS TECHNOLOGIES

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

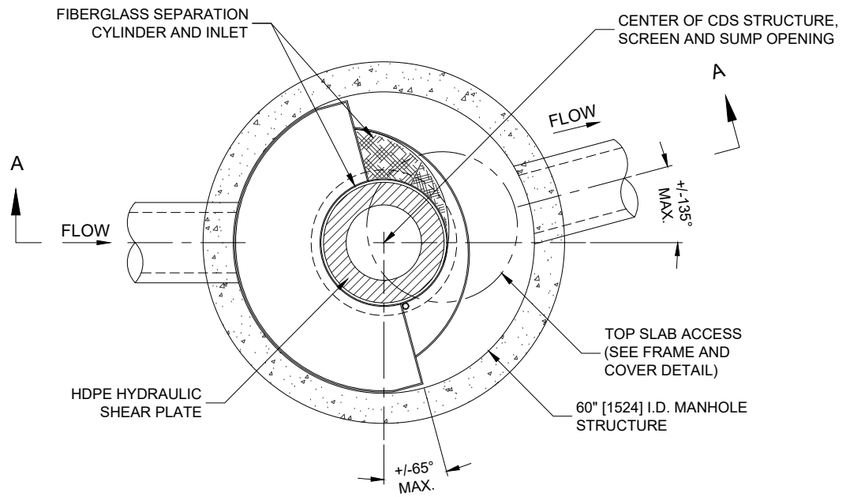
WAREHOUSE INDUSTRIAL DEVELOPMENT
FRANKLIN, MA

Area	**0.47 ac**	Unit Site Designation	**WQU 2**
Weighted C	**0.9**	Rainfall Station #	**68**
t_c	**6 min**		
CDS Model	**2015-5**	CDS Treatment Capacity	**1.4 cfs**

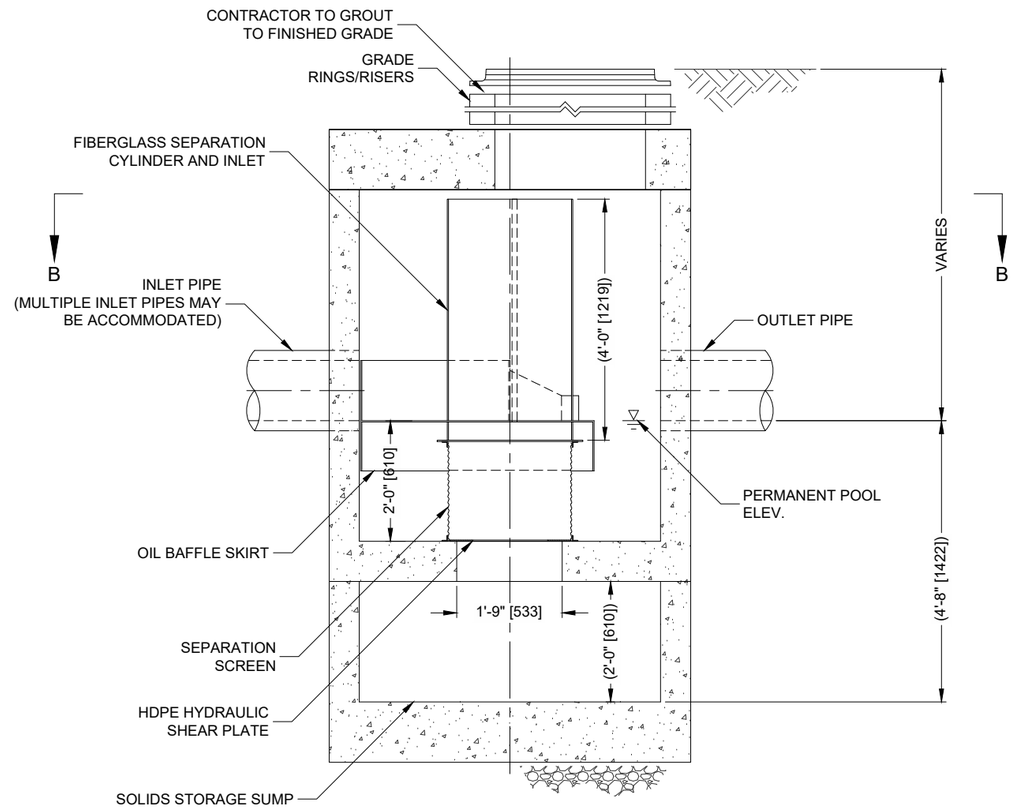
Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Total Flowrate (cfs)	Treated Flowrate (cfs)	Incremental Removal (%)
0.02	9.3%	9.3%	0.01	0.01	9.0
0.04	9.5%	18.8%	0.02	0.02	9.1
0.06	8.7%	27.5%	0.03	0.03	8.4
0.08	10.1%	37.6%	0.03	0.03	9.6
0.10	7.2%	44.8%	0.04	0.04	6.8
0.12	6.0%	50.8%	0.05	0.05	5.7
0.14	6.3%	57.1%	0.06	0.06	5.9
0.16	5.6%	62.7%	0.07	0.07	5.3
0.18	4.7%	67.4%	0.08	0.08	4.4
0.20	3.6%	71.0%	0.08	0.08	3.4
0.25	8.2%	79.1%	0.11	0.11	7.5
0.50	14.9%	94.0%	0.21	0.21	13.0
0.75	3.2%	97.3%	0.32	0.32	2.6
1.00	1.2%	98.5%	0.42	0.42	1.0
1.50	0.7%	99.2%	0.63	0.63	0.5
2.00	0.8%	100.0%	0.85	0.85	0.4
					92.6
				Removal Efficiency Adjustment[2] =	6.5%
				Predicted % Annual Rainfall Treated =	93.5%
				Predicted Net Annual Load Removal Efficiency =	**86.1%**

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.



PLAN VIEW B-B
N.T.S.



ELEVATION A-A
N.T.S.

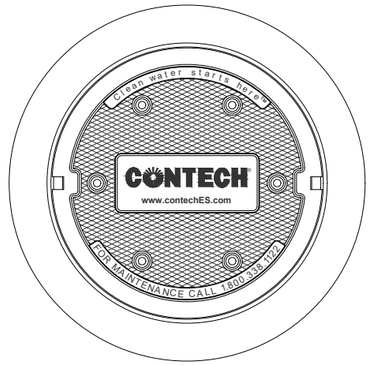
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,788,848; 6,641,720; 6,511,593; 6,581,783; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

CDS2015-5-C DESIGN NOTES

CDS2015-5-C RATED TREATMENT CAPACITY IS 1.4 CFS, OR PER LOCAL REGULATIONS.

THE STANDARD CDS2015-5-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			
WATER QUALITY FLOW RATE (CFS OR L/s)			*
PEAK FLOW RATE (CFS OR L/s)			*
RETURN PERIOD OF PEAK FLOW (YRS)			*
SCREEN APERTURE (2400 OR 4700)			*
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*
RIM ELEVATION			*
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT	
	*	*	

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO..
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CDS2015-5-C ONLINE CDS STANDARD DETAIL

\\AD.CONTECH-CPI.COM\ROOT\STORMWATER\JURISDICTIONS\USA\MA_SDE DESIGN TOOLS_STANDARD DETAILS\CDS2015-5-C-DTL.DWG 8/6/2018 4:25 PM

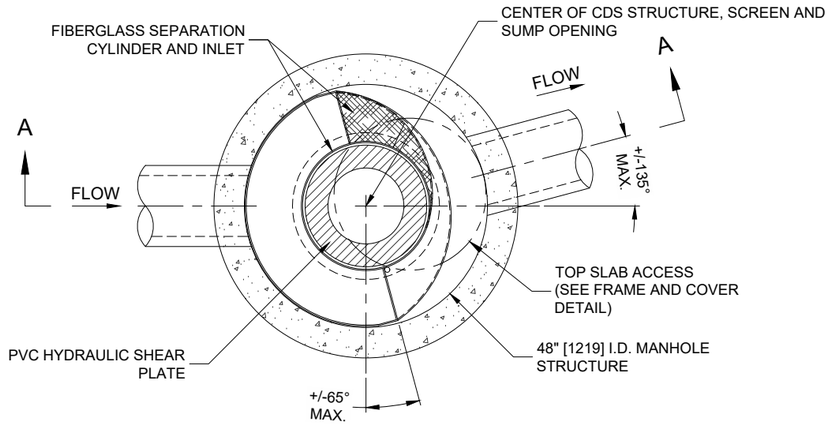
CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION
BASED ON THE RATIONAL RAINFALL METHOD

WAREHOUSE INDUSTRIAL DEVELOPMENT
FRANKLIN, MA

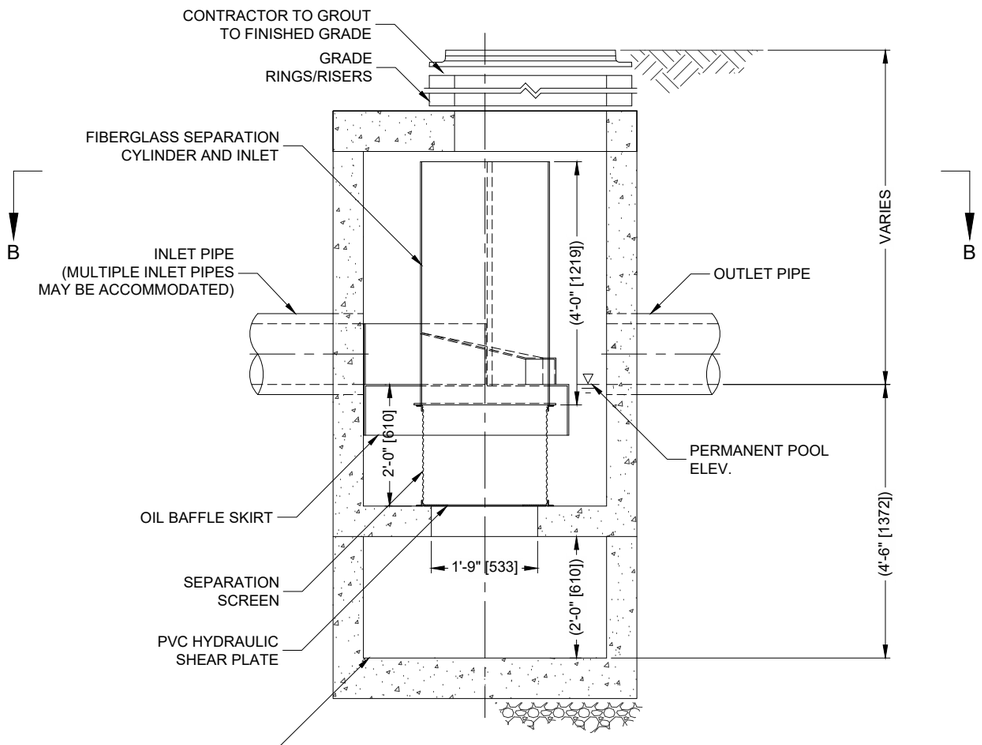
Area	**0.91 ac**	Unit Site Designation	**WQU 3**
Weighted C	**0.9**	Rainfall Station #	**68**
t_c	**6 min**		
CDS Model	**2015-4**	CDS Treatment Capacity	**1.4 cfs**

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	9.0
0.04	9.5%	18.8%	0.03	0.03	9.1
0.06	8.7%	27.5%	0.05	0.05	8.3
0.08	10.1%	37.6%	0.07	0.07	9.5
0.10	7.2%	44.8%	0.08	0.08	6.7
0.12	6.0%	50.8%	0.10	0.10	5.6
0.14	6.3%	57.1%	0.11	0.11	5.8
0.16	5.6%	62.7%	0.13	0.13	5.1
0.18	4.7%	67.4%	0.15	0.15	4.2
0.20	3.6%	71.0%	0.16	0.16	3.2
0.25	8.2%	79.1%	0.20	0.20	7.1
0.50	14.9%	94.0%	0.41	0.41	11.5
0.75	3.2%	97.3%	0.61	0.61	2.2
1.00	1.2%	98.5%	0.82	0.82	0.7
1.50	0.7%	99.2%	1.23	1.23	0.3
2.00	0.8%	100.0%	1.63	1.40	0.2
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
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
					88.3
				Removal Efficiency Adjustment[2] =	6.5%
				Predicted % Annual Rainfall Treated =	93.4%
				Predicted Net Annual Load Removal Efficiency =	**81.9%**

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.



PLAN VIEW B-B
N.T.S.



ELEVATION A-A
N.T.S.

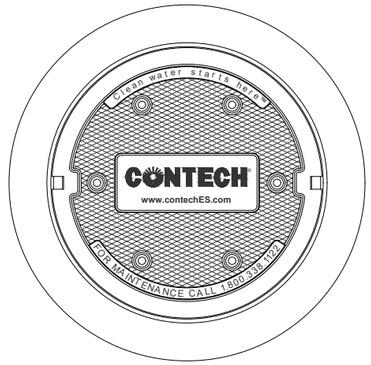
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,788,848; 6,641,720; 6,511,595; 6,581,783; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

CDS2015-4-C DESIGN NOTES

CDS2015-4-C RATED TREATMENT CAPACITY IS 1.4 CFS, OR PER LOCAL REGULATIONS.

THE STANDARD CDS2015-4-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			
WATER QUALITY FLOW RATE (CFS OR L/s)			*
PEAK FLOW RATE (CFS OR L/s)			*
RETURN PERIOD OF PEAK FLOW (YRS)			*
SCREEN APERTURE (2400 OR 4700)			*
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*
RIM ELEVATION			*
ANTI-FLOTATION BALLAST		WIDTH	HEIGHT
		*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO..
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CDS2015-4-C
ONLINE CDS
STANDARD DETAIL

\\AD.CONTECH-CPI.COM\ROOT\STORMWATER\JURISDICTIONS\USA\MA_SDE DESIGN TOOLS_STANDARD DETAILS\CDS2015-4-C-DTL.DWG 8/6/2018 4:22 PM

Estimated Net Annual Solids Load Reduction
Based on the Rational Rainfall Method

CONTECH ENGINEERED SOLUTIONS

CASCADE separator™

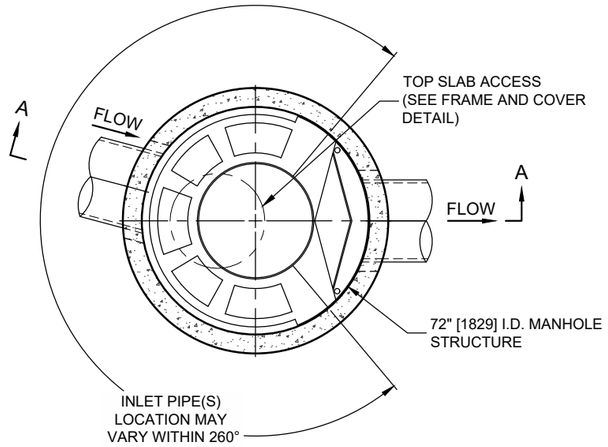
WAREHOUSE INDUSTRIAL DEV
FRANKLIN, MA
WQU 4

AREA	4.79	acres	CASCADE MODEL	CS-6	
WEIGHTED C	0.95		PARTICLE SIZE	110	microns
TC	8.00	minutes	RAINFALL STATION	68	

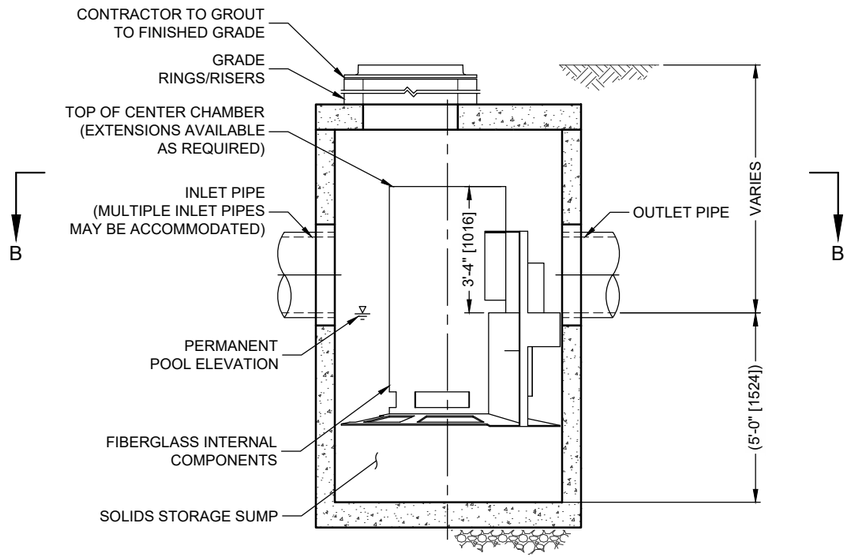
Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Hydraulic Loading Rate (gpm/ft2)	Removal Efficiency (%)	Incremental Removal (%)
0.02	9.3%	1.44	100.0	9.3
0.04	9.5%	2.89	100.0	9.5
0.06	8.7%	4.33	100.0	8.7
0.08	10.1%	5.78	100.0	10.1
0.10	7.2%	7.22	100.0	7.2
0.12	6.0%	8.67	100.0	6.0
0.14	6.3%	10.11	100.0	6.3
0.16	5.6%	11.56	100.0	5.6
0.18	4.7%	13.00	99.7	4.7
0.20	3.6%	14.45	98.3	3.6
0.25	8.2%	18.06	94.9	7.7
0.50	14.9%	36.12	77.9	11.6
0.75	3.2%	54.18	61.0	2.0
1.00	1.2%	72.24	44.0	0.5
1.50	0.7%	108.35	10.0	0.1
2.00	0.8%	115.09	3.0	0.0
				92.9
			Removal Efficiency Adjustment[2] =	6.5%
			Predicted % Annual Rainfall Treated =	93.4%
			Predicted Net Annual Load Removal Efficiency =	86.4%

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.



PLAN VIEW B-B
NOT TO SCALE



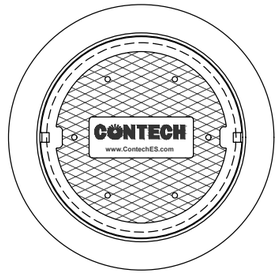
ELEVATION A-A
NOT TO SCALE

CASCADE
separator™

CASCADE SEPARATOR DESIGN NOTES

CS-6 RATED TREATMENT CAPACITY IS 5.6 CFS, OR PER LOCAL REGULATIONS.
THE STANDARD CS-6 CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES



FRAME AND COVER
(DIAMETER VARIES)
NOT TO SCALE

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
WATER QUALITY FLOW RATE (cfs [L/s])	
PEAK FLOW RATE (cfs [L/s])	
RETURN PERIOD OF PEAK FLOW (yrs)	
RIM ELEVATION	

PIPE DATA:	INVERT	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			

NOTES / SPECIAL REQUIREMENTS:

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CASCADE SEPARATOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. CASCADE SEPARATOR STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2' [610], AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. CASCADE SEPARATOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. ALTERNATE UNITS ARE SHOWN IN MILLIMETERS [mm].

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CASCADE SEPARATOR MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH
ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CS-6
CASCADE SEPARATOR
STANDARD DETAIL

I:\STORMWATER\JURISDICTIONS\USA\MA_SDE DESIGN TOOLS_STANDARD DETAILS\CASCADE\CS-6-DTL.DWG 4/10/2020 12:51 PM

		2-YR		10-YR	25-YR		100-YR
CARVER PLYMOUTH COUNTY NRCC-C	2.78	3.35	4.18	4.95	6.19	7.33	8.68
CHARLEMONT FRANKLIN COUNTY NRCC-C	2.48	3.02	3.70	4.33	5.32	6.22	7.29
CHARLTON WORCESTER COUNTY SOUTH NRCC-D	2.65	3.22	4.05	4.83	6.08	7.24	8.64
CHATHAM BARNSTABLE COUNTY EAST NRCC-C	2.74	3.26	4.03	4.74	5.88	6.92	8.15
CHELMSFORD MIDDLESEX COUNTY CENTRAL NRCC-D	2.58	3.09	3.90	4.65	5.87	7.00	8.36
CHELSEA SUFFOLK COUNTY NRCC-D	2.72	3.26	4.11	4.90	6.19	7.39	8.83
CHESHIRE BERKSHIRE COUNTY NORTH NRCC-B	2.42	2.81	3.48	4.09	5.07	5.97	7.04
CHESTER HAMPDEN COUNTY NRCC-C	2.60	3.11	3.89	4.60	5.74	6.80	8.05
CHESTERFIELD HAMPSHIRE COUNTY NRCC-C	2.55	3.07	3.80	4.47	5.54	6.52	7.68
CHICOPEE HAMPDEN COUNTY NRCC-C	2.60	3.11	3.89	4.60	5.74	6.80	8.05
CHILMARK DUKES COUNTY NRCC-C	2.80	3.31	4.14	4.91	6.16	7.30	8.67
CLARKSBURG BERKSHIRE COUNTY NORTH NRCC-B	2.42	2.81	3.48	4.09	5.07	5.97	7.04
CLINTON WORCESTER COUNTY CENTRAL NRCC-D	2.58	3.13	3.93	4.68	5.88	7.00	8.34
COHASSET NORFOLK COUNTY NRCC-C	2.69	3.22	4.07	4.86	6.15	7.35	8.80
COLRAIN FRANKLIN COUNTY NRCC-C	2.48	3.02	3.70	4.33	5.32	6.22	7.29
CONCORD MIDDLESEX COUNTY CENTRAL NRCC-D	2.58	3.09	3.90	4.65	5.87	7.00	8.36
CONWAY FRANKLIN COUNTY NRCC-C	2.48	3.02	3.70	4.33	5.32	6.22	7.29
CUMMINGTON HAMPSHIRE COUNTY NRCC-C	2.55	3.07	3.80	4.47	5.54	6.52	7.68
DALTON BERKSHIRE COUNTY NORTH NRCC-B	2.42	2.81	3.48	4.09	5.07	5.97	7.04
DANVERS ESSEX COUNTY NRCC-D	2.63	3.15	4.02	4.83	6.16	7.42	8.94
DARTMOUTH BRISTOL COUNTY NRCC-C	2.74	3.30	4.12	4.88	6.10	7.22	8.56
DEDHAM NORFOLK COUNTY NRCC-C	2.69	3.22	4.07	4.86	6.15	7.35	8.80
DEERFIELD FRANKLIN COUNTY NRCC-C	2.48	3.02	3.70	4.33	5.32	6.22	7.29
DENNIS BARNSTABLE COUNTY EAST NRCC-C	2.74	3.26	4.03	4.74	5.88	6.92	8.15
DIGHTON BRISTOL COUNTY NRCC-C	2.74	3.30	4.12	4.88	6.10	7.22	8.56
DOUGLAS WORCESTER COUNTY SOUTH NRCC-D	2.65	3.22	4.05	4.83	6.08	7.24	8.64
DOVER NORFOLK COUNTY NRCC-C	2.69	3.22	4.07	4.86	6.15	7.35	8.80
DRACUT MIDDLESEX COUNTY NORTH NRCC-C	2.52	3.00	3.76	4.46	5.60	6.66	7.92
DUDLEY WORCESTER COUNTY SOUTH NRCC-D	2.65	3.22	4.05	4.83	6.08	7.24	8.64
DUNSTABLE MIDDLESEX COUNTY NORTH NRCC-C	2.52	3.00	3.76	4.46	5.60	6.66	7.92
DUXBURY PLYMOUTH COUNTY NRCC-C	2.78	3.35	4.18	4.95	6.19	7.33	8.68
EAST BRIDGEWATER PLYMOUTH COUNTY NRCC-C	2.78	3.35	4.18	4.95	6.19	7.33	8.68
EAST BROOKFIELD WORCESTER COUNTY CENTRAL NRCC-D	2.58	3.13	3.93	4.68	5.88	7.00	8.34
EAST LONGMEADOW HAMPDEN COUNTY NRCC-C	2.60	3.11	3.89	4.60	5.74	6.80	8.05
EASTHAM BARNSTABLE COUNTY EAST NRCC-C	2.74	3.26	4.03	4.74	5.88	6.92	8.15
EASTHAMPTON HAMPSHIRE COUNTY NRCC-C	2.55	3.07	3.80	4.47	5.54	6.52	7.68
EASTON BRISTOL COUNTY NRCC-C	2.74	3.30	4.12	4.88	6.10	7.22	8.56
EDGARTOWN DUKES COUNTY NRCC-C	2.80	3.31	4.14	4.91	6.16	7.30	8.67
EGREMONT BERKSHIRE COUNTY SOUTH NRCC-C	2.50	2.94	3.69	4.38	5.50	6.54	7.78
ERVING FRANKLIN COUNTY NRCC-C	2.48	3.02	3.70	4.33	5.32	6.22	7.29
ESSEX ESSEX COUNTY NRCC-D	2.63	3.15	4.02	4.83	6.16	7.42	8.94
EVERETT MIDDLESEX COUNTY SOUTH NRCC-D	2.64	3.16	3.99	4.77	6.03	7.21	8.62
FAIRHAVEN BRISTOL COUNTY NRCC-C	2.74	3.30	4.12	4.88	6.10	7.22	8.56
FALL RIVER BRISTOL COUNTY NRCC-C	2.74	3.30	4.12	4.88	6.10	7.22	8.56
FALMOUTH BARNSTABLE COUNTY WEST NRCC-C	2.80	3.32	4.14	4.89	6.10	7.22	8.55
FITCHBURG WORCESTER COUNTY NORTH NRCC-C	2.47	2.95	3.68	4.35	5.43	6.42	7.60
FLORIDA BERKSHIRE COUNTY NORTH NRCC-B	2.42	2.81	3.48	4.09	5.07	5.97	7.04
FOXBOROUGH NORFOLK COUNTY NRCC-C	2.69	3.22	4.07	4.86	6.15	7.35	8.80
FRAMINGHAM MIDDLESEX COUNTY SOUTH NRCC-D	2.64	3.16	3.99	4.77	6.03	7.21	8.62
FRANKLIN NORFOLK COUNTY NRCC-C	2.69	3.22	4.07	4.86	6.15	7.35	8.80
FREETOWN BRISTOL COUNTY NRCC-C	2.74	3.30	4.12	4.88	6.10	7.22	8.56
GARDNER WORCESTER COUNTY NORTH NRCC-C	2.47	2.95	3.68	4.35	5.43	6.42	7.60
GEORGETOWN ESSEX COUNTY NRCC-D	2.63	3.15	4.02	4.83	6.16	7.42	8.94
GILL FRANKLIN COUNTY NRCC-C	2.48	3.02	3.70	4.33	5.32	6.22	7.29
GLOUCESTER ESSEX COUNTY NRCC-D	2.63	3.15	4.02	4.83	6.16	7.42	8.94
GOSHEN HAMPSHIRE COUNTY NRCC-C	2.55	3.07	3.80	4.47	5.54	6.52	7.68
GOSNOLD DUKES COUNTY NRCC-C	2.80	3.31	4.14	4.91	6.16	7.30	8.67
GRAFTON WORCESTER COUNTY SOUTH NRCC-D	2.65	3.22	4.05	4.83	6.08	7.24	8.64
GRANBY HAMPSHIRE COUNTY NRCC-C	2.55	3.07	3.80	4.47	5.54	6.52	7.68
GRANVILLE HAMPDEN COUNTY NRCC-C	2.60	3.11	3.89	4.60	5.74	6.80	8.05

DOWNSTREAM RECEIVING WATERBODY IMPAIRMENT ANALYSIS

The proposed project is located within the Charles River Watershed within The project site is most immediately tributary to Charles River by way of Dix Brook and Mine Brook to the West.

The "Massachusetts Year 2016 Integrated List of Waters," published December 2019, indicates Category 5 impairments for Mine Brook in the Charles River Watershed for Escherichia Coli (E. Coli).

The proposed project use will reduce the potential for effluent discharges to downstream receiving waters, thereby reducing the bacterial contamination of the Charles River.

The post-development site will not be open to the public, and there will be no public access contributing to pedestrian or pet traffic, thereby eliminating the prospect of pet waste entering the stormwater management system and discharging to downstream receiving waters through storm runoff. Future tenants will be advised not to dump waste into on-site drain inlets, rain gardens or sub-surface infiltration systems. Furthermore, the proposed project includes sanitary sewer service connection improvements, including precast concrete manholes and watertight PVC piping, which will replace existing on-site sewer infrastructure. This newer system will reduce the likelihood of unintentional subsurface sanitary waste discharges from old sewer infrastructure contaminating the groundwater table.

The proposed project will provide phosphorus removal via implementation of BMPs including two (2) surface infiltration rain gardens and six (6) subsurface infiltration systems, biannual catch basin sump cleaning, and leaf litter removal. The site will be subject to a Long-Term Operation and Maintenance Plan encompassing stormwater BMP inspection and maintenance, landscape management practices, good housekeeping, spill prevention and response, and snow removal per the recommendations of the Massachusetts Stormwater Management Standards. The removal of phosphorus will help reduce algae growth in downstream waterways, thereby reducing the consumption of dissolved oxygen through death and decomposition of algae.

The MS4 Stormwater Management Standards for development projects require a 60% minimum removal of the average annual load of total phosphorus from impervious areas prior to discharge. The following is an analysis of phosphorus removal efficiency for the proposed project. All calculations are per MA Small MS4 Permit Appendix F and Attachments 1 through 3 thereto.

POST-DEVELOPMENT PHOSPHORUS LOAD

Hydrologic Soil Group	= A	
Impervious Area	= 869,885 ft^2[1]	
Open Space Area	= 492,141 ft^2	
Wooded Area	= 0 ft^2	
P Load$_{IMP-IND}$	= (869,885/43,560) x 1.78	= 35.54 lb P/yr
P Load$_{PERV}$	= (492,141/43,560) x 0.21	= 2.37 lb P/yr
P Load$_{WOODED}$	= (0/43,560) x 0.13	= 0.00 lb P/yr
P_{DEV}	= 35.54 + 2.37 + 0.00	= **37.91 lb P/yr**

TARGET TOTAL PHOSPHORUS LOAD REDUCTION

$TPLR_{60}$ = 37.91 x 0.6

= **22.75 lb P/yr**

ENHANCED SWEEPING CREDIT (BIANNUAL)

$Credit_{SWEEPING}$ = IA^2 x $PLE_{IC-LAND-USE}$ x $PRF_{SWEEPING}$[3]

= (578,530/43,560) x 1.78 x 0.01 = **0.24 lb P/yr**

CATCH BASIN CLEANING CREDIT (BIANNUAL)

$Credit_{CB-CLEANING}$ = IA^4 x $PLE_{IC-LAND-USE}$ x $PRF_{CB-CLEANING}$

= (530,716/43,560) x 1.78 x 0.02 = **0.43 lb P/yr**

LEAF LITTER REMOVAL CREDIT

$Credit_{LL-RMV}$ = $LLRA^5$ x $PLE_{IC-LAND-USE}$ x 0.05

= (1,082,790/43,560) x 1.78 x 0.05 = **2.21 lb/yr**

---

[1] Existing building roof excluded.

[2] Includes all on-site paved ground surface areas including loading areas. Does not include sidewalk/hardscape areas.

[3] Mechanical broom technology, biannual

[4] Includes all on-site impervious ground surface areas tributary to existing and proposed catch basins. Does not include areas not tributary to existing and proposed catch basins.

[5] Includes all on-site non-wooded ground surface areas. Does not include roof areas.

Proposed BMPs: SWM-1, SWM-2, SWM-3, SWM-4, SWM-5, RG#1 & RG#2:

Infiltration Rate = 2.41in/hr

DSV_{UDS} = Chamber volume + stone void space volume below outlet invert

= 57,574 ft^3 (see Appendix B – Groundwater Recharge Calculations)

Impervious Area (IA_{UDS}) = 603,157 ft^2

Pervious Area (PA_{UDS}) = 156,551 ft^2

Runoff Depth from IA_{UDS} = (57,574 ft^3 / 603,157ft^2) x (12 in/ft) = 1.14 inches

P Load Reduction$_{UDS}$ = 96.5% (per Appendix F Attachment 3, Figure 3-5)

P Load$_{UDS}$ = [(603,157 /43,560) x 1.78] + [(156,551 /43,560) x 0.21] = 25.39 lb P/yr

BMP Reduction$_{UDS}$ = 25.39 x 0.965 = **24.50 lb P/yr**

Proposed BMPs: SWM-6:

Infiltration Rate = 2.41 in/hr

DSV_{UDS} = Chamber volume + stone void space volume below outlet invert

= 2,516 ft^3 (see Appendix B – Groundwater Recharge Calculations)

Impervious Area (IA_{UDS}) = 108,531 ft^2

Pervious Area (PA_{UDS}) = 0 ft^2

Runoff Depth from IA_{UDS} = (2,516 ft^3 / 108,531 ft^2) x (12 in/ft) = 0.28 inches

P Load Reduction$_{UDS}$ = 69% (per Appendix F Attachment 3, Figure 3-5)

P Load$_{UDS}$ = [(108,531 /43,560) x 1.78] + [(0 /43,560) x 0.21] = 4.43 lb P/yr

BMP Reduction$_{UDS}$ = 4.43 x 0.69 = **3.05 lb P/yr**

CUMULATIVE TOTAL PHOSPHORUS LOAD REDUCTION

Σ Credits = $Credit_{SWEEPING}$ + $Credit_{CB\text{-}CLEANING}$ + $Credit_{LL\text{-}RMV}$

= 0.24 + 0.43+ 2.21 = **2.88 lb P/yr**

Σ BMP Reductions = BMP Reduction$_{UDS}$ + BMP Reduction$_{UDS}$

= 24.50 + 3.05 = **27.55 lb P/yr**

$TPLR_{TOTAL}$ = Σ Credits + Σ BMP Reductions

= 2.88 + 27.55

= **30.43 lb P/yr > 22.75 lb P/yr**

TP Load Reduction Rate = 30.43/ 37.91

= **803% > 60.0%**

CONCLUSION

The proposed stormwater treatment train, including enhanced pavement sweeping, catch basin cleaning, and leaf litter removal practices incorporated into the Long-Term Operation and Maintenance Plan, achieves 80.3% total phosphorus removal for the project site.

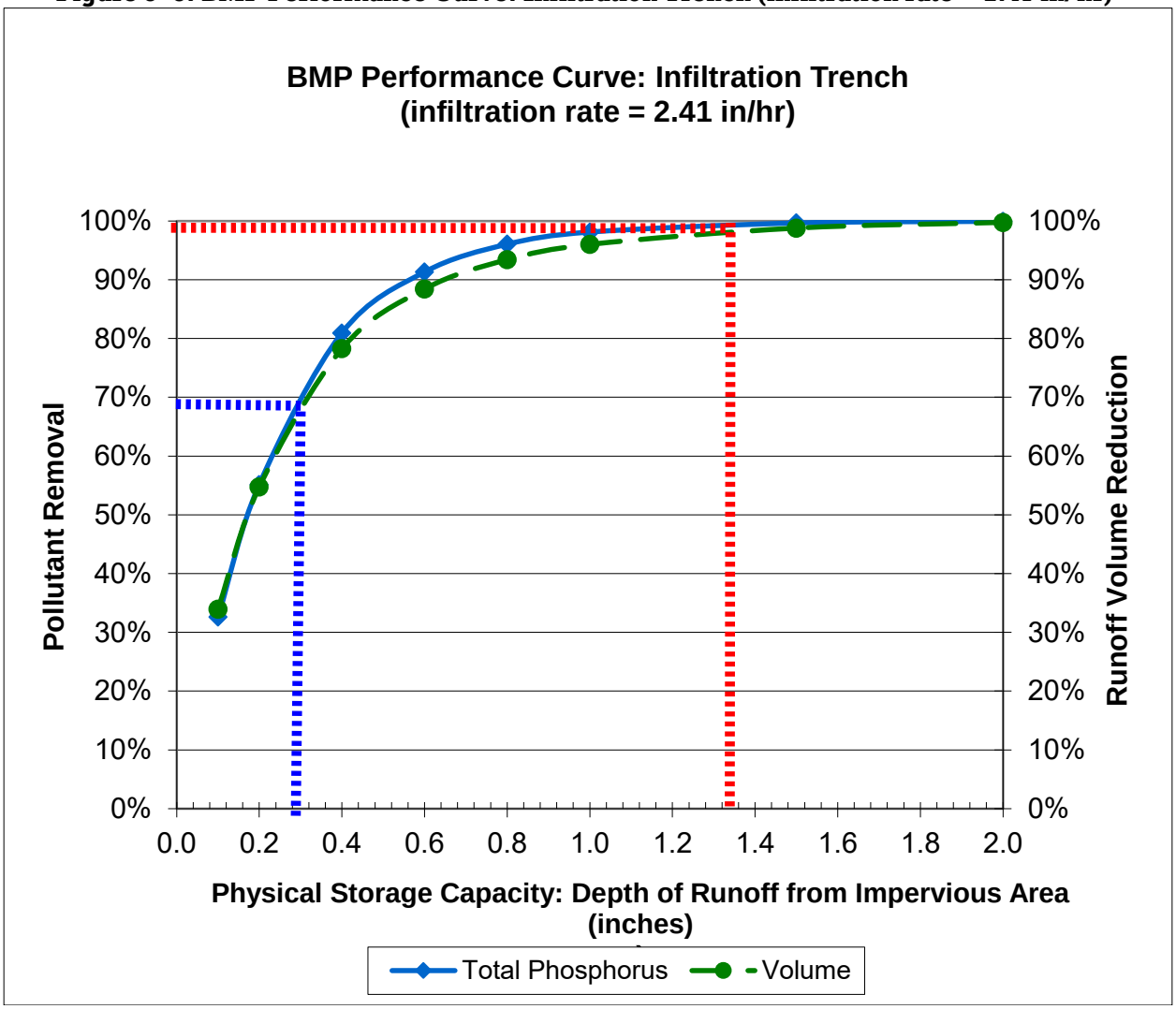
Additionally, the proposed use of the project site, including the implementation of the Long-Term Operation and Maintenance Plan, will not increase the likelihood of bacterial discharges to downstream receiving waters. The project proposes sanitary sewer service improvements which will prevent subsurface discharges of sanitary waste that could contaminate the groundwater table. The project site will not provide public access or amenities therefore pet waste will not be present on site.

The Long-Term Operation and Maintenance Plan is provided under Appendix D of the Stormwater Management Analysis.

Table 3- 8: Infiltration Trench (IR = 2.41 in/hr) BMP Performance Table

Infiltration Trench (IR = 2.41 in/hr) BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Runoff Volume Reduction	34.0%	54.7%	78.3%	88.4%	93.4%	96.0%	98.8%	99.8%
Cumulative Phosphorus Load Reduction	33%	55%	81%	91%	96%	98%	100%	100%

Figure 3- 5: BMP Performance Curve: Infiltration Trench (infiltration rate = 2.41 in/hr)



PROPOSED BMPs: SWM-1, SWM-2, SWM-3, SWM-4, SWM-5, SWM-7 RG#1 AND RG#2
1.34 INCHES = 98.0%

PROPOSED BMP: SWM-6
0.28 INCHES = 69%

PRELIMINARY SUBSURFACE ASSESSMENT REPORT

PROPOSED RE-DEVELOPMENT
100-200 FINANCIAL PARK
FRANKLIN, MASSACHUSETTS

Prepared For:

Highpoint Engineering, Inc.
980 Washington Street, Suite 216
Dedham, Massachusetts 02026

Prepared By:

McArdle Gannon Associates, Inc.
Engineers & Consultants

Pembroke, Massachusetts

DRAFT

MGA No. G0976
April 2023

McArdle Gannon Associates, Inc.
Engineers & Consultants

April 19, 2023
MGA No. G0976

Douglas Hartnett, P.E.
President
Highpoint Engineering, Inc.
980 Washington Street, Suite 216
Dedham, MA 02026

RE: Preliminary Subsurface Assessment Report for the Proposed Re-Development at 100-200 Financial Park in Franklin, Massachusetts.

Dear Doug:

This report summarizes the results of our preliminary subsurface assessment conducted at the site of the above referenced project. The purpose of our studies has been to assess subsurface conditions in the area of the proposed re-development at the site and provide preliminary geotechnical considerations for foundation, slab, pavement and stormwater infiltration design and related earthwork construction for the project.

This report had been prepared in accordance with our proposal to you dated January 18, 2023. The information contained in this report is subject to the Statement of Limitations attached as Appendix A.

BACKGROUND

Our understanding of the site and proposed project is based on our correspondence with you and review of the following:

- A plan entitled "Groundwater Contour Map, Spring 2010," Figure no. C.1, dated June 23, 2010, by Environmental Health & Engineering, Inc (EHE),
- An AutoCad File named "22051_Layout by Highpoint Engineering, Inc. (HEI), and
- Draft plans entitled "Limited/Complied Existing Conditions Plan," drawing no. EC-1 through EC-5, dated March 17, 2023, by Hancock Associates. (HA).

The subject site is located west of the intersection of Washington Street and Financial Park in Franklin, Massachusetts. A Site Locus is attached as Figure 1. The site is currently occupied by two buildings and associated pavement and landscape features. Financial Park encircles the subject property with residential properties to east, a commercial building to the south, and

DRAFT

wooded areas to the west and north of the property. Existing ground surface contours between about Elevation 242 and 270± feet are shown in the proposed development area on the referenced plans.

According to the above referenced plans, two warehouse buildings, a 224,300± square foot Building 1 and a 70,500± square feet Building 2, are planned at the site. Finish floors at Elevation of 262± feet are planned for the buildings. We understand that the smaller existing building at 200 Financial Park will remain and the larger building at 100 Financial Park will be razed to accommodate the re-development. Pavement areas and drainage improvements will also be included for the re-development.

SUBSURFACE EXPLORATIONS

M.J. Tuttle Excavating (MJT) of Holliston, Massachusetts excavated eight (8) test pits (TP-1 through TP-8) at the site on March 16, 2023 with a Caterpillar 416C backhoe. MJT excavated the pits to depths between about 11± and 14± feet below ground surface (bgs) and terminated the majority of the pits in natural granular soils. MJT ended test pit TP-14 in existing fill at 14± feet bgs.

A Massachusetts Licensed Soil Evaluator from our office observed and logged the test pits. "Form 11 – Soil Suitability Assessment for On-Site Sewage Disposal" logs are included as Appendix B. Pictures of the test pits are attached as Appendix C.

HA survey located and provided ground surface elevations at each test pit location. The elevations shown on the logs and discussed in the report are approximate. The approximate test pit locations are shown on the attached Figure 2: Exploration Location Plan.

LABORATORY TESTING

We performed gradation and moisture content tests on five (5) selected soil samples retrieved during the recent explorations for use in our preliminary studies. We performed the tests on samples of the natural granular soils to verify our field descriptions and to gain a preliminary understanding of the engineering behavior of the soils tested. The test results are attached as Appendix D. A summary of the lab test results is presented in Table I below:

TABLE I.
SUMMARY OF LABORATORY TEST RESULTS

Test Pit No.	Sample No.	Depth (feet)	Strata Description (USDA)	As Received Moisture (%)
TP-1	S-1	8-9	Sandy Loam	8.1
TP-3	S-1	5-6	Sand	5.3
TP-4	S-1	7-8	Sandy Loam	11
TP-6	S-1	4-5	Sand	4.7
TP-8	S-1	4-5	Silt Loam	17.9

DRAFT

SUBSURFACE CONDITIONS

The general subsurface profile encountered in the explorations at the site consists of topsoil, loam fill and granular fill underlain by natural granular soils (sand, sand and silt, sand and gravel, and silty sand and gravel). The approximate bottom of topsoil and fill depths and elevations are shown adjacent to each exploration on the attached Figure No. 2. Additional information can be found on the test pit logs attached as Appendix B.

The following is a general description of the subsurface strata encountered in the test pits performed at the site:

Topsoil or Loam Fill: Topsoil or loam fill (Soil Horizon Layer A or Ap on the logs) covers the ground surface at each exploration location. This layer is between about 0.5± to 2.7± feet thick and generally consists of dark brown, fine to medium sand with about 20 to 40 percent silt and up to about 15 percent roots/organic matter.

An approximately 0.5± to 0.7± feet thick buried topsoil layer (Soil Horizon A or Ap on the logs) exists below fill in test pits TP-1 and TP-2. The buried topsoil generally consists of dark brown, fine to medium sand with about 25 to 45 percent silt and up to 5 percent roots.

Fill: Fill below a loam fill layer at each test pit except TP-3, TP-5, and TP-6. The fill (including loam fill) is between about 0.8± and 9.3± feet thick, where penetrated, at the test pit locations. MJT terminated test pit TP-7 in fill at 14± feet bgs.

The existing fill is variable in its composition across the site. The fill is typically granular in nature, generally consisting of brown, fine to coarse sand with about 15 to 30 percent fine to coarse gravel, 10 to 20 percent silt, and 5 to 15 percent boulders and cobbles. The fill encountered in test pit TP-7 contains up to 15 percent roots.

Natural Granular Soils: The top of natural granular soil deposits (Soil Horizons C, C1 and C2 on the logs) are present below the topsoil, fill, and buried topsoil at between about 0.8 to 10± feet below existing ground surface in the test pit locations, except at test pit TP-7. These depths correspond to about Elevation 243.6± to 261.2± feet.

The granular soils encountered generally consist of sand, sand and silt, sand and gravel, and silty sand and gravel. The sand generally consists of beige, fine to medium/fine to coarse sand with up to about 15 percent fine/fine to coarse gravel, and up to 10 percent silt.

Natural Sand and Silt encountered at test pit TP-8 generally consists of beige, fine sand with about 45 percent silt.

Sand and gravel generally consist of light brown/orange-brown, fine to coarse sand with about 30 to 65 percent gravel, about 10 to 30 percent cobbles and boulders, and up to about 10 percent silt.

DRAFT

Silty Sand and gravel generally consist of olive-brown, fine to coarse sand with about 30 to 65 percent gravel, about 10 to 30 percent cobbles and boulders, and about 15 to 25 percent silt.

Groundwater: Groundwater was encountered at about 4.6± to 9± feet bgs during excavation of test pits TP-1, TP-2, TP-4 TP-5, and TP-8. These depths correspond to about Elevation 246.6± to 252.1± feet. Groundwater was not encountered to the depths explored during excavation of the remaining pits. We observed redoximorphic features, that are an indication of seasonal high groundwater levels, at a depth of about 5± to 5.2± feet below ground surface in test pit TP-5 and TP-8, corresponding to about Elevation 247.4± to 256.1± feet.

We measured the groundwater levels in several of the wells at the site shown on the referenced "Groundwater Contour Map, Spring 2010" on March 23, 2023. Those measurements are summarized in Table II below.

TABLE II.

March 26, 2023 Monitoring Well Measurement Summary

Well No.	Estimated Ground Surface Elevation(1) (feet±)	Water Level Depth (feet±)	Elevation of Water Level (feet±)
MW-5	247.0	7.0	240.0
MW-6	240.5	4.5	236.0
MW-8	246.5	4.5	242.0
MW-9	256.0	9.7	246.3
MW-10	250.5	5.1	245.4
MW-11	255.0	15.3	239.7
MW-16	246.0	4.1	241.9
MW-19	240.0	5.2	234.8
MW-20	251.0	10.1	240.9
MW-21	240.5	5.0	235.5

Notes:
(1) Ground surface elevation estimated from ground surface contours shown on plans entitled "Limited/Complied Existing Conditions Plan," drawing no. EC-1 through EC-5, dated March 17, 2023, by HA.

It should be noted that groundwater levels at the site will fluctuate due to varying climatic, surface, and subsurface conditions. Therefore, groundwater levels at the site at any given time may be different than those reported herein.

PRELIMINARY GEOTECHNICAL CONSIDERATIONS

Our preliminary conclusions and recommendations for the project are based on the results of the test pit explorations and laboratory tests discussed above and are addressed under the following subheadings:

DRAFT

Building Area Earthwork

The demolition of the existing building at 100 Financial Park and removal of numerous utilities and other structures is anticipated to accomplish the proposed re-development. Extensive excavations to remove building foundations and subsurface utilities and other structures will likely be performed. The existing fill and topsoil at the site are not considered suitable for support of the proposed buildings. The approximate depth/elevation of the bottom of fill and topsoil encountered at each test pit location is shown on the attached Figure No. 2.

The existing fill, topsoil, utilities to be abandoned, and other subsurface structures should be removed within building stress zones. Based on the subsurface conditions encountered at the exploration locations, we anticipate that the contractor may need to excavate to between about 2± to 11± feet below existing grades may be required to accomplish the removals. Deeper excavations may be required where deeper utilities or pockets of fill are encountered.

The contractor should place lifts of Granular Fill to backfill the above described excavations and fill to building subgrade elevations. The contractor should place Granular Fill within the proposed building areas in 12-inch maximum thick lifts up to proposed subgrade (bottom of base course) elevations. Each lift should be compacted to at least 95 percent of the material's maximum dry density as determined by ASTM D1557.

Granular Fill shall be free from ice and snow, roots, sod, rubbish and other deleterious or organic matter. Granular Fill shall conform to the following gradation requirements shown in Table III:

TABLE III.	
GRANULAR FILL	
Sieve Size	*Percent Passing by Weight*
*	100
No. 4	30 – 95
No. 40	10 – 70
No. 200	0 – 15**
*Two thirds (2/3) of the loose lift thickness. **0 – 8 for free-draining fill behind retaining walls.	

Foundations and Slabs

Provided that the contractor prepares the proposed building areas in accordance with our recommendations and under appropriate geotechnical observation, we expect that the proposed buildings can be supported on shallow spread footings. We envision that the building shallow foundations would be supported on undisturbed natural granular deposits or compacted Granular Fill. We will provide an allowable soil bearing capacity and other geotechnical criteria for use in footing design in our design phase Geotechnical Engineering Report for the project.

DRAFT

We anticipate that slab-on-grade construction will be appropriate for the building floor slabs. A base course layer of free-draining material consisting of sand and gravel or crushed stone will be required below proposed slabs. We intend to provide recommendations for proposed base course thicknesses and subgrade modulus upon completion of design phase geotechnical studies.

Pavements

Topsoil, subsoil, existing surface vegetation, trees and stumps should be removed from proposed pavement areas. If present, we anticipate that existing fill soils would be suitable for the support of the proposed pavement provided that the surface of the existing fill is systematically densified. The densification would consist of compacting the fill surface with a number of passes of a large vibratory drum roller. Granular Fill placement would be similar to the proposed building area.

Proposed pavements could then be supported on a base course layer of free-draining material. This layer typically consist of sand and gravel, dense graded aggregate, or a combination of the two. We intend to provide recommended pavements sections and associated earthwork construction guidance upon completion of design phase geotechnical studies and review of design traffic loads for the project.

Storm-water Infiltration

The subsurface conditions summarized on the Deep Observation Hole Logs attached as Appendix B are provided for consideration in the design of storm-water infiltration for the proposed re-development.

The natural soil deposits encountered in the test pits at the site contain variable gradations and percentages of gravel, sand, silt, and clay sized particles. As a result, the infiltration rates for these deposits will also be variable. We can conduct in-situ tests in proposed storm-water infiltration areas during our design phase studies to estimate the soil infiltration rates of the soils in these areas, if requested.

Estimated Seasonal High Groundwater (ESHG) levels are utilized to determine the design bottom of storm-water infiltration structures. In general, the groundwater levels that we documented at the time of the test pits correlate to the those shown on the referenced Figure C.1. The water level encountered during excavation of TP-1 and TP-2 differs from that shown on Figure C.1 and measured in monitoring wells on March 26, 2023 (see Table II on page 4). The water level encountered at these locations may be perched within in fill or around adjacent subsurface utilities. We recommend that we conduct additional subsurface explorations at these locations during the design phase to assess this condition.

DRAFT

Reuse of On-site Soils

We anticipate that the majority of the cuts to accomplish the proposed re-development grades at the site will be in natural granular soil or existing fill. Soils generated during cuts that meet the recommended gradation specification for Granular Fill (see Table III on page 5) that are maintained at suitable moisture contents for compaction should be suitable for reuse as fill to subgrade on the project. Cut soils that contain a percentages of fines (silt and clay sized particles) greater than about 15 percent may be difficult to place and compact when wet. Therefore, maintaining these soils at moisture contents suitable for placement and compaction and keeping the work area dry will be caveats to the successful reuse of these soils.

Laboratory moisture content tests performed on samples of the natural soils encountered in the test pits indicate that these soils were at moisture contents between about 4.7 to 17.9 percent at the time of sampling. Therefore, the contractor may need to dry or wet (clean sand soils) soil generated during cuts to suitable moisture contents for compaction prior to reuse.

Design Phase Studies

The considerations that we have presented in this report are for concept and preliminary design. We recommend that we conduct design phase geotechnical studies, including additional subsurface explorations (test borings and test pits) once the proposed development layout is determined in order to provide recommendations for use in the preparation of the design documents and performance of earthwork construction.

We trust that this preliminary information meets your needs regarding the project at this time. We are available to meet with the project team to discuss this information, if requested. If you have any questions regarding this information, please do not hesitate to call.

Regards,

MCARDLE GANNON ASSOCIATES, INC.

Robert E. Drown, P.E.
Geotechnical Engineer

John J. Gannon
Principal

RED/JJG/red

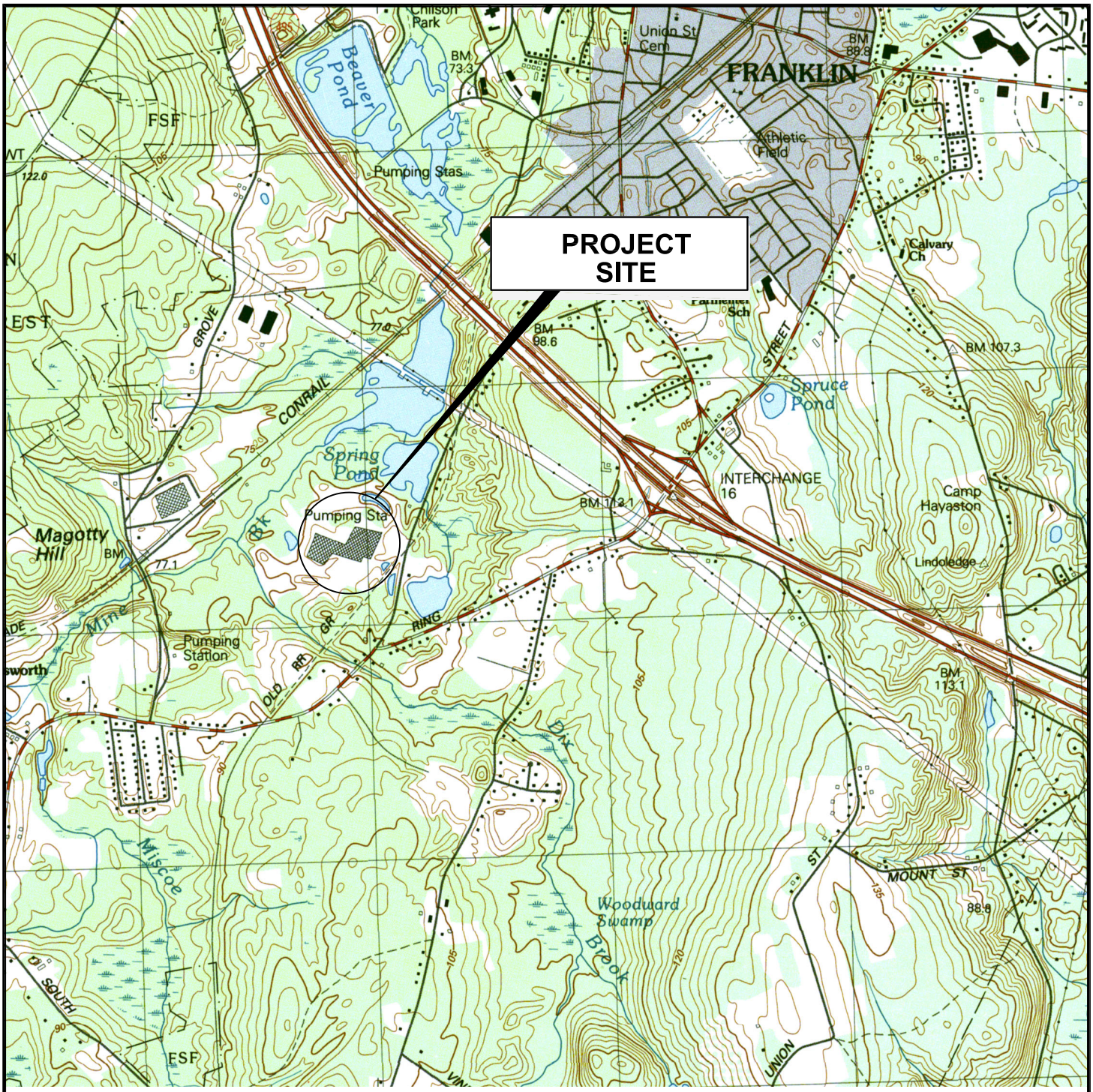
Attachments: Figure No. 1 – Locus Plan
Figure No. 2 – Exploration Location Plan

DRAFT

Figure No. C.1 – Groundwater Contour Map, Spring 2010
Appendix A – Statement of Limitations
Appendix B – Test Pit Logs
Appendix C – Test Pit Photos
Appendix D – Laboratory Test Results

DRAFT

FIGURES



SCALE: 1"=2000'

0 1000 2000 4000 FEET

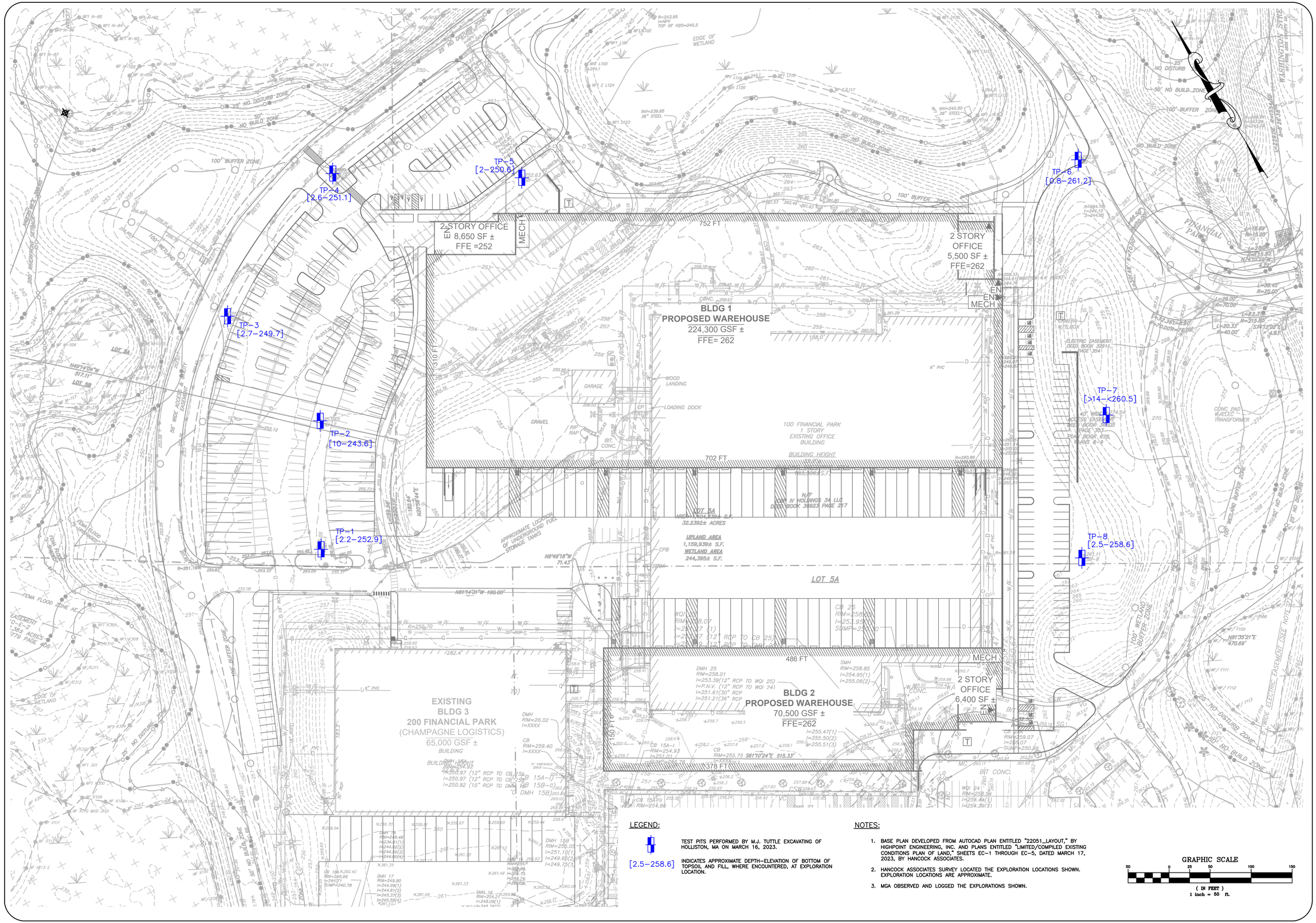
McArdle Gannon Associates, Inc.
Engineers & Consultants
300 Oak Street, Suite 460
Pembroke, MA 02359
781.826.0040 phone
781.735.0418 fax

LOCUS PLAN
PROPOSED REDEVELOPMENT
100-200 FINANCIAL PARK
FRANKLIN, MASSACHUSETTS

PROJECT: G0976 | DATE: 04/2023 | SCALE: AS NOTED

SKETCH NO.:
FIG. No. 1

DRAWN: RED
CHECKED: JJG



LEGEND:

TEST PITS PERFORMED BY M.J. TUTTLE EXCAVATING OF HOLLISTON, MA ON MARCH 16, 2023.

[2.5-258.6] INDICATES APPROXIMATE DEPTH-ELEVATION OF BOTTOM OF TOPSOIL AND FILL, WHERE ENCOUNTERED, AT EXPLORATION LOCATION.

NOTES:

1. BASE PLAN DEVELOPED FROM AUTOCAD PLAN ENTITLED "22051_LAYOUT," BY HIGHPOINT ENGINEERING, INC. AND PLANS ENTITLED "LIMITED/COMPILED EXISTING CONDITIONS PLAN OF LAND," SHEETS EC-1 THROUGH EC-5, DATED MARCH 17, 2023, BY HANCOCK ASSOCIATES.
2. HANCOCK ASSOCIATES SURVEY LOCATED THE EXPLORATION LOCATIONS SHOWN. EXPLORATION LOCATIONS ARE APPROXIMATE.
3. MGA OBSERVED AND LOGGED THE EXPLORATIONS SHOWN.

GRAPHIC SCALE

50 0 25 50 100 150

(IN FEET)

1 inch = 50 ft.

REVISIONS

DRAWN BY: RED

DESIGNED BY: RED

CHECKED BY: JJG

McArdle Gannon Associates, Inc.
Engineers & Consultants
300 Oak Street, Suite 460
Pembroke, MA 02359
781.826.0040 phone
781.735.0418 fax

EXPLORATION LOCATION PLAN

PROPOSED REDEVELOPMENT

100-200 FINANCIAL PARK, FRANKLIN, MASSACHUSETTS

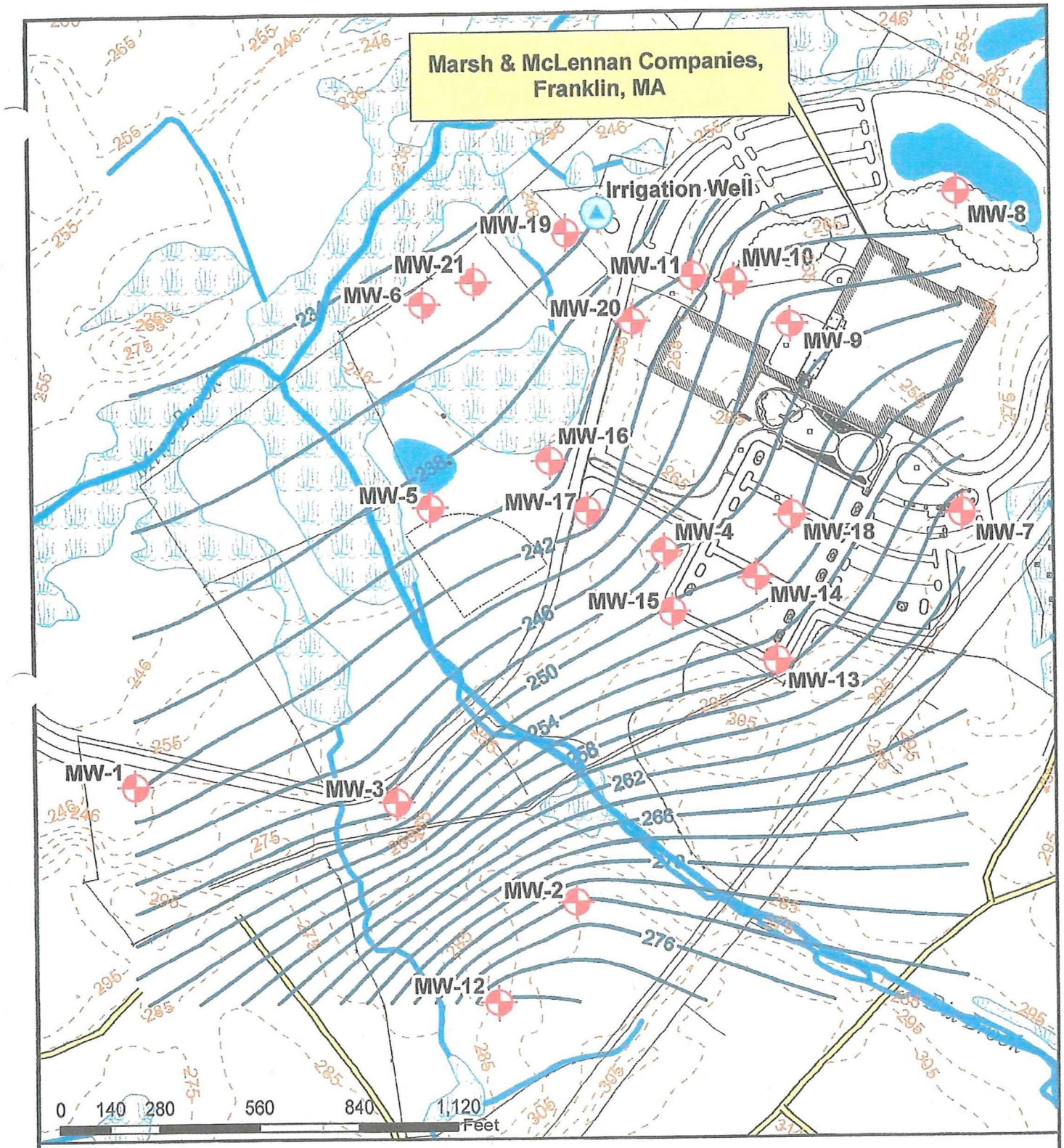
APRIL 2023

SCALE: 1" = 50'

JOB No. G0976

FIG No. 2

SHEET 1 OF 1



Legend

- 248 — Groundwater Contour (feet)
- Monitoring Well
- Irrigation Well
- Local Public Surface Road
- Private Road
- 265 — Elevation Contour (feet)
- Wetlands
- Open Water
- Stream/Brook

N
W E
S

Plan Notes:

Created using ESRI ArcView. Site Plan details obtained from site specific information using GPS and field surveys. Additional Data layers obtained from MassGIS.

Environmental Health & Engineering, Inc.
117 Fourth Avenue
Needham, MA 02494
1-781-247-4300 1-800-825-5343

Project No: 17161

Location: Marsh & McLennan Companies Franklin, Massachusetts

Title: **Groundwater Contour Map, Spring 2010**

Scale:	Drawn by:	Approved:	Date:	Figure No:
As Shown	SBL	CDC	June 23, 2010	C.1

DWG No./Path: P:\17161\ARCView files\Figure1_w_contours.mxd

APPENDIX A: STATEMENT OF LIMITATIONS

STATEMENT OF LIMITATIONS

Explorations

The analysis and recommendations submitted in this preliminary report are based in part upon the data obtained from subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

The stratification lines on the logs represent the approximate boundary between soil types and the transition may be gradual.

Water level readings have been made in the explorations at the time and under the conditions stated on the logs. This data has been reviewed and interpretations made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors that are different from the time the measurements were made.

Review

In the event that any change in the nature, design or location of the proposed structure are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this preliminary report modified or verified in writing.

It is recommended that this firm be provided the opportunity for a general review of final design and specifications in order that earthwork recommendations may be properly interpreted and implemented in the design and specifications.

Construction

It is recommended that this firm be retained to provide soil engineering services during the construction phase of the work. This is to observe compliance with design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

Use of Report

This preliminary report has been prepared for the exclusive use of Highpoint Engineering, Inc. for specific application to the proposed Re-development at 100-200 Financial Park in Franklin, Massachusetts, in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made.

APPENDIX B: TEST PIT LOGS

Commonwealth of Massachusetts
City/Town of Franklin, MA

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

G0976 - Proposed Redevelopment, 100-200 Financial Park, Franklin, MA

C. On-Site Review (continued)

Deep Observation Hole Number: TP-1 Ground Surface Elevation (ft): 255.05± (1)

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-9	A Fill	-	-	-	-	-	-	-	-	-	
9-20	Fill	-	-	-	-	-	-	-	-	-	
20-26	Ap	10YR 3/2	-	-	-	Sandy Loam	5	0	Massive	V. Friable	
26-64	C1	10YR 5/4	-	-	-	Loamy Sand	10-15	5-10	Massive	V. Friable	
64-132	C2D	10YR 4/3	-	-	-	Sandy Loam	25-30	15-20	Massive	V. Friable	(2)(3)(4)(5)

Additional Notes:

(1) Ground surface elevation provided by Hancock Associates.

(2) Water slowly seeping into north, east and south sides of deep hole at 56 inches below ground surface (bgs).

(3) Sample collected from 96-108 inches bgs.

(4) No redoximorphic features observed.

(5) Refusal to backhoe bucket on large boulders within C2D layer at 132 inches. D = Dense

McArdle Gannon Associates, Inc.
Engineers & Consultants

300 Oak Street, Suite 460
Pembroke, MA 02359

Phone: 781.826.0040
Fax: 781.735.0418

Engineer: Robert E. Drown, P.E. #SE13855
Operator: Mike Tuttle
Equipment: Caterpillar 416C Backhoe
Date: 03/16/2023

Commonwealth of Massachusetts
City/Town of Franklin, MA

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

G0976 - Proposed Redevelopment, 100-200 Financial Park, Franklin, MA

C. On-Site Review (continued)

Deep Observation Hole Number: TP-2 Ground Surface Elevation (ft): 253.55± (1)

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-20	A Fill	-	-	-	-	-	-	-	-	-	
20-112	Fill	-	-	-	-	-	-	-	-	-	-
112-120	A	10YR 3/2	-	-	-	Sandy Loam	5	0	Massive	V. Friable	(2)
120-168	C1	10YR 5/3	-	-	-	Sand	15-20	5-10	Single Grain	Loose	(3)

Additional Notes:

(1) Ground surface elevation provided by Hancock Associates.

(2) Water slowly seeping into eastern and southern sides of hole at 84 inches bgs.

(3) No redoximorphic features observed.

McArdle Gannon Associates, Inc.
Engineers & Consultants
300 Oak Street, Suite 460
Pembroke, MA 02359
Phone: 781.826.0040
Fax: 781.735.0418

Engineer: Robert E. Drown, P.E. #SE13855
Operator: Mike Tuttle
Equipment: Caterpillar 416C Backhoe
Date: 03/16/2023

Commonwealth of Massachusetts
City/Town of Franklin, MA

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

G0976 - Proposed Redevelopment, 100-200 Financial Park, Franklin, MA

C. On-Site Review (continued)

Deep Observation Hole Number: TP-3 Ground Surface Elevation (ft): 252.44± (1)

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color- Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-32	Ap	10YR 3/2	-	-	-	Sandy Loam	5-10	0	Massive	V. Friable	
32-168	C	10YR 6/2	-	-	-	Sand	5-10	0	Single Grain	Loose	(2)(3)

Additional Notes:

(1) Ground surface elevation provided by Hancock Associates.

(2) Sample collected from 60-72 inches bgs.

(3) No groundwater or redoximorphic features observed.

McArdle Gannon Associates, Inc.
Engineers & Consultants

300 Oak Street, Suite 460
Pembroke, MA 02359

Phone: 781.826.0040
Fax: 781.735.0418

Engineer: Robert E. Drown, P.E. #SE13855
Operator: Mike Tuttle
Equipment: Caterpillar 416C Backhoe
Date: 03/16/2023

Commonwealth of Massachusetts
City/Town of Franklin, MA

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

G0976 - Proposed Redevelopment, 100-200 Financial Park, Franklin, MA

C. On-Site Review (continued)

Deep Observation Hole Number: TP-4 Ground Surface Elevation (ft): 253.72± (1)

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-10	A Fill	-	-	-	-	-	-	-	-	-	
10-32	Fill	-	-	-	-	-	-	-	-	-	
32-72	C1	10YR 5/2	-	-	-	Sand	5-10	0	Single Grain	Loose	(2)
72-132	C2	10YR 5/4	-	-	-	Sandy Loam	25-30	5-10	Massive	V. Friable	(3)(4)(5)

Additional Notes:

(1) Ground surface elevation provided by Hancock Associates.

(2) Groundwater flowing quickly into sides of hole at 60 inches bgs.

(3) Sample collected from 84-96 inches bgs.

(4) Deep hole walls collapsed from about 120 to 132 inches bgs.

(5) No redoximorphic features observed.

McArdle Gannon Associates, Inc.
Engineers & Consultants

300 Oak Street, Suite 460
Pembroke, MA 02359

Phone: 781.826.0040
Fax: 781.735.0418

Engineer: Robert E. Drown, P.E. #SE13855
Operator: Mike Tuttle
Equipment: Caterpillar 416C Backhoe
Date: 03/16/2023

Commonwealth of Massachusetts
City/Town of Franklin, MA

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

G0976 - Proposed Redevelopment, 100-200 Financial Park, Franklin, MA

C. On-Site Review (continued)

Deep Observation Hole Number: TP-5 Ground Surface Elevation (ft): 252.63± (1)

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-24	A	10YR 3/2	-	-	-	Sandy Loam	5-10	0-5	Massive	V. Friable	
24-132	C1	10YR 5/4	62	5YR 5/8	30	Loamy Sand	15-20	5-10	Massive	V. Friable	(2)

Additional Notes:

(1) Ground surface elevation provided by Hancock Associates.

(2) Groundwater seeping quickly into sides of hole at 72 inches bgs.

McArdle Gannon Associates, Inc.
Engineers & Consultants
300 Oak Street, Suite 460
Pembroke, MA 02359
Phone: 781.826.0040
Fax: 781.735.0418

Engineer: Robert E. Drown, P.E. #SE13855
Operator: Mike Tuttle
Equipment: Caterpillar 416C Backhoe
Date: 03/16/2023

Commonwealth of Massachusetts
City/Town of Franklin, MA

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

G0976 - Proposed Redevelopment, 100-200 Financial Park, Franklin, MA

C. On-Site Review (continued)

Deep Observation Hole Number: TP-6 Ground Surface Elevation (ft): 262.02± (1)

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-10	A	10YR 4/3	-	-	-	Sandy Loam	5	0	Massive	V. Friable	
10-72	C1	10YR 5/3	-	-	-	Sand	30-25	15-20	Single Grain	Loose	
72-144	C2	10YR 5/2	-	-	-	Sand	5-10	5	Single Grain	Loose	(2)(3)(4)

Additional Notes:

(1) Ground surface elevation provided by Hancock Associates.

(2) Sample collected from 48-60 inches bgs.

(3) Deep hole walls collapsed from about 120 to 144 inches bgs.

(4) No redoximorphic features observed.

McArdle Gannon Associates, Inc.
Engineers & Consultants
300 Oak Street, Suite 460
Pembroke, MA 02359
Phone: 781.826.0040
Fax: 781.735.0418

Engineer: Robert E. Drown, P.E. #SE13855
Operator: Mike Tuttle
Equipment: Caterpillar 416C Backhoe
Date: 03/16/2023

Commonwealth of Massachusetts
City/Town of Franklin, MA

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

G0976 - Proposed Redevelopment, 100-200 Financial Park, Franklin, MA

C. On-Site Review (continued)

Deep Observation Hole Number: TP-7 Ground Surface Elevation (ft): 274.54± (1)

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color- Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-6	Ap Fill	-	-	-	-	-	-	-	-	-	
6-168	Fill	-	-	-	-	-	-	-	-	-	(2)

Additional Notes:

(1) Ground surface elevation provided by Hancock Associates.

(2) No groundwater or redoximorphic features observed.

McArdle Gannon Associates, Inc.
Engineers & Consultants

300 Oak Street, Suite 460 Phone: 781.826.0040
Pembroke, MA 02359 Fax: 781.735.0418

Engineer: Robert E. Drown, P.E. #SE13855
Operator: Mike Tuttle
Equipment: Caterpillar 416C Backhoe
Date: 03/16/2023

Commonwealth of Massachusetts
City/Town of Franklin, MA

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

G0976 - Proposed Redevelopment, 100-200 Financial Park, Franklin, MA

C. On-Site Review (continued)

Deep Observation Hole Number: TP-8 Ground Surface Elevation (ft): 261.11± (1)

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-12	A Fill	-	-	-	-	-	-	-	-	-	
12-30	Fill	-	-	-	-	-	-	-	-	-	
30-44	C1	10YR 6/8	-	-	-	Sand	25-30	10-15	Single Grain	Loose	
44-66	C2	10YR 5/2	60	5YR 5/8	20	Silt Loam	0	0	Massive	V. Friable	(2)
66-144	C3	10YR 5/4	-	-	-	Sandy Loam	20-25	5-10	Massive	Friable	(3)

Additional Notes:

(1) Ground surface elevation provided by Hancock Associates.

(2) Sample collected from 48-60 inches bgs.

(3) Groundwater seeping slowing into sides of hole at 108 inches bgs.

McArdle Gannon Associates, Inc.
Engineers & Consultants

300 Oak Street, Suite 460
Pembroke, MA 02359

Phone: 781.826.0040
Fax: 781.735.0418

Engineer: Robert E. Drown, P.E. #SE13855
Operator: Mike Tuttle
Equipment: Caterpillar 416C Backhoe
Date: 03/16/2023

APPENDIX C: TEST PIT PHOTOS



Photo #1: Looking northeast at test pit TP-1.



Photo #2: Looking northeast at soil excavated from test pit TP-1.



Photo #3: Looking southeast at test pit TP-2.



Photo #4: Looking northeast at soil excavated from test pit TP-2.



Photo #5: Looking east at test pit TP-3.



Photo #6: Looking northeast at soil excavated from test pit TP-3.



Photo #7: Looking southwest at test pit TP-4.



Photo #8: Looking southwest at soil excavated from test pit TP-4.



Photo #9: Looking south at test pit TP-5.



Photo #10: Looking southeast at soil excavated from test pit TP-5.



Photo #11: Looking northeast at test pit TP-6.



Photo #12: Looking north at soil excavated from test pit TP-6.



Photo #13: Looking northeast at test pit TP-7.



Photo #14: Looking north at soil excavated from test pit TP-7.



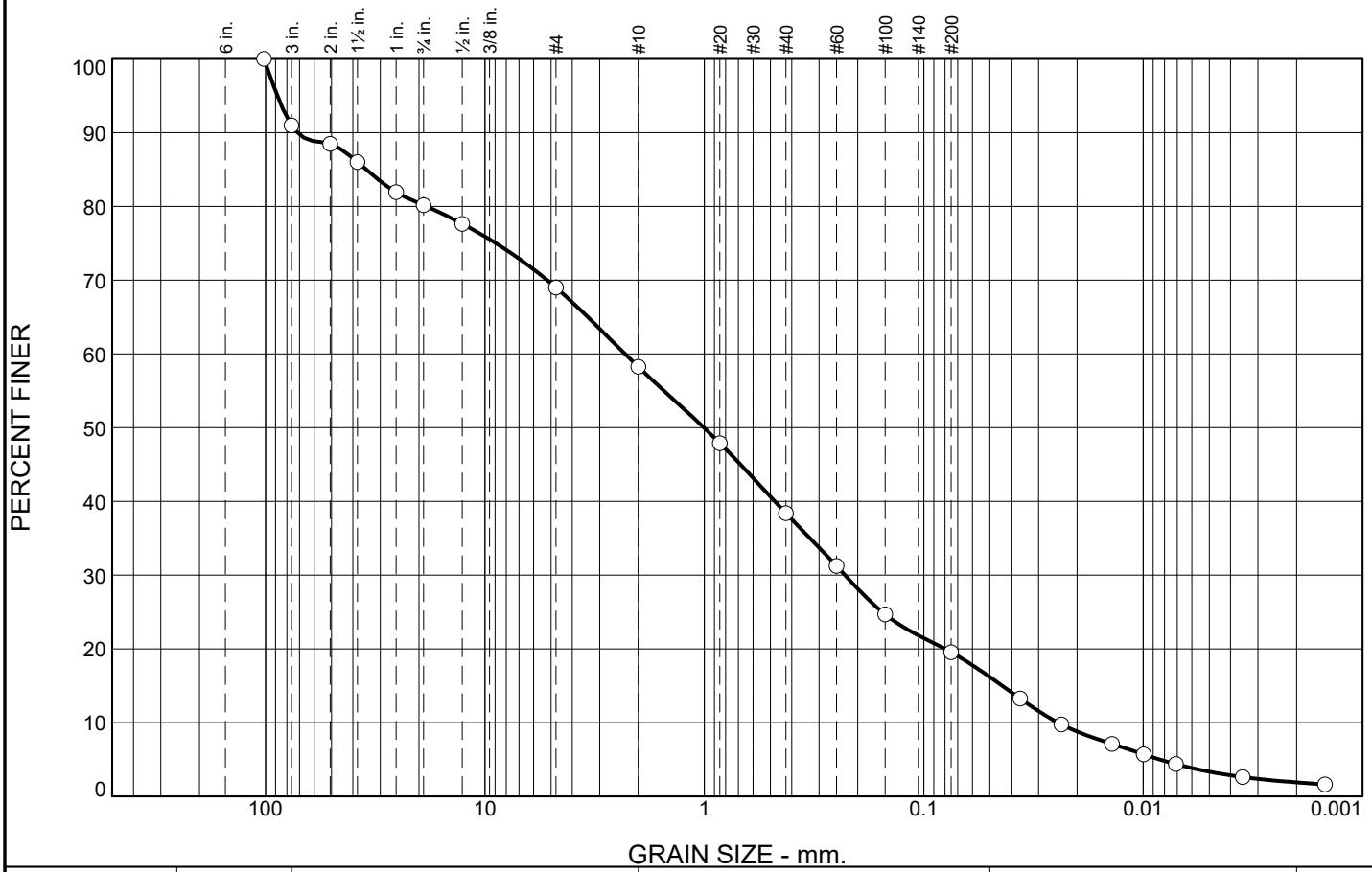
Photo #13: Looking east at test pit TP-8.



Photo #16: Looking northeast at soil excavated from test pit TP-8.

APPENDIX D: LABORATORY TEST RESULTS

PARTICLE SIZE DISTRIBUTION REPORT



% Stones	% +3"	% Gravel			% Sand					% Silt		% Clay
		Coarse	Medium	Fine	V. Crs.	Crs.	Med.	Fine	V. Fine	Crs.	Fine	
0.0	9.0	10.8	11.2	10.7	8.4	9.2	9.5	9.7	5.3	7.4	6.9	1.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
4	100.0		
3	91.0		
2	88.5		
1.5	86.0		
1	81.9		
3/4	80.2		
1/2	77.6		
#4	69.0		
#10	58.3		
#20	47.9		
#40	38.4		
#60	31.2		
#100	24.7		
#200	19.5		
0.0364 mm.	13.3		
0.0236 mm.	9.8		
0.0139 mm.	7.1		
0.0100 mm.	5.7		
0.0071 mm.	4.4		
0.0035 mm.	2.6		
0.0015 mm.	1.6		

* (no specification provided)

Soil Description

USDA Classification: Sandy Loam

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 71.6662 D_{85}= 34.7661 D_{60}= 2.2984
D_{50}= 1.0050 D_{30}= 0.2286 D_{15}= 0.0439
D_{10}= 0.0245 C_u= 93.94 C_c= 0.93

Classification

USCS= AASHTO=

Remarks

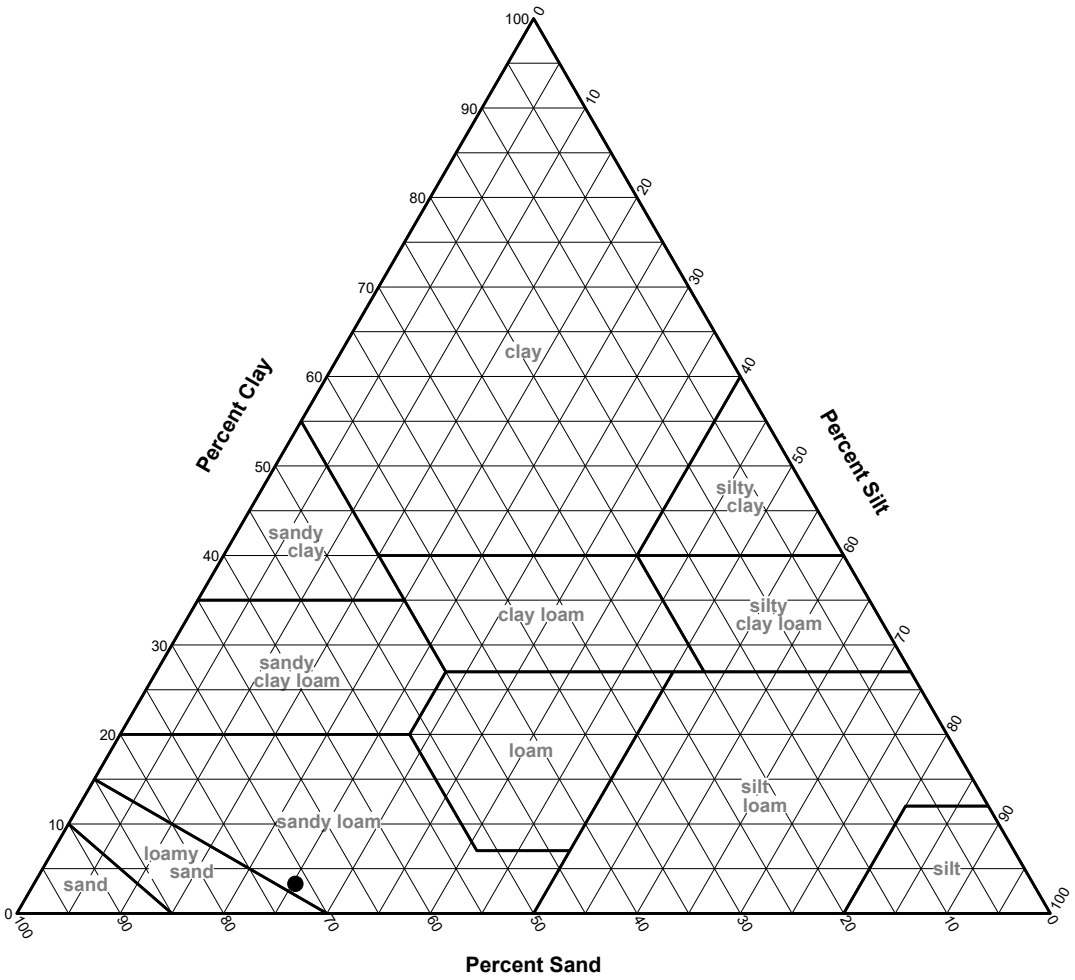
As received Moisture Content: 8.1%
SL-1971

Source of Sample: TP-1 **Depth:** 8-9'
Sample Number: S-1 **Date:** 3/20/23

McArdle Gannon Associates, Inc.
Engineers & Consultants

Client: Highpoint Engineering, Inc.
Project: Proposed Redevelopment
100 Financial Park, Franklin, MA
Project No: G0976 **Figure**

USDA Soil Classification



SOIL DATA

	Source	Sample No.	Depth	Percentages From Material Passing a #10 Sieve			Classification
				Sand	Silt	Clay	
●	TP-1	S-1	8-9'	71.4	25.4	3.3	Sandy loam
■	TP-1						

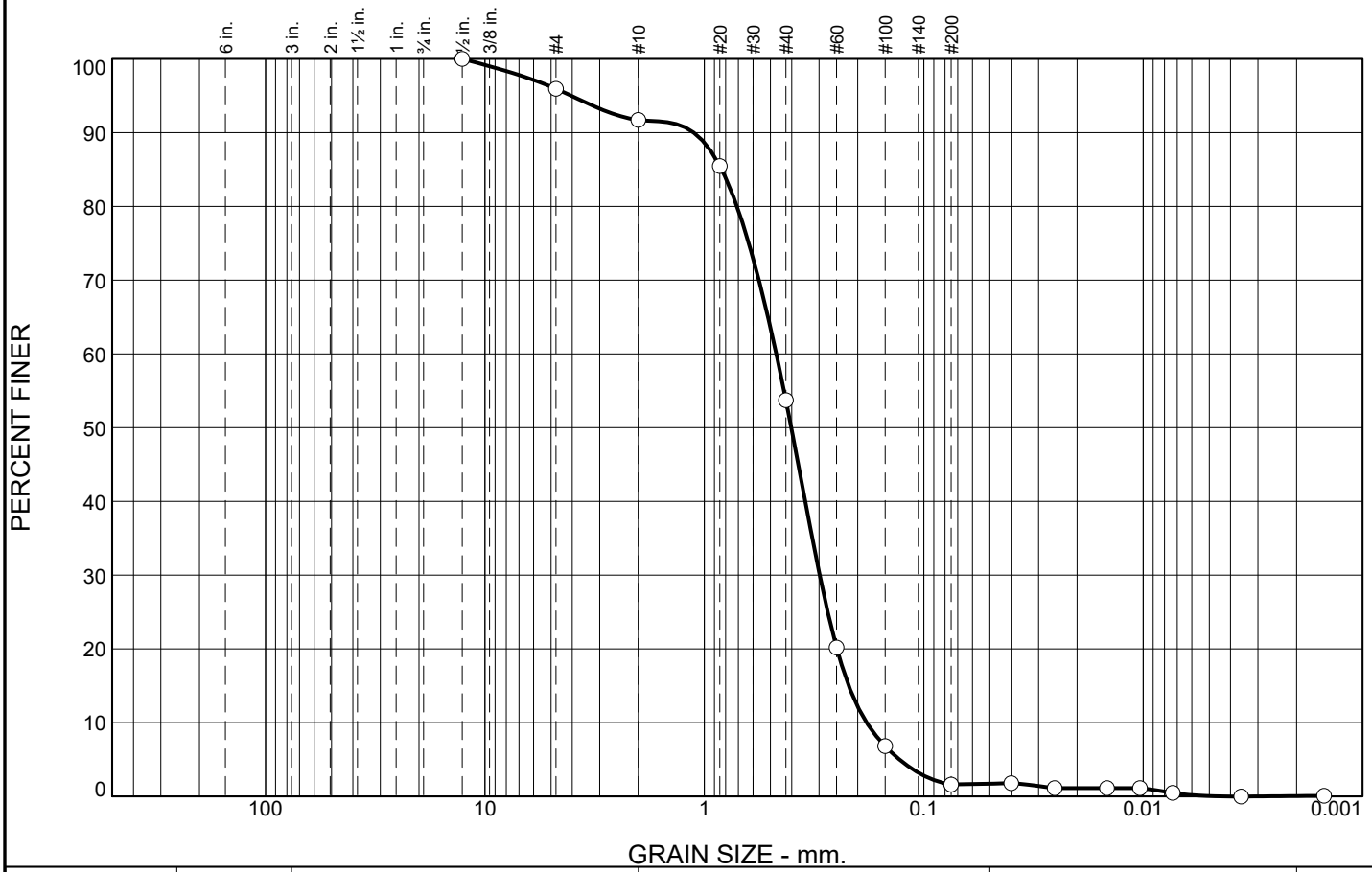
McArdle Gannon Associates, Inc.
Engineers & Consultants

Client: Highpoint Engineering, Inc.

Project: Proposed Redevelopment
100 Financial Park, Franklin, MA

Project No.: G0976 **Figure**

PARTICLE SIZE DISTRIBUTION REPORT



% Stones	% +3"	% Gravel			% Sand					% Silt		% Clay
		Coarse	Medium	Fine	V. Crs.	Crs.	Med.	Fine	V. Fine	Crs.	Fine	
0.0	0.0	0.0	4.0	4.3	3.1	25.0	43.4	17.4	1.1	0.6	1.1	0.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2	100.0		
#4	96.0		
#10	91.7		
#20	85.5		
#40	53.7		
#60	20.2		
#100	6.8		
#200	1.6		
0.0399 mm.	1.8		
0.0253 mm.	1.1		
0.0146 mm.	1.1		
0.0103 mm.	1.1		
0.0073 mm.	0.5		
0.0036 mm.			
0.0015 mm.	0.1		

* (no specification provided)

Soil Description

USDA Classification: Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.1174 D_{85}= 0.8342 D_{60}= 0.4700
D_{50}= 0.4016 D_{30}= 0.2981 D_{15}= 0.2198
D_{10}= 0.1823 C_u= 2.58 C_c= 1.04

Classification

USCS= SP AASHTO=

Remarks

As received Moisture Content: 5.3%
SL-1971

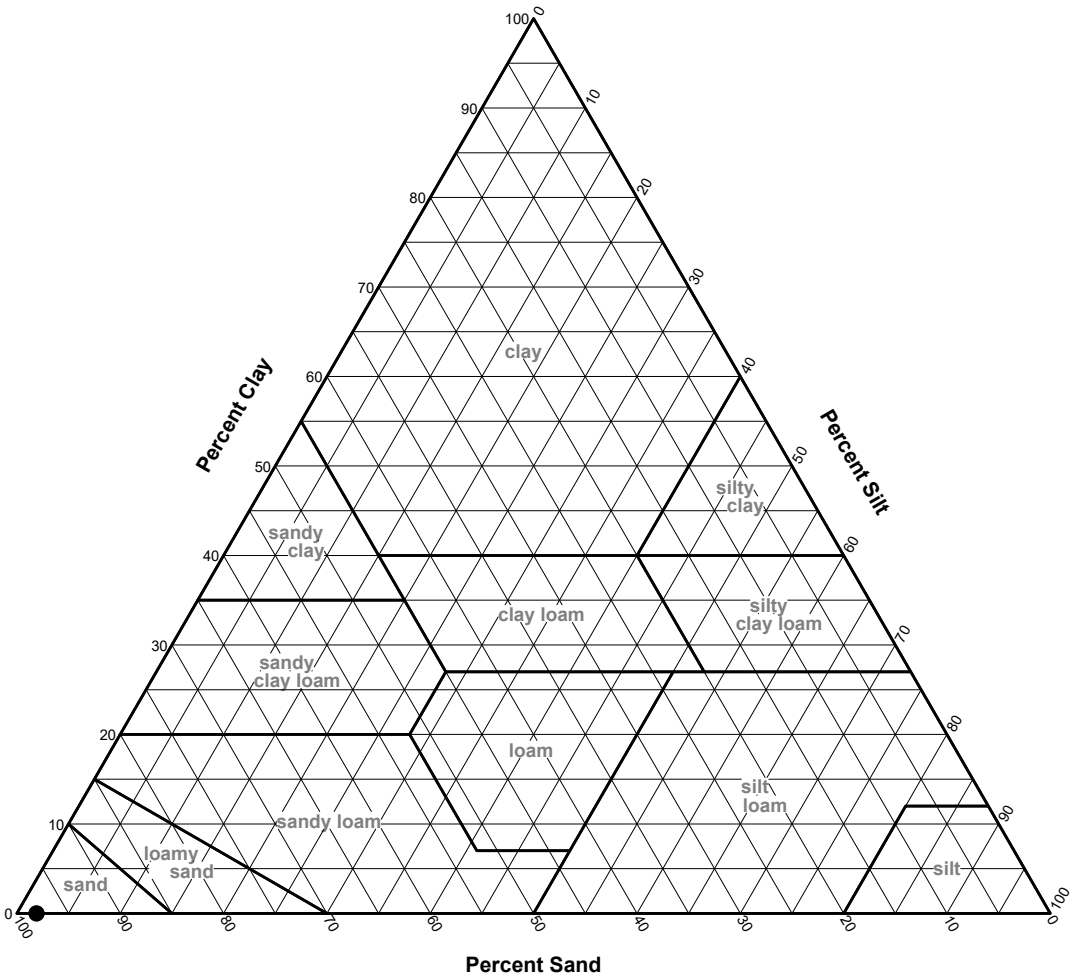
Source of Sample: TP-3 **Depth:** 5-6'
Sample Number: S-1

Date: 3/20/23

McArdle Gannon Associates, Inc.
Engineers & Consultants

Client: Highpoint Engineering, Inc.
Project: Proposed Redevelopment
100 Financial Park, Franklin, MA
Project No: G0976 **Figure**

USDA Soil Classification



SOIL DATA

	Source	Sample No.	Depth	Percentages From Material Passing a #10 Sieve			Classification
				Sand	Silt	Clay	
●	TP-3	S-1	5-6'	98.1	1.9	0.0	Sand

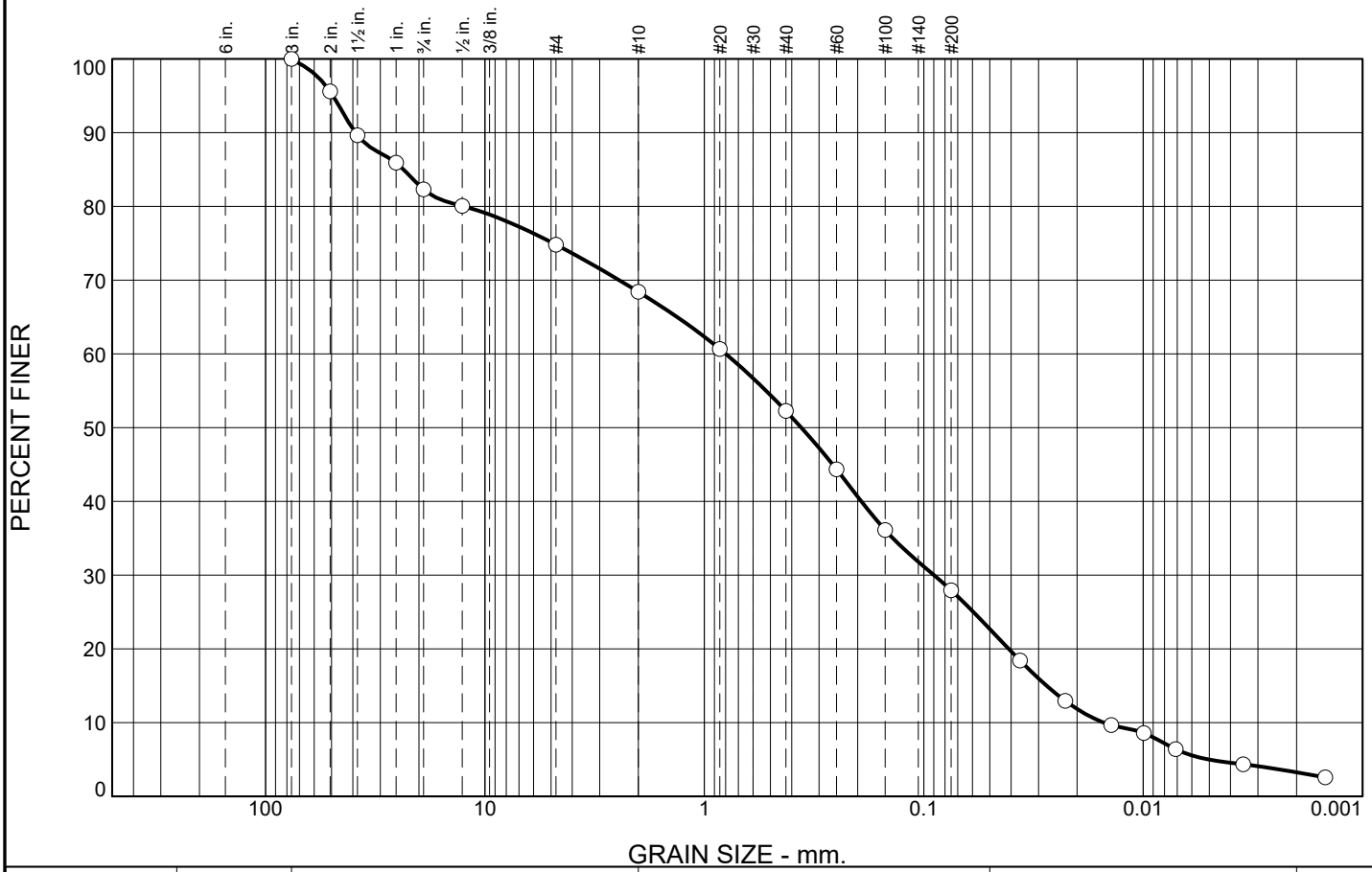
McArdle Gannon Associates, Inc.
Engineers & Consultants

Client: Highpoint Engineering, Inc.

Project: Proposed Redevelopment
100 Financial Park, Franklin, MA

Project No.: G0976 **Figure**

PARTICLE SIZE DISTRIBUTION REPORT



% Stones	% +3"	% Gravel			% Sand					% Silt		% Clay
		Coarse	Medium	Fine	V. Crs.	Crs.	Med.	Fine	V. Fine	Crs.	Fine	
0.0	0.0	17.7	7.5	6.4	6.1	7.9	10.0	13.2	8.5	10.9	8.5	3.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	95.6		
1.5	89.6		
1	85.9		
3/4	82.3		
1/2	80.1		
#4	74.8		
#10	68.4		
#20	60.7		
#40	52.3		
#60	44.4		
#100	36.1		
#200	27.9		
0.0364 mm.	18.4		
0.0227 mm.	13.0		
0.0140 mm.	9.7		
0.0099 mm.	8.6		
0.0071 mm.	6.4		
0.0035 mm.	4.4		
0.0015 mm.	2.6		

* (no specification provided)

Soil Description

USDA Classification: Sandy Loam

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 38.9059 D_{85}= 23.4657 D_{60}= 0.7987
D_{50}= 0.3614 D_{30}= 0.0899 D_{15}= 0.0275
D_{10}= 0.0151 C_u= 52.92 C_c= 0.67

Classification

USCS= AASHTO=

Remarks

As received Moisture Content: 11%
SL-1971

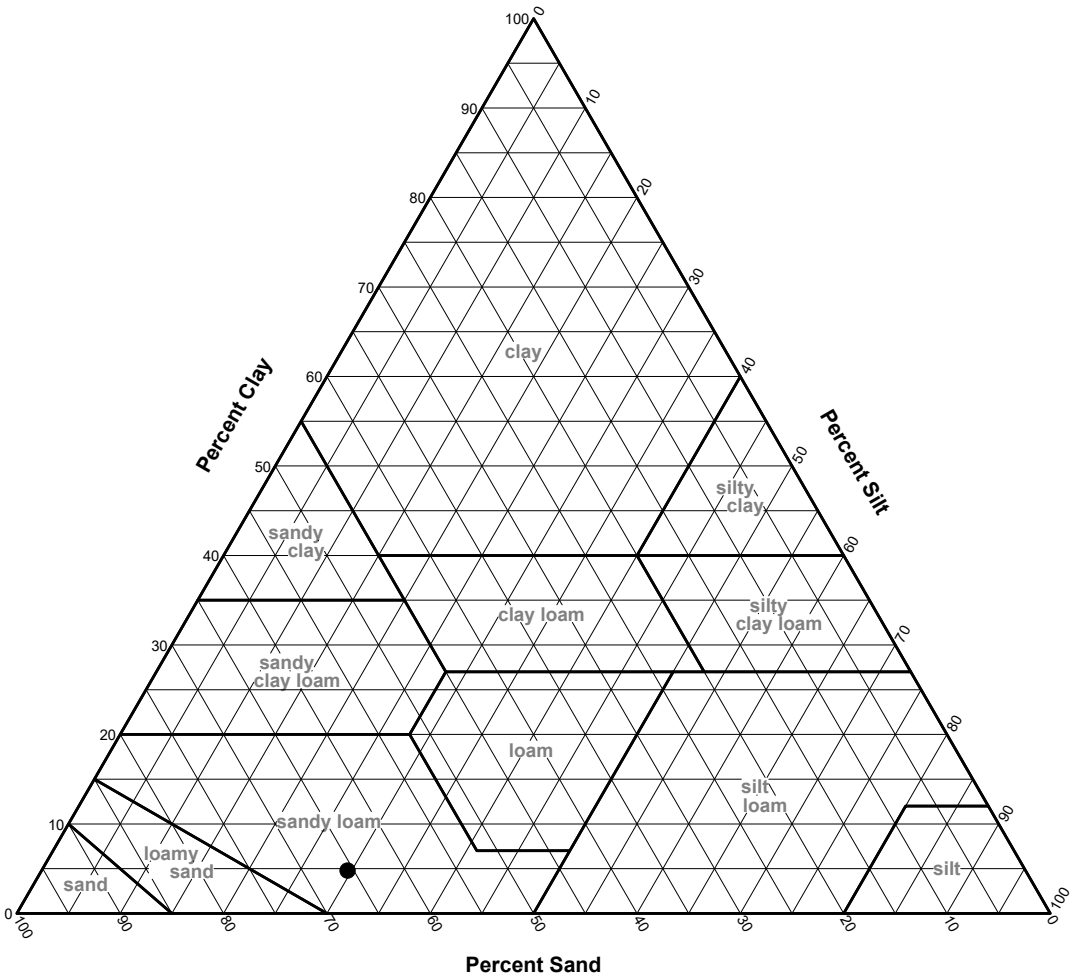
Source of Sample: TP-4 **Depth:** 7-8'
Sample Number: S-1

Date: 3/20/23

McArdle Gannon Associates, Inc.
Engineers & Consultants

Client: Highpoint Engineering, Inc.
Project: Proposed Redevelopment
100 Financial Park, Franklin, MA
Project No: G0976 **Figure**

USDA Soil Classification



SOIL DATA

	Source	Sample No.	Depth	Percentages From Material Passing a #10 Sieve			Classification
				Sand	Silt	Clay	
●	TP-4	S-1	7-8'	65.6	29.5	4.8	Sandy loam

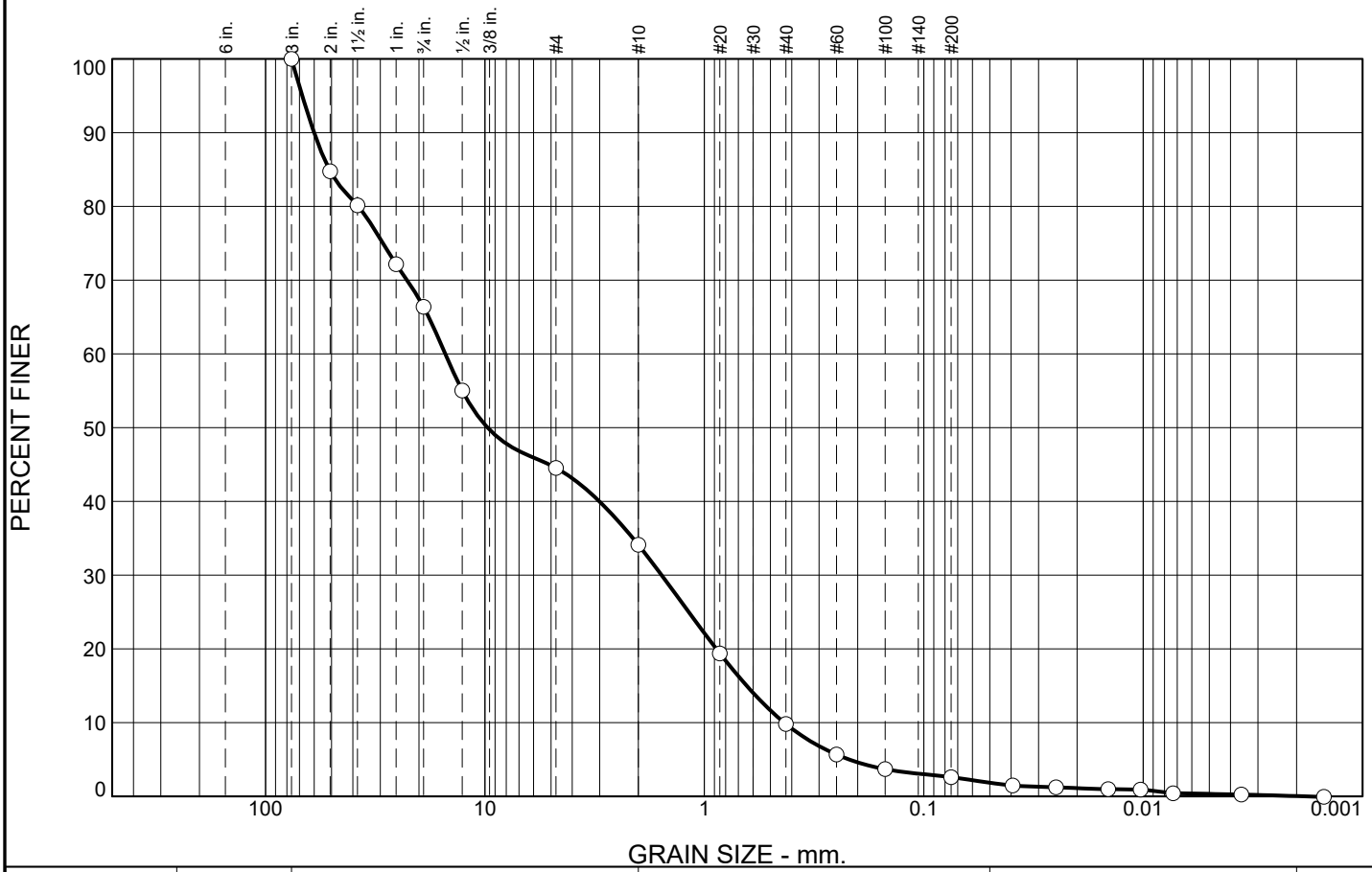
McArdle Gannon Associates, Inc.
Engineers & Consultants

Client: Highpoint Engineering, Inc.

Project: Proposed Redevelopment
100 Financial Park, Franklin, MA

Project No.: G0976 **Figure**

PARTICLE SIZE DISTRIBUTION REPORT



% Stones	% +3"	% Gravel			% Sand					% Silt		% Clay
		Coarse	Medium	Fine	V. Crs.	Crs.	Med.	Fine	V. Fine	Crs.	Fine	
0.0	0.0	33.6	21.9	10.4	12.0	10.4	6.0	2.7	1.2	0.7	1.1	0.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	84.8		
1.5	80.1		
1	72.2		
3/4	66.4		
1/2	55.0		
#4	44.5		
#10	34.1		
#20	19.4		
#40	9.8		
#60	5.7		
#100	3.7		
#200	2.6		
0.0393 mm.	1.5		
0.0249 mm.	1.2		
0.0144 mm.	1.0		
0.0103 mm.	0.9		
0.0073 mm.	0.4		
0.0036 mm.	0.2		
0.0015 mm.			

* (no specification provided)

Soil Description

USDA Classification: Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 60.0938 D_{85}= 51.2974 D_{60}= 15.1686
D_{50}= 9.7384 D_{30}= 1.5655 D_{15}= 0.6415
D_{10}= 0.4325 C_u= 35.07 C_c= 0.37

Classification

USCS= GP AASHTO=

Remarks

As received Moisture Content: 4.7%
SL-1971

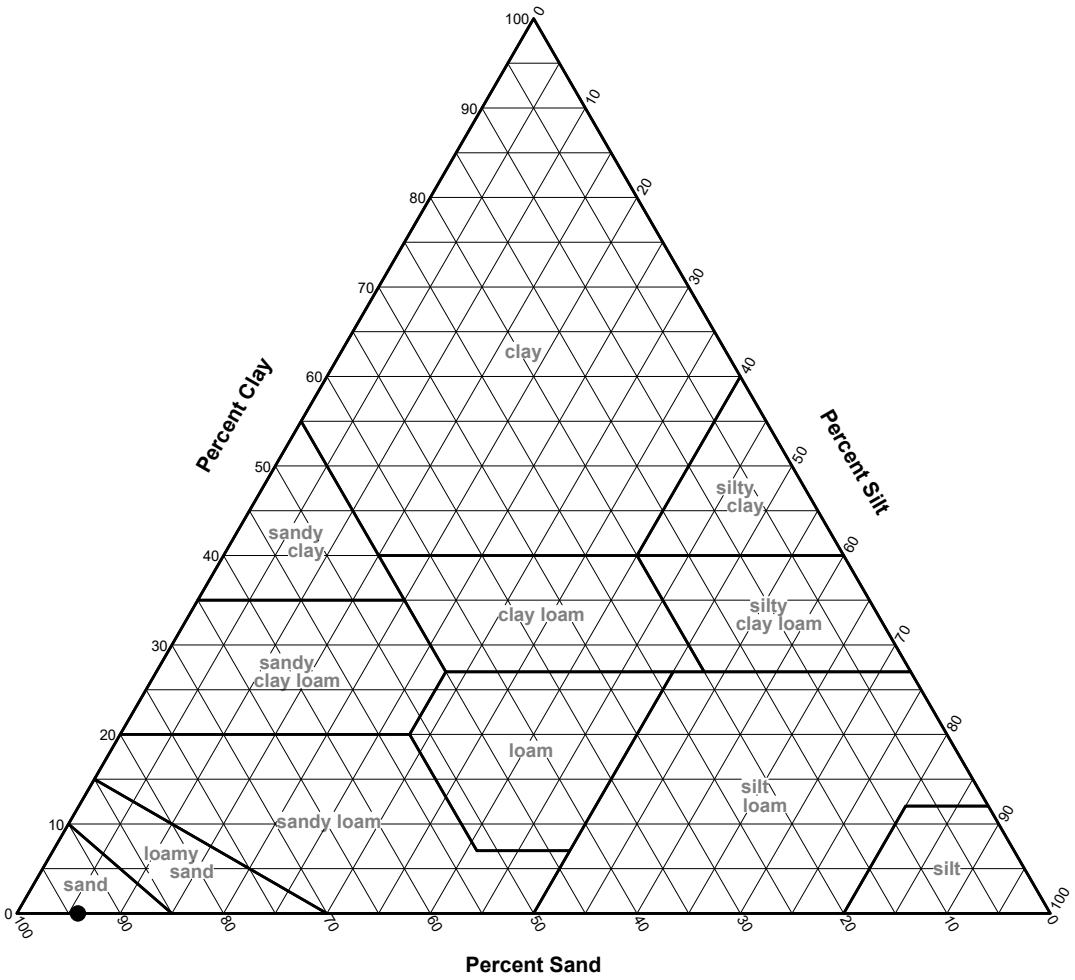
Source of Sample: TP-6 **Depth:** 4-5'
Sample Number: S-1

Date: 3/20/23

McArdle Gannon Associates, Inc.
Engineers & Consultants

Client: Highpoint Engineering, Inc.
Project: Proposed Redevelopment
100 Financial Park, Franklin, MA
Project No: G0976 **Figure**

USDA Soil Classification



SOIL DATA

	Source	Sample No.	Depth	Percentages From Material Passing a #10 Sieve			Classification
				Sand	Silt	Clay	
●	TP-6	S-1	4-5'	94.1	5.9	0.0	Sand

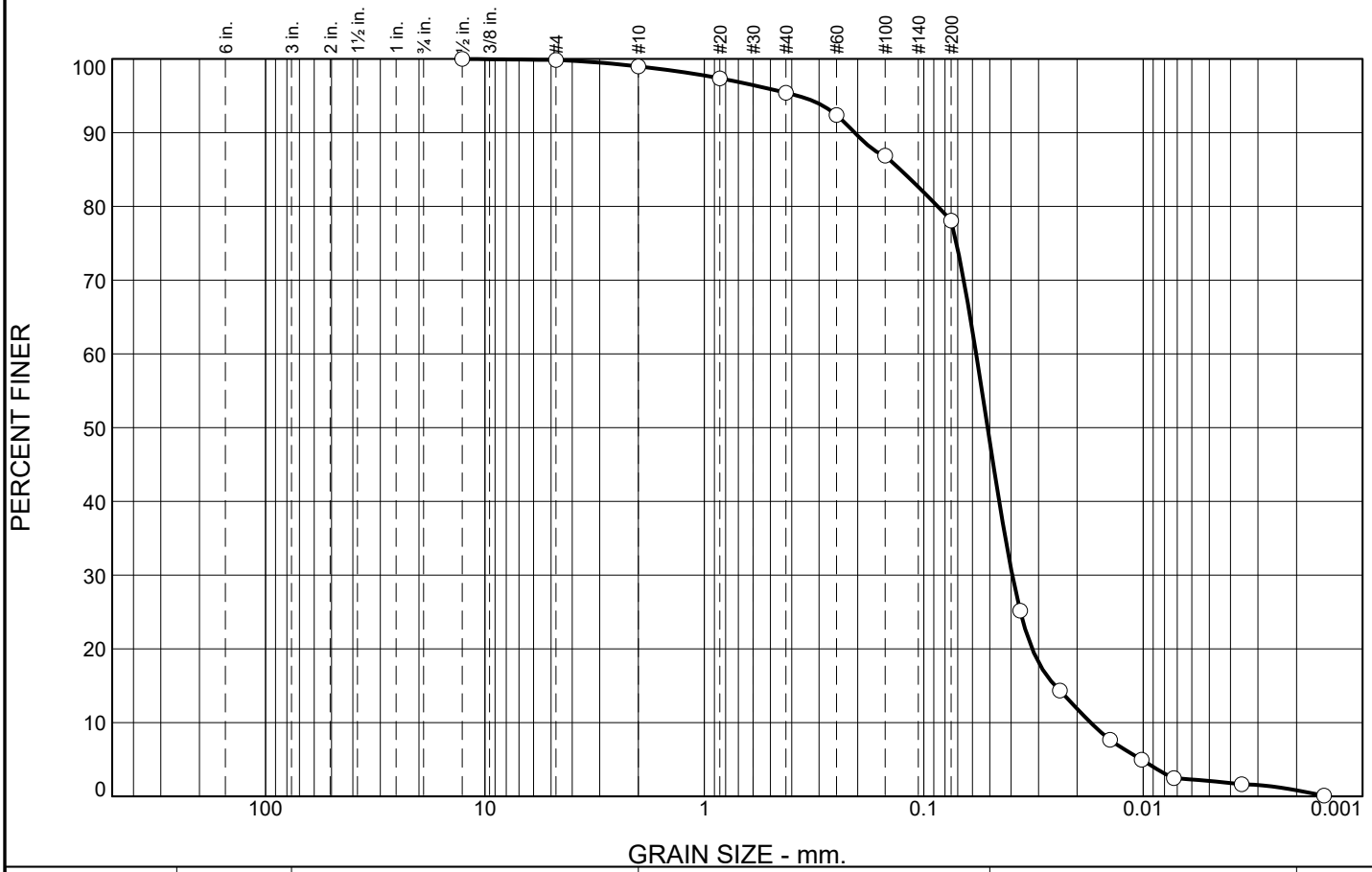
McArdle Gannon Associates, Inc.
Engineers & Consultants

Client: Highpoint Engineering, Inc.

Project: Proposed Redevelopment
100 Financial Park, Franklin, MA

Project No.: G0976 **Figure**

PARTICLE SIZE DISTRIBUTION REPORT



% Stones	% +3"	% Gravel			% Sand					% Silt		% Clay
		Coarse	Medium	Fine	V. Crs.	Crs.	Med.	Fine	V. Fine	Crs.	Fine	
0.0	0.0	0.0	0.1	0.9	1.2	1.9	3.5	10.5	33.9	36.1	11.1	0.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2	100.0		
#4	99.9		
#10	99.0		
#20	97.4		
#40	95.4		
#60	92.4		
#100	86.9		
#200	78.1		
0.0364 mm.	25.2		
0.0240 mm.	14.3		
0.0142 mm.	7.7		
0.0102 mm.	5.0		
0.0072 mm.	2.5		
0.0036 mm.	1.6		
0.0015 mm.	0.1		

* (no specification provided)

Soil Description

USDA Classification: Silt Loam

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2062 D_{85}= 0.1280 D_{60}= 0.0577
D_{50}= 0.0512 D_{30}= 0.0395 D_{15}= 0.0251
D_{10}= 0.0174 C_u= 3.32 C_c= 1.56

Classification

USCS= AASHTO=

Remarks

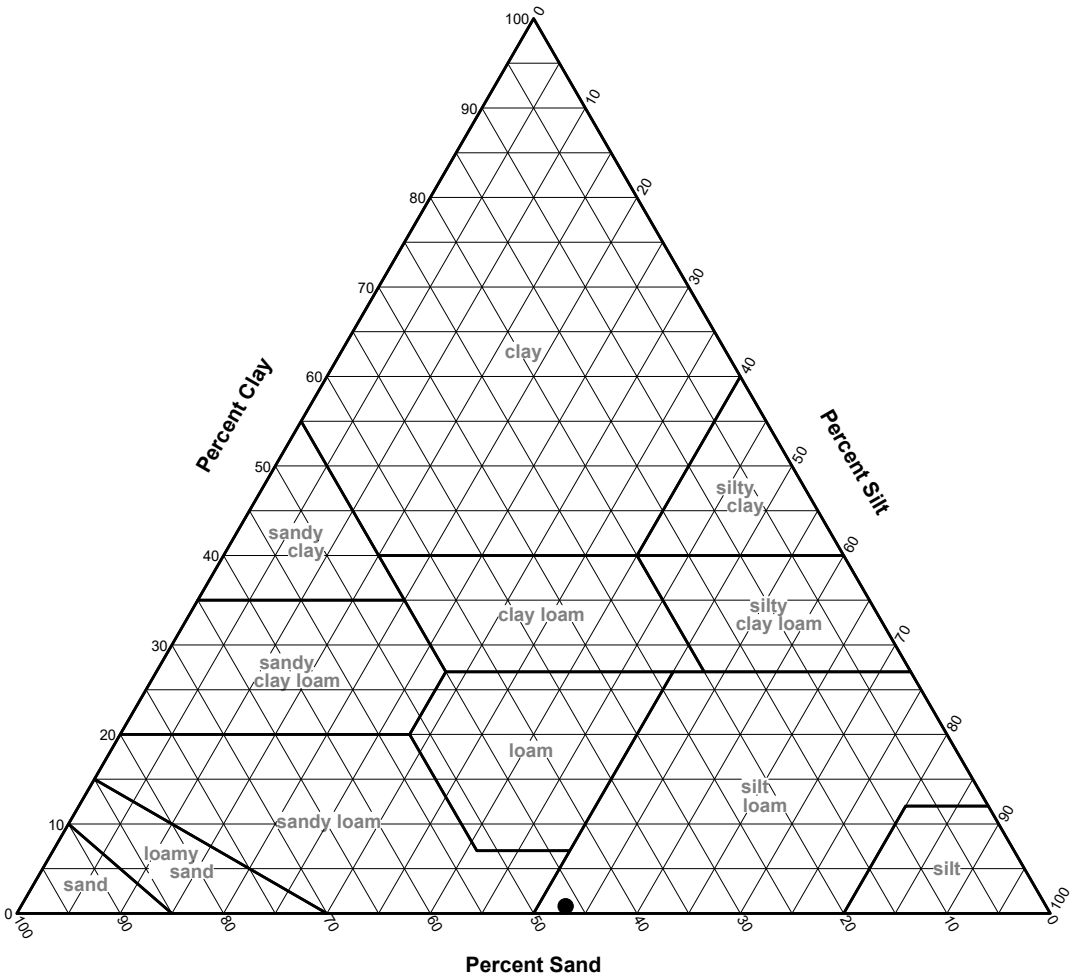
As received Moisture Content: 17.9%
SL-1971

Source of Sample: TP-8 **Depth:** 4-5'
Sample Number: S-1 **Date:** 3/20/23

McArdle Gannon Associates, Inc.
Engineers & Consultants

Client: Highpoint Engineering, Inc.
Project: Proposed Redevelopment
100 Financial Park, Franklin, MA
Project No: G0976 **Figure**

USDA Soil Classification



SOIL DATA

	Source	Sample No.	Depth	Percentages From Material Passing a #10 Sieve			Classification
				Sand	Silt	Clay	
●	TP-8	S-1	4-5'	46.5	52.7	0.8	Silt loam

McArdle Gannon Associates, Inc.
Engineers & Consultants

Client: Highpoint Engineering, Inc.

Project: Proposed Redevelopment
100 Financial Park, Franklin, MA

Project No.: G0976 **Figure**

APPENDIX D - OPERATION & MAINTENANCE PLANS

Date: 05/11/2023

I. OWNER:

ICBP IV Holdings 34, LLC c/o Berkeley Partners
1111 Broadway | Suite 1670
Oakland, CA 94607
(415) 450-1762
aramirez@berkeleypartners.com

II. RESPONSIBLE PARTY:

Berkeley Partners
1 Washington Mall | Suite 701
Boston, MA
(802) 353-2523
bpellerin@berkeleypartners.com

III. PROJECT OVERVIEW:

Prevention of offsite flooding and improvements to existing runoff, water quality, and groundwater recharge characteristics are the main priorities of the project with respect to the drainage design. The project will improve existing stormwater management within the property with respect to the current site condition, which includes no existing stormwater management facilities, by installing a new stormwater management system comprising various Best Management Practices (BMPs) to mitigate runoff and water quality impacts associated with the proposed site development. Water quality BMPs to mitigate the runoff generated by the site improvements during construction include straw wattle erosion control barrier, temporary Siltsack® drainage inlet inserts in adjacent existing street drainage and new on-site catch basins, new on-site catch basins (as installed), construction entrance with anti-tracking pad, a temporary sediment basin at the most down gradient limit of work, and periodic street sweeping along the site frontage.

It is the intent of the stormwater management design to achieve an 90% Total Suspended Solids (TSS) removal efficiency or 45% removal efficiency prior to discharge as outlined in the DEP Stormwater Management Standards.

The construction-phase BMPs used in this design were chosen for their effectiveness and ease of maintenance. Providing for maintenance requirements that are practical is essential to achieve the desired result of improved stormwater quality and peak attenuation. This plan will be provided to the property owner, property manager, and general contractor to educate them on the recommendations of this plan and the DEP Stormwater Management Guidelines.

IV. CONSTRUCTION PERIOD – BEST MANAGEMENT PRACTICES:

a) MONITORING

During construction operations, the stormwater management system will be inspected at least once every seven (7) calendar days, or once every fourteen (14) calendar days and within twenty-four (24) hours after a storm event of one quarter inch (0.25") or greater. Sediment accumulation shall be removed once a depth of one-third the height of perimeter sedimentation control devices is achieved unless stated otherwise. Damaged or underperforming sedimentation controls shall be replaced, modified, or otherwise supplemented immediately.

b) WASTE AND RECYCLING DISPOSAL

Metal dumpster type waste and recycling disposal receptacles will be located on-site and kept covered when not in active use. The project site will be policed daily by a person appointed by the general contractor to be kept the project site free of construction debris.

c) DUST MONITORING PLAN

A dust monitoring plan will be established prior to the start of construction and always kept on site. This will reduce the particulate levels in the air and reduce impacts to surrounding areas. Recommended methods for controlling dust include:

- Provide vegetative cover to disturbed areas at the end of earth disturbing activities as soon as practical, but no longer than 14 days.
- Apply a mulch layer to disturbed areas at the end of earth disturbing activities as soon as practical, but no longer than 14 days.
- Cover stockpiles unused for a maximum of 7 days with poly sheeting or tarps.
- Water surface materials and soil stockpiles.
- Use covered trucks.
- Minimize spoils stockpiled on site.
- Monitor construction practices to minimize unnecessary disturbance/ transfer of soils.
- Conduct periodic street cleaning along the site frontage during excavation activities.
- Pave driveways and parking surfaces as early as possible (where applicable and feasible).
- Assign personnel to remove windblown debris daily.
- Limit the idling of engines or stopped vehicles (except asphalt and cement concrete mixing trucks and equipment) to five minutes.

d) SPILL PREVENTION, CONTAINMENT, AND CLEANUP

Construction activities for this project will necessitate the use of equipment fuels, engine fluids, paints, and adhesives on the construction site and must be considered in the spill prevention and response practices for the project.

The general contractor will ensure areas where potential pollutants can occur are well protected with erosion control barriers and clean up equipment to prevent discharge of wastewater, fuels, and oil from vehicles and any other toxic or hazardous spills from the project site.

Spill kits comprising equipment necessary to attend to spills or leaks shall be stored on site in equipment sheds or similar covered enclosures and shall consist of the following:

- Safety goggles.
- Chemically resistant gloves and overshoe boots.
- Water and chemical fire extinguishers.
- Shovels.
- Absorbent materials.
- Containers suitable for storage of site-specific materials.
- First aid kits.

Spills and leaks shall be treated according to the type, volume, and location of the released material. Generally, mitigation shall consist of the following:

- Prevention of additional material storage.
- Containment of spilled material.
- Safe, thorough, and environmentally sound removal of spilled material.
- Remediation of environmental damage.

In the event of a spill, all materials used for containment and cleanup shall be replaced in kind in the spill kits immediately. The following describes specific preventative methods to be employed for materials used on site.

Fuels, Antifreeze, and Coolant for Construction Equipment and Generators:

In the case of a fuel spill on a pervious surface, the spill shall be contained and treated with absorbent polymer material immediately and the affected soil shall be excavated and stored in an impervious, bermed area, and the Licensed Site Professional shall be contacted to coordinate next steps regarding soil management. In the case of a fuel spill on an impervious surface, the spill shall be contained to prevent runoff and treated with absorbent material.

Adhesives and Paints:

Adhesive and paint materials shall be transferred to the site on an as needed basis. Any containers to be stored on site shall be clearly labeled and stored in non-flammable lockers. Wash water from paints shall be containerized; washing of paints into storm drainage systems shall be prohibited. Water-based and latex paints shall either be recycled or dried up and thrown out with the regular household trash, and oil-based paints and thinners shall be removed from the site by a local professional hazardous material removal company.

Town of Franklin Emergency Contacts are as Follows:

- Emergency Management: (888) 304-1133 (MassDEP 24-Hour Spill Reporting)
- Franklin Police Department: 911
- Franklin Fire Department: (508) 528-2323

For spills of less than five (5) gallons of material, mitigation shall consist of source control, containment, and clean-up with absorbent materials, unless an imminent hazard necessitates that a local professional hazardous material removal company become involved to mitigate the spill.

For spills greater than five (5) gallons of material, the incident shall be reported immediately to the MassDEP Hazardous Waste Incident Response Group at (617)-792-7653 and a professional emergency response contractor. Information that shall be provided to the said contractor is as follows:

- Type of material spilled.
- Quantity of material spilled.
- Location of the spill.
- Time of the spill.

The contractor shall then employ measures to prevent further spillage, contain and/or clean up the spill.

If a Reportable Quantity (RQ) of material is spilled during construction, the National Response Center (NRC) shall be notified immediately at (800) 424-8802. Reportable Quantities of hazardous material are available in 310 CMR 40: Massachusetts Contingency Plan Subpart P: Massachusetts Oil and Hazardous Material List. Within 14 days a report shall be submitted to the EPA New England Regional Office describing the following:

- Type of material released.
- Date and circumstances of the release.
- Measures taken to prevent future releases.

The report shall be submitted to the EPA New England Regional Office at the following address:

EPA New England, Region 1
1 Congress Street, Suite 1100
Boston, MA 02114-2023

Frequent inspections of areas where potential spill could occur is key to prevention. Inspection shall take place, at a minimum of once every calendar days, or once every 14 calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches or greater or the occurrence of runoff from snowmelt sufficient to cause a discharge.

An inspection report shall be completed within 24 hours of completing any site inspection. Each inspection report must include, at minimum, the following:

- The inspection date and time.
- The weather and temperature.
- Names and titles of personnel making the inspection.
- A summary of inspection findings, covering at a minimum the observations made in accordance with Part 4.6 of the 2022 Construction General Permit, including any necessary maintenance or corrective actions.
- If inspecting because of rainfall measuring 0.25 inches or greater, include the applicable rain gauge or weather station readings that triggered the inspection.
- If determined that it is unsafe to inspect a portion of the site, describe the reason found to be unsafe and specify the locations to which the conditions apply.

e) STATE & LOCAL SANITARY LAWS

Portable sanitary units will be placed on-site during construction and will be serviced weekly.

V. CONSTRUCTION PERIOD - STRUCTURAL BEST MANAGEMENT PRACTICES

Structural BMPs are those physical facilities that are designed to manage both stormwater quantity and quality. Proper maintenance of the proposed structural BMPs will ensure design performance, promote longevity, and decrease operator maintenance costs. The structural BMPs selected for the proposed site development include straw wattle erosion control barrier, temporary Siltsack® drainage inlet inserts in adjacent existing street drainage and new on-site catch basins (as installed),

a) STRAW WATTLE EROSION/SEDIMENTATION CONTROL BARRIER

Straw wattle erosion control barriers shall be installed as specified on the “Site Preparation & Erosion Control Plan” (plan sheet C200) prior to commencing construction activities. The straw wattle barriers shall be inspected daily and maintained throughout construction. Accumulated sediment shall be removed before it has accumulated to one-third of the above ground height of the filter sock. Any breach in the barriers shall be repaired within 24 hours or before next rainfall, whichever is sooner. Straw wattles shall remain in place for the duration of construction and may be supplemented and/or modified at any time. The general contractor shall maintain a stockpile of surplus straw wattles materials equivalent to 10

percent of the overall erosion/sedimentation control barrier length as depicted on plan sheet C200.

b) **SILTSACK® DRAINAGE INLET INSERTS FOR EXISTING AND PROPOSED CATCH BASINS**

The existing catch basin located in the existing ring road adjacent to the construction entrance, as well as all new catch basins upon installation, shall be equipped with Siltsacks® as shown on the "Site Preparation, & Erosion Control Plan (plan sheet C200).

Siltsacks® shall be regular flow units installed below grate castings and be equipped with internal emergency bypass devices. Siltsacks® are to remain in place until the end of the construction and the site is stabilized. During construction, all catch basins and Siltsacks® shall be inspected every fourteen (14) calendar days and after a storm of a quarter inch (0.25") or greater. Sediment accumulation shall be removed once sediment accumulates above the expansion restraint within the bag. Damaged Siltsacks® shall be replaced immediately. The contractor shall keep a minimum of two (2) extra Siltsacks® on site in case damaged units need to be replaced. Disposal of accumulated sediment and trash is to be in accordance with applicable local, state, and federal guidelines and regulations. Upon completion of the work, contractor is responsible for inspection and cleaning of units to ensure delivery of clean units to owner prior to completion of project.

c) **CONSTRUCTION ENTRANCE ANTI-TRACKING PAD**

A construction entrance anti-tracking pad shall be installed at the existing driveway entrances as shown on the "Site Preparation & Erosion Control Plan" (plan sheets C200 & C201) to minimize the track-out of sediment onto the street and sidewalk surfaces from vehicles leaving the construction site. The sub-base for the pad will be compacted and covered with a filter cloth. Crushed stone ranging in aggregate size from 1.5 to 3 inches will be placed on top of the filter cloth at a minimum thickness of 6 inches. The anti-tracking pad will remain in place and maintained until parking and loading areas receive an asphalt binder course or concrete slab-on-grade, depending on location.

The anti-tracking pad shall be installed prior to material and heavy equipment hauling commences. Maintenance requirements include:

- Construction vehicles will be restricted to using only the designated entrance/exit armored with the tracking pad until the site has been stabilized with asphalt binder course. The removed stone and sediment from the pad will be hauled off site and disposed in accordance with all applicable local, state, and federal regulations.

- The exit will be maintained in a condition that will prevent tracking or flowing of sediment off-site. This could require additional crushed stone to be placed within the exit. Sediment shall be swept form the anti-tracking pads at least weekly, or more often if necessary. If excess sediment has clogged the pads, they shall be top dressed using new crushed stone and re-leveled. Replacement of the entire pad may be necessary if

it becomes completely inundated with sediment. The pad will be reshaped as needed for drainage and runoff control depending on site conditions.

- Where sediment has been tracked into the public right of way from the construction site, the deposited sediment shall be removed by the end of the same workday. Sediment shall be removed by sweeping, shoveling, or vacuuming of these surfaces. Hosing or sweeping tracked-out sediment into a public or private stormwater system is prohibited.

- The exit will be inspected once every seven (7) calendar days and within 24 hours of storm events of 0.25 inches or greater, or the occurrence of runoff from snowmelt sufficient to cause a discharge.

END

LONG-TERM OPERATION AND MAINTENANCE PLAN

Warehouse/Industrial Development | 100 & 200 Financial Park | Franklin, MA

Project Address:	100 & 200 Financial Park Franklin, MA 02038
Date Prepared:	May 11, 2023
Project Number:	22051
Prepared for:	Berkeley Partners 1 Washington Street | Suite 701 Boston, MA 02108
Prepared by:	**Highpoint Engineering Inc.** Dedham Executive Center 980 Washington Street, Suite 216 Dedham, MA 02026 www.highpointeng.com



O&M UPDATE FORM

DATE OF UPDATE	DATE OF LAST UPDATE TO O&M PLAN

SECTIONS OUT OF DATE / REQUIRED UPDATES

MAINTENANCE LOG REVIEW

BMP	INSPECTION AND MAINTENANCE FREQUENCY		ACTION REQ'D?* (CIRCLE ONE)
	REQUIRED	ACTUAL	
CONTECH ®WATER QUALITY UNITS			Y N
DEEP SUMP/ HOODED CATCH BASINS			Y N
UNDERGROUND SYSTEM			Y N
RAIN GARDENS			Y N

*See next page for corrective action and training requirement updates (if applicable)

CORRECTIVE ACTION TO SCHEDULE(S) REQUIRED (IF YES TO ANY OF ABOVE)
EMPLOYEE AND CONTRACTOR TRAINING UPDATES (ATTACH BROCHURES AS NEEDED)

ANNUAL SITE INSPECTION AND UPDATE

OVERALL SITE CONDITION

_____
_____
_____
_____
_____

INSPECTION RESULTS

_____
_____
_____
_____
_____

EXCEPTIONAL CIRCUMSTANCES OBSERVED? _____

IF YES, DESCRIBE CIRCUMSTANCES AND CORRECTIVE ACTIONS NEEDED.

_____
_____
_____
_____
_____

OVERALL O&M PLAN EFFECTIVENESS (DESCRIBE)

_____
_____
_____
_____
_____

Reproduce update forms as necessary over the life of this Operation and Maintenance Plan.

SECTION 1 TABLE OF CONTENTS

SECTION 1 TABLE OF CONTENTS....1
PROJECT OVERVIEW....2
POST-CONSTRUCTION BEST MANAGEMENT PRACTICES....3
SITE FURNISHINGS BEST MANAGEMENT PRACTICES....6
SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURE PLAN....8
MAINTENANCE AGREEMENT....11

APPENDIX **Proprietary BMP Information**
- Contech Water Quality Units

Date: May 11, 2023

I. OWNER:

ICBP IV Holdings 34, LLC c/o Berkeley Partners
1111 Broadway | Suite 1670
Oakland, CA 94607
(415) 450-1762
aramirez@berkeleypartners.com

II. RESPONSIBLE PARTY:

Berkeley Partners
1 Washington Mall | Suite 701
Boston, MA
(802) 353-2523
bpellerin@berkeleypartners.com

PROJECT OVERVIEW

Prevention of offsite flooding and implementation of stormwater runoff, water quality, and groundwater recharge improvements where none currently exist on-site are the main priorities of the project with respect to drainage design. The project will improve existing stormwater management within the property with respect to the existing site condition, which currently includes no such improvements, by installing a stormwater management system comprising various Best Management Practices (BMPs). Long-term water quality BMPs to mitigate the runoff generated by the site improvements include six (6) R-Tank SD sub-surface infiltration systems, two (2) rain gardens, four (4) Contech water quality units and periodic mechanical sweeping to remove sand and sediment from paved surfaces.

It is the intent of the stormwater management design to achieve a 90% Total Suspended Solids (TSS) removal efficiency or 44% removal efficiency prior to discharge as outlined in the DEP Stormwater Management Standards.

The permanent BMPs used in this design were chosen for their effectiveness and ease of maintenance. Providing for maintenance requirements that are practical is essential to achieve the desired result of improved stormwater quality, and peak attenuation. This plan will be provided to the property owner, property manager, and general contractor to educate them on the recommendations of this plan and the DEP Stormwater Management Guidelines.

POST-CONSTRUCTION BEST MANAGEMENT PRACTICES

a) NON-STRUCTURAL BEST MANAGEMENT PRACTICES

Implementing source controls can aid in reducing the types and concentrations of contaminants in stormwater runoff. This principle for pollution prevention and non-structural controls, or BMPs, is to minimize the volume of runoff and to minimize contact of stormwater with potential pollutants. Measures such as street sweeping, managing snow removal, and educating the owner/operator of good maintenance practices are examples of non-structural BMPs.

i. PUBLIC AWARENESS

The responsible party shall issue periodic reminders to the building tenants to avoid dumping or releasing pollutants into the storm drains and onto the ground.

ii. STREET SWEEPING

Parking lot, driveway, and loading area sweeping is an integral part of the stormwater management plan as a fundamental component of source reduction efforts. Sweeping activities shall begin on or around April 1. However, sweeping may be done after winter thaw and the onset of early spring. It is critical to remove the accumulated sediment in the parking, loading, and driveway areas from the winter months as soon as possible before spring precipitation.

Sweeping activities should be performed a minimum of two times annually (April 1 and September 1).

iii. SNOW AND SNOWMELT MANAGEMENT

The removal contractor shall avoid stockpiling snow directly on top of catch basin grates and avoid stockpiled snow within the paved parking lot to allow normal vehicular maneuverability. Also avoid stockpiling snow in the six (6) raingardens located within the landscape islands in the trailer storage and surface parking areas to the west of the property.

It is suggested that during snowfall events, the snow be stockpiled in designated snow storage area throughout the site. These are located to the east of the Building 3 Parking area, the landscaped areas to the North and West of the trailer storage area, to the Northeast of the Building 1 parking area, along the West side of West parking lot, and to the south of the new Building 3 loading area, During significant snow fall event, six (6) inches or greater, accumulated snow shall be stockpiled in areas coordinated by the property owner and snow removal contractor and/or removed from the site by a snow removal contractor. It is the responsibility of the owner to make sure the snow removal contractor utilizes previously approved areas. The owner shall remove sediment from snow storage areas every spring.

It is suggested that no de-icing compounds such as calcium chloride ($CaCl_2$), calcium magnesium acetate (CMA) or the like be used on the site. The snow removal contractor shall store all sand off-site. No quantities of sand compounds shall be stored on site.

iv. PUBLIC SAFETY FEATURES

The project has been designed with consideration for public safety and does not require any specific features as part of the stormwater management system.

b) STRUCTURAL BEST MANAGEMENT PRACTICES:

Structural BMPs are those physical facilities that are designed to manage both stormwater quantity and quality. Proper maintenance of the proposed structural BMPs will ensure design performance and promote longevity of the structure and may decrease operator maintenance costs.

i. DEEP-SUMP/HOODED CATCH BASINS

All proposed catch basins shall be a minimum of four feet in diameter and equipped with four-foot-deep sumps to trap sediments and any debris/trash. The pipe outlets shall be hooded to prevent floating debris and oils from entering the subsurface drainage conveyance system. The actual removal of sediments, trash, and associated pollutants only occurs when the deep sumps are cleaned out; therefore, frequent maintenance is required. The more frequent the cleaning, the less likely sediments will be re-suspended and subsequently discharged downstream. In addition, frequent cleaning also results in more volume available for future storms and enhances overall performance.

The recommended inspection frequency of the deep sumps is every three months, and cleaning two to three times per year, if necessary, post-construction. Disposal of accumulated sediment and trash is to be in accordance with all applicable local, state, and federal guidelines and regulations.

ii. CONTECH WATER QUALITY UNITS

Four (4) Contech© water quality units are proposed to prevent sediments and oils from entering the underground detention basin in the north loading area. The actual removal of sediments, trash, and associated pollutants only occurs when the structures are cleaned out; therefore, frequent maintenance is required. The more frequent the cleaning, the less likely sediments will be re-suspended and subsequently discharged. In addition, frequent cleaning also results in more volume available for future storms and enhances overall performance. Contech CDS structures are an approved means of BMP for storm water management. See the TSS Removal Calculation Worksheet included in the Appendix B and the Contech unit sizing information in Appendix C for the specific TSS removals rate of the Contech© unit for this project.

Post-construction, the units shall be inspected every six months for the first year of operation to determine the oil and sediment accumulation rate. After the first year, inspections can be based on the first-year observations or local requirements. Cleaning, by full pump out, is recommended on an annual basis or when 15% of the units' storage capacity is filled with solids. Inspect the units immediately after an oil, fuel, or chemical spill. Maintenance shall be performed by conventional vacuum truck. Disposal of accumulated sediment, trash, and hydrocarbons shall be in accordance to all applicable local, state, and federal guidelines and regulations. Refer to product brochure in the Appendix for more information.

iii. UNDERGROUND INFILTRATION SYSTEM

Seven (7) underground infiltration systems consisting of ACF R-Tank SD chambers of varying heights are proposed to provide detention volume for landscape, hardscape, and roof runoff for the proposed development. SWM-1 is proposed beneath the bituminous concrete surface parking area to the West of Building 3. SWM-2 is located beneath the concrete loading area to the South of Building 1. SWM-3 and SWM-4 are located beneath the heavy duty bituminous concrete trailer storage to the West of Building 1. SWM-5 is located beneath the bituminous concrete surface parking area to the West of Building 1, SWM-6 is located to the East of Building 1 beneath the bituminous concrete entrance/parking area and SWM-7 is located adjacent to SWM-1 below the surface parking area. Refer to the "Grading and Drainage Plan" (Sheet C400 and C401) for exact sub-surface system locations. The infiltration systems are sized to provide groundwater recharge volume to the maximum extent practicable for all storm events up to and including the 100-year storm event and is designed to drain completely within 72 hours. Inspection ports with at-grade access will be installed to provide inspection and maintenance access to the chambers and stone bed.

The systems shall be inspected twice per year, at the beginning of July and late October/ early November, to determine if any loss of capacity has occurred. The system shall also be inspected 24 hours after a rainstorm of over 2.5 inches in a 24-hour period to ensure that the system is free of extraneous debris and fines and is draining adequately.

Removed materials shall be hauled off site and disposed of in compliance with all local, state, and federal guidelines and regulations. Refer to product brochure in the Appendix for more information.

iv. RAIN GARDENS

Two (2) rain gardens are proposed on site, the first (RG#1) is located to the West of the trailer storage area and the second (RG#2) is located to the West of the surface parking area to the West of Building 1. The rain gardens shall be inspected regularly when first created to ensure proper establishment of the plants.

Once the plants are established, the rain garden maintenance schedule is as follows:

- The rain garden areas shall be inspected monthly, year-round. Repair eroded soils and remove liter and debris during this time.
- The mulch layer shall be inspected annually in the spring and replaced, at a minimum, every two years.
- Remove invasive species as needed to prevent these species from spreading into the bioretention area.
- Remove dead vegetation annually in the fall or spring. Replace dead vegetation annually in the spring.
- Prune established vegetation annually in the fall or spring.
- Replace entire media and all vegetation as necessary in the late spring/early summer.

Refer to the Massachusetts Stormwater Handbook, Volume 2, Chapter 2, Bioretention Areas & Rain Gardens for additional detail.

SITE FURNISHINGS BEST MANAGEMENT PRACTICES

Site furnishings, as they pertain to this Operation and Maintenance Plan, comprise driveways and parking lots; walkways and hardscape areas; fences, walls, and guardrails; landscape areas; and solid waste management facilities.

i. DRIVEWAYS AND PARKING LOTS

All driveways, parking lots, loading areas, and emergency access ways shall be inspected twice annually (early Spring and Fall) to assess damage, cracking, differential settlement, and fading of pavement markings. Deteriorated asphalt and damaged curbs and signage shall be repaired as needed based on observation. Faded striping shall be re-painted in kind as needed.

Landscape vegetation around the perimeter and in the interior of the parking areas and perimeter of the Fire Pond shall be inspected for overgrowth twice annually (early Spring and Summer) and pruned as needed based on inspection.

ii. WALKWAYS AND HARDSCAPE AREAS

All concrete walkways, landings, pads, and driveways shall be inspected annually for spalling, cracking, and heaving. Cracked or spalled concrete shall be patched and repaired with cement or grout as needed based on inspection. In the case of widespread structural damage to concrete surfaces, slabs shall be demolished and reconstructed in kind and sub-base shall be inspected for settlement or heaving and corrected and/or re-compacted as needed.

iii. FENCES, WALLS, AND GUARDRAILS

All existing to remain or new fences, retaining walls, and galvanized steel pipe bollards shall be inspected annually.

Walls (including all segmental retaining walls) shall be inspected for damage, subsidence, and settlement of adjacent surfaces. Any such observed defects shall be repaired immediately. The Responsible Party shall monitor repairs on a weekly basis once established to ensure integrity of corrective action and coordinate follow-up action immediately upon observation of resurgence of defects, if applicable.

Bollards adjacent to pad mounted equipment, building corners and loading docks shall be inspected for damage and rust upon observation. In the event of damage, pipes and concrete bases shall be replaced in kind immediately. In the event of rust, affected areas shall be smoothed manually and pipes shall be re-painted with emergency yellow paint to prevent further deterioration.

iv. LANDSCAPE AREAS

Spring clean-up shall be conducted twice annually in the months of March and April. Spring clean-up comprises removal of winter wraps from trees, lawn raking/ leaf blowing, weeding, and fertilization as needed. Landscape edges shall also be inspected and re-established as needed during Spring clean-up activities.

Mulch areas shall be inspected once annually during the month of April. New mulch shall be added to planting beds as needed and washed-out mulch shall be removed from adjacent areas. Subgrade in washout areas shall be checked for erosion and re-graded as needed prior to replacement of mulch. Pre-emergent weed control shall be applied to planting beds concurrently with inspection activities.

Shrub and tree planting fertilization activities shall be limited to twice annually between April 15 and October 15 as needed. Fertilizer use shall be minimized to the extent practicable and shall never be applied before a heavy rainfall event, on frozen ground, or within vegetated stormwater management BMPs (i.e. Raingardens). Insect and disease sprays shall be used as needed on shrub and tree plantings throughout the Summer and never during frozen ground conditions or before heavy rainfall events.

The irrigation system shall operate between April and October. The irrigation system shall be winterized in advance of cold-weather months to prevent freeze damage.

Mowing shall be conducted as necessary between the months of May and October. Excess lawn clippings shall be removed from mowed surfaces prior to next rainfall, and no excess lawn clippings are to be left within vegetated surface BMPs. Shrub and ornamental tree

pruning shall be conducted twice annually during the months of July and August. Structural tree pruning shall be conducted twice annually during the months of August and September.

Fall cleanup shall be conducted twice annually during the months of October and November. Fall cleanup activities comprise application of winter wraps to trees, raking/leaf blowing lawn areas, and weeding. Lawn fertilization, if conducted during fall cleanup, shall not occur after October 15. Lime application treatment for lawn areas shall be conducted once annually in the month of November.

v. SOLID WASTE MANAGEMENT FACILITIES

Dumpster enclosures shall be inspected weekly for damage, rust, leaks, and loose hardware. Any such defects shall be repaired immediately upon observation.

Concrete dumpster and compactor pads shall be inspected quarterly. Staining and accumulated spillage shall be managed by manual removal/sweeping and power washing. Power washing runoff shall be directed to catch basin inlets located in loading and waste disposal areas.

The site perimeter and the stormwater outfalls shall be inspected monthly for wind-blown trash and debris. Such trash and debris shall be hand collected and disposed of in the on-site dumpster containers.

SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURE PLAN

Landscape maintenance and parking and loading operations which occur on site necessitate the use of various materials and must be considered in the spill prevention and response practices. The following is a summary of pollutants and the respective property use and maintenance activities generating each:

Pollutant-Generating Activity	**Pollutants or Pollutant Constituents** (that could be discharged if exposed to stormwater)	**Location on Site**
Landscaping Maintenance Operations	Gasoline (from lawnmowers), fertilizers	Lawn and landscape areas throughout site
Parking and Loading Operations	Hydraulic oil/fluid, Antifreeze, diesel/gasoline (all from automobiles)	Driveway, parking, and loading areas throughout site

The Owner/Responsible Party shall be responsible for coordinating necessary containment and cleanup efforts in the event of a spill at any location on site. Should a spill occur, equipment necessary to attend to spills or leaks shall be stored on site in a designated storage area within the building and shall consist, at minimum, of the following:

- Safety goggles.

- Chemically resistant gloves and overshoe boots.
- Water and chemical fire extinguishers.
- Shovels.
- Absorbent materials.
- Proprietary compact spill containment berms.
- Containers suitable for storage of site-specific materials.
- First aid kits.

Spills and leaks shall be treated according to the type, volume, and location of the released material. Generally, mitigation shall consist of the following:

- Prevention of additional material storage.
- Containment of spilled material.
- Safe, thorough, and environmentally sound removal of spilled material.
- Remediation of environmental damage.

The following describes specific preventative methods to be employed for materials to be used on site.

SPILLS FROM VEHICLES ACCESSING PARKING AND LOADING AREAS

Spills due to vehicular operations are not anticipated on pervious surfaces. In the case of a spill in the driveway, parking or loading areas, the spill shall be contained using spill berms and/or adhesive drain seals at all vulnerable catch basin inlets to prevent entering the subsurface drainage system, and the spill shall then be treated with absorbent material.

SPILLS FROM LANDSCAPE AND LAWN MAINTENANCE EQUIPMENT

In the case of a spill on a pervious surface, the spill shall be contained and treated with absorbent polymer material immediately and the affected soil, mulch, and/or planted vegetation shall be excavated and stored in a proprietary spill containment berm (by Ultratech or the like) for removal by a professional hazardous material removal company.

Town of Franklin Emergency Contacts are as follows:

- Emergency Management: (888) 304-1133 (MassDEP 24-Hour Spill Reporting)
- Police Department: 911
- Fire Department: (508) 528-2323

For spills of less than five (5) gallons of material, mitigation shall consist of source control, containment, and clean-up with absorbent materials, unless an imminent hazard necessitates that a local professional hazardous material removal company become involved to mitigate the spill.

For spills greater than five (5) gallons of material, the incident shall be reported immediately to the MassDEP Hazardous Waste Incident Response Group at (617) 792-7653 and a professional emergency response contractor (ERC). Information that shall be provided to the said ERC is as follows:

- Type of material spilled.
- Quantity of material spilled.
- Location of the spill.
- Time of the spill.

The Owner/Responsible Party shall then employ measures to prevent further spillage, contain and/or clean up the spill.

If a Reportable Quantity (RQ) of material is spilled during site maintenance and access activities, the National Response Center (NRC) shall be notified immediately at (800) 424-8802. Reportable Quantities of hazardous material are available in 310 CMR 40: Massachusetts Contingency Plan Subpart P: Massachusetts Oil and Hazardous Material List. Within 14 days a report shall be submitted to the EPA New England Regional Office describing the following:

- Type of material released.
- Date and circumstances of the release.
- Measures taken to prevent future releases.

This Spill Prevention Plan shall then be updated to document any such preventive measures implemented. The report shall then be submitted to the EPA New England Regional Office at the following address:

EPA New England, Region 1
1 Congress Street, Suite 1100
Boston, MA 02114-2023

Any inspection reports generated in accordance with a RQ spill shall be completed within 24 hours of completing any site inspection. A hard or electronic copy of the report must be retained on site for at least three (3) years from the date of reporting at the Responsible Party's office.

MAINTENANCE AGREEMENT

I, the undersigned, hereby certify that we understand and accept the terms specified in Chapter 153 of the Town of Franklin bylaws entitled: "Stormwater Management" and acknowledge the following:

1. I am responsible for the maintenance of permanent BMPs on this Site.
2. During a transfer of ownership, I am responsible for informing prospective new owner(s) of the requirements of the Long-Term Operation and Maintenance Plan and of the requirement to amend the Maintenance Agreement with the Town Stormwater Authority (Town of Franklin Conservation Commission or its authorized Agent).
3. I am responsible for allocating and making funds available to perform the required operation and maintenance functions on site.
4. The Town Stormwater Authority may conduct inspections whenever deemed necessary to enforce any provision of the Town of Plainville Stormwater Management Bylaw and Regulations to determine compliance therewith.

I understand that failure to comply with the requirements of the approved Long-Term Operation and Maintenance Plan may result in fines and penalties in accordance with the Town of Franklin Stormwater Management Bylaw and Regulations.

Owner

_____
(signature) (date)

Andy Ramirez
ICBP IV Holdings 34, LLC c/o Berkeley Partners
1111 Broadway | Suite 1670
(415) 450-1762
aramirez@berkeleypartners.com

Responsible Party

_____
(signature) (date)

Brendan Pellerin
Berkeley Partners
1 Washington Mall | Suite 701
(802) 353-2523
bpellerin@berkeleypartners.com

SECTION 2: INSPECTION AND MAINTENANCE LOGS

APPENDIX

Logs and Checklists

- BMP Maintenance Log
- Inspection Form: Deep Sump/ Hooded Catch Basin
- Inspection Form: Underground Infiltration Systems
- Inspection Form: Raingardens
- Inspection Form: Contech Water Quality Unit

BMP MAINTENANCE LOG

DATE	NAME OF MAINTENANCE PERSONNEL/COMPANY	TYPE OF MAINTENANCE PERFORMED	ISSUES/NEED FOR FOLLOW-UP	WORK ORDER PROVIDED?

DATE	NAME OF MAINTENANCE PERSONNEL/COMPANY	TYPE OF MAINTENANCE PERFORMED	ISSUES/NEED FOR FOLLOW-UP	WORK ORDER PROVIDED?

Reproduce log sheets as necessary over the life of this Operation and Maintenance Plan.

INSPECTION FORM: DEEP SUMP/ HOODED CATCH BASIN

Unit Number: CB _____ (Refer to Site Grading and Drainage Plan)

Inspector Name:

Date/Time:

Weather:

TYPE OF INSPECTION (CHECK ONE)	
	Routine (Every Three Months)
	Annual
	Post-Storm (Rainfall Depth =_____inches)
	Post-Spill (Time/Date of Spill:_____)

INSPECTION CHECKLIST (CHECK ALL THAT APPLY)	
	Check sediment depth (Sediment Depth =_____inches)
	Check for settlement/ cracking of pavement around frame and grate
	Remove floating trash and sediment
	Confirm water level in sump is at invert elevation
	Confirm oil/gas hood is secure and functioning
CORRECTIVE ACTION REQUIRED	
ADDITIONAL NOTES/OBSERVATIONS	

INSPECTION FORM: UNDERGROUND INFILTRATION SYSTEM

Subsurface System Number: SWM-____ (Refer to Site Grading and Drainage Plan)

Inspector Name:

Date/Time:

Weather:

TYPE OF INSPECTION (CHECK ONE)	
	Routine (Every Six Months)
	Annual
	Post-Storm (Depth =_____inches; Storm Duration =_____hrs; Storm End Date =_____)
	Post-Spill (Time/Date of Spill:_____)

INSPECTION CHECKLIST (CHECK ALL THAT APPLY)	
	Check for settlement/ cracking of pavement
	Check for ground settlement at inspection port locations
	Check for sediment accumulation at inlets/outlet via inspection ports
	Confirm dry condition within system
CORRECTIVE ACTION REQUIRED	
ADDITIONAL NOTES/OBSERVATIONS	

INSPECTION FORM: CONTECH CASCADE CS-4

Unit Number: WQU -1 (Refer to Site Grading and Drainage Plan)

Inspector Name:

Date/Time:

Weather:

TYPE OF INSPECTION (CHECK ONE)	
	Routine (Monthly)
	Annual
	Post-Storm (Rainfall Depth =_____inches)
	Post-Spill (Time/Date of Spill:_____)

INSPECTION CHECKLIST (CHECK ALL THAT APPLY)	
	Clear down pipe and riser pipe of debris and/or trash (as needed)
	Remove accumulated sediment from settling chamber (if >15% full of sediment)
	Remove floatables, oil, and hydrocarbons
	Ensure watertightness of structure
	Securely seat manhole cover after inspection
CORRECTIVE ACTION REQUIRED	
ADDITIONAL NOTES/OBSERVATIONS	

INSPECTION FORM: CONTECH CDS2015-5

Unit Number: WQU-2 (Refer to Site Grading and Drainage Plan)

Inspector Name:

Date/Time:

Weather:

TYPE OF INSPECTION (CHECK ONE)	
	Routine (Every Six Months)
	Annual
	Post-Storm (Rainfall Depth =_____inches)
	Post-Spill (Time/Date of Spill:_____)

INSPECTION CHECKLIST (CHECK ALL THAT APPLY)	
	Clear down pipe and riser pipe of debris and/or trash (as needed)
	Remove accumulated sediment from settling chamber (if >8" depth of sediment)
	Remove floatables, oil, and hydrocarbons
	Ensure watertightness of structure
	Securely seat manhole covers or grate (depending on unit) after inspection
CORRECTIVE ACTION REQUIRED	
ADDITIONAL NOTES/OBSERVATIONS	

INSPECTION FORM: CONTECH CDS2015-4

Unit Number: WQU-3 (Refer to Site Grading and Drainage Plan)

Inspector Name:

Date/Time:

Weather:

TYPE OF INSPECTION (CHECK ONE)	
	Routine (Every six months)
	Annual
	Post-Storm (Rainfall Depth =_____inches)
	Post-Spill (Time/Date of Spill:_____)

INSPECTION CHECKLIST (CHECK ALL THAT APPLY)	
	Vacuum out water from swirl chamber until water level in floatables chamber = lower aperture of swirl chamber
	Remove sediment from chambers other than swirl chamber if sediment level is within 18” of water level after drawdown
	Remove all sediment from swirl chamber by vacuum truck
	Remove oil and hydrocarbons using absorbent pads
	Clear internal baffles, apertures, and inlet/outlet of all obstructions
	Verify watertightness of structure
	Securely seat manhole covers after inspection
CORRECTIVE ACTION REQUIRED	
ADDITIONAL NOTES/OBSERVATIONS	

INSPECTION FORM: CONTECH CS--6

INSPECTION FORM: CONTECH CS-6

Unit Number: WQU-4 (Refer to Site Grading and Drainage Plan)

Inspector Name:

Date/Time:

Weather:

TYPE OF INSPECTION (CHECK ONE)	
	Routine (Every six months)
	Annual
	Post-Storm (Rainfall Depth =_____inches)
	Post-Spill (Time/Date of Spill:_____)

INSPECTION CHECKLIST (CHECK ALL THAT APPLY)	
	Vacuum out water from swirl chamber until water level in floatables chamber = lower aperture of swirl chamber
	Remove sediment from chambers other than swirl chamber if sediment level is within 18” of water level after drawdown
	Remove all sediment from swirl chamber by vacuum truck
	Remove oil and hydrocarbons using absorbent pads
	Clear internal baffles, apertures, and inlet/outlet of all obstructions
	Verify watertightness of structure
	Securely seat manhole covers after inspection
CORRECTIVE ACTION REQUIRED	
ADDITIONAL NOTES/OBSERVATIONS	

INSPECTION FORM: RAIN GARDEN

Basin Number: RG#____ (Refer to Site Grading and Drainage Plan)

Inspector Name:

Date/Time:

Weather:

	TYPE OF INSPECTION (CHECK ONE)
	Monthly
	Post-Storm (Depth =_____inches; Storm Duration =_____hrs; Date =_____)
	Post-Spill (Time/Date of Spill:_____)

	INSPECTION CHECKLIST (CHECK ALL THAT APPLY)
	Check embankment and side slopes for subsidence, erosion, cracking, tree growth
	Remove accumulated sediment and floating or settled trash/debris
	Remove invasive species
	Remove and replace dead plantings
	Remove and replace mulch layer
	Prune established vegetation
	Check beehive grate and basin for sediment/ debris/ leaf litter accumulation
	Check inspection ports for sediment accumulation/ standing water in structural underdrain
	Check for pavement cracking/ settlement within footprint of structural underdrain
	CORRECTIVE ACTION REQUIRED
	ADDITIONAL NOTES/OBSERVATIONS