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DESIGN REPORT

Gre853129D
Greene County, Iowa
DU Project #IA-340-100

Prepared by:

Ducks Unlimited, Inc.
Great Lakes/Atlantic Region
In Cooperation with:
Iowa Department of Agriculture and Land Stewardship (IDALS)
And
United States Department of Agriculture (USDA)

July 2026



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Andrew Schippers
Digitally signed by Andrew Schippers
Date: 2026.07.16 15:31:52 -05'00'

Andrew Schippers, P.E. Date
My license number is P26317.
My license renewal date is December 31, 2027
Pages of sheets covered by this seal: 1-563

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Introduction

This constructed wetland project is located in Greene County, Iowa approximately 1 mile South of Churdan, Iowa. Most of the constructed wetland site is owned by Kevin Fitzpatrick, while a small portion of the spoil area occurs on his son's property to the Northeast. The constructed wetland site is currently in agricultural row crop and grassed waterway. Water currently routes through the grassed waterway of the property, which routes through a box culvert through I Avenue and then transitions into a ditch outside of the Fitzpatrick property. Based on our on-site survey and hydrologic resources, the site exhibits a watershed of approximately 1,705.1 acres that routes into the proposed wetland area. The current land use is primarily for agricultural practice, and the landowner plans to use the constructed wetland area primarily for water quality, recreation, and the intention of promoting wildlife on the site.

This wetland is planned to provide nutrient reduction benefits. Nitrates will be converted to nitrogen gas through natural processes as the water passes through the wetland. Sediment with phosphorus will also be captured but will need to be removed from the sediment basin(s) on a regular basis.

The site was initially assessed by using remote digital desktop information to see if a wetland at this location was feasible. Payment information was presented to the landowner who expressed interest in participating in this project.

The wetland has been designed using the requirements outlined in NRCS Conservation Practice Standard (CPS), Constructed Wetland, Code 656 (December 2023). The project will include a constructed wetland using a sheet pile weir, berm, and submerged berms. Seven (7) tile lines will be modified to divert water into the wetland from on-site, as well as from the adjacent landowner's properties.

The project is a Job V Classification as determined by the Iowa Engineering Job Approval Authority Form IA-ENG-6 (March 2019). Since the wetland primary design standard is CPS 656, Constructed Wetland, and the wetland falls under "Field Runoff Treatment", with a direct drainage area greater than 1,000 acres, Job Classification V applies. For the secondary design standard, CPS 410, Grade Stabilization Structure, Job Classification I applies since the effective height is less than 8 feet. However, the most stringent job classification will apply for this project.

Iowa Department of Agricultural and Land Stewardship (IDALS) will submit permits for this project, which will include obtaining permits from The State Historic Preservation Office (SHPO), The Army Corps of Engineers, and the Iowa Department of Natural Resources (DNR).

The permanent easement for this project will be on one landowner. We will be updating the abstract and will have a signed easement recorded for the area as shown on the attached site plan drawing.

Proposed work includes:

l) Create berm to impound water within the wetland area, 2) Provide sheet pile primary weir within berm to impound water, 3) Provide submerged berms for water mixing and wave protection, 4)

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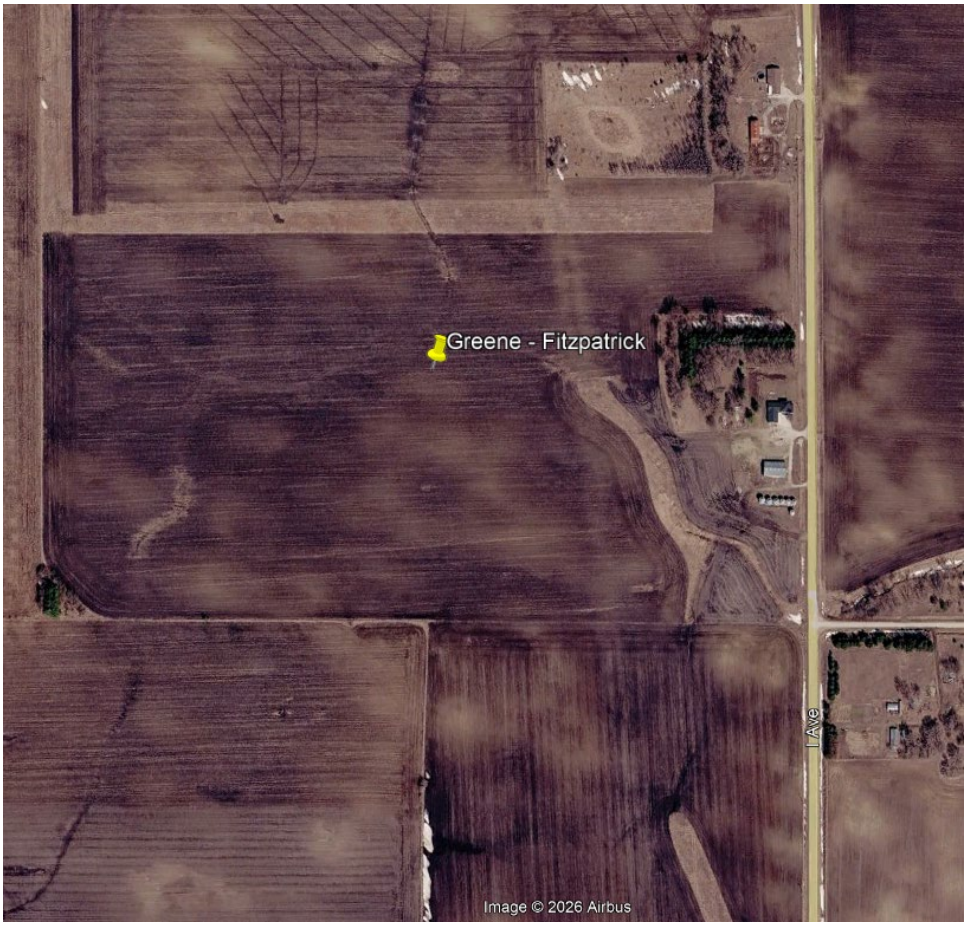
Provide water control structure for water management, 5) Provide tile modification to outlet tile 1' above the wetland normal pool elevation, and 6) Seeding and restoration of disturbed areas.



Project Location

Site Characteristics

Pre-Development Conditions

Pre-development conditions for the work area include the uses described in the previous section, which is predominately an agricultural landscape. The surrounding areas outside the work area are mostly grain production, agricultural row crops. Mild topography is predominant in the area with small waterways, drainage ditches, and culverts. The majority of ground cover is row crops during the growing season with a combination of row crop residue, tillage areas, and cover crop during non-growing season months. Soil types in the area vary with dominant hydrologic soil group D. Hydrologic soil group D is known to have a slow infiltration rate resulting in high runoff potential when wet. A NRCS Soil Map for Hydrologic Soil Groups within the Area of Interest is located in the appendix of this report. The Area of Interest (AOI) is shown on the NRCS Soil Report and NRCS Hydrologic Soil Report.

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Drainage is provided by Drainage District 141 as well private tile tied into the District tile. In rain events, some percentage of surface flows bypass the main and route to two culverts under I Avenue. The I Avenue culverts outlet to an open ditch. Additionally, the tile main's final outlet is in the same open ditch. Therefore, the entire watershed concentrates at I Avenue. A separate watershed extending to the south of the Fitzpatrick property also converges at the same two I Avenue culverts. These culverts routinely back water up both watersheds as shown on Page 214/562 of this report. Even in a 1-year event some ponding occurs due to the culverts, the size of the watersheds coming to them and the convergence of two watersheds at the road. The existing condition shows a 1-year event elevation of 1108.10' whereas the design normal water level is 1106.00'. The proposed condition improves the drainage slightly in a 1-year event by reducing the standing water elevation to 1107.81' (Page 478/562). The effect of adding storage to the system via the wetland slightly improves conditions in all events up to the 100-year but the effect diminishes as the events get larger. In the 100-year event the wetland is predicted to improve the standing water by only .06' and is thereby negligible.

Post-Development Conditions

Post-Development conditions will remain the same as pre-development for the basin tributary to the wetland area. This project includes grading within the wetland area itself and creating a berm around the wetland. None of the proposed work will change the tributary area or runoff characteristics of the basin.

It should be noted that the primary design standard for this project is the NRCS CPS, Constructed Wetland, Code 656 (December 2023). The definition of this standard is, "An artificial wetland ecosystem with hydrophytic vegetation for biological treatment of water." Since the sheet pile weir will be a full flow open structure, NRCS CPS 410, Grade Stabilization Structure (January 2023), is the standard utilized for designing the primary weir and berm.

Embankment Design

CPS 410, Table 1 – Design Criteria for Establishing Minimum Capacity of Full-flow Open Structures was utilized in the design of the embankment and spillway. The Classification initially considered is the criteria with a maximum Drainage Area classified as "All Others". This classification requires the principal spillway design to pass the 25-year, 24-hour storm and the total capacity spillway design to pass the 100-year, 24-hour storm without overtopping the embankment. Because this design does not include an auxiliary spillway, the principal spillway has been designed to pass the 100-year, 24-hour storm. See pages 435-457/562 and Pages 470/562, and 477 of this report. Also, see plan Sheet C101 design criteria. The 100-year storm elevation in the wetland is 1109.24', 1.06' below the wetland berm top. A summary of the calculations and storm events are shown on Page 477 of this report.

CPS 656 also requires the impoundment to have sufficient capacity to handle the peak flow and runoff volume from the 25-year frequency, 24-hour duration storm without overtopping the embankment, and provide erosion protection for the perimeter embankment. This criterion is met with the design, which is able to pass a 100-year storm through the sheet pile weir, while still providing 1-foot of freeboard.

The wetland design exhibits a water storage capacity of 38.749 acre-feet associated with the top of berm contour. The top of berm elevation is 1110.30′ and the downstream toe of the dam at the lowest elevation of the outside limit of the dam is 1104.00′. Accordingly, the vertical distance between these two points is 6.30′. Since the water storage capacity associated with the top of dam is less than 50

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acre-feet, this wetland embankment is not considered a jurisdictional dam by Iowa DNR dam safety criteria.

Note, the design criteria for Iowa DNR dam safety for Low Hazard Dams is providing a principal spillway designed for a Q10 (10% probability occurrence per year) without engaging an auxiliary spillway, and then to be able to withstand a Q100 (1% probability occurrence per year) without overtopping the dam. The principal spillway (sheet pile weir) was designed to route a 25-year storm event without an auxiliary spillway. The 100-year storm bounce of the wetland routing through the primary spillway is 1109.24', which provides over 1' of freeboard with the 100-year storm event. Accordingly, this design criteria satisfies both the NRCS guidelines and the Iowa DNR dam safety criteria, even though Iowa DNR dam safety criteria do not apply to this project.

The sheet pile weir primary spillway exhibits a 75 feet wide crest with sidewalls that slope up 2:1. The 25-year storm bounce in the wetland is 1108.26′ and the 100-year storm bounce in the wetland is 1109.24′. The sheet pile sidewalls are designed at 1109.30′, in accordance with CPS 410 design criteria (sidewalls set 0.5′ higher than the water surface attained by the principal spillway design discharge and at or above the maximum water surface attained by the total capacity design discharge). The top of embankment was set 1 foot higher than the sheet pile sidewalls (1110.30′).

In order to control potential seepage through the embankment, a core trench will be excavated along the centerline of the dam, 12 feet wide, 4 feet deep (below existing grade), and for a length as shown on the plans, extending out past the Normal Water Level of the wetland. The core trench will be filled and compacted with clay material obtained on site from either graded clay material or the specified borrow area, and the clay will be compacted using NRCS Compaction Method 2. Additionally, 6" diameter, perforated, corrugated plastic pipe will be provided along the downstream toes of the embankment. The toe drains will be provided to intercept seepage occurring through the embankment, concentrate it to the filter material and toe drains, and direct it to the stilling basin. Furthermore, a filter diaphragm is designed along the draw-down structure pipeline at the downstream portion in order to provide an engineering means to control seepage occurring along the pipeline and direct it to the stilling basin in a controlled manner.

Three submerged berms have been designed perpendicular to the flow direction in the wetland to maximize residence time and increase hydraulic efficiency. Due to the limited water depth for this graded wetland, these submerged berms are designed with 10-foot-wide tops at elevation 1106.00′, provided with 3:1 side slope.

Sheet Pile Design

The steel sheet pile weir utilized as the primary spillway was modeled and designed using a combination of available resources. First, the soil profile at the sheet pile structure was assumed and based on NRCS Web Soil Map data, as well as our experience and knowledge of the soils on-site obtained from test pits observed by DU. The soil information and proposed cantilevered sheet pile structure was then modeled in the Army Corps of Engineers CWALSHT program in order to determine the required embedment depth of the sheet pile structure with a 2' vertical drop and water on the impoundment side at full-service level. For the embedment calculation, the active pressure factor of safety is 1, while the passive pressure factor of safety is 1.5, in accordance with Table 5-1, EM 1110-2-2504. Then, DU referenced the NRCS Standard Drawing 1411 (dated August 2010) to also determine the embedment depth. The most conservative embedment depth was utilized between these two resources.

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For the sheet pile section design, DU again utilized the CWALSHT program using the same model described above with active and passive pressure factors of safety of 1, in accordance with EM 1110-2-2504, Section 6-1. The CWALSHT model resulted in a required sheet pile section less than the minimum requirements by NRCS, so the NRCS requirements were initially utilized with a more conservative modification, based on our calculations. DU also provided a recommended sheet pile section in the drawings, which is more stringent than the required section in the analysis. This is due to our experience of observing these sheet pile structure driven and installed in the field. Reference the Appendix for a more detailed analysis of the sheet pile design.

The weir length was established in accordance with the NRCS CPS 410 and CPS 656. Since the site does not have an auxiliary spillway the sheet pile weir length was sized to pass the 100-year storm without overtopping the embankment.

Subsurface Drainage Tile Modification

Drainage District 141 has a tile main that runs through the proposed wetland. The design plans to outlet the main 1.0' above the normal water level in the wetland. Additionally, lateral tile that was previously tied into the Drainage District Main will be adjusted accordingly to allow outlets at 1.0' above the normal water level. Reference Appendices A-9 through A-15 for capacity calculations regarding existing and proposed tile outlets. Flow from the main and laterals will then route into sedimentation basins to encourage both phosphorus and sediments to settle for removal when conditions allow. Nitrogen will be removed by vegetation within the wetland. Private tile located solely on Fitzpatrick ground is abandoned as noted on sheet C101. Due to nitrogen favoring the lowest flow regime in the wetland, submerged berms are included to delay nitrogen through the wetland and encouraging usage by vegetation within the wetland. Submerged berms also resist wave action and provide habitat diversity. Flows through the wetland will outlet over the sheet pile weir into a stilling basin formed by grouted riprap. From the stilling basin, base flows will route through a riser and back into the tile main. The riser is sized to exceed the capacity of the main to ensure it is not the limiting factor through the system. Additionally, the riser is fitted with an outer debris guard to resist plugging by algae and an interior debris guard to resist larger objects entering the tile main. It is important to note; the riser is sized to exceed the capacity of the main. The purpose of the stilling basin riser is to restore baseflows only and therefore ensure the wetland does not increase the surface flow condition. However, the existing condition already includes surface flows in storm events. No tile system handles 100% of surface flows. The stilling basin riser will restore baseflows but storm events surpassing the tile main capacity will still occur and surface flows are expected even in an event of a 1-year storm or smaller (as is the existing condition). Any surface flows occurring will follow the existing waterway to the two culverts under I Avenue. The wetland does not make the system "wetter" or increase flows; however, surface flows may be more noticeable due to the aesthetic impact of the wetland.

Sedimentation Analysis

DU analyzed the sedimentation accumulation anticipated for this site, which is included in the appendix of this report. Based on our analysis, the wetland would be expected to fill in with sediment after approximately 19 years. Accordingly, periodic maintenance and removal of sediment from the sedimentation basin(s) and wetland will be required to extend the lifespan of the wetland.

Usage of County Roads

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There will be no planned usage of county roads except for when the contractor mobilizes to the site, as well as for hauling materials (rock, grout, etc.).

Floodways, Floodplains, and Wetlands

FEMA Map Number 19073C0063C, located in the appendix of this report, shows the wetland area within Zone A. Zone A refers to areas within the Special Flood Hazard Area (SFHA) 1% annual chance flood that do not have listed Base Flood Elevation (BFE). No portion of the project area is located within a Regulatory Floodway.

The U.S. Fish and Wildlife Service National Wetlands Inventory Map located in the appendix of this report shows "Riverine Wetland" wetlands at this site, however, our on-site survey indicates this area is actually grassed waterway.

Runoff Analysis

Watershed

Tributary area to the area where the wetland is situated is determined to be 1,705.1 acres. This basin was determined with the aid of StreamStats which is a web-based Geographic Information System (GIS) application made available by the United States Geological Survey (USGS). Additionally, LiDAR topographic information along with visual analysis of the drainage areas was utilized to determine the direct watershed area into the wetland. The basin area and other basin characteristics provided by the StreamStats application were reviewed prior to being referenced for this project. A watershed characteristics map is included in the appendix of this report.

Time of Concentration

Time of Concentration was calculated using the NRCS Lag Method which is appropriate for this watershed due to is rural character and long hydraulic length. Flow length of the watershed is shown on the watershed map in the appendix of this report, which was derived from StreamStats. NRCS Lag Method considers the flow length, average watershed slope, and maximum potential retention which is a factor of the SCS curve number (CN). Flow length, average watershed slope, and CN used for runoff analysis for this watershed are listed in the HydroCAD Report in the appendix. The average slope of the entire watershed taken from LiDAR data (3.29%) was utilized in this analysis.

Precipitation Model

The rainfall events and intensities were obtained from the HydroCAD lookup table for Greene County, Iowa, MSE, 24-hour, Storm Curve 3 (MSE3). These rainfall events were compared to the MSE 3 rainfall intensities provided by Title 210, National Engineering Handbook, 2nd Ed., Amend. 1, July 2021, Figure IA2-25, Greene County, NOAA 14 Rainfall Type MSE3. The HydroCAD Report in the appendix reflects the precipitation model and rainfall intensities for MSE3.

Runoff Model

SCS TR-20 NRCS Peak Flow method was utilized as a runoff model. SCS methods combine land use and soil type into a single parameter known as the Curve Number (CN). Based on the various land

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uses and the hydrologic soil groups (predominately HSG D) within the watershed discussed earlier in this report, a weighted CN of 84 was determined to be appropriate assuming straight row crops plus crop residue in good condition.

Runoff Conveyance

Hydraulic Model

HydroCAD 10.20-2g was utilized to model the watershed. Input parameters include watershed size, SCS CN (determined by land use and soil types), time of concentration calculations, precipitation input, stage-storage, discharge, and outlet details. The watershed was modeled with the proposed berm and principal spillway. The HydroCAD Hydrograph Report is included in the appendix.

Summary & Conclusions

This project does not change the natural drainage area, drainage courses, runoff coefficients, or any other characteristics of the watershed. A berm will be constructed at the South end of the wetland, which will be designed to accommodate a 100-year design storm without affecting neighboring properties. Per NRCS CPS 410, and the drainage area exceeding 900 acres (1,396 acres), the primary spillway is designed to accommodate the 100-year rainfall event while still maintaining 1 foot of freeboard to the berm top. Note, there is an additional watershed of 309.04 acres that discharges downstream of the wetland berm, but upstream of the I Avenue Road culverts (72” RCP and 48” RCP). Ponding will still occur, extending from the I Avenue culverts up both watersheds, as is seen in the current conditions. The wetland will slightly improve/reduce the ponding but even in the 1-year storm the effect is small (0.29’ or 3.48”). Additionally, surface flows from the stilling basin will still occur even in small events as is the current condition. Significant benefits to the wetland area and areas upstream of the wetland area include improving water quality, promotion of wildlife habitat, as well as a nutrient and sediment buffer.

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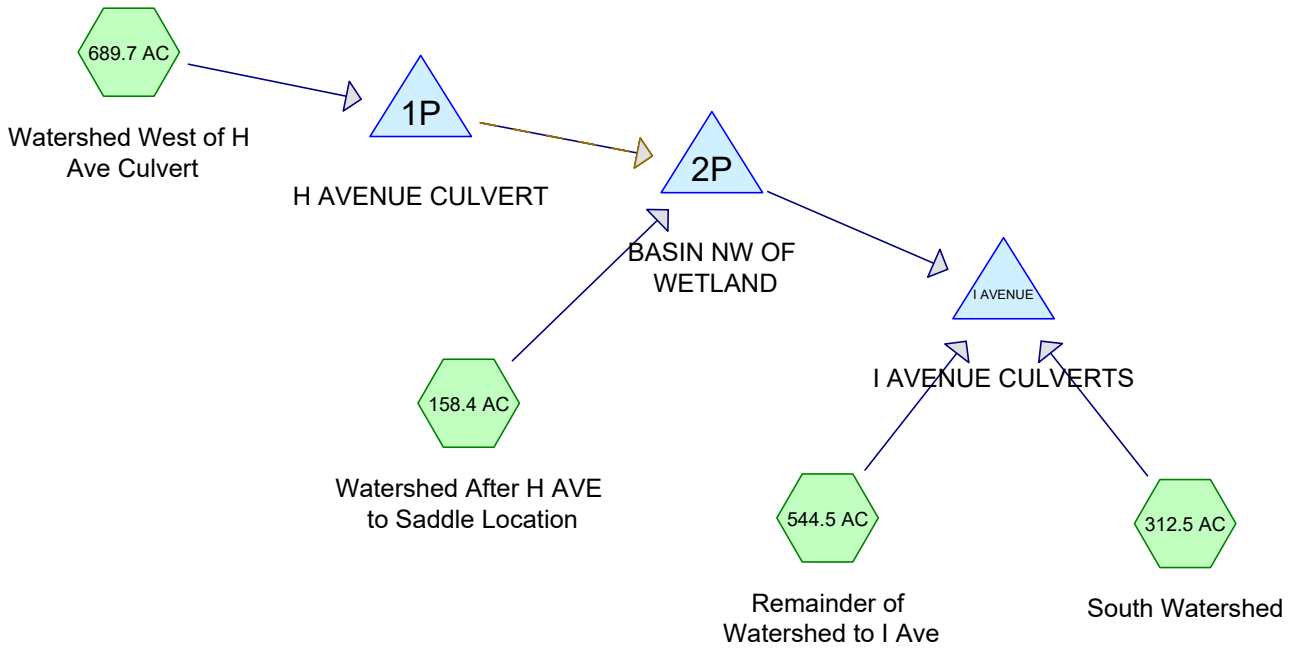
Appendix A-1

HydroCAD Report – Existing Conditions



Subcat Reach Pond Link

Routing Diagram for FITZPATRICK EXISTING CONDITIONS - AS - FINAL
Prepared by Ducks Unlimited, Printed 2/6/2026
HydroCAD® 10.20-5c s/n 04207 © 2023 HydroCAD Software Solutions LLC

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 1436 IA Greene
Rainfall events imported from "NRCS-Rain.txt" for 1436 IA Greene

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	MSE 24-hr	3	Default	24.00	1	2.70	2
2	2-Year	MSE 24-hr	3	Default	24.00	1	3.10	2
3	5-Year	MSE 24-hr	3	Default	24.00	1	3.85	2
4	10-Year	MSE 24-hr	3	Default	24.00	1	4.55	2
5	25-Year	MSE 24-hr	3	Default	24.00	1	5.63	2
6	50-Year	MSE 24-hr	3	Default	24.00	1	6.57	2
7	100-Year	MSE 24-hr	3	Default	24.00	1	7.58	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1,705.100	84	(158.4 AC, 312.5 AC, 544.5 AC, 689.7 AC)
1,705.100	**84**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
1,705.100	Other	158.4 AC, 312.5 AC, 544.5 AC, 689.7 AC
1,705.100		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	1,705.100	1,705.100		158.4 AC, 312.5 AC, 544.5 AC, 689.7 AC
0.000	**0.000**	**0.000**	**0.000**	**1,705.100**	**1,705.100**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	1P	1,124.00	1,124.00	60.0	0.0000	0.011	60.0	24.0	0.0	
2	I AVENUE	1,100.22	1,098.91	85.4	0.0153	0.025	0.0	72.0	0.0	
3	I AVENUE	1,104.72	1,104.41	62.4	0.0050	0.011	0.0	48.0	0.0	

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 158.4 AC: Watershed After Runoff Area=158.400 ac 0.00% Impervious Runoff Depth=1.27"
Flow Length=2,718' Slope=0.0329 '/' Tc=34.2 min CN=84 Runoff=166.34 cfs 16.807 af

Subcatchment 312.5 AC: South Watershed Runoff Area=312.500 ac 0.00% Impervious Runoff Depth=1.27"
Flow Length=9,197' Slope=0.0329 '/' Tc=90.7 min CN=84 Runoff=170.84 cfs 33.158 af

Subcatchment 544.5 AC: Remainder of Runoff Area=544.500 ac 0.00% Impervious Runoff Depth=1.27"
Flow Length=10,448' Slope=0.0329 '/' Tc=100.5 min CN=84 Runoff=274.71 cfs 57.774 af

Subcatchment 689.7 AC: Watershed West Runoff Area=689.700 ac 0.00% Impervious Runoff Depth=1.27"
Flow Length=9,666' Slope=0.0329 '/' Tc=94.4 min CN=84 Runoff=367.40 cfs 73.180 af

Pond 1P: H AVENUE CULVERT Peak Elev=1,127.93' Storage=37.189 af Inflow=367.40 cfs 73.180 af
Primary=0.00 cfs 0.000 af Secondary=82.04 cfs 73.180 af Outflow=82.04 cfs 73.180 af

Pond 2P: BASIN NW OF WETLAND Peak Elev=1,124.51' Storage=58.754 af Inflow=199.25 cfs 89.987 af
Primary=58.89 cfs 42.530 af Secondary=0.00 cfs 0.000 af Outflow=58.89 cfs 42.530 af

Pond I AVENUE: I AVENUE Peak Elev=1,108.10' Storage=12.243 af Inflow=443.31 cfs 133.462 af
Primary=268.87 cfs 125.647 af Secondary=55.78 cfs 7.803 af Tertiary=0.00 cfs 0.000 af Outflow=324.45 cfs 133.449 af

Total Runoff Area = 1,705.100 ac Runoff Volume = 180.919 af Average Runoff Depth = 1.27"
100.00% Pervious = 1,705.100 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Runoff = 166.34 cfs @ 12.50 hrs, Volume= 16.807 af, Depth= 1.27"
Routed to Pond 2P : BASIN NW OF WETLAND

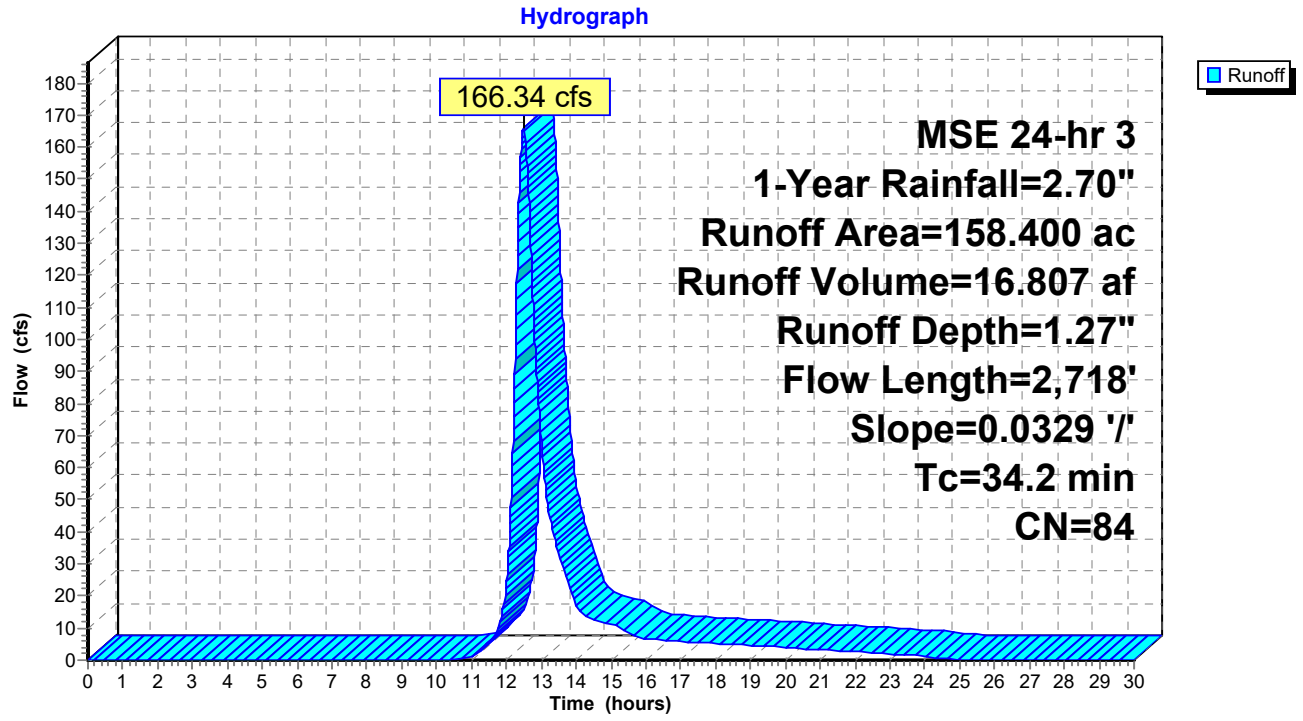
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Year Rainfall=2.70"

	Area (ac)	CN	Description
*	158.400	84	
	158.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.2	2,718	0.0329	1.32		**Lag/CN Method,**

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location



Hydrograph for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.02	0.00	0.00
2.50	0.03	0.00	0.00
3.00	0.04	0.00	0.00
3.50	0.06	0.00	0.00
4.00	0.07	0.00	0.00
4.50	0.09	0.00	0.00
5.00	0.10	0.00	0.00
5.50	0.12	0.00	0.00
6.00	0.14	0.00	0.00
6.50	0.16	0.00	0.00
7.00	0.18	0.00	0.00
7.50	0.20	0.00	0.00
8.00	0.23	0.00	0.00
8.50	0.25	0.00	0.00
9.00	0.28	0.00	0.00
9.50	0.32	0.00	0.00
10.00	0.37	0.00	0.00
10.50	0.42	0.00	0.06
11.00	0.52	0.01	1.19
11.50	0.67	0.04	5.39
12.00	1.25	0.27	23.93
12.50	2.03	0.77	**166.34**
13.00	2.18	0.87	67.63
13.50	2.28	0.95	32.88
14.00	2.33	0.98	17.50
14.50	2.38	1.02	12.51
15.00	2.42	1.06	11.38
15.50	2.45	1.08	8.64
16.00	2.47	1.10	6.66
16.50	2.50	1.11	6.15
17.00	2.52	1.13	5.83
17.50	2.54	1.15	5.51
18.00	2.56	1.16	5.20
18.50	2.58	1.18	4.88
19.00	2.60	1.19	4.56
19.50	2.61	1.21	4.24
20.00	2.63	1.22	3.91
20.50	2.64	1.23	3.58
21.00	2.66	1.24	3.25
21.50	2.67	1.25	2.92
22.00	2.68	1.25	2.59
22.50	2.68	1.26	2.25
23.00	2.69	1.27	1.92
23.50	2.70	1.27	1.58
24.00	**2.70**	**1.27**	1.24
24.50	2.70	1.27	0.49
25.00	2.70	1.27	0.06
25.50	2.70	1.27	0.01
26.00	2.70	1.27	0.00
26.50	2.70	1.27	0.00
27.00	2.70	1.27	0.00
27.50	2.70	1.27	0.00
28.00	2.70	1.27	0.00
28.50	2.70	1.27	0.00
29.00	2.70	1.27	0.00
29.50	2.70	1.27	0.00
30.00	2.70	1.27	0.00

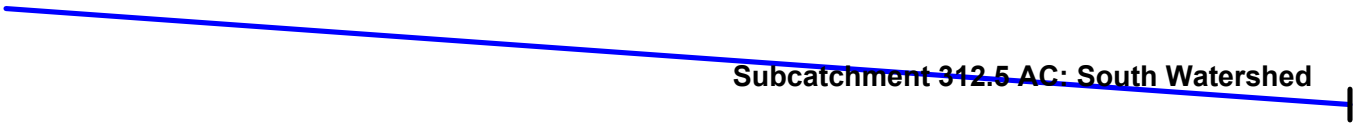
Summary for Subcatchment 312.5 AC: South Watershed

Runoff = 170.84 cfs @ 13.20 hrs, Volume= 33.158 af, Depth= 1.27"
Routed to Pond I AVENUE : I AVENUE CULVERTS

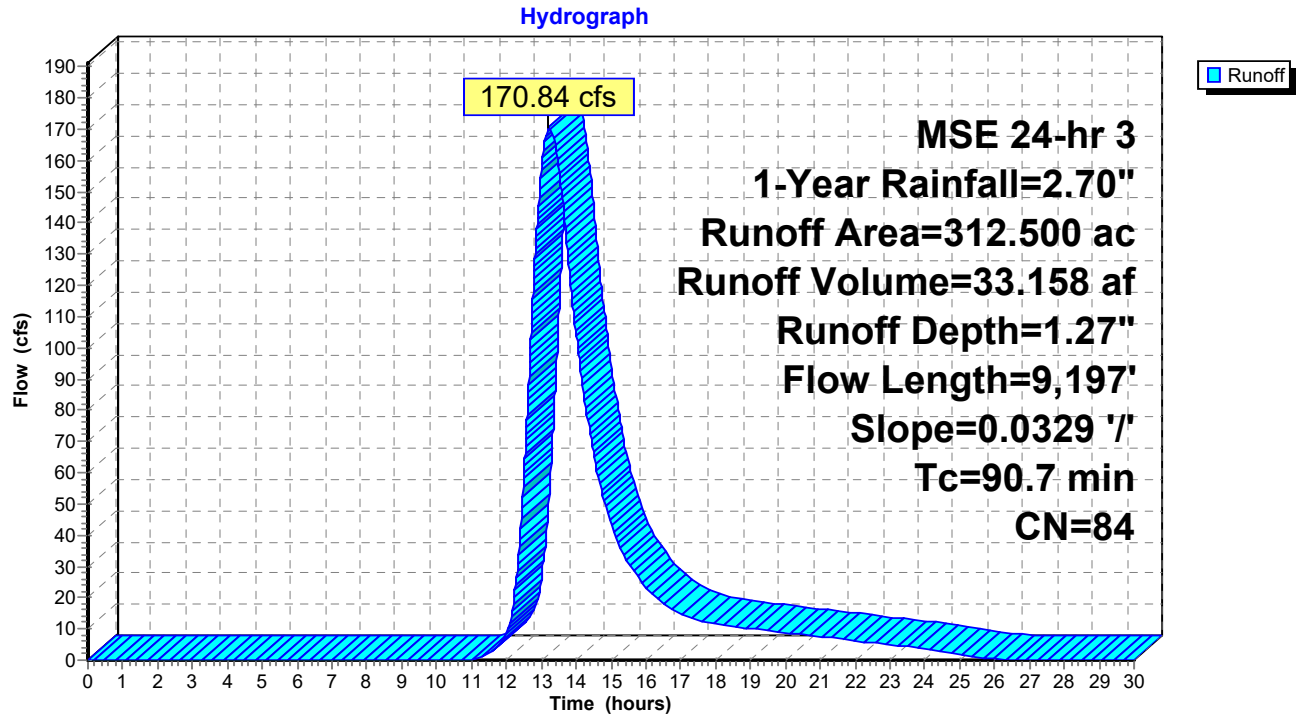
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Year Rainfall=2.70"

	Area (ac)	CN	Description
*	312.500	84	
	312.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
90.7	9,197	0.0329	1.69		**Lag/CN Method,**



Subcatchment 312.5 AC: South Watershed



Hydrograph for Subcatchment 312.5 AC: South Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.02	0.00	0.00
2.50	0.03	0.00	0.00
3.00	0.04	0.00	0.00
3.50	0.06	0.00	0.00
4.00	0.07	0.00	0.00
4.50	0.09	0.00	0.00
5.00	0.10	0.00	0.00
5.50	0.12	0.00	0.00
6.00	0.14	0.00	0.00
6.50	0.16	0.00	0.00
7.00	0.18	0.00	0.00
7.50	0.20	0.00	0.00
8.00	0.23	0.00	0.00
8.50	0.25	0.00	0.00
9.00	0.28	0.00	0.00
9.50	0.32	0.00	0.00
10.00	0.37	0.00	0.00
10.50	0.42	0.00	0.01
11.00	0.52	0.01	0.23
11.50	0.67	0.04	1.91
12.00	1.25	0.27	8.51
12.50	2.03	0.77	58.08
13.00	2.18	0.87	**157.52**
13.50	2.28	0.95	**158.34**
14.00	2.33	0.98	104.21
14.50	2.38	1.02	66.15
15.00	2.42	1.06	43.27
15.50	2.45	1.08	31.29
16.00	2.47	1.10	23.58
16.50	2.50	1.11	17.90
17.00	2.52	1.13	14.49
17.50	2.54	1.15	12.67
18.00	2.56	1.16	11.62
18.50	2.58	1.18	10.83
19.00	2.60	1.19	10.14
19.50	2.61	1.21	9.48
20.00	2.63	1.22	8.83
20.50	2.64	1.23	8.19
21.00	2.66	1.24	7.55
21.50	2.67	1.25	6.90
22.00	2.68	1.25	6.25
22.50	2.68	1.26	5.59
23.00	2.69	1.27	4.93
23.50	2.70	1.27	4.28
24.00	**2.70**	**1.27**	3.61
24.50	2.70	1.27	2.90
25.00	2.70	1.27	1.87
25.50	2.70	1.27	0.91
26.00	2.70	1.27	0.40
26.50	2.70	1.27	0.17
27.00	2.70	1.27	0.07
27.50	2.70	1.27	0.03
28.00	2.70	1.27	0.01
28.50	2.70	1.27	0.00
29.00	2.70	1.27	0.00
29.50	2.70	1.27	0.00
30.00	2.70	1.27	0.00

Summary for Subcatchment 544.5 AC: Remainder of Watershed to I Ave

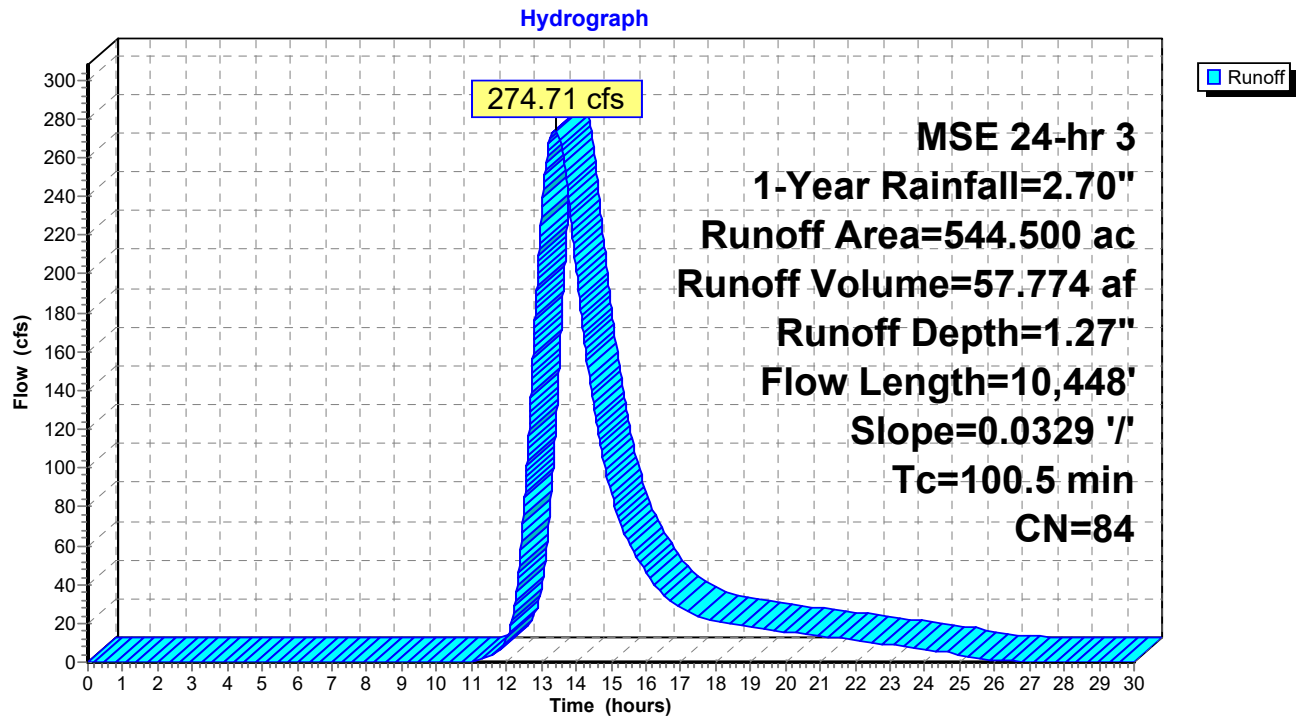
Runoff = 274.71 cfs @ 13.40 hrs, Volume= 57.774 af, Depth= 1.27"
Routed to Pond I AVENUE : I AVENUE CULVERTS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Year Rainfall=2.70"

	Area (ac)	CN	Description
*	544.500	84	
	544.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
100.5	10,448	0.0329	1.73		**Lag/CN Method,**





Hydrograph for Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.02	0.00	0.00
2.50	0.03	0.00	0.00
3.00	0.04	0.00	0.00
3.50	0.06	0.00	0.00
4.00	0.07	0.00	0.00
4.50	0.09	0.00	0.00
5.00	0.10	0.00	0.00
5.50	0.12	0.00	0.00
6.00	0.14	0.00	0.00
6.50	0.16	0.00	0.00
7.00	0.18	0.00	0.00
7.50	0.20	0.00	0.00
8.00	0.23	0.00	0.00
8.50	0.25	0.00	0.00
9.00	0.28	0.00	0.00
9.50	0.32	0.00	0.00
10.00	0.37	0.00	0.00
10.50	0.42	0.00	0.01
11.00	0.52	0.01	0.29
11.50	0.67	0.04	2.52
12.00	1.25	0.27	11.87
12.50	2.03	0.77	76.55
13.00	2.18	0.87	**228.16**
13.50	2.28	0.95	**271.91**
14.00	2.33	0.98	202.50
14.50	2.38	1.02	132.09
15.00	2.42	1.06	87.62
15.50	2.45	1.08	62.22
16.00	2.47	1.10	46.47
16.50	2.50	1.11	34.99
17.00	2.52	1.13	27.87
17.50	2.54	1.15	23.66
18.00	2.56	1.16	21.04
18.50	2.58	1.18	19.39
19.00	2.60	1.19	18.06
19.50	2.61	1.21	16.89
20.00	2.63	1.22	15.75
20.50	2.64	1.23	14.61
21.00	2.66	1.24	13.48
21.50	2.67	1.25	12.36
22.00	2.68	1.25	11.24
22.50	2.68	1.26	10.09
23.00	2.69	1.27	8.94
23.50	2.70	1.27	7.79
24.00	**2.70**	**1.27**	6.65
24.50	2.70	1.27	5.41
25.00	2.70	1.27	3.76
25.50	2.70	1.27	2.08
26.00	2.70	1.27	0.99
26.50	2.70	1.27	0.47
27.00	2.70	1.27	0.22
27.50	2.70	1.27	0.10
28.00	2.70	1.27	0.04
28.50	2.70	1.27	0.02
29.00	2.70	1.27	0.01
29.50	2.70	1.27	0.00
30.00	2.70	1.27	0.00

Summary for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Runoff = 367.40 cfs @ 13.32 hrs, Volume= 73.180 af, Depth= 1.27"
Routed to Pond 1P : H AVENUE CULVERT

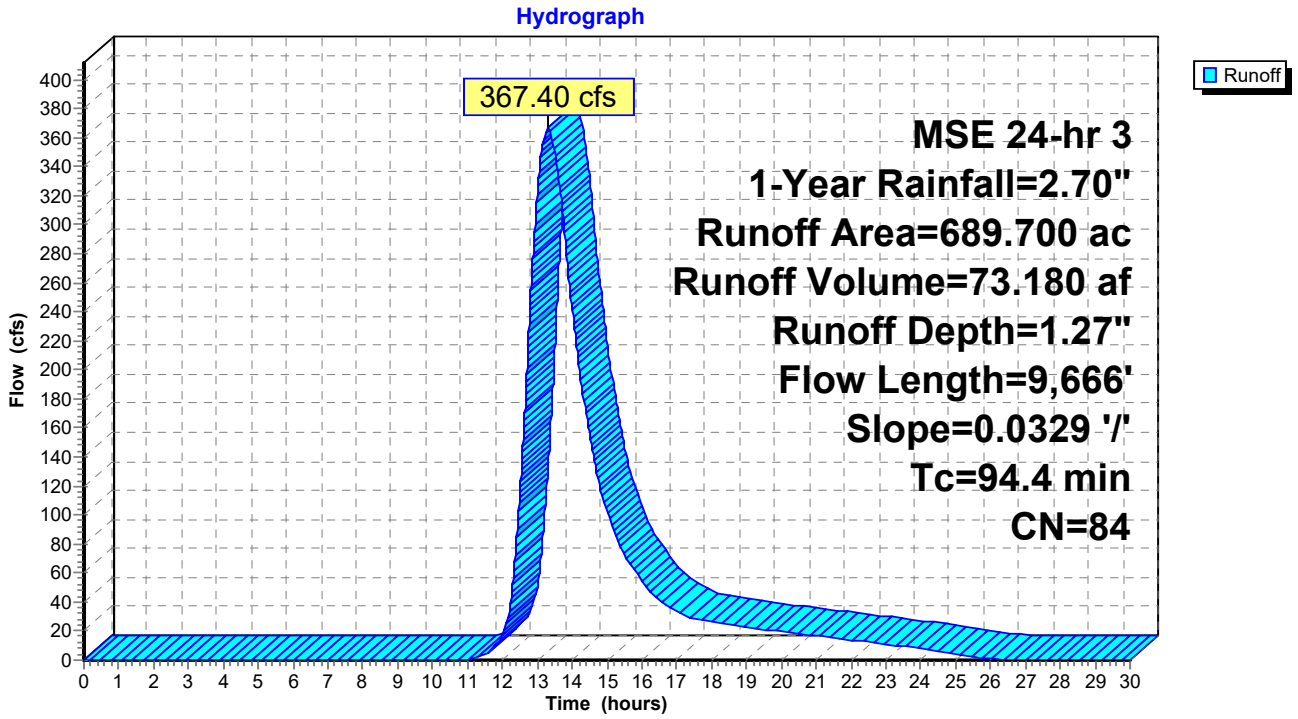
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Year Rainfall=2.70"

	Area (ac)	CN	Description
*	689.700	84	
	689.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
94.4	9,666	0.0329	1.71		**Lag/CN Method,**

Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Subcatchment 689.7 AC: Watershed West of H Ave Culvert



Hydrograph for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.02	0.00	0.00
2.50	0.03	0.00	0.00
3.00	0.04	0.00	0.00
3.50	0.06	0.00	0.00
4.00	0.07	0.00	0.00
4.50	0.09	0.00	0.00
5.00	0.10	0.00	0.00
5.50	0.12	0.00	0.00
6.00	0.14	0.00	0.00
6.50	0.16	0.00	0.00
7.00	0.18	0.00	0.00
7.50	0.20	0.00	0.00
8.00	0.23	0.00	0.00
8.50	0.25	0.00	0.00
9.00	0.28	0.00	0.00
9.50	0.32	0.00	0.00
10.00	0.37	0.00	0.00
10.50	0.42	0.00	0.01
11.00	0.52	0.01	0.44
11.50	0.67	0.04	3.82
12.00	1.25	0.27	17.52
12.50	2.03	0.77	111.94
13.00	2.18	0.87	**323.08**
13.50	2.28	0.95	**351.09**
14.00	2.33	0.98	241.97
14.50	2.38	1.02	155.35
15.00	2.42	1.06	101.67
15.50	2.45	1.08	72.75
16.00	2.47	1.10	54.61
16.50	2.50	1.11	41.28
17.00	2.52	1.13	33.25
17.50	2.54	1.15	28.56
18.00	2.56	1.16	25.98
18.50	2.58	1.18	24.13
19.00	2.60	1.19	22.57
19.50	2.61	1.21	21.08
20.00	2.63	1.22	19.66
20.50	2.64	1.23	18.24
21.00	2.66	1.24	16.81
21.50	2.67	1.25	15.40
22.00	2.68	1.25	13.95
22.50	2.68	1.26	12.51
23.00	2.69	1.27	11.06
23.50	2.70	1.27	9.59
24.00	**2.70**	**1.27**	8.14
24.50	2.70	1.27	6.55
25.00	2.70	1.27	4.37
25.50	2.70	1.27	2.25
26.00	2.70	1.27	1.01
26.50	2.70	1.27	0.46
27.00	2.70	1.27	0.20
27.50	2.70	1.27	0.09
28.00	2.70	1.27	0.03
28.50	2.70	1.27	0.01
29.00	2.70	1.27	0.00
29.50	2.70	1.27	0.00
30.00	2.70	1.27	0.00

Summary for Pond 1P: H AVENUE CULVERT

Inflow Area = 689.700 ac, 0.00% Impervious, Inflow Depth = 1.27" for 1-Year event
Inflow = 367.40 cfs @ 13.32 hrs, Volume= 73.180 af
Outflow = 82.04 cfs @ 15.30 hrs, Volume= 73.180 af, Atten= 78%, Lag= 118.9 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2P : BASIN NW OF WETLAND
Secondary = 82.04 cfs @ 15.30 hrs, Volume= 73.180 af
Routed to Pond 2P : BASIN NW OF WETLAND

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,127.93' @ 15.30 hrs Surf.Area= 35.125 ac Storage= 37.189 af

Plug-Flow detention time= 219.2 min calculated for 73.156 af (100% of inflow)
Center-of-Mass det. time= 219.2 min (1,111.9 - 892.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,124.00'	161.110 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,124.00	0.010	0.000	0.000
1,126.00	1.650	1.660	1.660
1,128.00	36.300	37.950	39.610
1,130.00	85.200	121.500	161.110

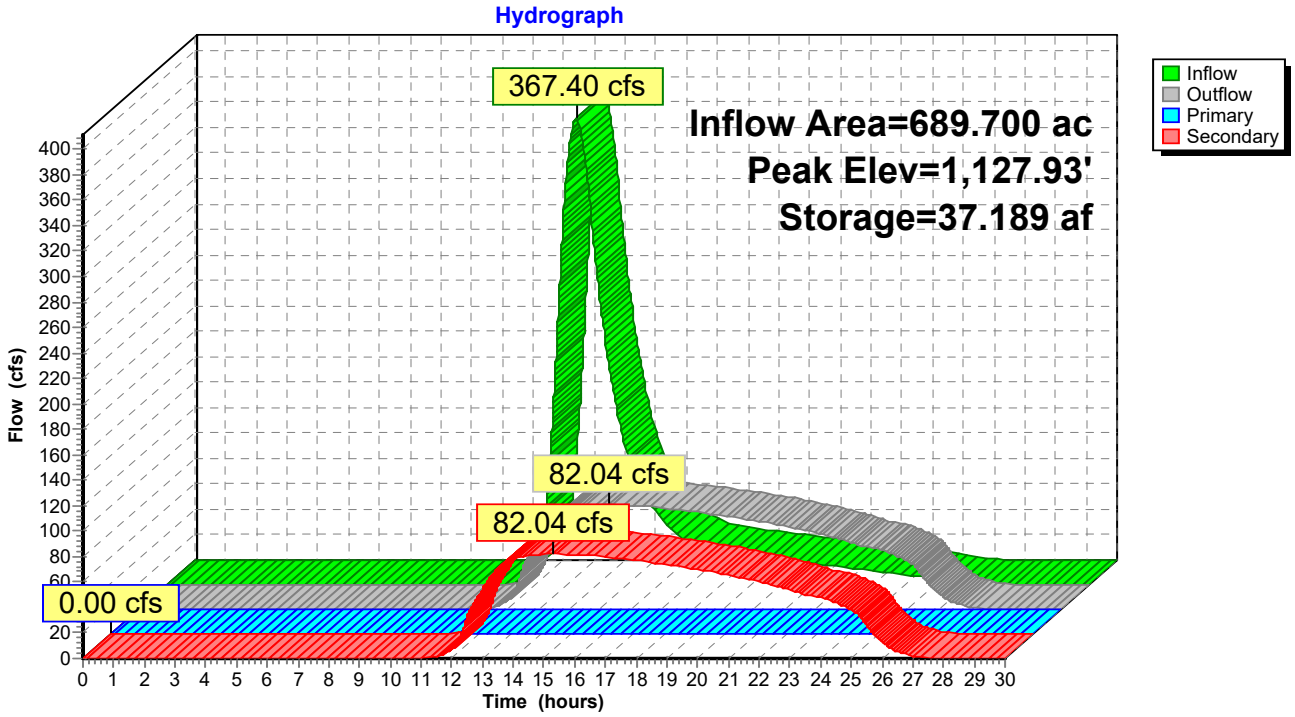
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,124.00'	**60.0" W x 24.0" H Box 5'x2' CULVERT** L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,124.00' / 1,124.00' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 10.00 sf
#2	Primary	1,128.05'	**342.0' long + 100.0 '/' SideZ x 25.0' breadth H Ave Road Surface** 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

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,124.00' (Free Discharge)
└**2=H Ave Road Surface** (Controls 0.00 cfs)

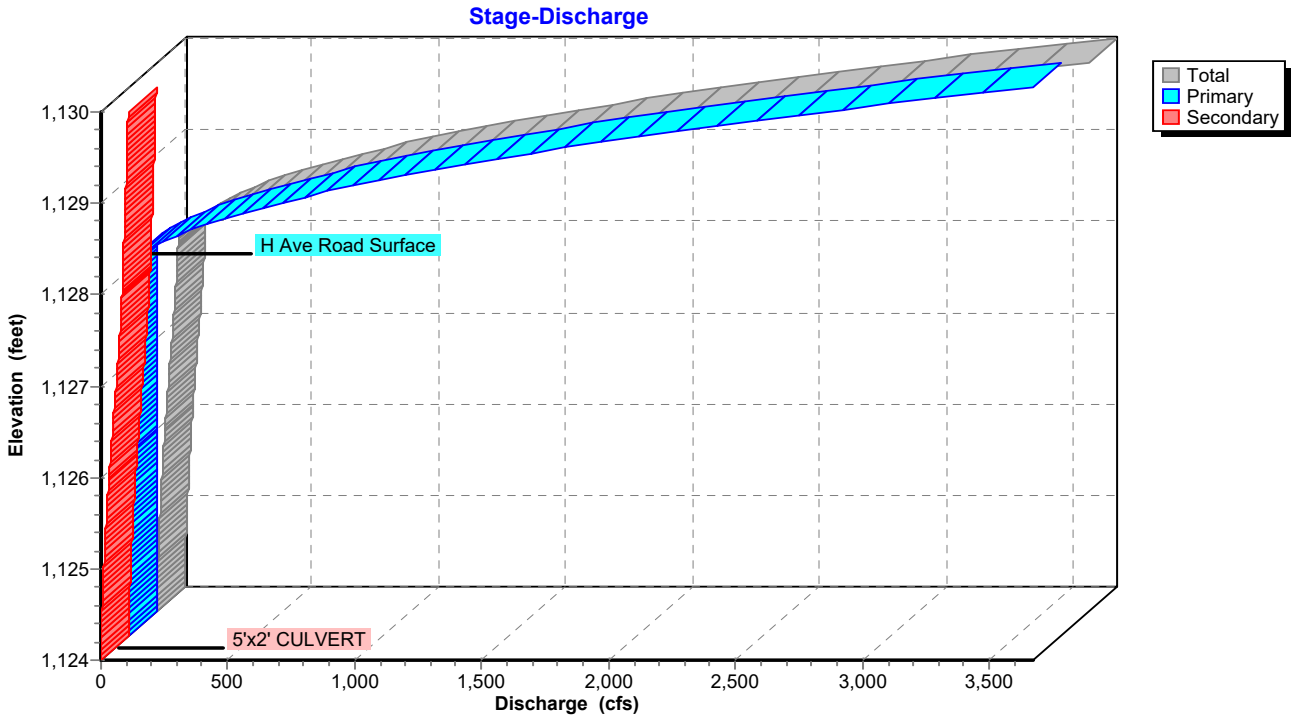
Secondary OutFlow Max=82.04 cfs @ 15.30 hrs HW=1,127.93' (Free Discharge)
└**1=5'x2' CULVERT** (Inlet Controls 82.04 cfs @ 8.20 fps)



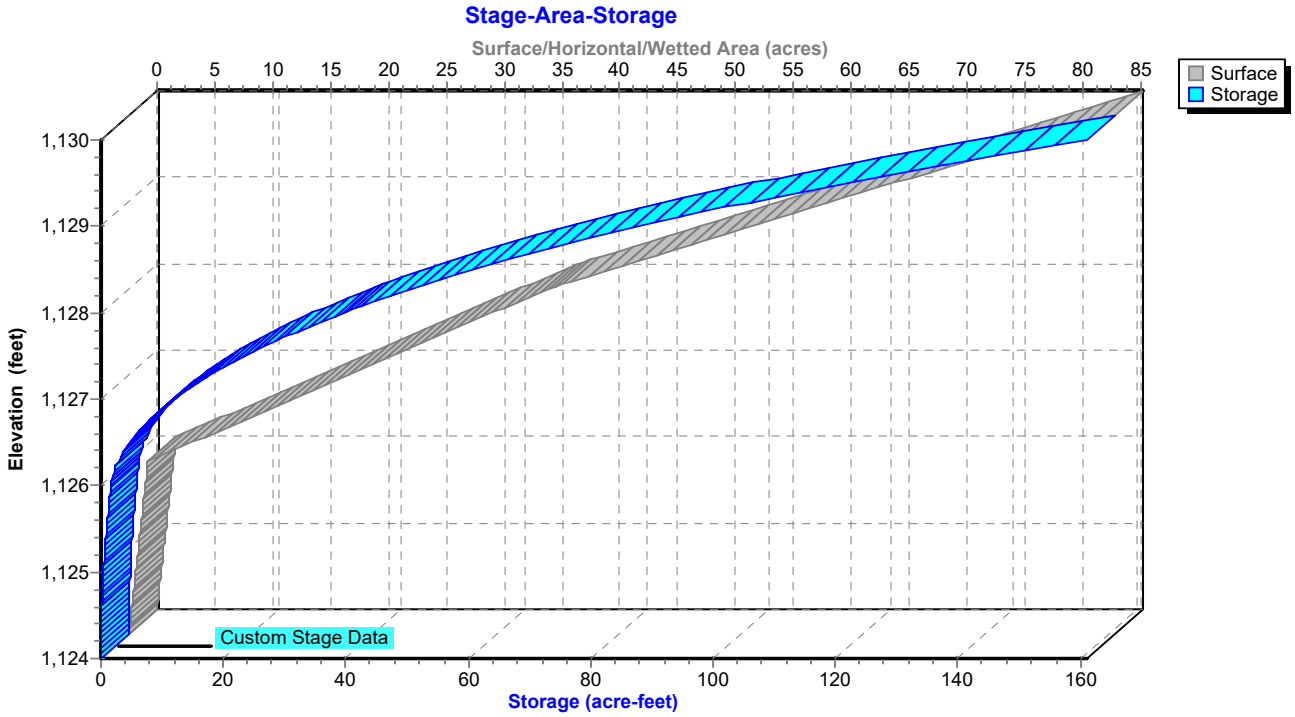
Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Hydrograph for Pond 1P: H AVENUE CULVERT

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,124.00	0.00	**0.00**	0.00
1.00	0.00	0.000	1,124.00	0.00	0.00	0.00
2.00	0.00	0.000	1,124.00	0.00	0.00	0.00
3.00	0.00	0.000	1,124.00	0.00	0.00	0.00
4.00	0.00	0.000	1,124.00	0.00	0.00	0.00
5.00	0.00	0.000	1,124.00	0.00	0.00	0.00
6.00	0.00	0.000	1,124.00	0.00	0.00	0.00
7.00	0.00	0.000	1,124.00	0.00	0.00	0.00
8.00	0.00	0.000	1,124.00	0.00	0.00	0.00
9.00	0.00	0.000	1,124.00	0.00	0.00	0.00
10.00	0.00	0.000	1,124.00	0.00	0.00	0.00
11.00	0.44	0.004	1,124.09	0.13	0.00	0.13
12.00	17.52	0.259	1,124.78	7.24	0.00	7.24
13.00	**323.08**	8.950	1,126.83	53.90	0.00	53.90
14.00	**241.97**	30.358	1,127.73	77.90	0.00	77.90
15.00	101.67	**36.966**	**1,127.93**	**81.95**	0.00	**81.95**
16.00	54.61	**36.350**	**1,127.91**	**81.70**	0.00	**81.70**
17.00	33.25	33.152	1,127.81	79.83	0.00	79.83
18.00	25.98	29.060	1,127.69	76.96	0.00	76.96
19.00	22.57	24.832	1,127.54	73.63	0.00	73.63
20.00	19.66	20.644	1,127.39	69.83	0.00	69.83
21.00	16.81	16.557	1,127.22	65.45	0.00	65.45
22.00	13.95	12.627	1,127.03	60.26	0.00	60.26
23.00	11.06	8.934	1,126.83	53.87	0.00	53.87
24.00	8.14	5.542	1,126.58	48.00	0.00	48.00
25.00	4.37	2.481	1,126.23	38.21	0.00	38.21
26.00	1.01	0.529	1,125.12	13.02	0.00	13.02
27.00	0.20	0.058	1,124.36	1.95	0.00	1.95
28.00	0.03	0.005	1,124.10	0.17	0.00	0.17
29.00	0.00	0.001	1,124.02	0.02	0.00	0.02
30.00	0.00	0.000	1,124.00	0.00	0.00	0.00

Stage-Discharge for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,124.00	0.00	0.00	0.00
1,124.10	0.16	0.00	0.16
1,124.20	0.64	0.00	0.64
1,124.30	1.37	0.00	1.37
1,124.40	2.30	0.00	2.30
1,124.50	3.40	0.00	3.40
1,124.60	4.64	0.00	4.64
1,124.70	6.01	0.00	6.01
1,124.80	7.50	0.00	7.50
1,124.90	9.10	0.00	9.10
1,125.00	10.80	0.00	10.80
1,125.10	12.59	0.00	12.59
1,125.20	14.47	0.00	14.47
1,125.30	16.44	0.00	16.44
1,125.40	18.49	0.00	18.49
1,125.50	20.61	0.00	20.61
1,125.60	22.82	0.00	22.82
1,125.70	25.10	0.00	25.10
1,125.80	27.44	0.00	27.44
1,125.90	29.86	0.00	29.86
1,126.00	32.34	0.00	32.34
1,126.10	34.89	0.00	34.89
1,126.20	37.50	0.00	37.50
1,126.30	40.17	0.00	40.17
1,126.40	42.91	0.00	42.91
1,126.50	45.70	0.00	45.70
1,126.60	48.55	0.00	48.55
1,126.70	49.59	0.00	49.59
1,126.80	53.02	0.00	53.02
1,126.90	56.23	0.00	56.23
1,127.00	59.28	0.00	59.28
1,127.10	62.17	0.00	62.17
1,127.20	64.93	0.00	64.93
1,127.30	67.59	0.00	67.59
1,127.40	70.14	0.00	70.14
1,127.50	72.60	0.00	72.60
1,127.60	74.98	0.00	74.98
1,127.70	77.29	0.00	77.29
1,127.80	79.53	0.00	79.53
1,127.90	81.58	0.00	81.58
1,128.00	83.00	0.00	83.00
1,128.10	94.77	10.37	84.40
1,128.20	140.89	55.12	85.78
1,128.30	208.62	121.50	87.13
1,128.40	294.93	206.47	88.46
1,128.50	397.86	308.09	89.77
1,128.60	516.16	425.10	91.06
1,128.70	646.72	554.38	92.33
1,128.80	786.82	693.24	93.59
1,128.90	942.26	847.43	94.82
1,129.00	1,114.94	1,018.90	96.05
1,129.10	1,303.85	1,206.60	97.25
1,129.20	1,510.10	1,411.66	98.44
1,129.30	1,730.38	1,630.76	99.62
1,129.40	1,964.23	1,863.45	100.78
1,129.50	2,211.09	2,109.16	101.93
1,129.60	2,470.36	2,367.29	103.06
1,129.70	2,746.35	2,642.17	104.19
1,129.80	3,039.97	2,934.67	105.30
1,129.90	3,349.12	3,242.72	106.40
1,130.00	**3,673.94**	**3,566.46**	**107.49**

Stage-Area-Storage for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,124.00	0.010	0.000
1,124.10	0.092	0.005
1,124.20	0.174	0.018
1,124.30	0.256	0.040
1,124.40	0.338	0.070
1,124.50	0.420	0.107
1,124.60	0.502	0.154
1,124.70	0.584	0.208
1,124.80	0.666	0.270
1,124.90	0.748	0.341
1,125.00	0.830	0.420
1,125.10	0.912	0.507
1,125.20	0.994	0.602
1,125.30	1.076	0.706
1,125.40	1.158	0.818
1,125.50	1.240	0.937
1,125.60	1.322	1.066
1,125.70	1.404	1.202
1,125.80	1.486	1.346
1,125.90	1.568	1.499
1,126.00	1.650	1.660
1,126.10	3.382	1.912
1,126.20	5.115	2.337
1,126.30	6.847	2.935
1,126.40	8.580	3.706
1,126.50	10.312	4.651
1,126.60	12.045	5.768
1,126.70	13.778	7.060
1,126.80	15.510	8.524
1,126.90	17.243	10.162
1,127.00	18.975	11.972
1,127.10	20.707	13.957
1,127.20	22.440	16.114
1,127.30	24.172	18.445
1,127.40	25.905	20.949
1,127.50	27.637	23.626
1,127.60	29.370	26.476
1,127.70	31.103	29.500
1,127.80	32.835	32.696
1,127.90	34.568	36.067
1,128.00	36.300	39.610
1,128.10	38.745	43.362
1,128.20	41.190	47.359
1,128.30	43.635	51.600
1,128.40	46.080	56.086
1,128.50	48.525	60.816
1,128.60	50.970	65.791
1,128.70	53.415	71.010
1,128.80	55.860	76.474
1,128.90	58.305	82.182
1,129.00	60.750	88.135
1,129.10	63.195	94.332
1,129.20	65.640	100.774
1,129.30	68.085	107.460
1,129.40	70.530	114.391
1,129.50	72.975	121.566
1,129.60	75.420	128.986
1,129.70	77.865	136.650
1,129.80	80.310	144.559
1,129.90	82.755	152.712
1,130.00	**85.200**	**161.110**

Summary for Pond 2P: BASIN NW OF WETLAND

[81] Warning: Exceeded Pond 1P by 0.23' @ 29.05 hrs

Inflow Area = 848.100 ac, 0.00% Impervious, Inflow Depth = 1.27" for 1-Year event
Inflow = 199.25 cfs @ 12.51 hrs, Volume= 89.987 af
Outflow = 58.89 cfs @ 22.58 hrs, Volume= 42.530 af, Atten= 70%, Lag= 604.4 min
Primary = 58.89 cfs @ 22.58 hrs, Volume= 42.530 af
Routed to Pond I AVENUE : I AVENUE CULVERTS
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,124.51' @ 22.58 hrs Surf.Area= 40.888 ac Storage= 58.754 af

Plug-Flow detention time= 543.9 min calculated for 42.530 af (47% of inflow)
Center-of-Mass det. time= 335.4 min (1,395.9 - 1,060.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,121.00'	311.173 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,121.00	1.997	0.000	0.000
1,122.00	7.899	4.948	4.948
1,123.00	16.217	12.058	17.006
1,124.00	30.839	23.528	40.534
1,126.00	70.400	101.239	141.773
1,128.00	99.000	169.400	311.173

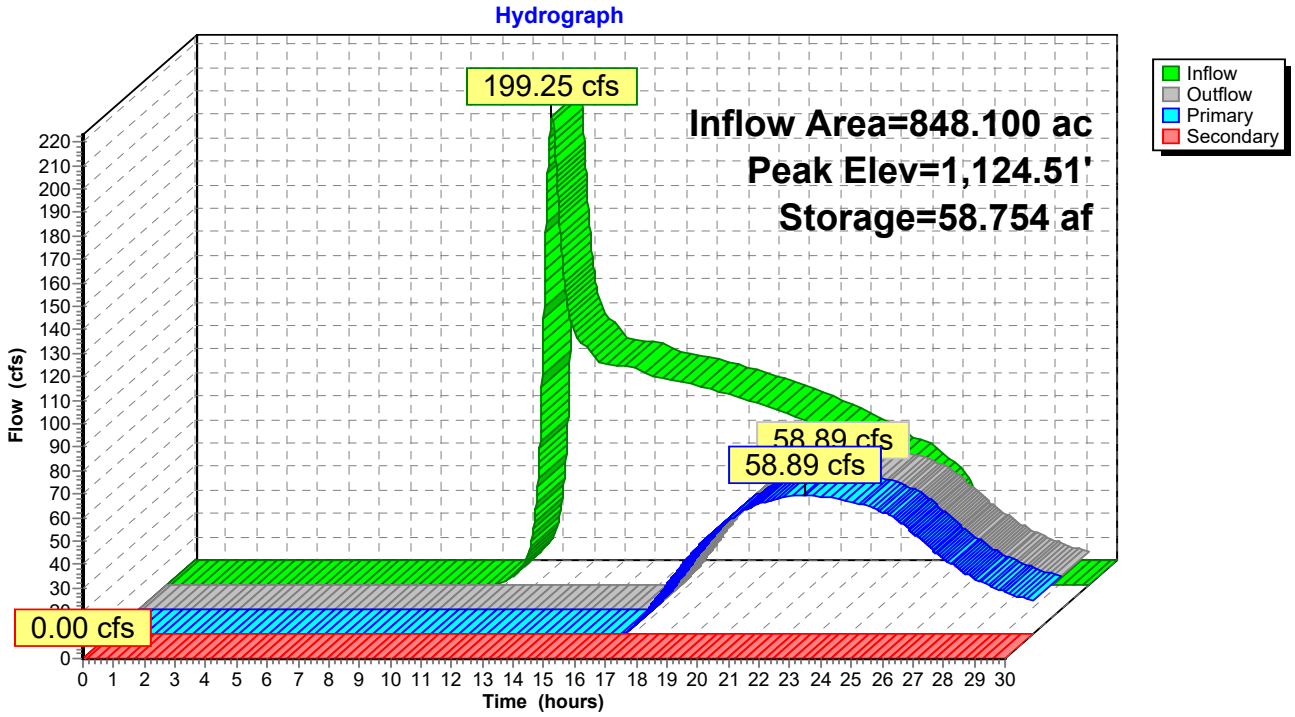
Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.00'	**50.0' long + 25.0 '/' SideZ x 50.0' breadth Saddle to Wetland** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	1,127.00'	**300.0' long + 50.0 '/' SideZ x 50.0' breadth Saddle Away from Wetland** 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

Primary OutFlow Max=58.82 cfs @ 22.58 hrs HW=1,124.51' (Free Discharge)
↑—**1=Saddle to Wetland** (Weir Controls 58.82 cfs @ 1.85 fps)

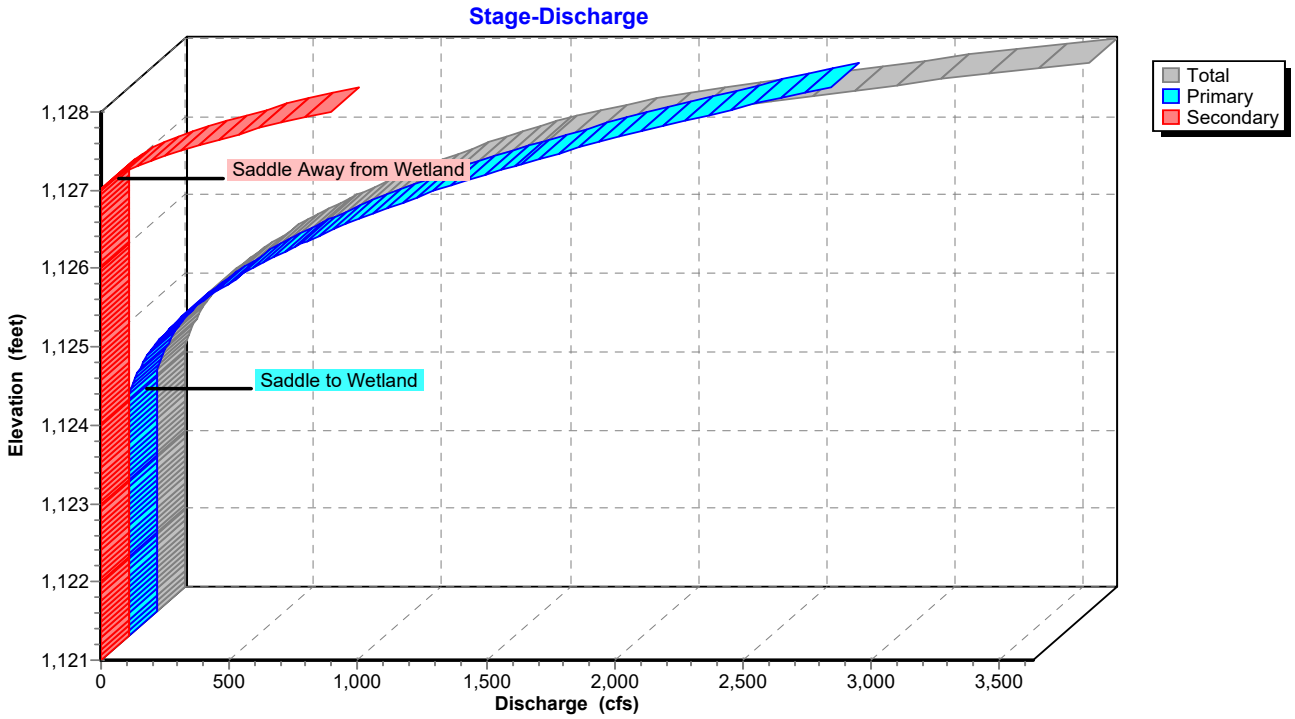
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,121.00' (Free Discharge)
↑—**2=Saddle Away from Wetland** (Controls 0.00 cfs)



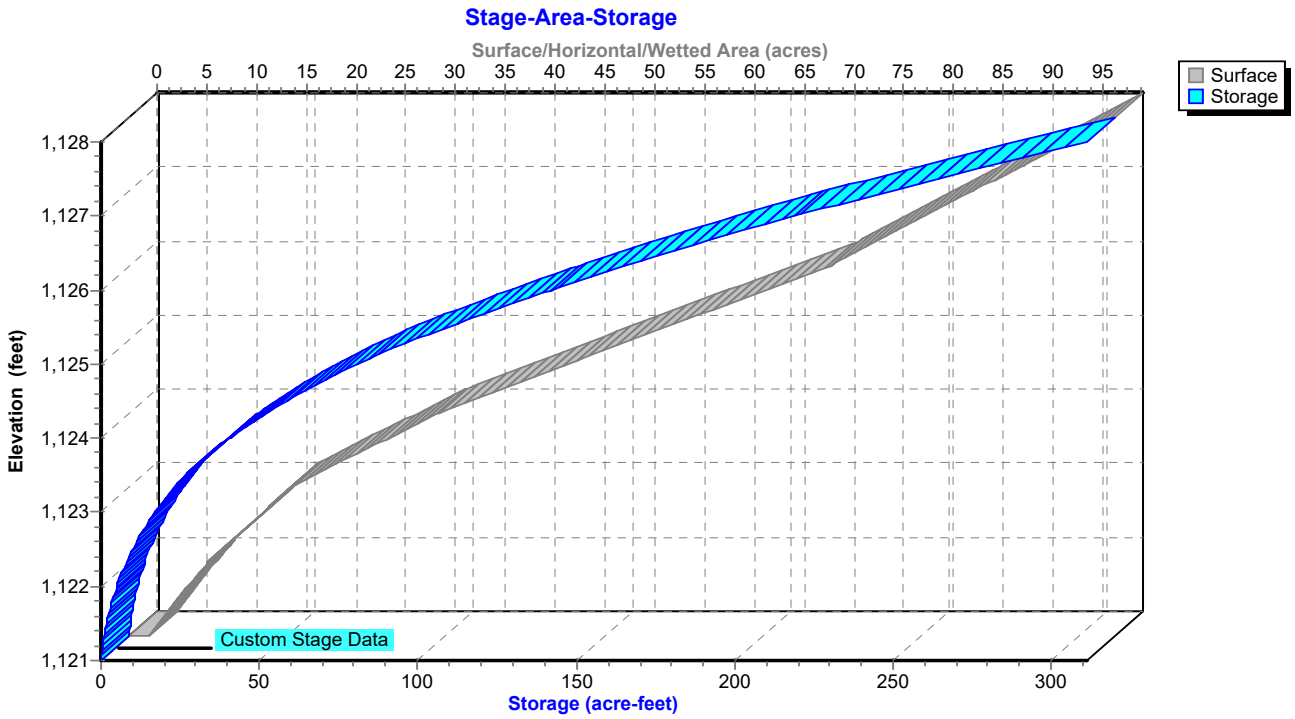
Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Hydrograph for Pond 2P: BASIN NW OF WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,121.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,121.00	0.00	0.00	0.00
2.00	0.00	0.000	1,121.00	0.00	0.00	0.00
3.00	0.00	0.000	1,121.00	0.00	0.00	0.00
4.00	0.00	0.000	1,121.00	0.00	0.00	0.00
5.00	0.00	0.000	1,121.00	0.00	0.00	0.00
6.00	0.00	0.000	1,121.00	0.00	0.00	0.00
7.00	0.00	0.000	1,121.00	0.00	0.00	0.00
8.00	0.00	0.000	1,121.00	0.00	0.00	0.00
9.00	0.00	0.000	1,121.00	0.00	0.00	0.00
10.00	0.00	0.000	1,121.00	0.00	0.00	0.00
11.00	1.32	0.020	1,121.01	0.00	0.00	0.00
12.00	**31.16**	0.794	1,121.28	0.00	0.00	0.00
13.00	**121.53**	12.128	1,122.67	0.00	0.00	0.00
14.00	95.41	20.753	1,123.21	0.00	0.00	0.00
15.00	93.32	28.500	1,123.56	0.00	0.00	0.00
16.00	88.36	36.007	1,123.85	0.00	0.00	0.00
17.00	85.65	43.156	1,124.08	3.33	3.33	0.00
18.00	82.15	49.172	1,124.26	19.64	19.64	0.00
19.00	78.19	53.494	1,124.37	35.72	35.72	0.00
20.00	73.74	56.299	1,124.45	47.66	47.66	0.00
21.00	68.70	57.917	1,124.49	54.97	54.97	0.00
22.00	62.84	**58.653**	**1,124.51**	**58.38**	**58.38**	0.00
23.00	55.79	**58.710**	**1,124.51**	**58.65**	**58.65**	0.00
24.00	49.24	58.257	1,124.50	56.51	56.51	0.00
25.00	38.26	57.375	1,124.47	52.53	52.53	0.00
26.00	13.02	55.489	1,124.43	44.05	44.05	0.00
27.00	1.95	52.822	1,124.36	32.95	32.95	0.00
28.00	0.17	50.533	1,124.30	24.28	24.28	0.00
29.00	0.02	48.791	1,124.25	18.37	18.37	0.00
30.00	0.00	47.463	1,124.21	14.11	14.11	0.00

Stage-Discharge for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,121.00	0.00	0.00	0.00
1,121.10	0.00	0.00	0.00
1,121.20	0.00	0.00	0.00
1,121.30	0.00	0.00	0.00
1,121.40	0.00	0.00	0.00
1,121.50	0.00	0.00	0.00
1,121.60	0.00	0.00	0.00
1,121.70	0.00	0.00	0.00
1,121.80	0.00	0.00	0.00
1,121.90	0.00	0.00	0.00
1,122.00	0.00	0.00	0.00
1,122.10	0.00	0.00	0.00
1,122.20	0.00	0.00	0.00
1,122.30	0.00	0.00	0.00
1,122.40	0.00	0.00	0.00
1,122.50	0.00	0.00	0.00
1,122.60	0.00	0.00	0.00
1,122.70	0.00	0.00	0.00
1,122.80	0.00	0.00	0.00
1,122.90	0.00	0.00	0.00
1,123.00	0.00	0.00	0.00
1,123.10	0.00	0.00	0.00
1,123.20	0.00	0.00	0.00
1,123.30	0.00	0.00	0.00
1,123.40	0.00	0.00	0.00
1,123.50	0.00	0.00	0.00
1,123.60	0.00	0.00	0.00
1,123.70	0.00	0.00	0.00
1,123.80	0.00	0.00	0.00
1,123.90	0.00	0.00	0.00
1,124.00	0.00	0.00	0.00
1,124.10	4.41	4.41	0.00
1,124.20	12.94	12.94	0.00
1,124.30	24.75	24.75	0.00
1,124.40	39.62	39.62	0.00
1,124.50	57.28	57.28	0.00
1,124.60	77.80	77.80	0.00
1,124.70	100.08	100.08	0.00
1,124.80	124.68	124.68	0.00
1,124.90	152.99	152.99	0.00
1,125.00	184.10	184.10	0.00
1,125.10	218.88	218.88	0.00
1,125.20	256.81	256.81	0.00
1,125.30	297.39	297.39	0.00
1,125.40	341.11	341.11	0.00
1,125.50	387.26	387.26	0.00
1,125.60	436.47	436.47	0.00
1,125.70	489.68	489.68	0.00
1,125.80	546.21	546.21	0.00
1,125.90	606.13	606.13	0.00
1,126.00	669.49	669.49	0.00
1,126.10	736.33	736.33	0.00
1,126.20	806.71	806.71	0.00
1,126.30	880.68	880.68	0.00
1,126.40	958.29	958.29	0.00
1,126.50	1,039.60	1,039.60	0.00
1,126.60	1,124.65	1,124.65	0.00
1,126.70	1,213.49	1,213.49	0.00
1,126.80	1,306.17	1,306.17	0.00
1,126.90	1,402.74	1,402.74	0.00
1,127.00	1,503.25	1,503.25	0.00
1,127.10	1,633.51	1,607.74	25.76
1,127.20	1,790.10	1,716.27	73.83
1,127.30	1,966.79	1,828.88	137.91
1,127.40	2,161.46	1,945.61	215.84
1,127.50	2,371.99	2,066.52	305.47
1,127.60	2,598.21	2,191.64	406.57
1,127.70	2,833.93	2,321.03	512.90
1,127.80	3,081.88	2,454.72	627.16
1,127.90	3,348.70	2,592.76	755.93
1,128.00	**3,629.40**	**2,735.20**	**894.20**

Stage-Area-Storage for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,121.00	1.997	0.000
1,121.10	2.587	0.229
1,121.20	3.177	0.517
1,121.30	3.768	0.865
1,121.40	4.358	1.271
1,121.50	4.948	1.736
1,121.60	5.538	2.261
1,121.70	6.128	2.844
1,121.80	6.719	3.486
1,121.90	7.309	4.188
1,122.00	7.899	4.948
1,122.10	8.731	5.779
1,122.20	9.563	6.694
1,122.30	10.394	7.692
1,122.40	11.226	8.773
1,122.50	12.058	9.937
1,122.60	12.890	11.185
1,122.70	13.722	12.515
1,122.80	14.553	13.929
1,122.90	15.385	15.426
1,123.00	16.217	17.006
1,123.10	17.679	18.701
1,123.20	19.141	20.542
1,123.30	20.604	22.529
1,123.40	22.066	24.663
1,123.50	23.528	26.942
1,123.60	24.990	29.368
1,123.70	26.452	31.940
1,123.80	27.915	34.659
1,123.90	29.377	37.523
1,124.00	30.839	40.534
1,124.10	32.817	43.717
1,124.20	34.795	47.097
1,124.30	36.773	50.676
1,124.40	38.751	54.452
1,124.50	40.729	58.426
1,124.60	42.707	62.598
1,124.70	44.685	66.968
1,124.80	46.663	71.535
1,124.90	48.641	76.300
1,125.00	50.619	81.263
1,125.10	52.598	86.424
1,125.20	54.576	91.783
1,125.30	56.554	97.339
1,125.40	58.532	103.093
1,125.50	60.510	109.046
1,125.60	62.488	115.195
1,125.70	64.466	121.543
1,125.80	66.444	128.089
1,125.90	68.422	134.832
1,126.00	70.400	141.773
1,126.10	71.830	148.884
1,126.20	73.260	156.139
1,126.30	74.690	163.536
1,126.40	76.120	171.077
1,126.50	77.550	178.760
1,126.60	78.980	186.587
1,126.70	80.410	194.557
1,126.80	81.840	202.669
1,126.90	83.270	210.925
1,127.00	84.700	219.323
1,127.10	86.130	227.864
1,127.20	87.560	236.549
1,127.30	88.990	245.376
1,127.40	90.420	254.347
1,127.50	91.850	263.460
1,127.60	93.280	272.717
1,127.70	94.710	282.117
1,127.80	96.140	291.659
1,127.90	97.570	301.345
1,128.00	**99.000**	**311.173**

Summary for Pond I AVENUE: I AVENUE CULVERTS

Inflow Area = 1,705.100 ac, 0.00% Impervious, Inflow Depth > 0.94" for 1-Year event
Inflow = 443.31 cfs @ 13.29 hrs, Volume= 133.462 af
Outflow = 324.45 cfs @ 13.93 hrs, Volume= 133.449 af, Atten= 27%, Lag= 38.4 min
Primary = 268.87 cfs @ 13.80 hrs, Volume= 125.647 af
Secondary = 55.78 cfs @ 13.93 hrs, Volume= 7.803 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,108.10' @ 13.93 hrs Surf.Area= 7.018 ac Storage= 12.243 af

Plug-Flow detention time= 9.8 min calculated for 133.449 af (100% of inflow)
Center-of-Mass det. time= 9.7 min (1,064.2 - 1,054.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,098.00'	389.351 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,098.00	0.000	0.000	0.000
1,099.00	0.001	0.001	0.001
1,100.00	0.001	0.001	0.002
1,101.00	0.008	0.005	0.006
1,102.00	0.027	0.017	0.023
1,103.00	0.110	0.069	0.092
1,104.00	0.241	0.175	0.267
1,105.00	0.739	0.490	0.757
1,106.00	2.505	1.622	2.380
1,107.00	4.643	3.574	5.954
1,108.00	6.580	5.611	11.565
1,109.00	10.976	8.778	20.343
1,110.00	16.743	13.859	34.202
1,111.00	23.315	20.029	54.231
1,112.00	31.569	27.442	81.673
1,113.00	42.966	37.267	118.941
1,114.00	53.960	48.463	167.404
1,115.00	65.810	59.885	227.289
1,116.00	79.729	72.769	300.058
1,117.00	98.855	89.292	389.351

Device	Routing	Invert	Outlet Devices
#1	Primary	1,100.22'	**72.0" Round 72" RCP CULVERT** L= 85.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,100.22' / 1,098.91' S= 0.0153 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 28.27 sf
#2	Secondary	1,104.72'	**48.0" Round 48" RCP CULVERT** L= 62.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,104.72' / 1,104.41' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#3	Tertiary	1,115.86'	**I AVENUE, C= 3.27** Offset (feet) 0.00 115.59 162.20 164.26 214.26 232.65 343.45

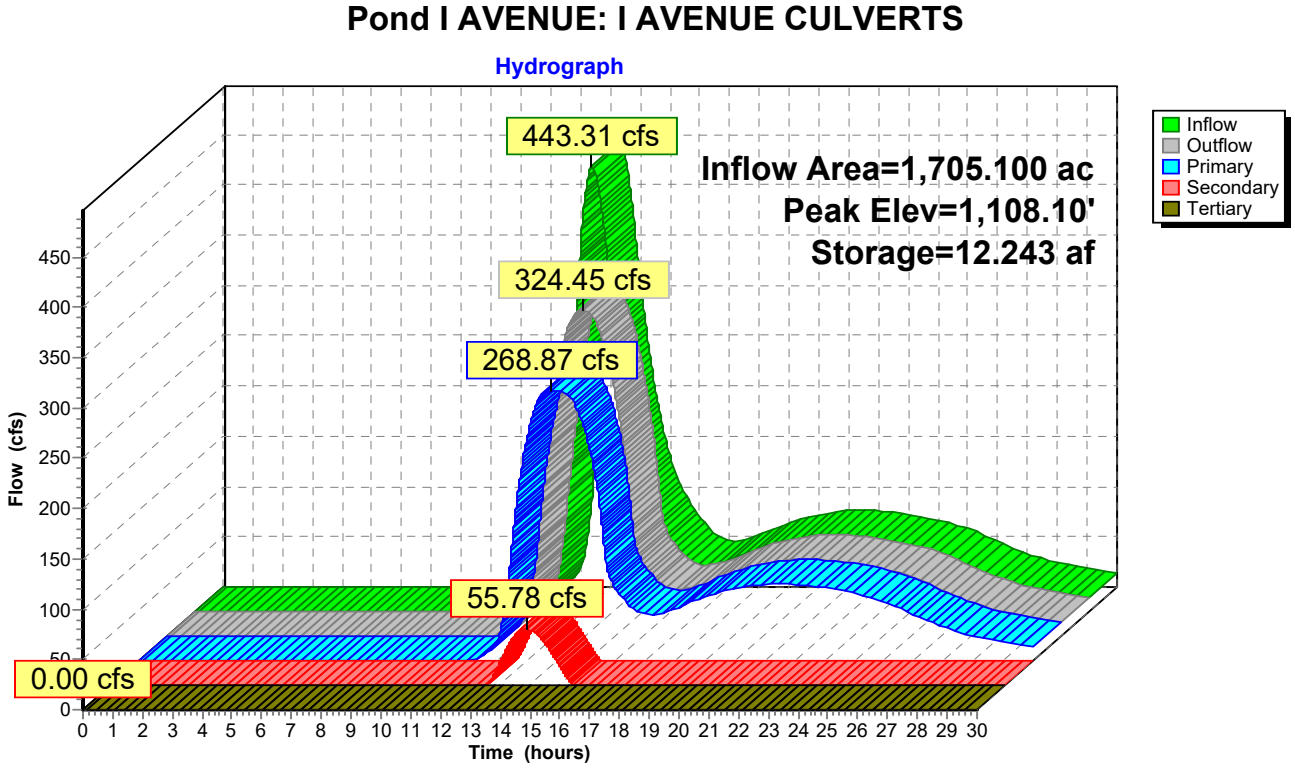
Height (feet) 1.14 0.14 0.00 0.00 0.09 0.14 1.14

Primary OutFlow Max=268.88 cfs @ 13.80 hrs HW=1,108.07' (Free Discharge)
└**1=72" RCP CULVERT** (Barrel Controls 268.88 cfs @ 9.55 fps)

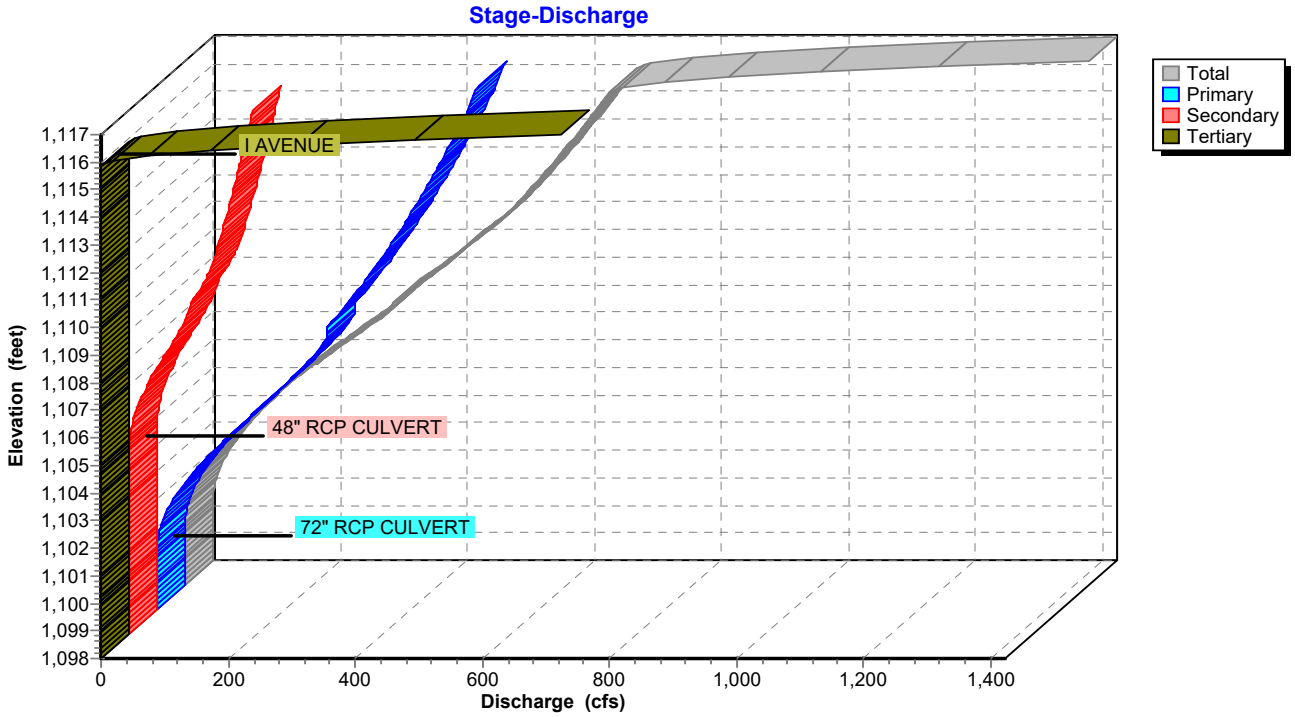
Secondary OutFlow Max=55.77 cfs @ 13.93 hrs HW=1,108.10' (Free Discharge)
└**2=48" RCP CULVERT** (Barrel Controls 55.77 cfs @ 6.64 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,098.00' (Free Discharge)
└**3=I AVENUE** (Controls 0.00 cfs)

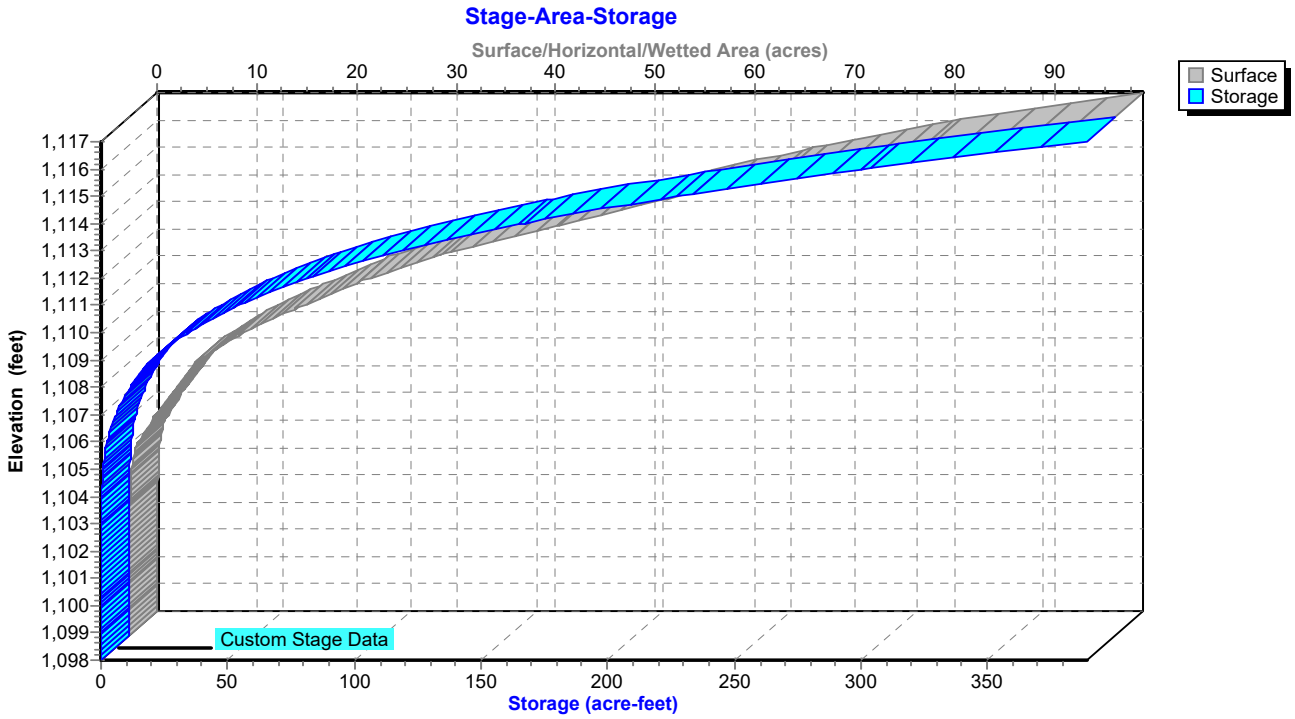




Pond I AVENUE: I AVENUE CULVERTS



Pond I AVENUE: I AVENUE CULVERTS



Hydrograph for Pond I AVENUE: I AVENUE CULVERTS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	0.00	0.000	1,098.00	0.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
2.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
3.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
4.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
5.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
6.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
7.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
8.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
9.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
10.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
11.00	0.52	0.003	1,100.47	0.47	0.47	0.00	0.00
12.00	20.38	0.017	1,101.75	19.72	19.72	0.00	0.00
13.00	**385.68**	**3.921**	**1,106.50**	**237.73**	**218.68**	**19.05**	0.00
14.00	**306.71**	**12.206**	**1,108.09**	**324.32**	**268.71**	**55.61**	0.00
15.00	130.89	4.471	1,106.65	246.93	225.05	21.88	0.00
16.00	70.05	0.134	1,103.32	72.08	72.08	0.00	0.00
17.00	45.69	0.057	1,102.62	45.81	45.81	0.00	0.00
18.00	52.30	0.072	1,102.80	51.92	51.92	0.00	0.00
19.00	63.92	0.105	1,103.11	63.50	63.50	0.00	0.00
20.00	72.25	0.134	1,103.32	71.97	71.97	0.00	0.00
21.00	76.00	0.150	1,103.42	75.92	75.92	0.00	0.00
22.00	75.86	0.150	1,103.42	75.94	75.94	0.00	0.00
23.00	72.52	0.137	1,103.34	72.75	72.75	0.00	0.00
24.00	66.77	0.117	1,103.20	67.03	67.03	0.00	0.00
25.00	58.15	0.090	1,102.98	58.54	58.54	0.00	0.00
26.00	45.44	0.057	1,102.62	45.81	45.81	0.00	0.00
27.00	33.24	0.033	1,102.25	33.44	33.44	0.00	0.00
28.00	24.34	0.022	1,101.93	24.42	24.42	0.00	0.00
29.00	18.37	0.016	1,101.70	18.43	18.43	0.00	0.00
30.00	14.11	0.013	1,101.51	14.15	14.15	0.00	0.00

Stage-Discharge for Pond I AVENUE: I AVENUE CULVERTS

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1,098.00	0.00	0.00	0.00	0.00
1,098.50	0.00	0.00	0.00	0.00
1,099.00	0.00	0.00	0.00	0.00
1,099.50	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	0.00	0.00
1,100.50	0.61	0.61	0.00	0.00
1,101.00	5.15	5.15	0.00	0.00
1,101.50	13.88	13.88	0.00	0.00
1,102.00	26.18	26.18	0.00	0.00
1,102.50	41.52	41.52	0.00	0.00
1,103.00	59.41	59.41	0.00	0.00
1,103.50	79.41	79.41	0.00	0.00
1,104.00	101.10	101.10	0.00	0.00
1,104.50	124.05	124.05	0.00	0.00
1,105.00	148.39	147.81	0.58	0.00
1,105.50	176.12	171.89	4.24	0.00
1,106.00	206.21	195.69	10.52	0.00
1,106.50	237.48	218.53	18.95	0.00
1,107.00	268.61	239.47	29.14	0.00
1,107.50	297.80	257.09	40.70	0.00
1,108.00	321.54	268.33	53.21	0.00
1,108.50	343.07	276.93	66.15	0.00
1,109.00	374.43	295.59	78.85	0.00
1,109.50	403.49	313.13	90.36	0.00
1,110.00	428.24	329.75	98.50	0.00
1,110.50	456.69	345.56	111.13	0.00
1,111.00	484.40	360.69	123.71	0.00
1,111.50	507.49	375.20	132.29	0.00
1,112.00	528.21	389.17	139.03	0.00
1,112.50	548.13	402.66	145.47	0.00
1,113.00	567.34	415.71	151.63	0.00
1,113.50	585.92	428.37	157.55	0.00
1,114.00	603.92	440.66	163.26	0.00
1,114.50	621.39	452.62	168.77	0.00
1,115.00	638.37	464.27	174.11	0.00
1,115.50	654.92	475.63	179.29	0.00
1,116.00	679.75	486.69	184.32	8.74
1,116.50	904.83	496.12	189.22	219.49
1,117.00	**1,422.27**	**505.37**	**194.00**	**722.89**

Stage-Area-Storage for Pond I AVENUE: I AVENUE CULVERTS

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,098.00	0.000	0.000
1,098.20	0.000	0.000
1,098.40	0.000	0.000
1,098.60	0.001	0.000
1,098.80	0.001	0.000
1,099.00	0.001	0.001
1,099.20	0.001	0.001
1,099.40	0.001	0.001
1,099.60	0.001	0.001
1,099.80	0.001	0.001
1,100.00	0.001	0.002
1,100.20	0.002	0.002
1,100.40	0.004	0.002
1,100.60	0.005	0.003
1,100.80	0.007	0.005
1,101.00	0.008	0.006
1,101.20	0.012	0.008
1,101.40	0.016	0.011
1,101.60	0.019	0.014
1,101.80	0.023	0.018
1,102.00	0.027	0.023
1,102.20	0.044	0.031
1,102.40	0.060	0.041
1,102.60	0.077	0.055
1,102.80	0.093	0.072
1,103.00	0.110	0.092
1,103.20	0.136	0.117
1,103.40	0.162	0.146
1,103.60	0.189	0.182
1,103.80	0.215	0.222
1,104.00	0.241	0.267
1,104.20	0.341	0.326
1,104.40	0.440	0.404
1,104.60	0.540	0.502
1,104.80	0.639	0.620
1,105.00	0.739	0.757
1,105.20	1.092	0.941
1,105.40	1.445	1.194
1,105.60	1.799	1.519
1,105.80	2.152	1.914
1,106.00	2.505	2.380
1,106.20	2.933	2.923
1,106.40	3.360	3.553
1,106.60	3.788	4.267
1,106.80	4.215	5.068
1,107.00	4.643	5.954
1,107.20	5.030	6.921
1,107.40	5.418	7.966
1,107.60	5.805	9.088
1,107.80	6.193	10.288
1,108.00	6.580	11.565
1,108.20	7.459	12.969
1,108.40	8.338	14.549
1,108.60	9.218	16.304
1,108.80	10.097	18.236
1,109.00	10.976	20.343
1,109.20	12.129	22.654
1,109.40	13.283	25.195
1,109.60	14.436	27.967
1,109.80	15.590	30.969
1,110.00	16.743	34.202
1,110.20	18.057	37.683
1,110.40	19.372	41.425
1,110.60	20.686	45.431
1,110.80	22.001	49.700
1,111.00	23.315	54.231
1,111.20	24.966	59.060
1,111.40	26.617	64.218
1,111.60	28.267	69.706
1,111.80	29.918	75.525
1,112.00	31.569	81.673
1,112.20	33.848	88.215
1,112.40	36.128	95.213
1,112.60	38.407	102.666
1,112.80	40.687	110.576
1,113.00	42.966	118.941
1,113.20	45.165	127.754
1,113.40	47.364	137.007
1,113.60	49.562	146.700
1,113.80	51.761	156.832
1,114.00	53.960	167.404
1,114.20	56.330	178.433
1,114.40	58.700	189.936
1,114.60	61.070	201.913
1,114.80	63.440	214.364
1,115.00	65.810	227.289
1,115.20	68.594	240.729
1,115.40	71.378	254.727
1,115.60	74.161	269.280
1,115.80	76.945	284.391
1,116.00	79.729	300.058
1,116.20	83.554	316.387
1,116.40	87.379	333.480
1,116.60	91.205	351.339
1,116.80	95.030	369.962
1,117.00	**98.855**	**389.351**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 158.4 AC: Watershed After Runoff Area=158.400 ac 0.00% Impervious Runoff Depth=1.60"
Flow Length=2,718' Slope=0.0329 '/' Tc=34.2 min CN=84 Runoff=209.81 cfs 21.106 af

Subcatchment 312.5 AC: South Watershed Runoff Area=312.500 ac 0.00% Impervious Runoff Depth=1.60"
Flow Length=9,197' Slope=0.0329 '/' Tc=90.7 min CN=84 Runoff=216.52 cfs 41.639 af

Subcatchment 544.5 AC: Remainder of Runoff Area=544.500 ac 0.00% Impervious Runoff Depth=1.60"
Flow Length=10,448' Slope=0.0329 '/' Tc=100.5 min CN=84 Runoff=347.53 cfs 72.552 af

Subcatchment 689.7 AC: Watershed West Runoff Area=689.700 ac 0.00% Impervious Runoff Depth=1.60"
Flow Length=9,666' Slope=0.0329 '/' Tc=94.4 min CN=84 Runoff=464.64 cfs 91.899 af

Pond 1P: H AVENUE CULVERT Peak Elev=1,128.19' Storage=47.026 af Inflow=464.64 cfs 91.899 af
Primary=51.08 cfs 6.384 af Secondary=85.66 cfs 85.515 af Outflow=136.75 cfs 91.899 af

Pond 2P: BASIN NW OF WETLAND Peak Elev=1,124.58' Storage=61.688 af Inflow=248.22 cfs 113.005 af
Primary=73.19 cfs 63.465 af Secondary=0.00 cfs 0.000 af Outflow=73.19 cfs 63.465 af

Pond I AVENUE: I AVENUE Peak Elev=1,108.97' Storage=20.043 af Inflow=561.73 cfs 177.657 af
Primary=294.58 cfs 163.994 af Secondary=78.16 cfs 13.645 af Tertiary=0.00 cfs 0.000 af Outflow=372.75 cfs 177.638 af

Total Runoff Area = 1,705.100 ac Runoff Volume = 227.197 af Average Runoff Depth = 1.60"
100.00% Pervious = 1,705.100 ac 0.00% Impervious = 0.000 ac

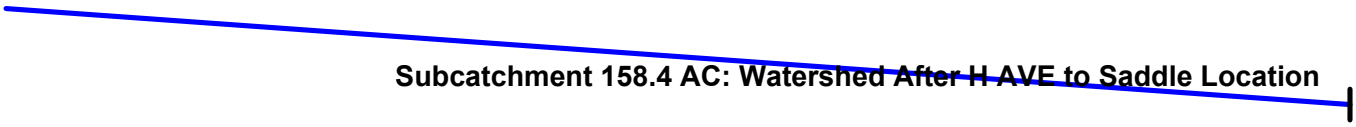
Summary for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Runoff = 209.81 cfs @ 12.50 hrs, Volume= 21.106 af, Depth= 1.60"
Routed to Pond 2P : BASIN NW OF WETLAND

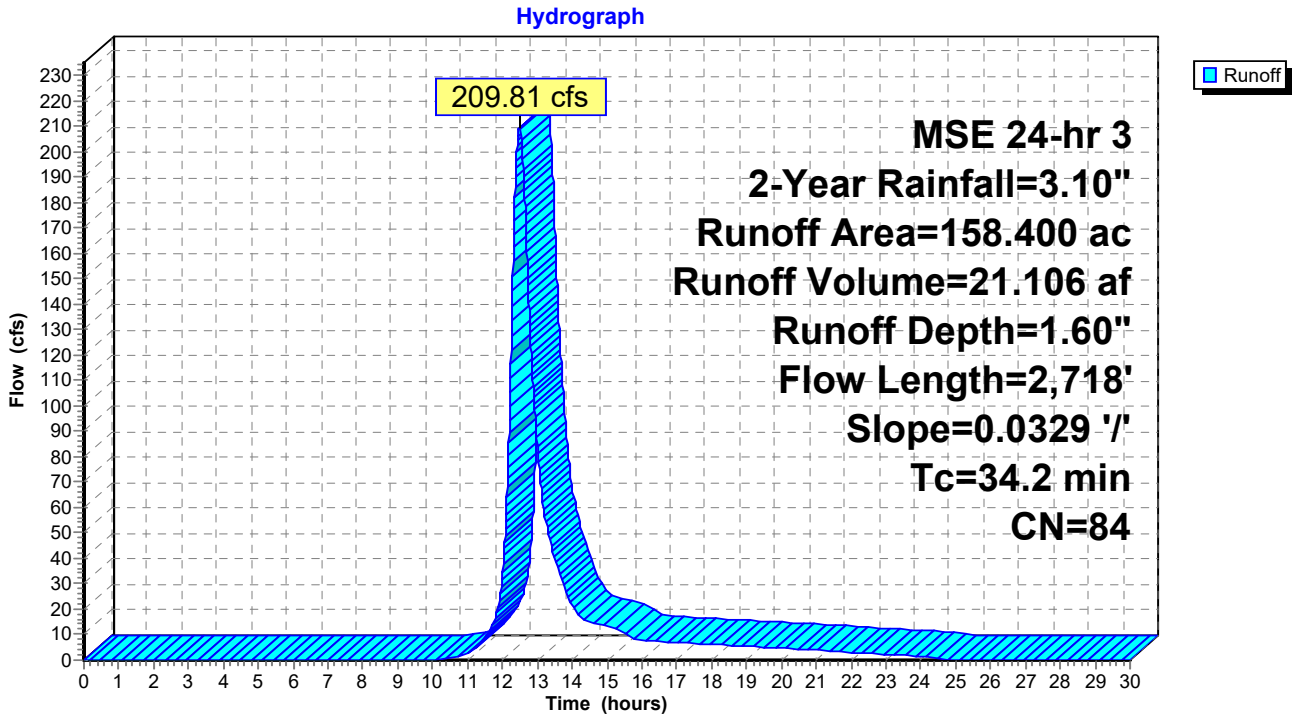
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.10"

	Area (ac)	CN	Description
*	158.400	84	
	158.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.2	2,718	0.0329	1.32		**Lag/CN Method,**



Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location



Hydrograph for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.03	0.00	0.00
2.50	0.04	0.00	0.00
3.00	0.05	0.00	0.00
3.50	0.07	0.00	0.00
4.00	0.08	0.00	0.00
4.50	0.10	0.00	0.00
5.00	0.12	0.00	0.00
5.50	0.14	0.00	0.00
6.00	0.16	0.00	0.00
6.50	0.18	0.00	0.00
7.00	0.21	0.00	0.00
7.50	0.23	0.00	0.00
8.00	0.26	0.00	0.00
8.50	0.29	0.00	0.00
9.00	0.32	0.00	0.00
9.50	0.37	0.00	0.00
10.00	0.43	0.00	0.08
10.50	0.48	0.01	0.82
11.00	0.60	0.02	2.87
11.50	0.77	0.07	8.93
12.00	1.43	0.38	33.54
12.50	2.33	0.99	**209.78**
13.00	2.50	1.12	83.36
13.50	2.62	1.21	40.00
14.00	2.67	1.25	21.17
14.50	2.73	1.30	15.09
15.00	2.78	1.34	13.71
15.50	2.81	1.36	10.41
16.00	2.84	1.39	8.02
16.50	2.87	1.41	7.40
17.00	2.89	1.43	7.01
17.50	2.92	1.45	6.62
18.00	2.94	1.47	6.24
18.50	2.96	1.49	5.86
19.00	2.98	1.50	5.47
19.50	3.00	1.52	5.08
20.00	3.02	1.53	4.69
20.50	3.03	1.54	4.29
21.00	3.05	1.56	3.90
21.50	3.06	1.57	3.50
22.00	3.07	1.58	3.10
22.50	3.08	1.58	2.69
23.00	3.09	1.59	2.30
23.50	3.10	1.60	1.89
24.00	**3.10**	**1.60**	1.49
24.50	3.10	1.60	0.59
25.00	3.10	1.60	0.07
25.50	3.10	1.60	0.01
26.00	3.10	1.60	0.00
26.50	3.10	1.60	0.00
27.00	3.10	1.60	0.00
27.50	3.10	1.60	0.00
28.00	3.10	1.60	0.00
28.50	3.10	1.60	0.00
29.00	3.10	1.60	0.00
29.50	3.10	1.60	0.00
30.00	3.10	1.60	0.00

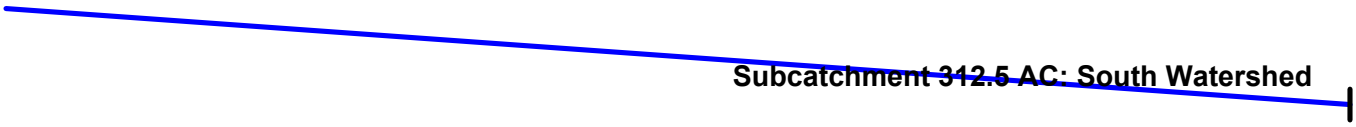
Summary for Subcatchment 312.5 AC: South Watershed

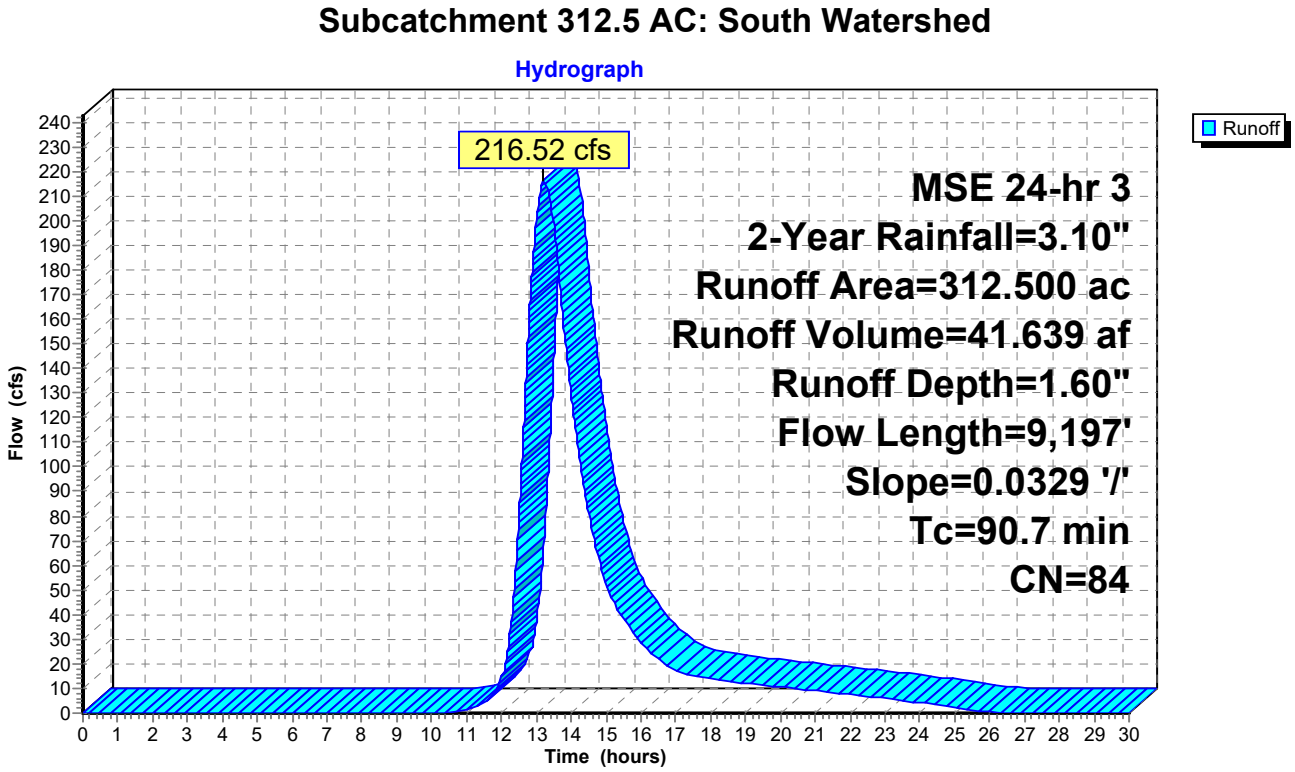
Runoff = 216.52 cfs @ 13.20 hrs, Volume= 41.639 af, Depth= 1.60"
Routed to Pond I AVENUE : I AVENUE CULVERTS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.10"

	Area (ac)	CN	Description
*	312.500	84	
	312.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
90.7	9,197	0.0329	1.69		**Lag/CN Method,**





Hydrograph for Subcatchment 312.5 AC: South Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.03	0.00	0.00
2.50	0.04	0.00	0.00
3.00	0.05	0.00	0.00
3.50	0.07	0.00	0.00
4.00	0.08	0.00	0.00
4.50	0.10	0.00	0.00
5.00	0.12	0.00	0.00
5.50	0.14	0.00	0.00
6.00	0.16	0.00	0.00
6.50	0.18	0.00	0.00
7.00	0.21	0.00	0.00
7.50	0.23	0.00	0.00
8.00	0.26	0.00	0.00
8.50	0.29	0.00	0.00
9.00	0.32	0.00	0.00
9.50	0.37	0.00	0.00
10.00	0.43	0.00	0.01
10.50	0.48	0.01	0.21
11.00	0.60	0.02	1.16
11.50	0.77	0.07	4.36
12.00	1.43	0.38	14.00
12.50	2.33	0.99	77.84
13.00	2.50	1.12	**201.25**
13.50	2.62	1.21	**198.91**
14.00	2.67	1.25	129.43
14.50	2.73	1.30	81.53
15.00	2.78	1.34	52.98
15.50	2.81	1.36	38.08
16.00	2.84	1.39	28.58
16.50	2.87	1.41	21.62
17.00	2.89	1.43	17.46
17.50	2.92	1.45	15.23
18.00	2.94	1.47	13.97
18.50	2.96	1.49	13.00
19.00	2.98	1.50	12.17
19.50	3.00	1.52	11.37
20.00	3.02	1.53	10.59
20.50	3.03	1.54	9.82
21.00	3.05	1.56	9.04
21.50	3.06	1.57	8.27
22.00	3.07	1.58	7.48
22.50	3.08	1.58	6.70
23.00	3.09	1.59	5.90
23.50	3.10	1.60	5.12
24.00	**3.10**	**1.60**	4.32
24.50	3.10	1.60	3.47
25.00	3.10	1.60	2.23
25.50	3.10	1.60	1.09
26.00	3.10	1.60	0.47
26.50	3.10	1.60	0.21
27.00	3.10	1.60	0.09
27.50	3.10	1.60	0.04
28.00	3.10	1.60	0.01
28.50	3.10	1.60	0.00
29.00	3.10	1.60	0.00
29.50	3.10	1.60	0.00
30.00	3.10	1.60	0.00

Summary for Subcatchment 544.5 AC: Remainder of Watershed to I Ave

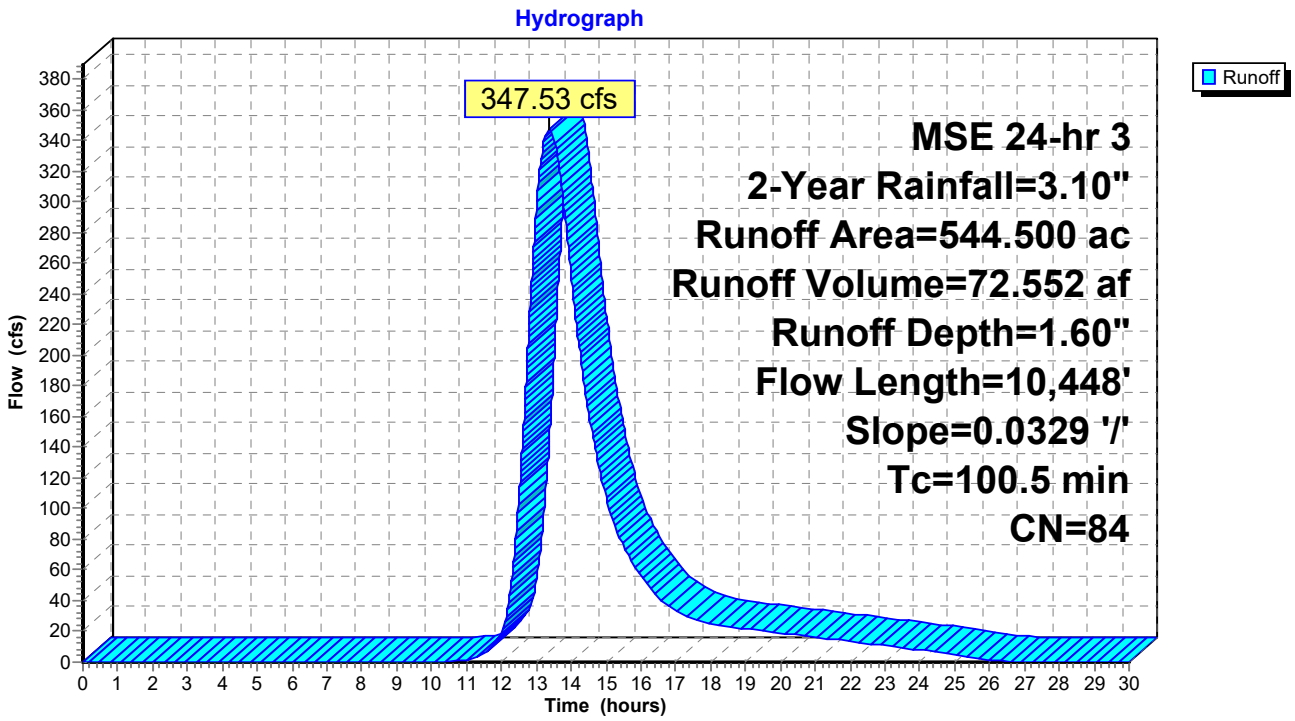
Runoff = 347.53 cfs @ 13.39 hrs, Volume= 72.552 af, Depth= 1.60"
Routed to Pond I AVENUE : I AVENUE CULVERTS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.10"

	Area (ac)	CN	Description
*	544.500	84	
	544.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
100.5	10,448	0.0329	1.73		**Lag/CN Method,**





Hydrograph for Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.03	0.00	0.00
2.50	0.04	0.00	0.00
3.00	0.05	0.00	0.00
3.50	0.07	0.00	0.00
4.00	0.08	0.00	0.00
4.50	0.10	0.00	0.00
5.00	0.12	0.00	0.00
5.50	0.14	0.00	0.00
6.00	0.16	0.00	0.00
6.50	0.18	0.00	0.00
7.00	0.21	0.00	0.00
7.50	0.23	0.00	0.00
8.00	0.26	0.00	0.00
8.50	0.29	0.00	0.00
9.00	0.32	0.00	0.00
9.50	0.37	0.00	0.00
10.00	0.43	0.00	0.01
10.50	0.48	0.01	0.26
11.00	0.60	0.02	1.58
11.50	0.77	0.07	6.08
12.00	1.43	0.38	20.05
12.50	2.33	0.99	104.00
13.00	2.50	1.12	**293.21**
13.50	2.62	1.21	**342.96**
14.00	2.67	1.25	252.39
14.50	2.73	1.30	163.36
15.00	2.78	1.34	107.66
15.50	2.81	1.36	75.99
16.00	2.84	1.39	56.47
16.50	2.87	1.41	42.37
17.00	2.89	1.43	33.65
17.50	2.92	1.45	28.49
18.00	2.94	1.47	25.29
18.50	2.96	1.49	23.29
19.00	2.98	1.50	21.69
19.50	3.00	1.52	20.27
20.00	3.02	1.53	18.90
20.50	3.03	1.54	17.52
21.00	3.05	1.56	16.16
21.50	3.06	1.57	14.82
22.00	3.07	1.58	13.47
22.50	3.08	1.58	12.09
23.00	3.09	1.59	10.70
23.50	3.10	1.60	9.33
24.00	**3.10**	**1.60**	7.96
24.50	3.10	1.60	6.47
25.00	3.10	1.60	4.50
25.50	3.10	1.60	2.49
26.00	3.10	1.60	1.19
26.50	3.10	1.60	0.57
27.00	3.10	1.60	0.27
27.50	3.10	1.60	0.12
28.00	3.10	1.60	0.05
28.50	3.10	1.60	0.02
29.00	3.10	1.60	0.01
29.50	3.10	1.60	0.00
30.00	3.10	1.60	0.00

Summary for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Runoff = 464.64 cfs @ 13.32 hrs, Volume= 91.899 af, Depth= 1.60"
Routed to Pond 1P : H AVENUE CULVERT

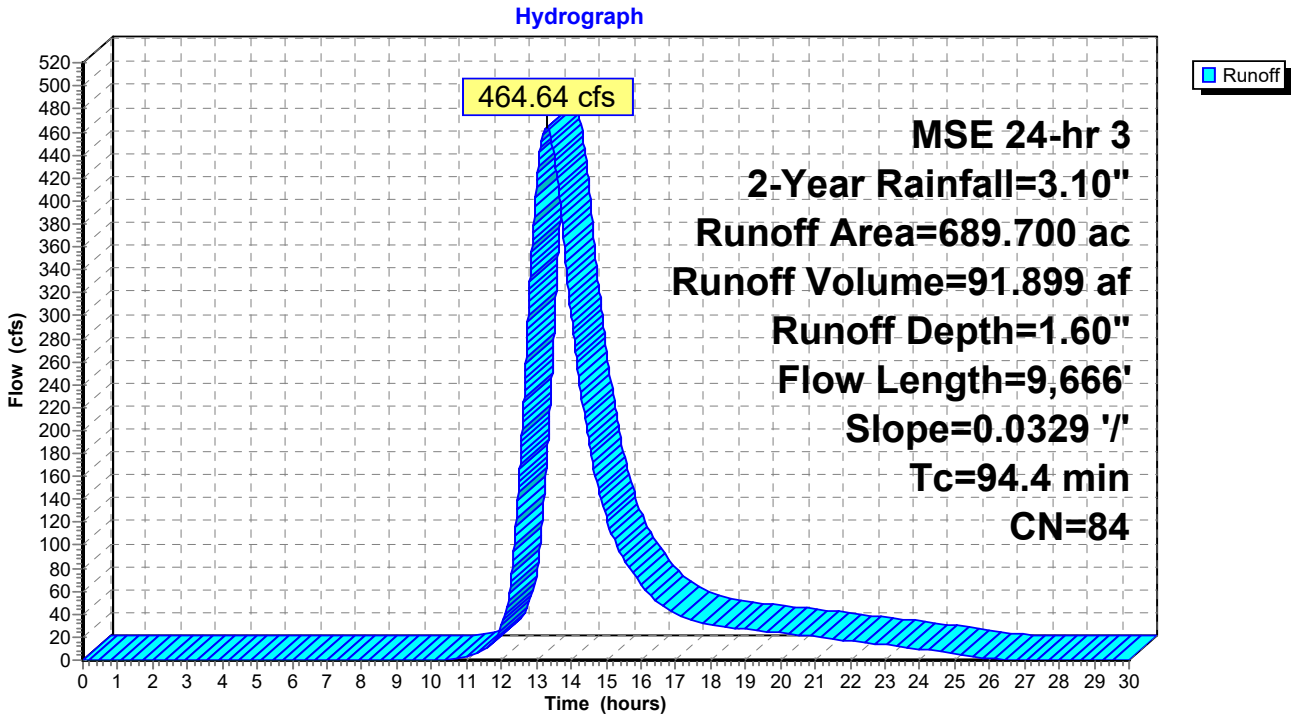
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.10"

	Area (ac)	CN	Description
*	689.700	84	
	689.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
94.4	9,666	0.0329	1.71		**Lag/CN Method,**

Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Subcatchment 689.7 AC: Watershed West of H Ave Culvert



Hydrograph for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.03	0.00	0.00
2.50	0.04	0.00	0.00
3.00	0.05	0.00	0.00
3.50	0.07	0.00	0.00
4.00	0.08	0.00	0.00
4.50	0.10	0.00	0.00
5.00	0.12	0.00	0.00
5.50	0.14	0.00	0.00
6.00	0.16	0.00	0.00
6.50	0.18	0.00	0.00
7.00	0.21	0.00	0.00
7.50	0.23	0.00	0.00
8.00	0.26	0.00	0.00
8.50	0.29	0.00	0.00
9.00	0.32	0.00	0.00
9.50	0.37	0.00	0.00
10.00	0.43	0.00	0.01
10.50	0.48	0.01	0.40
11.00	0.60	0.02	2.33
11.50	0.77	0.07	8.88
12.00	1.43	0.38	29.03
12.50	2.33	0.99	151.14
13.00	2.50	1.12	**413.64**
13.50	2.62	1.21	**441.73**
14.00	2.67	1.25	300.97
14.50	2.73	1.30	191.73
15.00	2.78	1.34	124.66
15.50	2.81	1.36	88.65
16.00	2.84	1.39	66.24
16.50	2.87	1.41	49.92
17.00	2.89	1.43	40.08
17.50	2.92	1.45	34.35
18.00	2.94	1.47	31.23
18.50	2.96	1.49	28.98
19.00	2.98	1.50	27.10
19.50	3.00	1.52	25.29
20.00	3.02	1.53	23.59
20.50	3.03	1.54	21.87
21.00	3.05	1.56	20.15
21.50	3.06	1.57	18.46
22.00	3.07	1.58	16.71
22.50	3.08	1.58	14.98
23.00	3.09	1.59	13.24
23.50	3.10	1.60	11.48
24.00	**3.10**	**1.60**	9.75
24.50	3.10	1.60	7.85
25.00	3.10	1.60	5.23
25.50	3.10	1.60	2.69
26.00	3.10	1.60	1.21
26.50	3.10	1.60	0.55
27.00	3.10	1.60	0.24
27.50	3.10	1.60	0.10
28.00	3.10	1.60	0.04
28.50	3.10	1.60	0.01
29.00	3.10	1.60	0.00
29.50	3.10	1.60	0.00
30.00	3.10	1.60	0.00

Summary for Pond 1P: H AVENUE CULVERT

Inflow Area = 689.700 ac, 0.00% Impervious, Inflow Depth = 1.60" for 2-Year event
Inflow = 464.64 cfs @ 13.32 hrs, Volume= 91.899 af
Outflow = 136.75 cfs @ 14.88 hrs, Volume= 91.899 af, Atten= 71%, Lag= 94.0 min
Primary = 51.08 cfs @ 14.88 hrs, Volume= 6.384 af
Routed to Pond 2P : BASIN NW OF WETLAND
Secondary = 85.66 cfs @ 14.88 hrs, Volume= 85.515 af
Routed to Pond 2P : BASIN NW OF WETLAND

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,128.19' @ 14.88 hrs Surf.Area= 40.992 ac Storage= 47.026 af

Plug-Flow detention time= 239.4 min calculated for 91.868 af (100% of inflow)
Center-of-Mass det. time= 239.4 min (1,127.4 - 888.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,124.00'	161.110 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,124.00	0.010	0.000	0.000
1,126.00	1.650	1.660	1.660
1,128.00	36.300	37.950	39.610
1,130.00	85.200	121.500	161.110

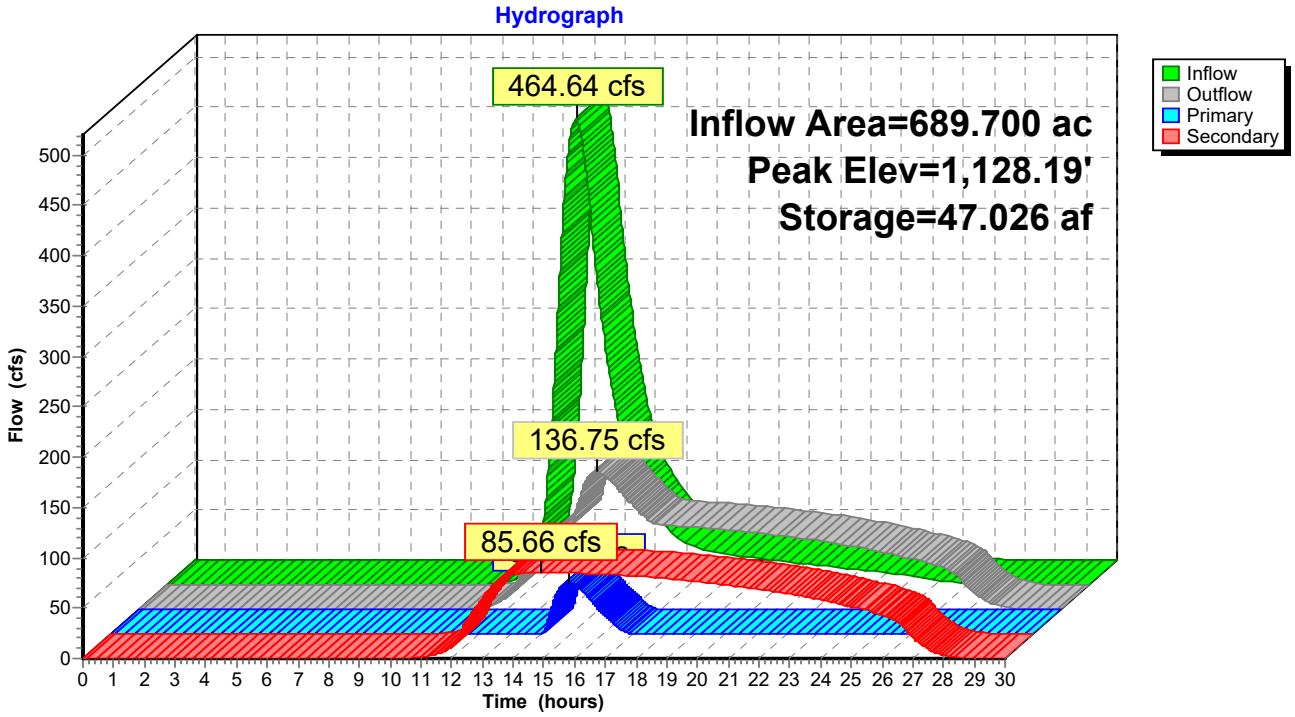
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,124.00'	**60.0" W x 24.0" H Box 5'x2' CULVERT** L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,124.00' / 1,124.00' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 10.00 sf
#2	Primary	1,128.05'	**342.0' long + 100.0 '/' SideZ x 25.0' breadth H Ave Road Surface** 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

Primary OutFlow Max=50.61 cfs @ 14.88 hrs HW=1,128.19' (Free Discharge)
└**2=H Ave Road Surface** (Weir Controls 50.61 cfs @ 1.00 fps)

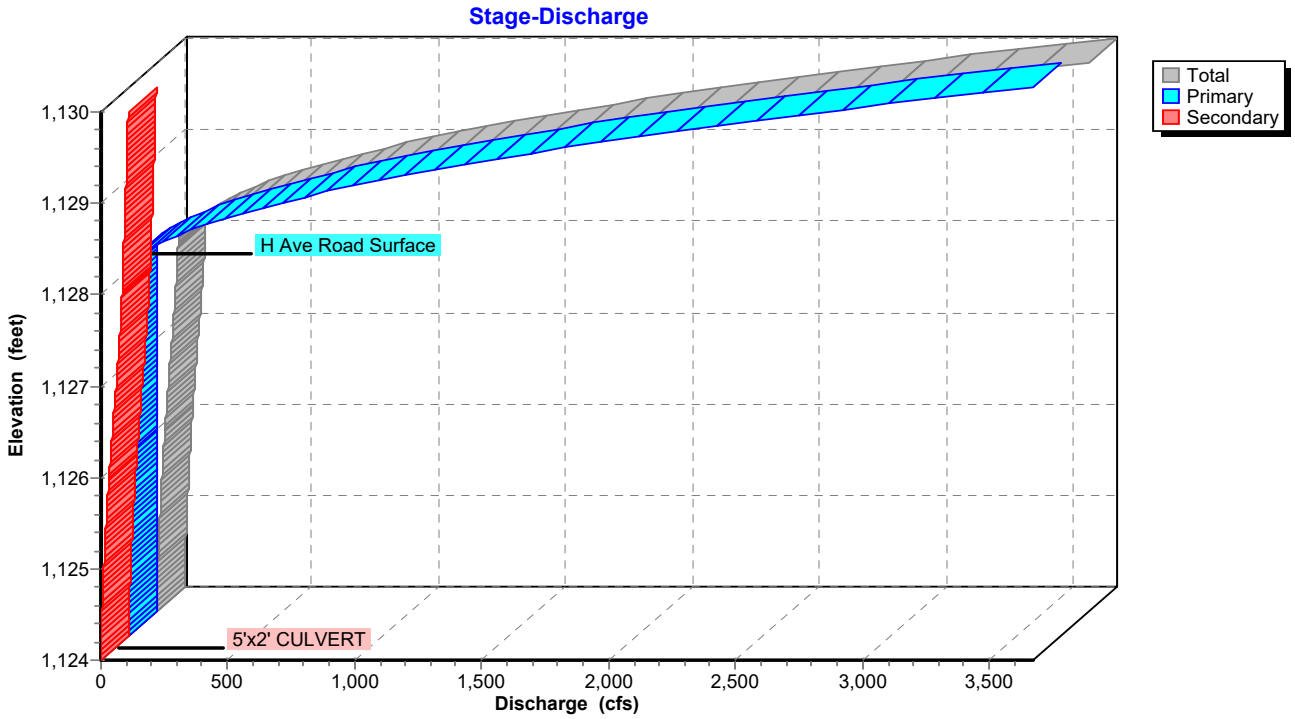
Secondary OutFlow Max=85.67 cfs @ 14.88 hrs HW=1,128.19' (Free Discharge)
└**1=5'x2' CULVERT** (Inlet Controls 85.67 cfs @ 8.57 fps)



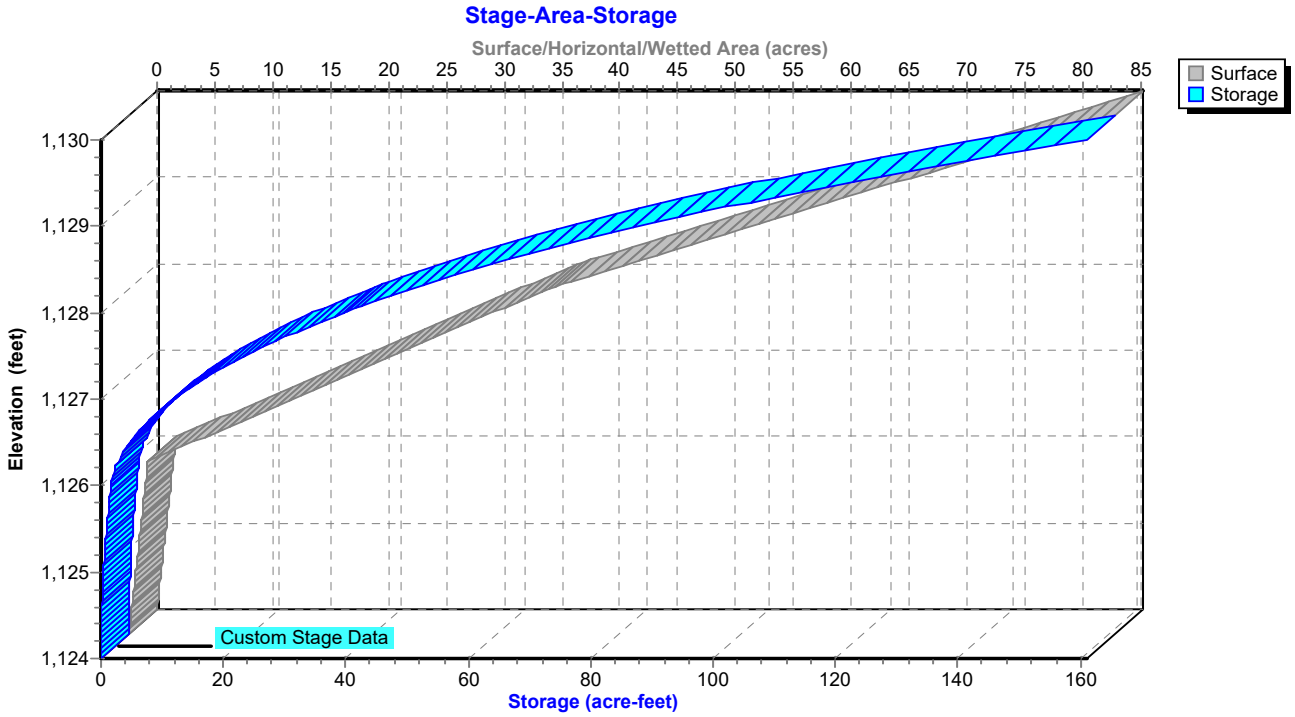
Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Hydrograph for Pond 1P: H AVENUE CULVERT

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,124.00	0.00	0.00	0.00
1.00	0.00	0.000	1,124.00	0.00	0.00	0.00
2.00	0.00	0.000	1,124.00	0.00	0.00	0.00
3.00	0.00	0.000	1,124.00	0.00	0.00	0.00
4.00	0.00	0.000	1,124.00	0.00	0.00	0.00
5.00	0.00	0.000	1,124.00	0.00	0.00	0.00
6.00	0.00	0.000	1,124.00	0.00	0.00	0.00
7.00	0.00	0.000	1,124.00	0.00	0.00	0.00
8.00	0.00	0.000	1,124.00	0.00	0.00	0.00
9.00	0.00	0.000	1,124.00	0.00	0.00	0.00
10.00	0.01	0.000	1,124.00	0.00	0.00	0.00
11.00	2.33	0.032	1,124.26	1.10	0.00	1.10
12.00	29.03	0.511	1,125.10	12.66	0.00	12.66
13.00	**413.64**	12.346	1,127.02	59.84	0.00	59.84
14.00	**300.97**	**40.310**	**1,128.02**	**83.27**	**0.00**	**83.27**
15.00	124.66	**46.974**	**1,128.19**	**136.03**	**50.39**	**85.65**
16.00	66.24	44.403	1,128.13	105.40	20.64	84.77
17.00	40.08	41.025	1,128.04	83.54	0.00	83.54
18.00	31.23	37.059	1,127.93	81.98	0.00	81.98
19.00	27.10	32.774	1,127.80	79.57	0.00	79.57
20.00	23.59	28.416	1,127.66	76.48	0.00	76.48
21.00	20.15	24.045	1,127.51	72.95	0.00	72.95
22.00	16.71	19.704	1,127.35	68.90	0.00	68.90
23.00	13.24	15.440	1,127.17	64.10	0.00	64.10
24.00	9.75	11.326	1,126.96	58.22	0.00	58.22
25.00	5.23	7.451	1,126.73	50.54	0.00	50.54
26.00	1.21	3.759	1,126.41	43.07	0.00	43.07
27.00	0.24	0.953	1,125.51	20.88	0.00	20.88
28.00	0.04	0.109	1,124.50	3.43	0.00	3.43
29.00	0.00	0.007	1,124.12	0.23	0.00	0.23
30.00	0.00	0.001	1,124.02	0.02	0.00	0.02

Stage-Discharge for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,124.00	0.00	0.00	0.00
1,124.10	0.16	0.00	0.16
1,124.20	0.64	0.00	0.64
1,124.30	1.37	0.00	1.37
1,124.40	2.30	0.00	2.30
1,124.50	3.40	0.00	3.40
1,124.60	4.64	0.00	4.64
1,124.70	6.01	0.00	6.01
1,124.80	7.50	0.00	7.50
1,124.90	9.10	0.00	9.10
1,125.00	10.80	0.00	10.80
1,125.10	12.59	0.00	12.59
1,125.20	14.47	0.00	14.47
1,125.30	16.44	0.00	16.44
1,125.40	18.49	0.00	18.49
1,125.50	20.61	0.00	20.61
1,125.60	22.82	0.00	22.82
1,125.70	25.10	0.00	25.10
1,125.80	27.44	0.00	27.44
1,125.90	29.86	0.00	29.86
1,126.00	32.34	0.00	32.34
1,126.10	34.89	0.00	34.89
1,126.20	37.50	0.00	37.50
1,126.30	40.17	0.00	40.17
1,126.40	42.91	0.00	42.91
1,126.50	45.70	0.00	45.70
1,126.60	48.55	0.00	48.55
1,126.70	49.59	0.00	49.59
1,126.80	53.02	0.00	53.02
1,126.90	56.23	0.00	56.23
1,127.00	59.28	0.00	59.28
1,127.10	62.17	0.00	62.17
1,127.20	64.93	0.00	64.93
1,127.30	67.59	0.00	67.59
1,127.40	70.14	0.00	70.14
1,127.50	72.60	0.00	72.60
1,127.60	74.98	0.00	74.98
1,127.70	77.29	0.00	77.29
1,127.80	79.53	0.00	79.53
1,127.90	81.58	0.00	81.58
1,128.00	83.00	0.00	83.00
1,128.10	94.77	10.37	84.40
1,128.20	140.89	55.12	85.78
1,128.30	208.62	121.50	87.13
1,128.40	294.93	206.47	88.46
1,128.50	397.86	308.09	89.77
1,128.60	516.16	425.10	91.06
1,128.70	646.72	554.38	92.33
1,128.80	786.82	693.24	93.59
1,128.90	942.26	847.43	94.82
1,129.00	1,114.94	1,018.90	96.05
1,129.10	1,303.85	1,206.60	97.25
1,129.20	1,510.10	1,411.66	98.44
1,129.30	1,730.38	1,630.76	99.62
1,129.40	1,964.23	1,863.45	100.78
1,129.50	2,211.09	2,109.16	101.93
1,129.60	2,470.36	2,367.29	103.06
1,129.70	2,746.35	2,642.17	104.19
1,129.80	3,039.97	2,934.67	105.30
1,129.90	3,349.12	3,242.72	106.40
1,130.00	**3,673.94**	**3,566.46**	**107.49**

Stage-Area-Storage for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,124.00	0.010	0.000
1,124.10	0.092	0.005
1,124.20	0.174	0.018
1,124.30	0.256	0.040
1,124.40	0.338	0.070
1,124.50	0.420	0.107
1,124.60	0.502	0.154
1,124.70	0.584	0.208
1,124.80	0.666	0.270
1,124.90	0.748	0.341
1,125.00	0.830	0.420
1,125.10	0.912	0.507
1,125.20	0.994	0.602
1,125.30	1.076	0.706
1,125.40	1.158	0.818
1,125.50	1.240	0.937
1,125.60	1.322	1.066
1,125.70	1.404	1.202
1,125.80	1.486	1.346
1,125.90	1.568	1.499
1,126.00	1.650	1.660
1,126.10	3.382	1.912
1,126.20	5.115	2.337
1,126.30	6.847	2.935
1,126.40	8.580	3.706
1,126.50	10.312	4.651
1,126.60	12.045	5.768
1,126.70	13.778	7.060
1,126.80	15.510	8.524
1,126.90	17.243	10.162
1,127.00	18.975	11.972
1,127.10	20.707	13.957
1,127.20	22.440	16.114
1,127.30	24.172	18.445
1,127.40	25.905	20.949
1,127.50	27.637	23.626
1,127.60	29.370	26.476
1,127.70	31.103	29.500
1,127.80	32.835	32.696
1,127.90	34.568	36.067
1,128.00	36.300	39.610
1,128.10	38.745	43.362
1,128.20	41.190	47.359
1,128.30	43.635	51.600
1,128.40	46.080	56.086
1,128.50	48.525	60.816
1,128.60	50.970	65.791
1,128.70	53.415	71.010
1,128.80	55.860	76.474
1,128.90	58.305	82.182
1,129.00	60.750	88.135
1,129.10	63.195	94.332
1,129.20	65.640	100.774
1,129.30	68.085	107.460
1,129.40	70.530	114.391
1,129.50	72.975	121.566
1,129.60	75.420	128.986
1,129.70	77.865	136.650
1,129.80	80.310	144.559
1,129.90	82.755	152.712
1,130.00	**85.200**	**161.110**

Summary for Pond 2P: BASIN NW OF WETLAND

[81] Warning: Exceeded Pond 1P by 0.25' @ 29.92 hrs

Inflow Area = 848.100 ac, 0.00% Impervious, Inflow Depth = 1.60" for 2-Year event
Inflow = 248.22 cfs @ 12.50 hrs, Volume= 113.005 af
Outflow = 73.19 cfs @ 21.76 hrs, Volume= 63.465 af, Atten= 71%, Lag= 555.8 min
Primary = 73.19 cfs @ 21.76 hrs, Volume= 63.465 af
Routed to Pond I AVENUE : I AVENUE CULVERTS
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,124.58' @ 21.76 hrs Surf.Area= 42.284 ac Storage= 61.688 af

Plug-Flow detention time= 484.4 min calculated for 63.465 af (56% of inflow)
Center-of-Mass det. time= 290.9 min (1,363.2 - 1,072.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,121.00'	311.173 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,121.00	1.997	0.000	0.000
1,122.00	7.899	4.948	4.948
1,123.00	16.217	12.058	17.006
1,124.00	30.839	23.528	40.534
1,126.00	70.400	101.239	141.773
1,128.00	99.000	169.400	311.173

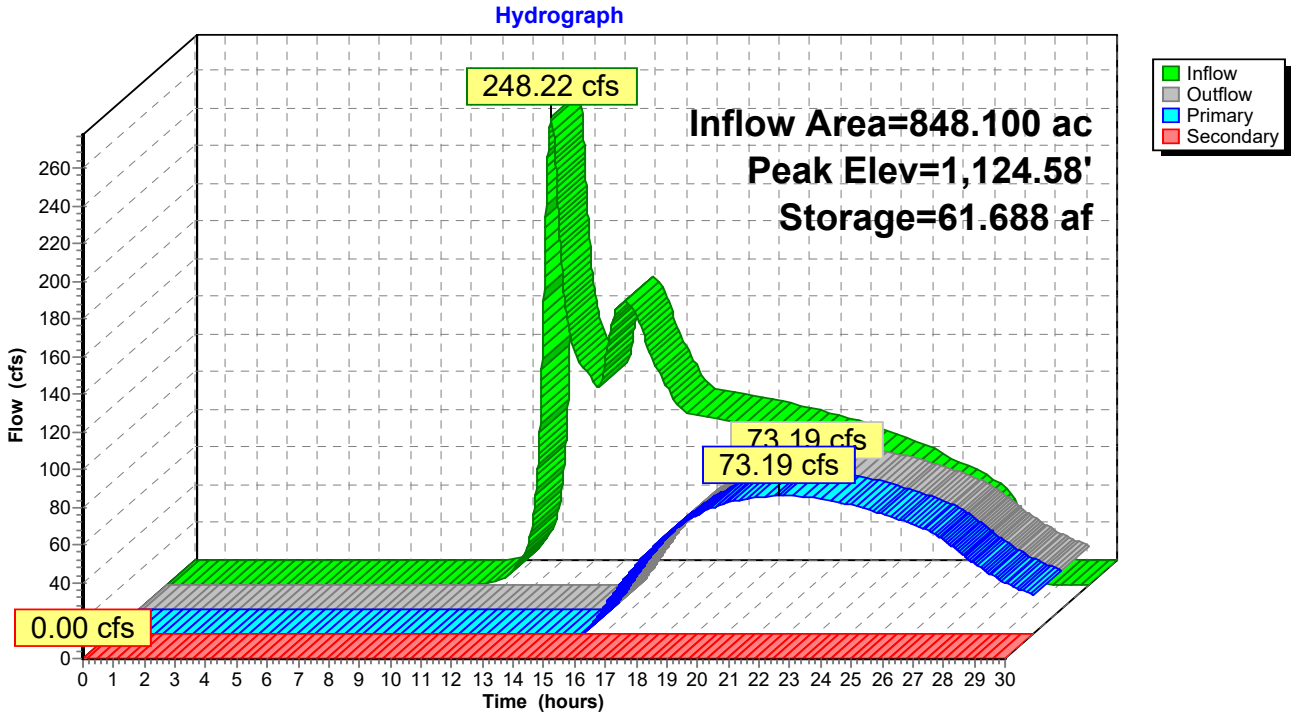
Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.00'	**50.0' long + 25.0 '/' SideZ x 50.0' breadth Saddle to Wetland** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	1,127.00'	**300.0' long + 50.0 '/' SideZ x 50.0' breadth Saddle Away from Wetland** 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

Primary OutFlow Max=73.16 cfs @ 21.76 hrs HW=1,124.58' (Free Discharge)
↑—**1=Saddle to Wetland** (Weir Controls 73.16 cfs @ 1.96 fps)

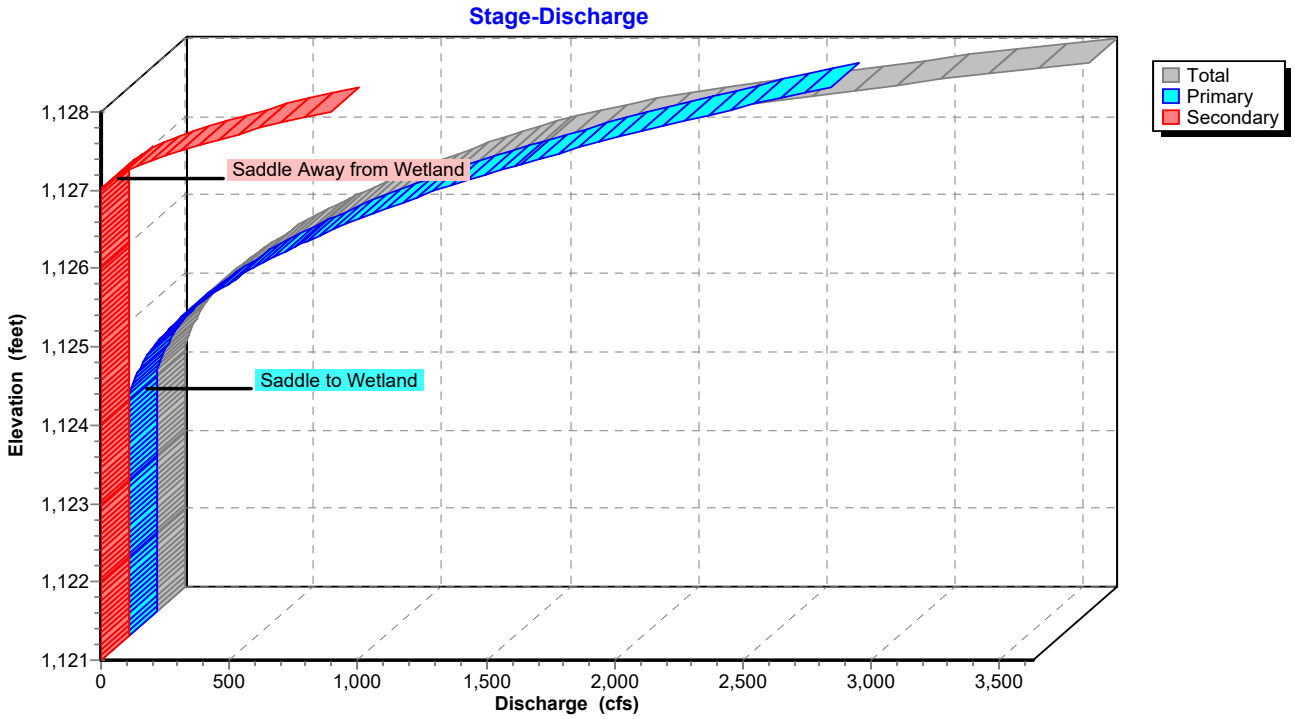
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,121.00' (Free Discharge)
↑—**2=Saddle Away from Wetland** (Controls 0.00 cfs)



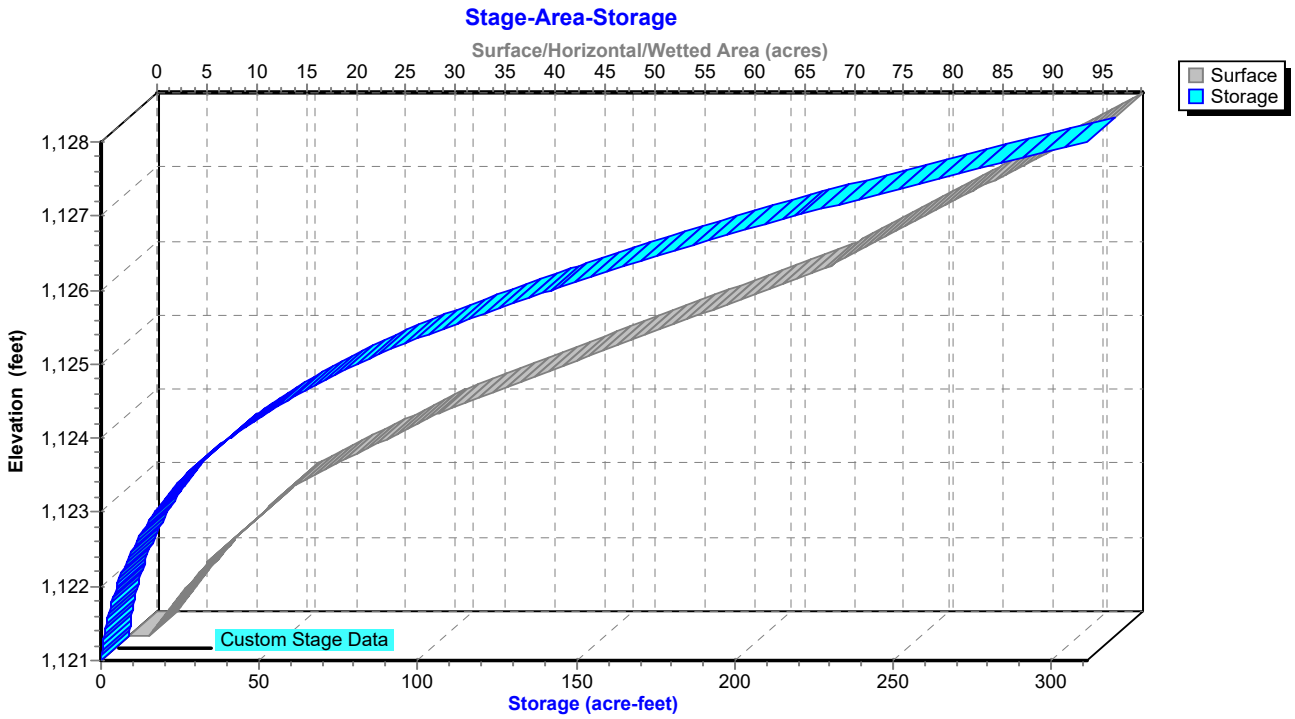
Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Hydrograph for Pond 2P: BASIN NW OF WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,121.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,121.00	0.00	0.00	0.00
2.00	0.00	0.000	1,121.00	0.00	0.00	0.00
3.00	0.00	0.000	1,121.00	0.00	0.00	0.00
4.00	0.00	0.000	1,121.00	0.00	0.00	0.00
5.00	0.00	0.000	1,121.00	0.00	0.00	0.00
6.00	0.00	0.000	1,121.00	0.00	0.00	0.00
7.00	0.00	0.000	1,121.00	0.00	0.00	0.00
8.00	0.00	0.000	1,121.00	0.00	0.00	0.00
9.00	0.00	0.000	1,121.00	0.00	0.00	0.00
10.00	0.08	0.001	1,121.00	0.00	0.00	0.00
11.00	3.96	0.105	1,121.05	0.00	0.00	0.00
12.00	**46.19**	1.444	1,121.44	0.00	0.00	0.00
13.00	**143.19**	15.639	1,122.91	0.00	0.00	0.00
14.00	104.44	25.404	1,123.43	0.00	0.00	0.00
15.00	149.75	36.448	1,123.86	0.00	0.00	0.00
16.00	113.42	47.100	1,124.20	13.09	13.09	0.00
17.00	90.55	53.283	1,124.37	34.83	34.83	0.00
18.00	88.23	57.084	1,124.47	51.21	51.21	0.00
19.00	85.04	59.520	1,124.53	62.58	62.58	0.00
20.00	81.17	60.911	1,124.56	69.33	69.33	0.00
21.00	76.85	**61.562**	**1,124.58**	**72.53**	**72.53**	0.00
22.00	71.99	**61.682**	**1,124.58**	**73.14**	**73.14**	0.00
23.00	66.40	61.407	1,124.57	71.75	71.75	0.00
24.00	59.71	60.808	1,124.56	68.83	68.83	0.00
25.00	50.61	59.865	1,124.53	64.25	64.25	0.00
26.00	43.07	58.711	1,124.51	58.66	58.66	0.00
27.00	20.88	57.008	1,124.46	50.87	50.87	0.00
28.00	3.43	54.166	1,124.39	38.52	38.52	0.00
29.00	0.23	51.543	1,124.32	28.11	28.11	0.00
30.00	0.02	49.548	1,124.27	20.89	20.89	0.00

Stage-Discharge for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,121.00	0.00	0.00	0.00
1,121.10	0.00	0.00	0.00
1,121.20	0.00	0.00	0.00
1,121.30	0.00	0.00	0.00
1,121.40	0.00	0.00	0.00
1,121.50	0.00	0.00	0.00
1,121.60	0.00	0.00	0.00
1,121.70	0.00	0.00	0.00
1,121.80	0.00	0.00	0.00
1,121.90	0.00	0.00	0.00
1,122.00	0.00	0.00	0.00
1,122.10	0.00	0.00	0.00
1,122.20	0.00	0.00	0.00
1,122.30	0.00	0.00	0.00
1,122.40	0.00	0.00	0.00
1,122.50	0.00	0.00	0.00
1,122.60	0.00	0.00	0.00
1,122.70	0.00	0.00	0.00
1,122.80	0.00	0.00	0.00
1,122.90	0.00	0.00	0.00
1,123.00	0.00	0.00	0.00
1,123.10	0.00	0.00	0.00
1,123.20	0.00	0.00	0.00
1,123.30	0.00	0.00	0.00
1,123.40	0.00	0.00	0.00
1,123.50	0.00	0.00	0.00
1,123.60	0.00	0.00	0.00
1,123.70	0.00	0.00	0.00
1,123.80	0.00	0.00	0.00
1,123.90	0.00	0.00	0.00
1,124.00	0.00	0.00	0.00
1,124.10	4.41	4.41	0.00
1,124.20	12.94	12.94	0.00
1,124.30	24.75	24.75	0.00
1,124.40	39.62	39.62	0.00
1,124.50	57.28	57.28	0.00
1,124.60	77.80	77.80	0.00
1,124.70	100.08	100.08	0.00
1,124.80	124.68	124.68	0.00
1,124.90	152.99	152.99	0.00
1,125.00	184.10	184.10	0.00
1,125.10	218.88	218.88	0.00
1,125.20	256.81	256.81	0.00
1,125.30	297.39	297.39	0.00
1,125.40	341.11	341.11	0.00
1,125.50	387.26	387.26	0.00
1,125.60	436.47	436.47	0.00
1,125.70	489.68	489.68	0.00
1,125.80	546.21	546.21	0.00
1,125.90	606.13	606.13	0.00
1,126.00	669.49	669.49	0.00
1,126.10	736.33	736.33	0.00
1,126.20	806.71	806.71	0.00
1,126.30	880.68	880.68	0.00
1,126.40	958.29	958.29	0.00
1,126.50	1,039.60	1,039.60	0.00
1,126.60	1,124.65	1,124.65	0.00
1,126.70	1,213.49	1,213.49	0.00
1,126.80	1,306.17	1,306.17	0.00
1,126.90	1,402.74	1,402.74	0.00
1,127.00	1,503.25	1,503.25	0.00
1,127.10	1,633.51	1,607.74	25.76
1,127.20	1,790.10	1,716.27	73.83
1,127.30	1,966.79	1,828.88	137.91
1,127.40	2,161.46	1,945.61	215.84
1,127.50	2,371.99	2,066.52	305.47
1,127.60	2,598.21	2,191.64	406.57
1,127.70	2,833.93	2,321.03	512.90
1,127.80	3,081.88	2,454.72	627.16
1,127.90	3,348.70	2,592.76	755.93
1,128.00	**3,629.40**	**2,735.20**	**894.20**

Stage-Area-Storage for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,121.00	1.997	0.000
1,121.10	2.587	0.229
1,121.20	3.177	0.517
1,121.30	3.768	0.865
1,121.40	4.358	1.271
1,121.50	4.948	1.736
1,121.60	5.538	2.261
1,121.70	6.128	2.844
1,121.80	6.719	3.486
1,121.90	7.309	4.188
1,122.00	7.899	4.948
1,122.10	8.731	5.779
1,122.20	9.563	6.694
1,122.30	10.394	7.692
1,122.40	11.226	8.773
1,122.50	12.058	9.937
1,122.60	12.890	11.185
1,122.70	13.722	12.515
1,122.80	14.553	13.929
1,122.90	15.385	15.426
1,123.00	16.217	17.006
1,123.10	17.679	18.701
1,123.20	19.141	20.542
1,123.30	20.604	22.529
1,123.40	22.066	24.663
1,123.50	23.528	26.942
1,123.60	24.990	29.368
1,123.70	26.452	31.940
1,123.80	27.915	34.659
1,123.90	29.377	37.523
1,124.00	30.839	40.534
1,124.10	32.817	43.717
1,124.20	34.795	47.097
1,124.30	36.773	50.676
1,124.40	38.751	54.452
1,124.50	40.729	58.426
1,124.60	42.707	62.598
1,124.70	44.685	66.968
1,124.80	46.663	71.535
1,124.90	48.641	76.300
1,125.00	50.619	81.263
1,125.10	52.598	86.424
1,125.20	54.576	91.783
1,125.30	56.554	97.339
1,125.40	58.532	103.093
1,125.50	60.510	109.046
1,125.60	62.488	115.195
1,125.70	64.466	121.543
1,125.80	66.444	128.089
1,125.90	68.422	134.832
1,126.00	70.400	141.773
1,126.10	71.830	148.884
1,126.20	73.260	156.139
1,126.30	74.690	163.536
1,126.40	76.120	171.077
1,126.50	77.550	178.760
1,126.60	78.980	186.587
1,126.70	80.410	194.557
1,126.80	81.840	202.669
1,126.90	83.270	210.925
1,127.00	84.700	219.323
1,127.10	86.130	227.864
1,127.20	87.560	236.549
1,127.30	88.990	245.376
1,127.40	90.420	254.347
1,127.50	91.850	263.460
1,127.60	93.280	272.717
1,127.70	94.710	282.117
1,127.80	96.140	291.659
1,127.90	97.570	301.345
1,128.00	**99.000**	**311.173**

Summary for Pond I AVENUE: I AVENUE CULVERTS

Inflow Area = 1,705.100 ac, 0.00% Impervious, Inflow Depth > 1.25" for 2-Year event
Inflow = 561.73 cfs @ 13.29 hrs, Volume= 177.657 af
Outflow = 372.75 cfs @ 14.03 hrs, Volume= 177.638 af, Atten= 34%, Lag= 44.1 min
Primary = 294.58 cfs @ 14.03 hrs, Volume= 163.994 af
Secondary = 78.16 cfs @ 14.03 hrs, Volume= 13.645 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,108.97' @ 14.03 hrs Surf.Area= 10.855 ac Storage= 20.043 af

Plug-Flow detention time= 13.9 min calculated for 177.579 af (100% of inflow)
Center-of-Mass det. time= 13.9 min (1,073.0 - 1,059.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,098.00'	389.351 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,098.00	0.000	0.000	0.000
1,099.00	0.001	0.001	0.001
1,100.00	0.001	0.001	0.002
1,101.00	0.008	0.005	0.006
1,102.00	0.027	0.017	0.023
1,103.00	0.110	0.069	0.092
1,104.00	0.241	0.175	0.267
1,105.00	0.739	0.490	0.757
1,106.00	2.505	1.622	2.380
1,107.00	4.643	3.574	5.954
1,108.00	6.580	5.611	11.565
1,109.00	10.976	8.778	20.343
1,110.00	16.743	13.859	34.202
1,111.00	23.315	20.029	54.231
1,112.00	31.569	27.442	81.673
1,113.00	42.966	37.267	118.941
1,114.00	53.960	48.463	167.404
1,115.00	65.810	59.885	227.289
1,116.00	79.729	72.769	300.058
1,117.00	98.855	89.292	389.351

Device	Routing	Invert	Outlet Devices
#1	Primary	1,100.22'	**72.0" Round 72" RCP CULVERT** L= 85.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,100.22' / 1,098.91' S= 0.0153 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 28.27 sf
#2	Secondary	1,104.72'	**48.0" Round 48" RCP CULVERT** L= 62.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,104.72' / 1,104.41' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#3	Tertiary	1,115.86'	**I AVENUE, C= 3.27** Offset (feet) 0.00 115.59 162.20 164.26 214.26 232.65 343.45

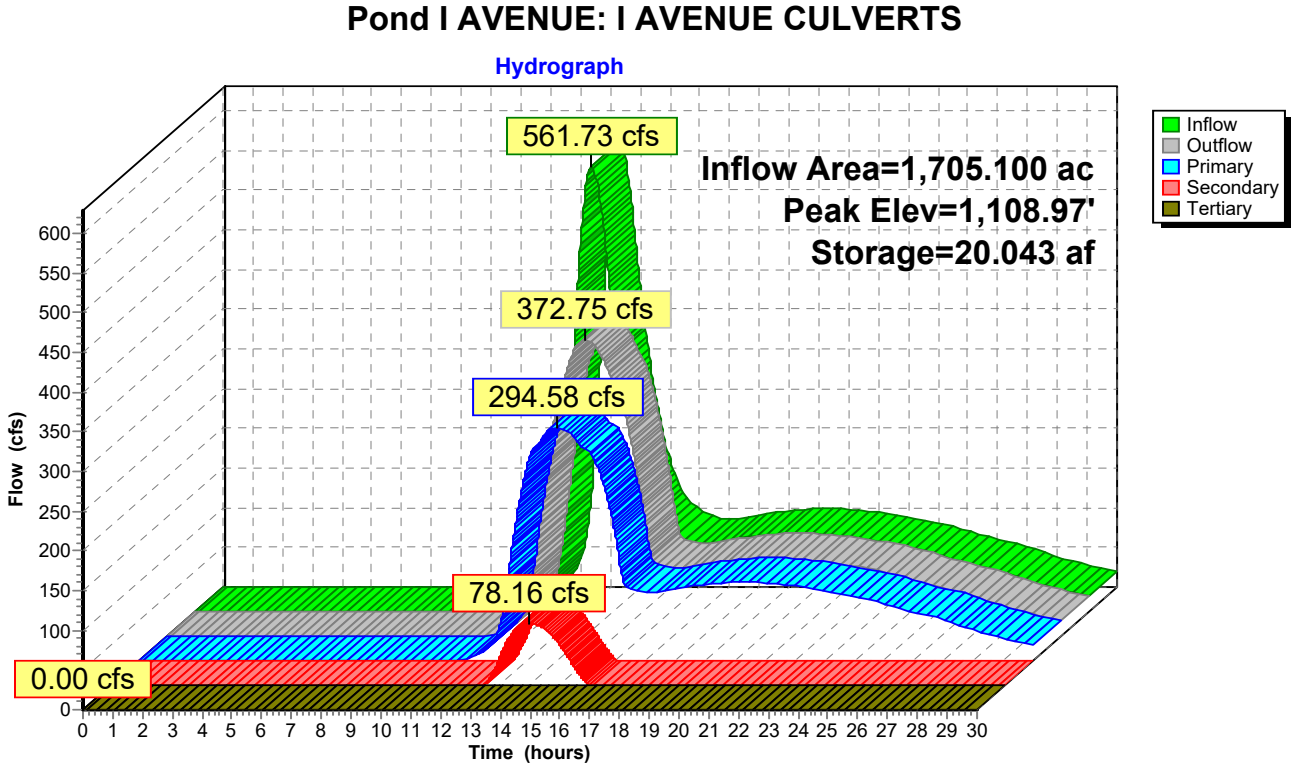
Height (feet) 1.14 0.14 0.00 0.00 0.09 0.14 1.14

Primary OutFlow Max=294.59 cfs @ 14.03 hrs HW=1,108.97' (Free Discharge)
└**1=72" RCP CULVERT** (Barrel Controls 294.59 cfs @ 10.42 fps)

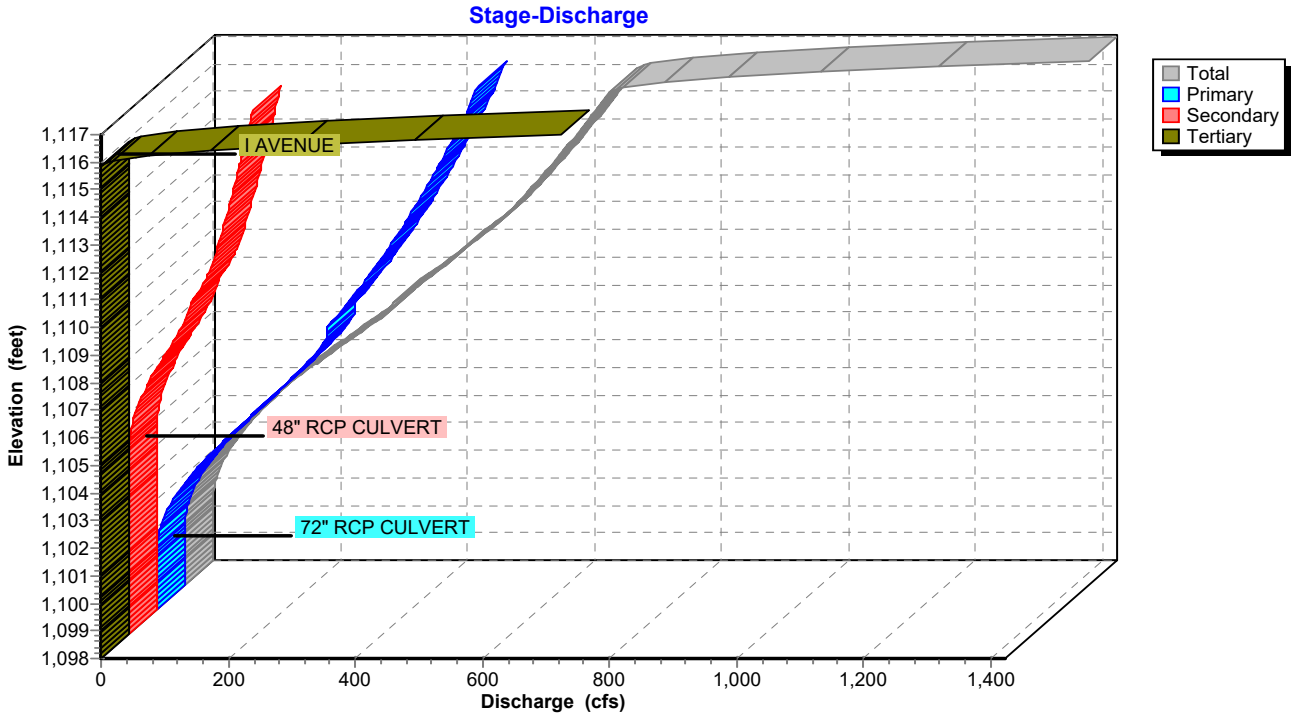
Secondary OutFlow Max=78.17 cfs @ 14.03 hrs HW=1,108.97' (Free Discharge)
└**2=48" RCP CULVERT** (Barrel Controls 78.17 cfs @ 7.28 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,098.00' (Free Discharge)
└**3=I AVENUE** (Controls 0.00 cfs)

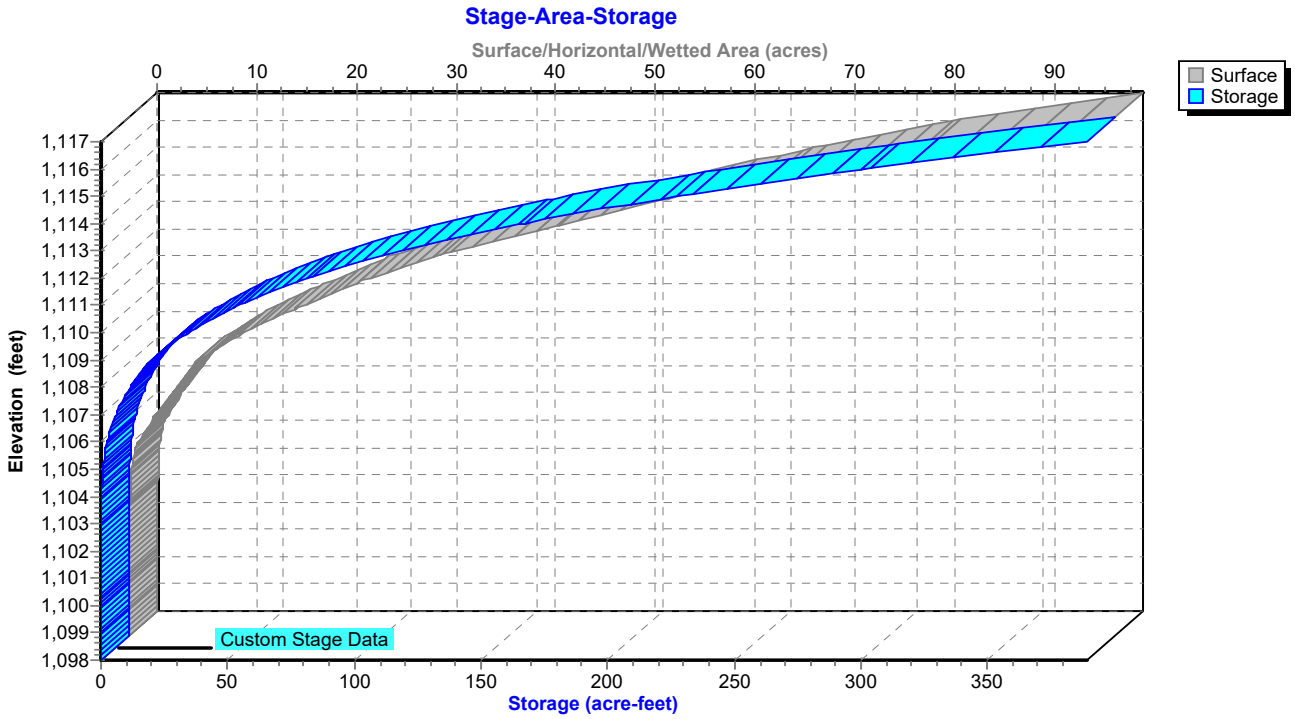




Pond I AVENUE: I AVENUE CULVERTS



Pond I AVENUE: I AVENUE CULVERTS



Hydrograph for Pond I AVENUE: I AVENUE CULVERTS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	0.00	0.000	1,098.00	0.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
2.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
3.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
4.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
5.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
6.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
7.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
8.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
9.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
10.00	0.02	0.000	1,098.42	0.00	0.00	0.00	0.00
11.00	2.75	0.004	1,100.78	2.68	2.68	0.00	0.00
12.00	34.05	0.032	1,102.22	32.60	32.60	0.00	0.00
13.00	**494.46**	6.258	1,107.06	272.49	241.93	30.56	0.00
14.00	**381.81**	**20.042**	**1,108.97**	**372.69**	**294.55**	**78.14**	0.00
15.00	160.64	**11.780**	**1,108.03**	**322.61**	**268.58**	**54.03**	0.00
16.00	98.14	0.894	1,105.15	156.34	154.94	1.40	0.00
17.00	85.94	0.193	1,103.65	85.98	85.98	0.00	0.00
18.00	90.47	0.212	1,103.75	90.04	90.04	0.00	0.00
19.00	96.44	0.242	1,103.89	96.17	96.17	0.00	0.00
20.00	98.82	0.255	1,103.95	98.77	98.77	0.00	0.00
21.00	97.74	0.251	1,103.93	97.89	97.89	0.00	0.00
22.00	94.09	0.233	1,103.85	94.35	94.35	0.00	0.00
23.00	88.36	0.205	1,103.72	88.75	88.75	0.00	0.00
24.00	81.11	0.173	1,103.55	81.53	81.53	0.00	0.00
25.00	70.99	0.132	1,103.31	71.55	71.55	0.00	0.00
26.00	60.32	0.096	1,103.03	60.65	60.65	0.00	0.00
27.00	51.22	0.071	1,102.79	51.59	51.59	0.00	0.00
28.00	38.59	0.042	1,102.42	38.89	38.89	0.00	0.00
29.00	28.11	0.026	1,102.07	28.24	28.24	0.00	0.00
30.00	20.89	0.019	1,101.80	20.96	20.96	0.00	0.00

Stage-Discharge for Pond I AVENUE: I AVENUE CULVERTS

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1,098.00	0.00	0.00	0.00	0.00
1,098.50	0.00	0.00	0.00	0.00
1,099.00	0.00	0.00	0.00	0.00
1,099.50	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	0.00	0.00
1,100.50	0.61	0.61	0.00	0.00
1,101.00	5.15	5.15	0.00	0.00
1,101.50	13.88	13.88	0.00	0.00
1,102.00	26.18	26.18	0.00	0.00
1,102.50	41.52	41.52	0.00	0.00
1,103.00	59.41	59.41	0.00	0.00
1,103.50	79.41	79.41	0.00	0.00
1,104.00	101.10	101.10	0.00	0.00
1,104.50	124.05	124.05	0.00	0.00
1,105.00	148.39	147.81	0.58	0.00
1,105.50	176.12	171.89	4.24	0.00
1,106.00	206.21	195.69	10.52	0.00
1,106.50	237.48	218.53	18.95	0.00
1,107.00	268.61	239.47	29.14	0.00
1,107.50	297.80	257.09	40.70	0.00
1,108.00	321.54	268.33	53.21	0.00
1,108.50	343.07	276.93	66.15	0.00
1,109.00	374.43	295.59	78.85	0.00
1,109.50	403.49	313.13	90.36	0.00
1,110.00	428.24	329.75	98.50	0.00
1,110.50	456.69	345.56	111.13	0.00
1,111.00	484.40	360.69	123.71	0.00
1,111.50	507.49	375.20	132.29	0.00
1,112.00	528.21	389.17	139.03	0.00
1,112.50	548.13	402.66	145.47	0.00
1,113.00	567.34	415.71	151.63	0.00
1,113.50	585.92	428.37	157.55	0.00
1,114.00	603.92	440.66	163.26	0.00
1,114.50	621.39	452.62	168.77	0.00
1,115.00	638.37	464.27	174.11	0.00
1,115.50	654.92	475.63	179.29	0.00
1,116.00	679.75	486.69	184.32	8.74
1,116.50	904.83	496.12	189.22	219.49
1,117.00	**1,422.27**	**505.37**	**194.00**	**722.89**

Stage-Area-Storage for Pond I AVENUE: I AVENUE CULVERTS

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,098.00	0.000	0.000
1,098.20	0.000	0.000
1,098.40	0.000	0.000
1,098.60	0.001	0.000
1,098.80	0.001	0.000
1,099.00	0.001	0.001
1,099.20	0.001	0.001
1,099.40	0.001	0.001
1,099.60	0.001	0.001
1,099.80	0.001	0.001
1,100.00	0.001	0.002
1,100.20	0.002	0.002
1,100.40	0.004	0.002
1,100.60	0.005	0.003
1,100.80	0.007	0.005
1,101.00	0.008	0.006
1,101.20	0.012	0.008
1,101.40	0.016	0.011
1,101.60	0.019	0.014
1,101.80	0.023	0.018
1,102.00	0.027	0.023
1,102.20	0.044	0.031
1,102.40	0.060	0.041
1,102.60	0.077	0.055
1,102.80	0.093	0.072
1,103.00	0.110	0.092
1,103.20	0.136	0.117
1,103.40	0.162	0.146
1,103.60	0.189	0.182
1,103.80	0.215	0.222
1,104.00	0.241	0.267
1,104.20	0.341	0.326
1,104.40	0.440	0.404
1,104.60	0.540	0.502
1,104.80	0.639	0.620
1,105.00	0.739	0.757
1,105.20	1.092	0.941
1,105.40	1.445	1.194
1,105.60	1.799	1.519
1,105.80	2.152	1.914
1,106.00	2.505	2.380
1,106.20	2.933	2.923
1,106.40	3.360	3.553
1,106.60	3.788	4.267
1,106.80	4.215	5.068
1,107.00	4.643	5.954
1,107.20	5.030	6.921
1,107.40	5.418	7.966
1,107.60	5.805	9.088
1,107.80	6.193	10.288
1,108.00	6.580	11.565
1,108.20	7.459	12.969
1,108.40	8.338	14.549
1,108.60	9.218	16.304
1,108.80	10.097	18.236
1,109.00	10.976	20.343
1,109.20	12.129	22.654
1,109.40	13.283	25.195
1,109.60	14.436	27.967
1,109.80	15.590	30.969
1,110.00	16.743	34.202
1,110.20	18.057	37.683
1,110.40	19.372	41.425
1,110.60	20.686	45.431
1,110.80	22.001	49.700
1,111.00	23.315	54.231
1,111.20	24.966	59.060
1,111.40	26.617	64.218
1,111.60	28.267	69.706
1,111.80	29.918	75.525
1,112.00	31.569	81.673
1,112.20	33.848	88.215
1,112.40	36.128	95.213
1,112.60	38.407	102.666
1,112.80	40.687	110.576
1,113.00	42.966	118.941
1,113.20	45.165	127.754
1,113.40	47.364	137.007
1,113.60	49.562	146.700
1,113.80	51.761	156.832
1,114.00	53.960	167.404
1,114.20	56.330	178.433
1,114.40	58.700	189.936
1,114.60	61.070	201.913
1,114.80	63.440	214.364
1,115.00	65.810	227.289
1,115.20	68.594	240.729
1,115.40	71.378	254.727
1,115.60	74.161	269.280
1,115.80	76.945	284.391
1,116.00	79.729	300.058
1,116.20	83.554	316.387
1,116.40	87.379	333.480
1,116.60	91.205	351.339
1,116.80	95.030	369.962
1,117.00	**98.855**	**389.351**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 158.4 AC: Watershed After Runoff Area=158.400 ac 0.00% Impervious Runoff Depth=2.24"
Flow Length=2,718' Slope=0.0329 '/' Tc=34.2 min CN=84 Runoff=294.17 cfs 29.561 af

Subcatchment 312.5 AC: South Watershed Runoff Area=312.500 ac 0.00% Impervious Runoff Depth=2.24"
Flow Length=9,197' Slope=0.0329 '/' Tc=90.7 min CN=84 Runoff=305.61 cfs 58.319 af

Subcatchment 544.5 AC: Remainder of Runoff Area=544.500 ac 0.00% Impervious Runoff Depth=2.24"
Flow Length=10,448' Slope=0.0329 '/' Tc=100.5 min CN=84 Runoff=491.45 cfs 101.614 af

Subcatchment 689.7 AC: Watershed West Runoff Area=689.700 ac 0.00% Impervious Runoff Depth=2.24"
Flow Length=9,666' Slope=0.0329 '/' Tc=94.4 min CN=84 Runoff=654.01 cfs 128.711 af

Pond 1P: H AVENUE CULVERT Peak Elev=1,128.42' Storage=57.166 af Inflow=654.01 cfs 128.711 af
Primary=229.37 cfs 33.853 af Secondary=88.76 cfs 94.853 af Outflow=318.14 cfs 128.707 af

Pond 2P: BASIN NW OF WETLAND Peak Elev=1,124.81' Storage=71.787 af Inflow=340.11 cfs 158.267 af
Primary=126.43 cfs 106.801 af Secondary=0.00 cfs 0.000 af Outflow=126.43 cfs 106.801 af

Pond I AVENUE: I AVENUE Peak Elev=1,110.22' Storage=38.112 af Inflow=792.74 cfs 266.734 af
Primary=336.90 cfs 234.189 af Secondary=103.49 cfs 32.520 af Tertiary=0.00 cfs 0.000 af Outflow=440.39 cfs 266.709 af

Total Runoff Area = 1,705.100 ac Runoff Volume = 318.205 af Average Runoff Depth = 2.24"
100.00% Pervious = 1,705.100 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Runoff = 294.17 cfs @ 12.50 hrs, Volume= 29.561 af, Depth= 2.24"
Routed to Pond 2P : BASIN NW OF WETLAND

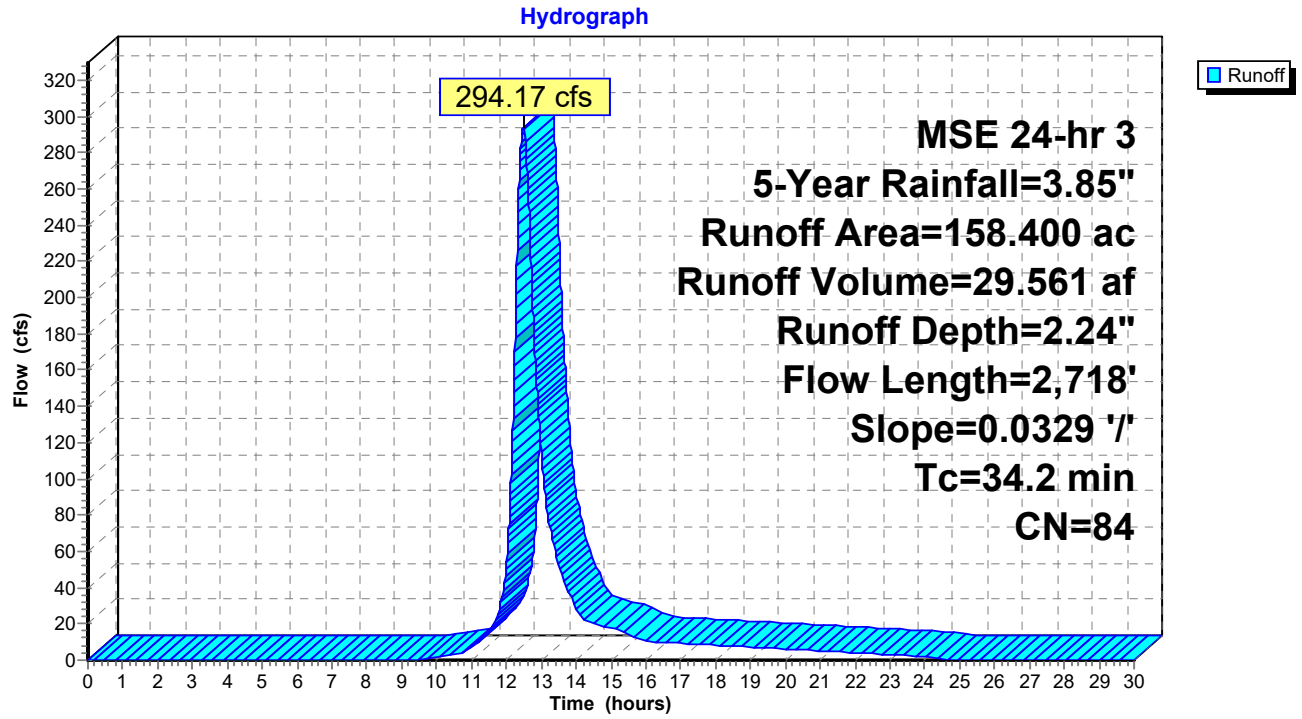
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 5-Year Rainfall=3.85"

	Area (ac)	CN	Description
*	158.400	84	
	158.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.2	2,718	0.0329	1.32		**Lag/CN Method,**

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location



Hydrograph for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.05	0.00	0.00
3.00	0.06	0.00	0.00
3.50	0.08	0.00	0.00
4.00	0.10	0.00	0.00
4.50	0.12	0.00	0.00
5.00	0.14	0.00	0.00
5.50	0.17	0.00	0.00
6.00	0.20	0.00	0.00
6.50	0.22	0.00	0.00
7.00	0.26	0.00	0.00
7.50	0.29	0.00	0.00
8.00	0.32	0.00	0.00
8.50	0.36	0.00	0.00
9.00	0.40	0.00	0.00
9.50	0.46	0.00	0.41
10.00	0.53	0.01	1.62
10.50	0.60	0.02	3.07
11.00	0.74	0.06	6.68
11.50	0.95	0.13	16.56
12.00	1.78	0.59	53.29
12.50	2.90	1.43	**294.03**
13.00	3.11	1.61	113.37
13.50	3.25	1.72	53.48
14.00	3.32	1.78	28.08
14.50	3.39	1.84	19.96
15.00	3.45	1.90	18.11
15.50	3.49	1.93	13.72
16.00	3.53	1.96	10.56
16.50	3.56	1.99	9.74
17.00	3.59	2.02	9.21
17.50	3.63	2.04	8.71
18.00	3.65	2.07	8.20
18.50	3.68	2.09	7.69
19.00	3.71	2.11	7.17
19.50	3.73	2.13	6.67
20.00	3.75	2.15	6.14
20.50	3.77	2.17	5.62
21.00	3.79	2.18	5.10
21.50	3.80	2.20	4.58
22.00	3.81	2.21	4.05
22.50	3.83	2.22	3.53
23.00	3.84	2.23	3.01
23.50	3.84	2.23	2.47
24.00	**3.85**	**2.24**	1.94
24.50	3.85	2.24	0.77
25.00	3.85	2.24	0.09
25.50	3.85	2.24	0.01
26.00	3.85	2.24	0.00
26.50	3.85	2.24	0.00
27.00	3.85	2.24	0.00
27.50	3.85	2.24	0.00
28.00	3.85	2.24	0.00
28.50	3.85	2.24	0.00
29.00	3.85	2.24	0.00
29.50	3.85	2.24	0.00
30.00	3.85	2.24	0.00

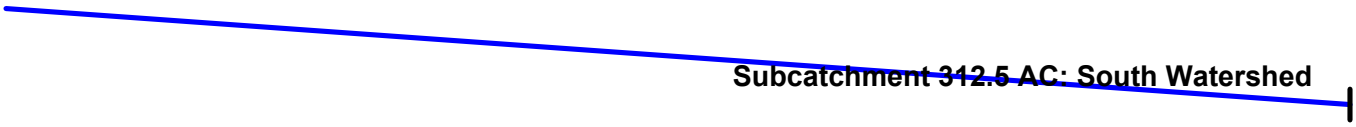
Summary for Subcatchment 312.5 AC: South Watershed

Runoff = 305.61 cfs @ 13.20 hrs, Volume= 58.319 af, Depth= 2.24"
Routed to Pond I AVENUE : I AVENUE CULVERTS

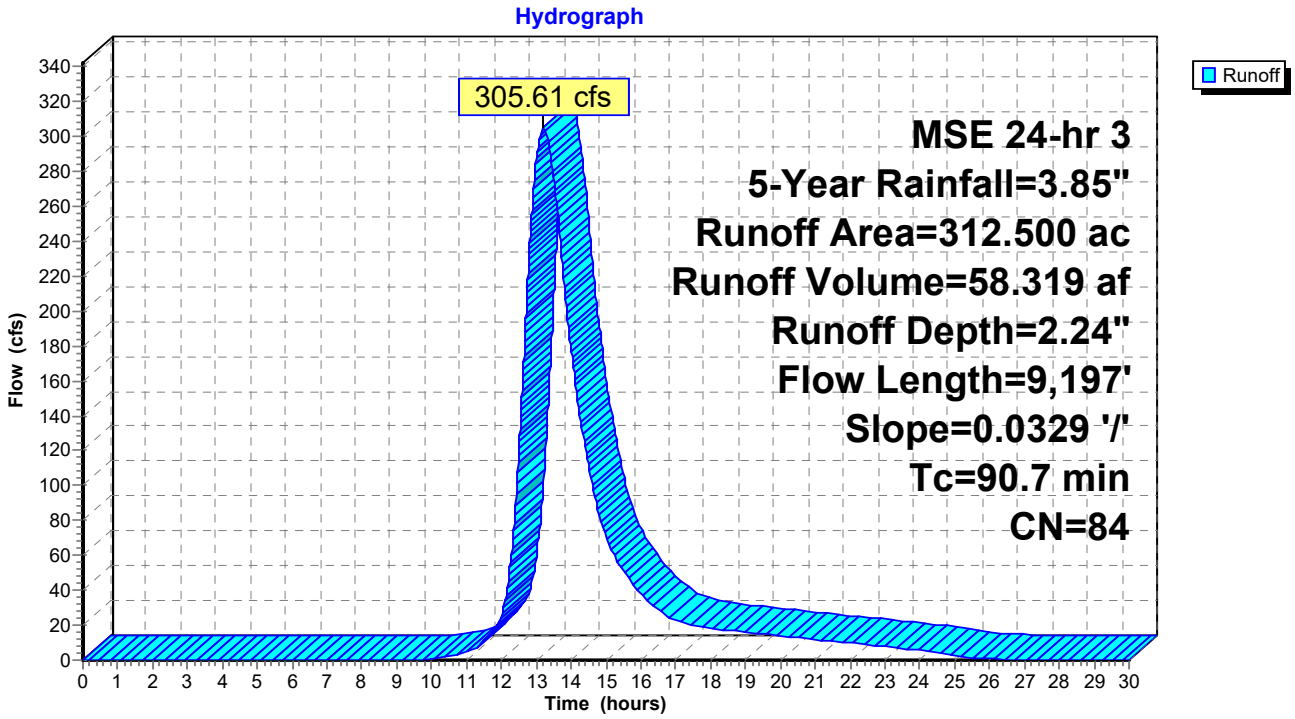
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 5-Year Rainfall=3.85"

	Area (ac)	CN	Description
*	312.500	84	
	312.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
90.7	9,197	0.0329	1.69		**Lag/CN Method,**



Subcatchment 312.5 AC: South Watershed



Hydrograph for Subcatchment 312.5 AC: South Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.05	0.00	0.00
3.00	0.06	0.00	0.00
3.50	0.08	0.00	0.00
4.00	0.10	0.00	0.00
4.50	0.12	0.00	0.00
5.00	0.14	0.00	0.00
5.50	0.17	0.00	0.00
6.00	0.20	0.00	0.00
6.50	0.22	0.00	0.00
7.00	0.26	0.00	0.00
7.50	0.29	0.00	0.00
8.00	0.32	0.00	0.00
8.50	0.36	0.00	0.00
9.00	0.40	0.00	0.00
9.50	0.46	0.00	0.06
10.00	0.53	0.01	0.62
10.50	0.60	0.02	2.12
11.00	0.74	0.06	4.63
11.50	0.95	0.13	10.50
12.00	1.78	0.59	26.12
12.50	2.90	1.43	117.84
13.00	3.11	1.61	**287.01**
13.50	3.25	1.72	**277.54**
14.00	3.32	1.78	177.92
14.50	3.39	1.84	110.92
15.00	3.45	1.90	71.45
15.50	3.49	1.93	50.95
16.00	3.53	1.96	38.00
16.50	3.56	1.99	28.63
17.00	3.59	2.02	23.02
17.50	3.63	2.04	20.05
18.00	3.65	2.07	18.37
18.50	3.68	2.09	17.09
19.00	3.71	2.11	15.98
19.50	3.73	2.13	14.93
20.00	3.75	2.15	13.90
20.50	3.77	2.17	12.88
21.00	3.79	2.18	11.86
21.50	3.80	2.20	10.84
22.00	3.81	2.21	9.80
22.50	3.83	2.22	8.77
23.00	3.84	2.23	7.73
23.50	3.84	2.23	6.70
24.00	**3.85**	**2.24**	5.65
24.50	3.85	2.24	4.53
25.00	3.85	2.24	2.92
25.50	3.85	2.24	1.42
26.00	3.85	2.24	0.62
26.50	3.85	2.24	0.27
27.00	3.85	2.24	0.12
27.50	3.85	2.24	0.05
28.00	3.85	2.24	0.02
28.50	3.85	2.24	0.00
29.00	3.85	2.24	0.00
29.50	3.85	2.24	0.00
30.00	3.85	2.24	0.00

Summary for Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Runoff = 491.45 cfs @ 13.29 hrs, Volume= 101.614 af, Depth= 2.24"
Routed to Pond I AVENUE : I AVENUE CULVERTS

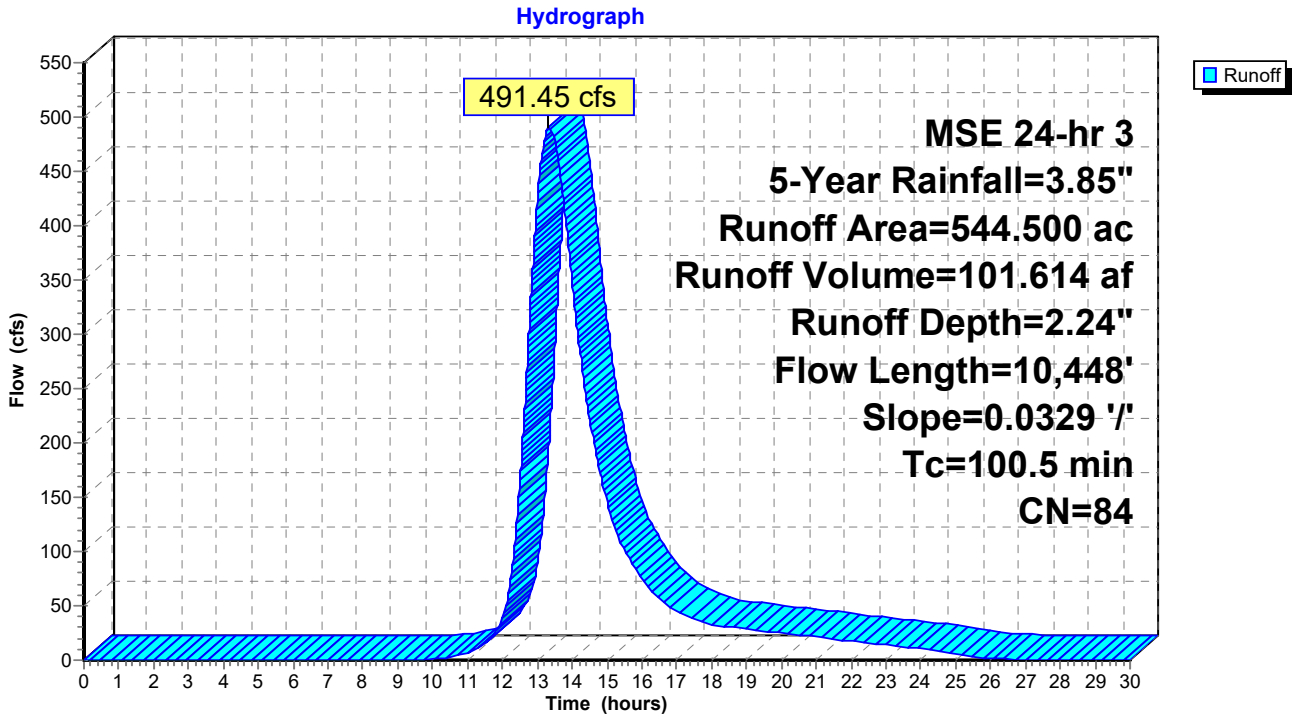
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 5-Year Rainfall=3.85"

	Area (ac)	CN	Description
*	544.500	84	
	544.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
100.5	10,448	0.0329	1.73		**Lag/CN Method,**

Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Subcatchment 544.5 AC: Remainder of Watershed to I Ave



Hydrograph for Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.05	0.00	0.00
3.00	0.06	0.00	0.00
3.50	0.08	0.00	0.00
4.00	0.10	0.00	0.00
4.50	0.12	0.00	0.00
5.00	0.14	0.00	0.00
5.50	0.17	0.00	0.00
6.00	0.20	0.00	0.00
6.50	0.22	0.00	0.00
7.00	0.26	0.00	0.00
7.50	0.29	0.00	0.00
8.00	0.32	0.00	0.00
8.50	0.36	0.00	0.00
9.00	0.40	0.00	0.00
9.50	0.46	0.00	0.07
10.00	0.53	0.01	0.81
10.50	0.60	0.02	2.99
11.00	0.74	0.06	6.88
11.50	0.95	0.13	15.45
12.00	1.78	0.59	38.40
12.50	2.90	1.43	160.09
13.00	3.11	1.61	**421.37**
13.50	3.25	1.72	**481.07**
14.00	3.32	1.78	348.55
14.50	3.39	1.84	223.34
15.00	3.45	1.90	145.92
15.50	3.49	1.93	102.15
16.00	3.53	1.96	75.41
16.50	3.56	1.99	56.30
17.00	3.59	2.02	44.54
17.50	3.63	2.04	37.57
18.00	3.65	2.07	33.28
18.50	3.68	2.09	30.63
19.00	3.71	2.11	28.49
19.50	3.73	2.13	26.62
20.00	3.75	2.15	24.80
20.50	3.77	2.17	22.98
21.00	3.79	2.18	21.19
21.50	3.80	2.20	19.42
22.00	3.81	2.21	17.64
22.50	3.83	2.22	15.83
23.00	3.84	2.23	14.01
23.50	3.84	2.23	12.21
24.00	**3.85**	**2.24**	10.41
24.50	3.85	2.24	8.47
25.00	3.85	2.24	5.89
25.50	3.85	2.24	3.25
26.00	3.85	2.24	1.55
26.50	3.85	2.24	0.74
27.00	3.85	2.24	0.35
27.50	3.85	2.24	0.16
28.00	3.85	2.24	0.07
28.50	3.85	2.24	0.03
29.00	3.85	2.24	0.01
29.50	3.85	2.24	0.00
30.00	3.85	2.24	0.00

Summary for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Runoff = 654.01 cfs @ 13.32 hrs, Volume= 128.711 af, Depth= 2.24"
Routed to Pond 1P : H AVENUE CULVERT

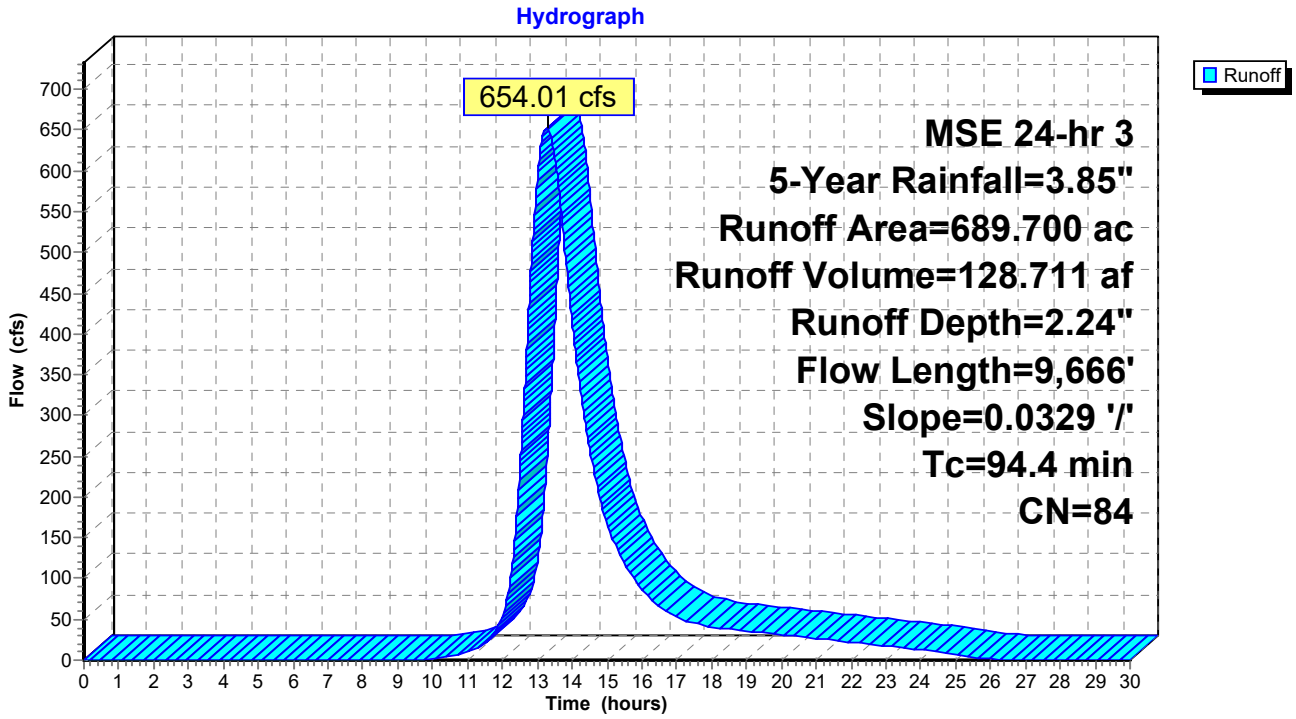
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 5-Year Rainfall=3.85"

	Area (ac)	CN	Description
*	689.700	84	
	689.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
94.4	9,666	0.0329	1.71		**Lag/CN Method,**

Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Subcatchment 689.7 AC: Watershed West of H Ave Culvert



Hydrograph for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.05	0.00	0.00
3.00	0.06	0.00	0.00
3.50	0.08	0.00	0.00
4.00	0.10	0.00	0.00
4.50	0.12	0.00	0.00
5.00	0.14	0.00	0.00
5.50	0.17	0.00	0.00
6.00	0.20	0.00	0.00
6.50	0.22	0.00	0.00
7.00	0.26	0.00	0.00
7.50	0.29	0.00	0.00
8.00	0.32	0.00	0.00
8.50	0.36	0.00	0.00
9.00	0.40	0.00	0.00
9.50	0.46	0.00	0.11
10.00	0.53	0.01	1.22
10.50	0.60	0.02	4.32
11.00	0.74	0.06	9.61
11.50	0.95	0.13	21.77
12.00	1.78	0.59	54.54
12.50	2.90	1.43	230.85
13.00	3.11	1.61	**591.51**
13.50	3.25	1.72	**617.57**
14.00	3.32	1.78	414.53
14.50	3.39	1.84	261.39
15.00	3.45	1.90	168.46
15.50	3.49	1.93	118.82
16.00	3.53	1.96	88.23
16.50	3.56	1.99	66.18
17.00	3.59	2.02	52.94
17.50	3.63	2.04	45.24
18.00	3.65	2.07	41.08
18.50	3.68	2.09	38.09
19.00	3.71	2.11	35.60
19.50	3.73	2.13	33.21
20.00	3.75	2.15	30.95
20.50	3.77	2.17	28.68
21.00	3.79	2.18	26.42
21.50	3.80	2.20	24.19
22.00	3.81	2.21	21.89
22.50	3.83	2.22	19.62
23.00	3.84	2.23	17.33
23.50	3.84	2.23	15.03
24.00	**3.85**	**2.24**	12.75
24.50	3.85	2.24	10.26
25.00	3.85	2.24	6.84
25.50	3.85	2.24	3.52
26.00	3.85	2.24	1.59
26.50	3.85	2.24	0.72
27.00	3.85	2.24	0.32
27.50	3.85	2.24	0.14
28.00	3.85	2.24	0.05
28.50	3.85	2.24	0.02
29.00	3.85	2.24	0.00
29.50	3.85	2.24	0.00
30.00	3.85	2.24	0.00

Summary for Pond 1P: H AVENUE CULVERT

Inflow Area = 689.700 ac, 0.00% Impervious, Inflow Depth = 2.24" for 5-Year event
Inflow = 654.01 cfs @ 13.32 hrs, Volume= 128.711 af
Outflow = 318.14 cfs @ 14.28 hrs, Volume= 128.707 af, Atten= 51%, Lag= 58.1 min
Primary = 229.37 cfs @ 14.28 hrs, Volume= 33.853 af
Routed to Pond 2P : BASIN NW OF WETLAND
Secondary = 88.76 cfs @ 14.28 hrs, Volume= 94.853 af
Routed to Pond 2P : BASIN NW OF WETLAND

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,128.42' @ 14.28 hrs Surf.Area= 46.649 ac Storage= 57.166 af

Plug-Flow detention time= 206.5 min calculated for 128.664 af (100% of inflow)
Center-of-Mass det. time= 206.4 min (1,087.7 - 881.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,124.00'	161.110 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,124.00	0.010	0.000	0.000
1,126.00	1.650	1.660	1.660
1,128.00	36.300	37.950	39.610
1,130.00	85.200	121.500	161.110

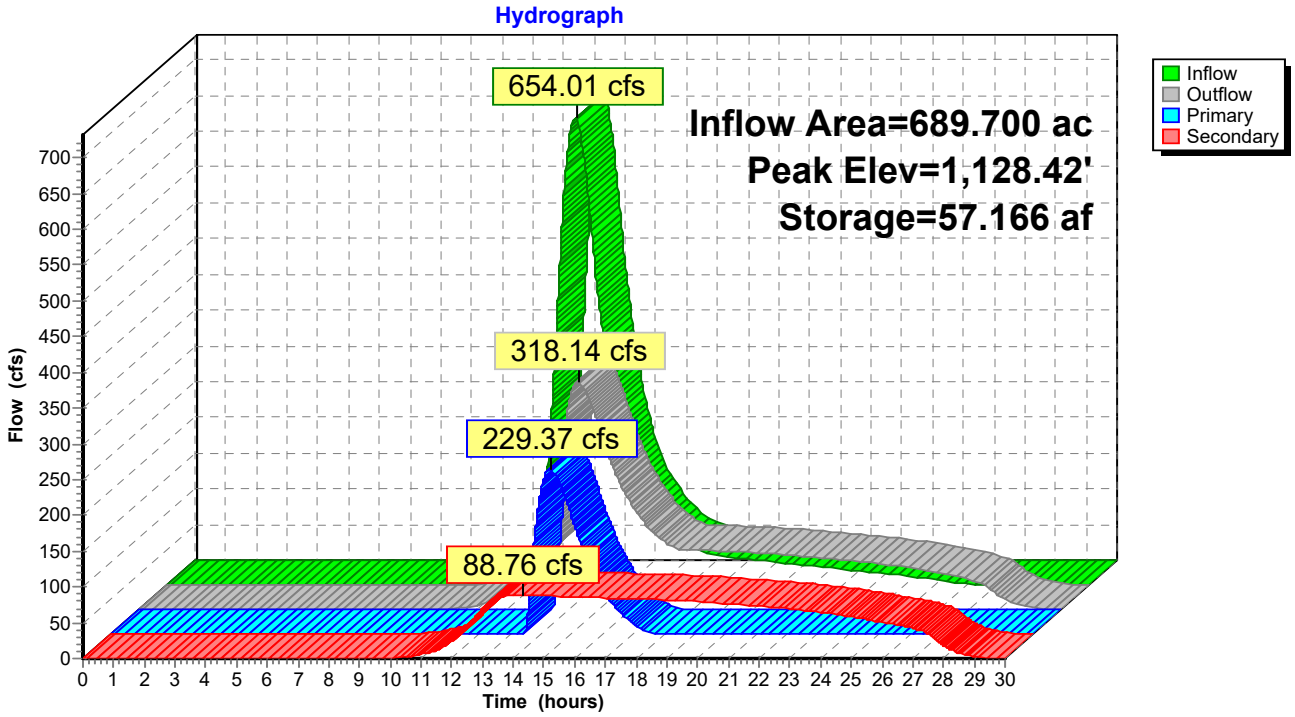
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,124.00'	**60.0" W x 24.0" H Box 5'x2' CULVERT** L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,124.00' / 1,124.00' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 10.00 sf
#2	Primary	1,128.05'	**342.0' long + 100.0 '/' SideZ x 25.0' breadth H Ave Road Surface** 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

Primary OutFlow Max=228.75 cfs @ 14.28 hrs HW=1,128.42' (Free Discharge)
└**2=H Ave Road Surface** (Weir Controls 228.75 cfs @ 1.62 fps)

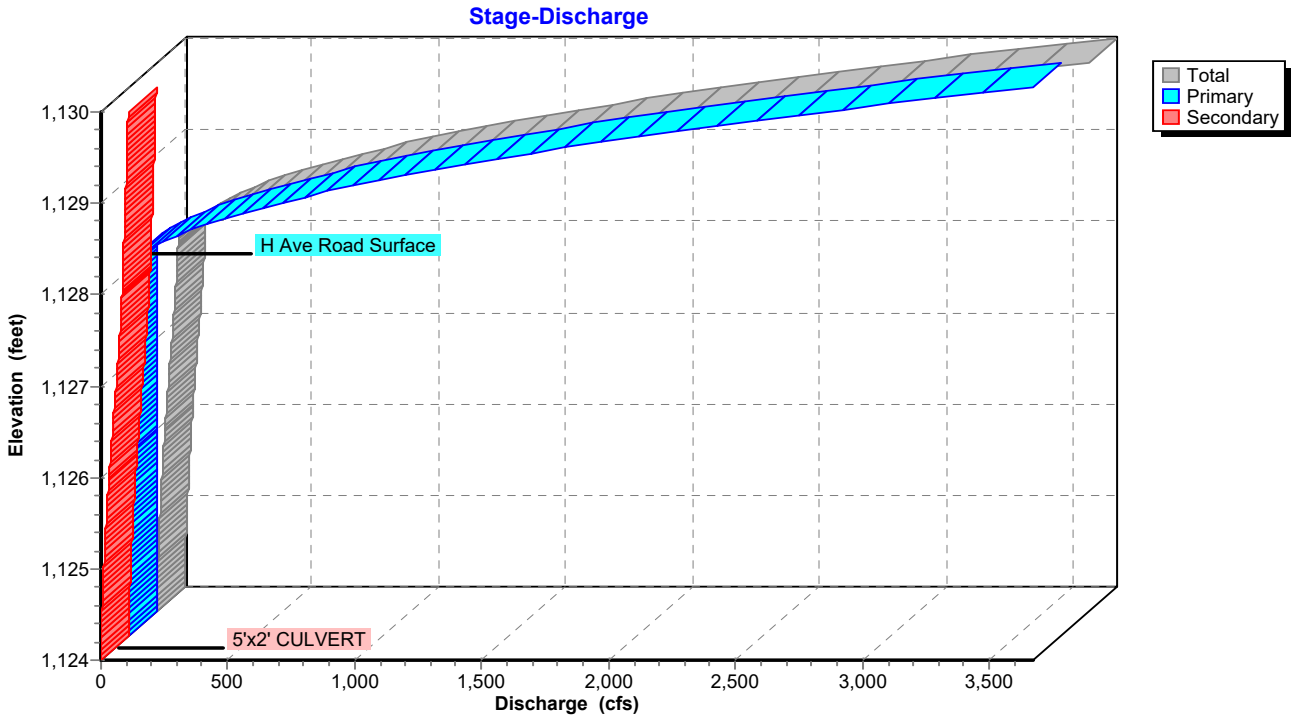
Secondary OutFlow Max=88.77 cfs @ 14.28 hrs HW=1,128.42' (Free Discharge)
└**1=5'x2' CULVERT** (Inlet Controls 88.77 cfs @ 8.88 fps)



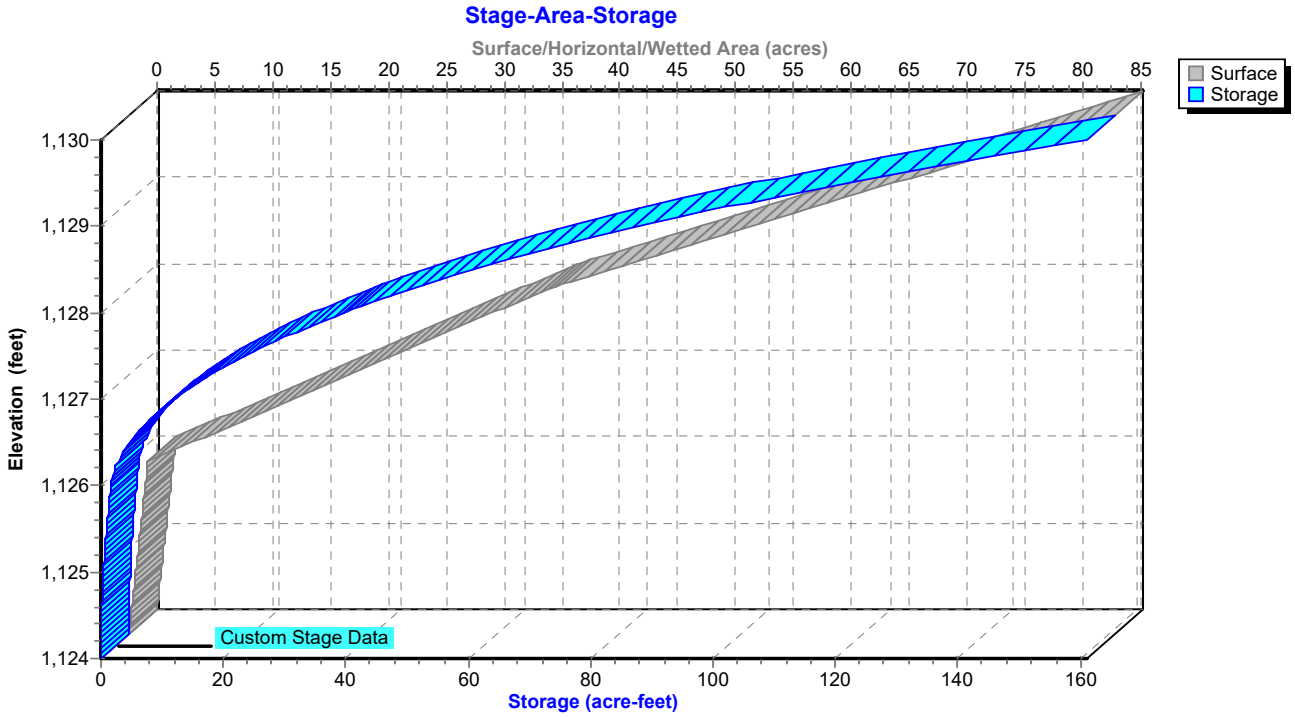
Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Hydrograph for Pond 1P: H AVENUE CULVERT

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,124.00	0.00	0.00	0.00
1.00	0.00	0.000	1,124.00	0.00	0.00	0.00
2.00	0.00	0.000	1,124.00	0.00	0.00	0.00
3.00	0.00	0.000	1,124.00	0.00	0.00	0.00
4.00	0.00	0.000	1,124.00	0.00	0.00	0.00
5.00	0.00	0.000	1,124.00	0.00	0.00	0.00
6.00	0.00	0.000	1,124.00	0.00	0.00	0.00
7.00	0.00	0.000	1,124.00	0.00	0.00	0.00
8.00	0.00	0.000	1,124.00	0.00	0.00	0.00
9.00	0.00	0.000	1,124.00	0.00	0.00	0.00
10.00	1.22	0.015	1,124.18	0.51	0.00	0.51
11.00	9.61	0.190	1,124.67	5.57	0.00	5.57
12.00	54.54	1.188	1,125.69	24.86	0.00	24.86
13.00	**591.51**	19.568	1,127.35	68.75	0.00	68.75
14.00	**414.53**	**55.898**	**1,128.40**	**291.48**	**203.07**	**88.40**
15.00	168.46	**53.800**	**1,128.35**	**249.92**	**162.13**	**87.79**
16.00	88.23	47.848	1,128.21	148.34	62.40	85.93
17.00	52.94	43.562	1,128.10	97.75	13.28	84.47
18.00	41.08	40.151	1,128.01	83.21	0.00	83.21
19.00	35.60	36.488	1,127.91	81.75	0.00	81.75
20.00	30.95	32.568	1,127.80	79.44	0.00	79.44
21.00	26.42	28.490	1,127.67	76.54	0.00	76.54
22.00	21.89	24.298	1,127.52	73.17	0.00	73.17
23.00	17.33	20.030	1,127.36	69.23	0.00	69.23
24.00	12.75	15.742	1,127.18	64.48	0.00	64.48
25.00	6.84	11.484	1,126.97	58.48	0.00	58.48
26.00	1.59	7.285	1,126.72	50.14	0.00	50.14
27.00	0.32	3.468	1,126.37	42.10	0.00	42.10
28.00	0.05	0.800	1,125.38	18.16	0.00	18.16
29.00	0.00	0.082	1,124.44	2.68	0.00	2.68
30.00	0.00	0.005	1,124.09	0.16	0.00	0.16

Stage-Discharge for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,124.00	0.00	0.00	0.00
1,124.10	0.16	0.00	0.16
1,124.20	0.64	0.00	0.64
1,124.30	1.37	0.00	1.37
1,124.40	2.30	0.00	2.30
1,124.50	3.40	0.00	3.40
1,124.60	4.64	0.00	4.64
1,124.70	6.01	0.00	6.01
1,124.80	7.50	0.00	7.50
1,124.90	9.10	0.00	9.10
1,125.00	10.80	0.00	10.80
1,125.10	12.59	0.00	12.59
1,125.20	14.47	0.00	14.47
1,125.30	16.44	0.00	16.44
1,125.40	18.49	0.00	18.49
1,125.50	20.61	0.00	20.61
1,125.60	22.82	0.00	22.82
1,125.70	25.10	0.00	25.10
1,125.80	27.44	0.00	27.44
1,125.90	29.86	0.00	29.86
1,126.00	32.34	0.00	32.34
1,126.10	34.89	0.00	34.89
1,126.20	37.50	0.00	37.50
1,126.30	40.17	0.00	40.17
1,126.40	42.91	0.00	42.91
1,126.50	45.70	0.00	45.70
1,126.60	48.55	0.00	48.55
1,126.70	49.59	0.00	49.59
1,126.80	53.02	0.00	53.02
1,126.90	56.23	0.00	56.23
1,127.00	59.28	0.00	59.28
1,127.10	62.17	0.00	62.17
1,127.20	64.93	0.00	64.93
1,127.30	67.59	0.00	67.59
1,127.40	70.14	0.00	70.14
1,127.50	72.60	0.00	72.60
1,127.60	74.98	0.00	74.98
1,127.70	77.29	0.00	77.29
1,127.80	79.53	0.00	79.53
1,127.90	81.58	0.00	81.58
1,128.00	83.00	0.00	83.00
1,128.10	94.77	10.37	84.40
1,128.20	140.89	55.12	85.78
1,128.30	208.62	121.50	87.13
1,128.40	294.93	206.47	88.46
1,128.50	397.86	308.09	89.77
1,128.60	516.16	425.10	91.06
1,128.70	646.72	554.38	92.33
1,128.80	786.82	693.24	93.59
1,128.90	942.26	847.43	94.82
1,129.00	1,114.94	1,018.90	96.05
1,129.10	1,303.85	1,206.60	97.25
1,129.20	1,510.10	1,411.66	98.44
1,129.30	1,730.38	1,630.76	99.62
1,129.40	1,964.23	1,863.45	100.78
1,129.50	2,211.09	2,109.16	101.93
1,129.60	2,470.36	2,367.29	103.06
1,129.70	2,746.35	2,642.17	104.19
1,129.80	3,039.97	2,934.67	105.30
1,129.90	3,349.12	3,242.72	106.40
1,130.00	**3,673.94**	**3,566.46**	**107.49**

Stage-Area-Storage for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,124.00	0.010	0.000
1,124.10	0.092	0.005
1,124.20	0.174	0.018
1,124.30	0.256	0.040
1,124.40	0.338	0.070
1,124.50	0.420	0.107
1,124.60	0.502	0.154
1,124.70	0.584	0.208
1,124.80	0.666	0.270
1,124.90	0.748	0.341
1,125.00	0.830	0.420
1,125.10	0.912	0.507
1,125.20	0.994	0.602
1,125.30	1.076	0.706
1,125.40	1.158	0.818
1,125.50	1.240	0.937
1,125.60	1.322	1.066
1,125.70	1.404	1.202
1,125.80	1.486	1.346
1,125.90	1.568	1.499
1,126.00	1.650	1.660
1,126.10	3.382	1.912
1,126.20	5.115	2.337
1,126.30	6.847	2.935
1,126.40	8.580	3.706
1,126.50	10.312	4.651
1,126.60	12.045	5.768
1,126.70	13.778	7.060
1,126.80	15.510	8.524
1,126.90	17.243	10.162
1,127.00	18.975	11.972
1,127.10	20.707	13.957
1,127.20	22.440	16.114
1,127.30	24.172	18.445
1,127.40	25.905	20.949
1,127.50	27.637	23.626
1,127.60	29.370	26.476
1,127.70	31.103	29.500
1,127.80	32.835	32.696
1,127.90	34.568	36.067
1,128.00	36.300	39.610
1,128.10	38.745	43.362
1,128.20	41.190	47.359
1,128.30	43.635	51.600
1,128.40	46.080	56.086
1,128.50	48.525	60.816
1,128.60	50.970	65.791
1,128.70	53.415	71.010
1,128.80	55.860	76.474
1,128.90	58.305	82.182
1,129.00	60.750	88.135
1,129.10	63.195	94.332
1,129.20	65.640	100.774
1,129.30	68.085	107.460
1,129.40	70.530	114.391
1,129.50	72.975	121.566
1,129.60	75.420	128.986
1,129.70	77.865	136.650
1,129.80	80.310	144.559
1,129.90	82.755	152.712
1,130.00	**85.200**	**161.110**

Summary for Pond 2P: BASIN NW OF WETLAND

[81] Warning: Exceeded Pond 1P by 0.23' @ 29.99 hrs

Inflow Area = 848.100 ac, 0.00% Impervious, Inflow Depth > 2.24" for 5-Year event
Inflow = 340.11 cfs @ 14.26 hrs, Volume= 158.267 af
Outflow = 126.43 cfs @ 16.52 hrs, Volume= 106.801 af, Atten= 63%, Lag= 135.9 min
Primary = 126.43 cfs @ 16.52 hrs, Volume= 106.801 af
Routed to Pond I AVENUE : I AVENUE CULVERTS
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,124.81' @ 16.52 hrs Surf.Area= 46.770 ac Storage= 71.787 af

Plug-Flow detention time= 381.0 min calculated for 106.766 af (67% of inflow)
Center-of-Mass det. time= 223.2 min (1,261.9 - 1,038.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,121.00'	311.173 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,121.00	1.997	0.000	0.000
1,122.00	7.899	4.948	4.948
1,123.00	16.217	12.058	17.006
1,124.00	30.839	23.528	40.534
1,126.00	70.400	101.239	141.773
1,128.00	99.000	169.400	311.173

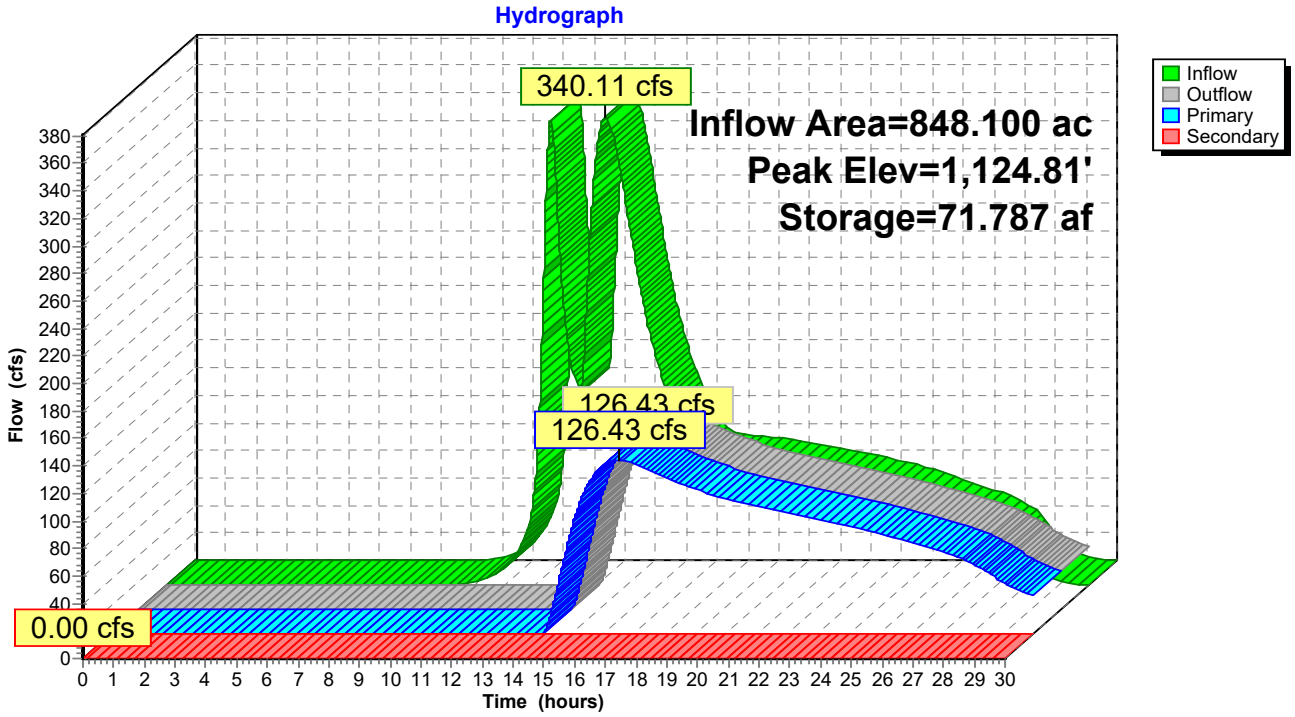
Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.00'	**50.0' long + 25.0 '/' SideZ x 50.0' breadth Saddle to Wetland**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	1,127.00'	**300.0' long + 50.0 '/' SideZ x 50.0' breadth Saddle Away from Wetland**
			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

Primary OutFlow Max=126.13 cfs @ 16.52 hrs HW=1,124.81' (Free Discharge)
↑—**1=Saddle to Wetland** (Weir Controls 126.13 cfs @ 2.23 fps)

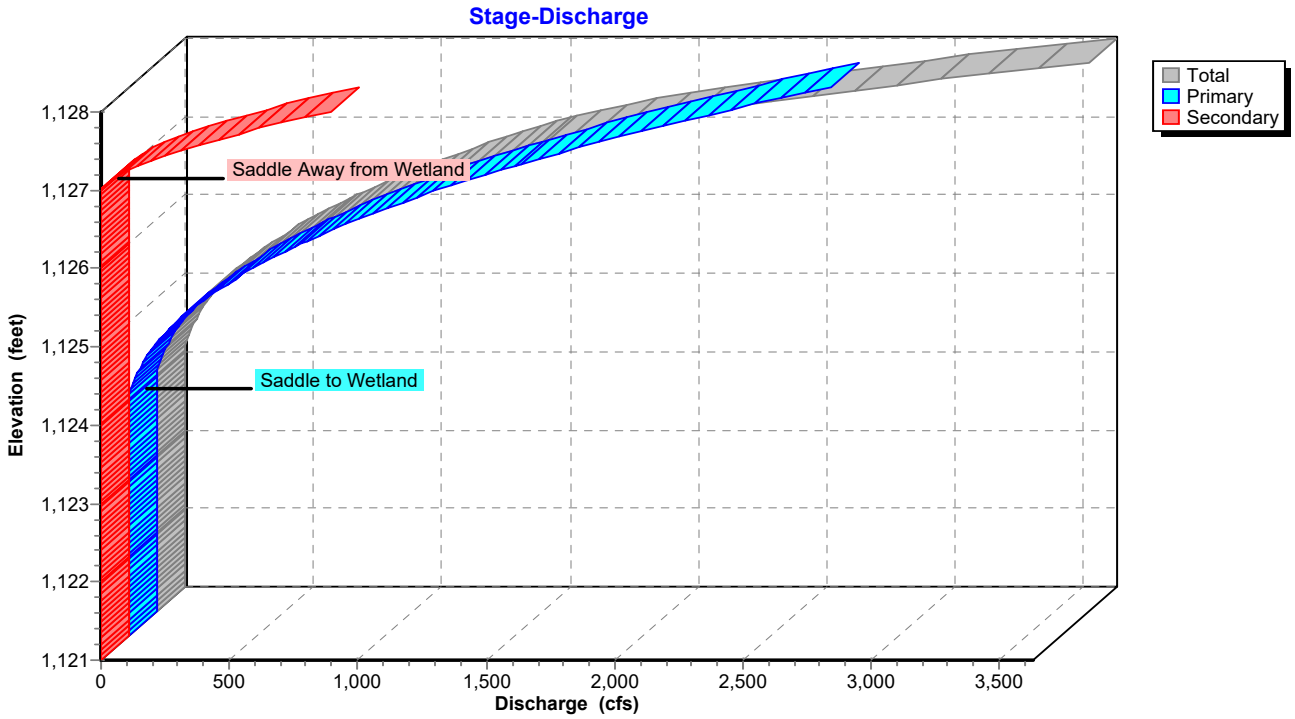
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,121.00' (Free Discharge)
↑—**2=Saddle Away from Wetland** (Controls 0.00 cfs)



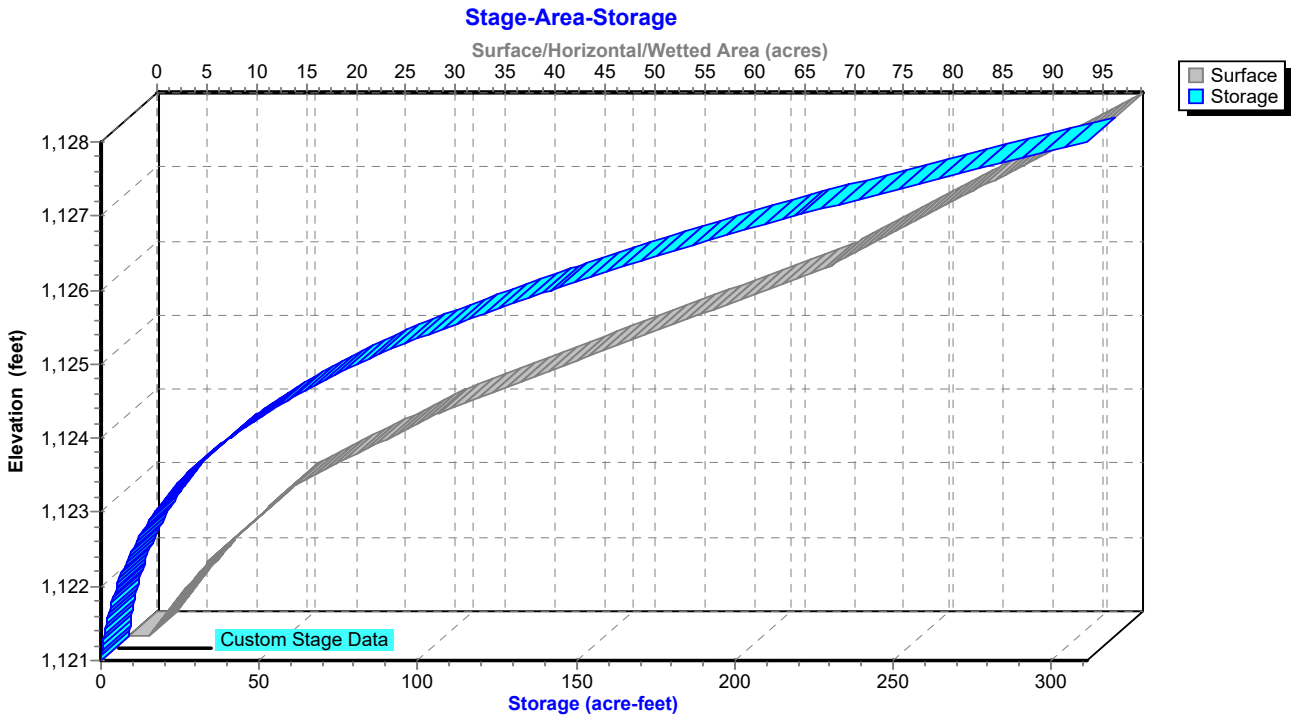
Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Hydrograph for Pond 2P: BASIN NW OF WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,121.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,121.00	0.00	0.00	0.00
2.00	0.00	0.000	1,121.00	0.00	0.00	0.00
3.00	0.00	0.000	1,121.00	0.00	0.00	0.00
4.00	0.00	0.000	1,121.00	0.00	0.00	0.00
5.00	0.00	0.000	1,121.00	0.00	0.00	0.00
6.00	0.00	0.000	1,121.00	0.00	0.00	0.00
7.00	0.00	0.000	1,121.00	0.00	0.00	0.00
8.00	0.00	0.000	1,121.00	0.00	0.00	0.00
9.00	0.00	0.000	1,121.00	0.00	0.00	0.00
10.00	2.13	0.054	1,121.02	0.00	0.00	0.00
11.00	12.25	0.540	1,121.21	0.00	0.00	0.00
12.00	78.15	3.223	1,121.76	0.00	0.00	0.00
13.00	182.13	22.813	1,123.31	0.00	0.00	0.00
14.00	**319.55**	39.134	1,123.95	0.00	0.00	0.00
15.00	**268.02**	62.581	1,124.60	77.66	77.66	0.00
16.00	158.90	**71.081**	**1,124.79**	**122.31**	**122.31**	0.00
17.00	106.96	**71.411**	**1,124.80**	**124.21**	**124.21**	0.00
18.00	91.41	69.498	1,124.76	113.62	113.62	0.00
19.00	88.92	67.928	1,124.72	105.19	105.19	0.00
20.00	85.58	66.725	1,124.69	98.86	98.86	0.00
21.00	81.64	65.692	1,124.67	93.52	93.52	0.00
22.00	77.23	64.737	1,124.65	88.58	88.58	0.00
23.00	72.24	63.796	1,124.63	83.78	83.78	0.00
24.00	66.42	62.810	1,124.60	78.82	78.82	0.00
25.00	58.57	61.689	1,124.58	73.17	73.17	0.00
26.00	50.14	60.409	1,124.55	66.89	66.89	0.00
27.00	42.10	59.034	1,124.51	60.22	60.22	0.00
28.00	18.16	57.075	1,124.47	51.17	51.17	0.00
29.00	2.68	54.103	1,124.39	38.26	38.26	0.00
30.00	0.16	51.477	1,124.32	27.86	27.86	0.00

Stage-Discharge for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,121.00	0.00	0.00	0.00
1,121.10	0.00	0.00	0.00
1,121.20	0.00	0.00	0.00
1,121.30	0.00	0.00	0.00
1,121.40	0.00	0.00	0.00
1,121.50	0.00	0.00	0.00
1,121.60	0.00	0.00	0.00
1,121.70	0.00	0.00	0.00
1,121.80	0.00	0.00	0.00
1,121.90	0.00	0.00	0.00
1,122.00	0.00	0.00	0.00
1,122.10	0.00	0.00	0.00
1,122.20	0.00	0.00	0.00
1,122.30	0.00	0.00	0.00
1,122.40	0.00	0.00	0.00
1,122.50	0.00	0.00	0.00
1,122.60	0.00	0.00	0.00
1,122.70	0.00	0.00	0.00
1,122.80	0.00	0.00	0.00
1,122.90	0.00	0.00	0.00
1,123.00	0.00	0.00	0.00
1,123.10	0.00	0.00	0.00
1,123.20	0.00	0.00	0.00
1,123.30	0.00	0.00	0.00
1,123.40	0.00	0.00	0.00
1,123.50	0.00	0.00	0.00
1,123.60	0.00	0.00	0.00
1,123.70	0.00	0.00	0.00
1,123.80	0.00	0.00	0.00
1,123.90	0.00	0.00	0.00
1,124.00	0.00	0.00	0.00
1,124.10	4.41	4.41	0.00
1,124.20	12.94	12.94	0.00
1,124.30	24.75	24.75	0.00
1,124.40	39.62	39.62	0.00
1,124.50	57.28	57.28	0.00
1,124.60	77.80	77.80	0.00
1,124.70	100.08	100.08	0.00
1,124.80	124.68	124.68	0.00
1,124.90	152.99	152.99	0.00
1,125.00	184.10	184.10	0.00
1,125.10	218.88	218.88	0.00
1,125.20	256.81	256.81	0.00
1,125.30	297.39	297.39	0.00
1,125.40	341.11	341.11	0.00
1,125.50	387.26	387.26	0.00
1,125.60	436.47	436.47	0.00
1,125.70	489.68	489.68	0.00
1,125.80	546.21	546.21	0.00
1,125.90	606.13	606.13	0.00
1,126.00	669.49	669.49	0.00
1,126.10	736.33	736.33	0.00
1,126.20	806.71	806.71	0.00
1,126.30	880.68	880.68	0.00
1,126.40	958.29	958.29	0.00
1,126.50	1,039.60	1,039.60	0.00
1,126.60	1,124.65	1,124.65	0.00
1,126.70	1,213.49	1,213.49	0.00
1,126.80	1,306.17	1,306.17	0.00
1,126.90	1,402.74	1,402.74	0.00
1,127.00	1,503.25	1,503.25	0.00
1,127.10	1,633.51	1,607.74	25.76
1,127.20	1,790.10	1,716.27	73.83
1,127.30	1,966.79	1,828.88	137.91
1,127.40	2,161.46	1,945.61	215.84
1,127.50	2,371.99	2,066.52	305.47
1,127.60	2,598.21	2,191.64	406.57
1,127.70	2,833.93	2,321.03	512.90
1,127.80	3,081.88	2,454.72	627.16
1,127.90	3,348.70	2,592.76	755.93
1,128.00	**3,629.40**	**2,735.20**	**894.20**

Stage-Area-Storage for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,121.00	1.997	0.000
1,121.10	2.587	0.229
1,121.20	3.177	0.517
1,121.30	3.768	0.865
1,121.40	4.358	1.271
1,121.50	4.948	1.736
1,121.60	5.538	2.261
1,121.70	6.128	2.844
1,121.80	6.719	3.486
1,121.90	7.309	4.188
1,122.00	7.899	4.948
1,122.10	8.731	5.779
1,122.20	9.563	6.694
1,122.30	10.394	7.692
1,122.40	11.226	8.773
1,122.50	12.058	9.937
1,122.60	12.890	11.185
1,122.70	13.722	12.515
1,122.80	14.553	13.929
1,122.90	15.385	15.426
1,123.00	16.217	17.006
1,123.10	17.679	18.701
1,123.20	19.141	20.542
1,123.30	20.604	22.529
1,123.40	22.066	24.663
1,123.50	23.528	26.942
1,123.60	24.990	29.368
1,123.70	26.452	31.940
1,123.80	27.915	34.659
1,123.90	29.377	37.523
1,124.00	30.839	40.534
1,124.10	32.817	43.717
1,124.20	34.795	47.097
1,124.30	36.773	50.676
1,124.40	38.751	54.452
1,124.50	40.729	58.426
1,124.60	42.707	62.598
1,124.70	44.685	66.968
1,124.80	46.663	71.535
1,124.90	48.641	76.300
1,125.00	50.619	81.263
1,125.10	52.598	86.424
1,125.20	54.576	91.783
1,125.30	56.554	97.339
1,125.40	58.532	103.093
1,125.50	60.510	109.046
1,125.60	62.488	115.195
1,125.70	64.466	121.543
1,125.80	66.444	128.089
1,125.90	68.422	134.832
1,126.00	70.400	141.773
1,126.10	71.830	148.884
1,126.20	73.260	156.139
1,126.30	74.690	163.536
1,126.40	76.120	171.077
1,126.50	77.550	178.760
1,126.60	78.980	186.587
1,126.70	80.410	194.557
1,126.80	81.840	202.669
1,126.90	83.270	210.925
1,127.00	84.700	219.323
1,127.10	86.130	227.864
1,127.20	87.560	236.549
1,127.30	88.990	245.376
1,127.40	90.420	254.347
1,127.50	91.850	263.460
1,127.60	93.280	272.717
1,127.70	94.710	282.117
1,127.80	96.140	291.659
1,127.90	97.570	301.345
1,128.00	**99.000**	**311.173**

Summary for Pond I AVENUE: I AVENUE CULVERTS

Inflow Area = 1,705.100 ac, 0.00% Impervious, Inflow Depth > 1.88" for 5-Year event
Inflow = 792.74 cfs @ 13.29 hrs, Volume= 266.734 af
Outflow = 440.39 cfs @ 14.21 hrs, Volume= 266.709 af, Atten= 44%, Lag= 55.4 min
Primary = 336.90 cfs @ 14.21 hrs, Volume= 234.189 af
Secondary = 103.49 cfs @ 14.21 hrs, Volume= 32.520 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,110.22' @ 14.21 hrs Surf.Area= 18.213 ac Storage= 38.112 af

Plug-Flow detention time= 26.9 min calculated for 266.620 af (100% of inflow)
Center-of-Mass det. time= 26.9 min (1,061.8 - 1,034.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,098.00'	389.351 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,098.00	0.000	0.000	0.000
1,099.00	0.001	0.001	0.001
1,100.00	0.001	0.001	0.002
1,101.00	0.008	0.005	0.006
1,102.00	0.027	0.017	0.023
1,103.00	0.110	0.069	0.092
1,104.00	0.241	0.175	0.267
1,105.00	0.739	0.490	0.757
1,106.00	2.505	1.622	2.380
1,107.00	4.643	3.574	5.954
1,108.00	6.580	5.611	11.565
1,109.00	10.976	8.778	20.343
1,110.00	16.743	13.859	34.202
1,111.00	23.315	20.029	54.231
1,112.00	31.569	27.442	81.673
1,113.00	42.966	37.267	118.941
1,114.00	53.960	48.463	167.404
1,115.00	65.810	59.885	227.289
1,116.00	79.729	72.769	300.058
1,117.00	98.855	89.292	389.351

Device	Routing	Invert	Outlet Devices
#1	Primary	1,100.22'	**72.0" Round 72" RCP CULVERT** L= 85.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,100.22' / 1,098.91' S= 0.0153 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 28.27 sf
#2	Secondary	1,104.72'	**48.0" Round 48" RCP CULVERT** L= 62.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,104.72' / 1,104.41' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#3	Tertiary	1,115.86'	**I AVENUE, C= 3.27** Offset (feet) 0.00 115.59 162.20 164.26 214.26 232.65 343.45

Height (feet) 1.14 0.14 0.00 0.00 0.09 0.14 1.14

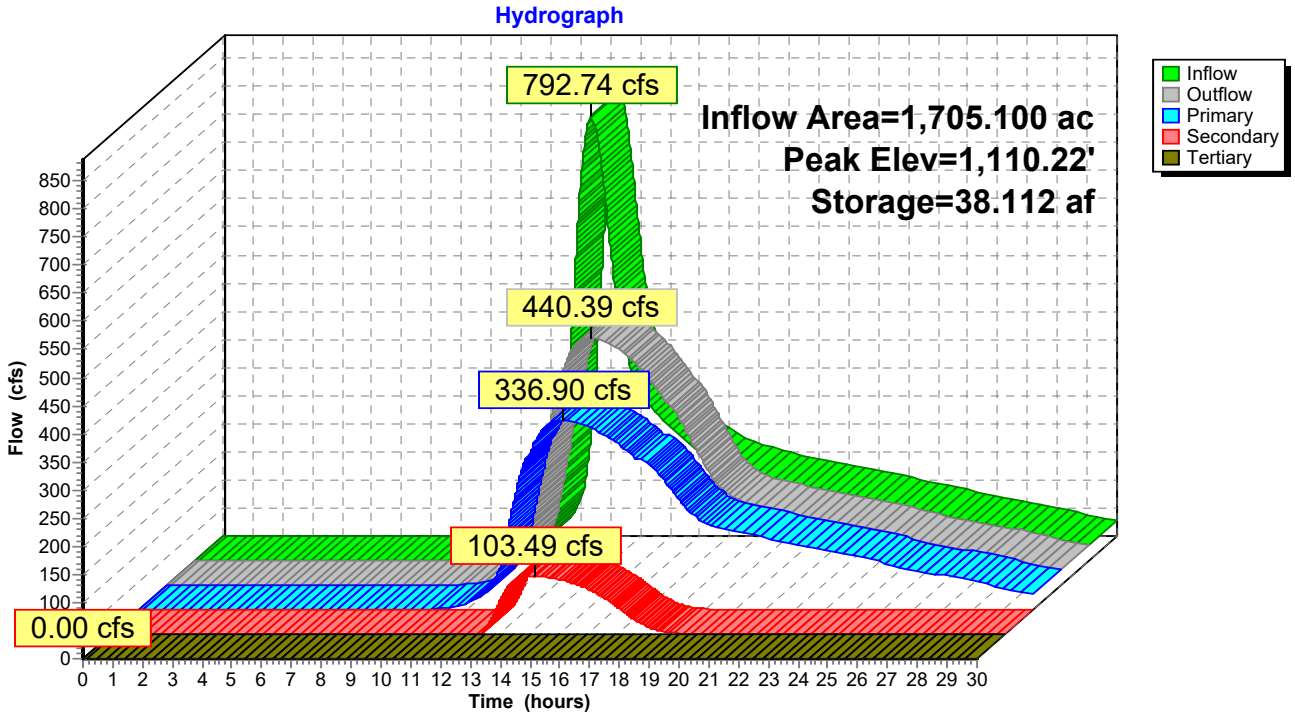
Primary OutFlow Max=336.91 cfs @ 14.21 hrs HW=1,110.22' (Free Discharge)
└**1=72" RCP CULVERT** (Barrel Controls 336.91 cfs @ 11.92 fps)

Secondary OutFlow Max=103.52 cfs @ 14.21 hrs HW=1,110.22' (Free Discharge)
└**2=48" RCP CULVERT** (Barrel Controls 103.52 cfs @ 8.24 fps)

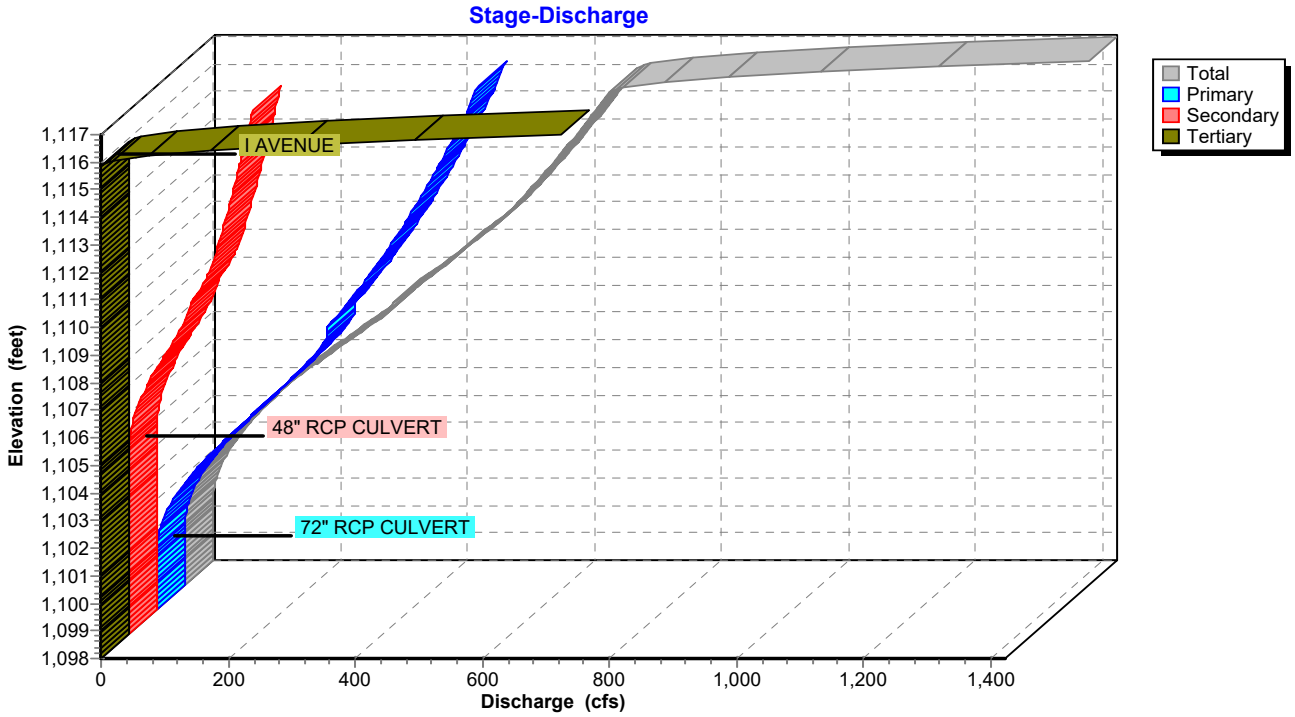
Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,098.00' (Free Discharge)
└**3=I AVENUE** (Controls 0.00 cfs)



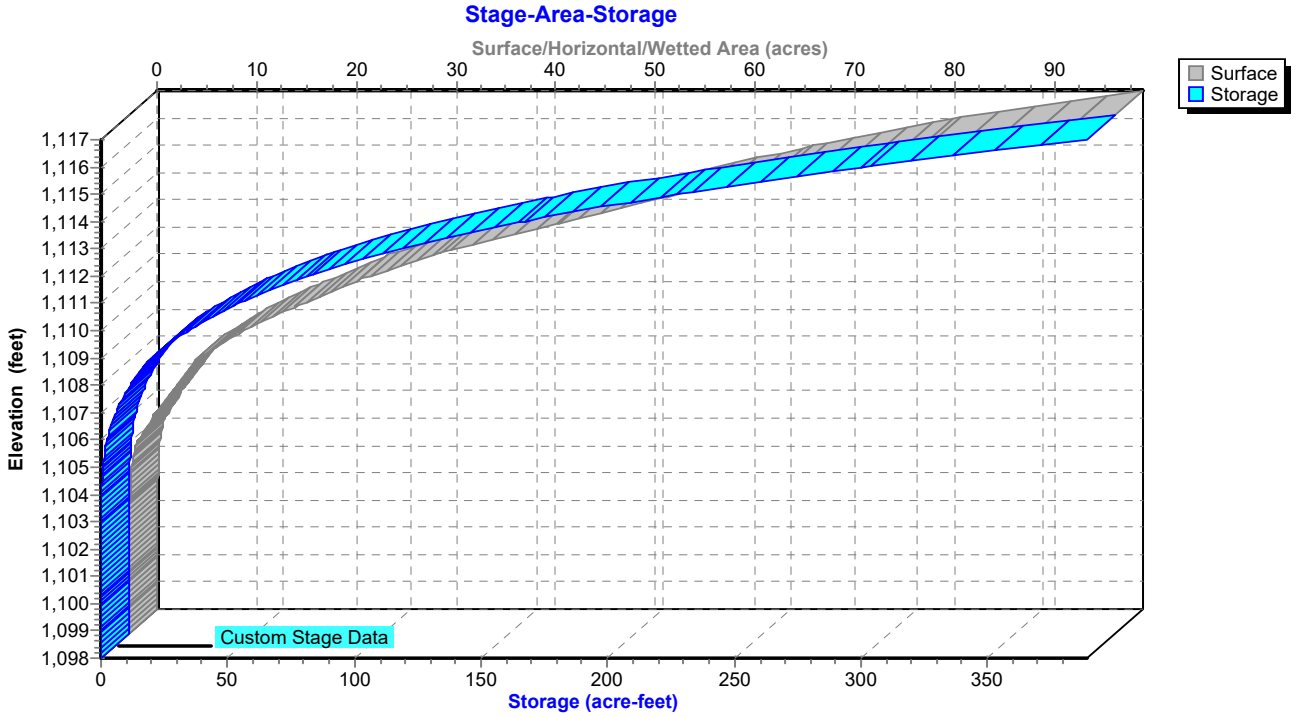
Pond I AVENUE: I AVENUE CULVERTS



Pond I AVENUE: I AVENUE CULVERTS



Pond I AVENUE: I AVENUE CULVERTS



Hydrograph for Pond I AVENUE: I AVENUE CULVERTS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	0.00	0.000	1,098.00	0.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
2.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
3.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
4.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
5.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
6.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
7.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
8.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
9.00	0.00	0.000	1,098.02	0.00	0.00	0.00	0.00
10.00	1.43	0.004	1,100.63	1.38	1.38	0.00	0.00
11.00	11.51	0.010	1,101.37	11.35	11.35	0.00	0.00
12.00	64.52	0.095	1,103.02	60.32	60.32	0.00	0.00
13.00	**708.38**	11.708	1,108.02	322.26	268.50	53.76	0.00
14.00	**526.47**	**37.420**	**1,110.18**	**438.06**	**335.67**	**102.39**	0.00
15.00	295.03	**32.858**	**1,109.92**	**424.55**	**327.04**	**97.51**	0.00
16.00	235.72	21.124	1,109.07	378.52	298.02	80.50	0.00
17.00	191.77	10.218	1,107.79	312.36	264.55	47.82	0.00
18.00	165.27	2.871	1,106.18	217.47	204.12	13.36	0.00
19.00	149.66	0.887	1,105.14	155.98	154.61	1.36	0.00
20.00	137.56	0.635	1,104.82	139.45	139.36	0.09	0.00
21.00	126.56	0.495	1,104.58	128.03	128.03	0.00	0.00
22.00	116.02	0.385	1,104.35	117.17	117.17	0.00	0.00
23.00	105.52	0.301	1,104.12	106.45	106.45	0.00	0.00
24.00	94.88	0.239	1,103.87	95.54	95.54	0.00	0.00
25.00	81.98	0.178	1,103.58	82.81	82.81	0.00	0.00
26.00	69.07	0.125	1,103.26	69.50	69.50	0.00	0.00
27.00	60.69	0.097	1,103.04	60.98	60.98	0.00	0.00
28.00	51.26	0.071	1,102.79	51.65	51.65	0.00	0.00
29.00	38.27	0.042	1,102.41	38.57	38.57	0.00	0.00
30.00	27.86	0.026	1,102.06	27.98	27.98	0.00	0.00

Stage-Discharge for Pond I AVENUE: I AVENUE CULVERTS

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1,098.00	0.00	0.00	0.00	0.00
1,098.50	0.00	0.00	0.00	0.00
1,099.00	0.00	0.00	0.00	0.00
1,099.50	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	0.00	0.00
1,100.50	0.61	0.61	0.00	0.00
1,101.00	5.15	5.15	0.00	0.00
1,101.50	13.88	13.88	0.00	0.00
1,102.00	26.18	26.18	0.00	0.00
1,102.50	41.52	41.52	0.00	0.00
1,103.00	59.41	59.41	0.00	0.00
1,103.50	79.41	79.41	0.00	0.00
1,104.00	101.10	101.10	0.00	0.00
1,104.50	124.05	124.05	0.00	0.00
1,105.00	148.39	147.81	0.58	0.00
1,105.50	176.12	171.89	4.24	0.00
1,106.00	206.21	195.69	10.52	0.00
1,106.50	237.48	218.53	18.95	0.00
1,107.00	268.61	239.47	29.14	0.00
1,107.50	297.80	257.09	40.70	0.00
1,108.00	321.54	268.33	53.21	0.00
1,108.50	343.07	276.93	66.15	0.00
1,109.00	374.43	295.59	78.85	0.00
1,109.50	403.49	313.13	90.36	0.00
1,110.00	428.24	329.75	98.50	0.00
1,110.50	456.69	345.56	111.13	0.00
1,111.00	484.40	360.69	123.71	0.00
1,111.50	507.49	375.20	132.29	0.00
1,112.00	528.21	389.17	139.03	0.00
1,112.50	548.13	402.66	145.47	0.00
1,113.00	567.34	415.71	151.63	0.00
1,113.50	585.92	428.37	157.55	0.00
1,114.00	603.92	440.66	163.26	0.00
1,114.50	621.39	452.62	168.77	0.00
1,115.00	638.37	464.27	174.11	0.00
1,115.50	654.92	475.63	179.29	0.00
1,116.00	679.75	486.69	184.32	8.74
1,116.50	904.83	496.12	189.22	219.49
1,117.00	**1,422.27**	**505.37**	**194.00**	**722.89**

Stage-Area-Storage for Pond I AVENUE: I AVENUE CULVERTS

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,098.00	0.000	0.000
1,098.20	0.000	0.000
1,098.40	0.000	0.000
1,098.60	0.001	0.000
1,098.80	0.001	0.000
1,099.00	0.001	0.001
1,099.20	0.001	0.001
1,099.40	0.001	0.001
1,099.60	0.001	0.001
1,099.80	0.001	0.001
1,100.00	0.001	0.002
1,100.20	0.002	0.002
1,100.40	0.004	0.002
1,100.60	0.005	0.003
1,100.80	0.007	0.005
1,101.00	0.008	0.006
1,101.20	0.012	0.008
1,101.40	0.016	0.011
1,101.60	0.019	0.014
1,101.80	0.023	0.018
1,102.00	0.027	0.023
1,102.20	0.044	0.031
1,102.40	0.060	0.041
1,102.60	0.077	0.055
1,102.80	0.093	0.072
1,103.00	0.110	0.092
1,103.20	0.136	0.117
1,103.40	0.162	0.146
1,103.60	0.189	0.182
1,103.80	0.215	0.222
1,104.00	0.241	0.267
1,104.20	0.341	0.326
1,104.40	0.440	0.404
1,104.60	0.540	0.502
1,104.80	0.639	0.620
1,105.00	0.739	0.757
1,105.20	1.092	0.941
1,105.40	1.445	1.194
1,105.60	1.799	1.519
1,105.80	2.152	1.914
1,106.00	2.505	2.380
1,106.20	2.933	2.923
1,106.40	3.360	3.553
1,106.60	3.788	4.267
1,106.80	4.215	5.068
1,107.00	4.643	5.954
1,107.20	5.030	6.921
1,107.40	5.418	7.966
1,107.60	5.805	9.088
1,107.80	6.193	10.288
1,108.00	6.580	11.565
1,108.20	7.459	12.969
1,108.40	8.338	14.549
1,108.60	9.218	16.304
1,108.80	10.097	18.236
1,109.00	10.976	20.343
1,109.20	12.129	22.654
1,109.40	13.283	25.195
1,109.60	14.436	27.967
1,109.80	15.590	30.969
1,110.00	16.743	34.202
1,110.20	18.057	37.683
1,110.40	19.372	41.425
1,110.60	20.686	45.431
1,110.80	22.001	49.700
1,111.00	23.315	54.231
1,111.20	24.966	59.060
1,111.40	26.617	64.218
1,111.60	28.267	69.706
1,111.80	29.918	75.525
1,112.00	31.569	81.673
1,112.20	33.848	88.215
1,112.40	36.128	95.213
1,112.60	38.407	102.666
1,112.80	40.687	110.576
1,113.00	42.966	118.941
1,113.20	45.165	127.754
1,113.40	47.364	137.007
1,113.60	49.562	146.700
1,113.80	51.761	156.832
1,114.00	53.960	167.404
1,114.20	56.330	178.433
1,114.40	58.700	189.936
1,114.60	61.070	201.913
1,114.80	63.440	214.364
1,115.00	65.810	227.289
1,115.20	68.594	240.729
1,115.40	71.378	254.727
1,115.60	74.161	269.280
1,115.80	76.945	284.391
1,116.00	79.729	300.058
1,116.20	83.554	316.387
1,116.40	87.379	333.480
1,116.60	91.205	351.339
1,116.80	95.030	369.962
1,117.00	**98.855**	**389.351**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 158.4 AC: Watershed After Runoff Area=158.400 ac 0.00% Impervious Runoff Depth=2.86"
Flow Length=2,718' Slope=0.0329 '/' Tc=34.2 min CN=84 Runoff=374.65 cfs 37.773 af

Subcatchment 312.5 AC: South Watershed Runoff Area=312.500 ac 0.00% Impervious Runoff Depth=2.86"
Flow Length=9,197' Slope=0.0329 '/' Tc=90.7 min CN=84 Runoff=391.22 cfs 74.521 af

Subcatchment 544.5 AC: Remainder of Runoff Area=544.500 ac 0.00% Impervious Runoff Depth=2.86"
Flow Length=10,448' Slope=0.0329 '/' Tc=100.5 min CN=84 Runoff=629.90 cfs 129.846 af

Subcatchment 689.7 AC: Watershed West Runoff Area=689.700 ac 0.00% Impervious Runoff Depth=2.86"
Flow Length=9,666' Slope=0.0329 '/' Tc=94.4 min CN=84 Runoff=835.77 cfs 164.472 af

Pond 1P: H AVENUE CULVERT Peak Elev=1,128.59' Storage=65.147 af Inflow=835.77 cfs 164.472 af
Primary=410.10 cfs 62.484 af Secondary=90.90 cfs 101.957 af Outflow=501.00 cfs 164.441 af

Pond 2P: BASIN NW OF WETLAND Peak Elev=1,125.13' Storage=87.879 af Inflow=534.55 cfs 202.214 af
Primary=229.03 cfs 149.045 af Secondary=0.00 cfs 0.000 af Outflow=229.03 cfs 149.045 af

Pond I AVENUE: I AVENUE Peak Elev=1,111.36' Storage=63.236 af Inflow=1,014.78 cfs 353.413 af
Primary=371.27 cfs 292.726 af Secondary=130.37 cfs 60.652 af Tertiary=0.00 cfs 0.000 af Outflow=501.64 cfs 353.378 af

Total Runoff Area = 1,705.100 ac Runoff Volume = 406.613 af Average Runoff Depth = 2.86"
100.00% Pervious = 1,705.100 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Runoff = 374.65 cfs @ 12.49 hrs, Volume= 37.773 af, Depth= 2.86"
Routed to Pond 2P : BASIN NW OF WETLAND

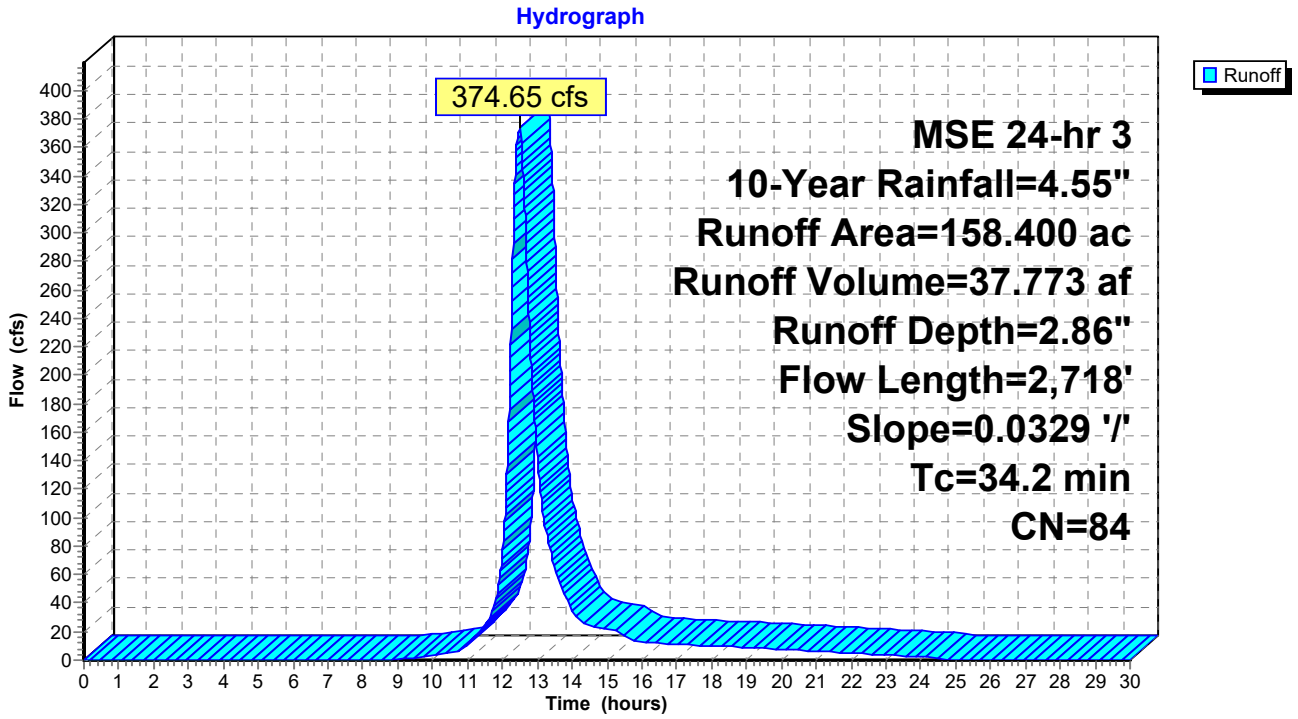
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.55"

	Area (ac)	CN	Description
*	158.400	84	
	158.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.2	2,718	0.0329	1.32		**Lag/CN Method,**

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location



Hydrograph for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.06	0.00	0.00
3.00	0.08	0.00	0.00
3.50	0.10	0.00	0.00
4.00	0.12	0.00	0.00
4.50	0.14	0.00	0.00
5.00	0.17	0.00	0.00
5.50	0.20	0.00	0.00
6.00	0.23	0.00	0.00
6.50	0.27	0.00	0.00
7.00	0.30	0.00	0.00
7.50	0.34	0.00	0.00
8.00	0.38	0.00	0.00
8.50	0.42	0.00	0.09
9.00	0.47	0.00	0.59
9.50	0.54	0.01	1.80
10.00	0.63	0.03	3.69
10.50	0.71	0.05	5.62
11.00	0.88	0.10	10.82
11.50	1.13	0.21	24.58
12.00	2.11	0.82	**73.17**
12.50	3.42	1.87	**374.54**
13.00	3.67	2.09	141.68
13.50	3.84	2.23	66.08
14.00	3.92	2.30	34.52
14.50	4.01	2.38	24.50
15.00	4.08	2.44	22.20
15.50	4.13	2.48	16.81
16.00	4.17	2.52	12.93
16.50	4.21	2.56	11.91
17.00	4.25	2.59	11.27
17.50	4.28	2.62	10.64
18.00	4.32	2.65	10.02
18.50	4.35	2.68	9.39
19.00	4.38	2.71	8.76
19.50	4.41	2.73	8.14
20.00	4.43	2.75	7.50
20.50	4.45	2.78	6.86
21.00	4.47	2.79	6.22
21.50	4.49	2.81	5.59
22.00	4.51	2.82	4.94
22.50	4.52	2.84	4.30
23.00	4.53	2.85	3.66
23.50	4.54	2.86	3.01
24.00	**4.55**	**2.86**	2.37
24.50	4.55	2.86	0.93
25.00	4.55	2.86	0.11
25.50	4.55	2.86	0.01
26.00	4.55	2.86	0.00
26.50	4.55	2.86	0.00
27.00	4.55	2.86	0.00
27.50	4.55	2.86	0.00
28.00	4.55	2.86	0.00
28.50	4.55	2.86	0.00
29.00	4.55	2.86	0.00
29.50	4.55	2.86	0.00
30.00	4.55	2.86	0.00

Summary for Subcatchment 312.5 AC: South Watershed

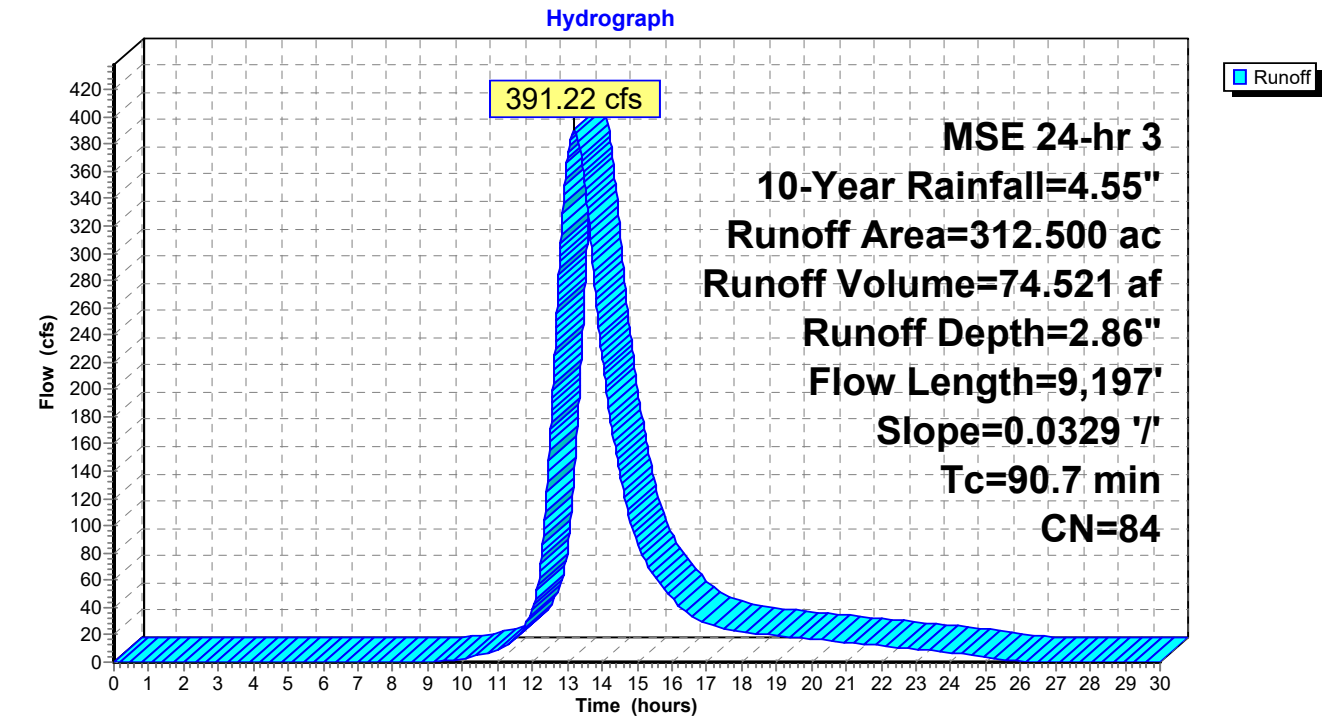
Runoff = 391.22 cfs @ 13.20 hrs, Volume= 74.521 af, Depth= 2.86"
Routed to Pond I AVENUE : I AVENUE CULVERTS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.55"

	Area (ac)	CN	Description
*	312.500	84	
	312.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
90.7	9,197	0.0329	1.69		**Lag/CN Method,**

Subcatchment 312.5 AC: South Watershed



Hydrograph for Subcatchment 312.5 AC: South Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.06	0.00	0.00
3.00	0.08	0.00	0.00
3.50	0.10	0.00	0.00
4.00	0.12	0.00	0.00
4.50	0.14	0.00	0.00
5.00	0.17	0.00	0.00
5.50	0.20	0.00	0.00
6.00	0.23	0.00	0.00
6.50	0.27	0.00	0.00
7.00	0.30	0.00	0.00
7.50	0.34	0.00	0.00
8.00	0.38	0.00	0.00
8.50	0.42	0.00	0.01
9.00	0.47	0.00	0.18
9.50	0.54	0.01	0.84
10.00	0.63	0.03	2.49
10.50	0.71	0.05	5.23
11.00	0.88	0.10	8.98
11.50	1.13	0.21	17.38
12.00	2.11	0.82	38.94
12.50	3.42	1.87	157.55
13.00	3.67	2.09	**369.82**
13.50	3.84	2.23	**352.67**
14.00	3.92	2.30	223.95
14.50	4.01	2.38	138.69
15.00	4.08	2.44	88.83
15.50	4.13	2.48	63.00
16.00	4.17	2.52	46.81
16.50	4.21	2.56	35.18
17.00	4.25	2.59	28.21
17.50	4.28	2.62	24.54
18.00	4.32	2.65	22.47
18.50	4.35	2.68	20.89
19.00	4.38	2.71	19.53
19.50	4.41	2.73	18.24
20.00	4.43	2.75	16.97
20.50	4.45	2.78	15.73
21.00	4.47	2.79	14.47
21.50	4.49	2.81	13.22
22.00	4.51	2.82	11.96
22.50	4.52	2.84	10.70
23.00	4.53	2.85	9.43
23.50	4.54	2.86	8.17
24.00	**4.55**	**2.86**	6.89
24.50	4.55	2.86	5.53
25.00	4.55	2.86	3.56
25.50	4.55	2.86	1.74
26.00	4.55	2.86	0.76
26.50	4.55	2.86	0.33
27.00	4.55	2.86	0.14
27.50	4.55	2.86	0.06
28.00	4.55	2.86	0.02
28.50	4.55	2.86	0.01
29.00	4.55	2.86	0.00
29.50	4.55	2.86	0.00
30.00	4.55	2.86	0.00

Summary for Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Runoff = 629.90 cfs @ 13.29 hrs, Volume= 129.846 af, Depth= 2.86"
Routed to Pond I AVENUE : I AVENUE CULVERTS

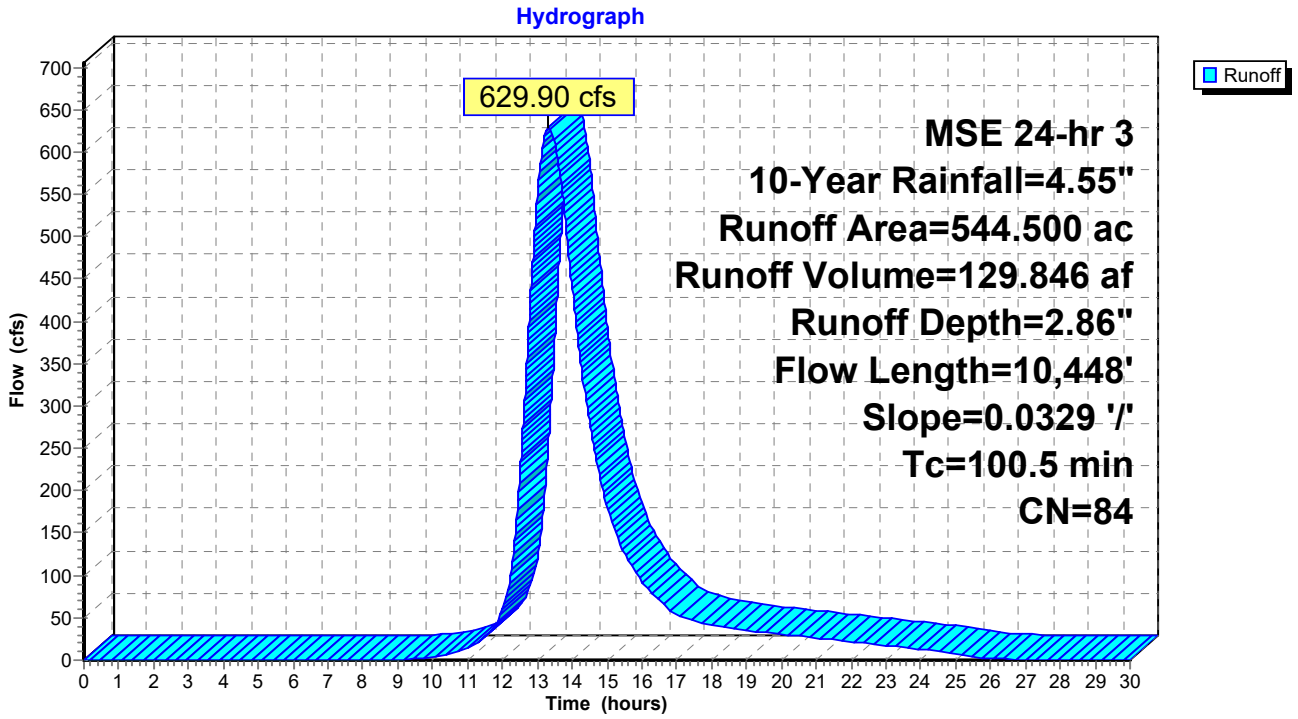
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.55"

	Area (ac)	CN	Description
*	544.500	84	
	544.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
100.5	10,448	0.0329	1.73		**Lag/CN Method,**

Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Subcatchment 544.5 AC: Remainder of Watershed to I Ave



Hydrograph for Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.06	0.00	0.00
3.00	0.08	0.00	0.00
3.50	0.10	0.00	0.00
4.00	0.12	0.00	0.00
4.50	0.14	0.00	0.00
5.00	0.17	0.00	0.00
5.50	0.20	0.00	0.00
6.00	0.23	0.00	0.00
6.50	0.27	0.00	0.00
7.00	0.30	0.00	0.00
7.50	0.34	0.00	0.00
8.00	0.38	0.00	0.00
8.50	0.42	0.00	0.01
9.00	0.47	0.00	0.23
9.50	0.54	0.01	1.15
10.00	0.63	0.03	3.57
10.50	0.71	0.05	7.82
11.00	0.88	0.10	13.82
11.50	1.13	0.21	26.17
12.00	2.11	0.82	58.02
12.50	3.42	1.87	216.19
13.00	3.67	2.09	**545.63**
13.50	3.84	2.23	**613.41**
14.00	3.92	2.30	440.04
14.50	4.01	2.38	280.14
15.00	4.08	2.44	182.01
15.50	4.13	2.48	126.74
16.00	4.17	2.52	93.16
16.50	4.21	2.56	69.32
17.00	4.25	2.59	54.69
17.50	4.28	2.62	46.02
18.00	4.32	2.65	40.71
18.50	4.35	2.68	37.44
19.00	4.38	2.71	34.82
19.50	4.41	2.73	32.52
20.00	4.43	2.75	30.29
20.50	4.45	2.78	28.05
21.00	4.47	2.79	25.86
21.50	4.49	2.81	23.69
22.00	4.51	2.82	21.52
22.50	4.52	2.84	19.30
23.00	4.53	2.85	17.08
23.50	4.54	2.86	14.89
24.00	**4.55**	**2.86**	12.69
24.50	4.55	2.86	10.33
25.00	4.55	2.86	7.18
25.50	4.55	2.86	3.97
26.00	4.55	2.86	1.89
26.50	4.55	2.86	0.90
27.00	4.55	2.86	0.42
27.50	4.55	2.86	0.19
28.00	4.55	2.86	0.09
28.50	4.55	2.86	0.03
29.00	4.55	2.86	0.01
29.50	4.55	2.86	0.00
30.00	4.55	2.86	0.00

Summary for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Runoff = 835.77 cfs @ 13.32 hrs, Volume= 164.472 af, Depth= 2.86"
Routed to Pond 1P : H AVENUE CULVERT

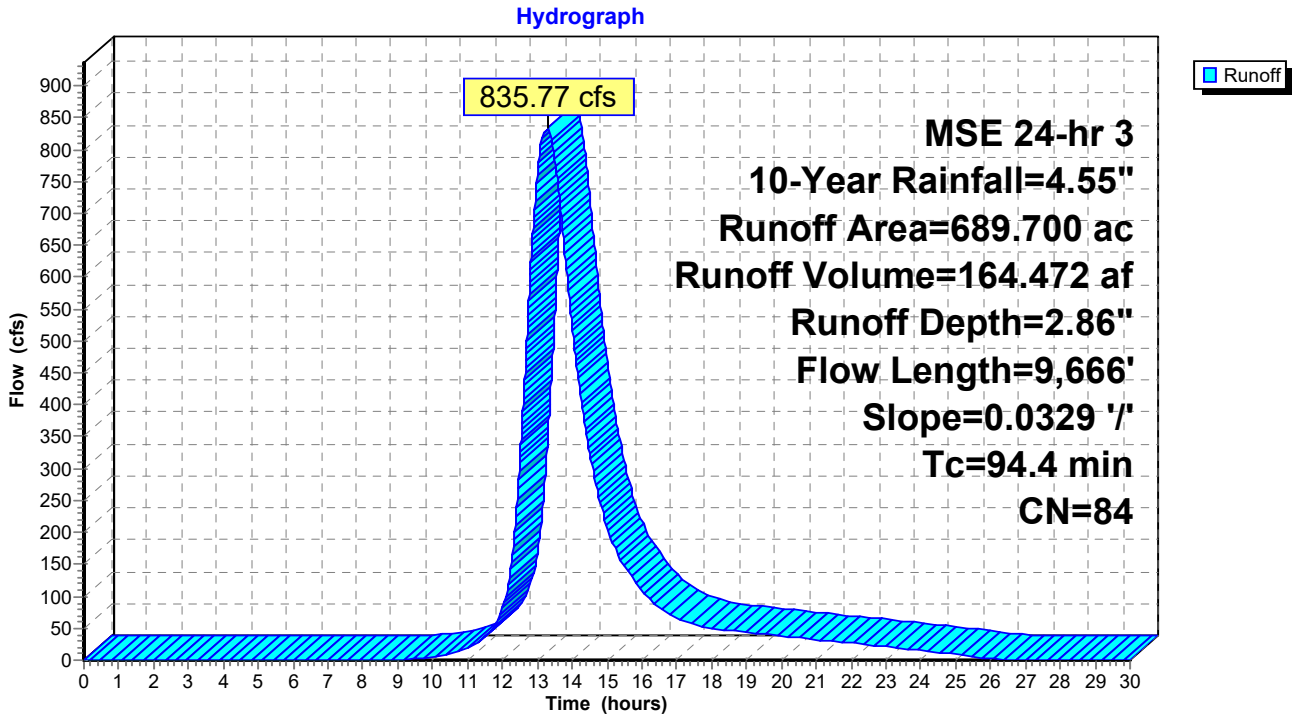
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.55"

	Area (ac)	CN	Description
*	689.700	84	
	689.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
94.4	9,666	0.0329	1.71		**Lag/CN Method,**

Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Subcatchment 689.7 AC: Watershed West of H Ave Culvert



Hydrograph for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.06	0.00	0.00
3.00	0.08	0.00	0.00
3.50	0.10	0.00	0.00
4.00	0.12	0.00	0.00
4.50	0.14	0.00	0.00
5.00	0.17	0.00	0.00
5.50	0.20	0.00	0.00
6.00	0.23	0.00	0.00
6.50	0.27	0.00	0.00
7.00	0.30	0.00	0.00
7.50	0.34	0.00	0.00
8.00	0.38	0.00	0.00
8.50	0.42	0.00	0.02
9.00	0.47	0.00	0.36
9.50	0.54	0.01	1.69
10.00	0.63	0.03	5.10
10.50	0.71	0.05	10.90
11.00	0.88	0.10	18.90
11.50	1.13	0.21	36.33
12.00	2.11	0.82	81.63
12.50	3.42	1.87	310.28
13.00	3.67	2.09	**763.53**
13.50	3.84	2.23	**785.75**
14.00	3.92	2.30	522.42
14.50	4.01	2.38	327.27
15.00	4.08	2.44	209.73
15.50	4.13	2.48	147.14
16.00	4.17	2.52	108.81
16.50	4.21	2.56	81.37
17.00	4.25	2.59	64.92
17.50	4.28	2.62	55.37
18.00	4.32	2.65	50.25
18.50	4.35	2.68	46.57
19.00	4.38	2.71	43.51
19.50	4.41	2.73	40.56
20.00	4.43	2.75	37.79
20.50	4.45	2.78	35.02
21.00	4.47	2.79	32.24
21.50	4.49	2.81	29.52
22.00	4.51	2.82	26.71
22.50	4.52	2.84	23.93
23.00	4.53	2.85	21.14
23.50	4.54	2.86	18.32
24.00	**4.55**	**2.86**	15.55
24.50	4.55	2.86	12.51
25.00	4.55	2.86	8.34
25.50	4.55	2.86	4.29
26.00	4.55	2.86	1.94
26.50	4.55	2.86	0.88
27.00	4.55	2.86	0.39
27.50	4.55	2.86	0.17
28.00	4.55	2.86	0.07
28.50	4.55	2.86	0.02
29.00	4.55	2.86	0.00
29.50	4.55	2.86	0.00
30.00	4.55	2.86	0.00

Summary for Pond 1P: H AVENUE CULVERT

Inflow Area = 689.700 ac, 0.00% Impervious, Inflow Depth = 2.86" for 10-Year event
Inflow = 835.77 cfs @ 13.32 hrs, Volume= 164.472 af
Outflow = 501.00 cfs @ 14.04 hrs, Volume= 164.441 af, Atten= 40%, Lag= 43.7 min
Primary = 410.10 cfs @ 14.04 hrs, Volume= 62.484 af
Routed to Pond 2P : BASIN NW OF WETLAND
Secondary = 90.90 cfs @ 14.04 hrs, Volume= 101.957 af
Routed to Pond 2P : BASIN NW OF WETLAND

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,128.59' @ 14.04 hrs Surf.Area= 50.660 ac Storage= 65.147 af

Plug-Flow detention time= 182.2 min calculated for 164.386 af (100% of inflow)
Center-of-Mass det. time= 182.0 min (1,058.4 - 876.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,124.00'	161.110 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,124.00	0.010	0.000	0.000
1,126.00	1.650	1.660	1.660
1,128.00	36.300	37.950	39.610
1,130.00	85.200	121.500	161.110

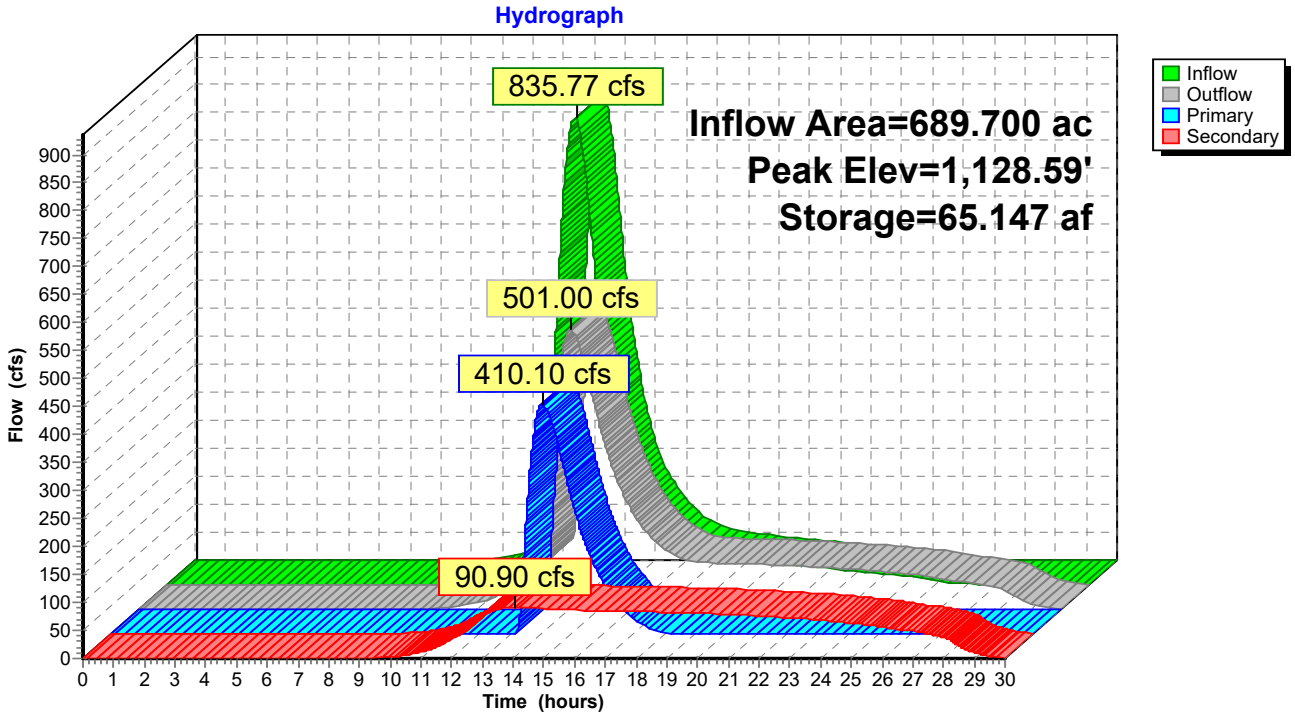
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,124.00'	**60.0" W x 24.0" H Box 5'x2' CULVERT** L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,124.00' / 1,124.00' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 10.00 sf
#2	Primary	1,128.05'	**342.0' long + 100.0 '/' SideZ x 25.0' breadth H Ave Road Surface** 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

Primary OutFlow Max=409.40 cfs @ 14.04 hrs HW=1,128.59' (Free Discharge)
└**2=H Ave Road Surface** (Weir Controls 409.40 cfs @ 1.93 fps)

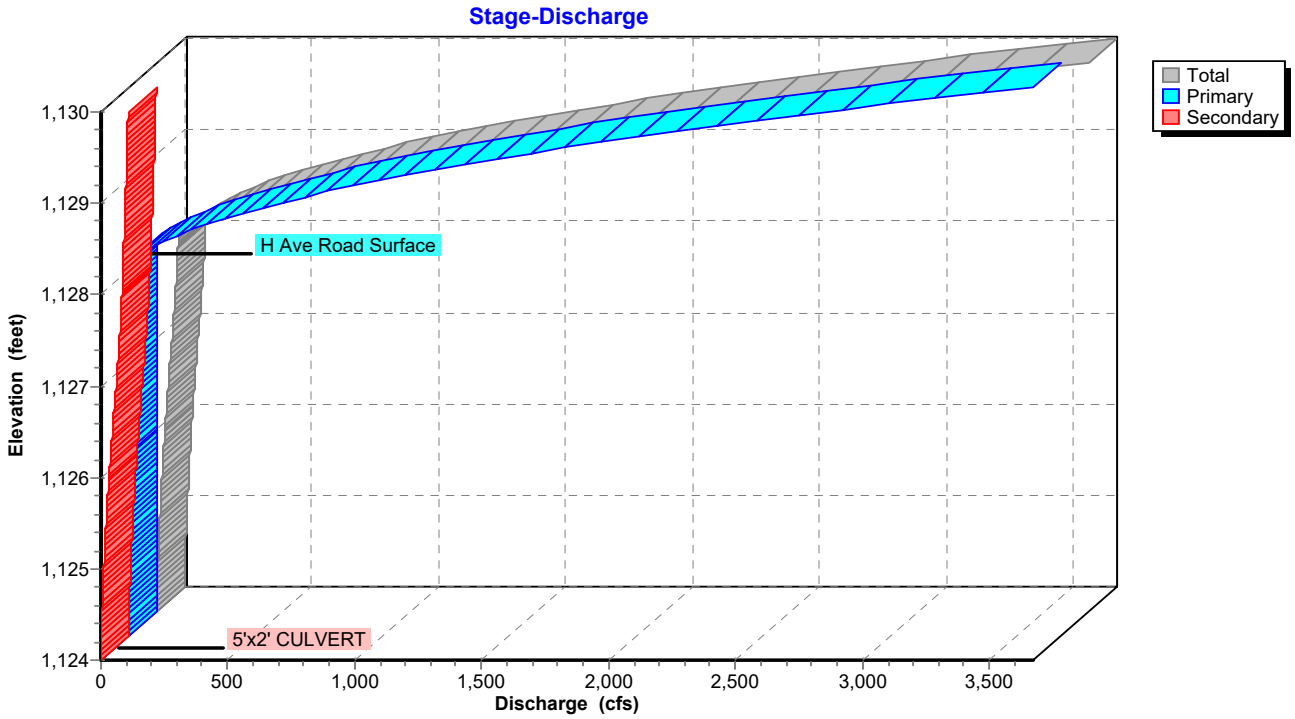
Secondary OutFlow Max=90.90 cfs @ 14.04 hrs HW=1,128.59' (Free Discharge)
└**1=5'x2' CULVERT** (Inlet Controls 90.90 cfs @ 9.09 fps)



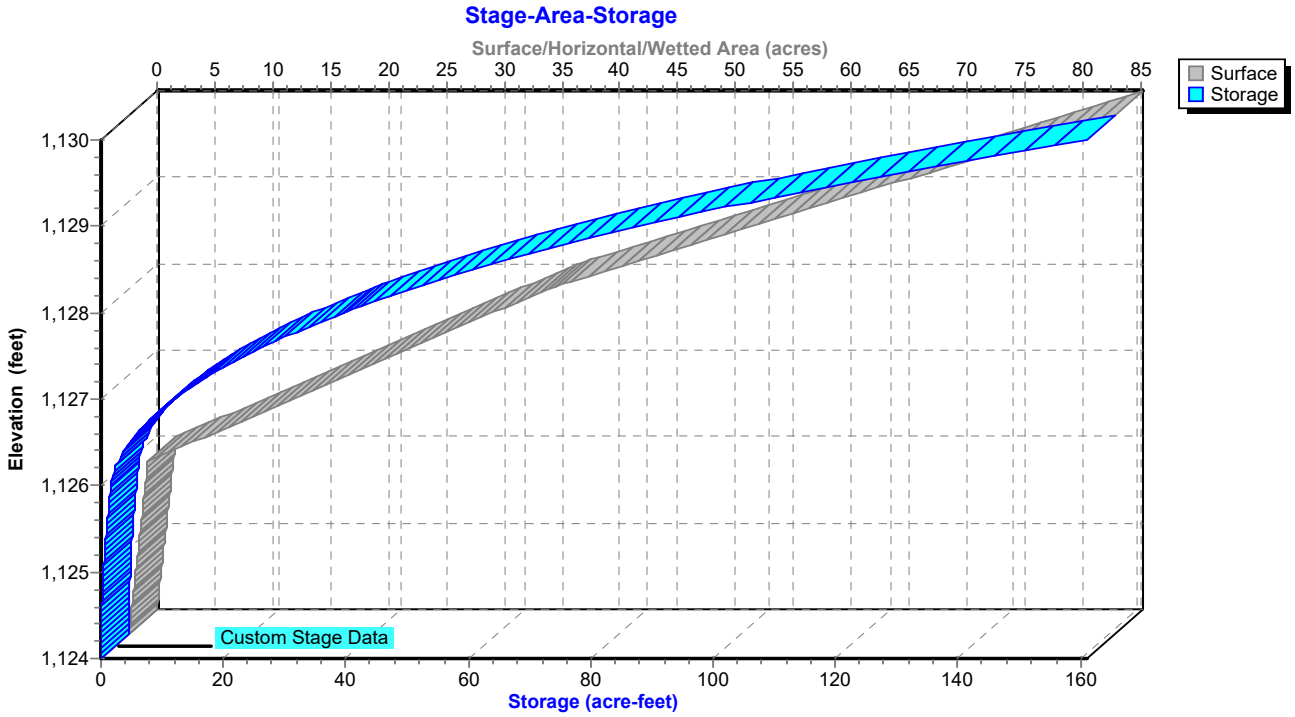
Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Hydrograph for Pond 1P: H AVENUE CULVERT

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,124.00	0.00	0.00	0.00
1.00	0.00	0.000	1,124.00	0.00	0.00	0.00
2.00	0.00	0.000	1,124.00	0.00	0.00	0.00
3.00	0.00	0.000	1,124.00	0.00	0.00	0.00
4.00	0.00	0.000	1,124.00	0.00	0.00	0.00
5.00	0.00	0.000	1,124.00	0.00	0.00	0.00
6.00	0.00	0.000	1,124.00	0.00	0.00	0.00
7.00	0.00	0.000	1,124.00	0.00	0.00	0.00
8.00	0.00	0.000	1,124.00	0.00	0.00	0.00
9.00	0.36	0.004	1,124.08	0.13	0.00	0.13
10.00	5.10	0.086	1,124.44	2.78	0.00	2.78
11.00	18.90	0.461	1,125.05	11.65	0.00	11.65
12.00	81.63	2.032	1,126.13	35.69	0.00	35.69
13.00	**763.53**	27.130	1,127.62	75.49	0.00	75.49
14.00	**522.42**	**65.118**	**1,128.59**	**500.02**	**409.14**	**90.89**
15.00	209.73	**57.602**	**1,128.43**	**327.06**	**238.18**	**88.89**
16.00	108.81	49.911	1,128.26	179.80	93.20	86.60
17.00	64.92	45.062	1,128.14	111.88	26.88	85.00
18.00	50.25	41.760	1,128.06	85.10	1.28	83.82
19.00	43.51	38.731	1,127.98	82.66	0.00	82.66
20.00	37.79	35.312	1,127.88	81.15	0.00	81.15
21.00	32.24	31.593	1,127.77	78.77	0.00	78.77
22.00	26.71	27.636	1,127.64	75.88	0.00	75.88
23.00	21.14	23.479	1,127.49	72.46	0.00	72.46
24.00	15.55	19.171	1,127.33	68.34	0.00	68.34
25.00	8.34	14.742	1,127.14	63.20	0.00	63.20
26.00	1.94	10.170	1,126.90	56.23	0.00	56.23
27.00	0.39	5.946	1,126.61	48.96	0.00	48.96
28.00	0.07	2.349	1,126.20	37.53	0.00	37.53
29.00	0.00	0.402	1,124.98	10.42	0.00	10.42
30.00	0.00	0.031	1,124.26	1.09	0.00	1.09

Stage-Discharge for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,124.00	0.00	0.00	0.00
1,124.10	0.16	0.00	0.16
1,124.20	0.64	0.00	0.64
1,124.30	1.37	0.00	1.37
1,124.40	2.30	0.00	2.30
1,124.50	3.40	0.00	3.40
1,124.60	4.64	0.00	4.64
1,124.70	6.01	0.00	6.01
1,124.80	7.50	0.00	7.50
1,124.90	9.10	0.00	9.10
1,125.00	10.80	0.00	10.80
1,125.10	12.59	0.00	12.59
1,125.20	14.47	0.00	14.47
1,125.30	16.44	0.00	16.44
1,125.40	18.49	0.00	18.49
1,125.50	20.61	0.00	20.61
1,125.60	22.82	0.00	22.82
1,125.70	25.10	0.00	25.10
1,125.80	27.44	0.00	27.44
1,125.90	29.86	0.00	29.86
1,126.00	32.34	0.00	32.34
1,126.10	34.89	0.00	34.89
1,126.20	37.50	0.00	37.50
1,126.30	40.17	0.00	40.17
1,126.40	42.91	0.00	42.91
1,126.50	45.70	0.00	45.70
1,126.60	48.55	0.00	48.55
1,126.70	49.59	0.00	49.59
1,126.80	53.02	0.00	53.02
1,126.90	56.23	0.00	56.23
1,127.00	59.28	0.00	59.28
1,127.10	62.17	0.00	62.17
1,127.20	64.93	0.00	64.93
1,127.30	67.59	0.00	67.59
1,127.40	70.14	0.00	70.14
1,127.50	72.60	0.00	72.60
1,127.60	74.98	0.00	74.98
1,127.70	77.29	0.00	77.29
1,127.80	79.53	0.00	79.53
1,127.90	81.58	0.00	81.58
1,128.00	83.00	0.00	83.00
1,128.10	94.77	10.37	84.40
1,128.20	140.89	55.12	85.78
1,128.30	208.62	121.50	87.13
1,128.40	294.93	206.47	88.46
1,128.50	397.86	308.09	89.77
1,128.60	516.16	425.10	91.06
1,128.70	646.72	554.38	92.33
1,128.80	786.82	693.24	93.59
1,128.90	942.26	847.43	94.82
1,129.00	1,114.94	1,018.90	96.05
1,129.10	1,303.85	1,206.60	97.25
1,129.20	1,510.10	1,411.66	98.44
1,129.30	1,730.38	1,630.76	99.62
1,129.40	1,964.23	1,863.45	100.78
1,129.50	2,211.09	2,109.16	101.93
1,129.60	2,470.36	2,367.29	103.06
1,129.70	2,746.35	2,642.17	104.19
1,129.80	3,039.97	2,934.67	105.30
1,129.90	3,349.12	3,242.72	106.40
1,130.00	**3,673.94**	**3,566.46**	**107.49**

Stage-Area-Storage for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,124.00	0.010	0.000
1,124.10	0.092	0.005
1,124.20	0.174	0.018
1,124.30	0.256	0.040
1,124.40	0.338	0.070
1,124.50	0.420	0.107
1,124.60	0.502	0.154
1,124.70	0.584	0.208
1,124.80	0.666	0.270
1,124.90	0.748	0.341
1,125.00	0.830	0.420
1,125.10	0.912	0.507
1,125.20	0.994	0.602
1,125.30	1.076	0.706
1,125.40	1.158	0.818
1,125.50	1.240	0.937
1,125.60	1.322	1.066
1,125.70	1.404	1.202
1,125.80	1.486	1.346
1,125.90	1.568	1.499
1,126.00	1.650	1.660
1,126.10	3.382	1.912
1,126.20	5.115	2.337
1,126.30	6.847	2.935
1,126.40	8.580	3.706
1,126.50	10.312	4.651
1,126.60	12.045	5.768
1,126.70	13.778	7.060
1,126.80	15.510	8.524
1,126.90	17.243	10.162
1,127.00	18.975	11.972
1,127.10	20.707	13.957
1,127.20	22.440	16.114
1,127.30	24.172	18.445
1,127.40	25.905	20.949
1,127.50	27.637	23.626
1,127.60	29.370	26.476
1,127.70	31.103	29.500
1,127.80	32.835	32.696
1,127.90	34.568	36.067
1,128.00	36.300	39.610
1,128.10	38.745	43.362
1,128.20	41.190	47.359
1,128.30	43.635	51.600
1,128.40	46.080	56.086
1,128.50	48.525	60.816
1,128.60	50.970	65.791
1,128.70	53.415	71.010
1,128.80	55.860	76.474
1,128.90	58.305	82.182
1,129.00	60.750	88.135
1,129.10	63.195	94.332
1,129.20	65.640	100.774
1,129.30	68.085	107.460
1,129.40	70.530	114.391
1,129.50	72.975	121.566
1,129.60	75.420	128.986
1,129.70	77.865	136.650
1,129.80	80.310	144.559
1,129.90	82.755	152.712
1,130.00	**85.200**	**161.110**

Summary for Pond 2P: BASIN NW OF WETLAND

[81] Warning: Exceeded Pond 1P by 0.10' @ 29.99 hrs

Inflow Area = 848.100 ac, 0.00% Impervious, Inflow Depth > 2.86" for 10-Year event
Inflow = 534.55 cfs @ 14.00 hrs, Volume= 202.214 af
Outflow = 229.03 cfs @ 15.69 hrs, Volume= 149.045 af, Atten= 57%, Lag= 101.0 min
Primary = 229.03 cfs @ 15.69 hrs, Volume= 149.045 af
Routed to Pond I AVENUE : I AVENUE CULVERTS
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,125.13' @ 15.69 hrs Surf.Area= 53.142 ac Storage= 87.879 af

Plug-Flow detention time= 323.0 min calculated for 149.045 af (74% of inflow)
Center-of-Mass det. time= 185.9 min (1,199.8 - 1,013.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,121.00'	311.173 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,121.00	1.997	0.000	0.000
1,122.00	7.899	4.948	4.948
1,123.00	16.217	12.058	17.006
1,124.00	30.839	23.528	40.534
1,126.00	70.400	101.239	141.773
1,128.00	99.000	169.400	311.173

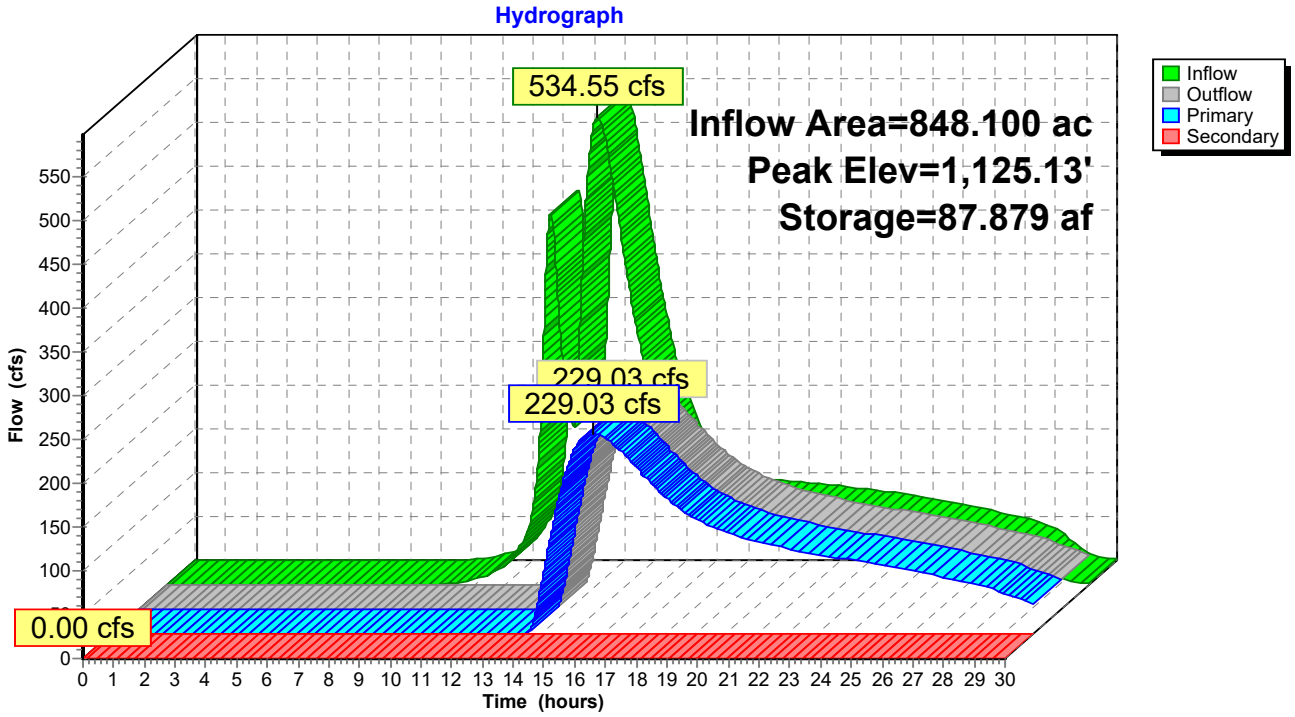
Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.00'	**50.0' long + 25.0 '/' SideZ x 50.0' breadth Saddle to Wetland** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	1,127.00'	**300.0' long + 50.0 '/' SideZ x 50.0' breadth Saddle Away from Wetland** 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

Primary OutFlow Max=229.00 cfs @ 15.69 hrs HW=1,125.13' (Free Discharge)
↑—**1=Saddle to Wetland** (Weir Controls 229.00 cfs @ 2.60 fps)

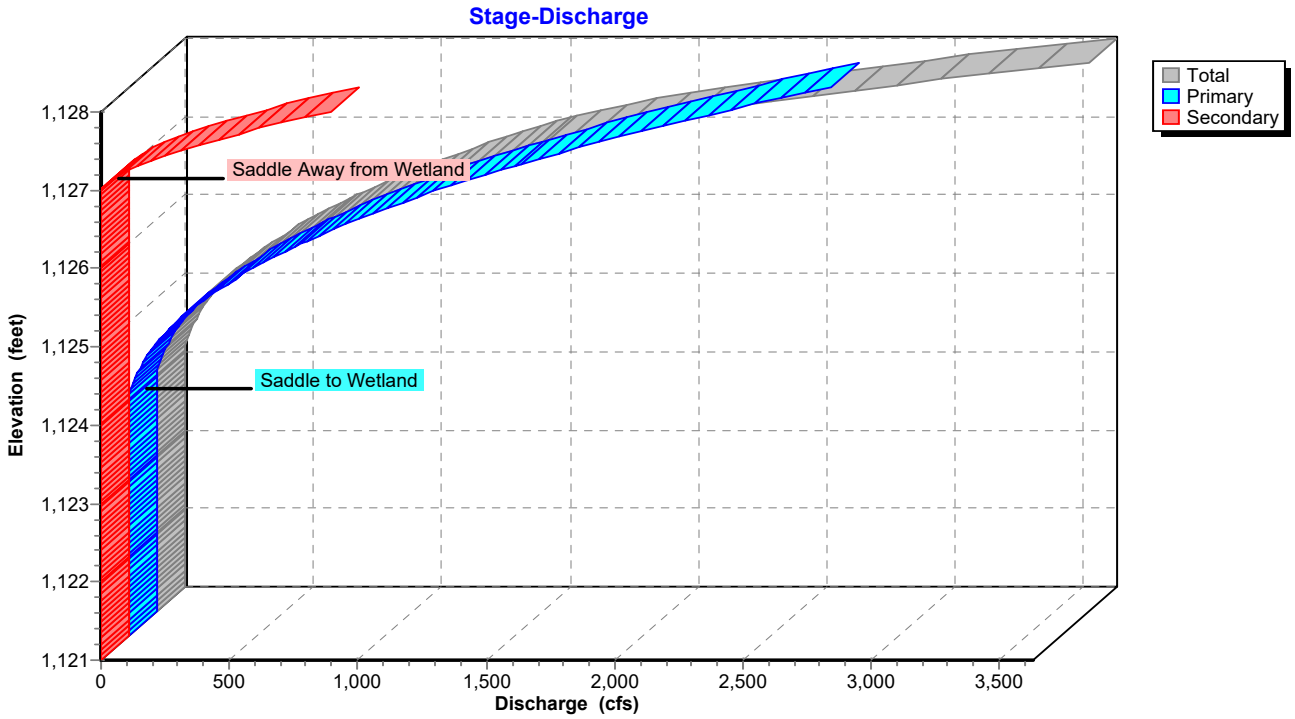
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,121.00' (Free Discharge)
↑—**2=Saddle Away from Wetland** (Controls 0.00 cfs)



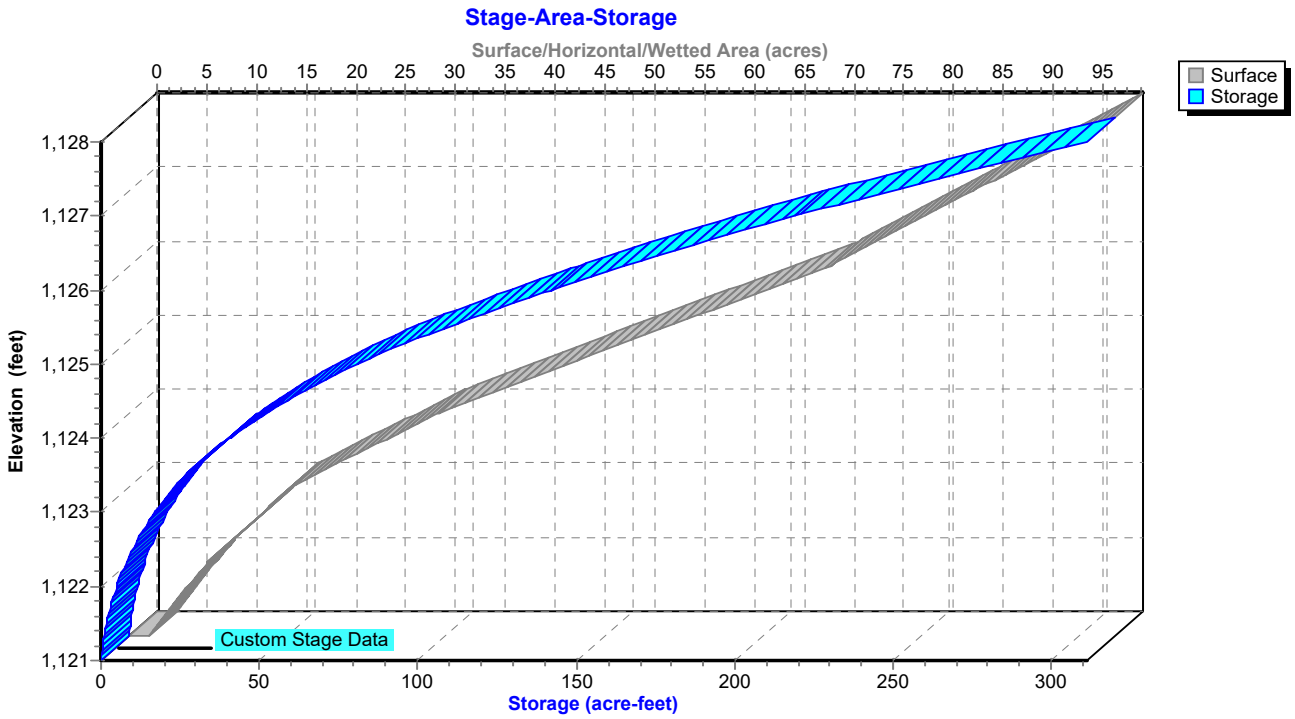
Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Hydrograph for Pond 2P: BASIN NW OF WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,121.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,121.00	0.00	0.00	0.00
2.00	0.00	0.000	1,121.00	0.00	0.00	0.00
3.00	0.00	0.000	1,121.00	0.00	0.00	0.00
4.00	0.00	0.000	1,121.00	0.00	0.00	0.00
5.00	0.00	0.000	1,121.00	0.00	0.00	0.00
6.00	0.00	0.000	1,121.00	0.00	0.00	0.00
7.00	0.00	0.000	1,121.00	0.00	0.00	0.00
8.00	0.00	0.000	1,121.00	0.00	0.00	0.00
9.00	0.72	0.016	1,121.01	0.00	0.00	0.00
10.00	6.47	0.260	1,121.11	0.00	0.00	0.00
11.00	22.47	1.312	1,121.41	0.00	0.00	0.00
12.00	108.86	5.454	1,122.06	0.00	0.00	0.00
13.00	217.17	29.997	1,123.62	0.00	0.00	0.00
14.00	**534.54**	58.103	1,124.49	55.82	55.82	0.00
15.00	349.26	**84.284**	**1,125.06**	**204.25**	**204.25**	0.00
16.00	192.74	**87.424**	**1,125.12**	**225.87**	**225.87**	0.00
17.00	123.14	82.681	1,125.03	193.61	193.61	0.00
18.00	95.12	77.039	1,124.92	157.54	157.54	0.00
19.00	91.41	72.813	1,124.83	132.27	132.27	0.00
20.00	88.64	70.030	1,124.77	116.48	116.48	0.00
21.00	84.99	68.045	1,124.72	105.82	105.82	0.00
22.00	80.83	66.505	1,124.69	97.72	97.72	0.00
23.00	76.13	65.203	1,124.66	90.99	90.99	0.00
24.00	70.71	64.013	1,124.63	84.87	84.87	0.00
25.00	63.31	62.785	1,124.60	78.69	78.69	0.00
26.00	56.23	61.500	1,124.57	72.22	72.22	0.00
27.00	48.96	60.114	1,124.54	65.46	65.46	0.00
28.00	37.53	58.608	1,124.50	58.16	58.16	0.00
29.00	10.42	56.164	1,124.44	47.05	47.05	0.00
30.00	1.09	53.183	1,124.37	34.42	34.42	0.00

Stage-Discharge for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,121.00	0.00	0.00	0.00
1,121.10	0.00	0.00	0.00
1,121.20	0.00	0.00	0.00
1,121.30	0.00	0.00	0.00
1,121.40	0.00	0.00	0.00
1,121.50	0.00	0.00	0.00
1,121.60	0.00	0.00	0.00
1,121.70	0.00	0.00	0.00
1,121.80	0.00	0.00	0.00
1,121.90	0.00	0.00	0.00
1,122.00	0.00	0.00	0.00
1,122.10	0.00	0.00	0.00
1,122.20	0.00	0.00	0.00
1,122.30	0.00	0.00	0.00
1,122.40	0.00	0.00	0.00
1,122.50	0.00	0.00	0.00
1,122.60	0.00	0.00	0.00
1,122.70	0.00	0.00	0.00
1,122.80	0.00	0.00	0.00
1,122.90	0.00	0.00	0.00
1,123.00	0.00	0.00	0.00
1,123.10	0.00	0.00	0.00
1,123.20	0.00	0.00	0.00
1,123.30	0.00	0.00	0.00
1,123.40	0.00	0.00	0.00
1,123.50	0.00	0.00	0.00
1,123.60	0.00	0.00	0.00
1,123.70	0.00	0.00	0.00
1,123.80	0.00	0.00	0.00
1,123.90	0.00	0.00	0.00
1,124.00	0.00	0.00	0.00
1,124.10	4.41	4.41	0.00
1,124.20	12.94	12.94	0.00
1,124.30	24.75	24.75	0.00
1,124.40	39.62	39.62	0.00
1,124.50	57.28	57.28	0.00
1,124.60	77.80	77.80	0.00
1,124.70	100.08	100.08	0.00
1,124.80	124.68	124.68	0.00
1,124.90	152.99	152.99	0.00
1,125.00	184.10	184.10	0.00
1,125.10	218.88	218.88	0.00
1,125.20	256.81	256.81	0.00
1,125.30	297.39	297.39	0.00
1,125.40	341.11	341.11	0.00
1,125.50	387.26	387.26	0.00
1,125.60	436.47	436.47	0.00
1,125.70	489.68	489.68	0.00
1,125.80	546.21	546.21	0.00
1,125.90	606.13	606.13	0.00
1,126.00	669.49	669.49	0.00
1,126.10	736.33	736.33	0.00
1,126.20	806.71	806.71	0.00
1,126.30	880.68	880.68	0.00
1,126.40	958.29	958.29	0.00
1,126.50	1,039.60	1,039.60	0.00
1,126.60	1,124.65	1,124.65	0.00
1,126.70	1,213.49	1,213.49	0.00
1,126.80	1,306.17	1,306.17	0.00
1,126.90	1,402.74	1,402.74	0.00
1,127.00	1,503.25	1,503.25	0.00
1,127.10	1,633.51	1,607.74	25.76
1,127.20	1,790.10	1,716.27	73.83
1,127.30	1,966.79	1,828.88	137.91
1,127.40	2,161.46	1,945.61	215.84
1,127.50	2,371.99	2,066.52	305.47
1,127.60	2,598.21	2,191.64	406.57
1,127.70	2,833.93	2,321.03	512.90
1,127.80	3,081.88	2,454.72	627.16
1,127.90	3,348.70	2,592.76	755.93
1,128.00	**3,629.40**	**2,735.20**	**894.20**

Stage-Area-Storage for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,121.00	1.997	0.000
1,121.10	2.587	0.229
1,121.20	3.177	0.517
1,121.30	3.768	0.865
1,121.40	4.358	1.271
1,121.50	4.948	1.736
1,121.60	5.538	2.261
1,121.70	6.128	2.844
1,121.80	6.719	3.486
1,121.90	7.309	4.188
1,122.00	7.899	4.948
1,122.10	8.731	5.779
1,122.20	9.563	6.694
1,122.30	10.394	7.692
1,122.40	11.226	8.773
1,122.50	12.058	9.937
1,122.60	12.890	11.185
1,122.70	13.722	12.515
1,122.80	14.553	13.929
1,122.90	15.385	15.426
1,123.00	16.217	17.006
1,123.10	17.679	18.701
1,123.20	19.141	20.542
1,123.30	20.604	22.529
1,123.40	22.066	24.663
1,123.50	23.528	26.942
1,123.60	24.990	29.368
1,123.70	26.452	31.940
1,123.80	27.915	34.659
1,123.90	29.377	37.523
1,124.00	30.839	40.534
1,124.10	32.817	43.717
1,124.20	34.795	47.097
1,124.30	36.773	50.676
1,124.40	38.751	54.452
1,124.50	40.729	58.426
1,124.60	42.707	62.598
1,124.70	44.685	66.968
1,124.80	46.663	71.535
1,124.90	48.641	76.300
1,125.00	50.619	81.263
1,125.10	52.598	86.424
1,125.20	54.576	91.783
1,125.30	56.554	97.339
1,125.40	58.532	103.093
1,125.50	60.510	109.046
1,125.60	62.488	115.195
1,125.70	64.466	121.543
1,125.80	66.444	128.089
1,125.90	68.422	134.832
1,126.00	70.400	141.773
1,126.10	71.830	148.884
1,126.20	73.260	156.139
1,126.30	74.690	163.536
1,126.40	76.120	171.077
1,126.50	77.550	178.760
1,126.60	78.980	186.587
1,126.70	80.410	194.557
1,126.80	81.840	202.669
1,126.90	83.270	210.925
1,127.00	84.700	219.323
1,127.10	86.130	227.864
1,127.20	87.560	236.549
1,127.30	88.990	245.376
1,127.40	90.420	254.347
1,127.50	91.850	263.460
1,127.60	93.280	272.717
1,127.70	94.710	282.117
1,127.80	96.140	291.659
1,127.90	97.570	301.345
1,128.00	**99.000**	**311.173**

Summary for Pond I AVENUE: I AVENUE CULVERTS

Inflow Area = 1,705.100 ac, 0.00% Impervious, Inflow Depth > 2.49" for 10-Year event
Inflow = 1,014.78 cfs @ 13.29 hrs, Volume= 353.413 af
Outflow = 501.64 cfs @ 14.82 hrs, Volume= 353.378 af, Atten= 51%, Lag= 92.1 min
Primary = 371.27 cfs @ 14.82 hrs, Volume= 292.726 af
Secondary = 130.37 cfs @ 14.82 hrs, Volume= 60.652 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,111.36' @ 14.82 hrs Surf.Area= 26.310 ac Storage= 63.236 af

Plug-Flow detention time= 48.8 min calculated for 353.378 af (100% of inflow)
Center-of-Mass det. time= 48.7 min (1,062.7 - 1,014.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,098.00'	389.351 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,098.00	0.000	0.000	0.000
1,099.00	0.001	0.001	0.001
1,100.00	0.001	0.001	0.002
1,101.00	0.008	0.005	0.006
1,102.00	0.027	0.017	0.023
1,103.00	0.110	0.069	0.092
1,104.00	0.241	0.175	0.267
1,105.00	0.739	0.490	0.757
1,106.00	2.505	1.622	2.380
1,107.00	4.643	3.574	5.954
1,108.00	6.580	5.611	11.565
1,109.00	10.976	8.778	20.343
1,110.00	16.743	13.859	34.202
1,111.00	23.315	20.029	54.231
1,112.00	31.569	27.442	81.673
1,113.00	42.966	37.267	118.941
1,114.00	53.960	48.463	167.404
1,115.00	65.810	59.885	227.289
1,116.00	79.729	72.769	300.058
1,117.00	98.855	89.292	389.351

Device	Routing	Invert	Outlet Devices
#1	Primary	1,100.22'	**72.0" Round 72" RCP CULVERT** L= 85.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,100.22' / 1,098.91' S= 0.0153 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 28.27 sf
#2	Secondary	1,104.72'	**48.0" Round 48" RCP CULVERT** L= 62.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,104.72' / 1,104.41' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#3	Tertiary	1,115.86'	**I AVENUE, C= 3.27** Offset (feet) 0.00 115.59 162.20 164.26 214.26 232.65 343.45

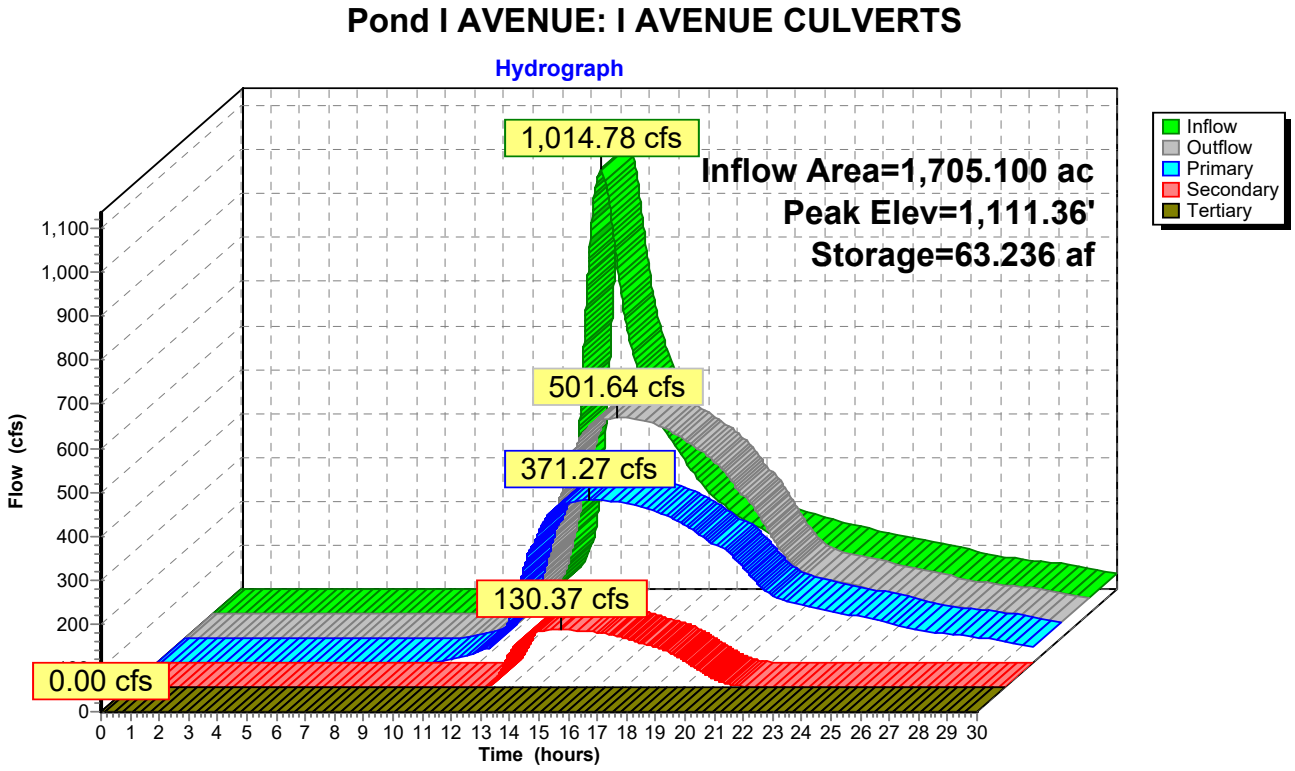
Height (feet) 1.14 0.14 0.00 0.00 0.09 0.14 1.14

Primary OutFlow Max=371.28 cfs @ 14.82 hrs HW=1,111.36' (Free Discharge)
└**1=72" RCP CULVERT** (Barrel Controls 371.28 cfs @ 13.13 fps)

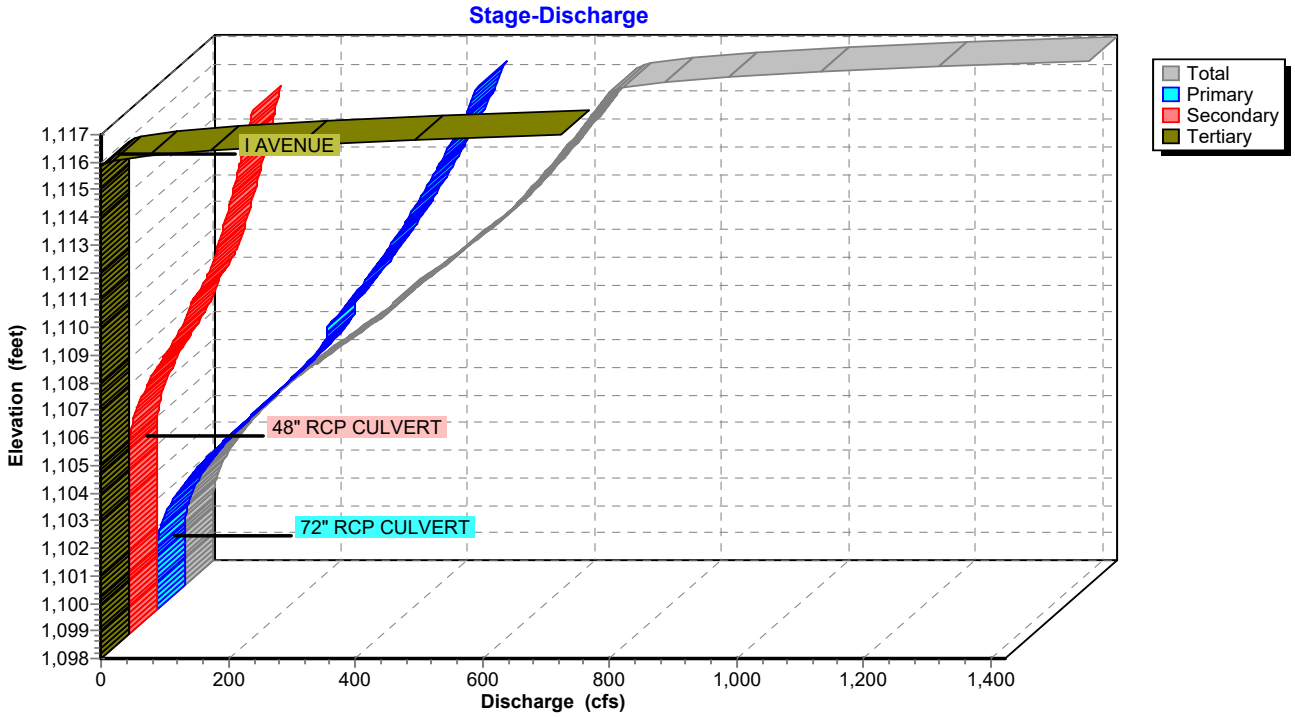
Secondary OutFlow Max=130.38 cfs @ 14.82 hrs HW=1,111.36' (Free Discharge)
└**2=48" RCP CULVERT** (Inlet Controls 130.38 cfs @ 10.37 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,098.00' (Free Discharge)
└**3=I AVENUE** (Controls 0.00 cfs)

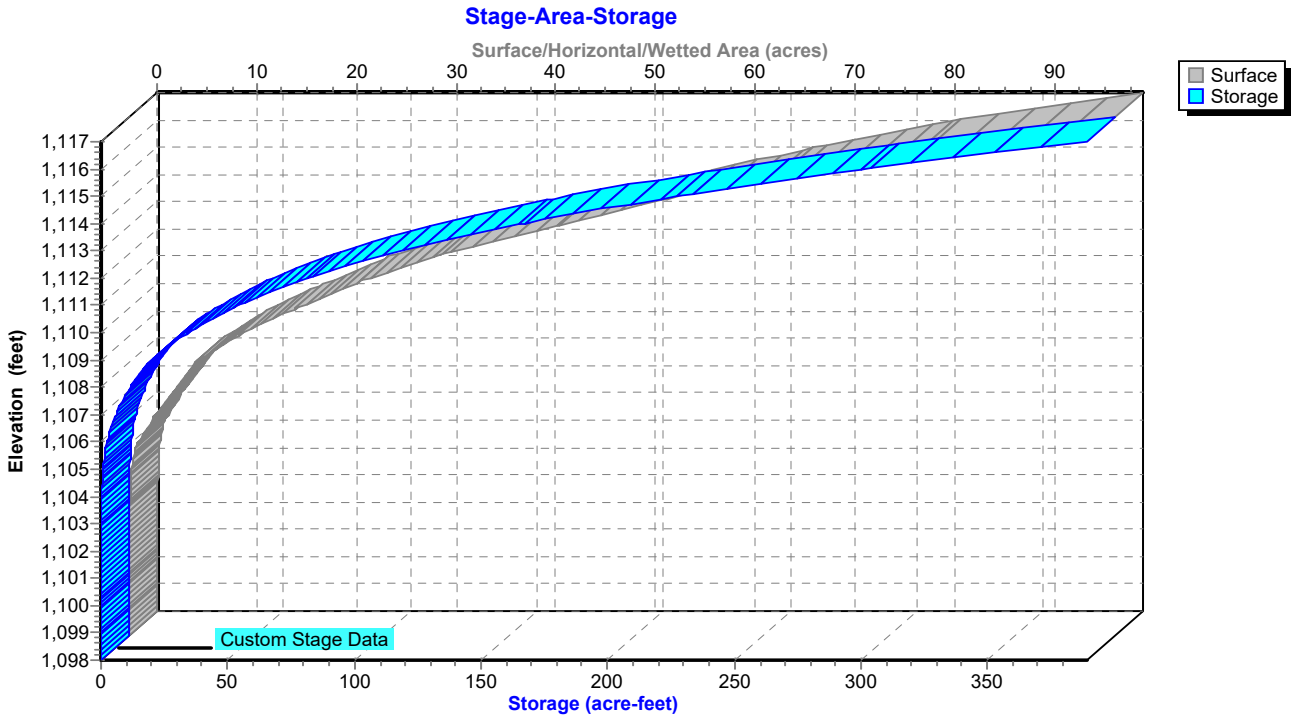




Pond I AVENUE: I AVENUE CULVERTS



Pond I AVENUE: I AVENUE CULVERTS



Hydrograph for Pond I AVENUE: I AVENUE CULVERTS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	0.00	0.000	1,098.00	0.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
2.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
3.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
4.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
5.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
6.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
7.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
8.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
9.00	0.42	0.003	1,100.43	0.39	0.39	0.00	0.00
10.00	6.06	0.007	1,101.06	5.97	5.97	0.00	0.00
11.00	22.80	0.020	1,101.86	22.50	22.50	0.00	0.00
12.00	96.96	0.204	1,103.71	88.53	88.53	0.00	0.00
13.00	**915.44**	17.852	1,108.76	359.57	286.76	72.82	0.00
14.00	**719.81**	**56.833**	**1,111.11**	**490.21**	**363.91**	**126.30**	0.00
15.00	475.09	**63.070**	**1,111.36**	**501.32**	**371.05**	**130.27**	0.00
16.00	365.84	56.570	1,111.10	489.62	363.59	126.04	0.00
17.00	276.51	43.598	1,110.51	457.20	345.84	111.36	0.00
18.00	220.72	28.111	1,109.61	409.36	316.83	92.53	0.00
19.00	186.62	13.936	1,108.32	331.54	269.99	61.55	0.00
20.00	163.74	4.172	1,106.57	242.10	221.74	20.36	0.00
21.00	146.15	0.906	1,105.16	157.05	155.57	1.48	0.00
22.00	131.20	0.558	1,104.70	133.43	133.43	0.00	0.00
23.00	117.50	0.402	1,104.39	119.03	119.03	0.00	0.00
24.00	104.46	0.295	1,104.10	105.57	105.57	0.00	0.00
25.00	89.43	0.214	1,103.76	90.48	90.48	0.00	0.00
26.00	74.87	0.148	1,103.40	75.41	75.41	0.00	0.00
27.00	66.03	0.114	1,103.18	66.35	66.35	0.00	0.00
28.00	58.26	0.090	1,102.98	58.55	58.55	0.00	0.00
29.00	47.06	0.061	1,102.67	47.45	47.45	0.00	0.00
30.00	34.42	0.035	1,102.29	34.64	34.64	0.00	0.00

Stage-Discharge for Pond I AVENUE: I AVENUE CULVERTS

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1,098.00	0.00	0.00	0.00	0.00
1,098.50	0.00	0.00	0.00	0.00
1,099.00	0.00	0.00	0.00	0.00
1,099.50	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	0.00	0.00
1,100.50	0.61	0.61	0.00	0.00
1,101.00	5.15	5.15	0.00	0.00
1,101.50	13.88	13.88	0.00	0.00
1,102.00	26.18	26.18	0.00	0.00
1,102.50	41.52	41.52	0.00	0.00
1,103.00	59.41	59.41	0.00	0.00
1,103.50	79.41	79.41	0.00	0.00
1,104.00	101.10	101.10	0.00	0.00
1,104.50	124.05	124.05	0.00	0.00
1,105.00	148.39	147.81	0.58	0.00
1,105.50	176.12	171.89	4.24	0.00
1,106.00	206.21	195.69	10.52	0.00
1,106.50	237.48	218.53	18.95	0.00
1,107.00	268.61	239.47	29.14	0.00
1,107.50	297.80	257.09	40.70	0.00
1,108.00	321.54	268.33	53.21	0.00
1,108.50	343.07	276.93	66.15	0.00
1,109.00	374.43	295.59	78.85	0.00
1,109.50	403.49	313.13	90.36	0.00
1,110.00	428.24	329.75	98.50	0.00
1,110.50	456.69	345.56	111.13	0.00
1,111.00	484.40	360.69	123.71	0.00
1,111.50	507.49	375.20	132.29	0.00
1,112.00	528.21	389.17	139.03	0.00
1,112.50	548.13	402.66	145.47	0.00
1,113.00	567.34	415.71	151.63	0.00
1,113.50	585.92	428.37	157.55	0.00
1,114.00	603.92	440.66	163.26	0.00
1,114.50	621.39	452.62	168.77	0.00
1,115.00	638.37	464.27	174.11	0.00
1,115.50	654.92	475.63	179.29	0.00
1,116.00	679.75	486.69	184.32	8.74
1,116.50	904.83	496.12	189.22	219.49
1,117.00	**1,422.27**	**505.37**	**194.00**	**722.89**

Stage-Area-Storage for Pond I AVENUE: I AVENUE CULVERTS

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,098.00	0.000	0.000
1,098.20	0.000	0.000
1,098.40	0.000	0.000
1,098.60	0.001	0.000
1,098.80	0.001	0.000
1,099.00	0.001	0.001
1,099.20	0.001	0.001
1,099.40	0.001	0.001
1,099.60	0.001	0.001
1,099.80	0.001	0.001
1,100.00	0.001	0.002
1,100.20	0.002	0.002
1,100.40	0.004	0.002
1,100.60	0.005	0.003
1,100.80	0.007	0.005
1,101.00	0.008	0.006
1,101.20	0.012	0.008
1,101.40	0.016	0.011
1,101.60	0.019	0.014
1,101.80	0.023	0.018
1,102.00	0.027	0.023
1,102.20	0.044	0.031
1,102.40	0.060	0.041
1,102.60	0.077	0.055
1,102.80	0.093	0.072
1,103.00	0.110	0.092
1,103.20	0.136	0.117
1,103.40	0.162	0.146
1,103.60	0.189	0.182
1,103.80	0.215	0.222
1,104.00	0.241	0.267
1,104.20	0.341	0.326
1,104.40	0.440	0.404
1,104.60	0.540	0.502
1,104.80	0.639	0.620
1,105.00	0.739	0.757
1,105.20	1.092	0.941
1,105.40	1.445	1.194
1,105.60	1.799	1.519
1,105.80	2.152	1.914
1,106.00	2.505	2.380
1,106.20	2.933	2.923
1,106.40	3.360	3.553
1,106.60	3.788	4.267
1,106.80	4.215	5.068
1,107.00	4.643	5.954
1,107.20	5.030	6.921
1,107.40	5.418	7.966
1,107.60	5.805	9.088
1,107.80	6.193	10.288
1,108.00	6.580	11.565
1,108.20	7.459	12.969
1,108.40	8.338	14.549
1,108.60	9.218	16.304
1,108.80	10.097	18.236
1,109.00	10.976	20.343
1,109.20	12.129	22.654
1,109.40	13.283	25.195
1,109.60	14.436	27.967
1,109.80	15.590	30.969
1,110.00	16.743	34.202
1,110.20	18.057	37.683
1,110.40	19.372	41.425
1,110.60	20.686	45.431
1,110.80	22.001	49.700
1,111.00	23.315	54.231
1,111.20	24.966	59.060
1,111.40	26.617	64.218
1,111.60	28.267	69.706
1,111.80	29.918	75.525
1,112.00	31.569	81.673
1,112.20	33.848	88.215
1,112.40	36.128	95.213
1,112.60	38.407	102.666
1,112.80	40.687	110.576
1,113.00	42.966	118.941
1,113.20	45.165	127.754
1,113.40	47.364	137.007
1,113.60	49.562	146.700
1,113.80	51.761	156.832
1,114.00	53.960	167.404
1,114.20	56.330	178.433
1,114.40	58.700	189.936
1,114.60	61.070	201.913
1,114.80	63.440	214.364
1,115.00	65.810	227.289
1,115.20	68.594	240.729
1,115.40	71.378	254.727
1,115.60	74.161	269.280
1,115.80	76.945	284.391
1,116.00	79.729	300.058
1,116.20	83.554	316.387
1,116.40	87.379	333.480
1,116.60	91.205	351.339
1,116.80	95.030	369.962
1,117.00	**98.855**	**389.351**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 158.4 AC: Watershed After Runoff Area=158.400 ac 0.00% Impervious Runoff Depth=3.85"
Flow Length=2,718' Slope=0.0329 '/' Tc=34.2 min CN=84 Runoff=501.48 cfs 50.839 af

Subcatchment 312.5 AC: South Watershed Runoff Area=312.500 ac 0.00% Impervious Runoff Depth=3.85"
Flow Length=9,197' Slope=0.0329 '/' Tc=90.7 min CN=84 Runoff=525.70 cfs 100.298 af

Subcatchment 544.5 AC: Remainder of Runoff Area=544.500 ac 0.00% Impervious Runoff Depth=3.85"
Flow Length=10,448' Slope=0.0329 '/' Tc=100.5 min CN=84 Runoff=847.59 cfs 174.759 af

Subcatchment 689.7 AC: Watershed West Runoff Area=689.700 ac 0.00% Impervious Runoff Depth=3.85"
Flow Length=9,666' Slope=0.0329 '/' Tc=94.4 min CN=84 Runoff=1,120.78 cfs 221.362 af

Pond 1P: H AVENUE CULVERT Peak Elev=1,128.80' Storage=76.488 af Inflow=1,120.78 cfs 221.362 af
Primary=693.62 cfs 109.648 af Secondary=93.59 cfs 111.428 af Outflow=787.21 cfs 221.075 af

Pond 2P: BASIN NW OF WETLAND Peak Elev=1,125.56' Storage=112.679 af Inflow=842.80 cfs 271.915 af
Primary=416.26 cfs 216.189 af Secondary=0.00 cfs 0.000 af Outflow=416.26 cfs 216.189 af

Pond I AVENUE: I AVENUE Peak Elev=1,113.27' Storage=131.087 af Inflow=1,386.17 cfs 491.246 af
Primary=422.67 cfs 385.321 af Secondary=154.89 cfs 105.869 af Tertiary=0.00 cfs 0.000 af Outflow=577.56 cfs 491.190 af

Total Runoff Area = 1,705.100 ac Runoff Volume = 547.258 af Average Runoff Depth = 3.85"
100.00% Pervious = 1,705.100 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Runoff = 501.48 cfs @ 12.47 hrs, Volume= 50.839 af, Depth= 3.85"
Routed to Pond 2P : BASIN NW OF WETLAND

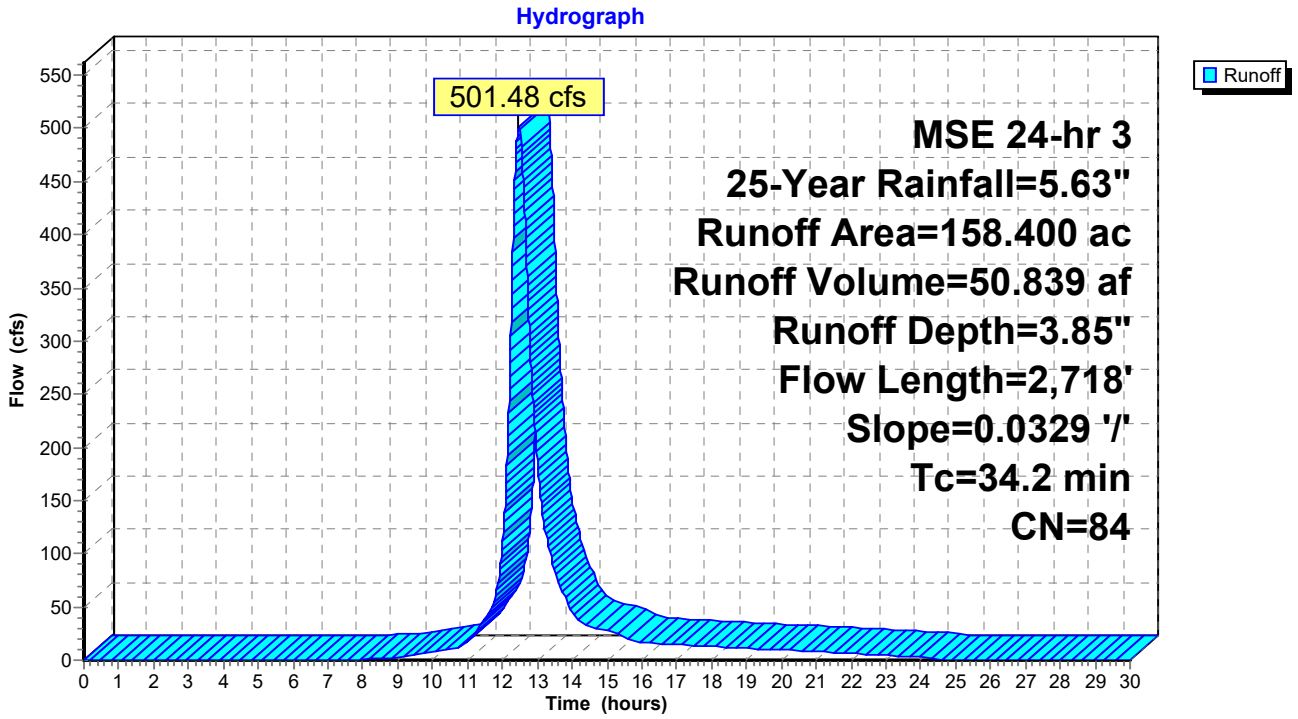
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 25-Year Rainfall=5.63"

	Area (ac)	CN	Description
*	158.400	84	
	158.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.2	2,718	0.0329	1.32		**Lag/CN Method,**

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location



Hydrograph for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.05	0.00	0.00
2.50	0.07	0.00	0.00
3.00	0.09	0.00	0.00
3.50	0.12	0.00	0.00
4.00	0.15	0.00	0.00
4.50	0.18	0.00	0.00
5.00	0.21	0.00	0.00
5.50	0.25	0.00	0.00
6.00	0.29	0.00	0.00
6.50	0.33	0.00	0.00
7.00	0.37	0.00	0.00
7.50	0.42	0.00	0.06
8.00	0.47	0.00	0.62
8.50	0.52	0.01	1.42
9.00	0.58	0.02	2.31
9.50	0.67	0.04	4.49
10.00	0.77	0.07	7.50
10.50	0.88	0.10	10.17
11.00	1.09	0.19	18.03
11.50	1.40	0.35	38.13
12.00	2.61	1.20	**105.59**
12.50	4.23	2.58	**500.38**
13.00	4.54	2.86	185.49
13.50	4.75	3.04	85.49
14.00	4.86	3.14	44.41
14.50	4.96	3.23	31.47
15.00	5.05	3.32	28.47
15.50	5.11	3.37	21.55
16.00	5.16	3.42	16.56
16.50	5.21	3.46	15.25
17.00	5.26	3.51	14.42
17.50	5.30	3.55	13.61
18.00	5.34	3.59	12.81
18.50	5.38	3.62	12.01
19.00	5.42	3.66	11.19
19.50	5.45	3.69	10.39
20.00	5.48	3.72	9.57
20.50	5.51	3.74	8.76
21.00	5.54	3.76	7.94
21.50	5.56	3.79	7.13
22.00	5.58	3.80	6.31
22.50	5.60	3.82	5.48
23.00	5.61	3.83	4.67
23.50	5.62	3.84	3.84
24.00	**5.63**	**3.85**	3.02
24.50	5.63	3.85	1.19
25.00	5.63	3.85	0.14
25.50	5.63	3.85	0.01
26.00	5.63	3.85	0.00
26.50	5.63	3.85	0.00
27.00	5.63	3.85	0.00
27.50	5.63	3.85	0.00
28.00	5.63	3.85	0.00
28.50	5.63	3.85	0.00
29.00	5.63	3.85	0.00
29.50	5.63	3.85	0.00
30.00	5.63	3.85	0.00

Summary for Subcatchment 312.5 AC: South Watershed

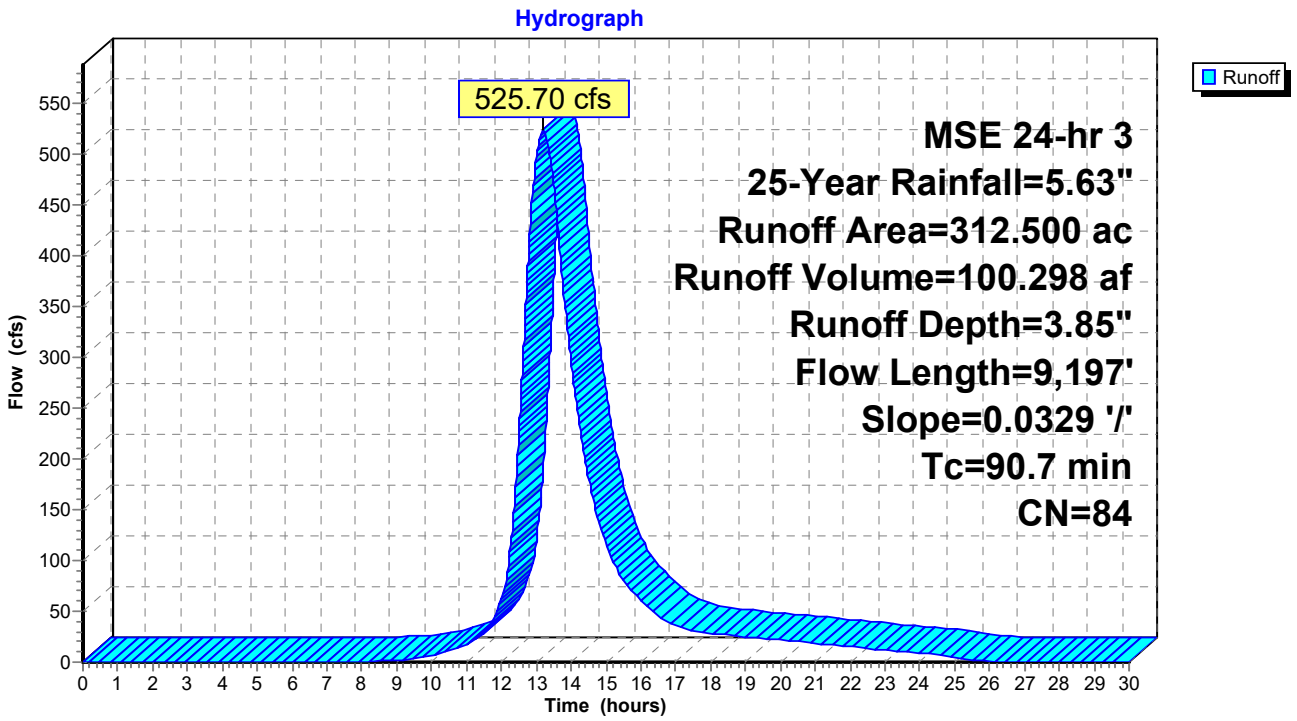
Runoff = 525.70 cfs @ 13.20 hrs, Volume= 100.298 af, Depth= 3.85"
Routed to Pond I AVENUE : I AVENUE CULVERTS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 25-Year Rainfall=5.63"

	Area (ac)	CN	Description
*	312.500	84	
	312.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
90.7	9,197	0.0329	1.69		**Lag/CN Method,**

Subcatchment 312.5 AC: South Watershed



Hydrograph for Subcatchment 312.5 AC: South Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.05	0.00	0.00
2.50	0.07	0.00	0.00
3.00	0.09	0.00	0.00
3.50	0.12	0.00	0.00
4.00	0.15	0.00	0.00
4.50	0.18	0.00	0.00
5.00	0.21	0.00	0.00
5.50	0.25	0.00	0.00
6.00	0.29	0.00	0.00
6.50	0.33	0.00	0.00
7.00	0.37	0.00	0.00
7.50	0.42	0.00	0.01
8.00	0.47	0.00	0.16
8.50	0.52	0.01	0.81
9.00	0.58	0.02	1.96
9.50	0.67	0.04	3.62
10.00	0.77	0.07	6.71
10.50	0.88	0.10	11.27
11.00	1.09	0.19	16.93
11.50	1.40	0.35	29.48
12.00	2.61	1.20	60.71
12.50	4.23	2.58	221.61
13.00	4.54	2.86	**500.40**
13.50	4.75	3.04	**470.15**
14.00	4.86	3.14	295.58
14.50	4.96	3.23	181.76
15.00	5.05	3.32	115.70
15.50	5.11	3.37	81.60
16.00	5.16	3.42	60.37
16.50	5.21	3.46	45.23
17.00	5.26	3.51	36.17
17.50	5.30	3.55	31.42
18.00	5.34	3.59	28.76
18.50	5.38	3.62	26.72
19.00	5.42	3.66	24.97
19.50	5.45	3.69	23.31
20.00	5.48	3.72	21.68
20.50	5.51	3.74	20.08
21.00	5.54	3.76	18.48
21.50	5.56	3.79	16.88
22.00	5.58	3.80	15.26
22.50	5.60	3.82	13.65
23.00	5.61	3.83	12.02
23.50	5.62	3.84	10.42
24.00	**5.63**	**3.85**	8.79
24.50	5.63	3.85	7.05
25.00	5.63	3.85	4.54
25.50	5.63	3.85	2.21
26.00	5.63	3.85	0.96
26.50	5.63	3.85	0.42
27.00	5.63	3.85	0.18
27.50	5.63	3.85	0.07
28.00	5.63	3.85	0.03
28.50	5.63	3.85	0.01
29.00	5.63	3.85	0.00
29.50	5.63	3.85	0.00
30.00	5.63	3.85	0.00

Summary for Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Runoff = 847.59 cfs @ 13.29 hrs, Volume= 174.759 af, Depth= 3.85"
Routed to Pond I AVENUE : I AVENUE CULVERTS

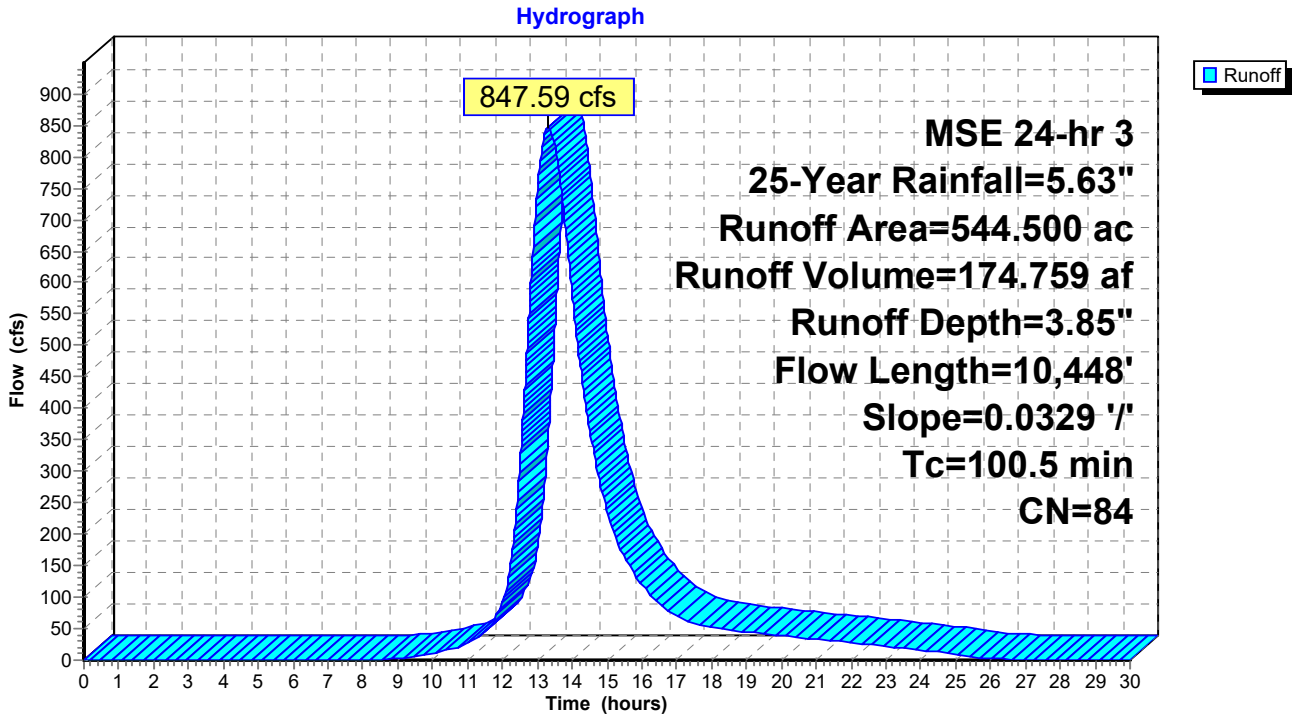
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 25-Year Rainfall=5.63"

	Area (ac)	CN	Description
*	544.500	84	
	544.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
100.5	10,448	0.0329	1.73		**Lag/CN Method,**

Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Subcatchment 544.5 AC: Remainder of Watershed to I Ave



Hydrograph for Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.05	0.00	0.00
2.50	0.07	0.00	0.00
3.00	0.09	0.00	0.00
3.50	0.12	0.00	0.00
4.00	0.15	0.00	0.00
4.50	0.18	0.00	0.00
5.00	0.21	0.00	0.00
5.50	0.25	0.00	0.00
6.00	0.29	0.00	0.00
6.50	0.33	0.00	0.00
7.00	0.37	0.00	0.00
7.50	0.42	0.00	0.01
8.00	0.47	0.00	0.21
8.50	0.52	0.01	1.10
9.00	0.58	0.02	2.88
9.50	0.67	0.04	5.51
10.00	0.77	0.07	10.20
10.50	0.88	0.10	17.44
11.00	1.09	0.19	26.70
11.50	1.40	0.35	45.19
12.00	2.61	1.20	91.52
12.50	4.23	2.58	307.27
13.00	4.54	2.86	**742.23**
13.50	4.75	3.04	**820.82**
14.00	4.86	3.14	582.65
14.50	4.96	3.23	368.39
15.00	5.05	3.32	237.92
15.50	5.11	3.37	164.71
16.00	5.16	3.42	120.50
16.50	5.21	3.46	89.35
17.00	5.26	3.51	70.29
17.50	5.30	3.55	58.98
18.00	5.34	3.59	52.11
18.50	5.38	3.62	47.90
19.00	5.42	3.66	44.53
19.50	5.45	3.69	41.56
20.00	5.48	3.72	38.70
20.50	5.51	3.74	35.83
21.00	5.54	3.76	33.02
21.50	5.56	3.79	30.25
22.00	5.58	3.80	27.47
22.50	5.60	3.82	24.63
23.00	5.61	3.83	21.80
23.50	5.62	3.84	19.00
24.00	**5.63**	**3.85**	16.19
24.50	5.63	3.85	13.17
25.00	5.63	3.85	9.16
25.50	5.63	3.85	5.06
26.00	5.63	3.85	2.41
26.50	5.63	3.85	1.15
27.00	5.63	3.85	0.54
27.50	5.63	3.85	0.25
28.00	5.63	3.85	0.11
28.50	5.63	3.85	0.04
29.00	5.63	3.85	0.01
29.50	5.63	3.85	0.00
30.00	5.63	3.85	0.00

Summary for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Runoff = 1,120.78 cfs @ 13.31 hrs, Volume= 221.362 af, Depth= 3.85"
Routed to Pond 1P : H AVENUE CULVERT

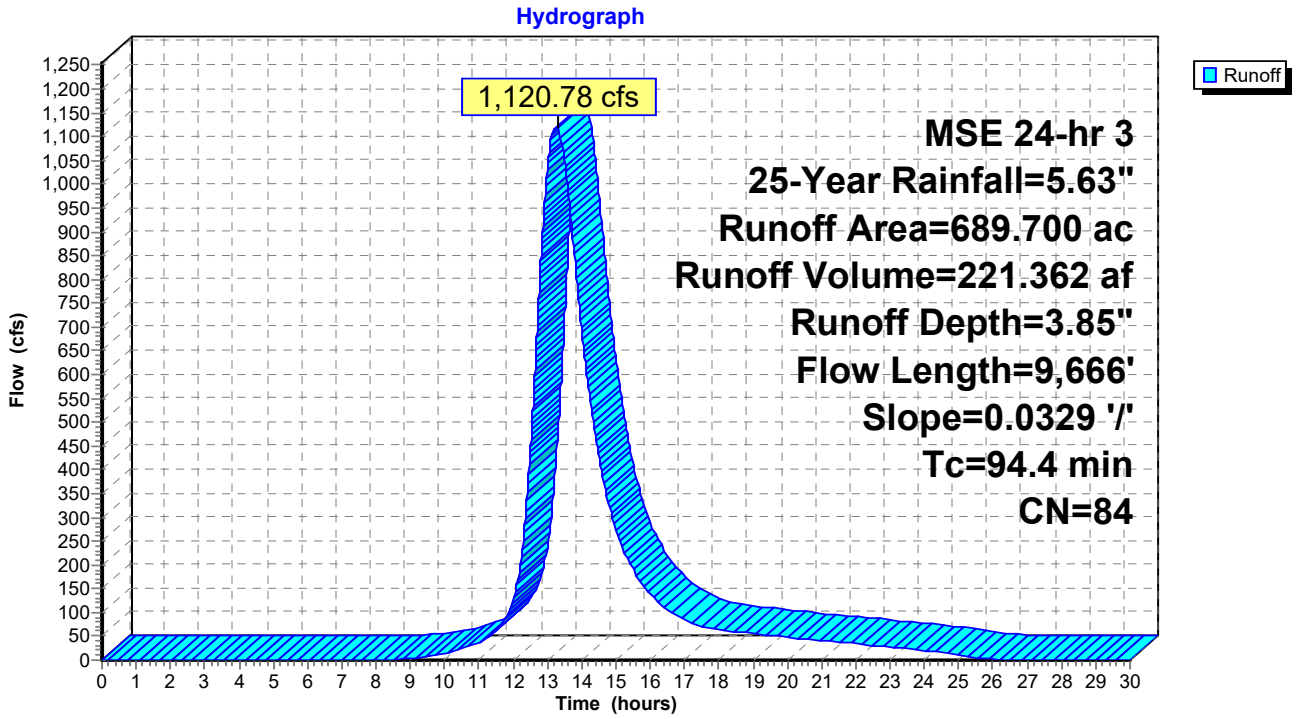
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 25-Year Rainfall=5.63"

	Area (ac)	CN	Description
*	689.700	84	
	689.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
94.4	9,666	0.0329	1.71		**Lag/CN Method,**

Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Subcatchment 689.7 AC: Watershed West of H Ave Culvert



Hydrograph for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.05	0.00	0.00
2.50	0.07	0.00	0.00
3.00	0.09	0.00	0.00
3.50	0.12	0.00	0.00
4.00	0.15	0.00	0.00
4.50	0.18	0.00	0.00
5.00	0.21	0.00	0.00
5.50	0.25	0.00	0.00
6.00	0.29	0.00	0.00
6.50	0.33	0.00	0.00
7.00	0.37	0.00	0.00
7.50	0.42	0.00	0.01
8.00	0.47	0.00	0.32
8.50	0.52	0.01	1.62
9.00	0.58	0.02	4.06
9.50	0.67	0.04	7.58
10.00	0.77	0.07	14.05
10.50	0.88	0.10	23.80
11.00	1.09	0.19	35.98
11.50	1.40	0.35	62.01
12.00	2.61	1.20	127.69
12.50	4.23	2.58	438.84
13.00	4.54	2.86	**1,035.11**
13.50	4.75	3.04	**1,048.96**
14.00	4.86	3.14	690.42
14.50	4.96	3.23	429.51
15.00	5.05	3.32	273.57
15.50	5.11	3.37	190.82
16.00	5.16	3.42	140.49
16.50	5.21	3.46	104.72
17.00	5.26	3.51	83.31
17.50	5.30	3.55	70.90
18.00	5.34	3.59	64.31
18.50	5.38	3.62	59.57
19.00	5.42	3.66	55.63
19.50	5.45	3.69	51.84
20.00	5.48	3.72	48.29
20.50	5.51	3.74	44.73
21.00	5.54	3.76	41.17
21.50	5.56	3.79	37.68
22.00	5.58	3.80	34.09
22.50	5.60	3.82	30.53
23.00	5.61	3.83	26.97
23.50	5.62	3.84	23.37
24.00	**5.63**	**3.85**	19.83
24.50	5.63	3.85	15.96
25.00	5.63	3.85	10.64
25.50	5.63	3.85	5.47
26.00	5.63	3.85	2.47
26.50	5.63	3.85	1.12
27.00	5.63	3.85	0.50
27.50	5.63	3.85	0.21
28.00	5.63	3.85	0.09
28.50	5.63	3.85	0.03
29.00	5.63	3.85	0.00
29.50	5.63	3.85	0.00
30.00	5.63	3.85	0.00

Summary for Pond 1P: H AVENUE CULVERT

Inflow Area = 689.700 ac, 0.00% Impervious, Inflow Depth = 3.85" for 25-Year event
Inflow = 1,120.78 cfs @ 13.31 hrs, Volume= 221.362 af
Outflow = 787.21 cfs @ 13.87 hrs, Volume= 221.075 af, Atten= 30%, Lag= 33.4 min
Primary = 693.62 cfs @ 13.87 hrs, Volume= 109.648 af
Routed to Pond 2P : BASIN NW OF WETLAND
Secondary = 93.59 cfs @ 13.87 hrs, Volume= 111.428 af
Routed to Pond 2P : BASIN NW OF WETLAND

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,128.80' @ 13.87 hrs Surf.Area= 55.866 ac Storage= 76.488 af

Plug-Flow detention time= 156.3 min calculated for 221.075 af (100% of inflow)
Center-of-Mass det. time= 155.4 min (1,025.8 - 870.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,124.00'	161.110 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,124.00	0.010	0.000	0.000
1,126.00	1.650	1.660	1.660
1,128.00	36.300	37.950	39.610
1,130.00	85.200	121.500	161.110

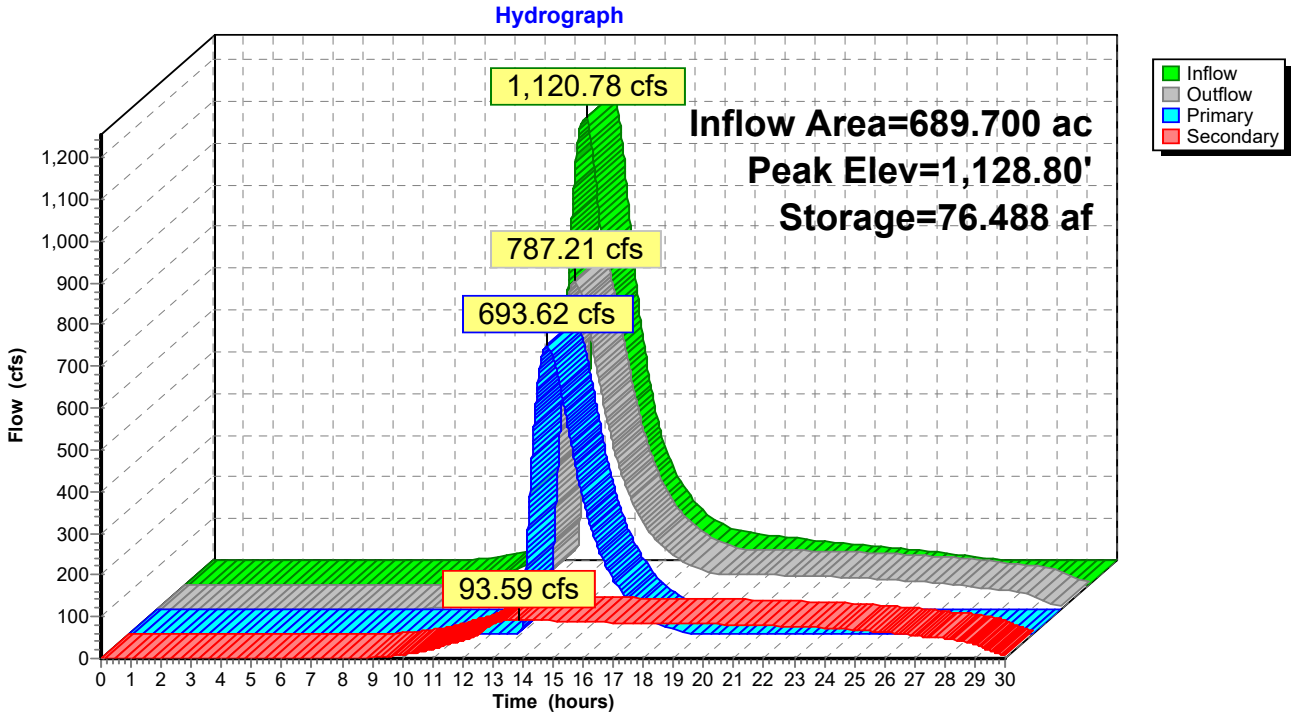
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,124.00'	**60.0" W x 24.0" H Box 5'x2' CULVERT** L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,124.00' / 1,124.00' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 10.00 sf
#2	Primary	1,128.05'	**342.0' long + 100.0 '/' SideZ x 25.0' breadth H Ave Road Surface** 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

Primary OutFlow Max=693.59 cfs @ 13.87 hrs HW=1,128.80' (Free Discharge)
└**2=H Ave Road Surface** (Weir Controls 693.59 cfs @ 2.22 fps)

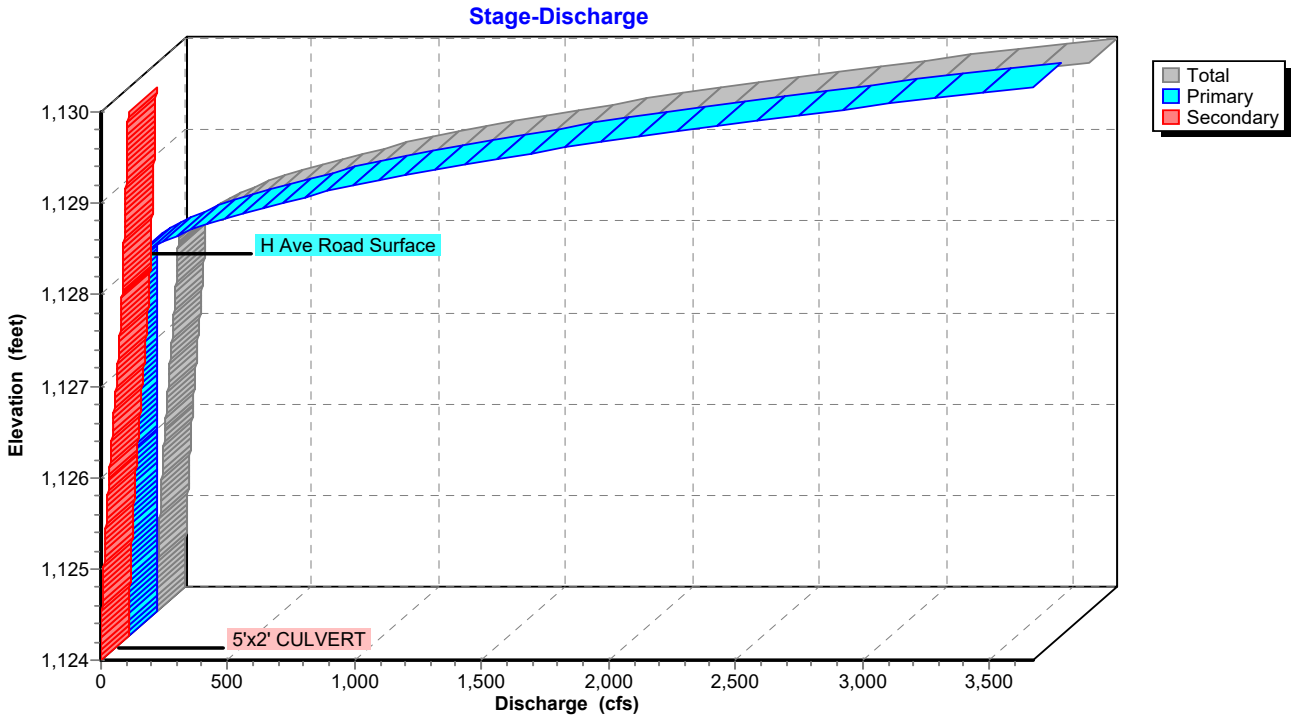
Secondary OutFlow Max=93.59 cfs @ 13.87 hrs HW=1,128.80' (Free Discharge)
└**1=5'x2' CULVERT** (Inlet Controls 93.59 cfs @ 9.36 fps)



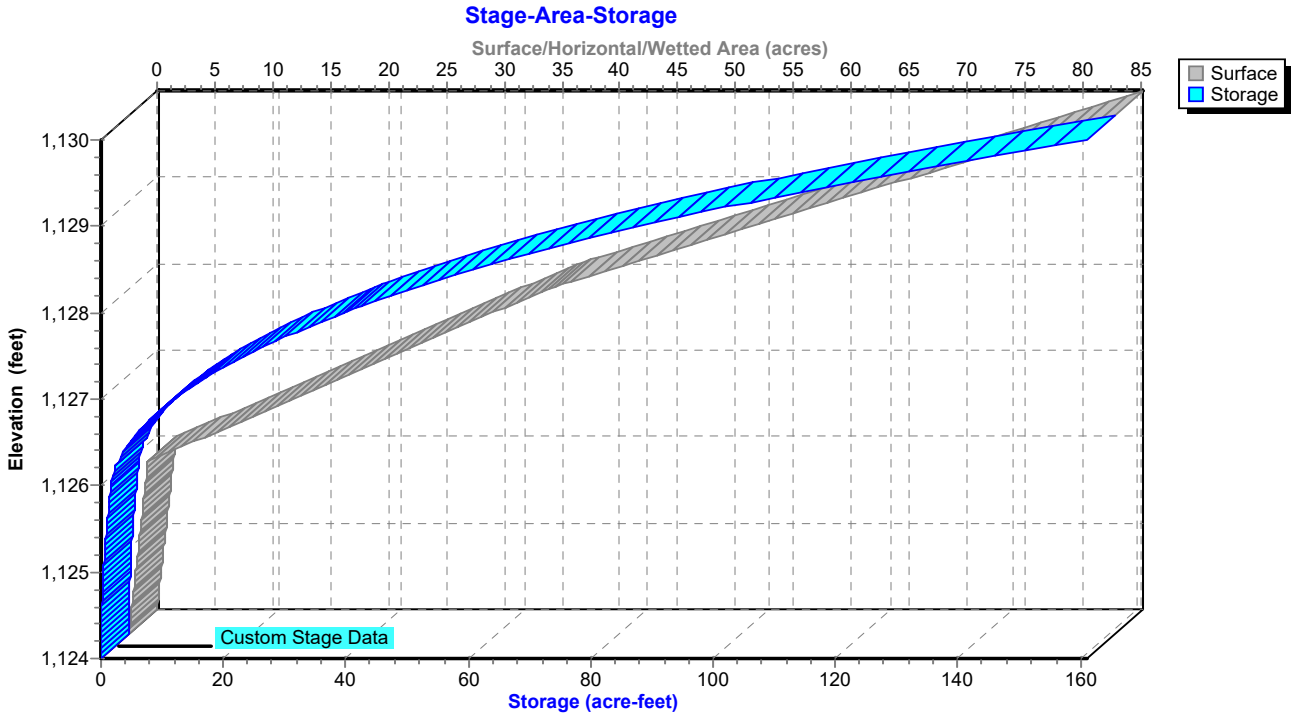
Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Hydrograph for Pond 1P: H AVENUE CULVERT

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,124.00	0.00	0.00	0.00
1.00	0.00	0.000	1,124.00	0.00	0.00	0.00
2.00	0.00	0.000	1,124.00	0.00	0.00	0.00
3.00	0.00	0.000	1,124.00	0.00	0.00	0.00
4.00	0.00	0.000	1,124.00	0.00	0.00	0.00
5.00	0.00	0.000	1,124.00	0.00	0.00	0.00
6.00	0.00	0.000	1,124.00	0.00	0.00	0.00
7.00	0.00	0.000	1,124.00	0.00	0.00	0.00
8.00	0.32	0.003	1,124.08	0.10	0.00	0.10
9.00	4.06	0.074	1,124.41	2.42	0.00	2.42
10.00	14.05	0.322	1,124.87	8.67	0.00	8.67
11.00	35.98	1.068	1,125.60	22.85	0.00	22.85
12.00	127.69	3.915	1,126.42	43.55	0.00	43.55
13.00	**1,035.11**	**40.035**	**1,128.01**	**83.17**	**0.00**	**83.17**
14.00	**690.42**	**75.986**	**1,128.79**	**774.23**	**680.75**	**93.48**
15.00	273.57	62.372	1,128.53	434.25	344.08	90.18
16.00	140.49	52.551	1,128.32	225.87	138.45	87.42
17.00	83.31	46.948	1,128.19	135.69	50.06	85.64
18.00	64.31	43.511	1,128.10	97.28	12.84	84.45
19.00	55.63	41.142	1,128.04	83.59	0.00	83.59
20.00	48.29	38.562	1,127.97	82.59	0.00	82.59
21.00	41.17	35.483	1,127.88	81.25	0.00	81.25
22.00	34.09	31.967	1,127.78	79.03	0.00	79.03
23.00	26.97	28.071	1,127.65	76.22	0.00	76.22
24.00	19.83	23.842	1,127.51	72.78	0.00	72.78
25.00	10.64	19.295	1,127.33	68.47	0.00	68.47
26.00	2.47	14.347	1,127.12	62.69	0.00	62.69
27.00	0.50	9.568	1,126.86	55.11	0.00	55.11
28.00	0.09	5.369	1,126.57	47.56	0.00	47.56
29.00	0.00	1.905	1,126.10	34.83	0.00	34.83
30.00	0.00	0.290	1,124.83	7.94	0.00	7.94

Stage-Discharge for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,124.00	0.00	0.00	0.00
1,124.10	0.16	0.00	0.16
1,124.20	0.64	0.00	0.64
1,124.30	1.37	0.00	1.37
1,124.40	2.30	0.00	2.30
1,124.50	3.40	0.00	3.40
1,124.60	4.64	0.00	4.64
1,124.70	6.01	0.00	6.01
1,124.80	7.50	0.00	7.50
1,124.90	9.10	0.00	9.10
1,125.00	10.80	0.00	10.80
1,125.10	12.59	0.00	12.59
1,125.20	14.47	0.00	14.47
1,125.30	16.44	0.00	16.44
1,125.40	18.49	0.00	18.49
1,125.50	20.61	0.00	20.61
1,125.60	22.82	0.00	22.82
1,125.70	25.10	0.00	25.10
1,125.80	27.44	0.00	27.44
1,125.90	29.86	0.00	29.86
1,126.00	32.34	0.00	32.34
1,126.10	34.89	0.00	34.89
1,126.20	37.50	0.00	37.50
1,126.30	40.17	0.00	40.17
1,126.40	42.91	0.00	42.91
1,126.50	45.70	0.00	45.70
1,126.60	48.55	0.00	48.55
1,126.70	49.59	0.00	49.59
1,126.80	53.02	0.00	53.02
1,126.90	56.23	0.00	56.23
1,127.00	59.28	0.00	59.28
1,127.10	62.17	0.00	62.17
1,127.20	64.93	0.00	64.93
1,127.30	67.59	0.00	67.59
1,127.40	70.14	0.00	70.14
1,127.50	72.60	0.00	72.60
1,127.60	74.98	0.00	74.98
1,127.70	77.29	0.00	77.29
1,127.80	79.53	0.00	79.53
1,127.90	81.58	0.00	81.58
1,128.00	83.00	0.00	83.00
1,128.10	94.77	10.37	84.40
1,128.20	140.89	55.12	85.78
1,128.30	208.62	121.50	87.13
1,128.40	294.93	206.47	88.46
1,128.50	397.86	308.09	89.77
1,128.60	516.16	425.10	91.06
1,128.70	646.72	554.38	92.33
1,128.80	786.82	693.24	93.59
1,128.90	942.26	847.43	94.82
1,129.00	1,114.94	1,018.90	96.05
1,129.10	1,303.85	1,206.60	97.25
1,129.20	1,510.10	1,411.66	98.44
1,129.30	1,730.38	1,630.76	99.62
1,129.40	1,964.23	1,863.45	100.78
1,129.50	2,211.09	2,109.16	101.93
1,129.60	2,470.36	2,367.29	103.06
1,129.70	2,746.35	2,642.17	104.19
1,129.80	3,039.97	2,934.67	105.30
1,129.90	3,349.12	3,242.72	106.40
1,130.00	**3,673.94**	**3,566.46**	**107.49**

Stage-Area-Storage for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,124.00	0.010	0.000
1,124.10	0.092	0.005
1,124.20	0.174	0.018
1,124.30	0.256	0.040
1,124.40	0.338	0.070
1,124.50	0.420	0.107
1,124.60	0.502	0.154
1,124.70	0.584	0.208
1,124.80	0.666	0.270
1,124.90	0.748	0.341
1,125.00	0.830	0.420
1,125.10	0.912	0.507
1,125.20	0.994	0.602
1,125.30	1.076	0.706
1,125.40	1.158	0.818
1,125.50	1.240	0.937
1,125.60	1.322	1.066
1,125.70	1.404	1.202
1,125.80	1.486	1.346
1,125.90	1.568	1.499
1,126.00	1.650	1.660
1,126.10	3.382	1.912
1,126.20	5.115	2.337
1,126.30	6.847	2.935
1,126.40	8.580	3.706
1,126.50	10.312	4.651
1,126.60	12.045	5.768
1,126.70	13.778	7.060
1,126.80	15.510	8.524
1,126.90	17.243	10.162
1,127.00	18.975	11.972
1,127.10	20.707	13.957
1,127.20	22.440	16.114
1,127.30	24.172	18.445
1,127.40	25.905	20.949
1,127.50	27.637	23.626
1,127.60	29.370	26.476
1,127.70	31.103	29.500
1,127.80	32.835	32.696
1,127.90	34.568	36.067
1,128.00	36.300	39.610
1,128.10	38.745	43.362
1,128.20	41.190	47.359
1,128.30	43.635	51.600
1,128.40	46.080	56.086
1,128.50	48.525	60.816
1,128.60	50.970	65.791
1,128.70	53.415	71.010
1,128.80	55.860	76.474
1,128.90	58.305	82.182
1,129.00	60.750	88.135
1,129.10	63.195	94.332
1,129.20	65.640	100.774
1,129.30	68.085	107.460
1,129.40	70.530	114.391
1,129.50	72.975	121.566
1,129.60	75.420	128.986
1,129.70	77.865	136.650
1,129.80	80.310	144.559
1,129.90	82.755	152.712
1,130.00	**85.200**	**161.110**

Summary for Pond 2P: BASIN NW OF WETLAND

[79] Warning: Submerged Pond 1P Secondary device # 1 by 1.56'

Inflow Area = 848.100 ac, 0.00% Impervious, Inflow Depth > 3.85" for 25-Year event
Inflow = 842.80 cfs @ 13.82 hrs, Volume= 271.915 af
Outflow = 416.26 cfs @ 15.16 hrs, Volume= 216.189 af, Atten= 51%, Lag= 80.2 min
Primary = 416.26 cfs @ 15.16 hrs, Volume= 216.189 af
Routed to Pond I AVENUE : I AVENUE CULVERTS
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,125.56' @ 15.16 hrs Surf.Area= 61.686 ac Storage= 112.679 af

Plug-Flow detention time= 267.2 min calculated for 216.189 af (80% of inflow)
Center-of-Mass det. time= 151.6 min (1,137.9 - 986.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,121.00'	311.173 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,121.00	1.997	0.000	0.000
1,122.00	7.899	4.948	4.948
1,123.00	16.217	12.058	17.006
1,124.00	30.839	23.528	40.534
1,126.00	70.400	101.239	141.773
1,128.00	99.000	169.400	311.173

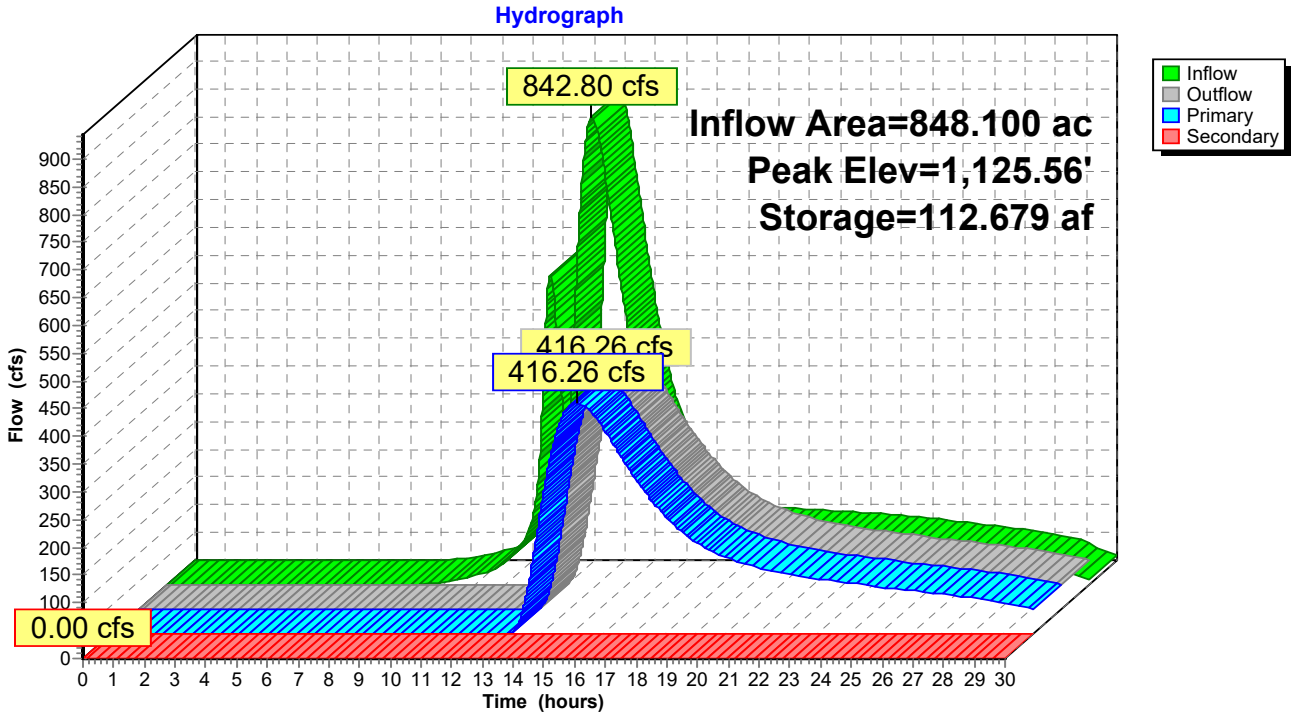
Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.00'	**50.0' long + 25.0 '/' SideZ x 50.0' breadth Saddle to Wetland** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	1,127.00'	**300.0' long + 50.0 '/' SideZ x 50.0' breadth Saddle Away from Wetland** 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

Primary OutFlow Max=416.15 cfs @ 15.16 hrs HW=1,125.56' (Free Discharge)
↑—**1=Saddle to Wetland** (Weir Controls 416.15 cfs @ 3.00 fps)

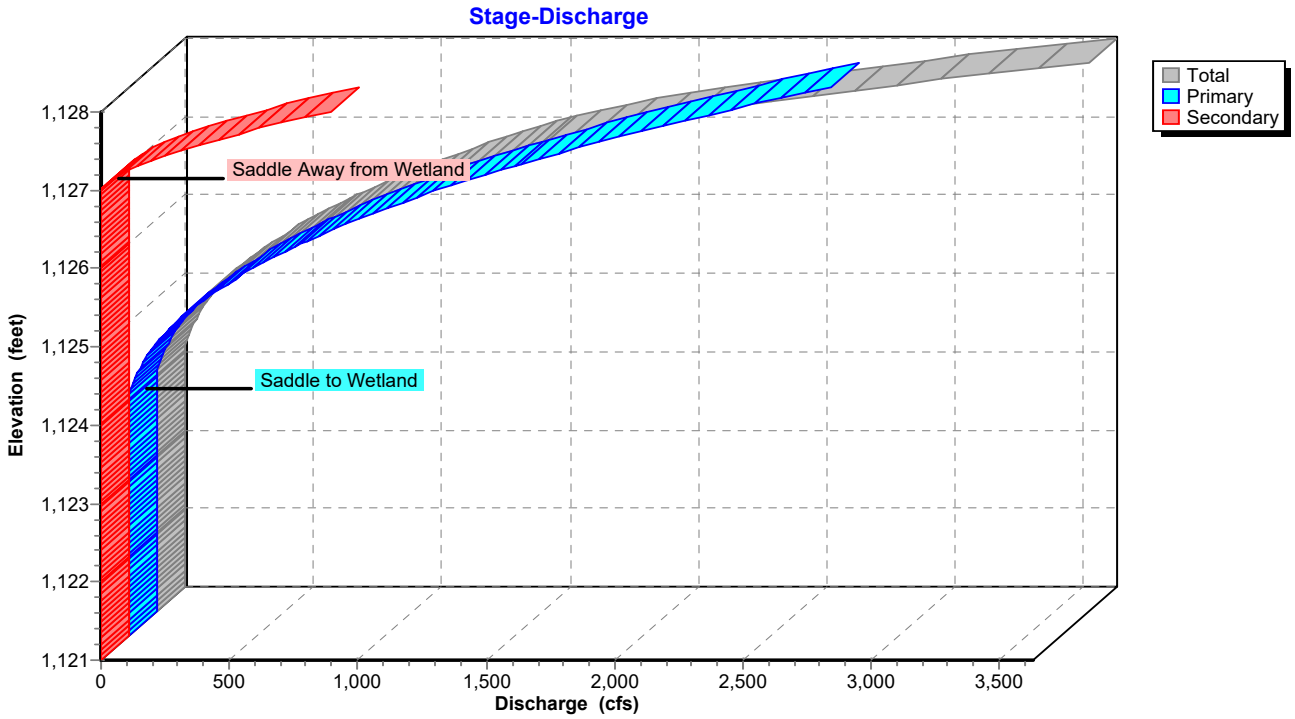
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,121.00' (Free Discharge)
↑—**2=Saddle Away from Wetland** (Controls 0.00 cfs)



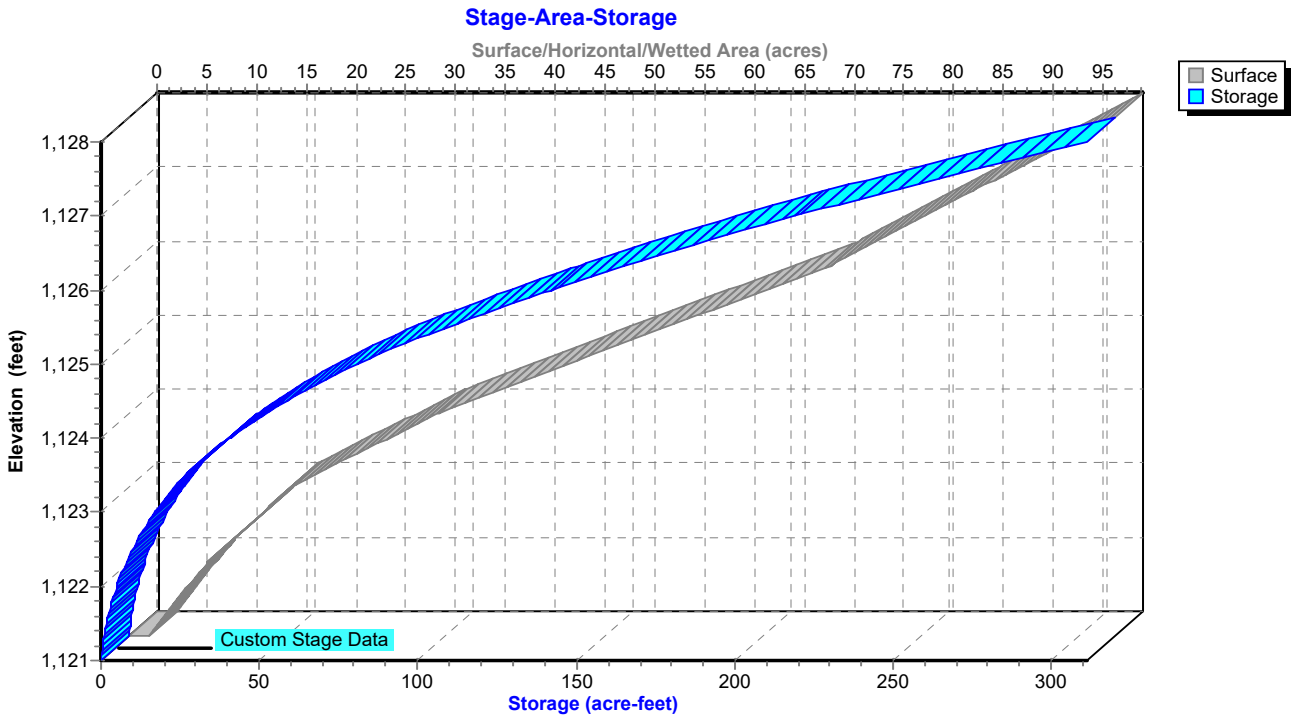
Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Hydrograph for Pond 2P: BASIN NW OF WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,121.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,121.00	0.00	0.00	0.00
2.00	0.00	0.000	1,121.00	0.00	0.00	0.00
3.00	0.00	0.000	1,121.00	0.00	0.00	0.00
4.00	0.00	0.000	1,121.00	0.00	0.00	0.00
5.00	0.00	0.000	1,121.00	0.00	0.00	0.00
6.00	0.00	0.000	1,121.00	0.00	0.00	0.00
7.00	0.00	0.000	1,121.00	0.00	0.00	0.00
8.00	0.73	0.014	1,121.01	0.00	0.00	0.00
9.00	4.73	0.213	1,121.09	0.00	0.00	0.00
10.00	16.16	1.012	1,121.34	0.00	0.00	0.00
11.00	40.88	3.156	1,121.75	0.00	0.00	0.00
12.00	149.14	9.529	1,122.47	0.00	0.00	0.00
13.00	**268.66**	41.643	1,124.04	1.21	1.21	0.00
14.00	**818.64**	88.006	1,125.13	229.89	229.89	0.00
15.00	462.73	**112.382**	**1,125.55**	**413.81**	**413.81**	0.00
16.00	242.43	**107.016**	**1,125.47**	**371.41**	**371.41**	0.00
17.00	150.11	95.638	1,125.27	284.79	284.79	0.00
18.00	110.09	85.691	1,125.09	213.93	213.93	0.00
19.00	94.78	78.432	1,124.94	166.24	166.24	0.00
20.00	92.16	73.711	1,124.85	137.44	137.44	0.00
21.00	89.19	70.632	1,124.78	119.72	119.72	0.00
22.00	85.34	68.461	1,124.73	108.05	108.05	0.00
23.00	80.89	66.786	1,124.70	99.18	99.18	0.00
24.00	75.80	65.377	1,124.66	91.89	91.89	0.00
25.00	68.61	64.029	1,124.63	84.95	84.95	0.00
26.00	62.69	62.717	1,124.60	78.35	78.35	0.00
27.00	55.11	61.396	1,124.57	71.69	71.69	0.00
28.00	47.56	59.974	1,124.54	64.79	64.79	0.00
29.00	34.83	58.391	1,124.50	57.12	57.12	0.00
30.00	7.94	55.741	1,124.43	45.15	45.15	0.00

Stage-Discharge for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,121.00	0.00	0.00	0.00
1,121.10	0.00	0.00	0.00
1,121.20	0.00	0.00	0.00
1,121.30	0.00	0.00	0.00
1,121.40	0.00	0.00	0.00
1,121.50	0.00	0.00	0.00
1,121.60	0.00	0.00	0.00
1,121.70	0.00	0.00	0.00
1,121.80	0.00	0.00	0.00
1,121.90	0.00	0.00	0.00
1,122.00	0.00	0.00	0.00
1,122.10	0.00	0.00	0.00
1,122.20	0.00	0.00	0.00
1,122.30	0.00	0.00	0.00
1,122.40	0.00	0.00	0.00
1,122.50	0.00	0.00	0.00
1,122.60	0.00	0.00	0.00
1,122.70	0.00	0.00	0.00
1,122.80	0.00	0.00	0.00
1,122.90	0.00	0.00	0.00
1,123.00	0.00	0.00	0.00
1,123.10	0.00	0.00	0.00
1,123.20	0.00	0.00	0.00
1,123.30	0.00	0.00	0.00
1,123.40	0.00	0.00	0.00
1,123.50	0.00	0.00	0.00
1,123.60	0.00	0.00	0.00
1,123.70	0.00	0.00	0.00
1,123.80	0.00	0.00	0.00
1,123.90	0.00	0.00	0.00
1,124.00	0.00	0.00	0.00
1,124.10	4.41	4.41	0.00
1,124.20	12.94	12.94	0.00
1,124.30	24.75	24.75	0.00
1,124.40	39.62	39.62	0.00
1,124.50	57.28	57.28	0.00
1,124.60	77.80	77.80	0.00
1,124.70	100.08	100.08	0.00
1,124.80	124.68	124.68	0.00
1,124.90	152.99	152.99	0.00
1,125.00	184.10	184.10	0.00
1,125.10	218.88	218.88	0.00
1,125.20	256.81	256.81	0.00
1,125.30	297.39	297.39	0.00
1,125.40	341.11	341.11	0.00
1,125.50	387.26	387.26	0.00
1,125.60	436.47	436.47	0.00
1,125.70	489.68	489.68	0.00
1,125.80	546.21	546.21	0.00
1,125.90	606.13	606.13	0.00
1,126.00	669.49	669.49	0.00
1,126.10	736.33	736.33	0.00
1,126.20	806.71	806.71	0.00
1,126.30	880.68	880.68	0.00
1,126.40	958.29	958.29	0.00
1,126.50	1,039.60	1,039.60	0.00
1,126.60	1,124.65	1,124.65	0.00
1,126.70	1,213.49	1,213.49	0.00
1,126.80	1,306.17	1,306.17	0.00
1,126.90	1,402.74	1,402.74	0.00
1,127.00	1,503.25	1,503.25	0.00
1,127.10	1,633.51	1,607.74	25.76
1,127.20	1,790.10	1,716.27	73.83
1,127.30	1,966.79	1,828.88	137.91
1,127.40	2,161.46	1,945.61	215.84
1,127.50	2,371.99	2,066.52	305.47
1,127.60	2,598.21	2,191.64	406.57
1,127.70	2,833.93	2,321.03	512.90
1,127.80	3,081.88	2,454.72	627.16
1,127.90	3,348.70	2,592.76	755.93
1,128.00	**3,629.40**	**2,735.20**	**894.20**

Stage-Area-Storage for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,121.00	1.997	0.000
1,121.10	2.587	0.229
1,121.20	3.177	0.517
1,121.30	3.768	0.865
1,121.40	4.358	1.271
1,121.50	4.948	1.736
1,121.60	5.538	2.261
1,121.70	6.128	2.844
1,121.80	6.719	3.486
1,121.90	7.309	4.188
1,122.00	7.899	4.948
1,122.10	8.731	5.779
1,122.20	9.563	6.694
1,122.30	10.394	7.692
1,122.40	11.226	8.773
1,122.50	12.058	9.937
1,122.60	12.890	11.185
1,122.70	13.722	12.515
1,122.80	14.553	13.929
1,122.90	15.385	15.426
1,123.00	16.217	17.006
1,123.10	17.679	18.701
1,123.20	19.141	20.542
1,123.30	20.604	22.529
1,123.40	22.066	24.663
1,123.50	23.528	26.942
1,123.60	24.990	29.368
1,123.70	26.452	31.940
1,123.80	27.915	34.659
1,123.90	29.377	37.523
1,124.00	30.839	40.534
1,124.10	32.817	43.717
1,124.20	34.795	47.097
1,124.30	36.773	50.676
1,124.40	38.751	54.452
1,124.50	40.729	58.426
1,124.60	42.707	62.598
1,124.70	44.685	66.968
1,124.80	46.663	71.535
1,124.90	48.641	76.300
1,125.00	50.619	81.263
1,125.10	52.598	86.424
1,125.20	54.576	91.783
1,125.30	56.554	97.339
1,125.40	58.532	103.093
1,125.50	60.510	109.046
1,125.60	62.488	115.195
1,125.70	64.466	121.543
1,125.80	66.444	128.089
1,125.90	68.422	134.832
1,126.00	70.400	141.773
1,126.10	71.830	148.884
1,126.20	73.260	156.139
1,126.30	74.690	163.536
1,126.40	76.120	171.077
1,126.50	77.550	178.760
1,126.60	78.980	186.587
1,126.70	80.410	194.557
1,126.80	81.840	202.669
1,126.90	83.270	210.925
1,127.00	84.700	219.323
1,127.10	86.130	227.864
1,127.20	87.560	236.549
1,127.30	88.990	245.376
1,127.40	90.420	254.347
1,127.50	91.850	263.460
1,127.60	93.280	272.717
1,127.70	94.710	282.117
1,127.80	96.140	291.659
1,127.90	97.570	301.345
1,128.00	**99.000**	**311.173**

Summary for Pond I AVENUE: I AVENUE CULVERTS

Inflow Area = 1,705.100 ac, 0.00% Impervious, Inflow Depth > 3.46" for 25-Year event
Inflow = 1,386.17 cfs @ 13.29 hrs, Volume= 491.246 af
Outflow = 577.56 cfs @ 15.87 hrs, Volume= 491.190 af, Atten= 58%, Lag= 154.6 min
Primary = 422.67 cfs @ 15.87 hrs, Volume= 385.321 af
Secondary = 154.89 cfs @ 15.87 hrs, Volume= 105.869 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,113.27' @ 15.87 hrs Surf.Area= 45.969 ac Storage= 131.087 af

Plug-Flow detention time= 97.0 min calculated for 491.026 af (100% of inflow)
Center-of-Mass det. time= 96.9 min (1,086.2 - 989.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,098.00'	389.351 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,098.00	0.000	0.000	0.000
1,099.00	0.001	0.001	0.001
1,100.00	0.001	0.001	0.002
1,101.00	0.008	0.005	0.006
1,102.00	0.027	0.017	0.023
1,103.00	0.110	0.069	0.092
1,104.00	0.241	0.175	0.267
1,105.00	0.739	0.490	0.757
1,106.00	2.505	1.622	2.380
1,107.00	4.643	3.574	5.954
1,108.00	6.580	5.611	11.565
1,109.00	10.976	8.778	20.343
1,110.00	16.743	13.859	34.202
1,111.00	23.315	20.029	54.231
1,112.00	31.569	27.442	81.673
1,113.00	42.966	37.267	118.941
1,114.00	53.960	48.463	167.404
1,115.00	65.810	59.885	227.289
1,116.00	79.729	72.769	300.058
1,117.00	98.855	89.292	389.351

Device	Routing	Invert	Outlet Devices
#1	Primary	1,100.22'	**72.0" Round 72" RCP CULVERT** L= 85.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,100.22' / 1,098.91' S= 0.0153 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 28.27 sf
#2	Secondary	1,104.72'	**48.0" Round 48" RCP CULVERT** L= 62.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,104.72' / 1,104.41' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#3	Tertiary	1,115.86'	**I AVENUE, C= 3.27** Offset (feet) 0.00 115.59 162.20 164.26 214.26 232.65 343.45

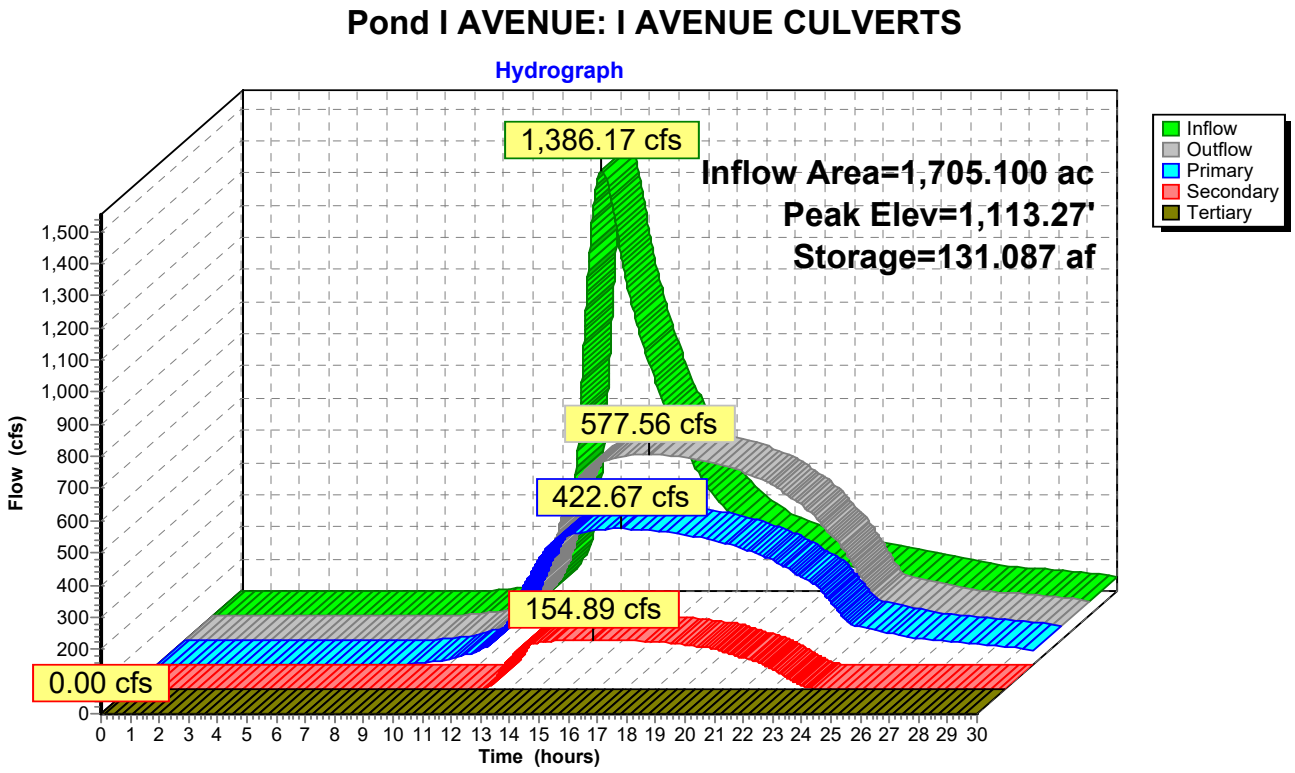
Height (feet) 1.14 0.14 0.00 0.00 0.09 0.14 1.14

Primary OutFlow Max=422.67 cfs @ 15.87 hrs HW=1,113.27' (Free Discharge)
└**1=72" RCP CULVERT** (Barrel Controls 422.67 cfs @ 14.95 fps)

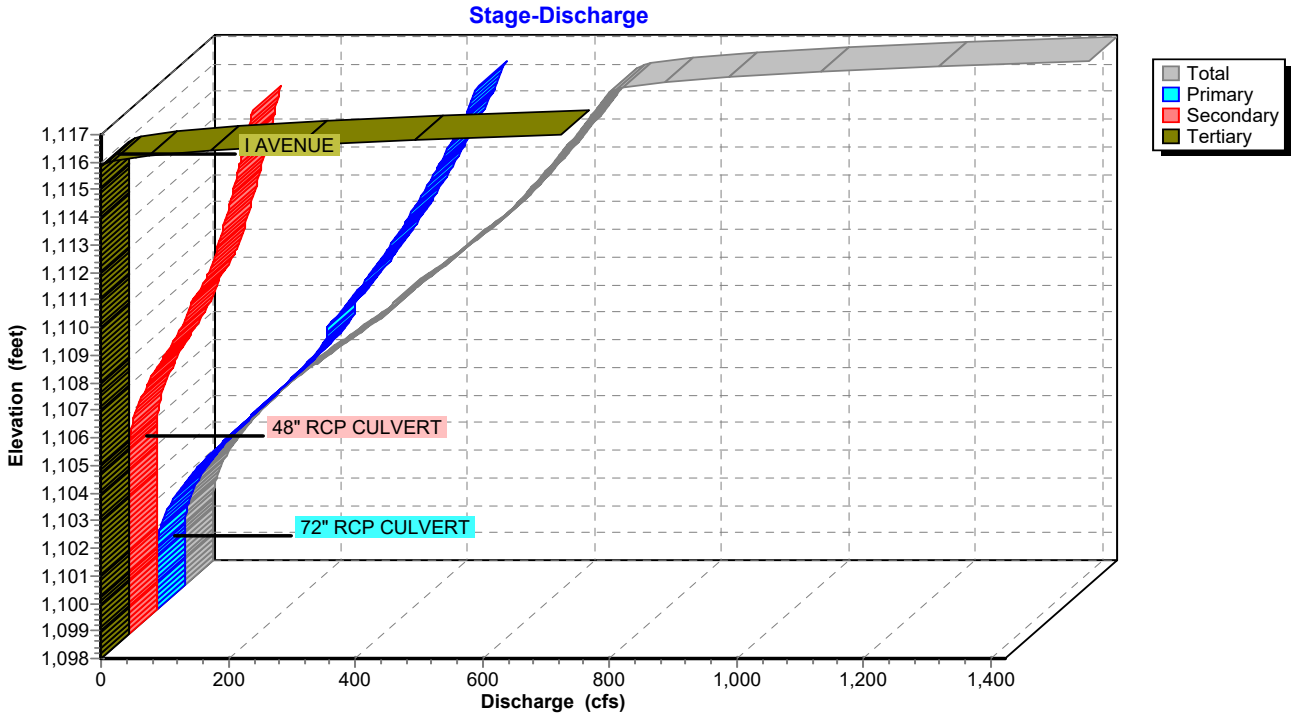
Secondary OutFlow Max=154.89 cfs @ 15.87 hrs HW=1,113.27' (Free Discharge)
└**2=48" RCP CULVERT** (Inlet Controls 154.89 cfs @ 12.33 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,098.00' (Free Discharge)
└**3=I AVENUE** (Controls 0.00 cfs)

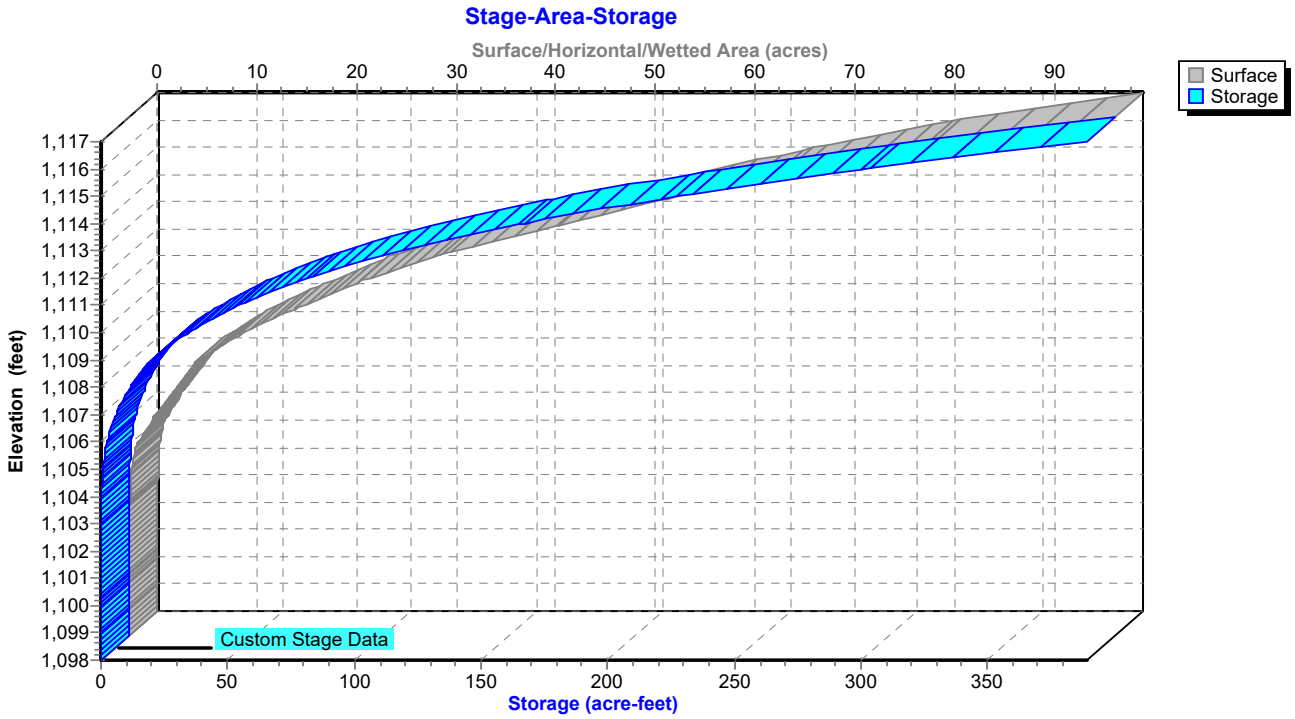




Pond I AVENUE: I AVENUE CULVERTS



Pond I AVENUE: I AVENUE CULVERTS



Hydrograph for Pond I AVENUE: I AVENUE CULVERTS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	0.00	0.000	1,098.00	0.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
2.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
3.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
4.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
5.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
6.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
7.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
8.00	0.37	0.003	1,100.41	0.34	0.34	0.00	0.00
9.00	4.85	0.006	1,100.97	4.80	4.80	0.00	0.00
10.00	16.91	0.015	1,101.63	16.69	16.69	0.00	0.00
11.00	43.63	0.050	1,102.54	42.73	42.73	0.00	0.00
12.00	152.23	0.516	1,104.62	129.92	129.92	0.00	0.00
13.00	**1,243.84**	28.616	1,109.64	411.11	317.96	93.15	0.00
14.00	**1,108.12**	94.715	1,112.39	543.60	399.59	144.01	0.00
15.00	767.43	**124.468**	**1,113.13**	**572.05**	**418.92**	**153.13**	0.00
16.00	552.29	**130.998**	**1,113.27**	**577.45**	**422.59**	**154.85**	0.00
17.00	391.25	121.990	1,113.07	569.95	417.49	152.46	0.00
18.00	294.80	103.539	1,112.62	552.90	405.90	147.00	0.00
19.00	235.74	80.595	1,111.97	526.79	388.22	138.57	0.00
20.00	197.82	56.321	1,111.09	489.07	363.28	125.79	0.00
21.00	171.22	33.586	1,109.96	426.66	328.53	98.13	0.00
22.00	150.78	14.823	1,108.43	338.66	274.28	64.38	0.00
23.00	133.00	2.918	1,106.20	218.44	204.83	13.62	0.00
24.00	116.87	0.404	1,104.40	119.23	119.23	0.00	0.00
25.00	98.65	0.262	1,103.98	100.08	100.08	0.00	0.00
26.00	81.73	0.177	1,103.57	82.39	82.39	0.00	0.00
27.00	72.41	0.137	1,103.34	72.81	72.81	0.00	0.00
28.00	64.92	0.110	1,103.15	65.22	65.22	0.00	0.00
29.00	57.13	0.086	1,102.95	57.43	57.43	0.00	0.00
30.00	45.15	0.056	1,102.62	45.54	45.54	0.00	0.00

Stage-Discharge for Pond I AVENUE: I AVENUE CULVERTS

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1,098.00	0.00	0.00	0.00	0.00
1,098.50	0.00	0.00	0.00	0.00
1,099.00	0.00	0.00	0.00	0.00
1,099.50	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	0.00	0.00
1,100.50	0.61	0.61	0.00	0.00
1,101.00	5.15	5.15	0.00	0.00
1,101.50	13.88	13.88	0.00	0.00
1,102.00	26.18	26.18	0.00	0.00
1,102.50	41.52	41.52	0.00	0.00
1,103.00	59.41	59.41	0.00	0.00
1,103.50	79.41	79.41	0.00	0.00
1,104.00	101.10	101.10	0.00	0.00
1,104.50	124.05	124.05	0.00	0.00
1,105.00	148.39	147.81	0.58	0.00
1,105.50	176.12	171.89	4.24	0.00
1,106.00	206.21	195.69	10.52	0.00
1,106.50	237.48	218.53	18.95	0.00
1,107.00	268.61	239.47	29.14	0.00
1,107.50	297.80	257.09	40.70	0.00
1,108.00	321.54	268.33	53.21	0.00
1,108.50	343.07	276.93	66.15	0.00
1,109.00	374.43	295.59	78.85	0.00
1,109.50	403.49	313.13	90.36	0.00
1,110.00	428.24	329.75	98.50	0.00
1,110.50	456.69	345.56	111.13	0.00
1,111.00	484.40	360.69	123.71	0.00
1,111.50	507.49	375.20	132.29	0.00
1,112.00	528.21	389.17	139.03	0.00
1,112.50	548.13	402.66	145.47	0.00
1,113.00	567.34	415.71	151.63	0.00
1,113.50	585.92	428.37	157.55	0.00
1,114.00	603.92	440.66	163.26	0.00
1,114.50	621.39	452.62	168.77	0.00
1,115.00	638.37	464.27	174.11	0.00
1,115.50	654.92	475.63	179.29	0.00
1,116.00	679.75	486.69	184.32	8.74
1,116.50	904.83	496.12	189.22	219.49
1,117.00	**1,422.27**	**505.37**	**194.00**	**722.89**

Stage-Area-Storage for Pond I AVENUE: I AVENUE CULVERTS

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,098.00	0.000	0.000
1,098.20	0.000	0.000
1,098.40	0.000	0.000
1,098.60	0.001	0.000
1,098.80	0.001	0.000
1,099.00	0.001	0.001
1,099.20	0.001	0.001
1,099.40	0.001	0.001
1,099.60	0.001	0.001
1,099.80	0.001	0.001
1,100.00	0.001	0.002
1,100.20	0.002	0.002
1,100.40	0.004	0.002
1,100.60	0.005	0.003
1,100.80	0.007	0.005
1,101.00	0.008	0.006
1,101.20	0.012	0.008
1,101.40	0.016	0.011
1,101.60	0.019	0.014
1,101.80	0.023	0.018
1,102.00	0.027	0.023
1,102.20	0.044	0.031
1,102.40	0.060	0.041
1,102.60	0.077	0.055
1,102.80	0.093	0.072
1,103.00	0.110	0.092
1,103.20	0.136	0.117
1,103.40	0.162	0.146
1,103.60	0.189	0.182
1,103.80	0.215	0.222
1,104.00	0.241	0.267
1,104.20	0.341	0.326
1,104.40	0.440	0.404
1,104.60	0.540	0.502
1,104.80	0.639	0.620
1,105.00	0.739	0.757
1,105.20	1.092	0.941
1,105.40	1.445	1.194
1,105.60	1.799	1.519
1,105.80	2.152	1.914
1,106.00	2.505	2.380
1,106.20	2.933	2.923
1,106.40	3.360	3.553
1,106.60	3.788	4.267
1,106.80	4.215	5.068
1,107.00	4.643	5.954
1,107.20	5.030	6.921
1,107.40	5.418	7.966
1,107.60	5.805	9.088
1,107.80	6.193	10.288
1,108.00	6.580	11.565
1,108.20	7.459	12.969
1,108.40	8.338	14.549
1,108.60	9.218	16.304
1,108.80	10.097	18.236
1,109.00	10.976	20.343
1,109.20	12.129	22.654
1,109.40	13.283	25.195
1,109.60	14.436	27.967
1,109.80	15.590	30.969
1,110.00	16.743	34.202
1,110.20	18.057	37.683
1,110.40	19.372	41.425
1,110.60	20.686	45.431
1,110.80	22.001	49.700
1,111.00	23.315	54.231
1,111.20	24.966	59.060
1,111.40	26.617	64.218
1,111.60	28.267	69.706
1,111.80	29.918	75.525
1,112.00	31.569	81.673
1,112.20	33.848	88.215
1,112.40	36.128	95.213
1,112.60	38.407	102.666
1,112.80	40.687	110.576
1,113.00	42.966	118.941
1,113.20	45.165	127.754
1,113.40	47.364	137.007
1,113.60	49.562	146.700
1,113.80	51.761	156.832
1,114.00	53.960	167.404
1,114.20	56.330	178.433
1,114.40	58.700	189.936
1,114.60	61.070	201.913
1,114.80	63.440	214.364
1,115.00	65.810	227.289
1,115.20	68.594	240.729
1,115.40	71.378	254.727
1,115.60	74.161	269.280
1,115.80	76.945	284.391
1,116.00	79.729	300.058
1,116.20	83.554	316.387
1,116.40	87.379	333.480
1,116.60	91.205	351.339
1,116.80	95.030	369.962
1,117.00	**98.855**	**389.351**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 158.4 AC: Watershed After Runoff Area=158.400 ac 0.00% Impervious Runoff Depth=4.73"
Flow Length=2,718' Slope=0.0329 '/' Tc=34.2 min CN=84 Runoff=612.57 cfs 62.470 af

Subcatchment 312.5 AC: South Watershed Runoff Area=312.500 ac 0.00% Impervious Runoff Depth=4.73"
Flow Length=9,197' Slope=0.0329 '/' Tc=90.7 min CN=84 Runoff=643.84 cfs 123.243 af

Subcatchment 544.5 AC: Remainder of Runoff Area=544.500 ac 0.00% Impervious Runoff Depth=4.73"
Flow Length=10,448' Slope=0.0329 '/' Tc=100.5 min CN=84 Runoff=1,039.01 cfs 214.739 af

Subcatchment 689.7 AC: Watershed West Runoff Area=689.700 ac 0.00% Impervious Runoff Depth=4.73"
Flow Length=9,666' Slope=0.0329 '/' Tc=94.4 min CN=84 Runoff=1,373.45 cfs 272.003 af

Pond 1P: H AVENUE CULVERT Peak Elev=1,128.96' Storage=85.610 af Inflow=1,373.45 cfs 272.003 af
Primary=945.91 cfs 152.788 af Secondary=95.54 cfs 118.213 af Outflow=1,041.44 cfs 271.001 af

Pond 2P: BASIN NW OF WETLAND Peak Elev=1,125.88' Storage=133.622 af Inflow=1,115.95 cfs 333.471 af
Primary=595.42 cfs 275.933 af Secondary=0.00 cfs 0.000 af Outflow=595.42 cfs 275.933 af

Pond I AVENUE: I AVENUE Peak Elev=1,114.67' Storage=206.264 af Inflow=1,767.41 cfs 613.915 af
Primary=456.62 cfs 469.065 af Secondary=170.61 cfs 144.774 af Tertiary=0.00 cfs 0.000 af Outflow=627.23 cfs 613.839 af

Total Runoff Area = 1,705.100 ac Runoff Volume = 672.455 af Average Runoff Depth = 4.73"
100.00% Pervious = 1,705.100 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Runoff = 612.57 cfs @ 12.47 hrs, Volume= 62.470 af, Depth= 4.73"
Routed to Pond 2P : BASIN NW OF WETLAND

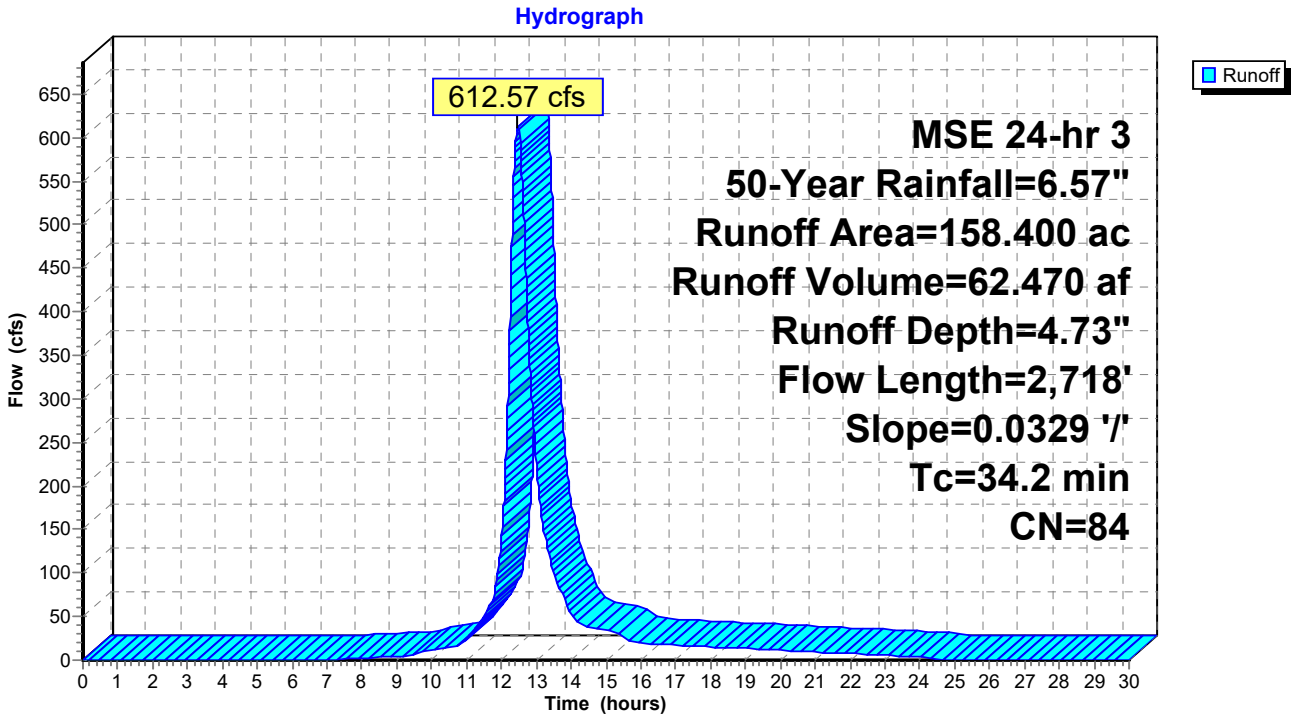
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 50-Year Rainfall=6.57"

	Area (ac)	CN	Description
*	158.400	84	
	158.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.2	2,718	0.0329	1.32		**Lag/CN Method,**

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location



Hydrograph for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.11	0.00	0.00
3.50	0.14	0.00	0.00
4.00	0.17	0.00	0.00
4.50	0.21	0.00	0.00
5.00	0.25	0.00	0.00
5.50	0.29	0.00	0.00
6.00	0.33	0.00	0.00
6.50	0.38	0.00	0.00
7.00	0.44	0.00	0.17
7.50	0.49	0.01	0.92
8.00	0.55	0.01	1.89
8.50	0.61	0.02	2.96
9.00	0.68	0.04	4.10
9.50	0.79	0.07	7.22
10.00	0.90	0.11	11.27
10.50	1.03	0.16	14.59
11.00	1.27	0.28	24.88
11.50	1.63	0.49	50.74
12.00	3.04	1.55	**134.88**
12.50	4.94	3.22	**610.48**
13.00	5.30	3.55	223.56
13.50	5.54	3.77	102.30
14.00	5.67	3.89	52.97
14.50	5.78	3.99	37.49
15.00	5.89	4.10	33.90
15.50	5.96	4.16	25.64
16.00	6.02	4.22	19.70
16.50	6.08	4.27	18.14
17.00	6.13	4.32	17.14
17.50	6.19	4.37	16.18
18.00	6.24	4.42	15.22
18.50	6.28	4.46	14.26
19.00	6.32	4.50	13.29
19.50	6.36	4.54	12.34
20.00	6.40	4.57	11.36
20.50	6.43	4.60	10.40
21.00	6.46	4.63	9.43
21.50	6.49	4.65	8.46
22.00	6.51	4.68	7.49
22.50	6.53	4.69	6.51
23.00	6.55	4.71	5.54
23.50	6.56	4.72	4.56
24.00	**6.57**	**4.73**	3.59
24.50	6.57	4.73	1.41
25.00	6.57	4.73	0.16
25.50	6.57	4.73	0.01
26.00	6.57	4.73	0.00
26.50	6.57	4.73	0.00
27.00	6.57	4.73	0.00
27.50	6.57	4.73	0.00
28.00	6.57	4.73	0.00
28.50	6.57	4.73	0.00
29.00	6.57	4.73	0.00
29.50	6.57	4.73	0.00
30.00	6.57	4.73	0.00

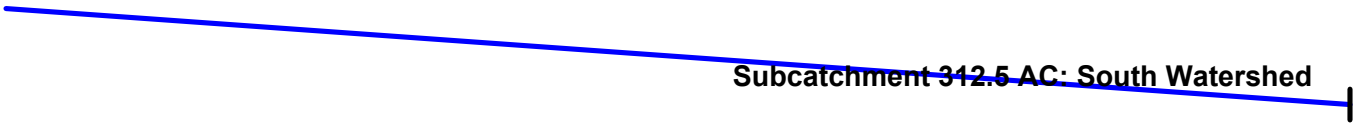
Summary for Subcatchment 312.5 AC: South Watershed

Runoff = 643.84 cfs @ 13.20 hrs, Volume= 123.243 af, Depth= 4.73"
Routed to Pond I AVENUE : I AVENUE CULVERTS

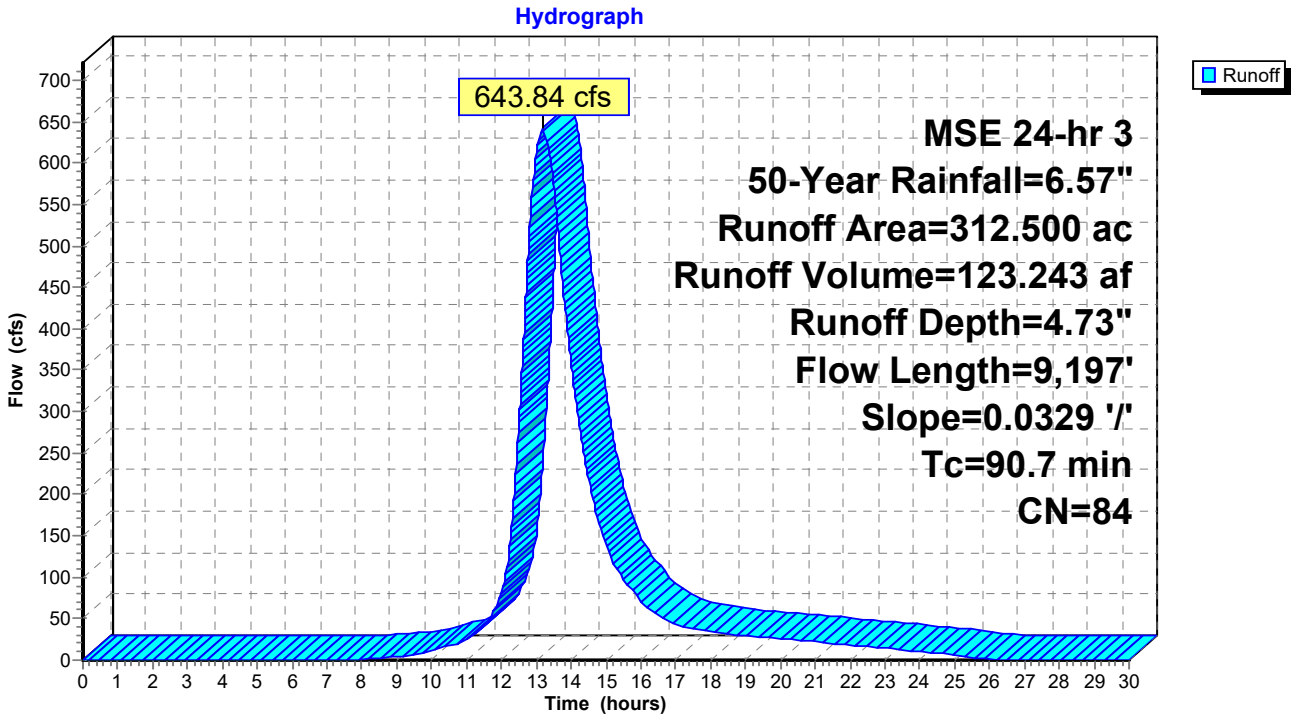
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 50-Year Rainfall=6.57"

	Area (ac)	CN	Description
*	312.500	84	
	312.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
90.7	9,197	0.0329	1.69		**Lag/CN Method,**



Subcatchment 312.5 AC: South Watershed



Hydrograph for Subcatchment 312.5 AC: South Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.11	0.00	0.00
3.50	0.14	0.00	0.00
4.00	0.17	0.00	0.00
4.50	0.21	0.00	0.00
5.00	0.25	0.00	0.00
5.50	0.29	0.00	0.00
6.00	0.33	0.00	0.00
6.50	0.38	0.00	0.00
7.00	0.44	0.00	0.02
7.50	0.49	0.01	0.30
8.00	0.55	0.01	1.20
8.50	0.61	0.02	2.67
9.00	0.68	0.04	4.49
9.50	0.79	0.07	6.81
10.00	0.90	0.11	11.14
10.50	1.03	0.16	17.36
11.00	1.27	0.28	24.75
11.50	1.63	0.49	41.08
12.00	3.04	1.55	81.02
12.50	4.94	3.22	279.07
13.00	5.30	3.55	**615.46**
13.50	5.54	3.77	**573.04**
14.00	5.67	3.89	358.10
14.50	5.78	3.99	219.26
15.00	5.89	4.10	139.06
15.50	5.96	4.16	97.73
16.00	6.02	4.22	72.11
16.50	6.08	4.27	53.93
17.00	6.13	4.32	43.05
17.50	6.19	4.37	37.37
18.00	6.24	4.42	34.19
18.50	6.28	4.46	31.76
19.00	6.32	4.50	29.67
19.50	6.36	4.54	27.69
20.00	6.40	4.57	25.75
20.50	6.43	4.60	23.85
21.00	6.46	4.63	21.94
21.50	6.49	4.65	20.04
22.00	6.51	4.68	18.12
22.50	6.53	4.69	16.21
23.00	6.55	4.71	14.27
23.50	6.56	4.72	12.37
24.00	**6.57**	**4.73**	10.43
24.50	6.57	4.73	8.36
25.00	6.57	4.73	5.39
25.50	6.57	4.73	2.63
26.00	6.57	4.73	1.14
26.50	6.57	4.73	0.50
27.00	6.57	4.73	0.21
27.50	6.57	4.73	0.09
28.00	6.57	4.73	0.03
28.50	6.57	4.73	0.01
29.00	6.57	4.73	0.00
29.50	6.57	4.73	0.00
30.00	6.57	4.73	0.00

Summary for Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Runoff = 1,039.01 cfs @ 13.29 hrs, Volume= 214.739 af, Depth= 4.73"
Routed to Pond I AVENUE : I AVENUE CULVERTS

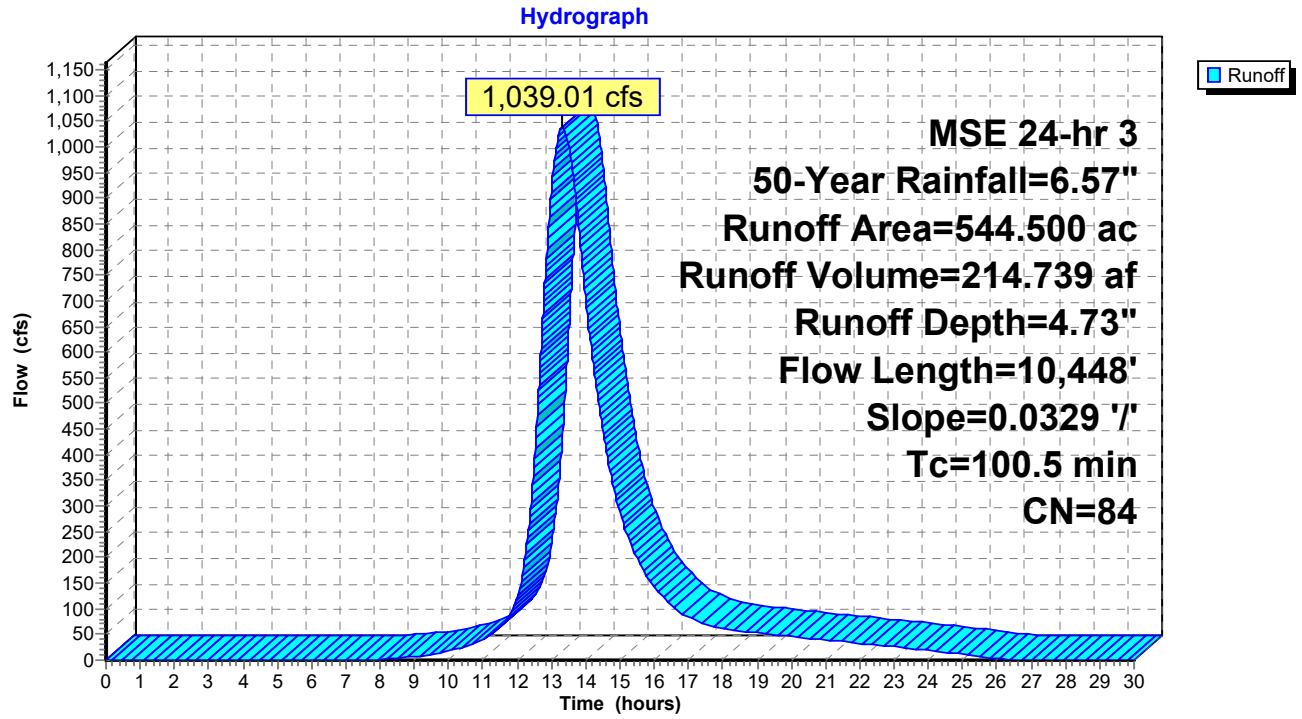
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 50-Year Rainfall=6.57"

	Area (ac)	CN	Description
*	544.500	84	
	544.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
100.5	10,448	0.0329	1.73		**Lag/CN Method,**

Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Subcatchment 544.5 AC: Remainder of Watershed to I Ave



Hydrograph for Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.11	0.00	0.00
3.50	0.14	0.00	0.00
4.00	0.17	0.00	0.00
4.50	0.21	0.00	0.00
5.00	0.25	0.00	0.00
5.50	0.29	0.00	0.00
6.00	0.33	0.00	0.00
6.50	0.38	0.00	0.00
7.00	0.44	0.00	0.02
7.50	0.49	0.01	0.38
8.00	0.55	0.01	1.67
8.50	0.61	0.02	3.96
9.00	0.68	0.04	6.95
9.50	0.79	0.07	10.71
10.00	0.90	0.11	17.30
10.50	1.03	0.16	27.24
11.00	1.27	0.28	39.45
11.50	1.63	0.49	63.51
12.00	3.04	1.55	122.91
12.50	4.94	3.22	389.36
13.00	5.30	3.55	**915.93**
13.50	5.54	3.77	**1,002.77**
14.00	5.67	3.89	707.27
14.50	5.78	3.99	445.34
15.00	5.89	4.10	286.57
15.50	5.96	4.16	197.69
16.00	6.02	4.22	144.22
16.50	6.08	4.27	106.70
17.00	6.13	4.32	83.80
17.50	6.19	4.37	70.20
18.00	6.24	4.42	61.96
18.50	6.28	4.46	56.94
19.00	6.32	4.50	52.92
19.50	6.36	4.54	49.38
20.00	6.40	4.57	45.97
20.50	6.43	4.60	42.56
21.00	6.46	4.63	39.21
21.50	6.49	4.65	35.91
22.00	6.51	4.68	32.61
22.50	6.53	4.69	29.24
23.00	6.55	4.71	25.87
23.50	6.56	4.72	22.55
24.00	**6.57**	**4.73**	19.22
24.50	6.57	4.73	15.63
25.00	6.57	4.73	10.86
25.50	6.57	4.73	6.00
26.00	6.57	4.73	2.87
26.50	6.57	4.73	1.37
27.00	6.57	4.73	0.64
27.50	6.57	4.73	0.29
28.00	6.57	4.73	0.13
28.50	6.57	4.73	0.05
29.00	6.57	4.73	0.02
29.50	6.57	4.73	0.00
30.00	6.57	4.73	0.00

Summary for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Runoff = 1,373.45 cfs @ 13.22 hrs, Volume= 272.003 af, Depth= 4.73"
Routed to Pond 1P : H AVENUE CULVERT

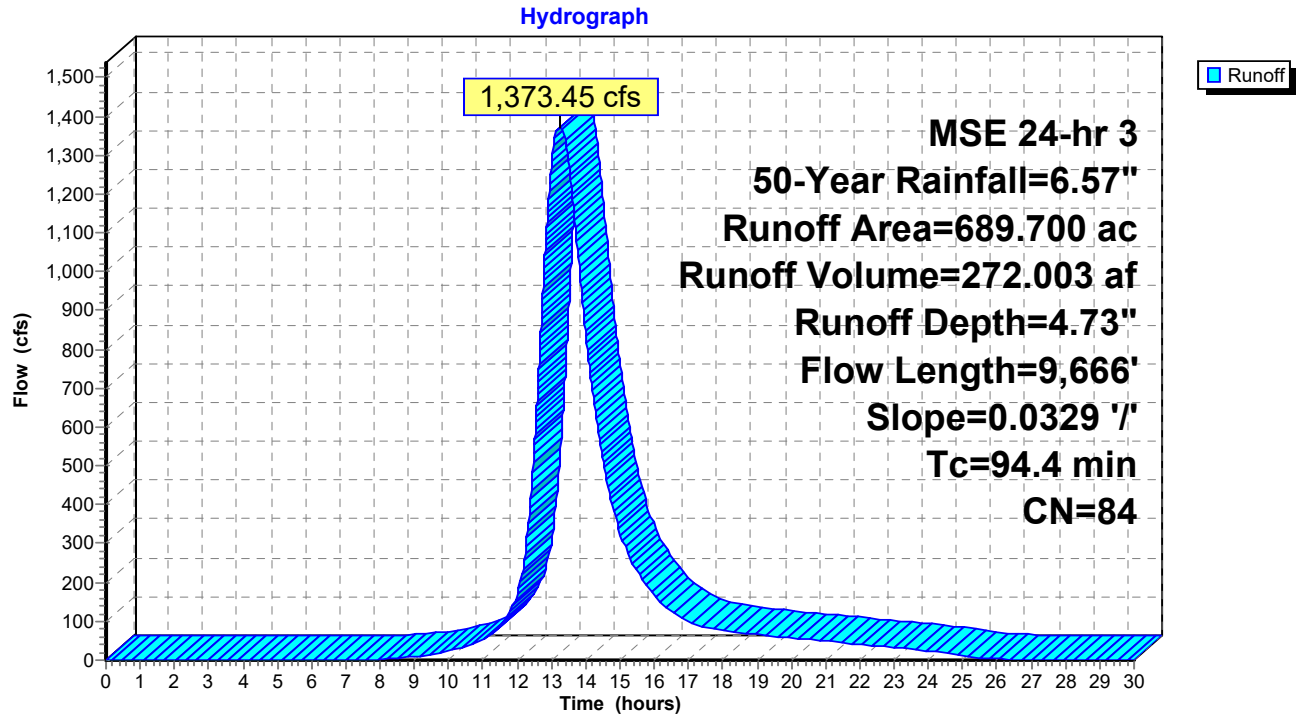
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 50-Year Rainfall=6.57"

	Area (ac)	CN	Description
*	689.700	84	
	689.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
94.4	9,666	0.0329	1.71		**Lag/CN Method,**

Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Subcatchment 689.7 AC: Watershed West of H Ave Culvert



Hydrograph for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.11	0.00	0.00
3.50	0.14	0.00	0.00
4.00	0.17	0.00	0.00
4.50	0.21	0.00	0.00
5.00	0.25	0.00	0.00
5.50	0.29	0.00	0.00
6.00	0.33	0.00	0.00
6.50	0.38	0.00	0.00
7.00	0.44	0.00	0.04
7.50	0.49	0.01	0.59
8.00	0.55	0.01	2.43
8.50	0.61	0.02	5.54
9.00	0.68	0.04	9.47
9.50	0.79	0.07	14.44
10.00	0.90	0.11	23.51
10.50	1.03	0.16	36.85
11.00	1.27	0.28	52.81
11.50	1.63	0.49	86.67
12.00	3.04	1.55	170.73
12.50	4.94	3.22	554.45
13.00	5.30	3.55	**1,274.66**
13.50	5.54	3.77	**1,279.59**
14.00	5.67	3.89	837.11
14.50	5.78	3.99	518.57
15.00	5.89	4.10	329.08
15.50	5.96	4.16	228.74
16.00	6.02	4.22	167.94
16.50	6.08	4.27	124.94
17.00	6.13	4.32	99.22
17.50	6.19	4.37	84.34
18.00	6.24	4.42	76.46
18.50	6.28	4.46	70.81
19.00	6.32	4.50	66.10
19.50	6.36	4.54	61.60
20.00	6.40	4.57	57.36
20.50	6.43	4.60	53.12
21.00	6.46	4.63	48.89
21.50	6.49	4.65	44.74
22.00	6.51	4.68	40.46
22.50	6.53	4.69	36.24
23.00	6.55	4.71	32.01
23.50	6.56	4.72	27.74
24.00	**6.57**	**4.73**	23.53
24.50	6.57	4.73	18.94
25.00	6.57	4.73	12.62
25.50	6.57	4.73	6.49
26.00	6.57	4.73	2.93
26.50	6.57	4.73	1.33
27.00	6.57	4.73	0.59
27.50	6.57	4.73	0.25
28.00	6.57	4.73	0.10
28.50	6.57	4.73	0.03
29.00	6.57	4.73	0.01
29.50	6.57	4.73	0.00
30.00	6.57	4.73	0.00

Summary for Pond 1P: H AVENUE CULVERT

Inflow Area = 689.700 ac, 0.00% Impervious, Inflow Depth = 4.73" for 50-Year event
Inflow = 1,373.45 cfs @ 13.22 hrs, Volume= 272.003 af
Outflow = 1,041.44 cfs @ 13.78 hrs, Volume= 271.001 af, Atten= 24%, Lag= 33.4 min
Primary = 945.91 cfs @ 13.78 hrs, Volume= 152.788 af
Routed to Pond 2P : BASIN NW OF WETLAND
Secondary = 95.54 cfs @ 13.78 hrs, Volume= 118.213 af
Routed to Pond 2P : BASIN NW OF WETLAND

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,128.96' @ 13.78 hrs Surf.Area= 59.725 ac Storage= 85.610 af

Plug-Flow detention time= 140.3 min calculated for 270.911 af (100% of inflow)
Center-of-Mass det. time= 137.9 min (1,004.2 - 866.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,124.00'	161.110 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,124.00	0.010	0.000	0.000
1,126.00	1.650	1.660	1.660
1,128.00	36.300	37.950	39.610
1,130.00	85.200	121.500	161.110

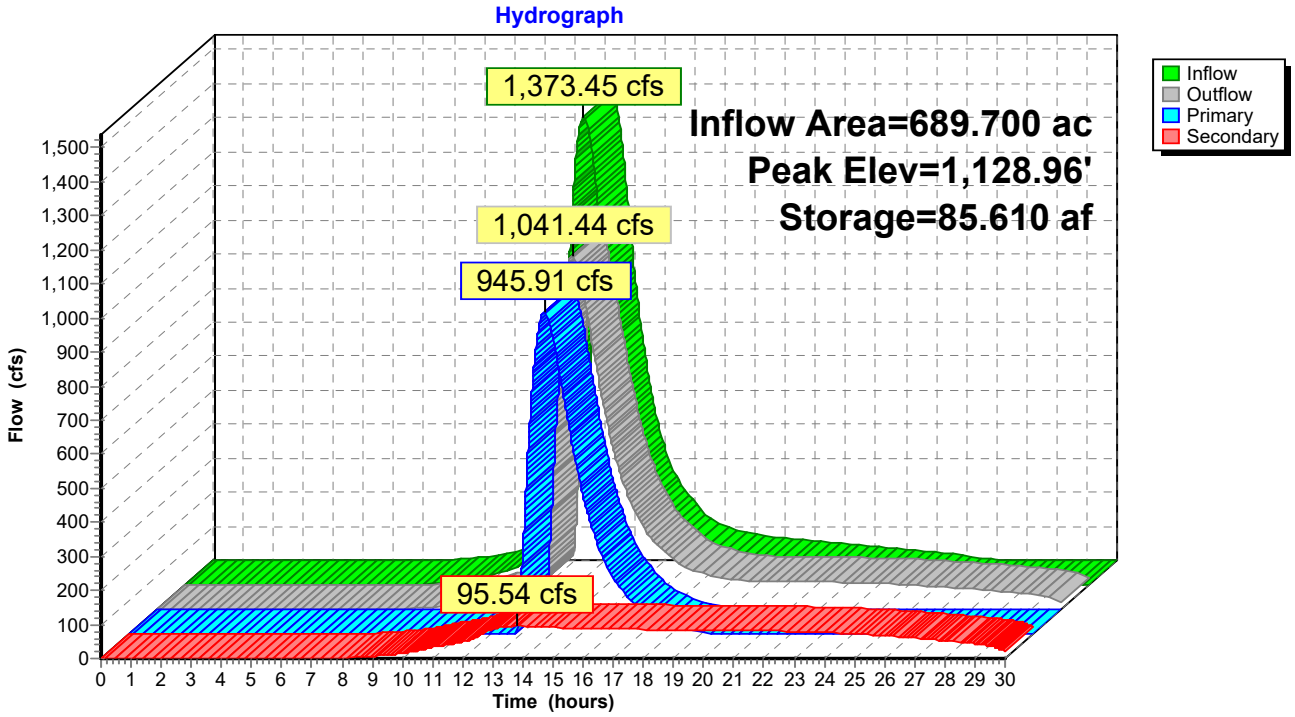
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,124.00'	**60.0" W x 24.0" H Box 5'x2' CULVERT** L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,124.00' / 1,124.00' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 10.00 sf
#2	Primary	1,128.05'	**342.0' long + 100.0 '/' SideZ x 25.0' breadth H Ave Road Surface** 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

Primary OutFlow Max=945.32 cfs @ 13.78 hrs HW=1,128.96' (Free Discharge)
└**2=H Ave Road Surface** (Weir Controls 945.32 cfs @ 2.41 fps)

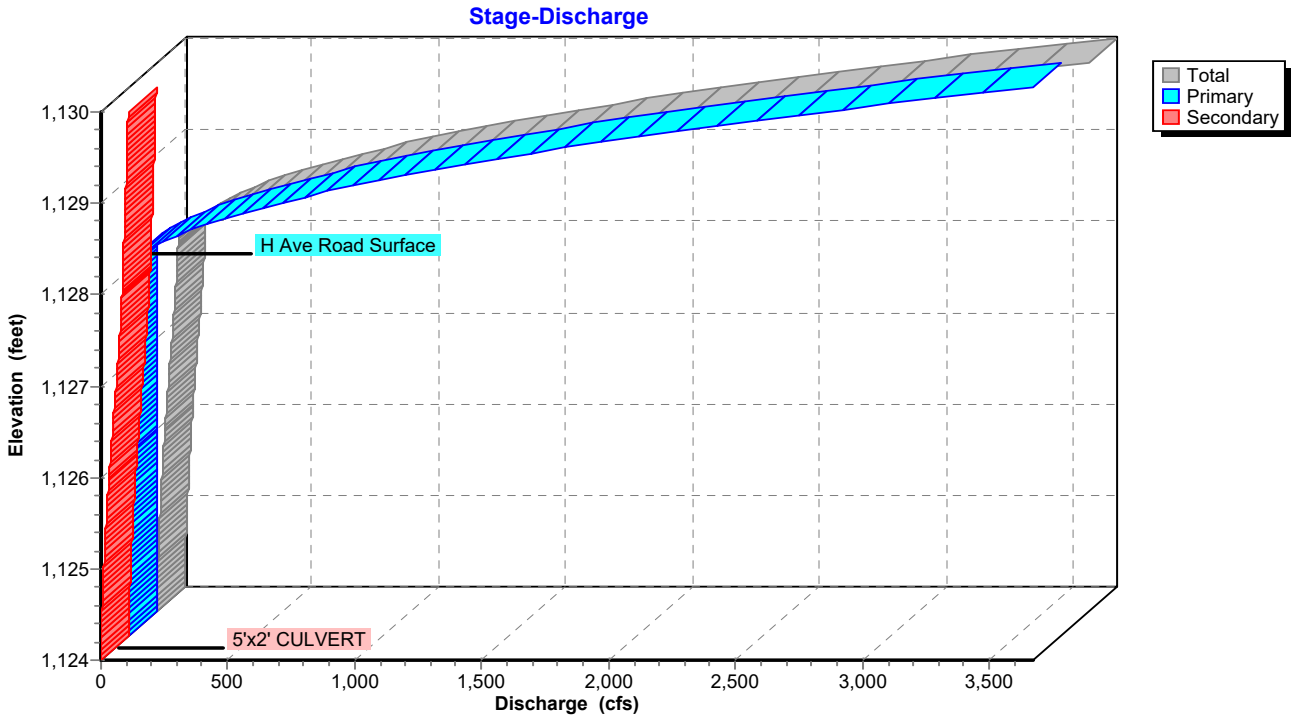
Secondary OutFlow Max=95.54 cfs @ 13.78 hrs HW=1,128.96' (Free Discharge)
└**1=5'x2' CULVERT** (Inlet Controls 95.54 cfs @ 9.55 fps)



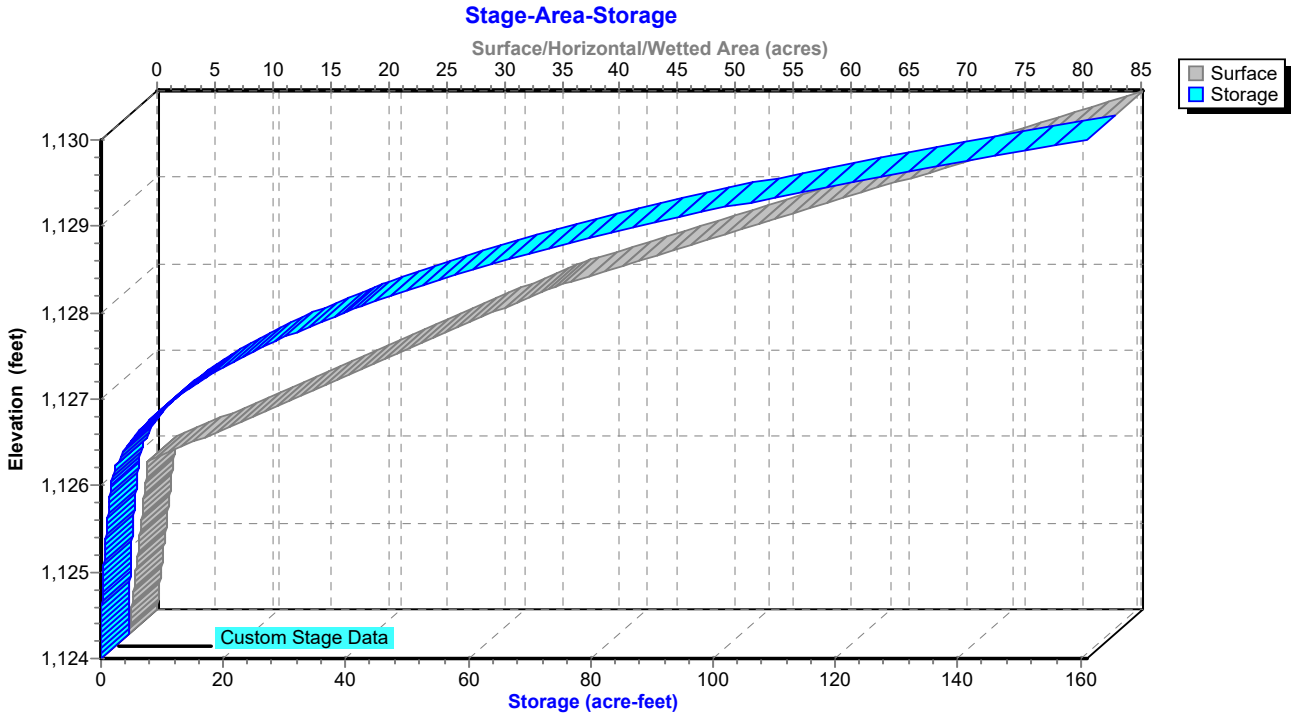
Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Hydrograph for Pond 1P: H AVENUE CULVERT

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,124.00	0.00	0.00	0.00
1.00	0.00	0.000	1,124.00	0.00	0.00	0.00
2.00	0.00	0.000	1,124.00	0.00	0.00	0.00
3.00	0.00	0.000	1,124.00	0.00	0.00	0.00
4.00	0.00	0.000	1,124.00	0.00	0.00	0.00
5.00	0.00	0.000	1,124.00	0.00	0.00	0.00
6.00	0.00	0.000	1,124.00	0.00	0.00	0.00
7.00	0.04	0.000	1,124.01	0.01	0.00	0.01
8.00	2.43	0.037	1,124.29	1.27	0.00	1.27
9.00	9.47	0.218	1,124.72	6.26	0.00	6.26
10.00	23.51	0.633	1,125.23	15.06	0.00	15.06
11.00	52.81	1.755	1,126.05	33.49	0.00	33.49
12.00	170.73	6.174	1,126.63	49.49	0.00	49.49
13.00	**1,274.66**	**51.777**	**1,128.30**	**212.26**	**125.09**	**87.18**
14.00	**837.11**	**83.991**	**1,128.93**	**994.19**	**898.99**	**95.20**
15.00	329.08	66.090	1,128.61	523.86	432.73	91.13
16.00	167.94	54.588	1,128.37	265.08	177.06	88.02
17.00	99.22	48.362	1,128.22	156.15	70.05	86.10
18.00	76.46	44.768	1,128.14	108.73	23.84	84.90
19.00	66.10	42.538	1,128.08	88.67	4.57	84.10
20.00	57.36	40.603	1,128.03	83.38	0.00	83.38
21.00	48.89	38.139	1,127.96	82.42	0.00	82.42
22.00	40.46	35.073	1,127.87	81.01	0.00	81.01
23.00	32.01	31.464	1,127.76	78.68	0.00	78.68
24.00	23.53	27.375	1,127.63	75.68	0.00	75.68
25.00	12.62	22.809	1,127.47	71.87	0.00	71.87
26.00	2.93	17.647	1,127.27	66.70	0.00	66.70
27.00	0.59	12.518	1,127.03	60.09	0.00	60.09
28.00	0.10	7.908	1,126.76	51.65	0.00	51.65
29.00	0.01	3.937	1,126.43	43.61	0.00	43.61
30.00	0.00	1.011	1,125.56	21.88	0.00	21.88

Stage-Discharge for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,124.00	0.00	0.00	0.00
1,124.10	0.16	0.00	0.16
1,124.20	0.64	0.00	0.64
1,124.30	1.37	0.00	1.37
1,124.40	2.30	0.00	2.30
1,124.50	3.40	0.00	3.40
1,124.60	4.64	0.00	4.64
1,124.70	6.01	0.00	6.01
1,124.80	7.50	0.00	7.50
1,124.90	9.10	0.00	9.10
1,125.00	10.80	0.00	10.80
1,125.10	12.59	0.00	12.59
1,125.20	14.47	0.00	14.47
1,125.30	16.44	0.00	16.44
1,125.40	18.49	0.00	18.49
1,125.50	20.61	0.00	20.61
1,125.60	22.82	0.00	22.82
1,125.70	25.10	0.00	25.10
1,125.80	27.44	0.00	27.44
1,125.90	29.86	0.00	29.86
1,126.00	32.34	0.00	32.34
1,126.10	34.89	0.00	34.89
1,126.20	37.50	0.00	37.50
1,126.30	40.17	0.00	40.17
1,126.40	42.91	0.00	42.91
1,126.50	45.70	0.00	45.70
1,126.60	48.55	0.00	48.55
1,126.70	49.59	0.00	49.59
1,126.80	53.02	0.00	53.02
1,126.90	56.23	0.00	56.23
1,127.00	59.28	0.00	59.28
1,127.10	62.17	0.00	62.17
1,127.20	64.93	0.00	64.93
1,127.30	67.59	0.00	67.59
1,127.40	70.14	0.00	70.14
1,127.50	72.60	0.00	72.60
1,127.60	74.98	0.00	74.98
1,127.70	77.29	0.00	77.29
1,127.80	79.53	0.00	79.53
1,127.90	81.58	0.00	81.58
1,128.00	83.00	0.00	83.00
1,128.10	94.77	10.37	84.40
1,128.20	140.89	55.12	85.78
1,128.30	208.62	121.50	87.13
1,128.40	294.93	206.47	88.46
1,128.50	397.86	308.09	89.77
1,128.60	516.16	425.10	91.06
1,128.70	646.72	554.38	92.33
1,128.80	786.82	693.24	93.59
1,128.90	942.26	847.43	94.82
1,129.00	1,114.94	1,018.90	96.05
1,129.10	1,303.85	1,206.60	97.25
1,129.20	1,510.10	1,411.66	98.44
1,129.30	1,730.38	1,630.76	99.62
1,129.40	1,964.23	1,863.45	100.78
1,129.50	2,211.09	2,109.16	101.93
1,129.60	2,470.36	2,367.29	103.06
1,129.70	2,746.35	2,642.17	104.19
1,129.80	3,039.97	2,934.67	105.30
1,129.90	3,349.12	3,242.72	106.40
1,130.00	**3,673.94**	**3,566.46**	**107.49**

Stage-Area-Storage for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,124.00	0.010	0.000
1,124.10	0.092	0.005
1,124.20	0.174	0.018
1,124.30	0.256	0.040
1,124.40	0.338	0.070
1,124.50	0.420	0.107
1,124.60	0.502	0.154
1,124.70	0.584	0.208
1,124.80	0.666	0.270
1,124.90	0.748	0.341
1,125.00	0.830	0.420
1,125.10	0.912	0.507
1,125.20	0.994	0.602
1,125.30	1.076	0.706
1,125.40	1.158	0.818
1,125.50	1.240	0.937
1,125.60	1.322	1.066
1,125.70	1.404	1.202
1,125.80	1.486	1.346
1,125.90	1.568	1.499
1,126.00	1.650	1.660
1,126.10	3.382	1.912
1,126.20	5.115	2.337
1,126.30	6.847	2.935
1,126.40	8.580	3.706
1,126.50	10.312	4.651
1,126.60	12.045	5.768
1,126.70	13.778	7.060
1,126.80	15.510	8.524
1,126.90	17.243	10.162
1,127.00	18.975	11.972
1,127.10	20.707	13.957
1,127.20	22.440	16.114
1,127.30	24.172	18.445
1,127.40	25.905	20.949
1,127.50	27.637	23.626
1,127.60	29.370	26.476
1,127.70	31.103	29.500
1,127.80	32.835	32.696
1,127.90	34.568	36.067
1,128.00	36.300	39.610
1,128.10	38.745	43.362
1,128.20	41.190	47.359
1,128.30	43.635	51.600
1,128.40	46.080	56.086
1,128.50	48.525	60.816
1,128.60	50.970	65.791
1,128.70	53.415	71.010
1,128.80	55.860	76.474
1,128.90	58.305	82.182
1,129.00	60.750	88.135
1,129.10	63.195	94.332
1,129.20	65.640	100.774
1,129.30	68.085	107.460
1,129.40	70.530	114.391
1,129.50	72.975	121.566
1,129.60	75.420	128.986
1,129.70	77.865	136.650
1,129.80	80.310	144.559
1,129.90	82.755	152.712
1,130.00	**85.200**	**161.110**

Summary for Pond 2P: BASIN NW OF WETLAND

[79] Warning: Submerged Pond 1P Secondary device # 1 by 1.88'

Inflow Area = 848.100 ac, 0.00% Impervious, Inflow Depth > 4.72" for 50-Year event
Inflow = 1,115.95 cfs @ 13.74 hrs, Volume= 333.471 af
Outflow = 595.42 cfs @ 14.91 hrs, Volume= 275.933 af, Atten= 47%, Lag= 70.2 min
Primary = 595.42 cfs @ 14.91 hrs, Volume= 275.933 af
Routed to Pond I AVENUE : I AVENUE CULVERTS
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,125.88' @ 14.91 hrs Surf.Area= 68.071 ac Storage= 133.622 af

Plug-Flow detention time= 235.8 min calculated for 275.841 af (83% of inflow)
Center-of-Mass det. time= 134.1 min (1,102.0 - 967.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,121.00'	311.173 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,121.00	1.997	0.000	0.000
1,122.00	7.899	4.948	4.948
1,123.00	16.217	12.058	17.006
1,124.00	30.839	23.528	40.534
1,126.00	70.400	101.239	141.773
1,128.00	99.000	169.400	311.173

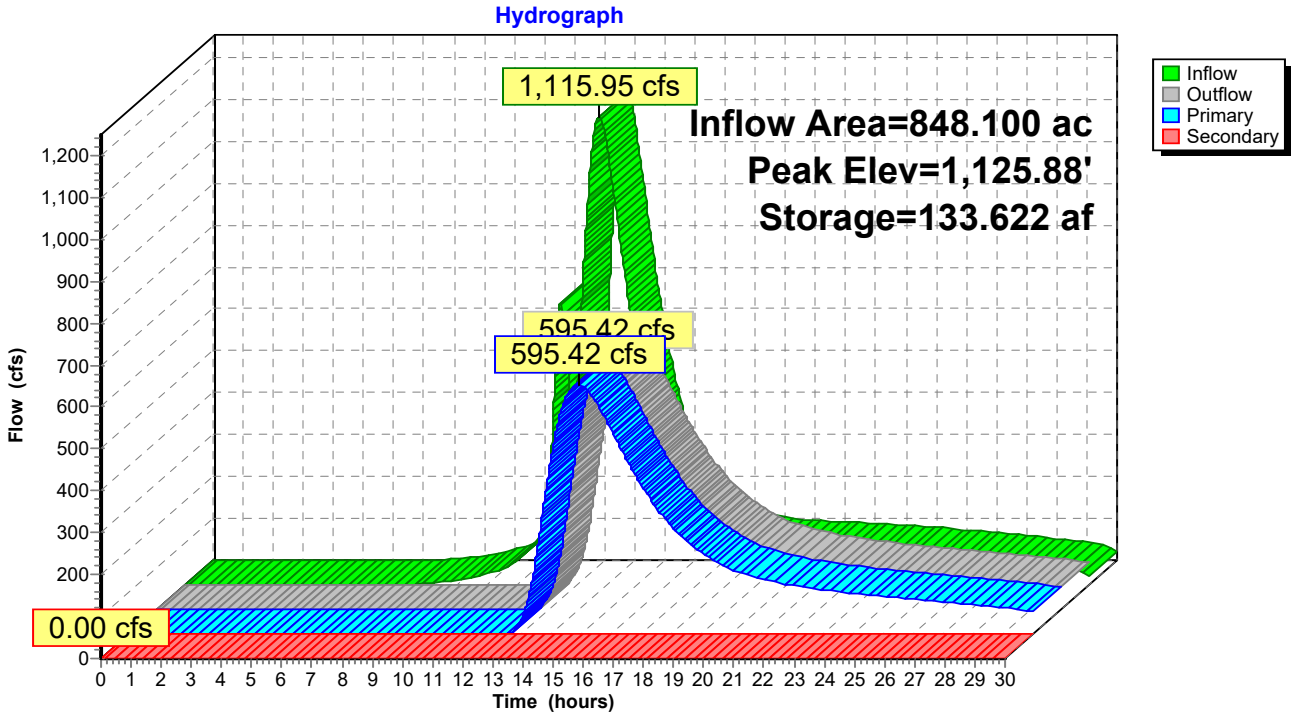
Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.00'	**50.0' long + 25.0 '/' SideZ x 50.0' breadth Saddle to Wetland** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	1,127.00'	**300.0' long + 50.0 '/' SideZ x 50.0' breadth Saddle Away from Wetland** 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

Primary OutFlow Max=595.26 cfs @ 14.91 hrs HW=1,125.88' (Free Discharge)
↑—**1=Saddle to Wetland** (Weir Controls 595.26 cfs @ 3.26 fps)

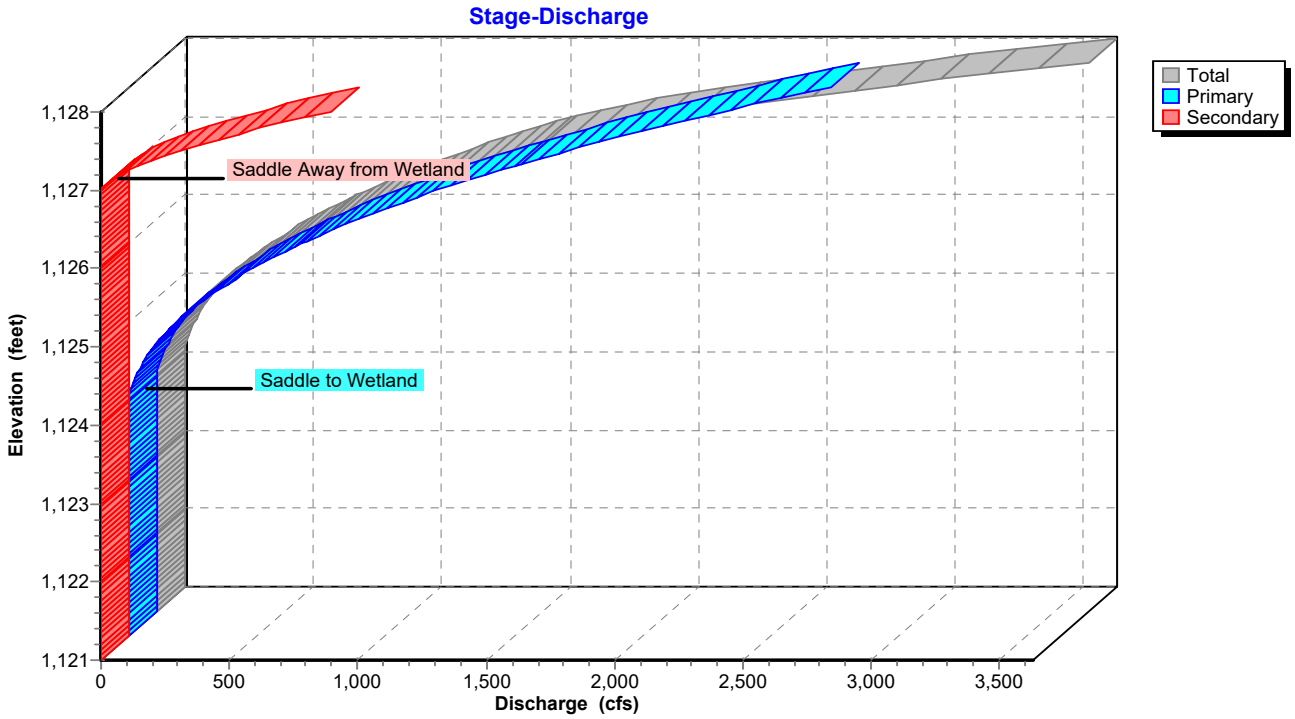
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,121.00' (Free Discharge)
↑—**2=Saddle Away from Wetland** (Controls 0.00 cfs)



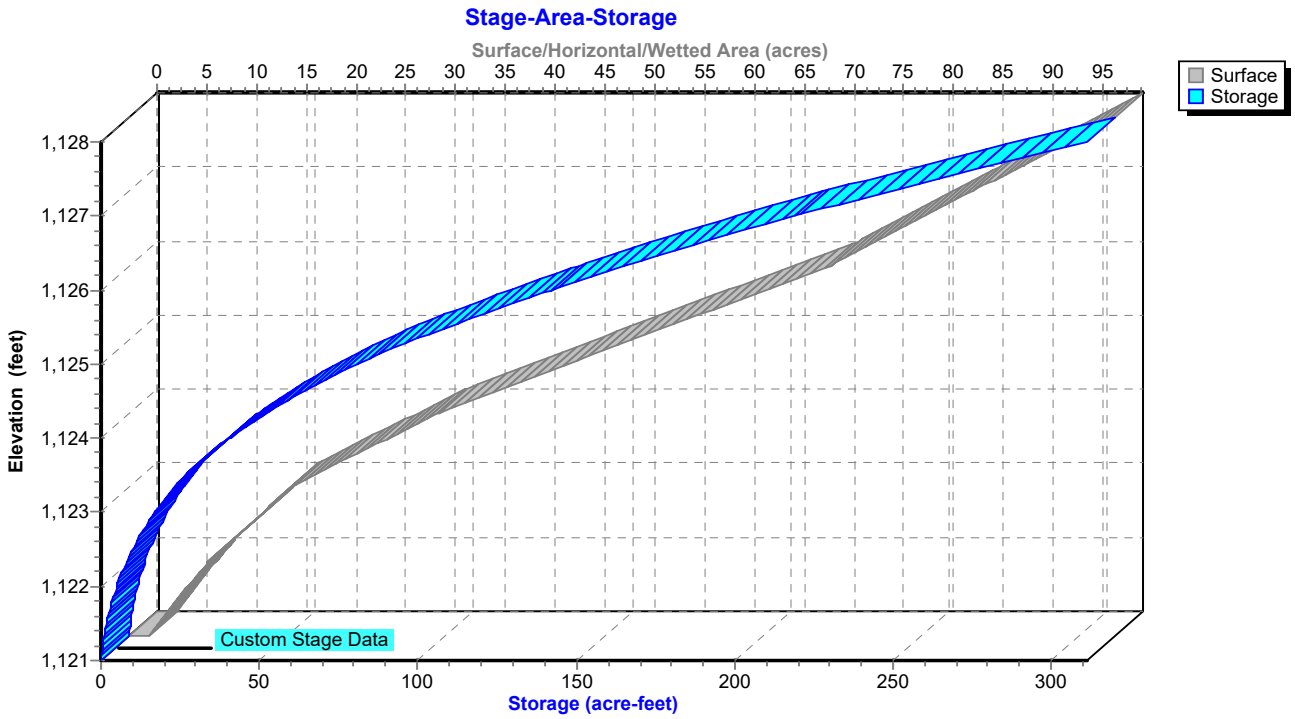
Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Hydrograph for Pond 2P: BASIN NW OF WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,121.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,121.00	0.00	0.00	0.00
2.00	0.00	0.000	1,121.00	0.00	0.00	0.00
3.00	0.00	0.000	1,121.00	0.00	0.00	0.00
4.00	0.00	0.000	1,121.00	0.00	0.00	0.00
5.00	0.00	0.000	1,121.00	0.00	0.00	0.00
6.00	0.00	0.000	1,121.00	0.00	0.00	0.00
7.00	0.17	0.002	1,121.00	0.00	0.00	0.00
8.00	3.16	0.111	1,121.05	0.00	0.00	0.00
9.00	10.35	0.644	1,121.24	0.00	0.00	0.00
10.00	26.33	2.084	1,121.57	0.00	0.00	0.00
11.00	58.37	5.316	1,122.05	0.00	0.00	0.00
12.00	184.38	13.431	1,122.77	0.00	0.00	0.00
13.00	**435.83**	52.212	1,124.34	30.64	30.64	0.00
14.00	**1,047.16**	**112.747**	**1,125.56**	**416.78**	**416.78**	0.00
15.00	557.77	**133.491**	**1,125.88**	**594.17**	**594.17**	0.00
16.00	284.78	121.185	1,125.69	486.65	486.65	0.00
17.00	173.29	104.899	1,125.43	355.03	355.03	0.00
18.00	123.96	91.856	1,125.20	257.34	257.34	0.00
19.00	101.96	82.693	1,125.03	193.69	193.69	0.00
20.00	94.75	76.503	1,124.90	154.30	154.30	0.00
21.00	91.85	72.525	1,124.82	130.61	130.61	0.00
22.00	88.50	69.858	1,124.76	115.56	115.56	0.00
23.00	84.22	67.903	1,124.72	105.06	105.06	0.00
24.00	79.26	66.333	1,124.69	96.84	96.84	0.00
25.00	72.03	64.881	1,124.65	89.32	89.32	0.00
26.00	66.70	63.529	1,124.62	82.44	82.44	0.00
27.00	60.09	62.235	1,124.59	75.92	75.92	0.00
28.00	51.65	60.872	1,124.56	69.14	69.14	0.00
29.00	43.61	59.422	1,124.52	62.11	62.11	0.00
30.00	21.88	57.551	1,124.48	53.32	53.32	0.00

Stage-Discharge for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,121.00	0.00	0.00	0.00
1,121.10	0.00	0.00	0.00
1,121.20	0.00	0.00	0.00
1,121.30	0.00	0.00	0.00
1,121.40	0.00	0.00	0.00
1,121.50	0.00	0.00	0.00
1,121.60	0.00	0.00	0.00
1,121.70	0.00	0.00	0.00
1,121.80	0.00	0.00	0.00
1,121.90	0.00	0.00	0.00
1,122.00	0.00	0.00	0.00
1,122.10	0.00	0.00	0.00
1,122.20	0.00	0.00	0.00
1,122.30	0.00	0.00	0.00
1,122.40	0.00	0.00	0.00
1,122.50	0.00	0.00	0.00
1,122.60	0.00	0.00	0.00
1,122.70	0.00	0.00	0.00
1,122.80	0.00	0.00	0.00
1,122.90	0.00	0.00	0.00
1,123.00	0.00	0.00	0.00
1,123.10	0.00	0.00	0.00
1,123.20	0.00	0.00	0.00
1,123.30	0.00	0.00	0.00
1,123.40	0.00	0.00	0.00
1,123.50	0.00	0.00	0.00
1,123.60	0.00	0.00	0.00
1,123.70	0.00	0.00	0.00
1,123.80	0.00	0.00	0.00
1,123.90	0.00	0.00	0.00
1,124.00	0.00	0.00	0.00
1,124.10	4.41	4.41	0.00
1,124.20	12.94	12.94	0.00
1,124.30	24.75	24.75	0.00
1,124.40	39.62	39.62	0.00
1,124.50	57.28	57.28	0.00
1,124.60	77.80	77.80	0.00
1,124.70	100.08	100.08	0.00
1,124.80	124.68	124.68	0.00
1,124.90	152.99	152.99	0.00
1,125.00	184.10	184.10	0.00
1,125.10	218.88	218.88	0.00
1,125.20	256.81	256.81	0.00
1,125.30	297.39	297.39	0.00
1,125.40	341.11	341.11	0.00
1,125.50	387.26	387.26	0.00
1,125.60	436.47	436.47	0.00
1,125.70	489.68	489.68	0.00
1,125.80	546.21	546.21	0.00
1,125.90	606.13	606.13	0.00
1,126.00	669.49	669.49	0.00
1,126.10	736.33	736.33	0.00
1,126.20	806.71	806.71	0.00
1,126.30	880.68	880.68	0.00
1,126.40	958.29	958.29	0.00
1,126.50	1,039.60	1,039.60	0.00
1,126.60	1,124.65	1,124.65	0.00
1,126.70	1,213.49	1,213.49	0.00
1,126.80	1,306.17	1,306.17	0.00
1,126.90	1,402.74	1,402.74	0.00
1,127.00	1,503.25	1,503.25	0.00
1,127.10	1,633.51	1,607.74	25.76
1,127.20	1,790.10	1,716.27	73.83
1,127.30	1,966.79	1,828.88	137.91
1,127.40	2,161.46	1,945.61	215.84
1,127.50	2,371.99	2,066.52	305.47
1,127.60	2,598.21	2,191.64	406.57
1,127.70	2,833.93	2,321.03	512.90
1,127.80	3,081.88	2,454.72	627.16
1,127.90	3,348.70	2,592.76	755.93
1,128.00	**3,629.40**	**2,735.20**	**894.20**

Stage-Area-Storage for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,121.00	1.997	0.000
1,121.10	2.587	0.229
1,121.20	3.177	0.517
1,121.30	3.768	0.865
1,121.40	4.358	1.271
1,121.50	4.948	1.736
1,121.60	5.538	2.261
1,121.70	6.128	2.844
1,121.80	6.719	3.486
1,121.90	7.309	4.188
1,122.00	7.899	4.948
1,122.10	8.731	5.779
1,122.20	9.563	6.694
1,122.30	10.394	7.692
1,122.40	11.226	8.773
1,122.50	12.058	9.937
1,122.60	12.890	11.185
1,122.70	13.722	12.515
1,122.80	14.553	13.929
1,122.90	15.385	15.426
1,123.00	16.217	17.006
1,123.10	17.679	18.701
1,123.20	19.141	20.542
1,123.30	20.604	22.529
1,123.40	22.066	24.663
1,123.50	23.528	26.942
1,123.60	24.990	29.368
1,123.70	26.452	31.940
1,123.80	27.915	34.659
1,123.90	29.377	37.523
1,124.00	30.839	40.534
1,124.10	32.817	43.717
1,124.20	34.795	47.097
1,124.30	36.773	50.676
1,124.40	38.751	54.452
1,124.50	40.729	58.426
1,124.60	42.707	62.598
1,124.70	44.685	66.968
1,124.80	46.663	71.535
1,124.90	48.641	76.300
1,125.00	50.619	81.263
1,125.10	52.598	86.424
1,125.20	54.576	91.783
1,125.30	56.554	97.339
1,125.40	58.532	103.093
1,125.50	60.510	109.046
1,125.60	62.488	115.195
1,125.70	64.466	121.543
1,125.80	66.444	128.089
1,125.90	68.422	134.832
1,126.00	70.400	141.773
1,126.10	71.830	148.884
1,126.20	73.260	156.139
1,126.30	74.690	163.536
1,126.40	76.120	171.077
1,126.50	77.550	178.760
1,126.60	78.980	186.587
1,126.70	80.410	194.557
1,126.80	81.840	202.669
1,126.90	83.270	210.925
1,127.00	84.700	219.323
1,127.10	86.130	227.864
1,127.20	87.560	236.549
1,127.30	88.990	245.376
1,127.40	90.420	254.347
1,127.50	91.850	263.460
1,127.60	93.280	272.717
1,127.70	94.710	282.117
1,127.80	96.140	291.659
1,127.90	97.570	301.345
1,128.00	**99.000**	**311.173**

Summary for Pond I AVENUE: I AVENUE CULVERTS

Inflow Area = 1,705.100 ac, 0.00% Impervious, Inflow Depth > 4.32" for 50-Year event
Inflow = 1,767.41 cfs @ 13.40 hrs, Volume= 613.915 af
Outflow = 627.23 cfs @ 16.29 hrs, Volume= 613.839 af, Atten= 65%, Lag= 173.5 min
Primary = 456.62 cfs @ 16.29 hrs, Volume= 469.065 af
Secondary = 170.61 cfs @ 16.29 hrs, Volume= 144.774 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,114.67' @ 16.29 hrs Surf.Area= 61.909 ac Storage= 206.264 af

Plug-Flow detention time= 145.8 min calculated for 613.839 af (100% of inflow)
Center-of-Mass det. time= 145.7 min (1,119.1 - 973.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,098.00'	389.351 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,098.00	0.000	0.000	0.000
1,099.00	0.001	0.001	0.001
1,100.00	0.001	0.001	0.002
1,101.00	0.008	0.005	0.006
1,102.00	0.027	0.017	0.023
1,103.00	0.110	0.069	0.092
1,104.00	0.241	0.175	0.267
1,105.00	0.739	0.490	0.757
1,106.00	2.505	1.622	2.380
1,107.00	4.643	3.574	5.954
1,108.00	6.580	5.611	11.565
1,109.00	10.976	8.778	20.343
1,110.00	16.743	13.859	34.202
1,111.00	23.315	20.029	54.231
1,112.00	31.569	27.442	81.673
1,113.00	42.966	37.267	118.941
1,114.00	53.960	48.463	167.404
1,115.00	65.810	59.885	227.289
1,116.00	79.729	72.769	300.058
1,117.00	98.855	89.292	389.351

Device	Routing	Invert	Outlet Devices
#1	Primary	1,100.22'	**72.0" Round 72" RCP CULVERT** L= 85.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,100.22' / 1,098.91' S= 0.0153 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 28.27 sf
#2	Secondary	1,104.72'	**48.0" Round 48" RCP CULVERT** L= 62.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,104.72' / 1,104.41' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#3	Tertiary	1,115.86'	**I AVENUE, C= 3.27** Offset (feet) 0.00 115.59 162.20 164.26 214.26 232.65 343.45

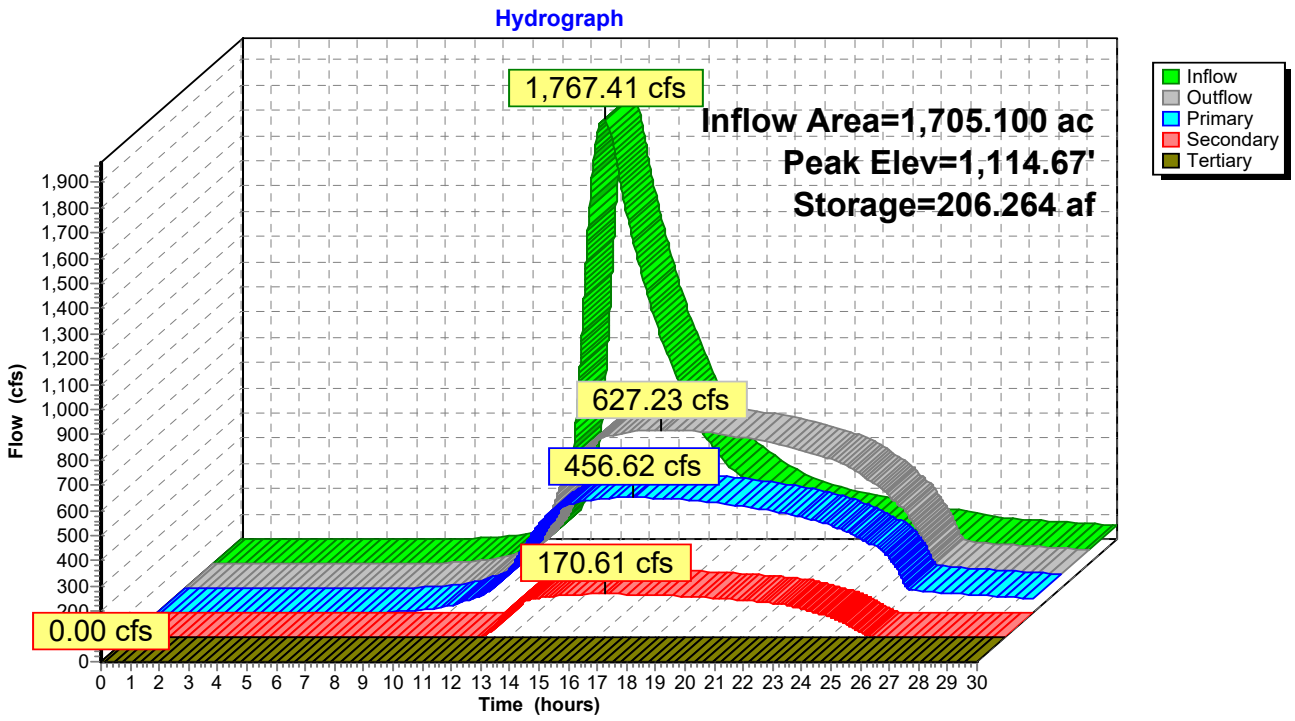
Height (feet) 1.14 0.14 0.00 0.00 0.09 0.14 1.14

Primary OutFlow Max=456.63 cfs @ 16.29 hrs HW=1,114.67' (Free Discharge)
└**1=72" RCP CULVERT** (Barrel Controls 456.63 cfs @ 16.15 fps)

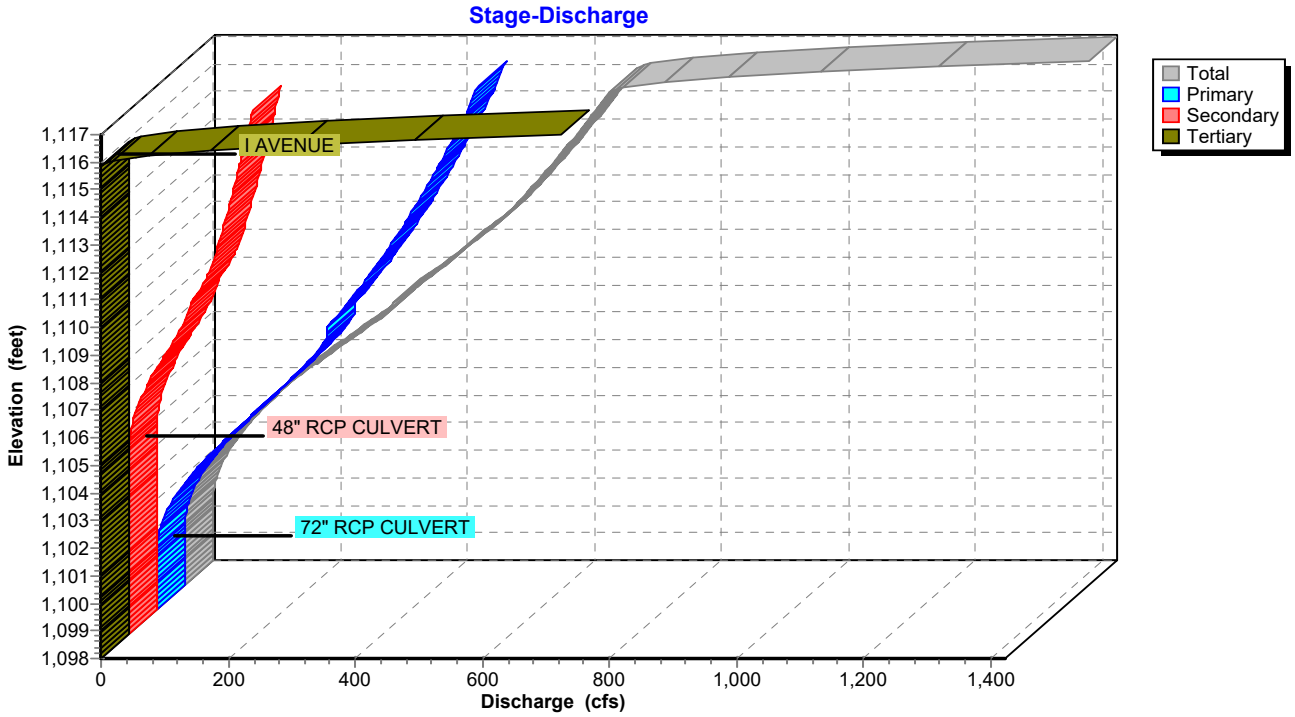
Secondary OutFlow Max=170.61 cfs @ 16.29 hrs HW=1,114.67' (Free Discharge)
└**2=48" RCP CULVERT** (Inlet Controls 170.61 cfs @ 13.58 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,098.00' (Free Discharge)
└**3=I AVENUE** (Controls 0.00 cfs)

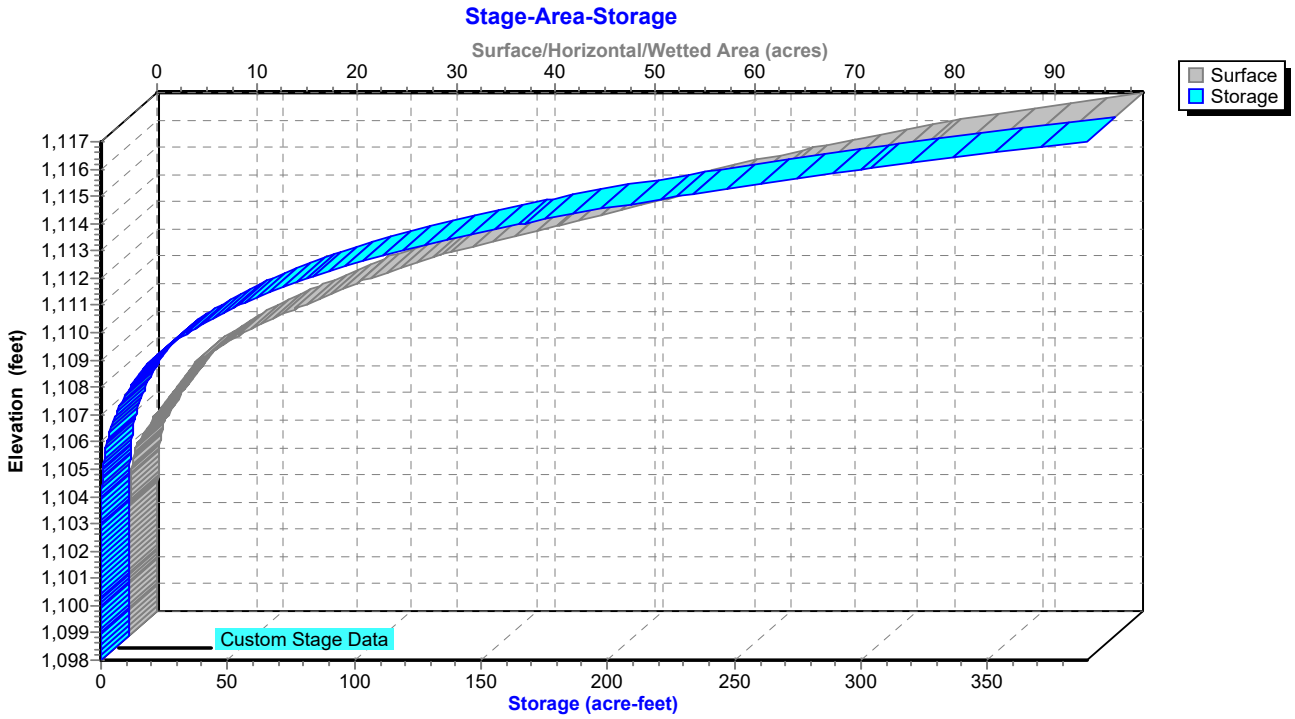




Pond I AVENUE: I AVENUE CULVERTS



Pond I AVENUE: I AVENUE CULVERTS



Hydrograph for Pond I AVENUE: I AVENUE CULVERTS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	0.00	0.000	1,098.00	0.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
2.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
3.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
4.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
5.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
6.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
7.00	0.04	0.000	1,098.81	0.00	0.00	0.00	0.00
8.00	2.87	0.005	1,100.79	2.82	2.82	0.00	0.00
9.00	11.44	0.010	1,101.37	11.34	11.34	0.00	0.00
10.00	28.44	0.026	1,102.06	28.03	28.03	0.00	0.00
11.00	64.20	0.101	1,103.08	62.45	62.45	0.00	0.00
12.00	203.94	1.020	1,105.26	162.70	160.52	2.18	0.00
13.00	**1,562.02**	39.410	1,110.29	444.53	339.08	105.45	0.00
14.00	**1,482.15**	133.930	1,113.33	579.80	424.19	155.60	0.00
15.00	1,019.80	186.358	1,114.34	615.80	448.79	167.01	0.00
16.00	702.99	**205.415**	**1,114.66**	**626.74**	**456.28**	**170.45**	0.00
17.00	481.87	**201.801**	**1,114.60**	**624.72**	**454.90**	**169.82**	0.00
18.00	353.49	184.576	1,114.31	614.71	448.04	166.66	0.00
19.00	276.28	160.173	1,113.86	599.04	437.32	161.71	0.00
20.00	226.02	132.096	1,113.29	578.33	423.19	155.13	0.00
21.00	191.76	102.528	1,112.60	551.85	405.19	146.66	0.00
22.00	166.28	73.053	1,111.72	516.52	381.28	135.23	0.00
23.00	145.20	45.236	1,110.59	461.77	348.31	113.46	0.00
24.00	126.48	21.461	1,109.10	380.25	299.06	81.19	0.00
25.00	105.57	4.624	1,106.69	249.39	226.74	22.66	0.00
26.00	86.45	0.198	1,103.68	87.23	87.23	0.00	0.00
27.00	76.77	0.155	1,103.45	77.16	77.16	0.00	0.00
28.00	69.30	0.126	1,103.26	69.61	69.61	0.00	0.00
29.00	62.12	0.101	1,103.08	62.40	62.40	0.00	0.00
30.00	53.32	0.076	1,102.85	53.69	53.69	0.00	0.00

Stage-Discharge for Pond I AVENUE: I AVENUE CULVERTS

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1,098.00	0.00	0.00	0.00	0.00
1,098.50	0.00	0.00	0.00	0.00
1,099.00	0.00	0.00	0.00	0.00
1,099.50	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	0.00	0.00
1,100.50	0.61	0.61	0.00	0.00
1,101.00	5.15	5.15	0.00	0.00
1,101.50	13.88	13.88	0.00	0.00
1,102.00	26.18	26.18	0.00	0.00
1,102.50	41.52	41.52	0.00	0.00
1,103.00	59.41	59.41	0.00	0.00
1,103.50	79.41	79.41	0.00	0.00
1,104.00	101.10	101.10	0.00	0.00
1,104.50	124.05	124.05	0.00	0.00
1,105.00	148.39	147.81	0.58	0.00
1,105.50	176.12	171.89	4.24	0.00
1,106.00	206.21	195.69	10.52	0.00
1,106.50	237.48	218.53	18.95	0.00
1,107.00	268.61	239.47	29.14	0.00
1,107.50	297.80	257.09	40.70	0.00
1,108.00	321.54	268.33	53.21	0.00
1,108.50	343.07	276.93	66.15	0.00
1,109.00	374.43	295.59	78.85	0.00
1,109.50	403.49	313.13	90.36	0.00
1,110.00	428.24	329.75	98.50	0.00
1,110.50	456.69	345.56	111.13	0.00
1,111.00	484.40	360.69	123.71	0.00
1,111.50	507.49	375.20	132.29	0.00
1,112.00	528.21	389.17	139.03	0.00
1,112.50	548.13	402.66	145.47	0.00
1,113.00	567.34	415.71	151.63	0.00
1,113.50	585.92	428.37	157.55	0.00
1,114.00	603.92	440.66	163.26	0.00
1,114.50	621.39	452.62	168.77	0.00
1,115.00	638.37	464.27	174.11	0.00
1,115.50	654.92	475.63	179.29	0.00
1,116.00	679.75	486.69	184.32	8.74
1,116.50	904.83	496.12	189.22	219.49
1,117.00	**1,422.27**	**505.37**	**194.00**	**722.89**

Stage-Area-Storage for Pond I AVENUE: I AVENUE CULVERTS

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,098.00	0.000	0.000
1,098.20	0.000	0.000
1,098.40	0.000	0.000
1,098.60	0.001	0.000
1,098.80	0.001	0.000
1,099.00	0.001	0.001
1,099.20	0.001	0.001
1,099.40	0.001	0.001
1,099.60	0.001	0.001
1,099.80	0.001	0.001
1,100.00	0.001	0.002
1,100.20	0.002	0.002
1,100.40	0.004	0.002
1,100.60	0.005	0.003
1,100.80	0.007	0.005
1,101.00	0.008	0.006
1,101.20	0.012	0.008
1,101.40	0.016	0.011
1,101.60	0.019	0.014
1,101.80	0.023	0.018
1,102.00	0.027	0.023
1,102.20	0.044	0.031
1,102.40	0.060	0.041
1,102.60	0.077	0.055
1,102.80	0.093	0.072
1,103.00	0.110	0.092
1,103.20	0.136	0.117
1,103.40	0.162	0.146
1,103.60	0.189	0.182
1,103.80	0.215	0.222
1,104.00	0.241	0.267
1,104.20	0.341	0.326
1,104.40	0.440	0.404
1,104.60	0.540	0.502
1,104.80	0.639	0.620
1,105.00	0.739	0.757
1,105.20	1.092	0.941
1,105.40	1.445	1.194
1,105.60	1.799	1.519
1,105.80	2.152	1.914
1,106.00	2.505	2.380
1,106.20	2.933	2.923
1,106.40	3.360	3.553
1,106.60	3.788	4.267
1,106.80	4.215	5.068
1,107.00	4.643	5.954
1,107.20	5.030	6.921
1,107.40	5.418	7.966
1,107.60	5.805	9.088
1,107.80	6.193	10.288
1,108.00	6.580	11.565
1,108.20	7.459	12.969
1,108.40	8.338	14.549
1,108.60	9.218	16.304
1,108.80	10.097	18.236
1,109.00	10.976	20.343
1,109.20	12.129	22.654
1,109.40	13.283	25.195
1,109.60	14.436	27.967
1,109.80	15.590	30.969
1,110.00	16.743	34.202
1,110.20	18.057	37.683
1,110.40	19.372	41.425
1,110.60	20.686	45.431
1,110.80	22.001	49.700
1,111.00	23.315	54.231
1,111.20	24.966	59.060
1,111.40	26.617	64.218
1,111.60	28.267	69.706
1,111.80	29.918	75.525
1,112.00	31.569	81.673
1,112.20	33.848	88.215
1,112.40	36.128	95.213
1,112.60	38.407	102.666
1,112.80	40.687	110.576
1,113.00	42.966	118.941
1,113.20	45.165	127.754
1,113.40	47.364	137.007
1,113.60	49.562	146.700
1,113.80	51.761	156.832
1,114.00	53.960	167.404
1,114.20	56.330	178.433
1,114.40	58.700	189.936
1,114.60	61.070	201.913
1,114.80	63.440	214.364
1,115.00	65.810	227.289
1,115.20	68.594	240.729
1,115.40	71.378	254.727
1,115.60	74.161	269.280
1,115.80	76.945	284.391
1,116.00	79.729	300.058
1,116.20	83.554	316.387
1,116.40	87.379	333.480
1,116.60	91.205	351.339
1,116.80	95.030	369.962
1,117.00	**98.855**	**389.351**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 158.4 AC: Watershed After Runoff Area=158.400 ac 0.00% Impervious Runoff Depth=5.69"
Flow Length=2,718' Slope=0.0329 '/' Tc=34.2 min CN=84 Runoff=732.08 cfs 75.145 af

Subcatchment 312.5 AC: South Watershed Runoff Area=312.500 ac 0.00% Impervious Runoff Depth=5.69"
Flow Length=9,197' Slope=0.0329 '/' Tc=90.7 min CN=84 Runoff=771.19 cfs 148.250 af

Subcatchment 544.5 AC: Remainder of Runoff Area=544.500 ac 0.00% Impervious Runoff Depth=5.69"
Flow Length=10,448' Slope=0.0329 '/' Tc=100.5 min CN=84 Runoff=1,245.46 cfs 258.311 af

Subcatchment 689.7 AC: Watershed West Runoff Area=689.700 ac 0.00% Impervious Runoff Depth=5.69"
Flow Length=9,666' Slope=0.0329 '/' Tc=94.4 min CN=84 Runoff=1,645.82 cfs 327.194 af

Pond 1P: H AVENUE CULVERT Peak Elev=1,129.11' Storage=94.690 af Inflow=1,645.82 cfs 327.194 af
Primary=1,218.01 cfs 200.827 af Secondary=97.32 cfs 123.943 af Outflow=1,315.33 cfs 324.770 af

Pond 2P: BASIN NW OF WETLAND Peak Elev=1,126.19' Storage=155.328 af Inflow=1,410.37 cfs 399.915 af
Primary=798.84 cfs 341.214 af Secondary=0.00 cfs 0.000 af Outflow=798.84 cfs 341.214 af

Pond I AVENUE: I AVENUE Peak Elev=1,115.94' Storage=295.584 af Inflow=2,220.64 cfs 747.776 af
Primary=485.46 cfs 561.819 af Secondary=183.76 cfs 185.424 af Tertiary=5.22 cfs 0.442 af Outflow=674.44 cfs 747.685 af

Total Runoff Area = 1,705.100 ac Runoff Volume = 808.901 af Average Runoff Depth = 5.69"
100.00% Pervious = 1,705.100 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Runoff = 732.08 cfs @ 12.47 hrs, Volume= 75.145 af, Depth= 5.69"
Routed to Pond 2P : BASIN NW OF WETLAND

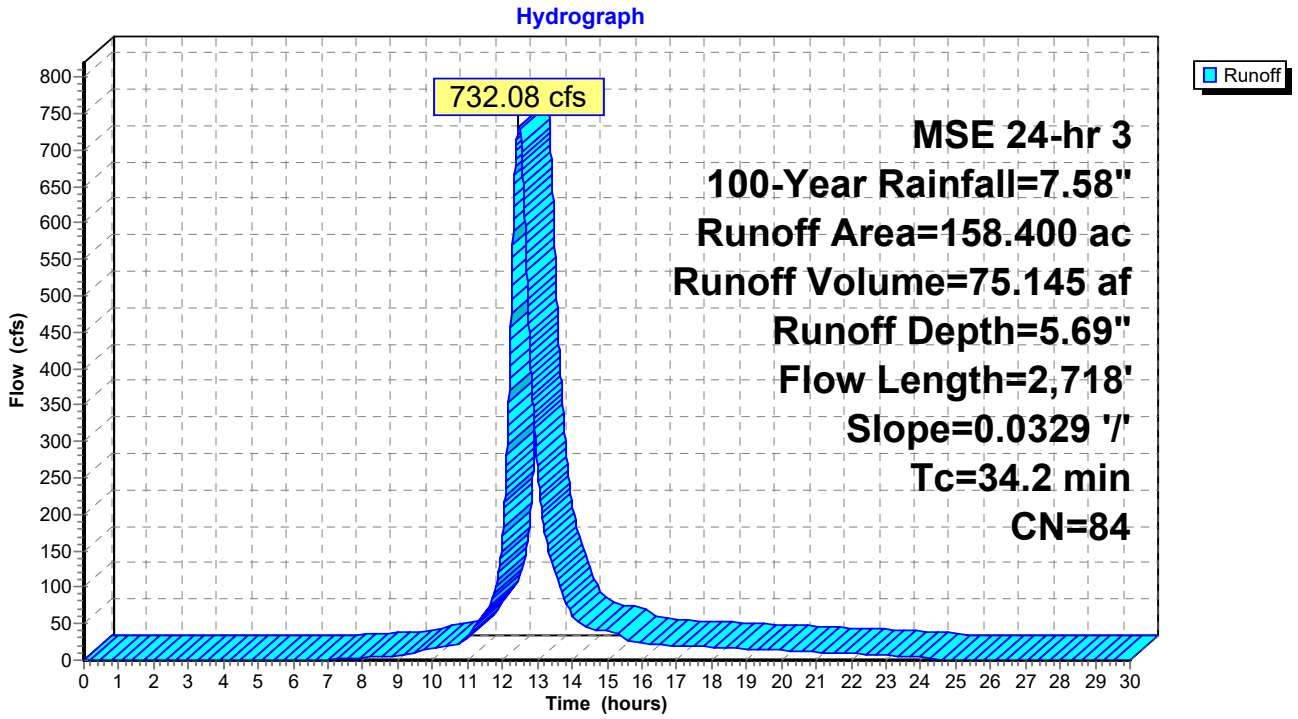
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.58"

	Area (ac)	CN	Description
*	158.400	84	
	158.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.2	2,718	0.0329	1.32		**Lag/CN Method,**

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location



Hydrograph for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.03	0.00	0.00
1.50	0.05	0.00	0.00
2.00	0.07	0.00	0.00
2.50	0.10	0.00	0.00
3.00	0.13	0.00	0.00
3.50	0.16	0.00	0.00
4.00	0.20	0.00	0.00
4.50	0.24	0.00	0.00
5.00	0.28	0.00	0.00
5.50	0.33	0.00	0.00
6.00	0.39	0.00	0.00
6.50	0.44	0.00	0.22
7.00	0.50	0.01	1.12
7.50	0.57	0.02	2.26
8.00	0.63	0.03	3.51
8.50	0.71	0.05	4.84
9.00	0.78	0.07	6.26
9.50	0.91	0.11	10.47
10.00	1.04	0.17	15.68
10.50	1.19	0.24	19.70
11.00	1.46	0.39	32.69
11.50	1.88	0.66	64.85
12.00	3.51	1.94	**167.01**
12.50	5.70	3.92	**728.81**
13.00	6.12	4.31	264.33
13.50	6.39	4.57	120.27
14.00	6.54	4.70	62.11
14.50	6.67	4.83	43.93
15.00	6.80	4.95	39.70
15.50	6.87	5.02	30.02
16.00	6.95	5.09	23.06
16.50	7.01	5.15	21.22
17.00	7.08	5.21	20.05
17.50	7.14	5.27	18.92
18.00	7.19	5.32	17.80
18.50	7.25	5.37	16.68
19.00	7.30	5.42	15.54
19.50	7.34	5.46	14.43
20.00	7.38	5.50	13.28
20.50	7.42	5.54	12.15
21.00	7.45	5.57	11.02
21.50	7.48	5.60	9.88
22.00	7.51	5.63	8.75
22.50	7.53	5.65	7.60
23.00	7.55	5.67	6.48
23.50	7.57	5.68	5.33
24.00	**7.58**	**5.69**	4.19
24.50	7.58	5.69	1.65
25.00	7.58	5.69	0.19
25.50	7.58	5.69	0.02
26.00	7.58	5.69	0.00
26.50	7.58	5.69	0.00
27.00	7.58	5.69	0.00
27.50	7.58	5.69	0.00
28.00	7.58	5.69	0.00
28.50	7.58	5.69	0.00
29.00	7.58	5.69	0.00
29.50	7.58	5.69	0.00
30.00	7.58	5.69	0.00

Summary for Subcatchment 312.5 AC: South Watershed

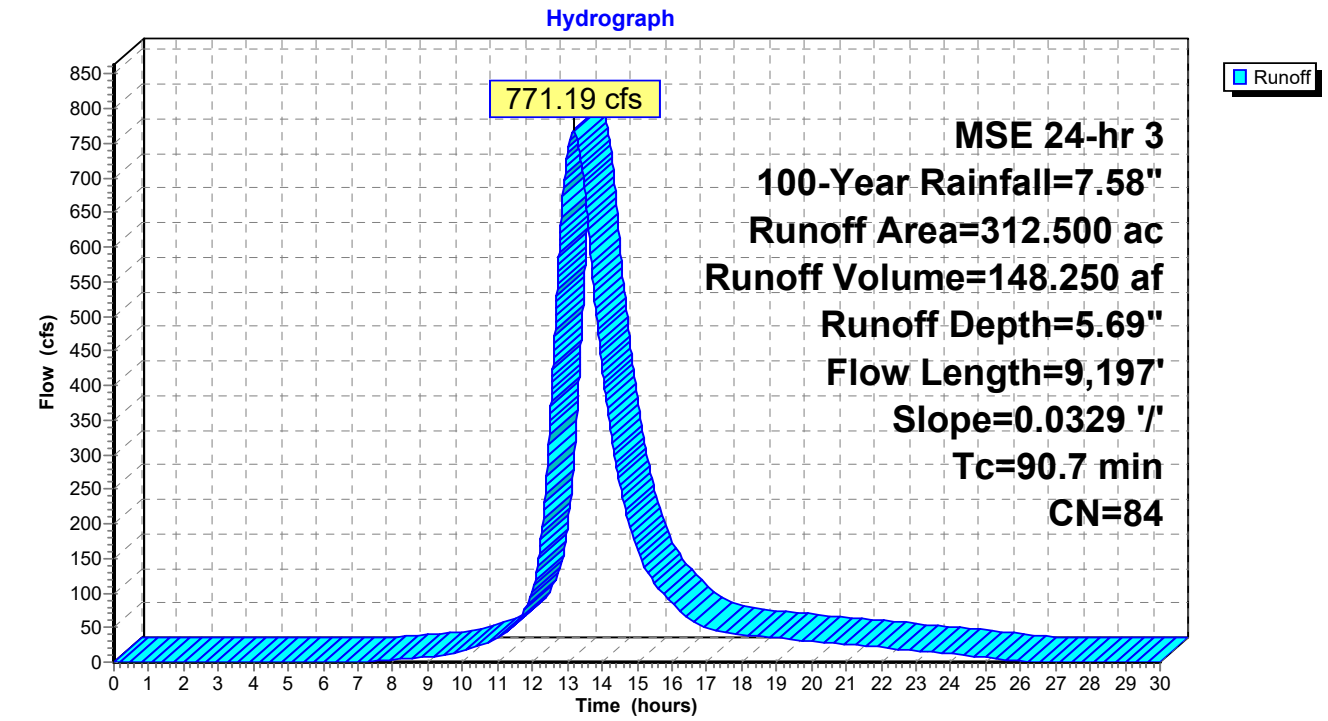
Runoff = 771.19 cfs @ 13.20 hrs, Volume= 148.250 af, Depth= 5.69"
Routed to Pond I AVENUE : I AVENUE CULVERTS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.58"

	Area (ac)	CN	Description
*	312.500	84	
	312.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
90.7	9,197	0.0329	1.69		**Lag/CN Method,**

Subcatchment 312.5 AC: South Watershed



Hydrograph for Subcatchment 312.5 AC: South Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.03	0.00	0.00
1.50	0.05	0.00	0.00
2.00	0.07	0.00	0.00
2.50	0.10	0.00	0.00
3.00	0.13	0.00	0.00
3.50	0.16	0.00	0.00
4.00	0.20	0.00	0.00
4.50	0.24	0.00	0.00
5.00	0.28	0.00	0.00
5.50	0.33	0.00	0.00
6.00	0.39	0.00	0.00
6.50	0.44	0.00	0.03
7.00	0.50	0.01	0.37
7.50	0.57	0.02	1.45
8.00	0.63	0.03	3.19
8.50	0.71	0.05	5.34
9.00	0.78	0.07	7.77
9.50	0.91	0.11	10.76
10.00	1.04	0.17	16.47
10.50	1.19	0.24	24.55
11.00	1.46	0.39	33.84
11.50	1.88	0.66	54.33
12.00	3.51	1.94	103.81
12.50	5.70	3.92	341.84
13.00	6.12	4.31	**739.70**
13.50	6.39	4.57	**683.71**
14.00	6.54	4.70	425.23
14.50	6.67	4.83	259.47
15.00	6.80	4.95	164.08
15.50	6.87	5.02	114.98
16.00	6.95	5.09	84.67
16.50	7.01	5.15	63.23
17.00	7.08	5.21	50.40
17.50	7.14	5.27	43.73
18.00	7.19	5.32	39.99
18.50	7.25	5.37	37.15
19.00	7.30	5.42	34.70
19.50	7.34	5.46	32.37
20.00	7.38	5.50	30.10
20.50	7.42	5.54	27.88
21.00	7.45	5.57	25.64
21.50	7.48	5.60	23.42
22.00	7.51	5.63	21.17
22.50	7.53	5.65	18.93
23.00	7.55	5.67	16.67
23.50	7.57	5.68	14.45
24.00	**7.58**	**5.69**	12.18
24.50	7.58	5.69	9.77
25.00	7.58	5.69	6.30
25.50	7.58	5.69	3.07
26.00	7.58	5.69	1.34
26.50	7.58	5.69	0.59
27.00	7.58	5.69	0.25
27.50	7.58	5.69	0.10
28.00	7.58	5.69	0.04
28.50	7.58	5.69	0.01
29.00	7.58	5.69	0.00
29.50	7.58	5.69	0.00
30.00	7.58	5.69	0.00

Summary for Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Runoff = 1,245.46 cfs @ 13.29 hrs, Volume= 258.311 af, Depth= 5.69"
Routed to Pond I AVENUE : I AVENUE CULVERTS

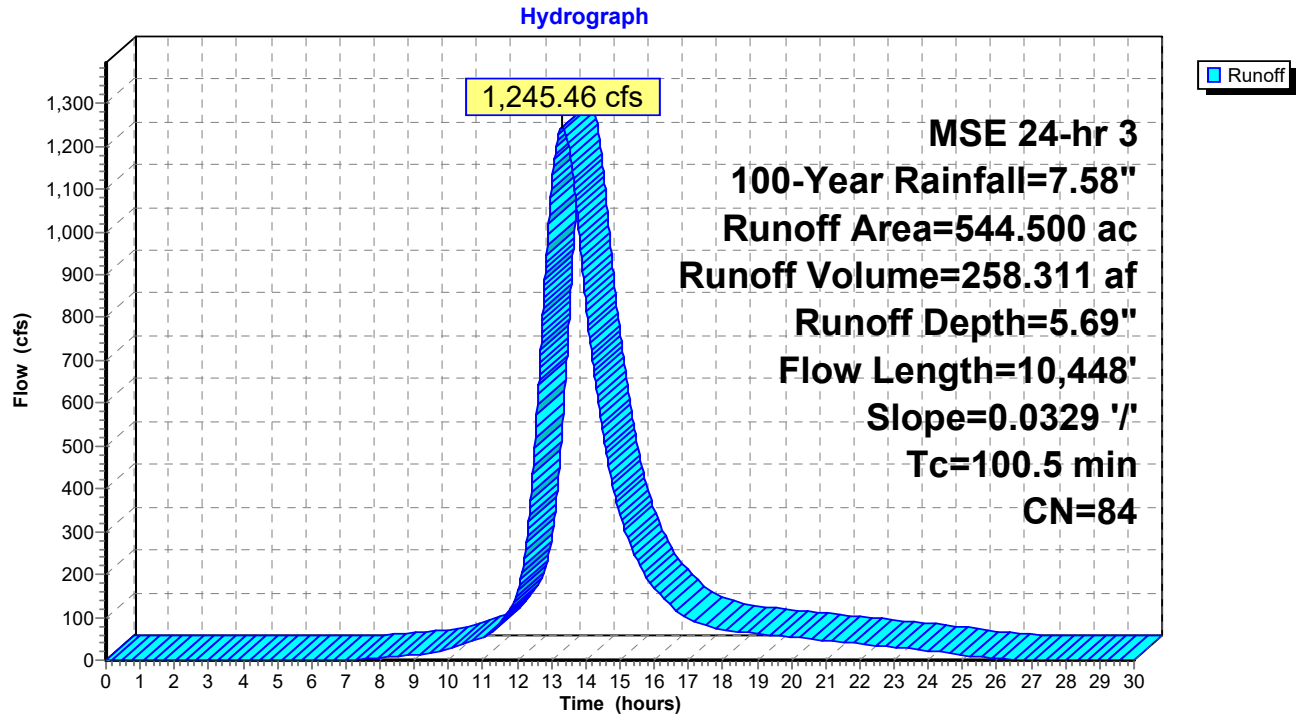
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.58"

	Area (ac)	CN	Description
*	544.500	84	
	544.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
100.5	10,448	0.0329	1.73		**Lag/CN Method,**

Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Subcatchment 544.5 AC: Remainder of Watershed to I Ave



Hydrograph for Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.03	0.00	0.00
1.50	0.05	0.00	0.00
2.00	0.07	0.00	0.00
2.50	0.10	0.00	0.00
3.00	0.13	0.00	0.00
3.50	0.16	0.00	0.00
4.00	0.20	0.00	0.00
4.50	0.24	0.00	0.00
5.00	0.28	0.00	0.00
5.50	0.33	0.00	0.00
6.00	0.39	0.00	0.00
6.50	0.44	0.00	0.03
7.00	0.50	0.01	0.48
7.50	0.57	0.02	2.03
8.00	0.63	0.03	4.75
8.50	0.71	0.05	8.26
9.00	0.78	0.07	12.33
9.50	0.91	0.11	17.23
10.00	1.04	0.17	25.91
10.50	1.19	0.24	38.87
11.00	1.46	0.39	54.33
11.50	1.88	0.66	84.52
12.00	3.51	1.94	158.26
12.50	5.70	3.92	479.35
13.00	6.12	4.31	**1,103.83**
13.50	6.39	4.57	**1,198.70**
14.00	6.54	4.70	841.17
14.50	6.67	4.83	527.91
15.00	6.80	4.95	338.72
15.50	6.87	5.02	233.02
16.00	6.95	5.09	169.60
16.50	7.01	5.15	125.26
17.00	7.08	5.21	98.23
17.50	7.14	5.27	82.18
18.00	7.19	5.32	72.49
18.50	7.25	5.37	66.60
19.00	7.30	5.42	61.88
19.50	7.34	5.46	57.73
20.00	7.38	5.50	53.74
20.50	7.42	5.54	49.75
21.00	7.45	5.57	45.82
21.50	7.48	5.60	41.97
22.00	7.51	5.63	38.10
22.50	7.53	5.65	34.16
23.00	7.55	5.67	30.22
23.50	7.57	5.68	26.34
24.00	**7.58**	**5.69**	22.45
24.50	7.58	5.69	18.25
25.00	7.58	5.69	12.69
25.50	7.58	5.69	7.01
26.00	7.58	5.69	3.35
26.50	7.58	5.69	1.60
27.00	7.58	5.69	0.75
27.50	7.58	5.69	0.34
28.00	7.58	5.69	0.15
28.50	7.58	5.69	0.06
29.00	7.58	5.69	0.02
29.50	7.58	5.69	0.00
30.00	7.58	5.69	0.00

Summary for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Runoff = 1,645.82 cfs @ 13.22 hrs, Volume= 327.194 af, Depth= 5.69"
Routed to Pond 1P : H AVENUE CULVERT

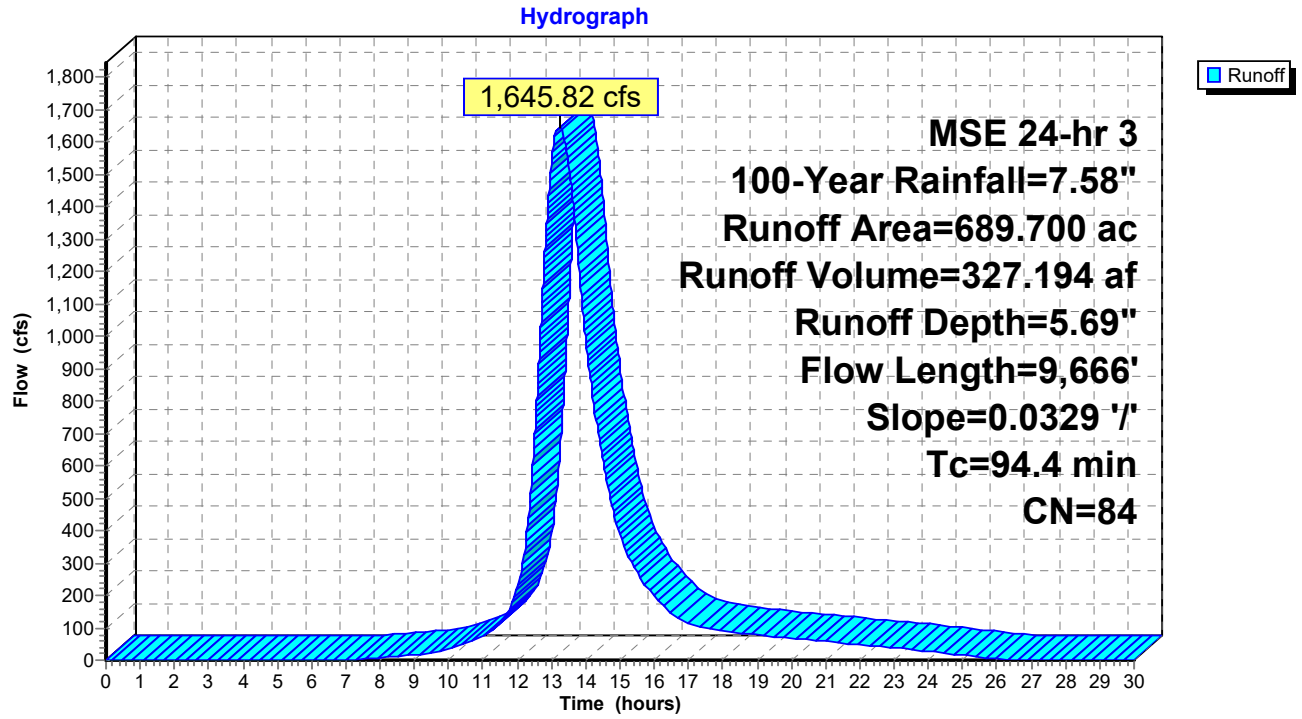
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.58"

	Area (ac)	CN	Description
*	689.700	84	
	689.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
94.4	9,666	0.0329	1.71		**Lag/CN Method,**

Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Subcatchment 689.7 AC: Watershed West of H Ave Culvert



Hydrograph for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.03	0.00	0.00
1.50	0.05	0.00	0.00
2.00	0.07	0.00	0.00
2.50	0.10	0.00	0.00
3.00	0.13	0.00	0.00
3.50	0.16	0.00	0.00
4.00	0.20	0.00	0.00
4.50	0.24	0.00	0.00
5.00	0.28	0.00	0.00
5.50	0.33	0.00	0.00
6.00	0.39	0.00	0.00
6.50	0.44	0.00	0.05
7.00	0.50	0.01	0.73
7.50	0.57	0.02	2.95
8.00	0.63	0.03	6.64
8.50	0.71	0.05	11.28
9.00	0.78	0.07	16.54
9.50	0.91	0.11	22.97
10.00	1.04	0.17	34.93
10.50	1.19	0.24	52.28
11.00	1.46	0.39	72.41
11.50	1.88	0.66	114.88
12.00	3.51	1.94	219.07
12.50	5.70	3.92	680.96
13.00	6.12	4.31	**1,533.51**
13.50	6.39	4.57	**1,527.78**
14.00	6.54	4.70	994.66
14.50	6.67	4.83	614.11
15.00	6.80	4.95	388.56
15.50	6.87	5.02	269.32
16.00	6.95	5.09	197.30
16.50	7.01	5.15	146.55
17.00	7.08	5.21	116.22
17.50	7.14	5.27	98.69
18.00	7.19	5.32	89.44
18.50	7.25	5.37	82.81
19.00	7.30	5.42	77.30
19.50	7.34	5.46	72.01
20.00	7.38	5.50	67.05
20.50	7.42	5.54	62.09
21.00	7.45	5.57	57.13
21.50	7.48	5.60	52.27
22.00	7.51	5.63	47.28
22.50	7.53	5.65	42.34
23.00	7.55	5.67	37.39
23.50	7.57	5.68	32.40
24.00	**7.58**	**5.69**	27.49
24.50	7.58	5.69	22.12
25.00	7.58	5.69	14.74
25.50	7.58	5.69	7.58
26.00	7.58	5.69	3.42
26.50	7.58	5.69	1.55
27.00	7.58	5.69	0.69
27.50	7.58	5.69	0.30
28.00	7.58	5.69	0.12
28.50	7.58	5.69	0.04
29.00	7.58	5.69	0.01
29.50	7.58	5.69	0.00
30.00	7.58	5.69	0.00

Summary for Pond 1P: H AVENUE CULVERT

Inflow Area = 689.700 ac, 0.00% Impervious, Inflow Depth = 5.69" for 100-Year event
Inflow = 1,645.82 cfs @ 13.22 hrs, Volume= 327.194 af
Outflow = 1,315.33 cfs @ 13.72 hrs, Volume= 324.770 af, Atten= 20%, Lag= 29.7 min
Primary = 1,218.01 cfs @ 13.72 hrs, Volume= 200.827 af
Routed to Pond 2P : BASIN NW OF WETLAND
Secondary = 97.32 cfs @ 13.72 hrs, Volume= 123.943 af
Routed to Pond 2P : BASIN NW OF WETLAND

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,129.11' @ 13.72 hrs Surf.Area= 63.333 ac Storage= 94.690 af

Plug-Flow detention time= 126.7 min calculated for 324.770 af (99% of inflow)
Center-of-Mass det. time= 122.0 min (984.7 - 862.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,124.00'	161.110 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,124.00	0.010	0.000	0.000
1,126.00	1.650	1.660	1.660
1,128.00	36.300	37.950	39.610
1,130.00	85.200	121.500	161.110

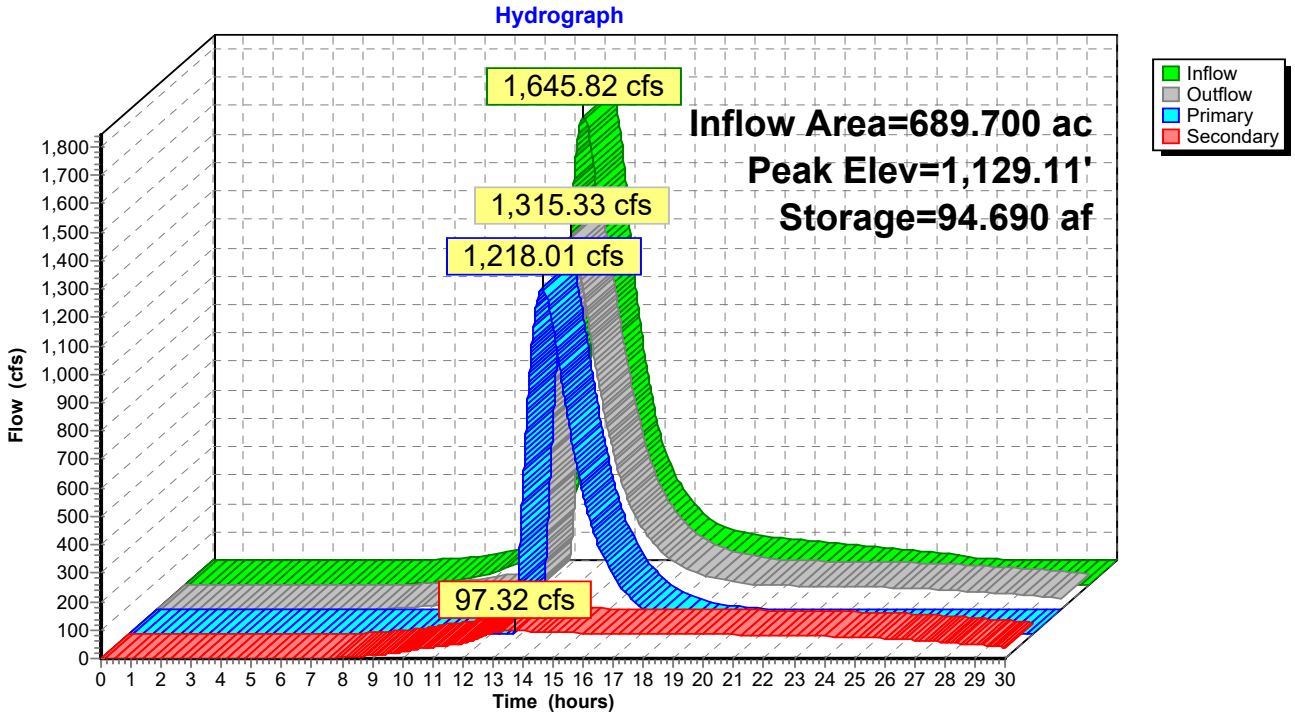
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,124.00'	**60.0" W x 24.0" H Box 5'x2' CULVERT** L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,124.00' / 1,124.00' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 10.00 sf
#2	Primary	1,128.05'	**342.0' long + 100.0 '/' SideZ x 25.0' breadth H Ave Road Surface** 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

Primary OutFlow Max=1,217.74 cfs @ 13.72 hrs HW=1,129.11' (Free Discharge)
└**2=H Ave Road Surface** (Weir Controls 1,217.74 cfs @ 2.58 fps)

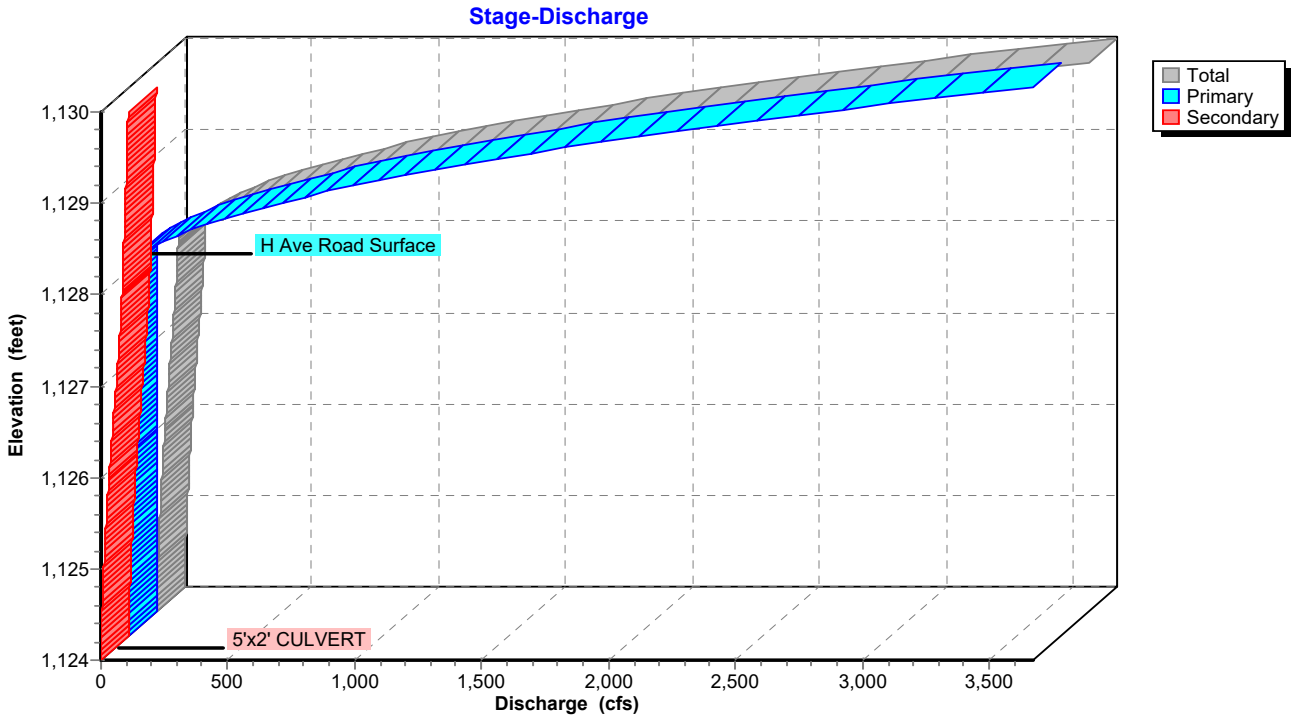
Secondary OutFlow Max=97.32 cfs @ 13.72 hrs HW=1,129.11' (Free Discharge)
└**1=5'x2' CULVERT** (Inlet Controls 97.32 cfs @ 9.73 fps)



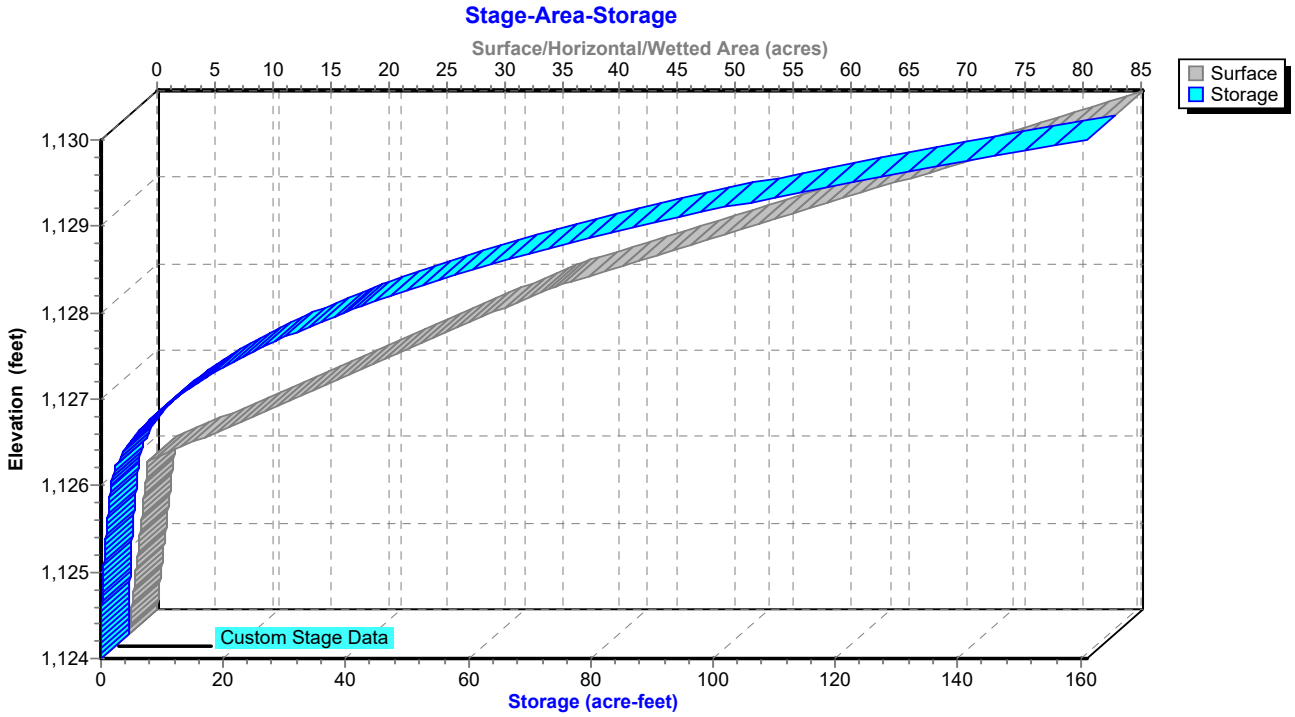
Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Hydrograph for Pond 1P: H AVENUE CULVERT

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,124.00	0.00	0.00	0.00
1.00	0.00	0.000	1,124.00	0.00	0.00	0.00
2.00	0.00	0.000	1,124.00	0.00	0.00	0.00
3.00	0.00	0.000	1,124.00	0.00	0.00	0.00
4.00	0.00	0.000	1,124.00	0.00	0.00	0.00
5.00	0.00	0.000	1,124.00	0.00	0.00	0.00
6.00	0.00	0.000	1,124.00	0.00	0.00	0.00
7.00	0.73	0.008	1,124.13	0.29	0.00	0.29
8.00	6.64	0.129	1,124.55	3.98	0.00	3.98
9.00	16.54	0.451	1,125.04	11.44	0.00	11.44
10.00	34.93	1.066	1,125.60	22.82	0.00	22.82
11.00	72.41	2.763	1,126.27	39.46	0.00	39.46
12.00	219.07	9.221	1,126.84	54.43	0.00	54.43
13.00	**1,533.51**	**63.325**	**1,128.55**	**456.53**	**366.10**	**90.43**
14.00	**994.66**	**91.609**	**1,129.06**	**1,219.60**	**1,122.88**	**96.73**
15.00	388.56	69.780	1,128.68	615.92	523.89	92.04
16.00	197.30	56.601	1,128.41	306.16	217.56	88.60
17.00	116.22	49.745	1,128.26	177.19	90.65	86.55
18.00	89.44	45.940	1,128.16	122.96	37.66	85.30
19.00	77.30	43.752	1,128.11	99.48	14.95	84.54
20.00	67.05	42.098	1,128.07	86.65	2.71	83.94
21.00	57.13	40.274	1,128.02	83.26	0.00	83.26
22.00	47.28	37.749	1,127.95	82.27	0.00	82.27
23.00	37.39	34.507	1,127.85	80.68	0.00	80.68
24.00	27.49	30.620	1,127.74	78.09	0.00	78.09
25.00	14.74	26.098	1,127.59	74.67	0.00	74.67
26.00	3.42	20.782	1,127.39	69.96	0.00	69.96
27.00	0.69	15.379	1,127.17	64.02	0.00	64.02
28.00	0.12	10.408	1,126.91	56.65	0.00	56.65
29.00	0.01	6.082	1,126.63	49.28	0.00	49.28
30.00	0.00	2.440	1,126.22	38.02	0.00	38.02

Stage-Discharge for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,124.00	0.00	0.00	0.00
1,124.10	0.16	0.00	0.16
1,124.20	0.64	0.00	0.64
1,124.30	1.37	0.00	1.37
1,124.40	2.30	0.00	2.30
1,124.50	3.40	0.00	3.40
1,124.60	4.64	0.00	4.64
1,124.70	6.01	0.00	6.01
1,124.80	7.50	0.00	7.50
1,124.90	9.10	0.00	9.10
1,125.00	10.80	0.00	10.80
1,125.10	12.59	0.00	12.59
1,125.20	14.47	0.00	14.47
1,125.30	16.44	0.00	16.44
1,125.40	18.49	0.00	18.49
1,125.50	20.61	0.00	20.61
1,125.60	22.82	0.00	22.82
1,125.70	25.10	0.00	25.10
1,125.80	27.44	0.00	27.44
1,125.90	29.86	0.00	29.86
1,126.00	32.34	0.00	32.34
1,126.10	34.89	0.00	34.89
1,126.20	37.50	0.00	37.50
1,126.30	40.17	0.00	40.17
1,126.40	42.91	0.00	42.91
1,126.50	45.70	0.00	45.70
1,126.60	48.55	0.00	48.55
1,126.70	49.59	0.00	49.59
1,126.80	53.02	0.00	53.02
1,126.90	56.23	0.00	56.23
1,127.00	59.28	0.00	59.28
1,127.10	62.17	0.00	62.17
1,127.20	64.93	0.00	64.93
1,127.30	67.59	0.00	67.59
1,127.40	70.14	0.00	70.14
1,127.50	72.60	0.00	72.60
1,127.60	74.98	0.00	74.98
1,127.70	77.29	0.00	77.29
1,127.80	79.53	0.00	79.53
1,127.90	81.58	0.00	81.58
1,128.00	83.00	0.00	83.00
1,128.10	94.77	10.37	84.40
1,128.20	140.89	55.12	85.78
1,128.30	208.62	121.50	87.13
1,128.40	294.93	206.47	88.46
1,128.50	397.86	308.09	89.77
1,128.60	516.16	425.10	91.06
1,128.70	646.72	554.38	92.33
1,128.80	786.82	693.24	93.59
1,128.90	942.26	847.43	94.82
1,129.00	1,114.94	1,018.90	96.05
1,129.10	1,303.85	1,206.60	97.25
1,129.20	1,510.10	1,411.66	98.44
1,129.30	1,730.38	1,630.76	99.62
1,129.40	1,964.23	1,863.45	100.78
1,129.50	2,211.09	2,109.16	101.93
1,129.60	2,470.36	2,367.29	103.06
1,129.70	2,746.35	2,642.17	104.19
1,129.80	3,039.97	2,934.67	105.30
1,129.90	3,349.12	3,242.72	106.40
1,130.00	**3,673.94**	**3,566.46**	**107.49**

Stage-Area-Storage for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,124.00	0.010	0.000
1,124.10	0.092	0.005
1,124.20	0.174	0.018
1,124.30	0.256	0.040
1,124.40	0.338	0.070
1,124.50	0.420	0.107
1,124.60	0.502	0.154
1,124.70	0.584	0.208
1,124.80	0.666	0.270
1,124.90	0.748	0.341
1,125.00	0.830	0.420
1,125.10	0.912	0.507
1,125.20	0.994	0.602
1,125.30	1.076	0.706
1,125.40	1.158	0.818
1,125.50	1.240	0.937
1,125.60	1.322	1.066
1,125.70	1.404	1.202
1,125.80	1.486	1.346
1,125.90	1.568	1.499
1,126.00	1.650	1.660
1,126.10	3.382	1.912
1,126.20	5.115	2.337
1,126.30	6.847	2.935
1,126.40	8.580	3.706
1,126.50	10.312	4.651
1,126.60	12.045	5.768
1,126.70	13.778	7.060
1,126.80	15.510	8.524
1,126.90	17.243	10.162
1,127.00	18.975	11.972
1,127.10	20.707	13.957
1,127.20	22.440	16.114
1,127.30	24.172	18.445
1,127.40	25.905	20.949
1,127.50	27.637	23.626
1,127.60	29.370	26.476
1,127.70	31.103	29.500
1,127.80	32.835	32.696
1,127.90	34.568	36.067
1,128.00	36.300	39.610
1,128.10	38.745	43.362
1,128.20	41.190	47.359
1,128.30	43.635	51.600
1,128.40	46.080	56.086
1,128.50	48.525	60.816
1,128.60	50.970	65.791
1,128.70	53.415	71.010
1,128.80	55.860	76.474
1,128.90	58.305	82.182
1,129.00	60.750	88.135
1,129.10	63.195	94.332
1,129.20	65.640	100.774
1,129.30	68.085	107.460
1,129.40	70.530	114.391
1,129.50	72.975	121.566
1,129.60	75.420	128.986
1,129.70	77.865	136.650
1,129.80	80.310	144.559
1,129.90	82.755	152.712
1,130.00	**85.200**	**161.110**

Summary for Pond 2P: BASIN NW OF WETLAND

[79] Warning: Submerged Pond 1P Secondary device # 1 by 2.19'

Inflow Area = 848.100 ac, 0.00% Impervious, Inflow Depth > 5.66" for 100-Year event
Inflow = 1,410.37 cfs @ 13.68 hrs, Volume= 399.915 af
Outflow = 798.84 cfs @ 14.73 hrs, Volume= 341.214 af, Atten= 43%, Lag= 63.1 min
Primary = 798.84 cfs @ 14.73 hrs, Volume= 341.214 af
Routed to Pond I AVENUE : I AVENUE CULVERTS
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,126.19' @ 14.73 hrs Surf.Area= 73.102 ac Storage= 155.328 af

Plug-Flow detention time= 211.8 min calculated for 341.100 af (85% of inflow)
Center-of-Mass det. time= 122.6 min (1,073.8 - 951.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,121.00'	311.173 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,121.00	1.997	0.000	0.000
1,122.00	7.899	4.948	4.948
1,123.00	16.217	12.058	17.006
1,124.00	30.839	23.528	40.534
1,126.00	70.400	101.239	141.773
1,128.00	99.000	169.400	311.173

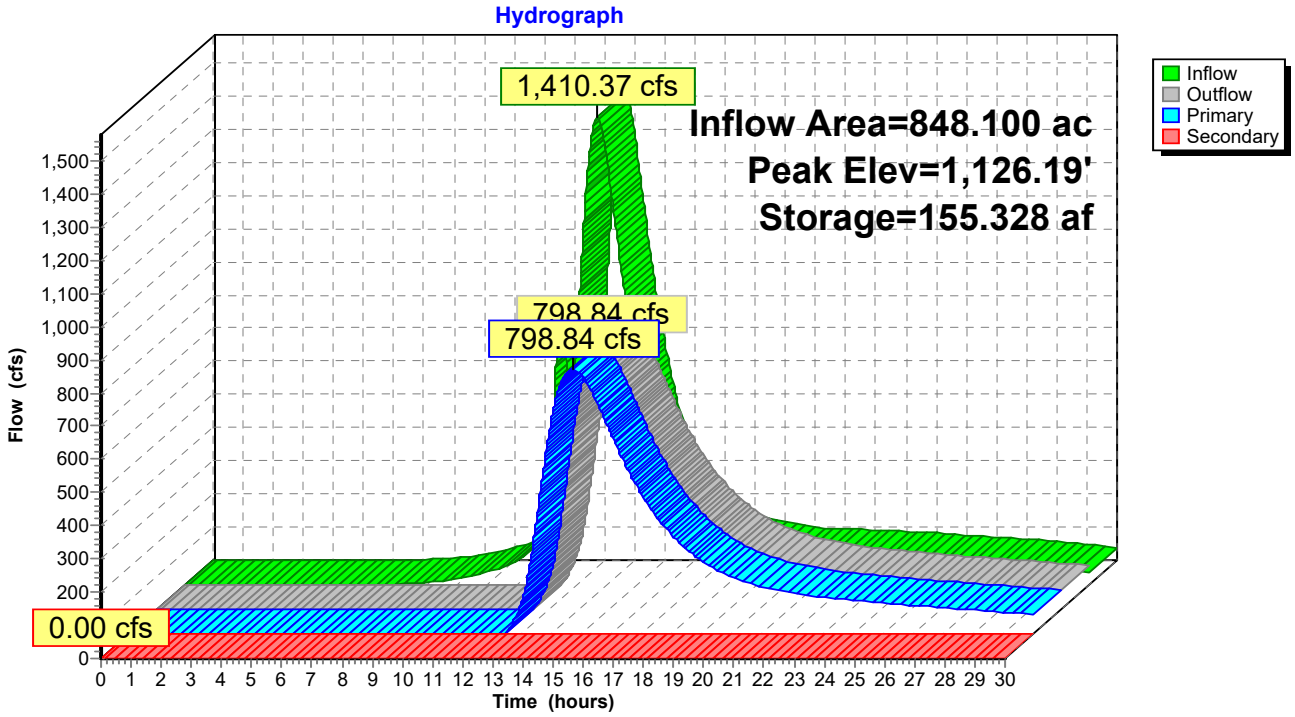
Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.00'	**50.0' long + 25.0 '/' SideZ x 50.0' breadth Saddle to Wetland** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	1,127.00'	**300.0' long + 50.0 '/' SideZ x 50.0' breadth Saddle Away from Wetland** 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

Primary OutFlow Max=798.73 cfs @ 14.73 hrs HW=1,126.19' (Free Discharge)
↑—**1=Saddle to Wetland** (Weir Controls 798.73 cfs @ 3.48 fps)

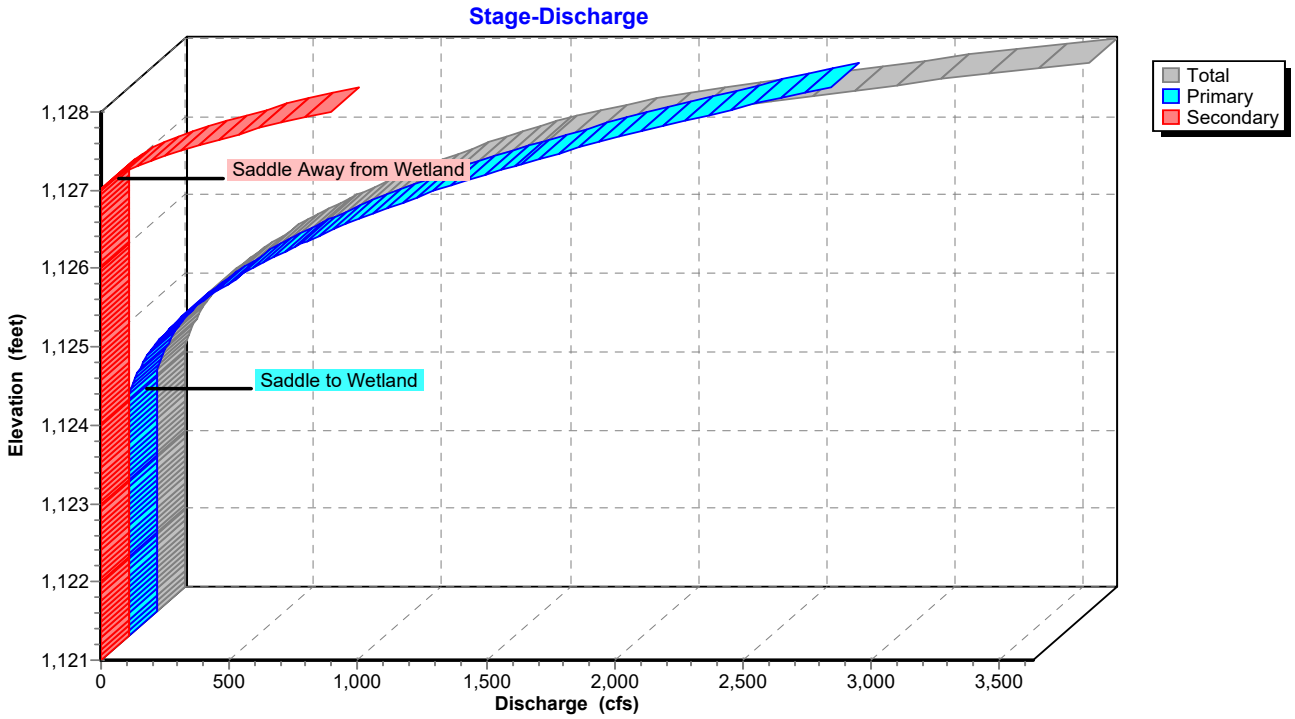
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,121.00' (Free Discharge)
↑—**2=Saddle Away from Wetland** (Controls 0.00 cfs)



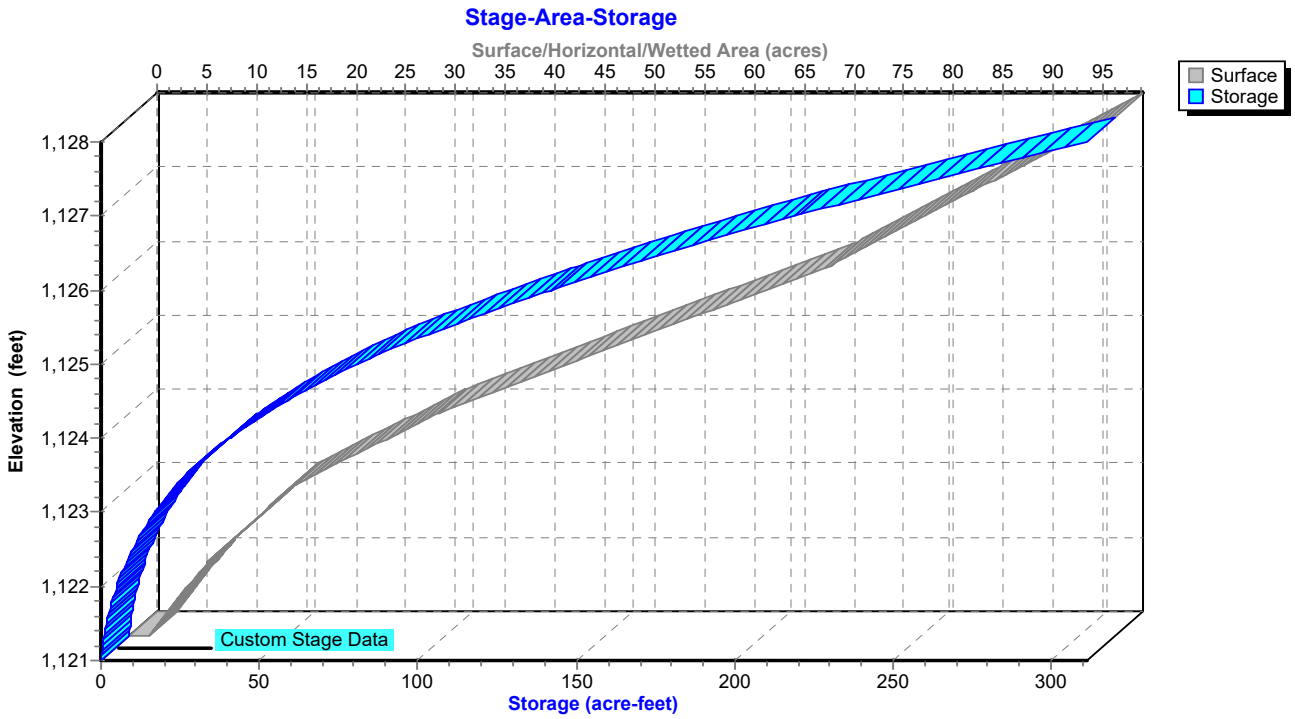
Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Hydrograph for Pond 2P: BASIN NW OF WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,121.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,121.00	0.00	0.00	0.00
2.00	0.00	0.000	1,121.00	0.00	0.00	0.00
3.00	0.00	0.000	1,121.00	0.00	0.00	0.00
4.00	0.00	0.000	1,121.00	0.00	0.00	0.00
5.00	0.00	0.000	1,121.00	0.00	0.00	0.00
6.00	0.00	0.000	1,121.00	0.00	0.00	0.00
7.00	1.41	0.032	1,121.01	0.00	0.00	0.00
8.00	7.49	0.365	1,121.15	0.00	0.00	0.00
9.00	17.70	1.385	1,121.43	0.00	0.00	0.00
10.00	38.50	3.617	1,121.82	0.00	0.00	0.00
11.00	72.15	7.993	1,122.33	0.00	0.00	0.00
12.00	221.44	17.821	1,123.05	0.00	0.00	0.00
13.00	**720.86**	64.817	1,124.65	88.99	88.99	0.00
14.00	**1,281.72**	**138.179**	**1,125.95**	**636.57**	**636.57**	0.00
15.00	655.62	**153.785**	**1,126.17**	**783.71**	**783.71**	0.00
16.00	329.22	134.467	1,125.89	602.88	602.88	0.00
17.00	197.24	113.480	1,125.57	422.73	422.73	0.00
18.00	140.76	97.631	1,125.30	299.67	299.67	0.00
19.00	115.02	86.779	1,125.11	221.43	221.43	0.00
20.00	99.93	79.455	1,124.96	172.68	172.68	0.00
21.00	94.28	74.503	1,124.86	142.18	142.18	0.00
22.00	91.01	71.250	1,124.79	123.28	123.28	0.00
23.00	87.16	68.979	1,124.74	110.84	110.84	0.00
24.00	82.28	67.228	1,124.71	101.47	101.47	0.00
25.00	74.86	65.657	1,124.67	93.34	93.34	0.00
26.00	69.96	64.243	1,124.64	86.03	86.03	0.00
27.00	64.02	62.949	1,124.61	79.51	79.51	0.00
28.00	56.65	61.645	1,124.58	72.95	72.95	0.00
29.00	49.28	60.231	1,124.54	66.03	66.03	0.00
30.00	38.02	58.710	1,124.51	58.65	58.65	0.00

Stage-Discharge for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,121.00	0.00	0.00	0.00
1,121.10	0.00	0.00	0.00
1,121.20	0.00	0.00	0.00
1,121.30	0.00	0.00	0.00
1,121.40	0.00	0.00	0.00
1,121.50	0.00	0.00	0.00
1,121.60	0.00	0.00	0.00
1,121.70	0.00	0.00	0.00
1,121.80	0.00	0.00	0.00
1,121.90	0.00	0.00	0.00
1,122.00	0.00	0.00	0.00
1,122.10	0.00	0.00	0.00
1,122.20	0.00	0.00	0.00
1,122.30	0.00	0.00	0.00
1,122.40	0.00	0.00	0.00
1,122.50	0.00	0.00	0.00
1,122.60	0.00	0.00	0.00
1,122.70	0.00	0.00	0.00
1,122.80	0.00	0.00	0.00
1,122.90	0.00	0.00	0.00
1,123.00	0.00	0.00	0.00
1,123.10	0.00	0.00	0.00
1,123.20	0.00	0.00	0.00
1,123.30	0.00	0.00	0.00
1,123.40	0.00	0.00	0.00
1,123.50	0.00	0.00	0.00
1,123.60	0.00	0.00	0.00
1,123.70	0.00	0.00	0.00
1,123.80	0.00	0.00	0.00
1,123.90	0.00	0.00	0.00
1,124.00	0.00	0.00	0.00
1,124.10	4.41	4.41	0.00
1,124.20	12.94	12.94	0.00
1,124.30	24.75	24.75	0.00
1,124.40	39.62	39.62	0.00
1,124.50	57.28	57.28	0.00
1,124.60	77.80	77.80	0.00
1,124.70	100.08	100.08	0.00
1,124.80	124.68	124.68	0.00
1,124.90	152.99	152.99	0.00
1,125.00	184.10	184.10	0.00
1,125.10	218.88	218.88	0.00
1,125.20	256.81	256.81	0.00
1,125.30	297.39	297.39	0.00
1,125.40	341.11	341.11	0.00
1,125.50	387.26	387.26	0.00
1,125.60	436.47	436.47	0.00
1,125.70	489.68	489.68	0.00
1,125.80	546.21	546.21	0.00
1,125.90	606.13	606.13	0.00
1,126.00	669.49	669.49	0.00
1,126.10	736.33	736.33	0.00
1,126.20	806.71	806.71	0.00
1,126.30	880.68	880.68	0.00
1,126.40	958.29	958.29	0.00
1,126.50	1,039.60	1,039.60	0.00
1,126.60	1,124.65	1,124.65	0.00
1,126.70	1,213.49	1,213.49	0.00
1,126.80	1,306.17	1,306.17	0.00
1,126.90	1,402.74	1,402.74	0.00
1,127.00	1,503.25	1,503.25	0.00
1,127.10	1,633.51	1,607.74	25.76
1,127.20	1,790.10	1,716.27	73.83
1,127.30	1,966.79	1,828.88	137.91
1,127.40	2,161.46	1,945.61	215.84
1,127.50	2,371.99	2,066.52	305.47
1,127.60	2,598.21	2,191.64	406.57
1,127.70	2,833.93	2,321.03	512.90
1,127.80	3,081.88	2,454.72	627.16
1,127.90	3,348.70	2,592.76	755.93
1,128.00	**3,629.40**	**2,735.20**	**894.20**

Stage-Area-Storage for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,121.00	1.997	0.000
1,121.10	2.587	0.229
1,121.20	3.177	0.517
1,121.30	3.768	0.865
1,121.40	4.358	1.271
1,121.50	4.948	1.736
1,121.60	5.538	2.261
1,121.70	6.128	2.844
1,121.80	6.719	3.486
1,121.90	7.309	4.188
1,122.00	7.899	4.948
1,122.10	8.731	5.779
1,122.20	9.563	6.694
1,122.30	10.394	7.692
1,122.40	11.226	8.773
1,122.50	12.058	9.937
1,122.60	12.890	11.185
1,122.70	13.722	12.515
1,122.80	14.553	13.929
1,122.90	15.385	15.426
1,123.00	16.217	17.006
1,123.10	17.679	18.701
1,123.20	19.141	20.542
1,123.30	20.604	22.529
1,123.40	22.066	24.663
1,123.50	23.528	26.942
1,123.60	24.990	29.368
1,123.70	26.452	31.940
1,123.80	27.915	34.659
1,123.90	29.377	37.523
1,124.00	30.839	40.534
1,124.10	32.817	43.717
1,124.20	34.795	47.097
1,124.30	36.773	50.676
1,124.40	38.751	54.452
1,124.50	40.729	58.426
1,124.60	42.707	62.598
1,124.70	44.685	66.968
1,124.80	46.663	71.535
1,124.90	48.641	76.300
1,125.00	50.619	81.263
1,125.10	52.598	86.424
1,125.20	54.576	91.783
1,125.30	56.554	97.339
1,125.40	58.532	103.093
1,125.50	60.510	109.046
1,125.60	62.488	115.195
1,125.70	64.466	121.543
1,125.80	66.444	128.089
1,125.90	68.422	134.832
1,126.00	70.400	141.773
1,126.10	71.830	148.884
1,126.20	73.260	156.139
1,126.30	74.690	163.536
1,126.40	76.120	171.077
1,126.50	77.550	178.760
1,126.60	78.980	186.587
1,126.70	80.410	194.557
1,126.80	81.840	202.669
1,126.90	83.270	210.925
1,127.00	84.700	219.323
1,127.10	86.130	227.864
1,127.20	87.560	236.549
1,127.30	88.990	245.376
1,127.40	90.420	254.347
1,127.50	91.850	263.460
1,127.60	93.280	272.717
1,127.70	94.710	282.117
1,127.80	96.140	291.659
1,127.90	97.570	301.345
1,128.00	**99.000**	**311.173**

Summary for Pond I AVENUE: I AVENUE CULVERTS

Inflow Area = 1,705.100 ac, 0.00% Impervious, Inflow Depth > 5.26" for 100-Year event
Inflow = 2,220.64 cfs @ 13.40 hrs, Volume= 747.776 af
Outflow = 674.44 cfs @ 16.57 hrs, Volume= 747.685 af, Atten= 70%, Lag= 190.1 min
Primary = 485.46 cfs @ 16.57 hrs, Volume= 561.819 af
Secondary = 183.76 cfs @ 16.57 hrs, Volume= 185.424 af
Tertiary = 5.22 cfs @ 16.57 hrs, Volume= 0.442 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,115.94' @ 16.57 hrs Surf.Area= 78.944 ac Storage= 295.584 af

Plug-Flow detention time= 200.0 min calculated for 747.685 af (100% of inflow)
Center-of-Mass det. time= 199.9 min (1,160.1 - 960.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,098.00'	389.351 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,098.00	0.000	0.000	0.000
1,099.00	0.001	0.001	0.001
1,100.00	0.001	0.001	0.002
1,101.00	0.008	0.005	0.006
1,102.00	0.027	0.017	0.023
1,103.00	0.110	0.069	0.092
1,104.00	0.241	0.175	0.267
1,105.00	0.739	0.490	0.757
1,106.00	2.505	1.622	2.380
1,107.00	4.643	3.574	5.954
1,108.00	6.580	5.611	11.565
1,109.00	10.976	8.778	20.343
1,110.00	16.743	13.859	34.202
1,111.00	23.315	20.029	54.231
1,112.00	31.569	27.442	81.673
1,113.00	42.966	37.267	118.941
1,114.00	53.960	48.463	167.404
1,115.00	65.810	59.885	227.289
1,116.00	79.729	72.769	300.058
1,117.00	98.855	89.292	389.351

Device	Routing	Invert	Outlet Devices
#1	Primary	1,100.22'	**72.0" Round 72" RCP CULVERT** L= 85.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,100.22' / 1,098.91' S= 0.0153 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 28.27 sf
#2	Secondary	1,104.72'	**48.0" Round 48" RCP CULVERT** L= 62.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,104.72' / 1,104.41' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf
#3	Tertiary	1,115.86'	**I AVENUE, C= 3.27** Offset (feet) 0.00 115.59 162.20 164.26 214.26 232.65 343.45

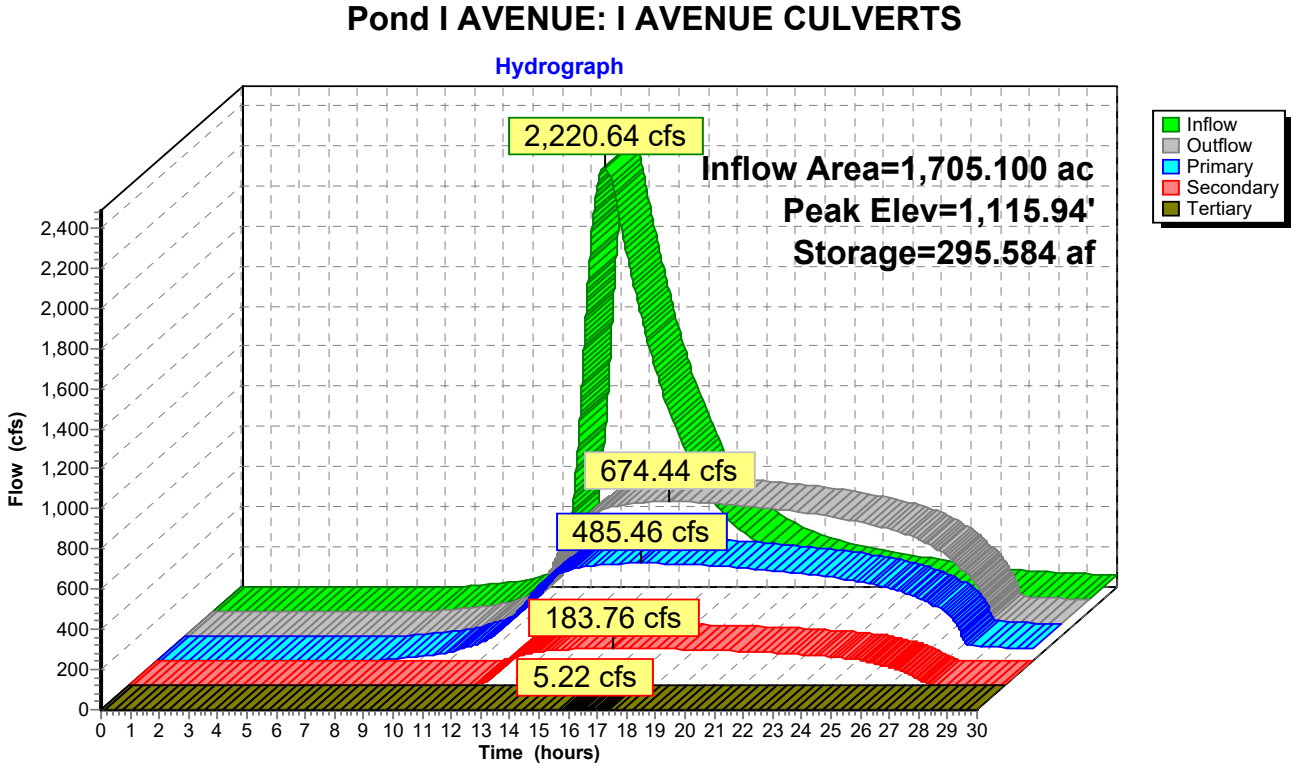
Height (feet) 1.14 0.14 0.00 0.00 0.09 0.14 1.14

Primary OutFlow Max=485.49 cfs @ 16.57 hrs HW=1,115.94' (Free Discharge)
└**1=72" RCP CULVERT** (Barrel Controls 485.49 cfs @ 17.17 fps)

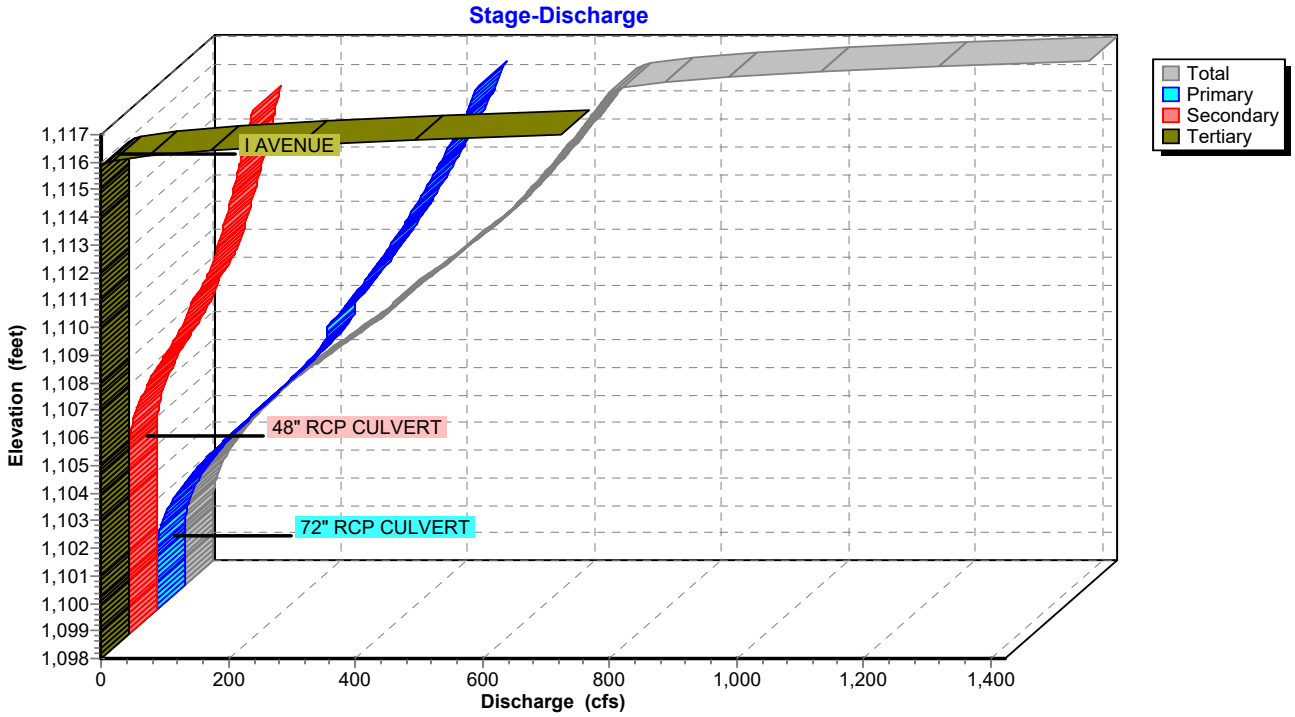
Secondary OutFlow Max=183.76 cfs @ 16.57 hrs HW=1,115.94' (Free Discharge)
└**2=48" RCP CULVERT** (Inlet Controls 183.76 cfs @ 14.62 fps)

Tertiary OutFlow Max=2.51 cfs @ 16.57 hrs HW=1,115.94' (Free Discharge)
└**3=I AVENUE** (Weir Controls 2.51 cfs @ 0.39 fps)

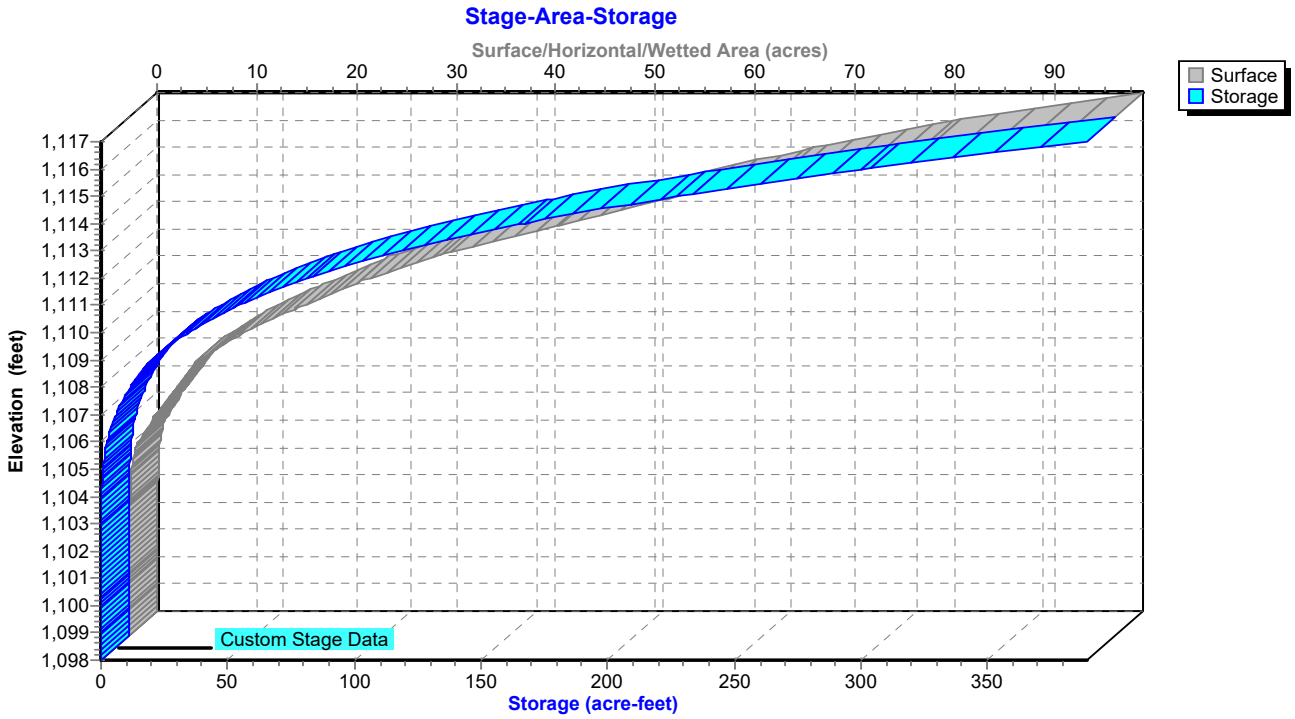




Pond I AVENUE: I AVENUE CULVERTS



Pond I AVENUE: I AVENUE CULVERTS



Hydrograph for Pond I AVENUE: I AVENUE CULVERTS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
1.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
2.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
3.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
4.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
5.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
6.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
7.00	0.86	0.003	1,100.53	0.83	0.83	0.00	0.00
8.00	7.94	0.008	1,101.18	7.86	7.86	0.00	0.00
9.00	20.09	0.018	1,101.76	19.94	19.94	0.00	0.00
10.00	42.38	0.048	1,102.50	41.50	41.50	0.00	0.00
11.00	88.17	0.188	1,103.63	85.07	85.07	0.00	0.00
12.00	262.07	1.860	1,105.77	192.38	184.98	7.40	0.00
13.00	**1,932.52**	52.642	1,110.93	480.69	358.64	122.05	0.00
14.00	**1,902.96**	180.671	1,114.24	612.31	446.40	165.91	0.00
15.00	1,286.51	258.632	1,115.45	653.41	474.59	178.82	0.00
16.00	857.15	**291.427**	**1,115.89**	**669.44**	**484.31**	**183.23**	**1.90**
17.00	571.36	**293.736**	**1,115.92**	**672.19**	**484.94**	**183.52**	**3.73**
18.00	412.15	278.662	1,115.72	662.20	480.64	181.56	0.00
19.00	318.01	254.227	1,115.39	651.38	473.20	178.18	0.00
20.00	256.52	224.542	1,114.96	636.96	463.30	173.66	0.00
21.00	213.64	191.944	1,114.43	619.07	451.03	168.04	0.00
22.00	182.55	157.957	1,113.82	597.53	436.29	161.23	0.00
23.00	157.73	123.646	1,113.11	571.36	418.45	152.91	0.00
24.00	136.10	89.862	1,112.25	538.19	395.93	142.26	0.00
25.00	112.32	57.515	1,111.14	491.47	364.71	126.76	0.00
26.00	90.71	28.403	1,109.63	410.38	317.49	92.89	0.00
27.00	80.51	6.617	1,107.14	276.96	244.73	32.23	0.00
28.00	73.14	0.140	1,103.36	73.50	73.50	0.00	0.00
29.00	66.05	0.114	1,103.18	66.34	66.34	0.00	0.00
30.00	58.65	0.091	1,102.99	58.94	58.94	0.00	0.00

Stage-Discharge for Pond I AVENUE: I AVENUE CULVERTS

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1,098.00	0.00	0.00	0.00	0.00
1,098.50	0.00	0.00	0.00	0.00
1,099.00	0.00	0.00	0.00	0.00
1,099.50	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	0.00	0.00
1,100.50	0.61	0.61	0.00	0.00
1,101.00	5.15	5.15	0.00	0.00
1,101.50	13.88	13.88	0.00	0.00
1,102.00	26.18	26.18	0.00	0.00
1,102.50	41.52	41.52	0.00	0.00
1,103.00	59.41	59.41	0.00	0.00
1,103.50	79.41	79.41	0.00	0.00
1,104.00	101.10	101.10	0.00	0.00
1,104.50	124.05	124.05	0.00	0.00
1,105.00	148.39	147.81	0.58	0.00
1,105.50	176.12	171.89	4.24	0.00
1,106.00	206.21	195.69	10.52	0.00
1,106.50	237.48	218.53	18.95	0.00
1,107.00	268.61	239.47	29.14	0.00
1,107.50	297.80	257.09	40.70	0.00
1,108.00	321.54	268.33	53.21	0.00
1,108.50	343.07	276.93	66.15	0.00
1,109.00	374.43	295.59	78.85	0.00
1,109.50	403.49	313.13	90.36	0.00
1,110.00	428.24	329.75	98.50	0.00
1,110.50	456.69	345.56	111.13	0.00
1,111.00	484.40	360.69	123.71	0.00
1,111.50	507.49	375.20	132.29	0.00
1,112.00	528.21	389.17	139.03	0.00
1,112.50	548.13	402.66	145.47	0.00
1,113.00	567.34	415.71	151.63	0.00
1,113.50	585.92	428.37	157.55	0.00
1,114.00	603.92	440.66	163.26	0.00
1,114.50	621.39	452.62	168.77	0.00
1,115.00	638.37	464.27	174.11	0.00
1,115.50	654.92	475.63	179.29	0.00
1,116.00	679.75	486.69	184.32	8.74
1,116.50	904.83	496.12	189.22	219.49
1,117.00	**1,422.27**	**505.37**	**194.00**	**722.89**

Stage-Area-Storage for Pond I AVENUE: I AVENUE CULVERTS

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,098.00	0.000	0.000
1,098.20	0.000	0.000
1,098.40	0.000	0.000
1,098.60	0.001	0.000
1,098.80	0.001	0.000
1,099.00	0.001	0.001
1,099.20	0.001	0.001
1,099.40	0.001	0.001
1,099.60	0.001	0.001
1,099.80	0.001	0.001
1,100.00	0.001	0.002
1,100.20	0.002	0.002
1,100.40	0.004	0.002
1,100.60	0.005	0.003
1,100.80	0.007	0.005
1,101.00	0.008	0.006
1,101.20	0.012	0.008
1,101.40	0.016	0.011
1,101.60	0.019	0.014
1,101.80	0.023	0.018
1,102.00	0.027	0.023
1,102.20	0.044	0.031
1,102.40	0.060	0.041
1,102.60	0.077	0.055
1,102.80	0.093	0.072
1,103.00	0.110	0.092
1,103.20	0.136	0.117
1,103.40	0.162	0.146
1,103.60	0.189	0.182
1,103.80	0.215	0.222
1,104.00	0.241	0.267
1,104.20	0.341	0.326
1,104.40	0.440	0.404
1,104.60	0.540	0.502
1,104.80	0.639	0.620
1,105.00	0.739	0.757
1,105.20	1.092	0.941
1,105.40	1.445	1.194
1,105.60	1.799	1.519
1,105.80	2.152	1.914
1,106.00	2.505	2.380
1,106.20	2.933	2.923
1,106.40	3.360	3.553
1,106.60	3.788	4.267
1,106.80	4.215	5.068
1,107.00	4.643	5.954
1,107.20	5.030	6.921
1,107.40	5.418	7.966
1,107.60	5.805	9.088
1,107.80	6.193	10.288
1,108.00	6.580	11.565
1,108.20	7.459	12.969
1,108.40	8.338	14.549
1,108.60	9.218	16.304
1,108.80	10.097	18.236
1,109.00	10.976	20.343
1,109.20	12.129	22.654
1,109.40	13.283	25.195
1,109.60	14.436	27.967
1,109.80	15.590	30.969
1,110.00	16.743	34.202
1,110.20	18.057	37.683
1,110.40	19.372	41.425
1,110.60	20.686	45.431
1,110.80	22.001	49.700
1,111.00	23.315	54.231
1,111.20	24.966	59.060
1,111.40	26.617	64.218
1,111.60	28.267	69.706
1,111.80	29.918	75.525
1,112.00	31.569	81.673
1,112.20	33.848	88.215
1,112.40	36.128	95.213
1,112.60	38.407	102.666
1,112.80	40.687	110.576
1,113.00	42.966	118.941
1,113.20	45.165	127.754
1,113.40	47.364	137.007
1,113.60	49.562	146.700
1,113.80	51.761	156.832
1,114.00	53.960	167.404
1,114.20	56.330	178.433
1,114.40	58.700	189.936
1,114.60	61.070	201.913
1,114.80	63.440	214.364
1,115.00	65.810	227.289
1,115.20	68.594	240.729
1,115.40	71.378	254.727
1,115.60	74.161	269.280
1,115.80	76.945	284.391
1,116.00	79.729	300.058
1,116.20	83.554	316.387
1,116.40	87.379	333.480
1,116.60	91.205	351.339
1,116.80	95.030	369.962
1,117.00	**98.855**	**389.351**

Events for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	2.70	166.34	16.807	1.27
2-Year	3.10	209.81	21.106	1.60
5-Year	3.85	294.17	29.561	2.24
10-Year	4.55	374.65	37.773	2.86
25-Year	5.63	501.48	50.839	3.85
50-Year	6.57	612.57	62.470	4.73
100-Year	**7.58**	**732.08**	**75.145**	**5.69**

Events for Subcatchment 312.5 AC: South Watershed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	2.70	170.84	33.158	1.27
2-Year	3.10	216.52	41.639	1.60
5-Year	3.85	305.61	58.319	2.24
10-Year	4.55	391.22	74.521	2.86
25-Year	5.63	525.70	100.298	3.85
50-Year	6.57	643.84	123.243	4.73
100-Year	**7.58**	**771.19**	**148.250**	**5.69**

Events for Subcatchment 544.5 AC: Remainder of Watershed to I Ave

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	2.70	274.71	57.774	1.27
2-Year	3.10	347.53	72.552	1.60
5-Year	3.85	491.45	101.614	2.24
10-Year	4.55	629.90	129.846	2.86
25-Year	5.63	847.59	174.759	3.85
50-Year	6.57	1,039.01	214.739	4.73
100-Year	**7.58**	**1,245.46**	**258.311**	**5.69**

Events for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	2.70	367.40	73.180	1.27
2-Year	3.10	464.64	91.899	1.60
5-Year	3.85	654.01	128.711	2.24
10-Year	4.55	835.77	164.472	2.86
25-Year	5.63	1,120.78	221.362	3.85
50-Year	6.57	1,373.45	272.003	4.73
100-Year	**7.58**	**1,645.82**	**327.194**	**5.69**

Events for Pond 1P: H AVENUE CULVERT

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-Year	367.40	82.04	0.00	82.04	1,127.93	37.189
2-Year	464.64	136.75	51.08	85.66	1,128.19	47.026
5-Year	654.01	318.14	229.37	88.76	1,128.42	57.166
10-Year	835.77	501.00	410.10	90.90	1,128.59	65.147
25-Year	1,120.78	787.21	693.62	93.59	1,128.80	76.488
50-Year	1,373.45	1,041.44	945.91	95.54	1,128.96	85.610
100-Year	**1,645.82**	**1,315.33**	**1,218.01**	**97.32**	**1,129.11**	**94.690**

Events for Pond 2P: BASIN NW OF WETLAND

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-Year	199.25	58.89	58.89	**0.00**	1,124.51	58.754
2-Year	248.22	73.19	73.19	0.00	1,124.58	61.688
5-Year	340.11	126.43	126.43	0.00	1,124.81	71.787
10-Year	534.55	229.03	229.03	0.00	1,125.13	87.879
25-Year	842.80	416.26	416.26	0.00	1,125.56	112.679
50-Year	1,115.95	595.42	595.42	0.00	1,125.88	133.622
100-Year	**1,410.37**	**798.84**	**798.84**	0.00	**1,126.19**	**155.328**

Events for Pond I AVENUE: I AVENUE CULVERTS

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)	Elevation (feet)	Storage (acre-feet)
1-Year	443.31	324.45	268.87	55.78	0.00	1,108.10	12.243
2-Year	561.73	372.75	294.58	78.16	0.00	1,108.97	20.043
5-Year	792.74	440.39	336.90	103.49	0.00	1,110.22	38.112
10-Year	1,014.78	501.64	371.27	130.37	0.00	1,111.36	63.236
25-Year	1,386.17	577.56	422.67	154.89	0.00	1,113.27	131.087
50-Year	1,767.41	627.23	456.62	170.61	0.00	1,114.67	206.264
100-Year	**2,220.64**	**674.44**	**485.46**	**183.76**	**5.22**	**1,115.94**	**295.584**

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GREAT LAKES/ATLANTIC REGION
7322 Newman Blvd., Bldg. 2
Dexter, MI 48130
(734) 623-2000
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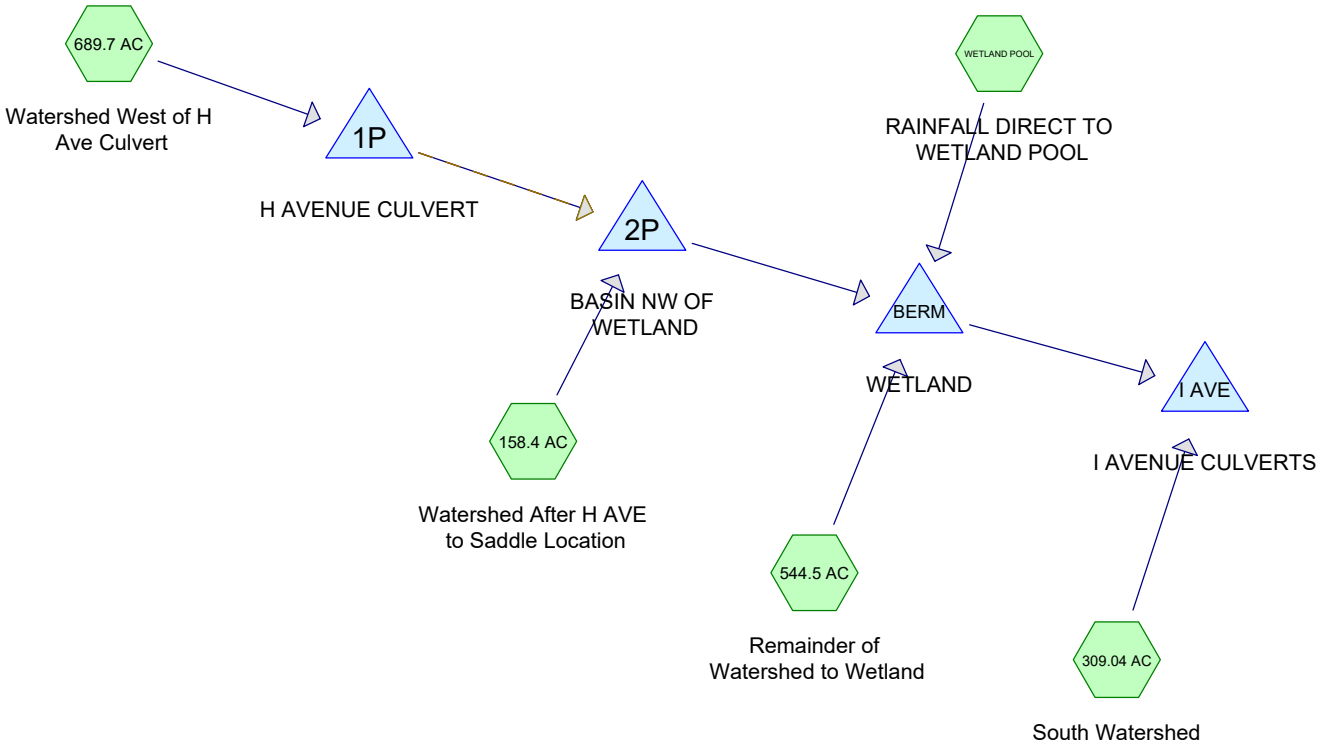
Appendix A-2

HydroCAD Report – Proposed Conditions



Subcat Reach Pond Link

Routing Diagram for FITZPATRICK PROPOSED CONDITIONS - AS - FINAL
Prepared by Ducks Unlimited, Printed 2/16/2026
HydroCAD® 10.20-5c s/n 04207 © 2023 HydroCAD Software Solutions LLC

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 1436 IA Greene
Rainfall events imported from "NRCS-Rain.txt" for 1436 IA Greene

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	MSE 24-hr	3	Default	24.00	1	2.70	2
2	2-Year	MSE 24-hr	3	Default	24.00	1	3.10	2
3	5-Year	MSE 24-hr	3	Default	24.00	1	3.85	2
4	10-Year	MSE 24-hr	3	Default	24.00	1	4.55	2
5	25-Year	MSE 24-hr	3	Default	24.00	1	5.63	2
6	50-Year	MSE 24-hr	3	Default	24.00	1	6.57	2
7	100-Year	MSE 24-hr	3	Default	24.00	1	7.58	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1,701.640	84	(158.4 AC, 309.04 AC, 544.5 AC, 689.7 AC)
3.420	98	Water Surface, HSG A (WETLAND POOL)
1,705.060	**84**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
3.420	HSG A	WETLAND POOL
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
1,701.640	Other	158.4 AC, 309.04 AC, 544.5 AC, 689.7 AC
1,705.060		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	1,701.640	1,701.640		158.4 AC, 309.04 AC, 544.5 AC, 689.7 AC
3.420	0.000	0.000	0.000	0.000	3.420	Water Surface	WETLAND POOL
3.420	**0.000**	**0.000**	**0.000**	**1,701.640**	**1,705.060**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	1P	1,124.00	1,124.00	60.0	0.0000	0.011	60.0	24.0	0.0	
2	I AVE	1,100.22	1,098.91	85.4	0.0153	0.025	0.0	72.0	0.0	
3	I AVE	1,104.72	1,104.41	62.4	0.0050	0.011	0.0	48.0	0.0	

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 158.4 AC: Watershed After Runoff Area=158.400 ac 0.00% Impervious Runoff Depth=1.27"
Flow Length=2,718' Slope=0.0329 '/' Tc=34.2 min CN=84 Runoff=166.34 cfs 16.807 af

Subcatchment 309.04 AC: South Runoff Area=309.040 ac 0.00% Impervious Runoff Depth=1.27"
Flow Length=9,197' Slope=0.0329 '/' Tc=90.7 min CN=84 Runoff=168.94 cfs 32.791 af

Subcatchment 544.5 AC: Remainder of Runoff Area=544.500 ac 0.00% Impervious Runoff Depth=1.27"
Flow Length=10,448' Slope=0.0329 '/' Tc=100.5 min CN=84 Runoff=274.71 cfs 57.774 af

Subcatchment 689.7 AC: Watershed West Runoff Area=689.700 ac 0.00% Impervious Runoff Depth=1.27"
Flow Length=9,666' Slope=0.0329 '/' Tc=94.4 min CN=84 Runoff=367.40 cfs 73.180 af

Subcatchment WETLAND POOL: Runoff Area=3.420 ac 100.00% Impervious Runoff Depth=2.47"
Flow Length=1,309' Tc=3.8 min CN=98 Runoff=14.67 cfs 0.704 af

Pond 1P: H AVENUE CULVERT Peak Elev=1,127.93' Storage=37.189 af Inflow=367.40 cfs 73.180 af
Primary=0.00 cfs 0.000 af Secondary=82.04 cfs 73.180 af Outflow=82.04 cfs 73.180 af

Pond 2P: BASIN NW OF WETLAND Peak Elev=1,124.51' Storage=58.754 af Inflow=199.25 cfs 89.987 af
Primary=58.89 cfs 42.530 af Secondary=0.00 cfs 0.000 af Outflow=58.89 cfs 42.530 af

Pond BERM: WETLAND Peak Elev=1,107.03' Storage=12.232 af Inflow=275.32 cfs 101.008 af
Outflow=260.64 cfs 99.997 af

Pond I AVE: I AVENUE CULVERTS Peak Elev=1,107.81' Storage=10.282 af Inflow=412.43 cfs 132.788 af
Primary=265.07 cfs 125.683 af Secondary=48.42 cfs 7.091 af Tertiary=0.00 cfs 0.000 af Outflow=313.49 cfs 132.773 af

Total Runoff Area = 1,705.060 ac Runoff Volume = 181.255 af Average Runoff Depth = 1.28"
99.80% Pervious = 1,701.640 ac 0.20% Impervious = 3.420 ac

Summary for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Runoff = 166.34 cfs @ 12.50 hrs, Volume= 16.807 af, Depth= 1.27"
Routed to Pond 2P : BASIN NW OF WETLAND

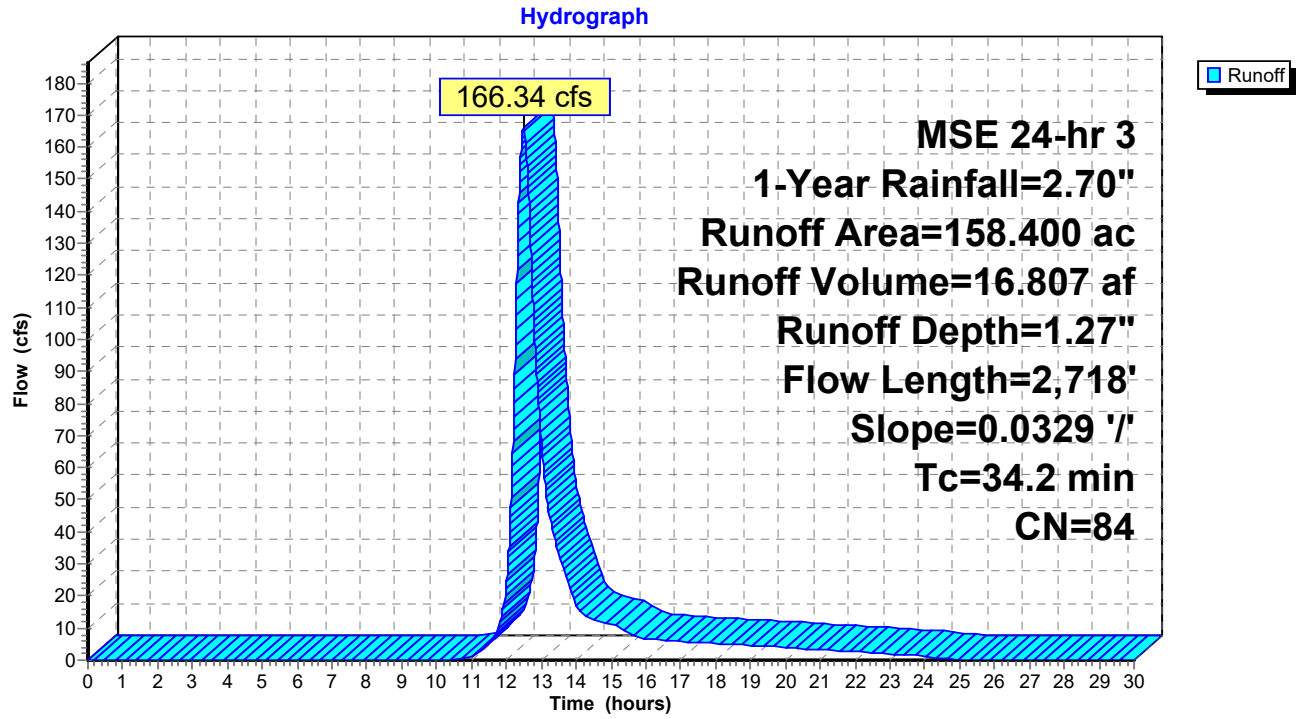
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Year Rainfall=2.70"

	Area (ac)	CN	Description
*	158.400	84	
	158.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.2	2,718	0.0329	1.32		**Lag/CN Method,**

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location



Hydrograph for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.02	0.00	0.00
2.50	0.03	0.00	0.00
3.00	0.04	0.00	0.00
3.50	0.06	0.00	0.00
4.00	0.07	0.00	0.00
4.50	0.09	0.00	0.00
5.00	0.10	0.00	0.00
5.50	0.12	0.00	0.00
6.00	0.14	0.00	0.00
6.50	0.16	0.00	0.00
7.00	0.18	0.00	0.00
7.50	0.20	0.00	0.00
8.00	0.23	0.00	0.00
8.50	0.25	0.00	0.00
9.00	0.28	0.00	0.00
9.50	0.32	0.00	0.00
10.00	0.37	0.00	0.00
10.50	0.42	0.00	0.06
11.00	0.52	0.01	1.19
11.50	0.67	0.04	5.39
12.00	1.25	0.27	23.93
12.50	2.03	0.77	**166.34**
13.00	2.18	0.87	67.63
13.50	2.28	0.95	32.88
14.00	2.33	0.98	17.50
14.50	2.38	1.02	12.51
15.00	2.42	1.06	11.38
15.50	2.45	1.08	8.64
16.00	2.47	1.10	6.66
16.50	2.50	1.11	6.15
17.00	2.52	1.13	5.83
17.50	2.54	1.15	5.51
18.00	2.56	1.16	5.20
18.50	2.58	1.18	4.88
19.00	2.60	1.19	4.56
19.50	2.61	1.21	4.24
20.00	2.63	1.22	3.91
20.50	2.64	1.23	3.58
21.00	2.66	1.24	3.25
21.50	2.67	1.25	2.92
22.00	2.68	1.25	2.59
22.50	2.68	1.26	2.25
23.00	2.69	1.27	1.92
23.50	2.70	1.27	1.58
24.00	**2.70**	**1.27**	1.24
24.50	2.70	1.27	0.49
25.00	2.70	1.27	0.06
25.50	2.70	1.27	0.01
26.00	2.70	1.27	0.00
26.50	2.70	1.27	0.00
27.00	2.70	1.27	0.00
27.50	2.70	1.27	0.00
28.00	2.70	1.27	0.00
28.50	2.70	1.27	0.00
29.00	2.70	1.27	0.00
29.50	2.70	1.27	0.00
30.00	2.70	1.27	0.00

Summary for Subcatchment 309.04 AC: South Watershed

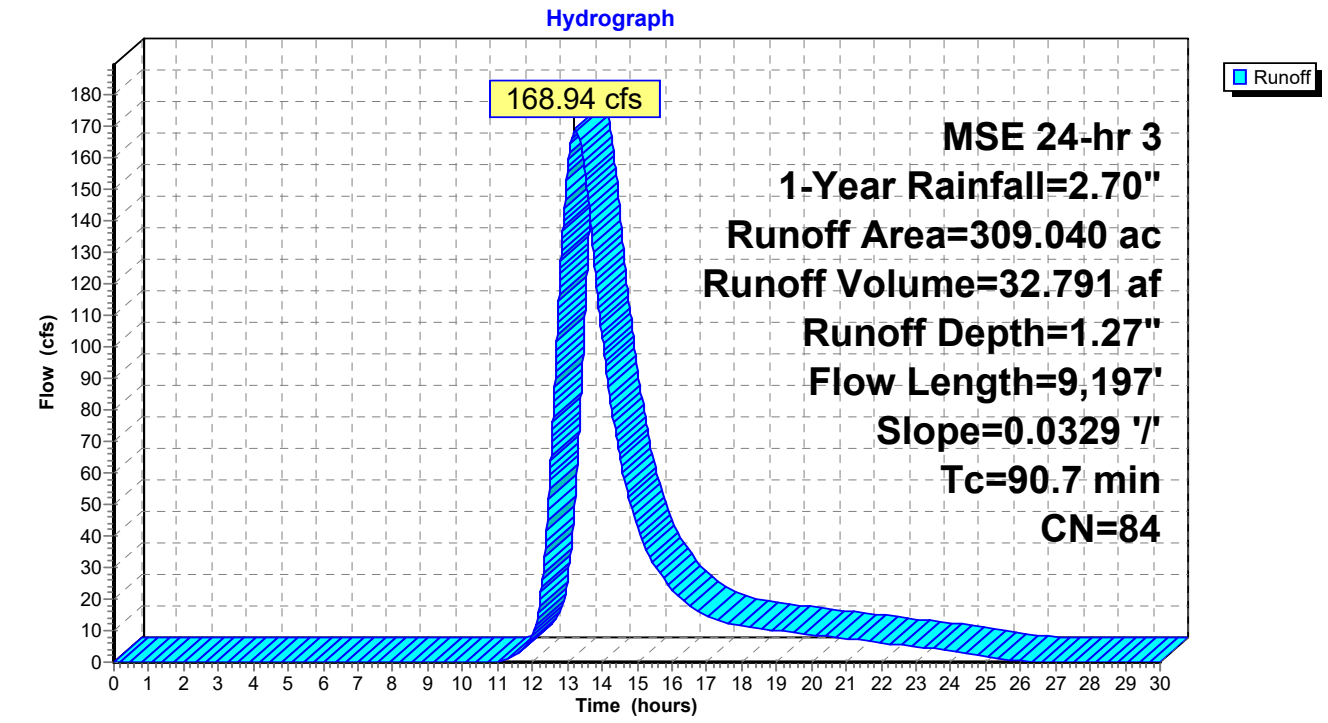
Runoff = 168.94 cfs @ 13.20 hrs, Volume= 32.791 af, Depth= 1.27"
Routed to Pond I AVE : I AVENUE CULVERTS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Year Rainfall=2.70"

	Area (ac)	CN	Description
*	309.040	84	
	309.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
90.7	9,197	0.0329	1.69		**Lag/CN Method,**

Subcatchment 309.04 AC: South Watershed



Hydrograph for Subcatchment 309.04 AC: South Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.02	0.00	0.00
2.50	0.03	0.00	0.00
3.00	0.04	0.00	0.00
3.50	0.06	0.00	0.00
4.00	0.07	0.00	0.00
4.50	0.09	0.00	0.00
5.00	0.10	0.00	0.00
5.50	0.12	0.00	0.00
6.00	0.14	0.00	0.00
6.50	0.16	0.00	0.00
7.00	0.18	0.00	0.00
7.50	0.20	0.00	0.00
8.00	0.23	0.00	0.00
8.50	0.25	0.00	0.00
9.00	0.28	0.00	0.00
9.50	0.32	0.00	0.00
10.00	0.37	0.00	0.00
10.50	0.42	0.00	0.01
11.00	0.52	0.01	0.23
11.50	0.67	0.04	1.89
12.00	1.25	0.27	8.41
12.50	2.03	0.77	57.43
13.00	2.18	0.87	**155.77**
13.50	2.28	0.95	**156.58**
14.00	2.33	0.98	103.05
14.50	2.38	1.02	65.42
15.00	2.42	1.06	42.79
15.50	2.45	1.08	30.95
16.00	2.47	1.10	23.32
16.50	2.50	1.11	17.70
17.00	2.52	1.13	14.33
17.50	2.54	1.15	12.53
18.00	2.56	1.16	11.50
18.50	2.58	1.18	10.71
19.00	2.60	1.19	10.02
19.50	2.61	1.21	9.37
20.00	2.63	1.22	8.73
20.50	2.64	1.23	8.10
21.00	2.66	1.24	7.46
21.50	2.67	1.25	6.83
22.00	2.68	1.25	6.18
22.50	2.68	1.26	5.53
23.00	2.69	1.27	4.88
23.50	2.70	1.27	4.23
24.00	**2.70**	**1.27**	3.57
24.50	2.70	1.27	2.86
25.00	2.70	1.27	1.85
25.50	2.70	1.27	0.90
26.00	2.70	1.27	0.39
26.50	2.70	1.27	0.17
27.00	2.70	1.27	0.07
27.50	2.70	1.27	0.03
28.00	2.70	1.27	0.01
28.50	2.70	1.27	0.00
29.00	2.70	1.27	0.00
29.50	2.70	1.27	0.00
30.00	2.70	1.27	0.00

Summary for Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Runoff = 274.71 cfs @ 13.40 hrs, Volume= 57.774 af, Depth= 1.27"
Routed to Pond BERM : WETLAND

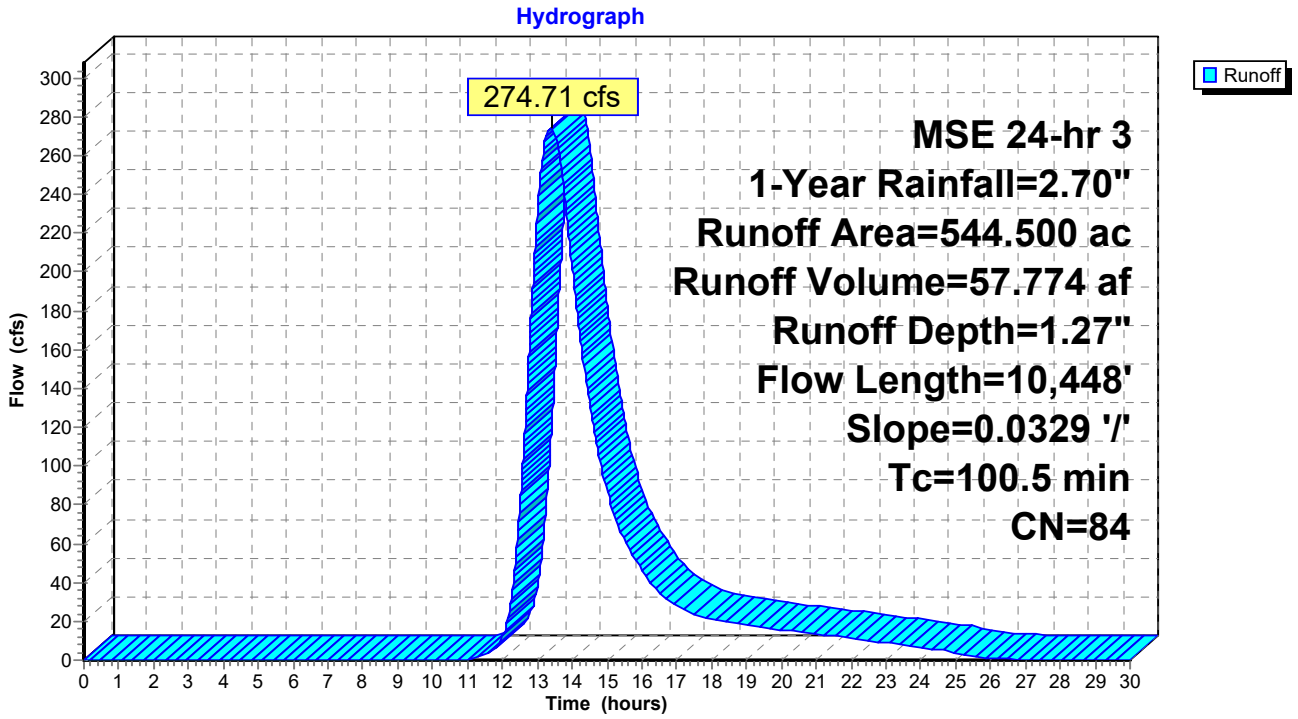
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Year Rainfall=2.70"

	Area (ac)	CN	Description
*	544.500	84	
	544.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
100.5	10,448	0.0329	1.73		**Lag/CN Method,**

Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Subcatchment 544.5 AC: Remainder of Watershed to Wetland



Hydrograph for Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.02	0.00	0.00
2.50	0.03	0.00	0.00
3.00	0.04	0.00	0.00
3.50	0.06	0.00	0.00
4.00	0.07	0.00	0.00
4.50	0.09	0.00	0.00
5.00	0.10	0.00	0.00
5.50	0.12	0.00	0.00
6.00	0.14	0.00	0.00
6.50	0.16	0.00	0.00
7.00	0.18	0.00	0.00
7.50	0.20	0.00	0.00
8.00	0.23	0.00	0.00
8.50	0.25	0.00	0.00
9.00	0.28	0.00	0.00
9.50	0.32	0.00	0.00
10.00	0.37	0.00	0.00
10.50	0.42	0.00	0.01
11.00	0.52	0.01	0.29
11.50	0.67	0.04	2.52
12.00	1.25	0.27	11.87
12.50	2.03	0.77	76.55
13.00	2.18	0.87	**228.16**
13.50	2.28	0.95	**271.91**
14.00	2.33	0.98	202.50
14.50	2.38	1.02	132.09
15.00	2.42	1.06	87.62
15.50	2.45	1.08	62.22
16.00	2.47	1.10	46.47
16.50	2.50	1.11	34.99
17.00	2.52	1.13	27.87
17.50	2.54	1.15	23.66
18.00	2.56	1.16	21.04
18.50	2.58	1.18	19.39
19.00	2.60	1.19	18.06
19.50	2.61	1.21	16.89
20.00	2.63	1.22	15.75
20.50	2.64	1.23	14.61
21.00	2.66	1.24	13.48
21.50	2.67	1.25	12.36
22.00	2.68	1.25	11.24
22.50	2.68	1.26	10.09
23.00	2.69	1.27	8.94
23.50	2.70	1.27	7.79
24.00	**2.70**	**1.27**	6.65
24.50	2.70	1.27	5.41
25.00	2.70	1.27	3.76
25.50	2.70	1.27	2.08
26.00	2.70	1.27	0.99
26.50	2.70	1.27	0.47
27.00	2.70	1.27	0.22
27.50	2.70	1.27	0.10
28.00	2.70	1.27	0.04
28.50	2.70	1.27	0.02
29.00	2.70	1.27	0.01
29.50	2.70	1.27	0.00
30.00	2.70	1.27	0.00

Summary for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Runoff = 367.40 cfs @ 13.32 hrs, Volume= 73.180 af, Depth= 1.27"
Routed to Pond 1P : H AVENUE CULVERT

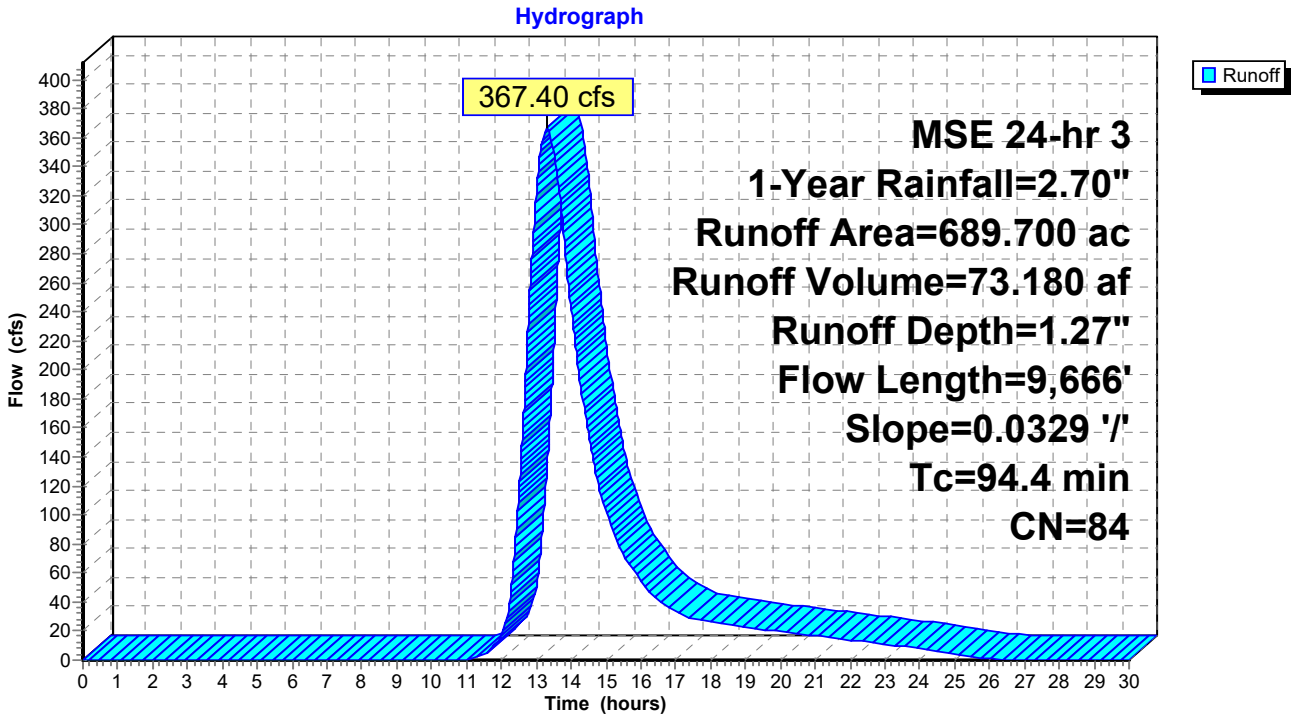
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Year Rainfall=2.70"

	Area (ac)	CN	Description
*	689.700	84	
	689.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
94.4	9,666	0.0329	1.71		**Lag/CN Method,**

Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Subcatchment 689.7 AC: Watershed West of H Ave Culvert



Hydrograph for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.02	0.00	0.00
2.50	0.03	0.00	0.00
3.00	0.04	0.00	0.00
3.50	0.06	0.00	0.00
4.00	0.07	0.00	0.00
4.50	0.09	0.00	0.00
5.00	0.10	0.00	0.00
5.50	0.12	0.00	0.00
6.00	0.14	0.00	0.00
6.50	0.16	0.00	0.00
7.00	0.18	0.00	0.00
7.50	0.20	0.00	0.00
8.00	0.23	0.00	0.00
8.50	0.25	0.00	0.00
9.00	0.28	0.00	0.00
9.50	0.32	0.00	0.00
10.00	0.37	0.00	0.00
10.50	0.42	0.00	0.01
11.00	0.52	0.01	0.44
11.50	0.67	0.04	3.82
12.00	1.25	0.27	17.52
12.50	2.03	0.77	111.94
13.00	2.18	0.87	**323.08**
13.50	2.28	0.95	**351.09**
14.00	2.33	0.98	241.97
14.50	2.38	1.02	155.35
15.00	2.42	1.06	101.67
15.50	2.45	1.08	72.75
16.00	2.47	1.10	54.61
16.50	2.50	1.11	41.28
17.00	2.52	1.13	33.25
17.50	2.54	1.15	28.56
18.00	2.56	1.16	25.98
18.50	2.58	1.18	24.13
19.00	2.60	1.19	22.57
19.50	2.61	1.21	21.08
20.00	2.63	1.22	19.66
20.50	2.64	1.23	18.24
21.00	2.66	1.24	16.81
21.50	2.67	1.25	15.40
22.00	2.68	1.25	13.95
22.50	2.68	1.26	12.51
23.00	2.69	1.27	11.06
23.50	2.70	1.27	9.59
24.00	**2.70**	**1.27**	8.14
24.50	2.70	1.27	6.55
25.00	2.70	1.27	4.37
25.50	2.70	1.27	2.25
26.00	2.70	1.27	1.01
26.50	2.70	1.27	0.46
27.00	2.70	1.27	0.20
27.50	2.70	1.27	0.09
28.00	2.70	1.27	0.03
28.50	2.70	1.27	0.01
29.00	2.70	1.27	0.00
29.50	2.70	1.27	0.00
30.00	2.70	1.27	0.00

Summary for Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL

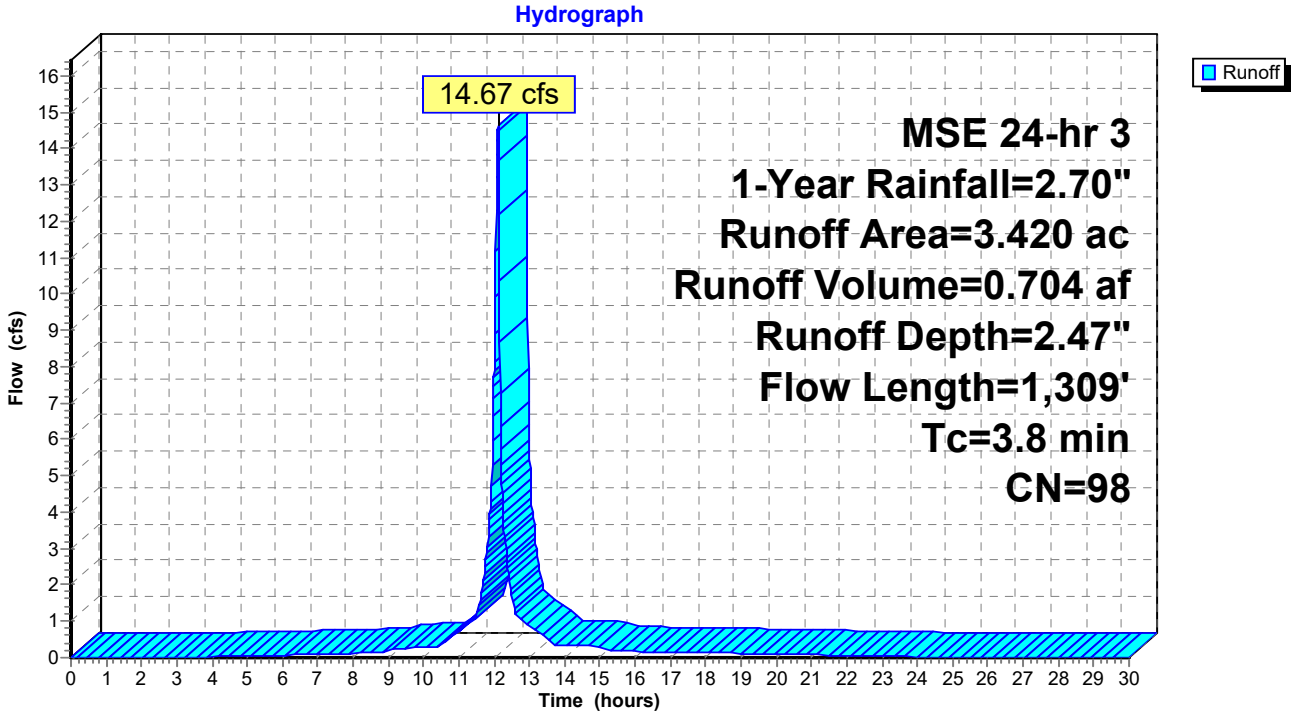
Runoff = 14.67 cfs @ 12.11 hrs, Volume= 0.704 af, Depth= 2.47"
Routed to Pond BERM : WETLAND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Year Rainfall=2.70"

Area (ac)	CN	Description
3.420	98	Water Surface, HSG A
3.420		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	1,309		5.67		**Lake or Reservoir,** Mean Depth= 1.00'

Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL



Hydrograph for Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.02	0.00	0.00
2.50	0.03	0.00	0.00
3.00	0.04	0.00	0.00
3.50	0.06	0.00	0.01
4.00	0.07	0.00	0.02
4.50	0.09	0.01	0.03
5.00	0.10	0.01	0.05
5.50	0.12	0.02	0.06
6.00	0.14	0.03	0.07
6.50	0.16	0.04	0.08
7.00	0.18	0.06	0.10
7.50	0.20	0.07	0.11
8.00	0.23	0.09	0.12
8.50	0.25	0.11	0.14
9.00	0.28	0.13	0.15
9.50	0.32	0.16	0.26
10.00	0.37	0.20	0.29
10.50	0.42	0.25	0.32
11.00	0.52	0.34	0.74
11.50	0.67	0.47	1.09
12.00	1.25	1.03	**7.88**
12.50	2.03	1.80	**1.74**
13.00	2.18	1.95	0.89
13.50	2.28	2.05	0.54
14.00	2.33	2.10	0.34
14.50	2.38	2.15	0.32
15.00	2.42	2.19	0.30
15.50	2.45	2.22	0.18
16.00	2.47	2.24	0.17
16.50	2.50	2.27	0.16
17.00	2.52	2.29	0.15
17.50	2.54	2.31	0.14
18.00	2.56	2.33	0.13
18.50	2.58	2.35	0.13
19.00	2.60	2.37	0.12
19.50	2.61	2.38	0.11
20.00	2.63	2.40	0.10
20.50	2.64	2.41	0.09
21.00	2.66	2.43	0.08
21.50	2.67	2.44	0.07
22.00	2.68	2.45	0.06
22.50	2.68	2.45	0.05
23.00	2.69	2.46	0.04
23.50	2.70	2.47	0.03
24.00	**2.70**	**2.47**	0.02
24.50	2.70	2.47	0.00
25.00	2.70	2.47	0.00
25.50	2.70	2.47	0.00
26.00	2.70	2.47	0.00
26.50	2.70	2.47	0.00
27.00	2.70	2.47	0.00
27.50	2.70	2.47	0.00
28.00	2.70	2.47	0.00
28.50	2.70	2.47	0.00
29.00	2.70	2.47	0.00
29.50	2.70	2.47	0.00
30.00	2.70	2.47	0.00

Summary for Pond 1P: H AVENUE CULVERT

Inflow Area = 689.700 ac, 0.00% Impervious, Inflow Depth = 1.27" for 1-Year event
Inflow = 367.40 cfs @ 13.32 hrs, Volume= 73.180 af
Outflow = 82.04 cfs @ 15.30 hrs, Volume= 73.180 af, Atten= 78%, Lag= 118.9 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2P : BASIN NW OF WETLAND
Secondary = 82.04 cfs @ 15.30 hrs, Volume= 73.180 af
Routed to Pond 2P : BASIN NW OF WETLAND

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,127.93' @ 15.30 hrs Surf.Area= 35.125 ac Storage= 37.189 af

Plug-Flow detention time= 219.2 min calculated for 73.156 af (100% of inflow)
Center-of-Mass det. time= 219.2 min (1,111.9 - 892.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,124.00'	161.110 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,124.00	0.010	0.000	0.000
1,126.00	1.650	1.660	1.660
1,128.00	36.300	37.950	39.610
1,130.00	85.200	121.500	161.110

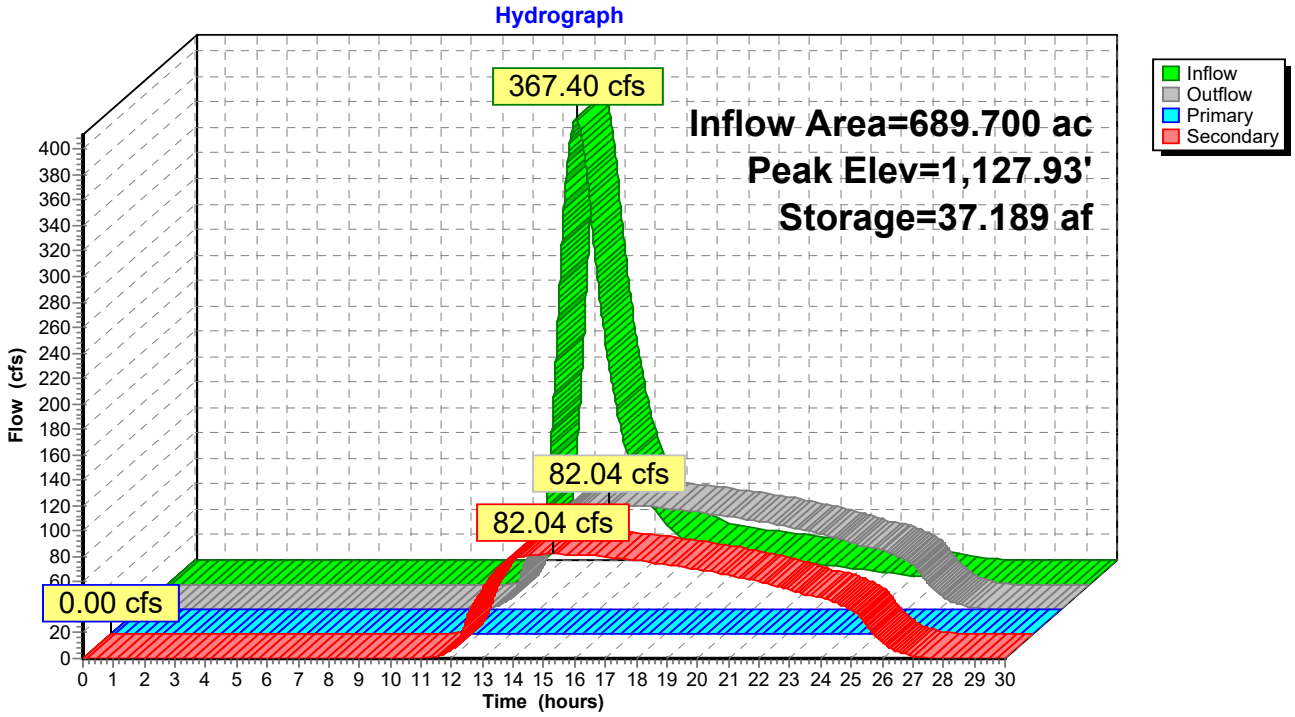
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,124.00'	**60.0" W x 24.0" H Box 5'x2' CULVERT** L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,124.00' / 1,124.00' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 10.00 sf
#2	Primary	1,128.05'	**342.0' long + 100.0 '/' SideZ x 25.0' breadth H Ave Road Surface** 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

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,124.00' (Free Discharge)
└**2=H Ave Road Surface** (Controls 0.00 cfs)

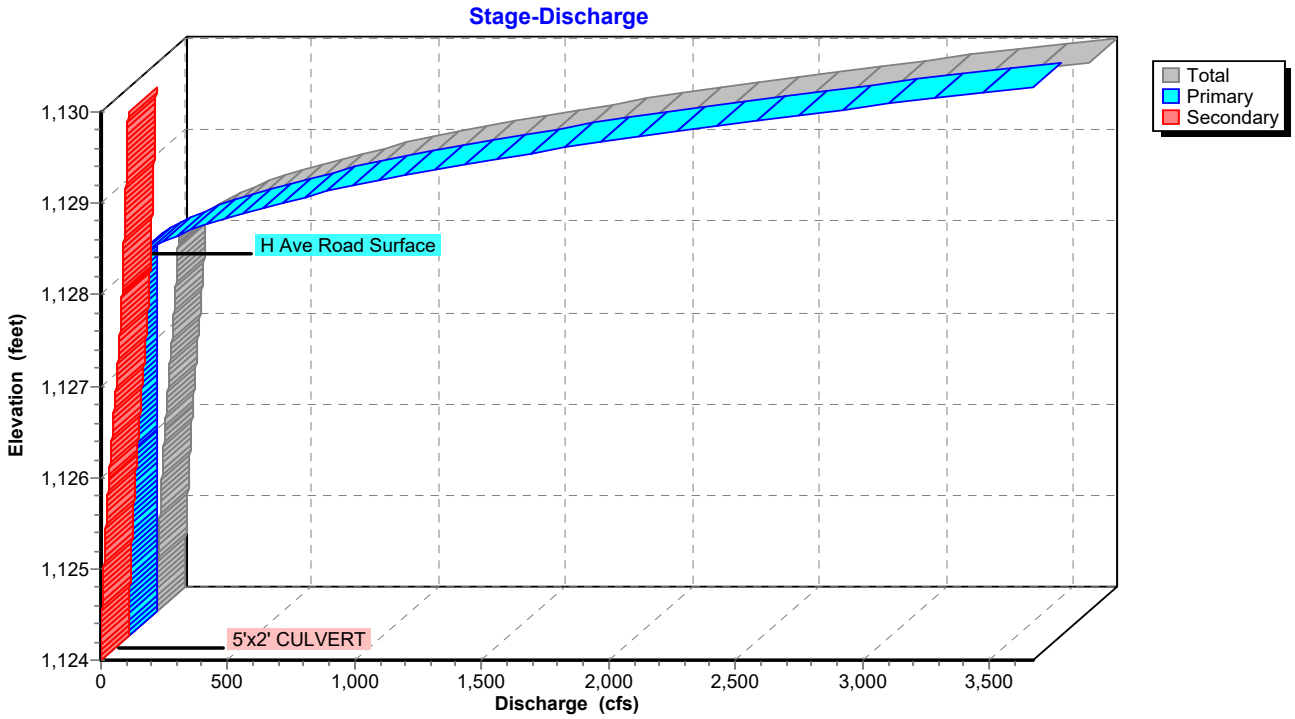
Secondary OutFlow Max=82.04 cfs @ 15.30 hrs HW=1,127.93' (Free Discharge)
└**1=5'x2' CULVERT** (Inlet Controls 82.04 cfs @ 8.20 fps)



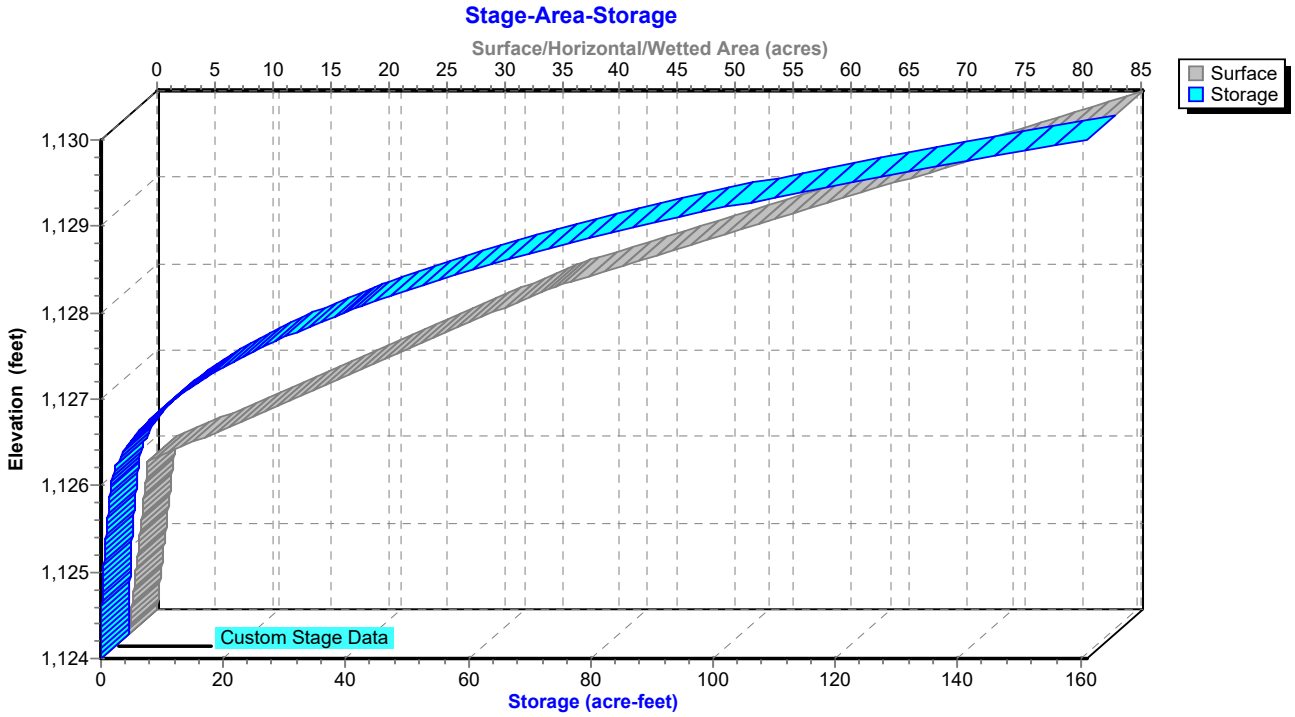
Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Hydrograph for Pond 1P: H AVENUE CULVERT

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,124.00	0.00	**0.00**	0.00
1.00	0.00	0.000	1,124.00	0.00	0.00	0.00
2.00	0.00	0.000	1,124.00	0.00	0.00	0.00
3.00	0.00	0.000	1,124.00	0.00	0.00	0.00
4.00	0.00	0.000	1,124.00	0.00	0.00	0.00
5.00	0.00	0.000	1,124.00	0.00	0.00	0.00
6.00	0.00	0.000	1,124.00	0.00	0.00	0.00
7.00	0.00	0.000	1,124.00	0.00	0.00	0.00
8.00	0.00	0.000	1,124.00	0.00	0.00	0.00
9.00	0.00	0.000	1,124.00	0.00	0.00	0.00
10.00	0.00	0.000	1,124.00	0.00	0.00	0.00
11.00	0.44	0.004	1,124.09	0.13	0.00	0.13
12.00	17.52	0.259	1,124.78	7.24	0.00	7.24
13.00	**323.08**	8.950	1,126.83	53.90	0.00	53.90
14.00	**241.97**	30.358	1,127.73	77.90	0.00	77.90
15.00	101.67	**36.966**	**1,127.93**	**81.95**	0.00	**81.95**
16.00	54.61	**36.350**	**1,127.91**	**81.70**	0.00	**81.70**
17.00	33.25	33.152	1,127.81	79.83	0.00	79.83
18.00	25.98	29.060	1,127.69	76.96	0.00	76.96
19.00	22.57	24.832	1,127.54	73.63	0.00	73.63
20.00	19.66	20.644	1,127.39	69.83	0.00	69.83
21.00	16.81	16.557	1,127.22	65.45	0.00	65.45
22.00	13.95	12.627	1,127.03	60.26	0.00	60.26
23.00	11.06	8.934	1,126.83	53.87	0.00	53.87
24.00	8.14	5.542	1,126.58	48.00	0.00	48.00
25.00	4.37	2.481	1,126.23	38.21	0.00	38.21
26.00	1.01	0.529	1,125.12	13.02	0.00	13.02
27.00	0.20	0.058	1,124.36	1.95	0.00	1.95
28.00	0.03	0.005	1,124.10	0.17	0.00	0.17
29.00	0.00	0.001	1,124.02	0.02	0.00	0.02
30.00	0.00	0.000	1,124.00	0.00	0.00	0.00

Stage-Discharge for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,124.00	0.00	0.00	0.00
1,124.10	0.16	0.00	0.16
1,124.20	0.64	0.00	0.64
1,124.30	1.37	0.00	1.37
1,124.40	2.30	0.00	2.30
1,124.50	3.40	0.00	3.40
1,124.60	4.64	0.00	4.64
1,124.70	6.01	0.00	6.01
1,124.80	7.50	0.00	7.50
1,124.90	9.10	0.00	9.10
1,125.00	10.80	0.00	10.80
1,125.10	12.59	0.00	12.59
1,125.20	14.47	0.00	14.47
1,125.30	16.44	0.00	16.44
1,125.40	18.49	0.00	18.49
1,125.50	20.61	0.00	20.61
1,125.60	22.82	0.00	22.82
1,125.70	25.10	0.00	25.10
1,125.80	27.44	0.00	27.44
1,125.90	29.86	0.00	29.86
1,126.00	32.34	0.00	32.34
1,126.10	34.89	0.00	34.89
1,126.20	37.50	0.00	37.50
1,126.30	40.17	0.00	40.17
1,126.40	42.91	0.00	42.91
1,126.50	45.70	0.00	45.70
1,126.60	48.55	0.00	48.55
1,126.70	49.59	0.00	49.59
1,126.80	53.02	0.00	53.02
1,126.90	56.23	0.00	56.23
1,127.00	59.28	0.00	59.28
1,127.10	62.17	0.00	62.17
1,127.20	64.93	0.00	64.93
1,127.30	67.59	0.00	67.59
1,127.40	70.14	0.00	70.14
1,127.50	72.60	0.00	72.60
1,127.60	74.98	0.00	74.98
1,127.70	77.29	0.00	77.29
1,127.80	79.53	0.00	79.53
1,127.90	81.58	0.00	81.58
1,128.00	83.00	0.00	83.00
1,128.10	94.77	10.37	84.40
1,128.20	140.89	55.12	85.78
1,128.30	208.62	121.50	87.13
1,128.40	294.93	206.47	88.46
1,128.50	397.86	308.09	89.77
1,128.60	516.16	425.10	91.06
1,128.70	646.72	554.38	92.33
1,128.80	786.82	693.24	93.59
1,128.90	942.26	847.43	94.82
1,129.00	1,114.94	1,018.90	96.05
1,129.10	1,303.85	1,206.60	97.25
1,129.20	1,510.10	1,411.66	98.44
1,129.30	1,730.38	1,630.76	99.62
1,129.40	1,964.23	1,863.45	100.78
1,129.50	2,211.09	2,109.16	101.93
1,129.60	2,470.36	2,367.29	103.06
1,129.70	2,746.35	2,642.17	104.19
1,129.80	3,039.97	2,934.67	105.30
1,129.90	3,349.12	3,242.72	106.40
1,130.00	**3,673.94**	**3,566.46**	**107.49**

Stage-Area-Storage for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,124.00	0.010	0.000
1,124.10	0.092	0.005
1,124.20	0.174	0.018
1,124.30	0.256	0.040
1,124.40	0.338	0.070
1,124.50	0.420	0.107
1,124.60	0.502	0.154
1,124.70	0.584	0.208
1,124.80	0.666	0.270
1,124.90	0.748	0.341
1,125.00	0.830	0.420
1,125.10	0.912	0.507
1,125.20	0.994	0.602
1,125.30	1.076	0.706
1,125.40	1.158	0.818
1,125.50	1.240	0.937
1,125.60	1.322	1.066
1,125.70	1.404	1.202
1,125.80	1.486	1.346
1,125.90	1.568	1.499
1,126.00	1.650	1.660
1,126.10	3.382	1.912
1,126.20	5.115	2.337
1,126.30	6.847	2.935
1,126.40	8.580	3.706
1,126.50	10.312	4.651
1,126.60	12.045	5.768
1,126.70	13.778	7.060
1,126.80	15.510	8.524
1,126.90	17.243	10.162
1,127.00	18.975	11.972
1,127.10	20.707	13.957
1,127.20	22.440	16.114
1,127.30	24.172	18.445
1,127.40	25.905	20.949
1,127.50	27.637	23.626
1,127.60	29.370	26.476
1,127.70	31.103	29.500
1,127.80	32.835	32.696
1,127.90	34.568	36.067
1,128.00	36.300	39.610
1,128.10	38.745	43.362
1,128.20	41.190	47.359
1,128.30	43.635	51.600
1,128.40	46.080	56.086
1,128.50	48.525	60.816
1,128.60	50.970	65.791
1,128.70	53.415	71.010
1,128.80	55.860	76.474
1,128.90	58.305	82.182
1,129.00	60.750	88.135
1,129.10	63.195	94.332
1,129.20	65.640	100.774
1,129.30	68.085	107.460
1,129.40	70.530	114.391
1,129.50	72.975	121.566
1,129.60	75.420	128.986
1,129.70	77.865	136.650
1,129.80	80.310	144.559
1,129.90	82.755	152.712
1,130.00	**85.200**	**161.110**

Summary for Pond 2P: BASIN NW OF WETLAND

[81] Warning: Exceeded Pond 1P by 0.23' @ 29.05 hrs

Inflow Area = 848.100 ac, 0.00% Impervious, Inflow Depth = 1.27" for 1-Year event
Inflow = 199.25 cfs @ 12.51 hrs, Volume= 89.987 af
Outflow = 58.89 cfs @ 22.58 hrs, Volume= 42.530 af, Atten= 70%, Lag= 604.4 min
Primary = 58.89 cfs @ 22.58 hrs, Volume= 42.530 af
Routed to Pond BERM : WETLAND
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,124.51' @ 22.58 hrs Surf.Area= 40.888 ac Storage= 58.754 af

Plug-Flow detention time= 543.9 min calculated for 42.530 af (47% of inflow)
Center-of-Mass det. time= 335.4 min (1,395.9 - 1,060.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,121.00'	311.173 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,121.00	1.997	0.000	0.000
1,122.00	7.899	4.948	4.948
1,123.00	16.217	12.058	17.006
1,124.00	30.839	23.528	40.534
1,126.00	70.400	101.239	141.773
1,128.00	99.000	169.400	311.173

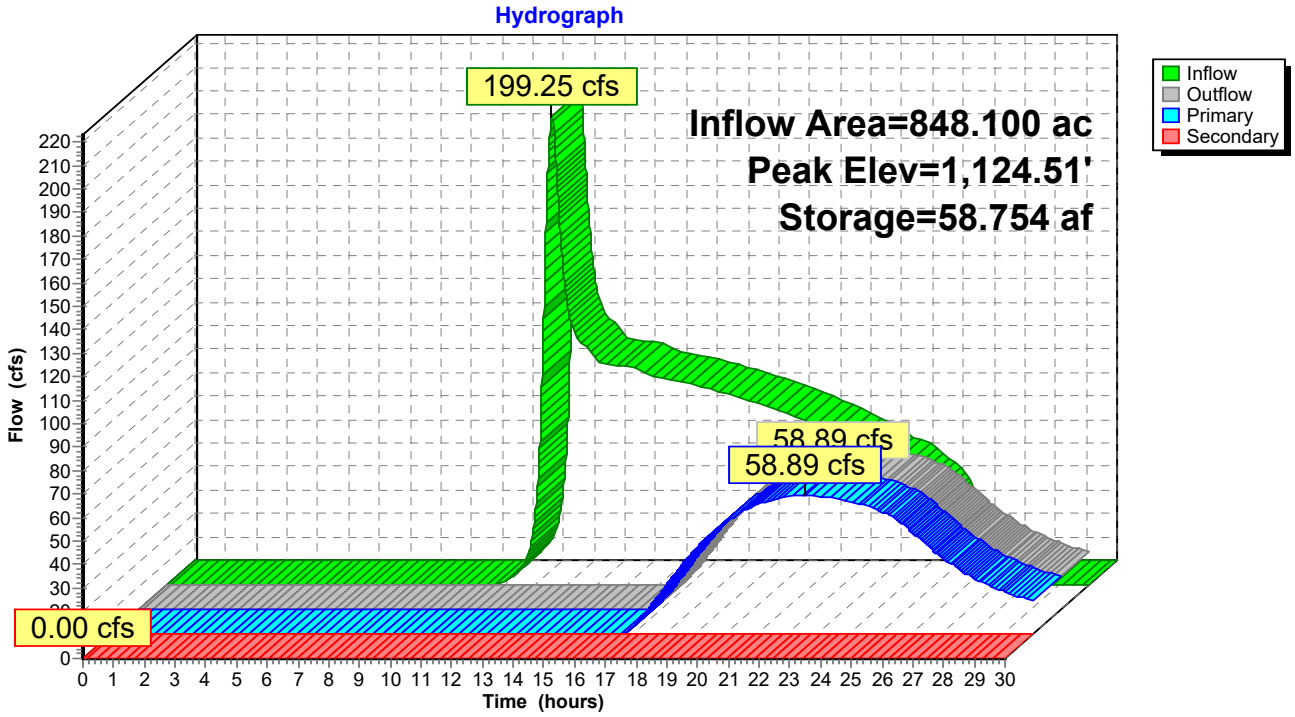
Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.00'	**50.0' long + 25.0 '/' SideZ x 50.0' breadth Saddle to Wetland** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	1,127.00'	**300.0' long + 50.0 '/' SideZ x 50.0' breadth Saddle Away from Wetland** 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

Primary OutFlow Max=58.82 cfs @ 22.58 hrs HW=1,124.51' (Free Discharge)
↑—**1=Saddle to Wetland** (Weir Controls 58.82 cfs @ 1.85 fps)

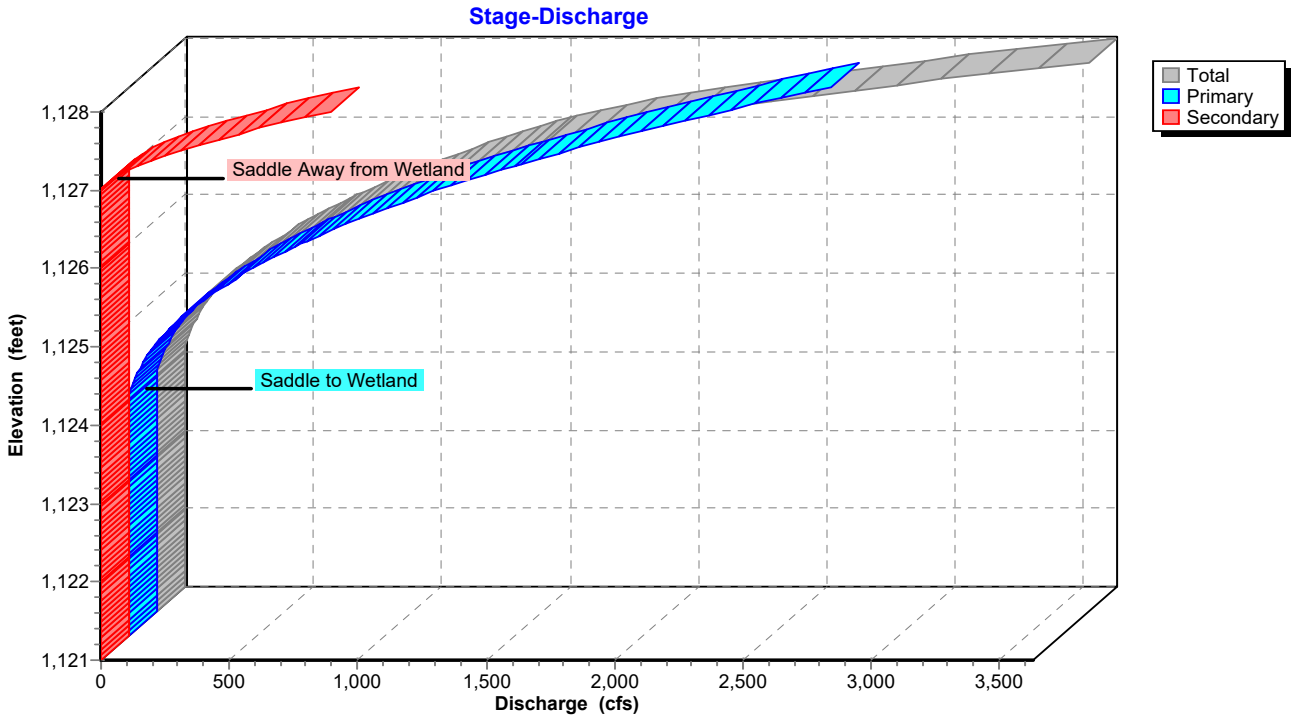
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,121.00' (Free Discharge)
↑—**2=Saddle Away from Wetland** (Controls 0.00 cfs)



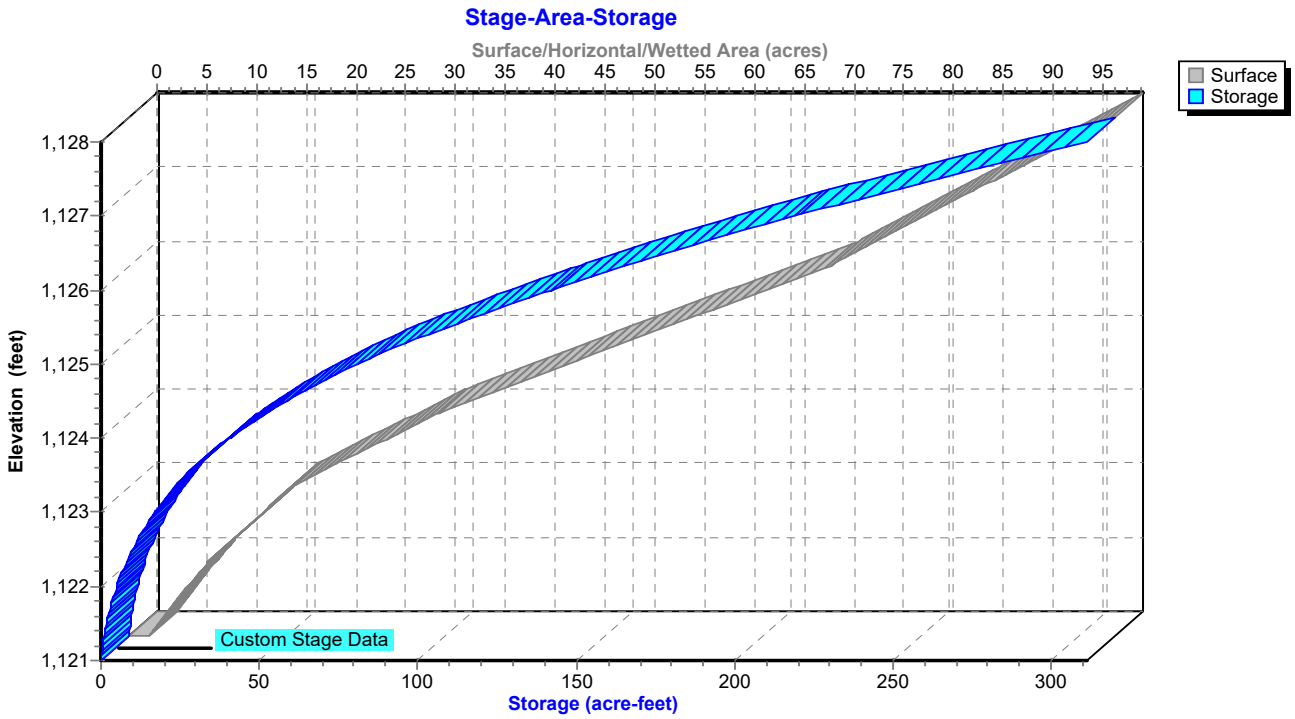
Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Hydrograph for Pond 2P: BASIN NW OF WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,121.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,121.00	0.00	0.00	0.00
2.00	0.00	0.000	1,121.00	0.00	0.00	0.00
3.00	0.00	0.000	1,121.00	0.00	0.00	0.00
4.00	0.00	0.000	1,121.00	0.00	0.00	0.00
5.00	0.00	0.000	1,121.00	0.00	0.00	0.00
6.00	0.00	0.000	1,121.00	0.00	0.00	0.00
7.00	0.00	0.000	1,121.00	0.00	0.00	0.00
8.00	0.00	0.000	1,121.00	0.00	0.00	0.00
9.00	0.00	0.000	1,121.00	0.00	0.00	0.00
10.00	0.00	0.000	1,121.00	0.00	0.00	0.00
11.00	1.32	0.020	1,121.01	0.00	0.00	0.00
12.00	**31.16**	0.794	1,121.28	0.00	0.00	0.00
13.00	**121.53**	12.128	1,122.67	0.00	0.00	0.00
14.00	95.41	20.753	1,123.21	0.00	0.00	0.00
15.00	93.32	28.500	1,123.56	0.00	0.00	0.00
16.00	88.36	36.007	1,123.85	0.00	0.00	0.00
17.00	85.65	43.156	1,124.08	3.33	3.33	0.00
18.00	82.15	49.172	1,124.26	19.64	19.64	0.00
19.00	78.19	53.494	1,124.37	35.72	35.72	0.00
20.00	73.74	56.299	1,124.45	47.66	47.66	0.00
21.00	68.70	57.917	1,124.49	54.97	54.97	0.00
22.00	62.84	**58.653**	**1,124.51**	**58.38**	**58.38**	0.00
23.00	55.79	**58.710**	**1,124.51**	**58.65**	**58.65**	0.00
24.00	49.24	58.257	1,124.50	56.51	56.51	0.00
25.00	38.26	57.375	1,124.47	52.53	52.53	0.00
26.00	13.02	55.489	1,124.43	44.05	44.05	0.00
27.00	1.95	52.822	1,124.36	32.95	32.95	0.00
28.00	0.17	50.533	1,124.30	24.28	24.28	0.00
29.00	0.02	48.791	1,124.25	18.37	18.37	0.00
30.00	0.00	47.463	1,124.21	14.11	14.11	0.00

Stage-Discharge for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,121.00	0.00	0.00	0.00
1,121.10	0.00	0.00	0.00
1,121.20	0.00	0.00	0.00
1,121.30	0.00	0.00	0.00
1,121.40	0.00	0.00	0.00
1,121.50	0.00	0.00	0.00
1,121.60	0.00	0.00	0.00
1,121.70	0.00	0.00	0.00
1,121.80	0.00	0.00	0.00
1,121.90	0.00	0.00	0.00
1,122.00	0.00	0.00	0.00
1,122.10	0.00	0.00	0.00
1,122.20	0.00	0.00	0.00
1,122.30	0.00	0.00	0.00
1,122.40	0.00	0.00	0.00
1,122.50	0.00	0.00	0.00
1,122.60	0.00	0.00	0.00
1,122.70	0.00	0.00	0.00
1,122.80	0.00	0.00	0.00
1,122.90	0.00	0.00	0.00
1,123.00	0.00	0.00	0.00
1,123.10	0.00	0.00	0.00
1,123.20	0.00	0.00	0.00
1,123.30	0.00	0.00	0.00
1,123.40	0.00	0.00	0.00
1,123.50	0.00	0.00	0.00
1,123.60	0.00	0.00	0.00
1,123.70	0.00	0.00	0.00
1,123.80	0.00	0.00	0.00
1,123.90	0.00	0.00	0.00
1,124.00	0.00	0.00	0.00
1,124.10	4.41	4.41	0.00
1,124.20	12.94	12.94	0.00
1,124.30	24.75	24.75	0.00
1,124.40	39.62	39.62	0.00
1,124.50	57.28	57.28	0.00
1,124.60	77.80	77.80	0.00
1,124.70	100.08	100.08	0.00
1,124.80	124.68	124.68	0.00
1,124.90	152.99	152.99	0.00
1,125.00	184.10	184.10	0.00
1,125.10	218.88	218.88	0.00
1,125.20	256.81	256.81	0.00
1,125.30	297.39	297.39	0.00
1,125.40	341.11	341.11	0.00
1,125.50	387.26	387.26	0.00
1,125.60	436.47	436.47	0.00
1,125.70	489.68	489.68	0.00
1,125.80	546.21	546.21	0.00
1,125.90	606.13	606.13	0.00
1,126.00	669.49	669.49	0.00
1,126.10	736.33	736.33	0.00
1,126.20	806.71	806.71	0.00
1,126.30	880.68	880.68	0.00
1,126.40	958.29	958.29	0.00
1,126.50	1,039.60	1,039.60	0.00
1,126.60	1,124.65	1,124.65	0.00
1,126.70	1,213.49	1,213.49	0.00
1,126.80	1,306.17	1,306.17	0.00
1,126.90	1,402.74	1,402.74	0.00
1,127.00	1,503.25	1,503.25	0.00
1,127.10	1,633.51	1,607.74	25.76
1,127.20	1,790.10	1,716.27	73.83
1,127.30	1,966.79	1,828.88	137.91
1,127.40	2,161.46	1,945.61	215.84
1,127.50	2,371.99	2,066.52	305.47
1,127.60	2,598.21	2,191.64	406.57
1,127.70	2,833.93	2,321.03	512.90
1,127.80	3,081.88	2,454.72	627.16
1,127.90	3,348.70	2,592.76	755.93
1,128.00	**3,629.40**	**2,735.20**	**894.20**

Stage-Area-Storage for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,121.00	1.997	0.000
1,121.10	2.587	0.229
1,121.20	3.177	0.517
1,121.30	3.768	0.865
1,121.40	4.358	1.271
1,121.50	4.948	1.736
1,121.60	5.538	2.261
1,121.70	6.128	2.844
1,121.80	6.719	3.486
1,121.90	7.309	4.188
1,122.00	7.899	4.948
1,122.10	8.731	5.779
1,122.20	9.563	6.694
1,122.30	10.394	7.692
1,122.40	11.226	8.773
1,122.50	12.058	9.937
1,122.60	12.890	11.185
1,122.70	13.722	12.515
1,122.80	14.553	13.929
1,122.90	15.385	15.426
1,123.00	16.217	17.006
1,123.10	17.679	18.701
1,123.20	19.141	20.542
1,123.30	20.604	22.529
1,123.40	22.066	24.663
1,123.50	23.528	26.942
1,123.60	24.990	29.368
1,123.70	26.452	31.940
1,123.80	27.915	34.659
1,123.90	29.377	37.523
1,124.00	30.839	40.534
1,124.10	32.817	43.717
1,124.20	34.795	47.097
1,124.30	36.773	50.676
1,124.40	38.751	54.452
1,124.50	40.729	58.426
1,124.60	42.707	62.598
1,124.70	44.685	66.968
1,124.80	46.663	71.535
1,124.90	48.641	76.300
1,125.00	50.619	81.263
1,125.10	52.598	86.424
1,125.20	54.576	91.783
1,125.30	56.554	97.339
1,125.40	58.532	103.093
1,125.50	60.510	109.046
1,125.60	62.488	115.195
1,125.70	64.466	121.543
1,125.80	66.444	128.089
1,125.90	68.422	134.832
1,126.00	70.400	141.773
1,126.10	71.830	148.884
1,126.20	73.260	156.139
1,126.30	74.690	163.536
1,126.40	76.120	171.077
1,126.50	77.550	178.760
1,126.60	78.980	186.587
1,126.70	80.410	194.557
1,126.80	81.840	202.669
1,126.90	83.270	210.925
1,127.00	84.700	219.323
1,127.10	86.130	227.864
1,127.20	87.560	236.549
1,127.30	88.990	245.376
1,127.40	90.420	254.347
1,127.50	91.850	263.460
1,127.60	93.280	272.717
1,127.70	94.710	282.117
1,127.80	96.140	291.659
1,127.90	97.570	301.345
1,128.00	**99.000**	**311.173**

Summary for Pond BERM: WETLAND

Inflow Area = 1,396.020 ac, 0.24% Impervious, Inflow Depth > 0.87" for 1-Year event
Inflow = 275.32 cfs @ 13.40 hrs, Volume= 101.008 af
Outflow = 260.64 cfs @ 13.63 hrs, Volume= 99.997 af, Atten= 5%, Lag= 14.1 min
Primary = 260.64 cfs @ 13.63 hrs, Volume= 99.997 af
Routed to Pond I AVE : I AVENUE CULVERTS

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 1,106.00' Surf.Area= 6.409 ac Storage= 5.396 af
Peak Elev= 1,107.03' @ 13.63 hrs Surf.Area= 6.909 ac Storage= 12.232 af (6.835 af above start)

Plug-Flow detention time= 80.7 min calculated for 94.569 af (94% of inflow)
Center-of-Mass det. time= 21.0 min (1,127.7 - 1,106.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,103.00'	386.614 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

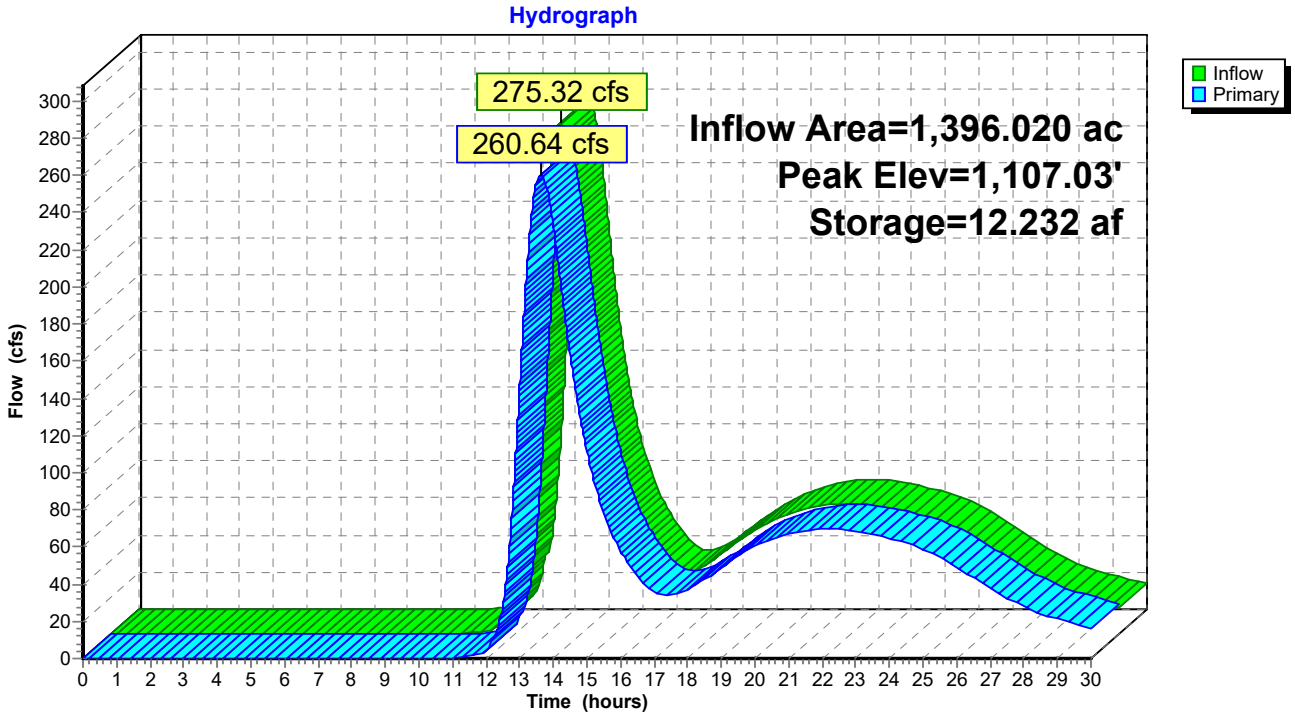
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,103.00	0.000	0.000	0.000
1,104.00	0.943	0.472	0.472
1,105.00	1.249	1.096	1.568
1,106.00	6.409	3.829	5.396
1,107.00	6.899	6.654	12.051
1,108.00	7.280	7.089	19.140
1,109.00	7.669	7.475	26.615
1,110.00	10.179	8.924	35.538
1,110.30	11.226	3.211	38.749
1,111.00	23.616	12.195	50.944
1,112.00	31.569	27.592	78.536
1,113.00	42.971	37.270	115.806
1,114.00	53.846	48.409	164.215
1,115.00	65.969	59.908	224.122
1,116.00	79.963	72.966	297.088
1,117.00	99.088	89.526	386.614

Device	Routing	Invert	Outlet Devices
#1	Primary	1,106.00'	**Sheet Pile Weir, C= 3.27** Offset (feet) -54.10 -52.10 -44.10 -37.50 37.50 44.10 52.10 54.10 Height (feet) 4.30 3.30 3.30 0.00 0.00 3.30 3.30 4.30

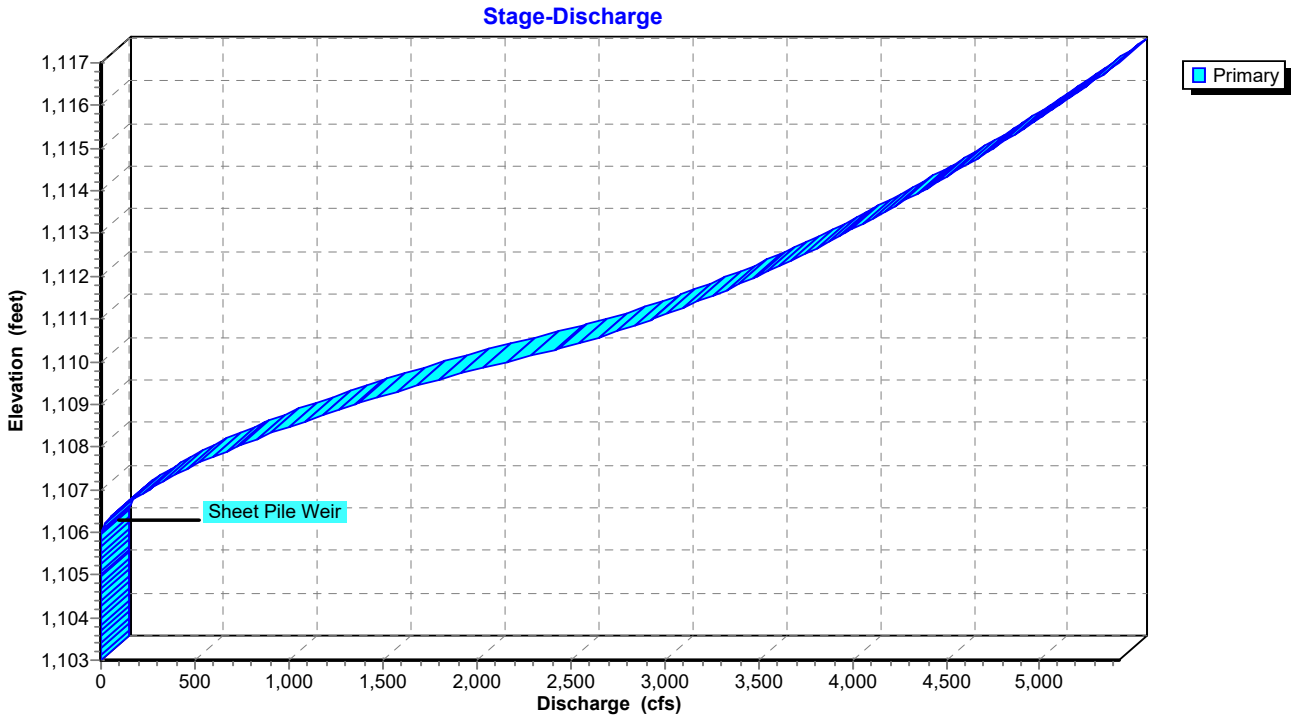
Primary OutFlow Max=260.55 cfs @ 13.63 hrs HW=1,107.03' (Free Discharge)
└**1=Sheet Pile Weir** (Weir Controls 260.55 cfs @ 3.21 fps)



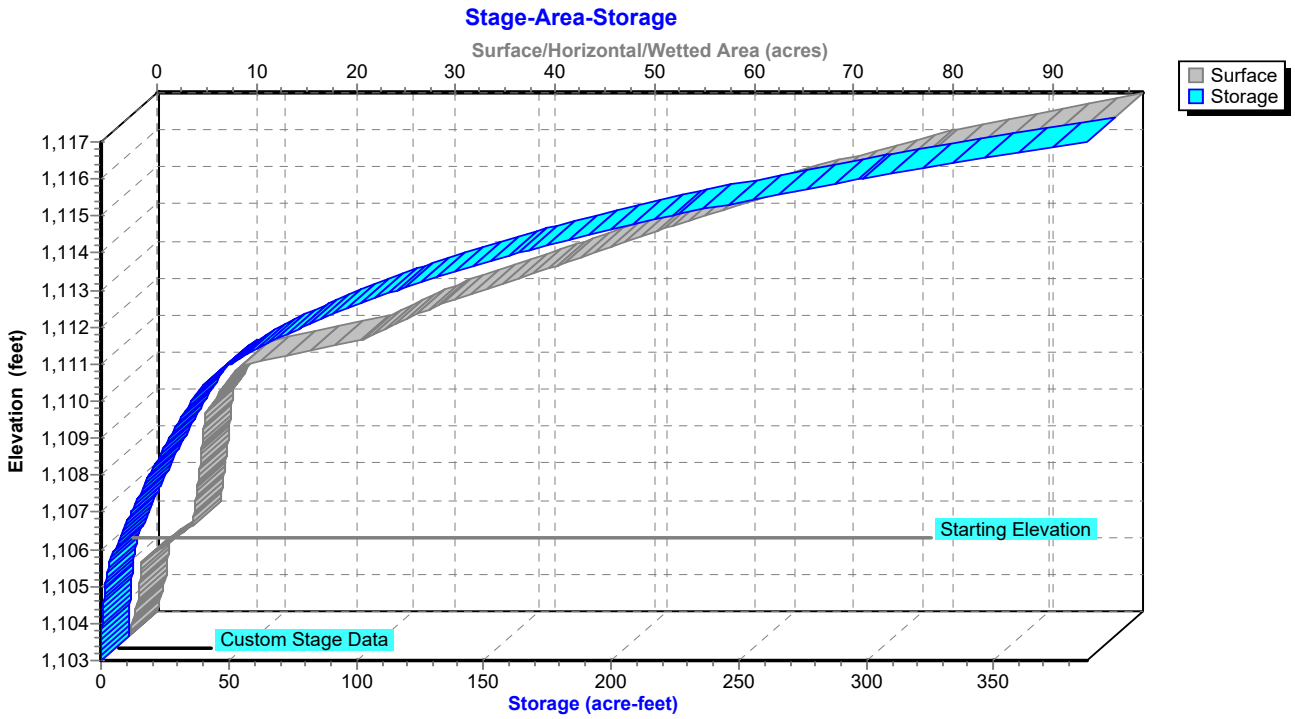
Pond BERM: WETLAND



Pond BERM: WETLAND



Pond BERM: WETLAND



Hydrograph for Pond BERM: WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	5.396	1,106.00	0.00
1.00	0.00	5.396	1,106.00	0.00
2.00	0.00	5.396	1,106.00	0.00
3.00	0.00	5.397	1,106.00	0.00
4.00	0.02	5.397	1,106.00	0.01
5.00	0.05	5.399	1,106.00	0.02
6.00	0.07	5.401	1,106.00	0.05
7.00	0.10	5.403	1,106.00	0.07
8.00	0.12	5.405	1,106.00	0.09
9.00	0.15	5.408	1,106.00	0.12
10.00	0.29	5.415	1,106.00	0.20
11.00	1.03	5.433	1,106.01	0.39
12.00	19.75	5.780	1,106.06	4.14
13.00	**229.05**	**10.028**	**1,106.70**	**147.45**
14.00	**202.85**	**11.714**	**1,106.95**	**232.25**
15.00	87.92	9.232	1,106.59	111.77
16.00	46.64	7.858	1,106.38	57.89
17.00	31.35	7.150	1,106.27	35.54
18.00	40.81	7.197	1,106.28	36.98
19.00	53.90	7.590	1,106.34	48.93
20.00	63.51	7.928	1,106.39	60.49
21.00	68.53	8.108	1,106.42	67.14
22.00	69.68	8.171	1,106.43	69.47
23.00	67.63	8.144	1,106.42	68.46
24.00	63.19	8.041	1,106.41	64.69
25.00	56.29	7.882	1,106.38	58.80
26.00	45.04	7.607	1,106.34	49.45
27.00	33.17	7.222	1,106.28	37.74
28.00	24.33	6.895	1,106.23	27.75
29.00	18.37	6.635	1,106.19	21.41
30.00	14.11	6.408	1,106.16	16.45

Stage-Discharge for Pond BERM: WETLAND

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,103.00	0.00	1,108.30	897.44	1,113.60	4,213.52
1,103.10	0.00	1,108.40	958.54	1,113.70	4,254.15
1,103.20	0.00	1,108.50	1,021.14	1,113.80	4,294.38
1,103.30	0.00	1,108.60	1,085.21	1,113.90	4,334.22
1,103.40	0.00	1,108.70	1,150.74	1,114.00	4,373.67
1,103.50	0.00	1,108.80	1,217.71	1,114.10	4,412.75
1,103.60	0.00	1,108.90	1,286.10	1,114.20	4,451.48
1,103.70	0.00	1,109.00	1,355.92	1,114.30	4,489.85
1,103.80	0.00	1,109.10	1,427.13	1,114.40	4,527.88
1,103.90	0.00	1,109.20	1,499.73	1,114.50	4,565.58
1,104.00	0.00	1,109.30	1,573.71	1,114.60	4,602.96
1,104.10	0.00	1,109.40	1,650.72	1,114.70	4,640.03
1,104.20	0.00	1,109.50	1,730.46	1,114.80	4,676.79
1,104.30	0.00	1,109.60	1,812.44	1,114.90	4,713.26
1,104.40	0.00	1,109.70	1,896.48	1,115.00	4,749.43
1,104.50	0.00	1,109.80	1,982.48	1,115.10	4,785.32
1,104.60	0.00	1,109.90	2,070.36	1,115.20	4,820.93
1,104.70	0.00	1,110.00	2,160.07	1,115.30	4,856.27
1,104.80	0.00	1,110.10	2,251.56	1,115.40	4,891.35
1,104.90	0.00	1,110.20	2,344.79	1,115.50	4,926.17
1,105.00	0.00	1,110.30	2,439.74	1,115.60	4,960.74
1,105.10	0.00	1,110.40	2,525.17	1,115.70	4,995.07
1,105.20	0.00	1,110.50	2,602.93	1,115.80	5,029.15
1,105.30	0.00	1,110.60	2,676.21	1,115.90	5,063.00
1,105.40	0.00	1,110.70	2,746.13	1,116.00	5,096.61
1,105.50	0.00	1,110.80	2,813.32	1,116.10	5,130.00
1,105.60	0.00	1,110.90	2,878.20	1,116.20	5,163.17
1,105.70	0.00	1,111.00	2,941.06	1,116.30	5,196.12
1,105.80	0.00	1,111.10	3,002.16	1,116.40	5,228.85
1,105.90	0.00	1,111.20	3,061.65	1,116.50	5,261.38
1,106.00	0.00	1,111.30	3,119.70	1,116.60	5,293.71
1,106.10	7.77	1,111.40	3,176.43	1,116.70	5,325.83
1,106.20	22.03	1,111.50	3,231.94	1,116.80	5,357.75
1,106.30	40.56	1,111.60	3,286.32	1,116.90	5,389.49
1,106.40	62.57	1,111.70	3,339.64	1,117.00	**5,421.03**
1,106.50	87.63	1,111.80	3,391.99		
1,106.60	115.44	1,111.90	3,443.41		
1,106.70	145.78	1,112.00	3,493.96		
1,106.80	178.48	1,112.10	3,543.69		
1,106.90	213.42	1,112.20	3,592.64		
1,107.00	250.48	1,112.30	3,640.85		
1,107.10	289.58	1,112.40	3,688.37		
1,107.20	330.64	1,112.50	3,735.21		
1,107.30	373.60	1,112.60	3,781.41		
1,107.40	418.39	1,112.70	3,827.00		
1,107.50	464.97	1,112.80	3,872.01		
1,107.60	513.29	1,112.90	3,916.45		
1,107.70	563.32	1,113.00	3,960.36		
1,107.80	615.01	1,113.10	4,003.74		
1,107.90	668.34	1,113.20	4,046.63		
1,108.00	723.27	1,113.30	4,089.03		
1,108.10	779.78	1,113.40	4,130.97		
1,108.20	837.84	1,113.50	4,172.46		

Stage-Area-Storage for Pond BERM: WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,103.00	0.000	0.000
1,103.20	0.189	0.019
1,103.40	0.377	0.075
1,103.60	0.566	0.170
1,103.80	0.754	0.302
1,104.00	0.943	0.472
1,104.20	1.004	0.666
1,104.40	1.065	0.873
1,104.60	1.127	1.092
1,104.80	1.188	1.324
1,105.00	1.249	1.568
1,105.20	2.281	1.921
1,105.40	3.313	2.480
1,105.60	4.345	3.246
1,105.80	5.377	4.218
1,106.00	6.409	5.396
1,106.20	6.507	6.688
1,106.40	6.605	7.999
1,106.60	6.703	9.330
1,106.80	6.801	10.680
1,107.00	6.899	12.051
1,107.20	6.975	13.438
1,107.40	7.051	14.841
1,107.60	7.128	16.258
1,107.80	7.204	17.692
1,108.00	7.280	19.140
1,108.20	7.358	20.604
1,108.40	7.436	22.083
1,108.60	7.513	23.578
1,108.80	7.591	25.088
1,109.00	7.669	26.615
1,109.20	8.171	28.199
1,109.40	8.673	29.883
1,109.60	9.175	31.668
1,109.80	9.677	33.553
1,110.00	10.179	35.538
1,110.20	10.877	37.644
1,110.40	12.996	39.960
1,110.60	16.536	42.914
1,110.80	20.076	46.575
1,111.00	23.616	50.944
1,111.20	25.207	55.826
1,111.40	26.797	61.027
1,111.60	28.388	66.545
1,111.80	29.978	72.382
1,112.00	31.569	78.536
1,112.20	33.849	85.078
1,112.40	36.130	92.076
1,112.60	38.410	99.530
1,112.80	40.691	107.440
1,113.00	42.971	115.806
1,113.20	45.146	124.618
1,113.40	47.321	133.865
1,113.60	49.496	143.547
1,113.80	51.671	153.663
1,114.00	53.846	164.215
1,114.20	56.271	175.227
1,114.40	58.695	186.723
1,114.60	61.120	198.705
1,114.80	63.544	211.171
1,115.00	65.969	224.122
1,115.20	68.768	237.596
1,115.40	71.567	251.630
1,115.60	74.365	266.223
1,115.80	77.164	281.376
1,116.00	79.963	297.088
1,116.20	83.788	313.464
1,116.40	87.613	330.604
1,116.60	91.438	348.509
1,116.80	95.263	367.179
1,117.00	**99.088**	**386.614**

Summary for Pond I AVE: I AVENUE CULVERTS

[81] Warning: Exceeded Pond BERM by 0.93' @ 14.25 hrs

Inflow Area = 1,705.060 ac, 0.20% Impervious, Inflow Depth > 0.93" for 1-Year event
Inflow = 412.43 cfs @ 13.50 hrs, Volume= 132.788 af
Outflow = 313.49 cfs @ 14.10 hrs, Volume= 132.773 af, Atten= 24%, Lag= 35.8 min
Primary = 265.07 cfs @ 14.10 hrs, Volume= 125.683 af
Secondary = 48.42 cfs @ 14.10 hrs, Volume= 7.091 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,107.81' @ 14.10 hrs Surf.Area= 6.722 ac Storage= 10.282 af

Plug-Flow detention time= 8.2 min calculated for 132.773 af (100% of inflow)
Center-of-Mass det. time= 8.2 min (1,076.9 - 1,068.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,098.00'	389.527 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,098.00	0.000	0.000	0.000
1,099.00	0.001	0.001	0.001
1,100.00	0.001	0.001	0.002
1,101.00	0.008	0.005	0.006
1,102.00	0.027	0.017	0.023
1,103.00	0.110	0.069	0.092
1,104.00	0.241	0.175	0.267
1,105.00	0.567	0.404	0.671
1,106.00	1.270	0.918	1.590
1,107.00	5.886	3.578	5.168
1,108.00	6.916	6.401	11.569
1,109.00	10.932	8.924	20.493
1,110.00	16.090	13.511	34.004
1,111.00	23.616	19.853	53.857
1,112.00	31.569	27.592	81.449
1,113.00	42.971	37.270	118.719
1,114.00	53.846	48.408	167.128
1,115.00	65.969	59.908	227.035
1,116.00	79.963	72.966	300.001
1,117.00	99.088	89.526	389.527

Device	Routing	Invert	Outlet Devices
#1	Primary	1,100.22'	**72.0" Round 72" RCP CULVERT** L= 85.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,100.22' / 1,098.91' S= 0.0153 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 28.27 sf
#2	Secondary	1,104.72'	**48.0" Round 48" RCP CULVERT** L= 62.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,104.72' / 1,104.41' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

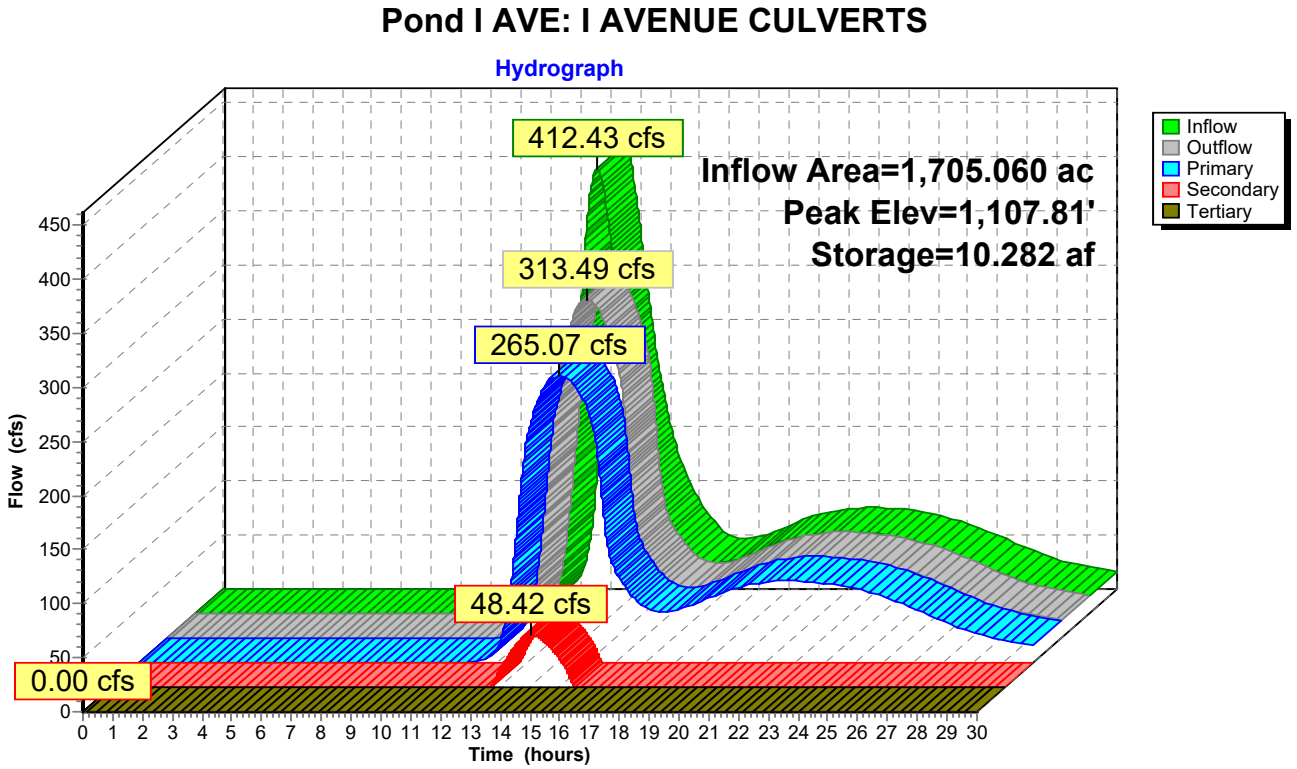
#3 Tertiary 1,115.86' **I AVENUE, C= 3.27**
Offset (feet) 0.00 115.59 162.20 164.26 214.26 232.65 343.45
Height (feet) 1.14 0.14 0.00 0.00 0.09 0.14 1.14

Primary OutFlow Max=265.23 cfs @ 14.10 hrs HW=1,107.81' (Free Discharge)
└**1=72" RCP CULVERT** (Barrel Controls 265.23 cfs @ 9.57 fps)

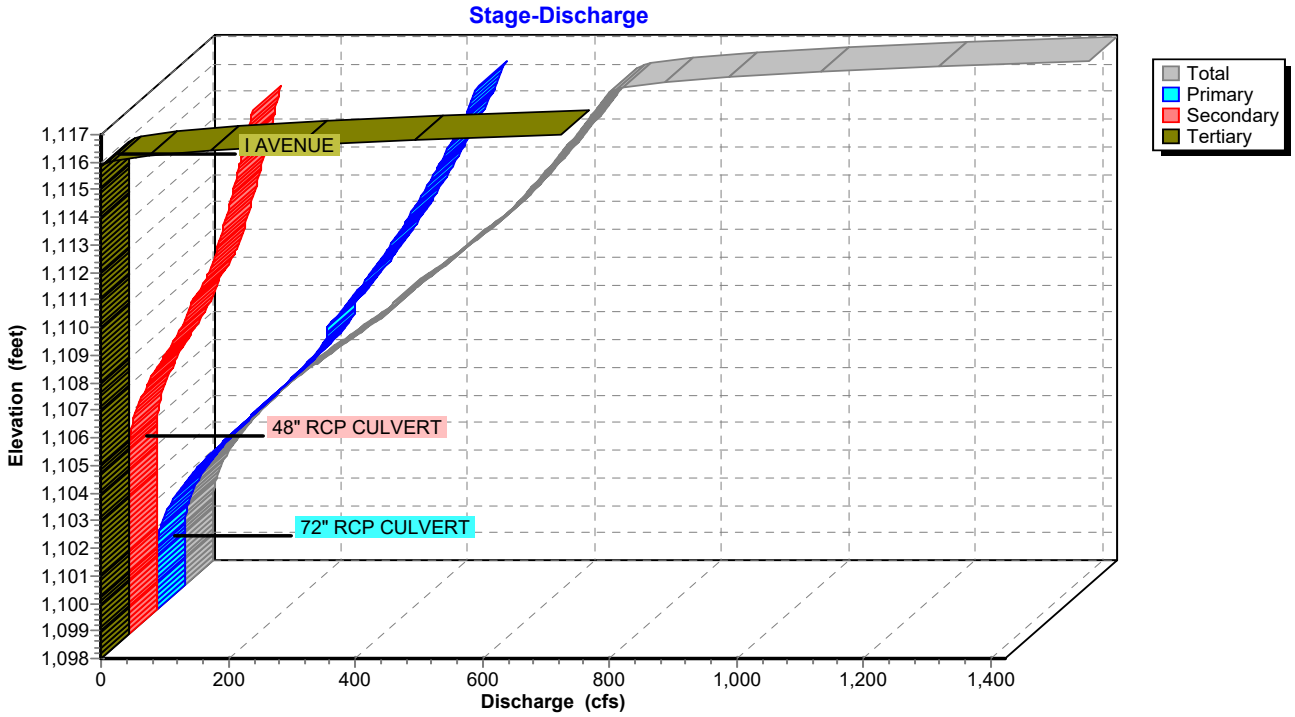
Secondary OutFlow Max=48.41 cfs @ 14.10 hrs HW=1,107.81' (Free Discharge)
└**2=48" RCP CULVERT** (Barrel Controls 48.41 cfs @ 6.41 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,098.00' (Free Discharge)
└**3=I AVENUE** (Controls 0.00 cfs)

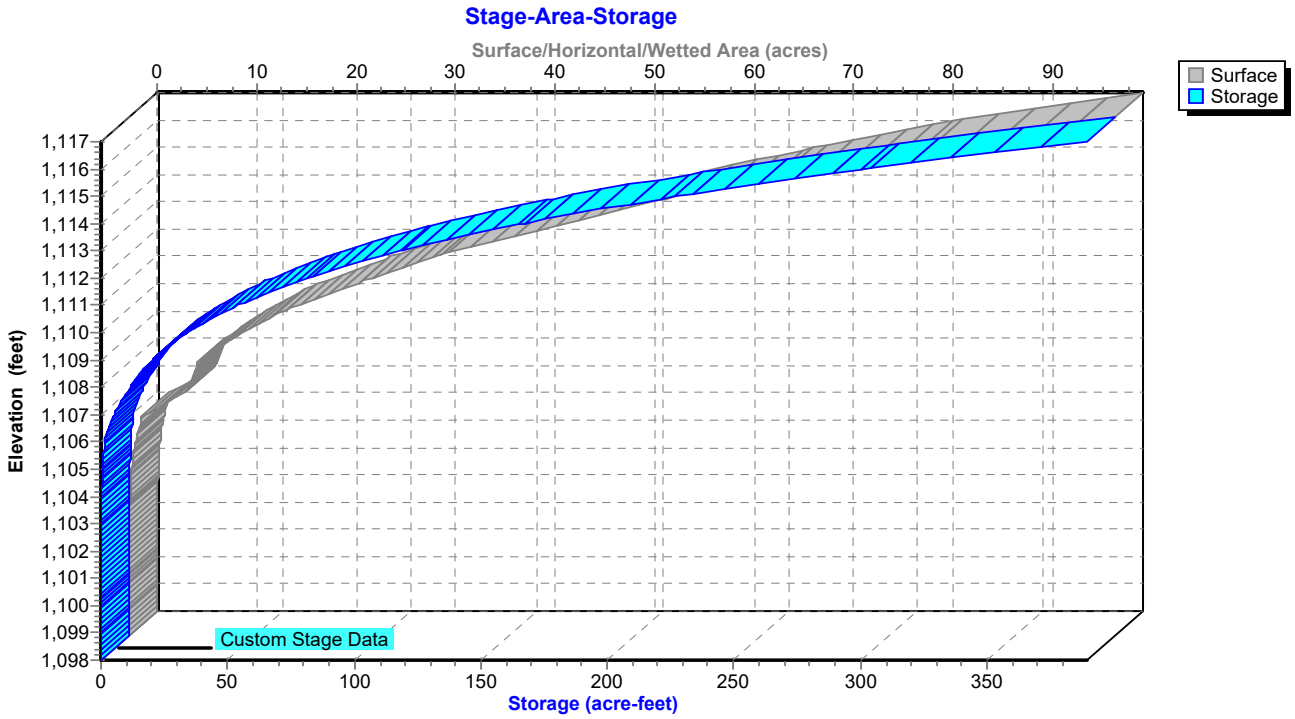




Pond I AVE: I AVENUE CULVERTS



Pond I AVE: I AVENUE CULVERTS



Hydrograph for Pond I AVE: I AVENUE CULVERTS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	0.00	0.000	1,098.00	0.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
2.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
3.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
4.00	0.01	0.000	1,098.70	0.00	0.00	0.00	0.00
5.00	0.02	0.002	1,100.01	0.00	0.00	0.00	0.00
6.00	0.05	0.002	1,100.29	0.04	0.04	0.00	0.00
7.00	0.07	0.002	1,100.30	0.07	0.07	0.00	0.00
8.00	0.09	0.002	1,100.31	0.09	0.09	0.00	0.00
9.00	0.12	0.002	1,100.32	0.12	0.12	0.00	0.00
10.00	0.20	0.002	1,100.36	0.20	0.20	0.00	0.00
11.00	0.62	0.003	1,100.49	0.60	0.60	0.00	0.00
12.00	12.56	0.011	1,101.42	12.20	12.20	0.00	0.00
13.00	**303.23**	1.916	1,106.19	217.87	204.41	13.46	0.00
14.00	**335.30**	**10.198**	**1,107.80**	**312.88**	**264.78**	**48.09**	0.00
15.00	154.57	**4.902**	**1,106.95**	**265.76**	**237.63**	**28.13**	0.00
16.00	81.22	0.184	1,103.61	84.06	84.06	0.00	0.00
17.00	49.88	0.068	1,102.76	50.41	50.41	0.00	0.00
18.00	48.48	0.063	1,102.70	48.26	48.26	0.00	0.00
19.00	58.96	0.090	1,102.98	58.57	58.57	0.00	0.00
20.00	69.22	0.123	1,103.24	68.87	68.87	0.00	0.00
21.00	74.60	0.144	1,103.38	74.45	74.45	0.00	0.00
22.00	75.65	0.149	1,103.41	75.68	75.68	0.00	0.00
23.00	73.34	0.140	1,103.36	73.52	73.52	0.00	0.00
24.00	68.26	0.122	1,103.23	68.50	68.50	0.00	0.00
25.00	60.65	0.097	1,103.04	61.01	61.01	0.00	0.00
26.00	49.85	0.067	1,102.75	50.22	50.22	0.00	0.00
27.00	37.81	0.041	1,102.40	38.10	38.10	0.00	0.00
28.00	27.76	0.026	1,102.06	27.89	27.89	0.00	0.00
29.00	21.41	0.019	1,101.82	21.47	21.47	0.00	0.00
30.00	16.45	0.015	1,101.62	16.49	16.49	0.00	0.00

Stage-Discharge for Pond I AVE: I AVENUE CULVERTS

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1,098.00	0.00	0.00	0.00	0.00
1,098.50	0.00	0.00	0.00	0.00
1,099.00	0.00	0.00	0.00	0.00
1,099.50	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	0.00	0.00
1,100.50	0.61	0.61	0.00	0.00
1,101.00	5.15	5.15	0.00	0.00
1,101.50	13.88	13.88	0.00	0.00
1,102.00	26.18	26.18	0.00	0.00
1,102.50	41.52	41.52	0.00	0.00
1,103.00	59.41	59.41	0.00	0.00
1,103.50	79.41	79.41	0.00	0.00
1,104.00	101.10	101.10	0.00	0.00
1,104.50	124.05	124.05	0.00	0.00
1,105.00	148.39	147.81	0.58	0.00
1,105.50	176.12	171.89	4.24	0.00
1,106.00	206.21	195.69	10.52	0.00
1,106.50	237.48	218.53	18.95	0.00
1,107.00	268.61	239.47	29.14	0.00
1,107.50	297.80	257.09	40.70	0.00
1,108.00	321.54	268.33	53.21	0.00
1,108.50	343.07	276.93	66.15	0.00
1,109.00	374.43	295.59	78.85	0.00
1,109.50	403.49	313.13	90.36	0.00
1,110.00	428.24	329.75	98.50	0.00
1,110.50	456.69	345.56	111.13	0.00
1,111.00	484.40	360.69	123.71	0.00
1,111.50	507.49	375.20	132.29	0.00
1,112.00	528.21	389.17	139.03	0.00
1,112.50	548.13	402.66	145.47	0.00
1,113.00	567.34	415.71	151.63	0.00
1,113.50	585.92	428.37	157.55	0.00
1,114.00	603.92	440.66	163.26	0.00
1,114.50	621.39	452.62	168.77	0.00
1,115.00	638.37	464.27	174.11	0.00
1,115.50	654.92	475.63	179.29	0.00
1,116.00	679.75	486.69	184.32	8.74
1,116.50	904.83	496.12	189.22	219.49
1,117.00	**1,422.27**	**505.37**	**194.00**	**722.89**

Stage-Area-Storage for Pond I AVE: I AVENUE CULVERTS

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,098.00	0.000	0.000
1,098.20	0.000	0.000
1,098.40	0.000	0.000
1,098.60	0.001	0.000
1,098.80	0.001	0.000
1,099.00	0.001	0.001
1,099.20	0.001	0.001
1,099.40	0.001	0.001
1,099.60	0.001	0.001
1,099.80	0.001	0.001
1,100.00	0.001	0.002
1,100.20	0.002	0.002
1,100.40	0.004	0.002
1,100.60	0.005	0.003
1,100.80	0.007	0.005
1,101.00	0.008	0.006
1,101.20	0.012	0.008
1,101.40	0.016	0.011
1,101.60	0.019	0.014
1,101.80	0.023	0.018
1,102.00	0.027	0.023
1,102.20	0.044	0.031
1,102.40	0.060	0.041
1,102.60	0.077	0.055
1,102.80	0.093	0.072
1,103.00	0.110	0.092
1,103.20	0.136	0.117
1,103.40	0.162	0.146
1,103.60	0.189	0.182
1,103.80	0.215	0.222
1,104.00	0.241	0.267
1,104.20	0.306	0.322
1,104.40	0.371	0.390
1,104.60	0.437	0.471
1,104.80	0.502	0.565
1,105.00	0.567	0.671
1,105.20	0.708	0.799
1,105.40	0.848	0.955
1,105.60	0.989	1.138
1,105.80	1.129	1.350
1,106.00	1.270	1.590
1,106.20	2.193	1.936
1,106.40	3.116	2.467
1,106.60	4.040	3.183
1,106.80	4.963	4.083
1,107.00	5.886	5.168
1,107.20	6.092	6.366
1,107.40	6.298	7.605
1,107.60	6.504	8.885
1,107.80	6.710	10.206
1,108.00	6.916	11.569
1,108.20	7.719	13.033
1,108.40	8.522	14.657
1,108.60	9.326	16.441
1,108.80	10.129	18.387
1,109.00	10.932	20.493
1,109.20	11.964	22.783
1,109.40	12.995	25.278
1,109.60	14.027	27.981
1,109.80	15.058	30.889
1,110.00	16.090	34.004
1,110.20	17.595	37.373
1,110.40	19.100	41.042
1,110.60	20.606	45.013
1,110.80	22.111	49.284
1,111.00	23.616	53.857
1,111.20	25.207	58.739
1,111.40	26.797	63.940
1,111.60	28.388	69.458
1,111.80	29.978	75.295
1,112.00	31.569	81.449
1,112.20	33.849	87.991
1,112.40	36.130	94.989
1,112.60	38.410	102.443
1,112.80	40.691	110.353
1,113.00	42.971	118.719
1,113.20	45.146	127.531
1,113.40	47.321	136.778
1,113.60	49.496	146.460
1,113.80	51.671	156.576
1,114.00	53.846	167.128
1,114.20	56.271	178.140
1,114.40	58.695	189.636
1,114.60	61.120	201.618
1,114.80	63.544	214.084
1,115.00	65.969	227.035
1,115.20	68.768	240.509
1,115.40	71.567	254.543
1,115.60	74.365	269.136
1,115.80	77.164	284.289
1,116.00	79.963	300.001
1,116.20	83.788	316.377
1,116.40	87.613	333.517
1,116.60	91.438	351.422
1,116.80	95.263	370.092
1,117.00	**99.088**	**389.527**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 158.4 AC: Watershed After Runoff Area=158.400 ac 0.00% Impervious Runoff Depth=1.60"
Flow Length=2,718' Slope=0.0329 '/' Tc=34.2 min CN=84 Runoff=209.81 cfs 21.106 af

Subcatchment 309.04 AC: South Runoff Area=309.040 ac 0.00% Impervious Runoff Depth=1.60"
Flow Length=9,197' Slope=0.0329 '/' Tc=90.7 min CN=84 Runoff=214.12 cfs 41.178 af

Subcatchment 544.5 AC: Remainder of Runoff Area=544.500 ac 0.00% Impervious Runoff Depth=1.60"
Flow Length=10,448' Slope=0.0329 '/' Tc=100.5 min CN=84 Runoff=347.53 cfs 72.552 af

Subcatchment 689.7 AC: Watershed West Runoff Area=689.700 ac 0.00% Impervious Runoff Depth=1.60"
Flow Length=9,666' Slope=0.0329 '/' Tc=94.4 min CN=84 Runoff=464.64 cfs 91.899 af

Subcatchment WETLAND POOL: Runoff Area=3.420 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=1,309' Tc=3.8 min CN=98 Runoff=16.90 cfs 0.817 af

Pond 1P: H AVENUE CULVERT Peak Elev=1,128.19' Storage=47.026 af Inflow=464.64 cfs 91.899 af
Primary=51.08 cfs 6.384 af Secondary=85.66 cfs 85.515 af Outflow=136.75 cfs 91.899 af

Pond 2P: BASIN NW OF WETLAND Peak Elev=1,124.58' Storage=61.688 af Inflow=248.22 cfs 113.005 af
Primary=73.19 cfs 63.465 af Secondary=0.00 cfs 0.000 af Outflow=73.19 cfs 63.465 af

Pond BERM: WETLAND Peak Elev=1,107.20' Storage=13.467 af Inflow=348.26 cfs 136.835 af
Outflow=332.43 cfs 135.479 af

Pond I AVE: I AVENUE CULVERTS Peak Elev=1,108.76' Storage=17.986 af Inflow=526.40 cfs 176.657 af
Primary=286.76 cfs 163.666 af Secondary=72.82 cfs 12.969 af Tertiary=0.00 cfs 0.000 af Outflow=359.59 cfs 176.635 af

Total Runoff Area = 1,705.060 ac Runoff Volume = 227.553 af Average Runoff Depth = 1.60"
99.80% Pervious = 1,701.640 ac 0.20% Impervious = 3.420 ac

Summary for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Runoff = 209.81 cfs @ 12.50 hrs, Volume= 21.106 af, Depth= 1.60"
Routed to Pond 2P : BASIN NW OF WETLAND

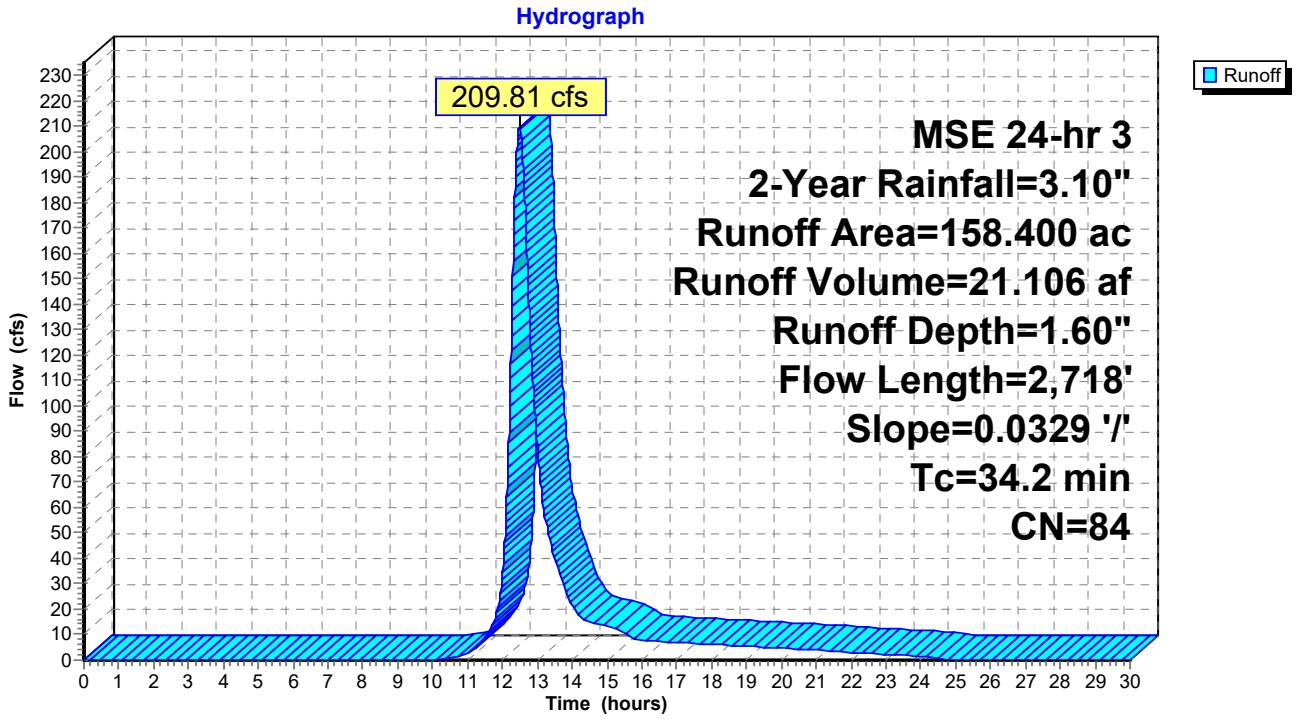
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.10"

	Area (ac)	CN	Description
*	158.400	84	
	158.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.2	2,718	0.0329	1.32		**Lag/CN Method,**

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location



Hydrograph for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.03	0.00	0.00
2.50	0.04	0.00	0.00
3.00	0.05	0.00	0.00
3.50	0.07	0.00	0.00
4.00	0.08	0.00	0.00
4.50	0.10	0.00	0.00
5.00	0.12	0.00	0.00
5.50	0.14	0.00	0.00
6.00	0.16	0.00	0.00
6.50	0.18	0.00	0.00
7.00	0.21	0.00	0.00
7.50	0.23	0.00	0.00
8.00	0.26	0.00	0.00
8.50	0.29	0.00	0.00
9.00	0.32	0.00	0.00
9.50	0.37	0.00	0.00
10.00	0.43	0.00	0.08
10.50	0.48	0.01	0.82
11.00	0.60	0.02	2.87
11.50	0.77	0.07	8.93
12.00	1.43	0.38	33.54
12.50	2.33	0.99	**209.78**
13.00	2.50	1.12	83.36
13.50	2.62	1.21	40.00
14.00	2.67	1.25	21.17
14.50	2.73	1.30	15.09
15.00	2.78	1.34	13.71
15.50	2.81	1.36	10.41
16.00	2.84	1.39	8.02
16.50	2.87	1.41	7.40
17.00	2.89	1.43	7.01
17.50	2.92	1.45	6.62
18.00	2.94	1.47	6.24
18.50	2.96	1.49	5.86
19.00	2.98	1.50	5.47
19.50	3.00	1.52	5.08
20.00	3.02	1.53	4.69
20.50	3.03	1.54	4.29
21.00	3.05	1.56	3.90
21.50	3.06	1.57	3.50
22.00	3.07	1.58	3.10
22.50	3.08	1.58	2.69
23.00	3.09	1.59	2.30
23.50	3.10	1.60	1.89
24.00	**3.10**	**1.60**	1.49
24.50	3.10	1.60	0.59
25.00	3.10	1.60	0.07
25.50	3.10	1.60	0.01
26.00	3.10	1.60	0.00
26.50	3.10	1.60	0.00
27.00	3.10	1.60	0.00
27.50	3.10	1.60	0.00
28.00	3.10	1.60	0.00
28.50	3.10	1.60	0.00
29.00	3.10	1.60	0.00
29.50	3.10	1.60	0.00
30.00	3.10	1.60	0.00

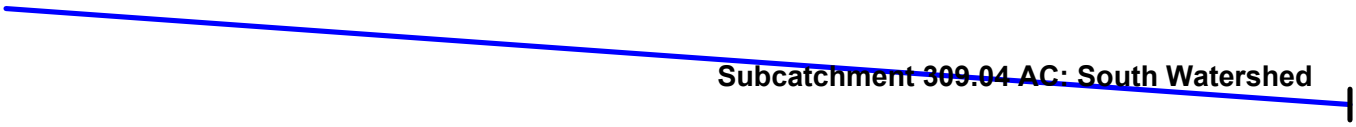
Summary for Subcatchment 309.04 AC: South Watershed

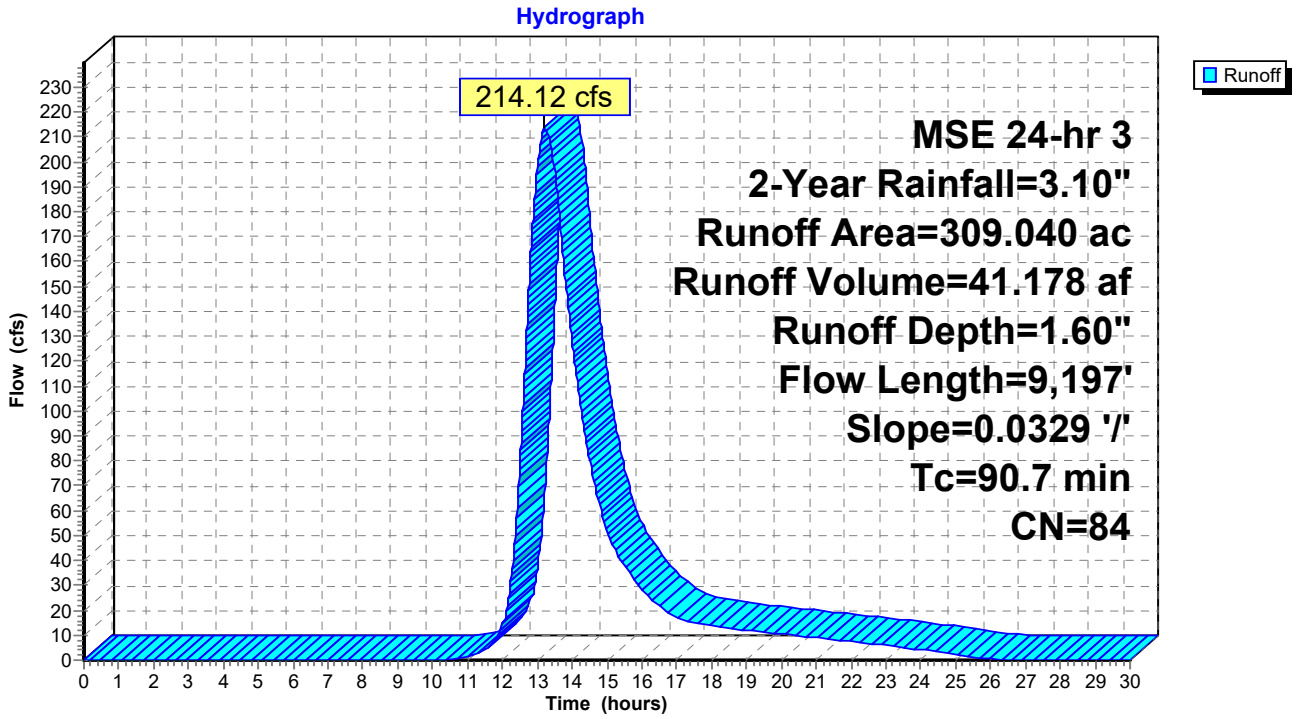
Runoff = 214.12 cfs @ 13.20 hrs, Volume= 41.178 af, Depth= 1.60"
Routed to Pond I AVE : I AVENUE CULVERTS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.10"

	Area (ac)	CN	Description
*	309.040	84	
	309.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
90.7	9,197	0.0329	1.69		**Lag/CN Method,**





Hydrograph for Subcatchment 309.04 AC: South Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.03	0.00	0.00
2.50	0.04	0.00	0.00
3.00	0.05	0.00	0.00
3.50	0.07	0.00	0.00
4.00	0.08	0.00	0.00
4.50	0.10	0.00	0.00
5.00	0.12	0.00	0.00
5.50	0.14	0.00	0.00
6.00	0.16	0.00	0.00
6.50	0.18	0.00	0.00
7.00	0.21	0.00	0.00
7.50	0.23	0.00	0.00
8.00	0.26	0.00	0.00
8.50	0.29	0.00	0.00
9.00	0.32	0.00	0.00
9.50	0.37	0.00	0.00
10.00	0.43	0.00	0.01
10.50	0.48	0.01	0.20
11.00	0.60	0.02	1.15
11.50	0.77	0.07	4.32
12.00	1.43	0.38	13.85
12.50	2.33	0.99	76.98
13.00	2.50	1.12	**199.02**
13.50	2.62	1.21	**196.71**
14.00	2.67	1.25	127.99
14.50	2.73	1.30	80.62
15.00	2.78	1.34	52.39
15.50	2.81	1.36	37.66
16.00	2.84	1.39	28.26
16.50	2.87	1.41	21.38
17.00	2.89	1.43	17.26
17.50	2.92	1.45	15.06
18.00	2.94	1.47	13.82
18.50	2.96	1.49	12.86
19.00	2.98	1.50	12.03
19.50	3.00	1.52	11.25
20.00	3.02	1.53	10.48
20.50	3.03	1.54	9.71
21.00	3.05	1.56	8.94
21.50	3.06	1.57	8.18
22.00	3.07	1.58	7.40
22.50	3.08	1.58	6.63
23.00	3.09	1.59	5.84
23.50	3.10	1.60	5.06
24.00	**3.10**	**1.60**	4.27
24.50	3.10	1.60	3.43
25.00	3.10	1.60	2.21
25.50	3.10	1.60	1.08
26.00	3.10	1.60	0.47
26.50	3.10	1.60	0.21
27.00	3.10	1.60	0.09
27.50	3.10	1.60	0.04
28.00	3.10	1.60	0.01
28.50	3.10	1.60	0.00
29.00	3.10	1.60	0.00
29.50	3.10	1.60	0.00
30.00	3.10	1.60	0.00

Summary for Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Runoff = 347.53 cfs @ 13.39 hrs, Volume= 72.552 af, Depth= 1.60"
Routed to Pond BERM : WETLAND

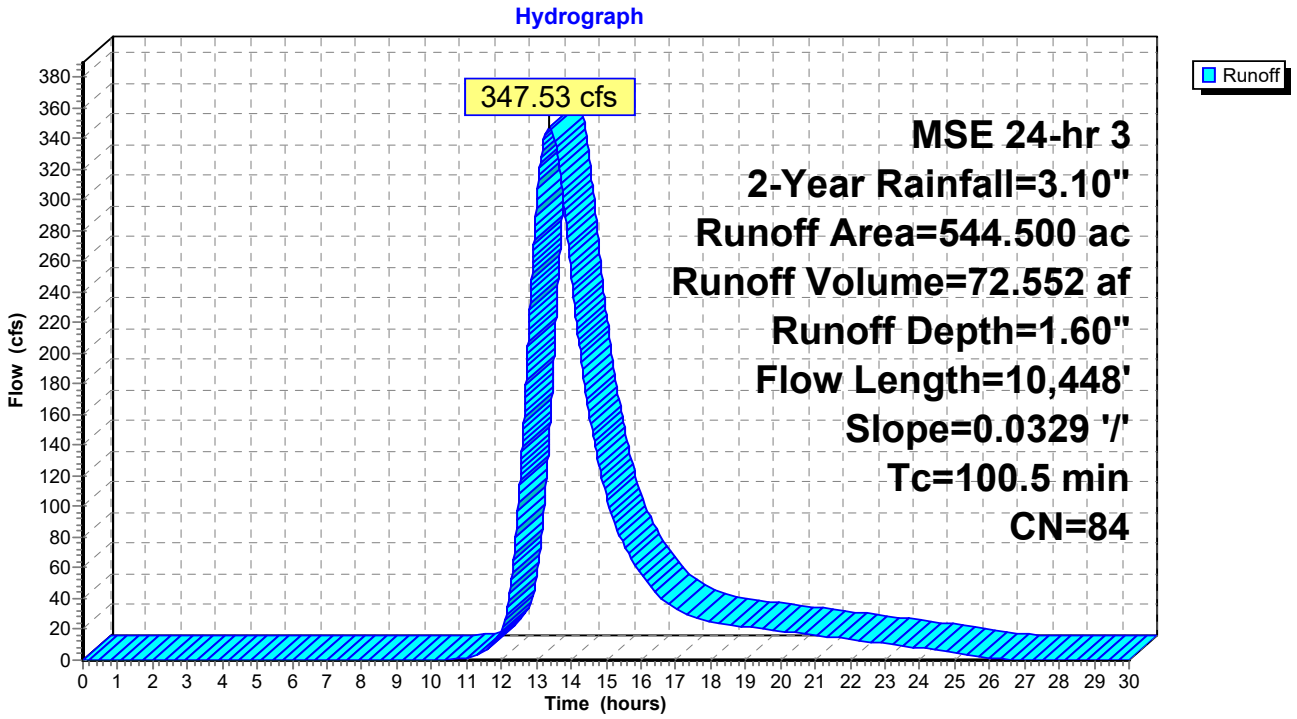
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.10"

	Area (ac)	CN	Description
*	544.500	84	
	544.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
100.5	10,448	0.0329	1.73		**Lag/CN Method,**

Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Subcatchment 544.5 AC: Remainder of Watershed to Wetland



Hydrograph for Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.03	0.00	0.00
2.50	0.04	0.00	0.00
3.00	0.05	0.00	0.00
3.50	0.07	0.00	0.00
4.00	0.08	0.00	0.00
4.50	0.10	0.00	0.00
5.00	0.12	0.00	0.00
5.50	0.14	0.00	0.00
6.00	0.16	0.00	0.00
6.50	0.18	0.00	0.00
7.00	0.21	0.00	0.00
7.50	0.23	0.00	0.00
8.00	0.26	0.00	0.00
8.50	0.29	0.00	0.00
9.00	0.32	0.00	0.00
9.50	0.37	0.00	0.00
10.00	0.43	0.00	0.01
10.50	0.48	0.01	0.26
11.00	0.60	0.02	1.58
11.50	0.77	0.07	6.08
12.00	1.43	0.38	20.05
12.50	2.33	0.99	104.00
13.00	2.50	1.12	**293.21**
13.50	2.62	1.21	**342.96**
14.00	2.67	1.25	252.39
14.50	2.73	1.30	163.36
15.00	2.78	1.34	107.66
15.50	2.81	1.36	75.99
16.00	2.84	1.39	56.47
16.50	2.87	1.41	42.37
17.00	2.89	1.43	33.65
17.50	2.92	1.45	28.49
18.00	2.94	1.47	25.29
18.50	2.96	1.49	23.29
19.00	2.98	1.50	21.69
19.50	3.00	1.52	20.27
20.00	3.02	1.53	18.90
20.50	3.03	1.54	17.52
21.00	3.05	1.56	16.16
21.50	3.06	1.57	14.82
22.00	3.07	1.58	13.47
22.50	3.08	1.58	12.09
23.00	3.09	1.59	10.70
23.50	3.10	1.60	9.33
24.00	**3.10**	**1.60**	7.96
24.50	3.10	1.60	6.47
25.00	3.10	1.60	4.50
25.50	3.10	1.60	2.49
26.00	3.10	1.60	1.19
26.50	3.10	1.60	0.57
27.00	3.10	1.60	0.27
27.50	3.10	1.60	0.12
28.00	3.10	1.60	0.05
28.50	3.10	1.60	0.02
29.00	3.10	1.60	0.01
29.50	3.10	1.60	0.00
30.00	3.10	1.60	0.00

Summary for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Runoff = 464.64 cfs @ 13.32 hrs, Volume= 91.899 af, Depth= 1.60"
Routed to Pond 1P : H AVENUE CULVERT

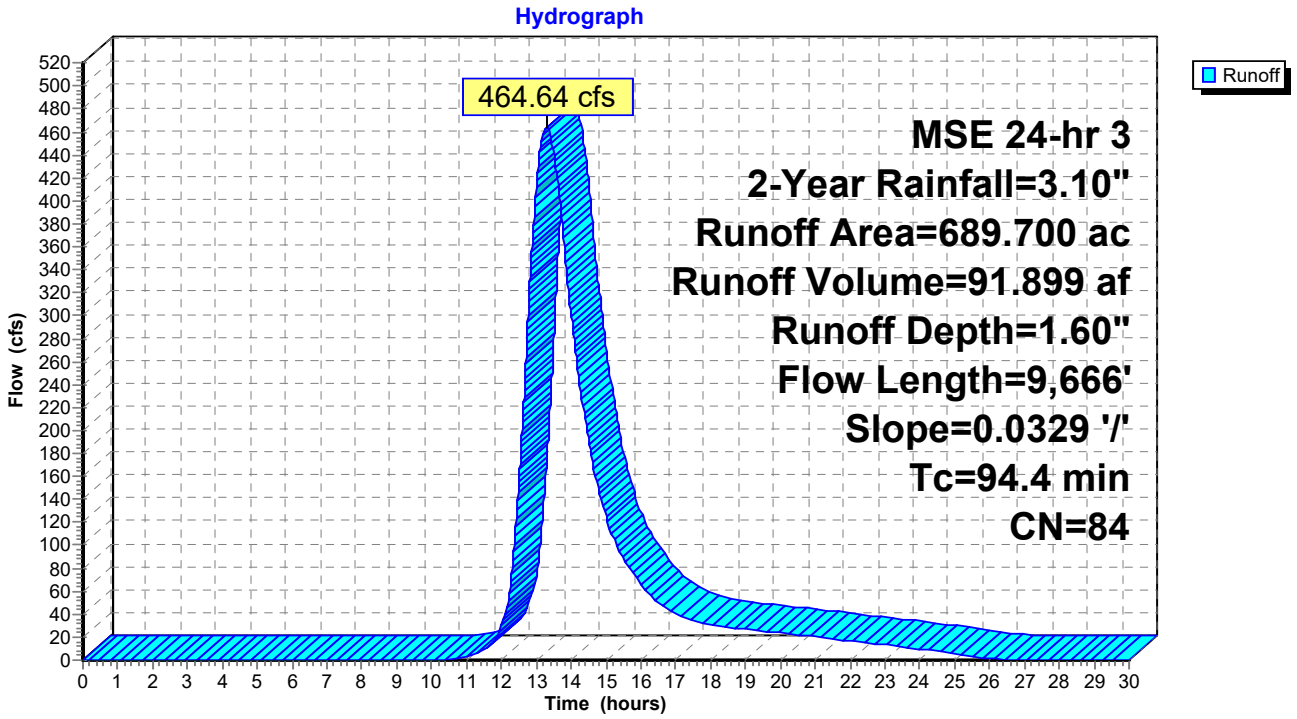
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.10"

	Area (ac)	CN	Description
*	689.700	84	
	689.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
94.4	9,666	0.0329	1.71		**Lag/CN Method,**

Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Subcatchment 689.7 AC: Watershed West of H Ave Culvert



Hydrograph for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.03	0.00	0.00
2.50	0.04	0.00	0.00
3.00	0.05	0.00	0.00
3.50	0.07	0.00	0.00
4.00	0.08	0.00	0.00
4.50	0.10	0.00	0.00
5.00	0.12	0.00	0.00
5.50	0.14	0.00	0.00
6.00	0.16	0.00	0.00
6.50	0.18	0.00	0.00
7.00	0.21	0.00	0.00
7.50	0.23	0.00	0.00
8.00	0.26	0.00	0.00
8.50	0.29	0.00	0.00
9.00	0.32	0.00	0.00
9.50	0.37	0.00	0.00
10.00	0.43	0.00	0.01
10.50	0.48	0.01	0.40
11.00	0.60	0.02	2.33
11.50	0.77	0.07	8.88
12.00	1.43	0.38	29.03
12.50	2.33	0.99	151.14
13.00	2.50	1.12	**413.64**
13.50	2.62	1.21	**441.73**
14.00	2.67	1.25	300.97
14.50	2.73	1.30	191.73
15.00	2.78	1.34	124.66
15.50	2.81	1.36	88.65
16.00	2.84	1.39	66.24
16.50	2.87	1.41	49.92
17.00	2.89	1.43	40.08
17.50	2.92	1.45	34.35
18.00	2.94	1.47	31.23
18.50	2.96	1.49	28.98
19.00	2.98	1.50	27.10
19.50	3.00	1.52	25.29
20.00	3.02	1.53	23.59
20.50	3.03	1.54	21.87
21.00	3.05	1.56	20.15
21.50	3.06	1.57	18.46
22.00	3.07	1.58	16.71
22.50	3.08	1.58	14.98
23.00	3.09	1.59	13.24
23.50	3.10	1.60	11.48
24.00	**3.10**	**1.60**	9.75
24.50	3.10	1.60	7.85
25.00	3.10	1.60	5.23
25.50	3.10	1.60	2.69
26.00	3.10	1.60	1.21
26.50	3.10	1.60	0.55
27.00	3.10	1.60	0.24
27.50	3.10	1.60	0.10
28.00	3.10	1.60	0.04
28.50	3.10	1.60	0.01
29.00	3.10	1.60	0.00
29.50	3.10	1.60	0.00
30.00	3.10	1.60	0.00

Summary for Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL

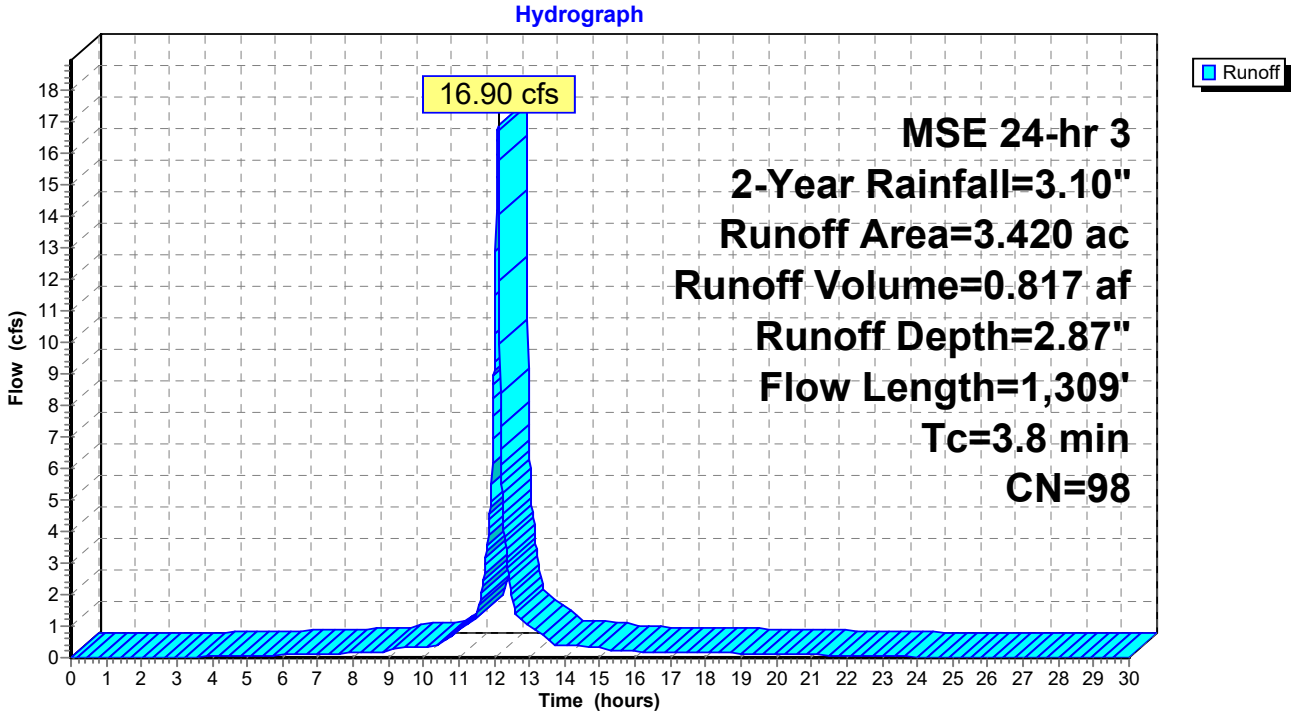
Runoff = 16.90 cfs @ 12.11 hrs, Volume= 0.817 af, Depth= 2.87"
Routed to Pond BERM : WETLAND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.10"

Area (ac)	CN	Description
3.420	98	Water Surface, HSG A
3.420		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	1,309		5.67		**Lake or Reservoir,** Mean Depth= 1.00'

Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL



Hydrograph for Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.03	0.00	0.00
2.50	0.04	0.00	0.00
3.00	0.05	0.00	0.01
3.50	0.07	0.00	0.02
4.00	0.08	0.01	0.03
4.50	0.10	0.01	0.05
5.00	0.12	0.02	0.06
5.50	0.14	0.03	0.08
6.00	0.16	0.04	0.09
6.50	0.18	0.06	0.11
7.00	0.21	0.07	0.12
7.50	0.23	0.09	0.13
8.00	0.26	0.11	0.15
8.50	0.29	0.14	0.16
9.00	0.32	0.16	0.18
9.50	0.37	0.20	0.31
10.00	0.43	0.25	0.34
10.50	0.48	0.30	0.37
11.00	0.60	0.41	0.86
11.50	0.77	0.57	1.27
12.00	1.43	1.22	**9.10**
12.50	2.33	2.10	**2.00**
13.00	2.50	2.27	1.02
13.50	2.62	2.39	0.62
14.00	2.67	2.44	0.39
14.50	2.73	2.50	0.37
15.00	2.78	2.55	0.34
15.50	2.81	2.58	0.21
16.00	2.84	2.61	0.20
16.50	2.87	2.64	0.19
17.00	2.89	2.66	0.17
17.50	2.92	2.69	0.17
18.00	2.94	2.71	0.15
18.50	2.96	2.73	0.14
19.00	2.98	2.75	0.13
19.50	3.00	2.77	0.12
20.00	3.02	2.79	0.11
20.50	3.03	2.80	0.10
21.00	3.05	2.82	0.09
21.50	3.06	2.83	0.08
22.00	3.07	2.84	0.07
22.50	3.08	2.85	0.06
23.00	3.09	2.86	0.05
23.50	3.10	2.86	0.04
24.00	**3.10**	**2.87**	0.03
24.50	3.10	2.87	0.00
25.00	3.10	2.87	0.00
25.50	3.10	2.87	0.00
26.00	3.10	2.87	0.00
26.50	3.10	2.87	0.00
27.00	3.10	2.87	0.00
27.50	3.10	2.87	0.00
28.00	3.10	2.87	0.00
28.50	3.10	2.87	0.00
29.00	3.10	2.87	0.00
29.50	3.10	2.87	0.00
30.00	3.10	2.87	0.00

Summary for Pond 1P: H AVENUE CULVERT

Inflow Area = 689.700 ac, 0.00% Impervious, Inflow Depth = 1.60" for 2-Year event
Inflow = 464.64 cfs @ 13.32 hrs, Volume= 91.899 af
Outflow = 136.75 cfs @ 14.88 hrs, Volume= 91.899 af, Atten= 71%, Lag= 94.0 min
Primary = 51.08 cfs @ 14.88 hrs, Volume= 6.384 af
Routed to Pond 2P : BASIN NW OF WETLAND
Secondary = 85.66 cfs @ 14.88 hrs, Volume= 85.515 af
Routed to Pond 2P : BASIN NW OF WETLAND

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,128.19' @ 14.88 hrs Surf.Area= 40.992 ac Storage= 47.026 af

Plug-Flow detention time= 239.4 min calculated for 91.868 af (100% of inflow)
Center-of-Mass det. time= 239.4 min (1,127.4 - 888.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,124.00'	161.110 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,124.00	0.010	0.000	0.000
1,126.00	1.650	1.660	1.660
1,128.00	36.300	37.950	39.610
1,130.00	85.200	121.500	161.110

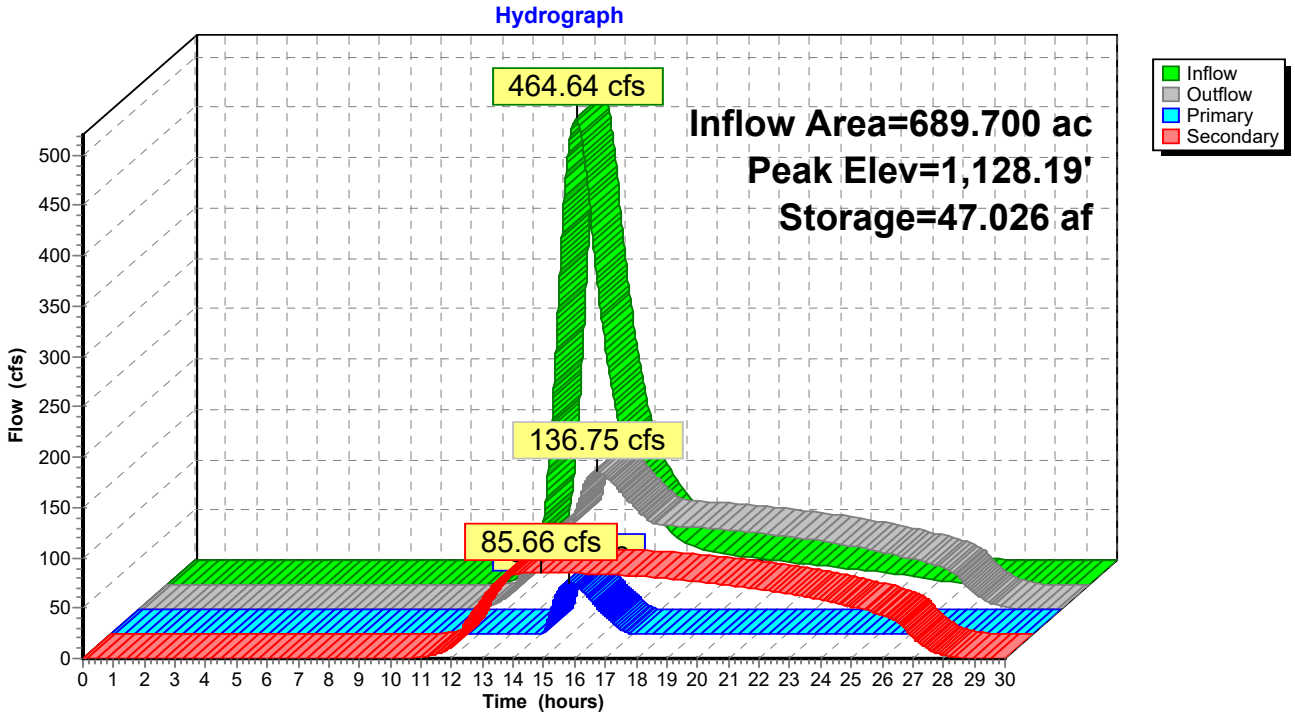
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,124.00'	**60.0" W x 24.0" H Box 5'x2' CULVERT** L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,124.00' / 1,124.00' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 10.00 sf
#2	Primary	1,128.05'	**342.0' long + 100.0 '/' SideZ x 25.0' breadth H Ave Road Surface** 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

Primary OutFlow Max=50.61 cfs @ 14.88 hrs HW=1,128.19' (Free Discharge)
↑—**2=H Ave Road Surface** (Weir Controls 50.61 cfs @ 1.00 fps)

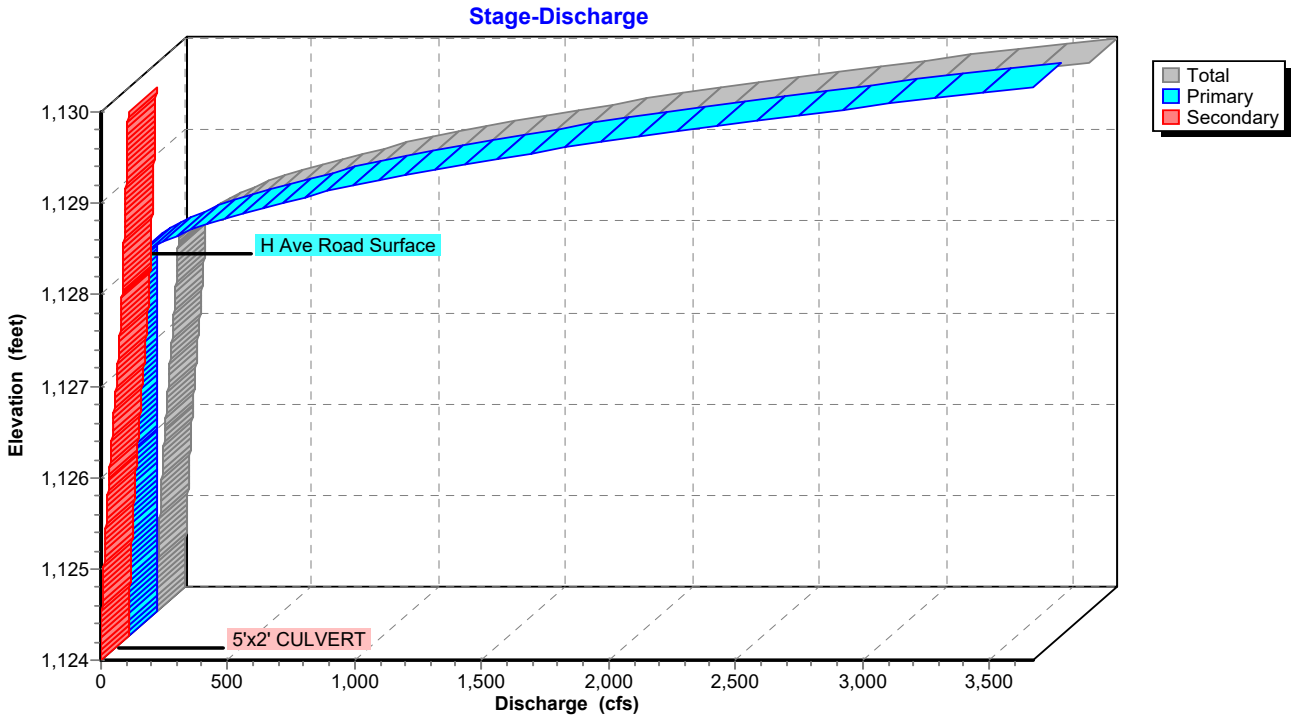
Secondary OutFlow Max=85.67 cfs @ 14.88 hrs HW=1,128.19' (Free Discharge)
↑—**1=5'x2' CULVERT** (Inlet Controls 85.67 cfs @ 8.57 fps)



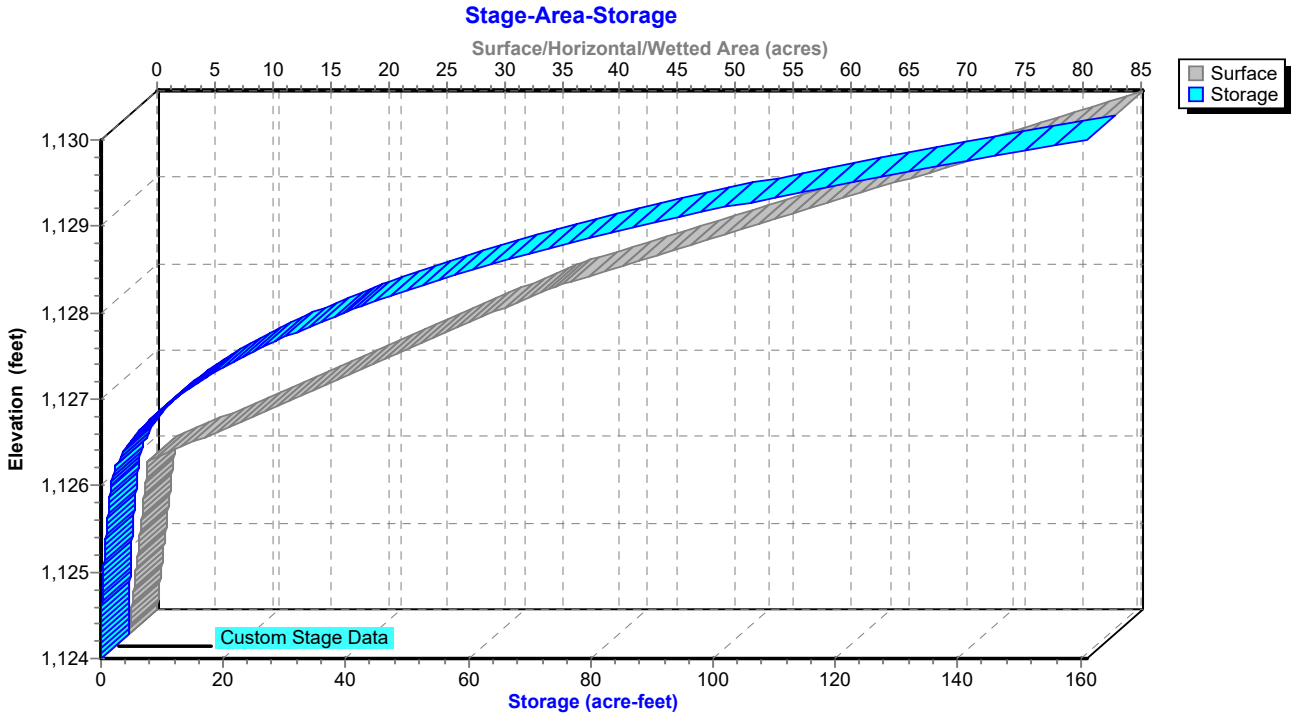
Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Hydrograph for Pond 1P: H AVENUE CULVERT

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,124.00	0.00	0.00	0.00
1.00	0.00	0.000	1,124.00	0.00	0.00	0.00
2.00	0.00	0.000	1,124.00	0.00	0.00	0.00
3.00	0.00	0.000	1,124.00	0.00	0.00	0.00
4.00	0.00	0.000	1,124.00	0.00	0.00	0.00
5.00	0.00	0.000	1,124.00	0.00	0.00	0.00
6.00	0.00	0.000	1,124.00	0.00	0.00	0.00
7.00	0.00	0.000	1,124.00	0.00	0.00	0.00
8.00	0.00	0.000	1,124.00	0.00	0.00	0.00
9.00	0.00	0.000	1,124.00	0.00	0.00	0.00
10.00	0.01	0.000	1,124.00	0.00	0.00	0.00
11.00	2.33	0.032	1,124.26	1.10	0.00	1.10
12.00	29.03	0.511	1,125.10	12.66	0.00	12.66
13.00	**413.64**	12.346	1,127.02	59.84	0.00	59.84
14.00	**300.97**	**40.310**	**1,128.02**	**83.27**	**0.00**	**83.27**
15.00	124.66	**46.974**	**1,128.19**	**136.03**	**50.39**	**85.65**
16.00	66.24	44.403	1,128.13	105.40	20.64	84.77
17.00	40.08	41.025	1,128.04	83.54	0.00	83.54
18.00	31.23	37.059	1,127.93	81.98	0.00	81.98
19.00	27.10	32.774	1,127.80	79.57	0.00	79.57
20.00	23.59	28.416	1,127.66	76.48	0.00	76.48
21.00	20.15	24.045	1,127.51	72.95	0.00	72.95
22.00	16.71	19.704	1,127.35	68.90	0.00	68.90
23.00	13.24	15.440	1,127.17	64.10	0.00	64.10
24.00	9.75	11.326	1,126.96	58.22	0.00	58.22
25.00	5.23	7.451	1,126.73	50.54	0.00	50.54
26.00	1.21	3.759	1,126.41	43.07	0.00	43.07
27.00	0.24	0.953	1,125.51	20.88	0.00	20.88
28.00	0.04	0.109	1,124.50	3.43	0.00	3.43
29.00	0.00	0.007	1,124.12	0.23	0.00	0.23
30.00	0.00	0.001	1,124.02	0.02	0.00	0.02

Stage-Discharge for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,124.00	0.00	0.00	0.00
1,124.10	0.16	0.00	0.16
1,124.20	0.64	0.00	0.64
1,124.30	1.37	0.00	1.37
1,124.40	2.30	0.00	2.30
1,124.50	3.40	0.00	3.40
1,124.60	4.64	0.00	4.64
1,124.70	6.01	0.00	6.01
1,124.80	7.50	0.00	7.50
1,124.90	9.10	0.00	9.10
1,125.00	10.80	0.00	10.80
1,125.10	12.59	0.00	12.59
1,125.20	14.47	0.00	14.47
1,125.30	16.44	0.00	16.44
1,125.40	18.49	0.00	18.49
1,125.50	20.61	0.00	20.61
1,125.60	22.82	0.00	22.82
1,125.70	25.10	0.00	25.10
1,125.80	27.44	0.00	27.44
1,125.90	29.86	0.00	29.86
1,126.00	32.34	0.00	32.34
1,126.10	34.89	0.00	34.89
1,126.20	37.50	0.00	37.50
1,126.30	40.17	0.00	40.17
1,126.40	42.91	0.00	42.91
1,126.50	45.70	0.00	45.70
1,126.60	48.55	0.00	48.55
1,126.70	49.59	0.00	49.59
1,126.80	53.02	0.00	53.02
1,126.90	56.23	0.00	56.23
1,127.00	59.28	0.00	59.28
1,127.10	62.17	0.00	62.17
1,127.20	64.93	0.00	64.93
1,127.30	67.59	0.00	67.59
1,127.40	70.14	0.00	70.14
1,127.50	72.60	0.00	72.60
1,127.60	74.98	0.00	74.98
1,127.70	77.29	0.00	77.29
1,127.80	79.53	0.00	79.53
1,127.90	81.58	0.00	81.58
1,128.00	83.00	0.00	83.00
1,128.10	94.77	10.37	84.40
1,128.20	140.89	55.12	85.78
1,128.30	208.62	121.50	87.13
1,128.40	294.93	206.47	88.46
1,128.50	397.86	308.09	89.77
1,128.60	516.16	425.10	91.06
1,128.70	646.72	554.38	92.33
1,128.80	786.82	693.24	93.59
1,128.90	942.26	847.43	94.82
1,129.00	1,114.94	1,018.90	96.05
1,129.10	1,303.85	1,206.60	97.25
1,129.20	1,510.10	1,411.66	98.44
1,129.30	1,730.38	1,630.76	99.62
1,129.40	1,964.23	1,863.45	100.78
1,129.50	2,211.09	2,109.16	101.93
1,129.60	2,470.36	2,367.29	103.06
1,129.70	2,746.35	2,642.17	104.19
1,129.80	3,039.97	2,934.67	105.30
1,129.90	3,349.12	3,242.72	106.40
1,130.00	**3,673.94**	**3,566.46**	**107.49**

Stage-Area-Storage for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,124.00	0.010	0.000
1,124.10	0.092	0.005
1,124.20	0.174	0.018
1,124.30	0.256	0.040
1,124.40	0.338	0.070
1,124.50	0.420	0.107
1,124.60	0.502	0.154
1,124.70	0.584	0.208
1,124.80	0.666	0.270
1,124.90	0.748	0.341
1,125.00	0.830	0.420
1,125.10	0.912	0.507
1,125.20	0.994	0.602
1,125.30	1.076	0.706
1,125.40	1.158	0.818
1,125.50	1.240	0.937
1,125.60	1.322	1.066
1,125.70	1.404	1.202
1,125.80	1.486	1.346
1,125.90	1.568	1.499
1,126.00	1.650	1.660
1,126.10	3.382	1.912
1,126.20	5.115	2.337
1,126.30	6.847	2.935
1,126.40	8.580	3.706
1,126.50	10.312	4.651
1,126.60	12.045	5.768
1,126.70	13.778	7.060
1,126.80	15.510	8.524
1,126.90	17.243	10.162
1,127.00	18.975	11.972
1,127.10	20.707	13.957
1,127.20	22.440	16.114
1,127.30	24.172	18.445
1,127.40	25.905	20.949
1,127.50	27.637	23.626
1,127.60	29.370	26.476
1,127.70	31.103	29.500
1,127.80	32.835	32.696
1,127.90	34.568	36.067
1,128.00	36.300	39.610
1,128.10	38.745	43.362
1,128.20	41.190	47.359
1,128.30	43.635	51.600
1,128.40	46.080	56.086
1,128.50	48.525	60.816
1,128.60	50.970	65.791
1,128.70	53.415	71.010
1,128.80	55.860	76.474
1,128.90	58.305	82.182
1,129.00	60.750	88.135
1,129.10	63.195	94.332
1,129.20	65.640	100.774
1,129.30	68.085	107.460
1,129.40	70.530	114.391
1,129.50	72.975	121.566
1,129.60	75.420	128.986
1,129.70	77.865	136.650
1,129.80	80.310	144.559
1,129.90	82.755	152.712
1,130.00	**85.200**	**161.110**

Summary for Pond 2P: BASIN NW OF WETLAND

[81] Warning: Exceeded Pond 1P by 0.25' @ 29.92 hrs

Inflow Area = 848.100 ac, 0.00% Impervious, Inflow Depth = 1.60" for 2-Year event
Inflow = 248.22 cfs @ 12.50 hrs, Volume= 113.005 af
Outflow = 73.19 cfs @ 21.76 hrs, Volume= 63.465 af, Atten= 71%, Lag= 555.8 min
Primary = 73.19 cfs @ 21.76 hrs, Volume= 63.465 af
Routed to Pond BERM : WETLAND
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,124.58' @ 21.76 hrs Surf.Area= 42.284 ac Storage= 61.688 af

Plug-Flow detention time= 484.4 min calculated for 63.465 af (56% of inflow)
Center-of-Mass det. time= 290.9 min (1,363.2 - 1,072.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,121.00'	311.173 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,121.00	1.997	0.000	0.000
1,122.00	7.899	4.948	4.948
1,123.00	16.217	12.058	17.006
1,124.00	30.839	23.528	40.534
1,126.00	70.400	101.239	141.773
1,128.00	99.000	169.400	311.173

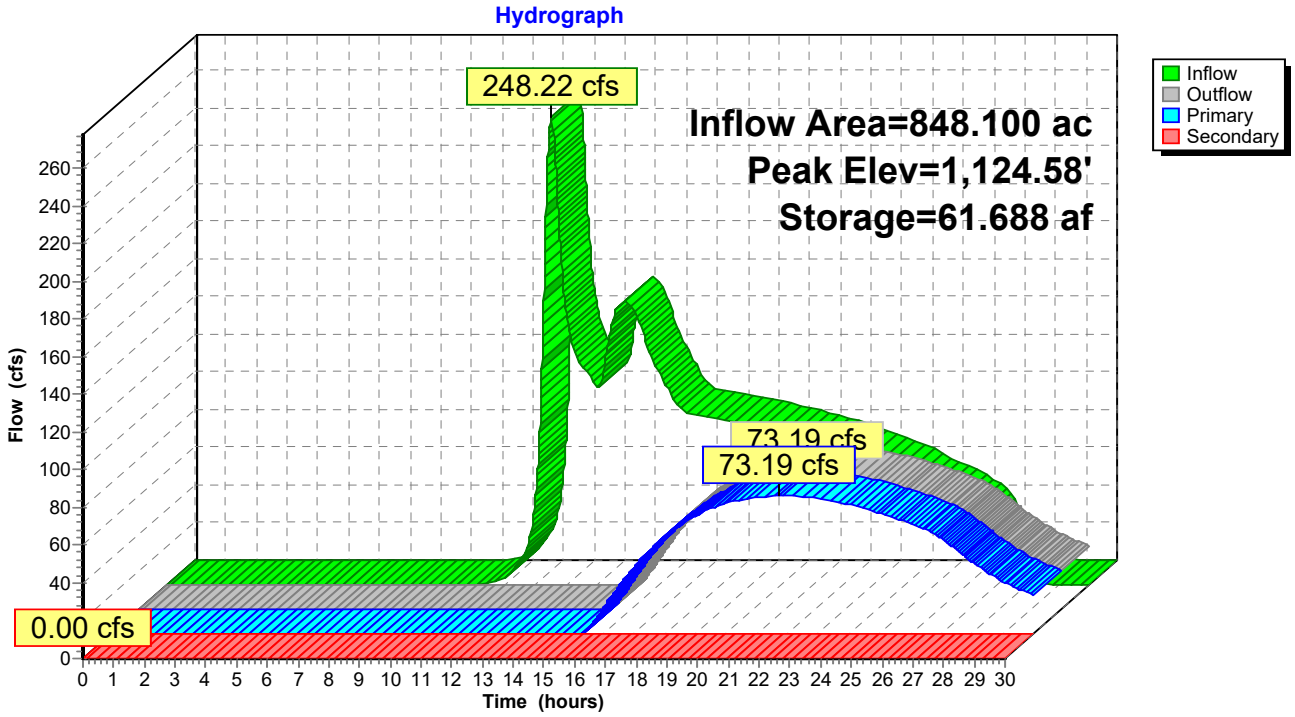
Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.00'	**50.0' long + 25.0 '/' SideZ x 50.0' breadth Saddle to Wetland** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	1,127.00'	**300.0' long + 50.0 '/' SideZ x 50.0' breadth Saddle Away from Wetland** 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

Primary OutFlow Max=73.16 cfs @ 21.76 hrs HW=1,124.58' (Free Discharge)
↑—**1=Saddle to Wetland** (Weir Controls 73.16 cfs @ 1.96 fps)

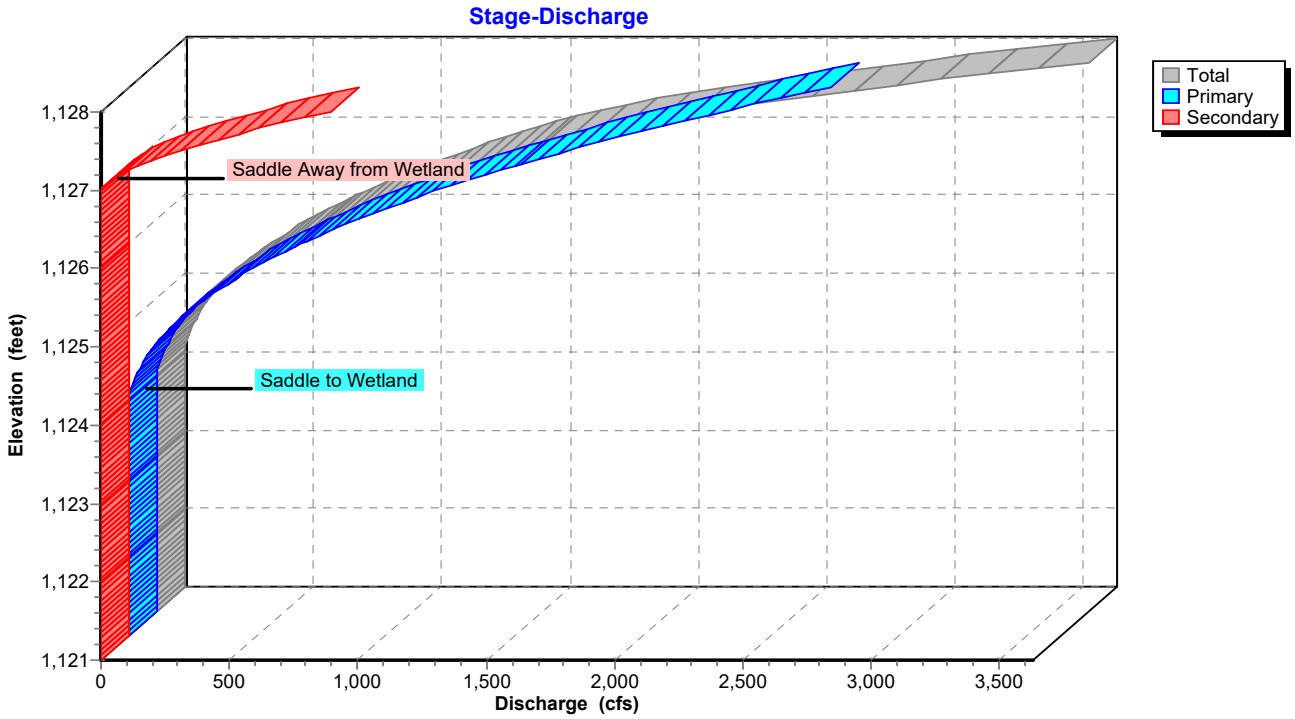
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,121.00' (Free Discharge)
↑—**2=Saddle Away from Wetland** (Controls 0.00 cfs)



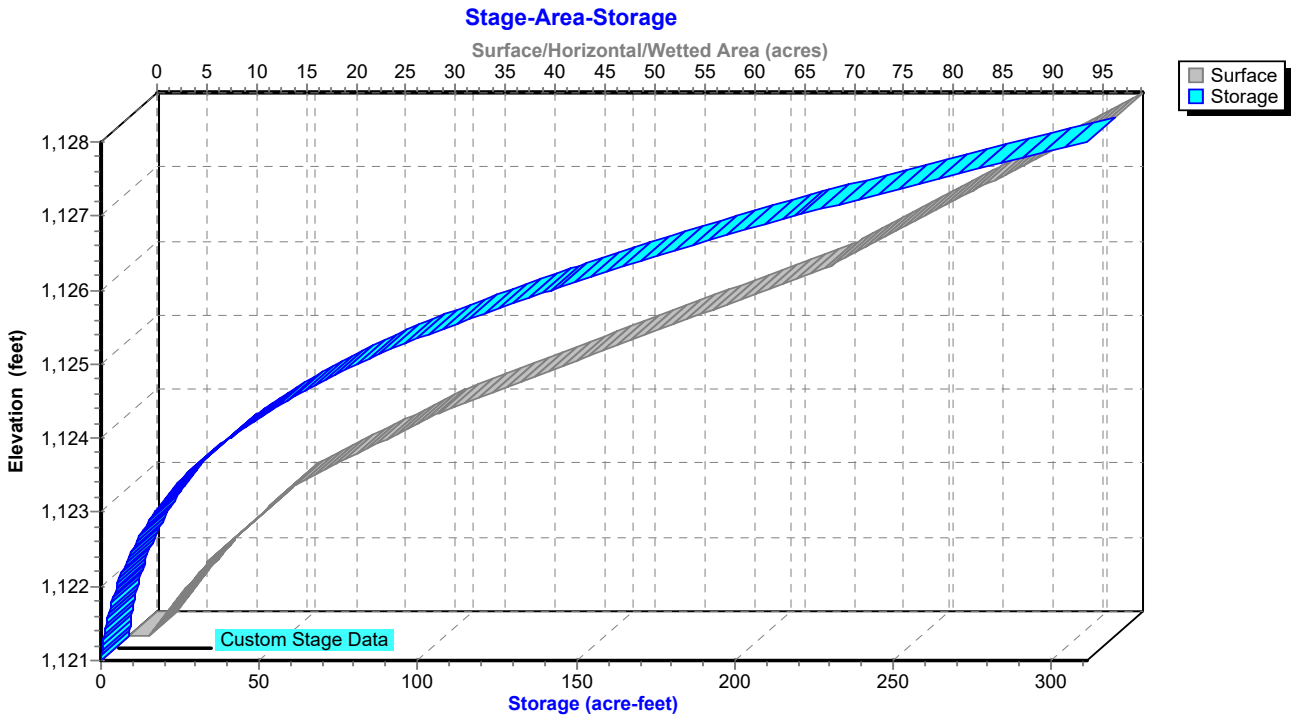
Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Hydrograph for Pond 2P: BASIN NW OF WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,121.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,121.00	0.00	0.00	0.00
2.00	0.00	0.000	1,121.00	0.00	0.00	0.00
3.00	0.00	0.000	1,121.00	0.00	0.00	0.00
4.00	0.00	0.000	1,121.00	0.00	0.00	0.00
5.00	0.00	0.000	1,121.00	0.00	0.00	0.00
6.00	0.00	0.000	1,121.00	0.00	0.00	0.00
7.00	0.00	0.000	1,121.00	0.00	0.00	0.00
8.00	0.00	0.000	1,121.00	0.00	0.00	0.00
9.00	0.00	0.000	1,121.00	0.00	0.00	0.00
10.00	0.08	0.001	1,121.00	0.00	0.00	0.00
11.00	3.96	0.105	1,121.05	0.00	0.00	0.00
12.00	**46.19**	1.444	1,121.44	0.00	0.00	0.00
13.00	**143.19**	15.639	1,122.91	0.00	0.00	0.00
14.00	104.44	25.404	1,123.43	0.00	0.00	0.00
15.00	149.75	36.448	1,123.86	0.00	0.00	0.00
16.00	113.42	47.100	1,124.20	13.09	13.09	0.00
17.00	90.55	53.283	1,124.37	34.83	34.83	0.00
18.00	88.23	57.084	1,124.47	51.21	51.21	0.00
19.00	85.04	59.520	1,124.53	62.58	62.58	0.00
20.00	81.17	60.911	1,124.56	69.33	69.33	0.00
21.00	76.85	**61.562**	**1,124.58**	**72.53**	**72.53**	0.00
22.00	71.99	**61.682**	**1,124.58**	**73.14**	**73.14**	0.00
23.00	66.40	61.407	1,124.57	71.75	71.75	0.00
24.00	59.71	60.808	1,124.56	68.83	68.83	0.00
25.00	50.61	59.865	1,124.53	64.25	64.25	0.00
26.00	43.07	58.711	1,124.51	58.66	58.66	0.00
27.00	20.88	57.008	1,124.46	50.87	50.87	0.00
28.00	3.43	54.166	1,124.39	38.52	38.52	0.00
29.00	0.23	51.543	1,124.32	28.11	28.11	0.00
30.00	0.02	49.548	1,124.27	20.89	20.89	0.00

Stage-Discharge for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,121.00	0.00	0.00	0.00
1,121.10	0.00	0.00	0.00
1,121.20	0.00	0.00	0.00
1,121.30	0.00	0.00	0.00
1,121.40	0.00	0.00	0.00
1,121.50	0.00	0.00	0.00
1,121.60	0.00	0.00	0.00
1,121.70	0.00	0.00	0.00
1,121.80	0.00	0.00	0.00
1,121.90	0.00	0.00	0.00
1,122.00	0.00	0.00	0.00
1,122.10	0.00	0.00	0.00
1,122.20	0.00	0.00	0.00
1,122.30	0.00	0.00	0.00
1,122.40	0.00	0.00	0.00
1,122.50	0.00	0.00	0.00
1,122.60	0.00	0.00	0.00
1,122.70	0.00	0.00	0.00
1,122.80	0.00	0.00	0.00
1,122.90	0.00	0.00	0.00
1,123.00	0.00	0.00	0.00
1,123.10	0.00	0.00	0.00
1,123.20	0.00	0.00	0.00
1,123.30	0.00	0.00	0.00
1,123.40	0.00	0.00	0.00
1,123.50	0.00	0.00	0.00
1,123.60	0.00	0.00	0.00
1,123.70	0.00	0.00	0.00
1,123.80	0.00	0.00	0.00
1,123.90	0.00	0.00	0.00
1,124.00	0.00	0.00	0.00
1,124.10	4.41	4.41	0.00
1,124.20	12.94	12.94	0.00
1,124.30	24.75	24.75	0.00
1,124.40	39.62	39.62	0.00
1,124.50	57.28	57.28	0.00
1,124.60	77.80	77.80	0.00
1,124.70	100.08	100.08	0.00
1,124.80	124.68	124.68	0.00
1,124.90	152.99	152.99	0.00
1,125.00	184.10	184.10	0.00
1,125.10	218.88	218.88	0.00
1,125.20	256.81	256.81	0.00
1,125.30	297.39	297.39	0.00
1,125.40	341.11	341.11	0.00
1,125.50	387.26	387.26	0.00
1,125.60	436.47	436.47	0.00
1,125.70	489.68	489.68	0.00
1,125.80	546.21	546.21	0.00
1,125.90	606.13	606.13	0.00
1,126.00	669.49	669.49	0.00
1,126.10	736.33	736.33	0.00
1,126.20	806.71	806.71	0.00
1,126.30	880.68	880.68	0.00
1,126.40	958.29	958.29	0.00
1,126.50	1,039.60	1,039.60	0.00
1,126.60	1,124.65	1,124.65	0.00
1,126.70	1,213.49	1,213.49	0.00
1,126.80	1,306.17	1,306.17	0.00
1,126.90	1,402.74	1,402.74	0.00
1,127.00	1,503.25	1,503.25	0.00
1,127.10	1,633.51	1,607.74	25.76
1,127.20	1,790.10	1,716.27	73.83
1,127.30	1,966.79	1,828.88	137.91
1,127.40	2,161.46	1,945.61	215.84
1,127.50	2,371.99	2,066.52	305.47
1,127.60	2,598.21	2,191.64	406.57
1,127.70	2,833.93	2,321.03	512.90
1,127.80	3,081.88	2,454.72	627.16
1,127.90	3,348.70	2,592.76	755.93
1,128.00	**3,629.40**	**2,735.20**	**894.20**

Stage-Area-Storage for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,121.00	1.997	0.000
1,121.10	2.587	0.229
1,121.20	3.177	0.517
1,121.30	3.768	0.865
1,121.40	4.358	1.271
1,121.50	4.948	1.736
1,121.60	5.538	2.261
1,121.70	6.128	2.844
1,121.80	6.719	3.486
1,121.90	7.309	4.188
1,122.00	7.899	4.948
1,122.10	8.731	5.779
1,122.20	9.563	6.694
1,122.30	10.394	7.692
1,122.40	11.226	8.773
1,122.50	12.058	9.937
1,122.60	12.890	11.185
1,122.70	13.722	12.515
1,122.80	14.553	13.929
1,122.90	15.385	15.426
1,123.00	16.217	17.006
1,123.10	17.679	18.701
1,123.20	19.141	20.542
1,123.30	20.604	22.529
1,123.40	22.066	24.663
1,123.50	23.528	26.942
1,123.60	24.990	29.368
1,123.70	26.452	31.940
1,123.80	27.915	34.659
1,123.90	29.377	37.523
1,124.00	30.839	40.534
1,124.10	32.817	43.717
1,124.20	34.795	47.097
1,124.30	36.773	50.676
1,124.40	38.751	54.452
1,124.50	40.729	58.426
1,124.60	42.707	62.598
1,124.70	44.685	66.968
1,124.80	46.663	71.535
1,124.90	48.641	76.300
1,125.00	50.619	81.263
1,125.10	52.598	86.424
1,125.20	54.576	91.783
1,125.30	56.554	97.339
1,125.40	58.532	103.093
1,125.50	60.510	109.046
1,125.60	62.488	115.195
1,125.70	64.466	121.543
1,125.80	66.444	128.089
1,125.90	68.422	134.832
1,126.00	70.400	141.773
1,126.10	71.830	148.884
1,126.20	73.260	156.139
1,126.30	74.690	163.536
1,126.40	76.120	171.077
1,126.50	77.550	178.760
1,126.60	78.980	186.587
1,126.70	80.410	194.557
1,126.80	81.840	202.669
1,126.90	83.270	210.925
1,127.00	84.700	219.323
1,127.10	86.130	227.864
1,127.20	87.560	236.549
1,127.30	88.990	245.376
1,127.40	90.420	254.347
1,127.50	91.850	263.460
1,127.60	93.280	272.717
1,127.70	94.710	282.117
1,127.80	96.140	291.659
1,127.90	97.570	301.345
1,128.00	**99.000**	**311.173**

Summary for Pond BERM: WETLAND

Inflow Area = 1,396.020 ac, 0.24% Impervious, Inflow Depth > 1.18" for 2-Year event
Inflow = 348.26 cfs @ 13.32 hrs, Volume= 136.835 af
Outflow = 332.43 cfs @ 13.60 hrs, Volume= 135.479 af, Atten= 5%, Lag= 16.4 min
Primary = 332.43 cfs @ 13.60 hrs, Volume= 135.479 af
Routed to Pond I AVE : I AVENUE CULVERTS

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 1,106.00' Surf.Area= 6.409 ac Storage= 5.396 af
Peak Elev= 1,107.20' @ 13.60 hrs Surf.Area= 6.977 ac Storage= 13.467 af (8.070 af above start)

Plug-Flow detention time= 65.5 min calculated for 130.039 af (95% of inflow)
Center-of-Mass det. time= 18.8 min (1,129.3 - 1,110.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,103.00'	386.614 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

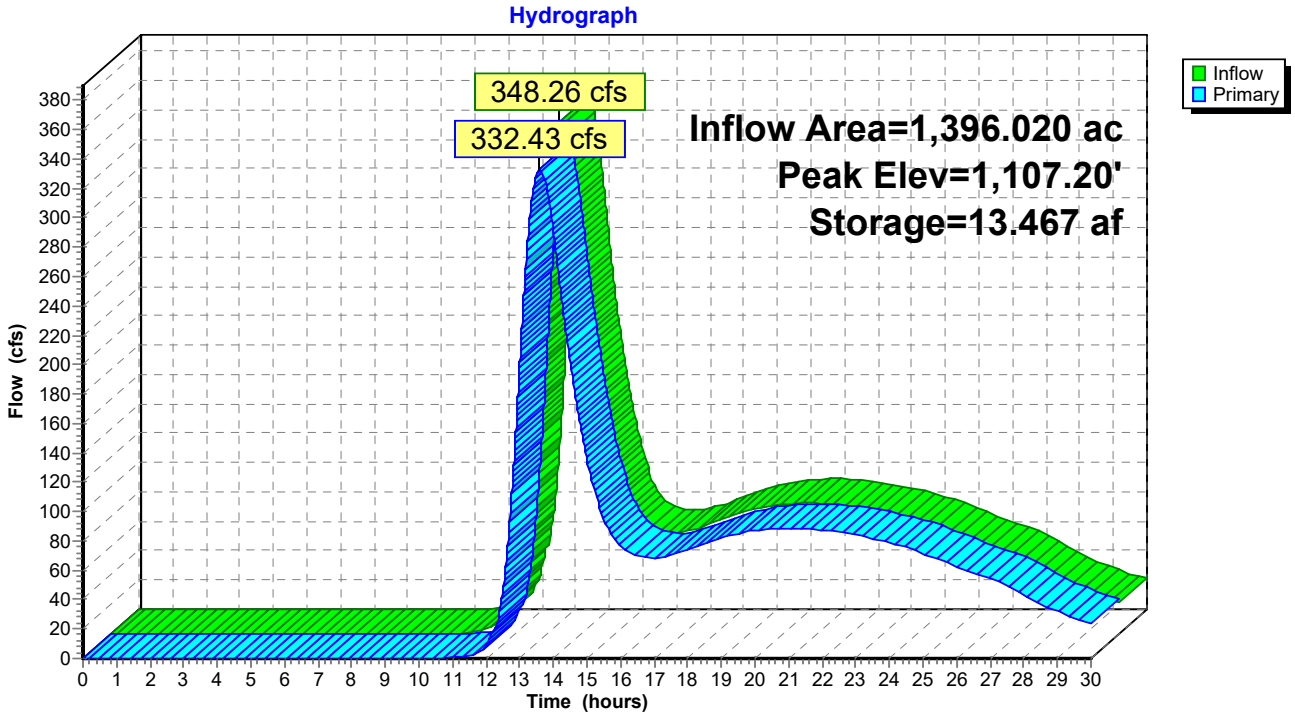
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,103.00	0.000	0.000	0.000
1,104.00	0.943	0.472	0.472
1,105.00	1.249	1.096	1.568
1,106.00	6.409	3.829	5.396
1,107.00	6.899	6.654	12.051
1,108.00	7.280	7.089	19.140
1,109.00	7.669	7.475	26.615
1,110.00	10.179	8.924	35.538
1,110.30	11.226	3.211	38.749
1,111.00	23.616	12.195	50.944
1,112.00	31.569	27.592	78.536
1,113.00	42.971	37.270	115.806
1,114.00	53.846	48.409	164.215
1,115.00	65.969	59.908	224.122
1,116.00	79.963	72.966	297.088
1,117.00	99.088	89.526	386.614

Device	Routing	Invert	Outlet Devices
#1	Primary	1,106.00'	**Sheet Pile Weir, C= 3.27** Offset (feet) -54.10 -52.10 -44.10 -37.50 37.50 44.10 52.10 54.10 Height (feet) 4.30 3.30 3.30 0.00 0.00 3.30 3.30 4.30

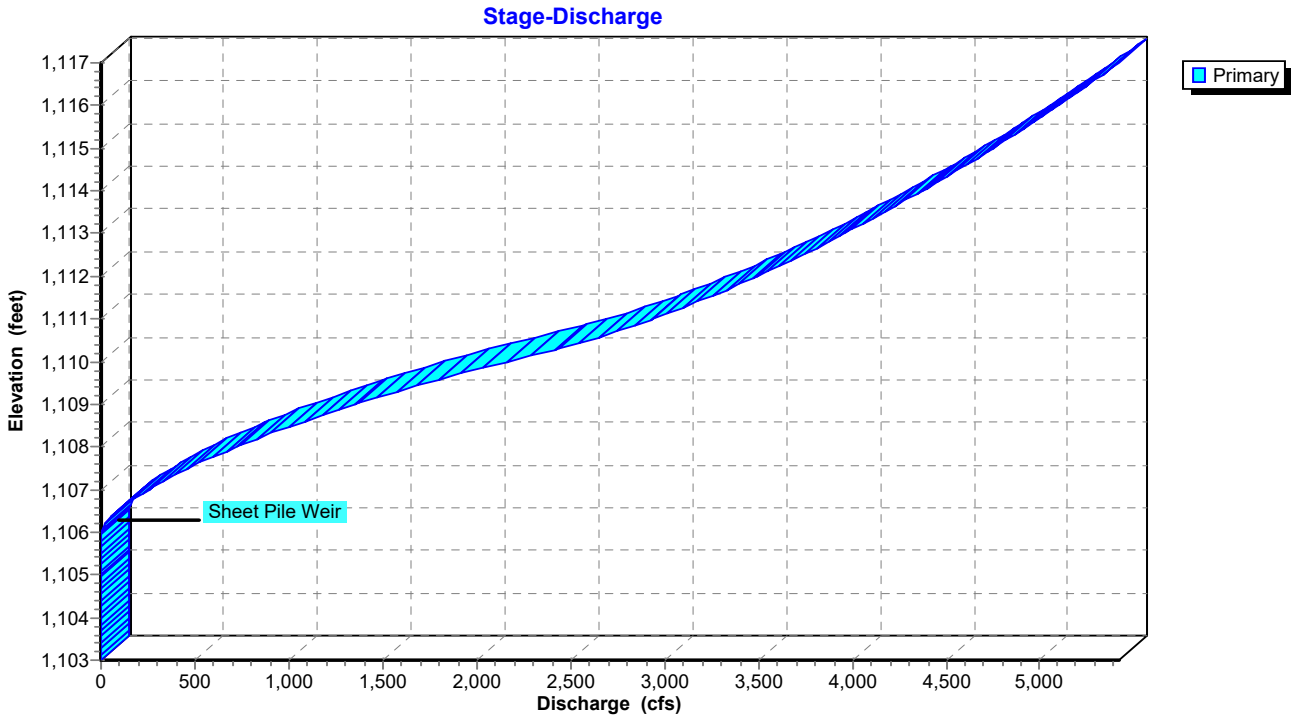
Primary OutFlow Max=332.37 cfs @ 13.60 hrs HW=1,107.20' (Free Discharge)
↳**1=Sheet Pile Weir** (Weir Controls 332.37 cfs @ 3.46 fps)



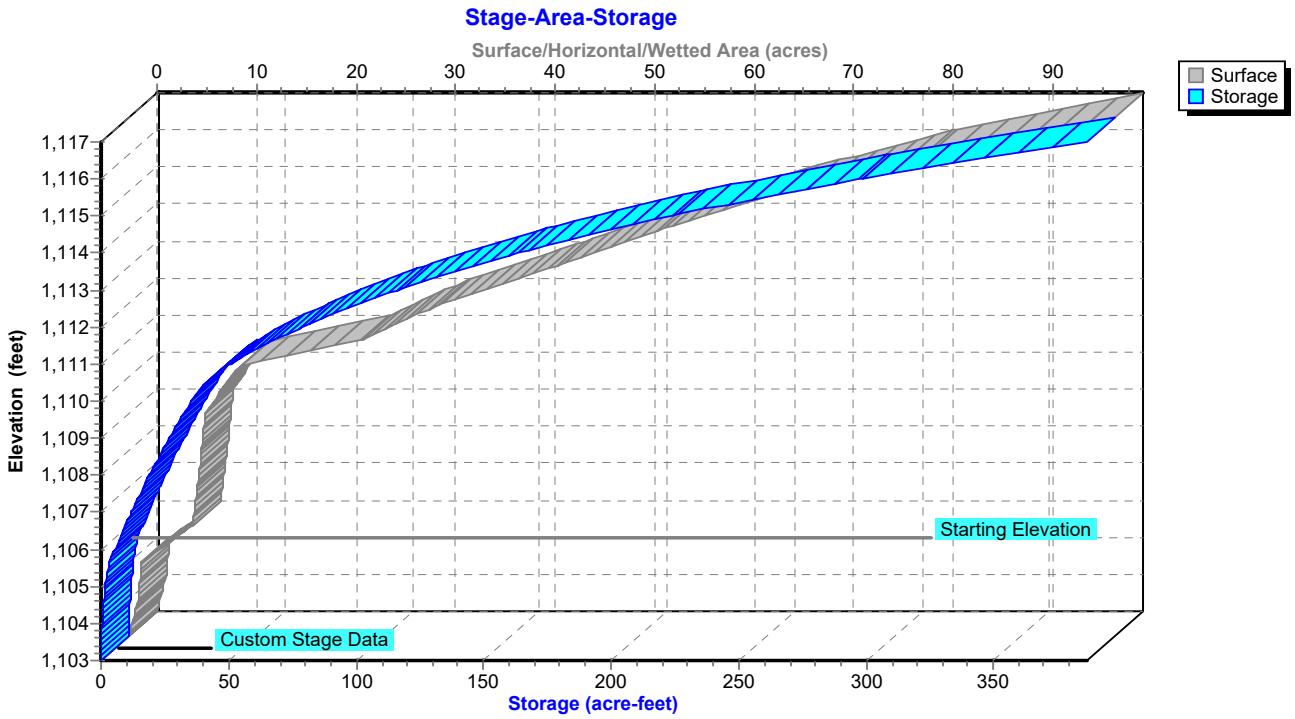
Pond BERM: WETLAND



Pond BERM: WETLAND



Pond BERM: WETLAND



Hydrograph for Pond BERM: WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	5.396	1,106.00	0.00
1.00	0.00	5.396	1,106.00	0.00
2.00	0.00	5.396	1,106.00	0.00
3.00	0.01	5.397	1,106.00	0.00
4.00	0.03	5.398	1,106.00	0.01
5.00	0.06	5.400	1,106.00	0.03
6.00	0.09	5.402	1,106.00	0.06
7.00	0.12	5.405	1,106.00	0.09
8.00	0.15	5.407	1,106.00	0.12
9.00	0.18	5.410	1,106.00	0.15
10.00	0.35	5.419	1,106.00	0.24
11.00	2.45	5.465	1,106.01	0.74
12.00	29.15	6.049	1,106.10	8.59
13.00	**294.23**	**11.129**	**1,106.87**	**201.68**
14.00	**252.78**	**12.741**	**1,107.10**	**289.83**
15.00	108.01	9.774	1,106.67	135.55
16.00	69.76	8.371	1,106.46	76.87
17.00	68.66	8.140	1,106.42	68.34
18.00	76.66	8.291	1,106.44	73.91
19.00	84.41	8.512	1,106.48	82.08
20.00	88.34	8.653	1,106.50	87.28
21.00	88.78	8.690	1,106.50	88.82
22.00	86.67	8.657	1,106.50	87.43
23.00	82.50	8.563	1,106.49	83.96
24.00	76.82	8.422	1,106.46	78.76
25.00	68.76	8.229	1,106.43	71.62
26.00	59.84	7.986	1,106.40	62.62
27.00	51.13	7.760	1,106.36	54.29
28.00	38.58	7.407	1,106.31	43.38
29.00	28.11	7.035	1,106.25	32.04
30.00	20.89	6.754	1,106.21	24.02

Stage-Discharge for Pond BERM: WETLAND

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,103.00	0.00	1,108.30	897.44	1,113.60	4,213.52
1,103.10	0.00	1,108.40	958.54	1,113.70	4,254.15
1,103.20	0.00	1,108.50	1,021.14	1,113.80	4,294.38
1,103.30	0.00	1,108.60	1,085.21	1,113.90	4,334.22
1,103.40	0.00	1,108.70	1,150.74	1,114.00	4,373.67
1,103.50	0.00	1,108.80	1,217.71	1,114.10	4,412.75
1,103.60	0.00	1,108.90	1,286.10	1,114.20	4,451.48
1,103.70	0.00	1,109.00	1,355.92	1,114.30	4,489.85
1,103.80	0.00	1,109.10	1,427.13	1,114.40	4,527.88
1,103.90	0.00	1,109.20	1,499.73	1,114.50	4,565.58
1,104.00	0.00	1,109.30	1,573.71	1,114.60	4,602.96
1,104.10	0.00	1,109.40	1,650.72	1,114.70	4,640.03
1,104.20	0.00	1,109.50	1,730.46	1,114.80	4,676.79
1,104.30	0.00	1,109.60	1,812.44	1,114.90	4,713.26
1,104.40	0.00	1,109.70	1,896.48	1,115.00	4,749.43
1,104.50	0.00	1,109.80	1,982.48	1,115.10	4,785.32
1,104.60	0.00	1,109.90	2,070.36	1,115.20	4,820.93
1,104.70	0.00	1,110.00	2,160.07	1,115.30	4,856.27
1,104.80	0.00	1,110.10	2,251.56	1,115.40	4,891.35
1,104.90	0.00	1,110.20	2,344.79	1,115.50	4,926.17
1,105.00	0.00	1,110.30	2,439.74	1,115.60	4,960.74
1,105.10	0.00	1,110.40	2,525.17	1,115.70	4,995.07
1,105.20	0.00	1,110.50	2,602.93	1,115.80	5,029.15
1,105.30	0.00	1,110.60	2,676.21	1,115.90	5,063.00
1,105.40	0.00	1,110.70	2,746.13	1,116.00	5,096.61
1,105.50	0.00	1,110.80	2,813.32	1,116.10	5,130.00
1,105.60	0.00	1,110.90	2,878.20	1,116.20	5,163.17
1,105.70	0.00	1,111.00	2,941.06	1,116.30	5,196.12
1,105.80	0.00	1,111.10	3,002.16	1,116.40	5,228.85
1,105.90	0.00	1,111.20	3,061.65	1,116.50	5,261.38
1,106.00	0.00	1,111.30	3,119.70	1,116.60	5,293.71
1,106.10	7.77	1,111.40	3,176.43	1,116.70	5,325.83
1,106.20	22.03	1,111.50	3,231.94	1,116.80	5,357.75
1,106.30	40.56	1,111.60	3,286.32	1,116.90	5,389.49
1,106.40	62.57	1,111.70	3,339.64	1,117.00	**5,421.03**
1,106.50	87.63	1,111.80	3,391.99		
1,106.60	115.44	1,111.90	3,443.41		
1,106.70	145.78	1,112.00	3,493.96		
1,106.80	178.48	1,112.10	3,543.69		
1,106.90	213.42	1,112.20	3,592.64		
1,107.00	250.48	1,112.30	3,640.85		
1,107.10	289.58	1,112.40	3,688.37		
1,107.20	330.64	1,112.50	3,735.21		
1,107.30	373.60	1,112.60	3,781.41		
1,107.40	418.39	1,112.70	3,827.00		
1,107.50	464.97	1,112.80	3,872.01		
1,107.60	513.29	1,112.90	3,916.45		
1,107.70	563.32	1,113.00	3,960.36		
1,107.80	615.01	1,113.10	4,003.74		
1,107.90	668.34	1,113.20	4,046.63		
1,108.00	723.27	1,113.30	4,089.03		
1,108.10	779.78	1,113.40	4,130.97		
1,108.20	837.84	1,113.50	4,172.46		

Stage-Area-Storage for Pond BERM: WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,103.00	0.000	0.000
1,103.20	0.189	0.019
1,103.40	0.377	0.075
1,103.60	0.566	0.170
1,103.80	0.754	0.302
1,104.00	0.943	0.472
1,104.20	1.004	0.666
1,104.40	1.065	0.873
1,104.60	1.127	1.092
1,104.80	1.188	1.324
1,105.00	1.249	1.568
1,105.20	2.281	1.921
1,105.40	3.313	2.480
1,105.60	4.345	3.246
1,105.80	5.377	4.218
1,106.00	6.409	5.396
1,106.20	6.507	6.688
1,106.40	6.605	7.999
1,106.60	6.703	9.330
1,106.80	6.801	10.680
1,107.00	6.899	12.051
1,107.20	6.975	13.438
1,107.40	7.051	14.841
1,107.60	7.128	16.258
1,107.80	7.204	17.692
1,108.00	7.280	19.140
1,108.20	7.358	20.604
1,108.40	7.436	22.083
1,108.60	7.513	23.578
1,108.80	7.591	25.088
1,109.00	7.669	26.615
1,109.20	8.171	28.199
1,109.40	8.673	29.883
1,109.60	9.175	31.668
1,109.80	9.677	33.553
1,110.00	10.179	35.538
1,110.20	10.877	37.644
1,110.40	12.996	39.960
1,110.60	16.536	42.914
1,110.80	20.076	46.575
1,111.00	23.616	50.944
1,111.20	25.207	55.826
1,111.40	26.797	61.027
1,111.60	28.388	66.545
1,111.80	29.978	72.382
1,112.00	31.569	78.536
1,112.20	33.849	85.078
1,112.40	36.130	92.076
1,112.60	38.410	99.530
1,112.80	40.691	107.440
1,113.00	42.971	115.806
1,113.20	45.146	124.618
1,113.40	47.321	133.865
1,113.60	49.496	143.547
1,113.80	51.671	153.663
1,114.00	53.846	164.215
1,114.20	56.271	175.227
1,114.40	58.695	186.723
1,114.60	61.120	198.705
1,114.80	63.544	211.171
1,115.00	65.969	224.122
1,115.20	68.768	237.596
1,115.40	71.567	251.630
1,115.60	74.365	266.223
1,115.80	77.164	281.376
1,116.00	79.963	297.088
1,116.20	83.788	313.464
1,116.40	87.613	330.604
1,116.60	91.438	348.509
1,116.80	95.263	367.179
1,117.00	**99.088**	**386.614**

Summary for Pond I AVE: I AVENUE CULVERTS

[81] Warning: Exceeded Pond BERM by 1.81' @ 14.42 hrs

Inflow Area = 1,705.060 ac, 0.20% Impervious, Inflow Depth > 1.24" for 2-Year event
Inflow = 526.40 cfs @ 13.46 hrs, Volume= 176.657 af
Outflow = 359.59 cfs @ 14.20 hrs, Volume= 176.635 af, Atten= 32%, Lag= 44.5 min
Primary = 286.76 cfs @ 14.20 hrs, Volume= 163.666 af
Secondary = 72.82 cfs @ 14.20 hrs, Volume= 12.969 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,108.76' @ 14.20 hrs Surf.Area= 9.968 ac Storage= 17.986 af

Plug-Flow detention time= 12.7 min calculated for 176.577 af (100% of inflow)
Center-of-Mass det. time= 12.6 min (1,084.8 - 1,072.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,098.00'	389.527 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,098.00	0.000	0.000	0.000
1,099.00	0.001	0.001	0.001
1,100.00	0.001	0.001	0.002
1,101.00	0.008	0.005	0.006
1,102.00	0.027	0.017	0.023
1,103.00	0.110	0.069	0.092
1,104.00	0.241	0.175	0.267
1,105.00	0.567	0.404	0.671
1,106.00	1.270	0.918	1.590
1,107.00	5.886	3.578	5.168
1,108.00	6.916	6.401	11.569
1,109.00	10.932	8.924	20.493
1,110.00	16.090	13.511	34.004
1,111.00	23.616	19.853	53.857
1,112.00	31.569	27.592	81.449
1,113.00	42.971	37.270	118.719
1,114.00	53.846	48.408	167.128
1,115.00	65.969	59.908	227.035
1,116.00	79.963	72.966	300.001
1,117.00	99.088	89.526	389.527

Device	Routing	Invert	Outlet Devices
#1	Primary	1,100.22'	**72.0" Round 72" RCP CULVERT** L= 85.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,100.22' / 1,098.91' S= 0.0153 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 28.27 sf
#2	Secondary	1,104.72'	**48.0" Round 48" RCP CULVERT** L= 62.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,104.72' / 1,104.41' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

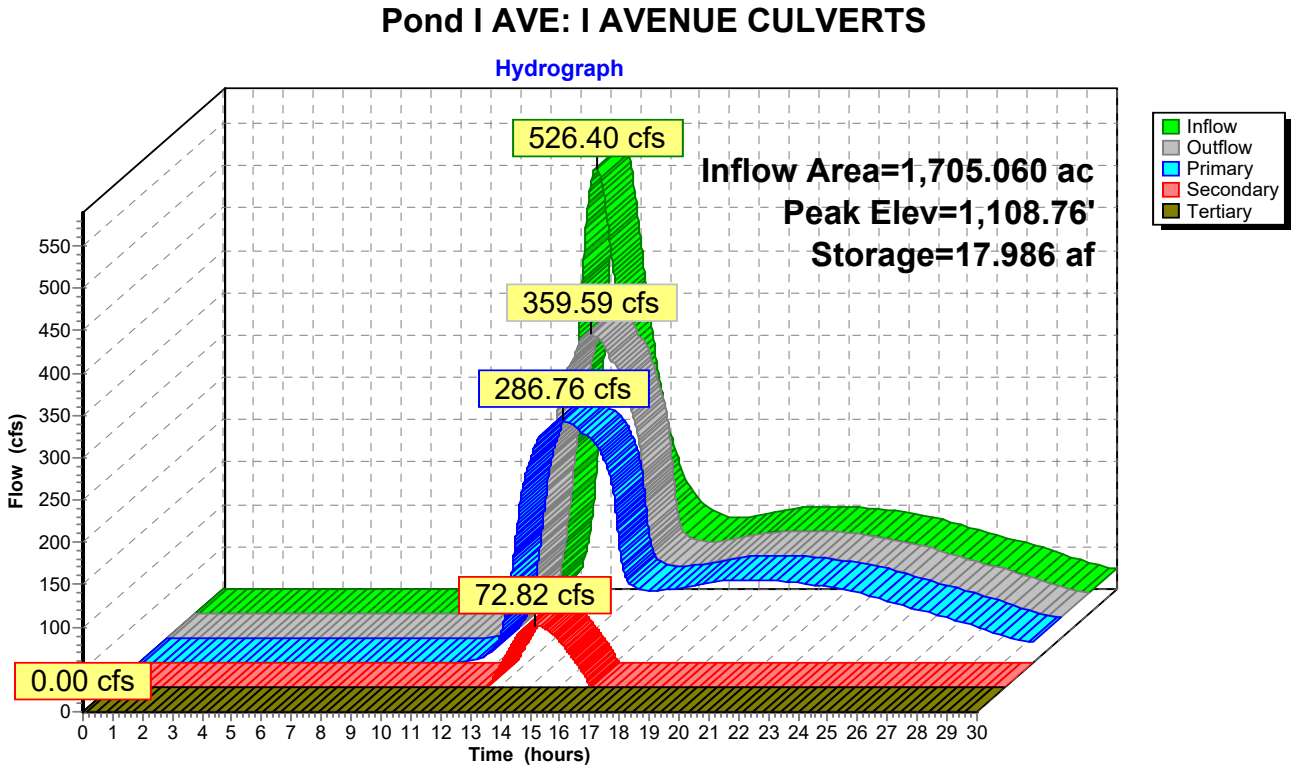
#3 Tertiary 1,115.86' **I AVENUE, C= 3.27**
Offset (feet) 0.00 115.59 162.20 164.26 214.26 232.65 343.45
Height (feet) 1.14 0.14 0.00 0.00 0.09 0.14 1.14

Primary OutFlow Max=286.78 cfs @ 14.20 hrs HW=1,108.76' (Free Discharge)
└**1=72" RCP CULVERT** (Barrel Controls 286.78 cfs @ 10.14 fps)

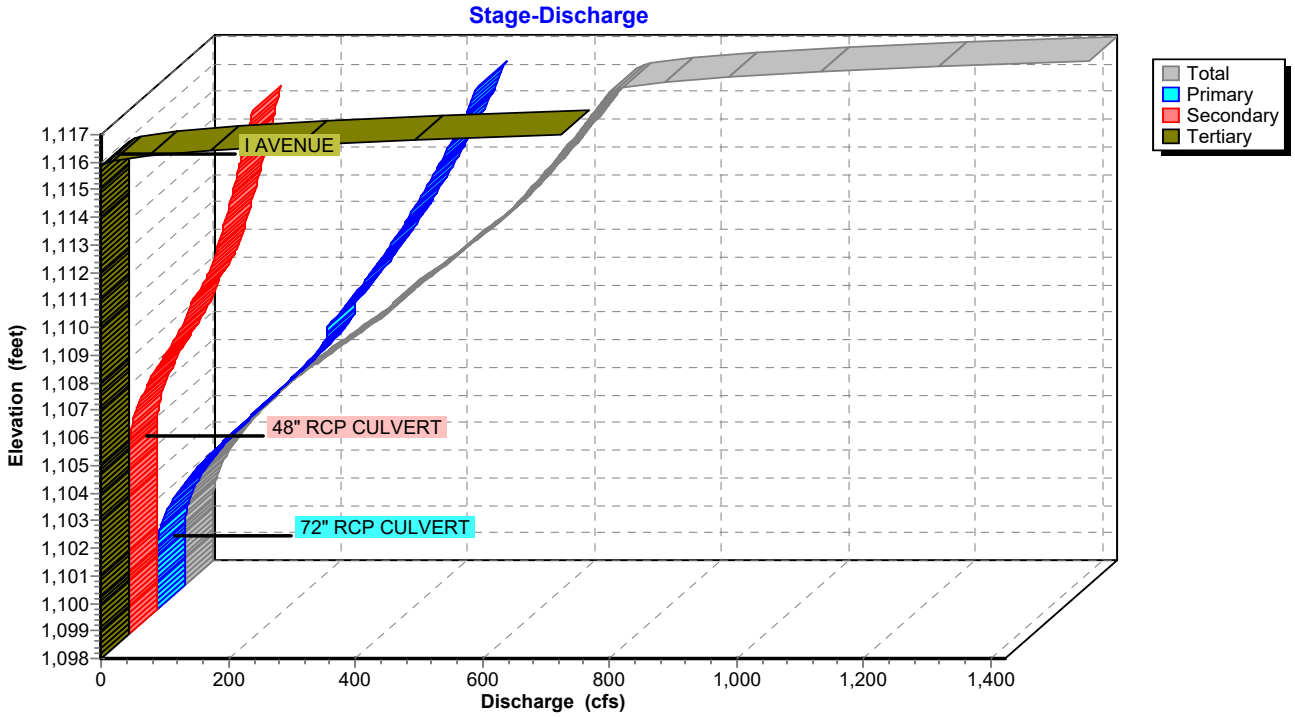
Secondary OutFlow Max=72.83 cfs @ 14.20 hrs HW=1,108.76' (Free Discharge)
└**2=48" RCP CULVERT** (Barrel Controls 72.83 cfs @ 7.13 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,098.00' (Free Discharge)
└**3=I AVENUE** (Controls 0.00 cfs)

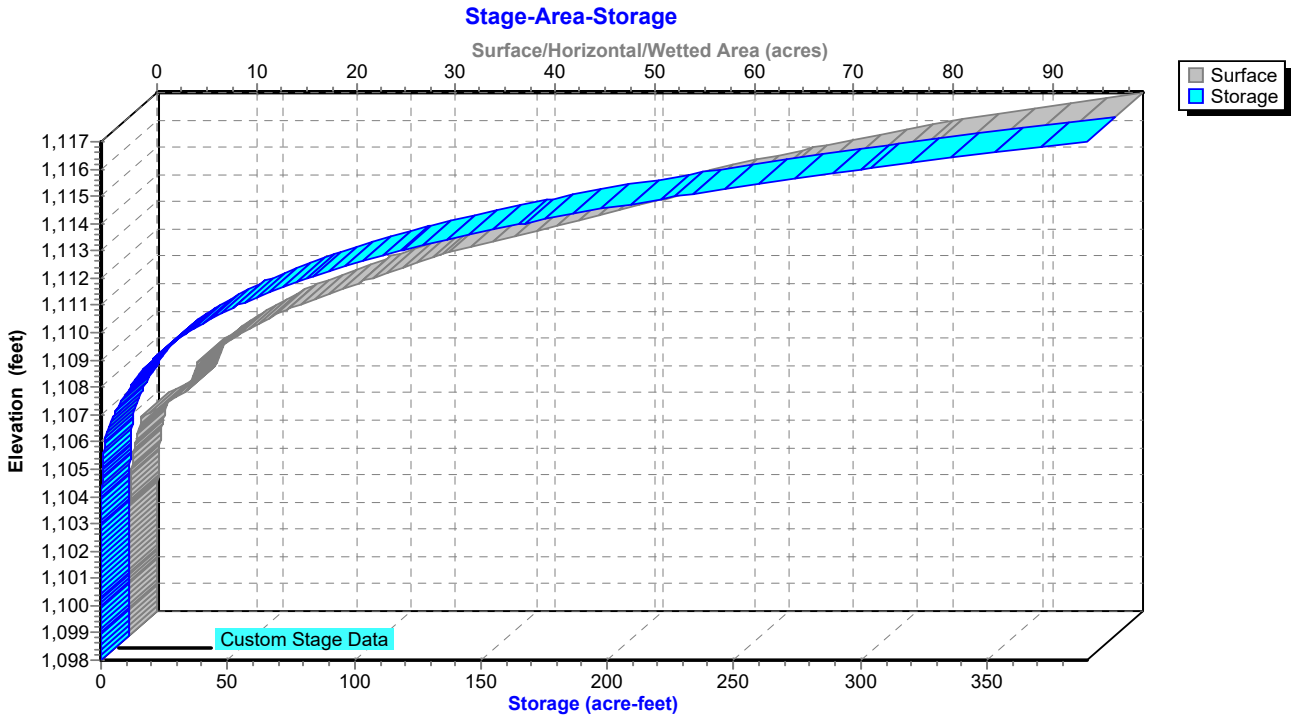




Pond I AVE: I AVENUE CULVERTS



Pond I AVE: I AVENUE CULVERTS



Hydrograph for Pond I AVE: I AVENUE CULVERTS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	0.00	0.000	1,098.00	0.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
2.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
3.00	0.00	0.000	1,098.12	0.00	0.00	0.00	0.00
4.00	0.01	0.001	1,099.01	0.00	0.00	0.00	0.00
5.00	0.03	0.002	1,100.28	0.03	0.03	0.00	0.00
6.00	0.06	0.002	1,100.30	0.06	0.06	0.00	0.00
7.00	0.09	0.002	1,100.31	0.09	0.09	0.00	0.00
8.00	0.12	0.002	1,100.32	0.12	0.12	0.00	0.00
9.00	0.15	0.002	1,100.33	0.14	0.14	0.00	0.00
10.00	0.25	0.002	1,100.37	0.25	0.25	0.00	0.00
11.00	1.90	0.004	1,100.69	1.85	1.85	0.00	0.00
12.00	22.44	0.019	1,101.83	21.64	21.64	0.00	0.00
13.00	**400.70**	3.397	1,106.65	246.68	224.88	21.80	0.00
14.00	**417.82**	**17.513**	**1,108.71**	**356.47**	**284.91**	**71.56**	0.00
15.00	187.94	**12.577**	**1,108.14**	**325.15**	**268.39**	**56.76**	0.00
16.00	105.13	1.185	1,105.64	184.64	178.80	5.84	0.00
17.00	85.60	0.192	1,103.65	85.95	85.95	0.00	0.00
18.00	87.73	0.199	1,103.69	87.40	87.40	0.00	0.00
19.00	94.11	0.230	1,103.83	93.77	93.77	0.00	0.00
20.00	97.75	0.249	1,103.92	97.63	97.63	0.00	0.00
21.00	97.77	0.250	1,103.93	97.86	97.86	0.00	0.00
22.00	94.83	0.236	1,103.86	95.06	95.06	0.00	0.00
23.00	89.80	0.212	1,103.75	90.15	90.15	0.00	0.00
24.00	83.03	0.181	1,103.59	83.43	83.43	0.00	0.00
25.00	73.83	0.143	1,103.38	74.38	74.38	0.00	0.00
26.00	63.09	0.104	1,103.10	63.45	63.45	0.00	0.00
27.00	54.38	0.079	1,102.87	54.69	54.69	0.00	0.00
28.00	43.39	0.052	1,102.57	43.73	43.73	0.00	0.00
29.00	32.04	0.031	1,102.21	32.24	32.24	0.00	0.00
30.00	24.02	0.022	1,101.92	24.08	24.08	0.00	0.00

Stage-Discharge for Pond I AVE: I AVENUE CULVERTS

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1,098.00	0.00	0.00	0.00	0.00
1,098.50	0.00	0.00	0.00	0.00
1,099.00	0.00	0.00	0.00	0.00
1,099.50	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	0.00	0.00
1,100.50	0.61	0.61	0.00	0.00
1,101.00	5.15	5.15	0.00	0.00
1,101.50	13.88	13.88	0.00	0.00
1,102.00	26.18	26.18	0.00	0.00
1,102.50	41.52	41.52	0.00	0.00
1,103.00	59.41	59.41	0.00	0.00
1,103.50	79.41	79.41	0.00	0.00
1,104.00	101.10	101.10	0.00	0.00
1,104.50	124.05	124.05	0.00	0.00
1,105.00	148.39	147.81	0.58	0.00
1,105.50	176.12	171.89	4.24	0.00
1,106.00	206.21	195.69	10.52	0.00
1,106.50	237.48	218.53	18.95	0.00
1,107.00	268.61	239.47	29.14	0.00
1,107.50	297.80	257.09	40.70	0.00
1,108.00	321.54	268.33	53.21	0.00
1,108.50	343.07	276.93	66.15	0.00
1,109.00	374.43	295.59	78.85	0.00
1,109.50	403.49	313.13	90.36	0.00
1,110.00	428.24	329.75	98.50	0.00
1,110.50	456.69	345.56	111.13	0.00
1,111.00	484.40	360.69	123.71	0.00
1,111.50	507.49	375.20	132.29	0.00
1,112.00	528.21	389.17	139.03	0.00
1,112.50	548.13	402.66	145.47	0.00
1,113.00	567.34	415.71	151.63	0.00
1,113.50	585.92	428.37	157.55	0.00
1,114.00	603.92	440.66	163.26	0.00
1,114.50	621.39	452.62	168.77	0.00
1,115.00	638.37	464.27	174.11	0.00
1,115.50	654.92	475.63	179.29	0.00
1,116.00	679.75	486.69	184.32	8.74
1,116.50	904.83	496.12	189.22	219.49
1,117.00	**1,422.27**	**505.37**	**194.00**	**722.89**

Stage-Area-Storage for Pond I AVE: I AVENUE CULVERTS

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,098.00	0.000	0.000
1,098.20	0.000	0.000
1,098.40	0.000	0.000
1,098.60	0.001	0.000
1,098.80	0.001	0.000
1,099.00	0.001	0.001
1,099.20	0.001	0.001
1,099.40	0.001	0.001
1,099.60	0.001	0.001
1,099.80	0.001	0.001
1,100.00	0.001	0.002
1,100.20	0.002	0.002
1,100.40	0.004	0.002
1,100.60	0.005	0.003
1,100.80	0.007	0.005
1,101.00	0.008	0.006
1,101.20	0.012	0.008
1,101.40	0.016	0.011
1,101.60	0.019	0.014
1,101.80	0.023	0.018
1,102.00	0.027	0.023
1,102.20	0.044	0.031
1,102.40	0.060	0.041
1,102.60	0.077	0.055
1,102.80	0.093	0.072
1,103.00	0.110	0.092
1,103.20	0.136	0.117
1,103.40	0.162	0.146
1,103.60	0.189	0.182
1,103.80	0.215	0.222
1,104.00	0.241	0.267
1,104.20	0.306	0.322
1,104.40	0.371	0.390
1,104.60	0.437	0.471
1,104.80	0.502	0.565
1,105.00	0.567	0.671
1,105.20	0.708	0.799
1,105.40	0.848	0.955
1,105.60	0.989	1.138
1,105.80	1.129	1.350
1,106.00	1.270	1.590
1,106.20	2.193	1.936
1,106.40	3.116	2.467
1,106.60	4.040	3.183
1,106.80	4.963	4.083
1,107.00	5.886	5.168
1,107.20	6.092	6.366
1,107.40	6.298	7.605
1,107.60	6.504	8.885
1,107.80	6.710	10.206
1,108.00	6.916	11.569
1,108.20	7.719	13.033
1,108.40	8.522	14.657
1,108.60	9.326	16.441
1,108.80	10.129	18.387
1,109.00	10.932	20.493
1,109.20	11.964	22.783
1,109.40	12.995	25.278
1,109.60	14.027	27.981
1,109.80	15.058	30.889
1,110.00	16.090	34.004
1,110.20	17.595	37.373
1,110.40	19.100	41.042
1,110.60	20.606	45.013
1,110.80	22.111	49.284
1,111.00	23.616	53.857
1,111.20	25.207	58.739
1,111.40	26.797	63.940
1,111.60	28.388	69.458
1,111.80	29.978	75.295
1,112.00	31.569	81.449
1,112.20	33.849	87.991
1,112.40	36.130	94.989
1,112.60	38.410	102.443
1,112.80	40.691	110.353
1,113.00	42.971	118.719
1,113.20	45.146	127.531
1,113.40	47.321	136.778
1,113.60	49.496	146.460
1,113.80	51.671	156.576
1,114.00	53.846	167.128
1,114.20	56.271	178.140
1,114.40	58.695	189.636
1,114.60	61.120	201.618
1,114.80	63.544	214.084
1,115.00	65.969	227.035
1,115.20	68.768	240.509
1,115.40	71.567	254.543
1,115.60	74.365	269.136
1,115.80	77.164	284.289
1,116.00	79.963	300.001
1,116.20	83.788	316.377
1,116.40	87.613	333.517
1,116.60	91.438	351.422
1,116.80	95.263	370.092
1,117.00	**99.088**	**389.527**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 158.4 AC: Watershed After Runoff Area=158.400 ac 0.00% Impervious Runoff Depth=2.24"
Flow Length=2,718' Slope=0.0329 '/' Tc=34.2 min CN=84 Runoff=294.17 cfs 29.561 af

Subcatchment 309.04 AC: South Runoff Area=309.040 ac 0.00% Impervious Runoff Depth=2.24"
Flow Length=9,197' Slope=0.0329 '/' Tc=90.7 min CN=84 Runoff=302.23 cfs 57.673 af

Subcatchment 544.5 AC: Remainder of Runoff Area=544.500 ac 0.00% Impervious Runoff Depth=2.24"
Flow Length=10,448' Slope=0.0329 '/' Tc=100.5 min CN=84 Runoff=491.45 cfs 101.614 af

Subcatchment 689.7 AC: Watershed West Runoff Area=689.700 ac 0.00% Impervious Runoff Depth=2.24"
Flow Length=9,666' Slope=0.0329 '/' Tc=94.4 min CN=84 Runoff=654.01 cfs 128.711 af

Subcatchment WETLAND POOL: Runoff Area=3.420 ac 100.00% Impervious Runoff Depth=3.62"
Flow Length=1,309' Tc=3.8 min CN=98 Runoff=21.08 cfs 1.030 af

Pond 1P: H AVENUE CULVERT Peak Elev=1,128.42' Storage=57.166 af Inflow=654.01 cfs 128.711 af
Primary=229.37 cfs 33.853 af Secondary=88.76 cfs 94.853 af Outflow=318.14 cfs 128.707 af

Pond 2P: BASIN NW OF WETLAND Peak Elev=1,124.81' Storage=71.787 af Inflow=340.11 cfs 158.267 af
Primary=126.43 cfs 106.801 af Secondary=0.00 cfs 0.000 af Outflow=126.43 cfs 106.801 af

Pond BERM: WETLAND Peak Elev=1,107.52' Storage=15.669 af Inflow=492.42 cfs 209.446 af
Outflow=473.47 cfs 207.817 af

Pond I AVE: I AVENUE CULVERTS Peak Elev=1,110.10' Storage=35.579 af Inflow=750.96 cfs 265.490 af
Primary=332.82 cfs 233.841 af Secondary=100.41 cfs 31.619 af Tertiary=0.00 cfs 0.000 af Outflow=433.23 cfs 265.460 af

Total Runoff Area = 1,705.060 ac Runoff Volume = 318.590 af Average Runoff Depth = 2.24"
99.80% Pervious = 1,701.640 ac 0.20% Impervious = 3.420 ac

Summary for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Runoff = 294.17 cfs @ 12.50 hrs, Volume= 29.561 af, Depth= 2.24"
Routed to Pond 2P : BASIN NW OF WETLAND

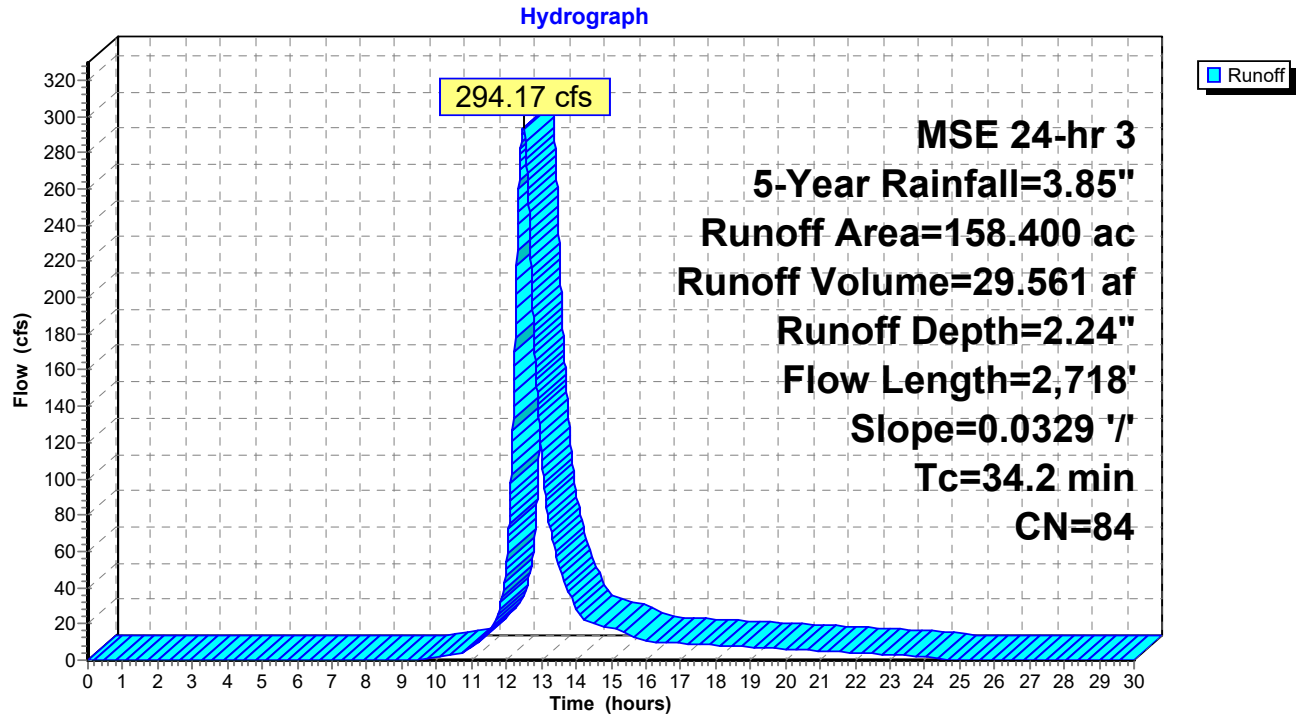
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 5-Year Rainfall=3.85"

	Area (ac)	CN	Description
*	158.400	84	
	158.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.2	2,718	0.0329	1.32		**Lag/CN Method,**

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location



Hydrograph for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.05	0.00	0.00
3.00	0.06	0.00	0.00
3.50	0.08	0.00	0.00
4.00	0.10	0.00	0.00
4.50	0.12	0.00	0.00
5.00	0.14	0.00	0.00
5.50	0.17	0.00	0.00
6.00	0.20	0.00	0.00
6.50	0.22	0.00	0.00
7.00	0.26	0.00	0.00
7.50	0.29	0.00	0.00
8.00	0.32	0.00	0.00
8.50	0.36	0.00	0.00
9.00	0.40	0.00	0.00
9.50	0.46	0.00	0.41
10.00	0.53	0.01	1.62
10.50	0.60	0.02	3.07
11.00	0.74	0.06	6.68
11.50	0.95	0.13	16.56
12.00	1.78	0.59	53.29
12.50	2.90	1.43	**294.03**
13.00	3.11	1.61	113.37
13.50	3.25	1.72	53.48
14.00	3.32	1.78	28.08
14.50	3.39	1.84	19.96
15.00	3.45	1.90	18.11
15.50	3.49	1.93	13.72
16.00	3.53	1.96	10.56
16.50	3.56	1.99	9.74
17.00	3.59	2.02	9.21
17.50	3.63	2.04	8.71
18.00	3.65	2.07	8.20
18.50	3.68	2.09	7.69
19.00	3.71	2.11	7.17
19.50	3.73	2.13	6.67
20.00	3.75	2.15	6.14
20.50	3.77	2.17	5.62
21.00	3.79	2.18	5.10
21.50	3.80	2.20	4.58
22.00	3.81	2.21	4.05
22.50	3.83	2.22	3.53
23.00	3.84	2.23	3.01
23.50	3.84	2.23	2.47
24.00	**3.85**	**2.24**	1.94
24.50	3.85	2.24	0.77
25.00	3.85	2.24	0.09
25.50	3.85	2.24	0.01
26.00	3.85	2.24	0.00
26.50	3.85	2.24	0.00
27.00	3.85	2.24	0.00
27.50	3.85	2.24	0.00
28.00	3.85	2.24	0.00
28.50	3.85	2.24	0.00
29.00	3.85	2.24	0.00
29.50	3.85	2.24	0.00
30.00	3.85	2.24	0.00

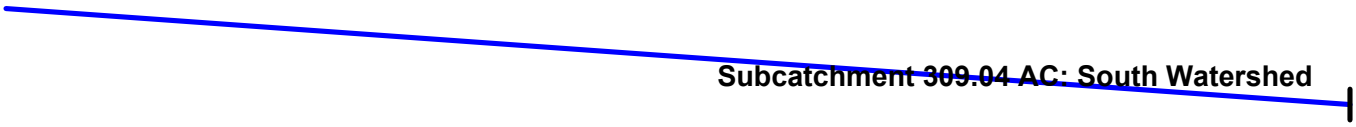
Summary for Subcatchment 309.04 AC: South Watershed

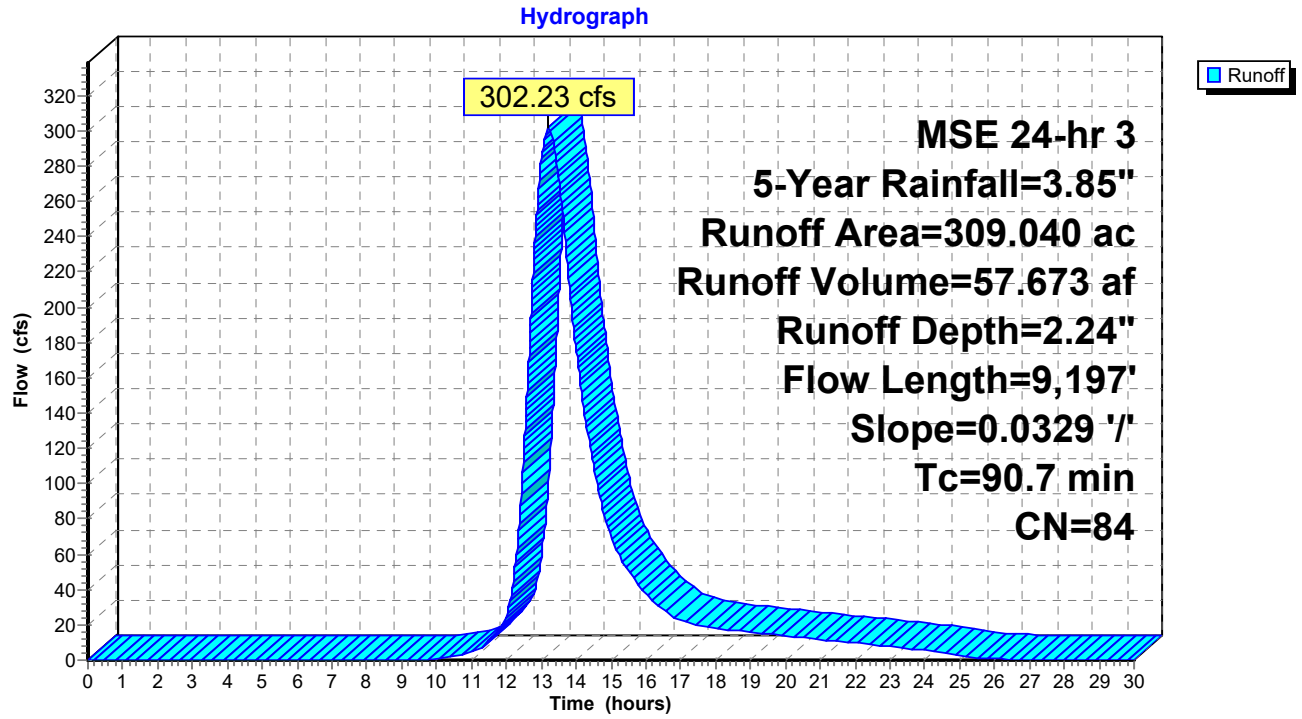
Runoff = 302.23 cfs @ 13.20 hrs, Volume= 57.673 af, Depth= 2.24"
Routed to Pond I AVE : I AVENUE CULVERTS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 5-Year Rainfall=3.85"

	Area (ac)	CN	Description
*	309.040	84	
	309.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
90.7	9,197	0.0329	1.69		**Lag/CN Method,**





Hydrograph for Subcatchment 309.04 AC: South Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.05	0.00	0.00
3.00	0.06	0.00	0.00
3.50	0.08	0.00	0.00
4.00	0.10	0.00	0.00
4.50	0.12	0.00	0.00
5.00	0.14	0.00	0.00
5.50	0.17	0.00	0.00
6.00	0.20	0.00	0.00
6.50	0.22	0.00	0.00
7.00	0.26	0.00	0.00
7.50	0.29	0.00	0.00
8.00	0.32	0.00	0.00
8.50	0.36	0.00	0.00
9.00	0.40	0.00	0.00
9.50	0.46	0.00	0.06
10.00	0.53	0.01	0.61
10.50	0.60	0.02	2.10
11.00	0.74	0.06	4.58
11.50	0.95	0.13	10.38
12.00	1.78	0.59	25.83
12.50	2.90	1.43	116.53
13.00	3.11	1.61	**283.83**
13.50	3.25	1.72	**274.47**
14.00	3.32	1.78	175.95
14.50	3.39	1.84	109.69
15.00	3.45	1.90	70.66
15.50	3.49	1.93	50.38
16.00	3.53	1.96	37.58
16.50	3.56	1.99	28.32
17.00	3.59	2.02	22.77
17.50	3.63	2.04	19.83
18.00	3.65	2.07	18.17
18.50	3.68	2.09	16.90
19.00	3.71	2.11	15.81
19.50	3.73	2.13	14.76
20.00	3.75	2.15	13.74
20.50	3.77	2.17	12.74
21.00	3.79	2.18	11.72
21.50	3.80	2.20	10.72
22.00	3.81	2.21	9.69
22.50	3.83	2.22	8.68
23.00	3.84	2.23	7.64
23.50	3.84	2.23	6.63
24.00	**3.85**	**2.24**	5.59
24.50	3.85	2.24	4.48
25.00	3.85	2.24	2.89
25.50	3.85	2.24	1.41
26.00	3.85	2.24	0.61
26.50	3.85	2.24	0.27
27.00	3.85	2.24	0.11
27.50	3.85	2.24	0.05
28.00	3.85	2.24	0.02
28.50	3.85	2.24	0.00
29.00	3.85	2.24	0.00
29.50	3.85	2.24	0.00
30.00	3.85	2.24	0.00

Summary for Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Runoff = 491.45 cfs @ 13.29 hrs, Volume= 101.614 af, Depth= 2.24"
Routed to Pond BERM : WETLAND

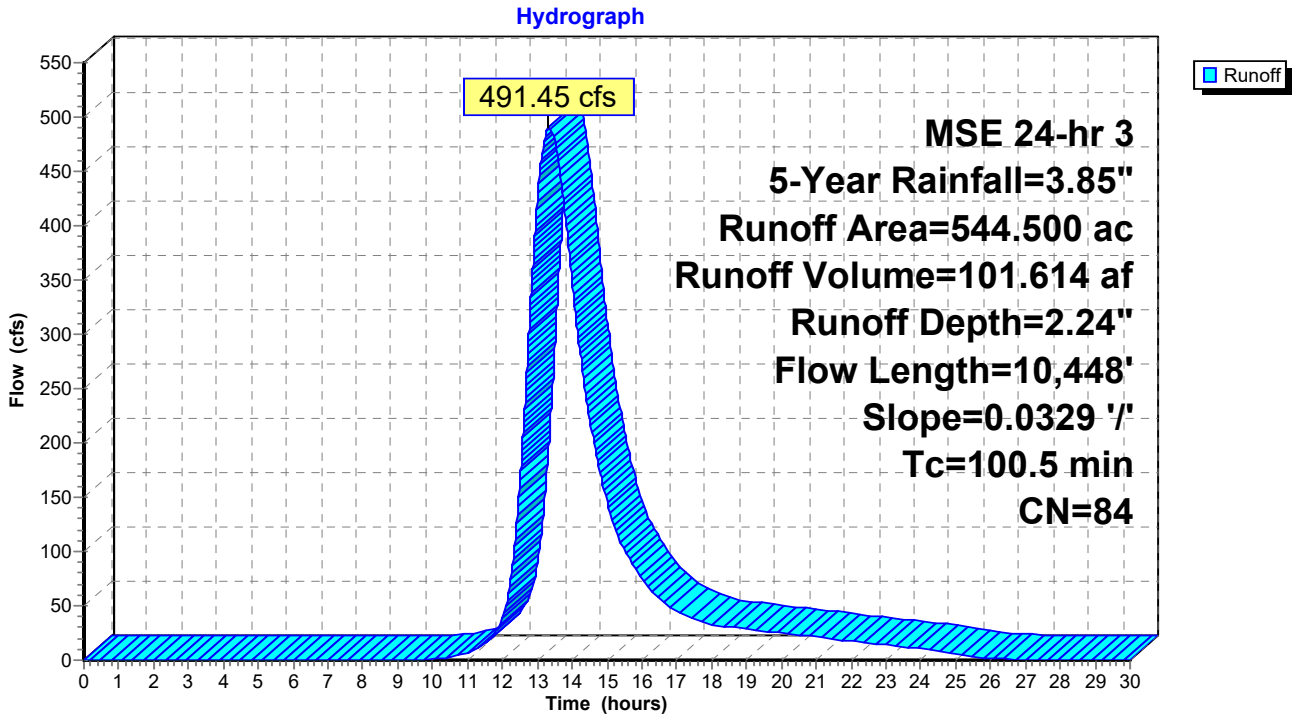
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 5-Year Rainfall=3.85"

	Area (ac)	CN	Description
*	544.500	84	
	544.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
100.5	10,448	0.0329	1.73		**Lag/CN Method,**

Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Subcatchment 544.5 AC: Remainder of Watershed to Wetland



Hydrograph for Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.05	0.00	0.00
3.00	0.06	0.00	0.00
3.50	0.08	0.00	0.00
4.00	0.10	0.00	0.00
4.50	0.12	0.00	0.00
5.00	0.14	0.00	0.00
5.50	0.17	0.00	0.00
6.00	0.20	0.00	0.00
6.50	0.22	0.00	0.00
7.00	0.26	0.00	0.00
7.50	0.29	0.00	0.00
8.00	0.32	0.00	0.00
8.50	0.36	0.00	0.00
9.00	0.40	0.00	0.00
9.50	0.46	0.00	0.07
10.00	0.53	0.01	0.81
10.50	0.60	0.02	2.99
11.00	0.74	0.06	6.88
11.50	0.95	0.13	15.45
12.00	1.78	0.59	38.40
12.50	2.90	1.43	160.09
13.00	3.11	1.61	**421.37**
13.50	3.25	1.72	**481.07**
14.00	3.32	1.78	348.55
14.50	3.39	1.84	223.34
15.00	3.45	1.90	145.92
15.50	3.49	1.93	102.15
16.00	3.53	1.96	75.41
16.50	3.56	1.99	56.30
17.00	3.59	2.02	44.54
17.50	3.63	2.04	37.57
18.00	3.65	2.07	33.28
18.50	3.68	2.09	30.63
19.00	3.71	2.11	28.49
19.50	3.73	2.13	26.62
20.00	3.75	2.15	24.80
20.50	3.77	2.17	22.98
21.00	3.79	2.18	21.19
21.50	3.80	2.20	19.42
22.00	3.81	2.21	17.64
22.50	3.83	2.22	15.83
23.00	3.84	2.23	14.01
23.50	3.84	2.23	12.21
24.00	**3.85**	**2.24**	10.41
24.50	3.85	2.24	8.47
25.00	3.85	2.24	5.89
25.50	3.85	2.24	3.25
26.00	3.85	2.24	1.55
26.50	3.85	2.24	0.74
27.00	3.85	2.24	0.35
27.50	3.85	2.24	0.16
28.00	3.85	2.24	0.07
28.50	3.85	2.24	0.03
29.00	3.85	2.24	0.01
29.50	3.85	2.24	0.00
30.00	3.85	2.24	0.00

Summary for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Runoff = 654.01 cfs @ 13.32 hrs, Volume= 128.711 af, Depth= 2.24"
Routed to Pond 1P : H AVENUE CULVERT

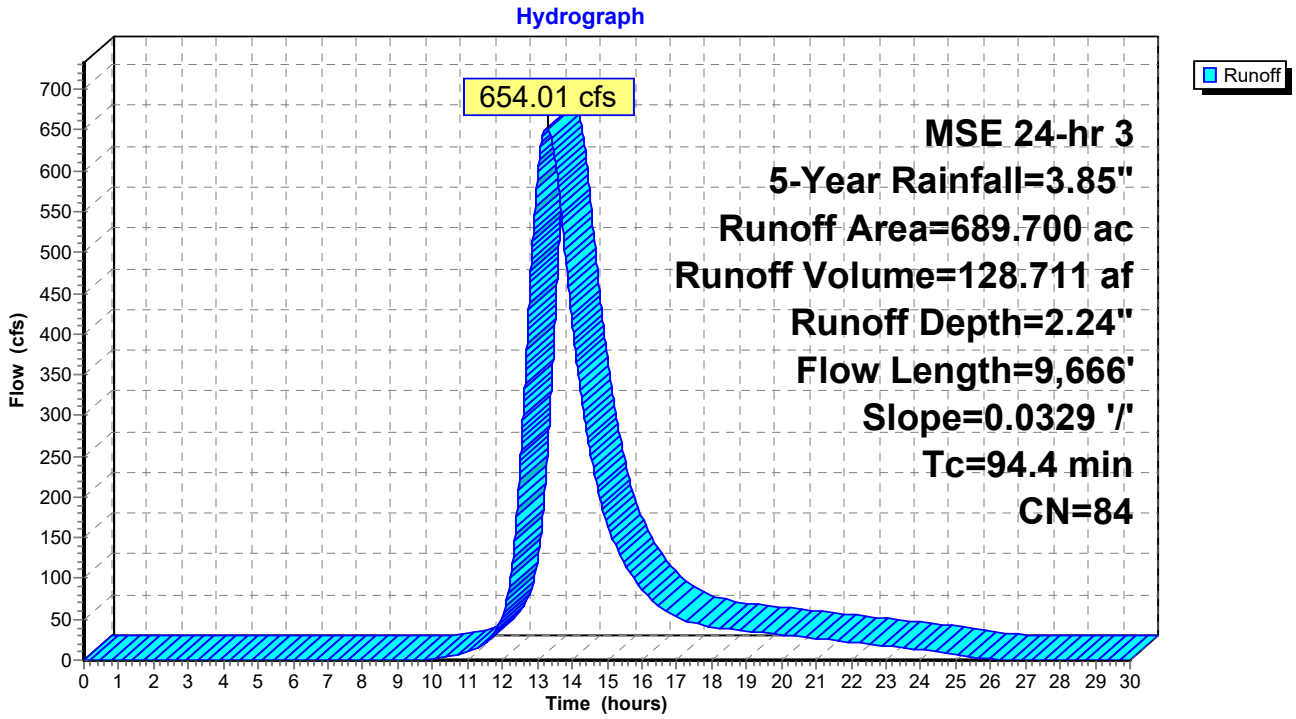
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 5-Year Rainfall=3.85"

	Area (ac)	CN	Description
*	689.700	84	
	689.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
94.4	9,666	0.0329	1.71		**Lag/CN Method,**

Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Subcatchment 689.7 AC: Watershed West of H Ave Culvert



Hydrograph for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.05	0.00	0.00
3.00	0.06	0.00	0.00
3.50	0.08	0.00	0.00
4.00	0.10	0.00	0.00
4.50	0.12	0.00	0.00
5.00	0.14	0.00	0.00
5.50	0.17	0.00	0.00
6.00	0.20	0.00	0.00
6.50	0.22	0.00	0.00
7.00	0.26	0.00	0.00
7.50	0.29	0.00	0.00
8.00	0.32	0.00	0.00
8.50	0.36	0.00	0.00
9.00	0.40	0.00	0.00
9.50	0.46	0.00	0.11
10.00	0.53	0.01	1.22
10.50	0.60	0.02	4.32
11.00	0.74	0.06	9.61
11.50	0.95	0.13	21.77
12.00	1.78	0.59	54.54
12.50	2.90	1.43	230.85
13.00	3.11	1.61	**591.51**
13.50	3.25	1.72	**617.57**
14.00	3.32	1.78	414.53
14.50	3.39	1.84	261.39
15.00	3.45	1.90	168.46
15.50	3.49	1.93	118.82
16.00	3.53	1.96	88.23
16.50	3.56	1.99	66.18
17.00	3.59	2.02	52.94
17.50	3.63	2.04	45.24
18.00	3.65	2.07	41.08
18.50	3.68	2.09	38.09
19.00	3.71	2.11	35.60
19.50	3.73	2.13	33.21
20.00	3.75	2.15	30.95
20.50	3.77	2.17	28.68
21.00	3.79	2.18	26.42
21.50	3.80	2.20	24.19
22.00	3.81	2.21	21.89
22.50	3.83	2.22	19.62
23.00	3.84	2.23	17.33
23.50	3.84	2.23	15.03
24.00	**3.85**	**2.24**	12.75
24.50	3.85	2.24	10.26
25.00	3.85	2.24	6.84
25.50	3.85	2.24	3.52
26.00	3.85	2.24	1.59
26.50	3.85	2.24	0.72
27.00	3.85	2.24	0.32
27.50	3.85	2.24	0.14
28.00	3.85	2.24	0.05
28.50	3.85	2.24	0.02
29.00	3.85	2.24	0.00
29.50	3.85	2.24	0.00
30.00	3.85	2.24	0.00

Summary for Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL

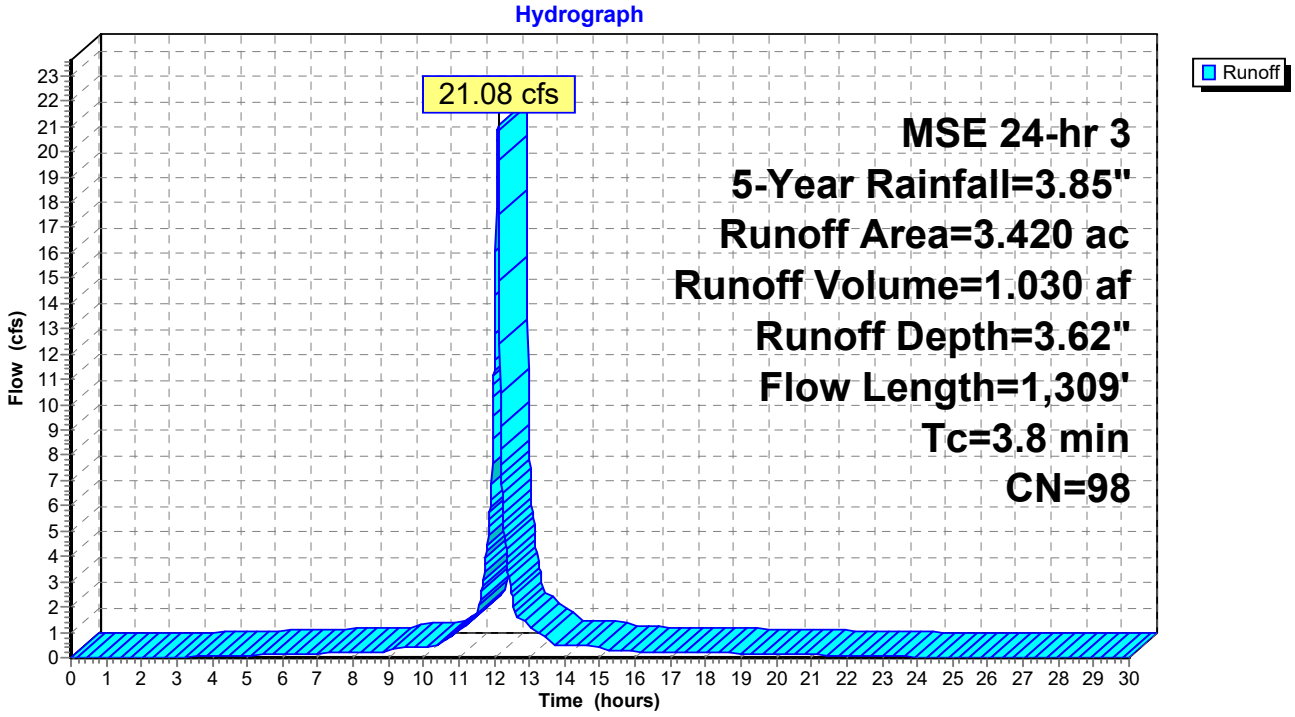
Runoff = 21.08 cfs @ 12.11 hrs, Volume= 1.030 af, Depth= 3.62"
Routed to Pond BERM : WETLAND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 5-Year Rainfall=3.85"

Area (ac)	CN	Description
3.420	98	Water Surface, HSG A
3.420		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	1,309		5.67		**Lake or Reservoir,** Mean Depth= 1.00'

Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL



Hydrograph for Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.02	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.05	0.00	0.01
3.00	0.06	0.00	0.02
3.50	0.08	0.01	0.04
4.00	0.10	0.01	0.05
4.50	0.12	0.02	0.07
5.00	0.14	0.03	0.09
5.50	0.17	0.05	0.11
6.00	0.20	0.07	0.13
6.50	0.22	0.09	0.15
7.00	0.26	0.11	0.16
7.50	0.29	0.14	0.18
8.00	0.32	0.16	0.20
8.50	0.36	0.19	0.22
9.00	0.40	0.23	0.23
9.50	0.46	0.28	0.40
10.00	0.53	0.34	0.44
10.50	0.60	0.41	0.48
11.00	0.74	0.54	1.10
11.50	0.95	0.75	1.60
12.00	1.78	1.56	**11.38**
12.50	2.90	2.66	**2.49**
13.00	3.11	2.88	1.27
13.50	3.25	3.02	0.77
14.00	3.32	3.09	0.49
14.50	3.39	3.16	0.46
15.00	3.45	3.22	0.43
15.50	3.49	3.26	0.26
16.00	3.53	3.29	0.24
16.50	3.56	3.33	0.23
17.00	3.59	3.36	0.22
17.50	3.63	3.39	0.21
18.00	3.65	3.42	0.19
18.50	3.68	3.45	0.18
19.00	3.71	3.47	0.17
19.50	3.73	3.49	0.15
20.00	3.75	3.52	0.14
20.50	3.77	3.53	0.13
21.00	3.79	3.55	0.11
21.50	3.80	3.57	0.10
22.00	3.81	3.58	0.09
22.50	3.83	3.59	0.08
23.00	3.84	3.60	0.06
23.50	3.84	3.61	0.05
24.00	**3.85**	**3.62**	0.04
24.50	3.85	3.62	0.00
25.00	3.85	3.62	0.00
25.50	3.85	3.62	0.00
26.00	3.85	3.62	0.00
26.50	3.85	3.62	0.00
27.00	3.85	3.62	0.00
27.50	3.85	3.62	0.00
28.00	3.85	3.62	0.00
28.50	3.85	3.62	0.00
29.00	3.85	3.62	0.00
29.50	3.85	3.62	0.00
30.00	3.85	3.62	0.00

Summary for Pond 1P: H AVENUE CULVERT

Inflow Area = 689.700 ac, 0.00% Impervious, Inflow Depth = 2.24" for 5-Year event
Inflow = 654.01 cfs @ 13.32 hrs, Volume= 128.711 af
Outflow = 318.14 cfs @ 14.28 hrs, Volume= 128.707 af, Atten= 51%, Lag= 58.1 min
Primary = 229.37 cfs @ 14.28 hrs, Volume= 33.853 af
Routed to Pond 2P : BASIN NW OF WETLAND
Secondary = 88.76 cfs @ 14.28 hrs, Volume= 94.853 af
Routed to Pond 2P : BASIN NW OF WETLAND

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,128.42' @ 14.28 hrs Surf.Area= 46.649 ac Storage= 57.166 af

Plug-Flow detention time= 206.5 min calculated for 128.664 af (100% of inflow)
Center-of-Mass det. time= 206.4 min (1,087.7 - 881.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,124.00'	161.110 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,124.00	0.010	0.000	0.000
1,126.00	1.650	1.660	1.660
1,128.00	36.300	37.950	39.610
1,130.00	85.200	121.500	161.110

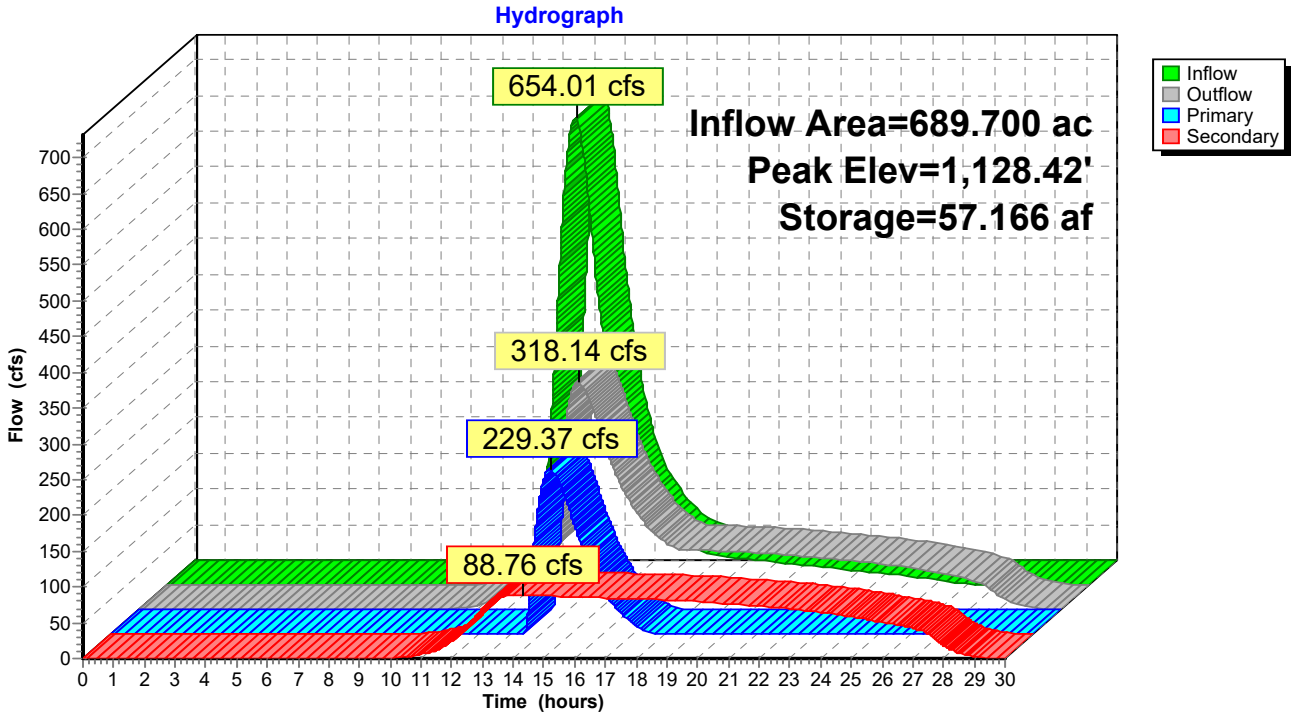
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,124.00'	**60.0" W x 24.0" H Box 5'x2' CULVERT** L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,124.00' / 1,124.00' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 10.00 sf
#2	Primary	1,128.05'	**342.0' long + 100.0 '/' SideZ x 25.0' breadth H Ave Road Surface** 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

Primary OutFlow Max=228.75 cfs @ 14.28 hrs HW=1,128.42' (Free Discharge)
└**2=H Ave Road Surface** (Weir Controls 228.75 cfs @ 1.62 fps)

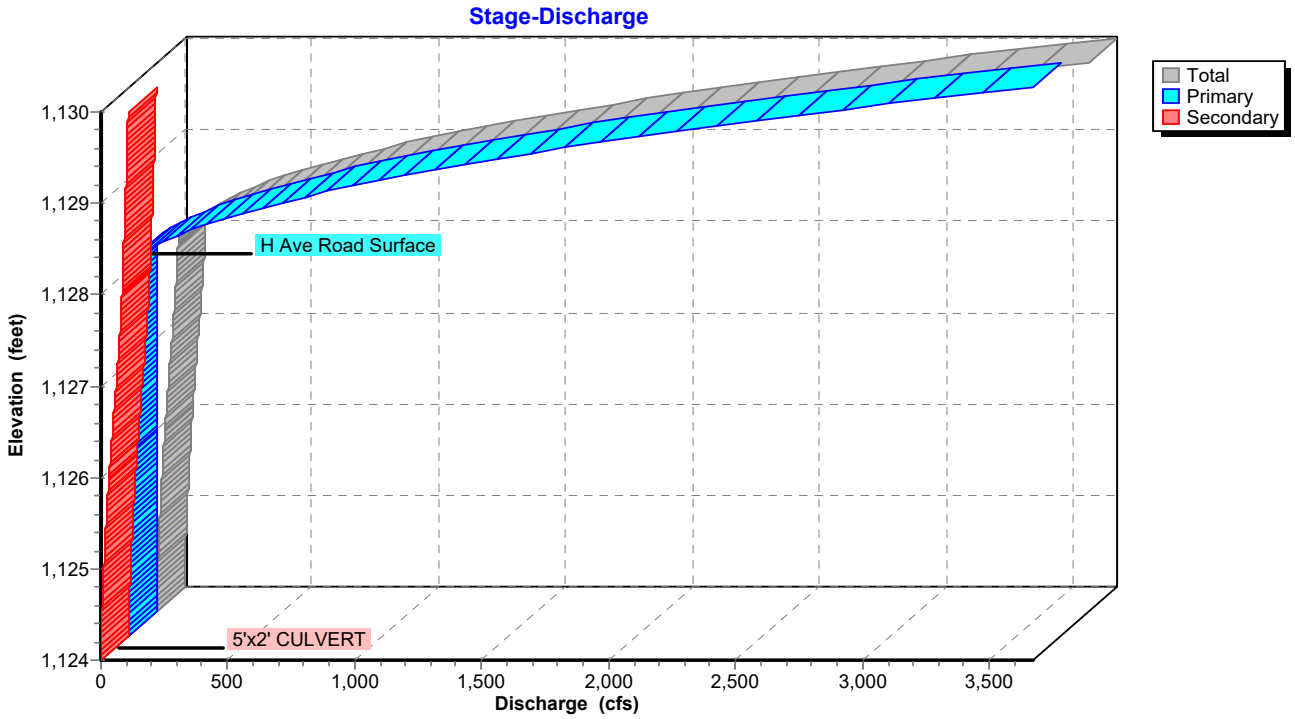
Secondary OutFlow Max=88.77 cfs @ 14.28 hrs HW=1,128.42' (Free Discharge)
└**1=5'x2' CULVERT** (Inlet Controls 88.77 cfs @ 8.88 fps)



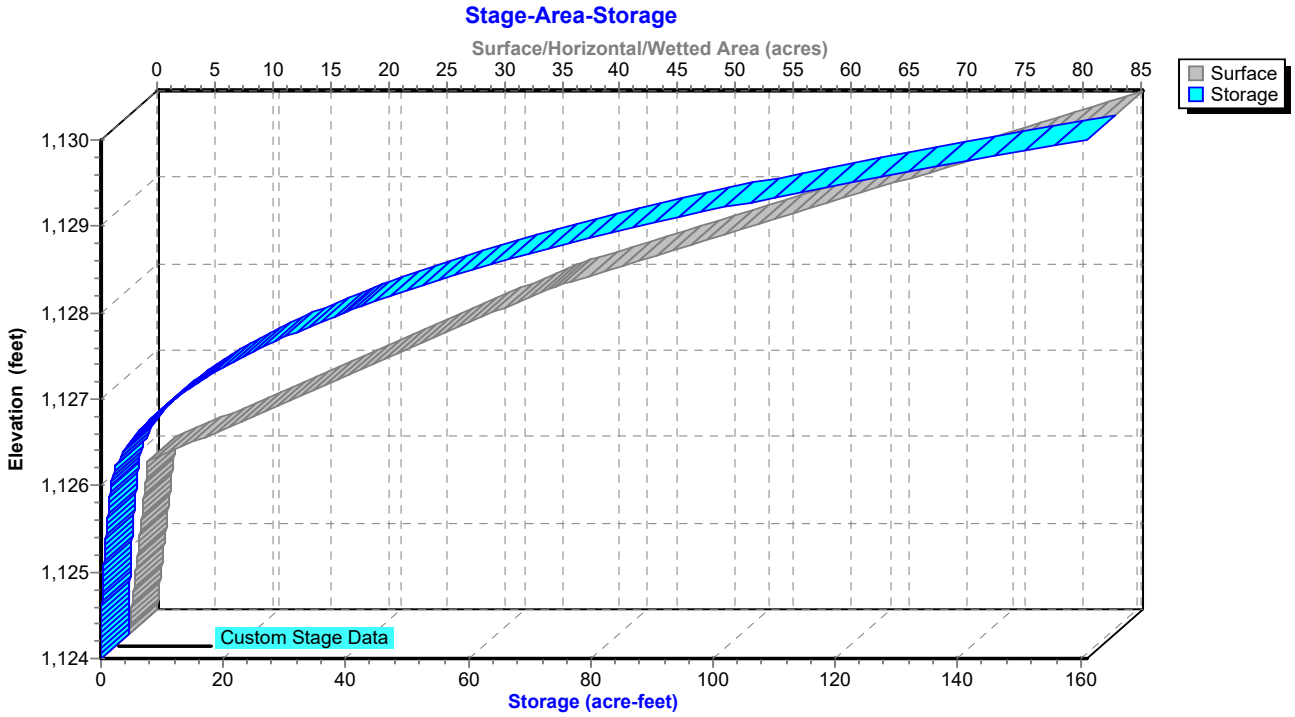
Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Hydrograph for Pond 1P: H AVENUE CULVERT

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,124.00	0.00	0.00	0.00
1.00	0.00	0.000	1,124.00	0.00	0.00	0.00
2.00	0.00	0.000	1,124.00	0.00	0.00	0.00
3.00	0.00	0.000	1,124.00	0.00	0.00	0.00
4.00	0.00	0.000	1,124.00	0.00	0.00	0.00
5.00	0.00	0.000	1,124.00	0.00	0.00	0.00
6.00	0.00	0.000	1,124.00	0.00	0.00	0.00
7.00	0.00	0.000	1,124.00	0.00	0.00	0.00
8.00	0.00	0.000	1,124.00	0.00	0.00	0.00
9.00	0.00	0.000	1,124.00	0.00	0.00	0.00
10.00	1.22	0.015	1,124.18	0.51	0.00	0.51
11.00	9.61	0.190	1,124.67	5.57	0.00	5.57
12.00	54.54	1.188	1,125.69	24.86	0.00	24.86
13.00	**591.51**	19.568	1,127.35	68.75	0.00	68.75
14.00	**414.53**	**55.898**	**1,128.40**	**291.48**	**203.07**	**88.40**
15.00	168.46	**53.800**	**1,128.35**	**249.92**	**162.13**	**87.79**
16.00	88.23	47.848	1,128.21	148.34	62.40	85.93
17.00	52.94	43.562	1,128.10	97.75	13.28	84.47
18.00	41.08	40.151	1,128.01	83.21	0.00	83.21
19.00	35.60	36.488	1,127.91	81.75	0.00	81.75
20.00	30.95	32.568	1,127.80	79.44	0.00	79.44
21.00	26.42	28.490	1,127.67	76.54	0.00	76.54
22.00	21.89	24.298	1,127.52	73.17	0.00	73.17
23.00	17.33	20.030	1,127.36	69.23	0.00	69.23
24.00	12.75	15.742	1,127.18	64.48	0.00	64.48
25.00	6.84	11.484	1,126.97	58.48	0.00	58.48
26.00	1.59	7.285	1,126.72	50.14	0.00	50.14
27.00	0.32	3.468	1,126.37	42.10	0.00	42.10
28.00	0.05	0.800	1,125.38	18.16	0.00	18.16
29.00	0.00	0.082	1,124.44	2.68	0.00	2.68
30.00	0.00	0.005	1,124.09	0.16	0.00	0.16

Stage-Discharge for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,124.00	0.00	0.00	0.00
1,124.10	0.16	0.00	0.16
1,124.20	0.64	0.00	0.64
1,124.30	1.37	0.00	1.37
1,124.40	2.30	0.00	2.30
1,124.50	3.40	0.00	3.40
1,124.60	4.64	0.00	4.64
1,124.70	6.01	0.00	6.01
1,124.80	7.50	0.00	7.50
1,124.90	9.10	0.00	9.10
1,125.00	10.80	0.00	10.80
1,125.10	12.59	0.00	12.59
1,125.20	14.47	0.00	14.47
1,125.30	16.44	0.00	16.44
1,125.40	18.49	0.00	18.49
1,125.50	20.61	0.00	20.61
1,125.60	22.82	0.00	22.82
1,125.70	25.10	0.00	25.10
1,125.80	27.44	0.00	27.44
1,125.90	29.86	0.00	29.86
1,126.00	32.34	0.00	32.34
1,126.10	34.89	0.00	34.89
1,126.20	37.50	0.00	37.50
1,126.30	40.17	0.00	40.17
1,126.40	42.91	0.00	42.91
1,126.50	45.70	0.00	45.70
1,126.60	48.55	0.00	48.55
1,126.70	49.59	0.00	49.59
1,126.80	53.02	0.00	53.02
1,126.90	56.23	0.00	56.23
1,127.00	59.28	0.00	59.28
1,127.10	62.17	0.00	62.17
1,127.20	64.93	0.00	64.93
1,127.30	67.59	0.00	67.59
1,127.40	70.14	0.00	70.14
1,127.50	72.60	0.00	72.60
1,127.60	74.98	0.00	74.98
1,127.70	77.29	0.00	77.29
1,127.80	79.53	0.00	79.53
1,127.90	81.58	0.00	81.58
1,128.00	83.00	0.00	83.00
1,128.10	94.77	10.37	84.40
1,128.20	140.89	55.12	85.78
1,128.30	208.62	121.50	87.13
1,128.40	294.93	206.47	88.46
1,128.50	397.86	308.09	89.77
1,128.60	516.16	425.10	91.06
1,128.70	646.72	554.38	92.33
1,128.80	786.82	693.24	93.59
1,128.90	942.26	847.43	94.82
1,129.00	1,114.94	1,018.90	96.05
1,129.10	1,303.85	1,206.60	97.25
1,129.20	1,510.10	1,411.66	98.44
1,129.30	1,730.38	1,630.76	99.62
1,129.40	1,964.23	1,863.45	100.78
1,129.50	2,211.09	2,109.16	101.93
1,129.60	2,470.36	2,367.29	103.06
1,129.70	2,746.35	2,642.17	104.19
1,129.80	3,039.97	2,934.67	105.30
1,129.90	3,349.12	3,242.72	106.40
1,130.00	**3,673.94**	**3,566.46**	**107.49**

Stage-Area-Storage for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,124.00	0.010	0.000
1,124.10	0.092	0.005
1,124.20	0.174	0.018
1,124.30	0.256	0.040
1,124.40	0.338	0.070
1,124.50	0.420	0.107
1,124.60	0.502	0.154
1,124.70	0.584	0.208
1,124.80	0.666	0.270
1,124.90	0.748	0.341
1,125.00	0.830	0.420
1,125.10	0.912	0.507
1,125.20	0.994	0.602
1,125.30	1.076	0.706
1,125.40	1.158	0.818
1,125.50	1.240	0.937
1,125.60	1.322	1.066
1,125.70	1.404	1.202
1,125.80	1.486	1.346
1,125.90	1.568	1.499
1,126.00	1.650	1.660
1,126.10	3.382	1.912
1,126.20	5.115	2.337
1,126.30	6.847	2.935
1,126.40	8.580	3.706
1,126.50	10.312	4.651
1,126.60	12.045	5.768
1,126.70	13.778	7.060
1,126.80	15.510	8.524
1,126.90	17.243	10.162
1,127.00	18.975	11.972
1,127.10	20.707	13.957
1,127.20	22.440	16.114
1,127.30	24.172	18.445
1,127.40	25.905	20.949
1,127.50	27.637	23.626
1,127.60	29.370	26.476
1,127.70	31.103	29.500
1,127.80	32.835	32.696
1,127.90	34.568	36.067
1,128.00	36.300	39.610
1,128.10	38.745	43.362
1,128.20	41.190	47.359
1,128.30	43.635	51.600
1,128.40	46.080	56.086
1,128.50	48.525	60.816
1,128.60	50.970	65.791
1,128.70	53.415	71.010
1,128.80	55.860	76.474
1,128.90	58.305	82.182
1,129.00	60.750	88.135
1,129.10	63.195	94.332
1,129.20	65.640	100.774
1,129.30	68.085	107.460
1,129.40	70.530	114.391
1,129.50	72.975	121.566
1,129.60	75.420	128.986
1,129.70	77.865	136.650
1,129.80	80.310	144.559
1,129.90	82.755	152.712
1,130.00	**85.200**	**161.110**

Summary for Pond 2P: BASIN NW OF WETLAND

[81] Warning: Exceeded Pond 1P by 0.23' @ 29.99 hrs

Inflow Area = 848.100 ac, 0.00% Impervious, Inflow Depth > 2.24" for 5-Year event
Inflow = 340.11 cfs @ 14.26 hrs, Volume= 158.267 af
Outflow = 126.43 cfs @ 16.52 hrs, Volume= 106.801 af, Atten= 63%, Lag= 135.9 min
Primary = 126.43 cfs @ 16.52 hrs, Volume= 106.801 af
Routed to Pond BERM : WETLAND
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,124.81' @ 16.52 hrs Surf.Area= 46.770 ac Storage= 71.787 af

Plug-Flow detention time= 381.0 min calculated for 106.766 af (67% of inflow)
Center-of-Mass det. time= 223.2 min (1,261.9 - 1,038.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,121.00'	311.173 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,121.00	1.997	0.000	0.000
1,122.00	7.899	4.948	4.948
1,123.00	16.217	12.058	17.006
1,124.00	30.839	23.528	40.534
1,126.00	70.400	101.239	141.773
1,128.00	99.000	169.400	311.173

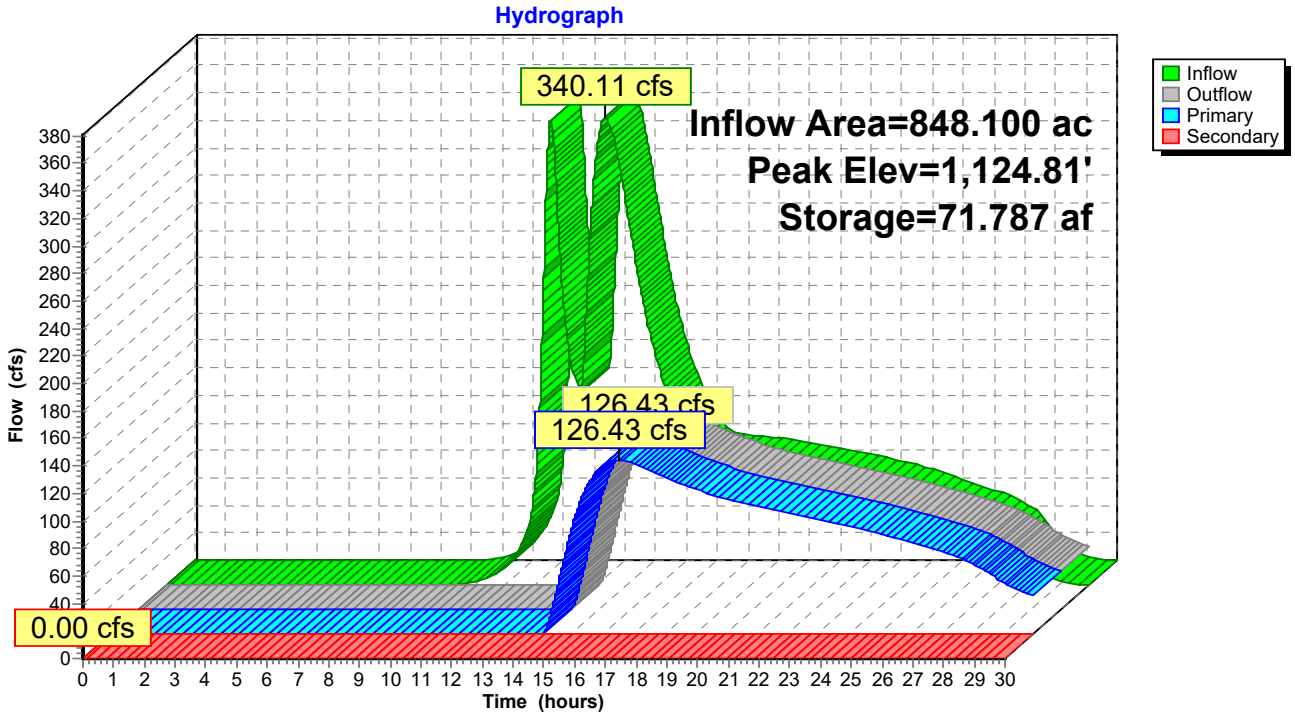
Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.00'	**50.0' long + 25.0 '/' SideZ x 50.0' breadth Saddle to Wetland** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	1,127.00'	**300.0' long + 50.0 '/' SideZ x 50.0' breadth Saddle Away from Wetland** 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

Primary OutFlow Max=126.13 cfs @ 16.52 hrs HW=1,124.81' (Free Discharge)
↑—**1=Saddle to Wetland** (Weir Controls 126.13 cfs @ 2.23 fps)

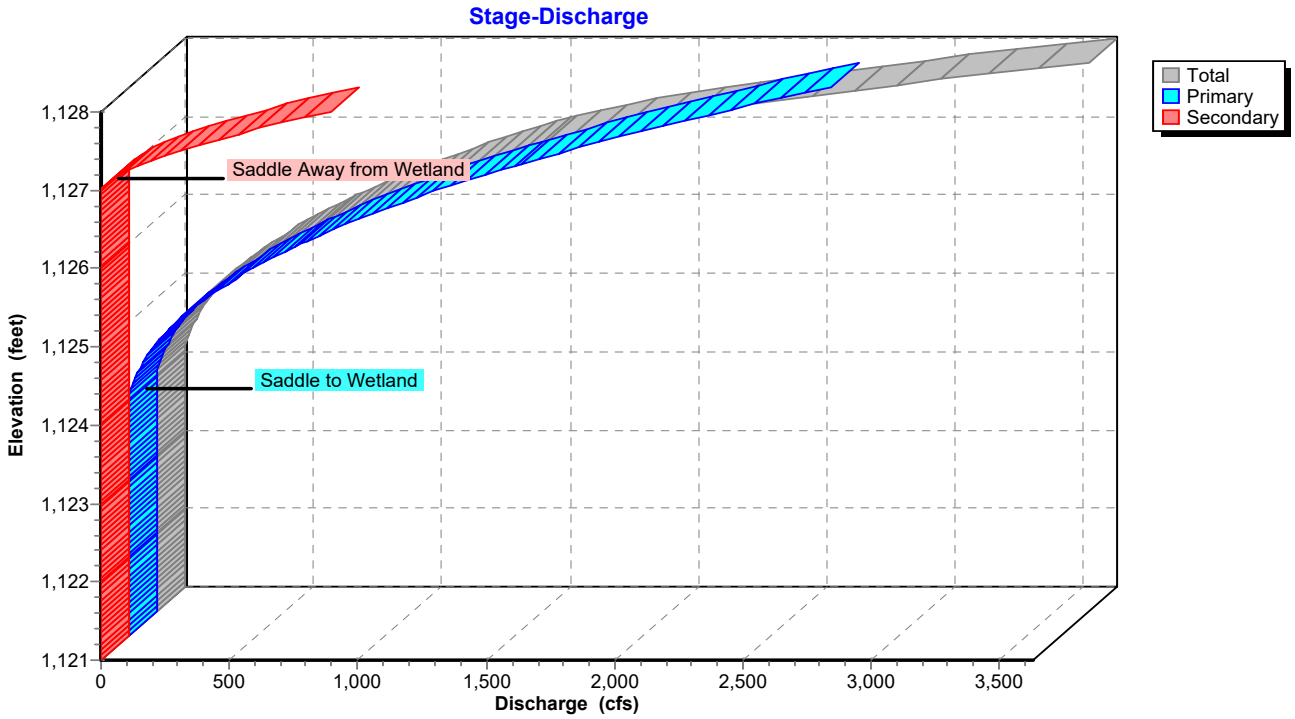
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,121.00' (Free Discharge)
↑—**2=Saddle Away from Wetland** (Controls 0.00 cfs)



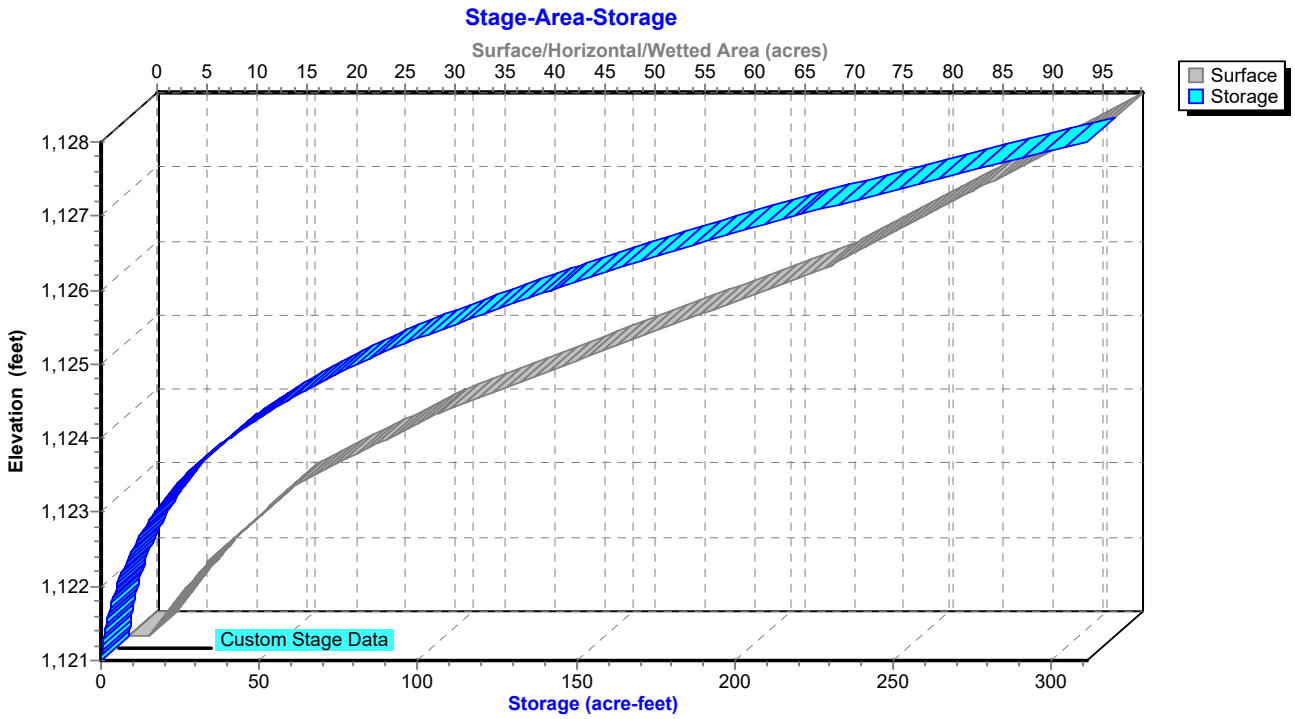
Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Hydrograph for Pond 2P: BASIN NW OF WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,121.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,121.00	0.00	0.00	0.00
2.00	0.00	0.000	1,121.00	0.00	0.00	0.00
3.00	0.00	0.000	1,121.00	0.00	0.00	0.00
4.00	0.00	0.000	1,121.00	0.00	0.00	0.00
5.00	0.00	0.000	1,121.00	0.00	0.00	0.00
6.00	0.00	0.000	1,121.00	0.00	0.00	0.00
7.00	0.00	0.000	1,121.00	0.00	0.00	0.00
8.00	0.00	0.000	1,121.00	0.00	0.00	0.00
9.00	0.00	0.000	1,121.00	0.00	0.00	0.00
10.00	2.13	0.054	1,121.02	0.00	0.00	0.00
11.00	12.25	0.540	1,121.21	0.00	0.00	0.00
12.00	78.15	3.223	1,121.76	0.00	0.00	0.00
13.00	182.13	22.813	1,123.31	0.00	0.00	0.00
14.00	**319.55**	39.134	1,123.95	0.00	0.00	0.00
15.00	**268.02**	62.581	1,124.60	77.66	77.66	0.00
16.00	158.90	**71.081**	**1,124.79**	**122.31**	**122.31**	0.00
17.00	106.96	**71.411**	**1,124.80**	**124.21**	**124.21**	0.00
18.00	91.41	69.498	1,124.76	113.62	113.62	0.00
19.00	88.92	67.928	1,124.72	105.19	105.19	0.00
20.00	85.58	66.725	1,124.69	98.86	98.86	0.00
21.00	81.64	65.692	1,124.67	93.52	93.52	0.00
22.00	77.23	64.737	1,124.65	88.58	88.58	0.00
23.00	72.24	63.796	1,124.63	83.78	83.78	0.00
24.00	66.42	62.810	1,124.60	78.82	78.82	0.00
25.00	58.57	61.689	1,124.58	73.17	73.17	0.00
26.00	50.14	60.409	1,124.55	66.89	66.89	0.00
27.00	42.10	59.034	1,124.51	60.22	60.22	0.00
28.00	18.16	57.075	1,124.47	51.17	51.17	0.00
29.00	2.68	54.103	1,124.39	38.26	38.26	0.00
30.00	0.16	51.477	1,124.32	27.86	27.86	0.00

Stage-Discharge for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,121.00	0.00	0.00	0.00
1,121.10	0.00	0.00	0.00
1,121.20	0.00	0.00	0.00
1,121.30	0.00	0.00	0.00
1,121.40	0.00	0.00	0.00
1,121.50	0.00	0.00	0.00
1,121.60	0.00	0.00	0.00
1,121.70	0.00	0.00	0.00
1,121.80	0.00	0.00	0.00
1,121.90	0.00	0.00	0.00
1,122.00	0.00	0.00	0.00
1,122.10	0.00	0.00	0.00
1,122.20	0.00	0.00	0.00
1,122.30	0.00	0.00	0.00
1,122.40	0.00	0.00	0.00
1,122.50	0.00	0.00	0.00
1,122.60	0.00	0.00	0.00
1,122.70	0.00	0.00	0.00
1,122.80	0.00	0.00	0.00
1,122.90	0.00	0.00	0.00
1,123.00	0.00	0.00	0.00
1,123.10	0.00	0.00	0.00
1,123.20	0.00	0.00	0.00
1,123.30	0.00	0.00	0.00
1,123.40	0.00	0.00	0.00
1,123.50	0.00	0.00	0.00
1,123.60	0.00	0.00	0.00
1,123.70	0.00	0.00	0.00
1,123.80	0.00	0.00	0.00
1,123.90	0.00	0.00	0.00
1,124.00	0.00	0.00	0.00
1,124.10	4.41	4.41	0.00
1,124.20	12.94	12.94	0.00
1,124.30	24.75	24.75	0.00
1,124.40	39.62	39.62	0.00
1,124.50	57.28	57.28	0.00
1,124.60	77.80	77.80	0.00
1,124.70	100.08	100.08	0.00
1,124.80	124.68	124.68	0.00
1,124.90	152.99	152.99	0.00
1,125.00	184.10	184.10	0.00
1,125.10	218.88	218.88	0.00
1,125.20	256.81	256.81	0.00
1,125.30	297.39	297.39	0.00
1,125.40	341.11	341.11	0.00
1,125.50	387.26	387.26	0.00
1,125.60	436.47	436.47	0.00
1,125.70	489.68	489.68	0.00
1,125.80	546.21	546.21	0.00
1,125.90	606.13	606.13	0.00
1,126.00	669.49	669.49	0.00
1,126.10	736.33	736.33	0.00
1,126.20	806.71	806.71	0.00
1,126.30	880.68	880.68	0.00
1,126.40	958.29	958.29	0.00
1,126.50	1,039.60	1,039.60	0.00
1,126.60	1,124.65	1,124.65	0.00
1,126.70	1,213.49	1,213.49	0.00
1,126.80	1,306.17	1,306.17	0.00
1,126.90	1,402.74	1,402.74	0.00
1,127.00	1,503.25	1,503.25	0.00
1,127.10	1,633.51	1,607.74	25.76
1,127.20	1,790.10	1,716.27	73.83
1,127.30	1,966.79	1,828.88	137.91
1,127.40	2,161.46	1,945.61	215.84
1,127.50	2,371.99	2,066.52	305.47
1,127.60	2,598.21	2,191.64	406.57
1,127.70	2,833.93	2,321.03	512.90
1,127.80	3,081.88	2,454.72	627.16
1,127.90	3,348.70	2,592.76	755.93
1,128.00	**3,629.40**	**2,735.20**	**894.20**

Stage-Area-Storage for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,121.00	1.997	0.000
1,121.10	2.587	0.229
1,121.20	3.177	0.517
1,121.30	3.768	0.865
1,121.40	4.358	1.271
1,121.50	4.948	1.736
1,121.60	5.538	2.261
1,121.70	6.128	2.844
1,121.80	6.719	3.486
1,121.90	7.309	4.188
1,122.00	7.899	4.948
1,122.10	8.731	5.779
1,122.20	9.563	6.694
1,122.30	10.394	7.692
1,122.40	11.226	8.773
1,122.50	12.058	9.937
1,122.60	12.890	11.185
1,122.70	13.722	12.515
1,122.80	14.553	13.929
1,122.90	15.385	15.426
1,123.00	16.217	17.006
1,123.10	17.679	18.701
1,123.20	19.141	20.542
1,123.30	20.604	22.529
1,123.40	22.066	24.663
1,123.50	23.528	26.942
1,123.60	24.990	29.368
1,123.70	26.452	31.940
1,123.80	27.915	34.659
1,123.90	29.377	37.523
1,124.00	30.839	40.534
1,124.10	32.817	43.717
1,124.20	34.795	47.097
1,124.30	36.773	50.676
1,124.40	38.751	54.452
1,124.50	40.729	58.426
1,124.60	42.707	62.598
1,124.70	44.685	66.968
1,124.80	46.663	71.535
1,124.90	48.641	76.300
1,125.00	50.619	81.263
1,125.10	52.598	86.424
1,125.20	54.576	91.783
1,125.30	56.554	97.339
1,125.40	58.532	103.093
1,125.50	60.510	109.046
1,125.60	62.488	115.195
1,125.70	64.466	121.543
1,125.80	66.444	128.089
1,125.90	68.422	134.832
1,126.00	70.400	141.773
1,126.10	71.830	148.884
1,126.20	73.260	156.139
1,126.30	74.690	163.536
1,126.40	76.120	171.077
1,126.50	77.550	178.760
1,126.60	78.980	186.587
1,126.70	80.410	194.557
1,126.80	81.840	202.669
1,126.90	83.270	210.925
1,127.00	84.700	219.323
1,127.10	86.130	227.864
1,127.20	87.560	236.549
1,127.30	88.990	245.376
1,127.40	90.420	254.347
1,127.50	91.850	263.460
1,127.60	93.280	272.717
1,127.70	94.710	282.117
1,127.80	96.140	291.659
1,127.90	97.570	301.345
1,128.00	**99.000**	**311.173**

Summary for Pond BERM: WETLAND

Inflow Area = 1,396.020 ac, 0.24% Impervious, Inflow Depth > 1.80" for 5-Year event
Inflow = 492.42 cfs @ 13.29 hrs, Volume= 209.446 af
Outflow = 473.47 cfs @ 13.55 hrs, Volume= 207.817 af, Atten= 4%, Lag= 15.4 min
Primary = 473.47 cfs @ 13.55 hrs, Volume= 207.817 af
Routed to Pond I AVE : I AVENUE CULVERTS

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 1,106.00' Surf.Area= 6.409 ac Storage= 5.396 af
Peak Elev= 1,107.52' @ 13.55 hrs Surf.Area= 7.096 ac Storage= 15.669 af (10.273 af above start)

Plug-Flow detention time= 48.8 min calculated for 202.354 af (97% of inflow)
Center-of-Mass det. time= 16.7 min (1,094.0 - 1,077.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,103.00'	386.614 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

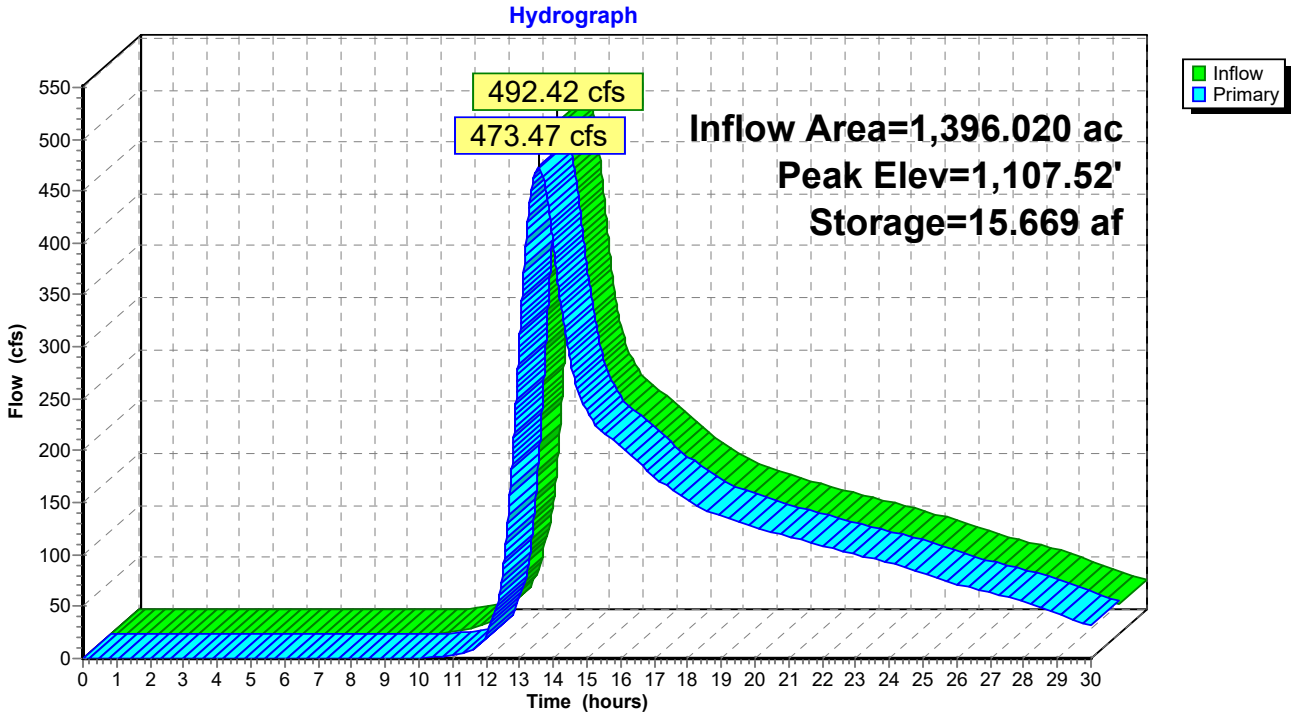
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,103.00	0.000	0.000	0.000
1,104.00	0.943	0.472	0.472
1,105.00	1.249	1.096	1.568
1,106.00	6.409	3.829	5.396
1,107.00	6.899	6.654	12.051
1,108.00	7.280	7.089	19.140
1,109.00	7.669	7.475	26.615
1,110.00	10.179	8.924	35.538
1,110.30	11.226	3.211	38.749
1,111.00	23.616	12.195	50.944
1,112.00	31.569	27.592	78.536
1,113.00	42.971	37.270	115.806
1,114.00	53.846	48.409	164.215
1,115.00	65.969	59.908	224.122
1,116.00	79.963	72.966	297.088
1,117.00	99.088	89.526	386.614

Device	Routing	Invert	Outlet Devices
#1	Primary	1,106.00'	**Sheet Pile Weir, C= 3.27** Offset (feet) -54.10 -52.10 -44.10 -37.50 37.50 44.10 52.10 54.10 Height (feet) 4.30 3.30 3.30 0.00 0.00 3.30 3.30 4.30

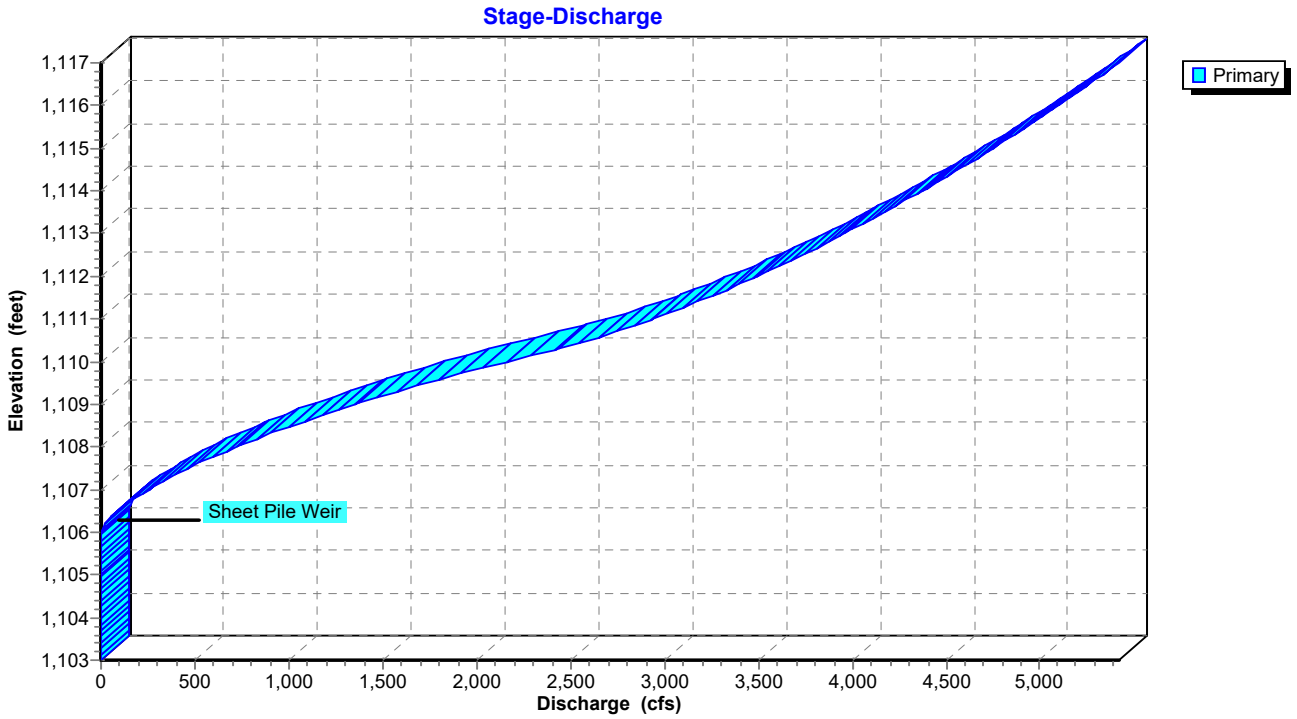
Primary OutFlow Max=473.14 cfs @ 13.55 hrs HW=1,107.52' (Free Discharge)
└**1=Sheet Pile Weir** (Weir Controls 473.14 cfs @ 3.85 fps)



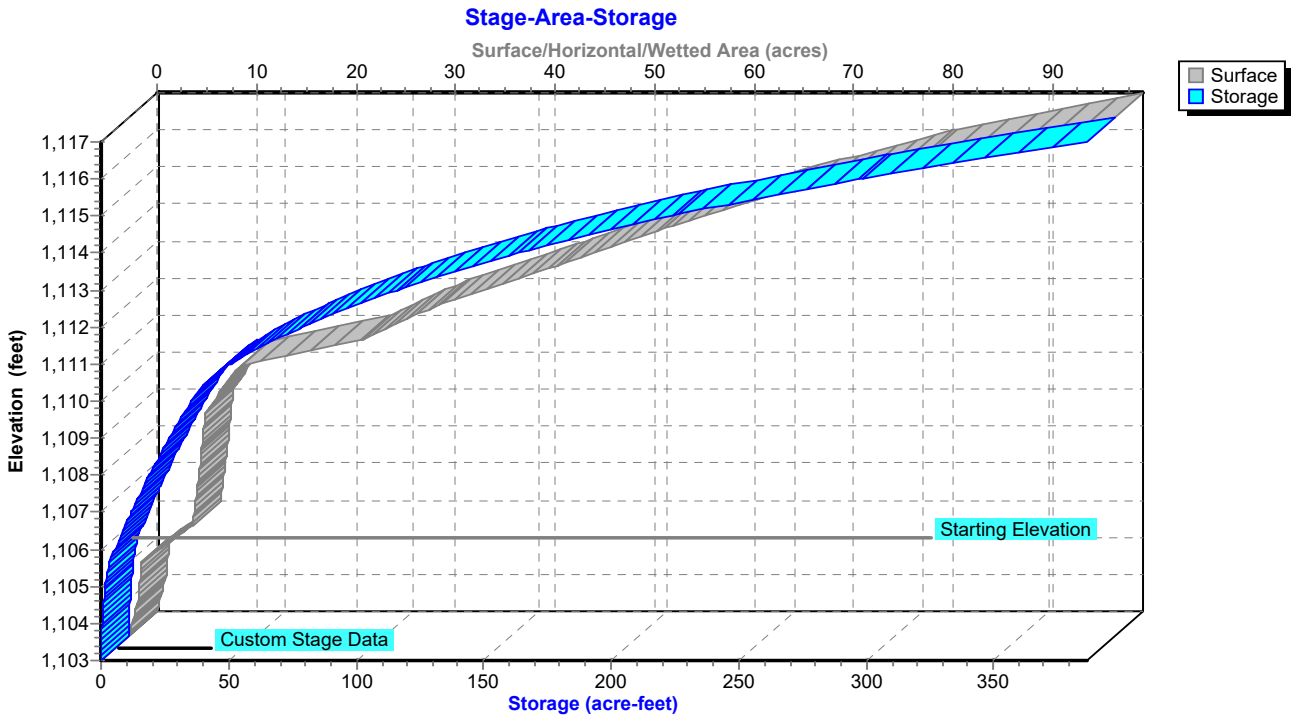
Pond BERM: WETLAND



Pond BERM: WETLAND



Pond BERM: WETLAND



Hydrograph for Pond BERM: WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	5.396	1,106.00	0.00
1.00	0.00	5.396	1,106.00	0.00
2.00	0.00	5.396	1,106.00	0.00
3.00	0.02	5.397	1,106.00	0.01
4.00	0.05	5.399	1,106.00	0.03
5.00	0.09	5.402	1,106.00	0.05
6.00	0.13	5.405	1,106.00	0.09
7.00	0.16	5.408	1,106.00	0.12
8.00	0.20	5.411	1,106.00	0.16
9.00	0.23	5.414	1,106.00	0.19
10.00	1.25	5.439	1,106.01	0.46
11.00	7.97	5.655	1,106.04	2.79
12.00	49.78	6.640	1,106.19	21.52
13.00	**422.64**	**13.117**	**1,107.15**	**311.84**
14.00	**349.04**	**14.546**	**1,107.36**	**399.59**
15.00	224.01	11.813	1,106.97	237.59
16.00	197.96	11.175	1,106.87	204.04
17.00	168.96	10.617	1,106.79	175.45
18.00	147.09	10.124	1,106.72	151.97
19.00	133.85	9.805	1,106.67	137.00
20.00	123.80	9.577	1,106.64	126.36
21.00	114.82	9.364	1,106.60	117.35
22.00	106.31	9.160	1,106.57	108.72
23.00	97.85	8.961	1,106.54	100.27
24.00	89.27	8.759	1,106.51	91.74
25.00	79.06	8.525	1,106.48	82.55
26.00	68.45	8.231	1,106.43	71.70
27.00	60.57	7.999	1,106.40	63.13
28.00	51.24	7.770	1,106.37	54.66
29.00	38.27	7.401	1,106.31	43.19
30.00	27.86	7.027	1,106.25	31.77

Stage-Discharge for Pond BERM: WETLAND

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,103.00	0.00	1,108.30	897.44	1,113.60	4,213.52
1,103.10	0.00	1,108.40	958.54	1,113.70	4,254.15
1,103.20	0.00	1,108.50	1,021.14	1,113.80	4,294.38
1,103.30	0.00	1,108.60	1,085.21	1,113.90	4,334.22
1,103.40	0.00	1,108.70	1,150.74	1,114.00	4,373.67
1,103.50	0.00	1,108.80	1,217.71	1,114.10	4,412.75
1,103.60	0.00	1,108.90	1,286.10	1,114.20	4,451.48
1,103.70	0.00	1,109.00	1,355.92	1,114.30	4,489.85
1,103.80	0.00	1,109.10	1,427.13	1,114.40	4,527.88
1,103.90	0.00	1,109.20	1,499.73	1,114.50	4,565.58
1,104.00	0.00	1,109.30	1,573.71	1,114.60	4,602.96
1,104.10	0.00	1,109.40	1,650.72	1,114.70	4,640.03
1,104.20	0.00	1,109.50	1,730.46	1,114.80	4,676.79
1,104.30	0.00	1,109.60	1,812.44	1,114.90	4,713.26
1,104.40	0.00	1,109.70	1,896.48	1,115.00	4,749.43
1,104.50	0.00	1,109.80	1,982.48	1,115.10	4,785.32
1,104.60	0.00	1,109.90	2,070.36	1,115.20	4,820.93
1,104.70	0.00	1,110.00	2,160.07	1,115.30	4,856.27
1,104.80	0.00	1,110.10	2,251.56	1,115.40	4,891.35
1,104.90	0.00	1,110.20	2,344.79	1,115.50	4,926.17
1,105.00	0.00	1,110.30	2,439.74	1,115.60	4,960.74
1,105.10	0.00	1,110.40	2,525.17	1,115.70	4,995.07
1,105.20	0.00	1,110.50	2,602.93	1,115.80	5,029.15
1,105.30	0.00	1,110.60	2,676.21	1,115.90	5,063.00
1,105.40	0.00	1,110.70	2,746.13	1,116.00	5,096.61
1,105.50	0.00	1,110.80	2,813.32	1,116.10	5,130.00
1,105.60	0.00	1,110.90	2,878.20	1,116.20	5,163.17
1,105.70	0.00	1,111.00	2,941.06	1,116.30	5,196.12
1,105.80	0.00	1,111.10	3,002.16	1,116.40	5,228.85
1,105.90	0.00	1,111.20	3,061.65	1,116.50	5,261.38
1,106.00	0.00	1,111.30	3,119.70	1,116.60	5,293.71
1,106.10	7.77	1,111.40	3,176.43	1,116.70	5,325.83
1,106.20	22.03	1,111.50	3,231.94	1,116.80	5,357.75
1,106.30	40.56	1,111.60	3,286.32	1,116.90	5,389.49
1,106.40	62.57	1,111.70	3,339.64	1,117.00	**5,421.03**
1,106.50	87.63	1,111.80	3,391.99		
1,106.60	115.44	1,111.90	3,443.41		
1,106.70	145.78	1,112.00	3,493.96		
1,106.80	178.48	1,112.10	3,543.69		
1,106.90	213.42	1,112.20	3,592.64		
1,107.00	250.48	1,112.30	3,640.85		
1,107.10	289.58	1,112.40	3,688.37		
1,107.20	330.64	1,112.50	3,735.21		
1,107.30	373.60	1,112.60	3,781.41		
1,107.40	418.39	1,112.70	3,827.00		
1,107.50	464.97	1,112.80	3,872.01		
1,107.60	513.29	1,112.90	3,916.45		
1,107.70	563.32	1,113.00	3,960.36		
1,107.80	615.01	1,113.10	4,003.74		
1,107.90	668.34	1,113.20	4,046.63		
1,108.00	723.27	1,113.30	4,089.03		
1,108.10	779.78	1,113.40	4,130.97		
1,108.20	837.84	1,113.50	4,172.46		

Stage-Area-Storage for Pond BERM: WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,103.00	0.000	0.000
1,103.20	0.189	0.019
1,103.40	0.377	0.075
1,103.60	0.566	0.170
1,103.80	0.754	0.302
1,104.00	0.943	0.472
1,104.20	1.004	0.666
1,104.40	1.065	0.873
1,104.60	1.127	1.092
1,104.80	1.188	1.324
1,105.00	1.249	1.568
1,105.20	2.281	1.921
1,105.40	3.313	2.480
1,105.60	4.345	3.246
1,105.80	5.377	4.218
1,106.00	6.409	5.396
1,106.20	6.507	6.688
1,106.40	6.605	7.999
1,106.60	6.703	9.330
1,106.80	6.801	10.680
1,107.00	6.899	12.051
1,107.20	6.975	13.438
1,107.40	7.051	14.841
1,107.60	7.128	16.258
1,107.80	7.204	17.692
1,108.00	7.280	19.140
1,108.20	7.358	20.604
1,108.40	7.436	22.083
1,108.60	7.513	23.578
1,108.80	7.591	25.088
1,109.00	7.669	26.615
1,109.20	8.171	28.199
1,109.40	8.673	29.883
1,109.60	9.175	31.668
1,109.80	9.677	33.553
1,110.00	10.179	35.538
1,110.20	10.877	37.644
1,110.40	12.996	39.960
1,110.60	16.536	42.914
1,110.80	20.076	46.575
1,111.00	23.616	50.944
1,111.20	25.207	55.826
1,111.40	26.797	61.027
1,111.60	28.388	66.545
1,111.80	29.978	72.382
1,112.00	31.569	78.536
1,112.20	33.849	85.078
1,112.40	36.130	92.076
1,112.60	38.410	99.530
1,112.80	40.691	107.440
1,113.00	42.971	115.806
1,113.20	45.146	124.618
1,113.40	47.321	133.865
1,113.60	49.496	143.547
1,113.80	51.671	153.663
1,114.00	53.846	164.215
1,114.20	56.271	175.227
1,114.40	58.695	186.723
1,114.60	61.120	198.705
1,114.80	63.544	211.171
1,115.00	65.969	224.122
1,115.20	68.768	237.596
1,115.40	71.567	251.630
1,115.60	74.365	266.223
1,115.80	77.164	281.376
1,116.00	79.963	297.088
1,116.20	83.788	313.464
1,116.40	87.613	330.604
1,116.60	91.438	348.509
1,116.80	95.263	367.179
1,117.00	**99.088**	**386.614**

Summary for Pond I AVE: I AVENUE CULVERTS

[81] Warning: Exceeded Pond BERM by 3.00' @ 14.62 hrs

Inflow Area = 1,705.060 ac, 0.20% Impervious, Inflow Depth > 1.87" for 5-Year event
Inflow = 750.96 cfs @ 13.41 hrs, Volume= 265.490 af
Outflow = 433.23 cfs @ 14.37 hrs, Volume= 265.460 af, Atten= 42%, Lag= 57.5 min
Primary = 332.82 cfs @ 14.37 hrs, Volume= 233.841 af
Secondary = 100.41 cfs @ 14.37 hrs, Volume= 31.619 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,110.10' @ 14.37 hrs Surf.Area= 16.810 ac Storage= 35.579 af

Plug-Flow detention time= 25.1 min calculated for 265.371 af (100% of inflow)
Center-of-Mass det. time= 25.0 min (1,072.0 - 1,047.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,098.00'	389.527 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,098.00	0.000	0.000	0.000
1,099.00	0.001	0.001	0.001
1,100.00	0.001	0.001	0.002
1,101.00	0.008	0.005	0.006
1,102.00	0.027	0.017	0.023
1,103.00	0.110	0.069	0.092
1,104.00	0.241	0.175	0.267
1,105.00	0.567	0.404	0.671
1,106.00	1.270	0.918	1.590
1,107.00	5.886	3.578	5.168
1,108.00	6.916	6.401	11.569
1,109.00	10.932	8.924	20.493
1,110.00	16.090	13.511	34.004
1,111.00	23.616	19.853	53.857
1,112.00	31.569	27.592	81.449
1,113.00	42.971	37.270	118.719
1,114.00	53.846	48.408	167.128
1,115.00	65.969	59.908	227.035
1,116.00	79.963	72.966	300.001
1,117.00	99.088	89.526	389.527

Device	Routing	Invert	Outlet Devices
#1	Primary	1,100.22'	**72.0" Round 72" RCP CULVERT** L= 85.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,100.22' / 1,098.91' S= 0.0153 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 28.27 sf
#2	Secondary	1,104.72'	**48.0" Round 48" RCP CULVERT** L= 62.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,104.72' / 1,104.41' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

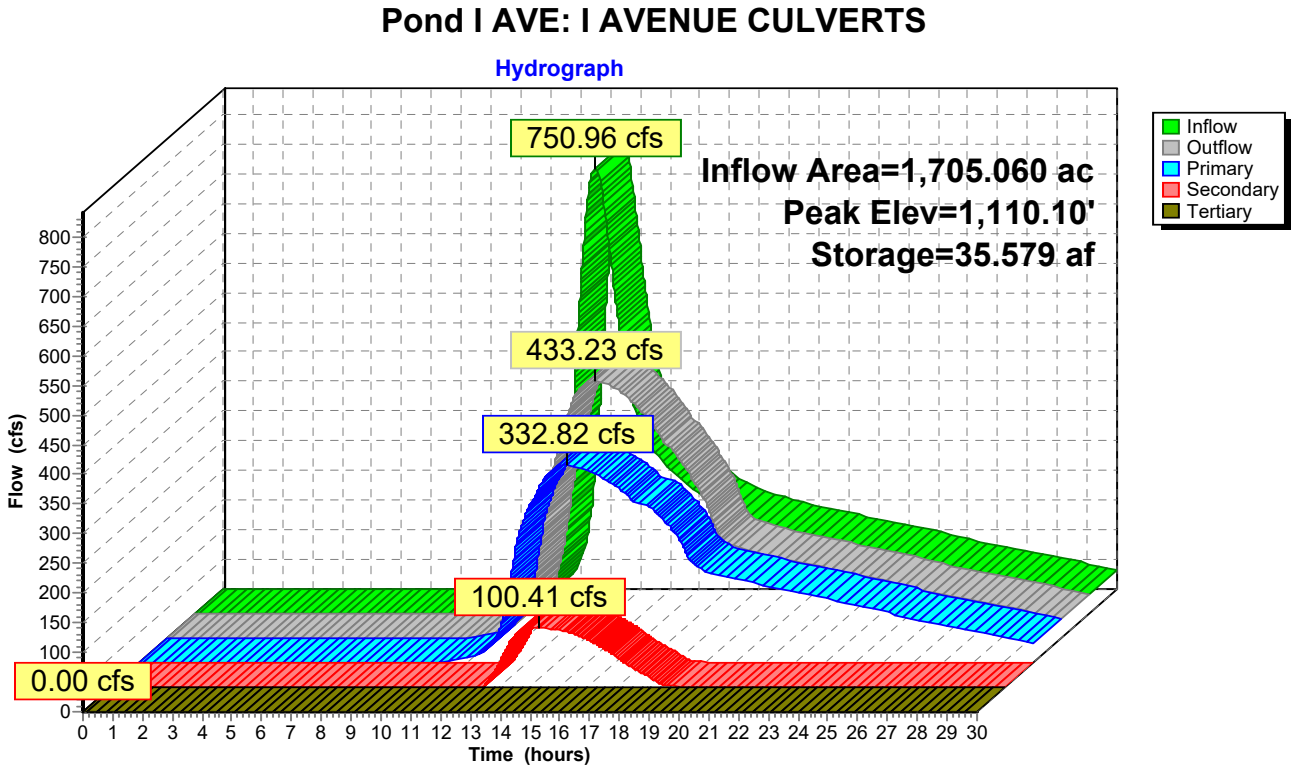
#3 Tertiary 1,115.86' **I AVENUE, C= 3.27**
Offset (feet) 0.00 115.59 162.20 164.26 214.26 232.65 343.45
Height (feet) 1.14 0.14 0.00 0.00 0.09 0.14 1.14

Primary OutFlow Max=332.83 cfs @ 14.37 hrs HW=1,110.10' (Free Discharge)
└**1=72" RCP CULVERT** (Barrel Controls 332.83 cfs @ 11.77 fps)

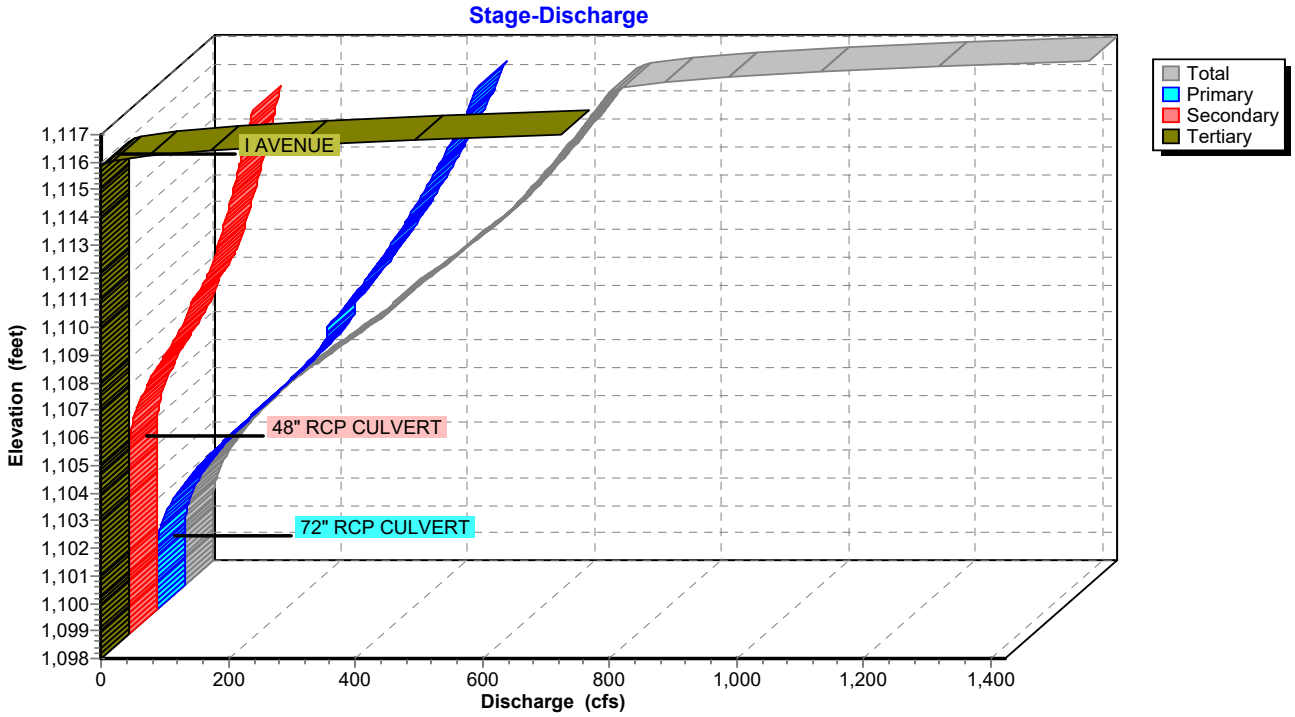
Secondary OutFlow Max=99.80 cfs @ 14.37 hrs HW=1,110.10' (Free Discharge)
└**2=48" RCP CULVERT** (Barrel Controls 99.80 cfs @ 7.94 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,098.00' (Free Discharge)
└**3=I AVENUE** (Controls 0.00 cfs)

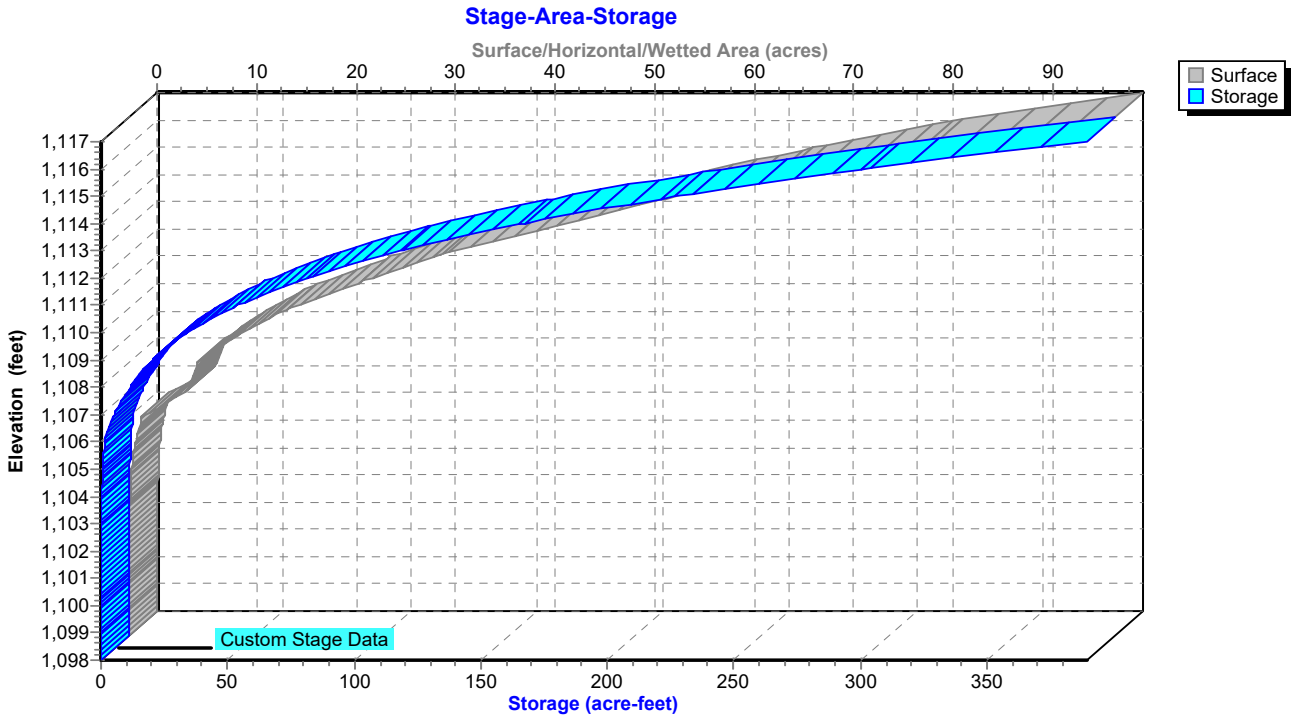




Pond I AVE: I AVENUE CULVERTS



Pond I AVE: I AVENUE CULVERTS



Hydrograph for Pond I AVE: I AVENUE CULVERTS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	0.00	0.000	1,098.00	0.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
2.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
3.00	0.01	0.000	1,098.44	0.00	0.00	0.00	0.00
4.00	0.03	0.001	1,099.76	0.00	0.00	0.00	0.00
5.00	0.05	0.002	1,100.29	0.05	0.05	0.00	0.00
6.00	0.09	0.002	1,100.31	0.09	0.09	0.00	0.00
7.00	0.12	0.002	1,100.32	0.12	0.12	0.00	0.00
8.00	0.16	0.002	1,100.34	0.16	0.16	0.00	0.00
9.00	0.19	0.002	1,100.35	0.19	0.19	0.00	0.00
10.00	1.07	0.003	1,100.57	1.04	1.04	0.00	0.00
11.00	7.37	0.007	1,101.14	7.27	7.27	0.00	0.00
12.00	47.35	0.055	1,102.60	44.83	44.83	0.00	0.00
13.00	**595.67**	7.439	1,107.37	290.63	252.96	37.67	0.00
14.00	**575.53**	**33.484**	**1,109.97**	**426.88**	**328.69**	**98.20**	0.00
15.00	308.25	**32.039**	**1,109.87**	**422.54**	**325.62**	**96.92**	0.00
16.00	241.62	21.050	1,109.05	377.40	297.35	80.04	0.00
17.00	198.22	10.649	1,107.87	316.04	266.26	49.78	0.00
18.00	170.14	2.780	1,106.49	236.76	218.00	18.76	0.00
19.00	152.81	0.759	1,105.14	155.75	154.41	1.34	0.00
20.00	140.10	0.599	1,104.87	141.58	141.40	0.18	0.00
21.00	129.07	0.486	1,104.63	130.32	130.32	0.00	0.00
22.00	118.42	0.391	1,104.40	119.42	119.42	0.00	0.00
23.00	107.91	0.314	1,104.17	108.75	108.75	0.00	0.00
24.00	97.33	0.251	1,103.93	98.02	98.02	0.00	0.00
25.00	85.44	0.193	1,103.66	86.20	86.20	0.00	0.00
26.00	72.32	0.137	1,103.34	72.86	72.86	0.00	0.00
27.00	63.25	0.105	1,103.11	63.55	63.55	0.00	0.00
28.00	54.67	0.080	1,102.88	55.00	55.00	0.00	0.00
29.00	43.19	0.052	1,102.56	43.54	43.54	0.00	0.00
30.00	31.77	0.031	1,102.20	31.97	31.97	0.00	0.00

Stage-Discharge for Pond I AVE: I AVENUE CULVERTS

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1,098.00	0.00	0.00	0.00	0.00
1,098.50	0.00	0.00	0.00	0.00
1,099.00	0.00	0.00	0.00	0.00
1,099.50	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	0.00	0.00
1,100.50	0.61	0.61	0.00	0.00
1,101.00	5.15	5.15	0.00	0.00
1,101.50	13.88	13.88	0.00	0.00
1,102.00	26.18	26.18	0.00	0.00
1,102.50	41.52	41.52	0.00	0.00
1,103.00	59.41	59.41	0.00	0.00
1,103.50	79.41	79.41	0.00	0.00
1,104.00	101.10	101.10	0.00	0.00
1,104.50	124.05	124.05	0.00	0.00
1,105.00	148.39	147.81	0.58	0.00
1,105.50	176.12	171.89	4.24	0.00
1,106.00	206.21	195.69	10.52	0.00
1,106.50	237.48	218.53	18.95	0.00
1,107.00	268.61	239.47	29.14	0.00
1,107.50	297.80	257.09	40.70	0.00
1,108.00	321.54	268.33	53.21	0.00
1,108.50	343.07	276.93	66.15	0.00
1,109.00	374.43	295.59	78.85	0.00
1,109.50	403.49	313.13	90.36	0.00
1,110.00	428.24	329.75	98.50	0.00
1,110.50	456.69	345.56	111.13	0.00
1,111.00	484.40	360.69	123.71	0.00
1,111.50	507.49	375.20	132.29	0.00
1,112.00	528.21	389.17	139.03	0.00
1,112.50	548.13	402.66	145.47	0.00
1,113.00	567.34	415.71	151.63	0.00
1,113.50	585.92	428.37	157.55	0.00
1,114.00	603.92	440.66	163.26	0.00
1,114.50	621.39	452.62	168.77	0.00
1,115.00	638.37	464.27	174.11	0.00
1,115.50	654.92	475.63	179.29	0.00
1,116.00	679.75	486.69	184.32	8.74
1,116.50	904.83	496.12	189.22	219.49
1,117.00	**1,422.27**	**505.37**	**194.00**	**722.89**

Stage-Area-Storage for Pond I AVE: I AVENUE CULVERTS

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,098.00	0.000	0.000
1,098.20	0.000	0.000
1,098.40	0.000	0.000
1,098.60	0.001	0.000
1,098.80	0.001	0.000
1,099.00	0.001	0.001
1,099.20	0.001	0.001
1,099.40	0.001	0.001
1,099.60	0.001	0.001
1,099.80	0.001	0.001
1,100.00	0.001	0.002
1,100.20	0.002	0.002
1,100.40	0.004	0.002
1,100.60	0.005	0.003
1,100.80	0.007	0.005
1,101.00	0.008	0.006
1,101.20	0.012	0.008
1,101.40	0.016	0.011
1,101.60	0.019	0.014
1,101.80	0.023	0.018
1,102.00	0.027	0.023
1,102.20	0.044	0.031
1,102.40	0.060	0.041
1,102.60	0.077	0.055
1,102.80	0.093	0.072
1,103.00	0.110	0.092
1,103.20	0.136	0.117
1,103.40	0.162	0.146
1,103.60	0.189	0.182
1,103.80	0.215	0.222
1,104.00	0.241	0.267
1,104.20	0.306	0.322
1,104.40	0.371	0.390
1,104.60	0.437	0.471
1,104.80	0.502	0.565
1,105.00	0.567	0.671
1,105.20	0.708	0.799
1,105.40	0.848	0.955
1,105.60	0.989	1.138
1,105.80	1.129	1.350
1,106.00	1.270	1.590
1,106.20	2.193	1.936
1,106.40	3.116	2.467
1,106.60	4.040	3.183
1,106.80	4.963	4.083
1,107.00	5.886	5.168
1,107.20	6.092	6.366
1,107.40	6.298	7.605
1,107.60	6.504	8.885
1,107.80	6.710	10.206
1,108.00	6.916	11.569
1,108.20	7.719	13.033
1,108.40	8.522	14.657
1,108.60	9.326	16.441
1,108.80	10.129	18.387
1,109.00	10.932	20.493
1,109.20	11.964	22.783
1,109.40	12.995	25.278
1,109.60	14.027	27.981
1,109.80	15.058	30.889
1,110.00	16.090	34.004
1,110.20	17.595	37.373
1,110.40	19.100	41.042
1,110.60	20.606	45.013
1,110.80	22.111	49.284
1,111.00	23.616	53.857
1,111.20	25.207	58.739
1,111.40	26.797	63.940
1,111.60	28.388	69.458
1,111.80	29.978	75.295
1,112.00	31.569	81.449
1,112.20	33.849	87.991
1,112.40	36.130	94.989
1,112.60	38.410	102.443
1,112.80	40.691	110.353
1,113.00	42.971	118.719
1,113.20	45.146	127.531
1,113.40	47.321	136.778
1,113.60	49.496	146.460
1,113.80	51.671	156.576
1,114.00	53.846	167.128
1,114.20	56.271	178.140
1,114.40	58.695	189.636
1,114.60	61.120	201.618
1,114.80	63.544	214.084
1,115.00	65.969	227.035
1,115.20	68.768	240.509
1,115.40	71.567	254.543
1,115.60	74.365	269.136
1,115.80	77.164	284.289
1,116.00	79.963	300.001
1,116.20	83.788	316.377
1,116.40	87.613	333.517
1,116.60	91.438	351.422
1,116.80	95.263	370.092
1,117.00	**99.088**	**389.527**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 158.4 AC: Watershed After Runoff Area=158.400 ac 0.00% Impervious Runoff Depth=2.86"
Flow Length=2,718' Slope=0.0329 '/' Tc=34.2 min CN=84 Runoff=374.65 cfs 37.773 af

Subcatchment 309.04 AC: South Runoff Area=309.040 ac 0.00% Impervious Runoff Depth=2.86"
Flow Length=9,197' Slope=0.0329 '/' Tc=90.7 min CN=84 Runoff=386.89 cfs 73.696 af

Subcatchment 544.5 AC: Remainder of Runoff Area=544.500 ac 0.00% Impervious Runoff Depth=2.86"
Flow Length=10,448' Slope=0.0329 '/' Tc=100.5 min CN=84 Runoff=629.90 cfs 129.846 af

Subcatchment 689.7 AC: Watershed West Runoff Area=689.700 ac 0.00% Impervious Runoff Depth=2.86"
Flow Length=9,666' Slope=0.0329 '/' Tc=94.4 min CN=84 Runoff=835.77 cfs 164.472 af

Subcatchment WETLAND POOL: Runoff Area=3.420 ac 100.00% Impervious Runoff Depth=4.31"
Flow Length=1,309' Tc=3.8 min CN=98 Runoff=24.96 cfs 1.229 af

Pond 1P: H AVENUE CULVERT Peak Elev=1,128.59' Storage=65.147 af Inflow=835.77 cfs 164.472 af
Primary=410.10 cfs 62.484 af Secondary=90.90 cfs 101.957 af Outflow=501.00 cfs 164.441 af

Pond 2P: BASIN NW OF WETLAND Peak Elev=1,125.13' Storage=87.879 af Inflow=534.55 cfs 202.214 af
Primary=229.03 cfs 149.045 af Secondary=0.00 cfs 0.000 af Outflow=229.03 cfs 149.045 af

Pond BERM: WETLAND Peak Elev=1,107.79' Storage=17.609 af Inflow=631.05 cfs 280.121 af
Outflow=609.26 cfs 278.248 af

Pond I AVE: I AVENUE CULVERTS Peak Elev=1,111.25' Storage=59.962 af Inflow=967.55 cfs 351.944 af
Primary=367.95 cfs 292.110 af Secondary=128.62 cfs 59.790 af Tertiary=0.00 cfs 0.000 af Outflow=496.58 cfs 351.901 af

Total Runoff Area = 1,705.060 ac Runoff Volume = 407.017 af Average Runoff Depth = 2.86"
99.80% Pervious = 1,701.640 ac 0.20% Impervious = 3.420 ac

Summary for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Runoff = 374.65 cfs @ 12.49 hrs, Volume= 37.773 af, Depth= 2.86"
Routed to Pond 2P : BASIN NW OF WETLAND

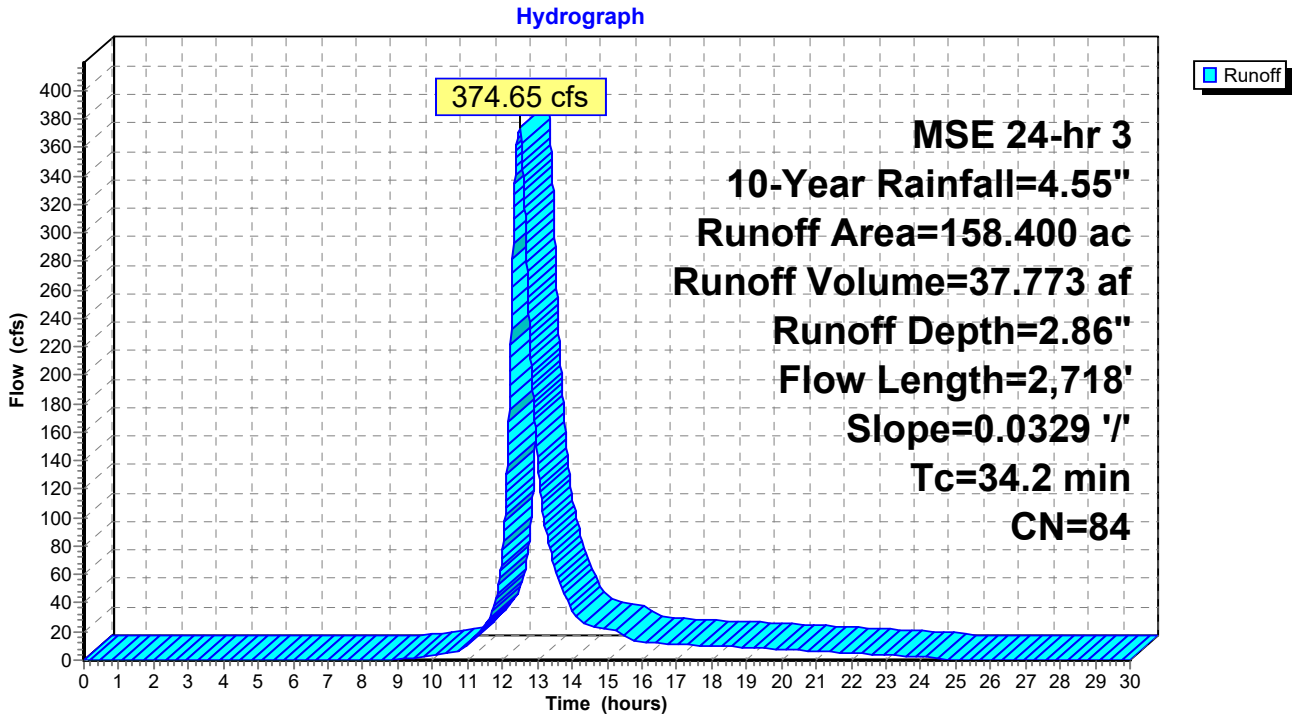
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.55"

	Area (ac)	CN	Description
*	158.400	84	
	158.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.2	2,718	0.0329	1.32		**Lag/CN Method,**

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location



Hydrograph for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.06	0.00	0.00
3.00	0.08	0.00	0.00
3.50	0.10	0.00	0.00
4.00	0.12	0.00	0.00
4.50	0.14	0.00	0.00
5.00	0.17	0.00	0.00
5.50	0.20	0.00	0.00
6.00	0.23	0.00	0.00
6.50	0.27	0.00	0.00
7.00	0.30	0.00	0.00
7.50	0.34	0.00	0.00
8.00	0.38	0.00	0.00
8.50	0.42	0.00	0.09
9.00	0.47	0.00	0.59
9.50	0.54	0.01	1.80
10.00	0.63	0.03	3.69
10.50	0.71	0.05	5.62
11.00	0.88	0.10	10.82
11.50	1.13	0.21	24.58
12.00	2.11	0.82	**73.17**
12.50	3.42	1.87	**374.54**
13.00	3.67	2.09	141.68
13.50	3.84	2.23	66.08
14.00	3.92	2.30	34.52
14.50	4.01	2.38	24.50
15.00	4.08	2.44	22.20
15.50	4.13	2.48	16.81
16.00	4.17	2.52	12.93
16.50	4.21	2.56	11.91
17.00	4.25	2.59	11.27
17.50	4.28	2.62	10.64
18.00	4.32	2.65	10.02
18.50	4.35	2.68	9.39
19.00	4.38	2.71	8.76
19.50	4.41	2.73	8.14
20.00	4.43	2.75	7.50
20.50	4.45	2.78	6.86
21.00	4.47	2.79	6.22
21.50	4.49	2.81	5.59
22.00	4.51	2.82	4.94
22.50	4.52	2.84	4.30
23.00	4.53	2.85	3.66
23.50	4.54	2.86	3.01
24.00	**4.55**	**2.86**	2.37
24.50	4.55	2.86	0.93
25.00	4.55	2.86	0.11
25.50	4.55	2.86	0.01
26.00	4.55	2.86	0.00
26.50	4.55	2.86	0.00
27.00	4.55	2.86	0.00
27.50	4.55	2.86	0.00
28.00	4.55	2.86	0.00
28.50	4.55	2.86	0.00
29.00	4.55	2.86	0.00
29.50	4.55	2.86	0.00
30.00	4.55	2.86	0.00

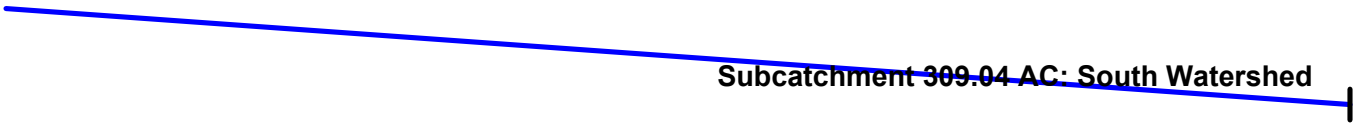
Summary for Subcatchment 309.04 AC: South Watershed

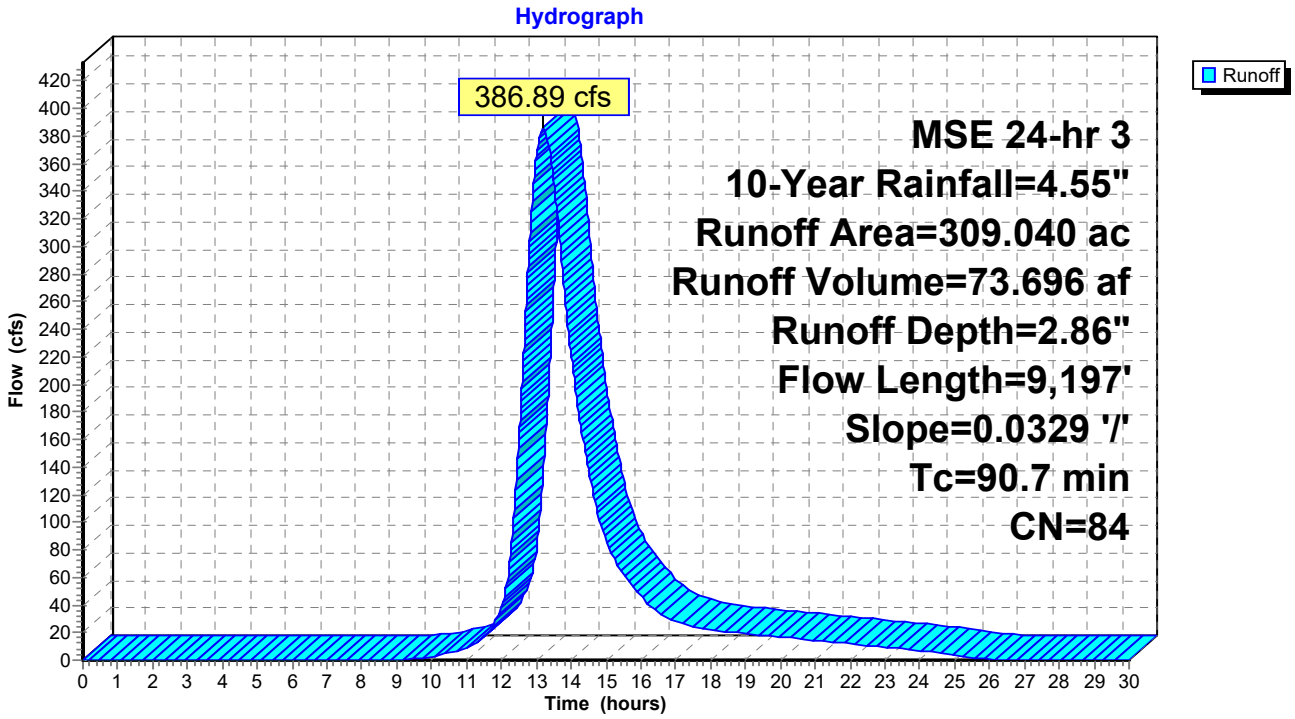
Runoff = 386.89 cfs @ 13.20 hrs, Volume= 73.696 af, Depth= 2.86"
Routed to Pond I AVE : I AVENUE CULVERTS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.55"

	Area (ac)	CN	Description
*	309.040	84	
	309.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
90.7	9,197	0.0329	1.69		**Lag/CN Method,**





Hydrograph for Subcatchment 309.04 AC: South Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.06	0.00	0.00
3.00	0.08	0.00	0.00
3.50	0.10	0.00	0.00
4.00	0.12	0.00	0.00
4.50	0.14	0.00	0.00
5.00	0.17	0.00	0.00
5.50	0.20	0.00	0.00
6.00	0.23	0.00	0.00
6.50	0.27	0.00	0.00
7.00	0.30	0.00	0.00
7.50	0.34	0.00	0.00
8.00	0.38	0.00	0.00
8.50	0.42	0.00	0.01
9.00	0.47	0.00	0.18
9.50	0.54	0.01	0.83
10.00	0.63	0.03	2.46
10.50	0.71	0.05	5.17
11.00	0.88	0.10	8.88
11.50	1.13	0.21	17.19
12.00	2.11	0.82	38.51
12.50	3.42	1.87	155.80
13.00	3.67	2.09	**365.72**
13.50	3.84	2.23	**348.77**
14.00	3.92	2.30	221.47
14.50	4.01	2.38	137.16
15.00	4.08	2.44	87.85
15.50	4.13	2.48	62.31
16.00	4.17	2.52	46.29
16.50	4.21	2.56	34.79
17.00	4.25	2.59	27.90
17.50	4.28	2.62	24.27
18.00	4.32	2.65	22.22
18.50	4.35	2.68	20.66
19.00	4.38	2.71	19.31
19.50	4.41	2.73	18.03
20.00	4.43	2.75	16.78
20.50	4.45	2.78	15.55
21.00	4.47	2.79	14.31
21.50	4.49	2.81	13.08
22.00	4.51	2.82	11.82
22.50	4.52	2.84	10.58
23.00	4.53	2.85	9.32
23.50	4.54	2.86	8.08
24.00	**4.55**	**2.86**	6.82
24.50	4.55	2.86	5.47
25.00	4.55	2.86	3.52
25.50	4.55	2.86	1.72
26.00	4.55	2.86	0.75
26.50	4.55	2.86	0.33
27.00	4.55	2.86	0.14
27.50	4.55	2.86	0.06
28.00	4.55	2.86	0.02
28.50	4.55	2.86	0.01
29.00	4.55	2.86	0.00
29.50	4.55	2.86	0.00
30.00	4.55	2.86	0.00

Summary for Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Runoff = 629.90 cfs @ 13.29 hrs, Volume= 129.846 af, Depth= 2.86"
Routed to Pond BERM : WETLAND

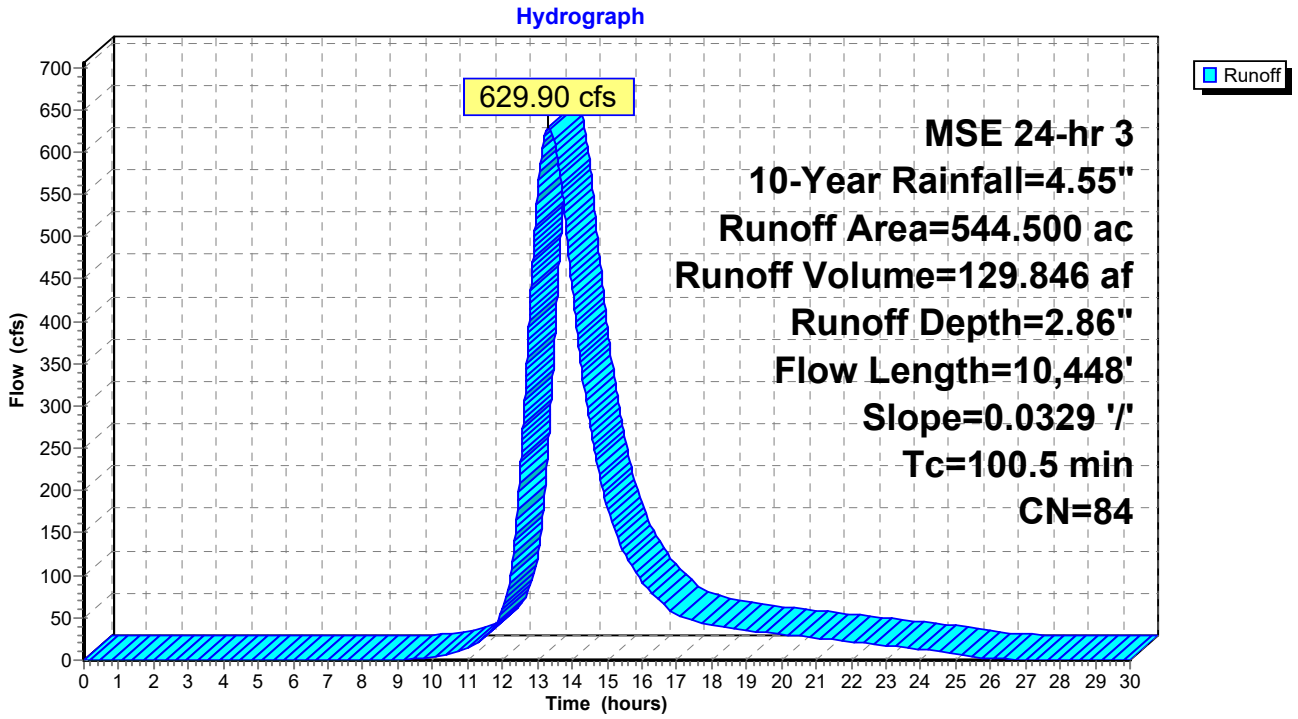
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.55"

	Area (ac)	CN	Description
*	544.500	84	
	544.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
100.5	10,448	0.0329	1.73		**Lag/CN Method,**

Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Subcatchment 544.5 AC: Remainder of Watershed to Wetland



Hydrograph for Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.06	0.00	0.00
3.00	0.08	0.00	0.00
3.50	0.10	0.00	0.00
4.00	0.12	0.00	0.00
4.50	0.14	0.00	0.00
5.00	0.17	0.00	0.00
5.50	0.20	0.00	0.00
6.00	0.23	0.00	0.00
6.50	0.27	0.00	0.00
7.00	0.30	0.00	0.00
7.50	0.34	0.00	0.00
8.00	0.38	0.00	0.00
8.50	0.42	0.00	0.01
9.00	0.47	0.00	0.23
9.50	0.54	0.01	1.15
10.00	0.63	0.03	3.57
10.50	0.71	0.05	7.82
11.00	0.88	0.10	13.82
11.50	1.13	0.21	26.17
12.00	2.11	0.82	58.02
12.50	3.42	1.87	216.19
13.00	3.67	2.09	**545.63**
13.50	3.84	2.23	**613.41**
14.00	3.92	2.30	440.04
14.50	4.01	2.38	280.14
15.00	4.08	2.44	182.01
15.50	4.13	2.48	126.74
16.00	4.17	2.52	93.16
16.50	4.21	2.56	69.32
17.00	4.25	2.59	54.69
17.50	4.28	2.62	46.02
18.00	4.32	2.65	40.71
18.50	4.35	2.68	37.44
19.00	4.38	2.71	34.82
19.50	4.41	2.73	32.52
20.00	4.43	2.75	30.29
20.50	4.45	2.78	28.05
21.00	4.47	2.79	25.86
21.50	4.49	2.81	23.69
22.00	4.51	2.82	21.52
22.50	4.52	2.84	19.30
23.00	4.53	2.85	17.08
23.50	4.54	2.86	14.89
24.00	**4.55**	**2.86**	12.69
24.50	4.55	2.86	10.33
25.00	4.55	2.86	7.18
25.50	4.55	2.86	3.97
26.00	4.55	2.86	1.89
26.50	4.55	2.86	0.90
27.00	4.55	2.86	0.42
27.50	4.55	2.86	0.19
28.00	4.55	2.86	0.09
28.50	4.55	2.86	0.03
29.00	4.55	2.86	0.01
29.50	4.55	2.86	0.00
30.00	4.55	2.86	0.00

Summary for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Runoff = 835.77 cfs @ 13.32 hrs, Volume= 164.472 af, Depth= 2.86"
Routed to Pond 1P : H AVENUE CULVERT

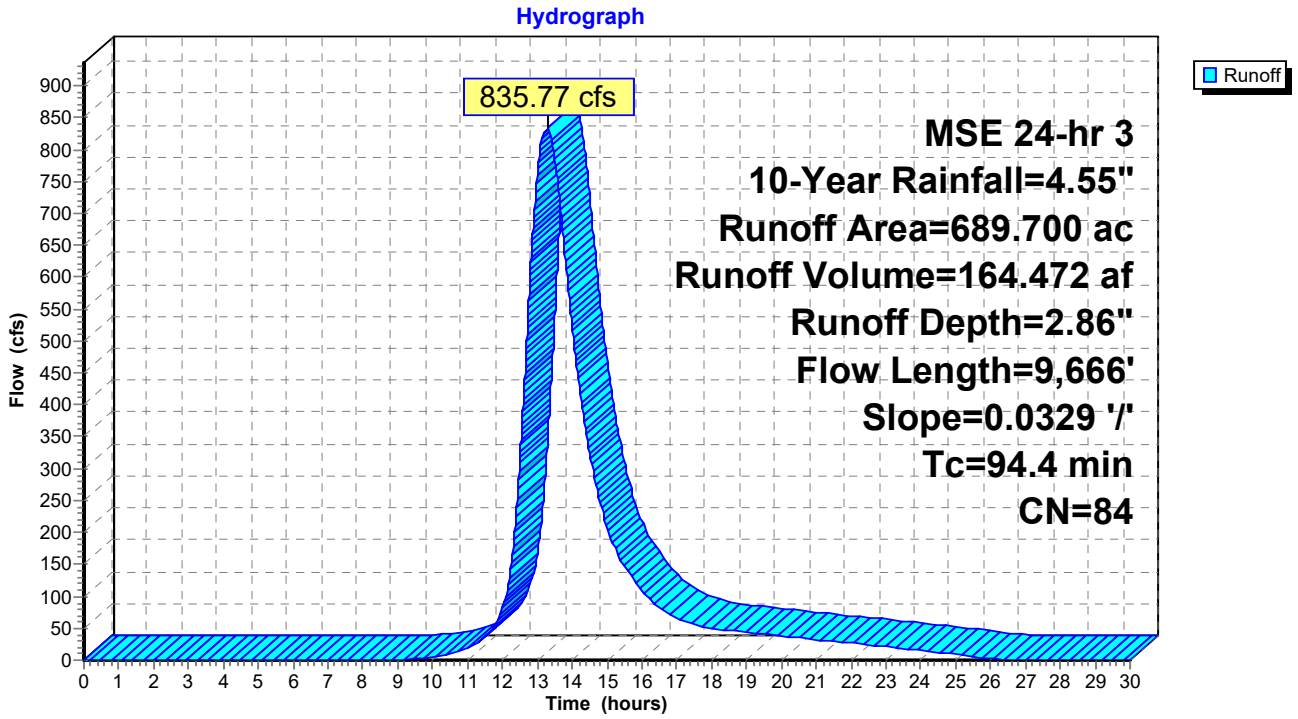
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.55"

	Area (ac)	CN	Description
*	689.700	84	
	689.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
94.4	9,666	0.0329	1.71		**Lag/CN Method,**

Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Subcatchment 689.7 AC: Watershed West of H Ave Culvert



Hydrograph for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.06	0.00	0.00
3.00	0.08	0.00	0.00
3.50	0.10	0.00	0.00
4.00	0.12	0.00	0.00
4.50	0.14	0.00	0.00
5.00	0.17	0.00	0.00
5.50	0.20	0.00	0.00
6.00	0.23	0.00	0.00
6.50	0.27	0.00	0.00
7.00	0.30	0.00	0.00
7.50	0.34	0.00	0.00
8.00	0.38	0.00	0.00
8.50	0.42	0.00	0.02
9.00	0.47	0.00	0.36
9.50	0.54	0.01	1.69
10.00	0.63	0.03	5.10
10.50	0.71	0.05	10.90
11.00	0.88	0.10	18.90
11.50	1.13	0.21	36.33
12.00	2.11	0.82	81.63
12.50	3.42	1.87	310.28
13.00	3.67	2.09	**763.53**
13.50	3.84	2.23	**785.75**
14.00	3.92	2.30	522.42
14.50	4.01	2.38	327.27
15.00	4.08	2.44	209.73
15.50	4.13	2.48	147.14
16.00	4.17	2.52	108.81
16.50	4.21	2.56	81.37
17.00	4.25	2.59	64.92
17.50	4.28	2.62	55.37
18.00	4.32	2.65	50.25
18.50	4.35	2.68	46.57
19.00	4.38	2.71	43.51
19.50	4.41	2.73	40.56
20.00	4.43	2.75	37.79
20.50	4.45	2.78	35.02
21.00	4.47	2.79	32.24
21.50	4.49	2.81	29.52
22.00	4.51	2.82	26.71
22.50	4.52	2.84	23.93
23.00	4.53	2.85	21.14
23.50	4.54	2.86	18.32
24.00	**4.55**	**2.86**	15.55
24.50	4.55	2.86	12.51
25.00	4.55	2.86	8.34
25.50	4.55	2.86	4.29
26.00	4.55	2.86	1.94
26.50	4.55	2.86	0.88
27.00	4.55	2.86	0.39
27.50	4.55	2.86	0.17
28.00	4.55	2.86	0.07
28.50	4.55	2.86	0.02
29.00	4.55	2.86	0.00
29.50	4.55	2.86	0.00
30.00	4.55	2.86	0.00

Summary for Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL

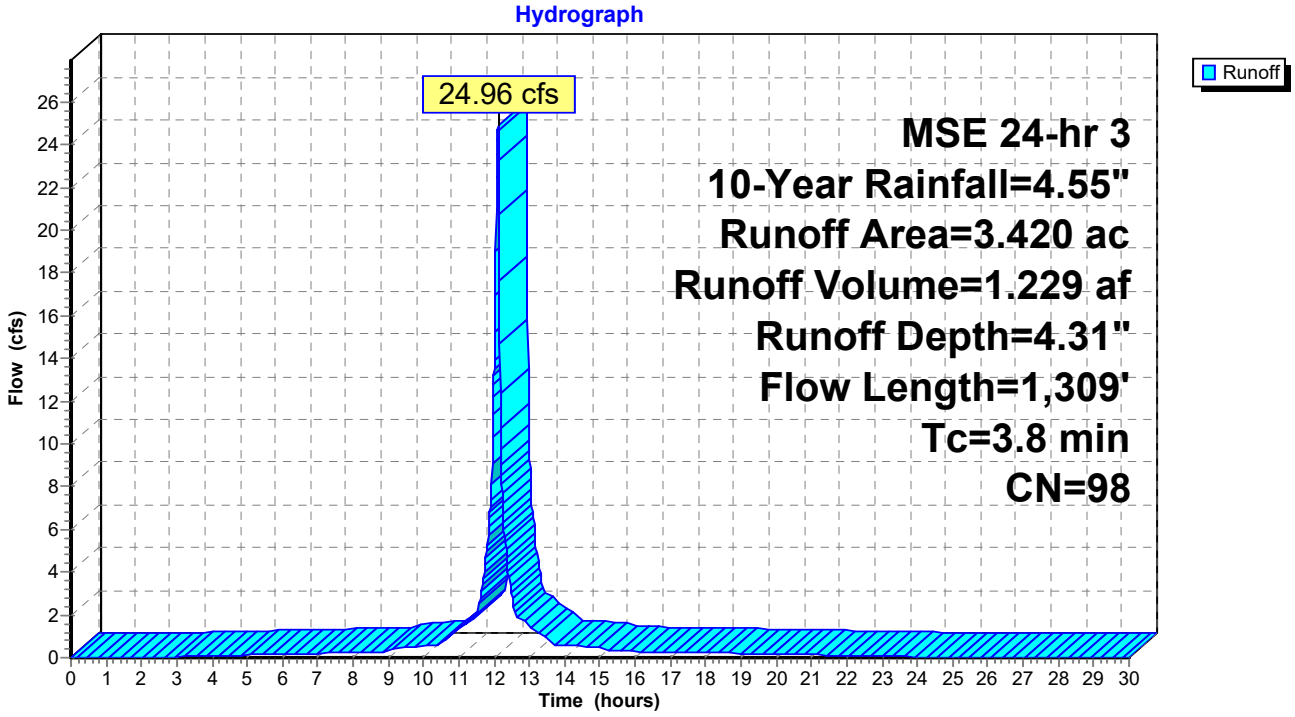
Runoff = 24.96 cfs @ 12.11 hrs, Volume= 1.229 af, Depth= 4.31"
Routed to Pond BERM : WETLAND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.55"

Area (ac)	CN	Description
3.420	98	Water Surface, HSG A
3.420		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	1,309		5.67		**Lake or Reservoir,** Mean Depth= 1.00'

Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL



Hydrograph for Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.04	0.00	0.00
2.50	0.06	0.00	0.01
3.00	0.08	0.01	0.03
3.50	0.10	0.01	0.05
4.00	0.12	0.02	0.08
4.50	0.14	0.03	0.10
5.00	0.17	0.05	0.12
5.50	0.20	0.07	0.14
6.00	0.23	0.09	0.16
6.50	0.27	0.12	0.18
7.00	0.30	0.15	0.21
7.50	0.34	0.18	0.22
8.00	0.38	0.21	0.24
8.50	0.42	0.25	0.27
9.00	0.47	0.29	0.28
9.50	0.54	0.36	0.49
10.00	0.63	0.43	0.53
10.50	0.71	0.51	0.57
11.00	0.88	0.67	1.31
11.50	1.13	0.92	1.91
12.00	2.11	1.88	**13.49**
12.50	3.42	3.19	**2.94**
13.00	3.67	3.44	1.50
13.50	3.84	3.60	0.91
14.00	3.92	3.69	0.58
14.50	4.01	3.77	0.54
15.00	4.08	3.85	0.51
15.50	4.13	3.89	0.30
16.00	4.17	3.93	0.29
16.50	4.21	3.97	0.27
17.00	4.25	4.01	0.26
17.50	4.28	4.05	0.24
18.00	4.32	4.08	0.23
18.50	4.35	4.11	0.21
19.00	4.38	4.14	0.20
19.50	4.41	4.17	0.18
20.00	4.43	4.20	0.17
20.50	4.45	4.22	0.15
21.00	4.47	4.24	0.13
21.50	4.49	4.26	0.12
22.00	4.51	4.27	0.10
22.50	4.52	4.29	0.09
23.00	4.53	4.30	0.07
23.50	4.54	4.31	0.06
24.00	**4.55**	**4.31**	0.04
24.50	4.55	4.31	0.00
25.00	4.55	4.31	0.00
25.50	4.55	4.31	0.00
26.00	4.55	4.31	0.00
26.50	4.55	4.31	0.00
27.00	4.55	4.31	0.00
27.50	4.55	4.31	0.00
28.00	4.55	4.31	0.00
28.50	4.55	4.31	0.00
29.00	4.55	4.31	0.00
29.50	4.55	4.31	0.00
30.00	4.55	4.31	0.00

Summary for Pond 1P: H AVENUE CULVERT

Inflow Area = 689.700 ac, 0.00% Impervious, Inflow Depth = 2.86" for 10-Year event
Inflow = 835.77 cfs @ 13.32 hrs, Volume= 164.472 af
Outflow = 501.00 cfs @ 14.04 hrs, Volume= 164.441 af, Atten= 40%, Lag= 43.7 min
Primary = 410.10 cfs @ 14.04 hrs, Volume= 62.484 af
Routed to Pond 2P : BASIN NW OF WETLAND
Secondary = 90.90 cfs @ 14.04 hrs, Volume= 101.957 af
Routed to Pond 2P : BASIN NW OF WETLAND

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,128.59' @ 14.04 hrs Surf.Area= 50.660 ac Storage= 65.147 af

Plug-Flow detention time= 182.2 min calculated for 164.386 af (100% of inflow)
Center-of-Mass det. time= 182.0 min (1,058.4 - 876.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,124.00'	161.110 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,124.00	0.010	0.000	0.000
1,126.00	1.650	1.660	1.660
1,128.00	36.300	37.950	39.610
1,130.00	85.200	121.500	161.110

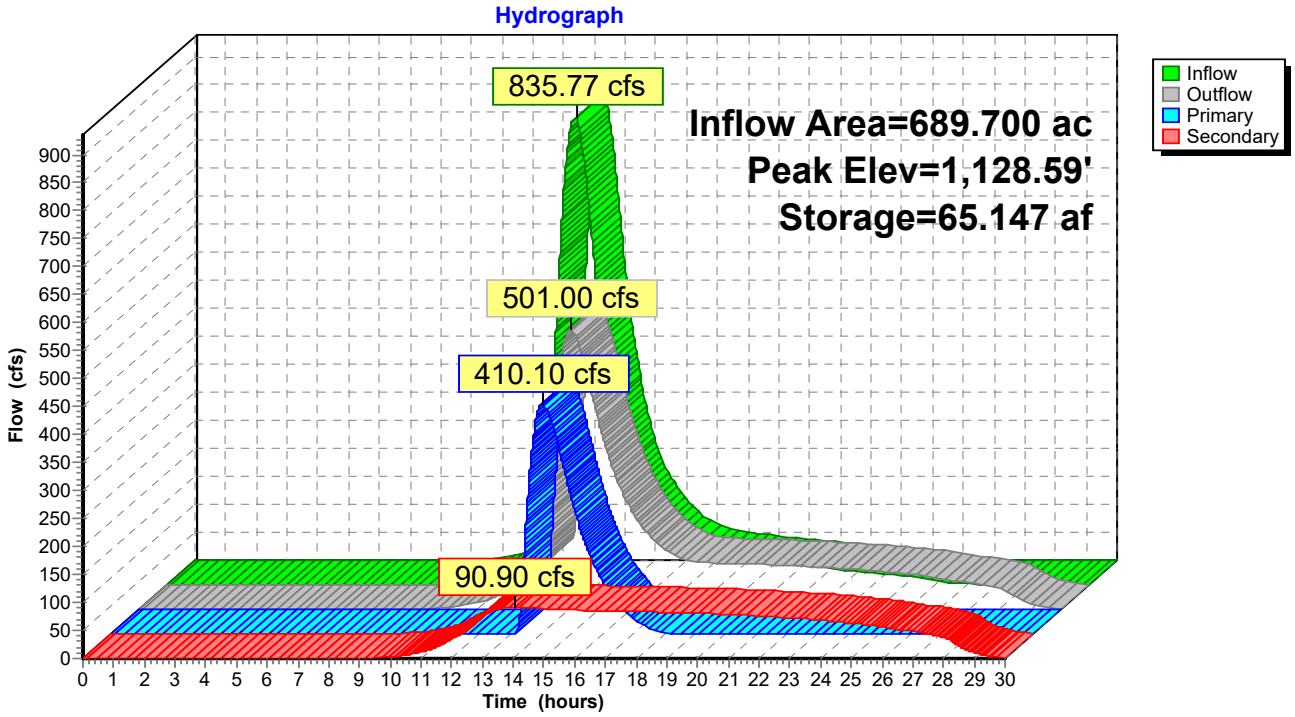
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,124.00'	**60.0" W x 24.0" H Box 5'x2' CULVERT** L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,124.00' / 1,124.00' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 10.00 sf
#2	Primary	1,128.05'	**342.0' long + 100.0 '/' SideZ x 25.0' breadth H Ave Road Surface** 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

Primary OutFlow Max=409.40 cfs @ 14.04 hrs HW=1,128.59' (Free Discharge)
└**2=H Ave Road Surface** (Weir Controls 409.40 cfs @ 1.93 fps)

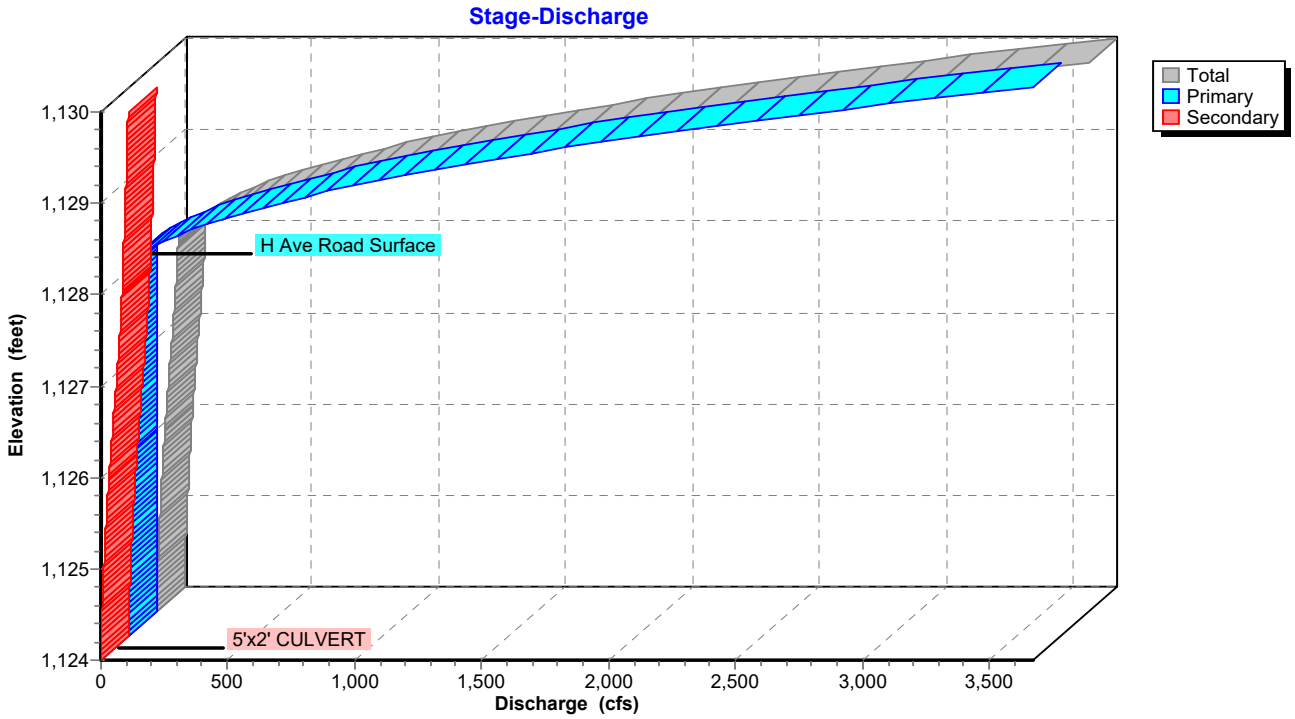
Secondary OutFlow Max=90.90 cfs @ 14.04 hrs HW=1,128.59' (Free Discharge)
└**1=5'x2' CULVERT** (Inlet Controls 90.90 cfs @ 9.09 fps)



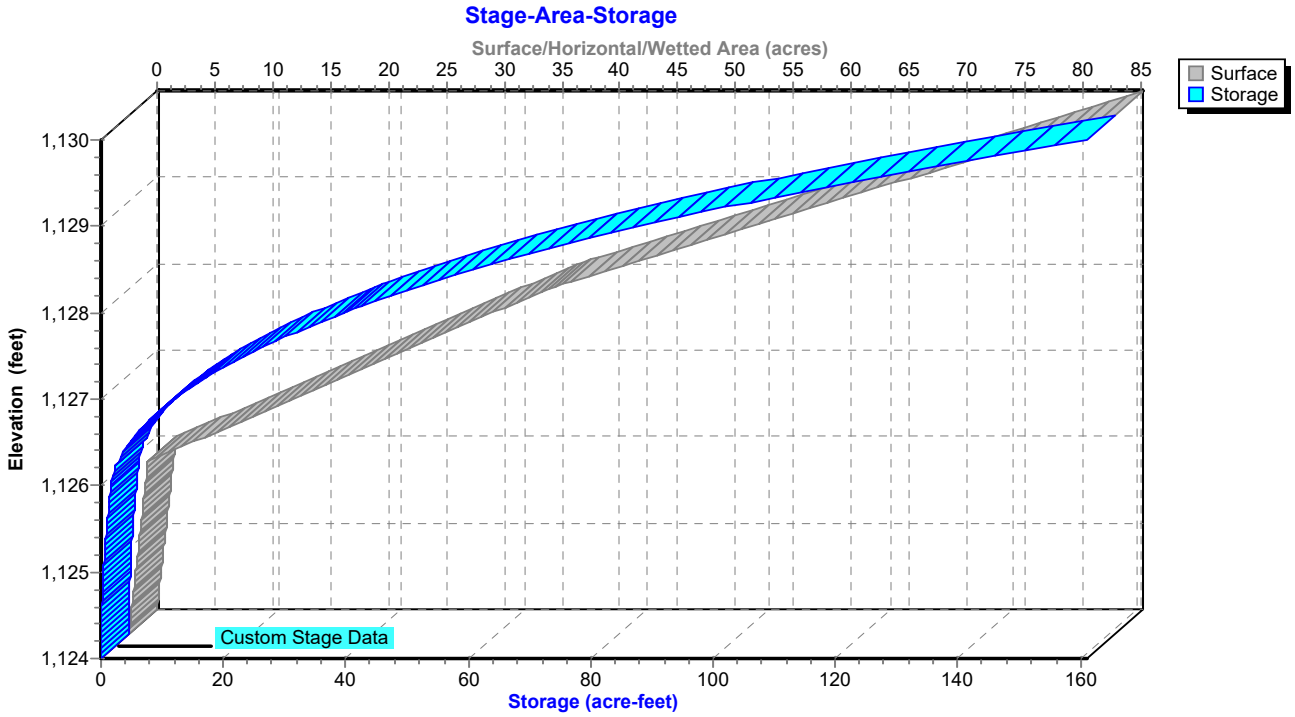
Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Hydrograph for Pond 1P: H AVENUE CULVERT

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,124.00	0.00	0.00	0.00
1.00	0.00	0.000	1,124.00	0.00	0.00	0.00
2.00	0.00	0.000	1,124.00	0.00	0.00	0.00
3.00	0.00	0.000	1,124.00	0.00	0.00	0.00
4.00	0.00	0.000	1,124.00	0.00	0.00	0.00
5.00	0.00	0.000	1,124.00	0.00	0.00	0.00
6.00	0.00	0.000	1,124.00	0.00	0.00	0.00
7.00	0.00	0.000	1,124.00	0.00	0.00	0.00
8.00	0.00	0.000	1,124.00	0.00	0.00	0.00
9.00	0.36	0.004	1,124.08	0.13	0.00	0.13
10.00	5.10	0.086	1,124.44	2.78	0.00	2.78
11.00	18.90	0.461	1,125.05	11.65	0.00	11.65
12.00	81.63	2.032	1,126.13	35.69	0.00	35.69
13.00	**763.53**	27.130	1,127.62	75.49	0.00	75.49
14.00	**522.42**	**65.118**	**1,128.59**	**500.02**	**409.14**	**90.89**
15.00	209.73	**57.602**	**1,128.43**	**327.06**	**238.18**	**88.89**
16.00	108.81	49.911	1,128.26	179.80	93.20	86.60
17.00	64.92	45.062	1,128.14	111.88	26.88	85.00
18.00	50.25	41.760	1,128.06	85.10	1.28	83.82
19.00	43.51	38.731	1,127.98	82.66	0.00	82.66
20.00	37.79	35.312	1,127.88	81.15	0.00	81.15
21.00	32.24	31.593	1,127.77	78.77	0.00	78.77
22.00	26.71	27.636	1,127.64	75.88	0.00	75.88
23.00	21.14	23.479	1,127.49	72.46	0.00	72.46
24.00	15.55	19.171	1,127.33	68.34	0.00	68.34
25.00	8.34	14.742	1,127.14	63.20	0.00	63.20
26.00	1.94	10.170	1,126.90	56.23	0.00	56.23
27.00	0.39	5.946	1,126.61	48.96	0.00	48.96
28.00	0.07	2.349	1,126.20	37.53	0.00	37.53
29.00	0.00	0.402	1,124.98	10.42	0.00	10.42
30.00	0.00	0.031	1,124.26	1.09	0.00	1.09

Stage-Discharge for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,124.00	0.00	0.00	0.00
1,124.10	0.16	0.00	0.16
1,124.20	0.64	0.00	0.64
1,124.30	1.37	0.00	1.37
1,124.40	2.30	0.00	2.30
1,124.50	3.40	0.00	3.40
1,124.60	4.64	0.00	4.64
1,124.70	6.01	0.00	6.01
1,124.80	7.50	0.00	7.50
1,124.90	9.10	0.00	9.10
1,125.00	10.80	0.00	10.80
1,125.10	12.59	0.00	12.59
1,125.20	14.47	0.00	14.47
1,125.30	16.44	0.00	16.44
1,125.40	18.49	0.00	18.49
1,125.50	20.61	0.00	20.61
1,125.60	22.82	0.00	22.82
1,125.70	25.10	0.00	25.10
1,125.80	27.44	0.00	27.44
1,125.90	29.86	0.00	29.86
1,126.00	32.34	0.00	32.34
1,126.10	34.89	0.00	34.89
1,126.20	37.50	0.00	37.50
1,126.30	40.17	0.00	40.17
1,126.40	42.91	0.00	42.91
1,126.50	45.70	0.00	45.70
1,126.60	48.55	0.00	48.55
1,126.70	49.59	0.00	49.59
1,126.80	53.02	0.00	53.02
1,126.90	56.23	0.00	56.23
1,127.00	59.28	0.00	59.28
1,127.10	62.17	0.00	62.17
1,127.20	64.93	0.00	64.93
1,127.30	67.59	0.00	67.59
1,127.40	70.14	0.00	70.14
1,127.50	72.60	0.00	72.60
1,127.60	74.98	0.00	74.98
1,127.70	77.29	0.00	77.29
1,127.80	79.53	0.00	79.53
1,127.90	81.58	0.00	81.58
1,128.00	83.00	0.00	83.00
1,128.10	94.77	10.37	84.40
1,128.20	140.89	55.12	85.78
1,128.30	208.62	121.50	87.13
1,128.40	294.93	206.47	88.46
1,128.50	397.86	308.09	89.77
1,128.60	516.16	425.10	91.06
1,128.70	646.72	554.38	92.33
1,128.80	786.82	693.24	93.59
1,128.90	942.26	847.43	94.82
1,129.00	1,114.94	1,018.90	96.05
1,129.10	1,303.85	1,206.60	97.25
1,129.20	1,510.10	1,411.66	98.44
1,129.30	1,730.38	1,630.76	99.62
1,129.40	1,964.23	1,863.45	100.78
1,129.50	2,211.09	2,109.16	101.93
1,129.60	2,470.36	2,367.29	103.06
1,129.70	2,746.35	2,642.17	104.19
1,129.80	3,039.97	2,934.67	105.30
1,129.90	3,349.12	3,242.72	106.40
1,130.00	**3,673.94**	**3,566.46**	**107.49**

Stage-Area-Storage for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,124.00	0.010	0.000
1,124.10	0.092	0.005
1,124.20	0.174	0.018
1,124.30	0.256	0.040
1,124.40	0.338	0.070
1,124.50	0.420	0.107
1,124.60	0.502	0.154
1,124.70	0.584	0.208
1,124.80	0.666	0.270
1,124.90	0.748	0.341
1,125.00	0.830	0.420
1,125.10	0.912	0.507
1,125.20	0.994	0.602
1,125.30	1.076	0.706
1,125.40	1.158	0.818
1,125.50	1.240	0.937
1,125.60	1.322	1.066
1,125.70	1.404	1.202
1,125.80	1.486	1.346
1,125.90	1.568	1.499
1,126.00	1.650	1.660
1,126.10	3.382	1.912
1,126.20	5.115	2.337
1,126.30	6.847	2.935
1,126.40	8.580	3.706
1,126.50	10.312	4.651
1,126.60	12.045	5.768
1,126.70	13.778	7.060
1,126.80	15.510	8.524
1,126.90	17.243	10.162
1,127.00	18.975	11.972
1,127.10	20.707	13.957
1,127.20	22.440	16.114
1,127.30	24.172	18.445
1,127.40	25.905	20.949
1,127.50	27.637	23.626
1,127.60	29.370	26.476
1,127.70	31.103	29.500
1,127.80	32.835	32.696
1,127.90	34.568	36.067
1,128.00	36.300	39.610
1,128.10	38.745	43.362
1,128.20	41.190	47.359
1,128.30	43.635	51.600
1,128.40	46.080	56.086
1,128.50	48.525	60.816
1,128.60	50.970	65.791
1,128.70	53.415	71.010
1,128.80	55.860	76.474
1,128.90	58.305	82.182
1,129.00	60.750	88.135
1,129.10	63.195	94.332
1,129.20	65.640	100.774
1,129.30	68.085	107.460
1,129.40	70.530	114.391
1,129.50	72.975	121.566
1,129.60	75.420	128.986
1,129.70	77.865	136.650
1,129.80	80.310	144.559
1,129.90	82.755	152.712
1,130.00	**85.200**	**161.110**

Summary for Pond 2P: BASIN NW OF WETLAND

[81] Warning: Exceeded Pond 1P by 0.10' @ 29.99 hrs

Inflow Area = 848.100 ac, 0.00% Impervious, Inflow Depth > 2.86" for 10-Year event
Inflow = 534.55 cfs @ 14.00 hrs, Volume= 202.214 af
Outflow = 229.03 cfs @ 15.69 hrs, Volume= 149.045 af, Atten= 57%, Lag= 101.0 min
Primary = 229.03 cfs @ 15.69 hrs, Volume= 149.045 af
Routed to Pond BERM : WETLAND
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,125.13' @ 15.69 hrs Surf.Area= 53.142 ac Storage= 87.879 af

Plug-Flow detention time= 323.0 min calculated for 149.045 af (74% of inflow)
Center-of-Mass det. time= 185.9 min (1,199.8 - 1,013.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,121.00'	311.173 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,121.00	1.997	0.000	0.000
1,122.00	7.899	4.948	4.948
1,123.00	16.217	12.058	17.006
1,124.00	30.839	23.528	40.534
1,126.00	70.400	101.239	141.773
1,128.00	99.000	169.400	311.173

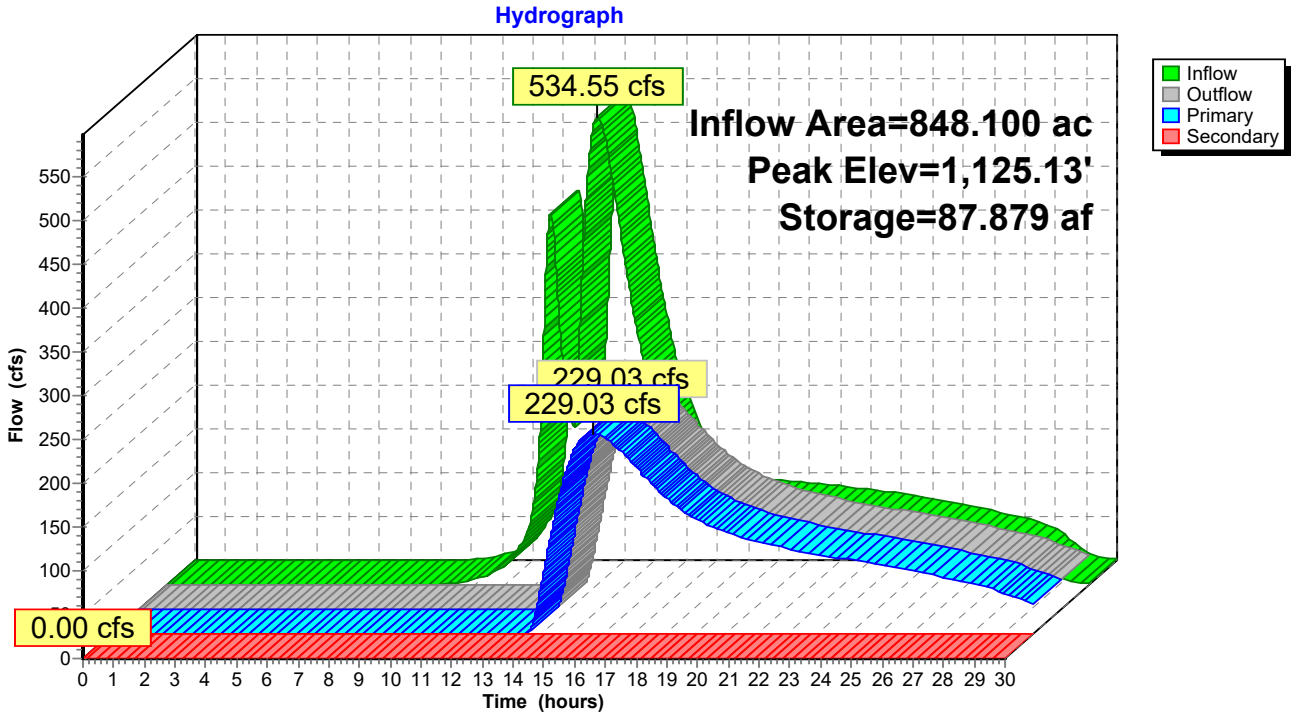
Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.00'	**50.0' long + 25.0 '/' SideZ x 50.0' breadth Saddle to Wetland** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	1,127.00'	**300.0' long + 50.0 '/' SideZ x 50.0' breadth Saddle Away from Wetland** 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

Primary OutFlow Max=229.00 cfs @ 15.69 hrs HW=1,125.13' (Free Discharge)
↑—**1=Saddle to Wetland** (Weir Controls 229.00 cfs @ 2.60 fps)

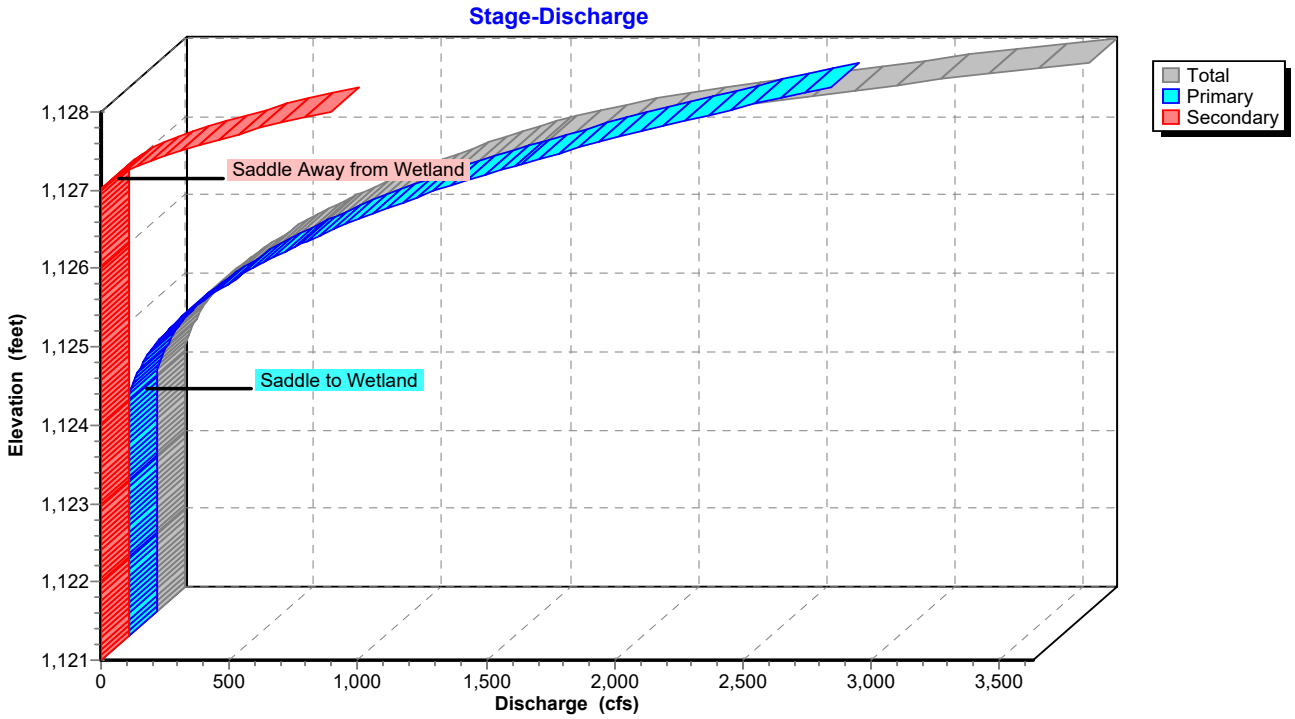
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,121.00' (Free Discharge)
↑—**2=Saddle Away from Wetland** (Controls 0.00 cfs)



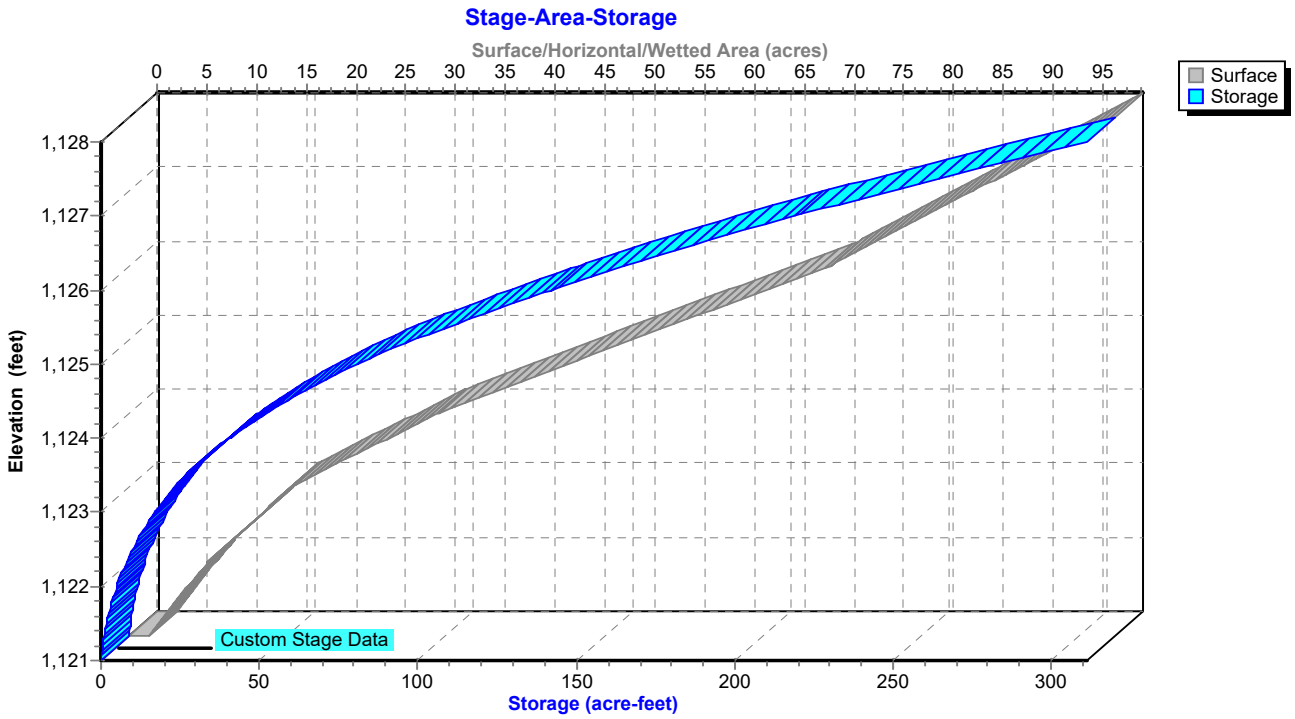
Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Hydrograph for Pond 2P: BASIN NW OF WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,121.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,121.00	0.00	0.00	0.00
2.00	0.00	0.000	1,121.00	0.00	0.00	0.00
3.00	0.00	0.000	1,121.00	0.00	0.00	0.00
4.00	0.00	0.000	1,121.00	0.00	0.00	0.00
5.00	0.00	0.000	1,121.00	0.00	0.00	0.00
6.00	0.00	0.000	1,121.00	0.00	0.00	0.00
7.00	0.00	0.000	1,121.00	0.00	0.00	0.00
8.00	0.00	0.000	1,121.00	0.00	0.00	0.00
9.00	0.72	0.016	1,121.01	0.00	0.00	0.00
10.00	6.47	0.260	1,121.11	0.00	0.00	0.00
11.00	22.47	1.312	1,121.41	0.00	0.00	0.00
12.00	108.86	5.454	1,122.06	0.00	0.00	0.00
13.00	217.17	29.997	1,123.62	0.00	0.00	0.00
14.00	**534.54**	58.103	1,124.49	55.82	55.82	0.00
15.00	349.26	**84.284**	**1,125.06**	**204.25**	**204.25**	0.00
16.00	192.74	**87.424**	**1,125.12**	**225.87**	**225.87**	0.00
17.00	123.14	82.681	1,125.03	193.61	193.61	0.00
18.00	95.12	77.039	1,124.92	157.54	157.54	0.00
19.00	91.41	72.813	1,124.83	132.27	132.27	0.00
20.00	88.64	70.030	1,124.77	116.48	116.48	0.00
21.00	84.99	68.045	1,124.72	105.82	105.82	0.00
22.00	80.83	66.505	1,124.69	97.72	97.72	0.00
23.00	76.13	65.203	1,124.66	90.99	90.99	0.00
24.00	70.71	64.013	1,124.63	84.87	84.87	0.00
25.00	63.31	62.785	1,124.60	78.69	78.69	0.00
26.00	56.23	61.500	1,124.57	72.22	72.22	0.00
27.00	48.96	60.114	1,124.54	65.46	65.46	0.00
28.00	37.53	58.608	1,124.50	58.16	58.16	0.00
29.00	10.42	56.164	1,124.44	47.05	47.05	0.00
30.00	1.09	53.183	1,124.37	34.42	34.42	0.00

Stage-Discharge for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,121.00	0.00	0.00	0.00
1,121.10	0.00	0.00	0.00
1,121.20	0.00	0.00	0.00
1,121.30	0.00	0.00	0.00
1,121.40	0.00	0.00	0.00
1,121.50	0.00	0.00	0.00
1,121.60	0.00	0.00	0.00
1,121.70	0.00	0.00	0.00
1,121.80	0.00	0.00	0.00
1,121.90	0.00	0.00	0.00
1,122.00	0.00	0.00	0.00
1,122.10	0.00	0.00	0.00
1,122.20	0.00	0.00	0.00
1,122.30	0.00	0.00	0.00
1,122.40	0.00	0.00	0.00
1,122.50	0.00	0.00	0.00
1,122.60	0.00	0.00	0.00
1,122.70	0.00	0.00	0.00
1,122.80	0.00	0.00	0.00
1,122.90	0.00	0.00	0.00
1,123.00	0.00	0.00	0.00
1,123.10	0.00	0.00	0.00
1,123.20	0.00	0.00	0.00
1,123.30	0.00	0.00	0.00
1,123.40	0.00	0.00	0.00
1,123.50	0.00	0.00	0.00
1,123.60	0.00	0.00	0.00
1,123.70	0.00	0.00	0.00
1,123.80	0.00	0.00	0.00
1,123.90	0.00	0.00	0.00
1,124.00	0.00	0.00	0.00
1,124.10	4.41	4.41	0.00
1,124.20	12.94	12.94	0.00
1,124.30	24.75	24.75	0.00
1,124.40	39.62	39.62	0.00
1,124.50	57.28	57.28	0.00
1,124.60	77.80	77.80	0.00
1,124.70	100.08	100.08	0.00
1,124.80	124.68	124.68	0.00
1,124.90	152.99	152.99	0.00
1,125.00	184.10	184.10	0.00
1,125.10	218.88	218.88	0.00
1,125.20	256.81	256.81	0.00
1,125.30	297.39	297.39	0.00
1,125.40	341.11	341.11	0.00
1,125.50	387.26	387.26	0.00
1,125.60	436.47	436.47	0.00
1,125.70	489.68	489.68	0.00
1,125.80	546.21	546.21	0.00
1,125.90	606.13	606.13	0.00
1,126.00	669.49	669.49	0.00
1,126.10	736.33	736.33	0.00
1,126.20	806.71	806.71	0.00
1,126.30	880.68	880.68	0.00
1,126.40	958.29	958.29	0.00
1,126.50	1,039.60	1,039.60	0.00
1,126.60	1,124.65	1,124.65	0.00
1,126.70	1,213.49	1,213.49	0.00
1,126.80	1,306.17	1,306.17	0.00
1,126.90	1,402.74	1,402.74	0.00
1,127.00	1,503.25	1,503.25	0.00
1,127.10	1,633.51	1,607.74	25.76
1,127.20	1,790.10	1,716.27	73.83
1,127.30	1,966.79	1,828.88	137.91
1,127.40	2,161.46	1,945.61	215.84
1,127.50	2,371.99	2,066.52	305.47
1,127.60	2,598.21	2,191.64	406.57
1,127.70	2,833.93	2,321.03	512.90
1,127.80	3,081.88	2,454.72	627.16
1,127.90	3,348.70	2,592.76	755.93
1,128.00	**3,629.40**	**2,735.20**	**894.20**

Stage-Area-Storage for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,121.00	1.997	0.000
1,121.10	2.587	0.229
1,121.20	3.177	0.517
1,121.30	3.768	0.865
1,121.40	4.358	1.271
1,121.50	4.948	1.736
1,121.60	5.538	2.261
1,121.70	6.128	2.844
1,121.80	6.719	3.486
1,121.90	7.309	4.188
1,122.00	7.899	4.948
1,122.10	8.731	5.779
1,122.20	9.563	6.694
1,122.30	10.394	7.692
1,122.40	11.226	8.773
1,122.50	12.058	9.937
1,122.60	12.890	11.185
1,122.70	13.722	12.515
1,122.80	14.553	13.929
1,122.90	15.385	15.426
1,123.00	16.217	17.006
1,123.10	17.679	18.701
1,123.20	19.141	20.542
1,123.30	20.604	22.529
1,123.40	22.066	24.663
1,123.50	23.528	26.942
1,123.60	24.990	29.368
1,123.70	26.452	31.940
1,123.80	27.915	34.659
1,123.90	29.377	37.523
1,124.00	30.839	40.534
1,124.10	32.817	43.717
1,124.20	34.795	47.097
1,124.30	36.773	50.676
1,124.40	38.751	54.452
1,124.50	40.729	58.426
1,124.60	42.707	62.598
1,124.70	44.685	66.968
1,124.80	46.663	71.535
1,124.90	48.641	76.300
1,125.00	50.619	81.263
1,125.10	52.598	86.424
1,125.20	54.576	91.783
1,125.30	56.554	97.339
1,125.40	58.532	103.093
1,125.50	60.510	109.046
1,125.60	62.488	115.195
1,125.70	64.466	121.543
1,125.80	66.444	128.089
1,125.90	68.422	134.832
1,126.00	70.400	141.773
1,126.10	71.830	148.884
1,126.20	73.260	156.139
1,126.30	74.690	163.536
1,126.40	76.120	171.077
1,126.50	77.550	178.760
1,126.60	78.980	186.587
1,126.70	80.410	194.557
1,126.80	81.840	202.669
1,126.90	83.270	210.925
1,127.00	84.700	219.323
1,127.10	86.130	227.864
1,127.20	87.560	236.549
1,127.30	88.990	245.376
1,127.40	90.420	254.347
1,127.50	91.850	263.460
1,127.60	93.280	272.717
1,127.70	94.710	282.117
1,127.80	96.140	291.659
1,127.90	97.570	301.345
1,128.00	**99.000**	**311.173**

Summary for Pond BERM: WETLAND

Inflow Area = 1,396.020 ac, 0.24% Impervious, Inflow Depth > 2.41" for 10-Year event
Inflow = 631.05 cfs @ 13.29 hrs, Volume= 280.121 af
Outflow = 609.26 cfs @ 13.53 hrs, Volume= 278.248 af, Atten= 3%, Lag= 14.0 min
Primary = 609.26 cfs @ 13.53 hrs, Volume= 278.248 af
Routed to Pond I AVE : I AVENUE CULVERTS

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 1,106.00' Surf.Area= 6.409 ac Storage= 5.396 af
Peak Elev= 1,107.79' @ 13.53 hrs Surf.Area= 7.199 ac Storage= 17.609 af (12.213 af above start)

Plug-Flow detention time= 40.4 min calculated for 272.761 af (97% of inflow)
Center-of-Mass det. time= 15.2 min (1,065.6 - 1,050.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,103.00'	386.614 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

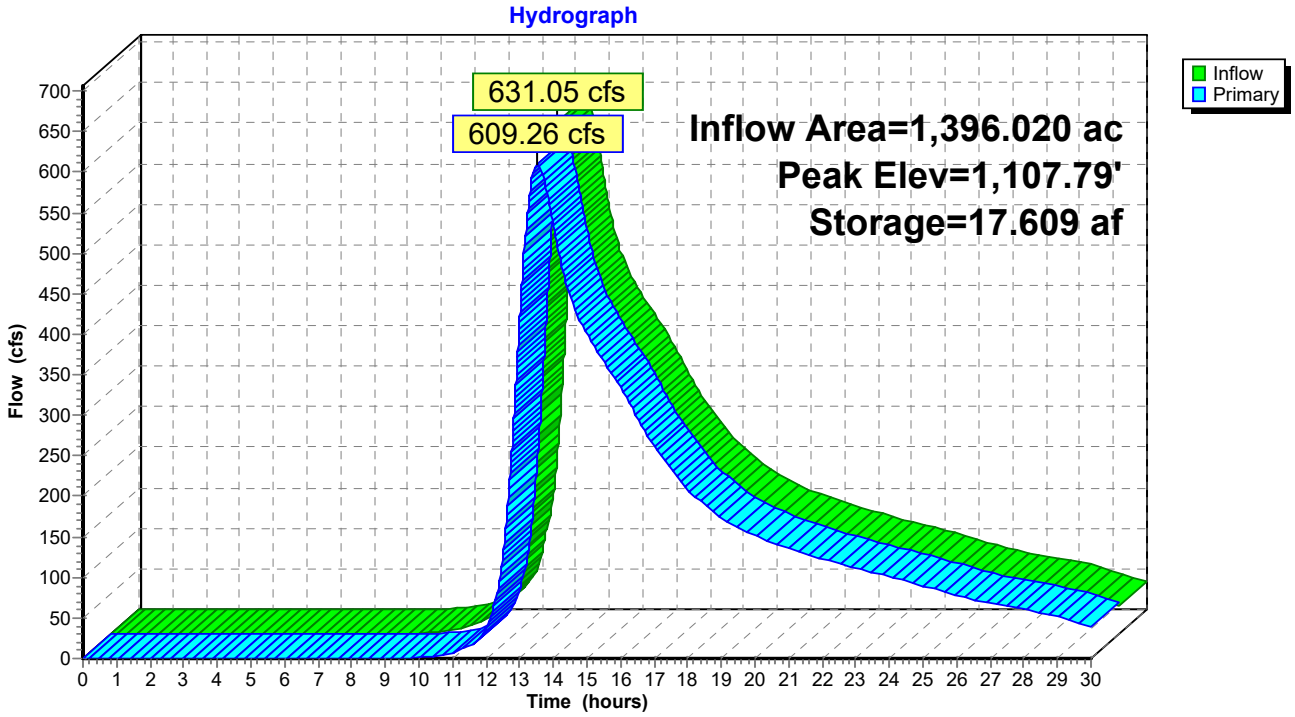
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,103.00	0.000	0.000	0.000
1,104.00	0.943	0.472	0.472
1,105.00	1.249	1.096	1.568
1,106.00	6.409	3.829	5.396
1,107.00	6.899	6.654	12.051
1,108.00	7.280	7.089	19.140
1,109.00	7.669	7.475	26.615
1,110.00	10.179	8.924	35.538
1,110.30	11.226	3.211	38.749
1,111.00	23.616	12.195	50.944
1,112.00	31.569	27.592	78.536
1,113.00	42.971	37.270	115.806
1,114.00	53.846	48.409	164.215
1,115.00	65.969	59.908	224.122
1,116.00	79.963	72.966	297.088
1,117.00	99.088	89.526	386.614

Device	Routing	Invert	Outlet Devices
#1	Primary	1,106.00'	**Sheet Pile Weir, C= 3.27** Offset (feet) -54.10 -52.10 -44.10 -37.50 37.50 44.10 52.10 54.10 Height (feet) 4.30 3.30 3.30 0.00 0.00 3.30 3.30 4.30

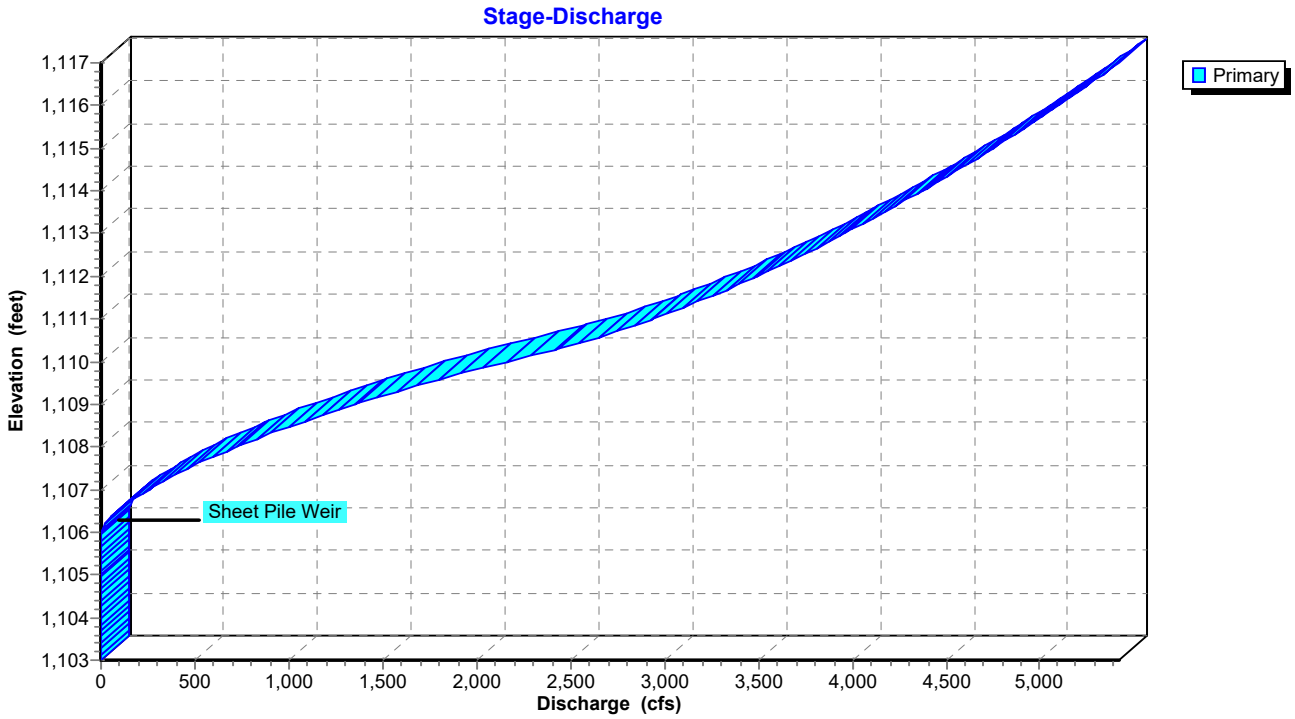
Primary OutFlow Max=608.99 cfs @ 13.53 hrs HW=1,107.79' (Free Discharge)
└**1=Sheet Pile Weir** (Weir Controls 608.99 cfs @ 4.14 fps)



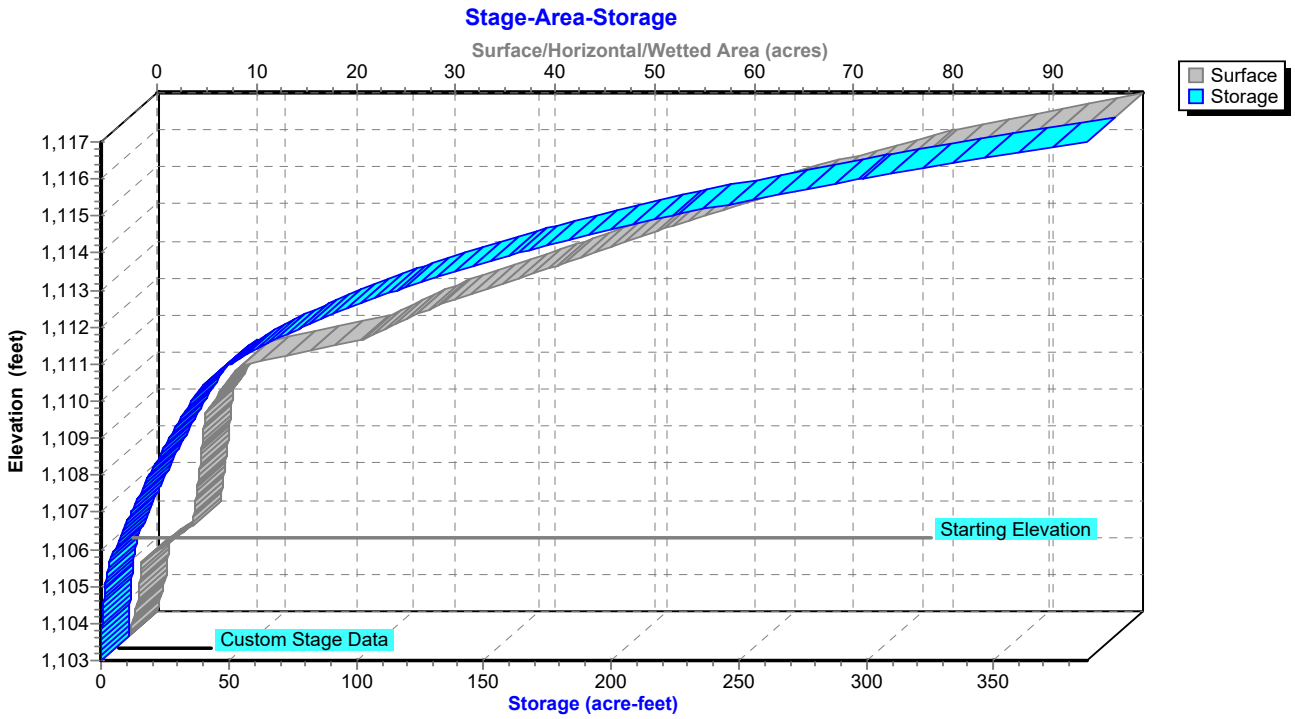
Pond BERM: WETLAND



Pond BERM: WETLAND



Pond BERM: WETLAND



Hydrograph for Pond BERM: WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	5.396	1,106.00	0.00
1.00	0.00	5.396	1,106.00	0.00
2.00	0.00	5.397	1,106.00	0.00
3.00	0.03	5.397	1,106.00	0.01
4.00	0.08	5.400	1,106.00	0.04
5.00	0.12	5.403	1,106.00	0.08
6.00	0.16	5.407	1,106.00	0.12
7.00	0.21	5.411	1,106.00	0.16
8.00	0.24	5.415	1,106.00	0.20
9.00	0.52	5.422	1,106.00	0.27
10.00	4.10	5.524	1,106.02	1.37
11.00	15.13	5.975	1,106.09	6.96
12.00	71.51	7.221	1,106.28	37.71
13.00	**547.13**	**14.877**	**1,107.41**	**421.13**
14.00	**496.44**	**16.558**	**1,107.64**	**534.26**
15.00	386.77	14.565	1,107.36	400.82
16.00	319.32	13.482	1,107.21	333.35
17.00	248.56	12.261	1,107.03	262.27
18.00	198.48	11.267	1,106.89	208.74
19.00	167.29	10.584	1,106.79	173.75
20.00	146.93	10.117	1,106.72	151.68
21.00	131.81	9.774	1,106.67	135.52
22.00	119.35	9.490	1,106.62	122.69
23.00	108.14	9.221	1,106.58	111.30
24.00	97.61	8.968	1,106.55	100.59
25.00	85.87	8.705	1,106.51	89.46
26.00	74.11	8.392	1,106.46	77.63
27.00	65.89	8.144	1,106.42	68.49
28.00	58.24	7.937	1,106.39	60.83
29.00	47.06	7.671	1,106.35	51.42
30.00	34.42	7.271	1,106.29	39.24

Stage-Discharge for Pond BERM: WETLAND

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,103.00	0.00	1,108.30	897.44	1,113.60	4,213.52
1,103.10	0.00	1,108.40	958.54	1,113.70	4,254.15
1,103.20	0.00	1,108.50	1,021.14	1,113.80	4,294.38
1,103.30	0.00	1,108.60	1,085.21	1,113.90	4,334.22
1,103.40	0.00	1,108.70	1,150.74	1,114.00	4,373.67
1,103.50	0.00	1,108.80	1,217.71	1,114.10	4,412.75
1,103.60	0.00	1,108.90	1,286.10	1,114.20	4,451.48
1,103.70	0.00	1,109.00	1,355.92	1,114.30	4,489.85
1,103.80	0.00	1,109.10	1,427.13	1,114.40	4,527.88
1,103.90	0.00	1,109.20	1,499.73	1,114.50	4,565.58
1,104.00	0.00	1,109.30	1,573.71	1,114.60	4,602.96
1,104.10	0.00	1,109.40	1,650.72	1,114.70	4,640.03
1,104.20	0.00	1,109.50	1,730.46	1,114.80	4,676.79
1,104.30	0.00	1,109.60	1,812.44	1,114.90	4,713.26
1,104.40	0.00	1,109.70	1,896.48	1,115.00	4,749.43
1,104.50	0.00	1,109.80	1,982.48	1,115.10	4,785.32
1,104.60	0.00	1,109.90	2,070.36	1,115.20	4,820.93
1,104.70	0.00	1,110.00	2,160.07	1,115.30	4,856.27
1,104.80	0.00	1,110.10	2,251.56	1,115.40	4,891.35
1,104.90	0.00	1,110.20	2,344.79	1,115.50	4,926.17
1,105.00	0.00	1,110.30	2,439.74	1,115.60	4,960.74
1,105.10	0.00	1,110.40	2,525.17	1,115.70	4,995.07
1,105.20	0.00	1,110.50	2,602.93	1,115.80	5,029.15
1,105.30	0.00	1,110.60	2,676.21	1,115.90	5,063.00
1,105.40	0.00	1,110.70	2,746.13	1,116.00	5,096.61
1,105.50	0.00	1,110.80	2,813.32	1,116.10	5,130.00
1,105.60	0.00	1,110.90	2,878.20	1,116.20	5,163.17
1,105.70	0.00	1,111.00	2,941.06	1,116.30	5,196.12
1,105.80	0.00	1,111.10	3,002.16	1,116.40	5,228.85
1,105.90	0.00	1,111.20	3,061.65	1,116.50	5,261.38
1,106.00	0.00	1,111.30	3,119.70	1,116.60	5,293.71
1,106.10	7.77	1,111.40	3,176.43	1,116.70	5,325.83
1,106.20	22.03	1,111.50	3,231.94	1,116.80	5,357.75
1,106.30	40.56	1,111.60	3,286.32	1,116.90	5,389.49
1,106.40	62.57	1,111.70	3,339.64	1,117.00	**5,421.03**
1,106.50	87.63	1,111.80	3,391.99		
1,106.60	115.44	1,111.90	3,443.41		
1,106.70	145.78	1,112.00	3,493.96		
1,106.80	178.48	1,112.10	3,543.69		
1,106.90	213.42	1,112.20	3,592.64		
1,107.00	250.48	1,112.30	3,640.85		
1,107.10	289.58	1,112.40	3,688.37		
1,107.20	330.64	1,112.50	3,735.21		
1,107.30	373.60	1,112.60	3,781.41		
1,107.40	418.39	1,112.70	3,827.00		
1,107.50	464.97	1,112.80	3,872.01		
1,107.60	513.29	1,112.90	3,916.45		
1,107.70	563.32	1,113.00	3,960.36		
1,107.80	615.01	1,113.10	4,003.74		
1,107.90	668.34	1,113.20	4,046.63		
1,108.00	723.27	1,113.30	4,089.03		
1,108.10	779.78	1,113.40	4,130.97		
1,108.20	837.84	1,113.50	4,172.46		

Stage-Area-Storage for Pond BERM: WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,103.00	0.000	0.000
1,103.20	0.189	0.019
1,103.40	0.377	0.075
1,103.60	0.566	0.170
1,103.80	0.754	0.302
1,104.00	0.943	0.472
1,104.20	1.004	0.666
1,104.40	1.065	0.873
1,104.60	1.127	1.092
1,104.80	1.188	1.324
1,105.00	1.249	1.568
1,105.20	2.281	1.921
1,105.40	3.313	2.480
1,105.60	4.345	3.246
1,105.80	5.377	4.218
1,106.00	6.409	5.396
1,106.20	6.507	6.688
1,106.40	6.605	7.999
1,106.60	6.703	9.330
1,106.80	6.801	10.680
1,107.00	6.899	12.051
1,107.20	6.975	13.438
1,107.40	7.051	14.841
1,107.60	7.128	16.258
1,107.80	7.204	17.692
1,108.00	7.280	19.140
1,108.20	7.358	20.604
1,108.40	7.436	22.083
1,108.60	7.513	23.578
1,108.80	7.591	25.088
1,109.00	7.669	26.615
1,109.20	8.171	28.199
1,109.40	8.673	29.883
1,109.60	9.175	31.668
1,109.80	9.677	33.553
1,110.00	10.179	35.538
1,110.20	10.877	37.644
1,110.40	12.996	39.960
1,110.60	16.536	42.914
1,110.80	20.076	46.575
1,111.00	23.616	50.944
1,111.20	25.207	55.826
1,111.40	26.797	61.027
1,111.60	28.388	66.545
1,111.80	29.978	72.382
1,112.00	31.569	78.536
1,112.20	33.849	85.078
1,112.40	36.130	92.076
1,112.60	38.410	99.530
1,112.80	40.691	107.440
1,113.00	42.971	115.806
1,113.20	45.146	124.618
1,113.40	47.321	133.865
1,113.60	49.496	143.547
1,113.80	51.671	153.663
1,114.00	53.846	164.215
1,114.20	56.271	175.227
1,114.40	58.695	186.723
1,114.60	61.120	198.705
1,114.80	63.544	211.171
1,115.00	65.969	224.122
1,115.20	68.768	237.596
1,115.40	71.567	251.630
1,115.60	74.365	266.223
1,115.80	77.164	281.376
1,116.00	79.963	297.088
1,116.20	83.788	313.464
1,116.40	87.613	330.604
1,116.60	91.438	348.509
1,116.80	95.263	367.179
1,117.00	**99.088**	**386.614**

Summary for Pond I AVE: I AVENUE CULVERTS

[81] Warning: Exceeded Pond BERM by 3.91' @ 15.31 hrs

Inflow Area = 1,705.060 ac, 0.20% Impervious, Inflow Depth > 2.48" for 10-Year event
Inflow = 967.55 cfs @ 13.40 hrs, Volume= 351.944 af
Outflow = 496.58 cfs @ 14.95 hrs, Volume= 351.901 af, Atten= 49%, Lag= 92.6 min
Primary = 367.95 cfs @ 14.95 hrs, Volume= 292.110 af
Secondary = 128.62 cfs @ 14.95 hrs, Volume= 59.790 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,111.25' @ 14.95 hrs Surf.Area= 25.590 ac Storage= 59.962 af

Plug-Flow detention time= 46.5 min calculated for 351.901 af (100% of inflow)
Center-of-Mass det. time= 46.4 min (1,071.6 - 1,025.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,098.00'	389.527 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,098.00	0.000	0.000	0.000
1,099.00	0.001	0.001	0.001
1,100.00	0.001	0.001	0.002
1,101.00	0.008	0.005	0.006
1,102.00	0.027	0.017	0.023
1,103.00	0.110	0.069	0.092
1,104.00	0.241	0.175	0.267
1,105.00	0.567	0.404	0.671
1,106.00	1.270	0.918	1.590
1,107.00	5.886	3.578	5.168
1,108.00	6.916	6.401	11.569
1,109.00	10.932	8.924	20.493
1,110.00	16.090	13.511	34.004
1,111.00	23.616	19.853	53.857
1,112.00	31.569	27.592	81.449
1,113.00	42.971	37.270	118.719
1,114.00	53.846	48.408	167.128
1,115.00	65.969	59.908	227.035
1,116.00	79.963	72.966	300.001
1,117.00	99.088	89.526	389.527

Device	Routing	Invert	Outlet Devices
#1	Primary	1,100.22'	**72.0" Round 72" RCP CULVERT** L= 85.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,100.22' / 1,098.91' S= 0.0153 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 28.27 sf
#2	Secondary	1,104.72'	**48.0" Round 48" RCP CULVERT** L= 62.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,104.72' / 1,104.41' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

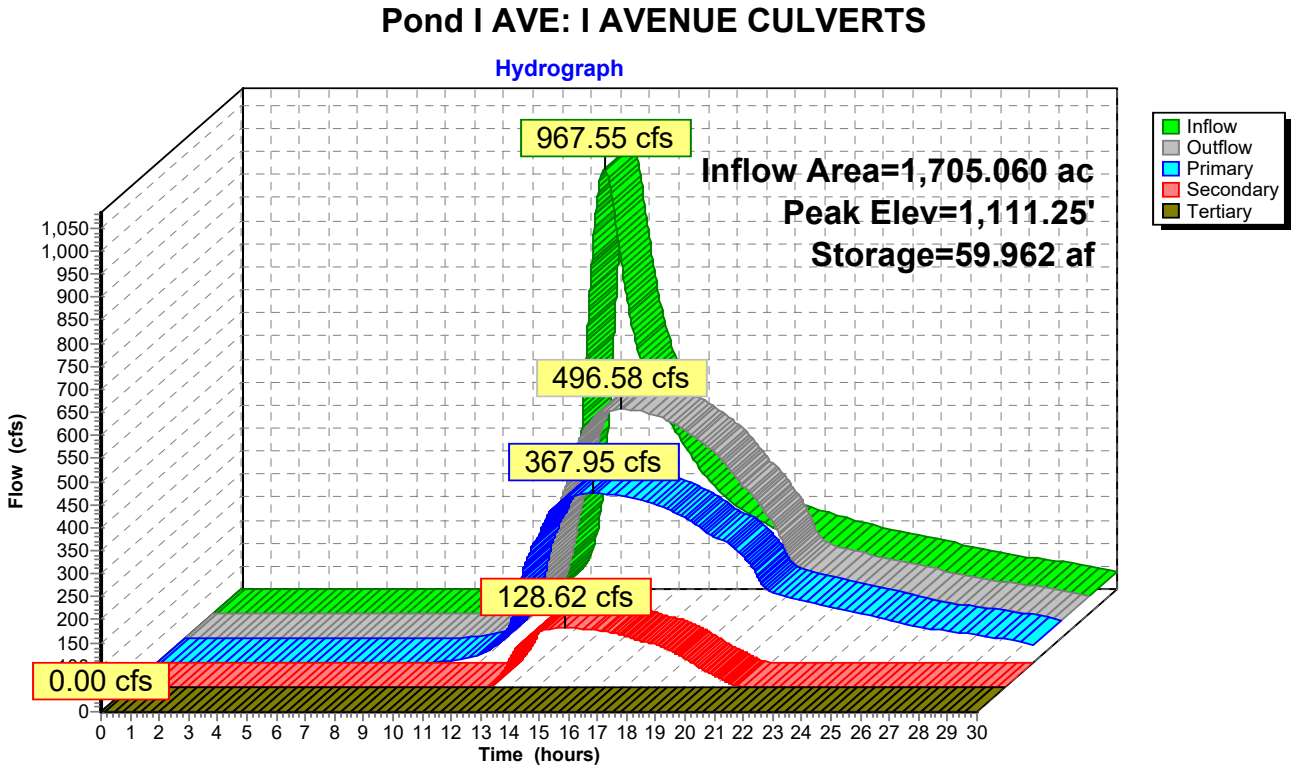
#3	Tertiary	1,115.86'	**I AVENUE, C= 3.27**
			Offset (feet) 0.00 115.59 162.20 164.26 214.26 232.65 343.45
			Height (feet) 1.14 0.14 0.00 0.00 0.09 0.14 1.14

Primary OutFlow Max=367.96 cfs @ 14.95 hrs HW=1,111.25' (Free Discharge)
└**1=72" RCP CULVERT** (Barrel Controls 367.96 cfs @ 13.01 fps)

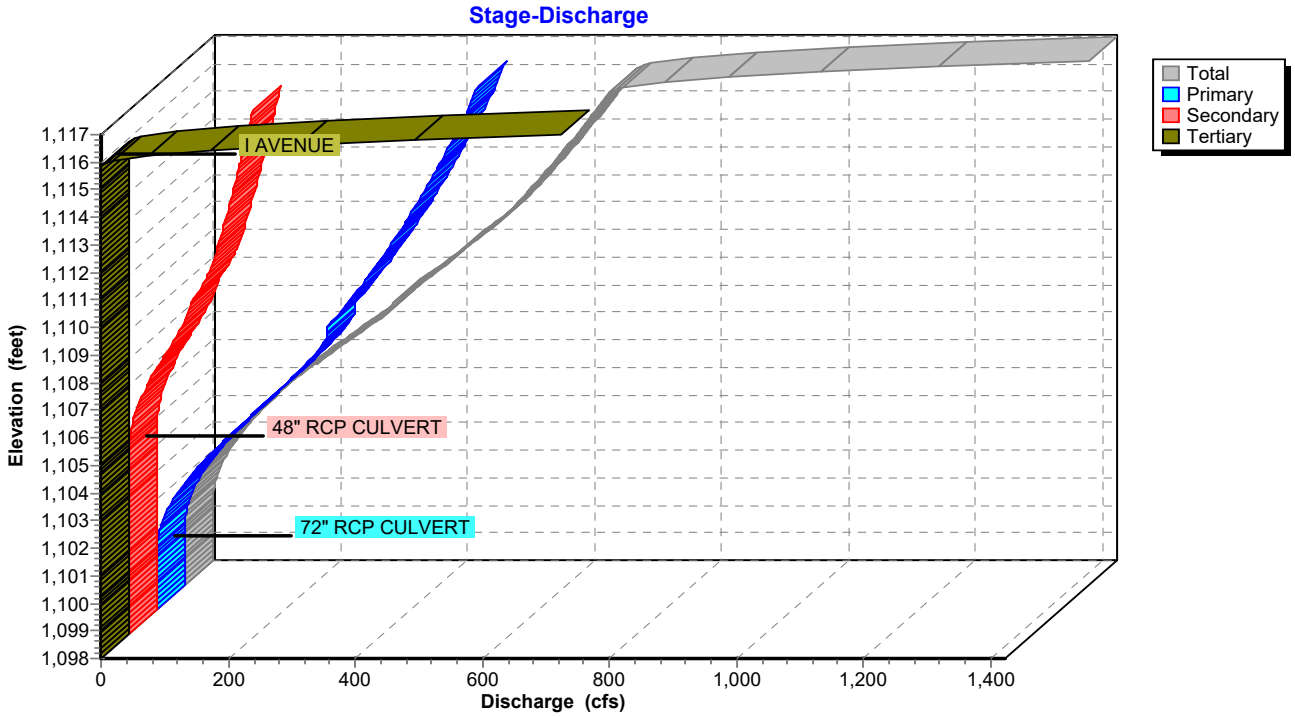
Secondary OutFlow Max=128.76 cfs @ 14.95 hrs HW=1,111.25' (Free Discharge)
└**2=48" RCP CULVERT** (Inlet Controls 128.76 cfs @ 10.25 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,098.00' (Free Discharge)
└**3=I AVENUE** (Controls 0.00 cfs)

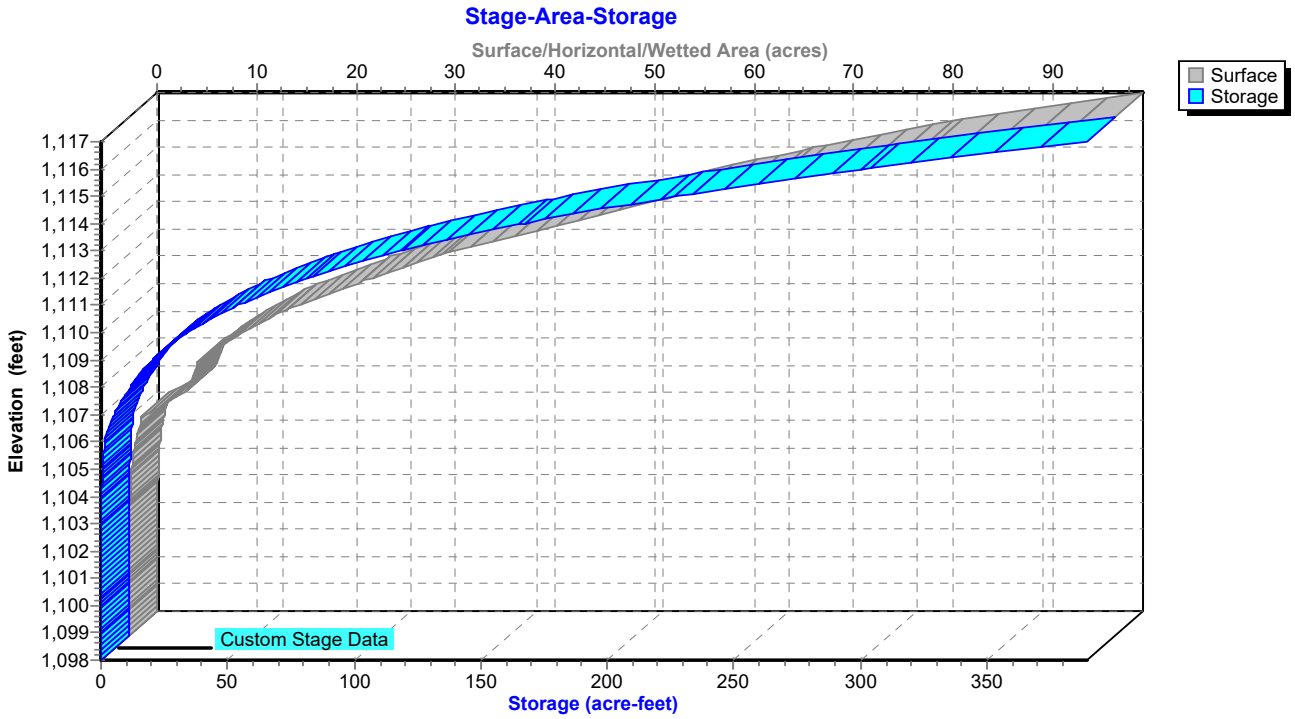




Pond I AVE: I AVENUE CULVERTS



Pond I AVE: I AVENUE CULVERTS



Hydrograph for Pond I AVE: I AVENUE CULVERTS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	0.00	0.000	1,098.00	0.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
2.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
3.00	0.01	0.000	1,098.76	0.00	0.00	0.00	0.00
4.00	0.04	0.002	1,100.28	0.03	0.03	0.00	0.00
5.00	0.08	0.002	1,100.30	0.07	0.07	0.00	0.00
6.00	0.12	0.002	1,100.32	0.12	0.12	0.00	0.00
7.00	0.16	0.002	1,100.34	0.16	0.16	0.00	0.00
8.00	0.20	0.002	1,100.35	0.20	0.20	0.00	0.00
9.00	0.45	0.003	1,100.45	0.44	0.44	0.00	0.00
10.00	3.84	0.005	1,100.89	3.79	3.79	0.00	0.00
11.00	15.83	0.014	1,101.58	15.58	15.58	0.00	0.00
12.00	76.22	0.128	1,103.28	70.42	70.42	0.00	0.00
13.00	**786.85**	12.291	1,108.10	324.45	268.67	55.79	0.00
14.00	**755.74**	**51.247**	**1,110.89**	**478.27**	**357.31**	**120.96**	0.00
15.00	488.66	**59.973**	**1,111.25**	**496.54**	**367.93**	**128.61**	0.00
16.00	379.65	54.838	1,111.04	486.56	361.89	124.67	0.00
17.00	290.16	43.202	1,110.51	457.23	345.86	111.37	0.00
18.00	230.96	28.620	1,109.64	411.15	317.99	93.16	0.00
19.00	193.07	14.827	1,108.42	337.80	273.76	64.04	0.00
20.00	168.46	4.657	1,106.91	262.98	235.81	27.17	0.00
21.00	149.83	0.756	1,105.13	155.53	154.21	1.31	0.00
22.00	134.51	0.544	1,104.76	136.29	136.26	0.03	0.00
23.00	120.62	0.412	1,104.46	122.09	122.09	0.00	0.00
24.00	107.40	0.312	1,104.16	108.43	108.43	0.00	0.00
25.00	92.98	0.231	1,103.84	93.98	93.98	0.00	0.00
26.00	78.38	0.162	1,103.49	78.99	78.99	0.00	0.00
27.00	68.63	0.123	1,103.24	68.98	68.98	0.00	0.00
28.00	60.85	0.097	1,103.04	61.15	61.15	0.00	0.00
29.00	51.42	0.071	1,102.79	51.76	51.76	0.00	0.00
30.00	39.24	0.044	1,102.44	39.53	39.53	0.00	0.00

Stage-Discharge for Pond I AVE: I AVENUE CULVERTS

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1,098.00	0.00	0.00	0.00	0.00
1,098.50	0.00	0.00	0.00	0.00
1,099.00	0.00	0.00	0.00	0.00
1,099.50	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	0.00	0.00
1,100.50	0.61	0.61	0.00	0.00
1,101.00	5.15	5.15	0.00	0.00
1,101.50	13.88	13.88	0.00	0.00
1,102.00	26.18	26.18	0.00	0.00
1,102.50	41.52	41.52	0.00	0.00
1,103.00	59.41	59.41	0.00	0.00
1,103.50	79.41	79.41	0.00	0.00
1,104.00	101.10	101.10	0.00	0.00
1,104.50	124.05	124.05	0.00	0.00
1,105.00	148.39	147.81	0.58	0.00
1,105.50	176.12	171.89	4.24	0.00
1,106.00	206.21	195.69	10.52	0.00
1,106.50	237.48	218.53	18.95	0.00
1,107.00	268.61	239.47	29.14	0.00
1,107.50	297.80	257.09	40.70	0.00
1,108.00	321.54	268.33	53.21	0.00
1,108.50	343.07	276.93	66.15	0.00
1,109.00	374.43	295.59	78.85	0.00
1,109.50	403.49	313.13	90.36	0.00
1,110.00	428.24	329.75	98.50	0.00
1,110.50	456.69	345.56	111.13	0.00
1,111.00	484.40	360.69	123.71	0.00
1,111.50	507.49	375.20	132.29	0.00
1,112.00	528.21	389.17	139.03	0.00
1,112.50	548.13	402.66	145.47	0.00
1,113.00	567.34	415.71	151.63	0.00
1,113.50	585.92	428.37	157.55	0.00
1,114.00	603.92	440.66	163.26	0.00
1,114.50	621.39	452.62	168.77	0.00
1,115.00	638.37	464.27	174.11	0.00
1,115.50	654.92	475.63	179.29	0.00
1,116.00	679.75	486.69	184.32	8.74
1,116.50	904.83	496.12	189.22	219.49
1,117.00	**1,422.27**	**505.37**	**194.00**	**722.89**

Stage-Area-Storage for Pond I AVE: I AVENUE CULVERTS

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,098.00	0.000	0.000
1,098.20	0.000	0.000
1,098.40	0.000	0.000
1,098.60	0.001	0.000
1,098.80	0.001	0.000
1,099.00	0.001	0.001
1,099.20	0.001	0.001
1,099.40	0.001	0.001
1,099.60	0.001	0.001
1,099.80	0.001	0.001
1,100.00	0.001	0.002
1,100.20	0.002	0.002
1,100.40	0.004	0.002
1,100.60	0.005	0.003
1,100.80	0.007	0.005
1,101.00	0.008	0.006
1,101.20	0.012	0.008
1,101.40	0.016	0.011
1,101.60	0.019	0.014
1,101.80	0.023	0.018
1,102.00	0.027	0.023
1,102.20	0.044	0.031
1,102.40	0.060	0.041
1,102.60	0.077	0.055
1,102.80	0.093	0.072
1,103.00	0.110	0.092
1,103.20	0.136	0.117
1,103.40	0.162	0.146
1,103.60	0.189	0.182
1,103.80	0.215	0.222
1,104.00	0.241	0.267
1,104.20	0.306	0.322
1,104.40	0.371	0.390
1,104.60	0.437	0.471
1,104.80	0.502	0.565
1,105.00	0.567	0.671
1,105.20	0.708	0.799
1,105.40	0.848	0.955
1,105.60	0.989	1.138
1,105.80	1.129	1.350
1,106.00	1.270	1.590
1,106.20	2.193	1.936
1,106.40	3.116	2.467
1,106.60	4.040	3.183
1,106.80	4.963	4.083
1,107.00	5.886	5.168
1,107.20	6.092	6.366
1,107.40	6.298	7.605
1,107.60	6.504	8.885
1,107.80	6.710	10.206
1,108.00	6.916	11.569
1,108.20	7.719	13.033
1,108.40	8.522	14.657
1,108.60	9.326	16.441
1,108.80	10.129	18.387
1,109.00	10.932	20.493
1,109.20	11.964	22.783
1,109.40	12.995	25.278
1,109.60	14.027	27.981
1,109.80	15.058	30.889
1,110.00	16.090	34.004
1,110.20	17.595	37.373
1,110.40	19.100	41.042
1,110.60	20.606	45.013
1,110.80	22.111	49.284
1,111.00	23.616	53.857
1,111.20	25.207	58.739
1,111.40	26.797	63.940
1,111.60	28.388	69.458
1,111.80	29.978	75.295
1,112.00	31.569	81.449
1,112.20	33.849	87.991
1,112.40	36.130	94.989
1,112.60	38.410	102.443
1,112.80	40.691	110.353
1,113.00	42.971	118.719
1,113.20	45.146	127.531
1,113.40	47.321	136.778
1,113.60	49.496	146.460
1,113.80	51.671	156.576
1,114.00	53.846	167.128
1,114.20	56.271	178.140
1,114.40	58.695	189.636
1,114.60	61.120	201.618
1,114.80	63.544	214.084
1,115.00	65.969	227.035
1,115.20	68.768	240.509
1,115.40	71.567	254.543
1,115.60	74.365	269.136
1,115.80	77.164	284.289
1,116.00	79.963	300.001
1,116.20	83.788	316.377
1,116.40	87.613	333.517
1,116.60	91.438	351.422
1,116.80	95.263	370.092
1,117.00	**99.088**	**389.527**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 158.4 AC: Watershed After Runoff Area=158.400 ac 0.00% Impervious Runoff Depth=3.85"
Flow Length=2,718' Slope=0.0329 '/' Tc=34.2 min CN=84 Runoff=501.48 cfs 50.839 af

Subcatchment 309.04 AC: South Runoff Area=309.040 ac 0.00% Impervious Runoff Depth=3.85"
Flow Length=9,197' Slope=0.0329 '/' Tc=90.7 min CN=84 Runoff=519.88 cfs 99.188 af

Subcatchment 544.5 AC: Remainder of Runoff Area=544.500 ac 0.00% Impervious Runoff Depth=3.85"
Flow Length=10,448' Slope=0.0329 '/' Tc=100.5 min CN=84 Runoff=847.59 cfs 174.759 af

Subcatchment 689.7 AC: Watershed West Runoff Area=689.700 ac 0.00% Impervious Runoff Depth=3.85"
Flow Length=9,666' Slope=0.0329 '/' Tc=94.4 min CN=84 Runoff=1,120.78 cfs 221.362 af

Subcatchment WETLAND POOL: Runoff Area=3.420 ac 100.00% Impervious Runoff Depth=5.39"
Flow Length=1,309' Tc=3.8 min CN=98 Runoff=30.95 cfs 1.537 af

Pond 1P: H AVENUE CULVERT Peak Elev=1,128.80' Storage=76.488 af Inflow=1,120.78 cfs 221.362 af
Primary=693.62 cfs 109.648 af Secondary=93.59 cfs 111.428 af Outflow=787.21 cfs 221.075 af

Pond 2P: BASIN NW OF WETLAND Peak Elev=1,125.56' Storage=112.679 af Inflow=842.80 cfs 271.915 af
Primary=416.26 cfs 216.189 af Secondary=0.00 cfs 0.000 af Outflow=416.26 cfs 216.189 af

Pond BERM: WETLAND Peak Elev=1,108.26' Storage=21.062 af Inflow=888.89 cfs 392.485 af
Outflow=875.09 cfs 390.264 af

Pond I AVE: I AVENUE CULVERTS Peak Elev=1,113.18' Storage=126.803 af Inflow=1,330.74 cfs 489.451 af
Primary=420.41 cfs 384.018 af Secondary=153.83 cfs 105.366 af Tertiary=0.00 cfs 0.000 af Outflow=574.24 cfs 489.384 af

Total Runoff Area = 1,705.060 ac Runoff Volume = 547.684 af Average Runoff Depth = 3.85"
99.80% Pervious = 1,701.640 ac 0.20% Impervious = 3.420 ac

Summary for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Runoff = 501.48 cfs @ 12.47 hrs, Volume= 50.839 af, Depth= 3.85"
Routed to Pond 2P : BASIN NW OF WETLAND

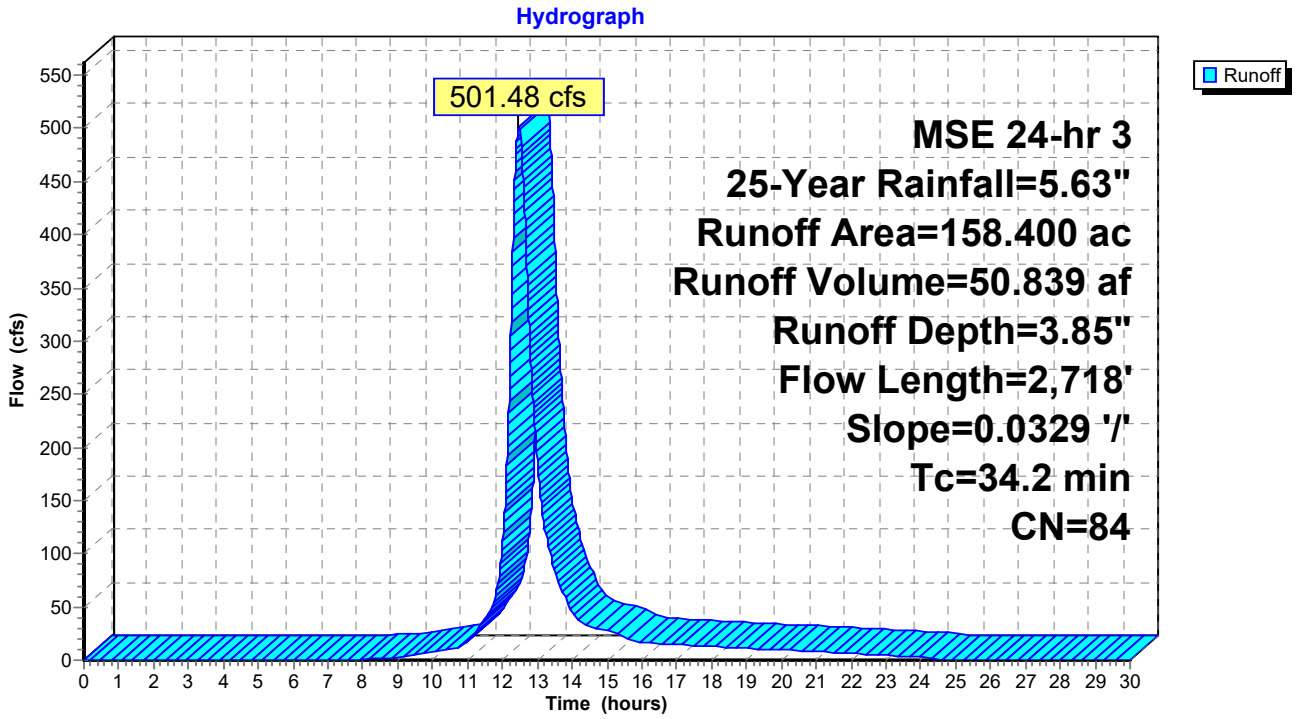
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 25-Year Rainfall=5.63"

	Area (ac)	CN	Description
*	158.400	84	
	158.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.2	2,718	0.0329	1.32		**Lag/CN Method,**

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location



Hydrograph for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.05	0.00	0.00
2.50	0.07	0.00	0.00
3.00	0.09	0.00	0.00
3.50	0.12	0.00	0.00
4.00	0.15	0.00	0.00
4.50	0.18	0.00	0.00
5.00	0.21	0.00	0.00
5.50	0.25	0.00	0.00
6.00	0.29	0.00	0.00
6.50	0.33	0.00	0.00
7.00	0.37	0.00	0.00
7.50	0.42	0.00	0.06
8.00	0.47	0.00	0.62
8.50	0.52	0.01	1.42
9.00	0.58	0.02	2.31
9.50	0.67	0.04	4.49
10.00	0.77	0.07	7.50
10.50	0.88	0.10	10.17
11.00	1.09	0.19	18.03
11.50	1.40	0.35	38.13
12.00	2.61	1.20	**105.59**
12.50	4.23	2.58	**500.38**
13.00	4.54	2.86	185.49
13.50	4.75	3.04	85.49
14.00	4.86	3.14	44.41
14.50	4.96	3.23	31.47
15.00	5.05	3.32	28.47
15.50	5.11	3.37	21.55
16.00	5.16	3.42	16.56
16.50	5.21	3.46	15.25
17.00	5.26	3.51	14.42
17.50	5.30	3.55	13.61
18.00	5.34	3.59	12.81
18.50	5.38	3.62	12.01
19.00	5.42	3.66	11.19
19.50	5.45	3.69	10.39
20.00	5.48	3.72	9.57
20.50	5.51	3.74	8.76
21.00	5.54	3.76	7.94
21.50	5.56	3.79	7.13
22.00	5.58	3.80	6.31
22.50	5.60	3.82	5.48
23.00	5.61	3.83	4.67
23.50	5.62	3.84	3.84
24.00	**5.63**	**3.85**	3.02
24.50	5.63	3.85	1.19
25.00	5.63	3.85	0.14
25.50	5.63	3.85	0.01
26.00	5.63	3.85	0.00
26.50	5.63	3.85	0.00
27.00	5.63	3.85	0.00
27.50	5.63	3.85	0.00
28.00	5.63	3.85	0.00
28.50	5.63	3.85	0.00
29.00	5.63	3.85	0.00
29.50	5.63	3.85	0.00
30.00	5.63	3.85	0.00

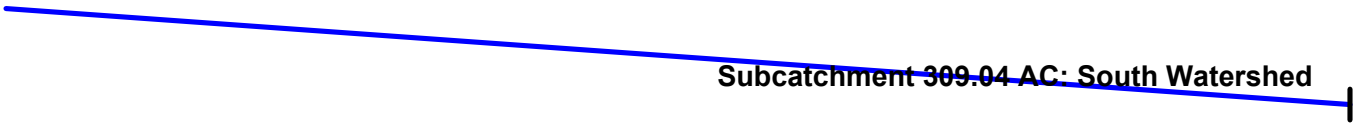
Summary for Subcatchment 309.04 AC: South Watershed

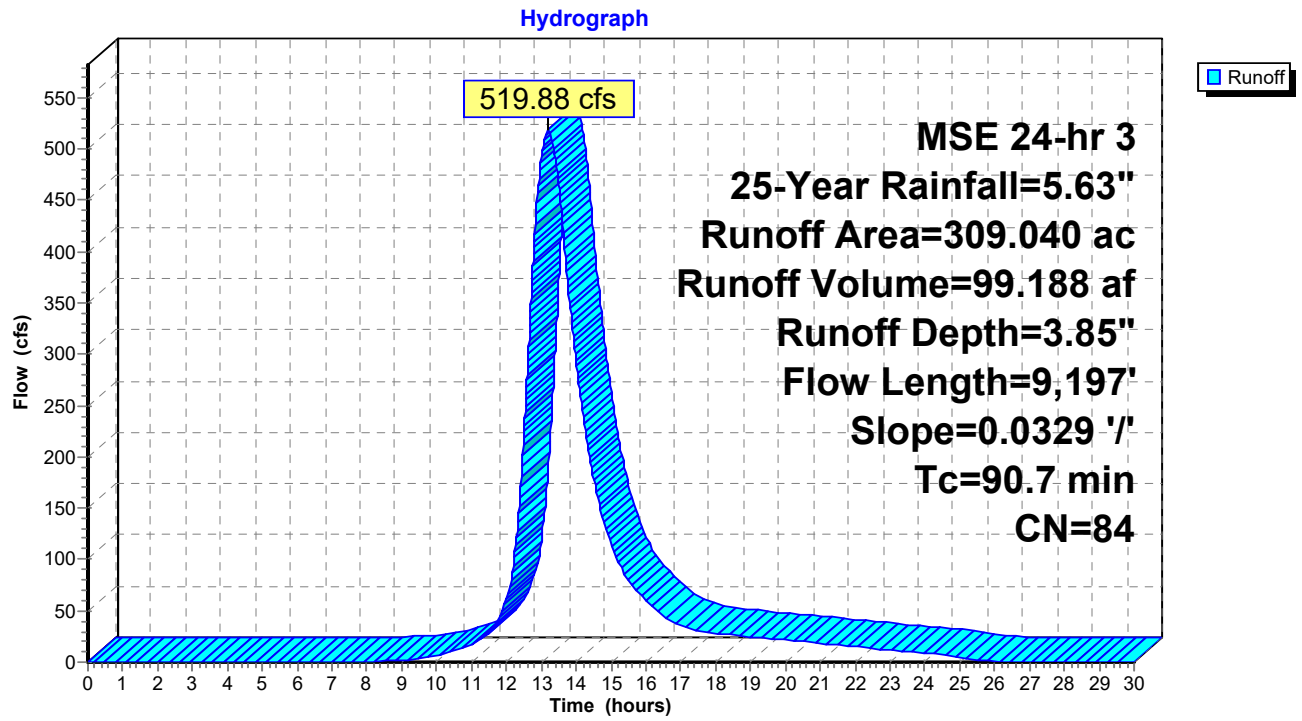
Runoff = 519.88 cfs @ 13.20 hrs, Volume= 99.188 af, Depth= 3.85"
Routed to Pond I AVE : I AVENUE CULVERTS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 25-Year Rainfall=5.63"

	Area (ac)	CN	Description
*	309.040	84	
	309.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
90.7	9,197	0.0329	1.69		**Lag/CN Method,**





Hydrograph for Subcatchment 309.04 AC: South Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.05	0.00	0.00
2.50	0.07	0.00	0.00
3.00	0.09	0.00	0.00
3.50	0.12	0.00	0.00
4.00	0.15	0.00	0.00
4.50	0.18	0.00	0.00
5.00	0.21	0.00	0.00
5.50	0.25	0.00	0.00
6.00	0.29	0.00	0.00
6.50	0.33	0.00	0.00
7.00	0.37	0.00	0.00
7.50	0.42	0.00	0.01
8.00	0.47	0.00	0.16
8.50	0.52	0.01	0.80
9.00	0.58	0.02	1.94
9.50	0.67	0.04	3.58
10.00	0.77	0.07	6.63
10.50	0.88	0.10	11.14
11.00	1.09	0.19	16.74
11.50	1.40	0.35	29.16
12.00	2.61	1.20	60.04
12.50	4.23	2.58	219.15
13.00	4.54	2.86	**494.85**
13.50	4.75	3.04	**464.95**
14.00	4.86	3.14	292.31
14.50	4.96	3.23	179.75
15.00	5.05	3.32	114.42
15.50	5.11	3.37	80.69
16.00	5.16	3.42	59.70
16.50	5.21	3.46	44.73
17.00	5.26	3.51	35.77
17.50	5.30	3.55	31.07
18.00	5.34	3.59	28.44
18.50	5.38	3.62	26.43
19.00	5.42	3.66	24.69
19.50	5.45	3.69	23.05
20.00	5.48	3.72	21.44
20.50	5.51	3.74	19.86
21.00	5.54	3.76	18.27
21.50	5.56	3.79	16.69
22.00	5.58	3.80	15.09
22.50	5.60	3.82	13.50
23.00	5.61	3.83	11.89
23.50	5.62	3.84	10.31
24.00	**5.63**	**3.85**	8.69
24.50	5.63	3.85	6.97
25.00	5.63	3.85	4.49
25.50	5.63	3.85	2.19
26.00	5.63	3.85	0.95
26.50	5.63	3.85	0.42
27.00	5.63	3.85	0.18
27.50	5.63	3.85	0.07
28.00	5.63	3.85	0.03
28.50	5.63	3.85	0.01
29.00	5.63	3.85	0.00
29.50	5.63	3.85	0.00
30.00	5.63	3.85	0.00

Summary for Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Runoff = 847.59 cfs @ 13.29 hrs, Volume= 174.759 af, Depth= 3.85"
Routed to Pond BERM : WETLAND

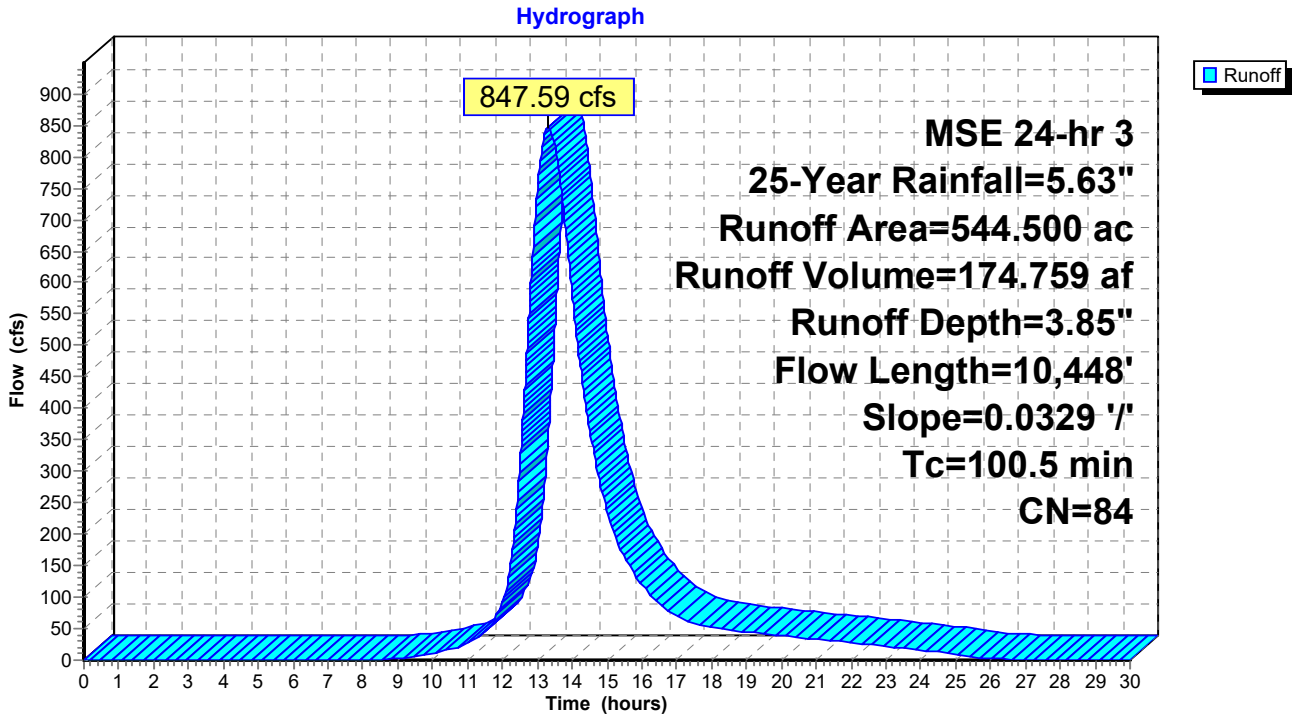
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 25-Year Rainfall=5.63"

	Area (ac)	CN	Description
*	544.500	84	
	544.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
100.5	10,448	0.0329	1.73		**Lag/CN Method,**

Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Subcatchment 544.5 AC: Remainder of Watershed to Wetland



Hydrograph for Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.05	0.00	0.00
2.50	0.07	0.00	0.00
3.00	0.09	0.00	0.00
3.50	0.12	0.00	0.00
4.00	0.15	0.00	0.00
4.50	0.18	0.00	0.00
5.00	0.21	0.00	0.00
5.50	0.25	0.00	0.00
6.00	0.29	0.00	0.00
6.50	0.33	0.00	0.00
7.00	0.37	0.00	0.00
7.50	0.42	0.00	0.01
8.00	0.47	0.00	0.21
8.50	0.52	0.01	1.10
9.00	0.58	0.02	2.88
9.50	0.67	0.04	5.51
10.00	0.77	0.07	10.20
10.50	0.88	0.10	17.44
11.00	1.09	0.19	26.70
11.50	1.40	0.35	45.19
12.00	2.61	1.20	91.52
12.50	4.23	2.58	307.27
13.00	4.54	2.86	**742.23**
13.50	4.75	3.04	**820.82**
14.00	4.86	3.14	582.65
14.50	4.96	3.23	368.39
15.00	5.05	3.32	237.92
15.50	5.11	3.37	164.71
16.00	5.16	3.42	120.50
16.50	5.21	3.46	89.35
17.00	5.26	3.51	70.29
17.50	5.30	3.55	58.98
18.00	5.34	3.59	52.11
18.50	5.38	3.62	47.90
19.00	5.42	3.66	44.53
19.50	5.45	3.69	41.56
20.00	5.48	3.72	38.70
20.50	5.51	3.74	35.83
21.00	5.54	3.76	33.02
21.50	5.56	3.79	30.25
22.00	5.58	3.80	27.47
22.50	5.60	3.82	24.63
23.00	5.61	3.83	21.80
23.50	5.62	3.84	19.00
24.00	**5.63**	**3.85**	16.19
24.50	5.63	3.85	13.17
25.00	5.63	3.85	9.16
25.50	5.63	3.85	5.06
26.00	5.63	3.85	2.41
26.50	5.63	3.85	1.15
27.00	5.63	3.85	0.54
27.50	5.63	3.85	0.25
28.00	5.63	3.85	0.11
28.50	5.63	3.85	0.04
29.00	5.63	3.85	0.01
29.50	5.63	3.85	0.00
30.00	5.63	3.85	0.00

Summary for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

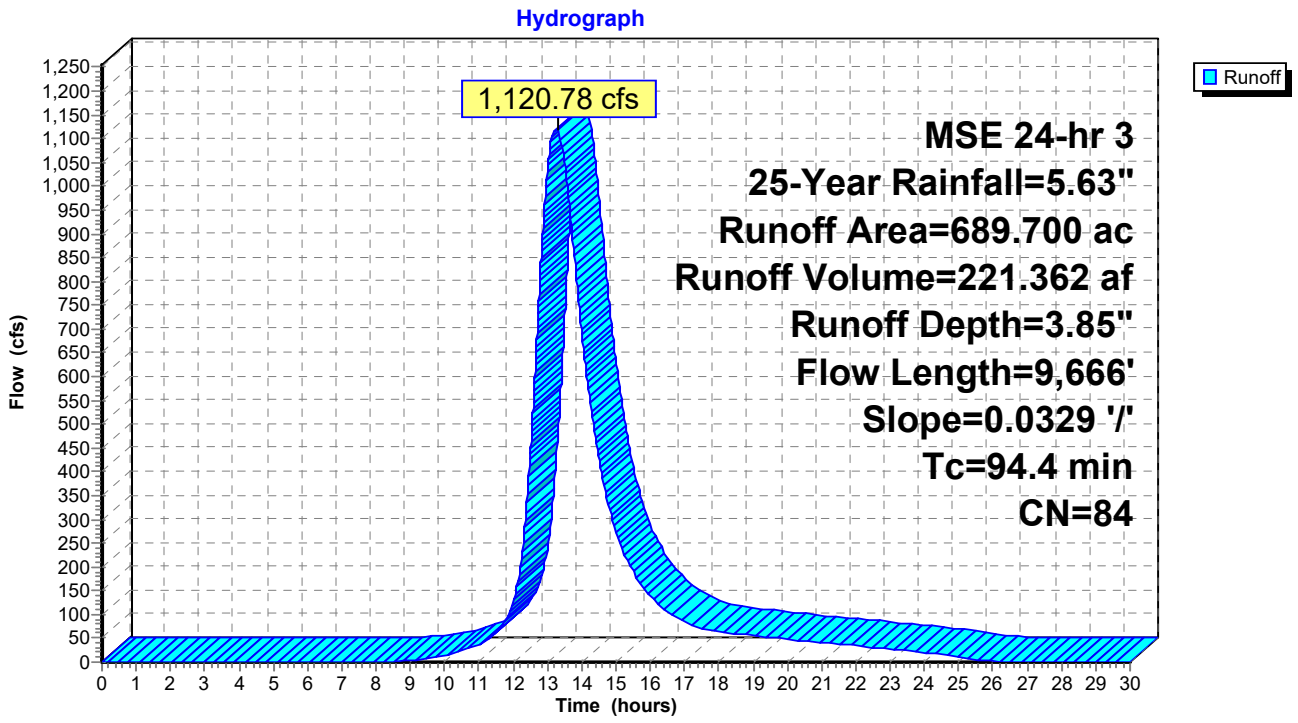
Runoff = 1,120.78 cfs @ 13.31 hrs, Volume= 221.362 af, Depth= 3.85"
Routed to Pond 1P : H AVENUE CULVERT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 25-Year Rainfall=5.63"

	Area (ac)	CN	Description
*	689.700	84	
	689.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
94.4	9,666	0.0329	1.71		**Lag/CN Method,**

Subcatchment 689.7 AC: Watershed West of H Ave Culvert



Hydrograph for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.05	0.00	0.00
2.50	0.07	0.00	0.00
3.00	0.09	0.00	0.00
3.50	0.12	0.00	0.00
4.00	0.15	0.00	0.00
4.50	0.18	0.00	0.00
5.00	0.21	0.00	0.00
5.50	0.25	0.00	0.00
6.00	0.29	0.00	0.00
6.50	0.33	0.00	0.00
7.00	0.37	0.00	0.00
7.50	0.42	0.00	0.01
8.00	0.47	0.00	0.32
8.50	0.52	0.01	1.62
9.00	0.58	0.02	4.06
9.50	0.67	0.04	7.58
10.00	0.77	0.07	14.05
10.50	0.88	0.10	23.80
11.00	1.09	0.19	35.98
11.50	1.40	0.35	62.01
12.00	2.61	1.20	127.69
12.50	4.23	2.58	438.84
13.00	4.54	2.86	**1,035.11**
13.50	4.75	3.04	**1,048.96**
14.00	4.86	3.14	690.42
14.50	4.96	3.23	429.51
15.00	5.05	3.32	273.57
15.50	5.11	3.37	190.82
16.00	5.16	3.42	140.49
16.50	5.21	3.46	104.72
17.00	5.26	3.51	83.31
17.50	5.30	3.55	70.90
18.00	5.34	3.59	64.31
18.50	5.38	3.62	59.57
19.00	5.42	3.66	55.63
19.50	5.45	3.69	51.84
20.00	5.48	3.72	48.29
20.50	5.51	3.74	44.73
21.00	5.54	3.76	41.17
21.50	5.56	3.79	37.68
22.00	5.58	3.80	34.09
22.50	5.60	3.82	30.53
23.00	5.61	3.83	26.97
23.50	5.62	3.84	23.37
24.00	**5.63**	**3.85**	19.83
24.50	5.63	3.85	15.96
25.00	5.63	3.85	10.64
25.50	5.63	3.85	5.47
26.00	5.63	3.85	2.47
26.50	5.63	3.85	1.12
27.00	5.63	3.85	0.50
27.50	5.63	3.85	0.21
28.00	5.63	3.85	0.09
28.50	5.63	3.85	0.03
29.00	5.63	3.85	0.00
29.50	5.63	3.85	0.00
30.00	5.63	3.85	0.00

Summary for Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL

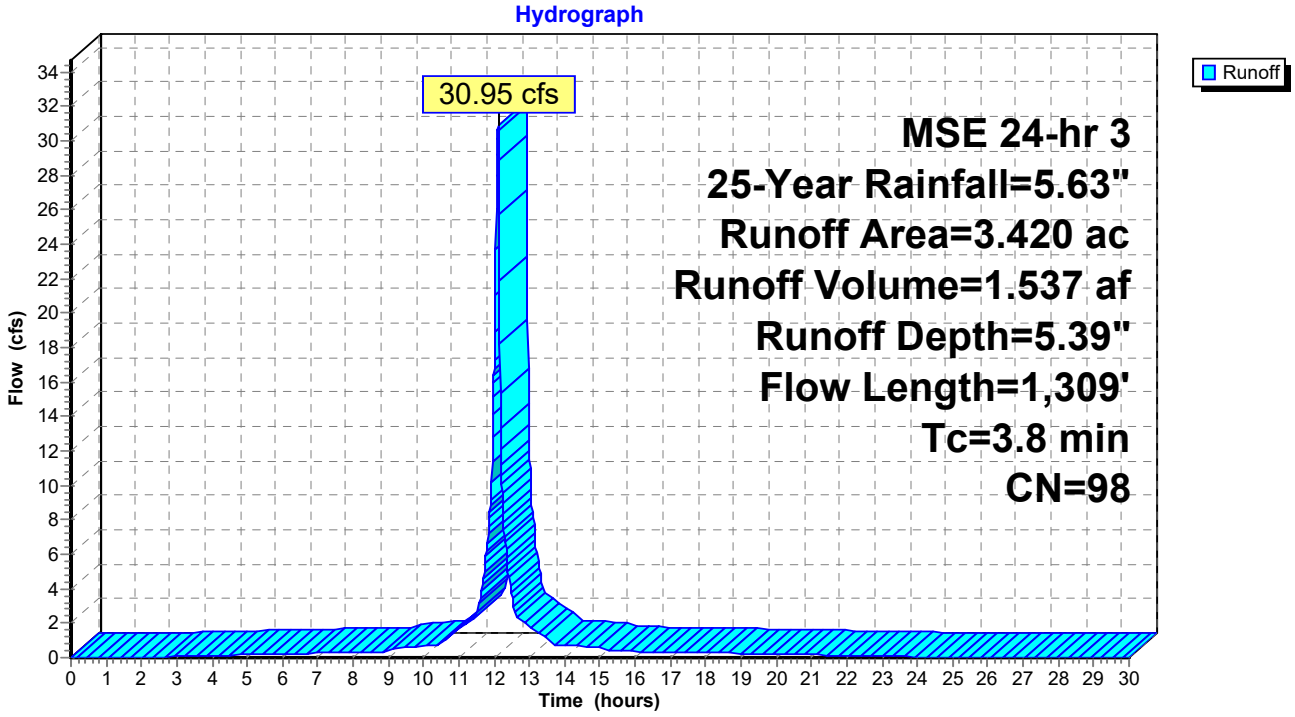
Runoff = 30.95 cfs @ 12.11 hrs, Volume= 1.537 af, Depth= 5.39"
Routed to Pond BERM : WETLAND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 25-Year Rainfall=5.63"

Area (ac)	CN	Description
3.420	98	Water Surface, HSG A
3.420		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	1,309		5.67		**Lake or Reservoir,** Mean Depth= 1.00'

Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL



Hydrograph for Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.03	0.00	0.00
2.00	0.05	0.00	0.01
2.50	0.07	0.00	0.03
3.00	0.09	0.01	0.06
3.50	0.12	0.02	0.08
4.00	0.15	0.04	0.11
4.50	0.18	0.05	0.14
5.00	0.21	0.08	0.17
5.50	0.25	0.10	0.19
6.00	0.29	0.13	0.22
6.50	0.33	0.17	0.24
7.00	0.37	0.21	0.27
7.50	0.42	0.25	0.29
8.00	0.47	0.29	0.32
8.50	0.52	0.34	0.34
9.00	0.58	0.39	0.36
9.50	0.67	0.48	0.62
10.00	0.77	0.57	0.67
10.50	0.88	0.68	0.72
11.00	1.09	0.87	1.64
11.50	1.40	1.18	2.38
12.00	2.61	2.38	**16.75**
12.50	4.23	4.00	**3.64**
13.00	4.54	4.31	1.86
13.50	4.75	4.51	1.13
14.00	4.86	4.62	0.72
14.50	4.96	4.72	0.67
15.00	5.05	4.81	0.63
15.50	5.11	4.87	0.38
16.00	5.16	4.92	0.36
16.50	5.21	4.97	0.34
17.00	5.26	5.02	0.32
17.50	5.30	5.06	0.30
18.00	5.34	5.11	0.28
18.50	5.38	5.14	0.26
19.00	5.42	5.18	0.24
19.50	5.45	5.21	0.22
20.00	5.48	5.25	0.21
20.50	5.51	5.27	0.19
21.00	5.54	5.30	0.17
21.50	5.56	5.32	0.15
22.00	5.58	5.34	0.13
22.50	5.60	5.36	0.11
23.00	5.61	5.37	0.09
23.50	5.62	5.38	0.07
24.00	**5.63**	**5.39**	0.05
24.50	5.63	5.39	0.00
25.00	5.63	5.39	0.00
25.50	5.63	5.39	0.00
26.00	5.63	5.39	0.00
26.50	5.63	5.39	0.00
27.00	5.63	5.39	0.00
27.50	5.63	5.39	0.00
28.00	5.63	5.39	0.00
28.50	5.63	5.39	0.00
29.00	5.63	5.39	0.00
29.50	5.63	5.39	0.00
30.00	5.63	5.39	0.00

Summary for Pond 1P: H AVENUE CULVERT

Inflow Area = 689.700 ac, 0.00% Impervious, Inflow Depth = 3.85" for 25-Year event
Inflow = 1,120.78 cfs @ 13.31 hrs, Volume= 221.362 af
Outflow = 787.21 cfs @ 13.87 hrs, Volume= 221.075 af, Atten= 30%, Lag= 33.4 min
Primary = 693.62 cfs @ 13.87 hrs, Volume= 109.648 af
Routed to Pond 2P : BASIN NW OF WETLAND
Secondary = 93.59 cfs @ 13.87 hrs, Volume= 111.428 af
Routed to Pond 2P : BASIN NW OF WETLAND

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,128.80' @ 13.87 hrs Surf.Area= 55.866 ac Storage= 76.488 af

Plug-Flow detention time= 156.3 min calculated for 221.075 af (100% of inflow)
Center-of-Mass det. time= 155.4 min (1,025.8 - 870.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,124.00'	161.110 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,124.00	0.010	0.000	0.000
1,126.00	1.650	1.660	1.660
1,128.00	36.300	37.950	39.610
1,130.00	85.200	121.500	161.110

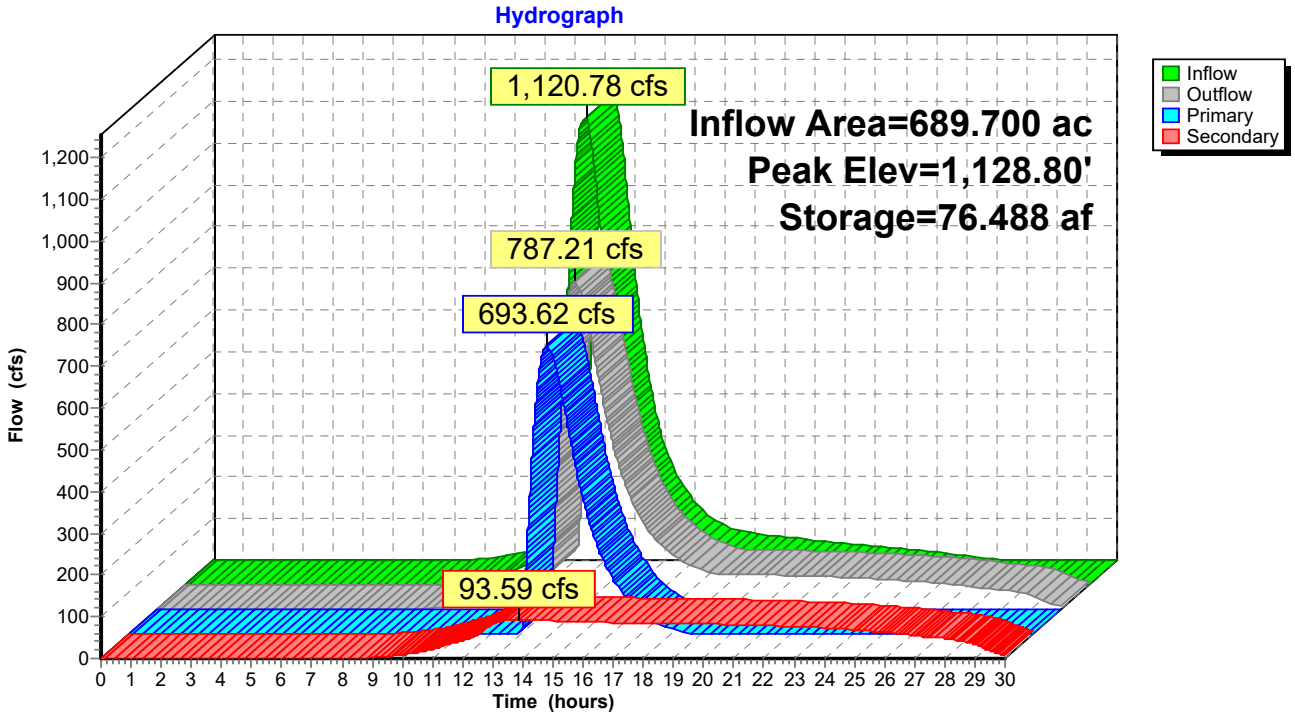
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,124.00'	**60.0" W x 24.0" H Box 5'x2' CULVERT** L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,124.00' / 1,124.00' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 10.00 sf
#2	Primary	1,128.05'	**342.0' long + 100.0 '/' SideZ x 25.0' breadth H Ave Road Surface** 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

Primary OutFlow Max=693.59 cfs @ 13.87 hrs HW=1,128.80' (Free Discharge)
└**2=H Ave Road Surface** (Weir Controls 693.59 cfs @ 2.22 fps)

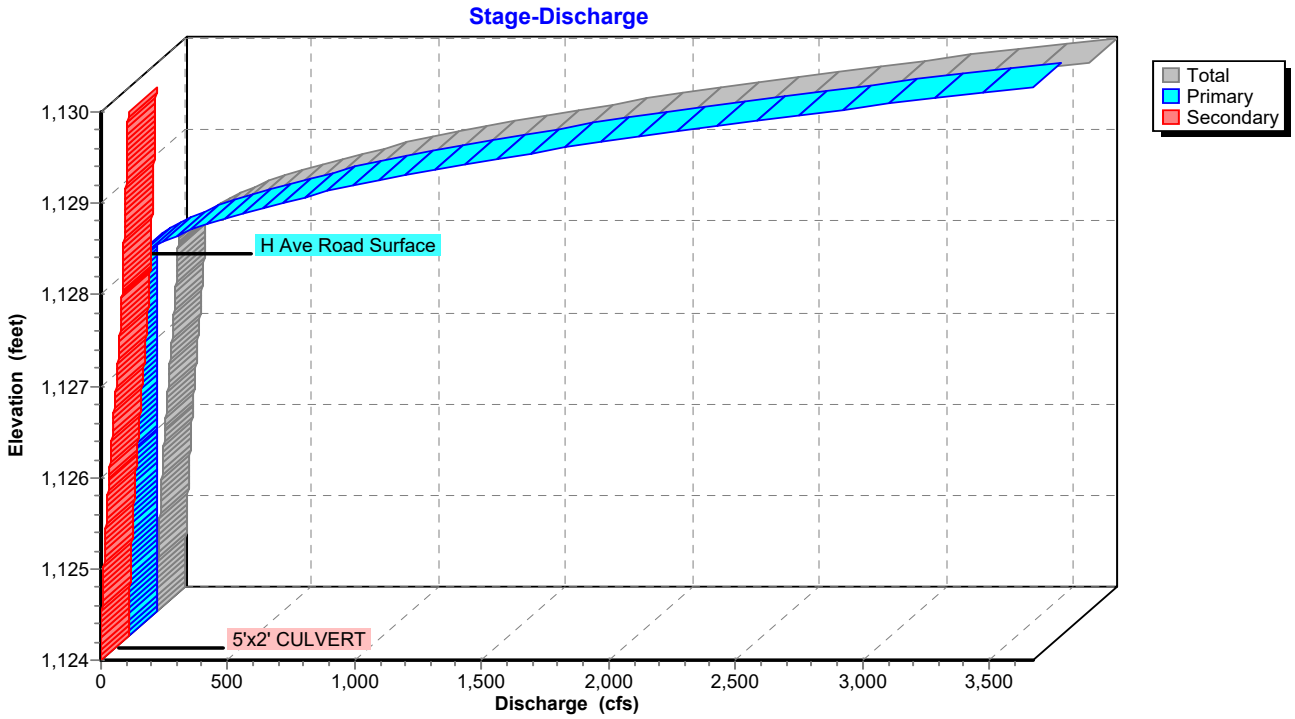
Secondary OutFlow Max=93.59 cfs @ 13.87 hrs HW=1,128.80' (Free Discharge)
└**1=5'x2' CULVERT** (Inlet Controls 93.59 cfs @ 9.36 fps)



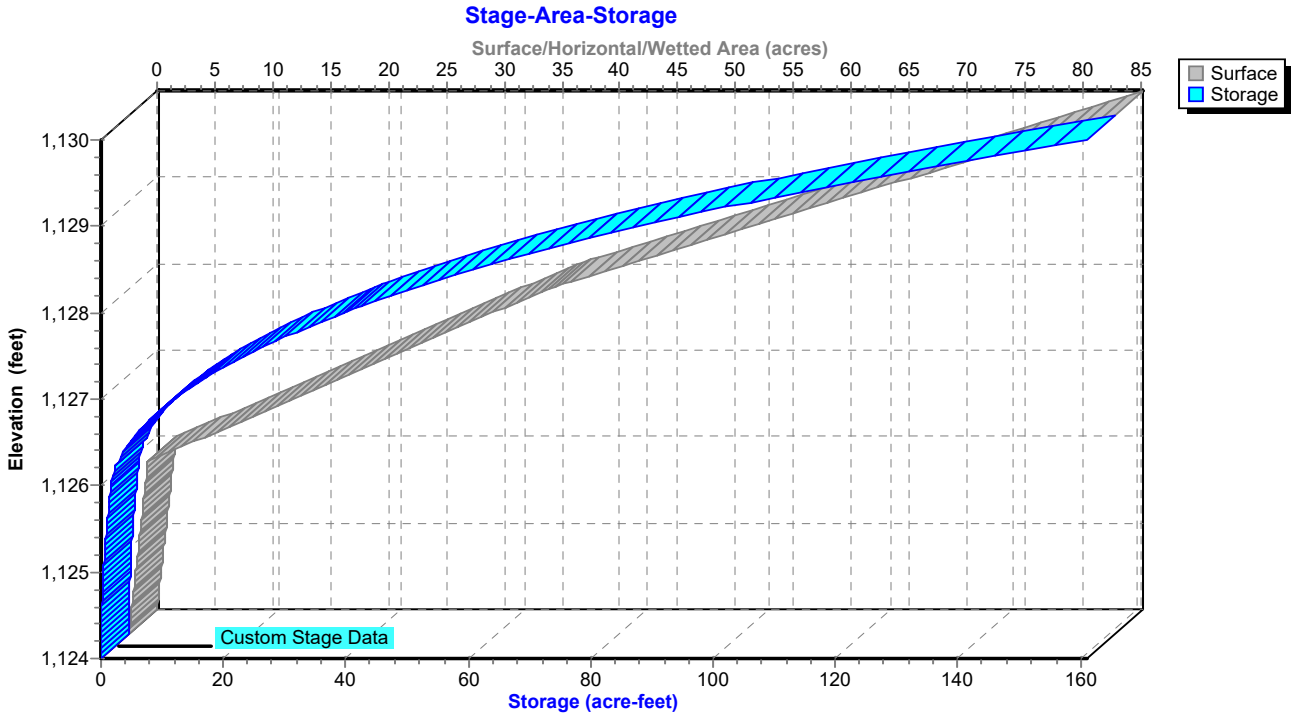
Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Hydrograph for Pond 1P: H AVENUE CULVERT

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,124.00	0.00	0.00	0.00
1.00	0.00	0.000	1,124.00	0.00	0.00	0.00
2.00	0.00	0.000	1,124.00	0.00	0.00	0.00
3.00	0.00	0.000	1,124.00	0.00	0.00	0.00
4.00	0.00	0.000	1,124.00	0.00	0.00	0.00
5.00	0.00	0.000	1,124.00	0.00	0.00	0.00
6.00	0.00	0.000	1,124.00	0.00	0.00	0.00
7.00	0.00	0.000	1,124.00	0.00	0.00	0.00
8.00	0.32	0.003	1,124.08	0.10	0.00	0.10
9.00	4.06	0.074	1,124.41	2.42	0.00	2.42
10.00	14.05	0.322	1,124.87	8.67	0.00	8.67
11.00	35.98	1.068	1,125.60	22.85	0.00	22.85
12.00	127.69	3.915	1,126.42	43.55	0.00	43.55
13.00	**1,035.11**	**40.035**	**1,128.01**	**83.17**	**0.00**	**83.17**
14.00	**690.42**	**75.986**	**1,128.79**	**774.23**	**680.75**	**93.48**
15.00	273.57	62.372	1,128.53	434.25	344.08	90.18
16.00	140.49	52.551	1,128.32	225.87	138.45	87.42
17.00	83.31	46.948	1,128.19	135.69	50.06	85.64
18.00	64.31	43.511	1,128.10	97.28	12.84	84.45
19.00	55.63	41.142	1,128.04	83.59	0.00	83.59
20.00	48.29	38.562	1,127.97	82.59	0.00	82.59
21.00	41.17	35.483	1,127.88	81.25	0.00	81.25
22.00	34.09	31.967	1,127.78	79.03	0.00	79.03
23.00	26.97	28.071	1,127.65	76.22	0.00	76.22
24.00	19.83	23.842	1,127.51	72.78	0.00	72.78
25.00	10.64	19.295	1,127.33	68.47	0.00	68.47
26.00	2.47	14.347	1,127.12	62.69	0.00	62.69
27.00	0.50	9.568	1,126.86	55.11	0.00	55.11
28.00	0.09	5.369	1,126.57	47.56	0.00	47.56
29.00	0.00	1.905	1,126.10	34.83	0.00	34.83
30.00	0.00	0.290	1,124.83	7.94	0.00	7.94

Stage-Discharge for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,124.00	0.00	0.00	0.00
1,124.10	0.16	0.00	0.16
1,124.20	0.64	0.00	0.64
1,124.30	1.37	0.00	1.37
1,124.40	2.30	0.00	2.30
1,124.50	3.40	0.00	3.40
1,124.60	4.64	0.00	4.64
1,124.70	6.01	0.00	6.01
1,124.80	7.50	0.00	7.50
1,124.90	9.10	0.00	9.10
1,125.00	10.80	0.00	10.80
1,125.10	12.59	0.00	12.59
1,125.20	14.47	0.00	14.47
1,125.30	16.44	0.00	16.44
1,125.40	18.49	0.00	18.49
1,125.50	20.61	0.00	20.61
1,125.60	22.82	0.00	22.82
1,125.70	25.10	0.00	25.10
1,125.80	27.44	0.00	27.44
1,125.90	29.86	0.00	29.86
1,126.00	32.34	0.00	32.34
1,126.10	34.89	0.00	34.89
1,126.20	37.50	0.00	37.50
1,126.30	40.17	0.00	40.17
1,126.40	42.91	0.00	42.91
1,126.50	45.70	0.00	45.70
1,126.60	48.55	0.00	48.55
1,126.70	49.59	0.00	49.59
1,126.80	53.02	0.00	53.02
1,126.90	56.23	0.00	56.23
1,127.00	59.28	0.00	59.28
1,127.10	62.17	0.00	62.17
1,127.20	64.93	0.00	64.93
1,127.30	67.59	0.00	67.59
1,127.40	70.14	0.00	70.14
1,127.50	72.60	0.00	72.60
1,127.60	74.98	0.00	74.98
1,127.70	77.29	0.00	77.29
1,127.80	79.53	0.00	79.53
1,127.90	81.58	0.00	81.58
1,128.00	83.00	0.00	83.00
1,128.10	94.77	10.37	84.40
1,128.20	140.89	55.12	85.78
1,128.30	208.62	121.50	87.13
1,128.40	294.93	206.47	88.46
1,128.50	397.86	308.09	89.77
1,128.60	516.16	425.10	91.06
1,128.70	646.72	554.38	92.33
1,128.80	786.82	693.24	93.59
1,128.90	942.26	847.43	94.82
1,129.00	1,114.94	1,018.90	96.05
1,129.10	1,303.85	1,206.60	97.25
1,129.20	1,510.10	1,411.66	98.44
1,129.30	1,730.38	1,630.76	99.62
1,129.40	1,964.23	1,863.45	100.78
1,129.50	2,211.09	2,109.16	101.93
1,129.60	2,470.36	2,367.29	103.06
1,129.70	2,746.35	2,642.17	104.19
1,129.80	3,039.97	2,934.67	105.30
1,129.90	3,349.12	3,242.72	106.40
1,130.00	**3,673.94**	**3,566.46**	**107.49**

Stage-Area-Storage for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,124.00	0.010	0.000
1,124.10	0.092	0.005
1,124.20	0.174	0.018
1,124.30	0.256	0.040
1,124.40	0.338	0.070
1,124.50	0.420	0.107
1,124.60	0.502	0.154
1,124.70	0.584	0.208
1,124.80	0.666	0.270
1,124.90	0.748	0.341
1,125.00	0.830	0.420
1,125.10	0.912	0.507
1,125.20	0.994	0.602
1,125.30	1.076	0.706
1,125.40	1.158	0.818
1,125.50	1.240	0.937
1,125.60	1.322	1.066
1,125.70	1.404	1.202
1,125.80	1.486	1.346
1,125.90	1.568	1.499
1,126.00	1.650	1.660
1,126.10	3.382	1.912
1,126.20	5.115	2.337
1,126.30	6.847	2.935
1,126.40	8.580	3.706
1,126.50	10.312	4.651
1,126.60	12.045	5.768
1,126.70	13.778	7.060
1,126.80	15.510	8.524
1,126.90	17.243	10.162
1,127.00	18.975	11.972
1,127.10	20.707	13.957
1,127.20	22.440	16.114
1,127.30	24.172	18.445
1,127.40	25.905	20.949
1,127.50	27.637	23.626
1,127.60	29.370	26.476
1,127.70	31.103	29.500
1,127.80	32.835	32.696
1,127.90	34.568	36.067
1,128.00	36.300	39.610
1,128.10	38.745	43.362
1,128.20	41.190	47.359
1,128.30	43.635	51.600
1,128.40	46.080	56.086
1,128.50	48.525	60.816
1,128.60	50.970	65.791
1,128.70	53.415	71.010
1,128.80	55.860	76.474
1,128.90	58.305	82.182
1,129.00	60.750	88.135
1,129.10	63.195	94.332
1,129.20	65.640	100.774
1,129.30	68.085	107.460
1,129.40	70.530	114.391
1,129.50	72.975	121.566
1,129.60	75.420	128.986
1,129.70	77.865	136.650
1,129.80	80.310	144.559
1,129.90	82.755	152.712
1,130.00	**85.200**	**161.110**

Summary for Pond 2P: BASIN NW OF WETLAND

[79] Warning: Submerged Pond 1P Secondary device # 1 by 1.56'

Inflow Area = 848.100 ac, 0.00% Impervious, Inflow Depth > 3.85" for 25-Year event
Inflow = 842.80 cfs @ 13.82 hrs, Volume= 271.915 af
Outflow = 416.26 cfs @ 15.16 hrs, Volume= 216.189 af, Atten= 51%, Lag= 80.2 min
Primary = 416.26 cfs @ 15.16 hrs, Volume= 216.189 af
Routed to Pond BERM : WETLAND
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,125.56' @ 15.16 hrs Surf.Area= 61.686 ac Storage= 112.679 af

Plug-Flow detention time= 267.2 min calculated for 216.189 af (80% of inflow)
Center-of-Mass det. time= 151.6 min (1,137.9 - 986.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,121.00'	311.173 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,121.00	1.997	0.000	0.000
1,122.00	7.899	4.948	4.948
1,123.00	16.217	12.058	17.006
1,124.00	30.839	23.528	40.534
1,126.00	70.400	101.239	141.773
1,128.00	99.000	169.400	311.173

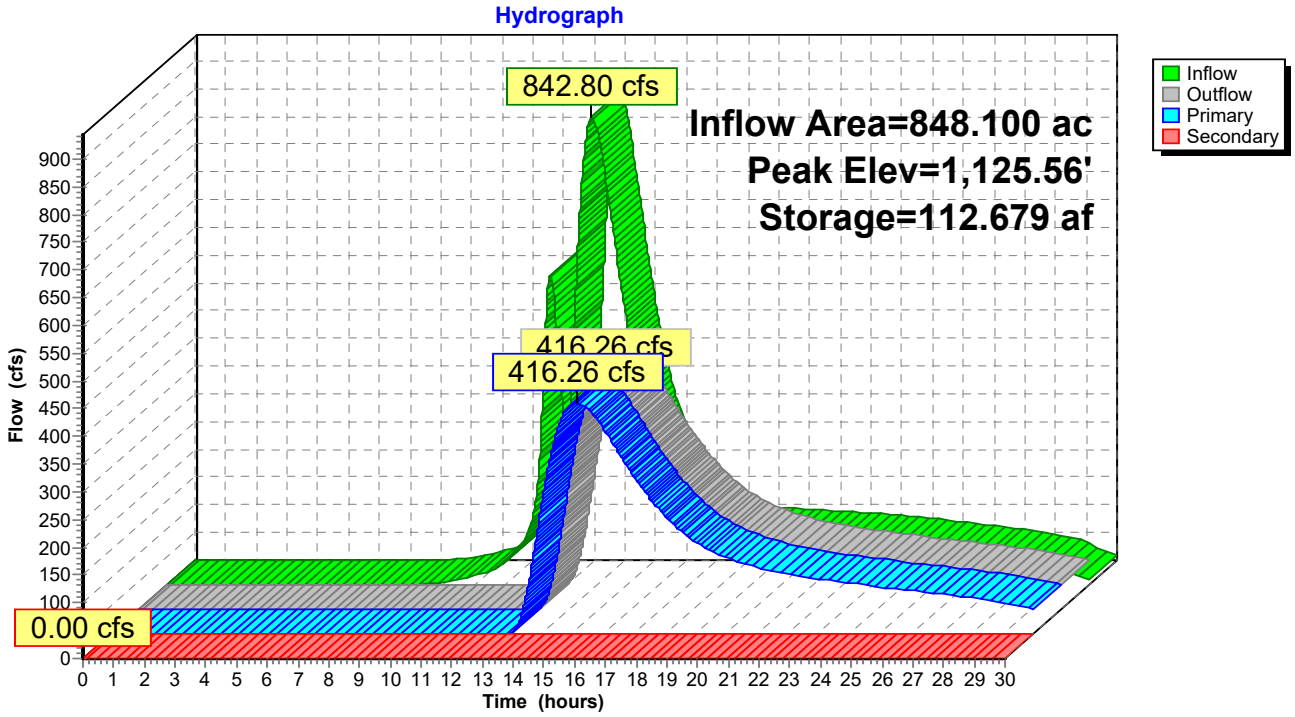
Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.00'	**50.0' long + 25.0 '/' SideZ x 50.0' breadth Saddle to Wetland** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	1,127.00'	**300.0' long + 50.0 '/' SideZ x 50.0' breadth Saddle Away from Wetland** 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

Primary OutFlow Max=416.15 cfs @ 15.16 hrs HW=1,125.56' (Free Discharge)
↑—**1=Saddle to Wetland** (Weir Controls 416.15 cfs @ 3.00 fps)

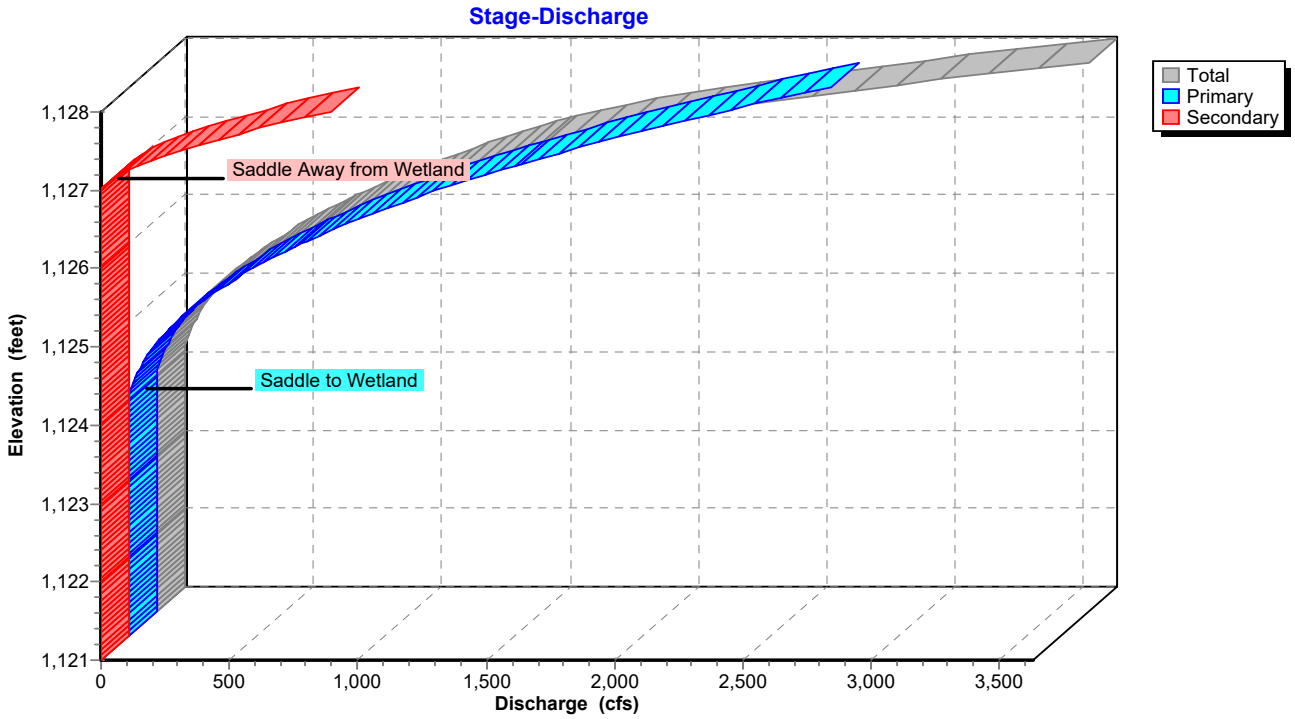
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,121.00' (Free Discharge)
↑—**2=Saddle Away from Wetland** (Controls 0.00 cfs)



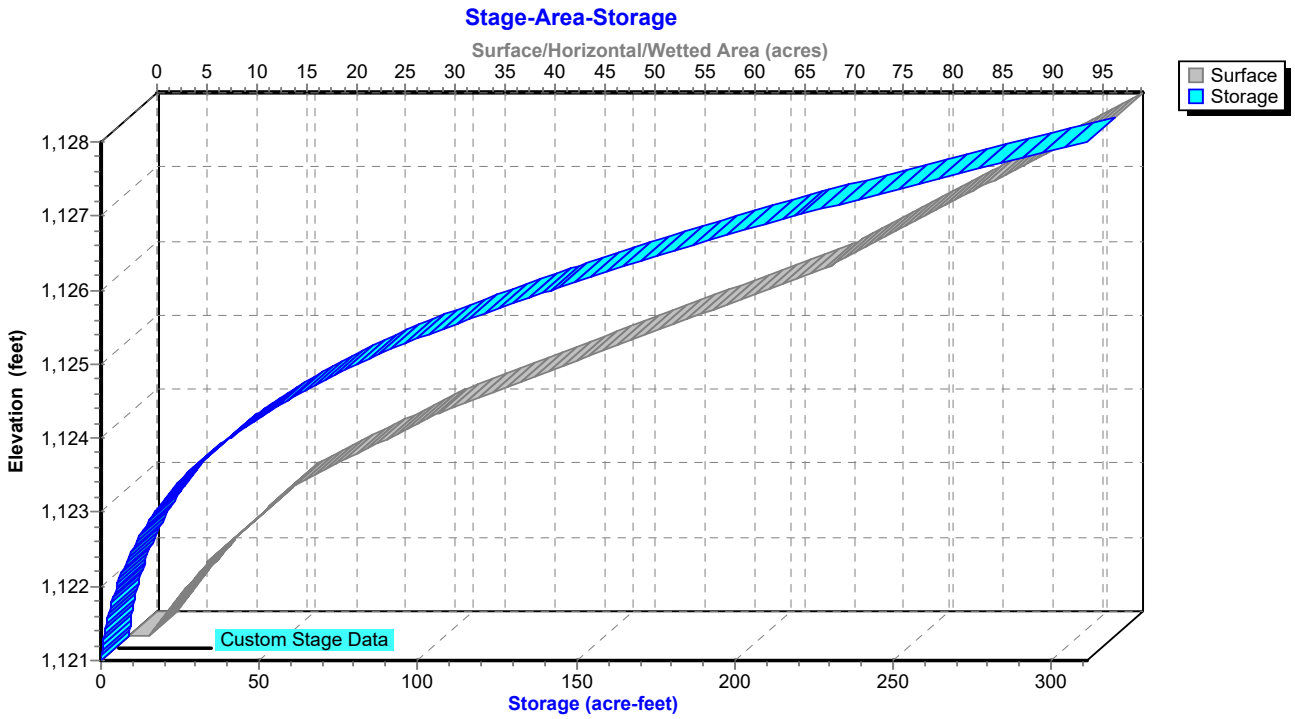
Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Hydrograph for Pond 2P: BASIN NW OF WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,121.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,121.00	0.00	0.00	0.00
2.00	0.00	0.000	1,121.00	0.00	0.00	0.00
3.00	0.00	0.000	1,121.00	0.00	0.00	0.00
4.00	0.00	0.000	1,121.00	0.00	0.00	0.00
5.00	0.00	0.000	1,121.00	0.00	0.00	0.00
6.00	0.00	0.000	1,121.00	0.00	0.00	0.00
7.00	0.00	0.000	1,121.00	0.00	0.00	0.00
8.00	0.73	0.014	1,121.01	0.00	0.00	0.00
9.00	4.73	0.213	1,121.09	0.00	0.00	0.00
10.00	16.16	1.012	1,121.34	0.00	0.00	0.00
11.00	40.88	3.156	1,121.75	0.00	0.00	0.00
12.00	149.14	9.529	1,122.47	0.00	0.00	0.00
13.00	**268.66**	41.643	1,124.04	1.21	1.21	0.00
14.00	**818.64**	88.006	1,125.13	229.89	229.89	0.00
15.00	462.73	**112.382**	**1,125.55**	**413.81**	**413.81**	0.00
16.00	242.43	**107.016**	**1,125.47**	**371.41**	**371.41**	0.00
17.00	150.11	95.638	1,125.27	284.79	284.79	0.00
18.00	110.09	85.691	1,125.09	213.93	213.93	0.00
19.00	94.78	78.432	1,124.94	166.24	166.24	0.00
20.00	92.16	73.711	1,124.85	137.44	137.44	0.00
21.00	89.19	70.632	1,124.78	119.72	119.72	0.00
22.00	85.34	68.461	1,124.73	108.05	108.05	0.00
23.00	80.89	66.786	1,124.70	99.18	99.18	0.00
24.00	75.80	65.377	1,124.66	91.89	91.89	0.00
25.00	68.61	64.029	1,124.63	84.95	84.95	0.00
26.00	62.69	62.717	1,124.60	78.35	78.35	0.00
27.00	55.11	61.396	1,124.57	71.69	71.69	0.00
28.00	47.56	59.974	1,124.54	64.79	64.79	0.00
29.00	34.83	58.391	1,124.50	57.12	57.12	0.00
30.00	7.94	55.741	1,124.43	45.15	45.15	0.00

Stage-Discharge for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,121.00	0.00	0.00	0.00
1,121.10	0.00	0.00	0.00
1,121.20	0.00	0.00	0.00
1,121.30	0.00	0.00	0.00
1,121.40	0.00	0.00	0.00
1,121.50	0.00	0.00	0.00
1,121.60	0.00	0.00	0.00
1,121.70	0.00	0.00	0.00
1,121.80	0.00	0.00	0.00
1,121.90	0.00	0.00	0.00
1,122.00	0.00	0.00	0.00
1,122.10	0.00	0.00	0.00
1,122.20	0.00	0.00	0.00
1,122.30	0.00	0.00	0.00
1,122.40	0.00	0.00	0.00
1,122.50	0.00	0.00	0.00
1,122.60	0.00	0.00	0.00
1,122.70	0.00	0.00	0.00
1,122.80	0.00	0.00	0.00
1,122.90	0.00	0.00	0.00
1,123.00	0.00	0.00	0.00
1,123.10	0.00	0.00	0.00
1,123.20	0.00	0.00	0.00
1,123.30	0.00	0.00	0.00
1,123.40	0.00	0.00	0.00
1,123.50	0.00	0.00	0.00
1,123.60	0.00	0.00	0.00
1,123.70	0.00	0.00	0.00
1,123.80	0.00	0.00	0.00
1,123.90	0.00	0.00	0.00
1,124.00	0.00	0.00	0.00
1,124.10	4.41	4.41	0.00
1,124.20	12.94	12.94	0.00
1,124.30	24.75	24.75	0.00
1,124.40	39.62	39.62	0.00
1,124.50	57.28	57.28	0.00
1,124.60	77.80	77.80	0.00
1,124.70	100.08	100.08	0.00
1,124.80	124.68	124.68	0.00
1,124.90	152.99	152.99	0.00
1,125.00	184.10	184.10	0.00
1,125.10	218.88	218.88	0.00
1,125.20	256.81	256.81	0.00
1,125.30	297.39	297.39	0.00
1,125.40	341.11	341.11	0.00
1,125.50	387.26	387.26	0.00
1,125.60	436.47	436.47	0.00
1,125.70	489.68	489.68	0.00
1,125.80	546.21	546.21	0.00
1,125.90	606.13	606.13	0.00
1,126.00	669.49	669.49	0.00
1,126.10	736.33	736.33	0.00
1,126.20	806.71	806.71	0.00
1,126.30	880.68	880.68	0.00
1,126.40	958.29	958.29	0.00
1,126.50	1,039.60	1,039.60	0.00
1,126.60	1,124.65	1,124.65	0.00
1,126.70	1,213.49	1,213.49	0.00
1,126.80	1,306.17	1,306.17	0.00
1,126.90	1,402.74	1,402.74	0.00
1,127.00	1,503.25	1,503.25	0.00
1,127.10	1,633.51	1,607.74	25.76
1,127.20	1,790.10	1,716.27	73.83
1,127.30	1,966.79	1,828.88	137.91
1,127.40	2,161.46	1,945.61	215.84
1,127.50	2,371.99	2,066.52	305.47
1,127.60	2,598.21	2,191.64	406.57
1,127.70	2,833.93	2,321.03	512.90
1,127.80	3,081.88	2,454.72	627.16
1,127.90	3,348.70	2,592.76	755.93
1,128.00	**3,629.40**	**2,735.20**	**894.20**

Stage-Area-Storage for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,121.00	1.997	0.000
1,121.10	2.587	0.229
1,121.20	3.177	0.517
1,121.30	3.768	0.865
1,121.40	4.358	1.271
1,121.50	4.948	1.736
1,121.60	5.538	2.261
1,121.70	6.128	2.844
1,121.80	6.719	3.486
1,121.90	7.309	4.188
1,122.00	7.899	4.948
1,122.10	8.731	5.779
1,122.20	9.563	6.694
1,122.30	10.394	7.692
1,122.40	11.226	8.773
1,122.50	12.058	9.937
1,122.60	12.890	11.185
1,122.70	13.722	12.515
1,122.80	14.553	13.929
1,122.90	15.385	15.426
1,123.00	16.217	17.006
1,123.10	17.679	18.701
1,123.20	19.141	20.542
1,123.30	20.604	22.529
1,123.40	22.066	24.663
1,123.50	23.528	26.942
1,123.60	24.990	29.368
1,123.70	26.452	31.940
1,123.80	27.915	34.659
1,123.90	29.377	37.523
1,124.00	30.839	40.534
1,124.10	32.817	43.717
1,124.20	34.795	47.097
1,124.30	36.773	50.676
1,124.40	38.751	54.452
1,124.50	40.729	58.426
1,124.60	42.707	62.598
1,124.70	44.685	66.968
1,124.80	46.663	71.535
1,124.90	48.641	76.300
1,125.00	50.619	81.263
1,125.10	52.598	86.424
1,125.20	54.576	91.783
1,125.30	56.554	97.339
1,125.40	58.532	103.093
1,125.50	60.510	109.046
1,125.60	62.488	115.195
1,125.70	64.466	121.543
1,125.80	66.444	128.089
1,125.90	68.422	134.832
1,126.00	70.400	141.773
1,126.10	71.830	148.884
1,126.20	73.260	156.139
1,126.30	74.690	163.536
1,126.40	76.120	171.077
1,126.50	77.550	178.760
1,126.60	78.980	186.587
1,126.70	80.410	194.557
1,126.80	81.840	202.669
1,126.90	83.270	210.925
1,127.00	84.700	219.323
1,127.10	86.130	227.864
1,127.20	87.560	236.549
1,127.30	88.990	245.376
1,127.40	90.420	254.347
1,127.50	91.850	263.460
1,127.60	93.280	272.717
1,127.70	94.710	282.117
1,127.80	96.140	291.659
1,127.90	97.570	301.345
1,128.00	**99.000**	**311.173**

Summary for Pond BERM: WETLAND

Inflow Area = 1,396.020 ac, 0.24% Impervious, Inflow Depth > 3.37" for 25-Year event
Inflow = 888.89 cfs @ 13.51 hrs, Volume= 392.485 af
Outflow = 875.09 cfs @ 13.66 hrs, Volume= 390.264 af, Atten= 2%, Lag= 9.3 min
Primary = 875.09 cfs @ 13.66 hrs, Volume= 390.264 af
Routed to Pond I AVE : I AVENUE CULVERTS

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 1,106.00' Surf.Area= 6.409 ac Storage= 5.396 af
Peak Elev= 1,108.26' @ 13.66 hrs Surf.Area= 7.382 ac Storage= 21.062 af (15.666 af above start)

Plug-Flow detention time= 32.8 min calculated for 384.867 af (98% of inflow)
Center-of-Mass det. time= 13.4 min (1,033.1 - 1,019.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,103.00'	386.614 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

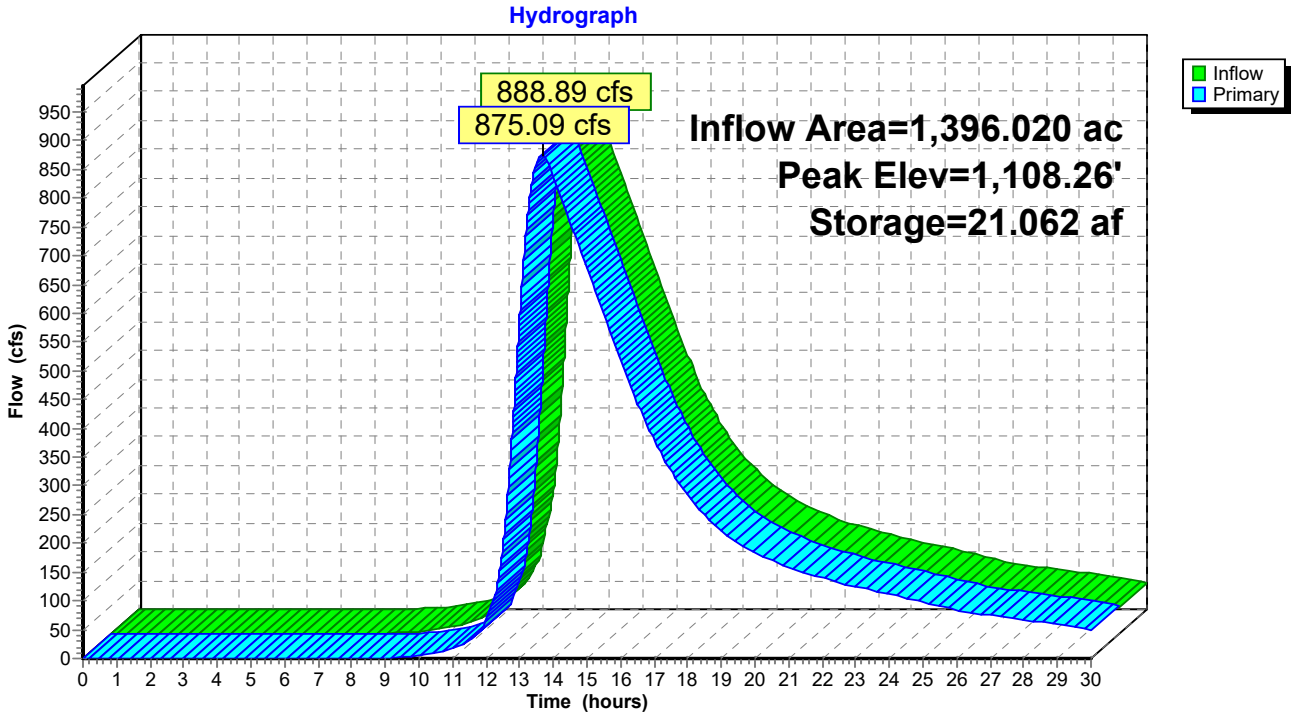
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,103.00	0.000	0.000	0.000
1,104.00	0.943	0.472	0.472
1,105.00	1.249	1.096	1.568
1,106.00	6.409	3.829	5.396
1,107.00	6.899	6.654	12.051
1,108.00	7.280	7.089	19.140
1,109.00	7.669	7.475	26.615
1,110.00	10.179	8.924	35.538
1,110.30	11.226	3.211	38.749
1,111.00	23.616	12.195	50.944
1,112.00	31.569	27.592	78.536
1,113.00	42.971	37.270	115.806
1,114.00	53.846	48.409	164.215
1,115.00	65.969	59.908	224.122
1,116.00	79.963	72.966	297.088
1,117.00	99.088	89.526	386.614

Device	Routing	Invert	Outlet Devices
#1	Primary	1,106.00'	**Sheet Pile Weir, C= 3.27** Offset (feet) -54.10 -52.10 -44.10 -37.50 37.50 44.10 52.10 54.10 Height (feet) 4.30 3.30 3.30 0.00 0.00 3.30 3.30 4.30

Primary OutFlow Max=874.72 cfs @ 13.66 hrs HW=1,108.26' (Free Discharge)
↑—**1=Sheet Pile Weir** (Weir Controls 874.72 cfs @ 4.60 fps)



Pond BERM: WETLAND



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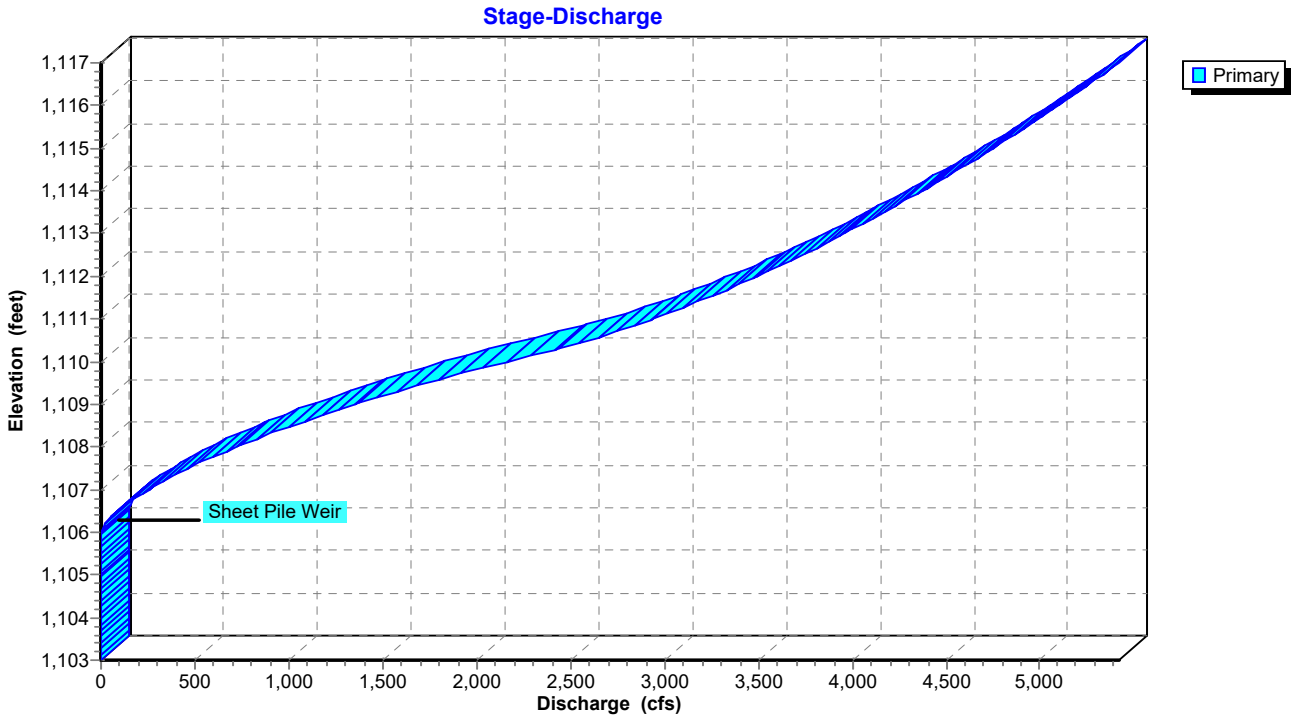
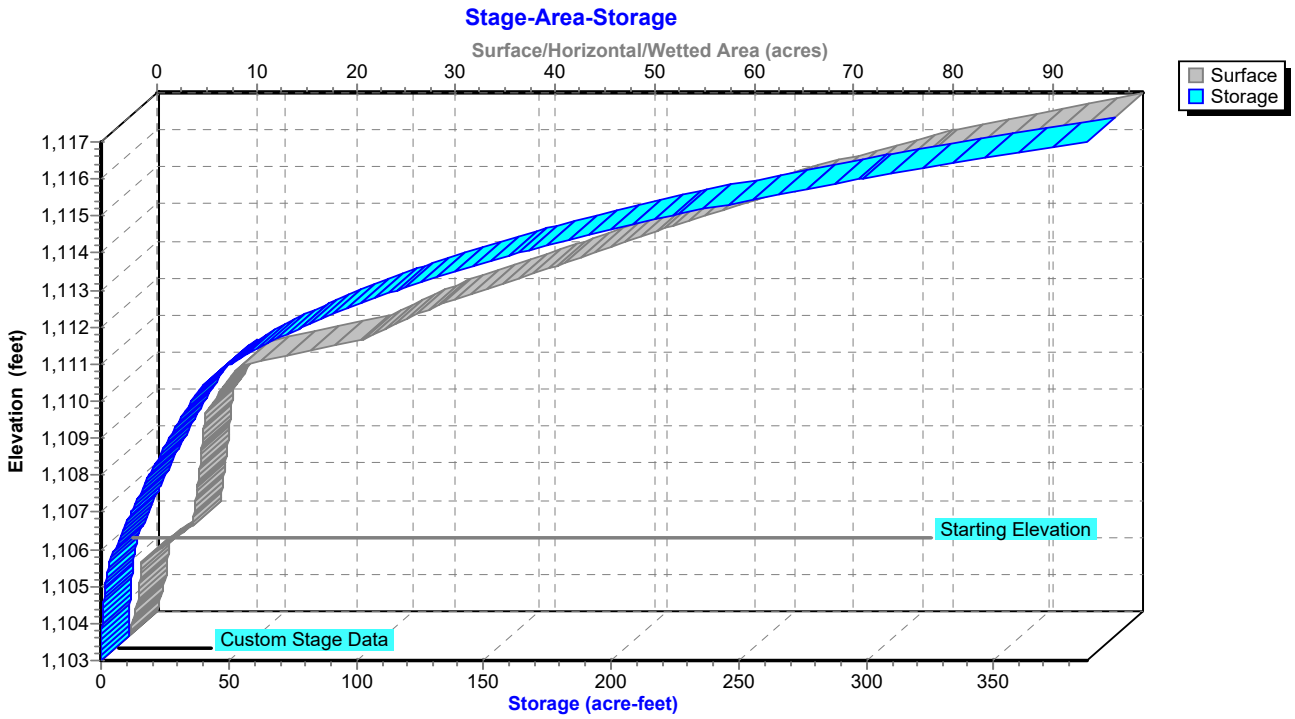


Pond BERM: WETLAND



Hydrograph for Pond BERM: WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	5.396	1,106.00	0.00
1.00	0.00	5.396	1,106.00	0.00
2.00	0.01	5.397	1,106.00	0.00
3.00	0.06	5.399	1,106.00	0.02
4.00	0.11	5.402	1,106.00	0.06
5.00	0.17	5.407	1,106.00	0.11
6.00	0.22	5.411	1,106.00	0.16
7.00	0.27	5.416	1,106.00	0.21
8.00	0.52	5.423	1,106.00	0.29
9.00	3.25	5.506	1,106.02	1.18
10.00	10.87	5.824	1,106.07	4.62
11.00	28.35	6.494	1,106.17	18.33
12.00	108.27	8.078	1,106.41	66.05
13.00	**745.30**	**17.440**	**1,107.77**	**596.82**
14.00	**813.25**	**20.618**	**1,108.20**	**839.14**
15.00	652.36	18.543	1,107.92	678.13
16.00	492.28	16.346	1,107.61	519.40
17.00	355.40	14.208	1,107.31	378.30
18.00	266.32	12.609	1,107.08	282.10
19.00	211.02	11.521	1,106.92	221.77
20.00	176.34	10.776	1,106.81	183.63
21.00	152.91	10.262	1,106.74	158.47
22.00	135.65	9.867	1,106.68	139.88
23.00	121.07	9.542	1,106.63	124.87
24.00	108.13	9.232	1,106.59	111.77
25.00	94.11	8.916	1,106.54	98.37
26.00	80.76	8.576	1,106.49	84.46
27.00	72.23	8.318	1,106.45	74.93
28.00	64.90	8.111	1,106.42	67.26
29.00	57.13	7.909	1,106.39	59.79
30.00	45.15	7.620	1,106.34	49.85

Stage-Discharge for Pond BERM: WETLAND

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,103.00	0.00	1,108.30	897.44	1,113.60	4,213.52
1,103.10	0.00	1,108.40	958.54	1,113.70	4,254.15
1,103.20	0.00	1,108.50	1,021.14	1,113.80	4,294.38
1,103.30	0.00	1,108.60	1,085.21	1,113.90	4,334.22
1,103.40	0.00	1,108.70	1,150.74	1,114.00	4,373.67
1,103.50	0.00	1,108.80	1,217.71	1,114.10	4,412.75
1,103.60	0.00	1,108.90	1,286.10	1,114.20	4,451.48
1,103.70	0.00	1,109.00	1,355.92	1,114.30	4,489.85
1,103.80	0.00	1,109.10	1,427.13	1,114.40	4,527.88
1,103.90	0.00	1,109.20	1,499.73	1,114.50	4,565.58
1,104.00	0.00	1,109.30	1,573.71	1,114.60	4,602.96
1,104.10	0.00	1,109.40	1,650.72	1,114.70	4,640.03
1,104.20	0.00	1,109.50	1,730.46	1,114.80	4,676.79
1,104.30	0.00	1,109.60	1,812.44	1,114.90	4,713.26
1,104.40	0.00	1,109.70	1,896.48	1,115.00	4,749.43
1,104.50	0.00	1,109.80	1,982.48	1,115.10	4,785.32
1,104.60	0.00	1,109.90	2,070.36	1,115.20	4,820.93
1,104.70	0.00	1,110.00	2,160.07	1,115.30	4,856.27
1,104.80	0.00	1,110.10	2,251.56	1,115.40	4,891.35
1,104.90	0.00	1,110.20	2,344.79	1,115.50	4,926.17
1,105.00	0.00	1,110.30	2,439.74	1,115.60	4,960.74
1,105.10	0.00	1,110.40	2,525.17	1,115.70	4,995.07
1,105.20	0.00	1,110.50	2,602.93	1,115.80	5,029.15
1,105.30	0.00	1,110.60	2,676.21	1,115.90	5,063.00
1,105.40	0.00	1,110.70	2,746.13	1,116.00	5,096.61
1,105.50	0.00	1,110.80	2,813.32	1,116.10	5,130.00
1,105.60	0.00	1,110.90	2,878.20	1,116.20	5,163.17
1,105.70	0.00	1,111.00	2,941.06	1,116.30	5,196.12
1,105.80	0.00	1,111.10	3,002.16	1,116.40	5,228.85
1,105.90	0.00	1,111.20	3,061.65	1,116.50	5,261.38
1,106.00	0.00	1,111.30	3,119.70	1,116.60	5,293.71
1,106.10	7.77	1,111.40	3,176.43	1,116.70	5,325.83
1,106.20	22.03	1,111.50	3,231.94	1,116.80	5,357.75
1,106.30	40.56	1,111.60	3,286.32	1,116.90	5,389.49
1,106.40	62.57	1,111.70	3,339.64	1,117.00	**5,421.03**
1,106.50	87.63	1,111.80	3,391.99		
1,106.60	115.44	1,111.90	3,443.41		
1,106.70	145.78	1,112.00	3,493.96		
1,106.80	178.48	1,112.10	3,543.69		
1,106.90	213.42	1,112.20	3,592.64		
1,107.00	250.48	1,112.30	3,640.85		
1,107.10	289.58	1,112.40	3,688.37		
1,107.20	330.64	1,112.50	3,735.21		
1,107.30	373.60	1,112.60	3,781.41		
1,107.40	418.39	1,112.70	3,827.00		
1,107.50	464.97	1,112.80	3,872.01		
1,107.60	513.29	1,112.90	3,916.45		
1,107.70	563.32	1,113.00	3,960.36		
1,107.80	615.01	1,113.10	4,003.74		
1,107.90	668.34	1,113.20	4,046.63		
1,108.00	723.27	1,113.30	4,089.03		
1,108.10	779.78	1,113.40	4,130.97		
1,108.20	837.84	1,113.50	4,172.46		

Stage-Area-Storage for Pond BERM: WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,103.00	0.000	0.000
1,103.20	0.189	0.019
1,103.40	0.377	0.075
1,103.60	0.566	0.170
1,103.80	0.754	0.302
1,104.00	0.943	0.472
1,104.20	1.004	0.666
1,104.40	1.065	0.873
1,104.60	1.127	1.092
1,104.80	1.188	1.324
1,105.00	1.249	1.568
1,105.20	2.281	1.921
1,105.40	3.313	2.480
1,105.60	4.345	3.246
1,105.80	5.377	4.218
1,106.00	6.409	5.396
1,106.20	6.507	6.688
1,106.40	6.605	7.999
1,106.60	6.703	9.330
1,106.80	6.801	10.680
1,107.00	6.899	12.051
1,107.20	6.975	13.438
1,107.40	7.051	14.841
1,107.60	7.128	16.258
1,107.80	7.204	17.692
1,108.00	7.280	19.140
1,108.20	7.358	20.604
1,108.40	7.436	22.083
1,108.60	7.513	23.578
1,108.80	7.591	25.088
1,109.00	7.669	26.615
1,109.20	8.171	28.199
1,109.40	8.673	29.883
1,109.60	9.175	31.668
1,109.80	9.677	33.553
1,110.00	10.179	35.538
1,110.20	10.877	37.644
1,110.40	12.996	39.960
1,110.60	16.536	42.914
1,110.80	20.076	46.575
1,111.00	23.616	50.944
1,111.20	25.207	55.826
1,111.40	26.797	61.027
1,111.60	28.388	66.545
1,111.80	29.978	72.382
1,112.00	31.569	78.536
1,112.20	33.849	85.078
1,112.40	36.130	92.076
1,112.60	38.410	99.530
1,112.80	40.691	107.440
1,113.00	42.971	115.806
1,113.20	45.146	124.618
1,113.40	47.321	133.865
1,113.60	49.496	143.547
1,113.80	51.671	153.663
1,114.00	53.846	164.215
1,114.20	56.271	175.227
1,114.40	58.695	186.723
1,114.60	61.120	198.705
1,114.80	63.544	211.171
1,115.00	65.969	224.122
1,115.20	68.768	237.596
1,115.40	71.567	251.630
1,115.60	74.365	266.223
1,115.80	77.164	281.376
1,116.00	79.963	297.088
1,116.20	83.788	313.464
1,116.40	87.613	330.604
1,116.60	91.438	348.509
1,116.80	95.263	367.179
1,117.00	**99.088**	**386.614**

Summary for Pond I AVE: I AVENUE CULVERTS

[81] Warning: Exceeded Pond BERM by 5.72' @ 16.93 hrs

Inflow Area = 1,705.060 ac, 0.20% Impervious, Inflow Depth > 3.44" for 25-Year event
Inflow = 1,330.74 cfs @ 13.41 hrs, Volume= 489.451 af
Outflow = 574.24 cfs @ 16.03 hrs, Volume= 489.384 af, Atten= 57%, Lag= 156.7 min
Primary = 420.41 cfs @ 16.03 hrs, Volume= 384.018 af
Secondary = 153.83 cfs @ 16.03 hrs, Volume= 105.366 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,113.18' @ 16.03 hrs Surf.Area= 44.970 ac Storage= 126.803 af

Plug-Flow detention time= 94.5 min calculated for 489.221 af (100% of inflow)
Center-of-Mass det. time= 94.3 min (1,093.7 - 999.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,098.00'	389.527 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,098.00	0.000	0.000	0.000
1,099.00	0.001	0.001	0.001
1,100.00	0.001	0.001	0.002
1,101.00	0.008	0.005	0.006
1,102.00	0.027	0.017	0.023
1,103.00	0.110	0.069	0.092
1,104.00	0.241	0.175	0.267
1,105.00	0.567	0.404	0.671
1,106.00	1.270	0.918	1.590
1,107.00	5.886	3.578	5.168
1,108.00	6.916	6.401	11.569
1,109.00	10.932	8.924	20.493
1,110.00	16.090	13.511	34.004
1,111.00	23.616	19.853	53.857
1,112.00	31.569	27.592	81.449
1,113.00	42.971	37.270	118.719
1,114.00	53.846	48.408	167.128
1,115.00	65.969	59.908	227.035
1,116.00	79.963	72.966	300.001
1,117.00	99.088	89.526	389.527

Device	Routing	Invert	Outlet Devices
#1	Primary	1,100.22'	**72.0" Round 72" RCP CULVERT** L= 85.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,100.22' / 1,098.91' S= 0.0153 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 28.27 sf
#2	Secondary	1,104.72'	**48.0" Round 48" RCP CULVERT** L= 62.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,104.72' / 1,104.41' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

#3	Tertiary	1,115.86'	**I AVENUE, C= 3.27**

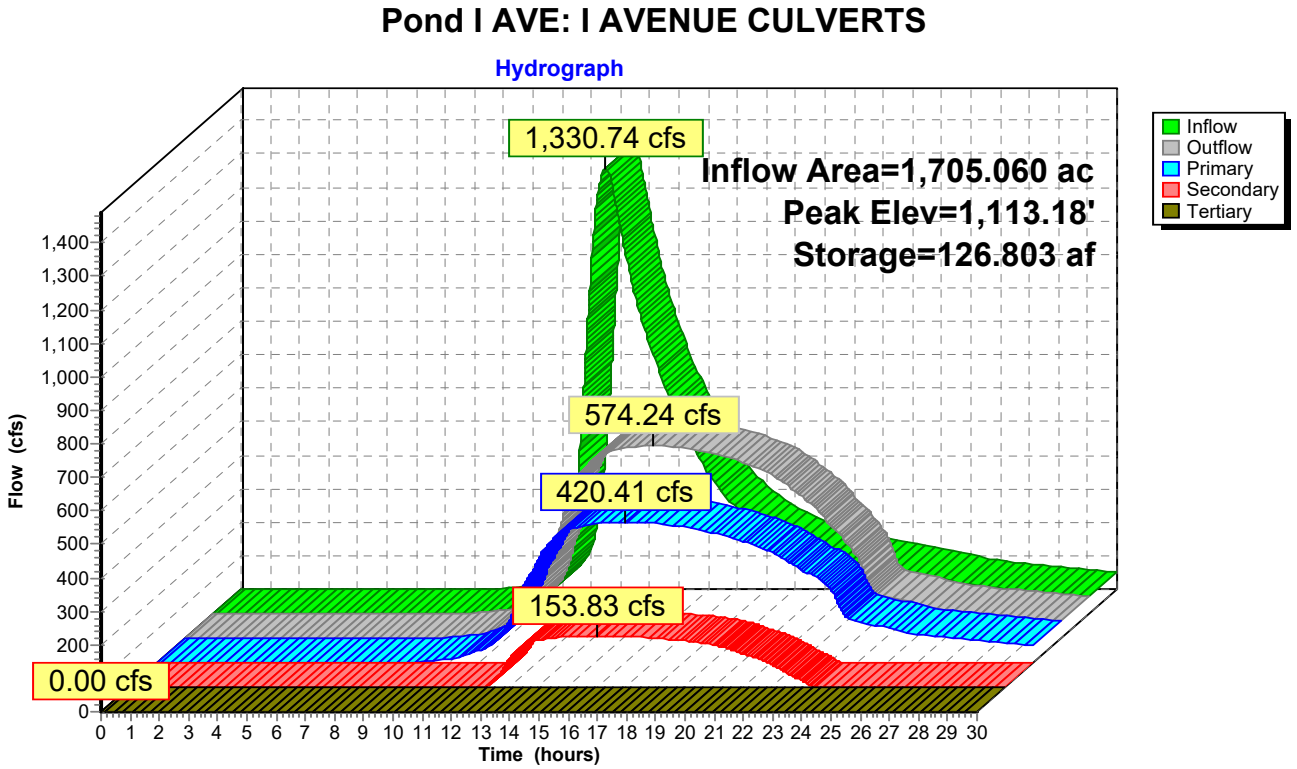
Offset (feet) 0.00 115.59 162.20 164.26 214.26 232.65 343.45
Height (feet) 1.14 0.14 0.00 0.00 0.09 0.14 1.14

Primary OutFlow Max=420.41 cfs @ 16.03 hrs HW=1,113.18' (Free Discharge)
└**1=72" RCP CULVERT** (Barrel Controls 420.41 cfs @ 14.87 fps)

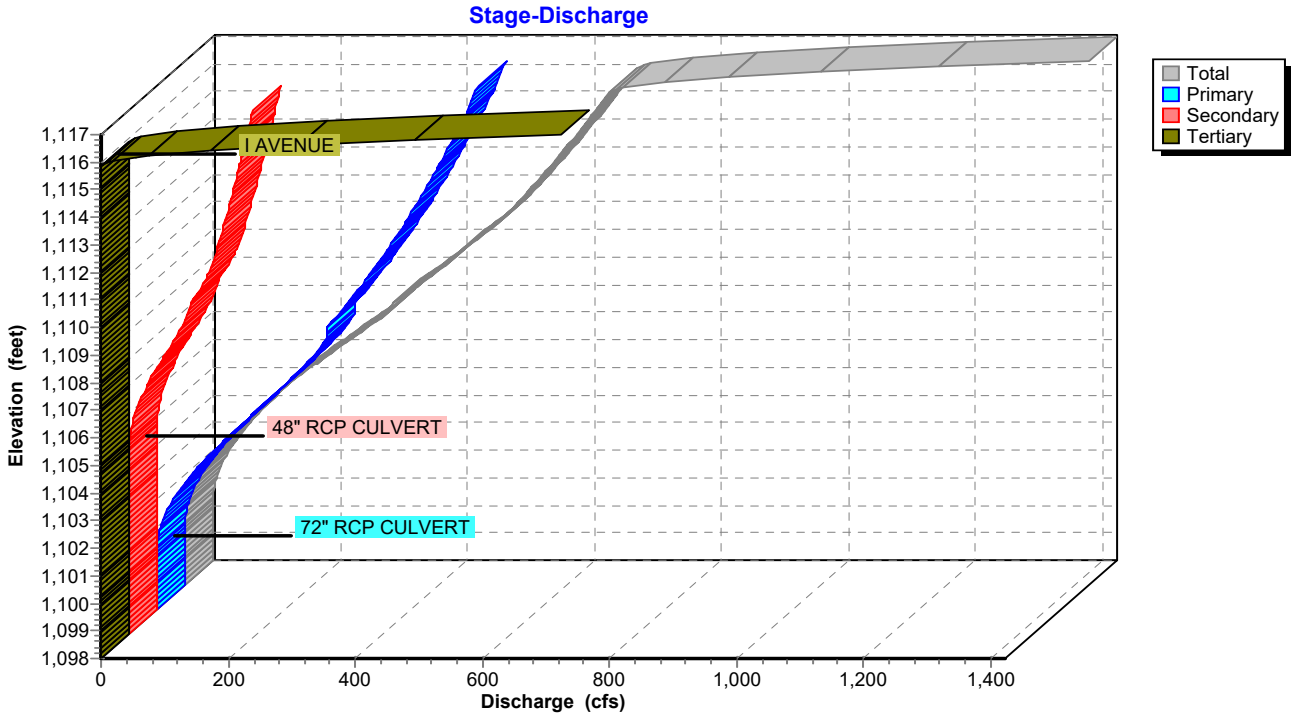
Secondary OutFlow Max=153.83 cfs @ 16.03 hrs HW=1,113.18' (Free Discharge)
└**2=48" RCP CULVERT** (Inlet Controls 153.83 cfs @ 12.24 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,098.00' (Free Discharge)
└**3=I AVENUE** (Controls 0.00 cfs)

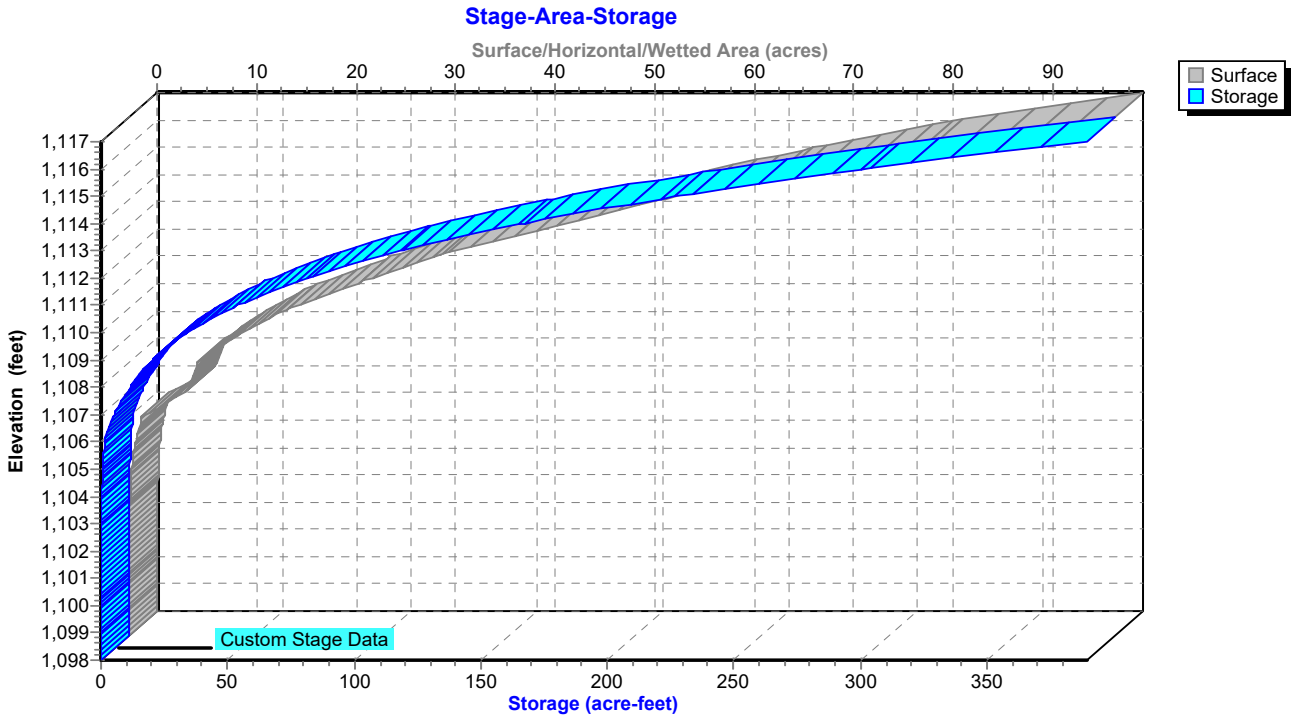




Pond I AVE: I AVENUE CULVERTS



Pond I AVE: I AVENUE CULVERTS



Hydrograph for Pond I AVE: I AVENUE CULVERTS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	0.00	0.000	1,098.00	0.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
2.00	0.00	0.000	1,098.07	0.00	0.00	0.00	0.00
3.00	0.02	0.001	1,099.28	0.00	0.00	0.00	0.00
4.00	0.06	0.002	1,100.30	0.06	0.06	0.00	0.00
5.00	0.11	0.002	1,100.32	0.11	0.11	0.00	0.00
6.00	0.16	0.002	1,100.34	0.16	0.16	0.00	0.00
7.00	0.21	0.002	1,100.36	0.21	0.21	0.00	0.00
8.00	0.45	0.003	1,100.45	0.44	0.44	0.00	0.00
9.00	3.12	0.005	1,100.82	3.09	3.09	0.00	0.00
10.00	11.25	0.010	1,101.36	11.13	11.13	0.00	0.00
11.00	35.08	0.035	1,102.28	34.45	34.45	0.00	0.00
12.00	126.09	0.337	1,104.25	112.25	112.25	0.00	0.00
13.00	**1,091.68**	21.254	1,109.07	378.45	297.98	80.47	0.00
14.00	**1,131.46**	85.437	1,112.12	533.13	392.51	140.63	0.00
15.00	792.55	117.771	1,112.98	566.49	415.13	151.35	0.00
16.00	579.10	**126.813**	**1,113.18**	**574.24**	**420.41**	**153.83**	0.00
17.00	414.07	**120.118**	**1,113.03**	**568.54**	**416.53**	**152.01**	0.00
18.00	310.53	103.320	1,112.62	552.90	405.90	147.00	0.00
19.00	246.47	81.406	1,112.00	528.15	389.14	139.02	0.00
20.00	205.07	57.696	1,111.16	492.41	365.31	127.10	0.00
21.00	176.74	35.060	1,110.06	431.54	331.78	99.76	0.00
22.00	154.97	16.167	1,108.57	347.45	279.54	67.91	0.00
23.00	136.77	3.376	1,106.64	246.37	224.67	21.70	0.00
24.00	120.46	0.415	1,104.47	122.42	122.42	0.00	0.00
25.00	102.86	0.286	1,104.07	104.40	104.40	0.00	0.00
26.00	85.41	0.193	1,103.66	86.13	86.13	0.00	0.00
27.00	75.10	0.148	1,103.41	75.52	75.52	0.00	0.00
28.00	67.29	0.119	1,103.21	67.60	67.60	0.00	0.00
29.00	59.79	0.094	1,103.02	60.08	60.08	0.00	0.00
30.00	49.85	0.067	1,102.75	50.22	50.22	0.00	0.00

Stage-Discharge for Pond I AVE: I AVENUE CULVERTS

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1,098.00	0.00	0.00	0.00	0.00
1,098.50	0.00	0.00	0.00	0.00
1,099.00	0.00	0.00	0.00	0.00
1,099.50	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	0.00	0.00
1,100.50	0.61	0.61	0.00	0.00
1,101.00	5.15	5.15	0.00	0.00
1,101.50	13.88	13.88	0.00	0.00
1,102.00	26.18	26.18	0.00	0.00
1,102.50	41.52	41.52	0.00	0.00
1,103.00	59.41	59.41	0.00	0.00
1,103.50	79.41	79.41	0.00	0.00
1,104.00	101.10	101.10	0.00	0.00
1,104.50	124.05	124.05	0.00	0.00
1,105.00	148.39	147.81	0.58	0.00
1,105.50	176.12	171.89	4.24	0.00
1,106.00	206.21	195.69	10.52	0.00
1,106.50	237.48	218.53	18.95	0.00
1,107.00	268.61	239.47	29.14	0.00
1,107.50	297.80	257.09	40.70	0.00
1,108.00	321.54	268.33	53.21	0.00
1,108.50	343.07	276.93	66.15	0.00
1,109.00	374.43	295.59	78.85	0.00
1,109.50	403.49	313.13	90.36	0.00
1,110.00	428.24	329.75	98.50	0.00
1,110.50	456.69	345.56	111.13	0.00
1,111.00	484.40	360.69	123.71	0.00
1,111.50	507.49	375.20	132.29	0.00
1,112.00	528.21	389.17	139.03	0.00
1,112.50	548.13	402.66	145.47	0.00
1,113.00	567.34	415.71	151.63	0.00
1,113.50	585.92	428.37	157.55	0.00
1,114.00	603.92	440.66	163.26	0.00
1,114.50	621.39	452.62	168.77	0.00
1,115.00	638.37	464.27	174.11	0.00
1,115.50	654.92	475.63	179.29	0.00
1,116.00	679.75	486.69	184.32	8.74
1,116.50	904.83	496.12	189.22	219.49
1,117.00	**1,422.27**	**505.37**	**194.00**	**722.89**

Stage-Area-Storage for Pond I AVE: I AVENUE CULVERTS

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,098.00	0.000	0.000
1,098.20	0.000	0.000
1,098.40	0.000	0.000
1,098.60	0.001	0.000
1,098.80	0.001	0.000
1,099.00	0.001	0.001
1,099.20	0.001	0.001
1,099.40	0.001	0.001
1,099.60	0.001	0.001
1,099.80	0.001	0.001
1,100.00	0.001	0.002
1,100.20	0.002	0.002
1,100.40	0.004	0.002
1,100.60	0.005	0.003
1,100.80	0.007	0.005
1,101.00	0.008	0.006
1,101.20	0.012	0.008
1,101.40	0.016	0.011
1,101.60	0.019	0.014
1,101.80	0.023	0.018
1,102.00	0.027	0.023
1,102.20	0.044	0.031
1,102.40	0.060	0.041
1,102.60	0.077	0.055
1,102.80	0.093	0.072
1,103.00	0.110	0.092
1,103.20	0.136	0.117
1,103.40	0.162	0.146
1,103.60	0.189	0.182
1,103.80	0.215	0.222
1,104.00	0.241	0.267
1,104.20	0.306	0.322
1,104.40	0.371	0.390
1,104.60	0.437	0.471
1,104.80	0.502	0.565
1,105.00	0.567	0.671
1,105.20	0.708	0.799
1,105.40	0.848	0.955
1,105.60	0.989	1.138
1,105.80	1.129	1.350
1,106.00	1.270	1.590
1,106.20	2.193	1.936
1,106.40	3.116	2.467
1,106.60	4.040	3.183
1,106.80	4.963	4.083
1,107.00	5.886	5.168
1,107.20	6.092	6.366
1,107.40	6.298	7.605
1,107.60	6.504	8.885
1,107.80	6.710	10.206
1,108.00	6.916	11.569
1,108.20	7.719	13.033
1,108.40	8.522	14.657
1,108.60	9.326	16.441
1,108.80	10.129	18.387
1,109.00	10.932	20.493
1,109.20	11.964	22.783
1,109.40	12.995	25.278
1,109.60	14.027	27.981
1,109.80	15.058	30.889
1,110.00	16.090	34.004
1,110.20	17.595	37.373
1,110.40	19.100	41.042
1,110.60	20.606	45.013
1,110.80	22.111	49.284
1,111.00	23.616	53.857
1,111.20	25.207	58.739
1,111.40	26.797	63.940
1,111.60	28.388	69.458
1,111.80	29.978	75.295
1,112.00	31.569	81.449
1,112.20	33.849	87.991
1,112.40	36.130	94.989
1,112.60	38.410	102.443
1,112.80	40.691	110.353
1,113.00	42.971	118.719
1,113.20	45.146	127.531
1,113.40	47.321	136.778
1,113.60	49.496	146.460
1,113.80	51.671	156.576
1,114.00	53.846	167.128
1,114.20	56.271	178.140
1,114.40	58.695	189.636
1,114.60	61.120	201.618
1,114.80	63.544	214.084
1,115.00	65.969	227.035
1,115.20	68.768	240.509
1,115.40	71.567	254.543
1,115.60	74.365	269.136
1,115.80	77.164	284.289
1,116.00	79.963	300.001
1,116.20	83.788	316.377
1,116.40	87.613	333.517
1,116.60	91.438	351.422
1,116.80	95.263	370.092
1,117.00	**99.088**	**389.527**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 158.4 AC: Watershed After Runoff Area=158.400 ac 0.00% Impervious Runoff Depth=4.73"
Flow Length=2,718' Slope=0.0329 '/' Tc=34.2 min CN=84 Runoff=612.57 cfs 62.470 af

Subcatchment 309.04 AC: South Runoff Area=309.040 ac 0.00% Impervious Runoff Depth=4.73"
Flow Length=9,197' Slope=0.0329 '/' Tc=90.7 min CN=84 Runoff=636.72 cfs 121.879 af

Subcatchment 544.5 AC: Remainder of Runoff Area=544.500 ac 0.00% Impervious Runoff Depth=4.73"
Flow Length=10,448' Slope=0.0329 '/' Tc=100.5 min CN=84 Runoff=1,039.01 cfs 214.739 af

Subcatchment 689.7 AC: Watershed West Runoff Area=689.700 ac 0.00% Impervious Runoff Depth=4.73"
Flow Length=9,666' Slope=0.0329 '/' Tc=94.4 min CN=84 Runoff=1,373.45 cfs 272.003 af

Subcatchment WETLAND POOL: Runoff Area=3.420 ac 100.00% Impervious Runoff Depth=6.33"
Flow Length=1,309' Tc=3.8 min CN=98 Runoff=36.15 cfs 1.804 af

Pond 1P: H AVENUE CULVERT Peak Elev=1,128.96' Storage=85.610 af Inflow=1,373.45 cfs 272.003 af
Primary=945.91 cfs 152.788 af Secondary=95.54 cfs 118.213 af Outflow=1,041.44 cfs 271.001 af

Pond 2P: BASIN NW OF WETLAND Peak Elev=1,125.88' Storage=133.622 af Inflow=1,115.95 cfs 333.471 af
Primary=595.42 cfs 275.933 af Secondary=0.00 cfs 0.000 af Outflow=595.42 cfs 275.933 af

Pond BERM: WETLAND Peak Elev=1,108.74' Storage=24.609 af Inflow=1,185.92 cfs 492.476 af
Outflow=1,175.18 cfs 490.055 af

Pond I AVE: I AVENUE CULVERTS Peak Elev=1,114.60' Storage=201.463 af Inflow=1,703.27 cfs 611.933 af
Primary=454.91 cfs 467.387 af Secondary=169.82 cfs 144.462 af Tertiary=0.00 cfs 0.000 af Outflow=624.73 cfs 611.849 af

Total Runoff Area = 1,705.060 ac Runoff Volume = 672.895 af Average Runoff Depth = 4.74"
99.80% Pervious = 1,701.640 ac 0.20% Impervious = 3.420 ac

Summary for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Runoff = 612.57 cfs @ 12.47 hrs, Volume= 62.470 af, Depth= 4.73"
Routed to Pond 2P : BASIN NW OF WETLAND

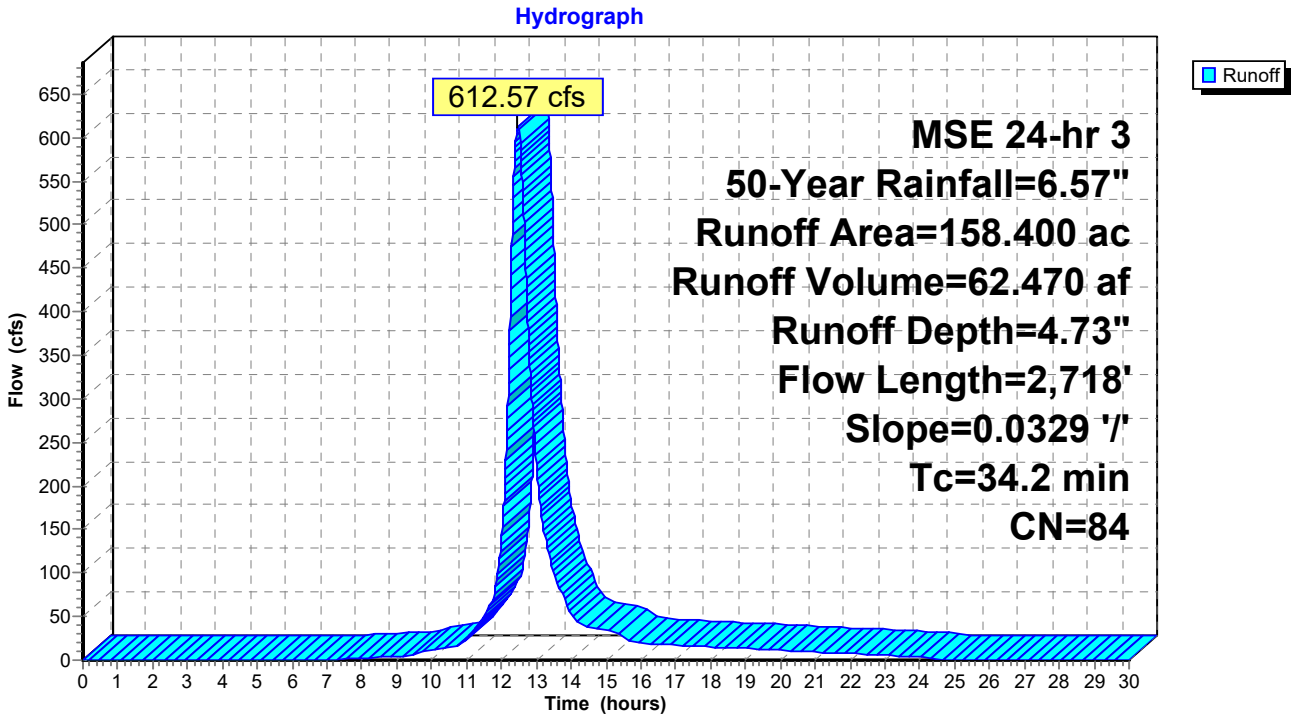
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 50-Year Rainfall=6.57"

	Area (ac)	CN	Description
*	158.400	84	
	158.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.2	2,718	0.0329	1.32		**Lag/CN Method,**

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location



Hydrograph for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.11	0.00	0.00
3.50	0.14	0.00	0.00
4.00	0.17	0.00	0.00
4.50	0.21	0.00	0.00
5.00	0.25	0.00	0.00
5.50	0.29	0.00	0.00
6.00	0.33	0.00	0.00
6.50	0.38	0.00	0.00
7.00	0.44	0.00	0.17
7.50	0.49	0.01	0.92
8.00	0.55	0.01	1.89
8.50	0.61	0.02	2.96
9.00	0.68	0.04	4.10
9.50	0.79	0.07	7.22
10.00	0.90	0.11	11.27
10.50	1.03	0.16	14.59
11.00	1.27	0.28	24.88
11.50	1.63	0.49	50.74
12.00	3.04	1.55	**134.88**
12.50	4.94	3.22	**610.48**
13.00	5.30	3.55	223.56
13.50	5.54	3.77	102.30
14.00	5.67	3.89	52.97
14.50	5.78	3.99	37.49
15.00	5.89	4.10	33.90
15.50	5.96	4.16	25.64
16.00	6.02	4.22	19.70
16.50	6.08	4.27	18.14
17.00	6.13	4.32	17.14
17.50	6.19	4.37	16.18
18.00	6.24	4.42	15.22
18.50	6.28	4.46	14.26
19.00	6.32	4.50	13.29
19.50	6.36	4.54	12.34
20.00	6.40	4.57	11.36
20.50	6.43	4.60	10.40
21.00	6.46	4.63	9.43
21.50	6.49	4.65	8.46
22.00	6.51	4.68	7.49
22.50	6.53	4.69	6.51
23.00	6.55	4.71	5.54
23.50	6.56	4.72	4.56
24.00	**6.57**	**4.73**	3.59
24.50	6.57	4.73	1.41
25.00	6.57	4.73	0.16
25.50	6.57	4.73	0.01
26.00	6.57	4.73	0.00
26.50	6.57	4.73	0.00
27.00	6.57	4.73	0.00
27.50	6.57	4.73	0.00
28.00	6.57	4.73	0.00
28.50	6.57	4.73	0.00
29.00	6.57	4.73	0.00
29.50	6.57	4.73	0.00
30.00	6.57	4.73	0.00

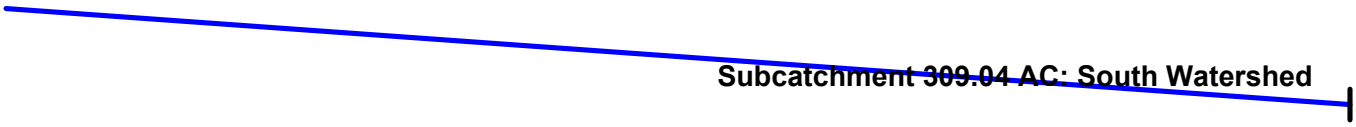
Summary for Subcatchment 309.04 AC: South Watershed

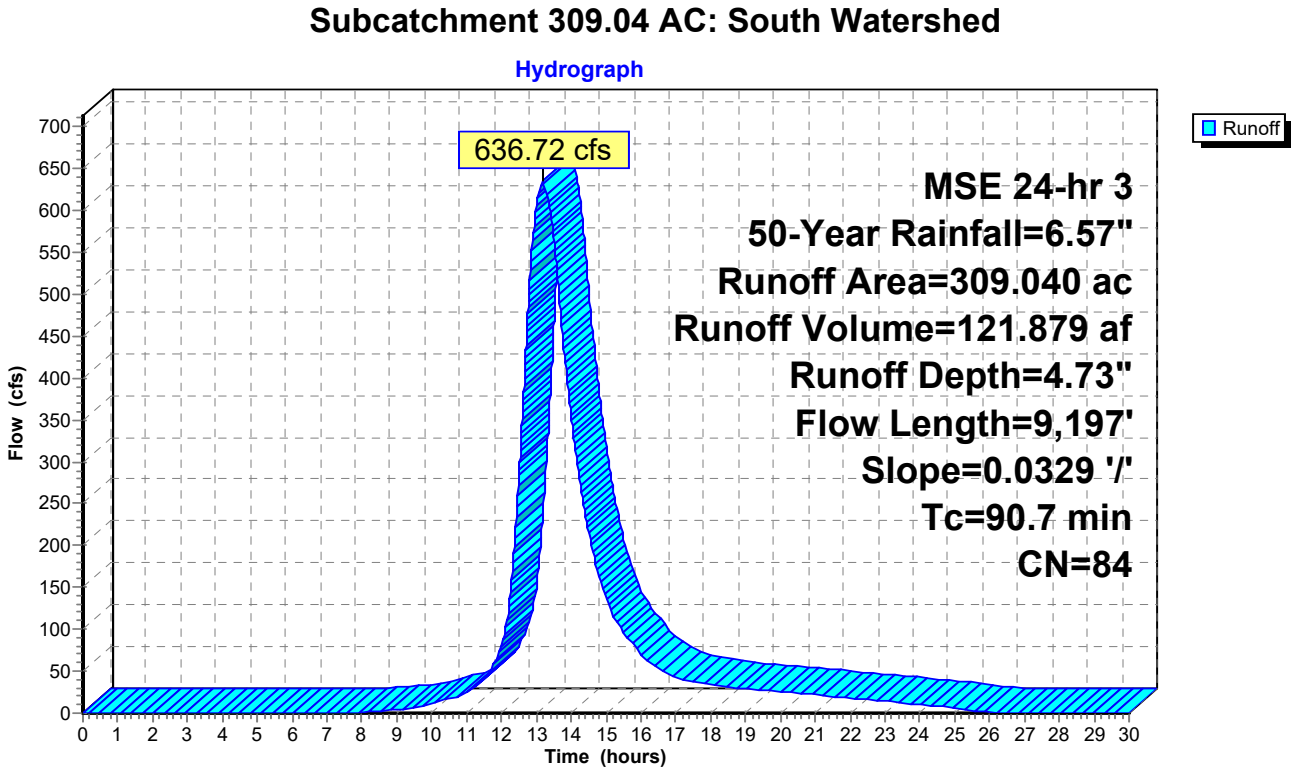
Runoff = 636.72 cfs @ 13.20 hrs, Volume= 121.879 af, Depth= 4.73"
Routed to Pond I AVE : I AVENUE CULVERTS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 50-Year Rainfall=6.57"

	Area (ac)	CN	Description
*	309.040	84	
	309.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
90.7	9,197	0.0329	1.69		**Lag/CN Method,**





Hydrograph for Subcatchment 309.04 AC: South Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.11	0.00	0.00
3.50	0.14	0.00	0.00
4.00	0.17	0.00	0.00
4.50	0.21	0.00	0.00
5.00	0.25	0.00	0.00
5.50	0.29	0.00	0.00
6.00	0.33	0.00	0.00
6.50	0.38	0.00	0.00
7.00	0.44	0.00	0.02
7.50	0.49	0.01	0.29
8.00	0.55	0.01	1.18
8.50	0.61	0.02	2.64
9.00	0.68	0.04	4.44
9.50	0.79	0.07	6.74
10.00	0.90	0.11	11.01
10.50	1.03	0.16	17.16
11.00	1.27	0.28	24.48
11.50	1.63	0.49	40.62
12.00	3.04	1.55	80.13
12.50	4.94	3.22	275.98
13.00	5.30	3.55	**608.64**
13.50	5.54	3.77	**566.69**
14.00	5.67	3.89	354.14
14.50	5.78	3.99	216.83
15.00	5.89	4.10	137.52
15.50	5.96	4.16	96.64
16.00	6.02	4.22	71.32
16.50	6.08	4.27	53.33
17.00	6.13	4.32	42.57
17.50	6.19	4.37	36.96
18.00	6.24	4.42	33.81
18.50	6.28	4.46	31.41
19.00	6.32	4.50	29.34
19.50	6.36	4.54	27.38
20.00	6.40	4.57	25.47
20.50	6.43	4.60	23.59
21.00	6.46	4.63	21.70
21.50	6.49	4.65	19.82
22.00	6.51	4.68	17.91
22.50	6.53	4.69	16.03
23.00	6.55	4.71	14.11
23.50	6.56	4.72	12.23
24.00	**6.57**	**4.73**	10.32
24.50	6.57	4.73	8.27
25.00	6.57	4.73	5.33
25.50	6.57	4.73	2.60
26.00	6.57	4.73	1.13
26.50	6.57	4.73	0.50
27.00	6.57	4.73	0.21
27.50	6.57	4.73	0.09
28.00	6.57	4.73	0.03
28.50	6.57	4.73	0.01
29.00	6.57	4.73	0.00
29.50	6.57	4.73	0.00
30.00	6.57	4.73	0.00

Summary for Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Runoff = 1,039.01 cfs @ 13.29 hrs, Volume= 214.739 af, Depth= 4.73"
Routed to Pond BERM : WETLAND

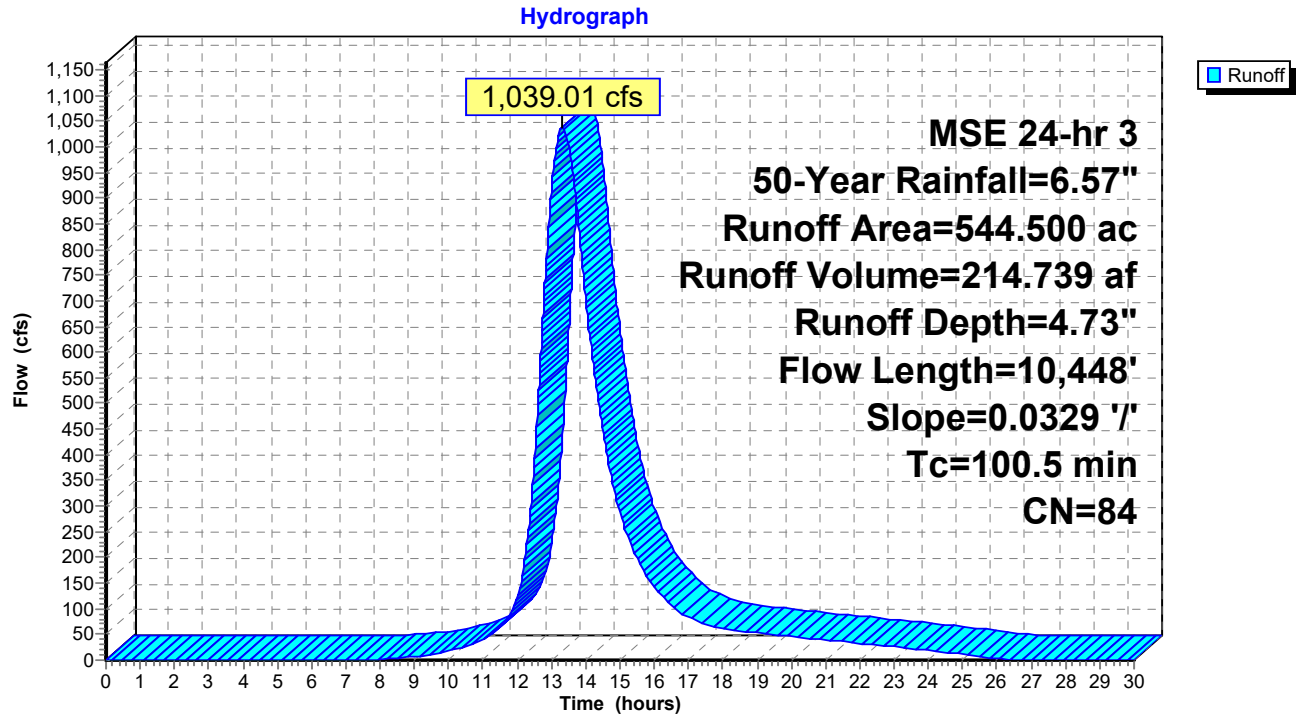
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 50-Year Rainfall=6.57"

	Area (ac)	CN	Description
*	544.500	84	
	544.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
100.5	10,448	0.0329	1.73		**Lag/CN Method,**

Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Subcatchment 544.5 AC: Remainder of Watershed to Wetland



Hydrograph for Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.11	0.00	0.00
3.50	0.14	0.00	0.00
4.00	0.17	0.00	0.00
4.50	0.21	0.00	0.00
5.00	0.25	0.00	0.00
5.50	0.29	0.00	0.00
6.00	0.33	0.00	0.00
6.50	0.38	0.00	0.00
7.00	0.44	0.00	0.02
7.50	0.49	0.01	0.38
8.00	0.55	0.01	1.67
8.50	0.61	0.02	3.96
9.00	0.68	0.04	6.95
9.50	0.79	0.07	10.71
10.00	0.90	0.11	17.30
10.50	1.03	0.16	27.24
11.00	1.27	0.28	39.45
11.50	1.63	0.49	63.51
12.00	3.04	1.55	122.91
12.50	4.94	3.22	389.36
13.00	5.30	3.55	**915.93**
13.50	5.54	3.77	**1,002.77**
14.00	5.67	3.89	707.27
14.50	5.78	3.99	445.34
15.00	5.89	4.10	286.57
15.50	5.96	4.16	197.69
16.00	6.02	4.22	144.22
16.50	6.08	4.27	106.70
17.00	6.13	4.32	83.80
17.50	6.19	4.37	70.20
18.00	6.24	4.42	61.96
18.50	6.28	4.46	56.94
19.00	6.32	4.50	52.92
19.50	6.36	4.54	49.38
20.00	6.40	4.57	45.97
20.50	6.43	4.60	42.56
21.00	6.46	4.63	39.21
21.50	6.49	4.65	35.91
22.00	6.51	4.68	32.61
22.50	6.53	4.69	29.24
23.00	6.55	4.71	25.87
23.50	6.56	4.72	22.55
24.00	**6.57**	**4.73**	19.22
24.50	6.57	4.73	15.63
25.00	6.57	4.73	10.86
25.50	6.57	4.73	6.00
26.00	6.57	4.73	2.87
26.50	6.57	4.73	1.37
27.00	6.57	4.73	0.64
27.50	6.57	4.73	0.29
28.00	6.57	4.73	0.13
28.50	6.57	4.73	0.05
29.00	6.57	4.73	0.02
29.50	6.57	4.73	0.00
30.00	6.57	4.73	0.00

Summary for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Runoff = 1,373.45 cfs @ 13.22 hrs, Volume= 272.003 af, Depth= 4.73"
Routed to Pond 1P : H AVENUE CULVERT

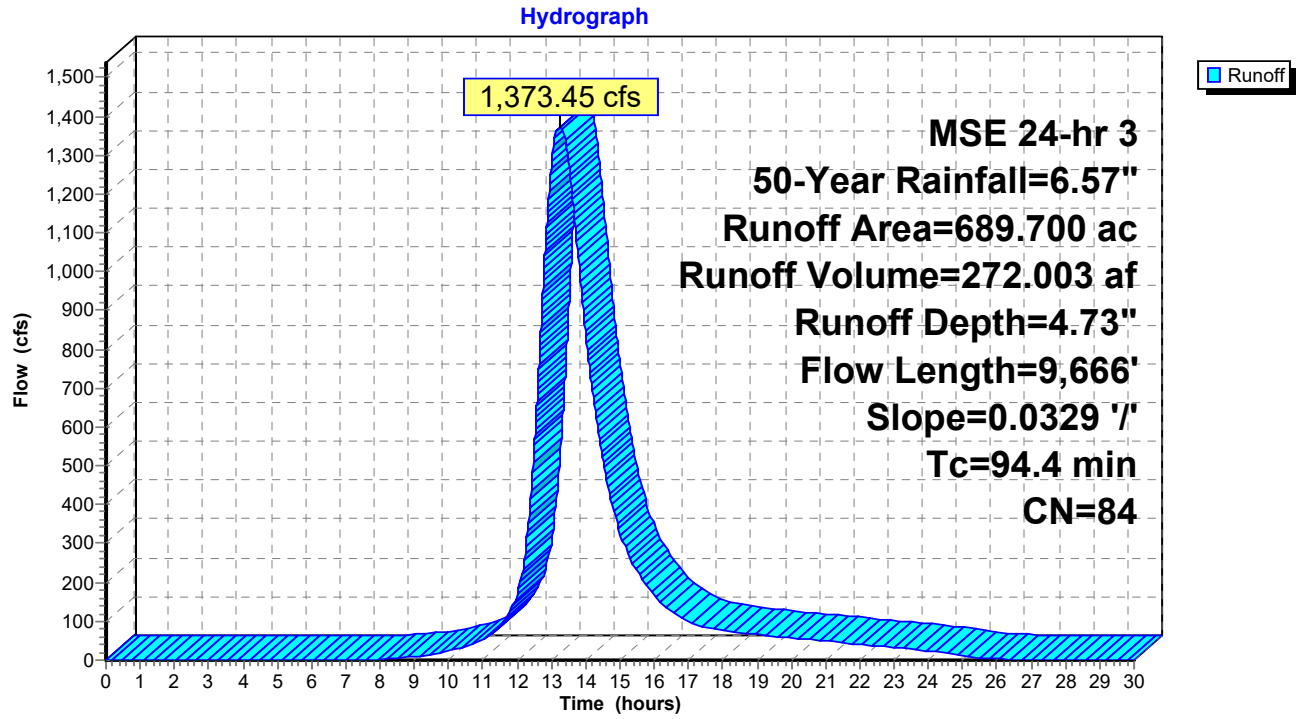
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 50-Year Rainfall=6.57"

	Area (ac)	CN	Description
*	689.700	84	
	689.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
94.4	9,666	0.0329	1.71		**Lag/CN Method,**

Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Subcatchment 689.7 AC: Watershed West of H Ave Culvert



Hydrograph for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.11	0.00	0.00
3.50	0.14	0.00	0.00
4.00	0.17	0.00	0.00
4.50	0.21	0.00	0.00
5.00	0.25	0.00	0.00
5.50	0.29	0.00	0.00
6.00	0.33	0.00	0.00
6.50	0.38	0.00	0.00
7.00	0.44	0.00	0.04
7.50	0.49	0.01	0.59
8.00	0.55	0.01	2.43
8.50	0.61	0.02	5.54
9.00	0.68	0.04	9.47
9.50	0.79	0.07	14.44
10.00	0.90	0.11	23.51
10.50	1.03	0.16	36.85
11.00	1.27	0.28	52.81
11.50	1.63	0.49	86.67
12.00	3.04	1.55	170.73
12.50	4.94	3.22	554.45
13.00	5.30	3.55	**1,274.66**
13.50	5.54	3.77	**1,279.59**
14.00	5.67	3.89	837.11
14.50	5.78	3.99	518.57
15.00	5.89	4.10	329.08
15.50	5.96	4.16	228.74
16.00	6.02	4.22	167.94
16.50	6.08	4.27	124.94
17.00	6.13	4.32	99.22
17.50	6.19	4.37	84.34
18.00	6.24	4.42	76.46
18.50	6.28	4.46	70.81
19.00	6.32	4.50	66.10
19.50	6.36	4.54	61.60
20.00	6.40	4.57	57.36
20.50	6.43	4.60	53.12
21.00	6.46	4.63	48.89
21.50	6.49	4.65	44.74
22.00	6.51	4.68	40.46
22.50	6.53	4.69	36.24
23.00	6.55	4.71	32.01
23.50	6.56	4.72	27.74
24.00	**6.57**	**4.73**	23.53
24.50	6.57	4.73	18.94
25.00	6.57	4.73	12.62
25.50	6.57	4.73	6.49
26.00	6.57	4.73	2.93
26.50	6.57	4.73	1.33
27.00	6.57	4.73	0.59
27.50	6.57	4.73	0.25
28.00	6.57	4.73	0.10
28.50	6.57	4.73	0.03
29.00	6.57	4.73	0.01
29.50	6.57	4.73	0.00
30.00	6.57	4.73	0.00

Summary for Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL

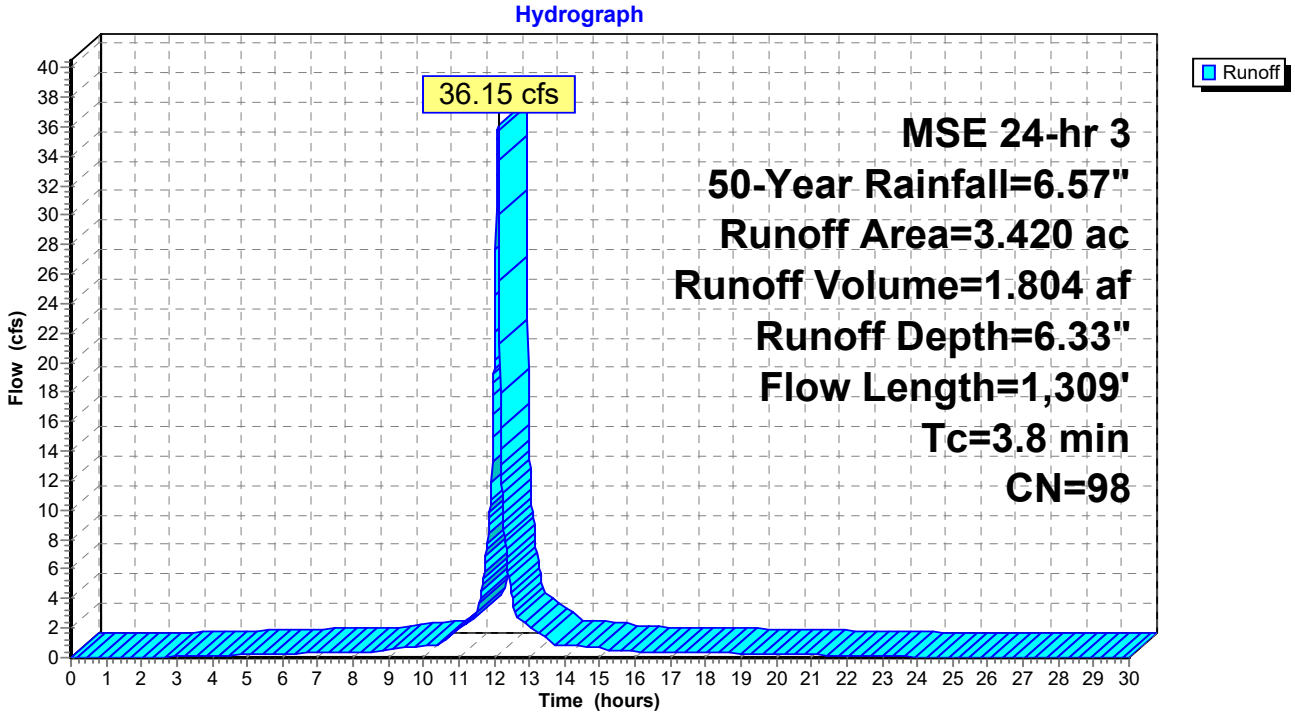
Runoff = 36.15 cfs @ 12.11 hrs, Volume= 1.804 af, Depth= 6.33"
Routed to Pond BERM : WETLAND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 50-Year Rainfall=6.57"

Area (ac)	CN	Description
3.420	98	Water Surface, HSG A
3.420		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	1,309		5.67		**Lake or Reservoir,** Mean Depth= 1.00'

Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL



Hydrograph for Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.02	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.02
2.50	0.08	0.01	0.05
3.00	0.11	0.02	0.08
3.50	0.14	0.03	0.11
4.00	0.17	0.05	0.15
4.50	0.21	0.07	0.18
5.00	0.25	0.10	0.21
5.50	0.29	0.14	0.24
6.00	0.33	0.17	0.27
6.50	0.38	0.21	0.30
7.00	0.44	0.26	0.33
7.50	0.49	0.31	0.35
8.00	0.55	0.36	0.38
8.50	0.61	0.42	0.41
9.00	0.68	0.48	0.43
9.50	0.79	0.59	0.74
10.00	0.90	0.70	0.79
10.50	1.03	0.82	0.85
11.00	1.27	1.05	1.93
11.50	1.63	1.41	2.79
12.00	3.04	2.81	**19.58**
12.50	4.94	4.70	**4.26**
13.00	5.30	5.07	2.17
13.50	5.54	5.31	1.32
14.00	5.67	5.43	0.84
14.50	5.78	5.55	0.79
15.00	5.89	5.65	0.73
15.50	5.96	5.72	0.44
16.00	6.02	5.78	0.42
16.50	6.08	5.84	0.40
17.00	6.13	5.90	0.37
17.50	6.19	5.95	0.35
18.00	6.24	6.00	0.33
18.50	6.28	6.04	0.31
19.00	6.32	6.08	0.28
19.50	6.36	6.12	0.26
20.00	6.40	6.16	0.24
20.50	6.43	6.19	0.22
21.00	6.46	6.22	0.20
21.50	6.49	6.25	0.17
22.00	6.51	6.27	0.15
22.50	6.53	6.29	0.13
23.00	6.55	6.31	0.11
23.50	6.56	6.32	0.08
24.00	**6.57**	**6.33**	0.06
24.50	6.57	6.33	0.00
25.00	6.57	6.33	0.00
25.50	6.57	6.33	0.00
26.00	6.57	6.33	0.00
26.50	6.57	6.33	0.00
27.00	6.57	6.33	0.00
27.50	6.57	6.33	0.00
28.00	6.57	6.33	0.00
28.50	6.57	6.33	0.00
29.00	6.57	6.33	0.00
29.50	6.57	6.33	0.00
30.00	6.57	6.33	0.00

Summary for Pond 1P: H AVENUE CULVERT

Inflow Area = 689.700 ac, 0.00% Impervious, Inflow Depth = 4.73" for 50-Year event
Inflow = 1,373.45 cfs @ 13.22 hrs, Volume= 272.003 af
Outflow = 1,041.44 cfs @ 13.78 hrs, Volume= 271.001 af, Atten= 24%, Lag= 33.4 min
Primary = 945.91 cfs @ 13.78 hrs, Volume= 152.788 af
Routed to Pond 2P : BASIN NW OF WETLAND
Secondary = 95.54 cfs @ 13.78 hrs, Volume= 118.213 af
Routed to Pond 2P : BASIN NW OF WETLAND

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,128.96' @ 13.78 hrs Surf.Area= 59.725 ac Storage= 85.610 af

Plug-Flow detention time= 140.3 min calculated for 270.911 af (100% of inflow)
Center-of-Mass det. time= 137.9 min (1,004.2 - 866.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,124.00'	161.110 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,124.00	0.010	0.000	0.000
1,126.00	1.650	1.660	1.660
1,128.00	36.300	37.950	39.610
1,130.00	85.200	121.500	161.110

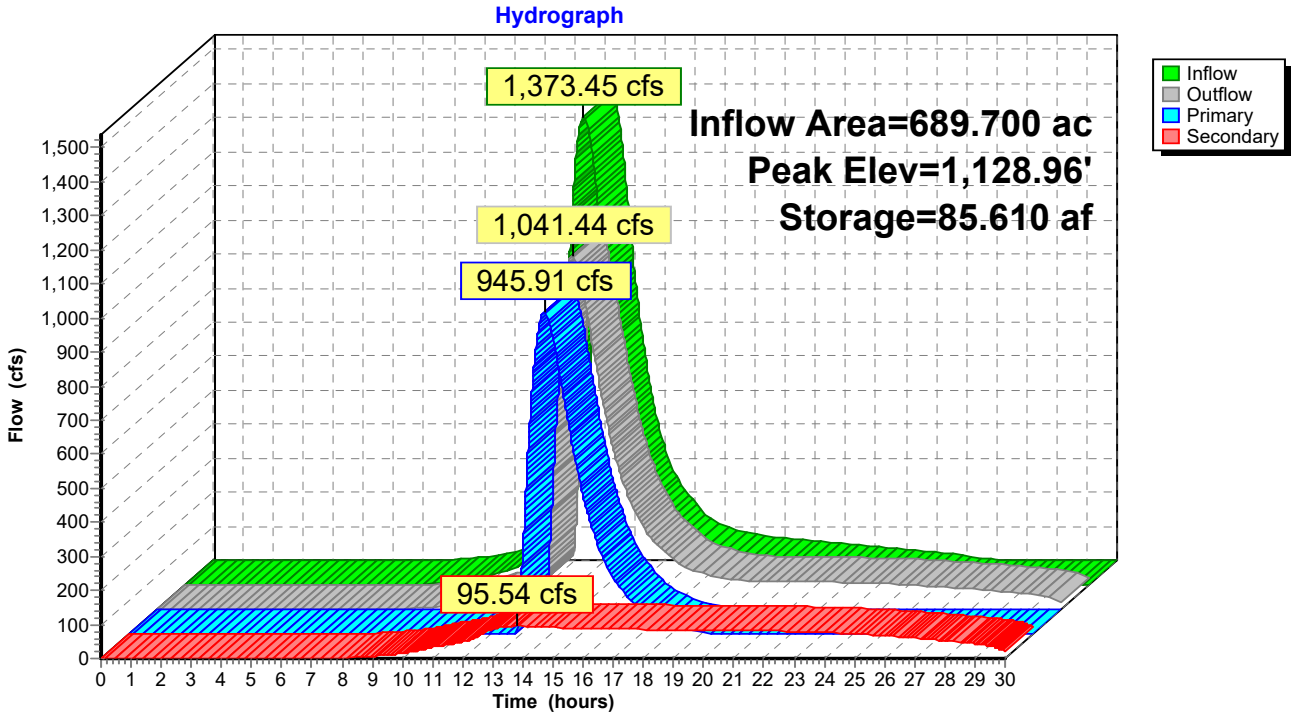
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,124.00'	**60.0" W x 24.0" H Box 5'x2' CULVERT** L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,124.00' / 1,124.00' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 10.00 sf
#2	Primary	1,128.05'	**342.0' long + 100.0 '/' SideZ x 25.0' breadth H Ave Road Surface** 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

Primary OutFlow Max=945.32 cfs @ 13.78 hrs HW=1,128.96' (Free Discharge)
└**2=H Ave Road Surface** (Weir Controls 945.32 cfs @ 2.41 fps)

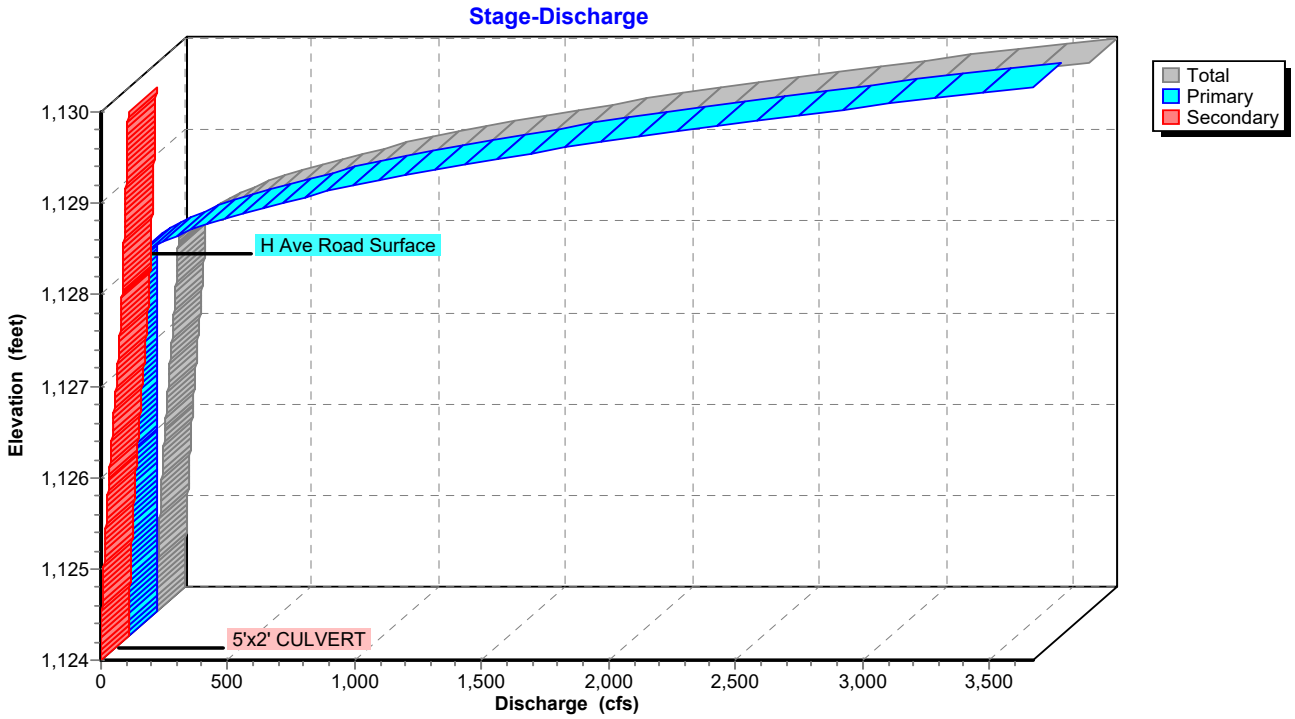
Secondary OutFlow Max=95.54 cfs @ 13.78 hrs HW=1,128.96' (Free Discharge)
└**1=5'x2' CULVERT** (Inlet Controls 95.54 cfs @ 9.55 fps)



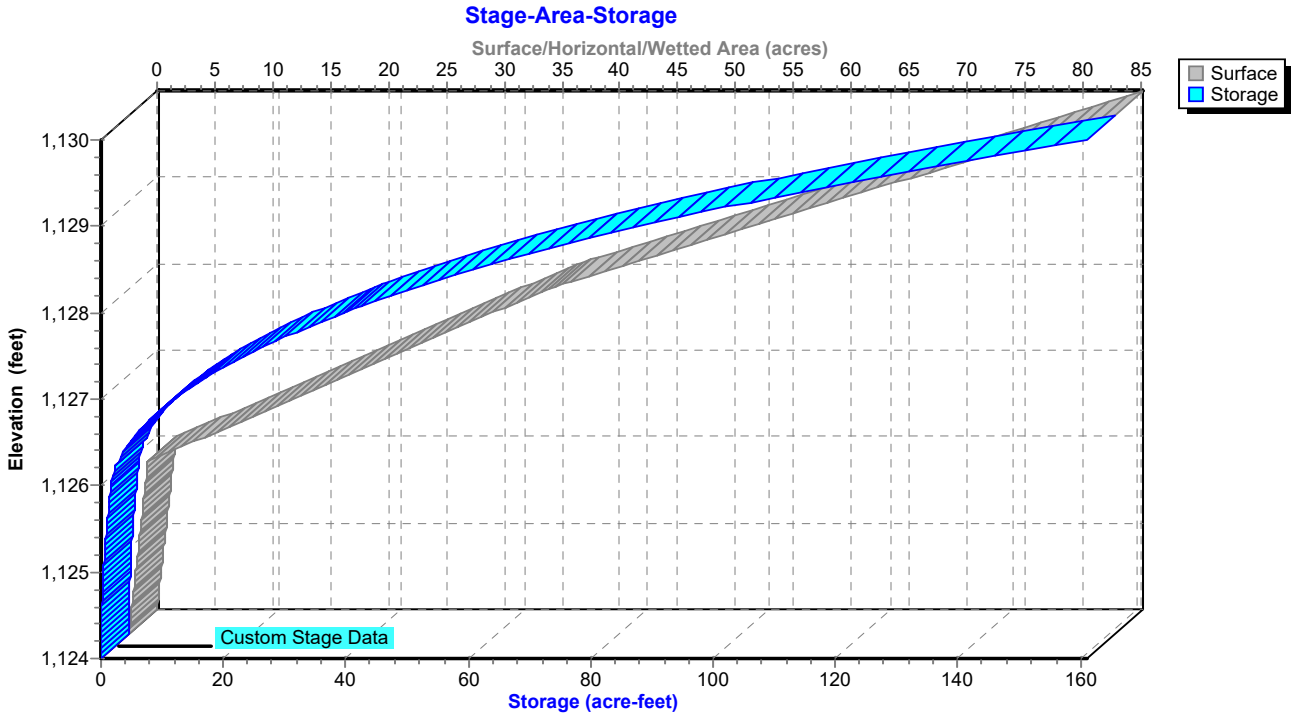
Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Hydrograph for Pond 1P: H AVENUE CULVERT

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,124.00	0.00	0.00	0.00
1.00	0.00	0.000	1,124.00	0.00	0.00	0.00
2.00	0.00	0.000	1,124.00	0.00	0.00	0.00
3.00	0.00	0.000	1,124.00	0.00	0.00	0.00
4.00	0.00	0.000	1,124.00	0.00	0.00	0.00
5.00	0.00	0.000	1,124.00	0.00	0.00	0.00
6.00	0.00	0.000	1,124.00	0.00	0.00	0.00
7.00	0.04	0.000	1,124.01	0.01	0.00	0.01
8.00	2.43	0.037	1,124.29	1.27	0.00	1.27
9.00	9.47	0.218	1,124.72	6.26	0.00	6.26
10.00	23.51	0.633	1,125.23	15.06	0.00	15.06
11.00	52.81	1.755	1,126.05	33.49	0.00	33.49
12.00	170.73	6.174	1,126.63	49.49	0.00	49.49
13.00	**1,274.66**	**51.777**	**1,128.30**	**212.26**	**125.09**	**87.18**
14.00	**837.11**	**83.991**	**1,128.93**	**994.19**	**898.99**	**95.20**
15.00	329.08	66.090	1,128.61	523.86	432.73	91.13
16.00	167.94	54.588	1,128.37	265.08	177.06	88.02
17.00	99.22	48.362	1,128.22	156.15	70.05	86.10
18.00	76.46	44.768	1,128.14	108.73	23.84	84.90
19.00	66.10	42.538	1,128.08	88.67	4.57	84.10
20.00	57.36	40.603	1,128.03	83.38	0.00	83.38
21.00	48.89	38.139	1,127.96	82.42	0.00	82.42
22.00	40.46	35.073	1,127.87	81.01	0.00	81.01
23.00	32.01	31.464	1,127.76	78.68	0.00	78.68
24.00	23.53	27.375	1,127.63	75.68	0.00	75.68
25.00	12.62	22.809	1,127.47	71.87	0.00	71.87
26.00	2.93	17.647	1,127.27	66.70	0.00	66.70
27.00	0.59	12.518	1,127.03	60.09	0.00	60.09
28.00	0.10	7.908	1,126.76	51.65	0.00	51.65
29.00	0.01	3.937	1,126.43	43.61	0.00	43.61
30.00	0.00	1.011	1,125.56	21.88	0.00	21.88

Stage-Discharge for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,124.00	0.00	0.00	0.00
1,124.10	0.16	0.00	0.16
1,124.20	0.64	0.00	0.64
1,124.30	1.37	0.00	1.37
1,124.40	2.30	0.00	2.30
1,124.50	3.40	0.00	3.40
1,124.60	4.64	0.00	4.64
1,124.70	6.01	0.00	6.01
1,124.80	7.50	0.00	7.50
1,124.90	9.10	0.00	9.10
1,125.00	10.80	0.00	10.80
1,125.10	12.59	0.00	12.59
1,125.20	14.47	0.00	14.47
1,125.30	16.44	0.00	16.44
1,125.40	18.49	0.00	18.49
1,125.50	20.61	0.00	20.61
1,125.60	22.82	0.00	22.82
1,125.70	25.10	0.00	25.10
1,125.80	27.44	0.00	27.44
1,125.90	29.86	0.00	29.86
1,126.00	32.34	0.00	32.34
1,126.10	34.89	0.00	34.89
1,126.20	37.50	0.00	37.50
1,126.30	40.17	0.00	40.17
1,126.40	42.91	0.00	42.91
1,126.50	45.70	0.00	45.70
1,126.60	48.55	0.00	48.55
1,126.70	49.59	0.00	49.59
1,126.80	53.02	0.00	53.02
1,126.90	56.23	0.00	56.23
1,127.00	59.28	0.00	59.28
1,127.10	62.17	0.00	62.17
1,127.20	64.93	0.00	64.93
1,127.30	67.59	0.00	67.59
1,127.40	70.14	0.00	70.14
1,127.50	72.60	0.00	72.60
1,127.60	74.98	0.00	74.98
1,127.70	77.29	0.00	77.29
1,127.80	79.53	0.00	79.53
1,127.90	81.58	0.00	81.58
1,128.00	83.00	0.00	83.00
1,128.10	94.77	10.37	84.40
1,128.20	140.89	55.12	85.78
1,128.30	208.62	121.50	87.13
1,128.40	294.93	206.47	88.46
1,128.50	397.86	308.09	89.77
1,128.60	516.16	425.10	91.06
1,128.70	646.72	554.38	92.33
1,128.80	786.82	693.24	93.59
1,128.90	942.26	847.43	94.82
1,129.00	1,114.94	1,018.90	96.05
1,129.10	1,303.85	1,206.60	97.25
1,129.20	1,510.10	1,411.66	98.44
1,129.30	1,730.38	1,630.76	99.62
1,129.40	1,964.23	1,863.45	100.78
1,129.50	2,211.09	2,109.16	101.93
1,129.60	2,470.36	2,367.29	103.06
1,129.70	2,746.35	2,642.17	104.19
1,129.80	3,039.97	2,934.67	105.30
1,129.90	3,349.12	3,242.72	106.40
1,130.00	**3,673.94**	**3,566.46**	**107.49**

Stage-Area-Storage for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,124.00	0.010	0.000
1,124.10	0.092	0.005
1,124.20	0.174	0.018
1,124.30	0.256	0.040
1,124.40	0.338	0.070
1,124.50	0.420	0.107
1,124.60	0.502	0.154
1,124.70	0.584	0.208
1,124.80	0.666	0.270
1,124.90	0.748	0.341
1,125.00	0.830	0.420
1,125.10	0.912	0.507
1,125.20	0.994	0.602
1,125.30	1.076	0.706
1,125.40	1.158	0.818
1,125.50	1.240	0.937
1,125.60	1.322	1.066
1,125.70	1.404	1.202
1,125.80	1.486	1.346
1,125.90	1.568	1.499
1,126.00	1.650	1.660
1,126.10	3.382	1.912
1,126.20	5.115	2.337
1,126.30	6.847	2.935
1,126.40	8.580	3.706
1,126.50	10.312	4.651
1,126.60	12.045	5.768
1,126.70	13.778	7.060
1,126.80	15.510	8.524
1,126.90	17.243	10.162
1,127.00	18.975	11.972
1,127.10	20.707	13.957
1,127.20	22.440	16.114
1,127.30	24.172	18.445
1,127.40	25.905	20.949
1,127.50	27.637	23.626
1,127.60	29.370	26.476
1,127.70	31.103	29.500
1,127.80	32.835	32.696
1,127.90	34.568	36.067
1,128.00	36.300	39.610
1,128.10	38.745	43.362
1,128.20	41.190	47.359
1,128.30	43.635	51.600
1,128.40	46.080	56.086
1,128.50	48.525	60.816
1,128.60	50.970	65.791
1,128.70	53.415	71.010
1,128.80	55.860	76.474
1,128.90	58.305	82.182
1,129.00	60.750	88.135
1,129.10	63.195	94.332
1,129.20	65.640	100.774
1,129.30	68.085	107.460
1,129.40	70.530	114.391
1,129.50	72.975	121.566
1,129.60	75.420	128.986
1,129.70	77.865	136.650
1,129.80	80.310	144.559
1,129.90	82.755	152.712
1,130.00	**85.200**	**161.110**

Summary for Pond 2P: BASIN NW OF WETLAND

[79] Warning: Submerged Pond 1P Secondary device # 1 by 1.88'

Inflow Area = 848.100 ac, 0.00% Impervious, Inflow Depth > 4.72" for 50-Year event
Inflow = 1,115.95 cfs @ 13.74 hrs, Volume= 333.471 af
Outflow = 595.42 cfs @ 14.91 hrs, Volume= 275.933 af, Atten= 47%, Lag= 70.2 min
Primary = 595.42 cfs @ 14.91 hrs, Volume= 275.933 af
Routed to Pond BERM : WETLAND
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,125.88' @ 14.91 hrs Surf.Area= 68.071 ac Storage= 133.622 af

Plug-Flow detention time= 235.8 min calculated for 275.841 af (83% of inflow)
Center-of-Mass det. time= 134.1 min (1,102.0 - 967.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,121.00'	311.173 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,121.00	1.997	0.000	0.000
1,122.00	7.899	4.948	4.948
1,123.00	16.217	12.058	17.006
1,124.00	30.839	23.528	40.534
1,126.00	70.400	101.239	141.773
1,128.00	99.000	169.400	311.173

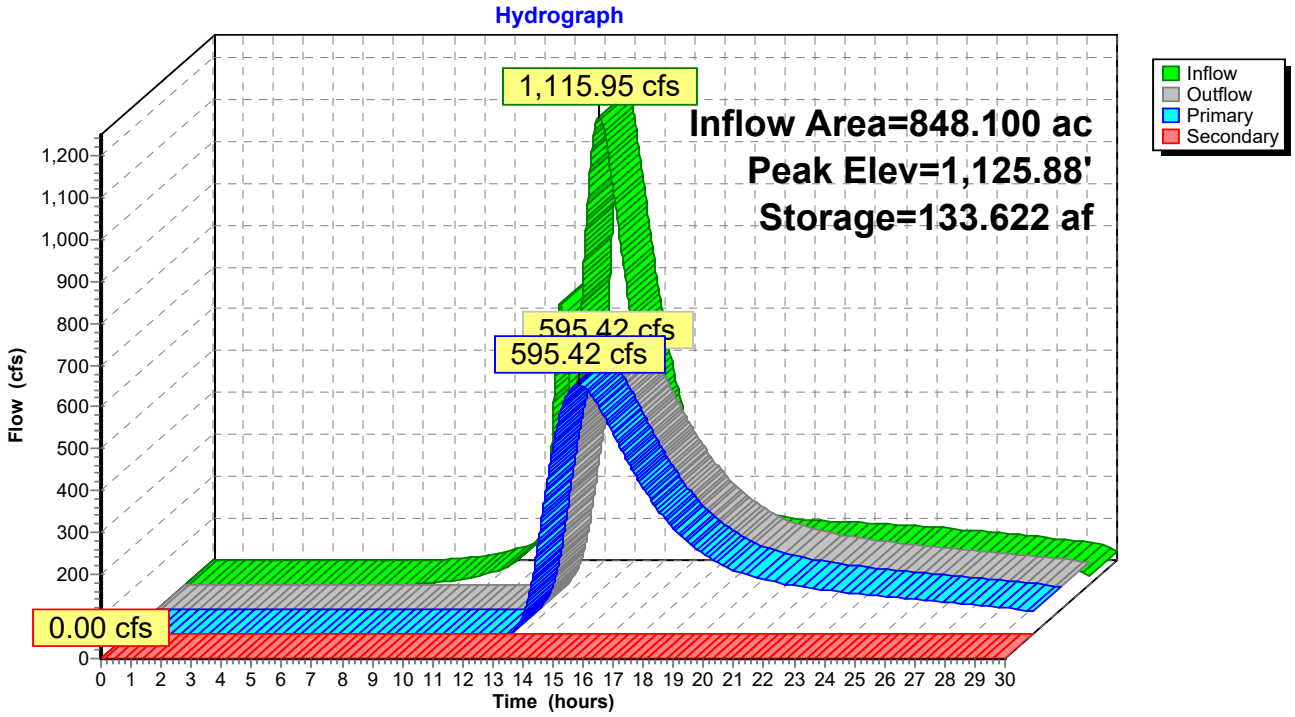
Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.00'	**50.0' long + 25.0 '/' SideZ x 50.0' breadth Saddle to Wetland** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	1,127.00'	**300.0' long + 50.0 '/' SideZ x 50.0' breadth Saddle Away from Wetland** 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

Primary OutFlow Max=595.26 cfs @ 14.91 hrs HW=1,125.88' (Free Discharge)
↑—**1=Saddle to Wetland** (Weir Controls 595.26 cfs @ 3.26 fps)

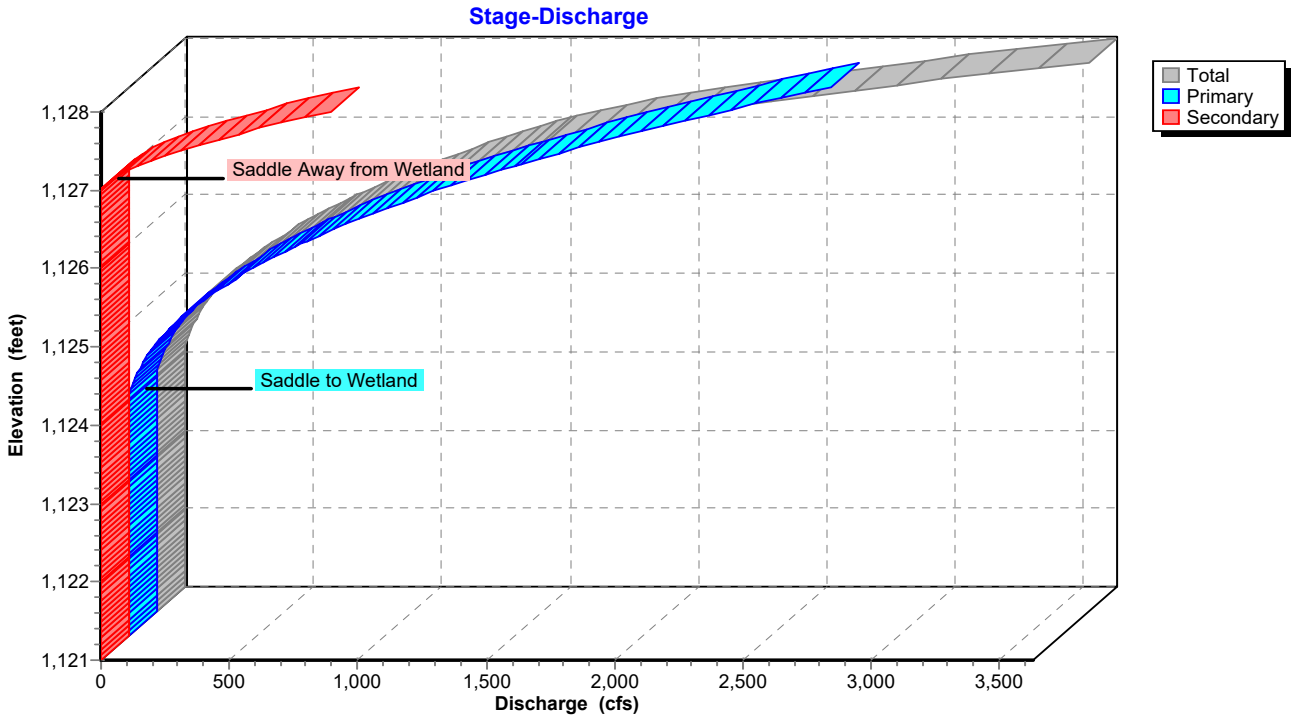
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,121.00' (Free Discharge)
↑—**2=Saddle Away from Wetland** (Controls 0.00 cfs)



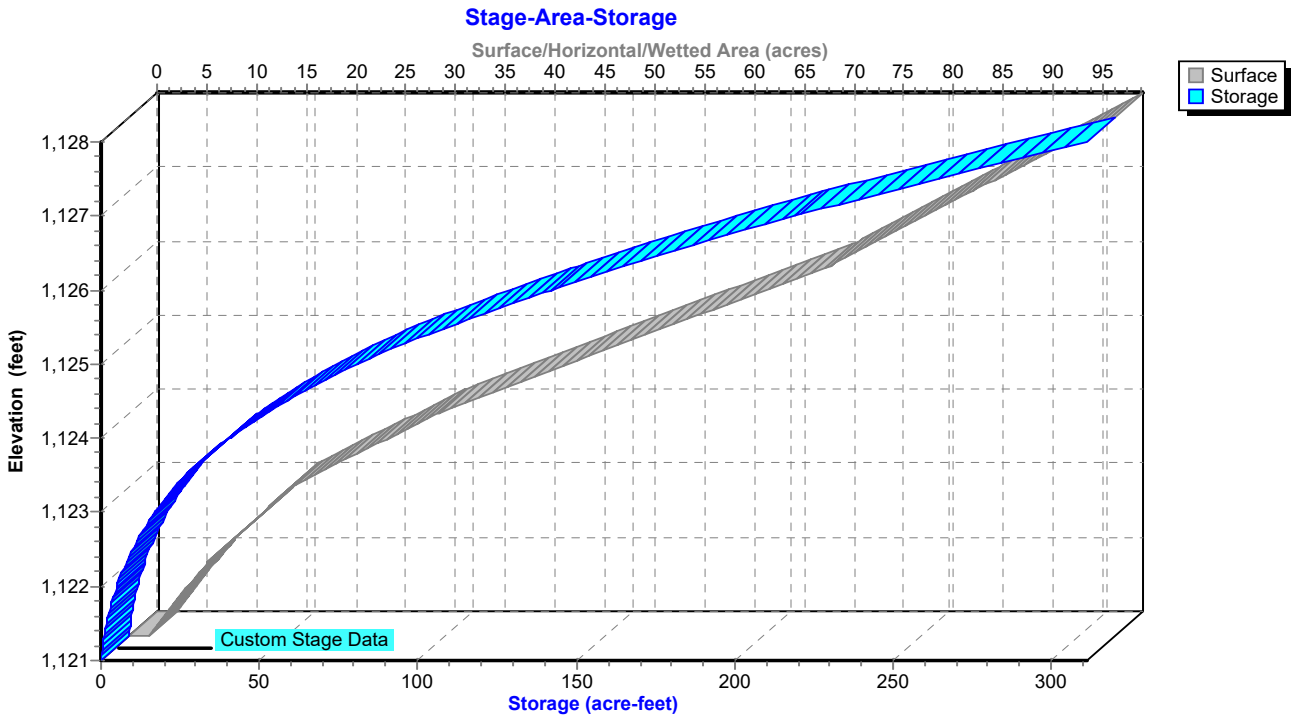
Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Hydrograph for Pond 2P: BASIN NW OF WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,121.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,121.00	0.00	0.00	0.00
2.00	0.00	0.000	1,121.00	0.00	0.00	0.00
3.00	0.00	0.000	1,121.00	0.00	0.00	0.00
4.00	0.00	0.000	1,121.00	0.00	0.00	0.00
5.00	0.00	0.000	1,121.00	0.00	0.00	0.00
6.00	0.00	0.000	1,121.00	0.00	0.00	0.00
7.00	0.17	0.002	1,121.00	0.00	0.00	0.00
8.00	3.16	0.111	1,121.05	0.00	0.00	0.00
9.00	10.35	0.644	1,121.24	0.00	0.00	0.00
10.00	26.33	2.084	1,121.57	0.00	0.00	0.00
11.00	58.37	5.316	1,122.05	0.00	0.00	0.00
12.00	184.38	13.431	1,122.77	0.00	0.00	0.00
13.00	**435.83**	52.212	1,124.34	30.64	30.64	0.00
14.00	**1,047.16**	**112.747**	**1,125.56**	**416.78**	**416.78**	0.00
15.00	557.77	**133.491**	**1,125.88**	**594.17**	**594.17**	0.00
16.00	284.78	121.185	1,125.69	486.65	486.65	0.00
17.00	173.29	104.899	1,125.43	355.03	355.03	0.00
18.00	123.96	91.856	1,125.20	257.34	257.34	0.00
19.00	101.96	82.693	1,125.03	193.69	193.69	0.00
20.00	94.75	76.503	1,124.90	154.30	154.30	0.00
21.00	91.85	72.525	1,124.82	130.61	130.61	0.00
22.00	88.50	69.858	1,124.76	115.56	115.56	0.00
23.00	84.22	67.903	1,124.72	105.06	105.06	0.00
24.00	79.26	66.333	1,124.69	96.84	96.84	0.00
25.00	72.03	64.881	1,124.65	89.32	89.32	0.00
26.00	66.70	63.529	1,124.62	82.44	82.44	0.00
27.00	60.09	62.235	1,124.59	75.92	75.92	0.00
28.00	51.65	60.872	1,124.56	69.14	69.14	0.00
29.00	43.61	59.422	1,124.52	62.11	62.11	0.00
30.00	21.88	57.551	1,124.48	53.32	53.32	0.00

Stage-Discharge for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,121.00	0.00	0.00	0.00
1,121.10	0.00	0.00	0.00
1,121.20	0.00	0.00	0.00
1,121.30	0.00	0.00	0.00
1,121.40	0.00	0.00	0.00
1,121.50	0.00	0.00	0.00
1,121.60	0.00	0.00	0.00
1,121.70	0.00	0.00	0.00
1,121.80	0.00	0.00	0.00
1,121.90	0.00	0.00	0.00
1,122.00	0.00	0.00	0.00
1,122.10	0.00	0.00	0.00
1,122.20	0.00	0.00	0.00
1,122.30	0.00	0.00	0.00
1,122.40	0.00	0.00	0.00
1,122.50	0.00	0.00	0.00
1,122.60	0.00	0.00	0.00
1,122.70	0.00	0.00	0.00
1,122.80	0.00	0.00	0.00
1,122.90	0.00	0.00	0.00
1,123.00	0.00	0.00	0.00
1,123.10	0.00	0.00	0.00
1,123.20	0.00	0.00	0.00
1,123.30	0.00	0.00	0.00
1,123.40	0.00	0.00	0.00
1,123.50	0.00	0.00	0.00
1,123.60	0.00	0.00	0.00
1,123.70	0.00	0.00	0.00
1,123.80	0.00	0.00	0.00
1,123.90	0.00	0.00	0.00
1,124.00	0.00	0.00	0.00
1,124.10	4.41	4.41	0.00
1,124.20	12.94	12.94	0.00
1,124.30	24.75	24.75	0.00
1,124.40	39.62	39.62	0.00
1,124.50	57.28	57.28	0.00
1,124.60	77.80	77.80	0.00
1,124.70	100.08	100.08	0.00
1,124.80	124.68	124.68	0.00
1,124.90	152.99	152.99	0.00
1,125.00	184.10	184.10	0.00
1,125.10	218.88	218.88	0.00
1,125.20	256.81	256.81	0.00
1,125.30	297.39	297.39	0.00
1,125.40	341.11	341.11	0.00
1,125.50	387.26	387.26	0.00
1,125.60	436.47	436.47	0.00
1,125.70	489.68	489.68	0.00
1,125.80	546.21	546.21	0.00
1,125.90	606.13	606.13	0.00
1,126.00	669.49	669.49	0.00
1,126.10	736.33	736.33	0.00
1,126.20	806.71	806.71	0.00
1,126.30	880.68	880.68	0.00
1,126.40	958.29	958.29	0.00
1,126.50	1,039.60	1,039.60	0.00
1,126.60	1,124.65	1,124.65	0.00
1,126.70	1,213.49	1,213.49	0.00
1,126.80	1,306.17	1,306.17	0.00
1,126.90	1,402.74	1,402.74	0.00
1,127.00	1,503.25	1,503.25	0.00
1,127.10	1,633.51	1,607.74	25.76
1,127.20	1,790.10	1,716.27	73.83
1,127.30	1,966.79	1,828.88	137.91
1,127.40	2,161.46	1,945.61	215.84
1,127.50	2,371.99	2,066.52	305.47
1,127.60	2,598.21	2,191.64	406.57
1,127.70	2,833.93	2,321.03	512.90
1,127.80	3,081.88	2,454.72	627.16
1,127.90	3,348.70	2,592.76	755.93
1,128.00	**3,629.40**	**2,735.20**	**894.20**

Stage-Area-Storage for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,121.00	1.997	0.000
1,121.10	2.587	0.229
1,121.20	3.177	0.517
1,121.30	3.768	0.865
1,121.40	4.358	1.271
1,121.50	4.948	1.736
1,121.60	5.538	2.261
1,121.70	6.128	2.844
1,121.80	6.719	3.486
1,121.90	7.309	4.188
1,122.00	7.899	4.948
1,122.10	8.731	5.779
1,122.20	9.563	6.694
1,122.30	10.394	7.692
1,122.40	11.226	8.773
1,122.50	12.058	9.937
1,122.60	12.890	11.185
1,122.70	13.722	12.515
1,122.80	14.553	13.929
1,122.90	15.385	15.426
1,123.00	16.217	17.006
1,123.10	17.679	18.701
1,123.20	19.141	20.542
1,123.30	20.604	22.529
1,123.40	22.066	24.663
1,123.50	23.528	26.942
1,123.60	24.990	29.368
1,123.70	26.452	31.940
1,123.80	27.915	34.659
1,123.90	29.377	37.523
1,124.00	30.839	40.534
1,124.10	32.817	43.717
1,124.20	34.795	47.097
1,124.30	36.773	50.676
1,124.40	38.751	54.452
1,124.50	40.729	58.426
1,124.60	42.707	62.598
1,124.70	44.685	66.968
1,124.80	46.663	71.535
1,124.90	48.641	76.300
1,125.00	50.619	81.263
1,125.10	52.598	86.424
1,125.20	54.576	91.783
1,125.30	56.554	97.339
1,125.40	58.532	103.093
1,125.50	60.510	109.046
1,125.60	62.488	115.195
1,125.70	64.466	121.543
1,125.80	66.444	128.089
1,125.90	68.422	134.832
1,126.00	70.400	141.773
1,126.10	71.830	148.884
1,126.20	73.260	156.139
1,126.30	74.690	163.536
1,126.40	76.120	171.077
1,126.50	77.550	178.760
1,126.60	78.980	186.587
1,126.70	80.410	194.557
1,126.80	81.840	202.669
1,126.90	83.270	210.925
1,127.00	84.700	219.323
1,127.10	86.130	227.864
1,127.20	87.560	236.549
1,127.30	88.990	245.376
1,127.40	90.420	254.347
1,127.50	91.850	263.460
1,127.60	93.280	272.717
1,127.70	94.710	282.117
1,127.80	96.140	291.659
1,127.90	97.570	301.345
1,128.00	**99.000**	**311.173**

Summary for Pond BERM: WETLAND

Inflow Area = 1,396.020 ac, 0.24% Impervious, Inflow Depth > 4.23" for 50-Year event
Inflow = 1,185.92 cfs @ 13.62 hrs, Volume= 492.476 af
Outflow = 1,175.18 cfs @ 13.76 hrs, Volume= 490.055 af, Atten= 1%, Lag= 8.4 min
Primary = 1,175.18 cfs @ 13.76 hrs, Volume= 490.055 af
Routed to Pond I AVE : I AVENUE CULVERTS

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 1,106.00' Surf.Area= 6.409 ac Storage= 5.396 af
Peak Elev= 1,108.74' @ 13.76 hrs Surf.Area= 7.567 ac Storage= 24.609 af (19.212 af above start)

Plug-Flow detention time= 28.7 min calculated for 484.658 af (98% of inflow)
Center-of-Mass det. time= 12.5 min (1,012.8 - 1,000.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,103.00'	386.614 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

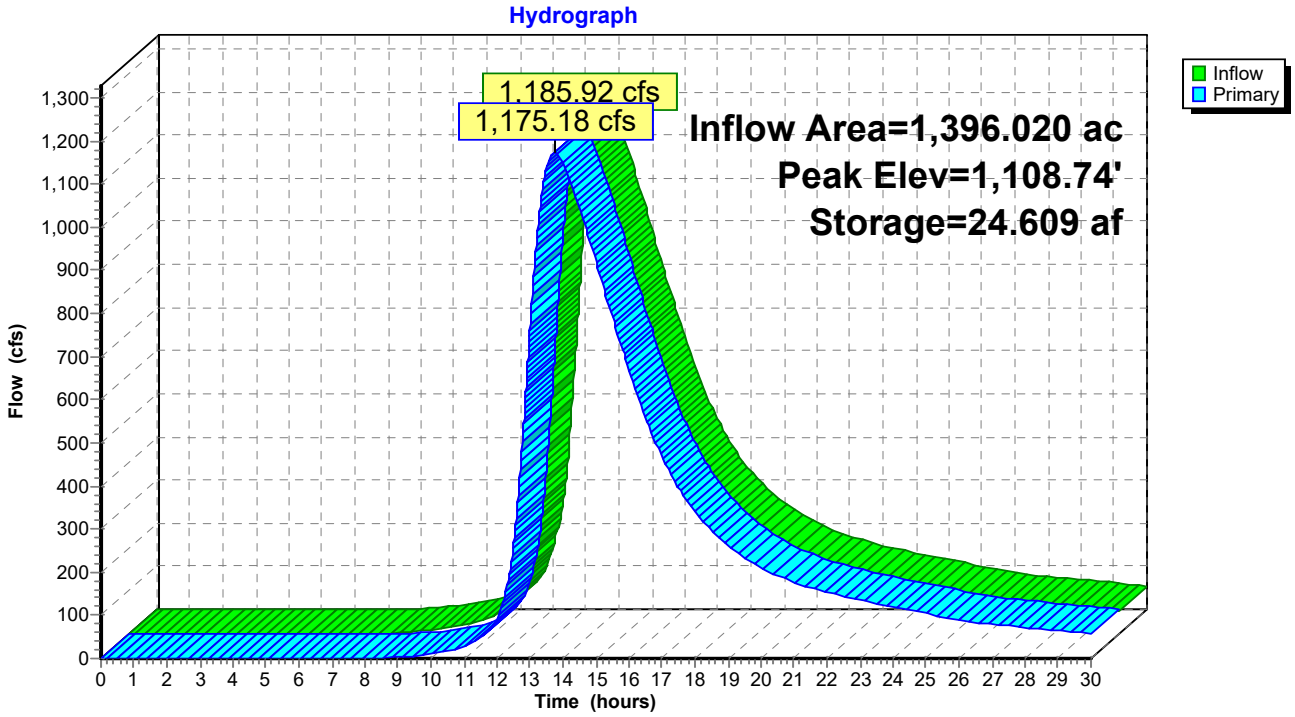
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,103.00	0.000	0.000	0.000
1,104.00	0.943	0.472	0.472
1,105.00	1.249	1.096	1.568
1,106.00	6.409	3.829	5.396
1,107.00	6.899	6.654	12.051
1,108.00	7.280	7.089	19.140
1,109.00	7.669	7.475	26.615
1,110.00	10.179	8.924	35.538
1,110.30	11.226	3.211	38.749
1,111.00	23.616	12.195	50.944
1,112.00	31.569	27.592	78.536
1,113.00	42.971	37.270	115.806
1,114.00	53.846	48.409	164.215
1,115.00	65.969	59.908	224.122
1,116.00	79.963	72.966	297.088
1,117.00	99.088	89.526	386.614

Device	Routing	Invert	Outlet Devices
#1	Primary	1,106.00'	**Sheet Pile Weir, C= 3.27** Offset (feet) -54.10 -52.10 -44.10 -37.50 37.50 44.10 52.10 54.10 Height (feet) 4.30 3.30 3.30 0.00 0.00 3.30 3.30 4.30

Primary OutFlow Max=1,175.14 cfs @ 13.76 hrs HW=1,108.74' (Free Discharge)
└**1=Sheet Pile Weir** (Weir Controls 1,175.14 cfs @ 5.00 fps)



Pond BERM: WETLAND



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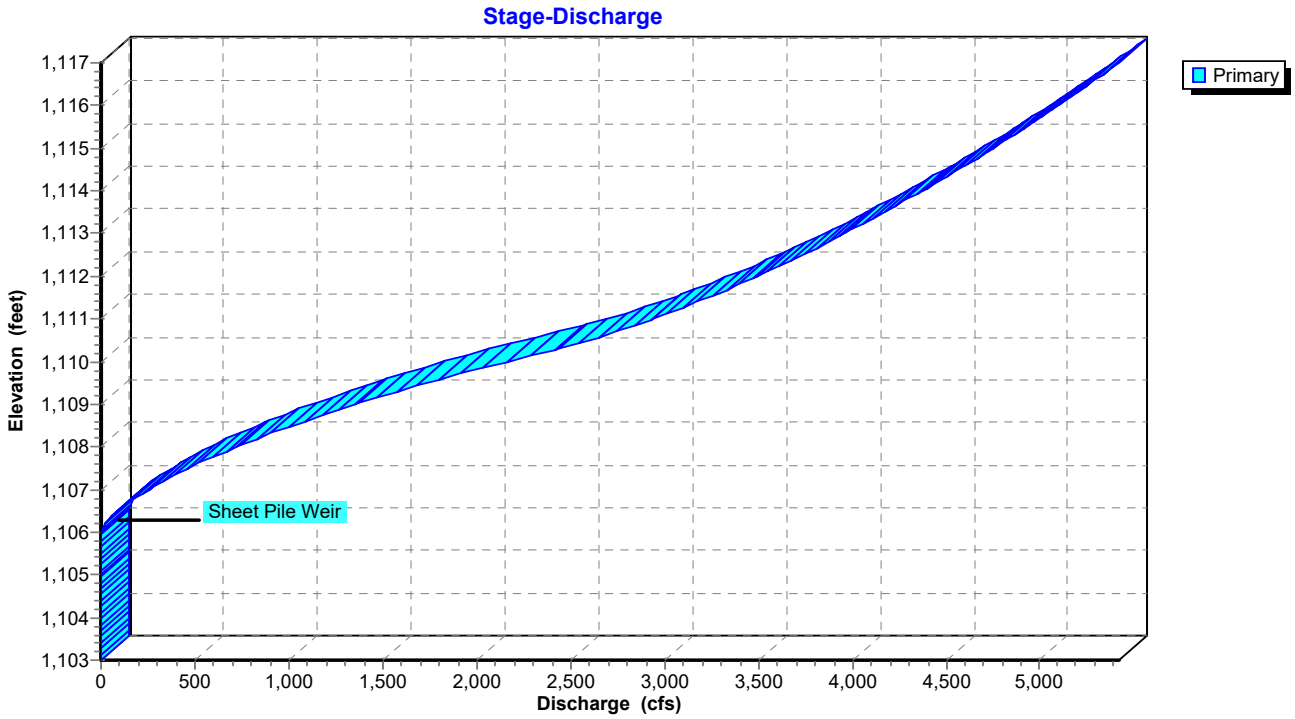

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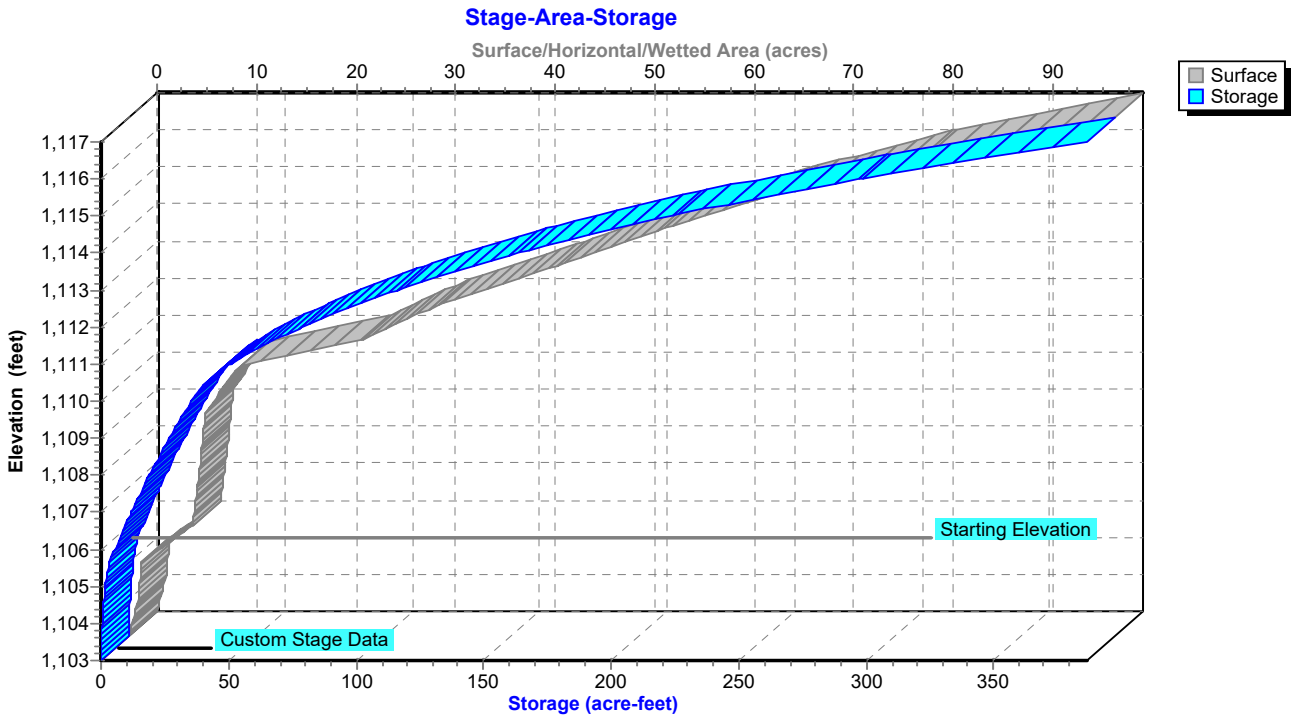


Hydrograph for Pond BERM: WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	5.396	1,106.00	0.00
1.00	0.00	5.396	1,106.00	0.00
2.00	0.02	5.397	1,106.00	0.00
3.00	0.08	5.400	1,106.00	0.03
4.00	0.15	5.404	1,106.00	0.08
5.00	0.21	5.410	1,106.00	0.14
6.00	0.27	5.415	1,106.00	0.20
7.00	0.35	5.421	1,106.00	0.26
8.00	2.05	5.462	1,106.01	0.71
9.00	7.38	5.690	1,106.05	3.17
10.00	18.10	6.162	1,106.12	11.06
11.00	41.38	6.958	1,106.24	29.68
12.00	142.50	8.787	1,106.52	92.93
13.00	**948.74**	**19.757**	**1,108.08**	**771.20**
14.00	**1,124.88**	**24.318**	**1,108.70**	**1,149.79**
15.00	881.47	21.609	1,108.34	919.43
16.00	631.29	18.424	1,107.90	669.09
17.00	439.19	15.592	1,107.51	468.13
18.00	319.63	13.579	1,107.22	339.35
19.00	246.89	12.227	1,107.03	260.39
20.00	200.51	11.291	1,106.89	209.96
21.00	170.02	10.638	1,106.79	176.51
22.00	148.32	10.155	1,106.72	153.45
23.00	131.03	9.770	1,106.67	135.33
24.00	116.11	9.431	1,106.61	120.20
25.00	100.18	9.073	1,106.56	105.04
26.00	85.30	8.695	1,106.50	89.03
27.00	76.56	8.436	1,106.47	79.26
28.00	69.27	8.230	1,106.43	71.65
29.00	62.12	8.036	1,106.41	64.48
30.00	53.32	7.820	1,106.37	56.49

Stage-Discharge for Pond BERM: WETLAND

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,103.00	0.00	1,108.30	897.44	1,113.60	4,213.52
1,103.10	0.00	1,108.40	958.54	1,113.70	4,254.15
1,103.20	0.00	1,108.50	1,021.14	1,113.80	4,294.38
1,103.30	0.00	1,108.60	1,085.21	1,113.90	4,334.22
1,103.40	0.00	1,108.70	1,150.74	1,114.00	4,373.67
1,103.50	0.00	1,108.80	1,217.71	1,114.10	4,412.75
1,103.60	0.00	1,108.90	1,286.10	1,114.20	4,451.48
1,103.70	0.00	1,109.00	1,355.92	1,114.30	4,489.85
1,103.80	0.00	1,109.10	1,427.13	1,114.40	4,527.88
1,103.90	0.00	1,109.20	1,499.73	1,114.50	4,565.58
1,104.00	0.00	1,109.30	1,573.71	1,114.60	4,602.96
1,104.10	0.00	1,109.40	1,650.72	1,114.70	4,640.03
1,104.20	0.00	1,109.50	1,730.46	1,114.80	4,676.79
1,104.30	0.00	1,109.60	1,812.44	1,114.90	4,713.26
1,104.40	0.00	1,109.70	1,896.48	1,115.00	4,749.43
1,104.50	0.00	1,109.80	1,982.48	1,115.10	4,785.32
1,104.60	0.00	1,109.90	2,070.36	1,115.20	4,820.93
1,104.70	0.00	1,110.00	2,160.07	1,115.30	4,856.27
1,104.80	0.00	1,110.10	2,251.56	1,115.40	4,891.35
1,104.90	0.00	1,110.20	2,344.79	1,115.50	4,926.17
1,105.00	0.00	1,110.30	2,439.74	1,115.60	4,960.74
1,105.10	0.00	1,110.40	2,525.17	1,115.70	4,995.07
1,105.20	0.00	1,110.50	2,602.93	1,115.80	5,029.15
1,105.30	0.00	1,110.60	2,676.21	1,115.90	5,063.00
1,105.40	0.00	1,110.70	2,746.13	1,116.00	5,096.61
1,105.50	0.00	1,110.80	2,813.32	1,116.10	5,130.00
1,105.60	0.00	1,110.90	2,878.20	1,116.20	5,163.17
1,105.70	0.00	1,111.00	2,941.06	1,116.30	5,196.12
1,105.80	0.00	1,111.10	3,002.16	1,116.40	5,228.85
1,105.90	0.00	1,111.20	3,061.65	1,116.50	5,261.38
1,106.00	0.00	1,111.30	3,119.70	1,116.60	5,293.71
1,106.10	7.77	1,111.40	3,176.43	1,116.70	5,325.83
1,106.20	22.03	1,111.50	3,231.94	1,116.80	5,357.75
1,106.30	40.56	1,111.60	3,286.32	1,116.90	5,389.49
1,106.40	62.57	1,111.70	3,339.64	1,117.00	**5,421.03**
1,106.50	87.63	1,111.80	3,391.99		
1,106.60	115.44	1,111.90	3,443.41		
1,106.70	145.78	1,112.00	3,493.96		
1,106.80	178.48	1,112.10	3,543.69		
1,106.90	213.42	1,112.20	3,592.64		
1,107.00	250.48	1,112.30	3,640.85		
1,107.10	289.58	1,112.40	3,688.37		
1,107.20	330.64	1,112.50	3,735.21		
1,107.30	373.60	1,112.60	3,781.41		
1,107.40	418.39	1,112.70	3,827.00		
1,107.50	464.97	1,112.80	3,872.01		
1,107.60	513.29	1,112.90	3,916.45		
1,107.70	563.32	1,113.00	3,960.36		
1,107.80	615.01	1,113.10	4,003.74		
1,107.90	668.34	1,113.20	4,046.63		
1,108.00	723.27	1,113.30	4,089.03		
1,108.10	779.78	1,113.40	4,130.97		
1,108.20	837.84	1,113.50	4,172.46		

Stage-Area-Storage for Pond BERM: WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,103.00	0.000	0.000
1,103.20	0.189	0.019
1,103.40	0.377	0.075
1,103.60	0.566	0.170
1,103.80	0.754	0.302
1,104.00	0.943	0.472
1,104.20	1.004	0.666
1,104.40	1.065	0.873
1,104.60	1.127	1.092
1,104.80	1.188	1.324
1,105.00	1.249	1.568
1,105.20	2.281	1.921
1,105.40	3.313	2.480
1,105.60	4.345	3.246
1,105.80	5.377	4.218
1,106.00	6.409	5.396
1,106.20	6.507	6.688
1,106.40	6.605	7.999
1,106.60	6.703	9.330
1,106.80	6.801	10.680
1,107.00	6.899	12.051
1,107.20	6.975	13.438
1,107.40	7.051	14.841
1,107.60	7.128	16.258
1,107.80	7.204	17.692
1,108.00	7.280	19.140
1,108.20	7.358	20.604
1,108.40	7.436	22.083
1,108.60	7.513	23.578
1,108.80	7.591	25.088
1,109.00	7.669	26.615
1,109.20	8.171	28.199
1,109.40	8.673	29.883
1,109.60	9.175	31.668
1,109.80	9.677	33.553
1,110.00	10.179	35.538
1,110.20	10.877	37.644
1,110.40	12.996	39.960
1,110.60	16.536	42.914
1,110.80	20.076	46.575
1,111.00	23.616	50.944
1,111.20	25.207	55.826
1,111.40	26.797	61.027
1,111.60	28.388	66.545
1,111.80	29.978	72.382
1,112.00	31.569	78.536
1,112.20	33.849	85.078
1,112.40	36.130	92.076
1,112.60	38.410	99.530
1,112.80	40.691	107.440
1,113.00	42.971	115.806
1,113.20	45.146	124.618
1,113.40	47.321	133.865
1,113.60	49.496	143.547
1,113.80	51.671	153.663
1,114.00	53.846	164.215
1,114.20	56.271	175.227
1,114.40	58.695	186.723
1,114.60	61.120	198.705
1,114.80	63.544	211.171
1,115.00	65.969	224.122
1,115.20	68.768	237.596
1,115.40	71.567	251.630
1,115.60	74.365	266.223
1,115.80	77.164	281.376
1,116.00	79.963	297.088
1,116.20	83.788	313.464
1,116.40	87.613	330.604
1,116.60	91.438	348.509
1,116.80	95.263	367.179
1,117.00	**99.088**	**386.614**

Summary for Pond I AVE: I AVENUE CULVERTS

[81] Warning: Exceeded Pond BERM by 7.10' @ 17.60 hrs

Inflow Area = 1,705.060 ac, 0.20% Impervious, Inflow Depth > 4.31" for 50-Year event
Inflow = 1,703.27 cfs @ 13.48 hrs, Volume= 611.933 af
Outflow = 624.73 cfs @ 16.45 hrs, Volume= 611.849 af, Atten= 63%, Lag= 178.3 min
Primary = 454.91 cfs @ 16.45 hrs, Volume= 467.387 af
Secondary = 169.82 cfs @ 16.45 hrs, Volume= 144.462 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,114.60' @ 16.45 hrs Surf.Area= 61.089 ac Storage= 201.463 af

Plug-Flow detention time= 143.3 min calculated for 611.849 af (100% of inflow)
Center-of-Mass det. time= 143.2 min (1,126.1 - 982.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,098.00'	389.527 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,098.00	0.000	0.000	0.000
1,099.00	0.001	0.001	0.001
1,100.00	0.001	0.001	0.002
1,101.00	0.008	0.005	0.006
1,102.00	0.027	0.017	0.023
1,103.00	0.110	0.069	0.092
1,104.00	0.241	0.175	0.267
1,105.00	0.567	0.404	0.671
1,106.00	1.270	0.918	1.590
1,107.00	5.886	3.578	5.168
1,108.00	6.916	6.401	11.569
1,109.00	10.932	8.924	20.493
1,110.00	16.090	13.511	34.004
1,111.00	23.616	19.853	53.857
1,112.00	31.569	27.592	81.449
1,113.00	42.971	37.270	118.719
1,114.00	53.846	48.408	167.128
1,115.00	65.969	59.908	227.035
1,116.00	79.963	72.966	300.001
1,117.00	99.088	89.526	389.527

Device	Routing	Invert	Outlet Devices
#1	Primary	1,100.22'	**72.0" Round 72" RCP CULVERT** L= 85.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,100.22' / 1,098.91' S= 0.0153 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 28.27 sf
#2	Secondary	1,104.72'	**48.0" Round 48" RCP CULVERT** L= 62.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,104.72' / 1,104.41' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

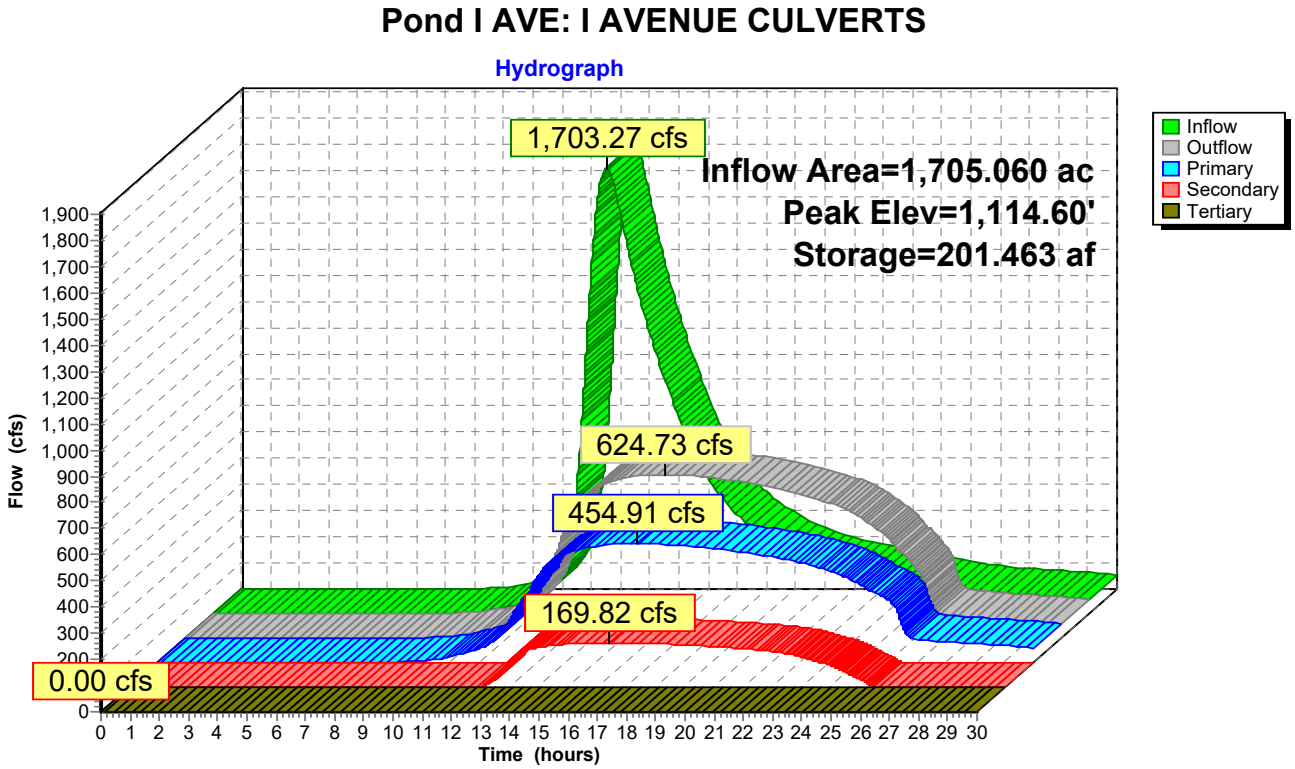
#3 Tertiary 1,115.86' **I AVENUE, C= 3.27**
Offset (feet) 0.00 115.59 162.20 164.26 214.26 232.65 343.45
Height (feet) 1.14 0.14 0.00 0.00 0.09 0.14 1.14

Primary OutFlow Max=454.91 cfs @ 16.45 hrs HW=1,114.60' (Free Discharge)
└**1=72" RCP CULVERT** (Barrel Controls 454.91 cfs @ 16.09 fps)

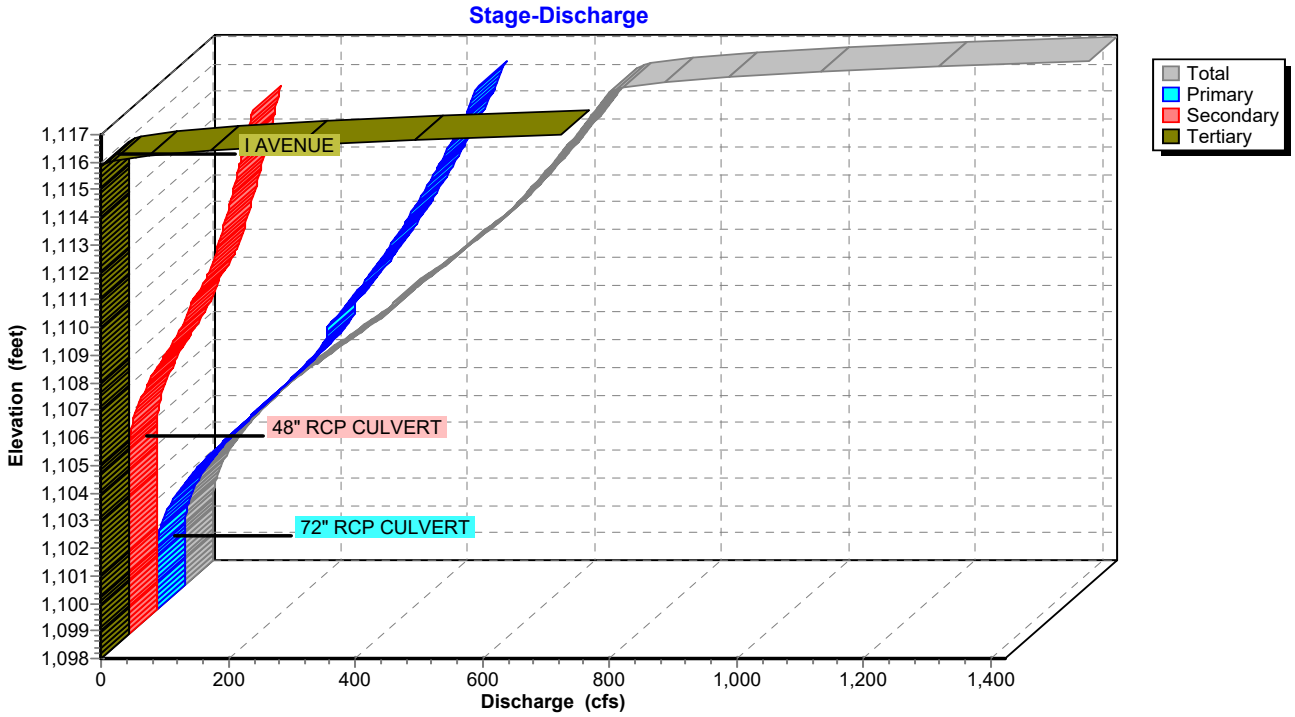
Secondary OutFlow Max=169.82 cfs @ 16.45 hrs HW=1,114.60' (Free Discharge)
└**2=48" RCP CULVERT** (Inlet Controls 169.82 cfs @ 13.51 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,098.00' (Free Discharge)
└**3=I AVENUE** (Controls 0.00 cfs)

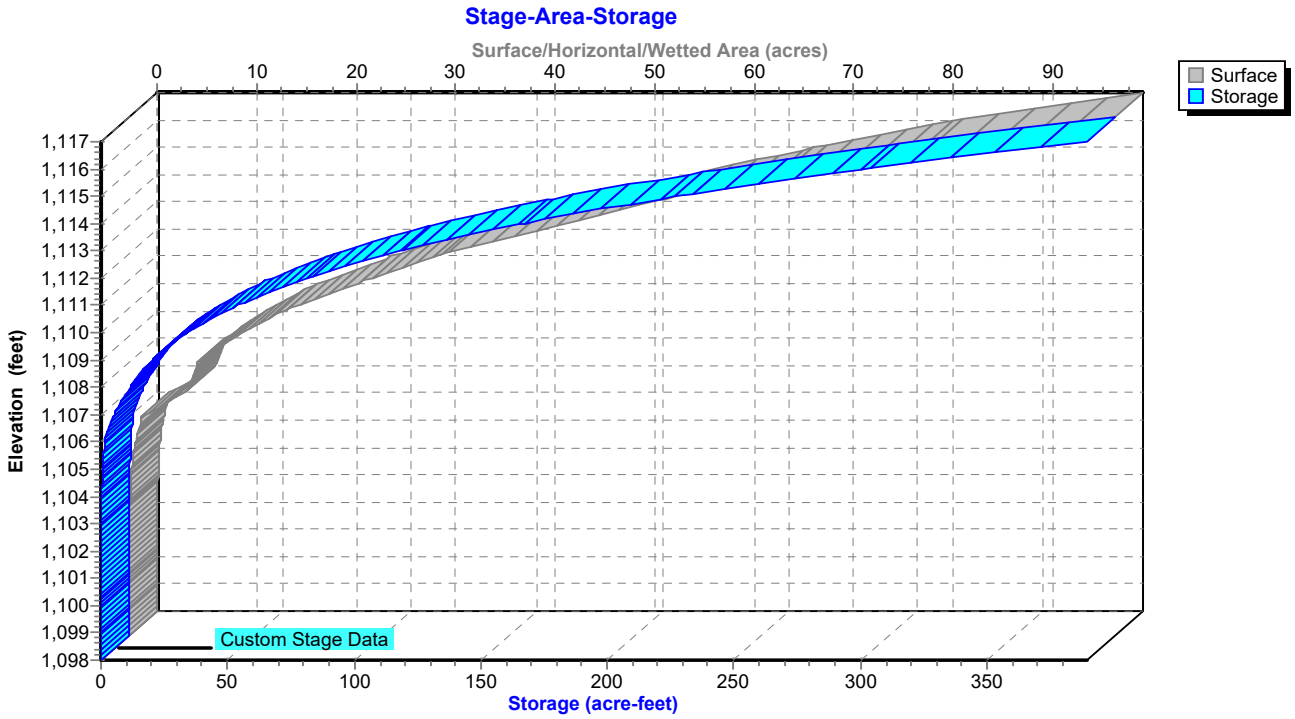




Pond I AVE: I AVENUE CULVERTS



Pond I AVE: I AVENUE CULVERTS



Hydrograph for Pond I AVE: I AVENUE CULVERTS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	0.00	0.000	1,098.00	0.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
2.00	0.00	0.000	1,098.27	0.00	0.00	0.00	0.00
3.00	0.03	0.001	1,099.88	0.00	0.00	0.00	0.00
4.00	0.08	0.002	1,100.31	0.08	0.08	0.00	0.00
5.00	0.14	0.002	1,100.33	0.14	0.14	0.00	0.00
6.00	0.20	0.002	1,100.35	0.20	0.20	0.00	0.00
7.00	0.28	0.002	1,100.39	0.28	0.28	0.00	0.00
8.00	1.89	0.004	1,100.69	1.86	1.86	0.00	0.00
9.00	7.61	0.008	1,101.16	7.55	7.55	0.00	0.00
10.00	22.07	0.019	1,101.84	21.80	21.80	0.00	0.00
11.00	54.16	0.074	1,102.82	52.67	52.67	0.00	0.00
12.00	173.06	0.660	1,104.98	147.32	146.80	0.52	0.00
13.00	**1,379.84**	30.225	1,109.75	416.88	321.70	95.18	0.00
14.00	**1,503.93**	121.252	1,113.06	569.51	417.19	152.32	0.00
15.00	1,056.95	176.874	1,114.18	610.15	444.93	165.23	0.00
16.00	740.40	**199.418**	**1,114.56**	**623.56**	**454.11**	**169.45**	0.00
17.00	510.71	**198.808**	**1,114.55**	**623.22**	**453.87**	**169.35**	0.00
18.00	373.16	183.667	1,114.30	614.33	447.79	166.55	0.00
19.00	289.74	160.605	1,113.88	599.51	437.65	161.86	0.00
20.00	235.43	133.391	1,113.33	579.55	424.02	155.52	0.00
21.00	198.21	104.340	1,112.65	553.91	406.58	147.32	0.00
22.00	171.37	75.128	1,111.79	519.73	383.45	136.28	0.00
23.00	149.44	47.305	1,110.71	468.47	351.94	116.53	0.00
24.00	130.51	23.281	1,109.24	388.72	304.13	84.59	0.00
25.00	110.37	5.772	1,107.10	274.76	243.37	31.40	0.00
26.00	90.16	0.217	1,103.77	91.14	91.14	0.00	0.00
27.00	79.47	0.166	1,103.51	79.94	79.94	0.00	0.00
28.00	71.68	0.134	1,103.32	72.03	72.03	0.00	0.00
29.00	64.48	0.109	1,103.14	64.78	64.78	0.00	0.00
30.00	56.49	0.085	1,102.93	56.80	56.80	0.00	0.00

Stage-Discharge for Pond I AVE: I AVENUE CULVERTS

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1,098.00	0.00	0.00	0.00	0.00
1,098.50	0.00	0.00	0.00	0.00
1,099.00	0.00	0.00	0.00	0.00
1,099.50	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	0.00	0.00
1,100.50	0.61	0.61	0.00	0.00
1,101.00	5.15	5.15	0.00	0.00
1,101.50	13.88	13.88	0.00	0.00
1,102.00	26.18	26.18	0.00	0.00
1,102.50	41.52	41.52	0.00	0.00
1,103.00	59.41	59.41	0.00	0.00
1,103.50	79.41	79.41	0.00	0.00
1,104.00	101.10	101.10	0.00	0.00
1,104.50	124.05	124.05	0.00	0.00
1,105.00	148.39	147.81	0.58	0.00
1,105.50	176.12	171.89	4.24	0.00
1,106.00	206.21	195.69	10.52	0.00
1,106.50	237.48	218.53	18.95	0.00
1,107.00	268.61	239.47	29.14	0.00
1,107.50	297.80	257.09	40.70	0.00
1,108.00	321.54	268.33	53.21	0.00
1,108.50	343.07	276.93	66.15	0.00
1,109.00	374.43	295.59	78.85	0.00
1,109.50	403.49	313.13	90.36	0.00
1,110.00	428.24	329.75	98.50	0.00
1,110.50	456.69	345.56	111.13	0.00
1,111.00	484.40	360.69	123.71	0.00
1,111.50	507.49	375.20	132.29	0.00
1,112.00	528.21	389.17	139.03	0.00
1,112.50	548.13	402.66	145.47	0.00
1,113.00	567.34	415.71	151.63	0.00
1,113.50	585.92	428.37	157.55	0.00
1,114.00	603.92	440.66	163.26	0.00
1,114.50	621.39	452.62	168.77	0.00
1,115.00	638.37	464.27	174.11	0.00
1,115.50	654.92	475.63	179.29	0.00
1,116.00	679.75	486.69	184.32	8.74
1,116.50	904.83	496.12	189.22	219.49
1,117.00	**1,422.27**	**505.37**	**194.00**	**722.89**

Stage-Area-Storage for Pond I AVE: I AVENUE CULVERTS

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,098.00	0.000	0.000
1,098.20	0.000	0.000
1,098.40	0.000	0.000
1,098.60	0.001	0.000
1,098.80	0.001	0.000
1,099.00	0.001	0.001
1,099.20	0.001	0.001
1,099.40	0.001	0.001
1,099.60	0.001	0.001
1,099.80	0.001	0.001
1,100.00	0.001	0.002
1,100.20	0.002	0.002
1,100.40	0.004	0.002
1,100.60	0.005	0.003
1,100.80	0.007	0.005
1,101.00	0.008	0.006
1,101.20	0.012	0.008
1,101.40	0.016	0.011
1,101.60	0.019	0.014
1,101.80	0.023	0.018
1,102.00	0.027	0.023
1,102.20	0.044	0.031
1,102.40	0.060	0.041
1,102.60	0.077	0.055
1,102.80	0.093	0.072
1,103.00	0.110	0.092
1,103.20	0.136	0.117
1,103.40	0.162	0.146
1,103.60	0.189	0.182
1,103.80	0.215	0.222
1,104.00	0.241	0.267
1,104.20	0.306	0.322
1,104.40	0.371	0.390
1,104.60	0.437	0.471
1,104.80	0.502	0.565
1,105.00	0.567	0.671
1,105.20	0.708	0.799
1,105.40	0.848	0.955
1,105.60	0.989	1.138
1,105.80	1.129	1.350
1,106.00	1.270	1.590
1,106.20	2.193	1.936
1,106.40	3.116	2.467
1,106.60	4.040	3.183
1,106.80	4.963	4.083
1,107.00	5.886	5.168
1,107.20	6.092	6.366
1,107.40	6.298	7.605
1,107.60	6.504	8.885
1,107.80	6.710	10.206
1,108.00	6.916	11.569
1,108.20	7.719	13.033
1,108.40	8.522	14.657
1,108.60	9.326	16.441
1,108.80	10.129	18.387
1,109.00	10.932	20.493
1,109.20	11.964	22.783
1,109.40	12.995	25.278
1,109.60	14.027	27.981
1,109.80	15.058	30.889
1,110.00	16.090	34.004
1,110.20	17.595	37.373
1,110.40	19.100	41.042
1,110.60	20.606	45.013
1,110.80	22.111	49.284
1,111.00	23.616	53.857
1,111.20	25.207	58.739
1,111.40	26.797	63.940
1,111.60	28.388	69.458
1,111.80	29.978	75.295
1,112.00	31.569	81.449
1,112.20	33.849	87.991
1,112.40	36.130	94.989
1,112.60	38.410	102.443
1,112.80	40.691	110.353
1,113.00	42.971	118.719
1,113.20	45.146	127.531
1,113.40	47.321	136.778
1,113.60	49.496	146.460
1,113.80	51.671	156.576
1,114.00	53.846	167.128
1,114.20	56.271	178.140
1,114.40	58.695	189.636
1,114.60	61.120	201.618
1,114.80	63.544	214.084
1,115.00	65.969	227.035
1,115.20	68.768	240.509
1,115.40	71.567	254.543
1,115.60	74.365	269.136
1,115.80	77.164	284.289
1,116.00	79.963	300.001
1,116.20	83.788	316.377
1,116.40	87.613	333.517
1,116.60	91.438	351.422
1,116.80	95.263	370.092
1,117.00	**99.088**	**389.527**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 158.4 AC: Watershed After Runoff Area=158.400 ac 0.00% Impervious Runoff Depth=5.69"
Flow Length=2,718' Slope=0.0329 '/' Tc=34.2 min CN=84 Runoff=732.08 cfs 75.145 af

Subcatchment 309.04 AC: South Runoff Area=309.040 ac 0.00% Impervious Runoff Depth=5.69"
Flow Length=9,197' Slope=0.0329 '/' Tc=90.7 min CN=84 Runoff=762.65 cfs 146.609 af

Subcatchment 544.5 AC: Remainder of Runoff Area=544.500 ac 0.00% Impervious Runoff Depth=5.69"
Flow Length=10,448' Slope=0.0329 '/' Tc=100.5 min CN=84 Runoff=1,245.46 cfs 258.311 af

Subcatchment 689.7 AC: Watershed West Runoff Area=689.700 ac 0.00% Impervious Runoff Depth=5.69"
Flow Length=9,666' Slope=0.0329 '/' Tc=94.4 min CN=84 Runoff=1,645.82 cfs 327.194 af

Subcatchment WETLAND POOL: Runoff Area=3.420 ac 100.00% Impervious Runoff Depth=7.34"
Flow Length=1,309' Tc=3.8 min CN=98 Runoff=41.74 cfs 2.092 af

Pond 1P: H AVENUE CULVERT Peak Elev=1,129.11' Storage=94.690 af Inflow=1,645.82 cfs 327.194 af
Primary=1,218.01 cfs 200.827 af Secondary=97.32 cfs 123.943 af Outflow=1,315.33 cfs 324.770 af

Pond 2P: BASIN NW OF WETLAND Peak Elev=1,126.19' Storage=155.328 af Inflow=1,410.37 cfs 399.915 af
Primary=798.84 cfs 341.214 af Secondary=0.00 cfs 0.000 af Outflow=798.84 cfs 341.214 af

Pond BERM: WETLAND Peak Elev=1,109.24' Storage=28.554 af Inflow=1,544.89 cfs 601.617 af
Outflow=1,531.85 cfs 599.069 af

Pond I AVE: I AVENUE CULVERTS Peak Elev=1,115.88' Storage=290.673 af Inflow=2,143.15 cfs 745.678 af
Primary=484.13 cfs 560.119 af Secondary=183.15 cfs 185.399 af Tertiary=1.38 cfs 0.061 af Outflow=668.66 cfs 745.579 af

Total Runoff Area = 1,705.060 ac Runoff Volume = 809.352 af Average Runoff Depth = 5.70"
99.80% Pervious = 1,701.640 ac 0.20% Impervious = 3.420 ac

Summary for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Runoff = 732.08 cfs @ 12.47 hrs, Volume= 75.145 af, Depth= 5.69"
Routed to Pond 2P : BASIN NW OF WETLAND

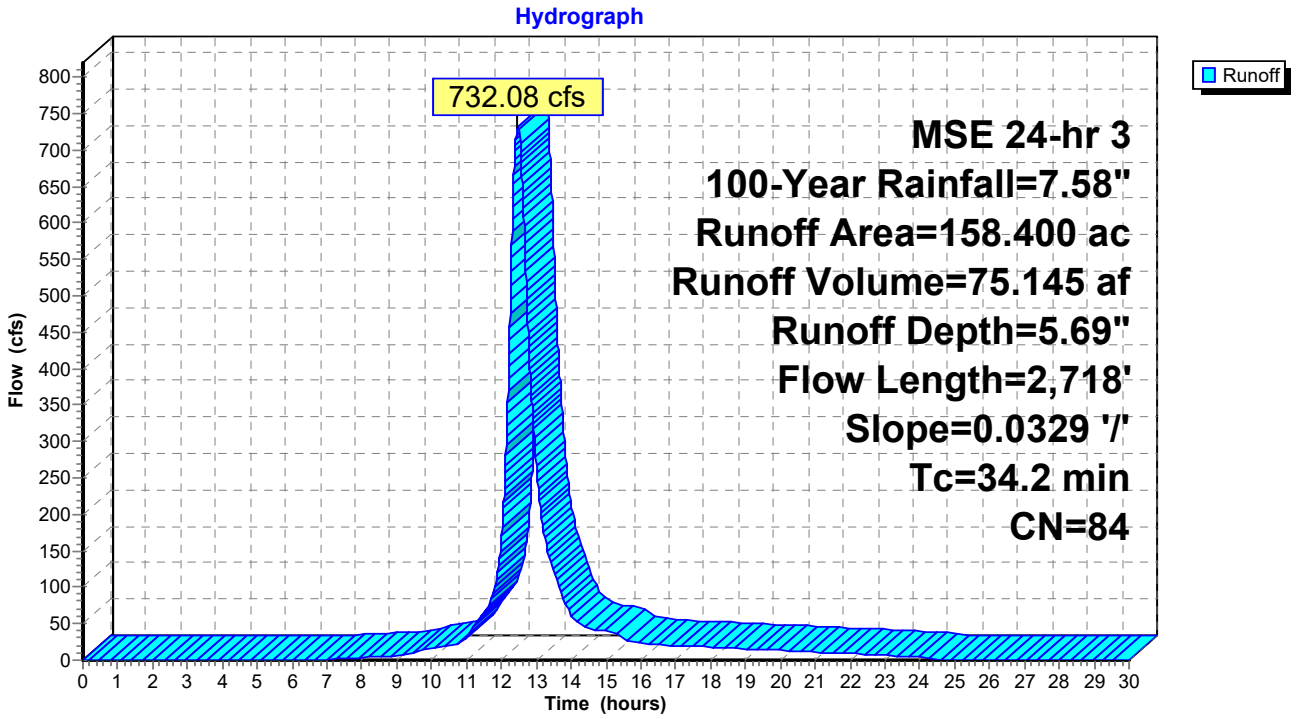
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.58"

	Area (ac)	CN	Description
*	158.400	84	
	158.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.2	2,718	0.0329	1.32		**Lag/CN Method,**

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location



Hydrograph for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.03	0.00	0.00
1.50	0.05	0.00	0.00
2.00	0.07	0.00	0.00
2.50	0.10	0.00	0.00
3.00	0.13	0.00	0.00
3.50	0.16	0.00	0.00
4.00	0.20	0.00	0.00
4.50	0.24	0.00	0.00
5.00	0.28	0.00	0.00
5.50	0.33	0.00	0.00
6.00	0.39	0.00	0.00
6.50	0.44	0.00	0.22
7.00	0.50	0.01	1.12
7.50	0.57	0.02	2.26
8.00	0.63	0.03	3.51
8.50	0.71	0.05	4.84
9.00	0.78	0.07	6.26
9.50	0.91	0.11	10.47
10.00	1.04	0.17	15.68
10.50	1.19	0.24	19.70
11.00	1.46	0.39	32.69
11.50	1.88	0.66	64.85
12.00	3.51	1.94	**167.01**
12.50	5.70	3.92	**728.81**
13.00	6.12	4.31	264.33
13.50	6.39	4.57	120.27
14.00	6.54	4.70	62.11
14.50	6.67	4.83	43.93
15.00	6.80	4.95	39.70
15.50	6.87	5.02	30.02
16.00	6.95	5.09	23.06
16.50	7.01	5.15	21.22
17.00	7.08	5.21	20.05
17.50	7.14	5.27	18.92
18.00	7.19	5.32	17.80
18.50	7.25	5.37	16.68
19.00	7.30	5.42	15.54
19.50	7.34	5.46	14.43
20.00	7.38	5.50	13.28
20.50	7.42	5.54	12.15
21.00	7.45	5.57	11.02
21.50	7.48	5.60	9.88
22.00	7.51	5.63	8.75
22.50	7.53	5.65	7.60
23.00	7.55	5.67	6.48
23.50	7.57	5.68	5.33
24.00	**7.58**	**5.69**	4.19
24.50	7.58	5.69	1.65
25.00	7.58	5.69	0.19
25.50	7.58	5.69	0.02
26.00	7.58	5.69	0.00
26.50	7.58	5.69	0.00
27.00	7.58	5.69	0.00
27.50	7.58	5.69	0.00
28.00	7.58	5.69	0.00
28.50	7.58	5.69	0.00
29.00	7.58	5.69	0.00
29.50	7.58	5.69	0.00
30.00	7.58	5.69	0.00

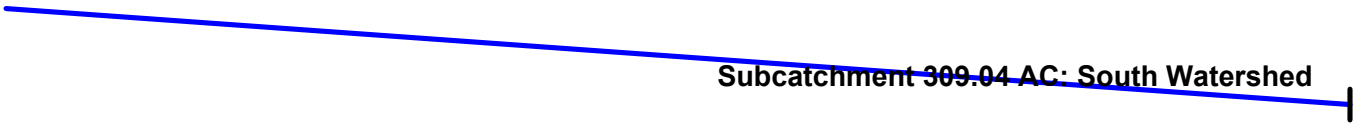
Summary for Subcatchment 309.04 AC: South Watershed

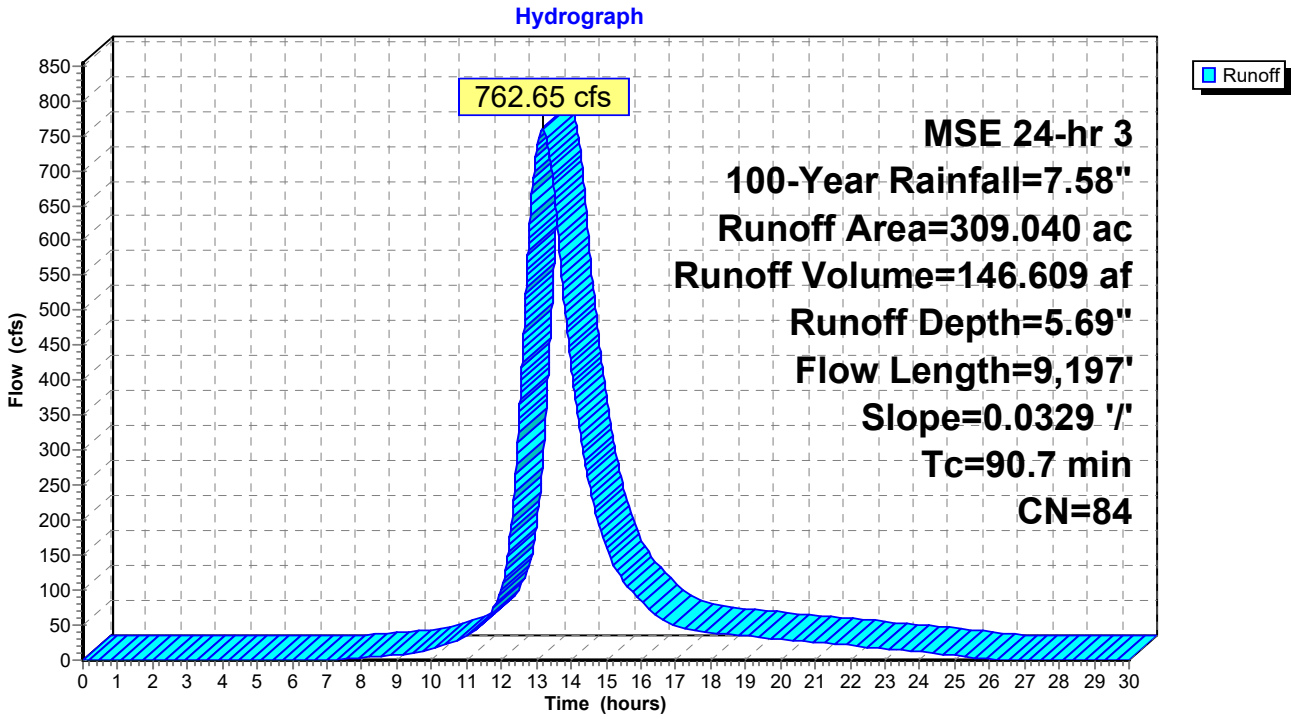
Runoff = 762.65 cfs @ 13.20 hrs, Volume= 146.609 af, Depth= 5.69"
Routed to Pond I AVE : I AVENUE CULVERTS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.58"

	Area (ac)	CN	Description
*	309.040	84	
	309.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
90.7	9,197	0.0329	1.69		**Lag/CN Method,**





Hydrograph for Subcatchment 309.04 AC: South Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.03	0.00	0.00
1.50	0.05	0.00	0.00
2.00	0.07	0.00	0.00
2.50	0.10	0.00	0.00
3.00	0.13	0.00	0.00
3.50	0.16	0.00	0.00
4.00	0.20	0.00	0.00
4.50	0.24	0.00	0.00
5.00	0.28	0.00	0.00
5.50	0.33	0.00	0.00
6.00	0.39	0.00	0.00
6.50	0.44	0.00	0.03
7.00	0.50	0.01	0.37
7.50	0.57	0.02	1.44
8.00	0.63	0.03	3.16
8.50	0.71	0.05	5.28
9.00	0.78	0.07	7.68
9.50	0.91	0.11	10.64
10.00	1.04	0.17	16.29
10.50	1.19	0.24	24.27
11.00	1.46	0.39	33.47
11.50	1.88	0.66	53.72
12.00	3.51	1.94	102.66
12.50	5.70	3.92	338.06
13.00	6.12	4.31	**731.51**
13.50	6.39	4.57	**676.14**
14.00	6.54	4.70	420.52
14.50	6.67	4.83	256.60
15.00	6.80	4.95	162.26
15.50	6.87	5.02	113.71
16.00	6.95	5.09	83.74
16.50	7.01	5.15	62.53
17.00	7.08	5.21	49.84
17.50	7.14	5.27	43.24
18.00	7.19	5.32	39.55
18.50	7.25	5.37	36.73
19.00	7.30	5.42	34.31
19.50	7.34	5.46	32.01
20.00	7.38	5.50	29.77
20.50	7.42	5.54	27.57
21.00	7.45	5.57	25.35
21.50	7.48	5.60	23.16
22.00	7.51	5.63	20.93
22.50	7.53	5.65	18.72
23.00	7.55	5.67	16.49
23.50	7.57	5.68	14.29
24.00	**7.58**	**5.69**	12.05
24.50	7.58	5.69	9.66
25.00	7.58	5.69	6.23
25.50	7.58	5.69	3.04
26.00	7.58	5.69	1.32
26.50	7.58	5.69	0.58
27.00	7.58	5.69	0.25
27.50	7.58	5.69	0.10
28.00	7.58	5.69	0.04
28.50	7.58	5.69	0.01
29.00	7.58	5.69	0.00
29.50	7.58	5.69	0.00
30.00	7.58	5.69	0.00

Summary for Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Runoff = 1,245.46 cfs @ 13.29 hrs, Volume= 258.311 af, Depth= 5.69"
Routed to Pond BERM : WETLAND

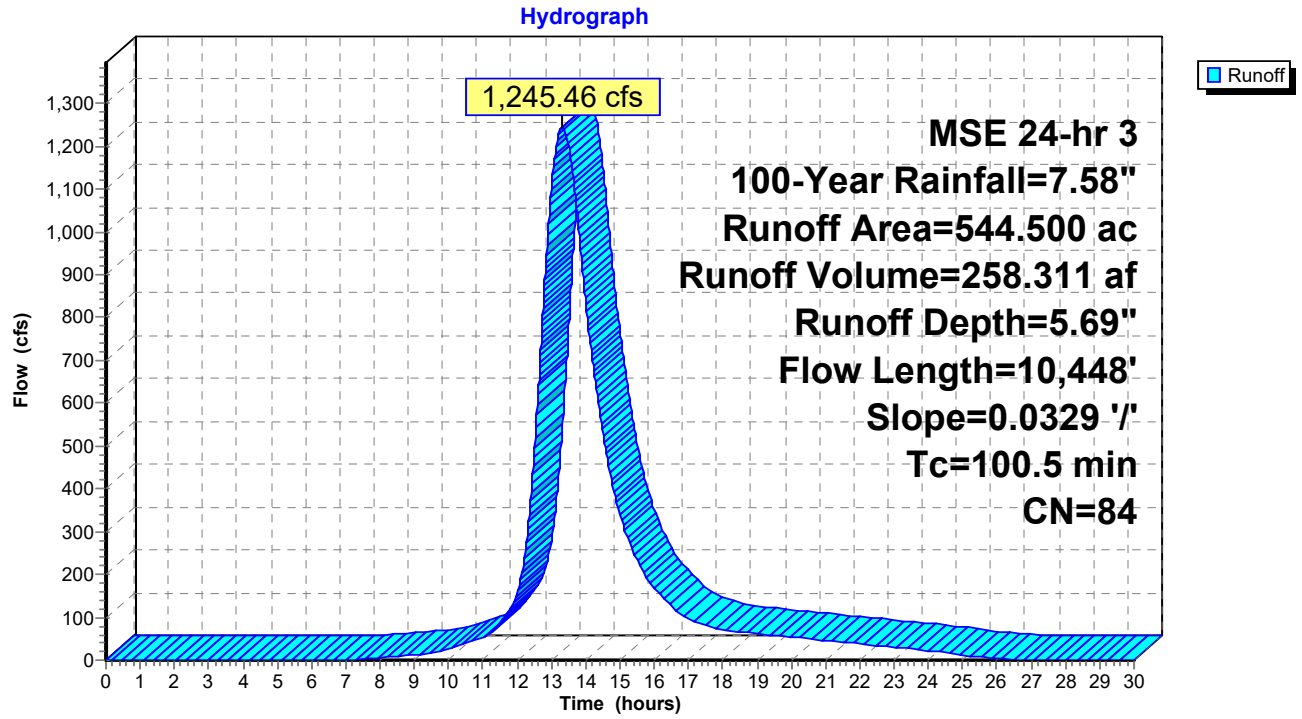
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.58"

	Area (ac)	CN	Description
*	544.500	84	
	544.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
100.5	10,448	0.0329	1.73		**Lag/CN Method,**

Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Subcatchment 544.5 AC: Remainder of Watershed to Wetland



Hydrograph for Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.03	0.00	0.00
1.50	0.05	0.00	0.00
2.00	0.07	0.00	0.00
2.50	0.10	0.00	0.00
3.00	0.13	0.00	0.00
3.50	0.16	0.00	0.00
4.00	0.20	0.00	0.00
4.50	0.24	0.00	0.00
5.00	0.28	0.00	0.00
5.50	0.33	0.00	0.00
6.00	0.39	0.00	0.00
6.50	0.44	0.00	0.03
7.00	0.50	0.01	0.48
7.50	0.57	0.02	2.03
8.00	0.63	0.03	4.75
8.50	0.71	0.05	8.26
9.00	0.78	0.07	12.33
9.50	0.91	0.11	17.23
10.00	1.04	0.17	25.91
10.50	1.19	0.24	38.87
11.00	1.46	0.39	54.33
11.50	1.88	0.66	84.52
12.00	3.51	1.94	158.26
12.50	5.70	3.92	479.35
13.00	6.12	4.31	**1,103.83**
13.50	6.39	4.57	**1,198.70**
14.00	6.54	4.70	841.17
14.50	6.67	4.83	527.91
15.00	6.80	4.95	338.72
15.50	6.87	5.02	233.02
16.00	6.95	5.09	169.60
16.50	7.01	5.15	125.26
17.00	7.08	5.21	98.23
17.50	7.14	5.27	82.18
18.00	7.19	5.32	72.49
18.50	7.25	5.37	66.60
19.00	7.30	5.42	61.88
19.50	7.34	5.46	57.73
20.00	7.38	5.50	53.74
20.50	7.42	5.54	49.75
21.00	7.45	5.57	45.82
21.50	7.48	5.60	41.97
22.00	7.51	5.63	38.10
22.50	7.53	5.65	34.16
23.00	7.55	5.67	30.22
23.50	7.57	5.68	26.34
24.00	**7.58**	**5.69**	22.45
24.50	7.58	5.69	18.25
25.00	7.58	5.69	12.69
25.50	7.58	5.69	7.01
26.00	7.58	5.69	3.35
26.50	7.58	5.69	1.60
27.00	7.58	5.69	0.75
27.50	7.58	5.69	0.34
28.00	7.58	5.69	0.15
28.50	7.58	5.69	0.06
29.00	7.58	5.69	0.02
29.50	7.58	5.69	0.00
30.00	7.58	5.69	0.00

Summary for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Runoff = 1,645.82 cfs @ 13.22 hrs, Volume= 327.194 af, Depth= 5.69"
Routed to Pond 1P : H AVENUE CULVERT

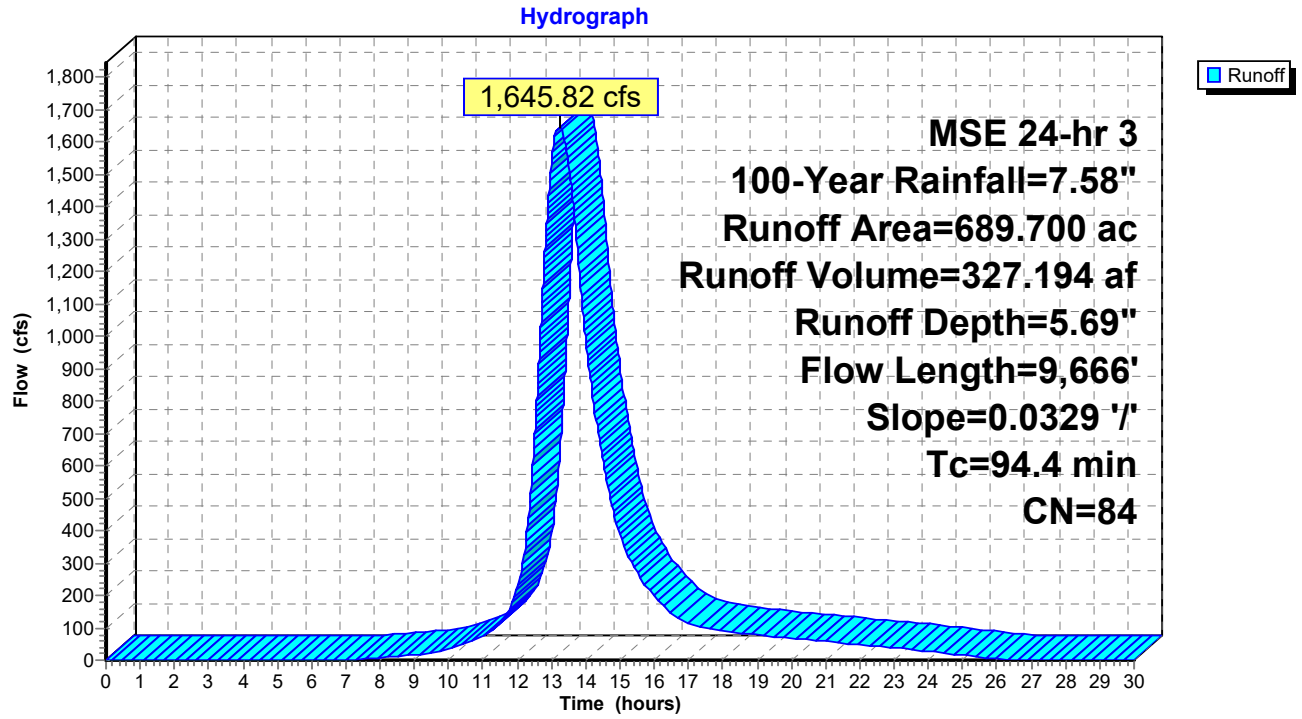
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.58"

	Area (ac)	CN	Description
*	689.700	84	
	689.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
94.4	9,666	0.0329	1.71		**Lag/CN Method,**

Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Subcatchment 689.7 AC: Watershed West of H Ave Culvert



Hydrograph for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.03	0.00	0.00
1.50	0.05	0.00	0.00
2.00	0.07	0.00	0.00
2.50	0.10	0.00	0.00
3.00	0.13	0.00	0.00
3.50	0.16	0.00	0.00
4.00	0.20	0.00	0.00
4.50	0.24	0.00	0.00
5.00	0.28	0.00	0.00
5.50	0.33	0.00	0.00
6.00	0.39	0.00	0.00
6.50	0.44	0.00	0.05
7.00	0.50	0.01	0.73
7.50	0.57	0.02	2.95
8.00	0.63	0.03	6.64
8.50	0.71	0.05	11.28
9.00	0.78	0.07	16.54
9.50	0.91	0.11	22.97
10.00	1.04	0.17	34.93
10.50	1.19	0.24	52.28
11.00	1.46	0.39	72.41
11.50	1.88	0.66	114.88
12.00	3.51	1.94	219.07
12.50	5.70	3.92	680.96
13.00	6.12	4.31	**1,533.51**
13.50	6.39	4.57	**1,527.78**
14.00	6.54	4.70	994.66
14.50	6.67	4.83	614.11
15.00	6.80	4.95	388.56
15.50	6.87	5.02	269.32
16.00	6.95	5.09	197.30
16.50	7.01	5.15	146.55
17.00	7.08	5.21	116.22
17.50	7.14	5.27	98.69
18.00	7.19	5.32	89.44
18.50	7.25	5.37	82.81
19.00	7.30	5.42	77.30
19.50	7.34	5.46	72.01
20.00	7.38	5.50	67.05
20.50	7.42	5.54	62.09
21.00	7.45	5.57	57.13
21.50	7.48	5.60	52.27
22.00	7.51	5.63	47.28
22.50	7.53	5.65	42.34
23.00	7.55	5.67	37.39
23.50	7.57	5.68	32.40
24.00	**7.58**	**5.69**	27.49
24.50	7.58	5.69	22.12
25.00	7.58	5.69	14.74
25.50	7.58	5.69	7.58
26.00	7.58	5.69	3.42
26.50	7.58	5.69	1.55
27.00	7.58	5.69	0.69
27.50	7.58	5.69	0.30
28.00	7.58	5.69	0.12
28.50	7.58	5.69	0.04
29.00	7.58	5.69	0.01
29.50	7.58	5.69	0.00
30.00	7.58	5.69	0.00

Summary for Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL

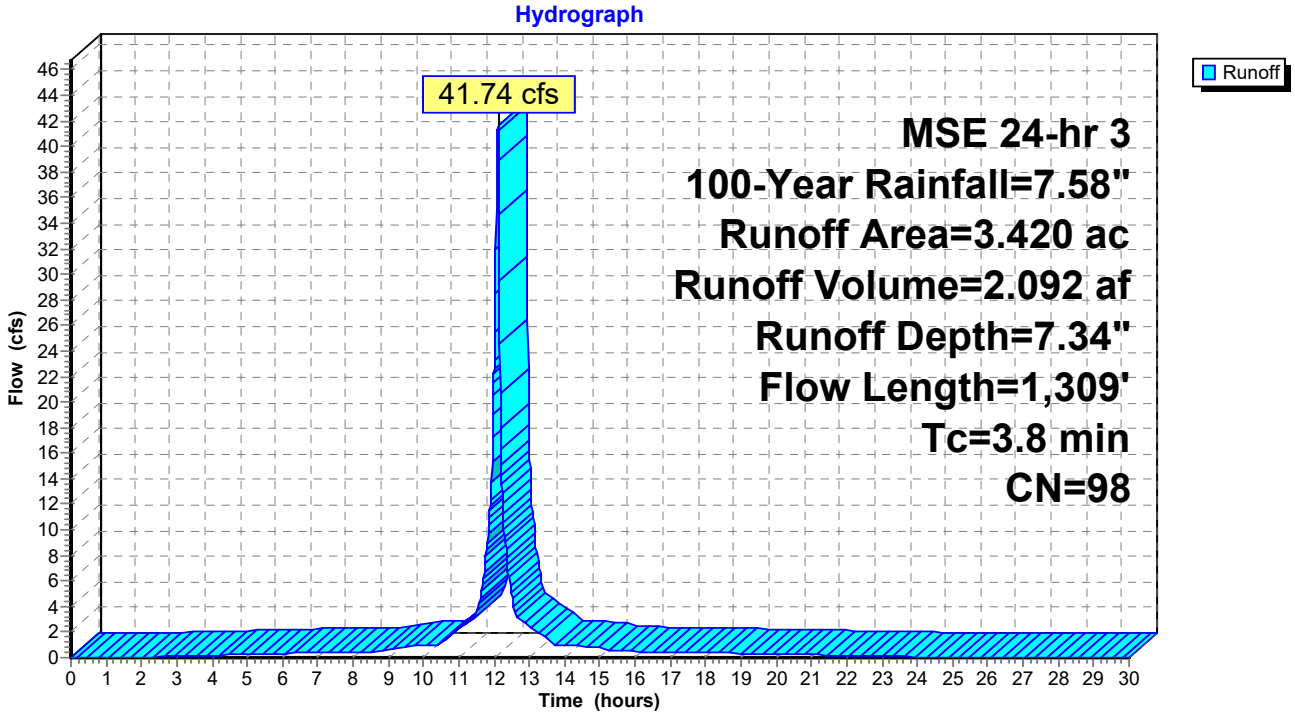
Runoff = 41.74 cfs @ 12.11 hrs, Volume= 2.092 af, Depth= 7.34"
Routed to Pond BERM : WETLAND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.58"

Area (ac)	CN	Description
3.420	98	Water Surface, HSG A
3.420		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	1,309		5.67		**Lake or Reservoir,** Mean Depth= 1.00'

Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL



Hydrograph for Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.01	0.00	0.00
1.00	0.03	0.00	0.00
1.50	0.05	0.00	0.00
2.00	0.07	0.00	0.04
2.50	0.10	0.01	0.07
3.00	0.13	0.02	0.11
3.50	0.16	0.04	0.14
4.00	0.20	0.07	0.18
4.50	0.24	0.10	0.22
5.00	0.28	0.13	0.25
5.50	0.33	0.17	0.29
6.00	0.39	0.22	0.32
6.50	0.44	0.27	0.35
7.00	0.50	0.32	0.38
7.50	0.57	0.38	0.41
8.00	0.63	0.44	0.44
8.50	0.71	0.51	0.48
9.00	0.78	0.58	0.50
9.50	0.91	0.70	0.86
10.00	1.04	0.83	0.92
10.50	1.19	0.97	0.99
11.00	1.46	1.24	2.24
11.50	1.88	1.66	3.23
12.00	3.51	3.28	**22.62**
12.50	5.70	5.46	**4.91**
13.00	6.12	5.88	2.51
13.50	6.39	6.16	1.52
14.00	6.54	6.30	0.96
14.50	6.67	6.43	0.91
15.00	6.80	6.56	0.84
15.50	6.87	6.64	0.51
16.00	6.95	6.71	0.48
16.50	7.01	6.77	0.46
17.00	7.08	6.84	0.43
17.50	7.14	6.90	0.41
18.00	7.19	6.95	0.38
18.50	7.25	7.01	0.36
19.00	7.30	7.06	0.33
19.50	7.34	7.10	0.30
20.00	7.38	7.14	0.28
20.50	7.42	7.18	0.25
21.00	7.45	7.21	0.23
21.50	7.48	7.25	0.20
22.00	7.51	7.27	0.17
22.50	7.53	7.29	0.15
23.00	7.55	7.31	0.12
23.50	7.57	7.33	0.10
24.00	**7.58**	**7.34**	0.07
24.50	7.58	7.34	0.00
25.00	7.58	7.34	0.00
25.50	7.58	7.34	0.00
26.00	7.58	7.34	0.00
26.50	7.58	7.34	0.00
27.00	7.58	7.34	0.00
27.50	7.58	7.34	0.00
28.00	7.58	7.34	0.00
28.50	7.58	7.34	0.00
29.00	7.58	7.34	0.00
29.50	7.58	7.34	0.00
30.00	7.58	7.34	0.00

Summary for Pond 1P: H AVENUE CULVERT

Inflow Area = 689.700 ac, 0.00% Impervious, Inflow Depth = 5.69" for 100-Year event
Inflow = 1,645.82 cfs @ 13.22 hrs, Volume= 327.194 af
Outflow = 1,315.33 cfs @ 13.72 hrs, Volume= 324.770 af, Atten= 20%, Lag= 29.7 min
Primary = 1,218.01 cfs @ 13.72 hrs, Volume= 200.827 af
Routed to Pond 2P : BASIN NW OF WETLAND
Secondary = 97.32 cfs @ 13.72 hrs, Volume= 123.943 af
Routed to Pond 2P : BASIN NW OF WETLAND

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,129.11' @ 13.72 hrs Surf.Area= 63.333 ac Storage= 94.690 af

Plug-Flow detention time= 126.7 min calculated for 324.770 af (99% of inflow)
Center-of-Mass det. time= 122.0 min (984.7 - 862.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,124.00'	161.110 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,124.00	0.010	0.000	0.000
1,126.00	1.650	1.660	1.660
1,128.00	36.300	37.950	39.610
1,130.00	85.200	121.500	161.110

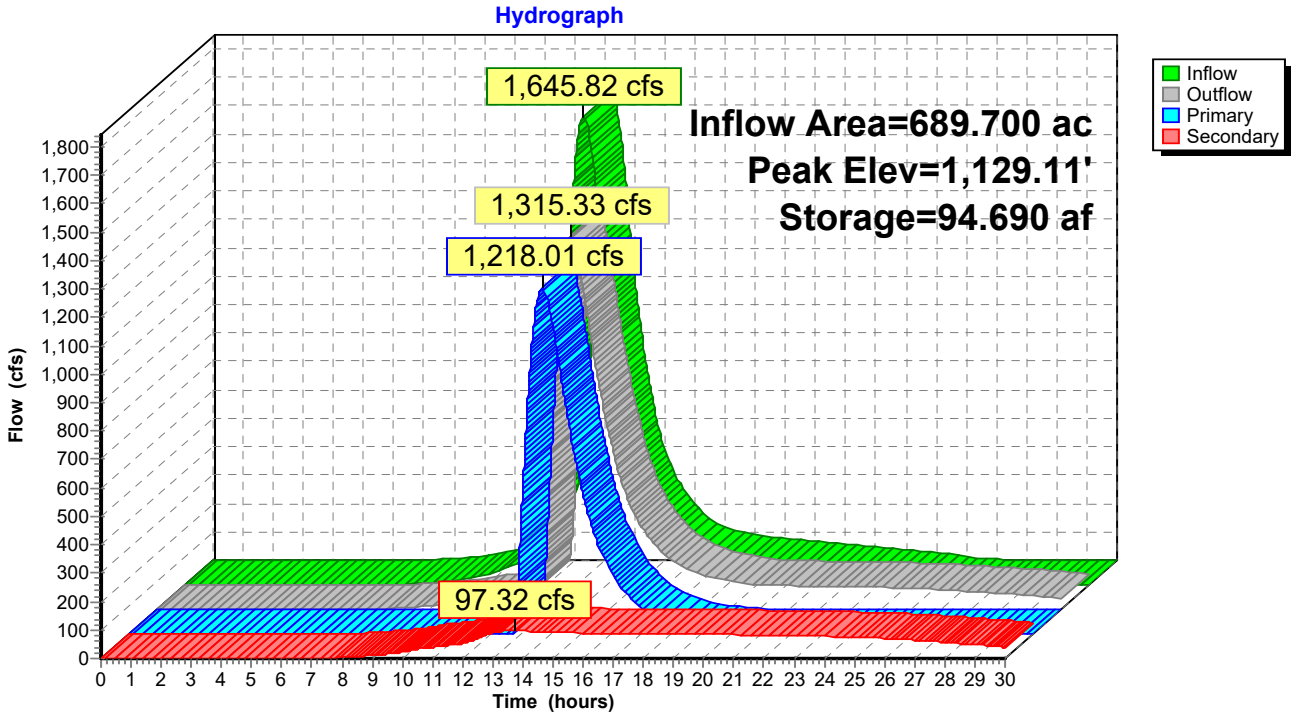
Device	Routing	Invert	Outlet Devices
#1	Secondary	1,124.00'	**60.0" W x 24.0" H Box 5'x2' CULVERT** L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,124.00' / 1,124.00' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 10.00 sf
#2	Primary	1,128.05'	**342.0' long + 100.0 '/' SideZ x 25.0' breadth H Ave Road Surface** 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

Primary OutFlow Max=1,217.74 cfs @ 13.72 hrs HW=1,129.11' (Free Discharge)
└**2=H Ave Road Surface** (Weir Controls 1,217.74 cfs @ 2.58 fps)

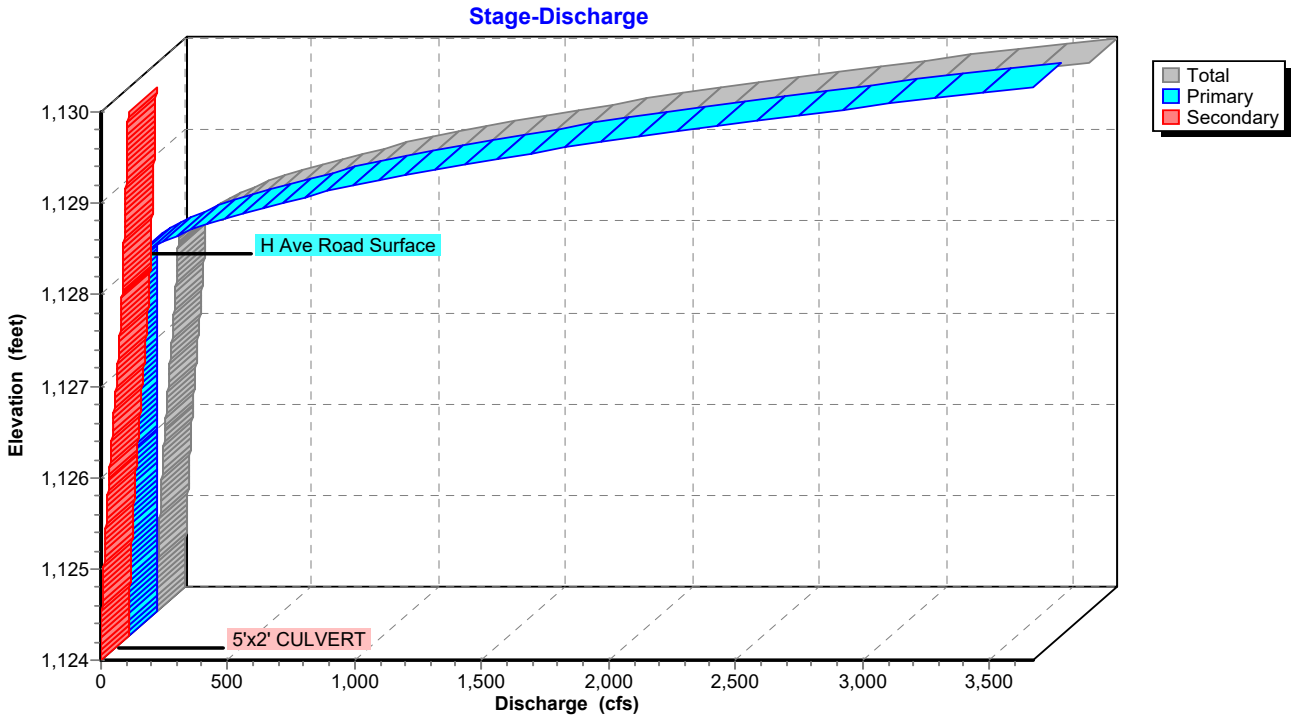
Secondary OutFlow Max=97.32 cfs @ 13.72 hrs HW=1,129.11' (Free Discharge)
└**1=5'x2' CULVERT** (Inlet Controls 97.32 cfs @ 9.73 fps)



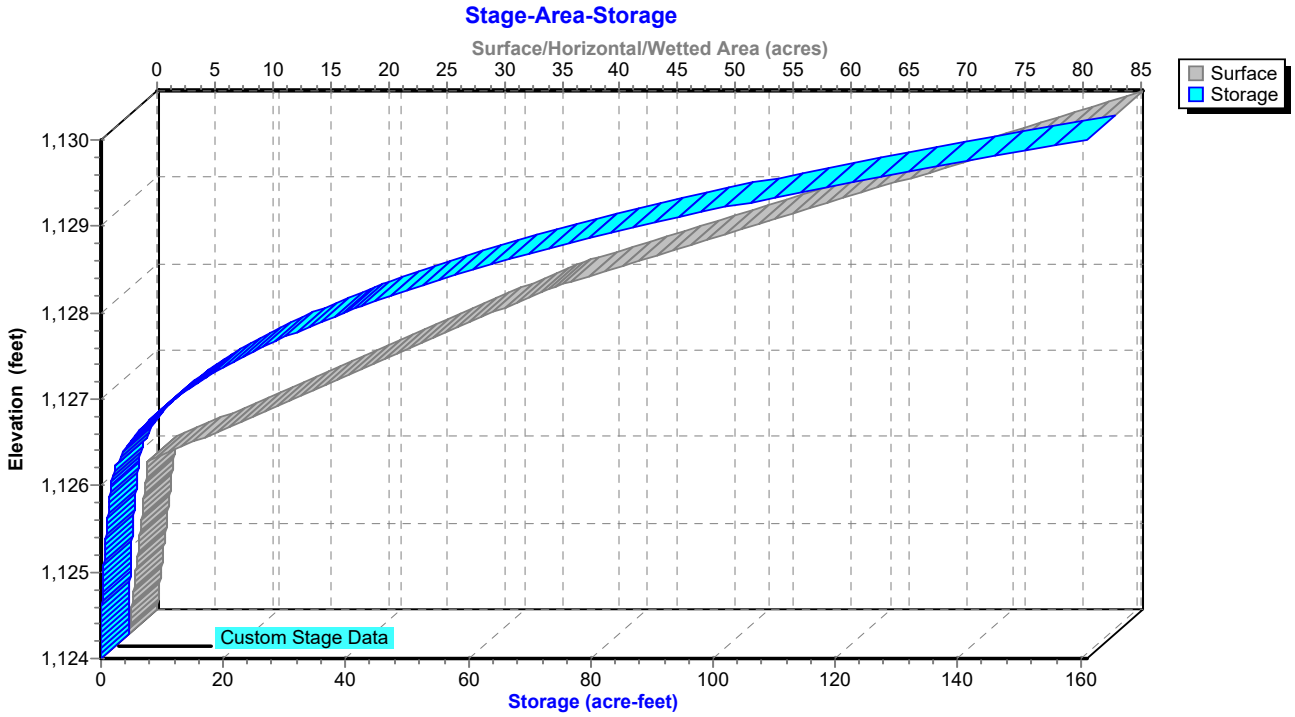
Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Pond 1P: H AVENUE CULVERT



Hydrograph for Pond 1P: H AVENUE CULVERT

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,124.00	0.00	0.00	0.00
1.00	0.00	0.000	1,124.00	0.00	0.00	0.00
2.00	0.00	0.000	1,124.00	0.00	0.00	0.00
3.00	0.00	0.000	1,124.00	0.00	0.00	0.00
4.00	0.00	0.000	1,124.00	0.00	0.00	0.00
5.00	0.00	0.000	1,124.00	0.00	0.00	0.00
6.00	0.00	0.000	1,124.00	0.00	0.00	0.00
7.00	0.73	0.008	1,124.13	0.29	0.00	0.29
8.00	6.64	0.129	1,124.55	3.98	0.00	3.98
9.00	16.54	0.451	1,125.04	11.44	0.00	11.44
10.00	34.93	1.066	1,125.60	22.82	0.00	22.82
11.00	72.41	2.763	1,126.27	39.46	0.00	39.46
12.00	219.07	9.221	1,126.84	54.43	0.00	54.43
13.00	**1,533.51**	**63.325**	**1,128.55**	**456.53**	**366.10**	**90.43**
14.00	**994.66**	**91.609**	**1,129.06**	**1,219.60**	**1,122.88**	**96.73**
15.00	388.56	69.780	1,128.68	615.92	523.89	92.04
16.00	197.30	56.601	1,128.41	306.16	217.56	88.60
17.00	116.22	49.745	1,128.26	177.19	90.65	86.55
18.00	89.44	45.940	1,128.16	122.96	37.66	85.30
19.00	77.30	43.752	1,128.11	99.48	14.95	84.54
20.00	67.05	42.098	1,128.07	86.65	2.71	83.94
21.00	57.13	40.274	1,128.02	83.26	0.00	83.26
22.00	47.28	37.749	1,127.95	82.27	0.00	82.27
23.00	37.39	34.507	1,127.85	80.68	0.00	80.68
24.00	27.49	30.620	1,127.74	78.09	0.00	78.09
25.00	14.74	26.098	1,127.59	74.67	0.00	74.67
26.00	3.42	20.782	1,127.39	69.96	0.00	69.96
27.00	0.69	15.379	1,127.17	64.02	0.00	64.02
28.00	0.12	10.408	1,126.91	56.65	0.00	56.65
29.00	0.01	6.082	1,126.63	49.28	0.00	49.28
30.00	0.00	2.440	1,126.22	38.02	0.00	38.02

Stage-Discharge for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,124.00	0.00	0.00	0.00
1,124.10	0.16	0.00	0.16
1,124.20	0.64	0.00	0.64
1,124.30	1.37	0.00	1.37
1,124.40	2.30	0.00	2.30
1,124.50	3.40	0.00	3.40
1,124.60	4.64	0.00	4.64
1,124.70	6.01	0.00	6.01
1,124.80	7.50	0.00	7.50
1,124.90	9.10	0.00	9.10
1,125.00	10.80	0.00	10.80
1,125.10	12.59	0.00	12.59
1,125.20	14.47	0.00	14.47
1,125.30	16.44	0.00	16.44
1,125.40	18.49	0.00	18.49
1,125.50	20.61	0.00	20.61
1,125.60	22.82	0.00	22.82
1,125.70	25.10	0.00	25.10
1,125.80	27.44	0.00	27.44
1,125.90	29.86	0.00	29.86
1,126.00	32.34	0.00	32.34
1,126.10	34.89	0.00	34.89
1,126.20	37.50	0.00	37.50
1,126.30	40.17	0.00	40.17
1,126.40	42.91	0.00	42.91
1,126.50	45.70	0.00	45.70
1,126.60	48.55	0.00	48.55
1,126.70	49.59	0.00	49.59
1,126.80	53.02	0.00	53.02
1,126.90	56.23	0.00	56.23
1,127.00	59.28	0.00	59.28
1,127.10	62.17	0.00	62.17
1,127.20	64.93	0.00	64.93
1,127.30	67.59	0.00	67.59
1,127.40	70.14	0.00	70.14
1,127.50	72.60	0.00	72.60
1,127.60	74.98	0.00	74.98
1,127.70	77.29	0.00	77.29
1,127.80	79.53	0.00	79.53
1,127.90	81.58	0.00	81.58
1,128.00	83.00	0.00	83.00
1,128.10	94.77	10.37	84.40
1,128.20	140.89	55.12	85.78
1,128.30	208.62	121.50	87.13
1,128.40	294.93	206.47	88.46
1,128.50	397.86	308.09	89.77
1,128.60	516.16	425.10	91.06
1,128.70	646.72	554.38	92.33
1,128.80	786.82	693.24	93.59
1,128.90	942.26	847.43	94.82
1,129.00	1,114.94	1,018.90	96.05
1,129.10	1,303.85	1,206.60	97.25
1,129.20	1,510.10	1,411.66	98.44
1,129.30	1,730.38	1,630.76	99.62
1,129.40	1,964.23	1,863.45	100.78
1,129.50	2,211.09	2,109.16	101.93
1,129.60	2,470.36	2,367.29	103.06
1,129.70	2,746.35	2,642.17	104.19
1,129.80	3,039.97	2,934.67	105.30
1,129.90	3,349.12	3,242.72	106.40
1,130.00	**3,673.94**	**3,566.46**	**107.49**

Stage-Area-Storage for Pond 1P: H AVENUE CULVERT

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,124.00	0.010	0.000
1,124.10	0.092	0.005
1,124.20	0.174	0.018
1,124.30	0.256	0.040
1,124.40	0.338	0.070
1,124.50	0.420	0.107
1,124.60	0.502	0.154
1,124.70	0.584	0.208
1,124.80	0.666	0.270
1,124.90	0.748	0.341
1,125.00	0.830	0.420
1,125.10	0.912	0.507
1,125.20	0.994	0.602
1,125.30	1.076	0.706
1,125.40	1.158	0.818
1,125.50	1.240	0.937
1,125.60	1.322	1.066
1,125.70	1.404	1.202
1,125.80	1.486	1.346
1,125.90	1.568	1.499
1,126.00	1.650	1.660
1,126.10	3.382	1.912
1,126.20	5.115	2.337
1,126.30	6.847	2.935
1,126.40	8.580	3.706
1,126.50	10.312	4.651
1,126.60	12.045	5.768
1,126.70	13.778	7.060
1,126.80	15.510	8.524
1,126.90	17.243	10.162
1,127.00	18.975	11.972
1,127.10	20.707	13.957
1,127.20	22.440	16.114
1,127.30	24.172	18.445
1,127.40	25.905	20.949
1,127.50	27.637	23.626
1,127.60	29.370	26.476
1,127.70	31.103	29.500
1,127.80	32.835	32.696
1,127.90	34.568	36.067
1,128.00	36.300	39.610
1,128.10	38.745	43.362
1,128.20	41.190	47.359
1,128.30	43.635	51.600
1,128.40	46.080	56.086
1,128.50	48.525	60.816
1,128.60	50.970	65.791
1,128.70	53.415	71.010
1,128.80	55.860	76.474
1,128.90	58.305	82.182
1,129.00	60.750	88.135
1,129.10	63.195	94.332
1,129.20	65.640	100.774
1,129.30	68.085	107.460
1,129.40	70.530	114.391
1,129.50	72.975	121.566
1,129.60	75.420	128.986
1,129.70	77.865	136.650
1,129.80	80.310	144.559
1,129.90	82.755	152.712
1,130.00	**85.200**	**161.110**

Summary for Pond 2P: BASIN NW OF WETLAND

[79] Warning: Submerged Pond 1P Secondary device # 1 by 2.19'

Inflow Area = 848.100 ac, 0.00% Impervious, Inflow Depth > 5.66" for 100-Year event
Inflow = 1,410.37 cfs @ 13.68 hrs, Volume= 399.915 af
Outflow = 798.84 cfs @ 14.73 hrs, Volume= 341.214 af, Atten= 43%, Lag= 63.1 min
Primary = 798.84 cfs @ 14.73 hrs, Volume= 341.214 af
Routed to Pond BERM : WETLAND
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,126.19' @ 14.73 hrs Surf.Area= 73.102 ac Storage= 155.328 af

Plug-Flow detention time= 211.8 min calculated for 341.100 af (85% of inflow)
Center-of-Mass det. time= 122.6 min (1,073.8 - 951.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,121.00'	311.173 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,121.00	1.997	0.000	0.000
1,122.00	7.899	4.948	4.948
1,123.00	16.217	12.058	17.006
1,124.00	30.839	23.528	40.534
1,126.00	70.400	101.239	141.773
1,128.00	99.000	169.400	311.173

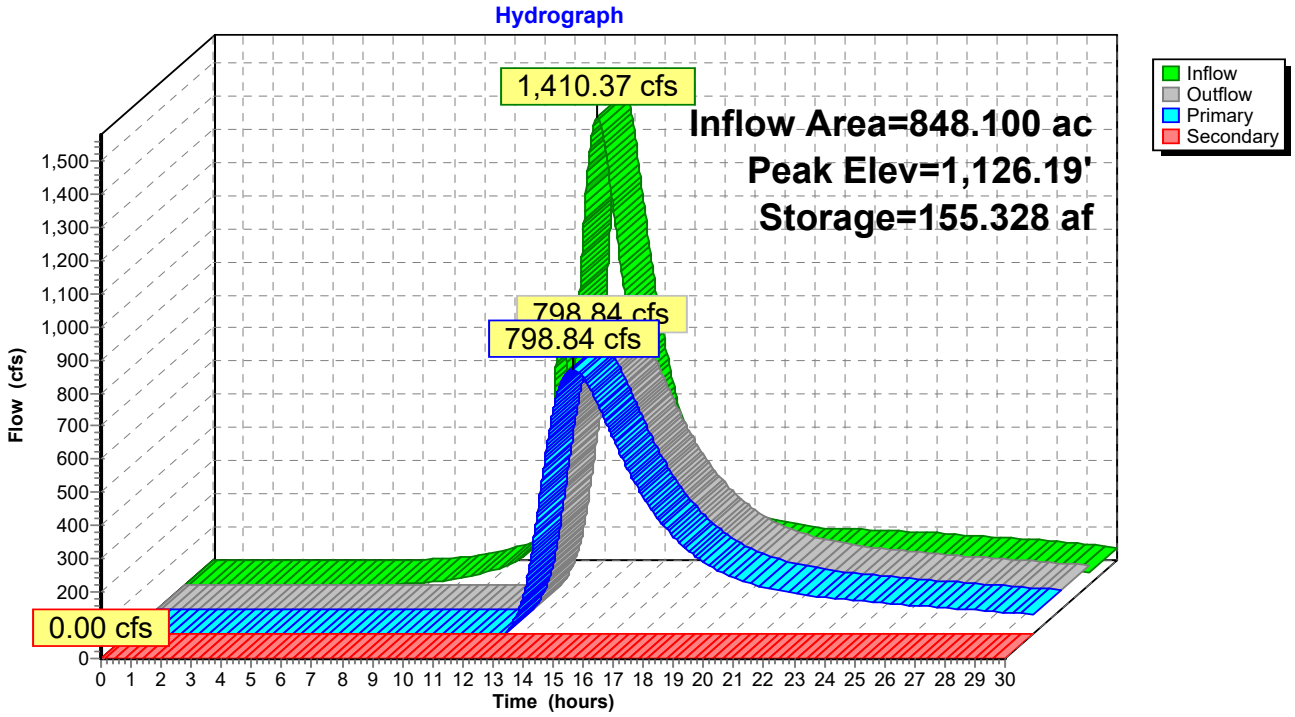
Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.00'	**50.0' long + 25.0 '/' SideZ x 50.0' breadth Saddle to Wetland** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Secondary	1,127.00'	**300.0' long + 50.0 '/' SideZ x 50.0' breadth Saddle Away from Wetland** 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

Primary OutFlow Max=798.73 cfs @ 14.73 hrs HW=1,126.19' (Free Discharge)
↑—**1=Saddle to Wetland** (Weir Controls 798.73 cfs @ 3.48 fps)

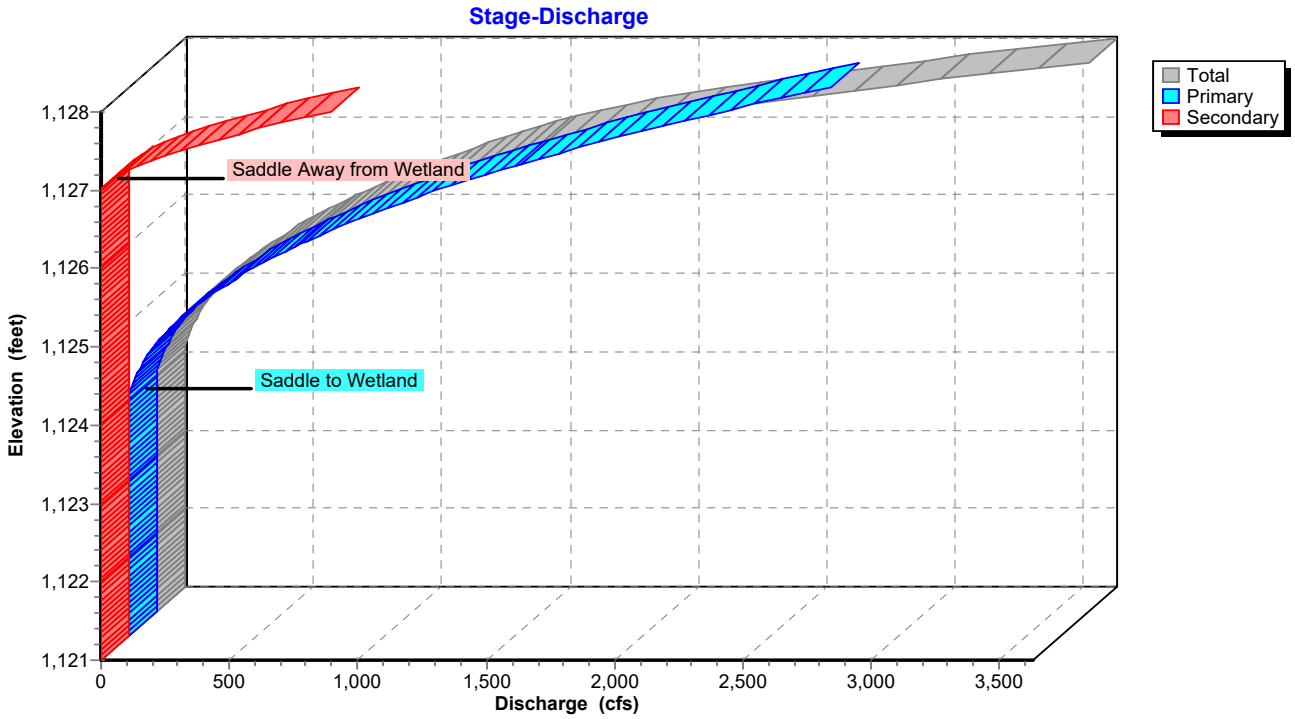
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,121.00' (Free Discharge)
↑—**2=Saddle Away from Wetland** (Controls 0.00 cfs)



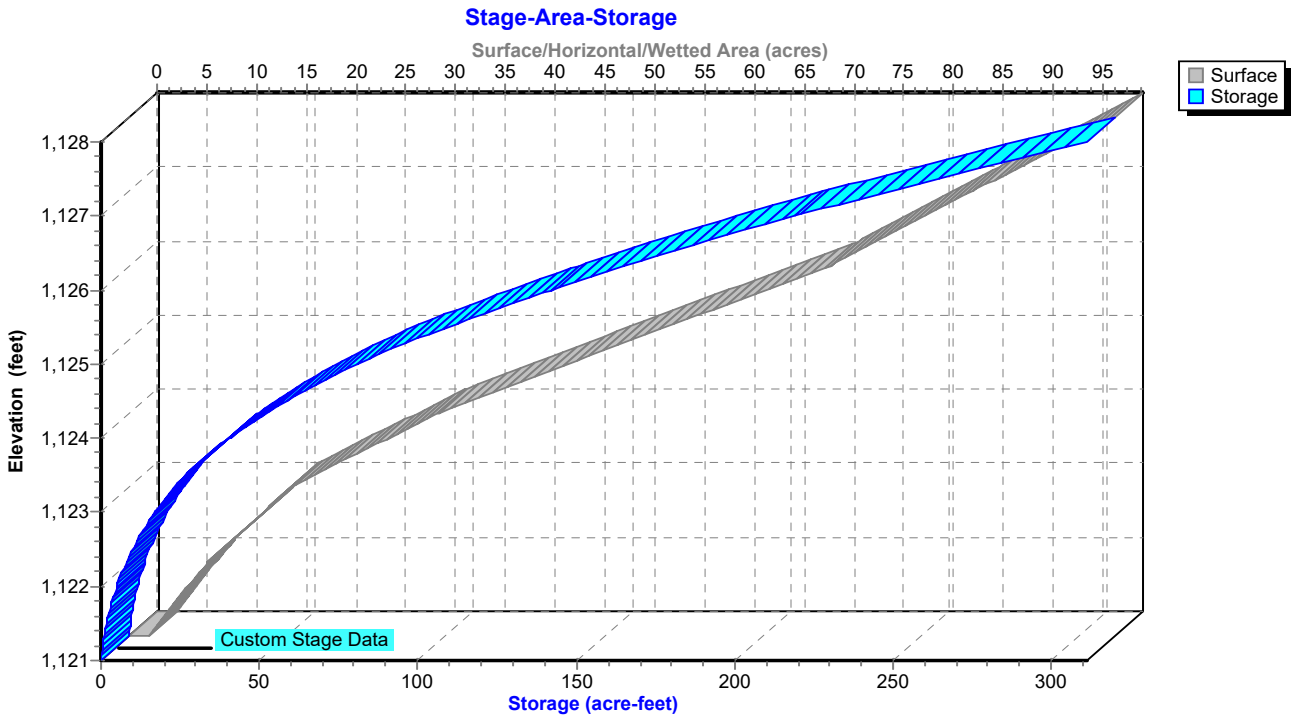
Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Pond 2P: BASIN NW OF WETLAND



Hydrograph for Pond 2P: BASIN NW OF WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.000	1,121.00	0.00	0.00	**0.00**
1.00	0.00	0.000	1,121.00	0.00	0.00	0.00
2.00	0.00	0.000	1,121.00	0.00	0.00	0.00
3.00	0.00	0.000	1,121.00	0.00	0.00	0.00
4.00	0.00	0.000	1,121.00	0.00	0.00	0.00
5.00	0.00	0.000	1,121.00	0.00	0.00	0.00
6.00	0.00	0.000	1,121.00	0.00	0.00	0.00
7.00	1.41	0.032	1,121.01	0.00	0.00	0.00
8.00	7.49	0.365	1,121.15	0.00	0.00	0.00
9.00	17.70	1.385	1,121.43	0.00	0.00	0.00
10.00	38.50	3.617	1,121.82	0.00	0.00	0.00
11.00	72.15	7.993	1,122.33	0.00	0.00	0.00
12.00	221.44	17.821	1,123.05	0.00	0.00	0.00
13.00	**720.86**	64.817	1,124.65	88.99	88.99	0.00
14.00	**1,281.72**	**138.179**	**1,125.95**	**636.57**	**636.57**	0.00
15.00	655.62	**153.785**	**1,126.17**	**783.71**	**783.71**	0.00
16.00	329.22	134.467	1,125.89	602.88	602.88	0.00
17.00	197.24	113.480	1,125.57	422.73	422.73	0.00
18.00	140.76	97.631	1,125.30	299.67	299.67	0.00
19.00	115.02	86.779	1,125.11	221.43	221.43	0.00
20.00	99.93	79.455	1,124.96	172.68	172.68	0.00
21.00	94.28	74.503	1,124.86	142.18	142.18	0.00
22.00	91.01	71.250	1,124.79	123.28	123.28	0.00
23.00	87.16	68.979	1,124.74	110.84	110.84	0.00
24.00	82.28	67.228	1,124.71	101.47	101.47	0.00
25.00	74.86	65.657	1,124.67	93.34	93.34	0.00
26.00	69.96	64.243	1,124.64	86.03	86.03	0.00
27.00	64.02	62.949	1,124.61	79.51	79.51	0.00
28.00	56.65	61.645	1,124.58	72.95	72.95	0.00
29.00	49.28	60.231	1,124.54	66.03	66.03	0.00
30.00	38.02	58.710	1,124.51	58.65	58.65	0.00

Stage-Discharge for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,121.00	0.00	0.00	0.00
1,121.10	0.00	0.00	0.00
1,121.20	0.00	0.00	0.00
1,121.30	0.00	0.00	0.00
1,121.40	0.00	0.00	0.00
1,121.50	0.00	0.00	0.00
1,121.60	0.00	0.00	0.00
1,121.70	0.00	0.00	0.00
1,121.80	0.00	0.00	0.00
1,121.90	0.00	0.00	0.00
1,122.00	0.00	0.00	0.00
1,122.10	0.00	0.00	0.00
1,122.20	0.00	0.00	0.00
1,122.30	0.00	0.00	0.00
1,122.40	0.00	0.00	0.00
1,122.50	0.00	0.00	0.00
1,122.60	0.00	0.00	0.00
1,122.70	0.00	0.00	0.00
1,122.80	0.00	0.00	0.00
1,122.90	0.00	0.00	0.00
1,123.00	0.00	0.00	0.00
1,123.10	0.00	0.00	0.00
1,123.20	0.00	0.00	0.00
1,123.30	0.00	0.00	0.00
1,123.40	0.00	0.00	0.00
1,123.50	0.00	0.00	0.00
1,123.60	0.00	0.00	0.00
1,123.70	0.00	0.00	0.00
1,123.80	0.00	0.00	0.00
1,123.90	0.00	0.00	0.00
1,124.00	0.00	0.00	0.00
1,124.10	4.41	4.41	0.00
1,124.20	12.94	12.94	0.00
1,124.30	24.75	24.75	0.00
1,124.40	39.62	39.62	0.00
1,124.50	57.28	57.28	0.00
1,124.60	77.80	77.80	0.00
1,124.70	100.08	100.08	0.00
1,124.80	124.68	124.68	0.00
1,124.90	152.99	152.99	0.00
1,125.00	184.10	184.10	0.00
1,125.10	218.88	218.88	0.00
1,125.20	256.81	256.81	0.00
1,125.30	297.39	297.39	0.00
1,125.40	341.11	341.11	0.00
1,125.50	387.26	387.26	0.00
1,125.60	436.47	436.47	0.00
1,125.70	489.68	489.68	0.00
1,125.80	546.21	546.21	0.00
1,125.90	606.13	606.13	0.00
1,126.00	669.49	669.49	0.00
1,126.10	736.33	736.33	0.00
1,126.20	806.71	806.71	0.00
1,126.30	880.68	880.68	0.00
1,126.40	958.29	958.29	0.00
1,126.50	1,039.60	1,039.60	0.00
1,126.60	1,124.65	1,124.65	0.00
1,126.70	1,213.49	1,213.49	0.00
1,126.80	1,306.17	1,306.17	0.00
1,126.90	1,402.74	1,402.74	0.00
1,127.00	1,503.25	1,503.25	0.00
1,127.10	1,633.51	1,607.74	25.76
1,127.20	1,790.10	1,716.27	73.83
1,127.30	1,966.79	1,828.88	137.91
1,127.40	2,161.46	1,945.61	215.84
1,127.50	2,371.99	2,066.52	305.47
1,127.60	2,598.21	2,191.64	406.57
1,127.70	2,833.93	2,321.03	512.90
1,127.80	3,081.88	2,454.72	627.16
1,127.90	3,348.70	2,592.76	755.93
1,128.00	**3,629.40**	**2,735.20**	**894.20**

Stage-Area-Storage for Pond 2P: BASIN NW OF WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,121.00	1.997	0.000
1,121.10	2.587	0.229
1,121.20	3.177	0.517
1,121.30	3.768	0.865
1,121.40	4.358	1.271
1,121.50	4.948	1.736
1,121.60	5.538	2.261
1,121.70	6.128	2.844
1,121.80	6.719	3.486
1,121.90	7.309	4.188
1,122.00	7.899	4.948
1,122.10	8.731	5.779
1,122.20	9.563	6.694
1,122.30	10.394	7.692
1,122.40	11.226	8.773
1,122.50	12.058	9.937
1,122.60	12.890	11.185
1,122.70	13.722	12.515
1,122.80	14.553	13.929
1,122.90	15.385	15.426
1,123.00	16.217	17.006
1,123.10	17.679	18.701
1,123.20	19.141	20.542
1,123.30	20.604	22.529
1,123.40	22.066	24.663
1,123.50	23.528	26.942
1,123.60	24.990	29.368
1,123.70	26.452	31.940
1,123.80	27.915	34.659
1,123.90	29.377	37.523
1,124.00	30.839	40.534
1,124.10	32.817	43.717
1,124.20	34.795	47.097
1,124.30	36.773	50.676
1,124.40	38.751	54.452
1,124.50	40.729	58.426
1,124.60	42.707	62.598
1,124.70	44.685	66.968
1,124.80	46.663	71.535
1,124.90	48.641	76.300
1,125.00	50.619	81.263
1,125.10	52.598	86.424
1,125.20	54.576	91.783
1,125.30	56.554	97.339
1,125.40	58.532	103.093
1,125.50	60.510	109.046
1,125.60	62.488	115.195
1,125.70	64.466	121.543
1,125.80	66.444	128.089
1,125.90	68.422	134.832
1,126.00	70.400	141.773
1,126.10	71.830	148.884
1,126.20	73.260	156.139
1,126.30	74.690	163.536
1,126.40	76.120	171.077
1,126.50	77.550	178.760
1,126.60	78.980	186.587
1,126.70	80.410	194.557
1,126.80	81.840	202.669
1,126.90	83.270	210.925
1,127.00	84.700	219.323
1,127.10	86.130	227.864
1,127.20	87.560	236.549
1,127.30	88.990	245.376
1,127.40	90.420	254.347
1,127.50	91.850	263.460
1,127.60	93.280	272.717
1,127.70	94.710	282.117
1,127.80	96.140	291.659
1,127.90	97.570	301.345
1,128.00	**99.000**	**311.173**

Summary for Pond BERM: WETLAND

Inflow Area = 1,396.020 ac, 0.24% Impervious, Inflow Depth > 5.17" for 100-Year event
Inflow = 1,544.89 cfs @ 13.63 hrs, Volume= 601.617 af
Outflow = 1,531.85 cfs @ 13.79 hrs, Volume= 599.069 af, Atten= 1%, Lag= 9.6 min
Primary = 1,531.85 cfs @ 13.79 hrs, Volume= 599.069 af
Routed to Pond I AVE : I AVENUE CULVERTS

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 1,106.00' Surf.Area= 6.409 ac Storage= 5.396 af
Peak Elev= 1,109.24' @ 13.79 hrs Surf.Area= 8.279 ac Storage= 28.554 af (23.157 af above start)

Plug-Flow detention time= 25.6 min calculated for 593.474 af (99% of inflow)
Center-of-Mass det. time= 11.9 min (996.2 - 984.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,103.00'	386.614 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

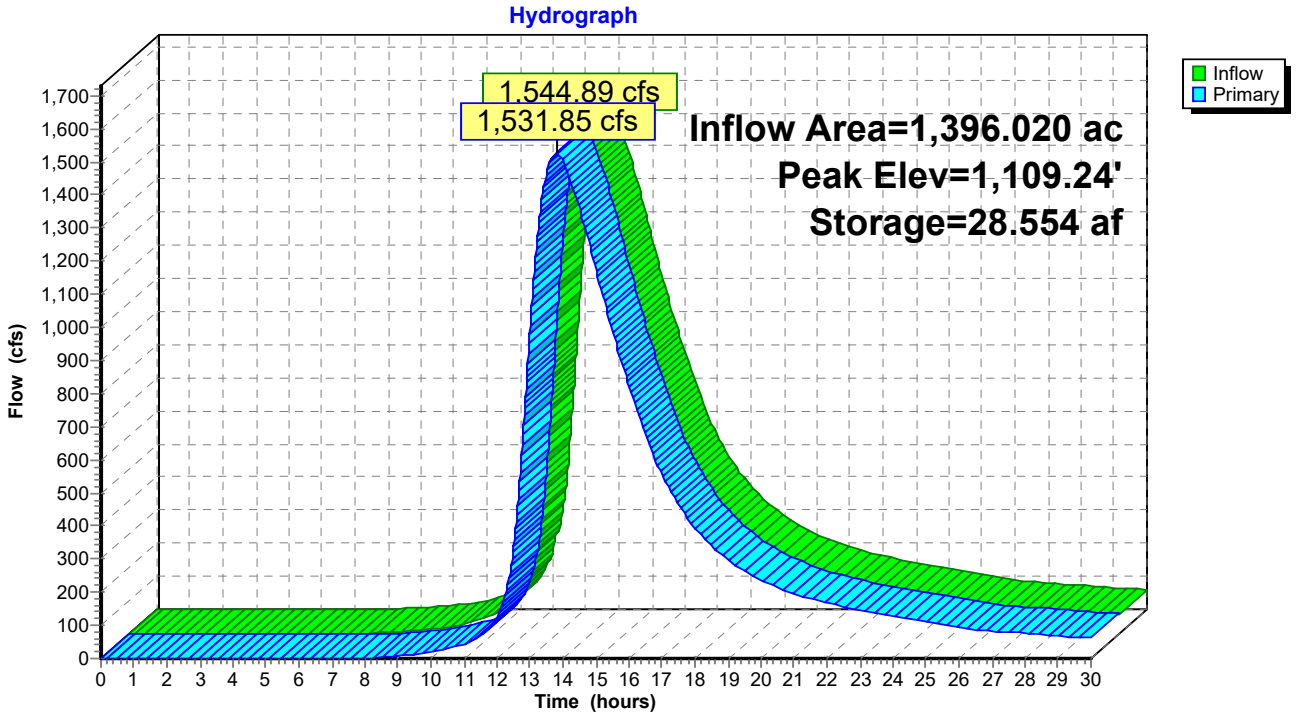
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,103.00	0.000	0.000	0.000
1,104.00	0.943	0.472	0.472
1,105.00	1.249	1.096	1.568
1,106.00	6.409	3.829	5.396
1,107.00	6.899	6.654	12.051
1,108.00	7.280	7.089	19.140
1,109.00	7.669	7.475	26.615
1,110.00	10.179	8.924	35.538
1,110.30	11.226	3.211	38.749
1,111.00	23.616	12.195	50.944
1,112.00	31.569	27.592	78.536
1,113.00	42.971	37.270	115.806
1,114.00	53.846	48.409	164.215
1,115.00	65.969	59.908	224.122
1,116.00	79.963	72.966	297.088
1,117.00	99.088	89.526	386.614

Device	Routing	Invert	Outlet Devices
#1	Primary	1,106.00'	**Sheet Pile Weir, C= 3.27** Offset (feet) -54.10 -52.10 -44.10 -37.50 37.50 44.10 52.10 54.10 Height (feet) 4.30 3.30 3.30 0.00 0.00 3.30 3.30 4.30

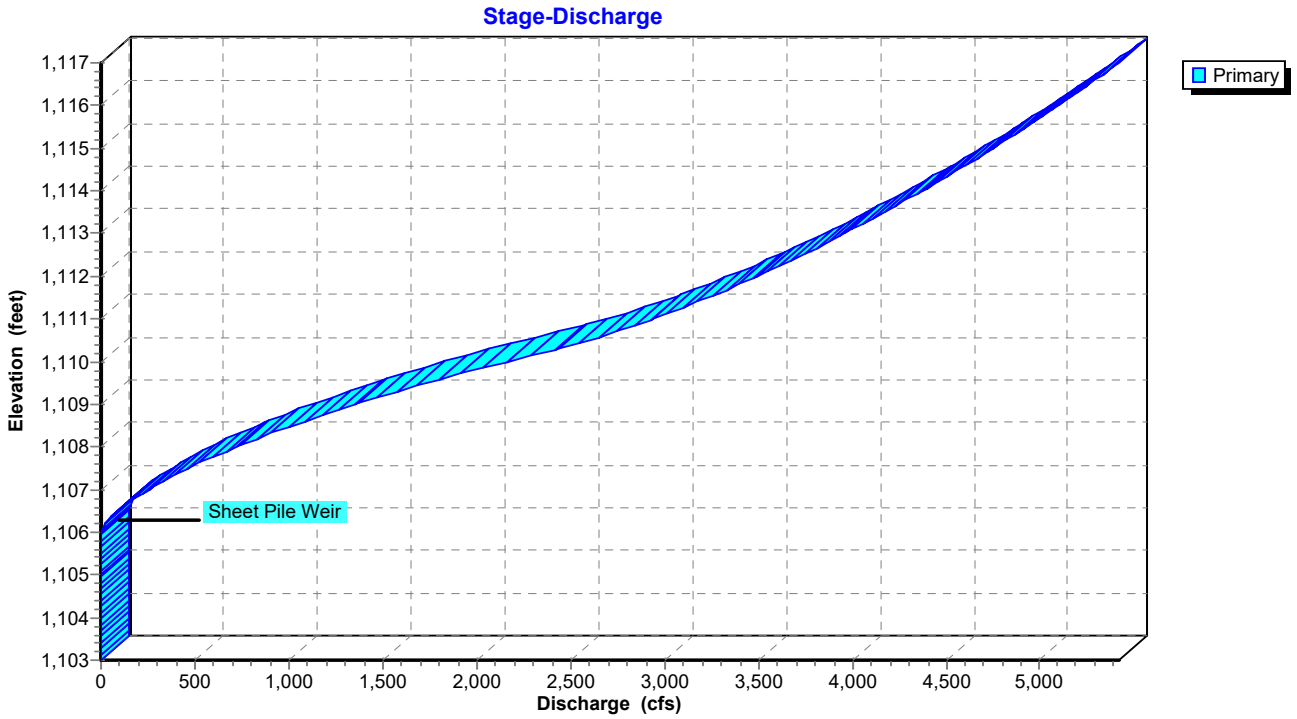
Primary OutFlow Max=1,531.52 cfs @ 13.79 hrs HW=1,109.24' (Free Discharge)
└**1=Sheet Pile Weir** (Weir Controls 1,531.52 cfs @ 5.37 fps)



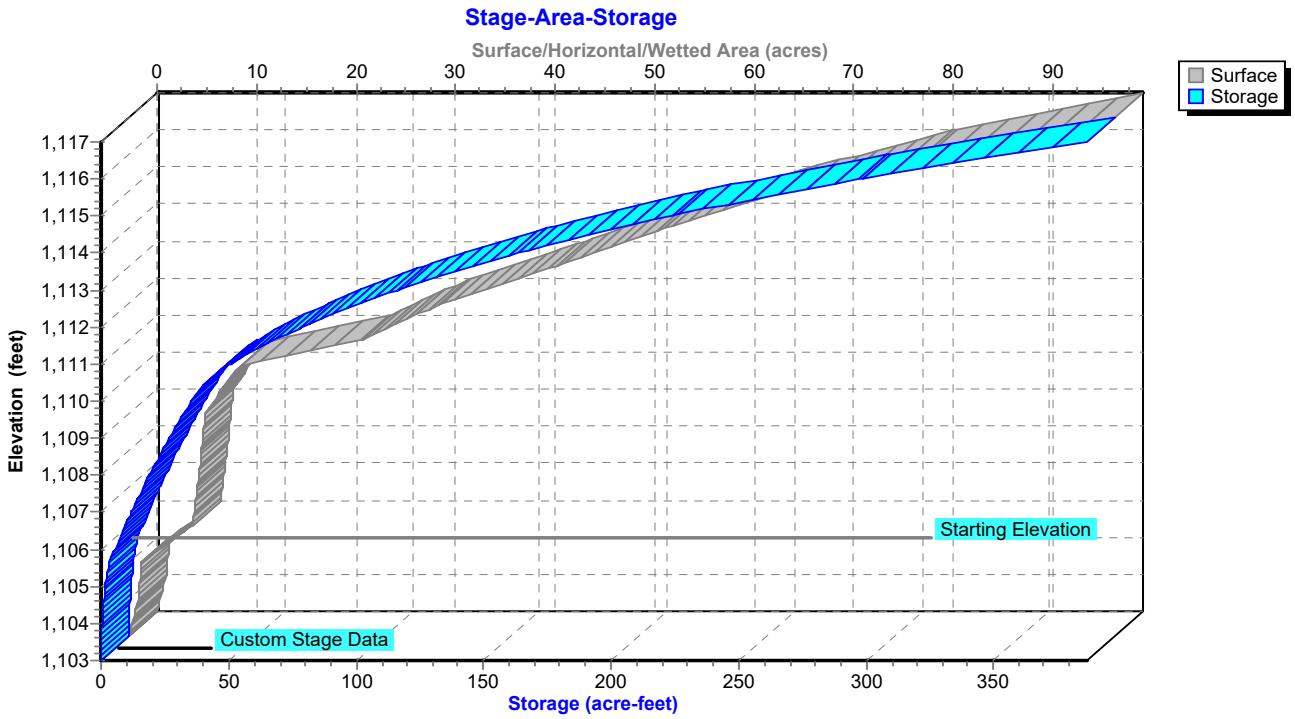
Pond BERM: WETLAND



Pond BERM: WETLAND



Pond BERM: WETLAND



Hydrograph for Pond BERM: WETLAND

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	5.396	1,106.00	0.00
1.00	0.00	5.396	1,106.00	0.00
2.00	0.04	5.397	1,106.00	0.01
3.00	0.11	5.401	1,106.00	0.05
4.00	0.18	5.406	1,106.00	0.11
5.00	0.25	5.413	1,106.00	0.18
6.00	0.32	5.419	1,106.00	0.24
7.00	0.87	5.432	1,106.01	0.39
8.00	5.19	5.573	1,106.03	1.91
9.00	12.83	5.978	1,106.09	7.03
10.00	26.84	6.500	1,106.17	18.45
11.00	56.57	7.416	1,106.31	43.65
12.00	180.87	9.518	1,106.63	123.87
13.00	**1,195.33**	**22.415**	**1,108.44**	**986.39**
14.00	**1,478.70**	**28.281**	**1,109.21**	**1,506.97**
15.00	1,123.28	24.611	1,108.74	1,175.39
16.00	772.96	20.392	1,108.17	821.04
17.00	521.38	16.875	1,107.69	556.72
18.00	372.54	14.484	1,107.35	395.56
19.00	283.64	12.904	1,107.12	299.40
20.00	226.69	11.816	1,106.97	237.76
21.00	188.23	11.026	1,106.85	196.42
22.00	161.55	10.457	1,106.77	167.63
23.00	141.18	10.000	1,106.70	146.16
24.00	123.98	9.620	1,106.64	128.27
25.00	106.03	9.226	1,106.58	111.49
26.00	89.38	8.801	1,106.52	93.51
27.00	80.26	8.536	1,106.48	82.97
28.00	73.10	8.332	1,106.45	75.43
29.00	66.05	8.140	1,106.42	68.35
30.00	58.65	7.946	1,106.39	61.17

Stage-Discharge for Pond BERM: WETLAND

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,103.00	0.00	1,108.30	897.44	1,113.60	4,213.52
1,103.10	0.00	1,108.40	958.54	1,113.70	4,254.15
1,103.20	0.00	1,108.50	1,021.14	1,113.80	4,294.38
1,103.30	0.00	1,108.60	1,085.21	1,113.90	4,334.22
1,103.40	0.00	1,108.70	1,150.74	1,114.00	4,373.67
1,103.50	0.00	1,108.80	1,217.71	1,114.10	4,412.75
1,103.60	0.00	1,108.90	1,286.10	1,114.20	4,451.48
1,103.70	0.00	1,109.00	1,355.92	1,114.30	4,489.85
1,103.80	0.00	1,109.10	1,427.13	1,114.40	4,527.88
1,103.90	0.00	1,109.20	1,499.73	1,114.50	4,565.58
1,104.00	0.00	1,109.30	1,573.71	1,114.60	4,602.96
1,104.10	0.00	1,109.40	1,650.72	1,114.70	4,640.03
1,104.20	0.00	1,109.50	1,730.46	1,114.80	4,676.79
1,104.30	0.00	1,109.60	1,812.44	1,114.90	4,713.26
1,104.40	0.00	1,109.70	1,896.48	1,115.00	4,749.43
1,104.50	0.00	1,109.80	1,982.48	1,115.10	4,785.32
1,104.60	0.00	1,109.90	2,070.36	1,115.20	4,820.93
1,104.70	0.00	1,110.00	2,160.07	1,115.30	4,856.27
1,104.80	0.00	1,110.10	2,251.56	1,115.40	4,891.35
1,104.90	0.00	1,110.20	2,344.79	1,115.50	4,926.17
1,105.00	0.00	1,110.30	2,439.74	1,115.60	4,960.74
1,105.10	0.00	1,110.40	2,525.17	1,115.70	4,995.07
1,105.20	0.00	1,110.50	2,602.93	1,115.80	5,029.15
1,105.30	0.00	1,110.60	2,676.21	1,115.90	5,063.00
1,105.40	0.00	1,110.70	2,746.13	1,116.00	5,096.61
1,105.50	0.00	1,110.80	2,813.32	1,116.10	5,130.00
1,105.60	0.00	1,110.90	2,878.20	1,116.20	5,163.17
1,105.70	0.00	1,111.00	2,941.06	1,116.30	5,196.12
1,105.80	0.00	1,111.10	3,002.16	1,116.40	5,228.85
1,105.90	0.00	1,111.20	3,061.65	1,116.50	5,261.38
1,106.00	0.00	1,111.30	3,119.70	1,116.60	5,293.71
1,106.10	7.77	1,111.40	3,176.43	1,116.70	5,325.83
1,106.20	22.03	1,111.50	3,231.94	1,116.80	5,357.75
1,106.30	40.56	1,111.60	3,286.32	1,116.90	5,389.49
1,106.40	62.57	1,111.70	3,339.64	1,117.00	**5,421.03**
1,106.50	87.63	1,111.80	3,391.99		
1,106.60	115.44	1,111.90	3,443.41		
1,106.70	145.78	1,112.00	3,493.96		
1,106.80	178.48	1,112.10	3,543.69		
1,106.90	213.42	1,112.20	3,592.64		
1,107.00	250.48	1,112.30	3,640.85		
1,107.10	289.58	1,112.40	3,688.37		
1,107.20	330.64	1,112.50	3,735.21		
1,107.30	373.60	1,112.60	3,781.41		
1,107.40	418.39	1,112.70	3,827.00		
1,107.50	464.97	1,112.80	3,872.01		
1,107.60	513.29	1,112.90	3,916.45		
1,107.70	563.32	1,113.00	3,960.36		
1,107.80	615.01	1,113.10	4,003.74		
1,107.90	668.34	1,113.20	4,046.63		
1,108.00	723.27	1,113.30	4,089.03		
1,108.10	779.78	1,113.40	4,130.97		
1,108.20	837.84	1,113.50	4,172.46		

Stage-Area-Storage for Pond BERM: WETLAND

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,103.00	0.000	0.000
1,103.20	0.189	0.019
1,103.40	0.377	0.075
1,103.60	0.566	0.170
1,103.80	0.754	0.302
1,104.00	0.943	0.472
1,104.20	1.004	0.666
1,104.40	1.065	0.873
1,104.60	1.127	1.092
1,104.80	1.188	1.324
1,105.00	1.249	1.568
1,105.20	2.281	1.921
1,105.40	3.313	2.480
1,105.60	4.345	3.246
1,105.80	5.377	4.218
1,106.00	6.409	5.396
1,106.20	6.507	6.688
1,106.40	6.605	7.999
1,106.60	6.703	9.330
1,106.80	6.801	10.680
1,107.00	6.899	12.051
1,107.20	6.975	13.438
1,107.40	7.051	14.841
1,107.60	7.128	16.258
1,107.80	7.204	17.692
1,108.00	7.280	19.140
1,108.20	7.358	20.604
1,108.40	7.436	22.083
1,108.60	7.513	23.578
1,108.80	7.591	25.088
1,109.00	7.669	26.615
1,109.20	8.171	28.199
1,109.40	8.673	29.883
1,109.60	9.175	31.668
1,109.80	9.677	33.553
1,110.00	10.179	35.538
1,110.20	10.877	37.644
1,110.40	12.996	39.960
1,110.60	16.536	42.914
1,110.80	20.076	46.575
1,111.00	23.616	50.944
1,111.20	25.207	55.826
1,111.40	26.797	61.027
1,111.60	28.388	66.545
1,111.80	29.978	72.382
1,112.00	31.569	78.536
1,112.20	33.849	85.078
1,112.40	36.130	92.076
1,112.60	38.410	99.530
1,112.80	40.691	107.440
1,113.00	42.971	115.806
1,113.20	45.146	124.618
1,113.40	47.321	133.865
1,113.60	49.496	143.547
1,113.80	51.671	153.663
1,114.00	53.846	164.215
1,114.20	56.271	175.227
1,114.40	58.695	186.723
1,114.60	61.120	198.705
1,114.80	63.544	211.171
1,115.00	65.969	224.122
1,115.20	68.768	237.596
1,115.40	71.567	251.630
1,115.60	74.365	266.223
1,115.80	77.164	281.376
1,116.00	79.963	297.088
1,116.20	83.788	313.464
1,116.40	87.613	330.604
1,116.60	91.438	348.509
1,116.80	95.263	367.179
1,117.00	**99.088**	**386.614**

Summary for Pond I AVE: I AVENUE CULVERTS

[81] Warning: Exceeded Pond BERM by 8.36' @ 18.13 hrs

Inflow Area = 1,705.060 ac, 0.20% Impervious, Inflow Depth > 5.25" for 100-Year event
Inflow = 2,143.15 cfs @ 13.51 hrs, Volume= 745.678 af
Outflow = 668.66 cfs @ 16.74 hrs, Volume= 745.579 af, Atten= 69%, Lag= 194.2 min
Primary = 484.13 cfs @ 16.74 hrs, Volume= 560.119 af
Secondary = 183.15 cfs @ 16.74 hrs, Volume= 185.399 af
Tertiary = 1.38 cfs @ 16.74 hrs, Volume= 0.061 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1,115.88' @ 16.74 hrs Surf.Area= 78.313 ac Storage= 290.673 af

Plug-Flow detention time= 197.9 min calculated for 745.579 af (100% of inflow)
Center-of-Mass det. time= 197.8 min (1,167.0 - 969.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,098.00'	389.527 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,098.00	0.000	0.000	0.000
1,099.00	0.001	0.001	0.001
1,100.00	0.001	0.001	0.002
1,101.00	0.008	0.005	0.006
1,102.00	0.027	0.017	0.023
1,103.00	0.110	0.069	0.092
1,104.00	0.241	0.175	0.267
1,105.00	0.567	0.404	0.671
1,106.00	1.270	0.918	1.590
1,107.00	5.886	3.578	5.168
1,108.00	6.916	6.401	11.569
1,109.00	10.932	8.924	20.493
1,110.00	16.090	13.511	34.004
1,111.00	23.616	19.853	53.857
1,112.00	31.569	27.592	81.449
1,113.00	42.971	37.270	118.719
1,114.00	53.846	48.408	167.128
1,115.00	65.969	59.908	227.035
1,116.00	79.963	72.966	300.001
1,117.00	99.088	89.526	389.527

Device	Routing	Invert	Outlet Devices
#1	Primary	1,100.22'	**72.0" Round 72" RCP CULVERT** L= 85.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,100.22' / 1,098.91' S= 0.0153 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 28.27 sf
#2	Secondary	1,104.72'	**48.0" Round 48" RCP CULVERT** L= 62.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 1,104.72' / 1,104.41' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

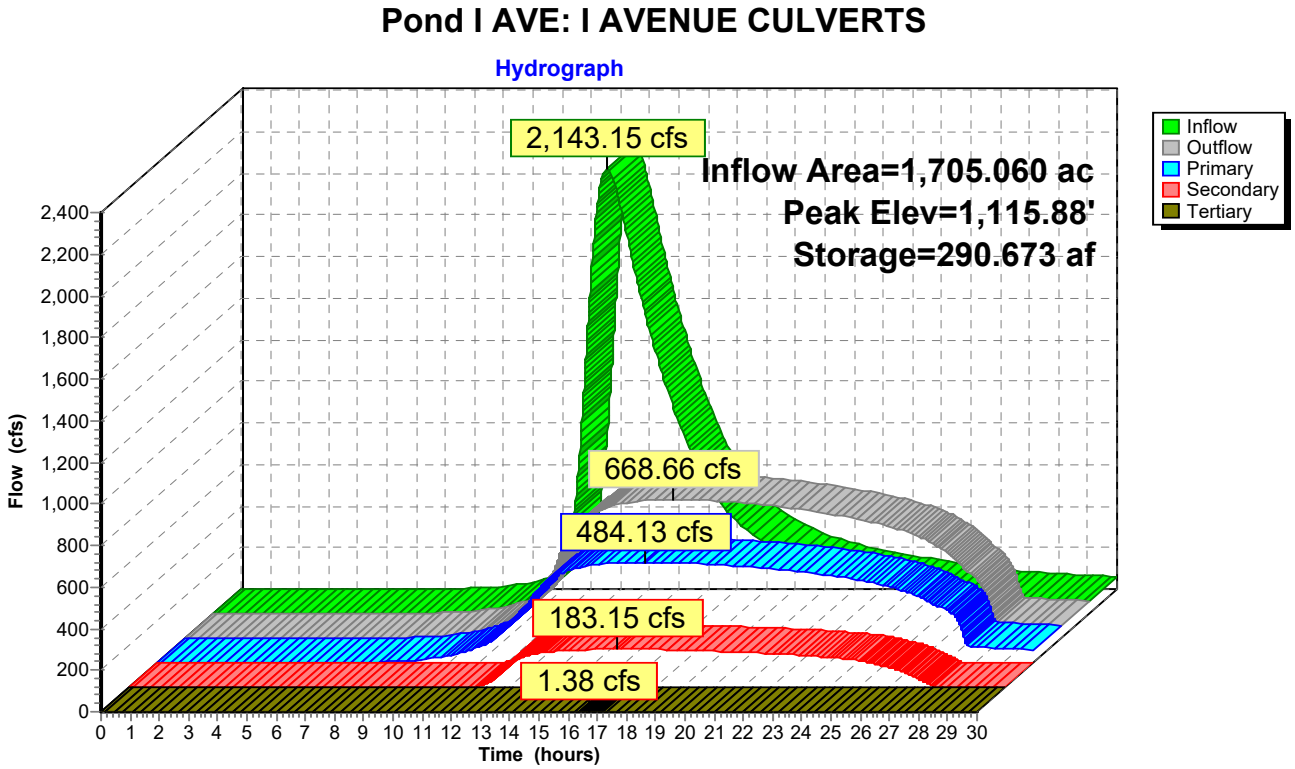
#3 Tertiary 1,115.86' **I AVENUE, C= 3.27**
Offset (feet) 0.00 115.59 162.20 164.26 214.26 232.65 343.45
Height (feet) 1.14 0.14 0.00 0.00 0.09 0.14 1.14

Primary OutFlow Max=484.13 cfs @ 16.74 hrs HW=1,115.88' (Free Discharge)
└**1=72" RCP CULVERT** (Barrel Controls 484.13 cfs @ 17.12 fps)

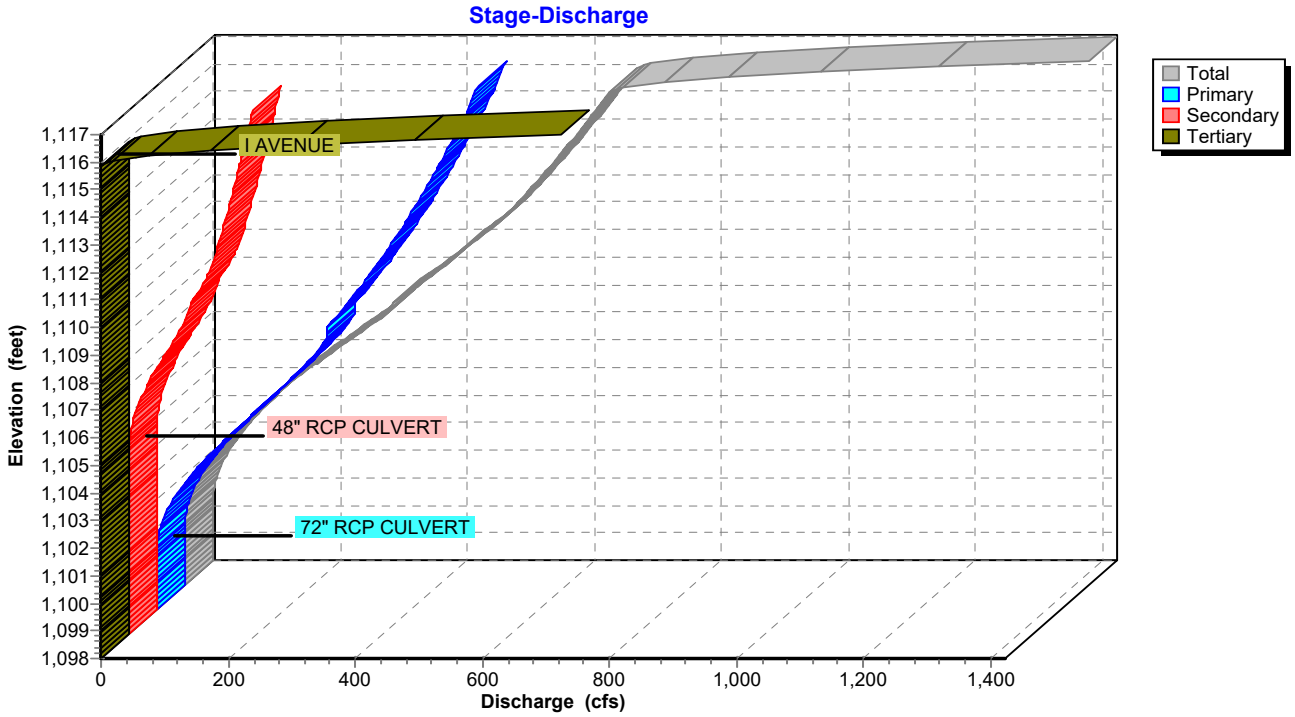
Secondary OutFlow Max=183.15 cfs @ 16.74 hrs HW=1,115.88' (Free Discharge)
└**2=48" RCP CULVERT** (Inlet Controls 183.15 cfs @ 14.57 fps)

Tertiary OutFlow Max=0.11 cfs @ 16.74 hrs HW=1,115.88' (Free Discharge)
└**3=I AVENUE** (Weir Controls 0.11 cfs @ 0.22 fps)

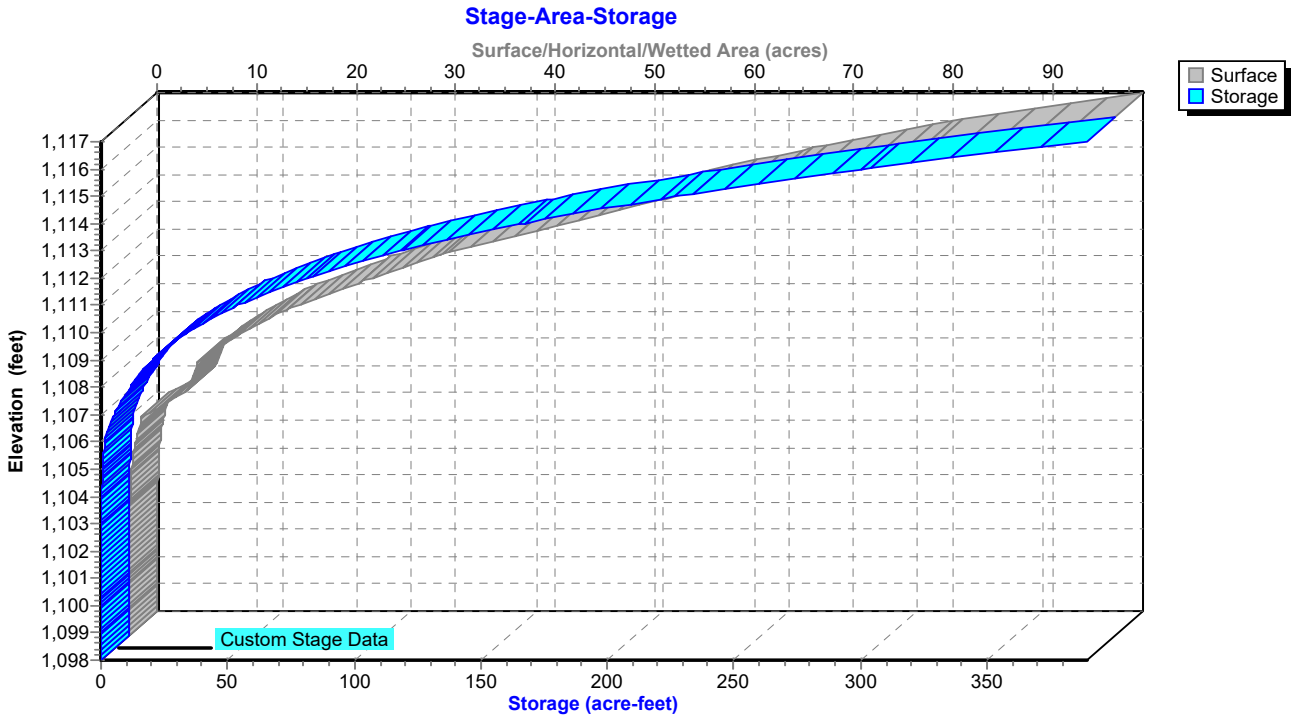




Pond I AVE: I AVENUE CULVERTS



Pond I AVE: I AVENUE CULVERTS



Hydrograph for Pond I AVE: I AVENUE CULVERTS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
0.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
1.00	0.00	0.000	1,098.00	0.00	0.00	0.00	0.00
2.00	0.01	0.000	1,098.48	0.00	0.00	0.00	0.00
3.00	0.05	0.002	1,100.29	0.04	0.04	0.00	0.00
4.00	0.11	0.002	1,100.32	0.11	0.11	0.00	0.00
5.00	0.18	0.002	1,100.34	0.17	0.17	0.00	0.00
6.00	0.24	0.002	1,100.37	0.24	0.24	0.00	0.00
7.00	0.76	0.003	1,100.52	0.74	0.74	0.00	0.00
8.00	5.07	0.006	1,100.99	5.02	5.02	0.00	0.00
9.00	14.71	0.013	1,101.53	14.56	14.56	0.00	0.00
10.00	34.73	0.034	1,102.27	34.16	34.16	0.00	0.00
11.00	77.11	0.144	1,103.38	74.61	74.61	0.00	0.00
12.00	226.54	1.178	1,105.64	184.26	178.50	5.76	0.00
13.00	**1,717.90**	41.290	1,110.41	451.52	342.80	108.72	0.00
14.00	**1,927.49**	164.329	1,113.95	602.05	439.38	162.67	0.00
15.00	1,337.65	246.414	1,115.29	647.86	470.78	177.08	0.00
16.00	904.77	**283.727**	**1,115.79**	**664.38**	**482.14**	**182.24**	**0.00**
17.00	606.56	**290.023**	**1,115.87**	**667.86**	**483.94**	**183.06**	**0.85**
18.00	435.11	277.473	1,115.71	661.75	480.33	181.42	0.00
19.00	333.71	254.620	1,115.40	651.64	473.38	178.26	0.00
20.00	267.53	225.971	1,114.98	637.83	463.89	173.94	0.00
21.00	221.77	194.063	1,114.47	620.49	452.00	168.49	0.00
22.00	188.56	160.504	1,113.87	599.44	437.60	161.84	0.00
23.00	162.65	126.461	1,113.18	573.94	420.20	153.73	0.00
24.00	140.32	92.802	1,112.34	541.72	398.32	143.40	0.00
25.00	117.71	60.467	1,111.27	497.44	368.50	128.94	0.00
26.00	94.84	31.069	1,109.81	419.62	323.56	96.06	0.00
27.00	83.22	8.461	1,107.53	299.59	258.05	41.54	0.00
28.00	75.47	0.149	1,103.41	75.87	75.87	0.00	0.00
29.00	68.35	0.122	1,103.24	68.65	68.65	0.00	0.00
30.00	61.17	0.098	1,103.05	61.46	61.46	0.00	0.00

Stage-Discharge for Pond I AVE: I AVENUE CULVERTS

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)
1,098.00	0.00	0.00	0.00	0.00
1,098.50	0.00	0.00	0.00	0.00
1,099.00	0.00	0.00	0.00	0.00
1,099.50	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	0.00	0.00
1,100.50	0.61	0.61	0.00	0.00
1,101.00	5.15	5.15	0.00	0.00
1,101.50	13.88	13.88	0.00	0.00
1,102.00	26.18	26.18	0.00	0.00
1,102.50	41.52	41.52	0.00	0.00
1,103.00	59.41	59.41	0.00	0.00
1,103.50	79.41	79.41	0.00	0.00
1,104.00	101.10	101.10	0.00	0.00
1,104.50	124.05	124.05	0.00	0.00
1,105.00	148.39	147.81	0.58	0.00
1,105.50	176.12	171.89	4.24	0.00
1,106.00	206.21	195.69	10.52	0.00
1,106.50	237.48	218.53	18.95	0.00
1,107.00	268.61	239.47	29.14	0.00
1,107.50	297.80	257.09	40.70	0.00
1,108.00	321.54	268.33	53.21	0.00
1,108.50	343.07	276.93	66.15	0.00
1,109.00	374.43	295.59	78.85	0.00
1,109.50	403.49	313.13	90.36	0.00
1,110.00	428.24	329.75	98.50	0.00
1,110.50	456.69	345.56	111.13	0.00
1,111.00	484.40	360.69	123.71	0.00
1,111.50	507.49	375.20	132.29	0.00
1,112.00	528.21	389.17	139.03	0.00
1,112.50	548.13	402.66	145.47	0.00
1,113.00	567.34	415.71	151.63	0.00
1,113.50	585.92	428.37	157.55	0.00
1,114.00	603.92	440.66	163.26	0.00
1,114.50	621.39	452.62	168.77	0.00
1,115.00	638.37	464.27	174.11	0.00
1,115.50	654.92	475.63	179.29	0.00
1,116.00	679.75	486.69	184.32	8.74
1,116.50	904.83	496.12	189.22	219.49
1,117.00	**1,422.27**	**505.37**	**194.00**	**722.89**

Stage-Area-Storage for Pond I AVE: I AVENUE CULVERTS

Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,098.00	0.000	0.000
1,098.20	0.000	0.000
1,098.40	0.000	0.000
1,098.60	0.001	0.000
1,098.80	0.001	0.000
1,099.00	0.001	0.001
1,099.20	0.001	0.001
1,099.40	0.001	0.001
1,099.60	0.001	0.001
1,099.80	0.001	0.001
1,100.00	0.001	0.002
1,100.20	0.002	0.002
1,100.40	0.004	0.002
1,100.60	0.005	0.003
1,100.80	0.007	0.005
1,101.00	0.008	0.006
1,101.20	0.012	0.008
1,101.40	0.016	0.011
1,101.60	0.019	0.014
1,101.80	0.023	0.018
1,102.00	0.027	0.023
1,102.20	0.044	0.031
1,102.40	0.060	0.041
1,102.60	0.077	0.055
1,102.80	0.093	0.072
1,103.00	0.110	0.092
1,103.20	0.136	0.117
1,103.40	0.162	0.146
1,103.60	0.189	0.182
1,103.80	0.215	0.222
1,104.00	0.241	0.267
1,104.20	0.306	0.322
1,104.40	0.371	0.390
1,104.60	0.437	0.471
1,104.80	0.502	0.565
1,105.00	0.567	0.671
1,105.20	0.708	0.799
1,105.40	0.848	0.955
1,105.60	0.989	1.138
1,105.80	1.129	1.350
1,106.00	1.270	1.590
1,106.20	2.193	1.936
1,106.40	3.116	2.467
1,106.60	4.040	3.183
1,106.80	4.963	4.083
1,107.00	5.886	5.168
1,107.20	6.092	6.366
1,107.40	6.298	7.605
1,107.60	6.504	8.885
1,107.80	6.710	10.206
1,108.00	6.916	11.569
1,108.20	7.719	13.033
1,108.40	8.522	14.657
1,108.60	9.326	16.441
1,108.80	10.129	18.387
1,109.00	10.932	20.493
1,109.20	11.964	22.783
1,109.40	12.995	25.278
1,109.60	14.027	27.981
1,109.80	15.058	30.889
1,110.00	16.090	34.004
1,110.20	17.595	37.373
1,110.40	19.100	41.042
1,110.60	20.606	45.013
1,110.80	22.111	49.284
1,111.00	23.616	53.857
1,111.20	25.207	58.739
1,111.40	26.797	63.940
1,111.60	28.388	69.458
1,111.80	29.978	75.295
1,112.00	31.569	81.449
1,112.20	33.849	87.991
1,112.40	36.130	94.989
1,112.60	38.410	102.443
1,112.80	40.691	110.353
1,113.00	42.971	118.719
1,113.20	45.146	127.531
1,113.40	47.321	136.778
1,113.60	49.496	146.460
1,113.80	51.671	156.576
1,114.00	53.846	167.128
1,114.20	56.271	178.140
1,114.40	58.695	189.636
1,114.60	61.120	201.618
1,114.80	63.544	214.084
1,115.00	65.969	227.035
1,115.20	68.768	240.509
1,115.40	71.567	254.543
1,115.60	74.365	269.136
1,115.80	77.164	284.289
1,116.00	79.963	300.001
1,116.20	83.788	316.377
1,116.40	87.613	333.517
1,116.60	91.438	351.422
1,116.80	95.263	370.092
1,117.00	**99.088**	**389.527**

Events for Subcatchment 158.4 AC: Watershed After H AVE to Saddle Location

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	2.70	166.34	16.807	1.27
2-Year	3.10	209.81	21.106	1.60
5-Year	3.85	294.17	29.561	2.24
10-Year	4.55	374.65	37.773	2.86
25-Year	5.63	501.48	50.839	3.85
50-Year	6.57	612.57	62.470	4.73
100-Year	**7.58**	**732.08**	**75.145**	**5.69**

Events for Subcatchment 309.04 AC: South Watershed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	2.70	168.94	32.791	1.27
2-Year	3.10	214.12	41.178	1.60
5-Year	3.85	302.23	57.673	2.24
10-Year	4.55	386.89	73.696	2.86
25-Year	5.63	519.88	99.188	3.85
50-Year	6.57	636.72	121.879	4.73
100-Year	**7.58**	**762.65**	**146.609**	**5.69**

Events for Subcatchment 544.5 AC: Remainder of Watershed to Wetland

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	2.70	274.71	57.774	1.27
2-Year	3.10	347.53	72.552	1.60
5-Year	3.85	491.45	101.614	2.24
10-Year	4.55	629.90	129.846	2.86
25-Year	5.63	847.59	174.759	3.85
50-Year	6.57	1,039.01	214.739	4.73
100-Year	**7.58**	**1,245.46**	**258.311**	**5.69**

Events for Subcatchment 689.7 AC: Watershed West of H Ave Culvert

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	2.70	367.40	73.180	1.27
2-Year	3.10	464.64	91.899	1.60
5-Year	3.85	654.01	128.711	2.24
10-Year	4.55	835.77	164.472	2.86
25-Year	5.63	1,120.78	221.362	3.85
50-Year	6.57	1,373.45	272.003	4.73
100-Year	**7.58**	**1,645.82**	**327.194**	**5.69**

Events for Subcatchment WETLAND POOL: RAINFALL DIRECT TO WETLAND POOL

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	2.70	14.67	0.704	2.47
2-Year	3.10	16.90	0.817	2.87
5-Year	3.85	21.08	1.030	3.62
10-Year	4.55	24.96	1.229	4.31
25-Year	5.63	30.95	1.537	5.39
50-Year	6.57	36.15	1.804	6.33
100-Year	**7.58**	**41.74**	**2.092**	**7.34**

Events for Pond 1P: H AVENUE CULVERT

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-Year	367.40	82.04	0.00	82.04	1,127.93	37.189
2-Year	464.64	136.75	51.08	85.66	1,128.19	47.026
5-Year	654.01	318.14	229.37	88.76	1,128.42	57.166
10-Year	835.77	501.00	410.10	90.90	1,128.59	65.147
25-Year	1,120.78	787.21	693.62	93.59	1,128.80	76.488
50-Year	1,373.45	1,041.44	945.91	95.54	1,128.96	85.610
100-Year	**1,645.82**	**1,315.33**	**1,218.01**	**97.32**	**1,129.11**	**94.690**

Events for Pond 2P: BASIN NW OF WETLAND

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-Year	199.25	58.89	58.89	**0.00**	1,124.51	58.754
2-Year	248.22	73.19	73.19	0.00	1,124.58	61.688
5-Year	340.11	126.43	126.43	0.00	1,124.81	71.787
10-Year	534.55	229.03	229.03	0.00	1,125.13	87.879
25-Year	842.80	416.26	416.26	0.00	1,125.56	112.679
50-Year	1,115.95	595.42	595.42	0.00	1,125.88	133.622
100-Year	**1,410.37**	**798.84**	**798.84**	0.00	**1,126.19**	**155.328**

Events for Pond BERM: WETLAND

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1-Year	275.32	260.64	1,107.03	12.232
2-Year	348.26	332.43	1,107.20	13.467
5-Year	492.42	473.47	1,107.52	15.669
10-Year	631.05	609.26	1,107.79	17.609
25-Year	888.89	875.09	1,108.26	21.062
50-Year	1,185.92	1,175.18	1,108.74	24.609
100-Year	**1,544.89**	**1,531.85**	**1,109.24**	**28.554**

Events for Pond I AVE: I AVENUE CULVERTS

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Tertiary (cfs)	Elevation (feet)	Storage (acre-feet)
1-Year	412.43	313.49	265.07	48.42	0.00	1,107.81	10.282
2-Year	526.40	359.59	286.76	72.82	0.00	1,108.76	17.986
5-Year	750.96	433.23	332.82	100.41	0.00	1,110.10	35.579
10-Year	967.55	496.58	367.95	128.62	0.00	1,111.25	59.962
25-Year	1,330.74	574.24	420.41	153.83	0.00	1,113.18	126.803
50-Year	1,703.27	624.73	454.91	169.82	0.00	1,114.60	201.463
100-Year	**2,143.15**	**668.66**	**484.13**	**183.15**	**1.38**	**1,115.88**	**290.673**

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101 Pond BERM: WETLAND
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Appendix A-3
Watershed Characteristics

WATERSHED CHARACTERISTICS:

-TOTAL WATERSHED: 1,705.1 ACRES

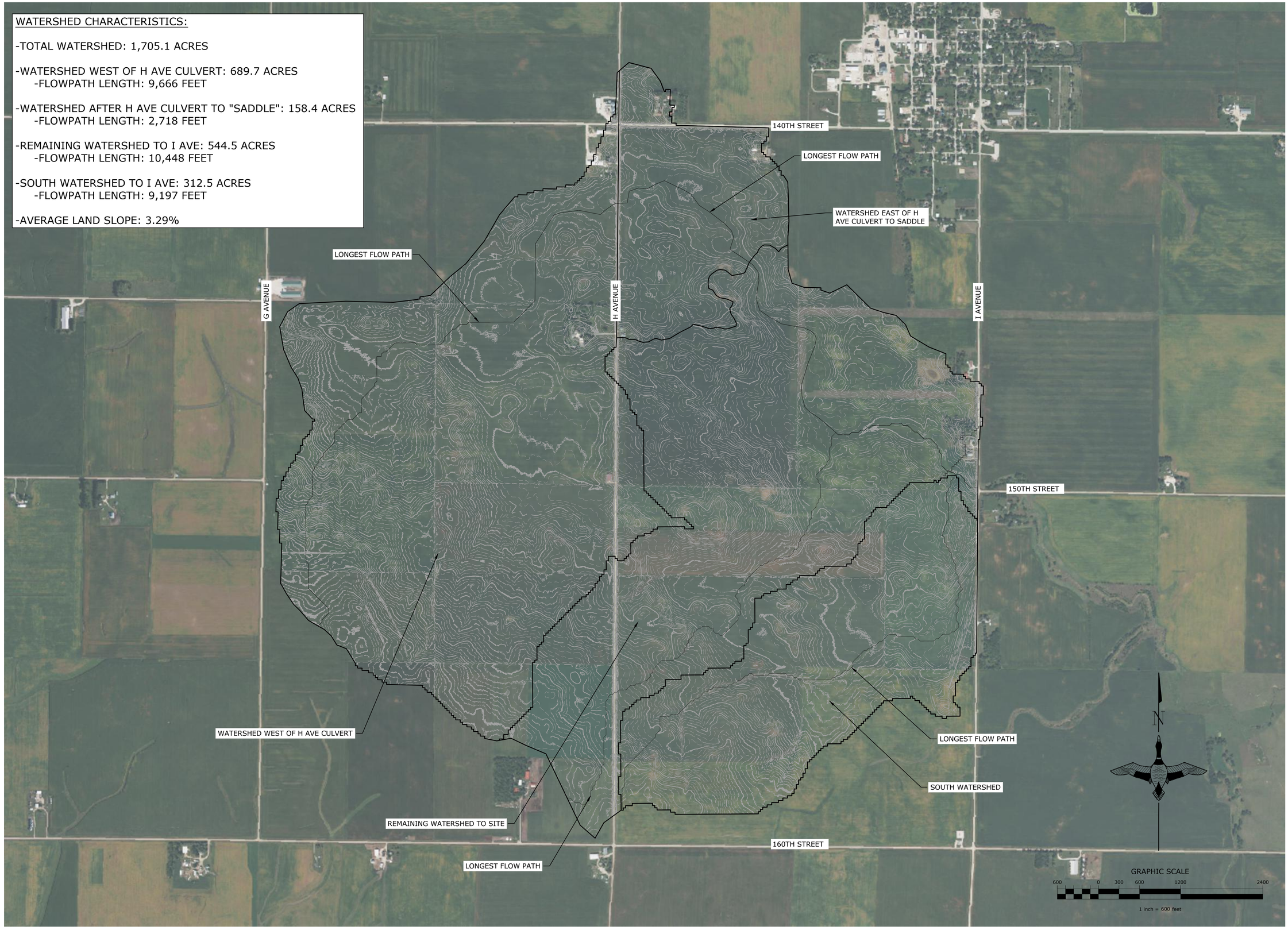
-WATERSHED WEST OF H AVE CULVERT: 689.7 ACRES
-FLOWPATH LENGTH: 9,666 FEET

-WATERSHED AFTER H AVE CULVERT TO "SADDLE": 158.4 ACRES
-FLOWPATH LENGTH: 2,718 FEET

-REMAINING WATERSHED TO I AVE: 544.5 ACRES
-FLOWPATH LENGTH: 10,448 FEET

-SOUTH WATERSHED TO I AVE: 312.5 ACRES
-FLOWPATH LENGTH: 9,197 FEET

-AVERAGE LAND SLOPE: 3.29%



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C:\Users\ABarkley\ducks unlimited incorporated\iowa - documents\iowa\02_cad projects\a-340-2 crep projects\greene fitzpatrick\c3d_drawing\Greene - Fitz LIDAR.dwg, 7/15/2026 2:45 PM, Alonzo Barkley, Watershed Characteristics, None

GREAT LAKES/ATLANTIC REGIONAL OFFICE
7322 NEWMAN BOULEVARD, BUILDING 2, STE. 200
DEXTER, MICHIGAN 48130
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AFFIX SEAL: DUCKS UNLIMITED, INC.

ON:

WATERSHED CHARACTERISTICS
GRE853129D
GREENE COUNTY
IOWA

Revision	Sheet	Revisions	Date	By

CAD FILE: Greene - Fitz LIDAR

DESIGNED BY: NA

DRAWN BY: A.S.

SURVEYED BY: A.S., C.K.

BIOLOGIST: D.B.

DATE: 2-5-26

PROJECT NUMBER: US-IA-340-100

NOT FOR CONSTRUCTION

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Appendix A-4

Drainage District & Tile Maps

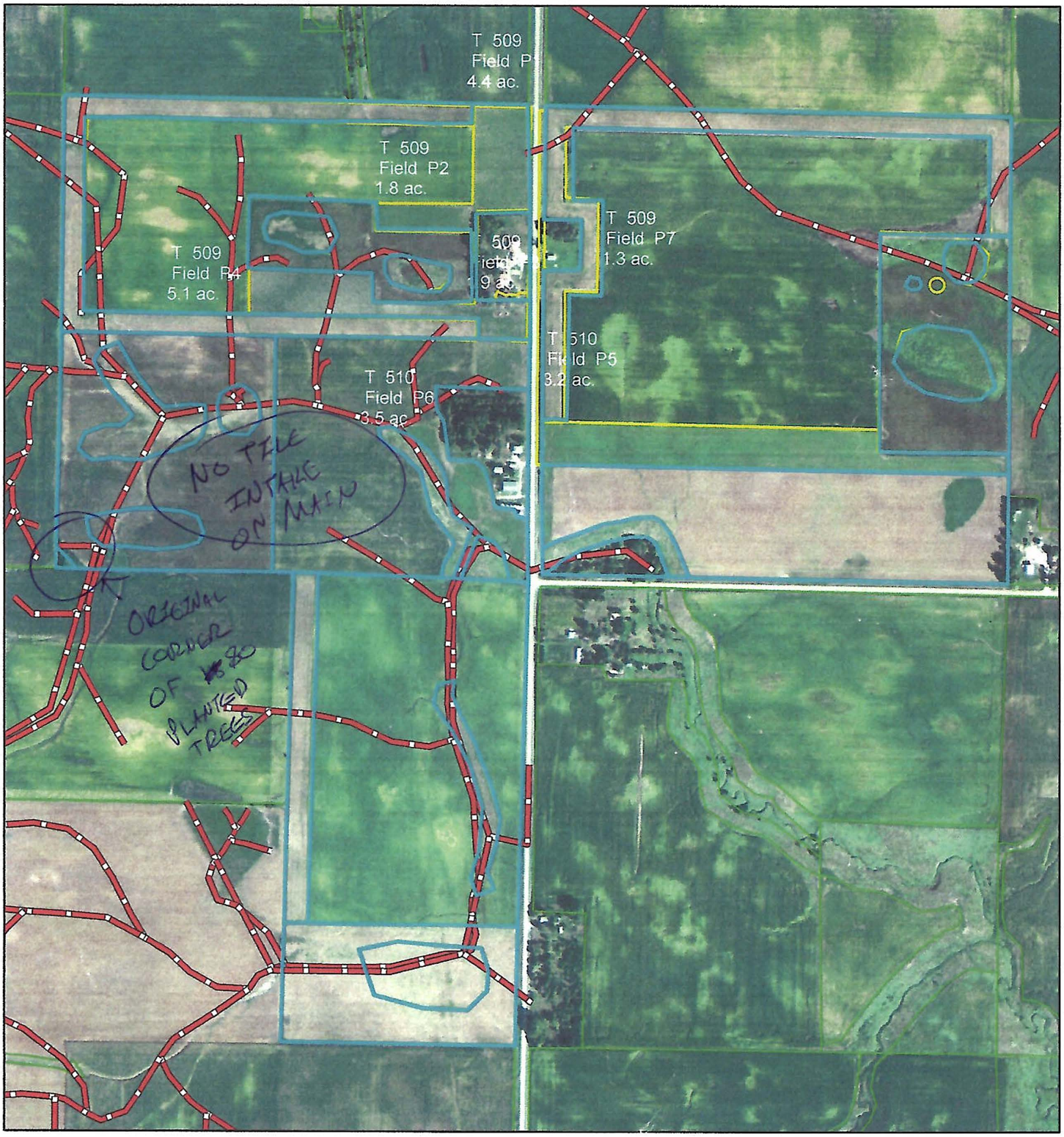
Grazing Plan

Date: 1/25/2006

Customer(s): KEVIN FITZPATRICK
District: GREENE SOIL & WATER CONSERVATION DISTRICT

Field Office: JEFFERSON SERVICE CENTER
Agency: USDA-NRCS
Assisted By: Curt M Houk
State and County: IA, GREENE

Legal Description: Highland 28 & 29 T509



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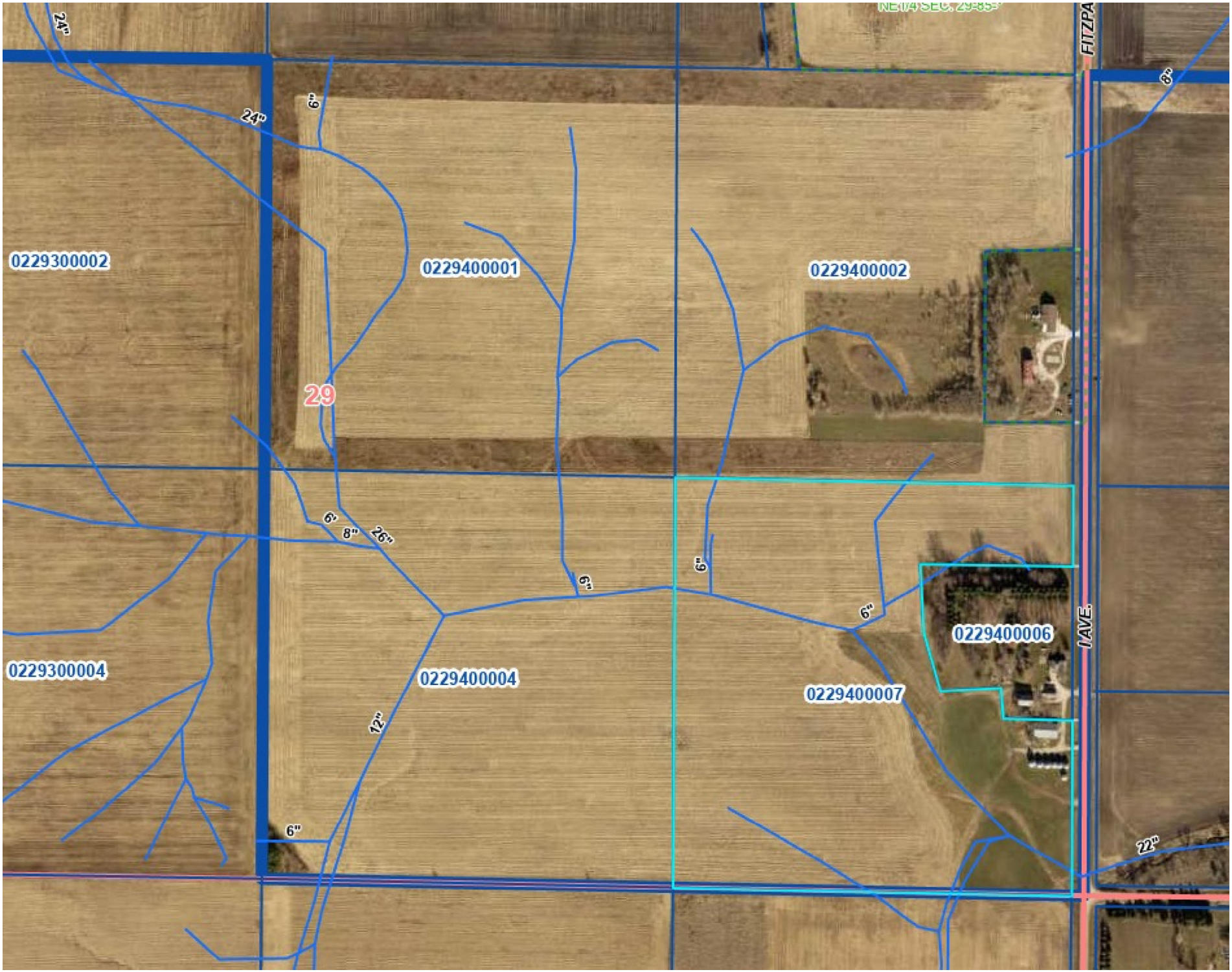
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0229400002
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0229400006
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0229400007
24"
24"
6"
8"
6"
26"
6"
6"
6"
12"
6"
8"
22"

SMS Map



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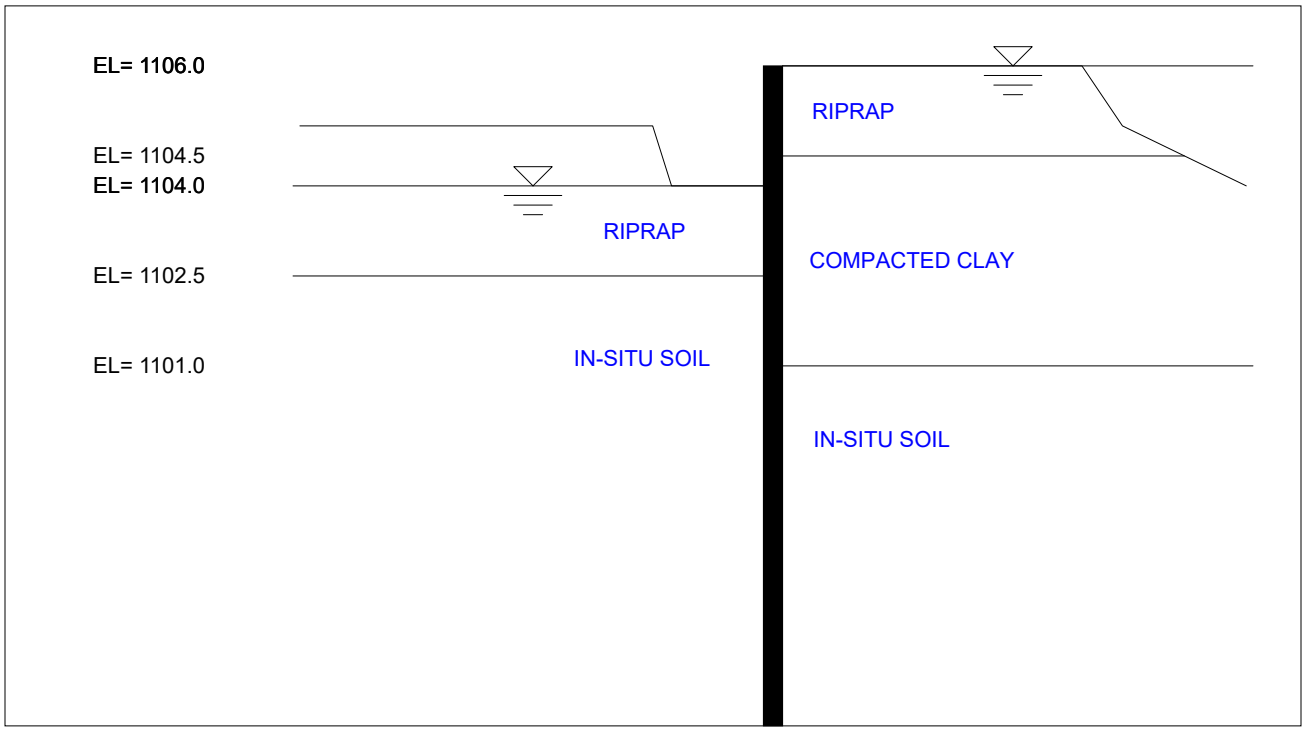
Appendix A-5

Sheet Pile Calculations

IA-340-100 - WETLAND SHEET PILE



PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS

DATE: 9-FEBRUARY-2026 TIME: 11:35:01

****
* INPUT DATA *
****

I.--HEADING
'IA-340-100 - WETLAND SHEET PILE

II.--CONTROL
CANTILEVER WALL DESIGN
FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.00
FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.50 FOR EMBEDMENT CALCULATION

III.--WALL DATA
ELEVATION AT TOP OF WALL = 1106.00 FT.

IV.--SURFACE POINT DATA

IV.A.--RIGHTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	1106.00
45.70	1106.00
51.70	1105.00
70.00	1104.00

IV.B.--LEFTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	1104.00
15.00	1104.00
17.80	1105.00
70.00	1105.00

V.--SOIL LAYER DATA

V.A.--RIGHTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAT. WGHT. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<-SAFETY-> <-FACTOR-> ACT.	PASS.
140.00	140.00	10.00	0.00	0.00	0.00	1104.50	0.00	DEF	DEF
120.00	120.00	14.00	50.00	14.00	0.00	1101.00	0.00	DEF	DEF
107.90	107.90	14.00	50.00	14.00	0.00			DEF	DEF

LAYERS (TOP TO BOTTOM)
-RIPRAP
-COMPACTED FILL
-IN-SITU SOIL

V.B.--LEFTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAT. WGHT. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<-SAFETY-> <-FACTOR-> ACT.	PASS.
140.00	140.00	10.00	0.00	0.00	0.00	1102.50	0.00	DEF	DEF
107.90	107.90	14.00	50.00	14.00	0.00			DEF	DEF

VI.--WATER DATA
UNIT WEIGHT = 62.40 (PCF)
RIGHTSIDE ELEVATION = 1106.00 (FT)
LEFTSIDE ELEVATION = 1104.00 (FT)
NO SEEPAGE

VII.--VERTICAL SURCHARGE LOADS
NONE

VIII.--HORIZONTAL LOADS
NONE

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS
DATE: 9-FEBRUARY-2026 TIME: 11:35:04

****
* SOIL PRESSURES FOR *
* CANTILEVER WALL DESIGN *
****

I.--HEADING
'IA-340-10 - WETLAND SHEET PILE

II.--SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY SWEEP SEARCH WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY SWEEP SEARCH WEDGE METHOD.

				<------NET------>			
	NET	<---LEFTSIDE--->		(SOIL + WATER)		<--RIGHTSIDE--->	
ELEV.	WATER	PASSIVE	ACTIVE	ACTIVE	PASSIVE	ACTIVE	PASSIVE
(FT)	(PSF)	(PSF)	(PSF)	(PSF)	(PSF)	(PSF)	(PSF)
1106.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1105.0	62.4	0.0	0.0	117.0	160.5	54.6	98.1
1104.5	93.6	0.0	0.0	125.8	297.1	32.2	203.5
1104.0	124.8	0.0	0.0	129.9	435.8	5.1	311.0
1103.0	124.8	98.1	54.6	65.8	484.5	39.1	414.4
1102.6	124.8	175.8	37.1	0.0	539.6	51.0	451.9
1102.5	124.8	201.3	31.3	-21.6	557.7	54.9	464.2
1102.0	124.8	301.8	1.7	-106.9	636.1	70.1	513.0
1101.0	124.8	385.8	29.1	-162.3	700.1	98.7	604.4
1100.0	124.8	464.7	53.9	-215.8	756.9	124.1	686.0
1099.0	124.8	541.4	77.8	-268.8	809.5	147.8	762.5
1098.0	124.8	617.4	101.6	-321.2	861.9	171.4	838.6
1097.0	124.8	693.5	125.4	-373.7	913.5	195.0	914.1
1096.0	124.8	769.3	149.2	-425.9	964.4	218.6	988.8
1095.0	124.8	849.3	172.8	-482.3	1015.7	242.2	1063.8
1094.0	124.8	945.4	196.5	-554.9	1067.4	265.7	1139.1
1093.0	124.8	1055.6	220.1	-641.5	1119.1	289.3	1214.4
1092.0	124.8	1172.2	243.7	-734.5	1170.8	312.9	1289.7
1091.0	124.8	1300.2	267.3	-838.7	1222.5	336.8	1364.9
1090.0	124.8	1442.4	309.2	-956.7	1255.8	360.9	1440.2
1089.0	124.8	1569.3	364.5	-1059.6	1275.8	384.8	1515.4
1088.0	124.8	1666.0	401.6	-1132.7	1313.9	408.5	1590.7
1087.0	124.8	1744.5	427.2	-1187.4	1363.5	432.2	1665.9
1086.0	124.8	1811.7	452.7	-1231.0	1413.2	456.0	1741.1
1085.0	124.8	1872.9	476.3	-1268.4	1464.8	479.7	1816.3
1084.0	124.8	1938.6	499.9	-1310.5	1516.4	503.4	1891.5
1083.0	124.8	2010.8	523.6	-1358.9	1567.9	527.1	1966.7
1082.0	124.8	2077.8	549.5	-1402.2	1617.2	550.8	2041.9
1081.0	124.8	2148.6	575.7	-1449.3	1666.2	574.5	2117.1
1080.0	124.8	2224.9	599.7	-1501.8	1681.9	598.2	2156.8
1079.0	124.8	2300.0	623.4	-1553.3	1663.8	622.0	2162.4
1078.0	124.8	2368.2	647.1	-1597.7	1674.5	645.7	2196.9
1077.0	124.8	2437.1	670.9	-1642.9	1711.8	669.4	2257.9
1076.0	124.8	2512.7	694.6	-1694.8	1743.1	693.1	2312.9
1075.0	124.8	2588.3	718.4	-1746.7	1778.9	716.8	2372.5
1074.0	124.8	2663.9	742.1	-1798.6	1826.2	740.5	2443.5
1073.0	124.8	2739.5	765.9	-1850.5	1868.5	764.2	2509.6

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS
DATE: 9-FEBRUARY-2026 TIME: 11:35:05

****
* SUMMARY OF RESULTS FOR *
* CANTILEVER WALL DESIGN *
****

I.--HEADING
'IA-340-10 - WETLAND SHEET PILE

II.--SUMMARY

RIGHTSIDE SOIL PRESSURES DETERMINED BY SWEEP SEARCH WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY SWEEP SEARCH WEDGE METHOD.

WALL BOTTOM ELEV. (FT) : 1097.06
PENETRATION (FT) : 6.94 6.94' + 2' = 8.94' TOTAL SHEET LENGTH

MAX. BEND MOMENT (LB-FT) : 9.0382E+02
AT ELEVATION (FT) : 1100.31

MAX. SCALED DEFL. (LB-IN^3): 3.6266E+07
AT ELEVATION (FT) : 1100.00

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF
ELLASTICITY IN PSI TIMES PILE MOMENT
OF INERTIA IN IN^4 TO OBTAIN DEFLECTION
IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS
DATE: 9-FEBRUARY-2026 TIME: 11:35:05

****
* COMPLETE OF RESULTS FOR *
* CANTILEVER WALL DESIGN *
****

I.--HEADING
'IA-340-10 - WETLAND SHEET PILE

II.--RESULTS

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
1106.00	0.0000E+00	0.	3.6266E+07	0.00
1105.00	1.9504E+01	59.	2.9449E+07	117.03
1104.50	6.3755E+01	119.	2.6051E+07	125.82
1104.00	1.3927E+02	183.	2.2681E+07	129.94
1103.00	3.7672E+02	281.	1.6172E+07	65.83
1102.62	4.8558E+02	293.	1.3867E+07	0.00
1102.50	5.2183E+02	292.	1.3133E+07	-21.64
1102.00	6.6162E+02	260.	1.0321E+07	-106.91
1101.00	8.5889E+02	125.	5.5994E+06	-162.27
1100.00	8.9420E+02	-64.	2.3390E+06	-215.84
1099.00	7.1376E+02	-306.	5.9259E+05	-268.81
1098.51	5.2991E+02	-444.	2.0897E+05	-294.57
1098.00	2.8405E+02	-486.	4.1346E+04	129.79
1097.06	0.0000E+00	0.	0.0000E+00	910.15

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELLASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
	WATER	<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
1106.00	0.	0.	0.	0.	0.
1105.00	62.	0.	0.	55.	98.
1104.50	94.	0.	0.	32.	204.
1104.00	125.	0.	0.	5.	311.
1103.00	125.	98.	55.	39.	414.
1102.62	125.	176.	37.	51.	452.
1102.50	125.	201.	31.	55.	464.
1102.00	125.	302.	2.	70.	513.
1101.00	125.	386.	29.	99.	604.
1100.00	125.	465.	54.	124.	686.
1099.00	125.	541.	78.	148.	762.
1098.51	125.	579.	89.	159.	800.
1098.00	125.	617.	102.	171.	839.
1097.06	125.	693.	125.	195.	914.
1096.00	125.	769.	149.	219.	989.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS

DATE: 9-FEBRUARY-2026 TIME: 11:41:41

****
* INPUT DATA *
****

I.--HEADING
'IA-340-10 - WETLAND SHEET PILE

II.--CONTROL
CANTILEVER WALL DESIGN
FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.00
FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.00 FOR SECTION CALCULATION

III.--WALL DATA
ELEVATION AT TOP OF WALL = 1106.00 FT.

IV.--SURFACE POINT DATA

IV.A.--RIGHTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	1106.00
45.70	1106.00
51.70	1105.00
70.00	1104.00

IV.B.--LEFTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	1104.00
15.00	1104.00
17.80	1105.00
70.00	1105.00

V.--SOIL LAYER DATA

V.A.--RIGHTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

		ANGLE OF		ANGLE OF				<-SAFETY->	
SAT.	MOIST	INTERNAL	COH-	WALL	ADH-	<--BOTTOM-->		<-FACTOR->	
WGHT.	WGHT.	FRICTION	ESION	FRICTION	ESION	ELEV.	SLOPE	ACT.	PASS.
(PCF)	(PCF)	(DEG)	(PSF)	(DEG)	(PSF)	(FT)	(FT/FT)		
140.00	140.00	10.00	0.00	0.00	0.00	1104.50	0.00	DEF	DEF
120.00	120.00	14.00	50.00	14.00	0.00	1101.00	0.00	DEF	DEF
107.90	107.90	14.00	50.00	14.00	0.00			DEF	DEF

LAYERS (FROM TOP TO BOTTOM):
-RIPRAP
-COMPACTED FILL
-IN-SITU SOIL

V.B.--LEFTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAT. WGHT. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<-SAFETY-> <-FACTOR-> ACT.	PASS.
140.00	140.00	10.00	0.00	0.00	0.00	1102.50	0.00	DEF	DEF
107.90	107.90	14.00	50.00	14.00	0.00			DEF	DEF

VI.--WATER DATA
UNIT WEIGHT = 62.40 (PCF)
RIGHTSIDE ELEVATION = 1106.00 (FT)
LEFTSIDE ELEVATION = 1104.00 (FT)
NO SEEPAGE

VII.--VERTICAL SURCHARGE LOADS
NONE

VIII.--HORIZONTAL LOADS
NONE

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS
DATE: 9-FEBRUARY-2026 TIME: 11:41:44

****
* SOIL PRESSURES FOR *
* CANTILEVER WALL DESIGN *
****

I.--HEADING
'IA-340-10 - WETLAND SHEET PILE

II.--SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY SWEEP SEARCH WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY SWEEP SEARCH WEDGE METHOD.

				<------NET------>			
	NET	<---LEFTSIDE--->		(SOIL + WATER)		<--RIGHTSIDE--->	
ELEV.	WATER	PASSIVE	ACTIVE	ACTIVE	PASSIVE	ACTIVE	PASSIVE
(FT)	(PSF)	(PSF)	(PSF)	(PSF)	(PSF)	(PSF)	(PSF)
1106.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1105.0	62.4	0.0	0.0	117.0	172.6	54.6	110.2
1104.5	93.6	0.0	0.0	125.8	357.5	32.2	263.9
1104.0	124.8	0.0	0.0	129.9	553.6	5.1	428.8
1103.0	124.8	110.2	54.6	53.7	646.3	39.1	576.2
1102.8	124.8	170.2	45.4	0.0	682.6	45.4	603.1
1102.5	124.8	261.2	31.3	-81.6	737.6	54.9	644.1
1102.0	124.8	417.5	1.7	-222.5	833.2	70.1	710.1
1101.0	124.8	539.3	29.1	-315.8	929.9	98.7	834.2
1100.0	124.8	648.6	53.9	-399.7	1013.5	124.1	942.6
1099.0	124.8	752.9	77.8	-480.3	1090.9	147.8	1043.9
1098.0	124.8	854.0	101.6	-557.8	1168.5	171.4	1145.3
1097.0	124.8	954.1	125.4	-634.3	1245.5	195.0	1246.1
1096.0	124.8	1064.4	149.2	-721.0	1322.3	218.6	1346.7
1095.0	124.8	1207.7	172.8	-840.8	1399.0	242.2	1447.0
1094.0	124.8	1389.4	196.5	-998.8	1475.6	265.7	1547.2
1093.0	124.8	1593.1	220.1	-1178.9	1549.7	289.3	1644.9
1092.0	124.8	1772.2	243.7	-1334.5	1623.4	312.9	1742.2
1091.0	124.8	1909.4	267.3	-1447.8	1699.1	336.8	1841.5
1090.0	124.8	2020.6	309.2	-1534.9	1756.5	360.9	1940.8
1089.0	124.8	2111.1	364.5	-1601.5	1800.4	384.8	2040.1
1088.0	124.8	2201.5	401.6	-1668.1	1862.6	408.5	2139.3
1087.0	124.8	2288.5	427.2	-1731.4	1936.2	432.2	2238.5
1086.0	124.8	2378.7	452.7	-1797.9	2009.8	456.0	2337.7
1085.0	124.8	2480.1	476.3	-1875.6	2085.4	479.7	2436.9
1084.0	124.8	2581.2	499.9	-1953.0	2160.9	503.4	2536.1
1083.0	124.8	2669.8	523.6	-2017.9	2223.4	527.1	2622.2
1082.0	124.8	2758.1	549.5	-2082.4	2222.1	550.8	2646.9
1081.0	124.8	2858.1	575.7	-2158.7	2212.2	574.5	2663.1
1080.0	124.8	2958.0	599.7	-2235.0	2256.4	598.2	2731.2
1079.0	124.8	3058.0	623.4	-2311.2	2305.9	622.0	2804.5
1078.0	124.8	3157.9	647.1	-2387.4	2354.3	645.7	2876.6
1077.0	124.8	3257.8	670.9	-2463.6	2412.0	669.4	2958.0
1076.0	124.8	3357.6	694.6	-2539.7	2473.3	693.1	3043.1
1075.0	124.8	3457.5	718.4	-2615.9	2538.0	716.8	3131.6
1074.0	124.8	3557.4	742.1	-2692.0	2615.8	740.5	3233.1
1073.0	124.8	3655.7	765.9	-2766.7	2697.3	764.2	3338.3

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS
DATE: 9-FEBRUARY-2026 TIME: 11:41:44

****
* SUMMARY OF RESULTS FOR *
* CANTILEVER WALL DESIGN *
****

I.--HEADING
'IA-340-10 - WETLAND SHEET PILE

II.--SUMMARY

RIGHTSIDE SOIL PRESSURES DETERMINED BY SWEEP SEARCH WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY SWEEP SEARCH WEDGE METHOD.

WALL BOTTOM ELEV. (FT) : 1098.79
PENETRATION (FT) : 5.21

MAX. BEND. MOMENT (LB-FT) : 7.0606E+02 MAXIMUM MOMENT = 706.1 FT-LBS.
AT ELEVATION (FT) : 1101.25

MAX. SCALED DEFL. (LB-IN^3): 1.7850E+07
AT ELEVATION (FT) : 1106.00

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF
ELLASTICITY IN PSI TIMES PILE MOMENT
OF INERTIA IN IN^4 TO OBTAIN DEFLECTION
IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS
DATE: 9-FEBRUARY-2026 TIME: 11:41:44

****
* COMPLETE OF RESULTS FOR *
* CANTILEVER WALL DESIGN *
****

I.--HEADING
'IA-340-10 - WETLAND SHEET PILE

II.--RESULTS

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
1106.00	0.0000E+00	0.	1.7850E+07	0.00
1105.00	1.9504E+01	59.	1.3810E+07	117.03
1104.50	6.3755E+01	119.	1.1800E+07	125.82
1104.00	1.3927E+02	183.	9.8187E+06	129.94
1103.00	3.7470E+02	275.	6.0860E+06	53.71
1102.80	4.2999E+02	280.	5.4080E+06	0.00
1102.50	5.1327E+02	268.	4.4353E+06	-81.58
1102.00	6.3121E+02	192.	3.0057E+06	-222.54
1101.00	6.9639E+02	-77.	9.8677E+05	-315.78
1100.01	4.5040E+02	-432.	1.2856E+05	-399.08
1100.00	4.4736E+02	-435.	1.2589E+05	-390.40
1099.00	2.3111E+01	-208.	1.5583E+02	844.48
1098.79	0.0000E+00	0.	0.0000E+00	1107.44

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELLASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

MAX SHEAR = 435 LBS.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
	WATER	<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
1106.00	0.	0.	0.	0.	0.
1105.00	62.	0.	0.	55.	110.
1104.50	94.	0.	0.	32.	264.
1104.00	125.	0.	0.	5.	429.
1103.00	125.	110.	55.	39.	576.
1102.80	125.	170.	45.	45.	603.
1102.50	125.	261.	31.	55.	644.
1102.00	125.	417.	2.	70.	710.
1101.00	125.	539.	29.	99.	834.
1100.01	125.	648.	54.	124.	942.
1100.00	125.	649.	54.	124.	943.
1099.00	125.	753.	78.	148.	1044.
1098.79	125.	854.	102.	171.	1145.
1097.00	125.	954.	125.	195.	1246.

IA-340-100-FITZPATRICK

2/9/26

WETLAND SHEET PILE DESIGN

A.S.

MAXIMUM BENDING MOMENT, M_{max} = 706.1 lbs.

MAXIMUM SHEAR, V_{max} = 435 lbs.

MIN. GRADE STEEL:
- 50 KSI
- SCZ

$$S_{ALLOW} = \frac{M_{max}}{f_b} \quad (EM\ 1110\text{-}2\text{-}2504,\ 6\text{-}3)$$

$$f_b = 0.5 f_y = 0.5 \times 50{,}000\ lb./in^2 = 25{,}000\ lbs./in.^2$$

$$S_{ALLOW} = \frac{706.1\ lbs.\text{-}ft/ft.\ wall \times 12\ in/ft}{25{,}000\ lbs./in^2} = 0.3389\ in^3/ft.\ of\ wall \qquad S = \frac{M}{y}$$

$M = 5'' \times .3389$

$$A_{ALLOW} = \frac{V_{max}}{f_V} \quad (EM\ 1110\text{-}2\text{-}2504,\ 6\text{-}4)$$

CONTROLS → $M = 1.6945\ in^4/ft.$ min. w/ 10" Sheet

$$f_V = 0.33 f_y = 0.33 \times 50{,}000\ lb./in^3 = 16{,}500\ lb./in^2$$

$$A_{ALLOW} = \frac{435\ lbs.}{16{,}500\ lb./in^2} = 0.0264\ in.^2/ft.\ of\ wall$$

NRCS MIN. DESIGN VALUES FOR 2' DROP:
- $S = 0.8\ in.^3/ft.$ → CONTROLS
- M.O.I = $0.9\ in.^4/ft.$

SHEAR AREA FOR Z-SHAPED PILING, $A_V = \frac{t_w \cdot h}{w}$ (EM-1110-2-2504, 6-5)

USE SCZ 21N

$$A_V = \frac{(0.375\ in.) \cdot (10\ in.)}{28.5\ in./12\ in./ft} = 1.58\ in^2/ft.\ of\ wall >> 0.0264\ in.^2/ft.\ wall \quad OK$$

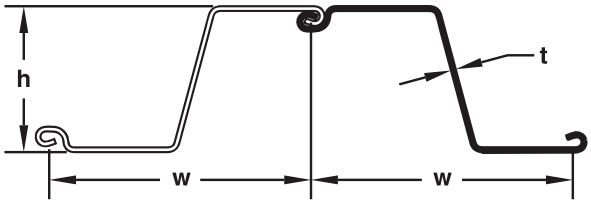
SCZ 21N SECTION MODULUS = $21.43\ in.^3/ft >> 0.34\ in.^3/ft$ OK

∴ MIN. DESIGN VALUES → $S = 0.8\ in.^3/ft.$ & M.O.I. = $1.694\ in.^4/ft.$

NUCOR® SKYLINE

SCZ/SKZ

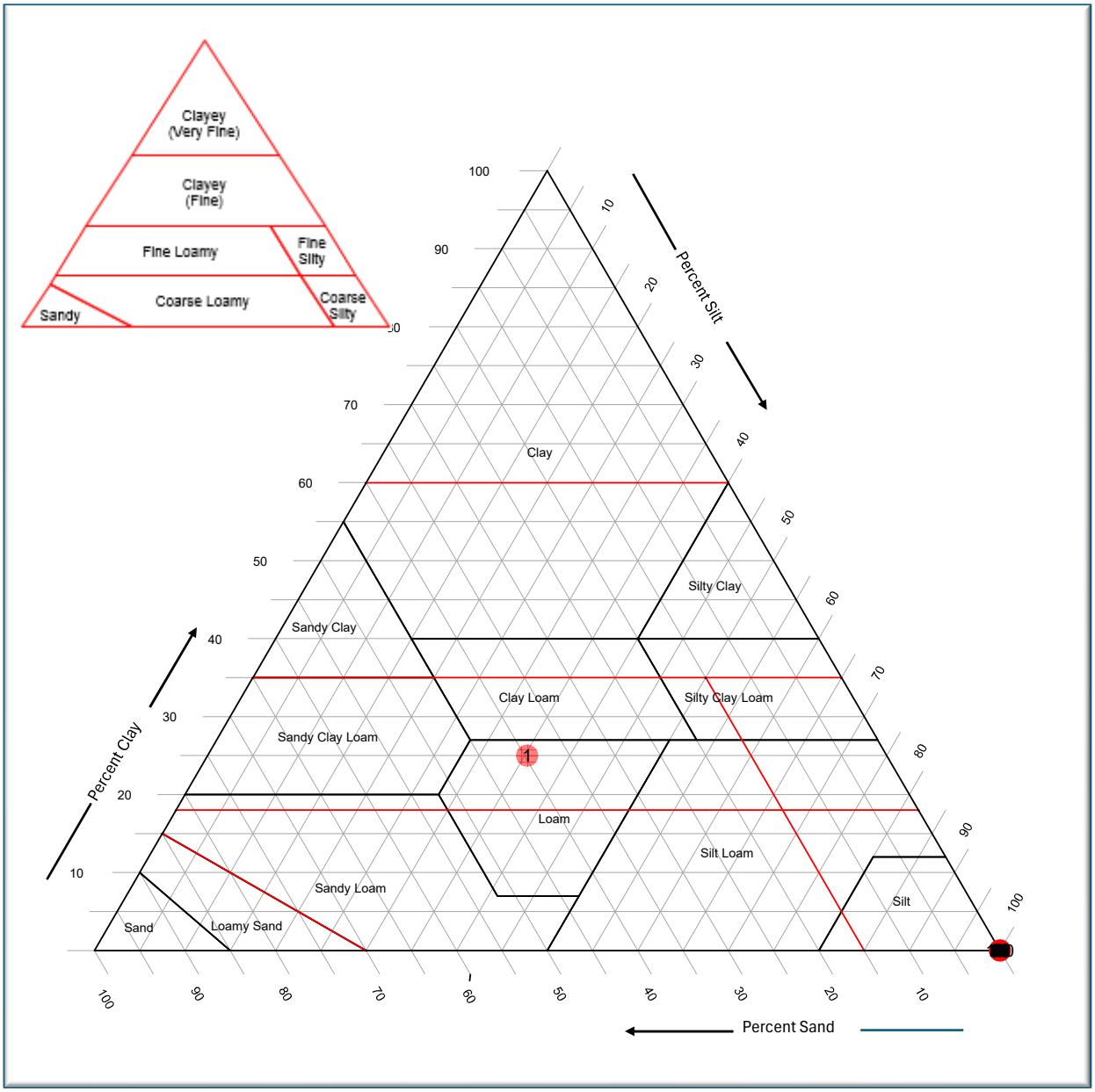
SCZ/SKZ Cold Formed Steel Sheet Pile

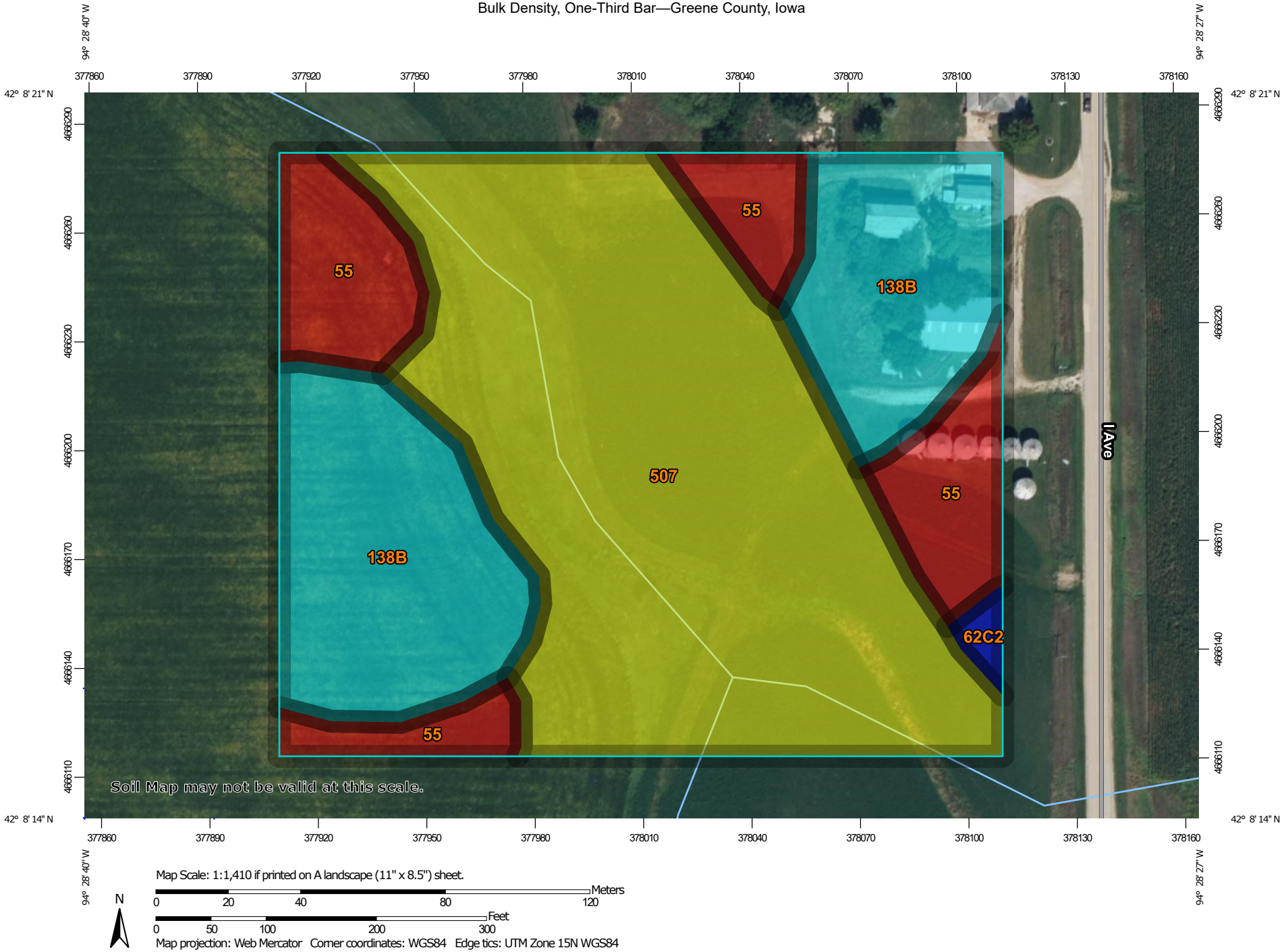


SECTION	Width (w) in (mm)	Height (h) in (mm)	Thickness (t) in (mm)	Cross Sectional Area in²/ft (cm²/m)	WEIGHT Pile lb/ft (kg/m)	WEIGHT Wall lb/ft² (kg/m²)	SECTION MODULUS Elastic in³/ft (cm³/m)	SECTION MODULUS Plastic in³/ft (cm³/m)	Moment of Inertia in⁴/ft (cm⁴/m)	COATING AREA Both Sides ft²/ft (m²/m)	COATING AREA Coating Area ft²/ft² (m²/m²)
SCZ 12	28.50 723.9	10.00 254.0	0.200 5.1	3.32 70.3	27.01 40.20	11.37 55.51	11.52 619	13.10 704	57.6 7866	6.10 1.86	1.28 1.28
SCZ 14	28.50 723.9	10.00 254.0	0.250 6.4	4.18 88.48	33.81 50.31	14.23 69.50	14.36 772	16.32 877.4	71.82 9808	6.10 1.86	1.28 1.28
SCZ 16	28.50 723.9	10.00 254.0	0.276 7.0	4.62 97.79	37.37 55.61	15.73 76.82	15.75 847	17.97 965.9	78.73 10751	6.10 1.86	1.28 1.28
SCZ 17N	28.50 723.9	10.00 254.0	0.295 7.5	4.95 104.78	40.03 59.58	16.86 82.32	16.87 907	19.21 1033	84.35 11519	6.10 1.86	1.28 1.28
SCZ 18N	28.50 723.9	10.00 254.0	0.317 8.1	5.31 112.39	42.94 63.91	18.08 88.28	18.10 973	20.61 1108	90.48 12356	6.10 1.86	1.28 1.28
SCZ 21N	28.50 723.9	10.00 254.0	0.375 9.5	6.29 133.06	50.84 75.66	21.41 104.54	21.43 1152	24.40 1312	107.13 14629	6.10 1.86	1.28 1.28
SKZ 20	28.50 723.9	16.00 406.4	0.315 8.0	6.00 127.00	48.24 71.79	20.31 99.17	31.69 1704	36.66 1970.97	253.51 34618	7.60 2.32	1.60 1.60
SKZ 22	28.50 723.9	16.00 406.4	0.335 8.5	6.30 133.35	51.30 76.34	21.60 105.46	33.43 1797	38.94 2093.55	267.40 36515	7.60 2.32	1.60 1.60
SKZ 23	28.50 723.9	16.00 406.4	0.354 9.0	6.70 141.82	54.20 80.66	22.82 111.42	35.61 1915	41.12 2210.75	284.90 38905	7.60 2.32	1.60 1.60
SKZ 24	28.50 723.9	16.00 406.4	0.375 9.5	7.10 150.28	57.43 85.47	24.18 118.06	37.73 2028	43.52 2339.78	301.80 41213	7.60 2.32	1.60 1.60
SKZ 25	28.50 723.9	16.00 406.4	0.399 10.1	7.60 160.87	61.10 90.93	25.73 125.61	40.14 2158	46.24 2486.02	321.12 43851	7.60 2.32	1.60 1.60
SKZ 31	28.50 723.9	18.00 457.2	0.450 11.4	9.07 192.04	73.82 109.85	31.08 151.75	51.56 2772	60.51 3253.29	464.05 63369	8.06 2.46	1.70 1.70
SKZ 33	28.50 723.9	18.00 457.2	0.475 12.1	9.40 198.97	77.64 115.54	32.69 159.61	54.89 2951	63.57 3417.68	494.03 67462	8.06 2.46	1.70 1.70
SKZ 34	28.50 723.9	18.00 457.2	0.500 12.7	9.89 209.25	81.42 121.17	34.28 167.38	57.62 3098	66.86 3594.60	518.62 70821	8.06 2.46	1.70 1.70
SKZ 36	28.50 723.9	18.00 457.2	0.535 13.6	10.78 228.10	86.81 129.19	36.55 178.46	60.71 3264	71.58 3848.17	546.43 74619	8.06 2.46	1.70 1.70
SKZ 38	28.50 723.9	18.00 457.2	0.550 14.0	11.07 234.42	88.95 132.37	37.45 182.85	62.32 3350	73.52 3952.44	560.85 76588	8.06 2.46	1.70 1.70

Interlock Compatibility

	SCZ 14	SCZ 16	SCZ 17N	SCZ 18N	SCZ 21N	SKZ 20	SKZ 22	SKZ 23	SKZ 24	SKZ 25	SKZ 31	SKZ 33	SKZ 34	SKZ 36	SKZ 38
SCZ 14	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SCZ 16	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SCZ 17N	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SCZ 18N	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SCZ 21N	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SKZ 20	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SKZ 22	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SKZ 23	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SKZ 24	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SKZ 25	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SKZ 31	○	○	○	○	○	○	○	○	○	○	●	●	●	●	●
SKZ 33	○	○	○	○	○	○	○	○	○	○	●	●	●	●	●
SKZ 34	○	○	○	○	○	○	○	○	○	○	●	●	●	●	●
SKZ 36	○	○	○	○	○	○	○	○	○	○	●	●	●	●	●
SKZ 38	○	○	○	○	○	○	○	○	○	○	●	●	●	●	●


Clayey (Very Fine)
Clayey (Fine)
Fine Loamy
Fine Silty
Coarse Loamy
Coarse Silty
Sandy
Clay
Silty Clay
Sandy Clay
Clay Loam
Silty Clay Loam
Sandy Clay Loam
Loam
Silt Loam
Sandy Loam
Silt
Sand
Loamy Sand
Percent Clay
Percent Silt
Percent Sand
1


94° 28' 40" W
94° 28' 27" W
42° 8' 21" N
42° 8' 14" N
377860
377890
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377980
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378040
378070
378100
378130
378160
4666290
4666260
4666230
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4666110
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138B
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138B
62C2
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I Ave
Soil Map may not be valid at this scale.
Map Scale: 1:1,410 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 20 40 80 120
Feet
0 50 100 200 300
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- <= 1.45
- > 1.45 and <= 1.46
- > 1.46 and <= 1.50
- > 1.50 and <= 1.54
- Not rated or not available

Soil Rating Lines
- <= 1.45
- > 1.45 and <= 1.46
- > 1.46 and <= 1.50
- > 1.50 and <= 1.54
- Not rated or not available

Soil Rating Points
- <= 1.45
- > 1.45 and <= 1.46
- > 1.46 and <= 1.50
- > 1.50 and <= 1.54
- 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 1:15,800.

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.

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

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Soil Survey Area: Greene County, Iowa
Survey Area Data: Version 31, Sep 8, 2025

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

Date(s) aerial images were photographed: Sep 5, 2021—Oct 14, 2021

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Bulk Density, One-Third Bar

Map unit symbol	Map unit name	Rating (grams per cubic centimeter)	Acres in AOI	Percent of AOI
55	Nicollet clay loam, 1 to 3 percent slopes	1.45	1.4	16.9%
62C2	Storden loam, 6 to 10 percent slopes, moderately eroded	1.54	0.1	0.7%
138B	Clarion loam, 2 to 6 percent slopes	1.50	2.4	28.6%
507	Canisteo clay loam, 0 to 2 percent slopes	1.46	4.4	53.7%
Totals for Area of Interest			**8.3**	**100.0%**

1.46 g/cm^3 = 91.2 pcf

Description

Bulk density, one-third bar, is the ovendry weight of the soil material less than 2 millimeters in size per unit volume of soil at water tension of 1/3 bar, expressed in grams per cubic centimeter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

For each soil layer, 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: grams per cubic centimeter

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

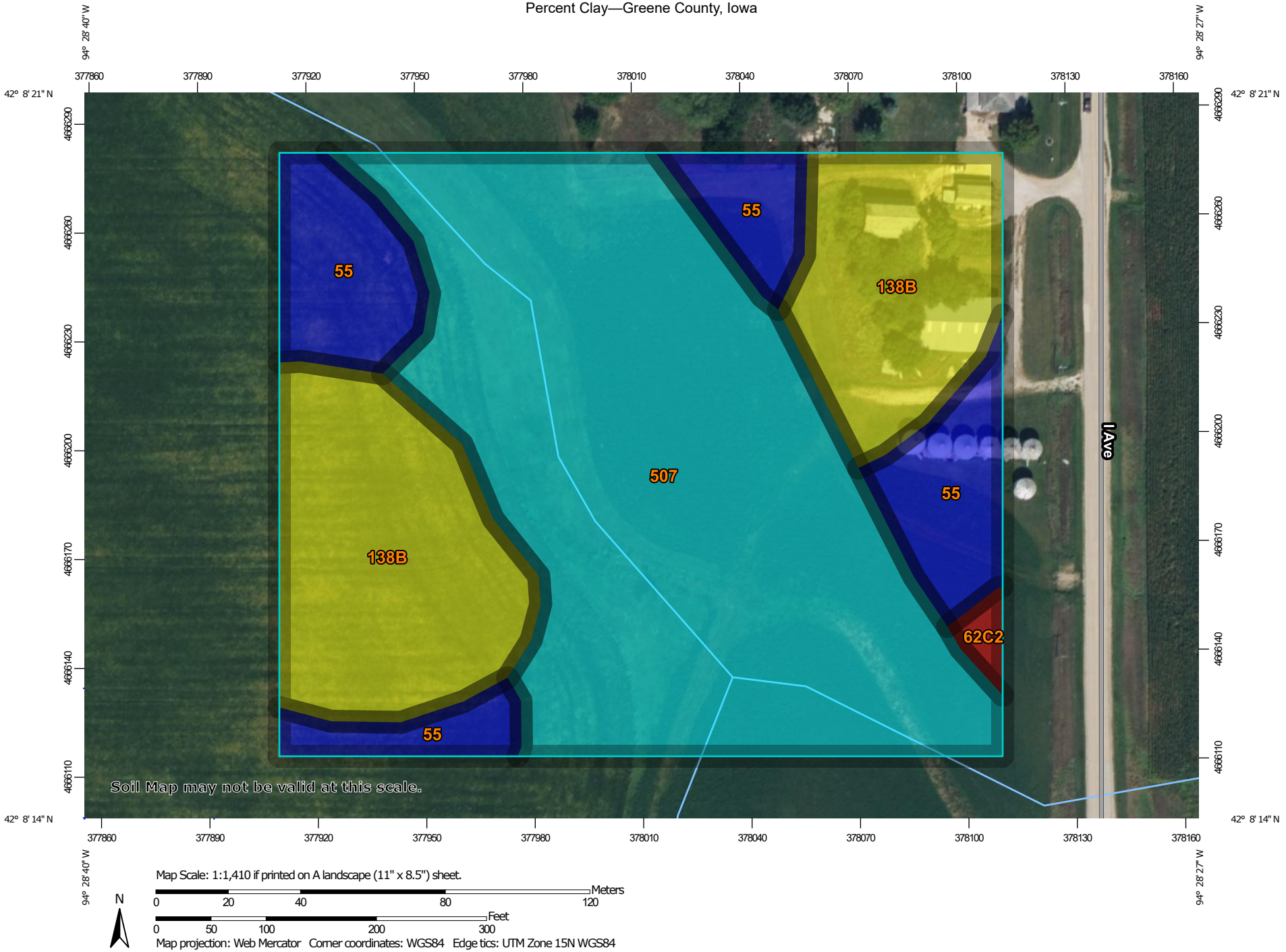
Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 300

Units of Measure: Inches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N
Meters
0 20 40 80 120
Feet
0 50 100 200 300
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

<= 21.0

> 21.0 and <= 22.3

> 22.3 and <= 25.0

> 25.0 and <= 25.1

Not rated or not available

Soil Rating Lines

<= 21.0

> 21.0 and <= 22.3

> 22.3 and <= 25.0

> 25.0 and <= 25.1

Not rated or not available

Soil Rating Points

<= 21.0

> 21.0 and <= 22.3

> 22.3 and <= 25.0

> 25.0 and <= 25.1

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

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

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Date(s) aerial images were photographed: Sep 5, 2021—Oct 14, 2021

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Percent Clay

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
55	Nicollet clay loam, 1 to 3 percent slopes	25.1	1.4	16.9%
62C2	Storden loam, 6 to 10 percent slopes, moderately eroded	21.0	0.1	0.7%
138B	Clarion loam, 2 to 6 percent slopes	22.3	2.4	28.6%
507	Canisteo clay loam, 0 to 2 percent slopes	25.0	4.4	53.7%
Totals for Area of Interest			**8.3**	**100.0%**

Description

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. The estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Most of the material is in one of three groups of clay minerals or a mixture of these clay minerals. The groups are kaolinite, smectite, and hydrous mica, the best known member of which is illite.

For each soil layer, 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: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

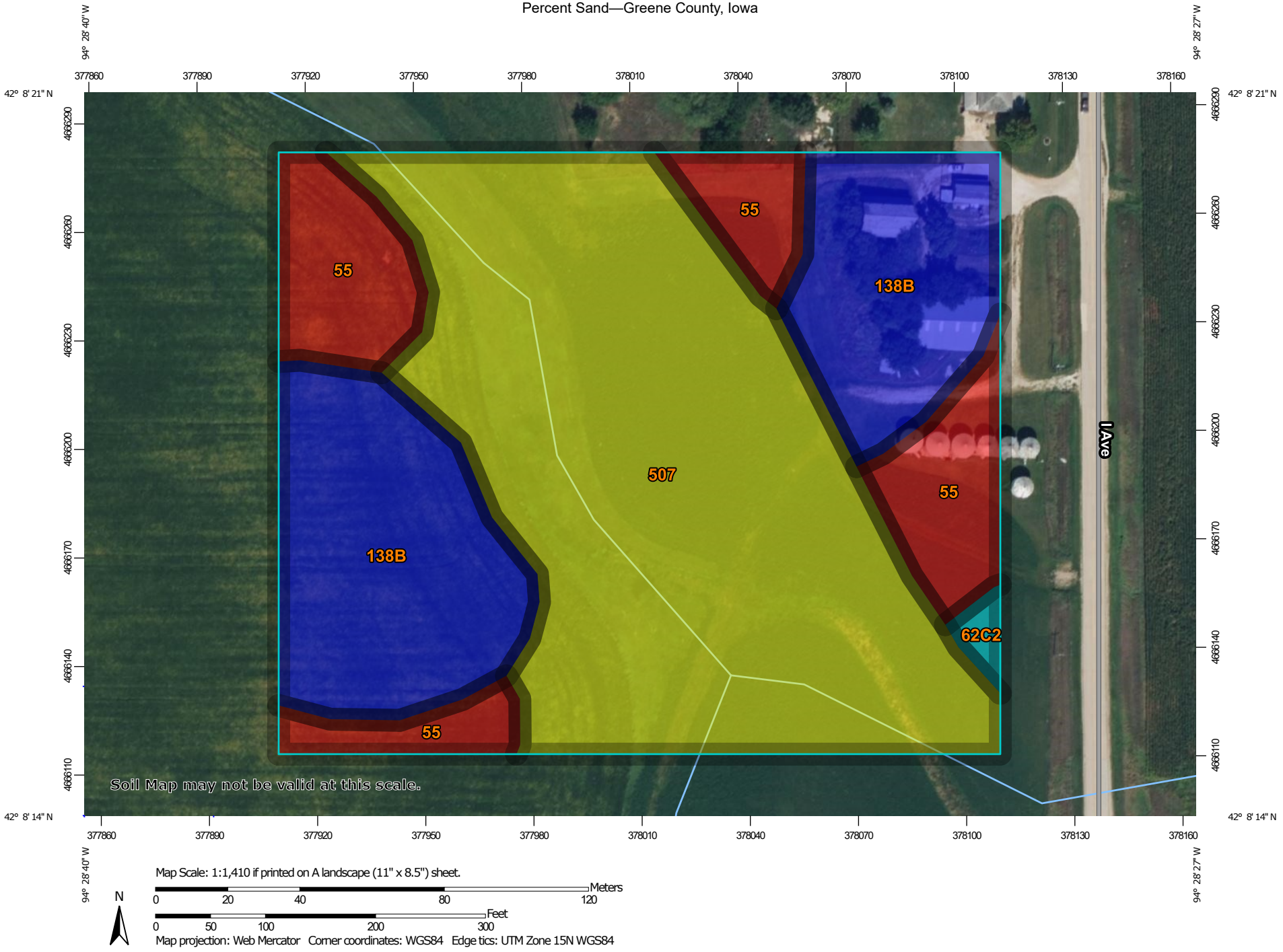
Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 300

Units of Measure: Inches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4666260
4666230
4666200
4666170
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4666110
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138B
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N
Meters
0 20 40 80 120
Feet
0 50 100 200 300
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

<= 39.5

> 39.5 and <= 39.7

> 39.7 and <= 43.0

> 43.0 and <= 43.2

Not rated or not available

Soil Rating Lines

<= 39.5

> 39.5 and <= 39.7

> 39.7 and <= 43.0

> 43.0 and <= 43.2

Not rated or not available

Soil Rating Points

<= 39.5

> 39.5 and <= 39.7

> 39.7 and <= 43.0

> 43.0 and <= 43.2

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

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Coordinate System: Web Mercator (EPSG:3857)

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Percent Sand

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
55	Nicollet clay loam, 1 to 3 percent slopes	39.5	1.4	16.9%
62C2	Storden loam, 6 to 10 percent slopes, moderately eroded	43.0	0.1	0.7%
138B	Clarion loam, 2 to 6 percent slopes	43.2	2.4	28.6%
507	Canisteo clay loam, 0 to 2 percent slopes	39.7	4.4	53.7%
Totals for Area of Interest			**8.3**	**100.0%**

Description

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the database, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

For each soil layer, 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: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

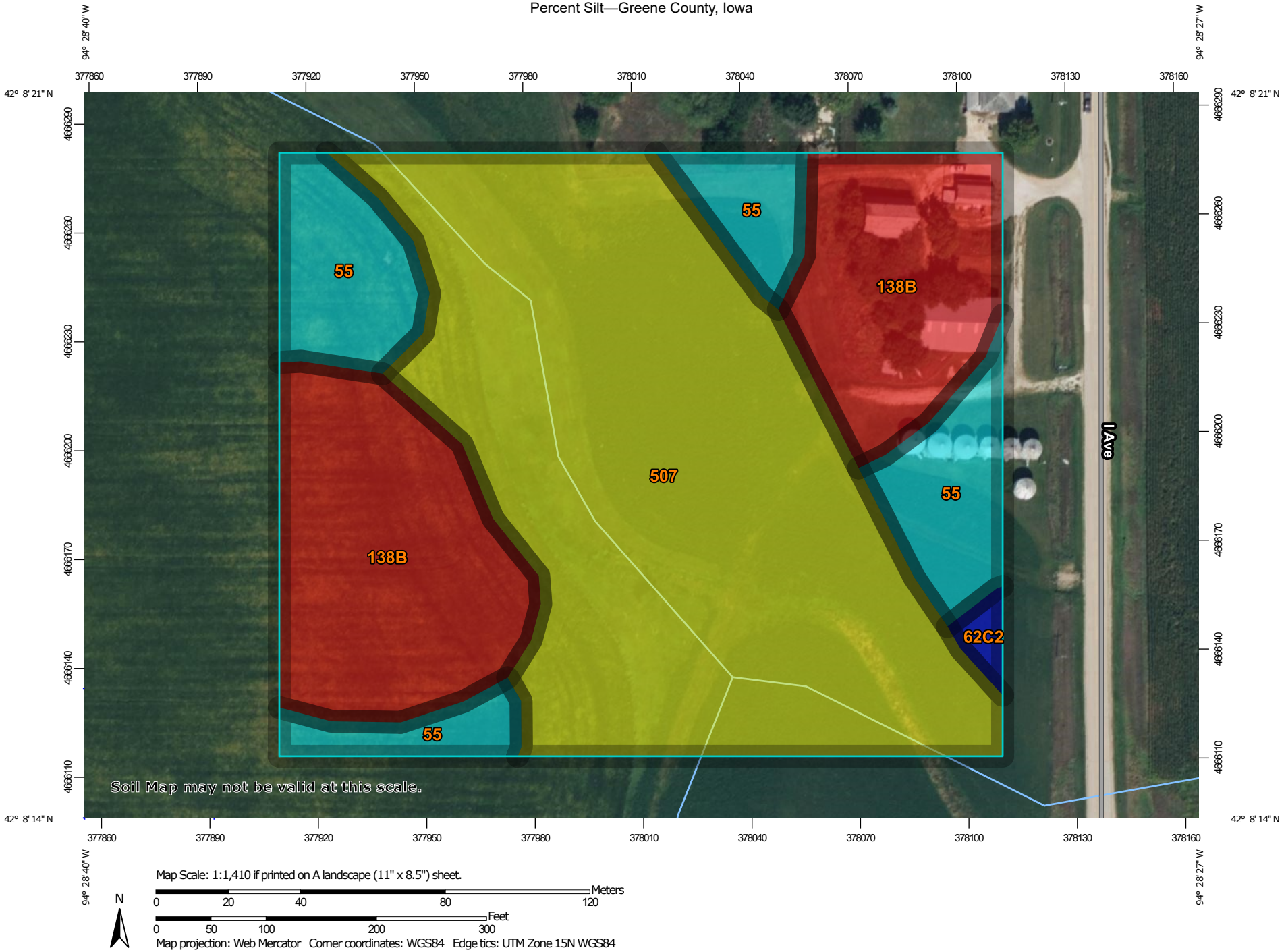
Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 300

Units of Measure: Inches



Map Scale: 1:1,410 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

<= 34.6

> 34.6 and <= 35.3

> 35.3 and <= 35.4

> 35.4 and <= 36.0

Not rated or not available

Soil Rating Lines

<= 34.6

> 34.6 and <= 35.3

> 35.3 and <= 35.4

> 35.4 and <= 36.0

Not rated or not available

Soil Rating Points

<= 34.6

> 34.6 and <= 35.3

> 35.3 and <= 35.4

> 35.4 and <= 36.0

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

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Percent Silt

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
55	Nicollet clay loam, 1 to 3 percent slopes	35.4	1.4	16.9%
62C2	Storden loam, 6 to 10 percent slopes, moderately eroded	36.0	0.1	0.7%
138B	Clarion loam, 2 to 6 percent slopes	34.6	2.4	28.6%
507	Canisteo clay loam, 0 to 2 percent slopes	35.3	4.4	53.7%
Totals for Area of Interest			**8.3**	**100.0%**

Description

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In the database, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification

For each soil layer, 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: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 300

Units of Measure: Inches

Table 1: Typical unit weight values for soils in their natural state (after Peck, Hanson, and Thornburn, 1974).

soil description	dry unit weight (pcf)	wet unit weight (pcf)
uniform sand (loose)	90	118
uniform sand (dense)	109	130
well-graded sand (loose)	99	124
well-graded sand (dense)	116	135
windblown silt (loose)	85	116
glacial till	132	145
soft glacial clay	76	110
stiff glacial clay	106	129
soft slightly organic clay	58	98
soft very organic clay	43	89

WET UNIT WEIGHT IS 9.85% HIGHER THAN DRY UNIT WEIGHT.

AVERAGE OF WET TO DRY UNIT WEIGHT BETWEEN IADOT AND NRCS = 18.28%.

THEREFORE, 91.20 DRY UNIT WEIGHT = 107.9 PCF WET UNIT WEIGHT.

Shear Strength

The shear strength of a soil can be evaluated by one of the following methods:

- Geotechnical laboratory testing.
- Correlations with in-situ field testing results.
- Correlations based on index parameters.

The laboratory test that is selected and used to evaluate the shear strength of a soil should be the method that is best suited to model the loading condition (undrained total stress or drained effective stress) and the soil response. Shear strength laboratory testing methods are described in Section 200D-1. The selection of peak, fully softened, or residual shear strength for design analyses should be based on review of the expected or tolerable displacements of the soil.

Undrained Cohesive: The short term, end of construction design of the project should be based on undrained (total) shear strength parameters. The undrained shear strength (Su) of cohesive soils (clay and highly plastic silts) can be measured using unconfined compression (UC) tests, unconsolidated undrained (UU) triaxial tests, or consolidated undrained (CU) triaxial tests of undisturbed samples. Typically, the total internal friction angle (ϕ) is negligible and assumed to be zero ($\phi = 0$) in cohesive materials. However, if required for the analyses, the undrained (total) friction angle (ϕ) and cohesion components of the shear strength can be determined using appropriate laboratory testing methods.

The undrained shear strength (Su) of cohesive soils may also be correlated to results of in-situ testing such as Standard Penetration Test (SPT), Cone Penetrometer Test (CPT), Flat Plate Penetrometer Test (CPT), Flat Plate Dilatometer Test (DMT), or Vane Shear Test (VST). For example, undrained shear strength (Su) can be correlated to the N_{60} value obtained from the Standard Penetration Test (SPT). The undrained shear strength (Su) can be estimated for low plasticity clays ($PI \leq 10$) and medium to high plasticity clays ($11 \leq PI \leq 40$) using the relationship developed by McGregor and Duncan, 1986, see Figure 1.

TABLE 6
Typical Values of Soil Index Properties

	Particle Size and Gradation				Voids[1]					Unit Weight[2] (lb./cu.ft.)						
	Approximate Size Range (mm)		Approx. D_{10} (mm)	Approx. Range Uniform Coefficient C_u	Void Ratio			Porosity (%)		Dry Weight			Wet Weight		Submerged Weight	
	D_{max}	D_{min}			e_{max} loose	e_{cr}	e_{min} dense	n_{max} loose	n_{min} dense	Min loose	100% Mod. AASHO	Max dense	Min loose	Max dense	Min loose	Max dense
GRANULAR MATERIALS																
Uniform Materials																
a. Equal spheres (theoretical values)	–	–	–	1.0	0.92	–	0.35	47.6	26	–	–	–	–	–	–	–
b. Standard Ottawa SAND	0.84	0.59	0.67	1.1	0.80	0.75	0.50	44	33	92	–	110	93	131	57	69
c. Clean, uniform SAND (fine or medium)	–	–	–	1.2 to 2.0	1.0	0.80	0.40	50	29	83	115	118	84	136	52	73
d. Uniform, inorganic SILT	0.05	0.005	0.012	1.2 to 2.0	1.1	–	0.40	52	29	80	–	118	81	136	51	73
Well-graded Materials																
a. Silty SAND	2.0	0.005	0.02	5 to 10	0.90	–	0.30	47	23	87	122	127	88	142	54	79
b. Clean, fine to coarse SAND	2.0	0.05	0.09	4 to 6	0.95	0.70	0.20	49	17	85	132	138	86	148	53	86
c. Micaceous SAND	–	–	–	–	1.2	–	0.40	55	29	76	–	120	77	138	48	76
d. Silty SAND & GRAVEL	100	0.005	0.02	15 to 300	0.85	–	0.14	46	12	89	–	146[3]	90	155[3]	56	92
MIXED SOILS																
Sandy or Silty CLAY	2.0	0.001	0.003	10 to 30	1.8	–	0.25	64	20	60	130	135	100	147	38	85
Skip-graded Silty CLAY with stones or rk fgmts	250	0.001	–	–	1.0	–	0.20	50	17	84	–	140	115	151	53	89
Well-graded GRAVEL, SAND, SILT & CLAY mixture	250	0.001	0.002	25 to 1000	0.70	–	0.13	41	11	100	140	148[4]	125	156[4]	62	94
CLAY SOILS																
CLAY (30%–50% clay sizes)	0.05	0.5μ	0.001	–	2.4	–	0.50	71	33	50	105	112	94	133	31	71
Colloidal CLAY (–0.002 mm: 50%)	0.01	10 Å	–	–	12	–	0.60	92	37	13	90	106	71	128	8	66
ORGANIC SOILS																
Organic SILT	–	–	–	–	3.0	–	0.55	75	35	40	–	110	87	131	25	69
Organic CLAY (30% – 50% clay sizes)	–	–	–	–	4.4	–	0.70	81	41	30		100	81	125	18	62

AVG. = 97.5 AVG. = 123.5

WET UNIT WEIGHT IS 26.7% HIGHER THAN DRY UNIT WEIGHT

TABLE 1

timate Friction Factors and Adhe n for Dissimilar Materials

Interface Materials	Friction factor, tan δ	Friction angle, δ degrees
Mass concrete on the following foundation materials:		
Clean sound rock	0.70	35
Clean gravel, gravel-sand mixtures, coarse sand	0.55 to 0.60	29 to 31
Clean fine to medium sand, silty medium to coarse sand, silty or clayey gravel	0.45 to 0.55	24 to 29
Clean fine sand, silty or clayey fine to medium sand	0.35 to 0.45	19 to 24
Fine sandy silt, nonplastic silt	0.30 to 0.35	17 to 19
Very stiff and hard residual or preconsolidated clay	0.40 to 0.50	22 to 26
Medium stiff and stiff clay and silty clay	0.30 to 0.35	17 to 19
(Masonry on foundation materials has same friction factors.)		
Steel sheet piles against the following soils:		δ
Clean gravel, gravel-sand mixtures, well-graded rock fill with spalls	0.40	22
Clean sand, silty sand-gravel mixture, single size hard rock fill	0.30	17
Silty sand, gravel or sand mixed with silt or clay	0.25	14
Fine sandy silt, nonplastic silt	0.20	11
Formed concrete or concrete sheet piling against the following soils:		
Clean gravel, gravel-sand mixture, well-graded rock fill with spalls	0.40 to 0.50	22 to 26
Clean sand, silty sand-gravel mixture, single size hard rock fill	0.30 to 0.40	17 to 22
Silty sand, gravel or sand mixed with silt or clay	0.30	17
Fine sandy silt, nonplastic silt	0.25	14
Various structural materials:		
Masonry on masonry, igneous and metamorphic rocks:		
Dressed soft rock on dressed soft rock	0.70	35
Dressed hard rock on dressed soft rock	0.65	33
Dressed hard rock on dressed hard rock	0.55	29
Masonry on wood (cross grain)	0.50	26
Steel on steel at sheet pile interlocks	0.30	17

The engineering properties are based primarily on classification, gradation, and compaction requirements, with consideration of the geologic source of the fill material. For suitable materials, where the material types vary, additional laboratory testing will be required to evaluate the range of engineering properties to be considered. For existing and new cohesive highway embankments, the Soils Design Section's standard of practice has been to assume a cohesion of 600 psf and a 12 degree friction angle for shear strength parameters; however, engineering judgment and project specific considerations must also be used in all instances.

Table 6: Typical engineering properties of engineered materials.

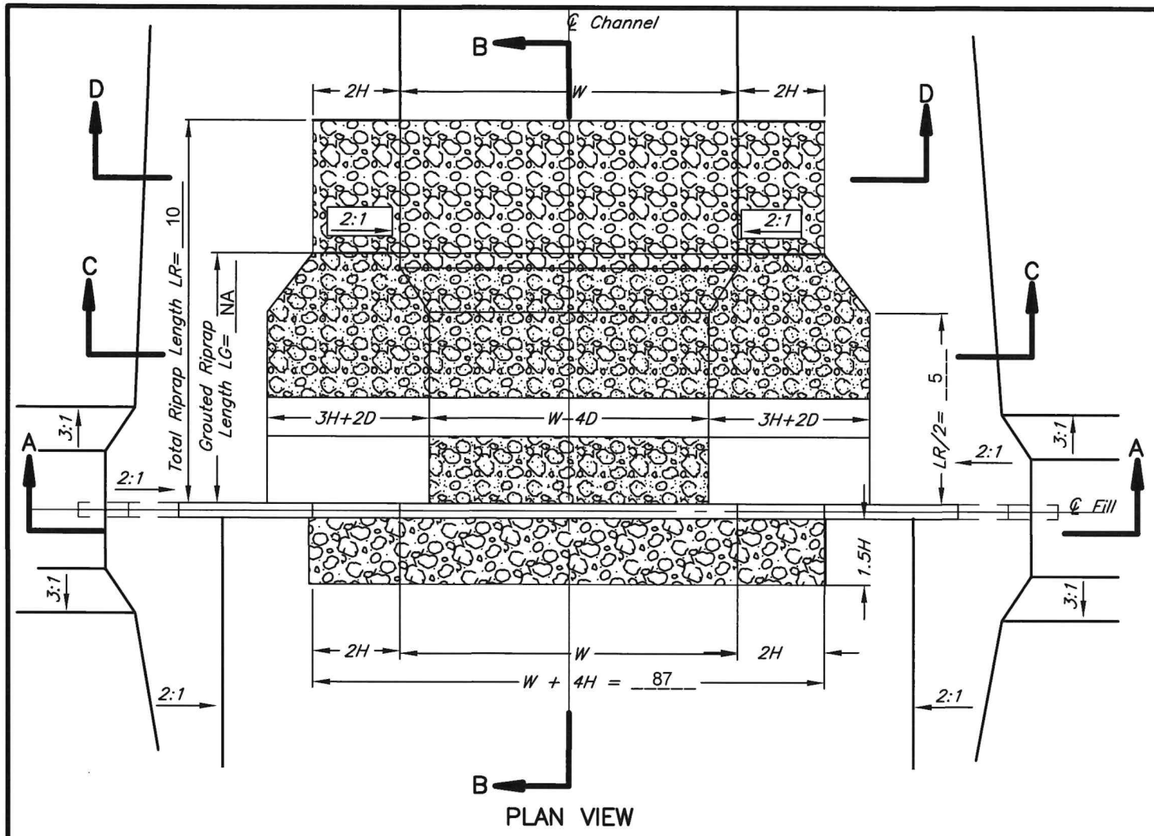
material	Iowa DOT standard specification	soil type (AASHTO/USCS classification)	friction angle (degrees)	cohesion (psf)	total unit weight (pcf)
suitable materials	2102.02,A	AASHTO T-99 Proctor Density of 95 pcf or greater, and AASHTO M 145 Group index less than 30 Liquid Limit (LL) < 50	Perform lab testing	Perform lab testing	Perform lab testing
select soils (cohesive)	2102.02,D,1,a	A-6 or A-7-6 soils of glacial origin (excluding Gumbotil and Palesols) Must have a AASHTO T-99 proctor density of 110 pcf or greater. Must have 45% or less silt content. Must have a plasticity index (PI) > 10	20 to 30	50 to 600	120 to 135
select soils (granular)	2102.02,D,1,b	A-1, A-2, or A-3 (0) / GW, GP, GW-GM, GP-GM, SW, SW-SM, SP Must have a AASHTO T-99 proctor density of 110 pcf or greater. Must have a combined silt and clay content of 15% or less (finer than 0.074 mm or #200 sieve). Must have a plasticity index (PI) of 3 or less	30 to 45	0	125 to 135

Final Property Selection

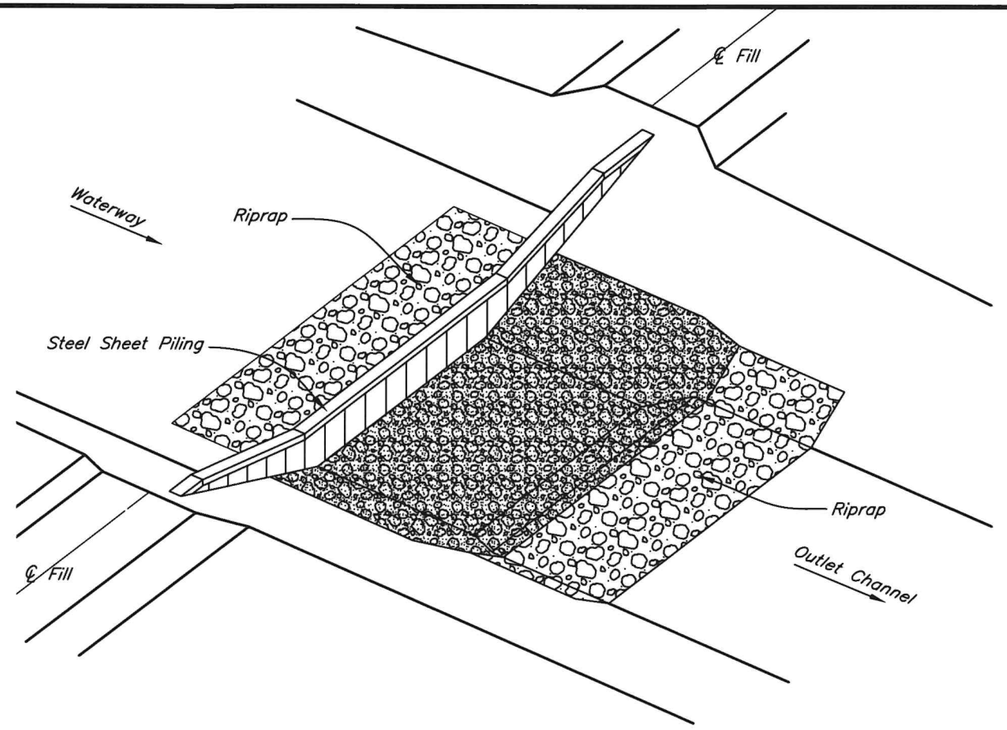
Engineering judgment and project specific considerations, combined with parametric analyses as needed, should always be used in selection of engineering properties. Previous experience with geologic units and other laboratory and field data should also be considered in the evaluation. The geotechnical engineer must recognize the variability of materials, and the influence of the uncertainty on the design level of safety. If the impact of this uncertainty is likely to be significant, parametric analyses should be conducted, or more data could be obtained to help reduce the uncertainty. The selection of engineering properties to be used for design is outlined in Sabatini, et al. (2002).

References

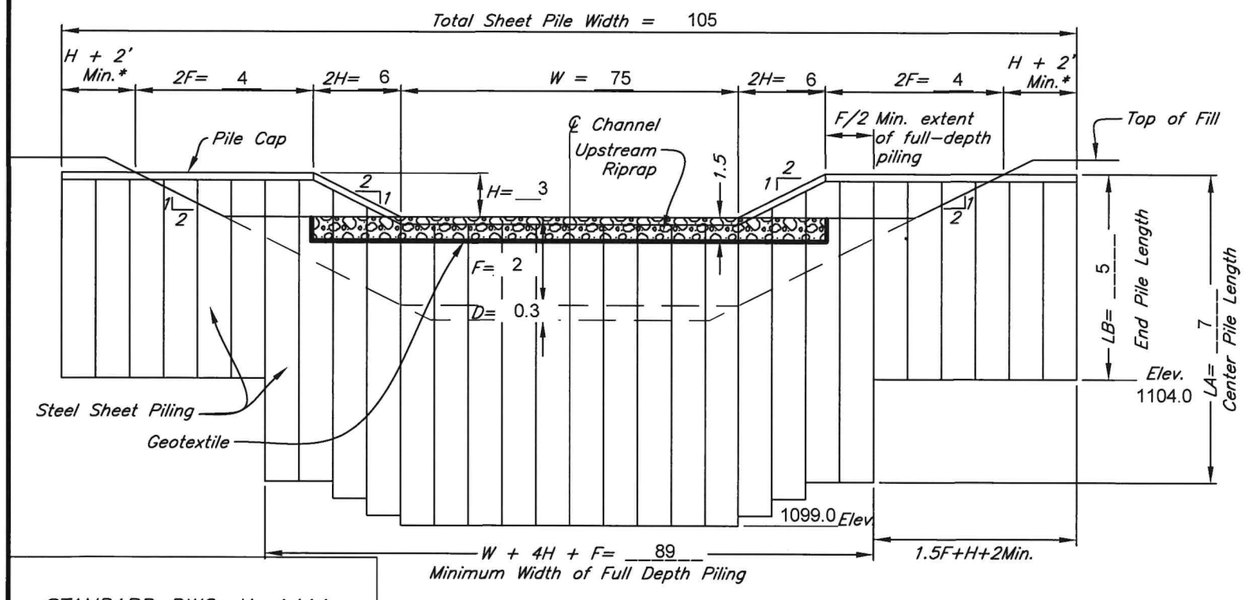
1. AASHTO, 2012. LRFD Bridge Design Specifications, Sixth Edition.
2. Goodman, R. E., 1989. Introduction to Rock Mechanics, 2nd Edition, John Wiley & Sons, New York, NY.
3. Hoek, E., Carranza-Torres, C., and Corkum, B., 2002, "Hoek-Brown Criterion – 2002 Edition," Proceedings NARMS-TAC Conference, Toronto, 2002, 1, pp. 267-273.
4. Ladd, C .C., 1973, Estimating Settlement of Structures on Cohesive Soils. Presentation prepared for the Foundations and Soil Mechanics Division of the ASCE, April 9-10, 1973.



PLAN VIEW

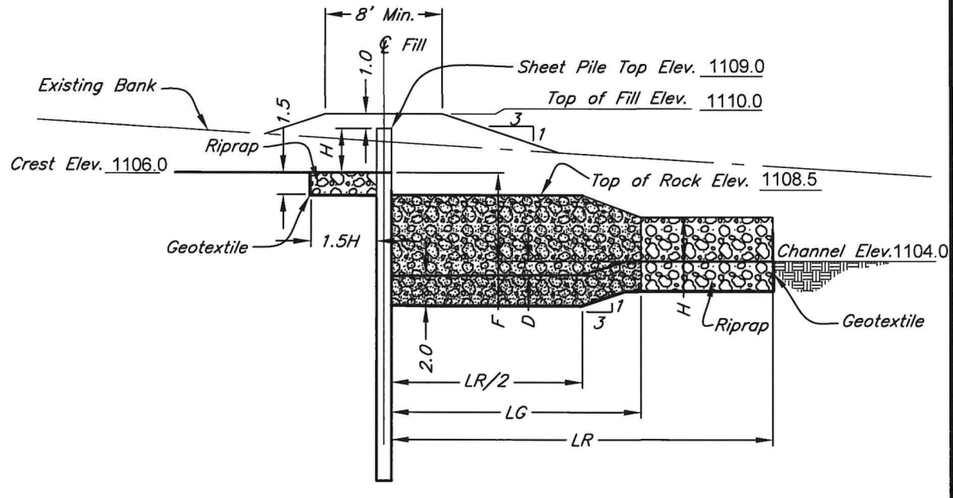


ISOMETRIC VIEW



SECTION A–A

* See Site Requirements Note 5, page 2 of 2



SECTION B–B

STANDARD DWG. IA–1411

DATE August 2010 | PAGE 1 OF 2

STEEL SHEET PILE DROP STRUCTURE
Till Foundation, 2 ft.–6 ft. Drop

FITZPATRICK WETLAND PROJECT

Date
Designed
Drawn
Checked
Approved

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.

Drawing No.

Sheet 1 of 2

SHEET PILE REQUIREMENTS -- MINIMUM VALUES						
Drop	Basin Depth	Full-Depth Pile Length	Side Pile Length	Pile Thickness	Section Modulus	Moment of Inertia
F, ft	D, ft	LA, ft	LB, ft	t, inches	S, in^3/ft	I, in^4/ft
2	0.3	7.0	5.0	0.209	0.8	0.9
3	0.5	10.0	7.0	0.209	0.8	0.9
4	0.7	14.0	9.0	0.209	2.0	3.3
5	0.8	17.0	11.0	0.250	4.4	8.1
6	1.0	22.0	14.0	0.250	8.2	20.1

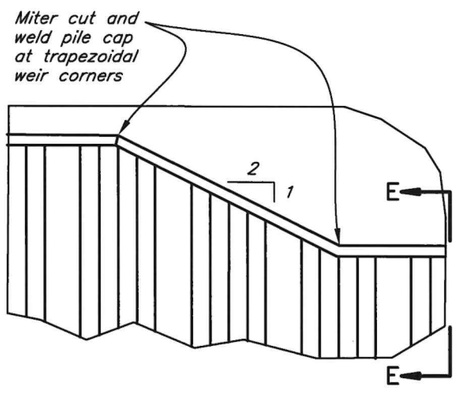
STRUCTURE DIMENSIONS		
Fall = F =	2	ft
Weir Notch Height = H =	3.0	ft
Weir Crest, Channel Width = W =	75.0	ft
Center Sheet Pile Length = LA =	7.0	ft
Side Sheet Pile Length = LB =	5.0	ft
DS Riprap Length = LR =	10	ft
Grouted Riprap Length = LG =	0	ft
Riprap Basin Depth = D =	0.3	ft
Est. tailwater at design storm = TW =	3.0	ft

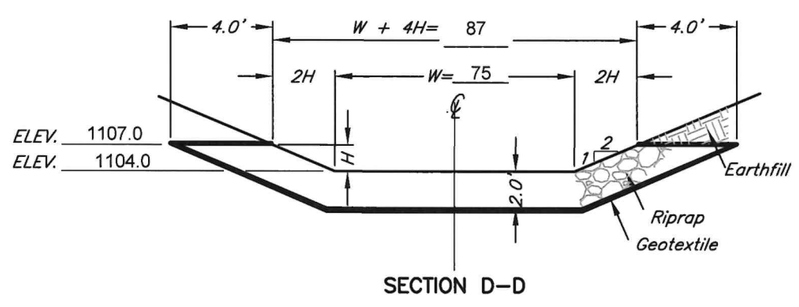
The principal spillway design flow for this structure is 968.05 cfs

The total capacity flow for this structure is 1285.42 cfs

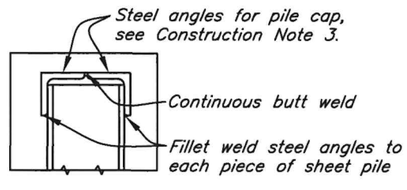
DOWNSTREAM RIPRAP AND GROUT REQUIREMENTS		
Drop	Total Riprap Length	Grouted Length
F, ft	LR, ft	LG, ft
2	10	0
3	13	0
4	18	12
5	22	15
6	26	18

QUANTITY SUMMARY		
Materials	Quantity	Units
Full depth Sheet Piles, 7.0 ft long	623.0	Sq. Ft.
Side Sheet Piles, 5.0 ft long	80.0	Sq. Ft.
Angle Iron for pile cap	212.8	Lin. Ft.
Riprap	89.2	Cu. Yd.
Grouted Riprap	0.0	Cu. Yd.
Geotextile	203.3	Sq. Yd.

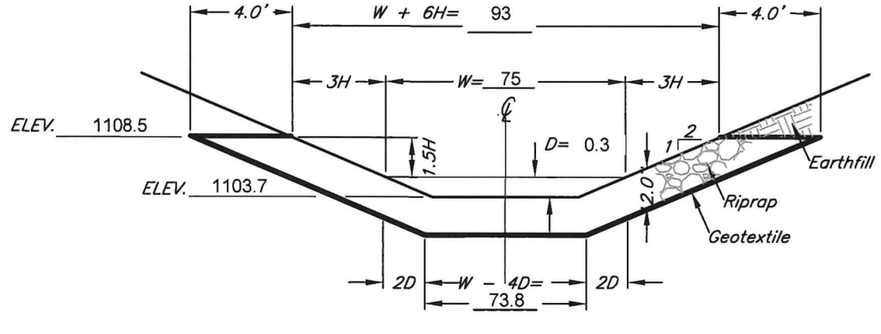




SECTION D-D



SECTION E-E



SECTION C-C

NOT TO SCALE

NOTES

DESIGN:

1. Maximum weir height H = 0.5F.
2. Minimum straight weir length W = 2H.
3. Maximum design flow = Q = 400 cfs
4. Minimum tailwater depth TW =1.3H at design discharge. If necessary outlet elevation shall be lowered to provide min. TW.
5. Size of weir should be evaluated based on channel morphology and flood conveyance requirements. Design weir capacity may be computed by the following formula. (assuming trapezoidal weir flow with 6" of freeboard):

   $Q=3.1\ (W+1.6h)(h)^{1.5}$
   $h = H-6"$

6. Sheet pile lengths and properties were determined using U.S. Army Corps of Engineers software, CWALSHT.
7. Riprap basin dimensions based on guidance in NEH Part 634, Sec. 11, Drop Spillways.

SITE REQUIREMENTS:

1. Channel upstream and downstream of structure shall be relatively straight and well aligned with the structure.
2. On-site soils investigation required (hand probe at minimum).
3. Depth to glacial till must be 4 ft or less below downstream channel elevation.
4. Downstream riprap shall be set at stable downstream channel grade.
5. Consider increasing horizontal embedment length of sheet pile into abutments if soils at the site are erosive (e.g. low PI, sandy, or dispersive soils).

CONSTRUCTION:

1. All riprap shall be IDOT Class D or E.
2. Top of sheet pile shall be trimmed as needed to obtain elevations indicated and to remove any damage caused by driving.
3. Shop drawings shall be provided for proposed construction of pile cap.

STANDARD DWG. IA-1411

DATE August 2010 | PAGE 2 OF 2

Date
Designed
Drawn
Checked
Approved

STEEL SHEET PILE DROP STRUCTURE
Till Foundation, 2 ft.-6 ft. Drop

FITZPATRICK WETLAND PROJECT

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.

Drawing No.

Sheet 2 of 2

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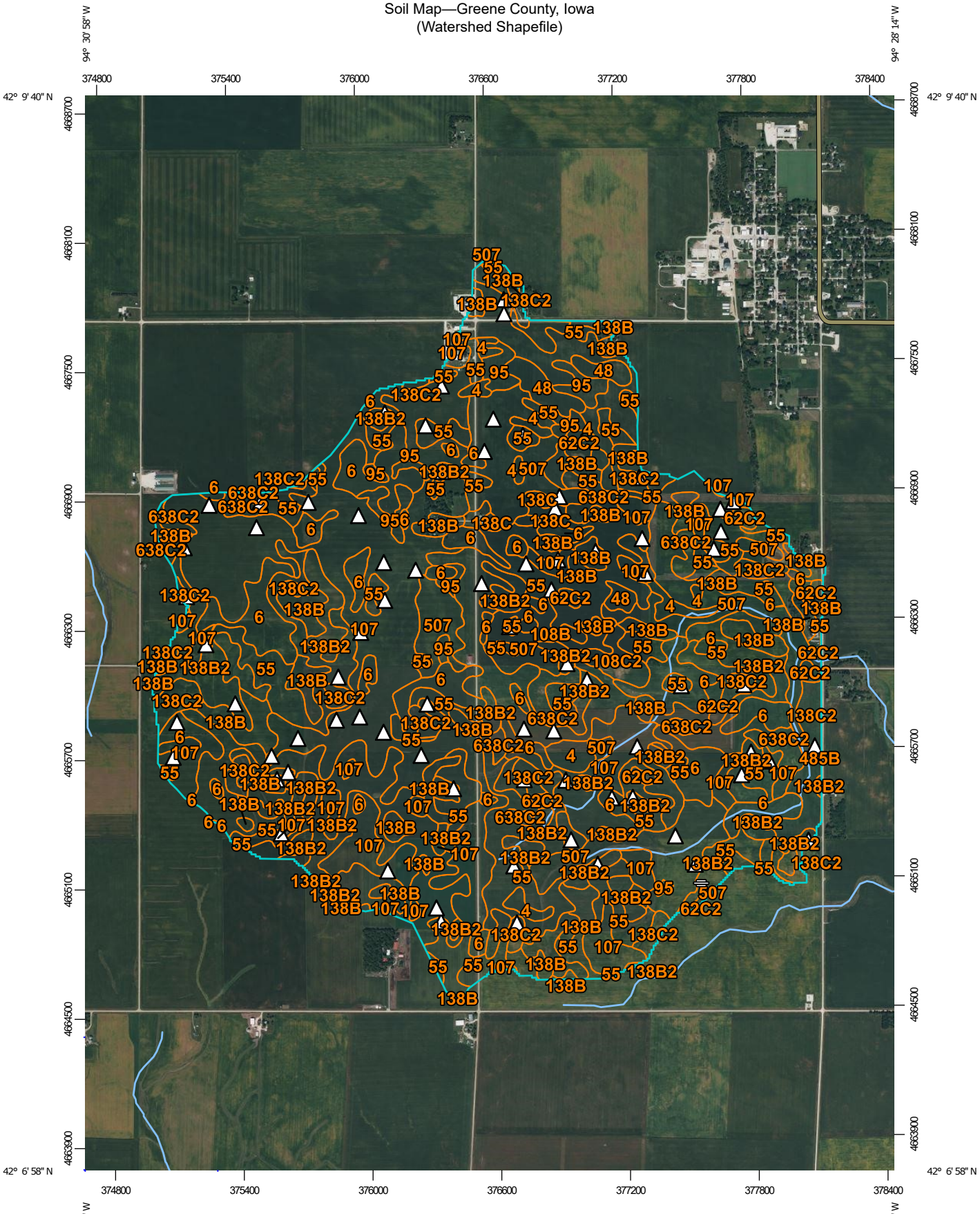
Appendix A-6

NRCS Soil Report

Soil Map—Greene County, Iowa
(Watershed Shapefile)



Map Scale: 1:24,300 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 350 700 1400 2100

Feet
0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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 1:15,800.

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: Greene County, Iowa
Survey Area Data: Version 31, Sep 8, 2025

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

Date(s) aerial images were photographed: Sep 5, 2021—Oct 14, 2021

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
4	Knoke silty clay loam, 0 to 1 percent slopes	24.2	1.4%
6	Okoboji silty clay loam, 0 to 1 percent slopes	155.5	9.1%
48	Knoke mucky silty clay loam, 0 to 1 percent slopes	19.1	1.1%
55	Nicollet clay loam, 1 to 3 percent slopes	495.7	29.1%
62C2	Storden loam, 6 to 10 percent slopes, moderately eroded	16.3	1.0%
95	Harps clay loam, 0 to 2 percent slopes	28.7	1.7%
107	Webster clay loam, 0 to 2 percent slopes	387.0	22.7%
108B	Wadena loam, 2 to 6 percent slopes	1.6	0.1%
108C2	Wadena loam, 6 to 12 percent slopes, moderately eroded	10.8	0.6%
138B	Clarion loam, 2 to 6 percent slopes	123.8	7.3%
138B2	Clarion loam, 2 to 6 percent slopes, moderately eroded	120.7	7.1%
138C	Clarion loam, 6 to 10 percent slopes	4.6	0.3%
138C2	Clarion loam, 6 to 10 percent slopes, moderately eroded	48.7	2.9%
485B	Spillville loam, 2 to 5 percent slopes	0.1	0.0%
507	Canisteo clay loam, 0 to 2 percent slopes	228.2	13.4%
638C2	Clarion-Storden complex, 6 to 10 percent slopes, moderately eroded	40.2	2.4%
Totals for Area of Interest		**1,705.1**	**100.0%**

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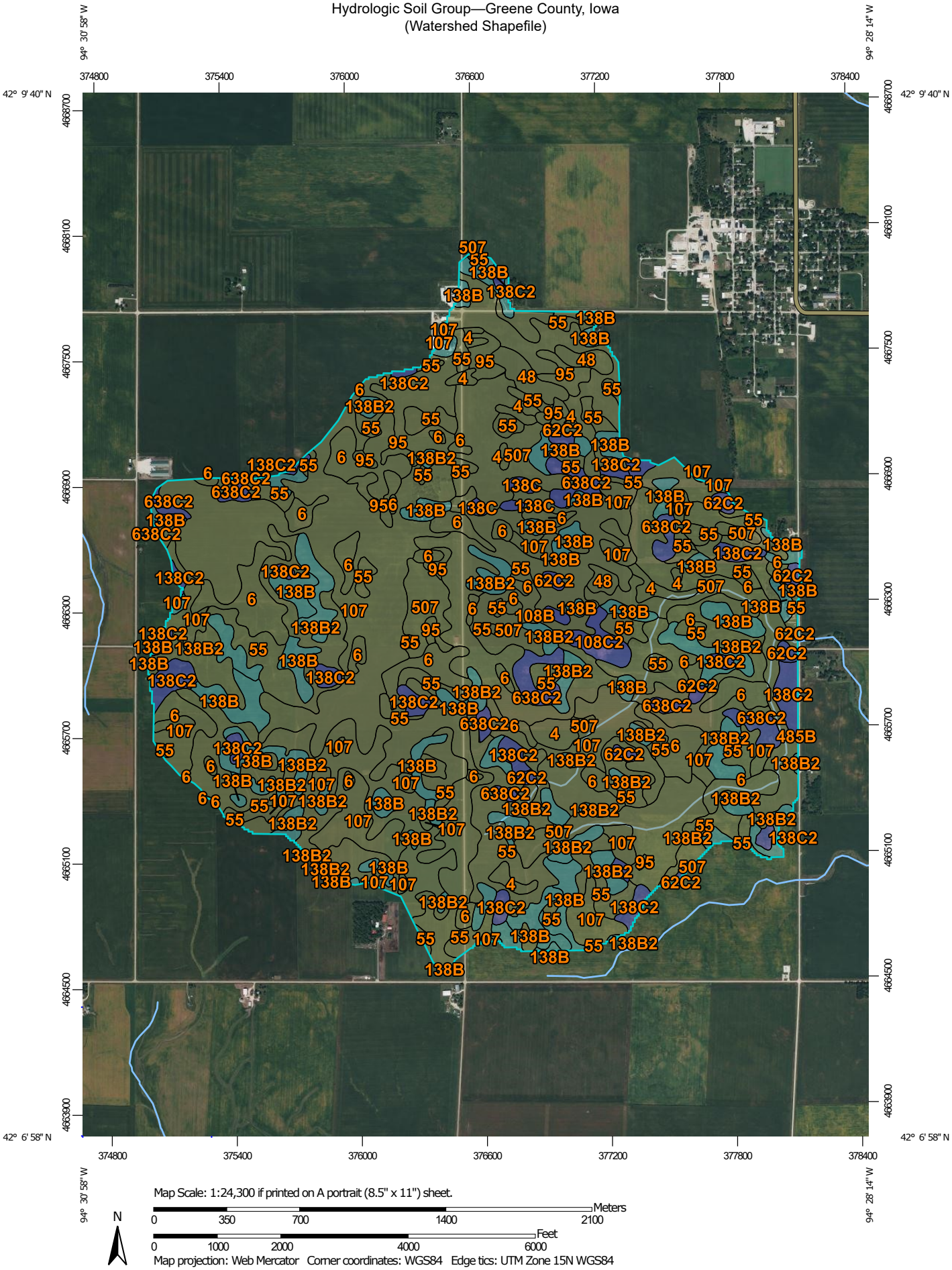
Appendix A-7

NRCS Hydrologic Soils Report

Hydrologic Soil Group—Greene County, Iowa
(Watershed Shapefile)



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 1:15,800.

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: Greene County, Iowa
Survey Area Data: Version 31, Sep 8, 2025

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

Date(s) aerial images were photographed: Sep 5, 2021—Oct 14, 2021

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
4	Knoke silty clay loam, 0 to 1 percent slopes	C/D	24.2	1.4%
6	Okoboji silty clay loam, 0 to 1 percent slopes	C/D	155.5	9.1%
48	Knoke mucky silty clay loam, 0 to 1 percent slopes	C/D	19.1	1.1%
55	Nicollet clay loam, 1 to 3 percent slopes	C/D	495.7	29.1%
62C2	Storden loam, 6 to 10 percent slopes, moderately eroded	B	16.3	1.0%
95	Harps clay loam, 0 to 2 percent slopes	C/D	28.7	1.7%
107	Webster clay loam, 0 to 2 percent slopes	C/D	387.0	22.7%
108B	Wadena loam, 2 to 6 percent slopes	B	1.6	0.1%
108C2	Wadena loam, 6 to 12 percent slopes, moderately eroded	B	10.8	0.6%
138B	Clarion loam, 2 to 6 percent slopes	C	123.8	7.3%
138B2	Clarion loam, 2 to 6 percent slopes, moderately eroded	C	120.7	7.1%
138C	Clarion loam, 6 to 10 percent slopes	B	4.6	0.3%
138C2	Clarion loam, 6 to 10 percent slopes, moderately eroded	B	48.7	2.9%
485B	Spillville loam, 2 to 5 percent slopes	C	0.1	0.0%
507	Canisteo clay loam, 0 to 2 percent slopes	C/D	228.2	13.4%
638C2	Clarion-Storden complex, 6 to 10 percent slopes, moderately eroded	B	40.2	2.4%
Totals for Area of Interest			**1,705.1**	**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

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Appendix A-8

Curve Number Calculations

CURVE NUMBER DESCRIPTION:				
FALLOW CROP RESIDUE, GOOD				
CURVE NUMBER (FROM HYDROCAD TABLE)	64	75	82	85
HYDRAULIC SOIL GROUP	**A**	**B**	**C**	**D**
		16.3	123.8	24.2
		1.6	120.7	155.5
		10.8	0.1	19.1
		4.6		495.7
		48.7		28.7
		40.2		387
				228.2
TOTALS	0	122.2	244.6	1338.4
TOTAL ACRES	1705.2			
PERCENT	0.00%	7.17%	14.34%	78.49%
WEIGHTS	0.00	5.37	11.76	66.72
ADJUSTED CURVE NUMBER	83.85			

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Appendix A-9

Tile #1 Calculations

MANNING'S EQUATION FOR PIPE FLOW

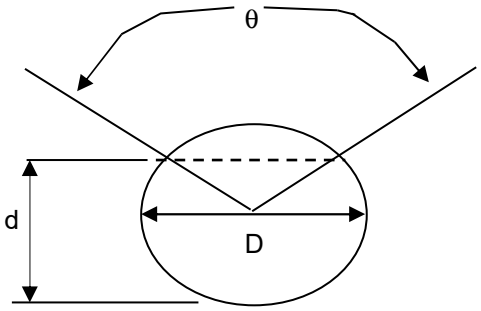
Project: GREENE CO FITZPATRICK Location: GREENE CO

By: AB Date:

Chk. By: Date:

mdo version 12.8.00

Clear Data Entry Cells



INPUT

D=	26	inches
d=	24.18	inches
n=	0.013	mannings coeff
θ=	61.4	degrees
S=	0.004892	slope in/in

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

Solution to Mannings Equation				
Area,ft^2	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs
3.57	5.65	0.63	5.89	21.06

Manning's n-values	
PVC	0.01
PE (<9"dia)	0.015
PE (>12"dia)	0.02
PE(9-12"dia)	0.017
CMP	0.025
ADS N12	0.012
HCMP	0.023
Conc	0.013

Created by: Mike O'Shea

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Appendix A-10

Tile #2 Calculations

MANNING'S EQUATION FOR PIPE FLOW

Project: GREENE CO FITZPATRICK Location: GREENE CO

By: AB Date:

Chk. By: Date: mdo version 12.8.00

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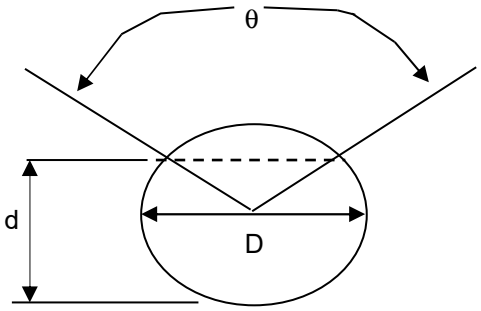


INPUT

D=	12	inches
d=	11.16	inches
n=	0.013	mannings coeff
θ=	61.4	degrees
S=	0.006576	slope in/in

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

Solution to Mannings Equation				
Area,ft^2	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs
0.76	2.61	0.29	4.08	3.11

Manning's n-values	
PVC	0.01
PE (<9"dia)	0.015
PE (>12"dia)	0.02
PE(9-12"dia)	0.017
CMP	0.025
ADS N12	0.012
HCMP	0.023
Conc	0.013

Created by: Mike O'Shea

MANNING'S EQUATION FOR PIPE FLOW

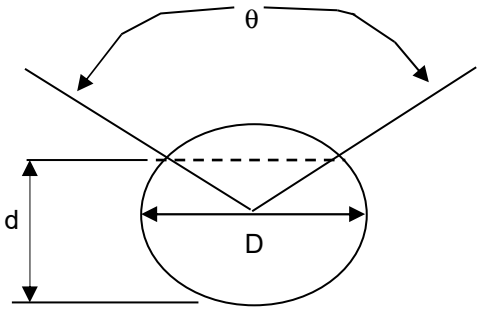
Project: GREENE CO FITZPATRICK Location: GREENE CO

By: AB Date:

Chk. By: Date:

mdo version 12.8.00

Clear Data Entry Cells



INPUT

D=	15	inches
d=	13.95	inches
n=	0.012	mannings coeff
θ=	61.4	degrees
S=	0.002062	slope in/in

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

Solution to Mannings Equation				
Area,ft^2	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs
1.19	3.26	0.37	2.87	3.42

Manning's n-values	
PVC	0.01
PE (<9"dia)	0.015
PE (>12"dia)	0.02
PE(9-12"dia)	0.017
CMP	0.025
ADS N12	0.012
HCMP	0.023
Conc	0.013

Created by: Mike O'Shea

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Appendix A-11

Tile #3 Calculations

MANNING'S EQUATION FOR PIPE FLOW

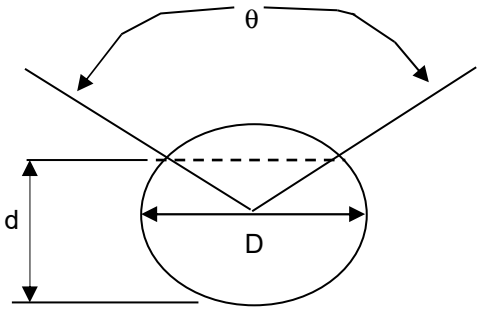
Project: GREENE CO FITZPATRICK Location: GREENE CO

By: AB Date:

Chk. By: Date:

mdo version 12.8.00

Clear Data Entry Cells



INPUT

D=	5	inches
d=	4.65	inches
n=	0.012	mannings coeff
θ=	61.4	degrees
S=	0.01131	slope in/in

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

Solution to Mannings Equation				
Area,ft^2	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs
0.13	1.09	0.12	3.23	0.43

Manning's n-values	
PVC	0.01
PE (<9"dia)	0.015
PE (>12"dia)	0.02
PE(9-12"dia)	0.017
CMP	0.025
ADS N12	0.012
HCMP	0.023
Conc	0.013

Created by: Mike O'Shea

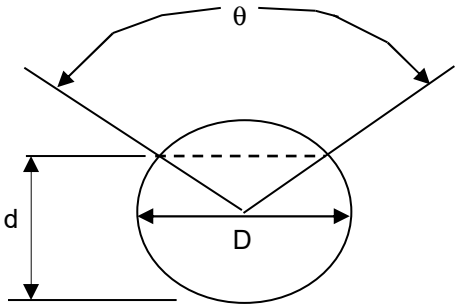
MANNING'S EQUATION FOR PIPE FLOW

Project: GREENE CO FITZPATRICK Location: GREENE CO

By: AB Date:

Chk. By: Date: mdo version 12.8.00

Clear Data Entry Cells



INPUT

D=	8	inches
d=	7.44	inches
n=	0.012	mannings coeff
θ=	61.4	degrees
S=	0.0015	slope in/in

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

Solution to Mannings Equation				
Area,ft^2	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs
0.34	1.74	0.19	1.61	0.55

Manning's n-values	
PVC	0.01
PE (<9"dia)	0.015
PE (>12"dia)	0.02
PE(9-12"dia)	0.017
CMP	0.025
ADS N12	0.012
HCMP	0.023
Conc	0.013

Created by: Mike O'Shea

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Appendix A-12

Tile #4 Calculations

MANNING'S EQUATION FOR PIPE FLOW

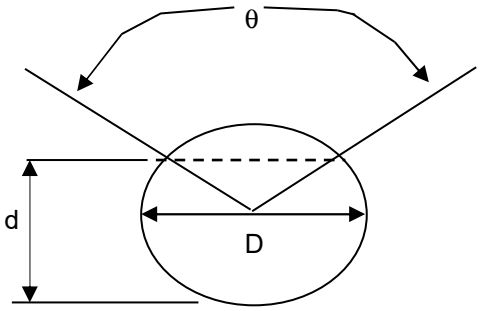
Project: GREENE CO FITZPATRICK Location: GREENE CO

By: AB Date:

Chk. By: Date:

mdo version 12.8.00

Clear Data Entry Cells



INPUT

D=	5	inches
d=	4.65	inches
n=	0.013	mannings coeff
θ=	61.4	degrees
S=	0.01765	slope in/in

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

Solution to Mannings Equation				
Area,ft^2	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs
0.13	1.09	0.12	3.73	0.49

Manning's n-values	
PVC	0.01
PE (<9"dia)	0.015
PE (>12"dia)	0.02
PE(9-12"dia)	0.017
CMP	0.025
ADS N12	0.012
HCMP	0.023
Conc	0.013

Created by: Mike O'Shea

MANNING'S EQUATION FOR PIPE FLOW

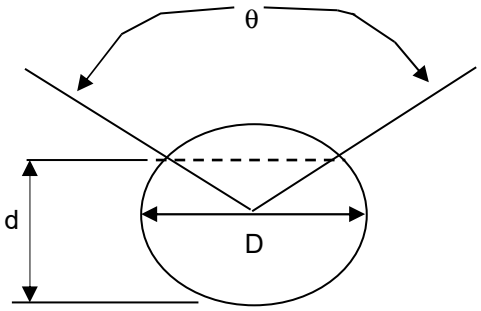
Project: GREENE CO FITZPATRICK Location: GREENE CO

By: AB Date:

Chk. By: Date:

mdo version 12.8.00

Clear Data Entry Cells



INPUT

D=	6	inches
d=	5.58	inches
n=	0.012	mannings coeff
θ=	61.4	degrees
S=	0.006	slope in/in

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

Solution to Mannings Equation				
Area,ft^2	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs
0.19	1.30	0.15	2.66	0.51

Manning's n-values	
PVC	0.01
PE (<9"dia)	0.015
PE (>12"dia)	0.02
PE(9-12"dia)	0.017
CMP	0.025
ADS N12	0.012
HCMP	0.023
Conc	0.013

Created by: Mike O'Shea

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Appendix A-13

Tile #5 Calculations

MANNING'S EQUATION FOR PIPE FLOW

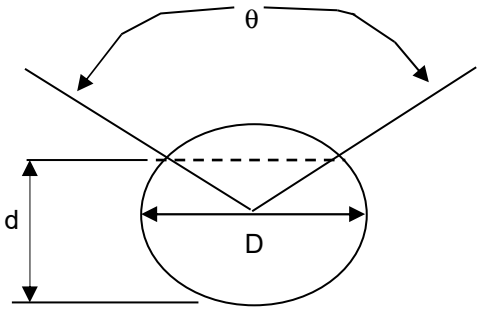
Project: GREENE CO FITZPATRICK Location: GREENE CO

By: AB Date:

Chk. By: Date:

mdo version 12.8.00

Clear Data Entry Cells



INPUT

D=	5	inches
d=	4.65	inches
n=	0.013	mannings coeff
θ=	61.4	degrees
S=	0.01647	slope in/in

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

Solution to Mannings Equation				
Area,ft^2	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs
0.13	1.09	0.12	3.60	0.48

Manning's n-values	
PVC	0.01
PE (<9"dia)	0.015
PE (>12"dia)	0.02
PE(9-12"dia)	0.017
CMP	0.025
ADS N12	0.012
HCMP	0.023
Conc	0.013

Created by: Mike O'Shea

MANNING'S EQUATION FOR PIPE FLOW

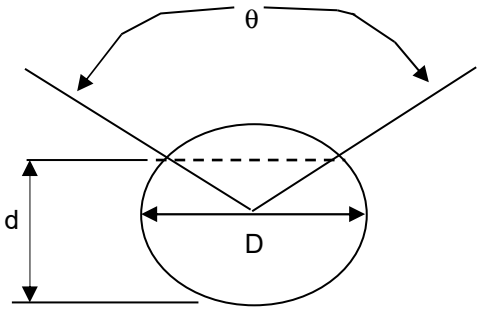
Project: GREENE CO FITZPATRICK Location: GREENE CO

By: AB Date:

Chk. By: Date:

mdo version 12.8.00

Clear Data Entry Cells



INPUT

D=	6	inches
d=	5.58	inches
n=	0.012	mannings coeff
θ=	61.4	degrees
S=	0.006	slope in/in

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

Solution to Mannings Equation				
Area,ft^2	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs
0.19	1.30	0.15	2.66	0.51

Manning's n-values	
PVC	0.01
PE (<9"dia)	0.015
PE (>12"dia)	0.02
PE(9-12"dia)	0.017
CMP	0.025
ADS N12	0.012
HCMP	0.023
Conc	0.013

Created by: Mike O'Shea

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Appendix A-14

Tile #6 Calculations

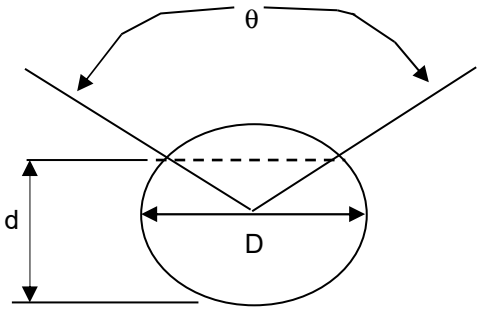
MANNING'S EQUATION FOR PIPE FLOW

Project: GREENE CO FITZPATRICK Location: GREENE CO

By: AB Date:

Chk. By: Date: mdo version 12.8.00

Clear Data Entry Cells



INPUT

D=	6	inches
d=	5.58	inches
n=	0.013	mannings coeff
θ=	61.4	degrees
S=	0.01245	slope in/in

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

Solution to Mannings Equation				
Area,ft^2	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs
0.19	1.30	0.15	3.54	0.67

Manning's n-values	
PVC	0.01
PE (<9"dia)	0.015
PE (>12"dia)	0.02
PE(9-12"dia)	0.017
CMP	0.025
ADS N12	0.012
HCMP	0.023
Conc	0.013

Created by: Mike O'Shea

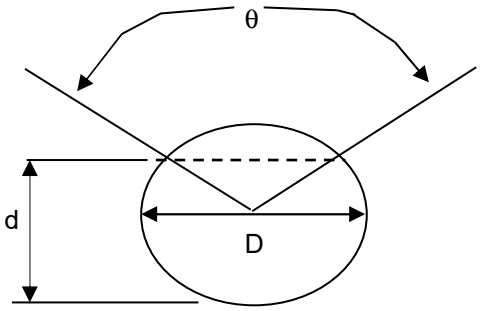
MANNING'S EQUATION FOR PIPE FLOW

Project: GREENE CO FITZPATRICK Location: GREENE CO

By: AB Date:

Chk. By: Date: mdo version 12.8.00

Clear Data Entry Cells



INPUT

D=	8	inches
d=	7.44	inches
n=	0.012	mannings coeff
θ=	61.4	degrees
S=	0.003	slope in/in

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

Solution to Mannings Equation				
Area,ft^2	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs
0.34	1.74	0.19	2.28	0.77

Manning's n-values	
PVC	0.01
PE (<9"dia)	0.015
PE (>12"dia)	0.02
PE(9-12"dia)	0.017
CMP	0.025
ADS N12	0.012
HCMP	0.023
Conc	0.013

Created by: Mike O'Shea

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Appendix A-15

Tile #7 Calculations

MANNING'S EQUATION FOR PIPE FLOW

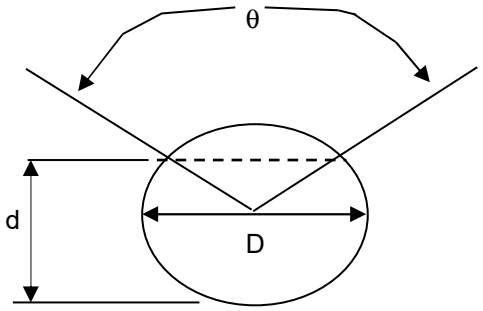
Project: GREENE CO FITZPATRICK Location: GREENE CO

By: AB Date:

Chk. By: Date:

mdo version 12.8.00

Clear Data Entry Cells



INPUT

D=	4	inches
d=	3.72	inches
n=	0.013	mannings coeff
θ=	61.4	degrees
S=	0.01028	slope in/in

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

Solution to Mannings Equation				
Area,ft^2	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs
0.08	0.87	0.10	2.45	0.21

Manning's n-values	
PVC	0.01
PE (<9"dia)	0.015
PE (>12"dia)	0.02
PE(9-12"dia)	0.017
CMP	0.025
ADS N12	0.012
HCMP	0.023
Conc	0.013

Created by: Mike O'Shea

MANNING'S EQUATION FOR PIPE FLOW

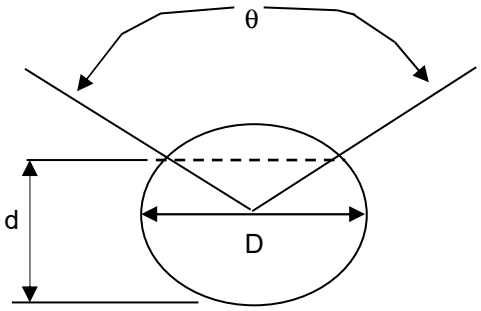
Project: GREENE CO FITZPATRICK Location: GREENE CO

By: AB Date:

Chk. By: Date:

mdo version 12.8.00

Clear Data Entry Cells



INPUT

D=	6	inches
d=	5.58	inches
n=	0.012	mannings coeff
θ=	61.4	degrees
S=	0.0024	slope in/in

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

Solution to Mannings Equation				
Area,ft^2	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs
0.19	1.30	0.15	1.68	0.32

Manning's n-values	
PVC	0.01
PE (<9"dia)	0.015
PE (>12"dia)	0.02
PE(9-12"dia)	0.017
CMP	0.025
ADS N12	0.012
HCMP	0.023
Conc	0.013

Created by: Mike O'Shea

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Appendix A-16

Stilling Basin Riser Inlet Calculations

- MAX CAPACITY OF EXISTING 26"Ø RCP : 21.06 CFS
- DESIGN RISER SO THAT FULL FLOW INTO 26"Ø EXISTING PIPE OCCURS WHEN WATER IN STILLING BASIN IS AT STILLING BASIN EXIT ELEVATION (1' WATER HEIGHT)

- $Q = C_W L h_1^{3/2}$

$C_W = 3.1$

$L = \pi d = \pi \cdot 3'$

$h_1 = 1.0'$

$Q = 29.2$ CFS O.K.

DUCKS UNLIMITED

DESIGN NOTES

PROJECT IA-340-100 - FITZPATRICK

SUBJECT STILLING BASIN INTAKE

FILE NO. _____ DATE 2/6/26

BY A.S. CHECKED _____ SHEET 1 OF 1

Q0351

Landowner:	*********	**Project:**	*****			**Field:**	*****
County:	*********	**State:**	*****	**Tract ID:**	*****	**Reach:**	*****
By:	*********	**Date:**	*****	**Checked:**	*****	**Date:**	*****
Subject :	*********						

Partially Full Pipe Flow Calculations - U.S. Units

II. Calculation of Discharge, Q, and average velocity, V

for pipes more than half full

Instructions: *Enter values in blue boxes. Spreadsheet calculates values in yellow boxes*

Inputs

Pipe Diameter, **D** =	24	in
Depth of flow, **y** = (must have y≥ D/2)	22.32	in
Full Pipe Manning roughness, n_{full} =	0.025	
Channel bottom slope, **S** =	0.03	ft/ft

Calculations

n/n_{full} =	1.035	
Partially Full Manning roughness, **n** =	0.026	

Calculations

Pipe Diameter, **D** =	2	ft
Pipe Radius, **r** =	1	ft
Circ. Segment Height, **h** =	0.140	ft
Central Angle, **θ** =	1.07	radians
Cross-Sect. Area, **A** =	3.04	ft^2
Wetted Perimeter, **P** =	5.2	ft
Hydraulic Radius, **R** =	0.58	ft
Discharge, **Q** =	21.22	cfs
Ave. Velocity, **V** =	6.97	ft/sec
pipe % full [(A/A_{full})*100%] =	96.9%	

Equations used for calculations:

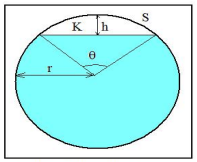
r = D/2

h = 2r - y

$$\theta = 2\arccos\left(\frac{r - h}{r}\right)$$

$$A = \pi r^2 - \frac{r^2(\theta - \sin\theta)}{2}$$

$$P = 2\pi r - r * \theta$$



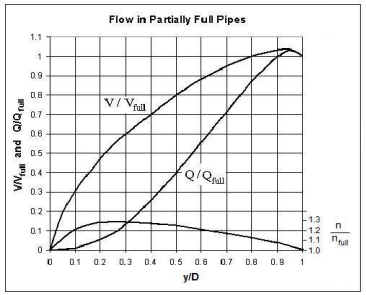
Partially Full Pipe Flow Parameters
(More Than Half Full)

R = A/P (hydraulic radius)

Q = (1.49/n)(A)($R^{2/3}$)($S^{1/2}$) (Manning Equation)

V = Q/A

Equation used for n/n_{full}: **n/n_{full} = 1.25 - (y/D -0.5)*0.5** (for 0.5 ≤ y/D ≤ 1)



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Appendix A-17

Sediment Accumulation Calculations

DU PROJECT NO.: IA-340-100
IDALS PROJECT NO.: Gre853129D
DESIGNED BY: A.S.
DATE: 2/16/2025

SEDIMENT ACCUMULATION

CONTRIBUTING DRAINAGE AREA[1]: 1396.02 ACRES	2.181	SQMI
STORAGE VOLUME AT NWL[1]:	5.40	AC-FT
TRAP EFFICIENCY[2]:	90	PERCENT
AVG. ANNUAL SHEET AND RILL EROSION[3]:	5.0	TONS/AC/YR
AREA OF DEPRESSIONS NOT SUBJECT TO SEDIMENT DELIVERY[1]:	0	ACRES
AREA SUBJECT TO SHEET AND RILL EROSION[1]:	1,396	ACRES
AVG. ANNUAL SHEET AND RILL EROSION:	6,980	TONS/YR
DELIVERY RATIO[2]:	5.5	PERCENT
SHEET AND RILL EROSION DELIVERED TO SITE:	384	TONS/YR
ADJUSTMENT FOR LRA 103[4]:	1.3	FACTOR
ADJUSTED SHEET AND RILL EROSION DELIVERED:	499	TONS/YR
LENGTH OF GULLY EROSION[1]:	1,000	FT
AVG. ANNUAL GULLY EROSION RATE[2]:	0.25	FT^3/FT
IN-PLACE DENSITY OF GULLY MATERIAL[2]:	90	LB/FT^3
AVG. ANNUAL GULLY EROSION (100% DELIVERED):	11	TON/YR
TOTAL SEDIMENT DELIVERED:	510	TON/YR
WEIGHT OF SEDIMENT RETAINED IN WETLAND AT 90 PERCENT TRAPPED:	459	TON/YR
SEDIMENT ACCUMULATION DURING 150 YEAR PERIOD:	68,894	TONS
ESTIMATE 80 PERCENT OF DELIVERED SEDIMENT WILL BE SUBMERGED[5]:	55,115	TONS
VOLUME OF SUBMERGED SEDIMENT[5] AT 1,307 TON/AC-FT[2]:	42.17	AC-FT
NORMAL POOL VOLUME 5.396 AC-FT WETLAND STORAGE EXCEEDED		
ESTIMATE 20 PRECENT OF DELIVERED SEDIMENT WILL BE AERATED[5]:	13,779	TONS
VOLUME OF AERATED SEDIMENT[5] AT 1,742 TON/AC-FT[2]:	7.91	AC-FT
WETLAND SEDIMENTATION ACCUMULATION DESIGN STORAGE LIFE:	19	YEARS

REFERENCES:

[1] DETERMINED BY ENGINEER.

[2] NRCS, FIELD OFFICE TECHNICAL GUIDE, IOWA, "EROSION AND SEDIMENT DELIVERY", MARCH 1998.

[3] NATIONAL ACADEMICS PRESS, "SOIL CONSERVATION", CHAPTER 1, PG. 8.

[4] NATIONAL ACADEMICS PRESS, "SOIL CONSERVATION", CHAPTER 3, PG. 51.

[5] NATIONAL ENGINEERING HANDBOOK, CHAPTER 8, SEDIMENT-STORAGE DESIGN CRITERIA.

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Appendix A-18

FEMA Flood Map

National Flood Hazard Layer FIRMette

FEMA

94°28'54"W 42°8'31"N



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

1:6,000

94°28'16"W 42°8'5"N

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 Cross Sections with 1% Annual Chance
- 17.5 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 10/12/2023 at 5:31 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

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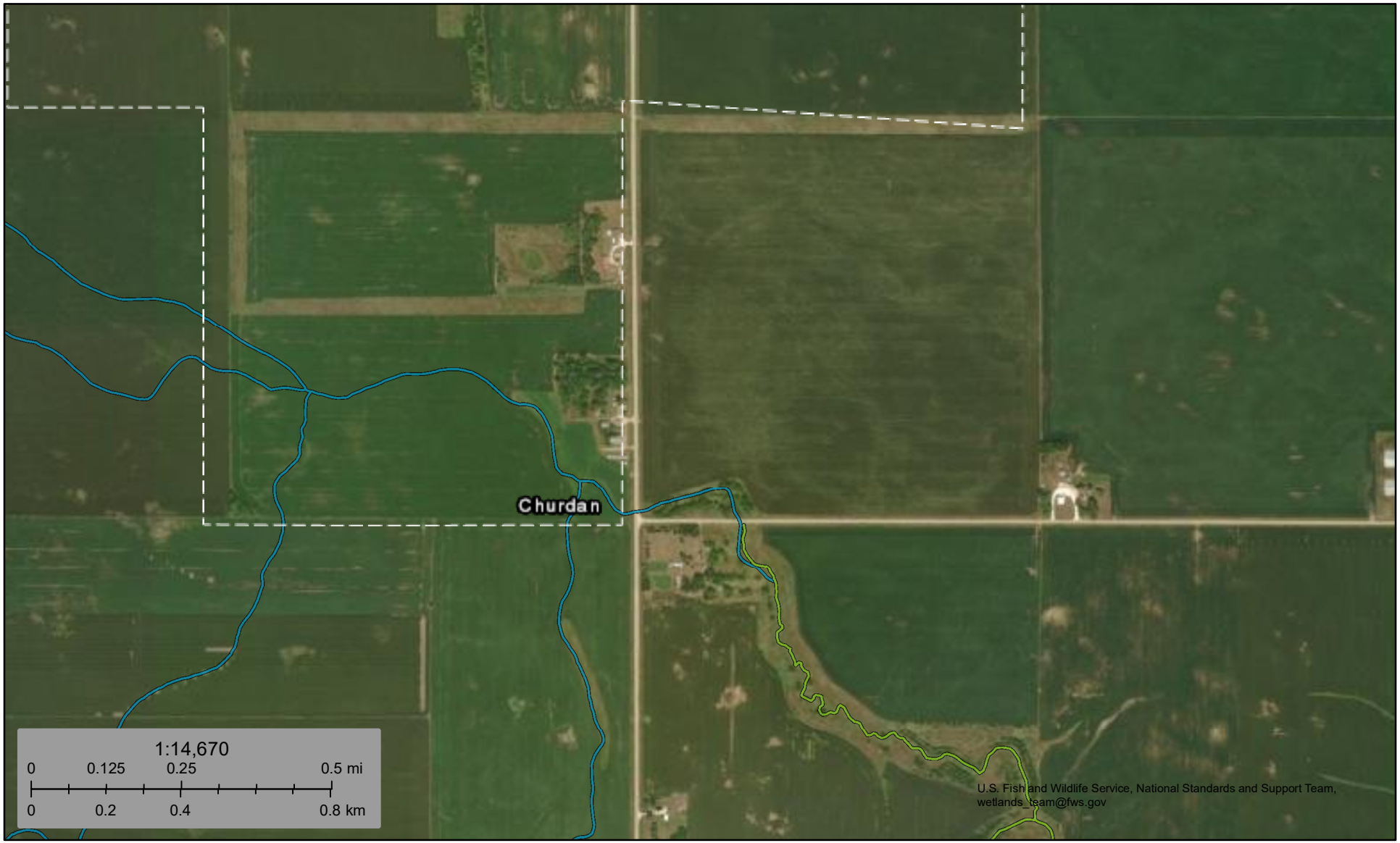
Appendix A-19

FWS Wetland Inventory Map

U.S. Fish and Wildlife Service
National Wetlands Inventory

Greene - Fitzpatrick



October 12, 2023

Wetlands

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

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

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Appendix A-20

Survey Point Map

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Revision	Sheet	Revisions	Date	By
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SURVEY POINT MAP
GRE853129D
GREENE COUNTY
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PROJECT NUMBER: US-IA-340-100
DATE: 2-6-26
BIOLOGIST: D.B.
SURVEYED BY: A.S., C.K.
DRAWN BY: A.S.
DESIGNED BY: NA
CAD FILE: Greene - Fitz Survey Point Map

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