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REPORT

December 2025
Revised April 2026

Truro Solar Photovoltaic Development

2 Sand Pit Road and 9 Noons Drive
Map 39, Lot 107 and Map 39, Lot 108
Truro, Massachusetts

Stormwater Report



04/27/2026

STORMWATER REPORT

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STORMWATER REPORT

Applicant/Project Name: NextGrid Pecan LLC
Truro Solar Photovoltaic Development

Project Location: 2 Sand Pit Road and 9 Noons Drive, Truro MA 02659

Application Prepared by:
Firm: Weston & Sampson Engineers, Inc.
Registered PE: Melinda Costello, P.E.

General

The proposed project is located at 2 Sand Pit Road (Map 39, Lot 107) and 9 Noons Drive (Map 39, Lot 108) in Truro, Massachusetts. The two lots have areas of approximately 38.7 acres and 17.2 acres, respectively, and are both owned by the Estate of Donald W. Noons. The project site currently exists as a sand and gravel pit.

The property is bounded by wooded areas and commercial buildings to the east, wooded area with residences to the north and south, and wooded areas, residences, and a pond to the west. A Locus Map is included in **Attachment A**.

The project is located in the Residential Zoning District. A wetland delineation was performed by LEC Environmental Consultants, Inc. on October 22, 2025, to identify the presence or absence of on-site and abutting Wetland Resource Areas protected under the Massachusetts Wetland Protection Act and Regulations (310 CMR 10.00) and the Truro Conservation Bylaw (Chapter VIII of the General By-Laws) and Truro Conservation Regulations. Two isolated wetlands have been identified: one along the western edge of Map 39, Lot 107 and one to the west of the property boundary of Map 39, Lot 107. Bordering vegetated wetlands have been identified to the west of the site. Proper setbacks from existing wetlands are maintained and no disturbance to wetlands or wetland buffers is proposed. A copy of the wetland delineation memo is included in **Attachment B**.

Project Description

The project proposes a ground mounted solar photovoltaic (PV) system with a capacity of approximately 7.68 megawatts (MW) direct current (DC) with associated battery energy storage (BESS) Access to the site is proposed via a proposed access road off Noons Drive along the southeastern parcel boundary. The solar array will be surrounded by a 7-foot tall chain link fence with access gates. The electricity generated by the PV modules is proposed to be exported to the electric grid in accordance with the utility's interconnection standards and regulations.

The total limit of work is approximately 26.5 acres consisting of the array area, tree clearing, stormwater management features, equipment pads, access road, fence, utility poles, underground electric conduits, and overhead wires. The total solar array footprint within the fence area is approximately 24.0 acres.

Site-wide grading is proposed for the PV array and stormwater management features. The area within the array footprint that currently exists as sand and gravel is proposed to be seeded with a grass mix to promote vegetation. Stormwater management, as discussed further below, is proposed via two vegetated infiltration basins, with pretreatment sediment forebays.

Stormwater Analysis

Pre- and post-development peak design flows were assessed using the United States Department of Agriculture National Resources Conservation Service (USDA NRCS) Technical Release 20 (TR-20) methodology. HydroCAD® version 10.20-5c stormwater modeling software was used to analyze and compare pre- and post-development stormwater conditions for the 2-, 10-, 50-, and 100-year 24-hour storm

events. It is a comprehensive hydrodynamic modeling program used to analyze systems such as, but not limited to, site hydrology, water conveyance infrastructure, and stormwater management systems.

According to the NRCS Web Soil Survey online soil mapping data, the site is comprised of soles of hydrologic soil group (HSG) A soils (Carver Coarse Sand and Sand and Gravel Pits). NRCS Web Soil Survey maps and reports for hydrologic soil group, depth to bedrock, and depth to water table are included in Attachment C. The land coverage curve number (CN) represents water retention and runoff capabilities of soil based on HSG and ground cover. CN for most land coverages is provided within the HydroCAD® software, however, sand is not. Therefore, the CN was calculated for the sand area. The CN calculation is provided in Attachment C.

The site is not located within any FEMA flood hazard zones. The FEMA FIRM map for the project site is included in Attachment C.

Rainfall data is referenced from NOAA Atlas 14, Volume 10, Version 3 for Truro, MA and is included in Attachment C.

A summary of the analysis is provided below. The full HydroCAD® reports for pre- and post-development conditions with associated drainage area maps are included in Attachment D.

Existing Hydrology

Under pre-development conditions, the site's topography as a sand and gravel pit consists of inconsistent soil piles and depressions, with all topography generally sloping from east to west across the site. The two low points include an isolated wetland to the northwest of the property and a bordering vegetated wetland to the west of the property. The southern portion of the site contains a pond-like depression that allows water to be retained and infiltrated on site.

The interior lot line between 2 Sand Pit Road and 9 Noons Drive, is proposed to be moved to allow for the proposed solar PV development to be located on it's own parcel. The stormwater analysis for this project was modeled using the proposed lot line referenced in an Approval Not Required Plan Dated December 10, 2025, prepared by SGC Engineering, LLC and a ridgeline on the southern portion of the site. All runoff flows via overland flow and no established channelization (i.e. swales either natural or manmade) was evident at the time this analysis was completed.

Based on the above site topography, the following point of analyses (POA) and drainage areas were analyzed. Figure 1 of Attachment D displays the limits of the pre-development conditions drainage area, time of concentration flow path, and existing land coverage.

- POA-1 – Isolated Wetland
- POA-2 – Bordering Vegetated Wetland
- POA-3 – Retained Onsite
- Drainage Area E-1 – Northwestern tip of the site draining toward the isolated wetland.
- Drainage Area E-2A – Large area in the center of the site containing one existing pond, draining west.
- Drainage Area E-2B – Center portion of site, draining toward the bordering vegetated wetland.
- Drainage Area E-3 – Southern portion of the site containing one existing pond, retaining water onsite.

Proposed Hydrology

Under post-development conditions, the site is proposed to be seeded within the array area and to have a more consistent slope from east to west across the site. There will be an increase in grass coverage, and a

decrease in woods, gravel, and sand coverage. There will also be an increase in impervious coverage due to the equipment pad and array racking posts.

The proposed stormwater management system consists of two vegetated infiltration basins with vegetated sediment forebays with one located in the northern corner of the site (basin 1P) and the other located toward the southwest corner of the site (basin 2P). The stormwater management system has been designed to reduce peak-flow runoff rate of the site area from pre- to post-development conditions. See Table 3 in Section 2 below for more information.

Figure 2 of Attachment D displays the limits of the post-development conditions drainage areas, time of concentration flow paths, and proposed land coverage. A description of the post-development point of analysis and drainage areas are included below.

- POA-1 – Isolated Wetland (same as pre-development conditions)
- POA-2 – Bordering Vegetated Wetland (same as pre-development conditions)
- Drainage Area P-1 – Northwestern tip of the site draining towards the isolated wetland.
- Drainage Area P-2A – Large northeastern portion of the site, draining towards infiltration basin 1P.
- Drainage Area P-2B – Western portion of the site, draining towards infiltration basin 2P.
- Drainage Area P-2C – Western portion of the site, draining toward the bordering vegetated wetland.

Test pits excavations have not been performed at the time this analysis was completed. Therefore, seasonal high ground water has not been confirmed. However, NRCS Web Soil Survey mapping data shows that there is greater than 6.5 feet to the water table. The proposed separation to groundwater from the bottom of the infiltration basins is greater than 4 feet.

Massachusetts Stormwater Management Standards

Below is a summary of the proposed stormwater management system's compliance with the Massachusetts Stormwater Management Standards 1-10.

Standard 1: No New Untreated Discharges

The proposed project is a new development. Compared to pre-development conditions, the post-development conditions have an increase in impervious coverage due to the proposed equipment pad and solar racking system support posts. The post-development conditions has an increase in grassed area and a decrease in sand and gravel area due to seeding within the array area. The site's overall curve number (CN) decreases from pre- to post-development conditions, therefore, no new untreated discharges area created. A summary of the discharge velocity from the site in included in Attachment E. The two infiltration basins are designed to mitigate the runoff from drainage areas P-1A and P-1B and propose no discharges from the basins for the 2-year, 24-hour storm; therefore, these areas are not included in the velocity summary table.

Standard 2: Peak Rate Attenuation

As shown in Tables 3 and 4 below, there is a net decrease in both peak flow runoff rate (cubic feet per second – cfs) and runoff discharge volume (acre feet – af) for all design storms due to the implementation of the stormwater management system for POA-2. POA-1 experiences a slight increase in peak discharge and volume due to tree clearing and grading, however, the amount is negligible. POA-3 is fully retained onsite in pre-development conditions, however, because of grading changes, this POA does not exist in post development conditions. The pre-development drainage area draining to POA-3 drains to POA-2 in post-development conditions and is mitigated by infiltration basin 2P.

Table 3 – Stormwater Peak Flow Rate Comparison

Point of Analysis	24 Hr Storm	Peak Discharge (cfs)		*Difference in Peak Runoff Rate (cfs)
		Pre-	Post-	
POA-1	2yr	0.0	0.0	0.0
	10yr	0.0	0.2	0.2
	50yr	0.1	0.7	0.6
	100yr	0.3	1.1	0.8
POA-2	2yr	0.9	0.0	-0.9
	10yr	6.9	0.1	-6.8
	50yr	18.3	0.9	-17.5
	100yr	24.5	1.6	-22.9
POA-3	2yr	0.4	0.0	-0.4
	10yr	2.0	0.0	-2.0
	50yr	4.5	0.0	-4.5
	100yr	5.9	0.0	-5.9

*Difference in peak runoff rates calculated based on HydroCAD® output values, then rounded to the nearest tenth.

Table 4 – Stormwater Runoff Discharge Volume Comparison

Point of Analysis	24 Hr Storm	Runoff Volume (af)		*Difference in Runoff Volume (af)
		Pre-	Post-	
POA-1	2yr	0.0	0.0	0.0
	10yr	0.0	0.0	0.0
	50yr	0.0	0.1	0.0
	100yr	0.0	0.1	0.0
POA-2	2yr	0.3	0.0	-0.3
	10yr	1.1	0.0	-1.0
	50yr	2.2	0.2	-2.0
	100yr	2.9	0.3	-2.6
POA-3	2yr	0.1	0.0	-0.1
	10yr	0.3	0.0	-0.3
	50yr	0.6	0.0	-0.6
	100yr	0.8	0.0	-0.8

*Difference in runoff rates and runoff volumes calculated based on HydroCAD® output values, then rounded to the nearest tenth.

Standard 3: Recharge

Recharge calculations and drawdown times have been completed for each infiltration basin. Both basins are proposed within HSG-A soils with an NRCS map unit name of Carver Coarse Sand and Sand and Gravel Pits. Based on the MassDEP Stormwater Handbook Volume 3 Chapter 1 Table 2.3.3, the Rawls Rate for this soil type is 8.27 inches per hour (in/hr). As each basin is designed to exfiltrate to groundwater, the lowest outlet elevation used for the drawdown time calculations is the spillway from the sediment forebay into the basin, for each basin. The spillway is proposed at an elevation of 37.5-feet for basin 1P and 52.5 feet for basin 2P.

The drawdown time for basin 1P is 24.8 hours and the drawdown time for basin 2P is 2.4 hours. Both are lower than the 72-hour limit set by the MassDEP, therefore, the MassDEP groundwater recharge requirement is met.

Refer to **Attachment E** for recharge calculations.

Standard 4: Water Quality

Added impervious area for the project includes the equipment pads and solar array racking posts, and in accordance with the Massachusetts Stormwater Handbook Volume 3.1, these features do not qualify as impervious coverage requiring treatment. Therefore, the water quality volume and the total suspended solids (TSS) removal calculations are not required for this project. However, TSS calculations for the infiltration basins have been provided and are included in **Attachment E**.

Source control and pollution prevention measures are identified in the Long Term Pollution Prevention Plan (**Attachment F**) and best management practices (BMPs) will be maintained in accordance with the site-specific Stormwater Operation and Maintenance Plan (**Attachment G**).

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

Not Applicable. There are no LUHPPLs in the work area.

Standard 6: Critical Areas

Not Applicable. There will be no new discharges to critical areas. There is a Zone II located in the northeast corner of the proposed limit of work, however, the topography of the site does not direct discharge to the Zone II. There are also Zone Is to the northwest of the project area. The Critical Area Map included in **Appendix H** shows the location of the Zone Is and Zone IIs.

Standard 7: Redevelopments and Other Projects Subject to the Standards Only to the Maximum Extent Practicable

Not applicable. This project is not a redevelopment project.

Standard 8: Construction Period Pollution Prevention and Erosion and Sediment Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan is included in **Attachment I**. To ensure that the work incorporates the performance standards recommended in MassDEP's Stormwater Management Policy, necessary erosion and sedimentation control measures will be utilized during construction as shown on the site plans.

The project will be covered under the National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP). A Notice of Intent and Stormwater Pollution Prevention Plan (SWPPP) will be prepared and submitted prior to land disturbance.

Standard 9: Operation and Maintenance Plan

A Stormwater Operation and Maintenance Plan for the proposed stormwater management system is provided with this report in **Attachment G**. The two infiltration basins will be maintained during and following construction in accordance with this plan.

Standard 10: Prohibition of Illicit Discharges

There will be no illicit discharges associated with the project. An Illicit Discharge Compliance Statement is included in Attachment J.

Attachment A - Locus Map



Legend

Proposed Solar PV Development Area

FIGURE 1

PORTION OF 2 SAND PIT ROAD / 9 NOONS DRIVE
TRURO, MASSACHUSETTS

LOCUS MAP

0 0.25 0.5 1 1.5 Miles

Weston & Sampson

Path: \\wse03.local\WSE\Projects\Private\NextGrid Inc\Truro, MA\2 Sand Pit - 9 Noons Drive\08-GIS\Phase_I_ESA\Phase_I_ESA.aprx **User:** Li.Esther **Saved:** 11/24/2025 1:29 PM **Opened:** 11/24/2025 1:35 PM

Attachment B - Wetland Delineation Memo

LEC WETLANDS WILDLIFE WATERWAYS

November 7, 2025

Email [Costello.melinda@wseinc.com]

Ms. Melinda Costello
Weston & Sampson
55 Walkers Brook Drive, Suite 100
Reading, MA 01887

Re: Wetland Resource Area Analysis [LEC File #: WS\25-424.01]
2 Sand Pit Road and 9 Noons Drive
Map 39, Parcels 107 and 108
Truro, Massachusetts

Dear Ms. Costello:

LEC Environmental Consultants, Inc., (LEC) conducted a site evaluation on October 22, 2025, to identify the presence or absence of on-site and abutting Wetland Resource Areas protected under the *Massachusetts Wetlands Protection Act* and *Regulations* (310 CMR 10.00) and the *Truro Conservation Bylaw* (Chapter VIII of the General By-Laws) and *Truro Conservation Regulations*.

LEC identified one (1) Isolated Wetland protected under the *Truro Conservation Bylaw* located on-site. Buffer Zone from off-site protectable Bordering Vegetated Wetlands (BVW) and a potential Isolated Wetland also extend onto the project site. The following provides a summary of these Resource Areas as depicted on the accompanying aerial orthophoto map (**Attachment A**).

Existing Conditions

The 56± acre site, comprised of two subject parcels, is occupied by a sand and gravel pit occurring west of Route 6, accessed off Noons Heights Road (**Attachment A**). Portions of the site are utilized for various commercial/industrial uses, including the storage/stockpile and/or sale of yard (organic) waste, soils, stone, shells, mulch, etc. The site is surrounded by residential development to the north and south with commercial development along Route 6 abutting to the east. Great Swamp is located west of the site and Cormorant Road, a subdivision roadway within the Shearwater residential neighborhood.

The site has been subject to past site excavation associated with the sand and gravel pit operation and generally contains rolling topography that primarily descends to the northwest. Under existing conditions, the only intact, naturally vegetated forested upland is limited to the outer perimeter of the site. Open, exposed areas within the interior contain variable, interstitial pockets of vegetation which have become established in the disturbed landscape, most notably occupied by black locust(*Robinia pseudoacacia*), autumn olive (*Elaeagnus umbellata*), multiflora rose (*Rosa multiflora*), bush honeysuckle

(*Lonicera* sp.), staghorn sumac (*Rhus typhina*), and Japanese knotweed (*Fallopia japonica*). These species occur around the perimeter of more recently disturbed areas along with pitch pine (*Pinus rigida*), black cherry (*Prunus serotina*), bayberry (*Myrica pensylvanica*), sweet fern (*Comptonia peregrina*), Pennsylvania sedge (*Carex pensylvanica*), little bluestem (*Schizachyrium scoparium*), wavy hairgrass (*Deschampsia flexuosa*), poison ivy (*Toxicodendron radicans*), dewberry (*Rubus flagellaris*), bearberry (*Arctostaphylos uva-ursi*), wild indigo (*Baptisia tinctoria*), false heather (*Hudsonia tomentosa*), and entanglements of Asiatic bittersweet (*Celastrus orbiculata*) and Japanese honeysuckle (*Lonicera japonica*).

Naturally vegetated forested upland around portions of the site perimeter is dominated by pitch pine with scattered black oak (*Quercus velutina*), scrub oak (*Quercus ilicifolia*), bayberry, and black huckleberry (*Gaylussacia baccata*) with the groundcover species listed above.

Floodplain Designation

According to the July 16, 2014 FEMA Flood Insurance Rate Map (FIRM) for Barnstable County (Map Number 25001C0139J), the site is located within Zone X, *Areas determined to be outside the 0.2% annual chance floodplain* (**Attachment B**).

Natural Heritage and Endangered Species Program Designation

According to the 15th Edition (effective August 1, 2021) of the *Massachusetts Natural Heritage Atlas* published by the Natural Heritage & Endangered Species Program (NHESP), the site is not located within a *Priority Habitat of Rare Species* and *Estimated Habitat of Rare Wildlife* (**Attachment A**).

MassGIS NHESP datalayers also confirm that no Certified Vernal Pools or Potential Vernal Pools are identified on or immediately abutting the site. The closest Certified Vernal Pool (CVP #7896) is located greater than 425 feet northwest of the site.

Wetlands

As depicted on the Aerial Orthophoto Map (**Attachment A**), an Isolated Wetland is present within the northwesterly portion of the subject parcel, representing the lowest topographic point on-site. The Isolated Wetland is approximately 960± square feet in size.

Based on Town of Truro GIS, an Isolated Wetland is located off-site on property having an address of 24 Turnstone Road (Map 39, Parcel 113), abutting to the north. The presence of the Isolated Wetland is corroborated by MassGIS topography (1-ft. Contours) and observations from the project site. The approximated boundary to the off-site Isolated Wetland is depicted on the Aerial Orthophoto Map (**Attachment A**).

Isolated Wetlands are protected under the *Truro Conservation Bylaw* and are defined under the *Truro Conservation Regulations* as *freshwater wetlands and may include wet meadows, marshes, swamps, bogs and vernal pools which do not border on any creek, river, stream, pond or lake. Isolated wetlands are areas where the soils are saturated and/or inundated such that they support a preponderance of wetland indicator plants, hydric soils or other indicators of hydrology.*

The on-site Isolated Wetland was demarcated in accordance with the *Truro Conservation Bylaw* and *Truro Conservation Regulations*, implementing principles stated within the *Massachusetts Handbook for Delineation of Bordering Vegetated Wetlands* (Second Edition, September 2022) and *Field Indicators for Identifying Hydric Soils in New England* (Version 4, June 2020). The IVW flags A1-A9 were GPS-located by LEC on October 30, 2025, as depicted on the aerial orthophoto map (**Attachment A**). Supporting Field Data Forms accompany this report (**Attachment C**).

The on-site IVW was observed to be saturated to the surface (following a rain event) and contained hydric (wetland) soils. Wetland vegetation consisting of sensitive fern (*Onoclea sensibilis*), meadowsweet (*Spirea alba*), and gypsywort (*Lycopus europaeus*) was observed in the interior, surrounded by a dense thicket of privet (*Ligustrum*), bush honeysuckle, multiflora rose, and Asiatic bittersweet entanglements. The IVW appears to be supported by groundwater and minimal surface runoff. Based on water marks, the IVW may hold a few inches of standing water (0-4± inches) following rain events and/or during the spring hydroperiod.

The on-site IVW does not appear to function as an Isolated Land Subject to Flooding (ILSF) under 310 CMR 10.57 (i.e., *an area which at least once a year confines standing water to a volume of at least ¼ acre-feet and to an average depth of at least six inches*) based on its small size and the presence of minimal standing water. The *Truro Conservation Regulations* do not separately define ILSF. As a result, the on-site IVW is not an Area Subject to Protection under the *Massachusetts Wetlands Protection Act* and *Regulations* (310 CMR 10.00).

A BVW is located off-site to the west of Cormorant Road, a subdivision roadway within the Shearwater residential neighborhood. The BVW is dominated by a cattail (*Typha latifolia*) marsh with two open water areas (approximately 9½± acre and ½± acre, respectively), identified locally as Great Swamp or Great Swamp Pond. The approximated boundary to the off-site BVW is depicted on the aerial orthophoto map (**Attachment A**). The BVW is protected under the *Massachusetts Wetlands Protection Act* and *Regulations* (310 CMR 10.00) and the *Truro Conservation Bylaw* (Chapter VIII of the General By-Laws) and *Truro Conservation Regulations*.

The 100-foot Buffer Zone to the on-site Isolated Wetland and approximated off-site BVW and Isolated Wetland are depicted on the aerial orthophoto map (**Attachment A**).

Summary

LEC identified one (1) on-site Isolated Wetland protected under the *Truro Conservation Bylaw* and *Truro Conservation Regulations*, while Buffer Zone from off-site protectable Bordering Vegetated Wetlands (BVW) and a potential off-site Isolated Wetland also extend onto the project site. Isolated Wetlands are protected under the *Truro Conservation Bylaw* and *Truro Conservation Regulations* and BVW is protected under the *Massachusetts Wetlands Protection Act* and *Regulations* (310 CMR 10.00) and the *Truro Conservation Bylaw* and *Truro Conservation Regulations*.

Any work proposed within the 100-foot Buffer Zone to these Resource Areas will require filing for the appropriate permits with the Town of Truro Conservation Commission and/or the Massachusetts Department of Environmental Protection.

If you have any questions or require additional information, please do not hesitate to contact me at bmadden@lecenvironmental.com.

Sincerely,

LEC Environmental Consultants, Inc.

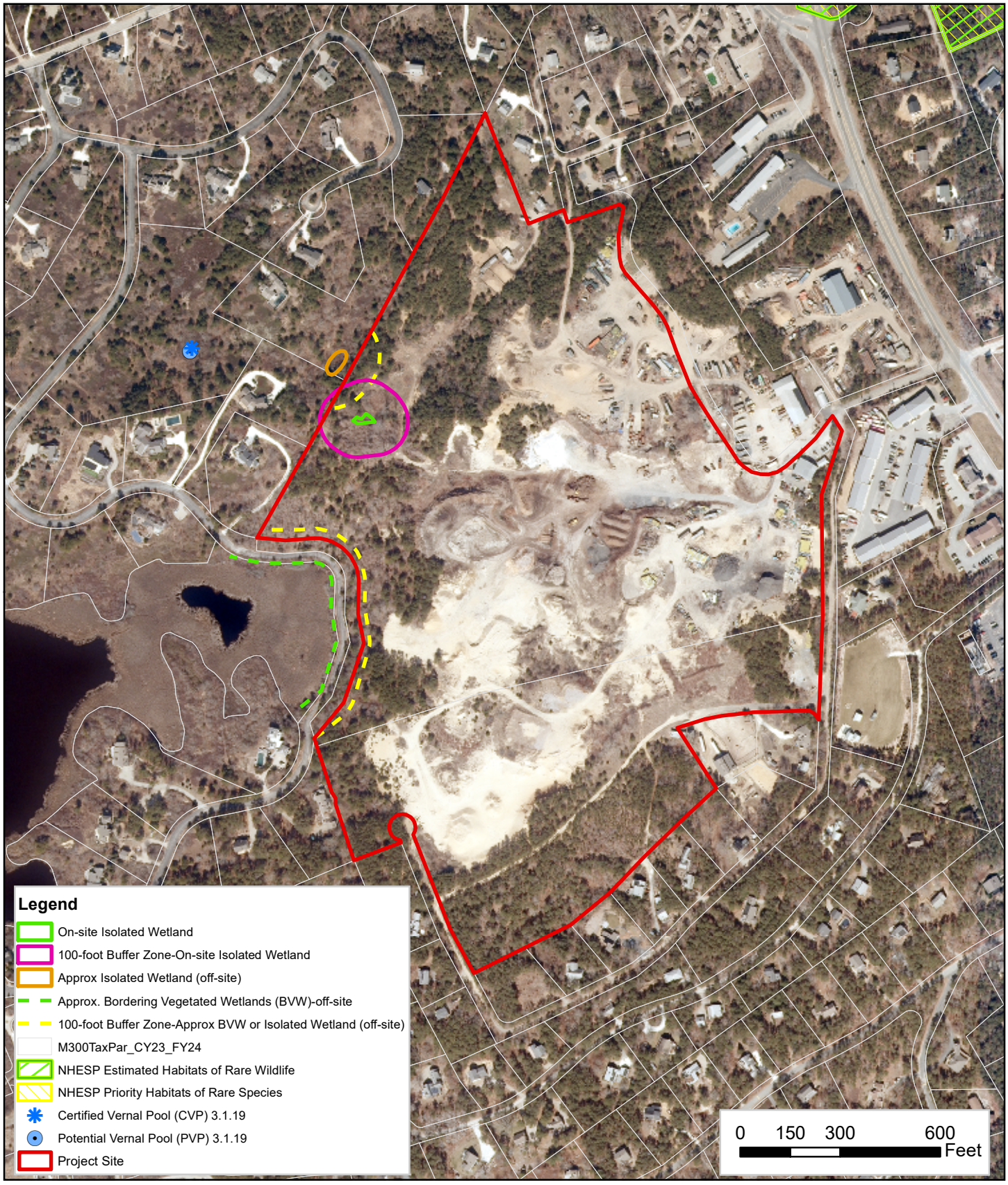


Brian T. Madden
Senior Wildlife/Wetland Scientist

Attachments

Attachment A

Aerial Orthophoto Map



LEC Environmental Consultants, Inc.
Plymouth, MA
508.746.9491
www.lecenvironmental.com

Aerial Orthophoto Map

2 Sand Pit Road & 9 Noons Drive
Truro, Massachusetts

N

November 3, 2025

Attachment B

FEMA Flood Insurance Rate Map



July 16, 2014 FEMA Flood Insurance Rate Map (FIRM) for Barnstable County (Map Number 25001C0139J

Attachment C

Bordering Vegetated Wetland Determination Forms

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: 2 Sand Pit Road and 9 Noons Drive City/Town: Truro Sampling Date: 10/30/2025

Applicant/Owner: Weston & Sampson Sampling Point or Zone: A2 Upgradient 4'

Investigator(s): Nate Goshgarian w/LEC Environmental Consultants, Inc. Latitude / Longitude: 42.023708, -70.081673

Soil Map Unit Name: Carver coarse sand, 3 to 8 percent slopes NWI or DEP Classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes [ ]	No [✓]	**Is the Sampled Area within a Wetland?** Yes [ ] No [✓]
Hydric Soils criterion met?	Yes [ ]	No [✓]	
Wetlands hydrology present?	Yes [ ]	No [✓]	

Remarks, Photo Details, Flagging, etc.:

HYDROLOGY

Field Observations:			
Surface Water Present?	Yes [ ]	No [✓]	Depth (inches)_____
Water Table Present?	Yes [ ]	No [✓]	Depth (inches)_____
Saturation Present (including capillary fringe)?	Yes [ ]	No [✓]	Depth (inches)_____

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
[ ] Water-stained leaves	[ ] Hydrological records	[ ] Direct observation of inundation
[ ] Evidence of aquatic fauna	[ ] Free water in a soil test hole	[ ] Drainage patterns
[ ] Iron deposits	[ ] Saturated soil	[ ] Drift lines
[ ] Algal mats or crusts	[ ] Water marks	[ ] Scoured areas
[ ] Oxidized rhizospheres/pore linings	[ ] Moss trim lines	[ ] Sediment deposits
[ ] Thin muck surfaces	[ ] Presence of reduced iron	[ ] Surface soil cracks
[ ] Plants with air-filled tissue (aerenchyma)	[ ] Woody plants with adventitious roots	[ ] Sparsely vegetated concave surface
[ ] Plants with polymorphic leaves	[ ] Trees with shallow root systems	[ ] Microtopographic relief
[ ] Plants with floating leaves	[ ] Woody plants with enlarged lenticels	[ ] Geographic position (depression, toe of slope, fringing lowland
[ ] Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Form Revised July 2023

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30' radius

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Norway maple	Acer platanoides	UPL	68.0	Yes	No
2. Eastern red cedar	Juniperus virginiana	FACU	10.5	No	
3.					
4.					
5.					
6.					
7.					
8.					
9.					

78.5 = Total Cover

Shrub/Sapling Stratum Plot size 15' radius

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Japanese honeysuckle	Lonicera japonica	FACU	38.0	Yes	No
2. Japanese Knotweed	Reynoutria japonica	FACU	20.5	Yes	No
3. European privet	Ligustrum vulgare	FACU	10.5	No	
4. Black cherry	Prunus serotina	FACU	10.5	No	
5.					
6.					
7.					
8.					
9.					

79.5 = Total Cover

Herb Stratum Plot size 5' radius

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Garlic mustard	Alliaria petiolata	FACU	10.5	Yes	No
2. European privet	Ligustrum vulgare	FACU	3.0	Yes	No
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

13.5 = Total Cover

VEGETATION – continued.

Woody Vine Stratum	Plot size 30' radius				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Asiatic bittersweet	Celastrus orbiculatus	UPL	10.5	Yes	No
2.					
3.					
4.					
			10.5 = Total Cover		

Rapid Test: Do all dominant species have an indicator status of OBL or FACW?				Yes ☐ No ☐
Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species?
	6	0		Yes ☐ No ☑
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species		X 1	= 0.00
	FACW species		X 2	= 0.00
	FAC species		X 3	= 0.00
	FACU species		X 4	= 0.00
	UPL species		X 5	= 0.00
	Column Totals	(A) 0		(B) 0
Prevalence Index		B/A = 0.00		Is the Prevalence Index ≤ 3.0? Yes ☐ No ☐
Wetland vegetation criterion met?		**Yes** ☐ **No** ☑		

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Location[2]		
0-14	10YR 3/3	100.00					FSL	^HTM/Fill
14-20	10YR 2/1						VFSL	Ab1-horizon
20-24	10YR 2/1	95.00	10YR 3/4	5.00	C	PL	VFSL	Ab2-horizon

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
☐ Histosol (A1)	☐ Polyvalue Below Surface (S8)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9)	☐ 5 cm Mucky Peat or Peat (S3)
☐ Black Histic (A3)	☐ Loamy Gleyed Matrix (F2)	☐ Iron-Manganese Masses (F12)
☐ Hydrogen Sulfide (A4)	☐ Depleted Matrix (F3)	☐ Mesic Spodic (A17)
☐ Stratified Layers (A5)	☐ Redox Dark Surface (F6)	☐ Red Parent Material (F21)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (F22)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)		
☐ Sandy Gleyed Matrix (S4)		
☐ Sandy Redox (S5)		☐ Other (Include Explanation in Remarks)
☐ Stripped Matrix (S6)		
☐ Dark Surface (S7)		

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks: No saturation, no H20 in entire soil profile.

Hydric Soils criterion met? **Yes** ☐ **No** ☑

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: 2 Sand Pit Road and 9 Noons Drive City/Town: Truro Sampling Date: 10/30/2025

Applicant/Owner: Weston & Sampson Sampling Point or Zone: A2 Downgradient 4'

Investigator(s): Nate Goshgarian w/LEC Environmental Consultants, Inc. Latitude / Longitude: 42.023708, -70.081673

Soil Map Unit Name: Carver coarse sand, 3 to 8 percent slopes NWI or DEP Classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes [✓] No [ ]	**Is the Sampled Area within a Wetland?** **Yes [✓] No [ ]**
Hydric Soils criterion met?	Yes [✓] No [ ]	
Wetlands hydrology present?	Yes [✓] No [ ]	

Remarks, Photo Details, Flagging, etc.:

HYDROLOGY

Field Observations:			
Surface Water Present?	Yes [ ]	No [✓]	Depth (inches)
Water Table Present?	Yes [✓]	No [ ]	Depth (inches) 4.00
Saturation Present (including capillary fringe)?	Yes [✓]	No [ ]	Depth (inches) 0.00

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
[✓] Water-stained leaves	[ ] Hydrological records	[ ] Direct observation of inundation
[ ] Evidence of aquatic fauna	[✓] Free water in a soil test hole	[ ] Drainage patterns
[ ] Iron deposits	[✓] Saturated soil	[ ] Drift lines
[ ] Algal mats or crusts	[ ] Water marks	[ ] Scoured areas
[✓] Oxidized rhizospheres/pore linings	[ ] Moss trim lines	[ ] Sediment deposits
[ ] Thin muck surfaces	[✓] Presence of reduced iron	[ ] Surface soil cracks
[ ] Plants with air-filled tissue (aerenchyma)	[✓] Woody plants with adventitious roots	[ ] Sparsely vegetated concave surface
[ ] Plants with polymorphic leaves	[✓] Trees with shallow root systems	[ ] Microtopographic relief
[ ] Plants with floating leaves	[ ] Woody plants with enlarged lenticels	[✓] Geographic position (depression, toe of slope, fringing lowland
[✓] Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Form Revised July 2023

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30' radius

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

0.0 = Total Cover

Shrub/Sapling Stratum Plot size 15' radius

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Eurpoean privet	Ligustrum vulgaris	FACU	10.5	Yes	No
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

10.5 = Total Cover

Herb Stratum Plot size 5' radius

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. White meadowsweet	Spiraea alba	FACW	10.5	Yes	Yes
2. Sensitive fern	Onoclea sensibilis	FACW	10.5	Yes	Yes
3. Gypsywort	Lycopus europaeus	OBL	10.5	Yes	Yes
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

31.5 = Total Cover

VEGETATION – continued.

Woody Vine Stratum	Plot size 30' radius				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Asiatic bittersweet	Celastrus orbiculatus	UPL	3.0	Yes	No
2.					
3.					
4.					
			3.0 = Total Cover		

Rapid Test: Do all dominant species have an indicator status of OBL or FACW?				Yes ☐ No ☐
Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes ☑ No ☐
	5	3		
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species		X 1	= 0.00
	FACW species		X 2	= 0.00
	FAC species		X 3	= 0.00
	FACU species		X 4	= 0.00
	UPL species		X 5	= 0.00
	Column Totals	(A) 0		(B) 0
Prevalence Index		B/A = 0.00		Is the Prevalence Index ≤ 3.0? Yes ☐ No ☐
Wetland vegetation criterion met?		**Yes** ☑ **No** ☐		

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Location[2]		
0-4	10YR 2/2	95.00	10YR 3/4	5.00	C	PL	VFSL	^A-horizon
4-18	10YR 4/2	95.00	10YR 4/3	5.00	D	M	FSL	^Bg-horizon
18-24	10YR 2/1	95.00	10YR 4/3	5.00	C	M	FSL	A-horizon

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

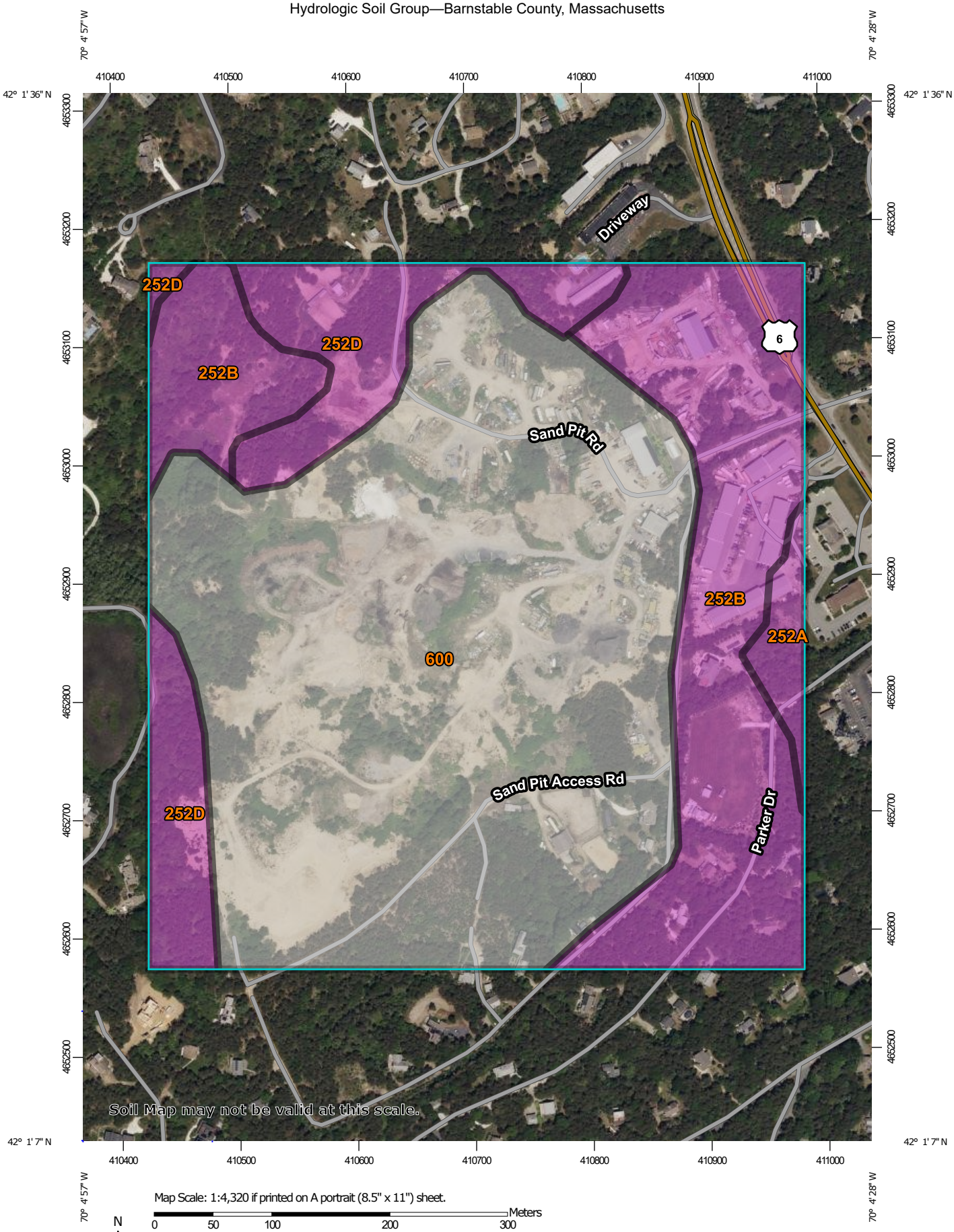
Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
☐ Histosol (A1)	☐ Polyvalue Below Surface (S8)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9)	☐ 5 cm Mucky Peat or Peat (S3)
☐ Black Histic (A3)	☐ Loamy Gleyed Matrix (F2)	☐ Iron-Manganese Masses (F12)
☐ Hydrogen Sulfide (A4)	☐ Depleted Matrix (F3)	☐ Mesic Spodic (A17)
☐ Stratified Layers (A5)	☑ Redox Dark Surface (F6)	☐ Red Parent Material (F21)
☑ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (F22)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)		
☐ Sandy Gleyed Matrix (S4)		
☐ Sandy Redox (S5)		☐ Other (Include Explanation in Remarks)
☐ Stripped Matrix (S6)		
☐ Dark Surface (S7)		

Restrictive Layer (if observed) Type: N/A Depth (inches): _____

Remarks: Buried A-horizon and B-horizon. Redoximorphic features observed within entire soil profile.

Hydric Soils criterion met? **Yes** ☑ **No** ☐

Attachment C - NRCS Web Soil Survey Maps & Reports:
Hydrologic Soils Group, Depth to Bedrock, Depth to Water Table,
FEMA FIRMettes,
NOAA Atlas 14 Rainfall Data, CN Calculation



Map Scale: 1:4,320 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

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

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

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

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

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

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

Soil Survey Area: Barnstable County, Massachusetts
Survey Area Data: Version 24, Sep 5, 2025

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

Date(s) aerial images were photographed: Jun 10, 2022—Jun 30, 2022

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
252A	Carver coarse sand, 0 to 3 percent slopes	A	1.5	1.8%
252B	Carver coarse sand, 3 to 8 percent slopes	A	21.5	26.0%
252D	Carver coarse sand, 15 to 35 percent slopes	A	9.8	11.9%
600	Pits, sand and gravel		49.8	60.3%
Totals for Area of Interest			**82.5**	**100.0%**

Description

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

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

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

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

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

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

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

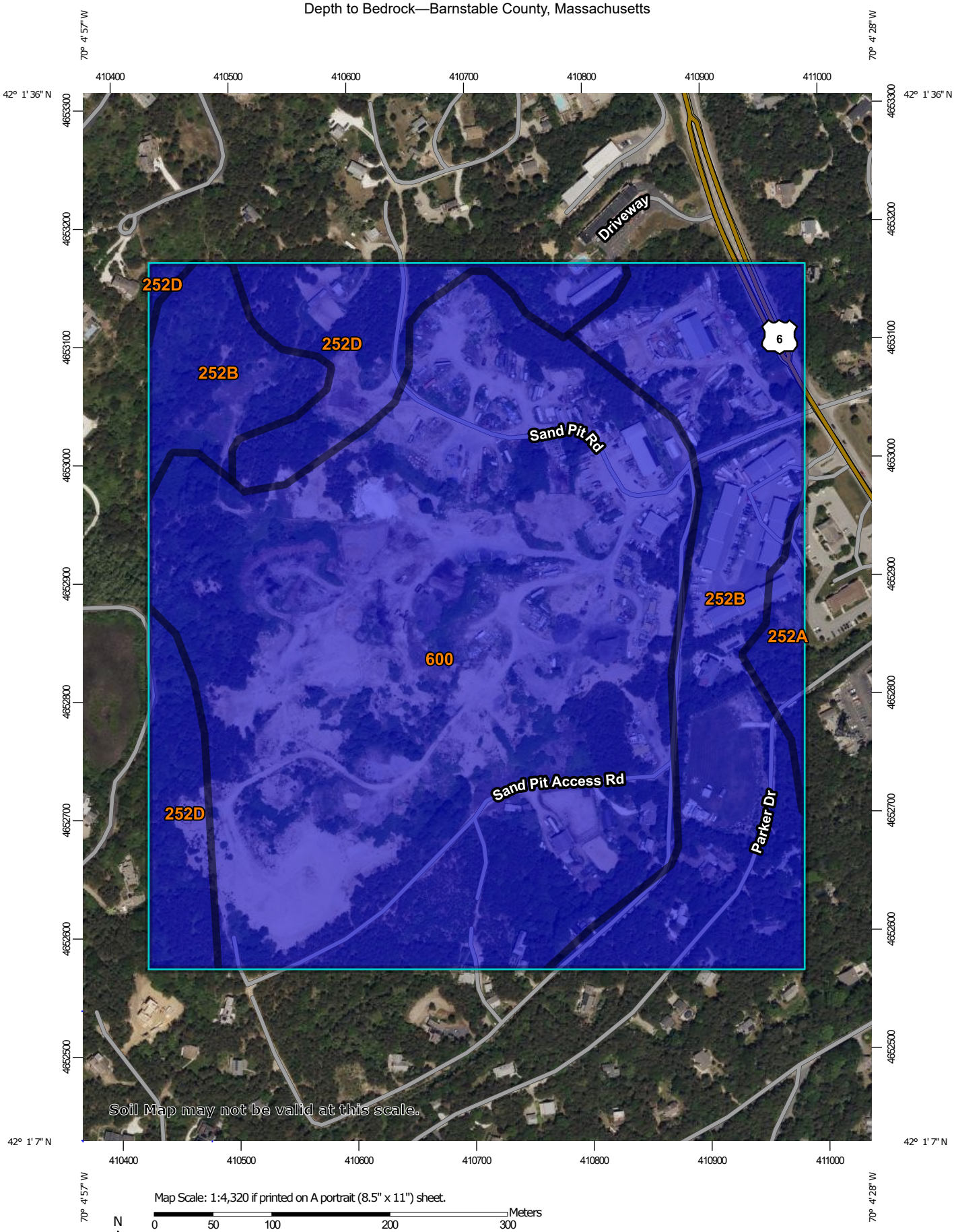
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Depth to Bedrock—Barnstable County, Massachusetts



Map Scale: 1:4,320 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

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

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

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

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

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

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Soil Survey Area: Barnstable County, Massachusetts
Survey Area Data: Version 24, Sep 5, 2025

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

Date(s) aerial images were photographed: Jun 10, 2022—Jun 30, 2022

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

Depth to Bedrock

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
252A	Carver coarse sand, 0 to 3 percent slopes	>200	1.5	1.8%
252B	Carver coarse sand, 3 to 8 percent slopes	>200	21.5	26.0%
252D	Carver coarse sand, 15 to 35 percent slopes	>200	9.8	11.9%
600	Pits, sand and gravel	>200	49.8	60.3%
Totals for Area of Interest			**82.5**	**100.0%**

Description

The term bedrock in soil survey refers to a continuous root and water restrictive layer of rock that occurs within the soil profile.

There are many types of restrictions that can occur within the soil profile but this theme only includes the three restrictions that use the term bedrock. These are:

1) Lithic Bedrock

2) Paralithic Bedrock

3) Densic Bedrock

Lithic bedrock and paralithic bedrock are comprised of igneous, metamorphic, and sedimentary rocks, which are coherent and consolidated into rock through pressure, heat, cementation, or fusion. Lithic bedrock represents the hardest type of bedrock, with a hardness of strongly coherent to indurated. Paralithic bedrock has a hardness of extremely weakly coherent to moderately coherent. It can occur as a thin layer of weathered bedrock above harder lithic bedrock. Paralithic bedrock can also be much thicker, extending well below the soil profile.

Densic bedrock represents a unique kind of bedrock recognized within the soil survey. It is non-coherent and consolidated, dense root restrictive material, formed by pressure, heat, and dewatering of earth materials or sediments. Densic bedrock differs from densic materials, which formed under the compaction of glaciers, mudflows, and or human-caused compaction.

If more than one type of bedrock is described for an individual soil type, the depth to the shallowest one is given. If no bedrock is described in a map unit, it is represented by the "greater than 200" depth class.

Depth to bedrock is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

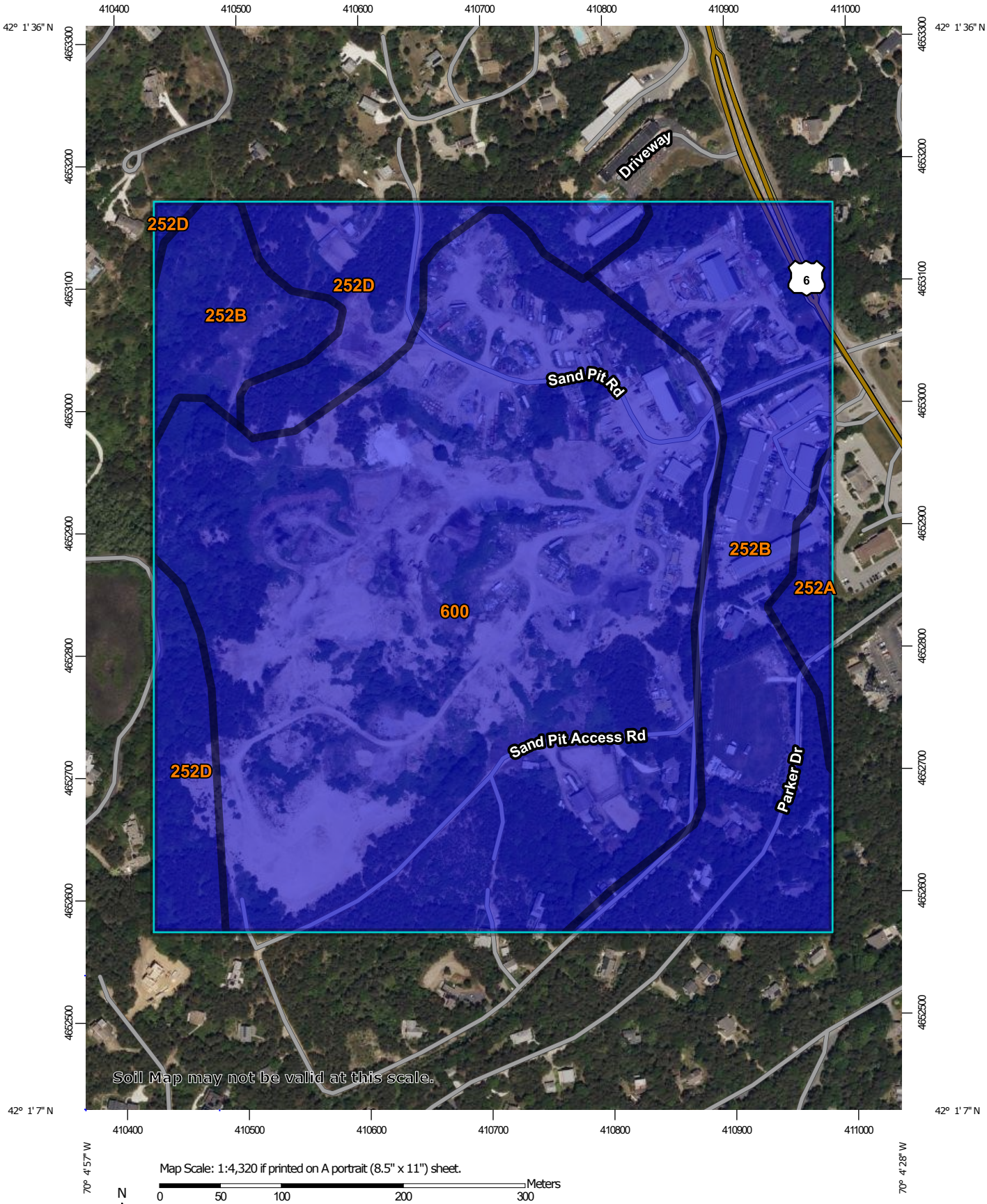
Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No



Map Scale: 1:4,320 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Lines

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Points

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

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

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

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Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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Survey Area Data: Version 24, Sep 5, 2025

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

Date(s) aerial images were photographed: Jun 10, 2022—Jun 30, 2022

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

Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
252A	Carver coarse sand, 0 to 3 percent slopes	>200	1.5	1.8%
252B	Carver coarse sand, 3 to 8 percent slopes	>200	21.5	26.0%
252D	Carver coarse sand, 15 to 35 percent slopes	>200	9.8	11.9%
600	Pits, sand and gravel	>200	49.8	60.3%
Totals for Area of Interest			**82.5**	**100.0%**

Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

NOAA Atlas 14, Volume 10, Version 3
Location name: Truro, Massachusetts, USA*
Latitude: 42.0213°, Longitude: -70.0783°
Elevation: 82 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.268** (0.206-0.347)	**0.338** (0.259-0.439)	**0.453** (0.346-0.589)	**0.549** (0.417-0.714)	**0.680** (0.503-0.918)	**0.777** (0.565-1.07)	**0.882** (0.628-1.25)	**1.01** (0.674-1.42)	**1.20** (0.772-1.73)	**1.36** (0.858-1.99)
10-min	**0.380** (0.291-0.492)	**0.479** (0.367-0.621)	**0.642** (0.490-0.833)	**0.777** (0.590-1.01)	**0.963** (0.712-1.30)	**1.10** (0.802-1.51)	**1.25** (0.889-1.77)	**1.43** (0.956-2.02)	**1.70** (1.10-2.45)	**1.92** (1.22-2.82)
15-min	**0.447** (0.343-0.579)	**0.564** (0.432-0.731)	**0.755** (0.577-0.980)	**0.914** (0.694-1.19)	**1.13** (0.838-1.53)	**1.30** (0.942-1.78)	**1.47** (1.05-2.08)	**1.68** (1.12-2.37)	**1.99** (1.29-2.88)	**2.26** (1.43-3.31)
30-min	**0.645** (0.495-0.836)	**0.811** (0.621-1.05)	**1.08** (0.827-1.40)	**1.31** (0.994-1.70)	**1.62** (1.20-2.19)	**1.85** (1.34-2.54)	**2.10** (1.50-2.97)	**2.40** (1.60-3.39)	**2.86** (1.85-4.14)	**3.25** (2.06-4.77)
60-min	**0.844** (0.647-1.09)	**1.06** (0.811-1.37)	**1.41** (1.08-1.83)	**1.70** (1.29-2.22)	**2.10** (1.56-2.84)	**2.40** (1.75-3.30)	**2.72** (1.94-3.86)	**3.12** (2.09-4.41)	**3.72** (2.41-5.39)	**4.25** (2.69-6.22)
2-hr	**1.14** (0.881-1.47)	**1.43** (1.10-1.84)	**1.90** (1.46-2.45)	**2.29** (1.75-2.96)	**2.83** (2.10-3.79)	**3.22** (2.36-4.39)	**3.65** (2.62-5.13)	**4.17** (2.81-5.85)	**4.96** (3.23-7.12)	**5.64** (3.59-8.18)
3-hr	**1.35** (1.04-1.73)	**1.68** (1.30-2.15)	**2.22** (1.71-2.85)	**2.67** (2.05-3.44)	**3.28** (2.45-4.38)	**3.74** (2.75-5.07)	**4.23** (3.04-5.91)	**4.82** (3.26-6.73)	**5.71** (3.72-8.14)	**6.46** (4.13-9.33)
6-hr	**1.76** (1.37-2.24)	**2.15** (1.68-2.74)	**2.80** (2.17-3.57)	**3.33** (2.58-4.27)	**4.07** (3.06-5.38)	**4.62** (3.41-6.20)	**5.21** (3.75-7.18)	**5.89** (4.01-8.15)	**6.90** (4.53-9.76)	**7.74** (4.98-11.1)
12-hr	**2.22** (1.75-2.81)	**2.67** (2.09-3.37)	**3.39** (2.65-4.30)	**3.99** (3.11-5.08)	**4.82** (3.64-6.31)	**5.44** (4.04-7.22)	**6.10** (4.40-8.30)	**6.84** (4.69-9.38)	**7.90** (5.23-11.1)	**8.78** (5.68-12.5)
24-hr	**2.69** (2.13-3.38)	**3.18** (2.51-3.99)	**3.98** (3.13-5.00)	**4.64** (3.63-5.85)	**5.55** (4.21-7.19)	**6.23** (4.64-8.18)	**6.95** (5.03-9.34)	**7.73** (5.34-10.5)	**8.84** (5.88-12.3)	**9.73** (6.33-13.7)
2-day	**3.14** (2.50-3.91)	**3.67** (2.92-4.57)	**4.54** (3.60-5.67)	**5.26** (4.15-6.59)	**6.25** (4.78-8.03)	**7.00** (5.25-9.11)	**7.78** (5.66-10.3)	**8.62** (5.99-11.6)	**9.77** (6.55-13.5)	**10.7** (7.01-14.9)
3-day	**3.44** (2.75-4.27)	**3.99** (3.18-4.95)	**4.88** (3.89-6.08)	**5.62** (4.45-7.02)	**6.64** (5.10-8.50)	**7.42** (5.58-9.60)	**8.22** (6.00-10.9)	**9.07** (6.33-12.2)	**10.2** (6.89-14.0)	**11.2** (7.34-15.5)
4-day	**3.70** (2.97-4.58)	**4.26** (3.41-5.27)	**5.16** (4.12-6.41)	**5.92** (4.70-7.36)	**6.96** (5.35-8.86)	**7.75** (5.84-9.98)	**8.56** (6.26-11.2)	**9.41** (6.59-12.6)	**10.6** (7.14-14.4)	**11.5** (7.58-15.9)
7-day	**4.36** (3.52-5.37)	**4.94** (3.98-6.09)	**5.90** (4.73-7.28)	**6.69** (5.34-8.28)	**7.77** (6.01-9.82)	**8.62** (6.51-11.0)	**9.45** (6.92-12.3)	**10.3** (7.25-13.6)	**11.4** (7.73-15.4)	**12.2** (8.09-16.8)
10-day	**4.97** (4.02-6.09)	**5.58** (4.51-6.85)	**6.58** (5.30-8.09)	**7.41** (5.94-9.14)	**8.55** (6.63-10.7)	**9.44** (7.16-12.0)	**10.3** (7.56-13.3)	**11.2** (7.89-14.7)	**12.2** (8.34-16.5)	**13.0** (8.65-17.8)
20-day	**6.77** (5.52-8.24)	**7.48** (6.09-9.11)	**8.63** (7.00-10.5)	**9.59** (7.74-11.7)	**10.9** (8.51-13.6)	**11.9** (9.11-15.0)	**12.9** (9.53-16.5)	**13.9** (9.88-18.1)	**15.0** (10.3-20.0)	**15.8** (10.6-21.4)
30-day	**8.28** (6.77-10.0)	**9.06** (7.41-11.0)	**10.3** (8.43-12.6)	**11.4** (9.25-13.9)	**12.9** (10.1-16.0)	**14.0** (10.7-17.5)	**15.1** (11.2-19.2)	**16.1** (11.5-21.0)	**17.4** (12.0-23.1)	**18.2** (12.2-24.5)
45-day	**10.2** (8.36-12.3)	**11.1** (9.07-13.4)	**12.5** (10.2-15.1)	**13.7** (11.1-16.6)	**15.3** (12.1-18.9)	**16.7** (12.8-20.7)	**17.9** (13.3-22.5)	**19.0** (13.6-24.6)	**20.3** (14.0-26.8)	**21.1** (14.3-28.3)
60-day	**11.8** (9.70-14.2)	**12.7** (10.5-15.3)	**14.3** (11.7-17.3)	**15.6** (12.7-18.9)	**17.4** (13.7-21.4)	**18.8** (14.5-23.3)	**20.2** (15.0-25.3)	**21.3** (15.4-27.5)	**22.7** (15.7-29.8)	**23.5** (15.9-31.4)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

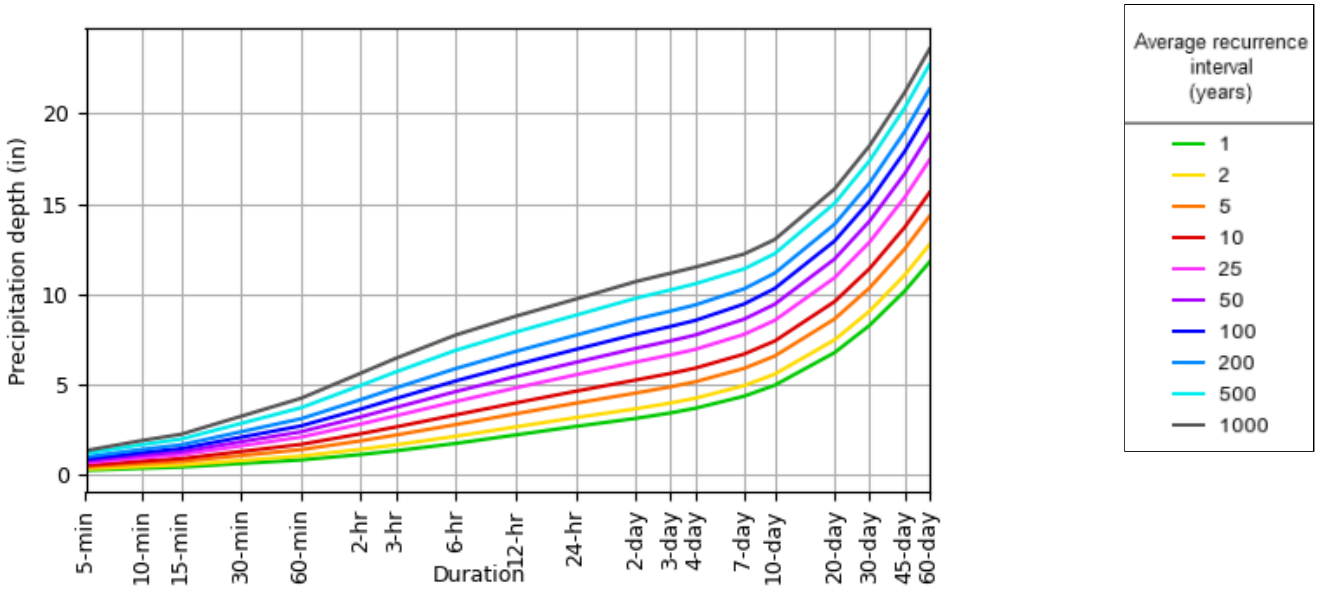
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

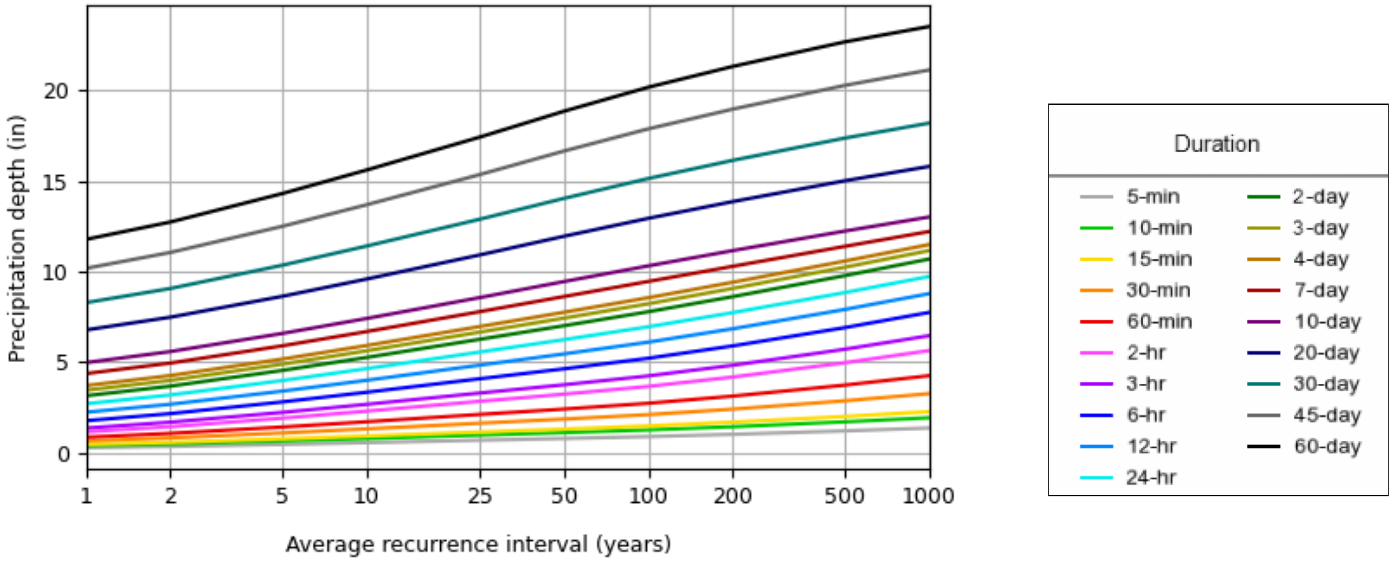
Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 42.0213°, Longitude: -70.0783°





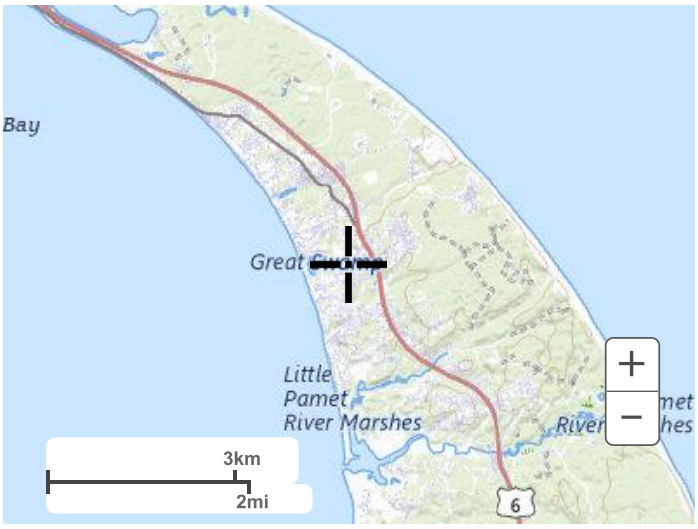
NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Tue Dec 9 19:14:13 2025

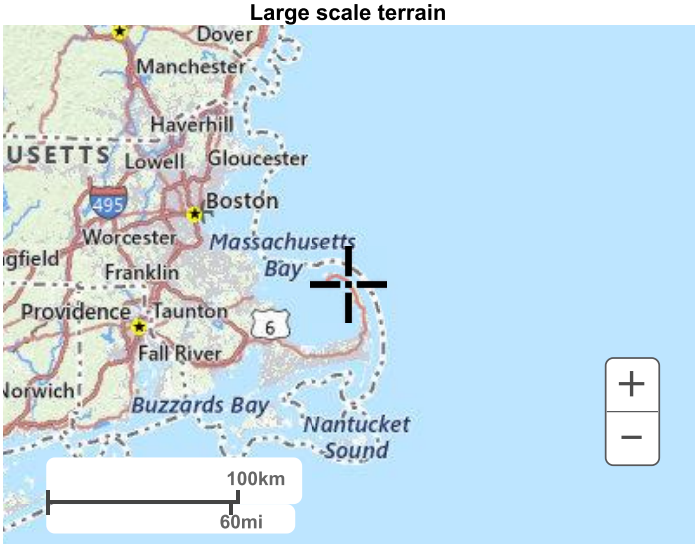
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Maps & aerials

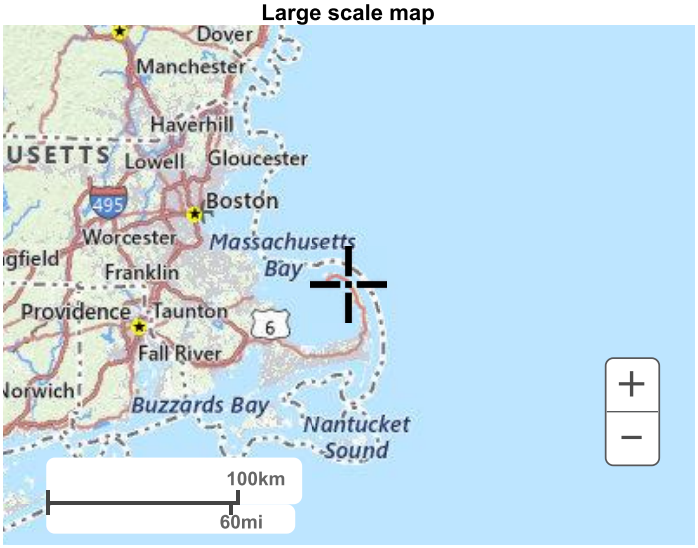
Small scale terrain



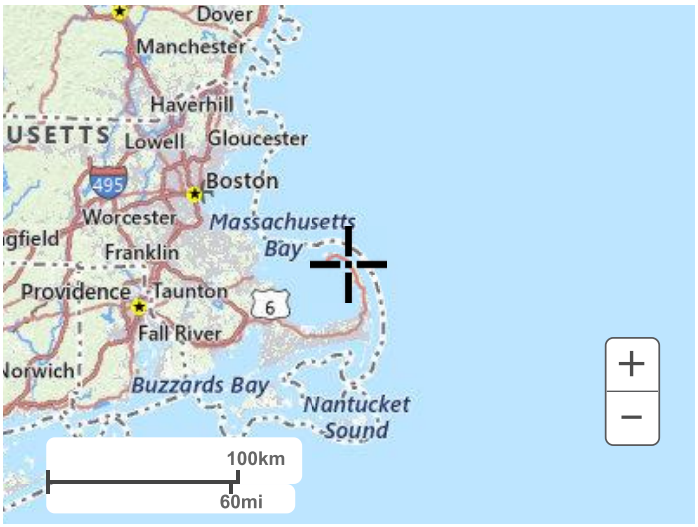
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

National Flood Hazard Layer FIRMette

FEMA

70°5'2"W 42°1'36"N



70°4'24"W 42°1'9"N

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

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

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

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

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

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

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

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

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

N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 12/24/2025 at 7:17 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

NextGrid - Truro Solar Photovoltaic Development
Truro, MA
Date: 12/30/2025

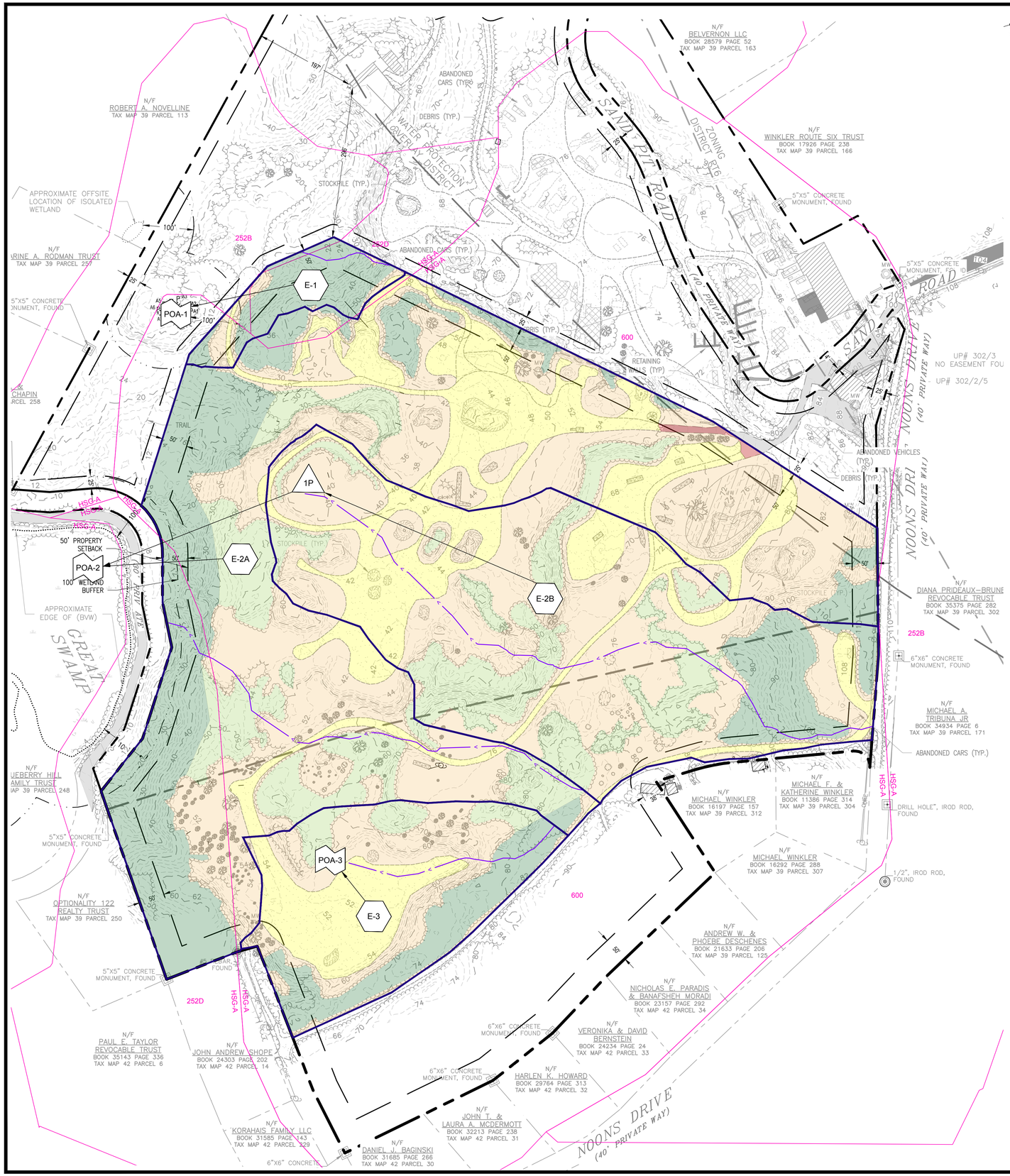
CN Estimation
SCS Potential Maxiumum Retention Equation

CN=1000/(S+10)
Where CN = Curve Number
S = Maximum Water Retention in section (inches)

Material	Depth (in)	Voids (%)	Voids (in)
Sand	24	30	7.2
		Total S =	7.2
		CN =	58

Sand revised CN to be used for pre- and post- development conditions

Attachment D - Drainage Area Maps & HydroCAD Reports



NOTES:

1. THIS PLAN IS SET TO MASSACHUSETTS STATE PLANE COORDINATED SYSTEM "MA83F" MAINLAND ZONE. ELECTRICAL RACKING SYSTEM AND MODULES DESIGNED TO TRUE NORTH.

SOIL DATA		
Map Unit Symbol	Map Unit Name	HSG Rating
252B	Carver coarse sand, 3 to 8 percent slopes	A
252D	Carver coarse sand, 15 to 35 percent slopes	A
600	Pits, sand and gravel	A

PRE-DEVELOPMENT TC LIST				
DRAINAGE AREA	FLOW TYPE	GROUNDCOVER	LENGTH (FT)	SLOPE
E-1	SHEET	WOODS: DENSE	23	45.07%
	SHEET	SMOOTH SURFACE	27	35.55%
	SCF	WOODLAND	47	21.21%
	SCF	WOODLAND	90	4.95%
	DIRECT ENTRY - 1 MINUTE			
E-2A	SHEET	WOODS: LIGHT	50	14.47%
	SCF	WOODLAND	116	2.33%
	SCF	UNPAVED	142	0.10%
	SCF	UNPAVED	76	9.98%
	SCF	WOODLAND	159	6.48%
	SCF	UNPAVED	141	2.89%
	SCF	UNPAVED	17	51.47%
	SCF	WOODLAND	84	1.11%
	SCF	UNPAVED	79	0.94%
	SCF	WOODLAND	104	29.16%
E-2B	SHEET	SMOOTH SURFACE	48	1.44%
	SHEET	WOODS: DENSE	2	0.10%
	SCF	WOODLAND	81	0.10%
	SCF	UNPAVED	39	10.85%
	SCF	WOODLAND	58	18.45%
	SCF	WOODLAND	74	0.18%
	SCF	UNPAVED	75	4.69%
	SCF	WOODLAND	75	1.81%
	SCF	UNPAVED	268	1.53%
	SCF	WOODLAND	51	17.31%
	SCF	UNPAVED	76	23.67%
	SCF	UNPAVED	504	1.65%
E-3	SHEET	WOODLAND	50	1.94%
	SCF	WOODLAND	97	6.62%
	SCF	UNPAVED	64	0.10%
	SCF	UNPAVED	231	2.04%

LEGEND DRAINAGE AREA MAP:

HYDROLOGY:

- FLOW PATH / TIME OF CONCENTRATION
- E-X — SUBBASIN LABEL
- POA-X — POINT OF ANALYSIS
- XP — BASIN
- SAND
- WOODS, GOOD COVER
- WOODS, POOR COVER
- GRAVEL
- IMPERVIOUS
- WATERSHED BOUNDARY
- NRCS SOIL BOUNDARY
- HSG-A — HYDROLOGIC SOIL GROUP CLASSIFICATION
- 252B — HYDROLOGIC SOIL MAP UNIT SYMBOL

LEGEND

EXISTING

- LOCUS PROPERTY BOUNDARY
- PROPOSED PROPERTY BOUNDARY
- APPROXIMATE ADJOINING PROPERTY BOUNDARY
- ASSESSOR BOUNDARY LINES
- EASEMENT UTILITY
- EASEMENT ACCESS
- RIGHT OF WAY
- ZONING SETBACK
- 420 — MAJOR CONTOUR INTERVAL
- 421 — MINOR CONTOUR INTERVAL
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- TREELINE
- STONE WALL
- WIRE FENCE
- CHAIN LINK FENCE
- GUARD RAIL
- OHU — OVERHEAD UTILITY
- OHE — OVERHEAD POWER
- UGE — POWER CONDUIT
- BORDERING VEGETATIVE WETLAND (BVW)
- ISOLATED WETLAND (IW)
- 100' WETLAND BUFFER
- IRON PIN, PIPE OR MONUMENT
- UTILITY POLE
- WF–A10 P — WETLAND FLAG AND ID
- TB–A10 ▫ — TOP OF BANK FLAG AND ID
- EOP — EDGE OF PAVEMENT
- (TYP) — TYPICAL
- CPP — CORRUGATED PLASTIC PIPE
- INV — INVERT ELEVATION
- EL — ELEVATION
- × 123.45 — SPOT ELEVATION
- GRAVEL SURFACE
- CONCRETE SURFACE
- APPROXIMATE PFAS CONTAMINATION SOURCE

0 50' 100' 200'
1" = 100' HORIZONTAL

NOT FOR CONSTRUCTION

Project:

PROPOSED SOLAR PV DEVELOPMENT

9 NOONS DRIVE, TRURO, MASSACHUSETTS 02652

Weston & Sampson

Weston & Sampson Engineers, Inc.
55 Walkers Brook Drive, Suite 100
Reading, MA 01867
978.532.1900 800.SAMPSON

Client:

NextGrid

NEXTGRID PECAN, LLC

68 Harrison Ave, Suite 605, PMB 73089
Boston, MA 02111
tel: (855) 636-6100 www.Nextgrid.com

811 Know what's Below. Call before you dig.

No.	Description	Date
1	LAYOUT CHANGES	4/17/26
0	ISSUED FOR PERMITTING	12/31/25

Revisions

Seal:

Issued For:

PERMITTING

Issued Date:	12/31/2025
Scale:	1" = 100'
Drawn By:	RJR
Reviewed By:	BMG
Approved By:	MRC
W&S Project No.:	ENG25-1122

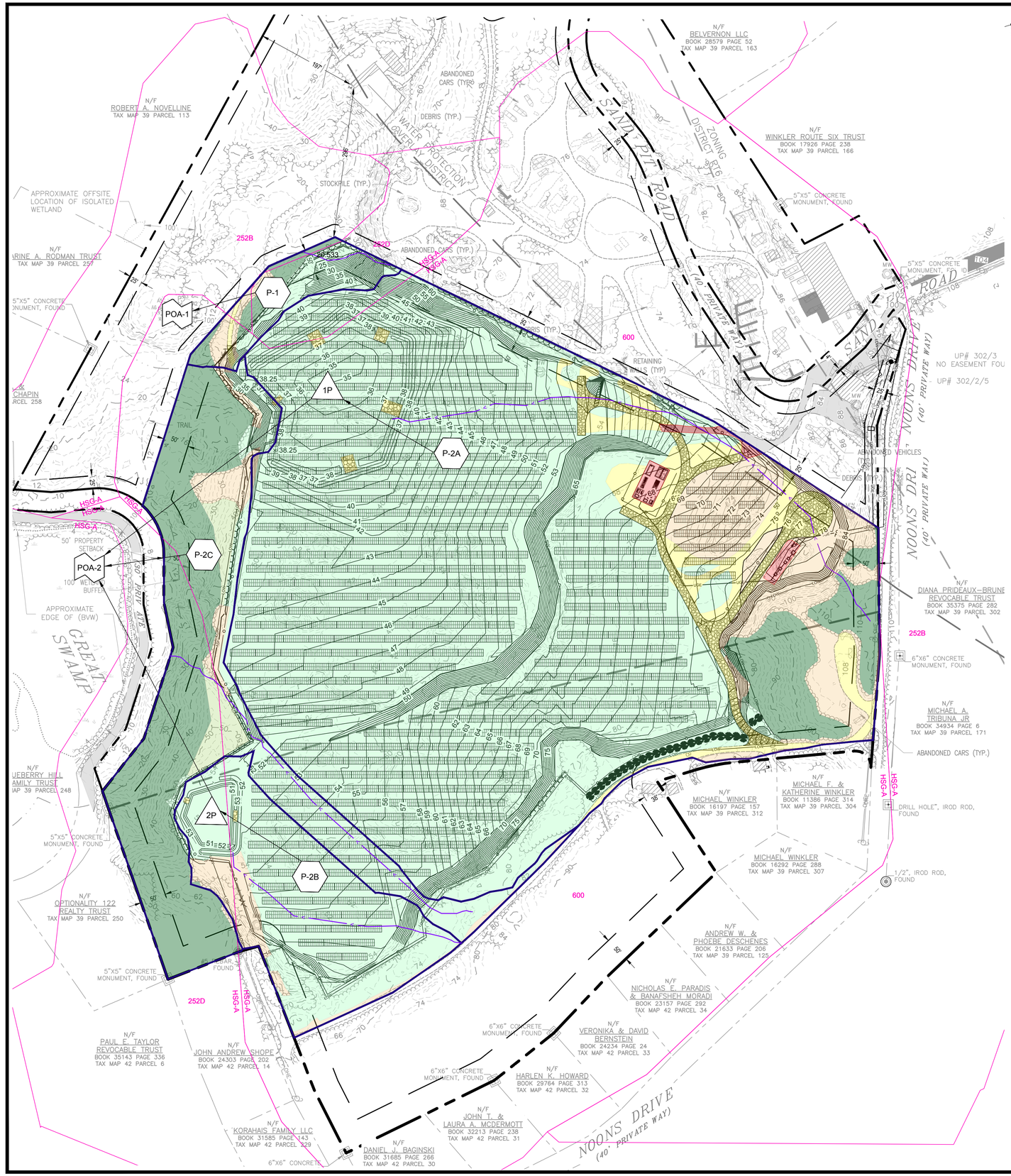
Drawing Title:

PRE-DEVELOPMENT DRAINAGE AREA MAP

Sheet Number:

FIGURE 1

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NOTES:

1. THIS PLAN IS SET TO MASSACHUSETTS STATE PLANE COORDINATED SYSTEM "MA83F" MAINLAND ZONE. ELECTRICAL RACKING SYSTEM AND MODULES DESIGNED TO TRUE NORTH.

SOIL DATA		
Map Unit Symbol	Map Unit Name	HSG Rating
252B	Carver coarse sand, 3 to 8 percent slopes	A
252D	Carver coarse sand, 15 to 35 percent slopes	A
600	Pits, sand and gravel	A

POST-DEVELOPMENT TC LIST				
DRAINAGE AREA	FLOW TYPE	GROUND COVER	LENGTH (FT)	SLOPE
P-1	SHEET	WOODLAND	23	45.07%
	SHEET	GRASS: DENSE	27	34.74%
	SCF	SHORT GRASS PASTURE	5	34.57%
	SCF	SHORT GRASS PASTURE	43	19.92%
	SCF	SHORT GRASS PASTURE	68	5.10%
	SCF	WOODLAND	21.96	4.51%
P-2A	SHEET	WOODS:DENSE	50	7.89%
	SCF	WOODLAND	66	23.04%
	SCF	UNPAVED	27	42.88%
	SCF	UNPAVED	311	3.58%
	SCF	SHORT GRASS PASTURE	52	3.73%
	SCF	PAVED	25	3.73%
	SCF	SHORT GRASS PASTURE	78	6.45%
	SCF	UNPAVED	169	5.13%
	SCF	SHORT GRASS PASTURE	373	4.06%
P-2B	SHEET	SMOOTH SURFACE	5	10.80%
	SHEET	GRASS: SHORT	45	6.21%
	SCF	SHORT GRASS PASTURE	82	17.40%
	SCF	SHORT GRASS PASTURE	303	1.32%
	SCF	UNPAVED	86	2.91%
P-2C	SHEET	GRASS: SHORT	50	11.98%
	SCF	SHORT GRASS PASTURE	38	1.02%
	SCF	SHORT GRASS PASTURE	45	31.25%
	SCF	SHORT GRASS PASTURE	392	1.78%
	SCF	SHORT GRASS PASTURE	137	6.02%
	SCF	WOODLAND	76	3.40%
	SCF	WOODLAND	82	29.67%

LEGEND DRAINAGE AREA MAP:

HYDROLOGY:

- FLOW PATH / TIME OF CONCENTRATION
- P-X — SUBBASIN LABEL
- POA-X — POINT OF ANALYSIS
- XP — BASIN
- SAND
- WOODS, GOOD COVER
- WOODS, POOR COVER
- GRASS, FAIR
- GRAVEL
- IMPERVIOUS
- WATERSHED BOUNDARY
- NRCS SOIL BOUNDARY
- HSG-A — HYDROLOGIC SOIL GROUP CLASSIFICATION
- 252B — HYDROLOGIC SOIL MAP UNIT SYMBOL

LEGEND

EXISTING

- LOCUS PROPERTY BOUNDARY
- PROPOSED PROPERTY BOUNDARY
- APPROXIMATE ADJOINING PROPERTY BOUNDARY
- ASSESSOR BOUNDARY LINES
- EASEMENT UTILITY
- EASEMENT ACCESS
- RIGHT OF WAY
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- TREELINE
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- WIRE FENCE
- CHAIN LINK FENCE
- GUARD RAIL
- OHU — OVERHEAD UTILITY
- OHE — OVERHEAD POWER
- UGE — POWER CONDUIT
- BORDERING VEGETATIVE WETLAND (BVW)
- ISOLATED WETLAND (IW)
- 100' WETLAND BUFFER
- IRON PIN, PIPE OR MONUENT
- UTILITY POLE
- WF–A10 P — WETLAND FLAG AND ID
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- EOP (TYP) — EDGE OF PAVEMENT TYPICAL
- CPP — CORRUGATED PLASTIC PIPE
- INV — INVERT ELEVATION
- EL × 123.45 — ELEVATION SPOT ELEVATION
- GRAVEL SURFACE
- CONCRETE SURFACE
- APPROXIMATE PFAS CONTAMINATION SOURCE

PROPOSED

- 420 — MAJOR CONTOUR INTERVAL
- 421 — MINOR CONTOUR INTERVAL
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- TREELINE
- CHAIN LINK FENCE
- STOCKADE FENCE
- SOUND BARRIER FENCE
- OHE — OVERHEAD POWER
- UGE — POWER CONDUIT
- LOW — LIMIT OF WORK
- SF — SILT FENCE
- SW — STRAW WATTLE
- ASF — AUGMENTED SILT FENCE
- UTILITY POLE
- SOLAR PANEL RACK AND MODULE
- CONCRETE SURFACE
- GRAVEL SURFACE
- RIPRAP SURFACE
- STABILIZED ROCK CONSTRUCTION EXIT
- TEMPORARY LAYDOWN AREA
- EROSION CONTROL BLANKET

0 50' 100' 200'
1" = 100' HORIZONTAL

NOT FOR CONSTRUCTION

Project:
PROPOSED SOLAR PV DEVELOPMENT
9 NOONS DRIVE, TRURO, MASSACHUSETTS 02652

Weston & Sampson
Weston & Sampson Engineers, Inc.
55 Walkers Brook Drive, Suite 100
Reading, MA 01867
978.532.1900 800.SAMPSON

Client:
NextGrid
NEXTGRID PECAN, LLC
68 Harrison Ave, Suite 605, PMB 73089
Boston, MA 02111
tel: (855) 636-6100 www.Nextgrid.com

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No.	Description	Date
1	LAYOUT CHANGES	4/17/26
0	ISSUED FOR PERMITTING	12/31/25

Revisions

Seal:

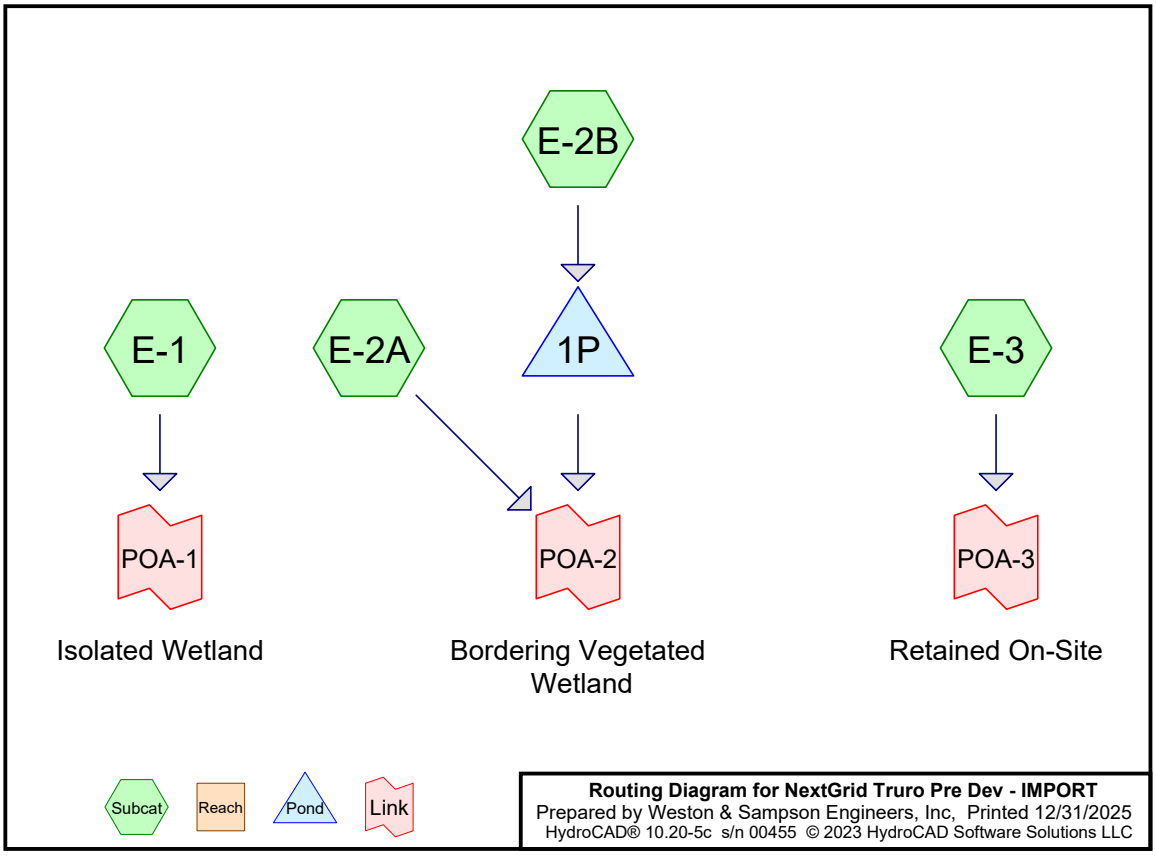
Issued For:
PERMITTING

Issued Date:	12/31/2025
Scale:	1" = 100'
Drawn By:	RJR
Reviewed By:	BMG
Approved By:	MRC
W&S Project No.:	ENG25-1122

Drawing Title:
POST-DEVELOPMENT DRAINAGE AREA MAP

Sheet Number:
FIGURE 2

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type III 24-hr		Default	24.00	1	3.18	2
2	10-yr	Type III 24-hr		Default	24.00	1	4.64	2
3	50-yr	Type III 24-hr		Default	24.00	1	6.23	2
4	100-yr	Type III 24-hr		Default	24.00	1	6.95	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
6.527	76	Gravel roads, HSG A (E-1, E-2A, E-2B, E-3)
15.066	58	Sand, HSG A (E-1, E-2A, E-2B, E-3)
0.061	98	Unconnected pavement, HSG A (E-2A)
7.155	30	Woods, Good, HSG A (E-1, E-2A, E-2B, E-3)
5.001	45	Woods, Poor, HSG A (E-2A, E-2B, E-3)
33.810	**54**	**TOTAL AREA**

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentE-1: Runoff Area=42,163 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=187' Tc=6.0 min CN=37 Runoff=0.00 cfs 0.000 af

SubcatchmentE-2A: Runoff Area=785,105 sf 0.34% Impervious Runoff Depth=0.19"
Flow Length=968' Tc=20.0 min CN=53 Runoff=0.94 cfs 0.289 af

SubcatchmentE-2B: Runoff Area=465,313 sf 0.00% Impervious Runoff Depth=0.27"
Flow Length=1,351' Tc=30.3 min CN=56 Runoff=0.94 cfs 0.243 af

SubcatchmentE-3: Runoff Area=180,174 sf 0.00% Impervious Runoff Depth=0.27"
Flow Length=442' Tc=26.9 min CN=56 Runoff=0.38 cfs 0.094 af

Pond 1P: Peak Elev=39.36' Storage=809 cf Inflow=0.94 cfs 0.243 af
Discarded=0.62 cfs 0.243 af Primary=0.00 cfs 0.000 af Outflow=0.62 cfs 0.243 af

Link POA-1: Isolated Wetland Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link POA-2: Bordering Vegetated Wetland Inflow=0.94 cfs 0.289 af
Primary=0.94 cfs 0.289 af

Link POA-3: Retained On-Site Inflow=0.38 cfs 0.094 af
Primary=0.38 cfs 0.094 af

Total Runoff Area = 33.810 ac Runoff Volume = 0.627 af Average Runoff Depth = 0.22"
99.82% Pervious = 33.749 ac 0.18% Impervious = 0.061 ac

Summary for Subcatchment E-1:

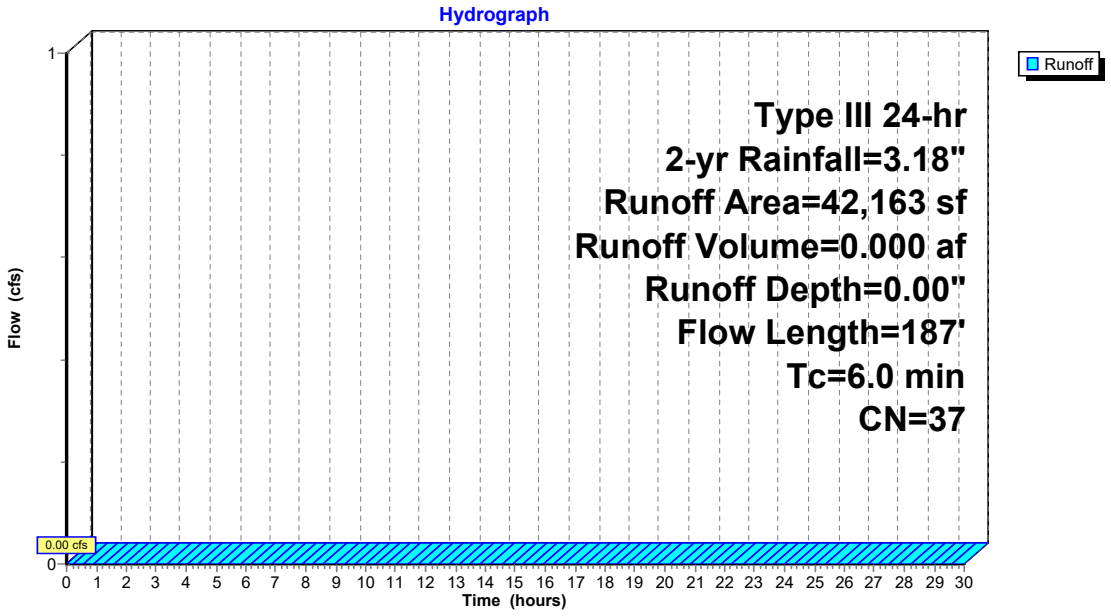
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link POA-1 : Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.18"

	Area (sf)	CN	Description
*	7,776	58	Sand, HSG A
	1,578	76	Gravel roads, HSG A
	32,809	30	Woods, Good, HSG A
	42,163	37	Weighted Average
	42,163		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.4500	0.12		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
0.1	27	0.3555	3.34		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.18"
0.3	47	0.2121	2.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	90	0.0495	1.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0					**Direct Entry,**
6.0	187	Total			

Subcatchment E-1:



Summary for Subcatchment E-2A:

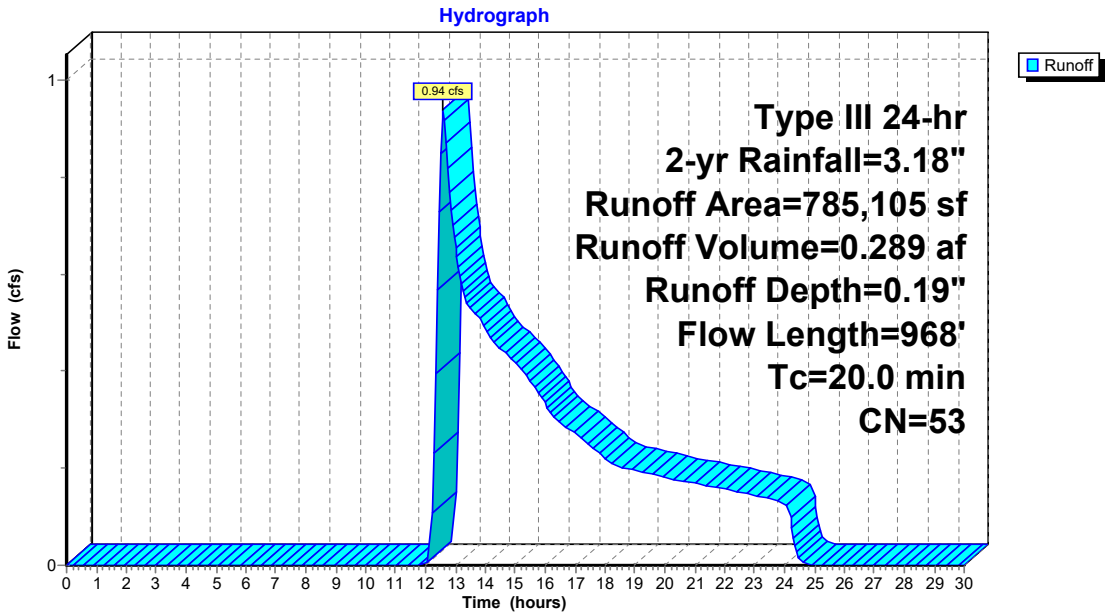
Runoff = 0.94 cfs @ 12.60 hrs, Volume= 0.289 af, Depth= 0.19"
Routed to Link POA-2 : Bordering Vegetated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.18"

	Area (sf)	CN	Description
*	346,526	58	Sand, HSG A
	137,998	76	Gravel roads, HSG A
	2,643	98	Unconnected pavement, HSG A
	190,947	30	Woods, Good, HSG A
	106,991	45	Woods, Poor, HSG A
	785,105	53	Weighted Average
	782,462		99.66% Pervious Area
	2,643		0.34% Impervious Area
	2,643		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.1447	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.18"
2.5	116	0.0233	0.76		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.6	142	0.0010	0.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	76	0.0998	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.1	159	0.0648	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	141	0.0289	2.74		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.0	17	0.5147	11.55		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.7	84	0.0111	0.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	79	0.0094	1.56		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.6	104	0.2916	2.70		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	968	Total			

Subcatchment E-2A:



Summary for Subcatchment E-2B:

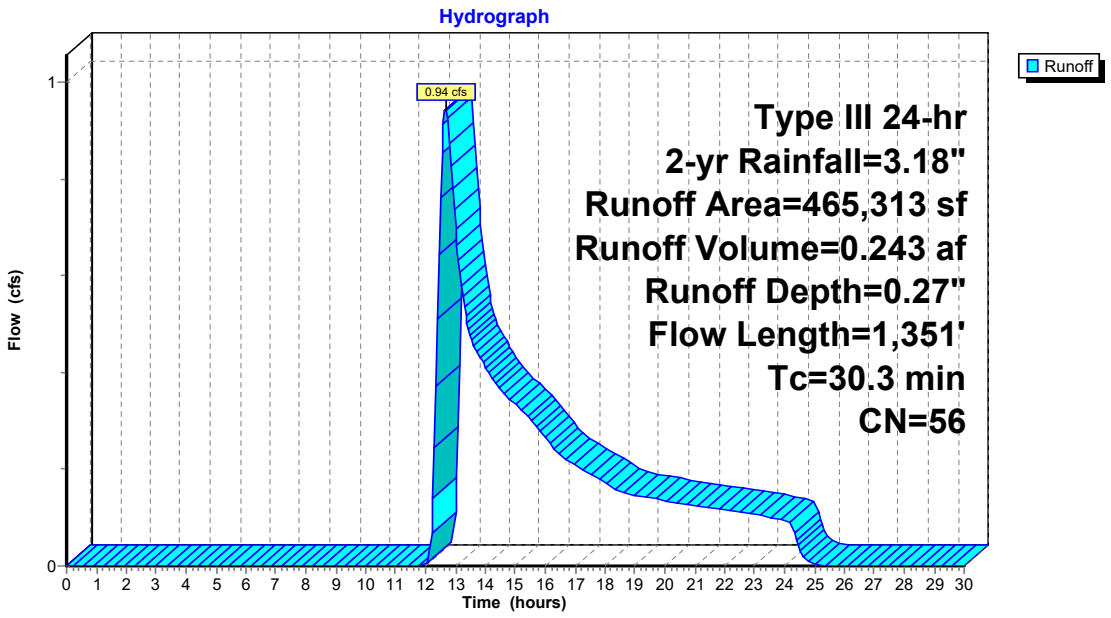
Runoff = 0.94 cfs @ 12.67 hrs, Volume= 0.243 af, Depth= 0.27"
Routed to Pond 1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.18"

	Area (sf)	CN	Description
*	236,523	58	Sand, HSG A
	89,848	76	Gravel roads, HSG A
	44,255	30	Woods, Good, HSG A
	94,687	45	Woods, Poor, HSG A
	465,313	56	Weighted Average
	465,313		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	48	0.0144	1.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.18"
5.4	2	0.0010	0.01		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
8.5	81	0.0010	0.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	39	0.1085	5.30		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	58	0.1845	2.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.8	74	0.0018	0.21		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	75	0.0469	3.49		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.9	75	0.0181	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.2	268	0.0153	1.99		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.4	51	0.1731	2.08		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	76	0.2367	7.83		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.1	504	0.0165	2.07		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
30.3	1,351	Total			

Subcatchment E-2B:



Summary for Subcatchment E-3:

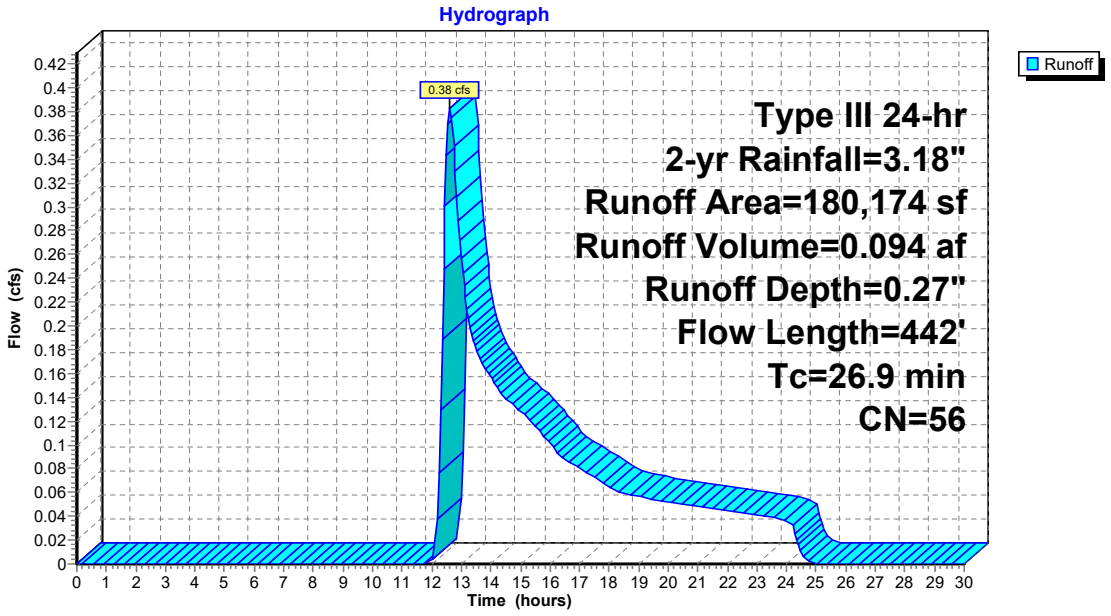
Runoff = 0.38 cfs @ 12.62 hrs, Volume= 0.094 af, Depth= 0.27"
Routed to Link POA-3 : Retained On-Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.18"

	Area (sf)	CN	Description
*	65,464	58	Sand, HSG A
	54,877	76	Gravel roads, HSG A
	43,662	30	Woods, Good, HSG A
	16,171	45	Woods, Poor, HSG A
	180,174	56	Weighted Average
	180,174		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.8	50	0.0194	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
1.3	97	0.0662	1.29		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.1	64	0.0010	0.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	231	0.0204	2.30		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
26.9	442	Total			

Subcatchment E-3:



Summary for Pond 1P:

Inflow Area = 10.682 ac, 0.00% Impervious, Inflow Depth = 0.27" for 2-yr event
Inflow = 0.94 cfs @ 12.67 hrs, Volume= 0.243 af
Outflow = 0.62 cfs @ 13.12 hrs, Volume= 0.243 af, Atten= 34%, Lag= 26.8 min
Discarded = 0.62 cfs @ 13.12 hrs, Volume= 0.243 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link POA-2 : Bordering Vegetated Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 39.36' @ 13.12 hrs Surf.Area= 3,260 sf Storage= 809 cf

Plug-Flow detention time= 11.1 min calculated for 0.243 af (100% of inflow)
Center-of-Mass det. time= 11.0 min (982.0 - 971.0)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	91,759 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

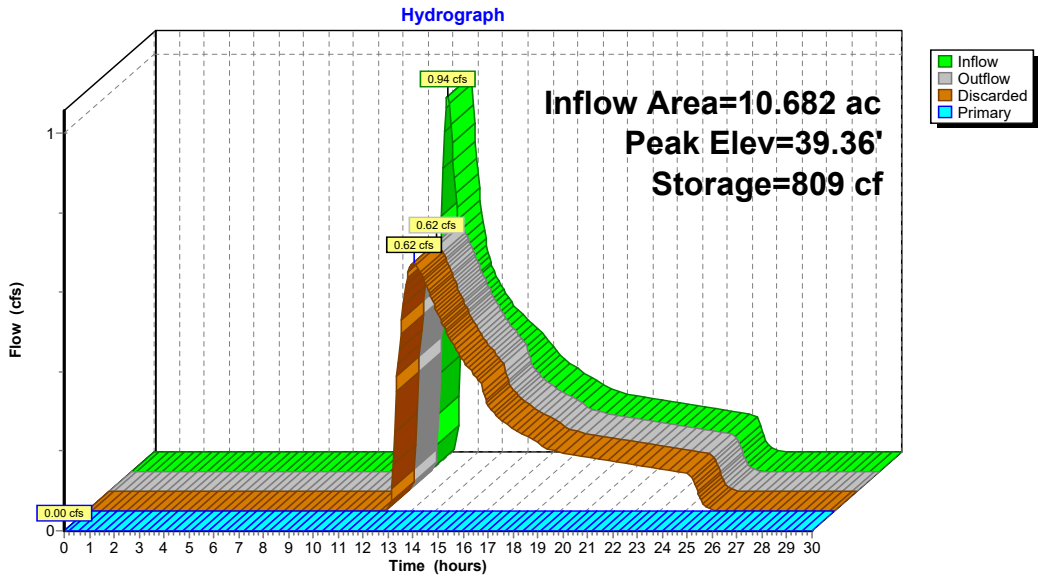
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
39.00	1,366	0	0	1,366
40.00	8,624	4,474	4,474	8,628
41.00	12,688	10,591	15,065	12,708
42.00	13,817	13,248	28,313	13,908
43.00	14,827	14,319	42,632	15,004
44.00	15,667	15,245	57,878	15,951
45.00	16,950	16,304	74,182	17,312
46.00	18,212	17,577	91,759	18,658

Device	Routing	Invert	Outlet Devices
#1	Discarded	39.00'	**8.270 in/hr Exfiltration over Wetted area**
#2	Primary	44.00'	**15.0' long x 20.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.62 cfs @ 13.12 hrs HW=39.36' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.62 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=39.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 1P:



Stage-Area-Storage for Pond 1P:

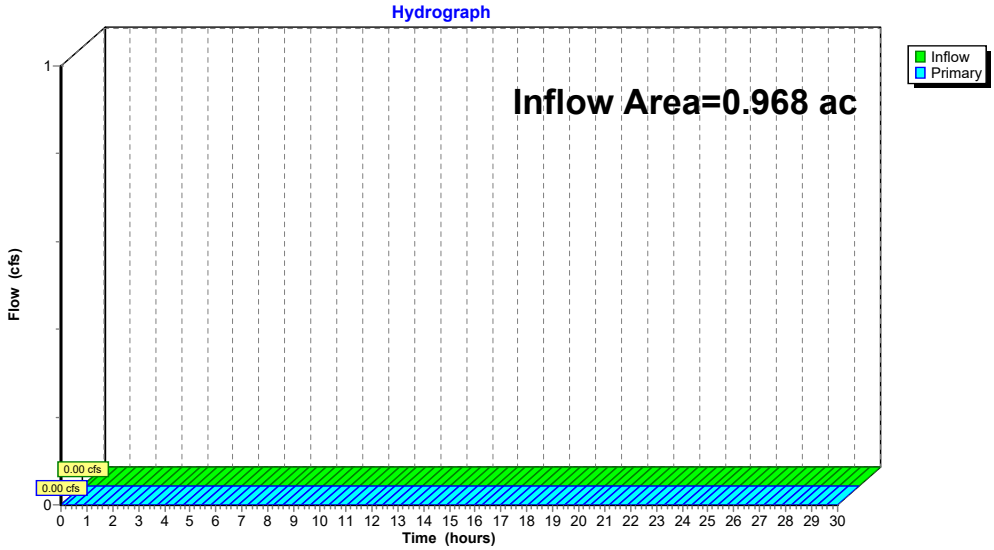
Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
39.00	1,366	1,366	0	42.60	14,419	14,561	36,783
39.10	1,811	1,811	158	42.70	14,520	14,671	38,230
39.20	2,318	2,318	364	42.80	14,622	14,782	39,688
39.30	2,887	2,888	624	42.90	14,724	14,893	41,155
39.40	3,519	3,520	944	43.00	14,827	15,004	42,632
39.50	4,214	4,215	1,330	43.10	14,910	15,097	44,119
39.60	4,971	4,972	1,788	43.20	14,993	15,191	45,614
39.70	5,790	5,792	2,326	43.30	15,077	15,285	47,118
39.80	6,672	6,675	2,949	43.40	15,160	15,380	48,630
39.90	7,617	7,620	3,663	43.50	15,244	15,474	50,150
40.00	8,624	8,628	4,474	43.60	15,328	15,569	51,679
40.10	8,995	9,000	5,355	43.70	15,413	15,664	53,216
40.20	9,374	9,381	6,273	43.80	15,497	15,760	54,761
40.30	9,761	9,769	7,230	43.90	15,582	15,855	56,315
40.40	10,156	10,166	8,226	44.00	15,667	15,951	57,878
40.50	10,558	10,570	9,261	44.10	15,793	16,085	59,450
40.60	10,969	10,982	10,338	44.20	15,920	16,219	61,036
40.70	11,387	11,401	11,455	44.30	16,047	16,354	62,634
40.80	11,813	11,829	12,615	44.40	16,174	16,489	64,245
40.90	12,246	12,265	13,818	44.50	16,302	16,625	65,869
41.00	12,688	12,708	15,065	44.60	16,431	16,761	67,506
41.10	12,799	12,826	16,339	44.70	16,560	16,898	69,155
41.20	12,910	12,944	17,625	44.80	16,689	17,035	70,818
41.30	13,022	13,063	18,921	44.90	16,819	17,173	72,493
41.40	13,134	13,182	20,229	45.00	16,950	17,312	74,182
41.50	13,246	13,302	21,548	45.10	17,074	17,444	75,883
41.60	13,360	13,422	22,878	45.20	17,199	17,577	77,597
41.70	13,473	13,543	24,220	45.30	17,324	17,710	79,323
41.80	13,587	13,664	25,573	45.40	17,449	17,844	81,061
41.90	13,702	13,786	26,937	45.50	17,575	17,979	82,813
42.00	13,817	13,908	28,313	45.60	17,702	18,114	84,577
42.10	13,916	14,016	29,700	45.70	17,829	18,249	86,353
42.20	14,016	14,124	31,097	45.80	17,956	18,385	88,142
42.30	14,116	14,233	32,503	45.90	18,084	18,521	89,944
42.40	14,217	14,342	33,920	46.00	**18,212**	**18,658**	**91,759**
42.50	14,318	14,451	35,347				

Summary for Link POA-1: Isolated Wetland

Inflow Area = 0.968 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-1: Isolated Wetland

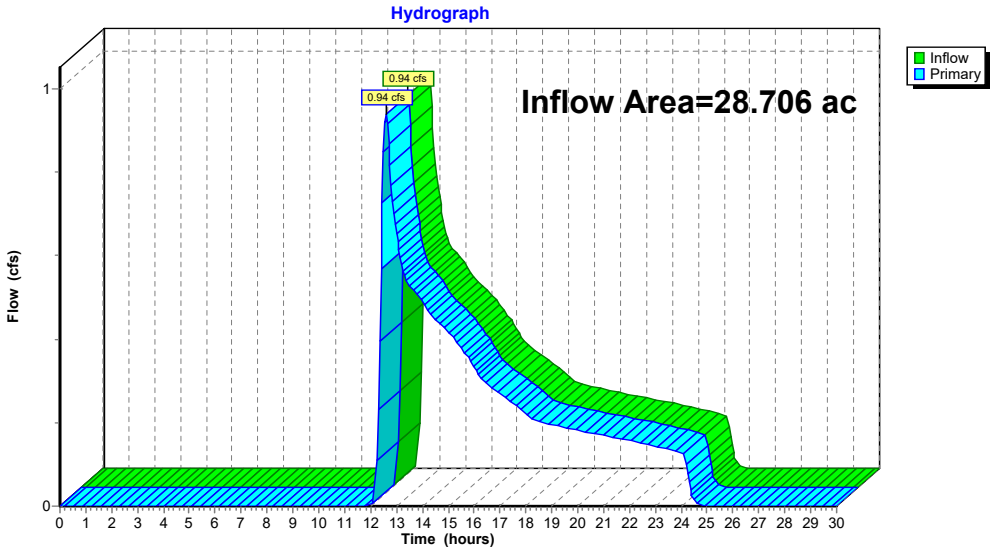


Summary for Link POA-2: Bordering Vegetated Wetland

Inflow Area = 28.706 ac, 0.21% Impervious, Inflow Depth = 0.12" for 2-yr event
Inflow = 0.94 cfs @ 12.60 hrs, Volume= 0.289 af
Primary = 0.94 cfs @ 12.60 hrs, Volume= 0.289 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-2: Bordering Vegetated Wetland

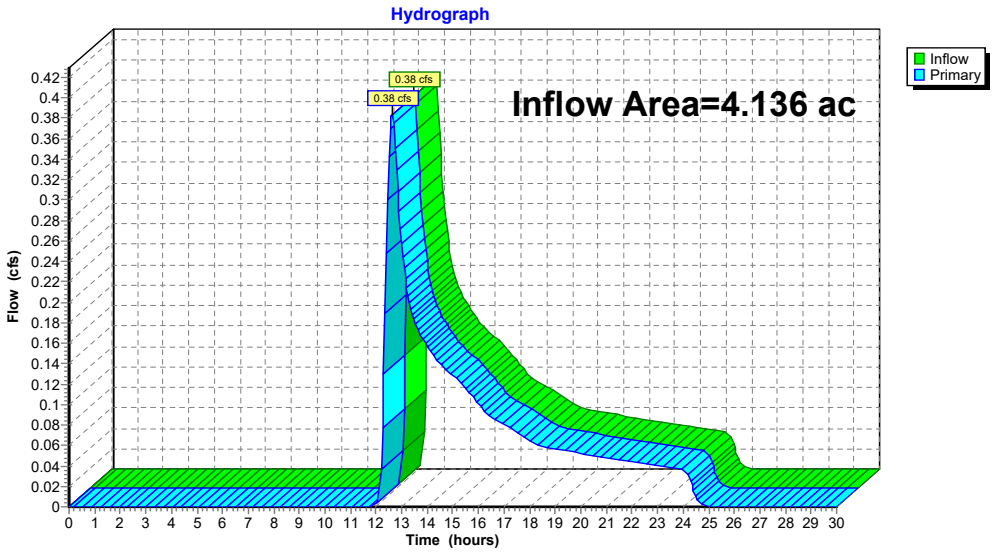


Summary for Link POA-3: Retained On-Site

Inflow Area = 4.136 ac, 0.00% Impervious, Inflow Depth = 0.27" for 2-yr event
Inflow = 0.38 cfs @ 12.62 hrs, Volume= 0.094 af
Primary = 0.38 cfs @ 12.62 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-3: Retained On-Site



Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentE-1: Runoff Area=42,163 sf 0.00% Impervious Runoff Depth=0.08"
Flow Length=187' Tc=6.0 min CN=37 Runoff=0.01 cfs 0.007 af

SubcatchmentE-2A: Runoff Area=785,105 sf 0.34% Impervious Runoff Depth=0.70"
Flow Length=968' Tc=20.0 min CN=53 Runoff=6.88 cfs 1.052 af

SubcatchmentE-2B: Runoff Area=465,313 sf 0.00% Impervious Runoff Depth=0.86"
Flow Length=1,351' Tc=30.3 min CN=56 Runoff=4.81 cfs 0.767 af

SubcatchmentE-3: Runoff Area=180,174 sf 0.00% Impervious Runoff Depth=0.86"
Flow Length=442' Tc=26.9 min CN=56 Runoff=1.96 cfs 0.297 af

Pond 1P: Peak Elev=40.29' Storage=7,179 cf Inflow=4.81 cfs 0.767 af
Discarded=1.87 cfs 0.767 af Primary=0.00 cfs 0.000 af Outflow=1.87 cfs 0.767 af

Link POA-1: Isolated Wetland Inflow=0.01 cfs 0.007 af
Primary=0.01 cfs 0.007 af

Link POA-2: Bordering Vegetated Wetland Inflow=6.88 cfs 1.052 af
Primary=6.88 cfs 1.052 af

Link POA-3: Retained On-Site Inflow=1.96 cfs 0.297 af
Primary=1.96 cfs 0.297 af

Total Runoff Area = 33.810 ac Runoff Volume = 2.123 af Average Runoff Depth = 0.75"
99.82% Pervious = 33.749 ac 0.18% Impervious = 0.061 ac

Summary for Subcatchment E-1:

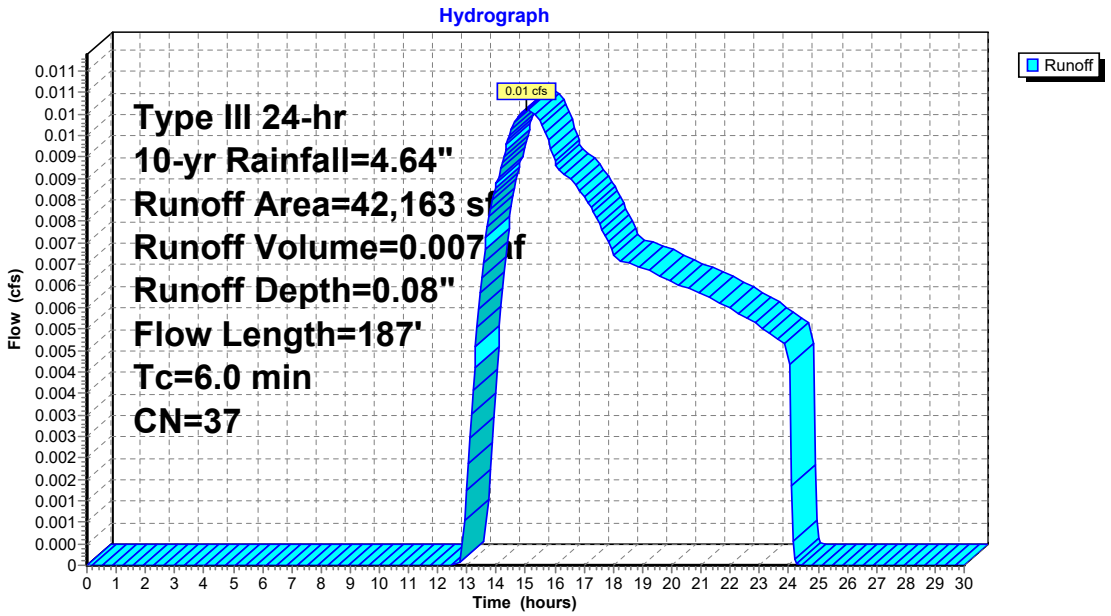
Runoff = 0.01 cfs @ 15.06 hrs, Volume= 0.007 af, Depth= 0.08"
Routed to Link POA-1 : Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.64"

	Area (sf)	CN	Description
*	7,776	58	Sand, HSG A
	1,578	76	Gravel roads, HSG A
	32,809	30	Woods, Good, HSG A
	42,163	37	Weighted Average
	42,163		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.4500	0.12		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
0.1	27	0.3555	3.34		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.18"
0.3	47	0.2121	2.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	90	0.0495	1.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0					**Direct Entry,**
6.0	187	Total			

Subcatchment E-1:



Summary for Subcatchment E-2A:

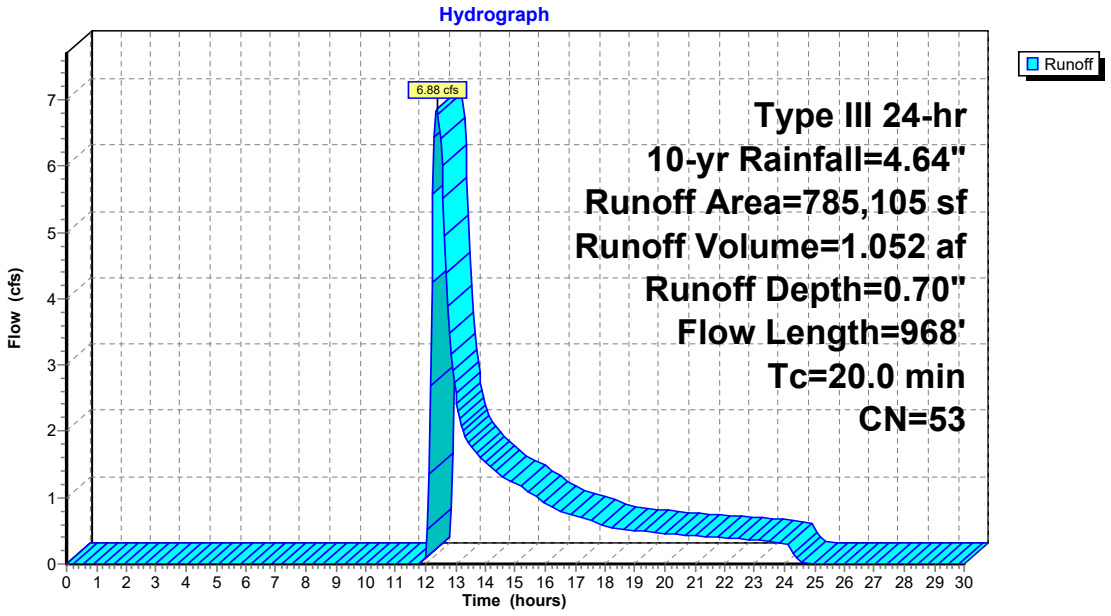
Runoff = 6.88 cfs @ 12.38 hrs, Volume= 1.052 af, Depth= 0.70"
Routed to Link POA-2 : Bordering Vegetated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.64"

	Area (sf)	CN	Description
*	346,526	58	Sand, HSG A
	137,998	76	Gravel roads, HSG A
	2,643	98	Unconnected pavement, HSG A
	190,947	30	Woods, Good, HSG A
	106,991	45	Woods, Poor, HSG A
	785,105	53	Weighted Average
	782,462		99.66% Pervious Area
	2,643		0.34% Impervious Area
	2,643		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.1447	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.18"
2.5	116	0.0233	0.76		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.6	142	0.0010	0.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	76	0.0998	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.1	159	0.0648	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	141	0.0289	2.74		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.0	17	0.5147	11.55		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.7	84	0.0111	0.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	79	0.0094	1.56		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.6	104	0.2916	2.70		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	968	Total			

Subcatchment E-2A:



Summary for Subcatchment E-2B:

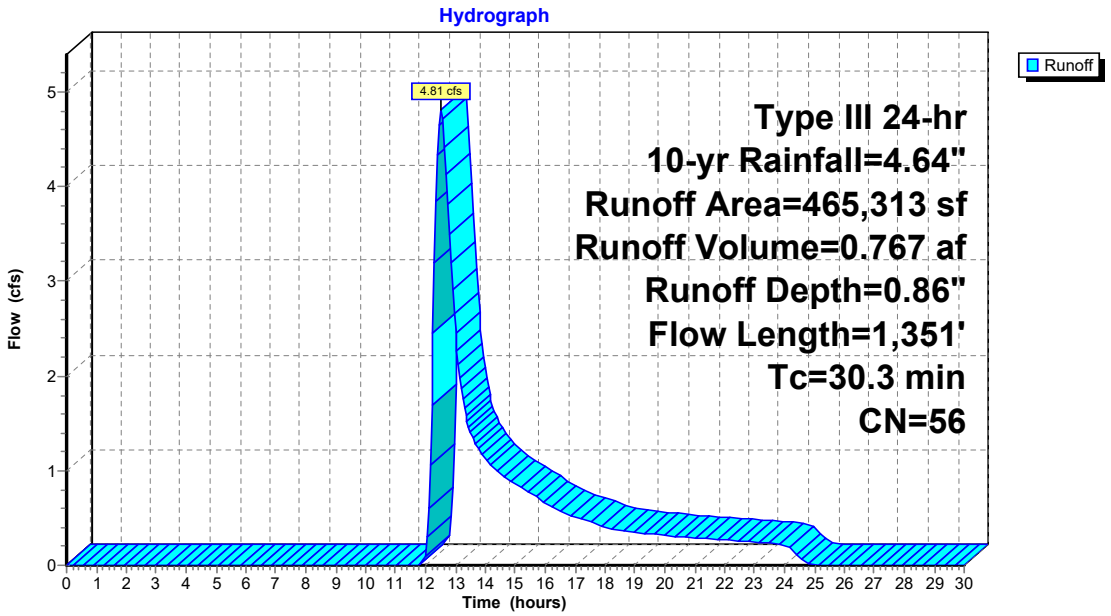
Runoff = 4.81 cfs @ 12.52 hrs, Volume= 0.767 af, Depth= 0.86"
Routed to Pond 1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.64"

	Area (sf)	CN	Description
*	236,523	58	Sand, HSG A
	89,848	76	Gravel roads, HSG A
	44,255	30	Woods, Good, HSG A
	94,687	45	Woods, Poor, HSG A
	465,313	56	Weighted Average
	465,313		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	48	0.0144	1.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.18"
5.4	2	0.0010	0.01		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
8.5	81	0.0010	0.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	39	0.1085	5.30		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	58	0.1845	2.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.8	74	0.0018	0.21		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	75	0.0469	3.49		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.9	75	0.0181	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.2	268	0.0153	1.99		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.4	51	0.1731	2.08		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	76	0.2367	7.83		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.1	504	0.0165	2.07		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
30.3	1,351	Total			

Subcatchment E-2B:



Summary for Subcatchment E-3:

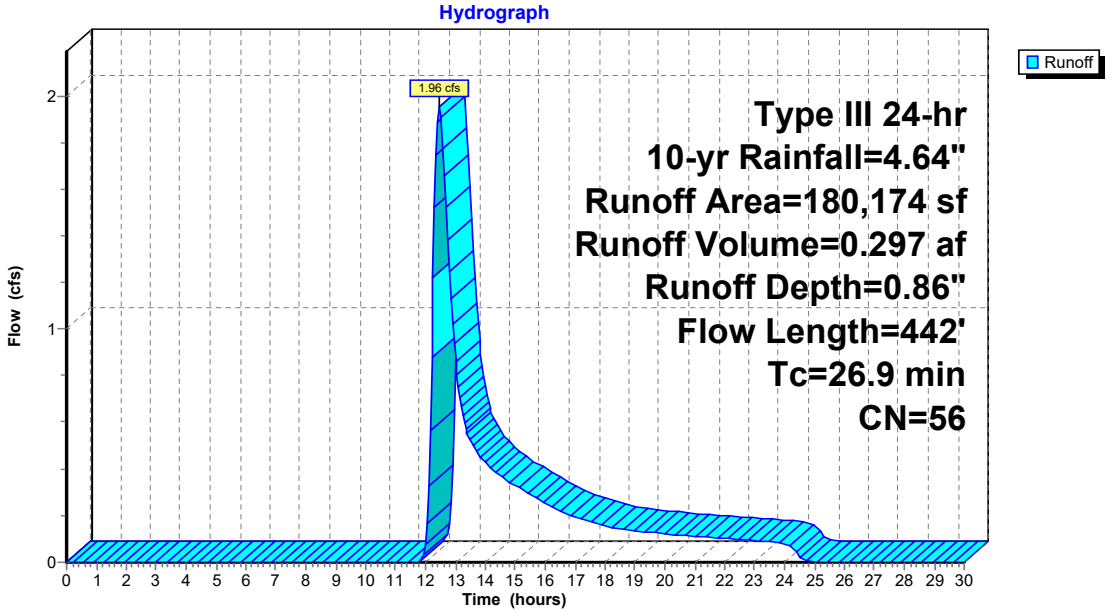
Runoff = 1.96 cfs @ 12.47 hrs, Volume= 0.297 af, Depth= 0.86"
Routed to Link POA-3 : Retained On-Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.64"

	Area (sf)	CN	Description
*	65,464	58	Sand, HSG A
	54,877	76	Gravel roads, HSG A
	43,662	30	Woods, Good, HSG A
	16,171	45	Woods, Poor, HSG A
	180,174	56	Weighted Average
	180,174		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.8	50	0.0194	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
1.3	97	0.0662	1.29		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.1	64	0.0010	0.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	231	0.0204	2.30		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
26.9	442	Total			

Subcatchment E-3:



Summary for Pond 1P:

Inflow Area = 10.682 ac, 0.00% Impervious, Inflow Depth = 0.86" for 10-yr event
Inflow = 4.81 cfs @ 12.52 hrs, Volume= 0.767 af
Outflow = 1.87 cfs @ 13.20 hrs, Volume= 0.767 af, Atten= 61%, Lag= 40.7 min
Discarded = 1.87 cfs @ 13.20 hrs, Volume= 0.767 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link POA-2 : Bordering Vegetated Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 40.29' @ 13.20 hrs Surf.Area= 9,741 sf Storage= 7,179 cf

Plug-Flow detention time= 36.9 min calculated for 0.766 af (100% of inflow)
Center-of-Mass det. time= 36.9 min (955.4 - 918.5)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	91,759 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

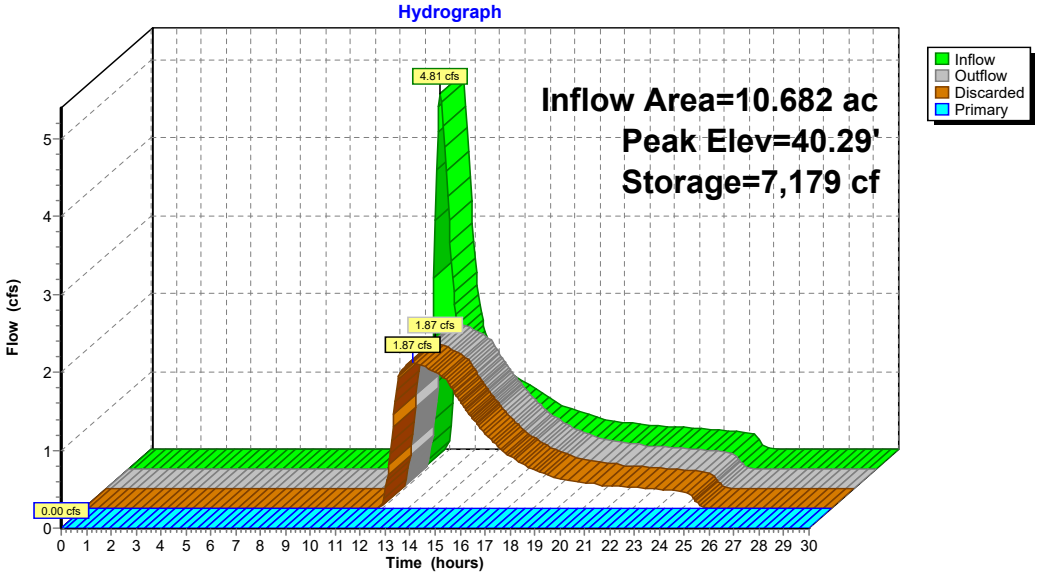
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
39.00	1,366	0	0	1,366
40.00	8,624	4,474	4,474	8,628
41.00	12,688	10,591	15,065	12,708
42.00	13,817	13,248	28,313	13,908
43.00	14,827	14,319	42,632	15,004
44.00	15,667	15,245	57,878	15,951
45.00	16,950	16,304	74,182	17,312
46.00	18,212	17,577	91,759	18,658

Device	Routing	Invert	Outlet Devices
#1	Discarded	39.00'	**8.270 in/hr Exfiltration over Wetted area**
#2	Primary	44.00'	**15.0' long x 20.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=1.87 cfs @ 13.20 hrs HW=40.29' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.87 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=39.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 1P:



Stage-Area-Storage for Pond 1P:

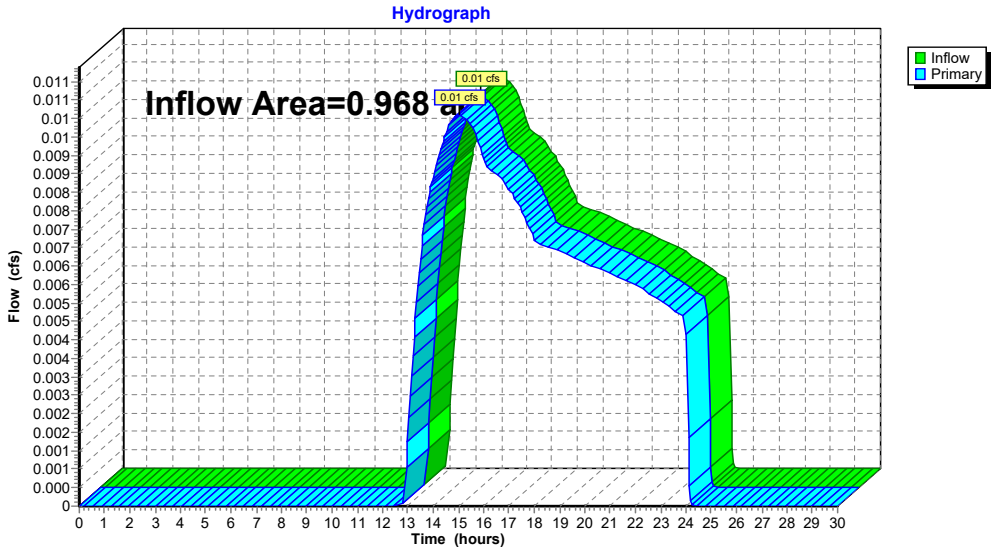
Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
39.00	1,366	1,366	0	42.60	14,419	14,561	36,783
39.10	1,811	1,811	158	42.70	14,520	14,671	38,230
39.20	2,318	2,318	364	42.80	14,622	14,782	39,688
39.30	2,887	2,888	624	42.90	14,724	14,893	41,155
39.40	3,519	3,520	944	43.00	14,827	15,004	42,632
39.50	4,214	4,215	1,330	43.10	14,910	15,097	44,119
39.60	4,971	4,972	1,788	43.20	14,993	15,191	45,614
39.70	5,790	5,792	2,326	43.30	15,077	15,285	47,118
39.80	6,672	6,675	2,949	43.40	15,160	15,380	48,630
39.90	7,617	7,620	3,663	43.50	15,244	15,474	50,150
40.00	8,624	8,628	4,474	43.60	15,328	15,569	51,679
40.10	8,995	9,000	5,355	43.70	15,413	15,664	53,216
40.20	9,374	9,381	6,273	43.80	15,497	15,760	54,761
40.30	9,761	9,769	7,230	43.90	15,582	15,855	56,315
40.40	10,156	10,166	8,226	44.00	15,667	15,951	57,878
40.50	10,558	10,570	9,261	44.10	15,793	16,085	59,450
40.60	10,969	10,982	10,338	44.20	15,920	16,219	61,036
40.70	11,387	11,401	11,455	44.30	16,047	16,354	62,634
40.80	11,813	11,829	12,615	44.40	16,174	16,489	64,245
40.90	12,246	12,265	13,818	44.50	16,302	16,625	65,869
41.00	12,688	12,708	15,065	44.60	16,431	16,761	67,506
41.10	12,799	12,826	16,339	44.70	16,560	16,898	69,155
41.20	12,910	12,944	17,625	44.80	16,689	17,035	70,818
41.30	13,022	13,063	18,921	44.90	16,819	17,173	72,493
41.40	13,134	13,182	20,229	45.00	16,950	17,312	74,182
41.50	13,246	13,302	21,548	45.10	17,074	17,444	75,883
41.60	13,360	13,422	22,878	45.20	17,199	17,577	77,597
41.70	13,473	13,543	24,220	45.30	17,324	17,710	79,323
41.80	13,587	13,664	25,573	45.40	17,449	17,844	81,061
41.90	13,702	13,786	26,937	45.50	17,575	17,979	82,813
42.00	13,817	13,908	28,313	45.60	17,702	18,114	84,577
42.10	13,916	14,016	29,700	45.70	17,829	18,249	86,353
42.20	14,016	14,124	31,097	45.80	17,956	18,385	88,142
42.30	14,116	14,233	32,503	45.90	18,084	18,521	89,944
42.40	14,217	14,342	33,920	46.00	**18,212**	**18,658**	**91,759**
42.50	14,318	14,451	35,347				

Summary for Link POA-1: Isolated Wetland

Inflow Area = 0.968 ac, 0.00% Impervious, Inflow Depth = 0.08" for 10-yr event
Inflow = 0.01 cfs @ 15.06 hrs, Volume= 0.007 af
Primary = 0.01 cfs @ 15.06 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-1: Isolated Wetland

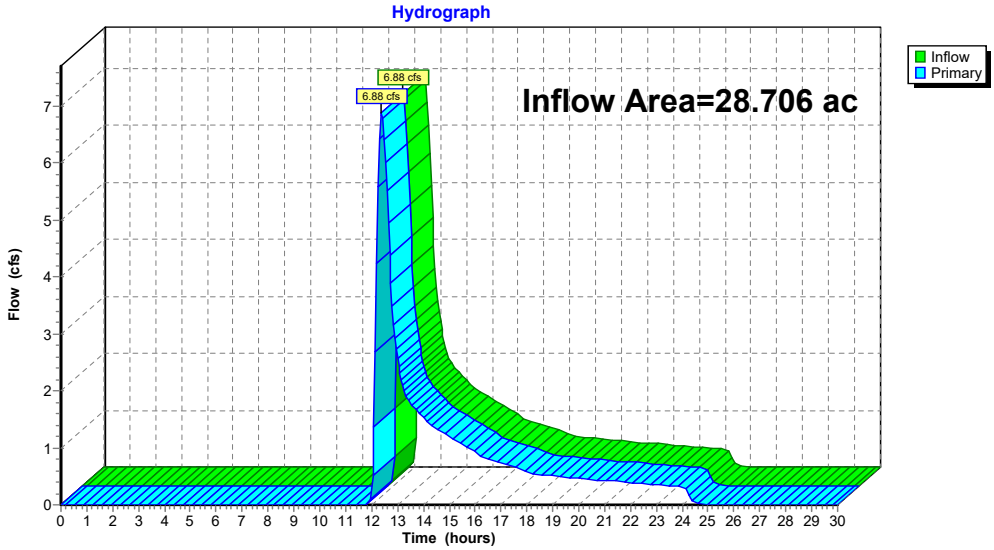


Summary for Link POA-2: Bordering Vegetated Wetland

Inflow Area = 28.706 ac, 0.21% Impervious, Inflow Depth = 0.44" for 10-yr event
Inflow = 6.88 cfs @ 12.38 hrs, Volume= 1.052 af
Primary = 6.88 cfs @ 12.38 hrs, Volume= 1.052 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-2: Bordering Vegetated Wetland

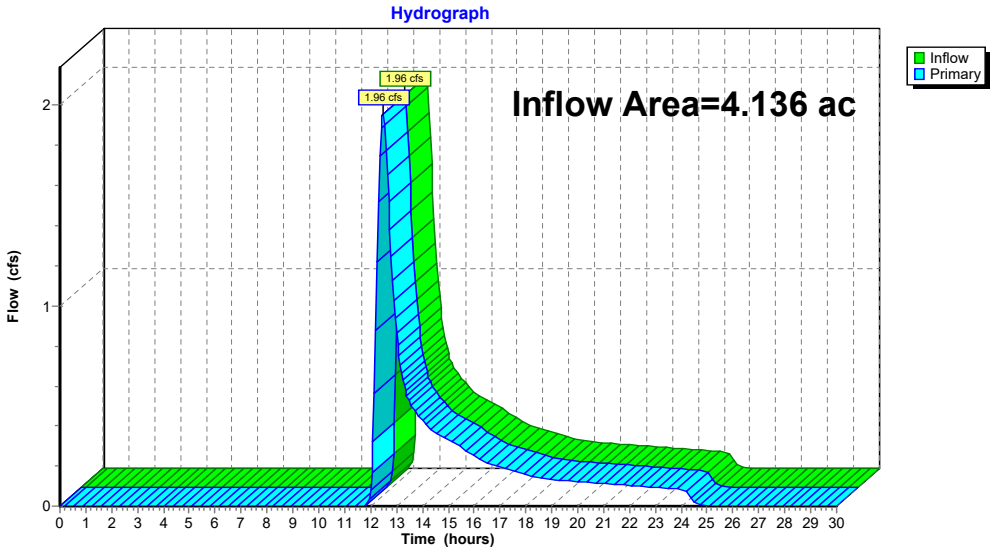


Summary for Link POA-3: Retained On-Site

Inflow Area = 4.136 ac, 0.00% Impervious, Inflow Depth = 0.86" for 10-yr event
Inflow = 1.96 cfs @ 12.47 hrs, Volume= 0.297 af
Primary = 1.96 cfs @ 12.47 hrs, Volume= 0.297 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-3: Retained On-Site



Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentE-1: Runoff Area=42,163 sf 0.00% Impervious Runoff Depth=0.40"
Flow Length=187' Tc=6.0 min CN=37 Runoff=0.14 cfs 0.032 af

SubcatchmentE-2A: Runoff Area=785,105 sf 0.34% Impervious Runoff Depth=1.49"
Flow Length=968' Tc=20.0 min CN=53 Runoff=18.34 cfs 2.239 af

SubcatchmentE-2B: Runoff Area=465,313 sf 0.00% Impervious Runoff Depth=1.73"
Flow Length=1,351' Tc=30.3 min CN=56 Runoff=11.15 cfs 1.544 af

SubcatchmentE-3: Runoff Area=180,174 sf 0.00% Impervious Runoff Depth=1.73"
Flow Length=442' Tc=26.9 min CN=56 Runoff=4.54 cfs 0.598 af

Pond 1P: Peak Elev=41.56' Storage=22,304 cf Inflow=11.15 cfs 1.544 af
Discarded=2.56 cfs 1.544 af Primary=0.00 cfs 0.000 af Outflow=2.56 cfs 1.544 af

Link POA-1: Isolated Wetland Inflow=0.14 cfs 0.032 af
Primary=0.14 cfs 0.032 af

Link POA-2: Bordering Vegetated Wetland Inflow=18.34 cfs 2.239 af
Primary=18.34 cfs 2.239 af

Link POA-3: Retained On-Site Inflow=4.54 cfs 0.598 af
Primary=4.54 cfs 0.598 af

Total Runoff Area = 33.810 ac Runoff Volume = 4.412 af Average Runoff Depth = 1.57"
99.82% Pervious = 33.749 ac 0.18% Impervious = 0.061 ac

Summary for Subcatchment E-1:

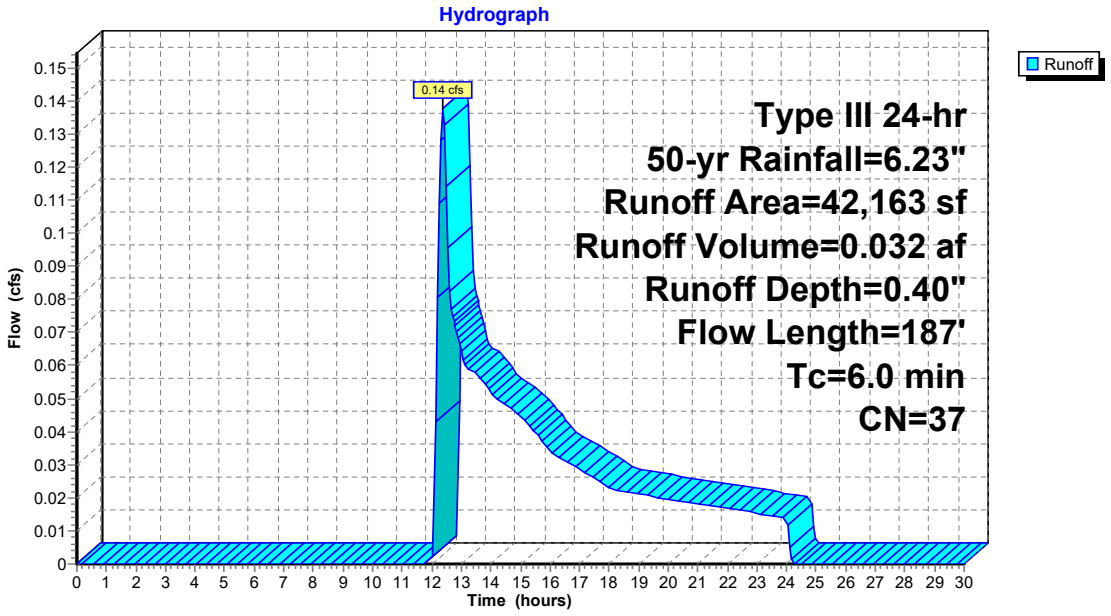
Runoff = 0.14 cfs @ 12.37 hrs, Volume= 0.032 af, Depth= 0.40"
Routed to Link POA-1 : Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=6.23"

	Area (sf)	CN	Description
*	7,776	58	Sand, HSG A
	1,578	76	Gravel roads, HSG A
	32,809	30	Woods, Good, HSG A
	42,163	37	Weighted Average
	42,163		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.4500	0.12		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
0.1	27	0.3555	3.34		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.18"
0.3	47	0.2121	2.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	90	0.0495	1.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0					**Direct Entry,**
6.0	187	Total			

Subcatchment E-1:



Summary for Subcatchment E-2A:

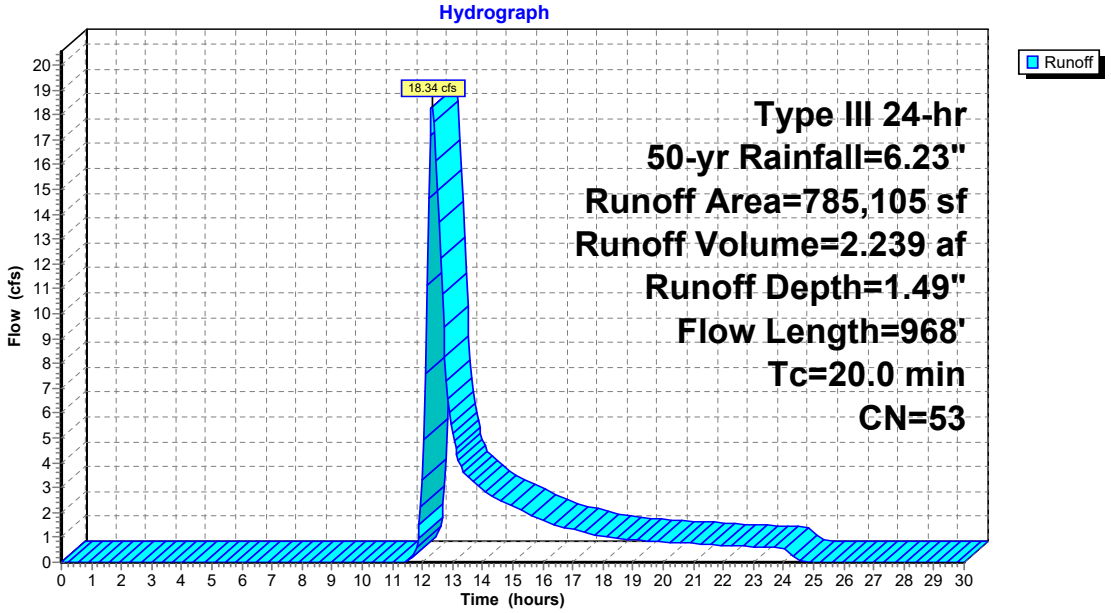
Runoff = 18.34 cfs @ 12.32 hrs, Volume= 2.239 af, Depth= 1.49"
Routed to Link POA-2 : Bordering Vegetated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=6.23"

	Area (sf)	CN	Description
*	346,526	58	Sand, HSG A
	137,998	76	Gravel roads, HSG A
	2,643	98	Unconnected pavement, HSG A
	190,947	30	Woods, Good, HSG A
	106,991	45	Woods, Poor, HSG A
	785,105	53	Weighted Average
	782,462		99.66% Pervious Area
	2,643		0.34% Impervious Area
	2,643		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.1447	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.18"
2.5	116	0.0233	0.76		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.6	142	0.0010	0.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	76	0.0998	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.1	159	0.0648	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	141	0.0289	2.74		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.0	17	0.5147	11.55		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.7	84	0.0111	0.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	79	0.0094	1.56		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.6	104	0.2916	2.70		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	968	Total			

Subcatchment E-2A:



Summary for Subcatchment E-2B:

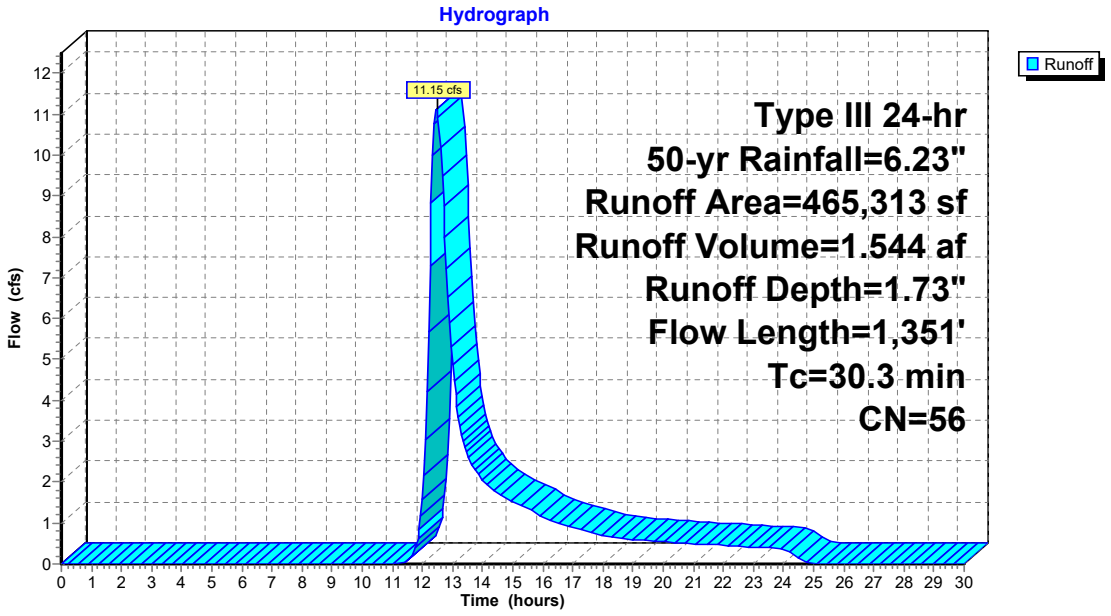
Runoff = 11.15 cfs @ 12.47 hrs, Volume= 1.544 af, Depth= 1.73"
Routed to Pond 1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=6.23"

	Area (sf)	CN	Description
*	236,523	58	Sand, HSG A
	89,848	76	Gravel roads, HSG A
	44,255	30	Woods, Good, HSG A
	94,687	45	Woods, Poor, HSG A
	465,313	56	Weighted Average
	465,313		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	48	0.0144	1.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.18"
5.4	2	0.0010	0.01		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
8.5	81	0.0010	0.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	39	0.1085	5.30		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	58	0.1845	2.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.8	74	0.0018	0.21		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	75	0.0469	3.49		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.9	75	0.0181	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.2	268	0.0153	1.99		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.4	51	0.1731	2.08		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	76	0.2367	7.83		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.1	504	0.0165	2.07		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
30.3	1,351	Total			

Subcatchment E-2B:



Summary for Subcatchment E-3:

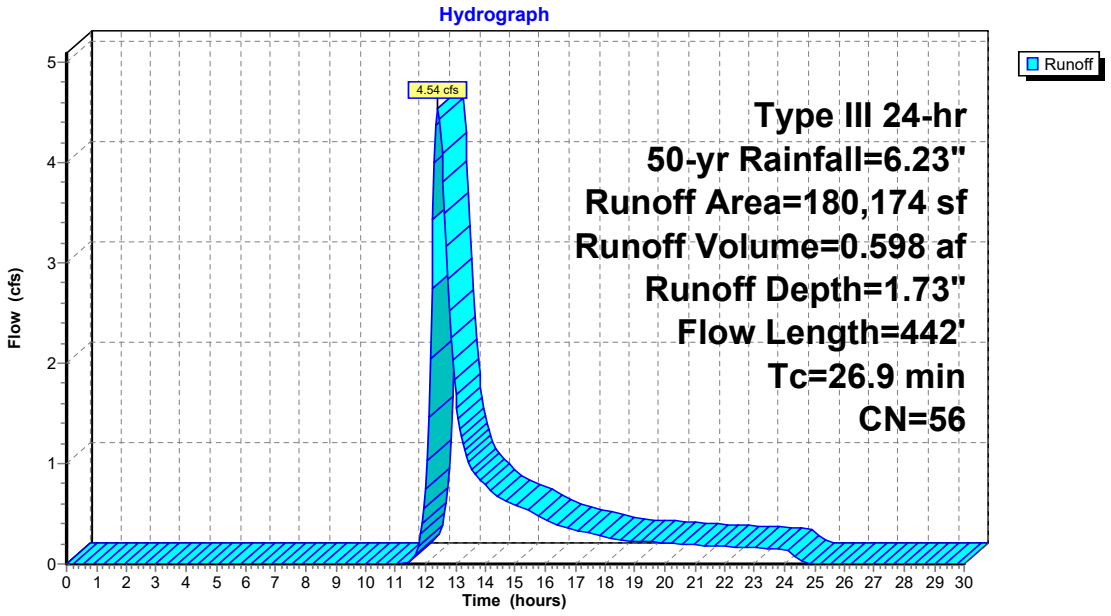
Runoff = 4.54 cfs @ 12.42 hrs, Volume= 0.598 af, Depth= 1.73"
Routed to Link POA-3 : Retained On-Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=6.23"

	Area (sf)	CN	Description
*	65,464	58	Sand, HSG A
	54,877	76	Gravel roads, HSG A
	43,662	30	Woods, Good, HSG A
	16,171	45	Woods, Poor, HSG A
	180,174	56	Weighted Average
	180,174		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.8	50	0.0194	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
1.3	97	0.0662	1.29		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.1	64	0.0010	0.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	231	0.0204	2.30		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
26.9	442	Total			

Subcatchment E-3:



Summary for Pond 1P:

Inflow Area = 10.682 ac, 0.00% Impervious, Inflow Depth = 1.73" for 50-yr event
Inflow = 11.15 cfs @ 12.47 hrs, Volume= 1.544 af
Outflow = 2.56 cfs @ 13.54 hrs, Volume= 1.544 af, Atten= 77%, Lag= 63.9 min
Discarded = 2.56 cfs @ 13.54 hrs, Volume= 1.544 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link POA-2 : Bordering Vegetated Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 41.56' @ 13.54 hrs Surf.Area= 13,311 sf Storage= 22,304 cf

Plug-Flow detention time= 89.3 min calculated for 1.541 af (100% of inflow)
Center-of-Mass det. time= 89.1 min (983.0 - 893.9)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	91,759 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

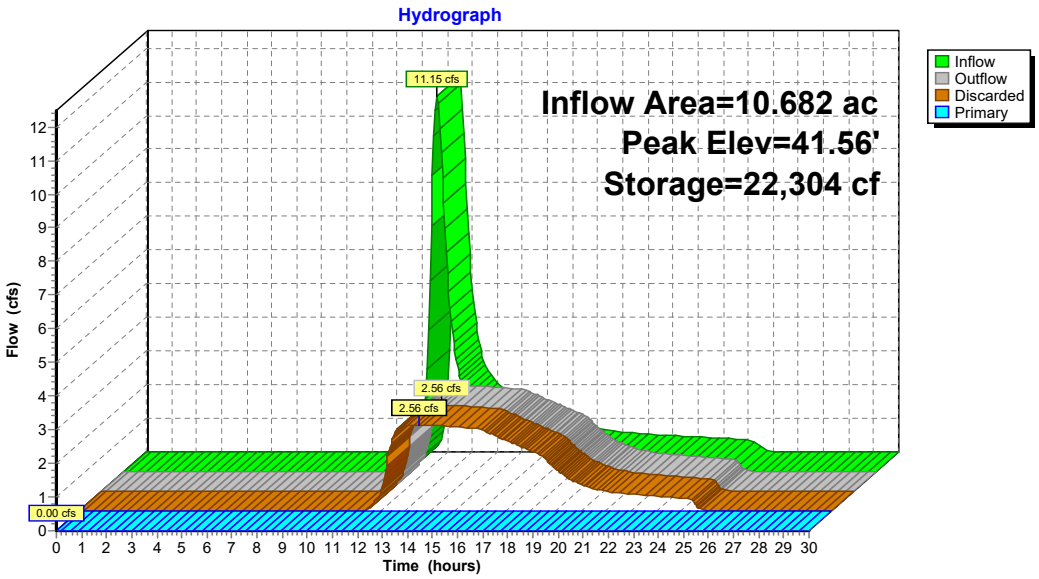
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
39.00	1,366	0	0	1,366
40.00	8,624	4,474	4,474	8,628
41.00	12,688	10,591	15,065	12,708
42.00	13,817	13,248	28,313	13,908
43.00	14,827	14,319	42,632	15,004
44.00	15,667	15,245	57,878	15,951
45.00	16,950	16,304	74,182	17,312
46.00	18,212	17,577	91,759	18,658

Device	Routing	Invert	Outlet Devices
#1	Discarded	39.00'	**8.270 in/hr Exfiltration over Wetted area**
#2	Primary	44.00'	**15.0' long x 20.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=2.56 cfs @ 13.54 hrs HW=41.56' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 2.56 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=39.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 1P:



Stage-Area-Storage for Pond 1P:

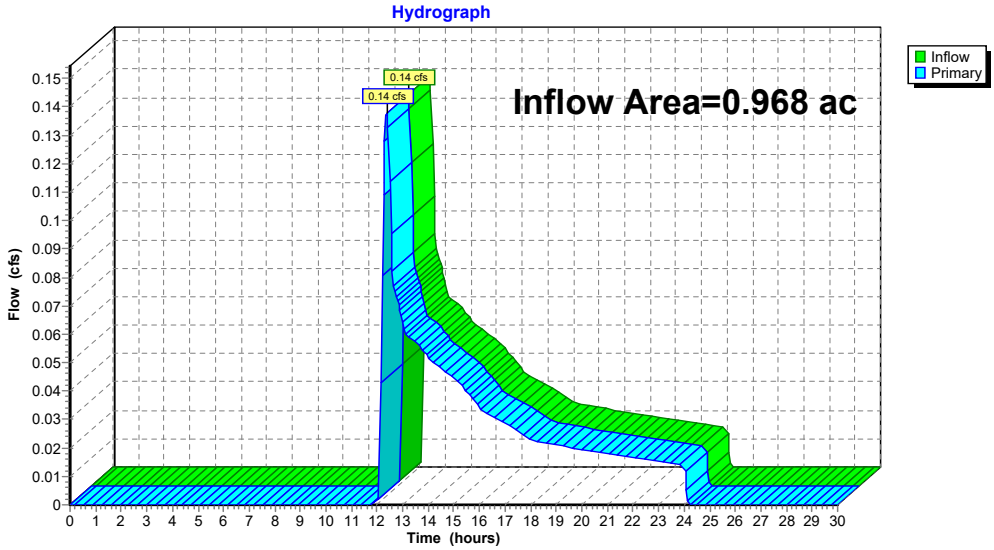
Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
39.00	1,366	1,366	0	42.60	14,419	14,561	36,783
39.10	1,811	1,811	158	42.70	14,520	14,671	38,230
39.20	2,318	2,318	364	42.80	14,622	14,782	39,688
39.30	2,887	2,888	624	42.90	14,724	14,893	41,155
39.40	3,519	3,520	944	43.00	14,827	15,004	42,632
39.50	4,214	4,215	1,330	43.10	14,910	15,097	44,119
39.60	4,971	4,972	1,788	43.20	14,993	15,191	45,614
39.70	5,790	5,792	2,326	43.30	15,077	15,285	47,118
39.80	6,672	6,675	2,949	43.40	15,160	15,380	48,630
39.90	7,617	7,620	3,663	43.50	15,244	15,474	50,150
40.00	8,624	8,628	4,474	43.60	15,328	15,569	51,679
40.10	8,995	9,000	5,355	43.70	15,413	15,664	53,216
40.20	9,374	9,381	6,273	43.80	15,497	15,760	54,761
40.30	9,761	9,769	7,230	43.90	15,582	15,855	56,315
40.40	10,156	10,166	8,226	44.00	15,667	15,951	57,878
40.50	10,558	10,570	9,261	44.10	15,793	16,085	59,450
40.60	10,969	10,982	10,338	44.20	15,920	16,219	61,036
40.70	11,387	11,401	11,455	44.30	16,047	16,354	62,634
40.80	11,813	11,829	12,615	44.40	16,174	16,489	64,245
40.90	12,246	12,265	13,818	44.50	16,302	16,625	65,869
41.00	12,688	12,708	15,065	44.60	16,431	16,761	67,506
41.10	12,799	12,826	16,339	44.70	16,560	16,898	69,155
41.20	12,910	12,944	17,625	44.80	16,689	17,035	70,818
41.30	13,022	13,063	18,921	44.90	16,819	17,173	72,493
41.40	13,134	13,182	20,229	45.00	16,950	17,312	74,182
41.50	13,246	13,302	21,548	45.10	17,074	17,444	75,883
41.60	13,360	13,422	22,878	45.20	17,199	17,577	77,597
41.70	13,473	13,543	24,220	45.30	17,324	17,710	79,323
41.80	13,587	13,664	25,573	45.40	17,449	17,844	81,061
41.90	13,702	13,786	26,937	45.50	17,575	17,979	82,813
42.00	13,817	13,908	28,313	45.60	17,702	18,114	84,577
42.10	13,916	14,016	29,700	45.70	17,829	18,249	86,353
42.20	14,016	14,124	31,097	45.80	17,956	18,385	88,142
42.30	14,116	14,233	32,503	45.90	18,084	18,521	89,944
42.40	14,217	14,342	33,920	46.00	**18,212**	**18,658**	**91,759**
42.50	14,318	14,451	35,347				

Summary for Link POA-1: Isolated Wetland

Inflow Area = 0.968 ac, 0.00% Impervious, Inflow Depth = 0.40" for 50-yr event
Inflow = 0.14 cfs @ 12.37 hrs, Volume= 0.032 af
Primary = 0.14 cfs @ 12.37 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-1: Isolated Wetland

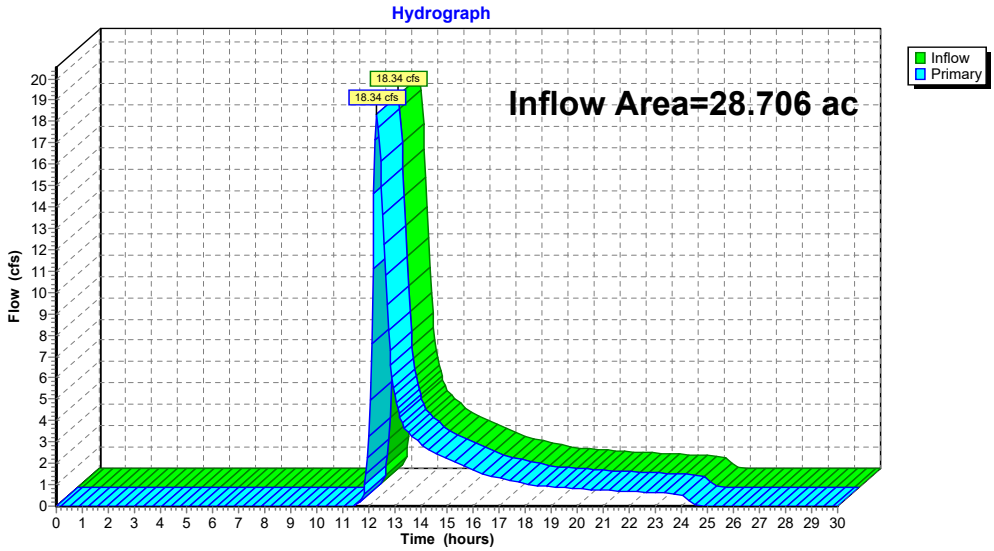


Summary for Link POA-2: Bordering Vegetated Wetland

Inflow Area = 28.706 ac, 0.21% Impervious, Inflow Depth = 0.94" for 50-yr event
Inflow = 18.34 cfs @ 12.32 hrs, Volume= 2.239 af
Primary = 18.34 cfs @ 12.32 hrs, Volume= 2.239 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-2: Bordering Vegetated Wetland

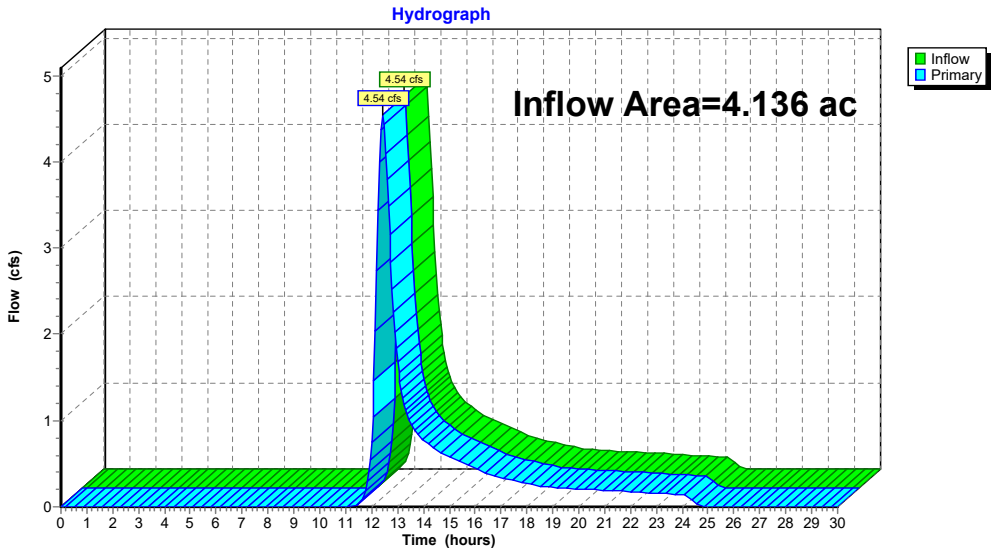


Summary for Link POA-3: Retained On-Site

Inflow Area = 4.136 ac, 0.00% Impervious, Inflow Depth = 1.73" for 50-yr event
Inflow = 4.54 cfs @ 12.42 hrs, Volume= 0.598 af
Primary = 4.54 cfs @ 12.42 hrs, Volume= 0.598 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-3: Retained On-Site



Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentE-1: Runoff Area=42,163 sf 0.00% Impervious Runoff Depth=0.61"
Flow Length=187' Tc=6.0 min CN=37 Runoff=0.26 cfs 0.049 af

SubcatchmentE-2A: Runoff Area=785,105 sf 0.34% Impervious Runoff Depth=1.91"
Flow Length=968' Tc=20.0 min CN=53 Runoff=24.50 cfs 2.866 af

SubcatchmentE-2B: Runoff Area=465,313 sf 0.00% Impervious Runoff Depth=2.19"
Flow Length=1,351' Tc=30.3 min CN=56 Runoff=14.45 cfs 1.946 af

SubcatchmentE-3: Runoff Area=180,174 sf 0.00% Impervious Runoff Depth=2.19"
Flow Length=442' Tc=26.9 min CN=56 Runoff=5.89 cfs 0.753 af

Pond 1P: Peak Elev=42.25' Storage=31,735 cf Inflow=14.45 cfs 1.946 af
Discarded=2.71 cfs 1.946 af Primary=0.00 cfs 0.000 af Outflow=2.71 cfs 1.946 af

Link POA-1: Isolated Wetland Inflow=0.26 cfs 0.049 af
Primary=0.26 cfs 0.049 af

Link POA-2: Bordering Vegetated Wetland Inflow=24.50 cfs 2.866 af
Primary=24.50 cfs 2.866 af

Link POA-3: Retained On-Site Inflow=5.89 cfs 0.753 af
Primary=5.89 cfs 0.753 af

Total Runoff Area = 33.810 ac Runoff Volume = 5.614 af Average Runoff Depth = 1.99"
99.82% Pervious = 33.749 ac 0.18% Impervious = 0.061 ac

Summary for Subcatchment E-1:

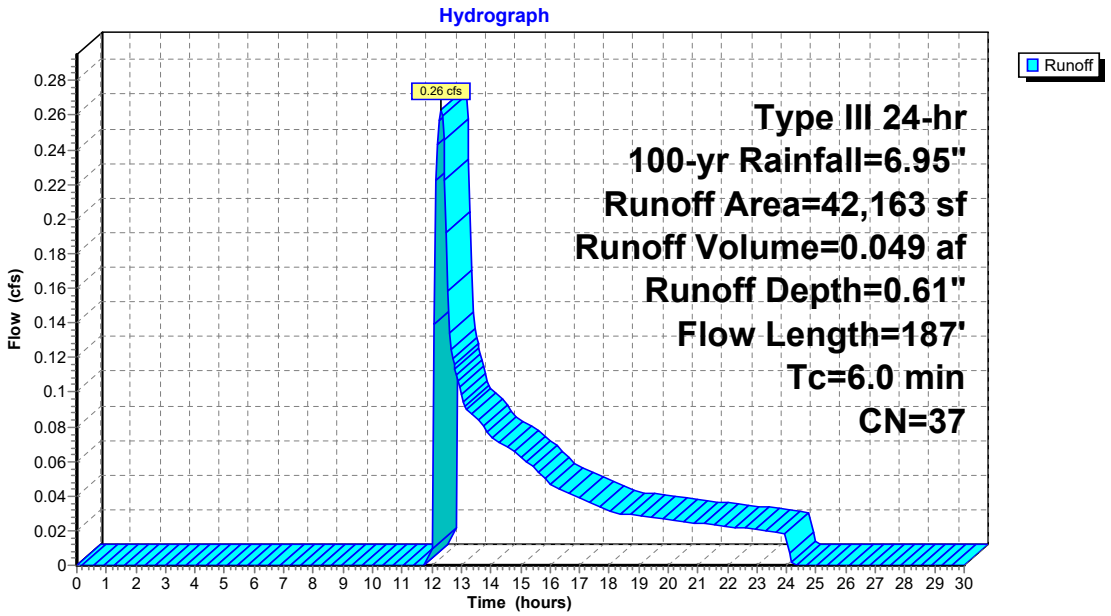
Runoff = 0.26 cfs @ 12.31 hrs, Volume= 0.049 af, Depth= 0.61"
Routed to Link POA-1 : Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=6.95"

	Area (sf)	CN	Description
*	7,776	58	Sand, HSG A
	1,578	76	Gravel roads, HSG A
	32,809	30	Woods, Good, HSG A
	42,163	37	Weighted Average
	42,163		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.4500	0.12		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
0.1	27	0.3555	3.34		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.18"
0.3	47	0.2121	2.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	90	0.0495	1.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0					**Direct Entry,**
6.0	187	Total			

Subcatchment E-1:



Summary for Subcatchment E-2A:

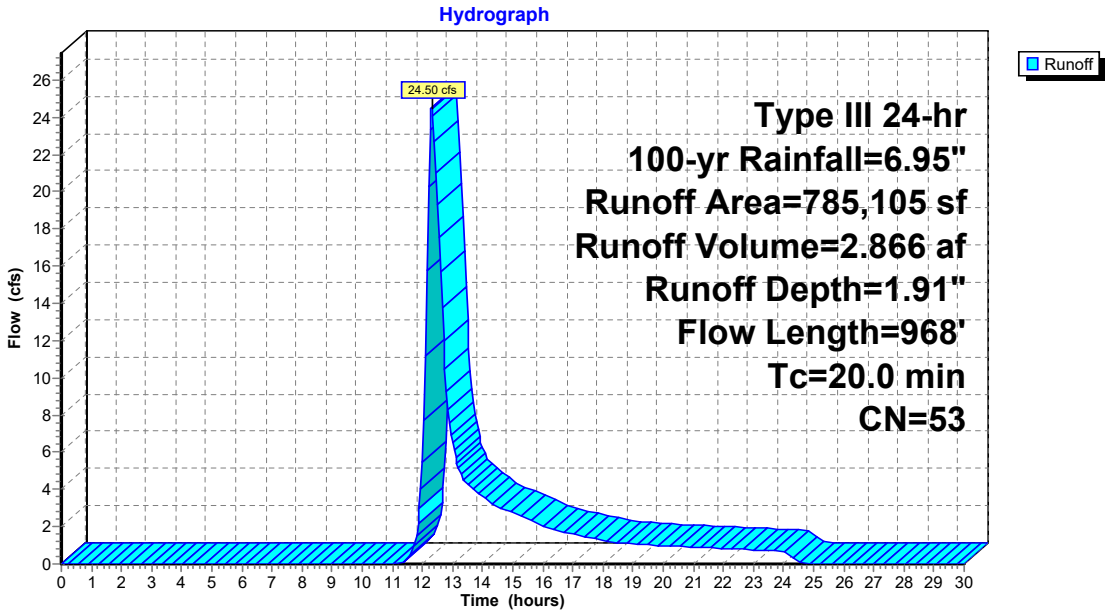
Runoff = 24.50 cfs @ 12.31 hrs, Volume= 2.866 af, Depth= 1.91"
Routed to Link POA-2 : Bordering Vegetated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=6.95"

	Area (sf)	CN	Description
*	346,526	58	Sand, HSG A
	137,998	76	Gravel roads, HSG A
	2,643	98	Unconnected pavement, HSG A
	190,947	30	Woods, Good, HSG A
	106,991	45	Woods, Poor, HSG A
	785,105	53	Weighted Average
	782,462		99.66% Pervious Area
	2,643		0.34% Impervious Area
	2,643		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.1447	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.18"
2.5	116	0.0233	0.76		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.6	142	0.0010	0.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	76	0.0998	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.1	159	0.0648	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	141	0.0289	2.74		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.0	17	0.5147	11.55		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.7	84	0.0111	0.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	79	0.0094	1.56		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.6	104	0.2916	2.70		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	968	Total			

Subcatchment E-2A:



Summary for Subcatchment E-2B:

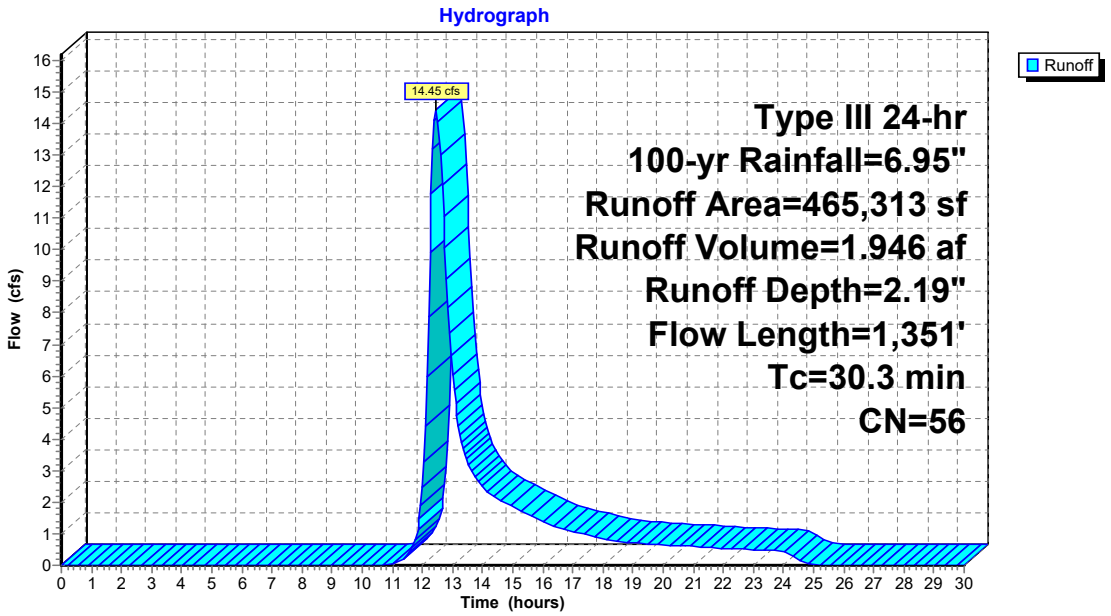
Runoff = 14.45 cfs @ 12.46 hrs, Volume= 1.946 af, Depth= 2.19"
Routed to Pond 1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=6.95"

	Area (sf)	CN	Description
*	236,523	58	Sand, HSG A
	89,848	76	Gravel roads, HSG A
	44,255	30	Woods, Good, HSG A
	94,687	45	Woods, Poor, HSG A
	465,313	56	Weighted Average
	465,313		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	48	0.0144	1.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.18"
5.4	2	0.0010	0.01		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
8.5	81	0.0010	0.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	39	0.1085	5.30		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	58	0.1845	2.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.8	74	0.0018	0.21		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	75	0.0469	3.49		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.9	75	0.0181	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.2	268	0.0153	1.99		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.4	51	0.1731	2.08		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	76	0.2367	7.83		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.1	504	0.0165	2.07		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
30.3	1,351	Total			

Subcatchment E-2B:



Summary for Subcatchment E-3:

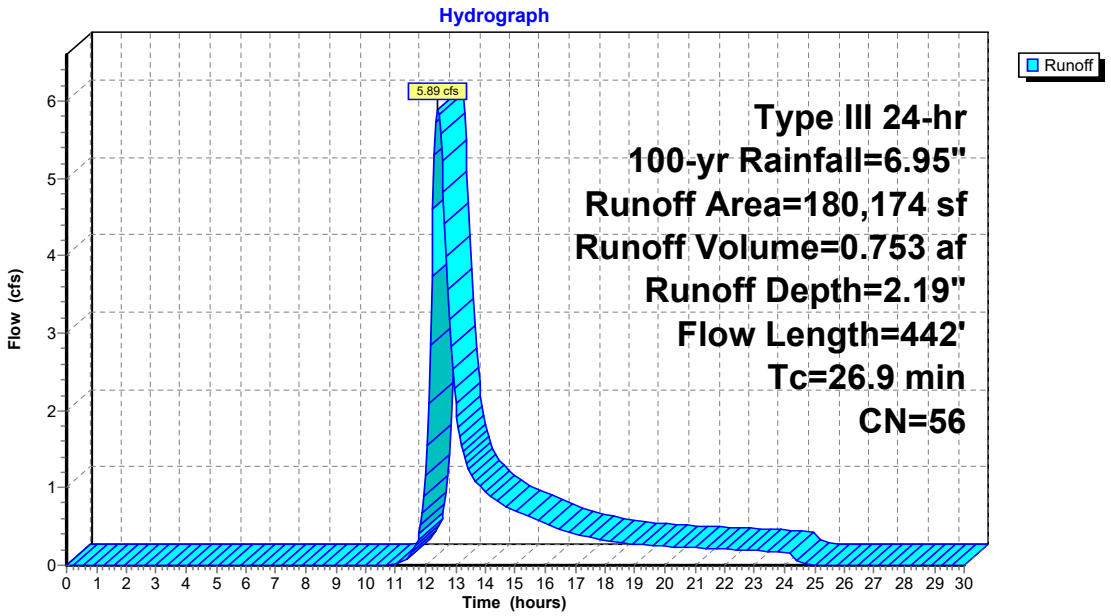
Runoff = 5.89 cfs @ 12.41 hrs, Volume= 0.753 af, Depth= 2.19"
Routed to Link POA-3 : Retained On-Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=6.95"

	Area (sf)	CN	Description
*	65,464	58	Sand, HSG A
	54,877	76	Gravel roads, HSG A
	43,662	30	Woods, Good, HSG A
	16,171	45	Woods, Poor, HSG A
	180,174	56	Weighted Average
	180,174		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.8	50	0.0194	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
1.3	97	0.0662	1.29		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.1	64	0.0010	0.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	231	0.0204	2.30		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
26.9	442	Total			

Subcatchment E-3:



Summary for Pond 1P:

Inflow Area = 10.682 ac, 0.00% Impervious, Inflow Depth = 2.19" for 100-yr event
Inflow = 14.45 cfs @ 12.46 hrs, Volume= 1.946 af
Outflow = 2.71 cfs @ 13.80 hrs, Volume= 1.946 af, Atten= 81%, Lag= 80.3 min
Discarded = 2.71 cfs @ 13.80 hrs, Volume= 1.946 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link POA-2 : Bordering Vegetated Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 42.25' @ 13.80 hrs Surf.Area= 14,062 sf Storage= 31,735 cf

Plug-Flow detention time= 123.3 min calculated for 1.942 af (100% of inflow)
Center-of-Mass det. time= 123.1 min (1,009.6 - 886.5)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	91,759 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

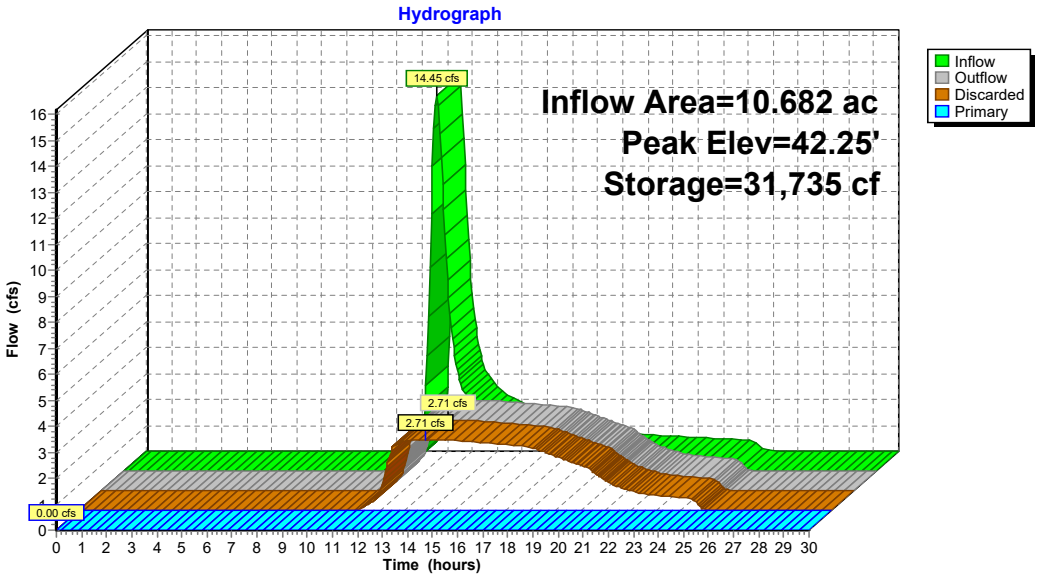
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
39.00	1,366	0	0	1,366
40.00	8,624	4,474	4,474	8,628
41.00	12,688	10,591	15,065	12,708
42.00	13,817	13,248	28,313	13,908
43.00	14,827	14,319	42,632	15,004
44.00	15,667	15,245	57,878	15,951
45.00	16,950	16,304	74,182	17,312
46.00	18,212	17,577	91,759	18,658

Device	Routing	Invert	Outlet Devices
#1	Discarded	39.00'	**8.270 in/hr Exfiltration over Wetted area**
#2	Primary	44.00'	**15.0' long x 20.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=2.71 cfs @ 13.80 hrs HW=42.25' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 2.71 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=39.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 1P:



Stage-Area-Storage for Pond 1P:

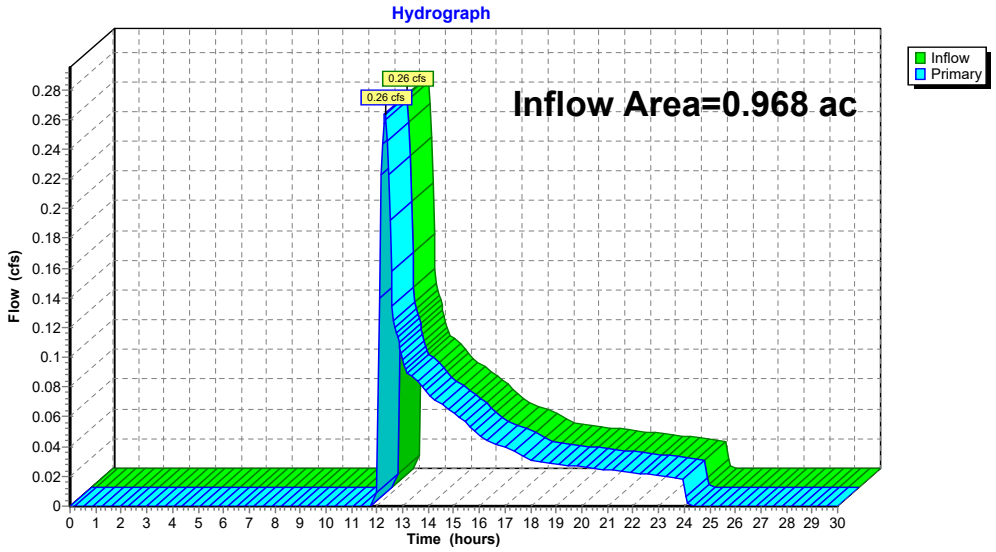
Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
39.00	1,366	1,366	0	42.60	14,419	14,561	36,783
39.10	1,811	1,811	158	42.70	14,520	14,671	38,230
39.20	2,318	2,318	364	42.80	14,622	14,782	39,688
39.30	2,887	2,888	624	42.90	14,724	14,893	41,155
39.40	3,519	3,520	944	43.00	14,827	15,004	42,632
39.50	4,214	4,215	1,330	43.10	14,910	15,097	44,119
39.60	4,971	4,972	1,788	43.20	14,993	15,191	45,614
39.70	5,790	5,792	2,326	43.30	15,077	15,285	47,118
39.80	6,672	6,675	2,949	43.40	15,160	15,380	48,630
39.90	7,617	7,620	3,663	43.50	15,244	15,474	50,150
40.00	8,624	8,628	4,474	43.60	15,328	15,569	51,679
40.10	8,995	9,000	5,355	43.70	15,413	15,664	53,216
40.20	9,374	9,381	6,273	43.80	15,497	15,760	54,761
40.30	9,761	9,769	7,230	43.90	15,582	15,855	56,315
40.40	10,156	10,166	8,226	44.00	15,667	15,951	57,878
40.50	10,558	10,570	9,261	44.10	15,793	16,085	59,450
40.60	10,969	10,982	10,338	44.20	15,920	16,219	61,036
40.70	11,387	11,401	11,455	44.30	16,047	16,354	62,634
40.80	11,813	11,829	12,615	44.40	16,174	16,489	64,245
40.90	12,246	12,265	13,818	44.50	16,302	16,625	65,869
41.00	12,688	12,708	15,065	44.60	16,431	16,761	67,506
41.10	12,799	12,826	16,339	44.70	16,560	16,898	69,155
41.20	12,910	12,944	17,625	44.80	16,689	17,035	70,818
41.30	13,022	13,063	18,921	44.90	16,819	17,173	72,493
41.40	13,134	13,182	20,229	45.00	16,950	17,312	74,182
41.50	13,246	13,302	21,548	45.10	17,074	17,444	75,883
41.60	13,360	13,422	22,878	45.20	17,199	17,577	77,597
41.70	13,473	13,543	24,220	45.30	17,324	17,710	79,323
41.80	13,587	13,664	25,573	45.40	17,449	17,844	81,061
41.90	13,702	13,786	26,937	45.50	17,575	17,979	82,813
42.00	13,817	13,908	28,313	45.60	17,702	18,114	84,577
42.10	13,916	14,016	29,700	45.70	17,829	18,249	86,353
42.20	14,016	14,124	31,097	45.80	17,956	18,385	88,142
42.30	14,116	14,233	32,503	45.90	18,084	18,521	89,944
42.40	14,217	14,342	33,920	46.00	**18,212**	**18,658**	**91,759**
42.50	14,318	14,451	35,347				

Summary for Link POA-1: Isolated Wetland

Inflow Area = 0.968 ac, 0.00% Impervious, Inflow Depth = 0.61" for 100-yr event
Inflow = 0.26 cfs @ 12.31 hrs, Volume= 0.049 af
Primary = 0.26 cfs @ 12.31 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-1: Isolated Wetland

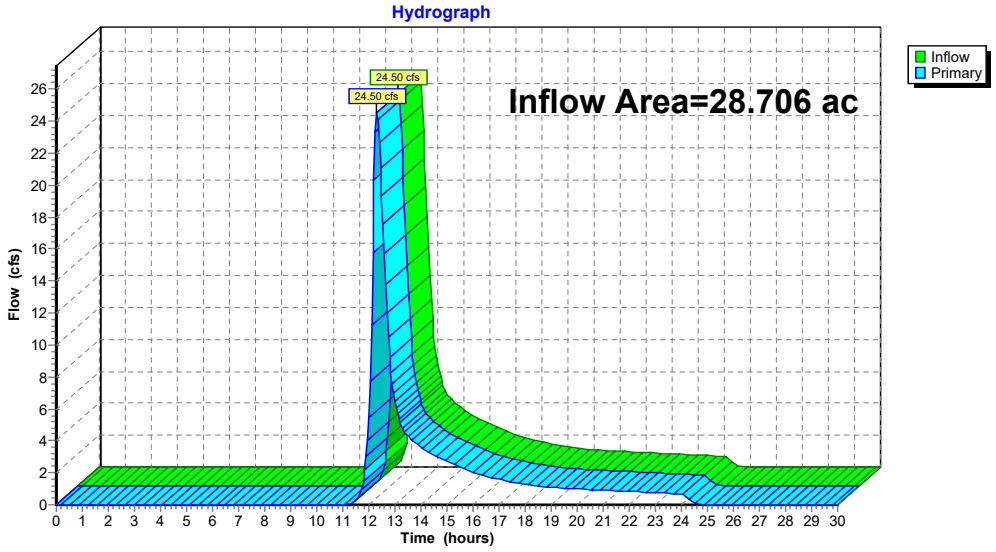


Summary for Link POA-2: Bordering Vegetated Wetland

Inflow Area = 28.706 ac, 0.21% Impervious, Inflow Depth = 1.20" for 100-yr event
Inflow = 24.50 cfs @ 12.31 hrs, Volume= 2.866 af
Primary = 24.50 cfs @ 12.31 hrs, Volume= 2.866 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-2: Bordering Vegetated Wetland

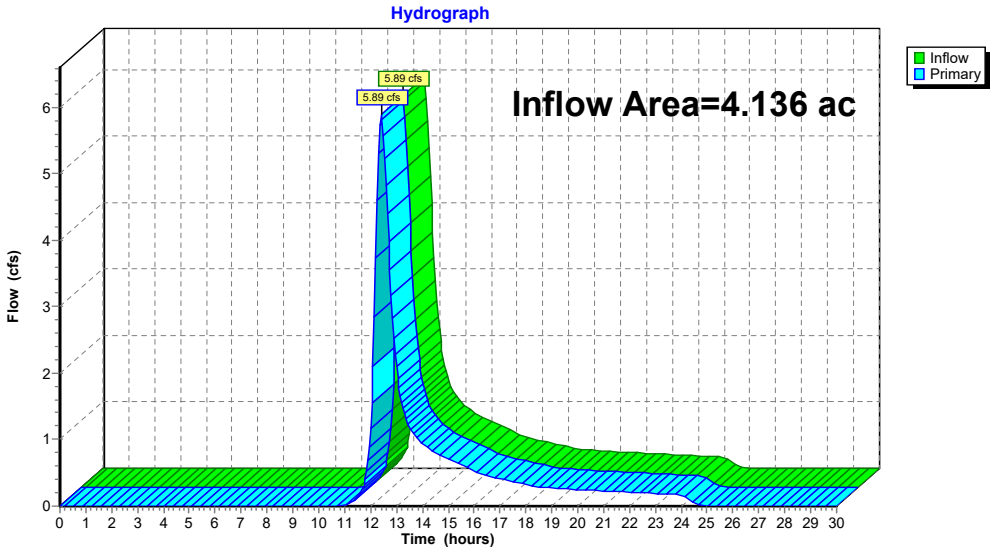


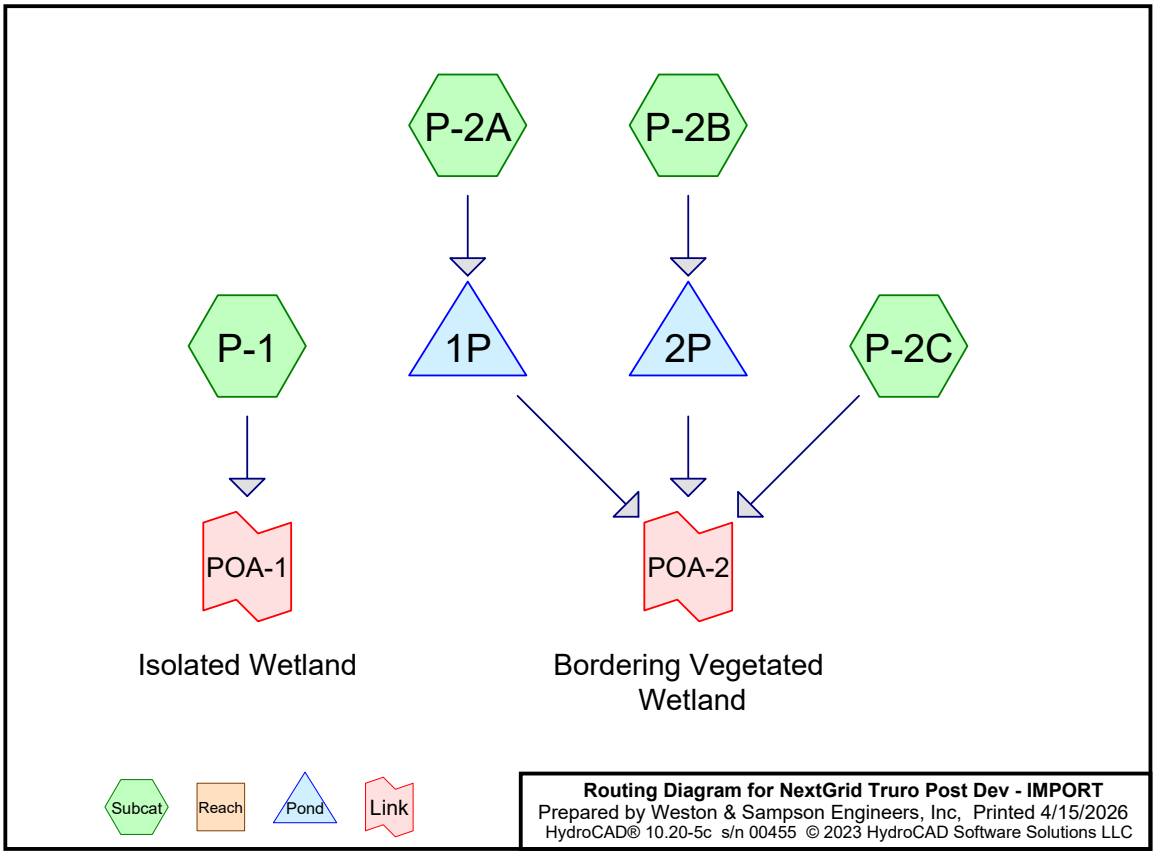
Summary for Link POA-3: Retained On-Site

Inflow Area = 4.136 ac, 0.00% Impervious, Inflow Depth = 2.19" for 100-yr event
Inflow = 5.89 cfs @ 12.41 hrs, Volume= 0.753 af
Primary = 5.89 cfs @ 12.41 hrs, Volume= 0.753 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-3: Retained On-Site





Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type III 24-hr		Default	24.00	1	3.18	2
2	10-yr	Type III 24-hr		Default	24.00	1	4.64	2
3	50-yr	Type III 24-hr		Default	24.00	1	6.23	2
4	100-yr	Type III 24-hr		Default	24.00	1	6.95	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
23.767	49	50-75% Grass cover, Fair, HSG A (P-1, P-2A, P-2B, P-2C)
1.679	76	Gravel roads, HSG A (P-1, P-2A, P-2B, P-2C)
3.208	58	Sand, HSG A (P-1, P-2A, P-2B, P-2C)
0.134	98	Unconnected pavement, HSG A (P-2A, P-2B, P-2C)
4.647	30	Woods, Good, HSG A (P-1, P-2A, P-2B, P-2C)
0.375	45	Woods, Poor, HSG A (P-2C)
33.810	**49**	**TOTAL AREA**

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentP-1: Runoff Area=36,208 sf 0.00% Impervious Runoff Depth=0.07"
Flow Length=188' Tc=6.1 min CN=47 Runoff=0.01 cfs 0.005 af

SubcatchmentP-2A: Runoff Area=1,064,473 sf 0.55% Impervious Runoff Depth=0.15"
Flow Length=1,151' Tc=21.2 min CN=51 Runoff=0.65 cfs 0.297 af

SubcatchmentP-2B: Runoff Area=139,364 sf 0.01% Impervious Runoff Depth=0.12"
Flow Length=521' Tc=10.7 min CN=50 Runoff=0.06 cfs 0.033 af

SubcatchmentP-2C: Runoff Area=232,710 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=820' Tc=14.1 min CN=38 Runoff=0.00 cfs 0.000 af

Pond 1P: Peak Elev=35.03' Storage=239 cf Inflow=0.65 cfs 0.297 af
Discarded=0.61 cfs 0.297 af Primary=0.00 cfs 0.000 af Outflow=0.61 cfs 0.297 af

Pond 2P: Peak Elev=51.00' Storage=7 cf Inflow=0.06 cfs 0.033 af
Discarded=0.06 cfs 0.033 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.033 af

Link POA-1: Isolated Wetland Inflow=0.01 cfs 0.005 af
Primary=0.01 cfs 0.005 af

Link POA-2: Bordering Vegetated Wetland Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 33.810 ac Runoff Volume = 0.335 af Average Runoff Depth = 0.12"
99.60% Pervious = 33.676 ac 0.40% Impervious = 0.134 ac

Summary for Subcatchment P-1:

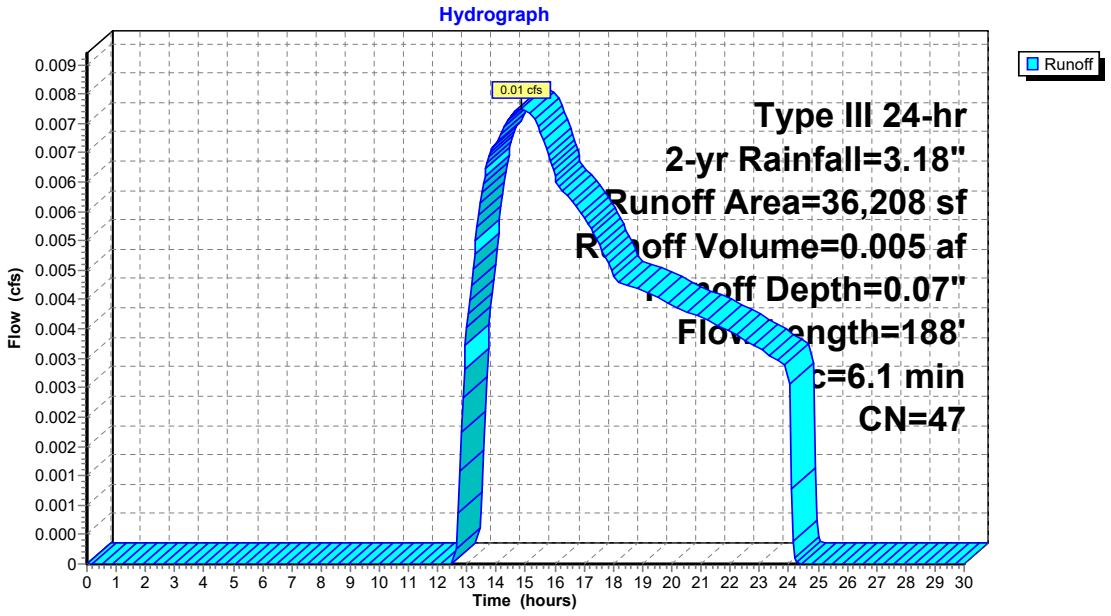
Runoff = 0.01 cfs @ 14.83 hrs, Volume= 0.005 af, Depth= 0.07"
Routed to Link POA-1 : Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.18"

	Area (sf)	CN	Description
	19,971	49	50-75% Grass cover, Fair, HSG A
*	6,026	58	Sand, HSG A
	1,164	76	Gravel roads, HSG A
	9,047	30	Woods, Good, HSG A
	36,208	47	Weighted Average
	36,208		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.4507	0.12		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
1.6	27	0.3474	0.28		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.18"
0.0	5	0.3457	4.12		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	43	0.1992	3.12		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	68	0.0510	1.58		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	22	0.0451	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.1	188	Total			

Subcatchment P-1:



Summary for Subcatchment P-2A:

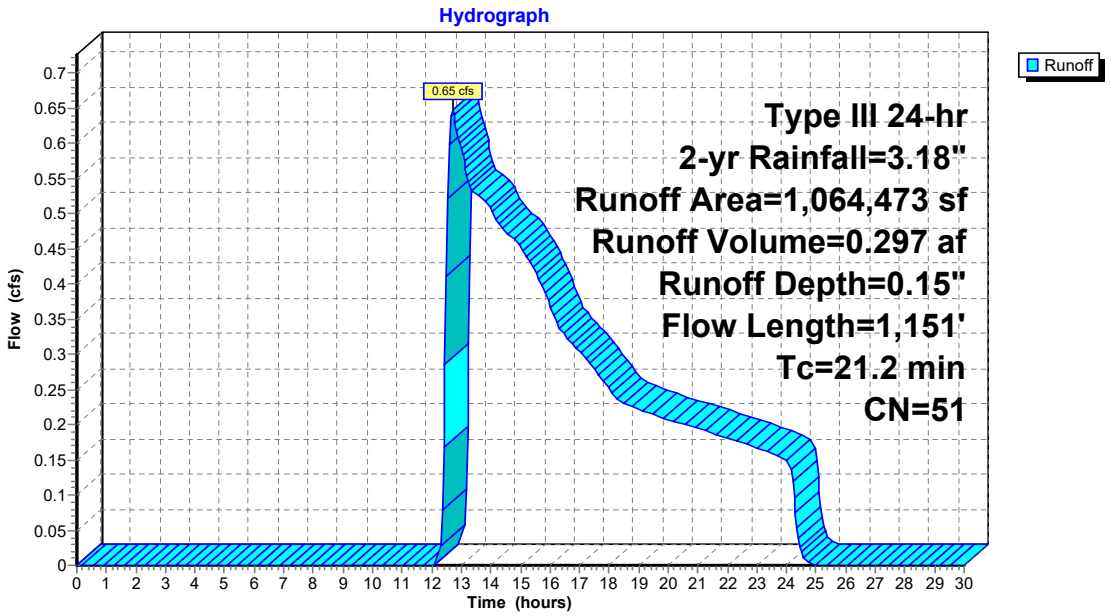
Runoff = 0.65 cfs @ 12.70 hrs, Volume= 0.297 af, Depth= 0.15"
Routed to Pond 1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.18"

	Area (sf)	CN	Description
	835,764	49	50-75% Grass cover, Fair, HSG A
*	99,348	58	Sand, HSG A
	71,562	76	Gravel roads, HSG A
	5,825	98	Unconnected pavement, HSG A
	51,974	30	Woods, Good, HSG A
	1,064,473	51	Weighted Average
	1,058,648		99.45% Pervious Area
	5,825		0.55% Impervious Area
	5,825		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	50	0.0789	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
0.5	66	0.2304	2.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	27	0.4288	10.54		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	311	0.0358	3.05		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.6	52	0.0373	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.0373	3.92		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	78	0.0645	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	169	0.0513	3.65		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.4	373	0.0406	1.41		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.2	1,151	Total			

Subcatchment P-2A:



Summary for Subcatchment P-2B:

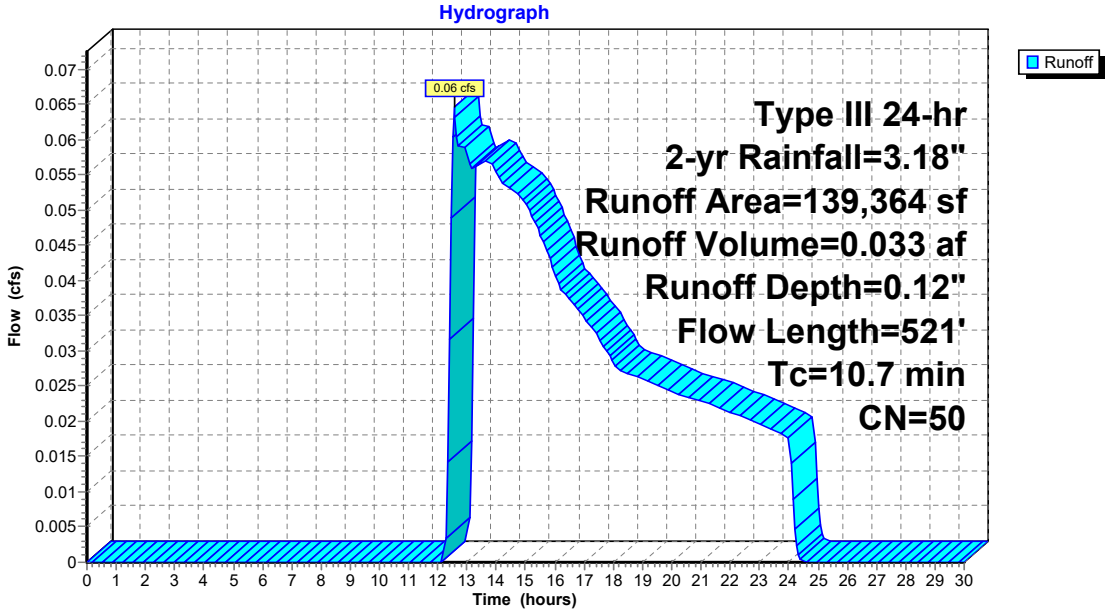
Runoff = 0.06 cfs @ 12.56 hrs, Volume= 0.033 af, Depth= 0.12"
Routed to Pond 2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.18"

	Area (sf)	CN	Description
	120,749	49	50-75% Grass cover, Fair, HSG A
*	17,735	58	Sand, HSG A
	286	76	Gravel roads, HSG A
	7	98	Unconnected pavement, HSG A
	587	30	Woods, Good, HSG A
	139,364	50	Weighted Average
	139,357		99.99% Pervious Area
	7		0.01% Impervious Area
	7		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	5	0.1080	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.18"
3.3	45	0.0621	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.18"
0.5	82	0.1740	2.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.3	303	0.0132	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	86	0.0291	2.75		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
10.7	521	Total			

Subcatchment P-2B:



Summary for Subcatchment P-2C:

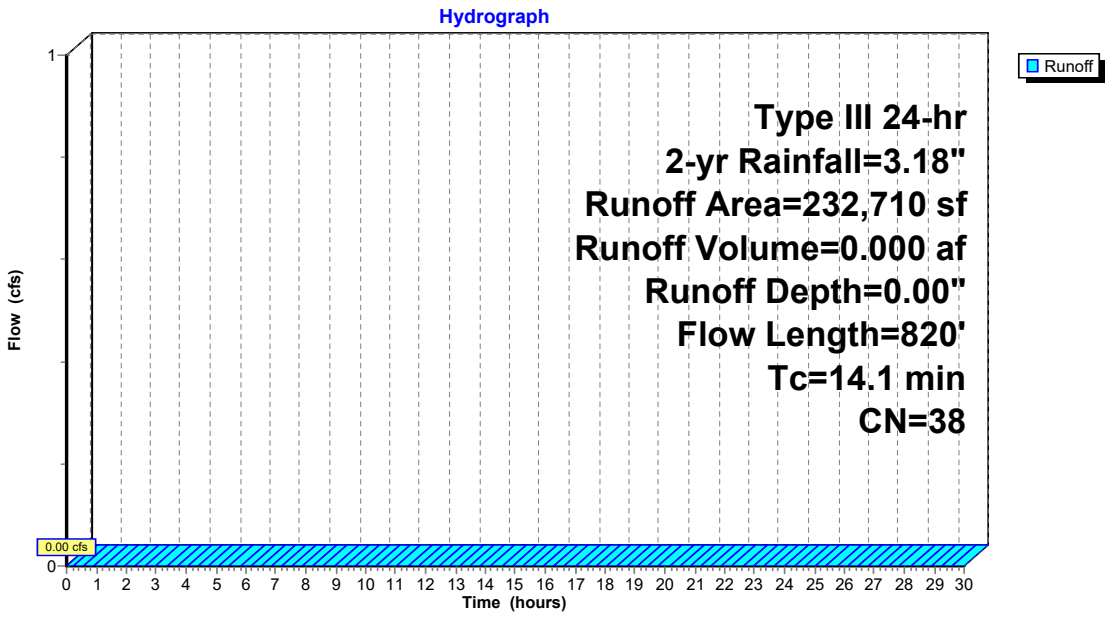
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link POA-2 : Bordering Vegetated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.18"

	Area (sf)	CN	Description
	58,811	49	50-75% Grass cover, Fair, HSG A
*	16,620	58	Sand, HSG A
	106	76	Gravel roads, HSG A
	4	98	Unconnected pavement, HSG A
	140,815	30	Woods, Good, HSG A
	16,354	45	Woods, Poor, HSG A
	232,710	38	Weighted Average
	232,706		100.00% Pervious Area
	4		0.00% Impervious Area
	4		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	50	0.1198	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.18"
0.9	38	0.0102	0.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	45	0.3125	3.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.0	392	0.0178	0.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	137	0.0602	1.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	76	0.0340	0.92		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	82	0.2967	2.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.1	820	Total			

Subcatchment P-2C:



Summary for Pond 1P:

Inflow Area = 24.437 ac, 0.55% Impervious, Inflow Depth = 0.15" for 2-yr event
Inflow = 0.65 cfs @ 12.70 hrs, Volume= 0.297 af
Outflow = 0.61 cfs @ 12.89 hrs, Volume= 0.297 af, Atten= 6%, Lag= 11.3 min
Discarded = 0.61 cfs @ 12.89 hrs, Volume= 0.297 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link POA-2 : Bordering Vegetated Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 35.03' @ 12.89 hrs Surf.Area= 3,846 sf Storage= 239 cf

Plug-Flow detention time= 6.5 min calculated for 0.296 af (100% of inflow)
Center-of-Mass det. time= 6.5 min (1,019.3 - 1,012.8)

Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	101,868 cf	**Custom Stage Data (Irregular)** Listed below

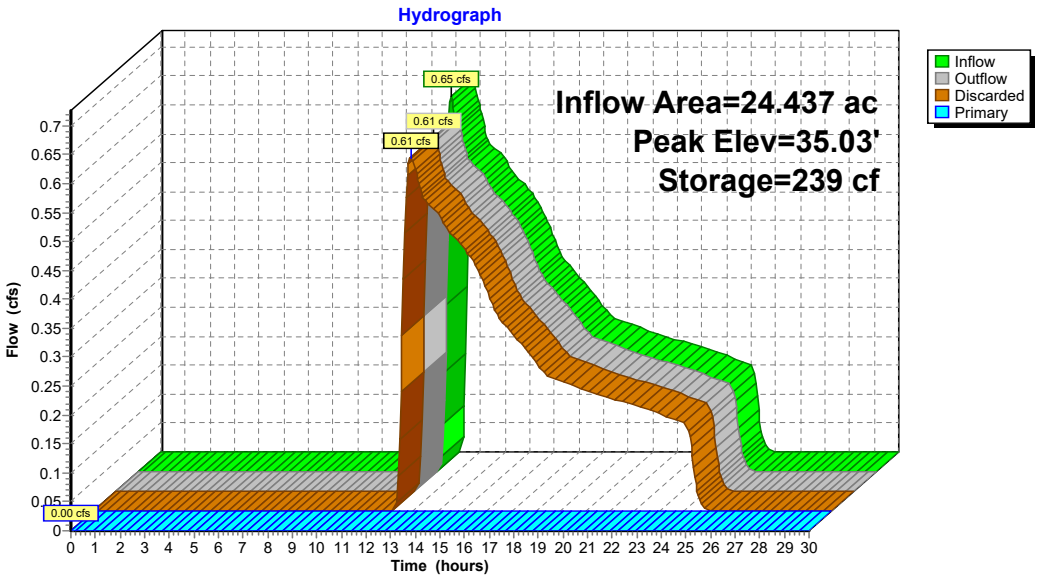
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	3,508	286.2	0	0	3,508
36.00	16,540	518.6	9,222	9,222	18,397
37.00	38,294	804.1	26,667	35,889	48,455
38.00	59,205	963.7	48,371	84,260	70,925
38.25	82,293	1,167.8	17,608	101,868	105,545

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.00'	**8.270 in/hr Exfiltration over Wetted area**
#2	Primary	37.50'	**10.0' long x 18.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.75 cfs @ 12.89 hrs HW=35.03' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.75 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=35.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 1P:



Stage-Area-Storage for Pond 1P:

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
35.00	3,508	3,508	0	36.80	33,943	42,444	30,555
35.05	4,160	4,252	461	36.85	35,031	43,947	31,889
35.10	4,811	4,997	922	36.90	36,119	45,450	33,222
35.15	5,463	5,741	1,383	36.95	37,206	46,953	34,555
35.20	6,114	6,486	1,844	37.00	38,294	48,455	35,889
35.25	6,766	7,230	2,305	37.05	39,340	49,579	38,307
35.30	7,418	7,975	2,767	37.10	40,385	50,702	40,726
35.35	8,069	8,719	3,228	37.15	41,431	51,826	43,144
35.40	8,721	9,464	3,689	37.20	42,476	52,949	45,563
35.45	9,372	10,208	4,150	37.25	43,522	54,073	47,982
35.50	10,024	10,953	4,611	37.30	44,567	55,196	50,400
35.55	10,676	11,697	5,072	37.35	45,613	56,320	52,819
35.60	11,327	12,442	5,533	37.40	46,658	57,443	55,237
35.65	11,979	13,186	5,994	37.45	47,704	58,567	57,656
35.70	12,630	13,930	6,455	37.50	48,750	59,690	60,074
35.75	13,282	14,675	6,916	37.55	49,795	60,814	62,493
35.80	13,934	15,419	7,377	37.60	50,841	61,937	64,912
35.85	14,585	16,164	7,838	37.65	51,886	63,061	67,330
35.90	15,237	16,908	8,300	37.70	52,932	64,184	69,749
35.95	15,888	17,653	8,761	37.75	53,977	65,308	72,167
36.00	16,540	18,397	9,222	37.80	55,023	66,431	74,586
36.05	17,628	19,900	10,555	37.85	56,068	67,554	77,004
36.10	18,715	21,403	11,888	37.90	57,114	68,678	79,423
36.15	19,803	22,906	13,222	37.95	58,159	69,801	81,842
36.20	20,891	24,409	14,555	38.00	59,205	70,925	84,260
36.25	21,979	25,912	15,889	38.05	63,823	77,849	87,782
36.30	23,066	27,415	17,222	38.10	68,440	84,773	91,303
36.35	24,154	28,918	18,555	38.15	73,058	91,697	94,825
36.40	25,242	30,421	19,889	38.20	77,675	98,621	98,347
36.45	26,329	31,923	21,222	38.25	**82,293**	**105,545**	**101,868**
36.50	27,417	33,426	22,555				
36.55	28,505	34,929	23,889				
36.60	29,592	36,432	25,222				
36.65	30,680	37,935	26,555				
36.70	31,768	39,438	27,889				
36.75	32,856	40,941	29,222				

Summary for Pond 2P:

Inflow Area = 3.199 ac, 0.01% Impervious, Inflow Depth = 0.12" for 2-yr event
Inflow = 0.06 cfs @ 12.56 hrs, Volume= 0.033 af
Outflow = 0.06 cfs @ 12.60 hrs, Volume= 0.033 af, Atten= 2%, Lag= 2.3 min
Discarded = 0.06 cfs @ 12.60 hrs, Volume= 0.033 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link POA-2 : Bordering Vegetated Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 51.00' @ 12.60 hrs Surf.Area= 8,050 sf Storage= 7 cf

Plug-Flow detention time= 1.8 min calculated for 0.033 af (100% of inflow)
Center-of-Mass det. time= 1.7 min (1,018.3 - 1,016.5)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	18,297 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

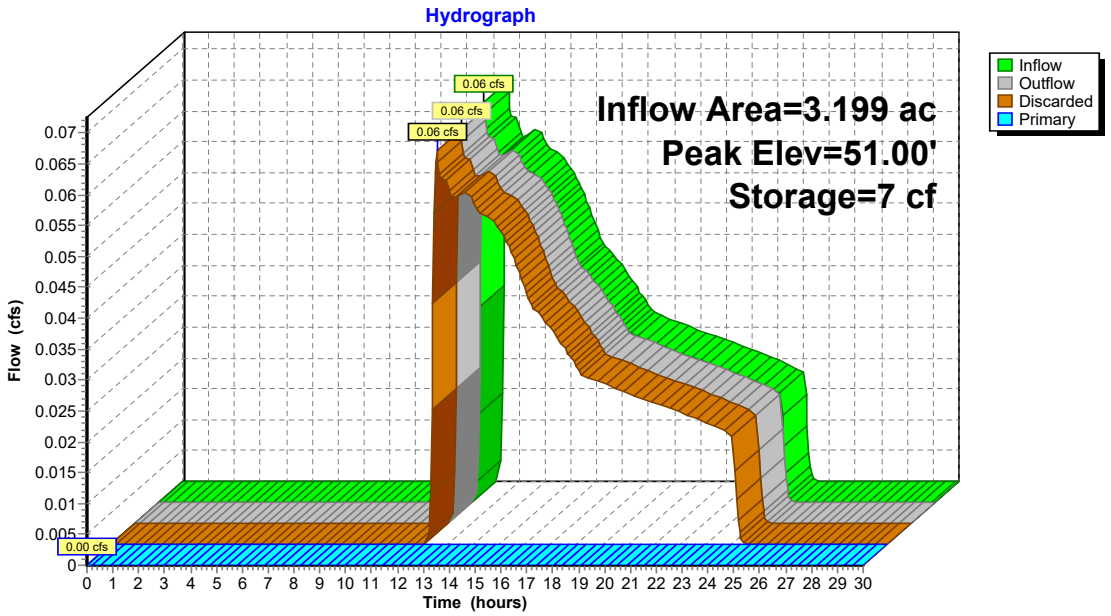
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
51.00	8,049	354.1	0	0	8,049
52.00	9,140	373.0	8,589	8,589	9,201
53.00	10,287	391.8	9,708	18,297	10,408

Device	Routing	Invert	Outlet Devices
#1	Discarded	51.00'	**8.270 in/hr Exfiltration over Wetted area**
#2	Primary	52.50'	**10.0' long x 11.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Discarded OutFlow Max=1.54 cfs @ 12.60 hrs HW=51.00' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 1.54 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.00' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 2P:



Stage-Area-Storage for Pond 2P:

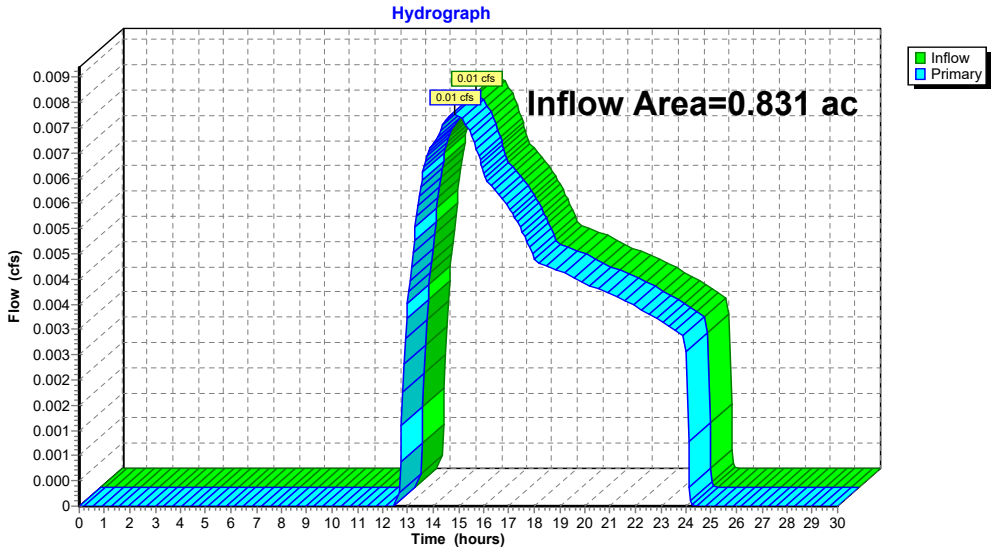
Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
51.00	8,049	8,049	0
51.05	8,102	8,105	404
51.10	8,155	8,162	810
51.15	8,208	8,218	1,219
51.20	8,262	8,275	1,631
51.25	8,315	8,331	2,045
51.30	8,369	8,388	2,463
51.35	8,423	8,446	2,882
51.40	8,477	8,503	3,305
51.45	8,531	8,560	3,730
51.50	8,586	8,618	4,158
51.55	8,640	8,675	4,589
51.60	8,695	8,733	5,022
51.65	8,750	8,791	5,458
51.70	8,805	8,849	5,897
51.75	8,861	8,908	6,339
51.80	8,916	8,966	6,783
51.85	8,972	9,025	7,230
51.90	9,028	9,083	7,680
51.95	9,084	9,142	8,133
52.00	9,140	9,201	8,589
52.05	9,196	9,260	9,047
52.10	9,252	9,319	9,508
52.15	9,308	9,379	9,972
52.20	9,364	9,438	10,439
52.25	9,420	9,497	10,909
52.30	9,477	9,557	11,381
52.35	9,534	9,617	11,856
52.40	9,591	9,677	12,334
52.45	9,648	9,737	12,815
52.50	9,705	9,797	13,299
52.55	9,762	9,858	13,786
52.60	9,820	9,918	14,276
52.65	9,878	9,979	14,768
52.70	9,936	10,040	15,263
52.75	9,994	10,101	15,762
52.80	10,052	10,162	16,263
52.85	10,111	10,223	16,767
52.90	10,169	10,285	17,274
52.95	10,228	10,346	17,784
53.00	**10,287**	**10,408**	**18,297**

Summary for Link POA-1: Isolated Wetland

Inflow Area = 0.831 ac, 0.00% Impervious, Inflow Depth = 0.07" for 2-yr event
Inflow = 0.01 cfs @ 14.83 hrs, Volume= 0.005 af
Primary = 0.01 cfs @ 14.83 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-1: Isolated Wetland

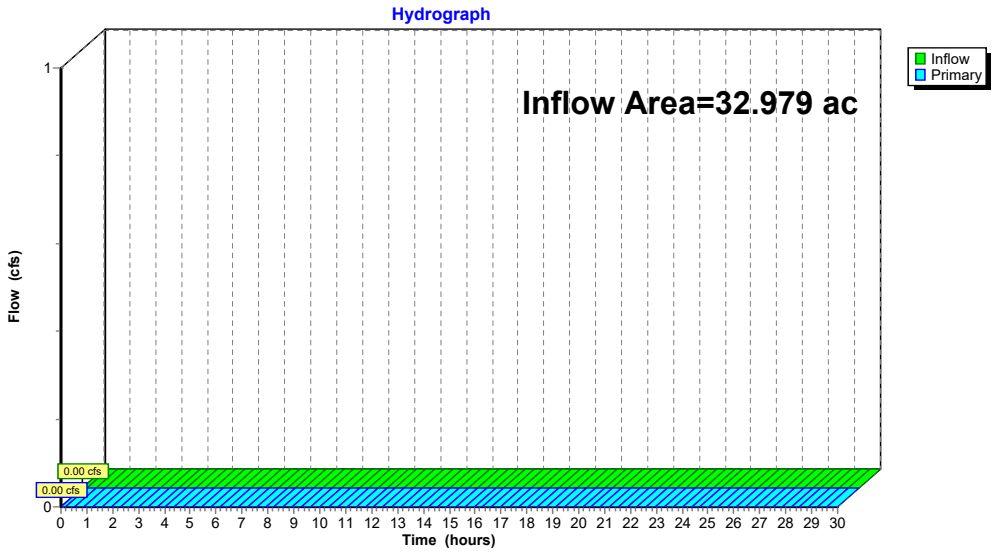


Summary for Link POA-2: Bordering Vegetated Wetland

Inflow Area = 32.979 ac, 0.41% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-2: Bordering Vegetated Wetland



Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentP-1: Runoff Area=36,208 sf 0.00% Impervious Runoff Depth=0.42"
Flow Length=188' Tc=6.1 min CN=47 Runoff=0.16 cfs 0.029 af

SubcatchmentP-2A: Runoff Area=1,064,473 sf 0.55% Impervious Runoff Depth=0.60"
Flow Length=1,151' Tc=21.2 min CN=51 Runoff=7.12 cfs 1.221 af

SubcatchmentP-2B: Runoff Area=139,364 sf 0.01% Impervious Runoff Depth=0.55"
Flow Length=521' Tc=10.7 min CN=50 Runoff=0.94 cfs 0.147 af

SubcatchmentP-2C: Runoff Area=232,710 sf 0.00% Impervious Runoff Depth=0.11"
Flow Length=820' Tc=14.1 min CN=38 Runoff=0.08 cfs 0.048 af

Pond 1P: Peak Elev=35.94' Storage=8,657 cf Inflow=7.12 cfs 1.221 af
Discarded=3.35 cfs 1.221 af Primary=0.00 cfs 0.000 af Outflow=3.35 cfs 1.221 af

Pond 2P: Peak Elev=51.01' Storage=97 cf Inflow=0.94 cfs 0.147 af
Discarded=0.93 cfs 0.147 af Primary=0.00 cfs 0.000 af Outflow=0.93 cfs 0.147 af

Link POA-1: Isolated Wetland Inflow=0.16 cfs 0.029 af
Primary=0.16 cfs 0.029 af

Link POA-2: Bordering Vegetated Wetland Inflow=0.08 cfs 0.048 af
Primary=0.08 cfs 0.048 af

Total Runoff Area = 33.810 ac Runoff Volume = 1.444 af Average Runoff Depth = 0.51"
99.60% Pervious = 33.676 ac 0.40% Impervious = 0.134 ac

Summary for Subcatchment P-1:

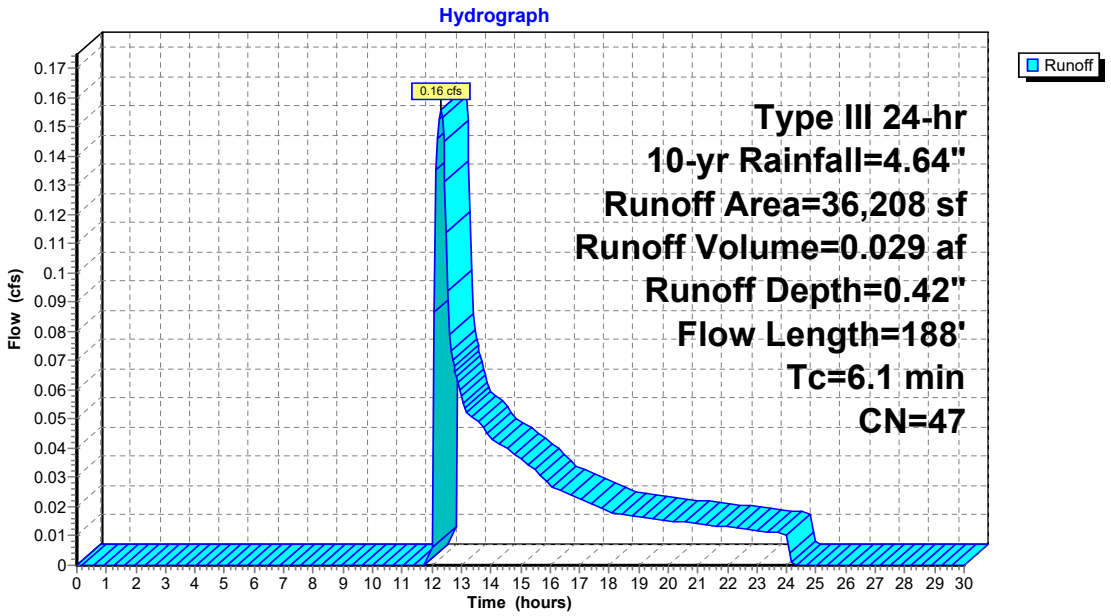
Runoff = 0.16 cfs @ 12.30 hrs, Volume= 0.029 af, Depth= 0.42"
Routed to Link POA-1 : Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.64"

	Area (sf)	CN	Description
	19,971	49	50-75% Grass cover, Fair, HSG A
*	6,026	58	Sand, HSG A
	1,164	76	Gravel roads, HSG A
	9,047	30	Woods, Good, HSG A
	36,208	47	Weighted Average
	36,208		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.4507	0.12		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
1.6	27	0.3474	0.28		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.18"
0.0	5	0.3457	4.12		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	43	0.1992	3.12		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	68	0.0510	1.58		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	22	0.0451	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.1	188	Total			

Subcatchment P-1:



Summary for Subcatchment P-2A:

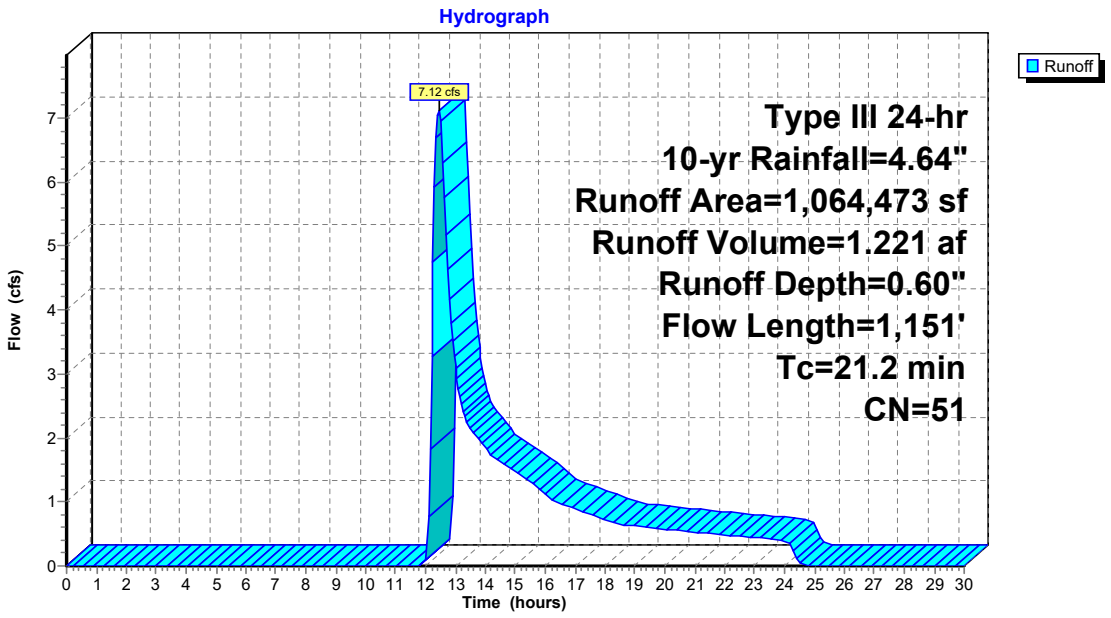
Runoff = 7.12 cfs @ 12.44 hrs, Volume= 1.221 af, Depth= 0.60"
Routed to Pond 1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.64"

	Area (sf)	CN	Description
	835,764	49	50-75% Grass cover, Fair, HSG A
*	99,348	58	Sand, HSG A
	71,562	76	Gravel roads, HSG A
	5,825	98	Unconnected pavement, HSG A
	51,974	30	Woods, Good, HSG A
	1,064,473	51	Weighted Average
	1,058,648		99.45% Pervious Area
	5,825		0.55% Impervious Area
	5,825		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	50	0.0789	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
0.5	66	0.2304	2.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	27	0.4288	10.54		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	311	0.0358	3.05		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.6	52	0.0373	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.0373	3.92		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	78	0.0645	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	169	0.0513	3.65		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.4	373	0.0406	1.41		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.2	1,151	Total			

Subcatchment P-2A:



Summary for Subcatchment P-2B:

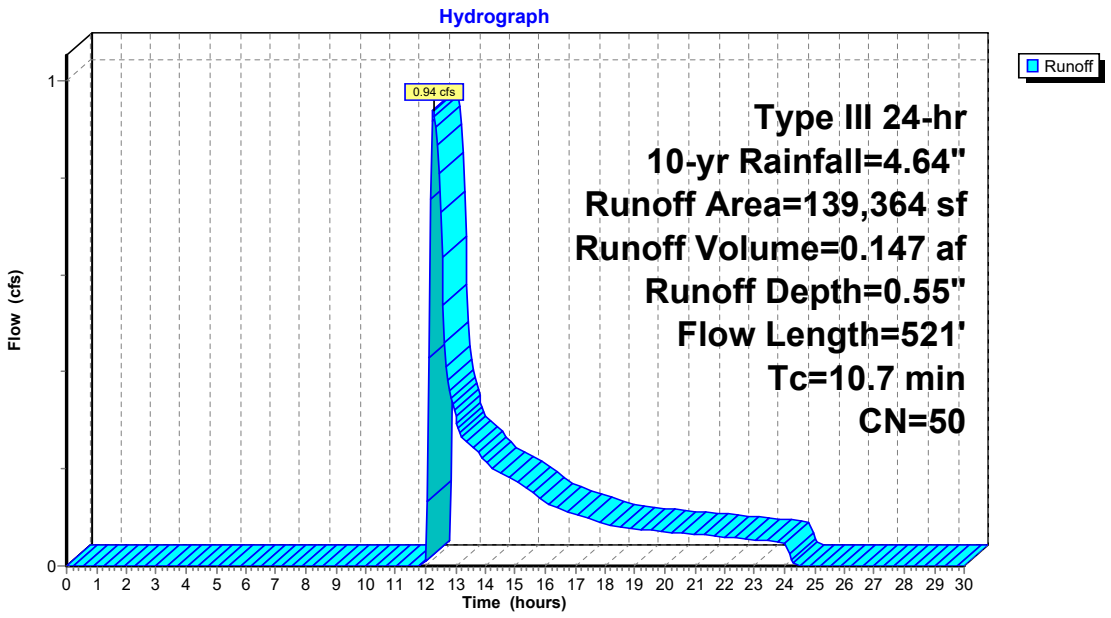
Runoff = 0.94 cfs @ 12.26 hrs, Volume= 0.147 af, Depth= 0.55"
Routed to Pond 2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.64"

	Area (sf)	CN	Description
	120,749	49	50-75% Grass cover, Fair, HSG A
*	17,735	58	Sand, HSG A
	286	76	Gravel roads, HSG A
	7	98	Unconnected pavement, HSG A
	587	30	Woods, Good, HSG A
	139,364	50	Weighted Average
	139,357		99.99% Pervious Area
	7		0.01% Impervious Area
	7		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	5	0.1080	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.18"
3.3	45	0.0621	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.18"
0.5	82	0.1740	2.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.3	303	0.0132	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	86	0.0291	2.75		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
10.7	521	Total			

Subcatchment P-2B:



Summary for Subcatchment P-2C:

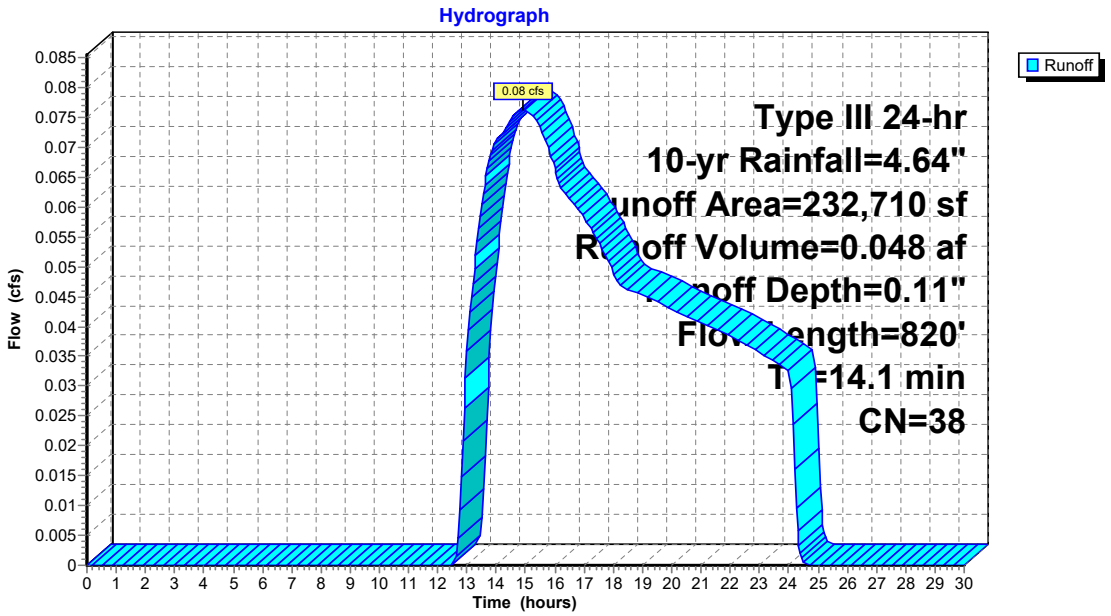
Runoff = 0.08 cfs @ 14.92 hrs, Volume= 0.048 af, Depth= 0.11"
Routed to Link POA-2 : Bordering Vegetated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.64"

	Area (sf)	CN	Description
	58,811	49	50-75% Grass cover, Fair, HSG A
*	16,620	58	Sand, HSG A
	106	76	Gravel roads, HSG A
	4	98	Unconnected pavement, HSG A
	140,815	30	Woods, Good, HSG A
	16,354	45	Woods, Poor, HSG A
	232,710	38	Weighted Average
	232,706		100.00% Pervious Area
	4		0.00% Impervious Area
	4		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	50	0.1198	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.18"
0.9	38	0.0102	0.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	45	0.3125	3.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.0	392	0.0178	0.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	137	0.0602	1.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	76	0.0340	0.92		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	82	0.2967	2.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.1	820	Total			

Subcatchment P-2C:



Summary for Pond 1P:

Inflow Area = 24.437 ac, 0.55% Impervious, Inflow Depth = 0.60" for 10-yr event
Inflow = 7.12 cfs @ 12.44 hrs, Volume= 1.221 af
Outflow = 3.35 cfs @ 12.94 hrs, Volume= 1.221 af, Atten= 53%, Lag= 29.6 min
Discarded = 3.35 cfs @ 12.94 hrs, Volume= 1.221 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link POA-2 : Bordering Vegetated Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 35.94' @ 12.94 hrs Surf.Area= 15,742 sf Storage= 8,657 cf

Plug-Flow detention time= 28.4 min calculated for 1.219 af (100% of inflow)
Center-of-Mass det. time= 28.3 min (962.0 - 933.6)

Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	101,868 cf	**Custom Stage Data (Irregular)** Listed below

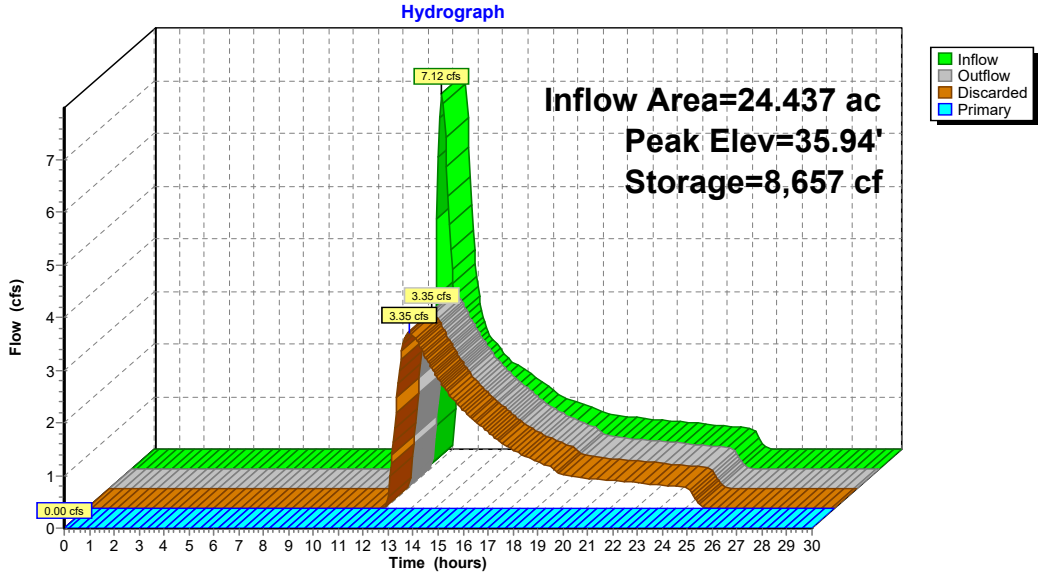
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	3,508	286.2	0	0	3,508
36.00	16,540	518.6	9,222	9,222	18,397
37.00	38,294	804.1	26,667	35,889	48,455
38.00	59,205	963.7	48,371	84,260	70,925
38.25	82,293	1,167.8	17,608	101,868	105,545

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.00'	**8.270 in/hr Exfiltration over Wetted area**
#2	Primary	37.50'	**10.0' long x 18.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=3.35 cfs @ 12.94 hrs HW=35.94' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 3.35 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=35.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 1P:



Stage-Area-Storage for Pond 1P:

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
35.00	3,508	3,508	0	36.80	33,943	42,444	30,555
35.05	4,160	4,252	461	36.85	35,031	43,947	31,889
35.10	4,811	4,997	922	36.90	36,119	45,450	33,222
35.15	5,463	5,741	1,383	36.95	37,206	46,953	34,555
35.20	6,114	6,486	1,844	37.00	38,294	48,455	35,889
35.25	6,766	7,230	2,305	37.05	39,340	49,579	38,307
35.30	7,418	7,975	2,767	37.10	40,385	50,702	40,726
35.35	8,069	8,719	3,228	37.15	41,431	51,826	43,144
35.40	8,721	9,464	3,689	37.20	42,476	52,949	45,563
35.45	9,372	10,208	4,150	37.25	43,522	54,073	47,982
35.50	10,024	10,953	4,611	37.30	44,567	55,196	50,400
35.55	10,676	11,697	5,072	37.35	45,613	56,320	52,819
35.60	11,327	12,442	5,533	37.40	46,658	57,443	55,237
35.65	11,979	13,186	5,994	37.45	47,704	58,567	57,656
35.70	12,630	13,930	6,455	37.50	48,750	59,690	60,074
35.75	13,282	14,675	6,916	37.55	49,795	60,814	62,493
35.80	13,934	15,419	7,377	37.60	50,841	61,937	64,912
35.85	14,585	16,164	7,838	37.65	51,886	63,061	67,330
35.90	15,237	16,908	8,300	37.70	52,932	64,184	69,749
35.95	15,888	17,653	8,761	37.75	53,977	65,308	72,167
36.00	16,540	18,397	9,222	37.80	55,023	66,431	74,586
36.05	17,628	19,900	10,555	37.85	56,068	67,554	77,004
36.10	18,715	21,403	11,888	37.90	57,114	68,678	79,423
36.15	19,803	22,906	13,222	37.95	58,159	69,801	81,842
36.20	20,891	24,409	14,555	38.00	59,205	70,925	84,260
36.25	21,979	25,912	15,889	38.05	63,823	77,849	87,782
36.30	23,066	27,415	17,222	38.10	68,440	84,773	91,303
36.35	24,154	28,918	18,555	38.15	73,058	91,697	94,825
36.40	25,242	30,421	19,889	38.20	77,675	98,621	98,347
36.45	26,329	31,923	21,222	38.25	**82,293**	**105,545**	**101,868**
36.50	27,417	33,426	22,555				
36.55	28,505	34,929	23,889				
36.60	29,592	36,432	25,222				
36.65	30,680	37,935	26,555				
36.70	31,768	39,438	27,889				
36.75	32,856	40,941	29,222				

Summary for Pond 2P:

Inflow Area = 3.199 ac, 0.01% Impervious, Inflow Depth = 0.55" for 10-yr event
Inflow = 0.94 cfs @ 12.26 hrs, Volume= 0.147 af
Outflow = 0.93 cfs @ 12.30 hrs, Volume= 0.147 af, Atten= 1%, Lag= 2.4 min
Discarded = 0.93 cfs @ 12.30 hrs, Volume= 0.147 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link POA-2 : Bordering Vegetated Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 51.01' @ 12.30 hrs Surf.Area= 8,062 sf Storage= 97 cf

Plug-Flow detention time= 1.7 min calculated for 0.147 af (100% of inflow)
Center-of-Mass det. time= 1.7 min (931.3 - 929.6)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	18,297 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

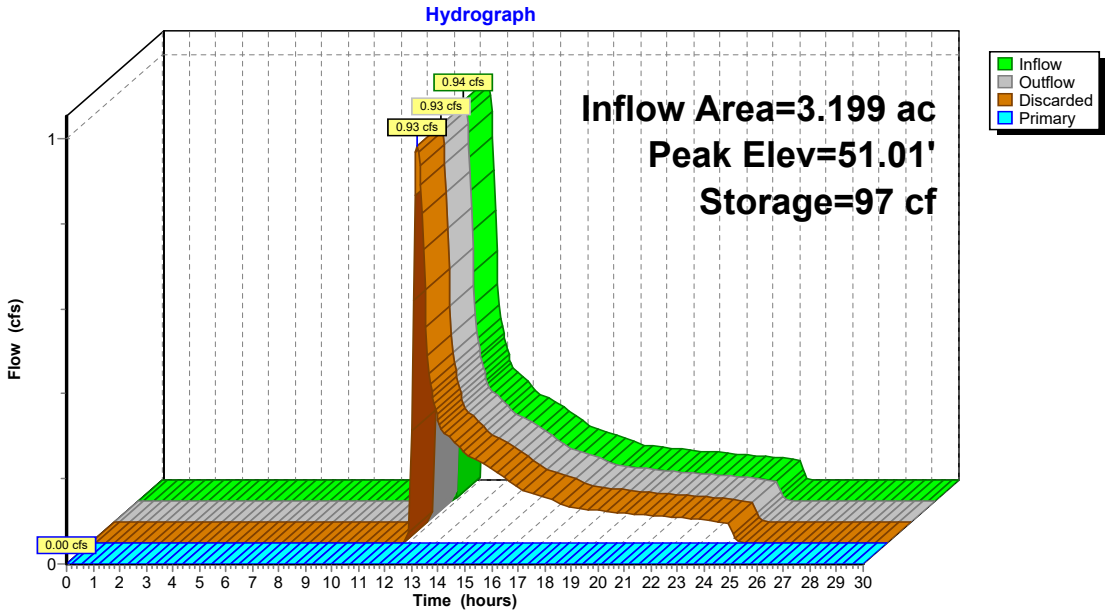
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
51.00	8,049	354.1	0	0	8,049
52.00	9,140	373.0	8,589	8,589	9,201
53.00	10,287	391.8	9,708	18,297	10,408

Device	Routing	Invert	Outlet Devices
#1	Discarded	51.00'	**8.270 in/hr Exfiltration over Wetted area**
#2	Primary	52.50'	**10.0' long x 11.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Discarded OutFlow Max=1.54 cfs @ 12.30 hrs HW=51.01' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 1.54 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.00' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 2P:



Stage-Area-Storage for Pond 2P:

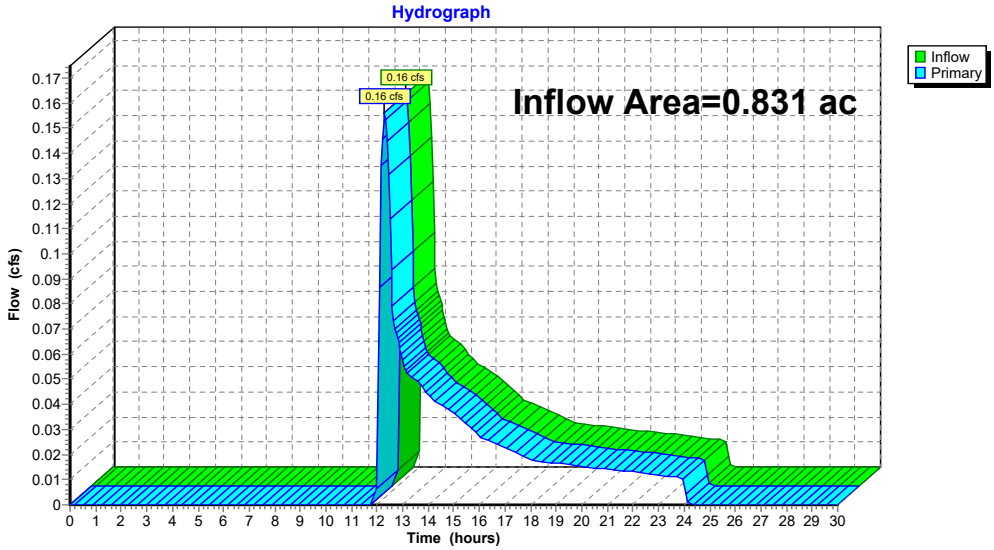
Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
51.00	8,049	8,049	0
51.05	8,102	8,105	404
51.10	8,155	8,162	810
51.15	8,208	8,218	1,219
51.20	8,262	8,275	1,631
51.25	8,315	8,331	2,045
51.30	8,369	8,388	2,463
51.35	8,423	8,446	2,882
51.40	8,477	8,503	3,305
51.45	8,531	8,560	3,730
51.50	8,586	8,618	4,158
51.55	8,640	8,675	4,589
51.60	8,695	8,733	5,022
51.65	8,750	8,791	5,458
51.70	8,805	8,849	5,897
51.75	8,861	8,908	6,339
51.80	8,916	8,966	6,783
51.85	8,972	9,025	7,230
51.90	9,028	9,083	7,680
51.95	9,084	9,142	8,133
52.00	9,140	9,201	8,589
52.05	9,196	9,260	9,047
52.10	9,252	9,319	9,508
52.15	9,308	9,379	9,972
52.20	9,364	9,438	10,439
52.25	9,420	9,497	10,909
52.30	9,477	9,557	11,381
52.35	9,534	9,617	11,856
52.40	9,591	9,677	12,334
52.45	9,648	9,737	12,815
52.50	9,705	9,797	13,299
52.55	9,762	9,858	13,786
52.60	9,820	9,918	14,276
52.65	9,878	9,979	14,768
52.70	9,936	10,040	15,263
52.75	9,994	10,101	15,762
52.80	10,052	10,162	16,263
52.85	10,111	10,223	16,767
52.90	10,169	10,285	17,274
52.95	10,228	10,346	17,784
53.00	**10,287**	**10,408**	**18,297**

Summary for Link POA-1: Isolated Wetland

Inflow Area = 0.831 ac, 0.00% Impervious, Inflow Depth = 0.42" for 10-yr event
Inflow = 0.16 cfs @ 12.30 hrs, Volume= 0.029 af
Primary = 0.16 cfs @ 12.30 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-1: Isolated Wetland

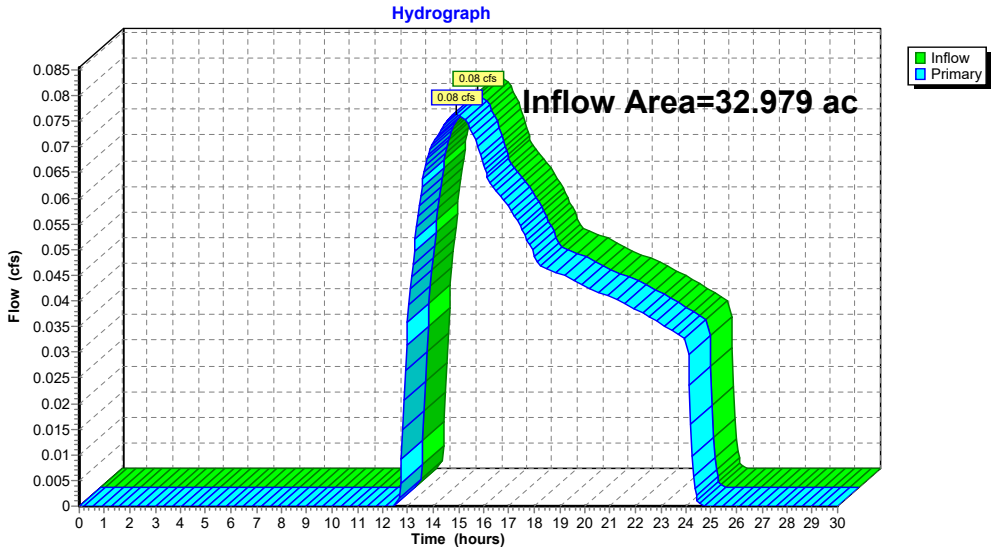


Summary for Link POA-2: Bordering Vegetated Wetland

Inflow Area = 32.979 ac, 0.41% Impervious, Inflow Depth = 0.02" for 10-yr event
Inflow = 0.08 cfs @ 14.92 hrs, Volume= 0.048 af
Primary = 0.08 cfs @ 14.92 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-2: Bordering Vegetated Wetland



Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentP-1: Runoff Area=36,208 sf 0.00% Impervious Runoff Depth=1.04"
Flow Length=188' Tc=6.1 min CN=47 Runoff=0.72 cfs 0.072 af

SubcatchmentP-2A: Runoff Area=1,064,473 sf 0.55% Impervious Runoff Depth=1.33"
Flow Length=1,151' Tc=21.2 min CN=51 Runoff=20.83 cfs 2.716 af

SubcatchmentP-2B: Runoff Area=139,364 sf 0.01% Impervious Runoff Depth=1.26"
Flow Length=521' Tc=10.7 min CN=50 Runoff=3.17 cfs 0.335 af

SubcatchmentP-2C: Runoff Area=232,710 sf 0.00% Impervious Runoff Depth=0.46"
Flow Length=820' Tc=14.1 min CN=38 Runoff=0.87 cfs 0.203 af

Pond 1P: Peak Elev=36.73' Storage=28,672 cf Inflow=20.83 cfs 2.716 af
Discarded=7.72 cfs 2.716 af Primary=0.00 cfs 0.000 af Outflow=7.72 cfs 2.716 af

Pond 2P: Peak Elev=51.20' Storage=1,617 cf Inflow=3.17 cfs 0.335 af
Discarded=1.58 cfs 0.335 af Primary=0.00 cfs 0.000 af Outflow=1.58 cfs 0.335 af

Link POA-1: Isolated Wetland Inflow=0.72 cfs 0.072 af
Primary=0.72 cfs 0.072 af

Link POA-2: Bordering Vegetated Wetland Inflow=0.87 cfs 0.203 af
Primary=0.87 cfs 0.203 af

Total Runoff Area = 33.810 ac Runoff Volume = 3.327 af Average Runoff Depth = 1.18"
99.60% Pervious = 33.676 ac 0.40% Impervious = 0.134 ac

Summary for Subcatchment P-1:

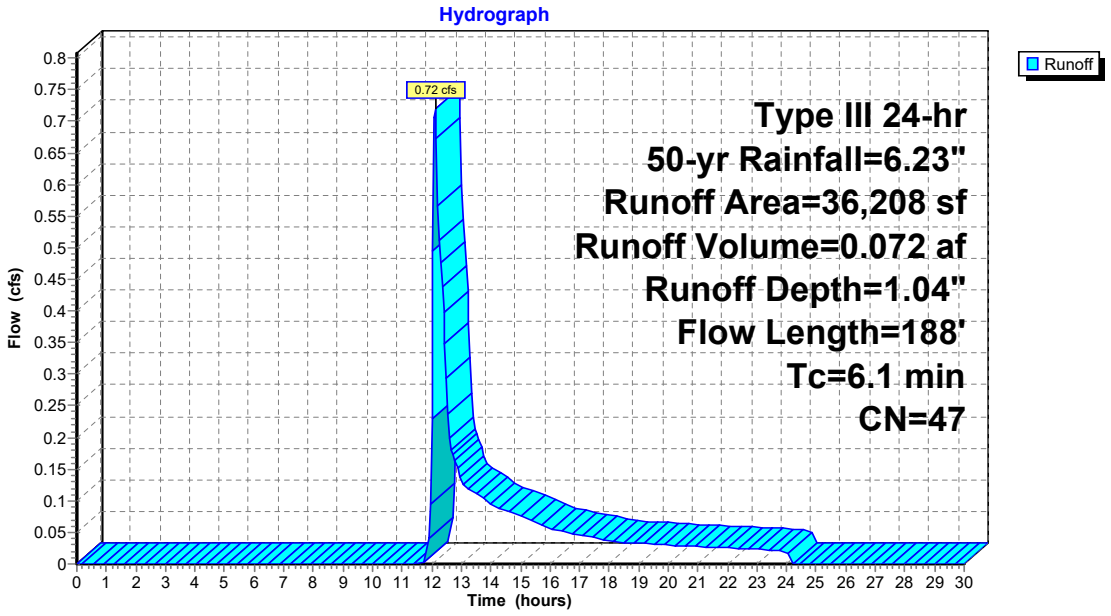
Runoff = 0.72 cfs @ 12.12 hrs, Volume= 0.072 af, Depth= 1.04"
Routed to Link POA-1 : Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=6.23"

	Area (sf)	CN	Description
	19,971	49	50-75% Grass cover, Fair, HSG A
*	6,026	58	Sand, HSG A
	1,164	76	Gravel roads, HSG A
	9,047	30	Woods, Good, HSG A
	36,208	47	Weighted Average
	36,208		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.4507	0.12		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
1.6	27	0.3474	0.28		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.18"
0.0	5	0.3457	4.12		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	43	0.1992	3.12		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	68	0.0510	1.58		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	22	0.0451	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.1	188	Total			

Subcatchment P-1:



Summary for Subcatchment P-2A:

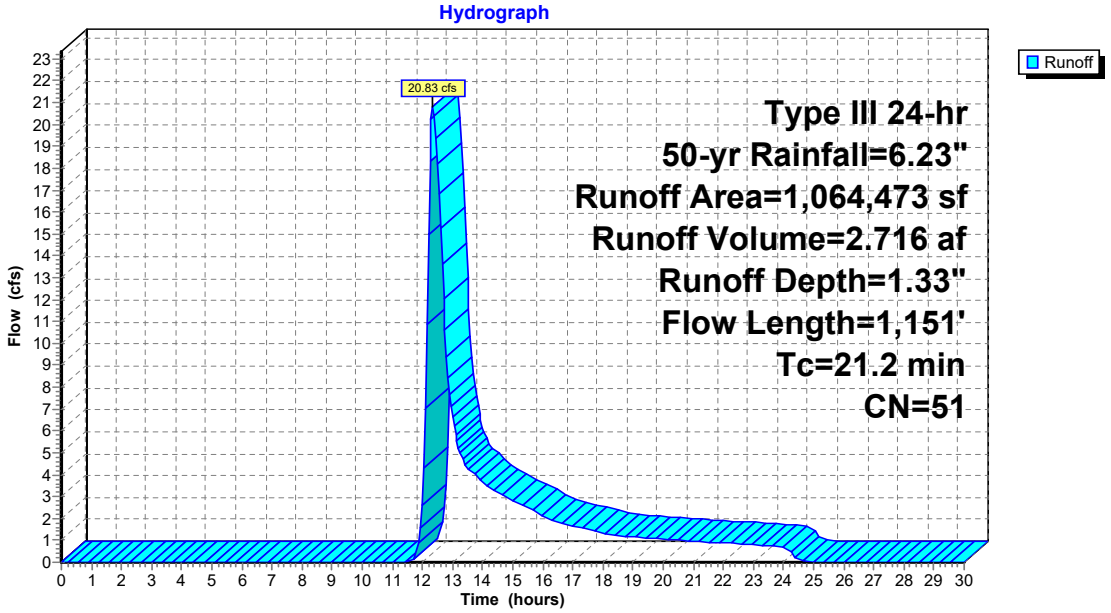
Runoff = 20.83 cfs @ 12.35 hrs, Volume= 2.716 af, Depth= 1.33"
Routed to Pond 1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=6.23"

	Area (sf)	CN	Description
	835,764	49	50-75% Grass cover, Fair, HSG A
*	99,348	58	Sand, HSG A
	71,562	76	Gravel roads, HSG A
	5,825	98	Unconnected pavement, HSG A
	51,974	30	Woods, Good, HSG A
	1,064,473	51	Weighted Average
	1,058,648		99.45% Pervious Area
	5,825		0.55% Impervious Area
	5,825		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	50	0.0789	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
0.5	66	0.2304	2.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	27	0.4288	10.54		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	311	0.0358	3.05		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.6	52	0.0373	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.0373	3.92		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	78	0.0645	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	169	0.0513	3.65		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.4	373	0.0406	1.41		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.2	1,151	Total			

Subcatchment P-2A:



Summary for Subcatchment P-2B:

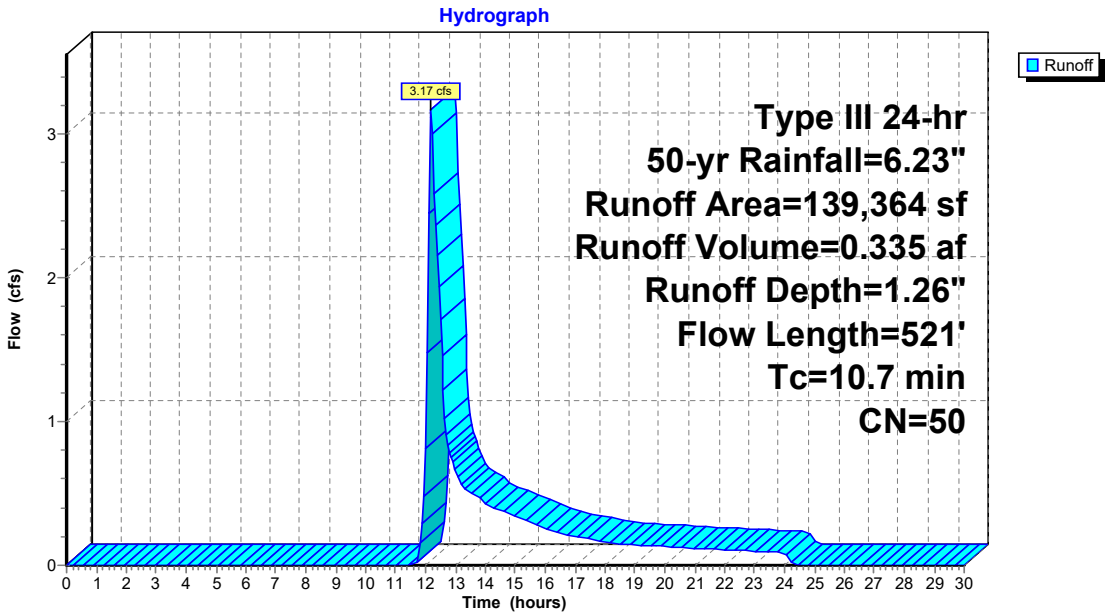
Runoff = 3.17 cfs @ 12.18 hrs, Volume= 0.335 af, Depth= 1.26"
Routed to Pond 2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=6.23"

	Area (sf)	CN	Description
	120,749	49	50-75% Grass cover, Fair, HSG A
*	17,735	58	Sand, HSG A
	286	76	Gravel roads, HSG A
	7	98	Unconnected pavement, HSG A
	587	30	Woods, Good, HSG A
	139,364	50	Weighted Average
	139,357		99.99% Pervious Area
	7		0.01% Impervious Area
	7		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	5	0.1080	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.18"
3.3	45	0.0621	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.18"
0.5	82	0.1740	2.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.3	303	0.0132	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	86	0.0291	2.75		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
10.7	521	Total			

Subcatchment P-2B:



Summary for Subcatchment P-2C:

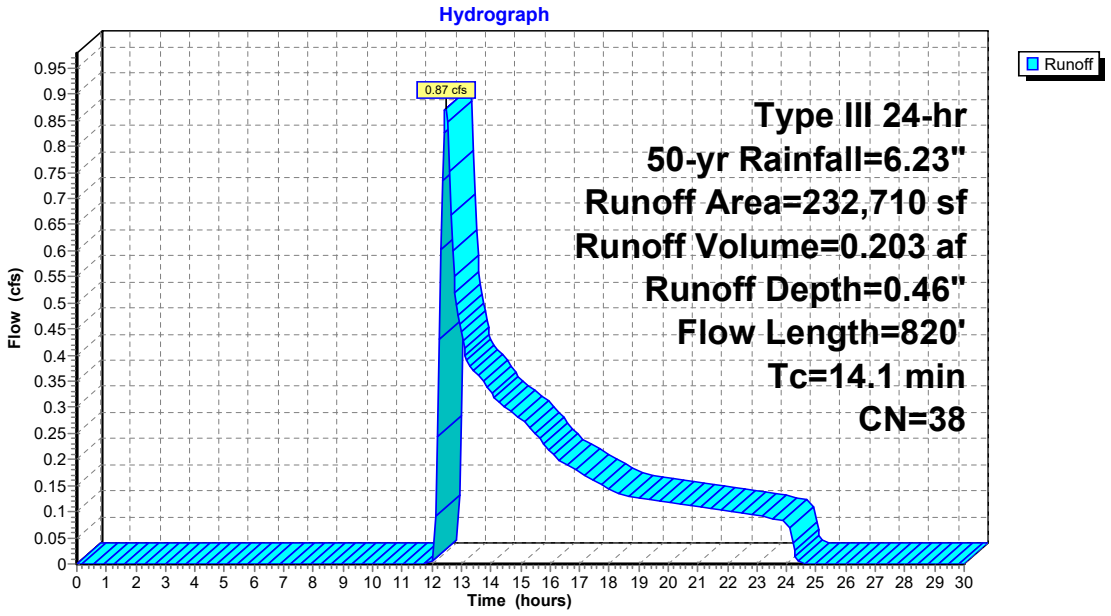
Runoff = 0.87 cfs @ 12.47 hrs, Volume= 0.203 af, Depth= 0.46"
Routed to Link POA-2 : Bordering Vegetated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=6.23"

	Area (sf)	CN	Description
	58,811	49	50-75% Grass cover, Fair, HSG A
*	16,620	58	Sand, HSG A
	106	76	Gravel roads, HSG A
	4	98	Unconnected pavement, HSG A
	140,815	30	Woods, Good, HSG A
	16,354	45	Woods, Poor, HSG A
	232,710	38	Weighted Average
	232,706		100.00% Pervious Area
	4		0.00% Impervious Area
	4		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	50	0.1198	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.18"
0.9	38	0.0102	0.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	45	0.3125	3.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.0	392	0.0178	0.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	137	0.0602	1.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	76	0.0340	0.92		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	82	0.2967	2.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.1	820	Total			

Subcatchment P-2C:



Summary for Pond 1P:

Inflow Area = 24.437 ac, 0.55% Impervious, Inflow Depth = 1.33" for 50-yr event
Inflow = 20.83 cfs @ 12.35 hrs, Volume= 2.716 af
Outflow = 7.72 cfs @ 12.90 hrs, Volume= 2.716 af, Atten= 63%, Lag= 32.8 min
Discarded = 7.72 cfs @ 12.90 hrs, Volume= 2.716 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link POA-2 : Bordering Vegetated Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 36.73' @ 12.90 hrs Surf.Area= 32,407 sf Storage= 28,672 cf

Plug-Flow detention time= 45.5 min calculated for 2.716 af (100% of inflow)
Center-of-Mass det. time= 45.4 min (946.7 - 901.3)

Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	101,868 cf	**Custom Stage Data (Irregular)** Listed below

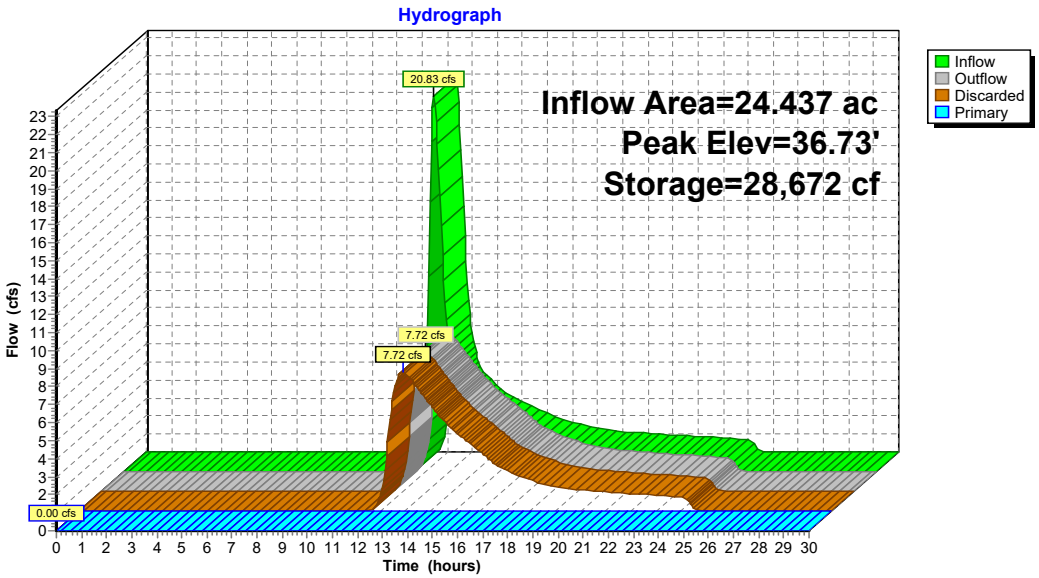
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	3,508	286.2	0	0	3,508
36.00	16,540	518.6	9,222	9,222	18,397
37.00	38,294	804.1	26,667	35,889	48,455
38.00	59,205	963.7	48,371	84,260	70,925
38.25	82,293	1,167.8	17,608	101,868	105,545

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.00'	**8.270 in/hr Exfiltration over Wetted area**
#2	Primary	37.50'	**10.0' long x 18.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=7.72 cfs @ 12.90 hrs HW=36.73' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 7.72 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=35.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 1P:



Stage-Area-Storage for Pond 1P:

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
35.00	3,508	3,508	0	36.80	33,943	42,444	30,555
35.05	4,160	4,252	461	36.85	35,031	43,947	31,889
35.10	4,811	4,997	922	36.90	36,119	45,450	33,222
35.15	5,463	5,741	1,383	36.95	37,206	46,953	34,555
35.20	6,114	6,486	1,844	37.00	38,294	48,455	35,889
35.25	6,766	7,230	2,305	37.05	39,340	49,579	38,307
35.30	7,418	7,975	2,767	37.10	40,385	50,702	40,726
35.35	8,069	8,719	3,228	37.15	41,431	51,826	43,144
35.40	8,721	9,464	3,689	37.20	42,476	52,949	45,563
35.45	9,372	10,208	4,150	37.25	43,522	54,073	47,982
35.50	10,024	10,953	4,611	37.30	44,567	55,196	50,400
35.55	10,676	11,697	5,072	37.35	45,613	56,320	52,819
35.60	11,327	12,442	5,533	37.40	46,658	57,443	55,237
35.65	11,979	13,186	5,994	37.45	47,704	58,567	57,656
35.70	12,630	13,930	6,455	37.50	48,750	59,690	60,074
35.75	13,282	14,675	6,916	37.55	49,795	60,814	62,493
35.80	13,934	15,419	7,377	37.60	50,841	61,937	64,912
35.85	14,585	16,164	7,838	37.65	51,886	63,061	67,330
35.90	15,237	16,908	8,300	37.70	52,932	64,184	69,749
35.95	15,888	17,653	8,761	37.75	53,977	65,308	72,167
36.00	16,540	18,397	9,222	37.80	55,023	66,431	74,586
36.05	17,628	19,900	10,555	37.85	56,068	67,554	77,004
36.10	18,715	21,403	11,888	37.90	57,114	68,678	79,423
36.15	19,803	22,906	13,222	37.95	58,159	69,801	81,842
36.20	20,891	24,409	14,555	38.00	59,205	70,925	84,260
36.25	21,979	25,912	15,889	38.05	63,823	77,849	87,782
36.30	23,066	27,415	17,222	38.10	68,440	84,773	91,303
36.35	24,154	28,918	18,555	38.15	73,058	91,697	94,825
36.40	25,242	30,421	19,889	38.20	77,675	98,621	98,347
36.45	26,329	31,923	21,222	38.25	**82,293**	**105,545**	**101,868**
36.50	27,417	33,426	22,555				
36.55	28,505	34,929	23,889				
36.60	29,592	36,432	25,222				
36.65	30,680	37,935	26,555				
36.70	31,768	39,438	27,889				
36.75	32,856	40,941	29,222				

Summary for Pond 2P:

Inflow Area = 3.199 ac, 0.01% Impervious, Inflow Depth = 1.26" for 50-yr event
Inflow = 3.17 cfs @ 12.18 hrs, Volume= 0.335 af
Outflow = 1.58 cfs @ 12.53 hrs, Volume= 0.335 af, Atten= 50%, Lag= 20.7 min
Discarded = 1.58 cfs @ 12.53 hrs, Volume= 0.335 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link POA-2 : Bordering Vegetated Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 51.20' @ 12.53 hrs Surf.Area= 8,260 sf Storage= 1,617 cf

Plug-Flow detention time= 5.5 min calculated for 0.335 af (100% of inflow)
Center-of-Mass det. time= 5.4 min (900.6 - 895.2)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	18,297 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

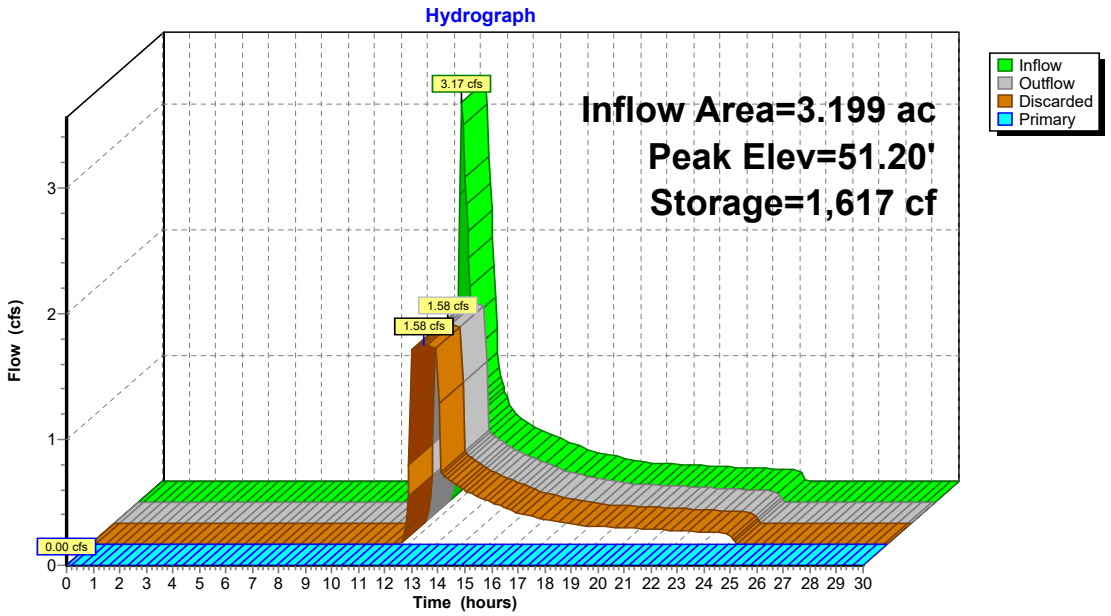
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
51.00	8,049	354.1	0	0	8,049
52.00	9,140	373.0	8,589	8,589	9,201
53.00	10,287	391.8	9,708	18,297	10,408

Device	Routing	Invert	Outlet Devices
#1	Discarded	51.00'	**8.270 in/hr Exfiltration over Wetted area**
#2	Primary	52.50'	**10.0' long x 11.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Discarded OutFlow Max=1.58 cfs @ 12.53 hrs HW=51.20' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 1.58 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.00' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 2P:



Stage-Area-Storage for Pond 2P:

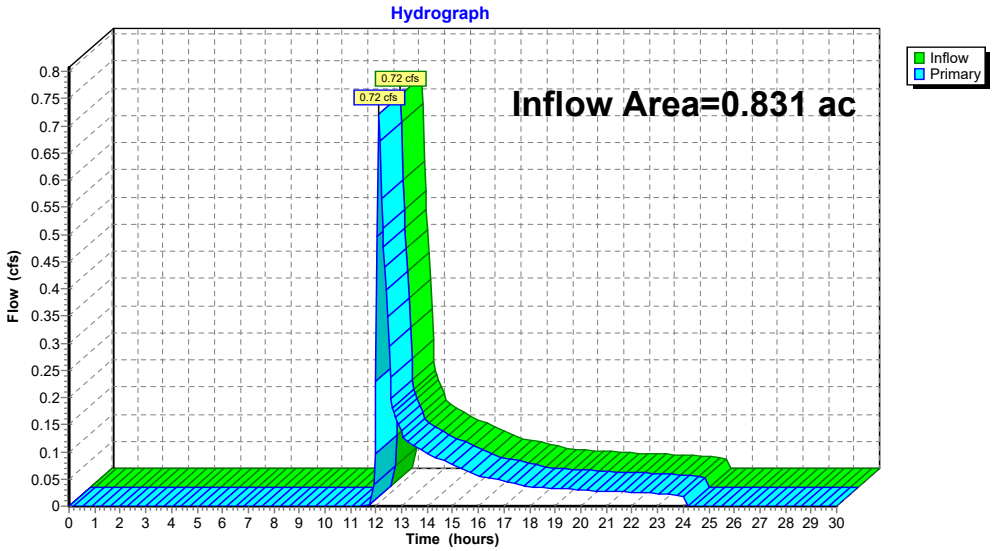
Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
51.00	8,049	8,049	0
51.05	8,102	8,105	404
51.10	8,155	8,162	810
51.15	8,208	8,218	1,219
51.20	8,262	8,275	1,631
51.25	8,315	8,331	2,045
51.30	8,369	8,388	2,463
51.35	8,423	8,446	2,882
51.40	8,477	8,503	3,305
51.45	8,531	8,560	3,730
51.50	8,586	8,618	4,158
51.55	8,640	8,675	4,589
51.60	8,695	8,733	5,022
51.65	8,750	8,791	5,458
51.70	8,805	8,849	5,897
51.75	8,861	8,908	6,339
51.80	8,916	8,966	6,783
51.85	8,972	9,025	7,230
51.90	9,028	9,083	7,680
51.95	9,084	9,142	8,133
52.00	9,140	9,201	8,589
52.05	9,196	9,260	9,047
52.10	9,252	9,319	9,508
52.15	9,308	9,379	9,972
52.20	9,364	9,438	10,439
52.25	9,420	9,497	10,909
52.30	9,477	9,557	11,381
52.35	9,534	9,617	11,856
52.40	9,591	9,677	12,334
52.45	9,648	9,737	12,815
52.50	9,705	9,797	13,299
52.55	9,762	9,858	13,786
52.60	9,820	9,918	14,276
52.65	9,878	9,979	14,768
52.70	9,936	10,040	15,263
52.75	9,994	10,101	15,762
52.80	10,052	10,162	16,263
52.85	10,111	10,223	16,767
52.90	10,169	10,285	17,274
52.95	10,228	10,346	17,784
53.00	**10,287**	**10,408**	**18,297**

Summary for Link POA-1: Isolated Wetland

Inflow Area = 0.831 ac, 0.00% Impervious, Inflow Depth = 1.04" for 50-yr event
Inflow = 0.72 cfs @ 12.12 hrs, Volume= 0.072 af
Primary = 0.72 cfs @ 12.12 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-1: Isolated Wetland

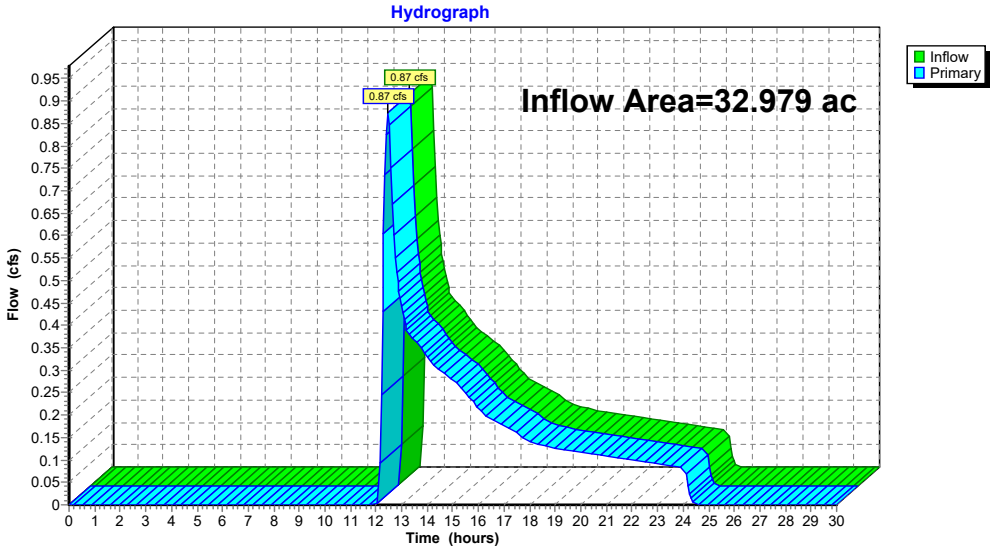


Summary for Link POA-2: Bordering Vegetated Wetland

Inflow Area = 32.979 ac, 0.41% Impervious, Inflow Depth = 0.07" for 50-yr event
Inflow = 0.87 cfs @ 12.47 hrs, Volume= 0.203 af
Primary = 0.87 cfs @ 12.47 hrs, Volume= 0.203 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-2: Bordering Vegetated Wetland



Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentP-1: Runoff Area=36,208 sf 0.00% Impervious Runoff Depth=1.38"
Flow Length=188' Tc=6.1 min CN=47 Runoff=1.07 cfs 0.096 af

SubcatchmentP-2A: Runoff Area=1,064,473 sf 0.55% Impervious Runoff Depth=1.73"
Flow Length=1,151' Tc=21.2 min CN=51 Runoff=28.47 cfs 3.518 af

SubcatchmentP-2B: Runoff Area=139,364 sf 0.01% Impervious Runoff Depth=1.64"
Flow Length=521' Tc=10.7 min CN=50 Runoff=4.48 cfs 0.437 af

SubcatchmentP-2C: Runoff Area=232,710 sf 0.00% Impervious Runoff Depth=0.68"
Flow Length=820' Tc=14.1 min CN=38 Runoff=1.61 cfs 0.303 af

Pond 1P: Peak Elev=37.10' Storage=40,685 cf Inflow=28.47 cfs 3.518 af
Discarded=9.70 cfs 3.518 af Primary=0.00 cfs 0.000 af Outflow=9.70 cfs 3.518 af

Pond 2P: Peak Elev=51.39' Storage=3,192 cf Inflow=4.48 cfs 0.437 af
Discarded=1.62 cfs 0.437 af Primary=0.00 cfs 0.000 af Outflow=1.62 cfs 0.437 af

Link POA-1: Isolated Wetland Inflow=1.07 cfs 0.096 af
Primary=1.07 cfs 0.096 af

Link POA-2: Bordering Vegetated Wetland Inflow=1.61 cfs 0.303 af
Primary=1.61 cfs 0.303 af

Total Runoff Area = 33.810 ac Runoff Volume = 4.353 af Average Runoff Depth = 1.55"
99.60% Pervious = 33.676 ac 0.40% Impervious = 0.134 ac

Summary for Subcatchment P-1:

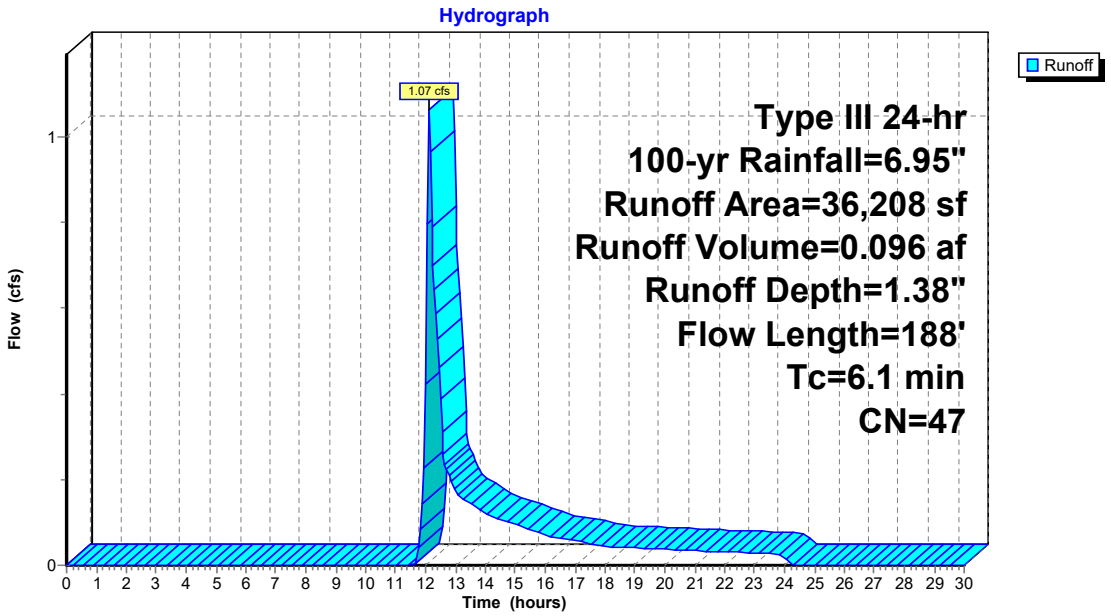
Runoff = 1.07 cfs @ 12.11 hrs, Volume= 0.096 af, Depth= 1.38"
Routed to Link POA-1 : Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=6.95"

	Area (sf)	CN	Description
	19,971	49	50-75% Grass cover, Fair, HSG A
*	6,026	58	Sand, HSG A
	1,164	76	Gravel roads, HSG A
	9,047	30	Woods, Good, HSG A
	36,208	47	Weighted Average
	36,208		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.4507	0.12		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
1.6	27	0.3474	0.28		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.18"
0.0	5	0.3457	4.12		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	43	0.1992	3.12		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	68	0.0510	1.58		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	22	0.0451	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.1	188	Total			

Subcatchment P-1:



Summary for Subcatchment P-2A:

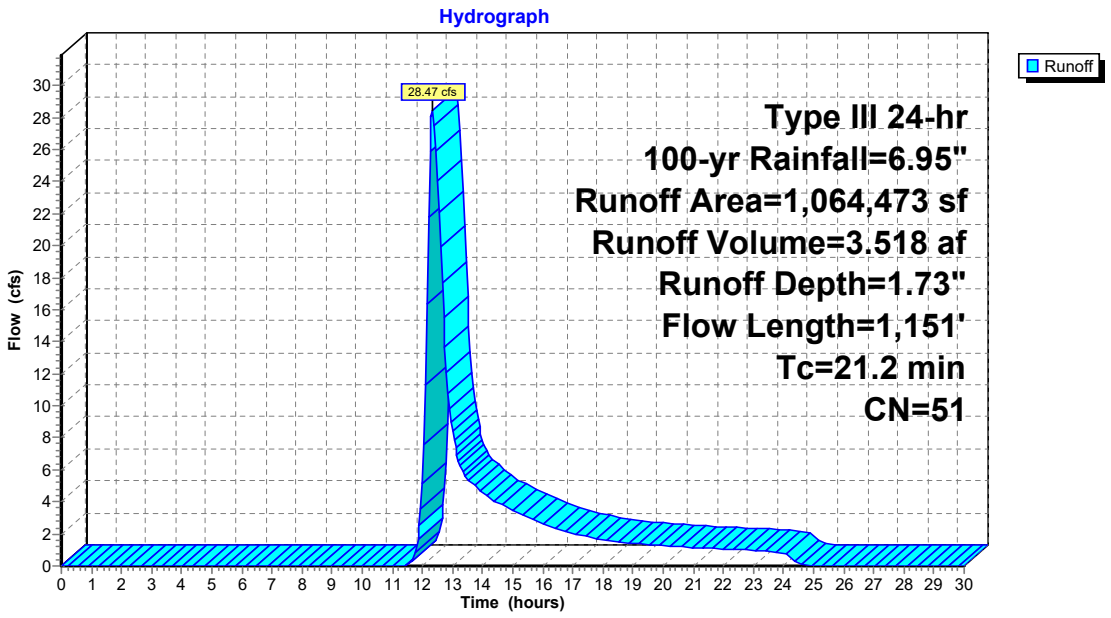
Runoff = 28.47 cfs @ 12.34 hrs, Volume= 3.518 af, Depth= 1.73"
Routed to Pond 1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=6.95"

	Area (sf)	CN	Description
	835,764	49	50-75% Grass cover, Fair, HSG A
*	99,348	58	Sand, HSG A
	71,562	76	Gravel roads, HSG A
	5,825	98	Unconnected pavement, HSG A
	51,974	30	Woods, Good, HSG A
	1,064,473	51	Weighted Average
	1,058,648		99.45% Pervious Area
	5,825		0.55% Impervious Area
	5,825		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	50	0.0789	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.18"
0.5	66	0.2304	2.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	27	0.4288	10.54		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	311	0.0358	3.05		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.6	52	0.0373	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.0373	3.92		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	78	0.0645	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	169	0.0513	3.65		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.4	373	0.0406	1.41		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.2	1,151	Total			

Subcatchment P-2A:



Summary for Subcatchment P-2B:

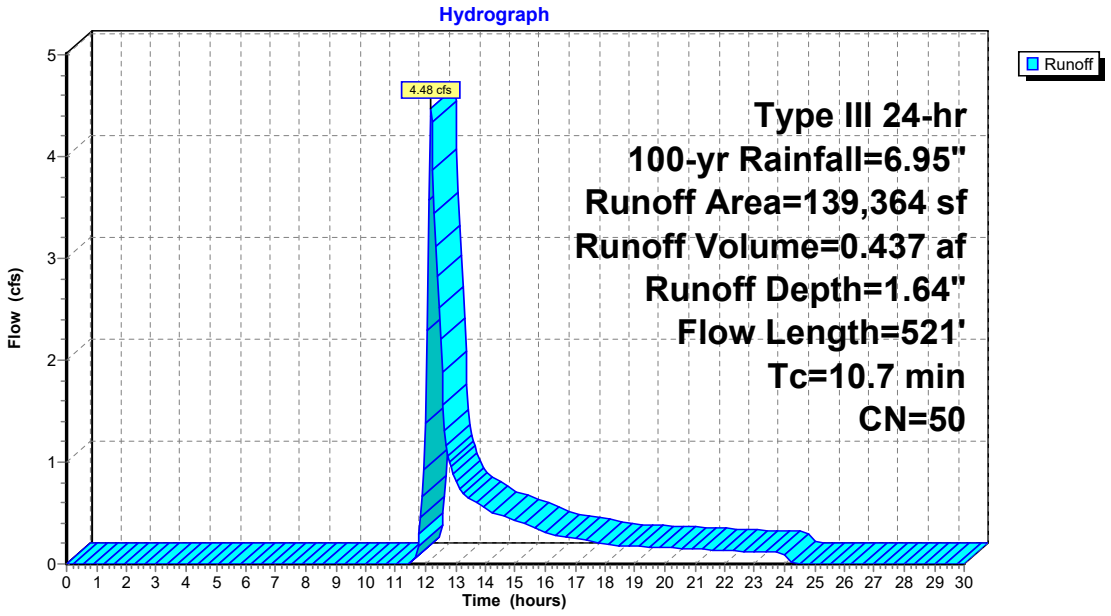
Runoff = 4.48 cfs @ 12.17 hrs, Volume= 0.437 af, Depth= 1.64"
Routed to Pond 2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=6.95"

	Area (sf)	CN	Description
	120,749	49	50-75% Grass cover, Fair, HSG A
*	17,735	58	Sand, HSG A
	286	76	Gravel roads, HSG A
	7	98	Unconnected pavement, HSG A
	587	30	Woods, Good, HSG A
	139,364	50	Weighted Average
	139,357		99.99% Pervious Area
	7		0.01% Impervious Area
	7		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	5	0.1080	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.18"
3.3	45	0.0621	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.18"
0.5	82	0.1740	2.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.3	303	0.0132	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	86	0.0291	2.75		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
10.7	521	Total			

Subcatchment P-2B:



Summary for Subcatchment P-2C:

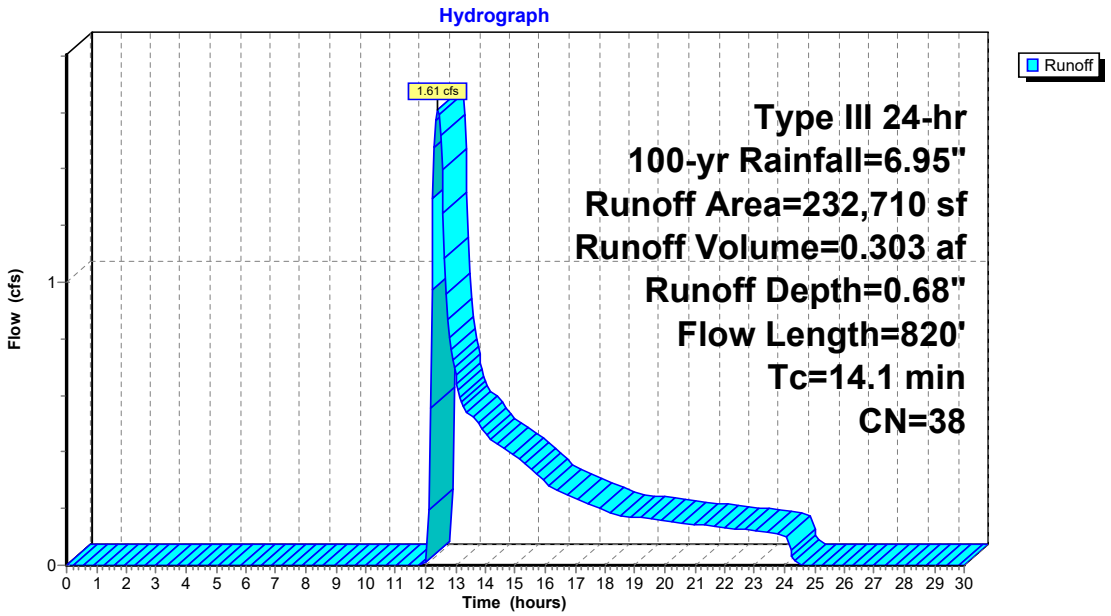
Runoff = 1.61 cfs @ 12.41 hrs, Volume= 0.303 af, Depth= 0.68"
Routed to Link POA-2 : Bordering Vegetated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=6.95"

	Area (sf)	CN	Description
	58,811	49	50-75% Grass cover, Fair, HSG A
*	16,620	58	Sand, HSG A
	106	76	Gravel roads, HSG A
	4	98	Unconnected pavement, HSG A
	140,815	30	Woods, Good, HSG A
	16,354	45	Woods, Poor, HSG A
	232,710	38	Weighted Average
	232,706		100.00% Pervious Area
	4		0.00% Impervious Area
	4		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	50	0.1198	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.18"
0.9	38	0.0102	0.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	45	0.3125	3.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.0	392	0.0178	0.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	137	0.0602	1.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	76	0.0340	0.92		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	82	0.2967	2.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.1	820	Total			

Subcatchment P-2C:



Summary for Pond 1P:

Inflow Area = 24.437 ac, 0.55% Impervious, Inflow Depth = 1.73" for 100-yr event
Inflow = 28.47 cfs @ 12.34 hrs, Volume= 3.518 af
Outflow = 9.70 cfs @ 12.91 hrs, Volume= 3.518 af, Atten= 66%, Lag= 34.2 min
Discarded = 9.70 cfs @ 12.91 hrs, Volume= 3.518 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link POA-2 : Bordering Vegetated Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 37.10' @ 12.91 hrs Surf.Area= 40,367 sf Storage= 40,685 cf

Plug-Flow detention time= 51.2 min calculated for 3.512 af (100% of inflow)
Center-of-Mass det. time= 51.2 min (943.4 - 892.3)

Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	101,868 cf	**Custom Stage Data (Irregular)** Listed below

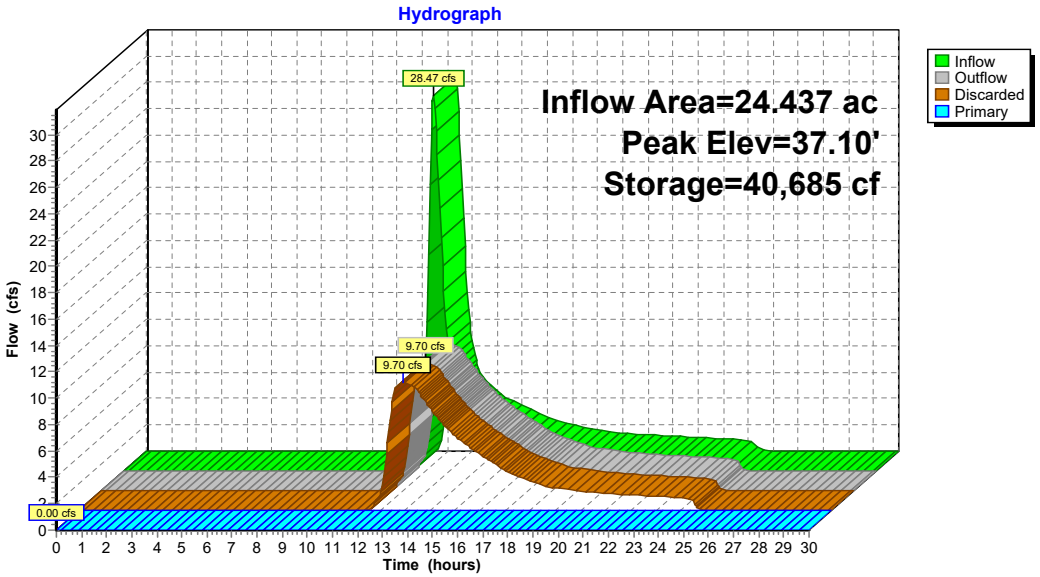
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	3,508	286.2	0	0	3,508
36.00	16,540	518.6	9,222	9,222	18,397
37.00	38,294	804.1	26,667	35,889	48,455
38.00	59,205	963.7	48,371	84,260	70,925
38.25	82,293	1,167.8	17,608	101,868	105,545

Device	Routing	Invert	Outlet Devices
#1	Discarded	35.00'	**8.270 in/hr Exfiltration over Wetted area**
#2	Primary	37.50'	**10.0' long x 18.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=9.70 cfs @ 12.91 hrs HW=37.10' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 9.70 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=35.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 1P:



Stage-Area-Storage for Pond 1P:

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
35.00	3,508	3,508	0	36.80	33,943	42,444	30,555
35.05	4,160	4,252	461	36.85	35,031	43,947	31,889
35.10	4,811	4,997	922	36.90	36,119	45,450	33,222
35.15	5,463	5,741	1,383	36.95	37,206	46,953	34,555
35.20	6,114	6,486	1,844	37.00	38,294	48,455	35,889
35.25	6,766	7,230	2,305	37.05	39,340	49,579	38,307
35.30	7,418	7,975	2,767	37.10	40,385	50,702	40,726
35.35	8,069	8,719	3,228	37.15	41,431	51,826	43,144
35.40	8,721	9,464	3,689	37.20	42,476	52,949	45,563
35.45	9,372	10,208	4,150	37.25	43,522	54,073	47,982
35.50	10,024	10,953	4,611	37.30	44,567	55,196	50,400
35.55	10,676	11,697	5,072	37.35	45,613	56,320	52,819
35.60	11,327	12,442	5,533	37.40	46,658	57,443	55,237
35.65	11,979	13,186	5,994	37.45	47,704	58,567	57,656
35.70	12,630	13,930	6,455	37.50	48,750	59,690	60,074
35.75	13,282	14,675	6,916	37.55	49,795	60,814	62,493
35.80	13,934	15,419	7,377	37.60	50,841	61,937	64,912
35.85	14,585	16,164	7,838	37.65	51,886	63,061	67,330
35.90	15,237	16,908	8,300	37.70	52,932	64,184	69,749
35.95	15,888	17,653	8,761	37.75	53,977	65,308	72,167
36.00	16,540	18,397	9,222	37.80	55,023	66,431	74,586
36.05	17,628	19,900	10,555	37.85	56,068	67,554	77,004
36.10	18,715	21,403	11,888	37.90	57,114	68,678	79,423
36.15	19,803	22,906	13,222	37.95	58,159	69,801	81,842
36.20	20,891	24,409	14,555	38.00	59,205	70,925	84,260
36.25	21,979	25,912	15,889	38.05	63,823	77,849	87,782
36.30	23,066	27,415	17,222	38.10	68,440	84,773	91,303
36.35	24,154	28,918	18,555	38.15	73,058	91,697	94,825
36.40	25,242	30,421	19,889	38.20	77,675	98,621	98,347
36.45	26,329	31,923	21,222	38.25	**82,293**	**105,545**	**101,868**
36.50	27,417	33,426	22,555				
36.55	28,505	34,929	23,889				
36.60	29,592	36,432	25,222				
36.65	30,680	37,935	26,555				
36.70	31,768	39,438	27,889				
36.75	32,856	40,941	29,222				

Summary for Pond 2P:

Inflow Area = 3.199 ac, 0.01% Impervious, Inflow Depth = 1.64" for 100-yr event
Inflow = 4.48 cfs @ 12.17 hrs, Volume= 0.437 af
Outflow = 1.62 cfs @ 12.59 hrs, Volume= 0.437 af, Atten= 64%, Lag= 25.2 min
Discarded = 1.62 cfs @ 12.59 hrs, Volume= 0.437 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link POA-2 : Bordering Vegetated Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 51.39' @ 12.59 hrs Surf.Area= 8,463 sf Storage= 3,192 cf

Plug-Flow detention time= 11.0 min calculated for 0.436 af (100% of inflow)
Center-of-Mass det. time= 11.0 min (896.7 - 885.7)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	18,297 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

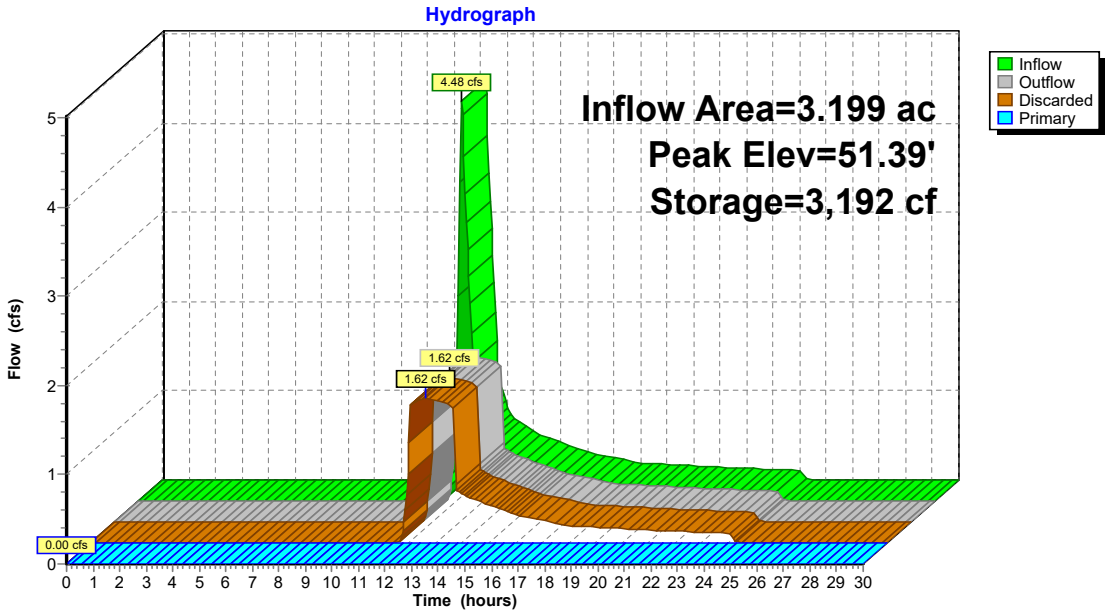
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
51.00	8,049	354.1	0	0	8,049
52.00	9,140	373.0	8,589	8,589	9,201
53.00	10,287	391.8	9,708	18,297	10,408

Device	Routing	Invert	Outlet Devices
#1	Discarded	51.00'	**8.270 in/hr Exfiltration over Wetted area**
#2	Primary	52.50'	**10.0' long x 11.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Discarded OutFlow Max=1.62 cfs @ 12.59 hrs HW=51.39' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.62 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 2P:



Stage-Area-Storage for Pond 2P:

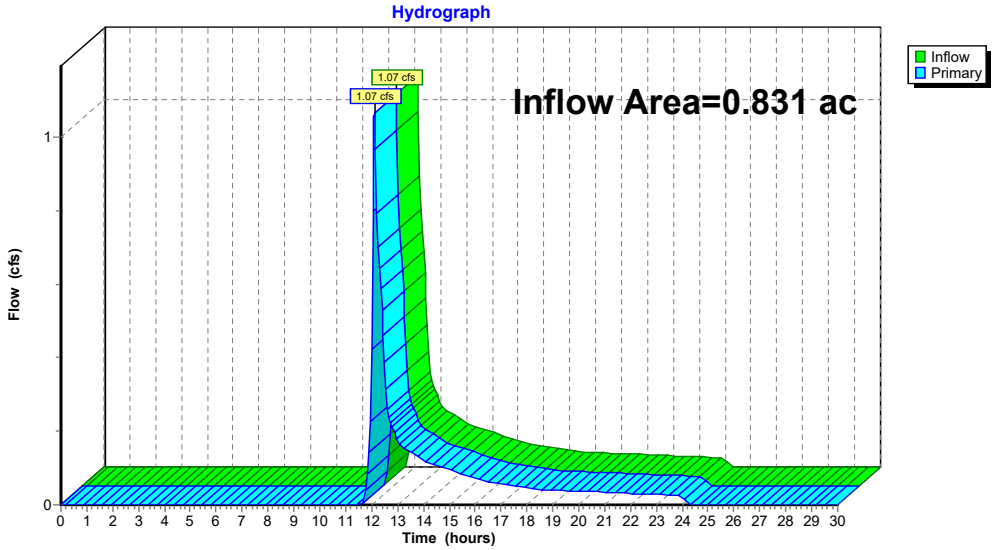
Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
51.00	8,049	8,049	0
51.05	8,102	8,105	404
51.10	8,155	8,162	810
51.15	8,208	8,218	1,219
51.20	8,262	8,275	1,631
51.25	8,315	8,331	2,045
51.30	8,369	8,388	2,463
51.35	8,423	8,446	2,882
51.40	8,477	8,503	3,305
51.45	8,531	8,560	3,730
51.50	8,586	8,618	4,158
51.55	8,640	8,675	4,589
51.60	8,695	8,733	5,022
51.65	8,750	8,791	5,458
51.70	8,805	8,849	5,897
51.75	8,861	8,908	6,339
51.80	8,916	8,966	6,783
51.85	8,972	9,025	7,230
51.90	9,028	9,083	7,680
51.95	9,084	9,142	8,133
52.00	9,140	9,201	8,589
52.05	9,196	9,260	9,047
52.10	9,252	9,319	9,508
52.15	9,308	9,379	9,972
52.20	9,364	9,438	10,439
52.25	9,420	9,497	10,909
52.30	9,477	9,557	11,381
52.35	9,534	9,617	11,856
52.40	9,591	9,677	12,334
52.45	9,648	9,737	12,815
52.50	9,705	9,797	13,299
52.55	9,762	9,858	13,786
52.60	9,820	9,918	14,276
52.65	9,878	9,979	14,768
52.70	9,936	10,040	15,263
52.75	9,994	10,101	15,762
52.80	10,052	10,162	16,263
52.85	10,111	10,223	16,767
52.90	10,169	10,285	17,274
52.95	10,228	10,346	17,784
53.00	**10,287**	**10,408**	**18,297**

Summary for Link POA-1: Isolated Wetland

Inflow Area = 0.831 ac, 0.00% Impervious, Inflow Depth = 1.38" for 100-yr event
Inflow = 1.07 cfs @ 12.11 hrs, Volume= 0.096 af
Primary = 1.07 cfs @ 12.11 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-1: Isolated Wetland

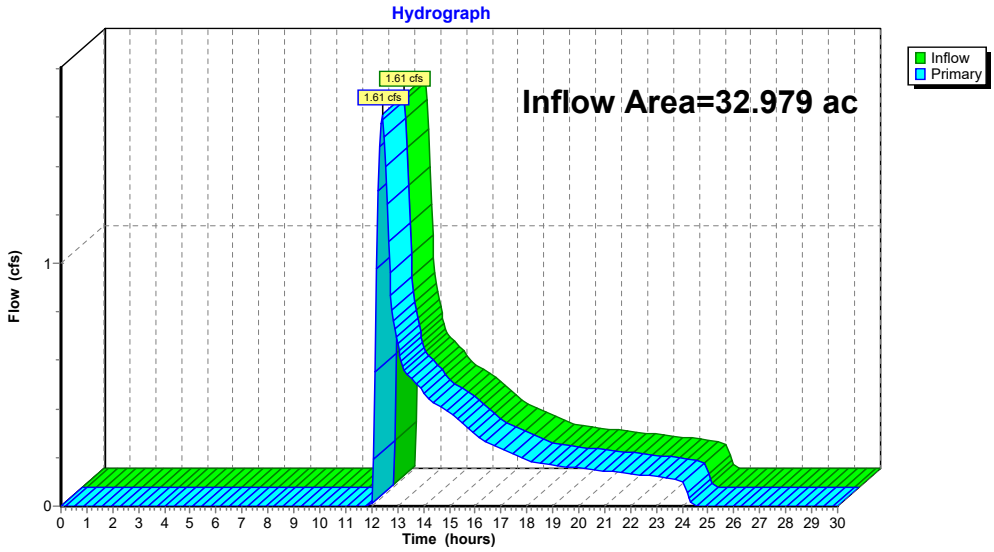


Summary for Link POA-2: Bordering Vegetated Wetland

Inflow Area = 32.979 ac, 0.41% Impervious, Inflow Depth = 0.11" for 100-yr event
Inflow = 1.61 cfs @ 12.41 hrs, Volume= 0.303 af
Primary = 1.61 cfs @ 12.41 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link POA-2: Bordering Vegetated Wetland



Attachment E - Supporting Calculations

NextGrid - Truro Solar Photovoltaic Development
Truro, MA
Date: 4/15/2026

Standard 1: No New Untreated Discharges

Subcatchment	2-yr 24-hr Discharge Velocity (fps)	Discharge Location	Point of Analysis	Permissible Velocity (fps)
P-1	1.06	Isolated Wetland	1	3
P-2C	2.72	Bordering Vegetated Wetland	2	3

Notes:
1. Velocities calculated using HydroCAD modeling software.

2. Permissible Velocities referenced from the Massachusetts Stormwater Handbook Volume 3 Table 2.3.1 Example of Permissible Velocity Table for slopes between 0-5%, slopes between 5-10%, and slopes greater than 10%.

NextGrid - Truro Solar Photovoltaic Development
Truro, MA
Date: 4/15/2026

Standard 3: Recharge Calculations (Static Method)

Drainage Area P-2A

	A	B	C	D		
Hydrologic Soils Group:						
Total Proposed Increase Impervious Area:	3182.00	0.00	0.00	0.00	3182.00	SF
Target Factor:	0.60	0.35	0.25	0.10		
DA-P-2A Required Recharge Volume:	159	0	0	0	*159*	*CF*

Storage Volume In Infiltraion Basin 1P Below Lowest Outlet	60,074	CF
Lowest Outlet: Spillway w/ El. = 37.5 FT		
DA-P-2A Total Recharge Volume Provided:	*60,074*	*CF*

Determine Drawdown Time

Saturated Hydraulic Conductivity (Rawls Rate):	8.27	IN/HR
Bottom Area of Infiltration Basin 1P	3,508	SF
Drawdown Time 1P	*24.8*	*HRS*

Drainage Area P-2B

	A	B	C	D		
Hydrologic Soils Group:						
Total Proposed Increase Impervious Area:	7.00	0.00	0.00	0.00	7.00	SF
Target Factor:	0.60	0.35	0.25	0.10		
DA-P-2B Required Recharge Volume:	0	0	0	0	*0*	*CF*

Storage Volume In Infiltraion Basin 2P Below Lowest Outlet	13,299	CF
Lowest Outlet: Spillway w/ El. = 52.5 FT		
DA-P2B Total Recharge Volume Provided:	*13,299*	*CF*

Determine Drawdown Time

Saturated Hydraulic Conductivity (Rawls Rate):	8.27	IN/HR
Bottom Area of Infiltration Basin 2P	8,049	SF
Drawdown Time 2P	*2.4*	*HRS*

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Basin 1P

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)
Infiltration Basin	**0.80**	**1.00**	**0.80**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**

Total TSS Removal = **80%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: NextGrid Truro Solar Photovoltaic Development

Prepared By: TLG

Date: 12/31/2025

*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:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Basin 2P

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)
Infiltration Basin	**0.80**	**1.00**	**0.80**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**

Total TSS Removal = **80%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: NextGrid Truro Solar Photovoltaic Development

Prepared By: TLG

Date: 12/31/2025

*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

Attachment F - Long Term Pollution Prevention Plan

Long Term Pollution Prevention Plan

To meet the requirements of Standard 4 of the Massachusetts Stormwater Handbook, this Long Term Pollution Prevention Plan is provided to identify the proper procedures and practices for source control and pollution prevention.

Storage and Handling of Oil and other Hazardous Materials

There will be no hazardous materials stored or handled onsite with the exception of fuel for construction equipment. Fuel will be stored in approved storage containers, outside of wetland resource areas and associated buffer zones.

Operation and Maintenance of Stormwater Control Structures

Included in Attachment F is the Operation and Maintenance plan for this site, which includes maintenance requirements of the stormwater BMPs. The owner—NextGrid Pecan LLC—or their Contractor, will be responsible for the implementation of the plan.

Landscaping

After the completion of construction, including final seeding, landscaped areas will be maintained by the owner. There is no intent to use herbicides or pesticides for this project, nor will they be stored on site.

Septic System

There will be no septic system or wastewater produced on site.

Snow Management

Following construction, the solar system will be monitored remotely, and routine site visits will be performed 1-2 times per year. Snow removal will be performed as needed along the gravel access road for site access to the entry gate and equipment pads. Salt and/or sand will not be stored on-site.

Non-Hazardous Waste Management/Good Housekeeping Practices

All non-hazardous waste is to be stored in designated trash or recycling containers onsite for periodic collection by the local trash collector, or Contractor during construction. Following construction all non-hazardous waste should not be stored onsite. The owner's maintenance staff should inspect the site during maintenance visits, if trash is observed it should be collected and removed from the site.

Prohibition of Illicit Discharges

Illicit discharges to the on-site stormwater management system are strictly prohibited. Illicit discharges are defined as any direct or indirect non-stormwater discharge to the on-site stormwater system. There are no illicit discharges associated with the project.

Contact Information/Responsible Parties

Owner/Operator:
NextGrid Pecan LLC
Daniel Serber, Senior Director of Land Development
68 Harrison Avenue, Suite 605, PMB 73069
Boston, MA 02111

Attachment G - Stormwater Operation & Maintenance Plan

Stormwater Operation and Maintenance Plan

1.0 Introduction

The following document has been written to comply with the stormwater guidelines set forth by the Massachusetts Department of Environmental Protection (MassDEP). The intent of these guidelines is to encourage Low Impact Development techniques to improve the quality of the stormwater runoff. These techniques, also known as Best Management Practices (BMPs) collect, store, and treat the runoff before discharging to adjacent environmental resources.

2.0 Purpose

This Operation and Maintenance Plan (O&M Plan) is intended to provide a mechanism for the consistent inspection and maintenance of each BMP installed on the project site. Included in this O&M Plan is a description and an inspection form for each BMP type. NextGrid Pecan LLC is the owner and operator of the system and is responsible for its upkeep and maintenance. This work will be funded on an annual basis through the owner's operating budget.

Owner/Operator:
NextGrid Pecan LLC
Daniel Serber, Senior Director of Land Development
68 Harrison Avenue, Suite 650, PMB 73069
Boston, MA 02111

In the event the Owner sells the property, it is the Owner's responsibility to transfer this plan as well as the past three years of operation and maintenance records to the new property owner.

3.0 BMP Descriptions and Locations

Proposed stormwater BMPs are identified on the attached Site Plan and described below.

3.1 Stormwater Infiltration Basin

Stormwater basins on-site will receive runoff from the developed site area. The basins will provide infiltration to attenuate peak rates of runoff leaving the site.

3.2 Sediment Forebay

Sediment forebays are to be installed immediately upstream of the stormwater infiltration basin(s). They are designed to allow initial pretreatment of stormwater discharge prior to discharging to the basins via a stone overflow weir.

4.0 Inspection, Maintenance Checklist and Schedule

Inspection and maintenance of stormwater BMPs identified in this plan shall be conducted at the frequencies outlined below for each item.

4.1 Stormwater Infiltration Basin

Stormwater basins are to be inspected every three months during the first year, and annually thereafter. Inspections are to include all items noted below.

All accumulated sediment and debris in the stormwater basins will be removed and disposed of according to local, state, and federal regulations. Any grassed areas in close proximity to any areas that use salt in deicing applications will be re-seeded in the spring. Vegetation in basin bottoms will

likewise be inspected for degradation and any accumulated sediment will be removed and bare spots will be re-seeded as needed.

Any vegetation, soil, or debris that forms a barrier to flow will be removed. If any soil erosion is noted, erosion will be repaired, and bare spots will be armored with stone riprap. Embankments, spillways, and swales will likewise be inspected for blockage or damage. Any accumulated debris that may impede stormwater flow will be removed, and any noted erosion will be repaired with stone riprap.

In the event of contamination by a spill or other means, all cleanings must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000 and handled as hazardous waste.

In the absence of evidence of contamination, cleanings may be taken to a landfill or other facility permitted by MassDEP to accept Solid Waste without any prior approval by MassDEP. Please note that current MassDEP regulations prevent landfills from accepting materials that contain free-draining liquids.

4.2 Sediment Forebays

Sediment forebays, at a minimum, are to be inspected monthly and are to be cleaned out at least four times per year. Stabilize the floor and sidewalls before making it operational, otherwise the forebay will discharge excess amounts of suspended sediments. Mow so that the grass height does not exceed six (6) inches and ensure mower blades are set no lower than three to four (3-4) inches. If vegetation is damaged during sediment removal reseed or resod damaged areas. When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket, or similar practice to ensure no scour occurs in the forebay while the seeds germinate and develop roots.

Stormwater Operation and Maintenance Plan

INSPECTION CHECKLIST SHEETS

Stormwater Infiltration Basin

Frequency: Stormwater basins are to be inspected every three months during the first year, and annually thereafter. Inspect and/or clean outlet control structures at least four times per year and at the end of foliage and snow removal seasons.

Basin Location: _____

Inspected By: _____ Date: _____

Observations: _____

_____

_____

Actions Taken: _____

_____

_____

Instructions: All accumulated sediment and debris in the stormwater basins will be removed and disposed of according to local, state, and federal regulations. Any grassed areas in close proximity to any areas that use salt in deicing applications will be re-seeded in the spring. Vegetation in basin bottoms will likewise be inspected for degradation and any accumulated sediment will be removed and bare spots will be re-seeded as needed.

Any vegetation, soil, or debris that forms a barrier to flow will be removed. If any soil erosion is noted, erosion will be repaired, and bare spots will be armored with stone riprap. Embankments, spillways, and swales will likewise be inspected for blockage or damage. Any accumulated debris that may impede stormwater flow will be removed, and any noted erosion will be repaired with stone riprap.

INSPECTION CHECKLIST SHEETS

Sediment Forebays

Frequency: Sediment forebays, at a minimum, are to be inspected monthly and are to be cleaned out at least four times per year.

Basin Location: _____

Inspected By: _____ Date: _____

Observations: _____

_____

_____

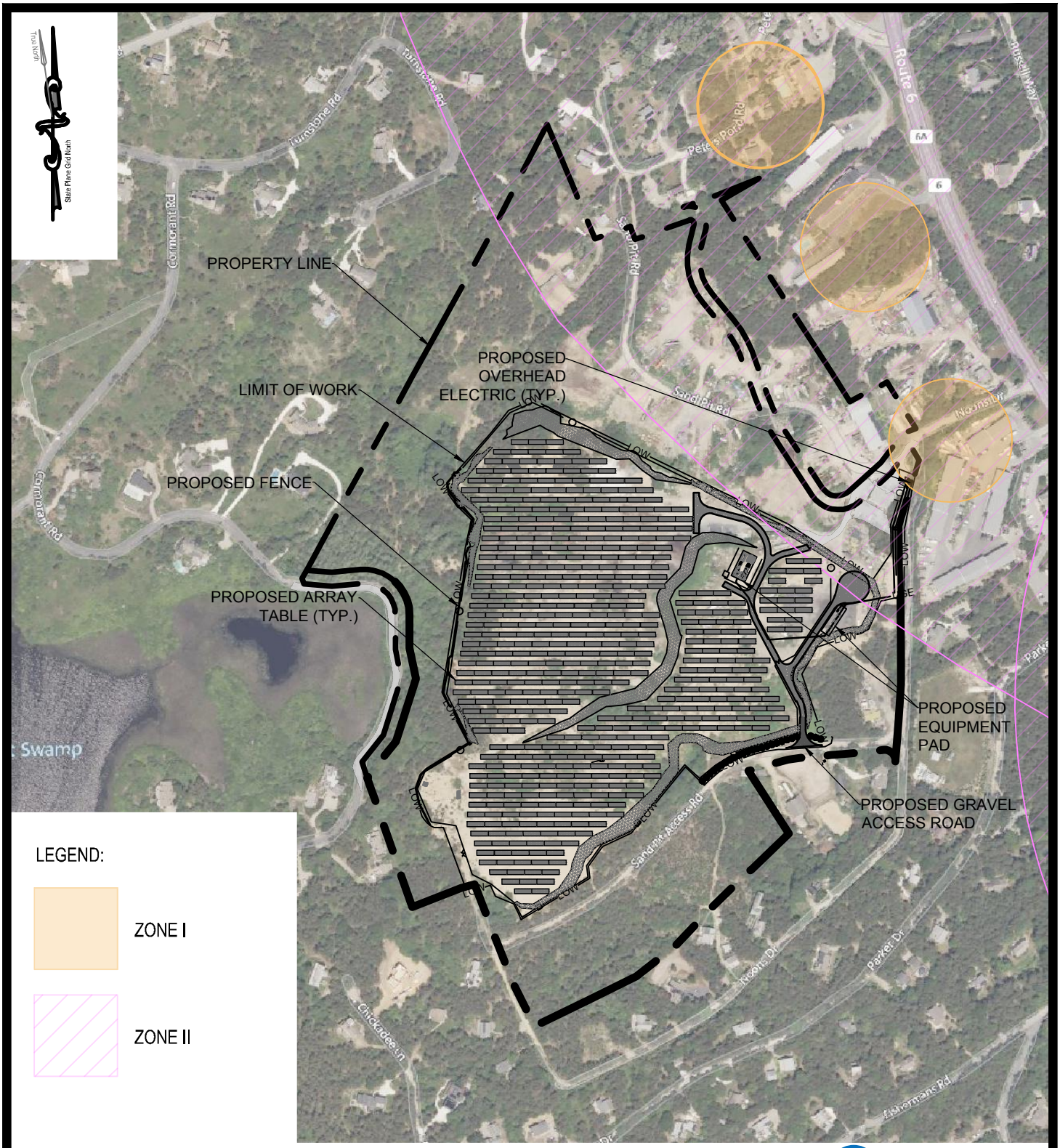
Actions Taken: _____

_____

_____

Instructions: Stabilize the floor and sidewalls before making it operational, otherwise the forebay will discharge excess amounts of suspended sediments. Mow so that the grass height does not exceed six (6) inches and ensure mower blades are set no lower than three to four (3-4) inches. If vegetation is damaged during sediment removal reseed or resod damaged areas. When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket, or similar practice to ensure no scour occurs in the forebay while the seeds germinate and develop roots.

Attachment H - Critical Areas Map



Weston & Sampson

GENERAL NOTES:

1. ZONE I AND ZONE II LAYERS PROVIDED BY MASSGIS.

FIGURE 1
CRITICAL AREAS MAP
2 SAND PIT ROAD & 9 NOONS DRIVE
TRURO, MASSACHUSETTS
SCALE: 1" = 400'

0 200' 400' 800'
1" = 400' HORIZONTAL

Rev: 1 Date: 12/31/2025

P:\Private\NextGrid Inc\Truro, MA\2 Sand Pit - 9 Noons Drive\06-BIM-CAD\07-Civil-Survey\03 Sheets\Figure 1 - Critical Areas Map.dwg

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Attachment I - Construction Period Pollution and Erosion and Sedimentation Plan

SECTION 1: Introduction

The project applicant proposes construction of a ground mounted solar photovoltaic (PV) ground mounted array with associated gravel access driveways, battery energy storage (BESS), and electrical appurtenances.

SECTION 2: Construction Period Pollution Prevention Measures

Best Management Practices (BMPs) will be utilized as Construction Period Pollution Prevention Measures to reduce potential pollutants and prevent any off-site discharge. The objectives of the BMPs for construction activity are to minimize the disturbed areas, stabilize any disturbed areas, control the site perimeter, and retain sediment. Both erosion and sedimentation controls and non-stormwater best management measures will be used to minimize site disturbance and ensure compliance with the performance standards of the Wetlands Protection Act and any state and local stormwater standards. Measures will be taken to minimize the area disturbed by construction activities to reduce the potential for soil erosion and stormwater pollution problems. In addition, good housekeeping measures will be followed for the day-to-day operation of the construction site under the control of the contractor to minimize the impact of construction. This section describes the control practices that will be in place during construction activities. Recommended control practices will comply with the standards set in the MA DEP Stormwater Policy Handbook.

2.1 Minimize Disturbed Area and Protect Natural Features and Soil

To minimize disturbed areas, work will be completed within well-defined work limits. These work limits are shown on the construction plans. The Contractor will be responsible to make sure that their workers and any subcontractors know the proper work limits and do not extend their work into the undisturbed areas. The protective measures are described in more detail in the following sections.

2.2 Control Stormwater Flowing onto and through the Project

Perimeter erosion controls shall be installed on-site to control stormwater discharges as depicted on the site plans. The barriers will be inspected at least once every 7 calendar days, or every 14 calendar days and within 24 hours of a storm event of 0.25 inches or greater, and accumulated silt will be removed as needed.

2.3 Stabilize Soils

The Contractor should limit the area of land which is exposed and unvegetated during construction. In areas where the period of exposure will be greater than two months, mulching, the use of erosion control mats, or other protective measures will be provided as specified on the plans.

The Contractor should follow the seeding requirements outlined on the plans and will be responsible for maintaining the seeded areas until final acceptance is received. Final acceptance after 90 days following construction, or until the site reaches 70% stabilization, whichever is longer.

2.4 Proper Storage and Cover of Any Stockpiles

The location of the Contractor's storage areas for equipment and/or materials should be upon cleared portions of the job site or areas to be cleared as a part of this project.

Adequate measures for erosion and sediment control such as the placement of straw wattle sediment barriers around the downstream perimeter of stockpiles will be employed to protect any downstream areas from siltation.

There will be no storage of equipment or materials in wetlands.

2.5 Perimeter Controls and Sediment Barriers

Straw wattle (as detailed in the site plans) will be utilized to ensure that sedimentation does not occur outside the perimeter of the work area.

2.6 Storm Drain Inlet Protection

There are no storm drains in the work area.

2.7 Retain Sediment On-Site

The Contractor will be responsible for monitoring erosion control measures. Whenever necessary, the Contractor will clear sediment from the sediment barriers that have been silted up during construction. Inspections must be documented using the attached Monitoring Form.

2.8 Material Handling and Waste Management

Materials stored on-site will be stored in a neat, orderly manner in appropriate containers. Materials will be kept in their original containers with the original manufacturer's label. Substances will not be mixed with one another unless recommended by the manufacturer.

Waste materials will be collected and stored in a securely lidded metal container from a licensed management company. The waste and any construction debris from the site will be hauled off-site and disposed of properly. The contractor will be responsible for waste removal. Manufacturer's recommendations for proper use and disposal will be followed for materials. If portable sanitary waste facilities will be used on-site, sanitary waste will be collected from the units a minimum of once a week, by a licensed sanitary waste management contractor.

2.9 Designated Washout Areas

The Contractor should use washout facilities at their own facilities.

2.10 Proper Equipment/Vehicle Fueling and Maintenance Practices

On-site vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the risk of leakage. To ensure that leaks from stored equipment do not contaminate the site, oil-absorbing mats will be placed under oil-containing equipment during storage. Regular fueling and service of the equipment may be performed using approved methods and with care taken to minimize chance of spills. Repair of equipment or machinery within 100 feet of any water resources is not allowed. Any petroleum products will be stored in tightly sealed containers that are clearly labeled with spill control pads/socks placed under/around their perimeters.

2.11 Equipment/Vehicle Washing

The Contractor will be responsible to ensure that no equipment is washed on-site.

SECTION 3: Spill Prevention and Control Plan

The Contractor will be responsible for preventing spills in accordance with the project drawings and applicable federal, state, and local regulations. The Contractor will identify a properly trained site employee, involved with the day-to-day site operations to be the spill prevention and cleanup coordinator. The name(s) of the responsible spill personnel will be posted on-site. Each employee will be instructed that all spills are to be reported to the spill prevention and cleanup coordinator.

3.1 Spill Control Equipment

Spill control/containment equipment will be kept in the work area. Materials and equipment necessary for spill cleanup will be kept either in the work area or in an otherwise accessible on-site location. Equipment and materials will include, but not be limited to, absorbent booms/mats, brooms, dust pans, mops, rags, gloves, sand, plastic and metal containers specifically for this purpose. It is the responsibility of the Contractor to ensure the inventory will be readily accessible and maintained.

3.2 Notification

Workers will be directed to inform the on-site supervisor of a spill event. The supervisor will assess the incident and initiate proper containment and response procedures immediately upon notification. Workers should avoid direct contact with spilled materials during the containment procedures. Primary notification of a spill should be made to the local Fire Department and Police Departments. Secondary Notification will be to the certified cleanup contractor if deemed necessary by Fire and/or Police personnel. The third level of notification (within 1 hour), if required, is to the DEP or municipality's Licensed Site Professional (LSP) if the spill exceeds the reportable quantity for the material spilt. The specific cleanup contractor to be used will be identified by the Contractor prior to commencement of construction activities.

3.3 Spill Containment and Clean-Up Measures

Spills will be contained with granular sorbent material, sand, sorbent pads, booms or all of the above to prevent spreading. Certified cleanup contractors should complete spill cleanup. The material manufacturer's recommended methods for spill cleanup will be clearly posted and on-site personnel will be made aware of the procedures and the location of the information and cleanup supplies.

3.4 Hazardous Materials Spill Report

The Contractor will report and record any spill. The spill report will present a description of the release, including the quantity and type of material, date of the spill, circumstances leading to the release, location of spill, response actions and personnel, documentation of notifications and corrective measures implemented to prevent reoccurrence.

This document does not relieve the Contractor of the Federal reporting requirements of 40 CFR Part 110, 40 CFR Part 117, 40 CFR Part 302 and the State requirements specified under the Massachusetts Contingency Plan (M.C.P) relating to spills or other releases of oils or hazardous substances. Where a release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117 or 40 CFR Part 302, occurs during a twenty-four (24) hour period, the Contractor is required to comply with the response requirements of the above mentioned regulations. Spills of oil or hazardous material in excess of the reportable quantity will be reported to the National Response Center (NRC).

SECTION 4: Contact Information/Responsible Parties

Owner/Operator:
NextGrid Pecan LLC
Daniel Serber, Senior Director of Land Development
68 Harrison Avenue, Suite 605, PMB 73069
Boston, MA 02111

Engineer:
Melinda Costello, PE
Weston & Sampson Engineers, Inc.
55 Walkers Brook Drive, Suite 100
Reading, MA 01867
978-532-1900

Site Inspector:
TBD

Contractor:
TBD

SECTION 5: Erosion and Sedimentation Control

Erosion and Sedimentation Control features can be found in the attached project plans which include specifications for installation and monitoring control devices.

SECTION 6: Site Development Plan

The proposed site development plan is included in the attached plans.

SECTION 7: Operation and Maintenance of Erosion Control

The erosion control measures will be installed as detailed in project plans. If there is a failure of the controls, the Contractor is required to stop work until the failure is repaired.

Periodically throughout the work, the sediment that has been deposited against the controls will be removed to ensure that the controls are working properly.

SECTION 8: Inspection Schedule

During construction, the erosion and sedimentation controls will be inspected at least once every 7 calendar days, or once every 14 calendar days and within 24 hours of the end of a storm event of 0.25 inches or greater. Once the Contractor is selected, an on-site inspector will be identified to ensure that erosion and sedimentation controls are in place and working properly. A Monitoring Form is included for use by the on-site inspector.

Monitoring Form

Inspected By:_____ Date: _____Time:_____

YES	NO	DOES NOT APPLY	ITEM
			Do any erosion/siltation control measures require repair or clean out to maintain adequate function?
			Is there any evidence that sediment is leaving the site?
			Are any temporary soil stockpiles or construction materials located in non-approved areas?
			Are on-site construction traffic routes, parking, and storage of equipment and supplies located in areas not specifically designed for them?
			Are storage of fuels located outside of resource areas and associated buffer zones? Are fuels stored in proper storage containers?

Specific location, current weather conditions, and action to be taken:

_____

_____

_____

_____

_____

Other Comments:

_____

_____

_____

Pending the actions noted above I certify that the erosion and sedimentation controls at the site are in compliance with the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan.

Signature:_____ Date: _____

Attachment J - Illicit Discharge Statement

ILLICIT DISCHARGE COMPLIANCE STATEMENT

Illicit Discharge Compliance Statement

Section I – Purpose/Intent

Standard 10 of the Massachusetts Stormwater Handbook prohibits illicit discharges to stormwater management systems. The stormwater management system is the system for conveying, treating, and infiltrating stormwater on-site, including stormwater best management practices (BMPs) and any pipes intended to transport stormwater to the groundwater, a surface water, or municipal separate storm sewer system. Illicit discharges to the stormwater management system are discharges that are not entirely comprised of stormwater.

This Illicit Discharge Statement is related to work performed by NextGrid Pecan LLC and their subcontractor(s). Site maintenance will be performed in accordance with the Site's Operation and Maintenance Plan and Long-Term Pollution Prevention Plan.

Section II - Prohibitions

Prohibition of Illicit Discharges
No person shall dump, discharge, cause or allow to be discharged any pollutant or non-stormwater discharge into the Stormwater BMPs, into a watercourse, or into waters of the United States and/or Commonwealth.

Exemptions
The following activities are considered exempt: firefighting, water line flushing, landscape irrigation, uncontaminated groundwater, potable water sources, foundation drains, air conditioning condensation, footing drains, individual resident car washing, flows from riparian habitats and wetlands, dechlorinated water from swimming pools, water used for street washing and water used to clean residential buildings without detergents.

Section III - Notification of Spills

In the event of a spill or release which may result in a discharge of pollutants or non-stormwater discharge to the on-site Stormwater BMPs, waters of the United States, and/or waters of the Commonwealth, the responsible parties, potentially responsible parties, or any person or persons managing the Site shall take all necessary steps to ensure containment and provide the required notification under local, state and/or federal law.

Daniel Serber
Representative of NextGrid Pecan LLC

04/27/2026
Date