Proposed Residential Development

Township of Verona, Essex County, NJ



Submitted To:

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Pennoni

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Overview

This stormwater management report was prepared for the DMH2, LLC Proposed Residential Development project. The project site is located at 176-200 Bloomfield Avenue in the Township of Verona, Essex County, NJ. It is designated as Block 202, Lots 1 & 23 on the Township of Verona Tax Map Sheet #2. The 1.64-acre site is currently wooded with concrete foundation remains. Existing access to the site consists of one driveway fronting Westview Road. The project proposes to demolish the existing site features and construct a 11,821 SF, 3-story residential apartment building with associated parking and sidewalk areas. Additional improvements include grading, drainage, utilities, lighting, and landscaping. Two new driveways are proposed for site access, one (1) on Bloomfield Avenue and one (1) on Westview Road.

As the project disturbs more than 0.5 acres, creates more than 5,000 square feet of "regulated impervious surface", and creates more than 5,000 square feet of "regulated motor vehicle surface", it is classified as a Major Development under § 150-25.2 of the Township of Verona Stormwater Management Controls and Requirements Ordinance. As such, stormwater management measures are required to offset the increase in runoff from the project.

A stormwater analysis using the 2-, 10-, and 100-year storm events for the current and future pre- and post-construction conditions was performed to identify the existing and proposed peak runoff flows and volumes of the project site. The analysis was performed for the pre-construction areas identified as Existing Drainage Areas 1 and 2 (EDA-1 & EDA-2) and the post-construction areas identified as Proposed Drainage Areas 1 and 2 (PDA-1 and PDA-2).

To provide onsite stormwater management and offset the increase in runoff caused by the increase in impervious surface coverage for the post-construction condition, four (4) pervious pavement basins with ADS Detention Systems are proposed. The new pervious pavement systems were designed in accordance with the NJ BMP Manual to meet the standards for Green Infrastructure as required by NJAC 7:8. The post-construction stormwater management measures were designed to meet the peak flow reduction factors as required by NJAC 7:8-5.6(b)3. Tables 1 and 2 below provide a summary of the pre- and post-construction peak flows.

Table 1: Pre-Construction vs Post-Construction Peak Flows

	EDA-1		PDA-1		Delta	
Storm	Current (cfs)	Future (cfs)	Current (cfs)	Future (cfs)	Q Current (%)	Q Future (%)
2	1.02	1.50	0.51	0.64	50%	57%
10	2.45	3.40	0.90	1.12	63%	67%
100	5.74	8.14	1.89	3.30	67%	59%

Table 2: Pre-Construction vs Post-Construction Peak Flows

	EDA-2		PDA-2		Delta	
Storm	Current (cfs)	Future (cfs)	Current (cfs)	Future (cfs)	Q Current (%)	Q Future (%)
2	0.31	0.47	0.30	0.45	3.2%	4.3%
10	0.79	1.09	0.76	1.05	3.8%	3.7%
100	1.87	2.64	1.80	2.54	3.7%	3.8%

As demonstrated in Tables 1 and 2, the proposed project does not increase peak flows from their pre-construction condition and does not negatively affect downstream conditions. The project proposes an increase of 0.70 acres in regulated impervious surface and proposes an increase of 0.33 acres in regulated motor vehicle surface. In addition, the project is located in the Metropolitan Planning Area (PA-1) on NJ State Planning Maps. As such, the project is required to meet the quantity and quality reduction standards but is exempt from the groundwater recharge standards of a Major Development.

Methodology

Survey and Existing Background Information

The following survey and plans were referenced for this stormwater management report:

- Boundary and Topographic Survey prepared by Kennon Surveying Services, Inc. dated April 23, 2026, last revised May 15, 2026.
- Plans entitled, "Proposed Residential Development Preliminary and Final Major Site Plan" prepared by Pennoni Associates, Inc. dated August 17, 2026.

Existing and proposed drainage area maps were generated using the topographic survey and the proposed grading plan to determine and compare the stormwater runoff from the project area for the pre- and post-development conditions. These maps can be found under Appendix H.

Calculations

Calculations for stormwater runoff rates and volumes were completed in accordance with the latest edition of NJAC 7:8 that incorporates the Inland Flood Protection Rules, Stormwater Management Rules, and Chapter 5 of the NJDEP Best Management Practices (NJ BMP) Manual. The design of the stormwater collection and management systems for this project has been directed by the guidelines set forth by the Township of Verona and by generally accepted industry standards.

The stormwater analysis was based upon the Natural Resources Conservation Service (NRCS) Part 630 Hydrology, National Engineering Handbook using a NOAA Type D Distribution. Precipitation depth estimated values used were provided by NOAA's National Weather Service Precipitation Frequency Data Server website specifically for the site (see Appendix G). The precipitation depths are listed under Table 3.

As required by NJAC 7:8-5.7(c), adjustment factors for the current and future storm events were applied to the precipitation depths for the calculation of stormwater runoff. The adjustment factors for Essex County as per NJAC 7:8 Table 5-5 and Table 5-6 were applied. A summary of values is included in Table 3.

Table 3: NOAA Atlas Precipitation Depths for Essex County

Storm	Precipitation Depth (inches)	Change Factor		Precipitation Depth (inches)	
Year	NOAA Atlas 14	Current	Future	Current	Future
2	3.44	1.01	1.19	3.47	4.09
10	5.22	1.03	1.22	5.38	6.37
100	8.66	1.06	1.33	9.18	11.52

Computations were performed utilizing HydroCAD. Time of concentration was calculated using HydroCAD. In accordance with Chapter 5 of the NJ BMP Manual, the sheet flow length used was 100 LF for the pre-construction condition. Sheet flow length was calculated using the McCuen-Spiess Limitation for post-construction condition or 100LF, whichever was less. Sheet flow calculations can be found in Appendix F.

The runoff curve numbers taken from SCS TR-55 were based on the soil types using the USDA NRCS Web Soil Survey. In accordance with NJAC 7:8, runoff calculations were performed for pervious and impervious surface coverage separately.

Soils and Geotechnical Testing

Per the USDA Soil Survey, soils at the site are classified as BouB – Boonton – Urban Land.

No geotechnical testing or soil testing was performed as part of this project. Infiltration testing was not performed to determine the suitability of subsoils for infiltration. Per Chapter 12 of the NJ Stormwater Best Management Practices (BMP) Manual, Figure 12-1b was used to determine the hydrologic soil group for BouB – Boonton – Urban Land. Hydrologic Soil Group C was the group identified for the soils at the site and used for the analysis.

Existing Conditions

The existing site entirely consists of wooded areas with concrete foundation remains which previously appeared to be for a one-family dwelling at 176-200 Bloomfield Avenue in Verona, NJ. Site features consist of a block wall along the Bloomfield Avenue frontage, and an asphalt driveway on Westview Road. Additionally, chain-link fence runs along the rear of the property. The immediate and surrounding area is currently developed as commercial and residential uses, with a little league baseball field known as Everett Field to the west of the site on the other side of Westview Road. The site slopes down from the northwest corner of the property towards Bloomfield Avenue and Westview Road. Slopes within the project vary as low as about 1% within the highest point of the site at the northwestern corner of the property to as high as 50% on the eastern side of the property. The highest point of the site is at elevation 497 and the lowest point is at 448 so there is a 59' drop throughout site. There is an existing underground storm sewer network within Bloomfield Ave in front of Everett Field that flows to the west. Based on these existing conditions, the point of study was identified where the runoff drains off the lawn space and onto Bloomfield Avenue, where it is eventually collected and enters the existing storm sewer system. The drainage area was defined as the project areas that are to be permanently disturbed and converted by the project and is identified as Existing Drainage Area 1 (EDA-1) on the drainage area map included in Appendix H. Existing Drainage Area 2 (EDA-2) drains to the eastern side of the site. Per FEMA mapping, the project is located at Zone X, an area outside of the 100-year flood zone.

Existing Drainage Areas

EDA-1

Drainage area EDA-1 consists of 1.21 acres of project area, of which the majority is to be disturbed and changed. Pervious surface coverage is 1.17 acres and consists of a wooded area with a CN of 70. Impervious surface coverage is 0.04 acres and is a mix of asphalt pavement and concrete foundation remains with a CN of 98. Total existing regulated motor vehicle surface area is 0.00 acres. EDA-1 sheet flows to Bloomfield Avenue, where it is collected and enters the existing municipal storm sewer system in front of the neighboring property to the west (Everett Field).

Table 4: Peak Flows from EDA-1

Storm	EDA-1		Factor	Allowable Peak Flow	
	(1)	(2)	(3)	(4)	(5)
Year	**Q Current (cfs)**	**Q Future (cfs)**	**%**	**Q Current (cfs)**	**Q Future (cfs)**
2	1.02	1.50	50%	0.51	0.75
10	2.45	3.40	75%	1.84	2.55
100	5.74	8.14	80%	4.59	6.51

Columns (1) and (2) are the current and future flows for EDA-1, (3) is the required reduction factor per NJAC 7:8-5.6(b)3, and the allowable peak runoffs are listed under columns (4) and (5).

EDA-2

Drainage area EDA-2 consists of 0.39 acres of project area, of which the majority is to remain wooded. Pervious surface coverage is 0.39 acres with a CN of 70. EDA-2 sheet flows offsite towards the northeastern side of the property.

Table 5: Peak Flows from EDA-2

Storm	EDA-2		Allowable Peak Flow	
	(1)	(2)	(3)	(4)
Year	**Q Current (cfs)**	**Q Future (cfs)**	**Q Current (cfs)**	**Q Future (cfs)**
2	0.31	0.47	0.31	0.47
10	0.79	1.09	0.79	1.09
100	1.87	2.64	1.87	2.64

Columns (1) and (2) are the current and future flows for EDA-2, and the allowable peak runoffs per NJAC 7:8-5.6(b)2 are listed under columns (3) and (4).

Proposed Conditions

The project proposes a 3-story residential apartment complex and thirty-six (36) parking spaces in front of the building. Additional site improvements include sidewalks, curbing, grading and drainage, landscaping, and lighting. The new parking spaces consist of pervious pavement to capture runoff within the areas of disturbance and ADS Detention systems below to capture and attenuate stormwater runoff.

As the project increases regulated impervious surface coverage by 0.71 acres, and regulated motor vehicle surface by 0.33 acres, it is classified as a Major Development under NJAC 7:8 and the Township of Verona Stormwater Management Controls and Requirements Ordinance. As such, stormwater quantity management measures are required to offset the increase in runoff from the project.

Proposed Drainage Areas

PDA-1

Drainage area PDA-1 consists of 1.25 acres of total post-construction area permanently disturbed and altered by the project. It is divided into ten drainage areas, with nine areas captured by stormwater management systems and one area bypassing the proposed systems. Total impervious area within PDA-1 is 0.77 acres and pervious area is 0.83 acres. Total motor vehicle surface within PDA-1 is 0.33 acres.

The stormwater management improvements for PDA-1 are designed so that the post-construction peak runoff rates of the areas disturbed by this project for the current and future 2-, 10-, and 100-year storm events, respectively, are less than 50, 75, and 80 percent, respectively, of the pre-construction peak runoff rates.

PDA-1A

PDA-1A consists of 0.17 acres of total areas, with 0.09 acres pervious and 0.08 acres impervious (including 0.05 acres motor vehicle surface). Runoff within this area is captured by pervious pavement identified as Pervious Pavement Basin #1. The basin is designed in accordance with Chapter 9 of the NJ BMP Manual. Below the pervious pavement we propose an ADS N-12 48" detention system with a system size of 117.00' X 18.00' X 6.29'. A 15" HDPE pipe then conveys outflow to Basin #2.

Table 6 provides a summary of the peak flows that enter the basin and the attenuated peak flows discharged from the pervious pavement basin from the outlet control structure.

Table 6: PDA-1A Peak Flows and Basin Elevations

Storm	Current (cfs)	Future (cfs)	Current (cfs)	Future (cfs)	Current (ft)	Future (ft)
	Unattenuated		Attenuated		Basin Elevations	
2	0.69	0.83	0.18	0.20	446.73	446.99
10	1.12	1.54	0.22	0.23	447.60	448.14
100	2.42	3.09	0.27	0.60	449.56	450.34

PDA-1B

PDA-1B consists of 0.12 acres of total areas, with 0.00 acres pervious and 0.12 acres impervious (including 0.12 acres motor vehicle surface). Runoff within this area is captured by pervious pavement identified as Pervious Pavement Basin #2. The basin is designed in accordance with Chapter 9 of the NJ BMP Manual. Below the pervious pavement, we propose an ADS N-12 60" detention system with a system size of 116.17' X 18.00' X 8.17'. A 15" HDPE pipe then conveys outflow from the basin to the existing municipal storm sewer system in Bloomfield Avenue.

Table 7 provides a summary of the peak flows that enter the basin and the attenuated peak flows discharged from the pervious pavement basin from the outlet control structure.

Table 7: PDA-1B Peak Flows and Basin Elevations

Storm	Current (cfs)	Future (cfs)	Current (cfs)	Future (cfs)	Current (ft)	Future (ft)
	Unattenuated		Attenuated		Basin Elevations	
2	0.81	0.93	0.27	0.29	445.74	446.12
10	1.18	1.36	0.34	0.50	446.81	446.92
100	2.73	4.15	1.62	2.51	447.45	448.28

PDA-1C

PDA-1C consists of 0.06 acres of total areas, with 0.00 acres pervious and 0.06 acres impervious (including 0.06 acres motor vehicle surface). Runoff within this area is captured by pervious pavement identified as Pervious Pavement Basin #3. The basin is designed in accordance with Chapter 9 of the NJ BMP Manual. Below the pervious pavement, we propose an ADS N-12 60" detention system with a system size of 62.17' X 18.00' X 10.08'. A 15" HDPE pipe then conveys outflow from Basin #3 into Basin #2.

Table 8 provides a summary of the peak flows that enter the basin and the attenuated peak flows discharged from the pervious pavement basin from the outlet control structure.

Table 8: PDA-1C Peak Flows and Basin Elevations

Storm	Current (cfs)	Future (cfs)	Current (cfs)	Future (cfs)	Current (ft)	Future (ft)
	Unattenuated		Attenuated		Basin Elevations	
2	1.43	1.76	0.26	0.29	448.10	448.64
10	2.40	2.94	0.34	0.58	449.84	450.65
100	4.37	5.67	2.04	2.91	452.23	454.22

PDA-1D

PDA-1D consists of 0.05 acres of total areas, with 0.01 acres pervious and 0.04 acres impervious (including 0.01 acres motor vehicle surface). Runoff within this area is captured by pervious pavement identified as Pervious Pavement Basin #4. The basin is designed in accordance with Chapter 9 of the NJ BMP Manual. Below the pervious pavement, we propose an ADS N-12 48" detention system with a system size of 33.00' X 18.00' X 5.83'. A 15" HDPE pipe then conveys outflow from Basin #4 into Basin #1.

Table 9 provides a summary of the peak flows that enter the basin and the attenuated peak flows discharged from the pervious pavement basin from the outlet control structure.

Table 9: PDA-1D Peak Flows and Basin Elevations

Storm	Current (cfs)	Future (cfs)	Current (cfs)	Future (cfs)	Current (ft)	Future (ft)
	Unattenuated		Attenuated		Basin Elevations	
2	0.67	0.80	0.20	0.22	453.59	453.90
10	1.06	1.27	0.45	0.58	454.35	454.68
100	1.85	2.35	0.84	1.04	455.69	456.74

PDA-1E

PDA-1E consists of 0.16 acres of total areas, with 0.00 acres pervious and 0.16 acres impervious (including 0.00 acres motor vehicle surface). Runoff in this area is conveyed into Basin #4 using roof drains connected directly to the basin. This runoff is captured by the basin and detained until it is released into the municipal storm sewer system in Bloomfield Avenue.

Table 10: PDA-1E Peak Flows

Storm	Current (cfs)	Future (cfs)
2	0.47	0.56
10	0.73	0.87
100	1.25	1.58

PDA-1F

PDA-1F consists of 0.32 acres of total areas, with 0.08 acres pervious and 0.24 acres impervious (including 0.05 acres motor vehicle surface). Runoff in this area is captured using a heavy-duty trench drain and type E inlets along the eastern side of the building. Runoff is then conveyed into Basin #3 until it is released into the municipal storm sewer system in Bloomfield Avenue.

Table 11: PDA-1F Peak Flows

Storm	Current (cfs)	Future (cfs)
2	0.96	1.16
10	1.56	1.89
100	2.79	3.57

PDA-1G

PDA-1G consists of 0.13 acres of total areas, with 0.13 acres pervious and 0.00 acres impervious (including 0.00 acres motor vehicle surface). Runoff in this area is captured within the type E inlet in the rear of the building and conveyed into Basin #3. Runoff is then detained until it is released into the municipal storm sewer system in Bloomfield Avenue.

Table 12: PDA-1G Peak Flows

Storm	Current (cfs)	Future (cfs)
2	0.15	0.22
10	0.34	0.46
100	0.76	1.05

PDA-1H

PDA-1H consists of 0.02 acres of total areas, with 0.01 acres pervious and 0.01 acres impervious (including 0.01 acres motor vehicle surface). Runoff in this area is captured using a heavy-duty trench drain. This runoff is conveyed directly to the existing municipal storm sewer system in Bloomfield Avenue using 15” HDPE pipe.

Table 13: PDA-1H Peak Flows

Storm	Current (cfs)	Future (cfs)
2	0.05	0.06
10	0.09	0.11
100	0.17	0.22

PDA-1I

PDA-1I consists of 0.17 acres of total areas, with 0.16 acres pervious and 0.01 acres impervious (including 0.00 acres motor vehicle surface). Runoff in this area bypasses all catchment systems. This area flows off site onto Bloomfield Avenue before being captured by existing inlets to the west near Everett Field. Runoff enters here and is conveyed through the existing municipal storm sewer system.

Table 14: PDA-1I Peak Flows

Storm	Current (cfs)	Future (cfs)
2	0.27	0.37
10	0.59	0.77
100	1.26	1.70

PDA-1J

PDA-1J consists of 0.05 acres of total areas, with 0.01 acres pervious and 0.04 acres impervious (including 0.03 acres motor vehicle surface). Runoff in this area is captured by a Type B inlet which is then conveyed into Basin #3 using 15” HDPE pipe. Runoff is detained here until it is released into the existing municipal storm system in Bloomfield Avenue.

Table 15: PDA-1J Peak Flows

Storm	Current (cfs)	Future (cfs)
2	0.17	0.20
10	0.27	0.33
100	0.49	0.62

PDA-2

Drainage area PDA-2 consists of 0.35 acres of total post-construction area undisturbed or altered by the project. It is comprised of a single drainage area and is entirely pervious. PDA-2 flows off-site, where the runoff combines into Lot 25 and then flows back to Bloomfield Avenue and is collected within the existing municipal storm sewer system, combining with PDA-1.

Table 16: PDA-2 Peak Flows

Storm	Current (cfs)	Future (cfs)
2	0.30	0.45
10	0.76	1.05
100	1.80	2.54

A summary of the peak flow runoff for the post-construction condition of each PDA is provided. Table 17 compares the post-construction peak flows versus the existing and allowable peak flow in PDA-1, and Table 18 compares the post-construction peak flows versus the existing and allowable peak flow in PDA-2.

For Table 17, columns (1) and (2) are the total pre-construction flows from EDA-1. Columns (3) and (4) are the allowable design flows while columns (5) and (6) are the actual proposed post-construction flows. Columns (7) and (8) represent the delta in peak flow from the pre- to post-construction condition. Since the reduced post-construction flows meet or exceed the 50%, 75%, and 80% required for the 2-, 10-, and 100-year current and future storms, respectively, the project meets the reduction requirements of NJAC 7:8-5.6(b)3 for PDA-1. Since the reduced post-construction flows demonstrate that there are is no increase, as compared to the pre-construction condition, in the peak runoff rates of stormwater leaving the site, the project meets the requirements of NJAC7:8-5.6(b)2 for PDA-2.

Table 17: EDA-1 vs PDA-1, Pre- vs Post-Construction Peak Flow Comparison

Storm	EDA-1		EDA-1 Allowable		PDA-1 Proposed		Delta	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	Q Current (cfs)	Q Future (cfs)	Q Current (cfs)	Q Future (cfs)	Q Current (cfs)	Q Future (cfs)	Q Current (%)	Q Future (%)
2	1.02	1.50	*0.51*	*0.75*	**0.51**	**0.64**	50%	57%
10	2.45	3.40	*1.84*	*2.55*	**0.90**	**1.12**	63%	67%
100	5.74	8.14	*4.59*	*6.51*	**1.89**	**3.30**	67%	59%

Table 18: EDA-2 vs PDA-2, Pre- vs Post-Construction Peak Flow Comparison

Storm	EDA		EDA Allowable		PDA Proposed		Delta	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	Q Current (cfs)	Q Future (cfs)	Q Current (cfs)	Q Future (cfs)	Q Current (cfs)	Q Future (cfs)	Q Current (%)	Q Future (%)
2	0.31	0.47	*0.31*	*0.47*	**0.30**	**0.45**	3.2%	4.3%
10	0.79	1.09	*0.79*	*1.09*	**0.76**	**1.05**	3.8%	3.7%
100	1.87	2.64	*1.87*	*2.64*	**1.80**	**2.54**	3.7%	3.8%

Stormwater Conveyance

The stormwater conveyance system was designed per the Township of Verona ordinance section §150-25 and the NJDOT Drainage Manual to convey on-site stormwater runoff from the 25-year storm event at a minimum of 2 feet per second (fps). Sizing was done using the Rational Method for inlet drainage areas and Manning's Formula for pipe capacity. Calculations can be found in Appendix D.

Stormwater Quality

As per NJAC 7:8-5.5(a), water quality treatment is required if a project proposes a net increase in regulated motor vehicle surface by 0.25 acres. The total pre- and post-construction regulated motor vehicle surface area is 0.00 and 0.33 acres, respectively, which is a net increase of 0.33 acres. As the project proposes an increase in regulated motor vehicle surface greater than 0.25-acres, the project is considered a "major development", and water quality treatment is required. The increase in motor vehicle surface coverage is from the proposed parking areas in front of the building. Per NJAC 7:8-5.5(b)1, we are responsible for 80% TSS removal for the net increase of motor vehicle surface and 50% for the existing motor vehicle surface being "repaved". The weighted TSS removal required is 80% since there are no existing motor vehicle surfaces (See Calculation Below).

[(0.33 acres)*(80%) + (0.00 acres)*(50%)] / 0.33 acres = 80%

Table 19 below summarizes the proposed stormwater best management practices (BMPs) and their TSS removal rates in accordance with NJAC 7:8 Table 5-1. Refer to Appendix E for compliance with NJAC 7:8-5.3(b).

Table 19: Proposed BMP Summary

BMP	BMP Type	TSS Removal Rate	Basin Size	Drainage Area
Basin #1	Pervious Pavement System	80%	2,106 SF	8,081 SF
Basin #2	Pervious Pavement System	80%	2,106 SF	3,001 SF
Basin #3	Pervious Pavement System	80%	1,134 SF	2,808 SF
Basin #4	Pervious Pavement System	80%	594 SF	3,003 SF

As per Chapter 4 of the NJDEP Best Management Practices (NJ BMP) Manual, a "major development" project must include stormwater management measures that reduce the average total suspended solids (TSS) load in the development site's post construction runoff by 80%. The weighted TSS removal required for this project is 80%. Since runoff is discharged from the site at multiple points, 80 percent TSS removal requirements will have to be applied at each discharge point using example 4-2 from Chapter 4 to determine the total TSS removal rate. The total TSS removal rate is 80%, which complies because it is equal to the weighted TSS removal required which is 80% (See Calculation Below).

PDA-1A Motor Vehicle Surface: 0.05 acres
PDA-1B Motor Vehicle Surface: 0.12 acres
PDA-1C Motor Vehicle Surface: 0.06 acres
PDA-1D Motor Vehicle Surface: 0.01 acres
PDA-1F Motor Vehicle Surface: 0.05 acres
PDA-1G Motor Vehicle Surface: 0.00 acres
PDA-1H Motor Vehicle Surface: 0.01 acres
PDA-1I Motor Vehicle Surface: 0.00 acres
PDA-1J Motor Vehicle Surface: 0.03 acres
PDA-2 Motor Vehicle Surface: 0.00 acres
Total Motor Vehicle Surface: 0.33 acres

[(0.05)*(80%) + (0.12)*(80%) + (0.06)*(80%) + (0.01)*(80%) + (0.05)*(80%)+ (0.00)*(80%)+ (0.01)*(80%)+ (0.00)*(80%) + (0.03)*(80%) + (0.00)*(80%)] / 0.33 = 80% Total TSS Removal Rate

Groundwater Recharge

The project site is located within an area delineated as part of the Metropolitan Planning Area (PA-1) on the NJ State Plan Policy Map. Areas within zone PA-1 are considered urban redevelopment areas and are exempt from groundwater recharge requirements per NJAC 7:8-5.4(b)2.

The proposed BMPs are not designed to infiltrate runoff to the subsoil, therefore no stormwater mounding analysis is required.

Appendix A:
Figures



SOURCE: EagleView

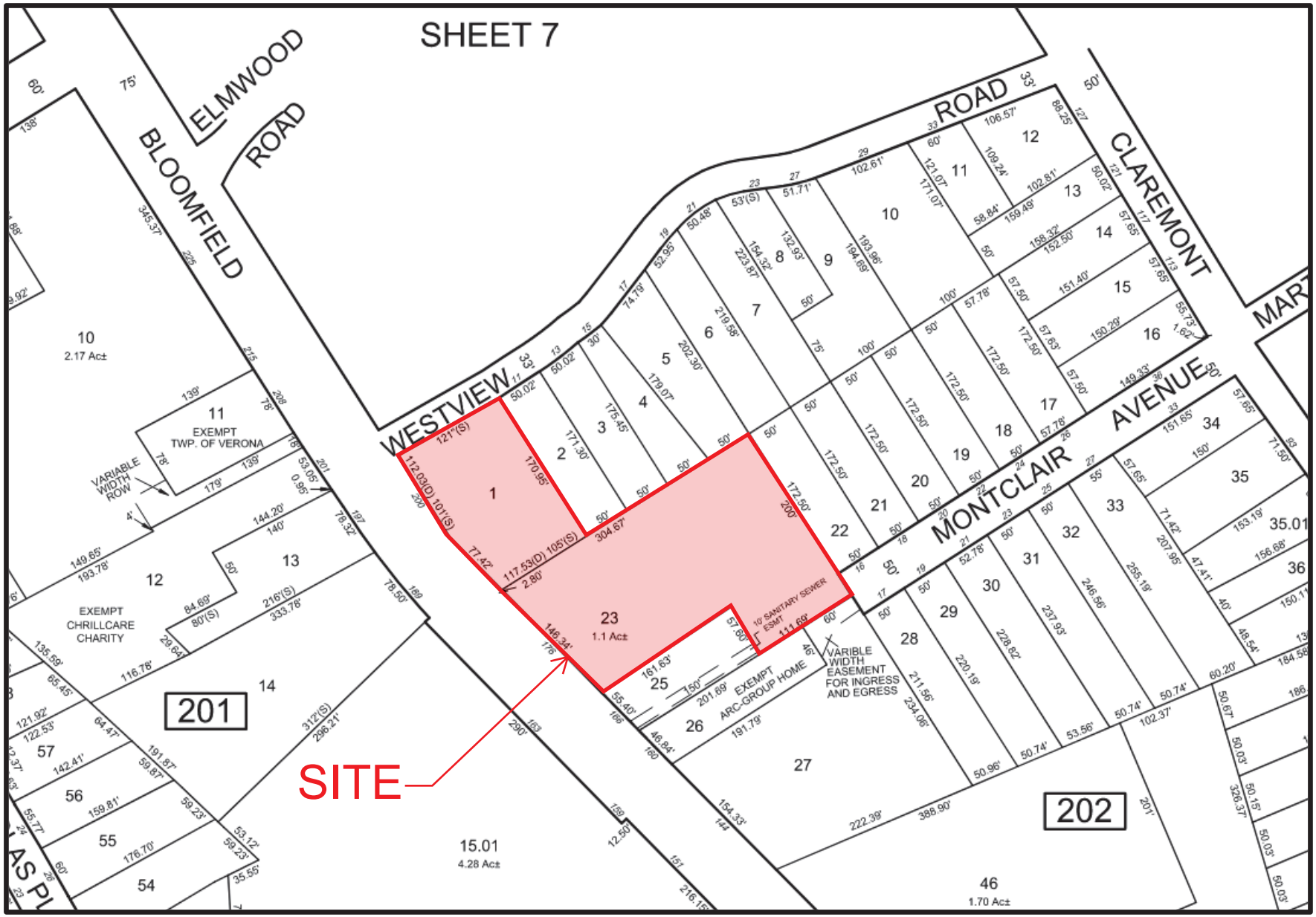
PENNONI ASSOCIATES INC.
1085 RAYMOND BOULEVARD, SUITE 2102
NEWARK, NJ 07102

176-200 Bloomfield Avenue
Township of Verona, Essex County, NJ
Block 202, Lots 1 & 23

Job No. DMH2C26001

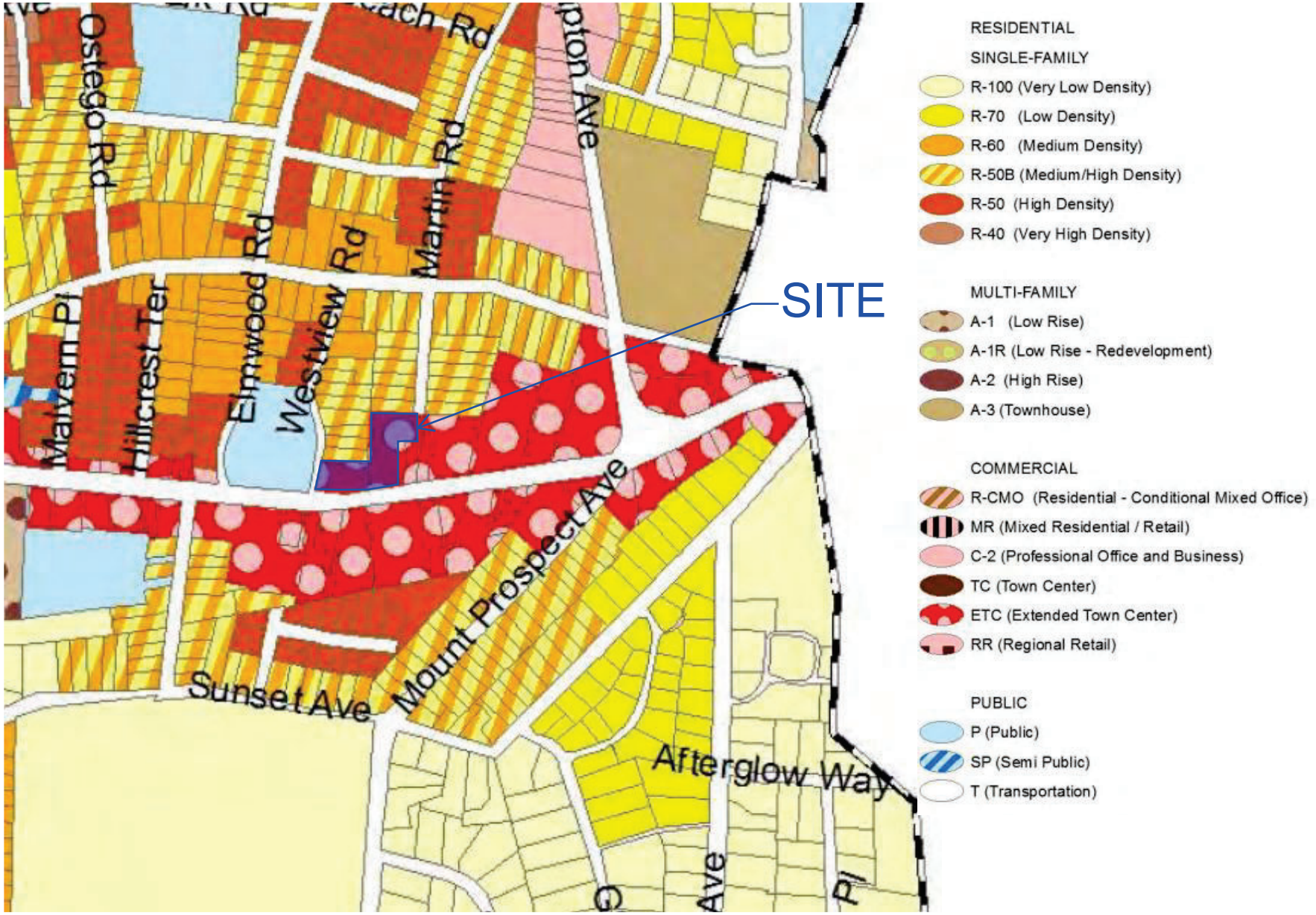
Scale: NTS

FIGURE 1 – AERIAL LOCATION MAP



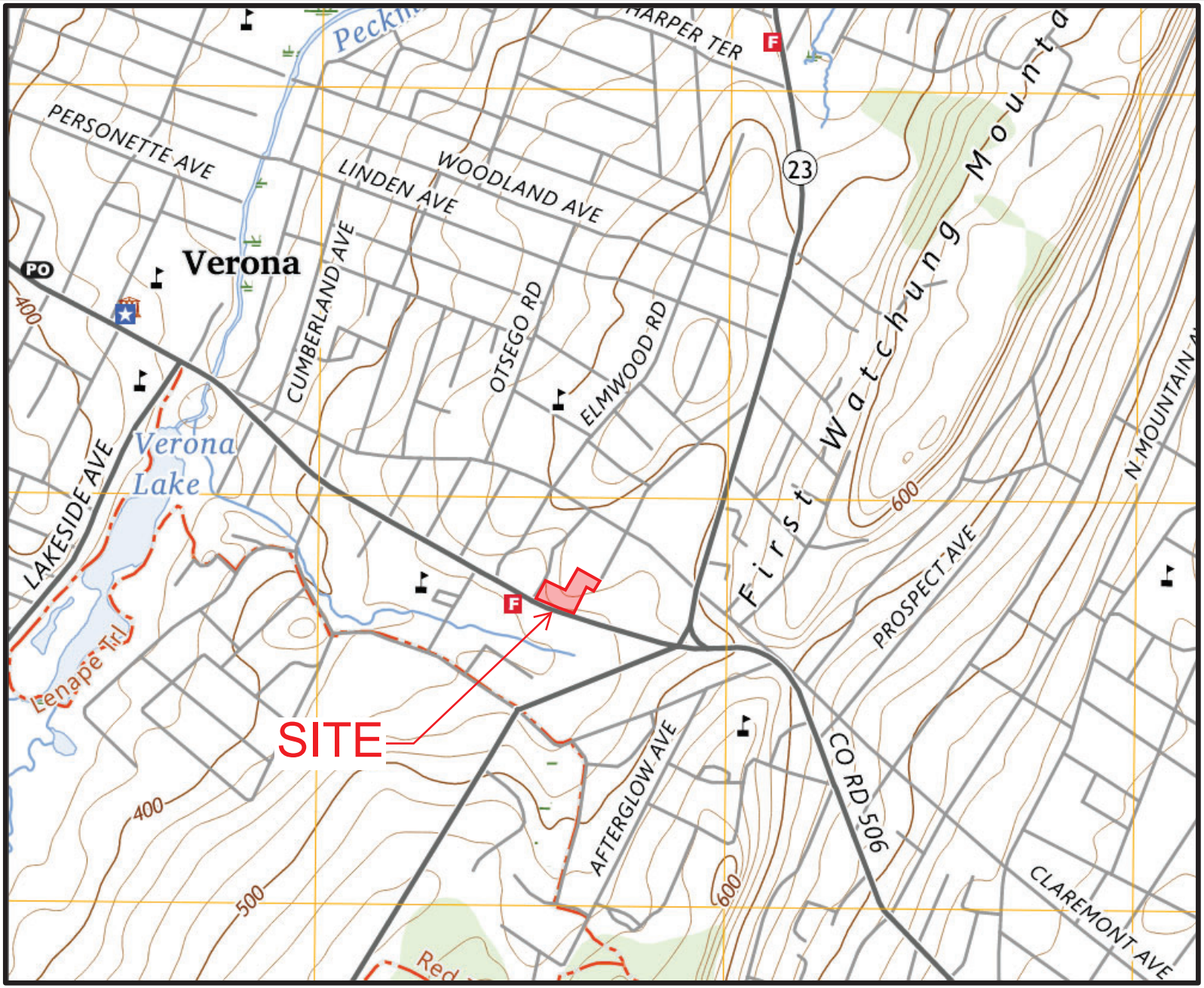
SOURCE: Township of Verona Tax Map Sheet 2

Pennoni PENNONI ASSOCIATES INC. 1085 RAYMOND BOULEVARD, SUITE 2102 NEWARK, NJ 07102		176-200 Bloomfield Avenue Township of Verona, Essex County, NJ Block 202, Lots 1 & 23
Job No. DMH2C26001	Scale: NTS	FIGURE 2 – TAX MAP



SOURCE: Zoning Map of the Township of Verona

Pennoni PENNONI ASSOCIATES INC. 1085 RAYMOND BOULEVARD, SUITE 2102 NEWARK, NJ 07102		176-200 Bloomfield Avenue Township of Verona, Essex County, NJ Block 202, Lots 1 & 23
Job No. DMH2C26001	Scale: NTS	FIGURE 3 – TOWNSHIP OF VERONA ZONING MAP



SOURCE: USGS 7.5-minute topographic quadrangles for New Brunswick, NJ

Pennoni PENNONI ASSOCIATES INC. 1085 RAYMOND BOULEVARD, SUITE 2102 NEWARK, NJ 07102		176-200 Bloomfield Avenue Township of Verona, Essex County, NJ Block 202, Lots 1 & 23
Job No. DMH2C26001	Scale: NTS	FIGURE 4 – USGS QUAD MAP



Legend

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

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

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

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

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

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

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

N

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

SOURCE: FEMA Map Number 34013C0103F

PENNONI ASSOCIATES INC.
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NEWARK, NJ 07102

176-200 Bloomfield Avenue
Township of Verona, Essex County, NJ
Block 202, Lots 1 & 23

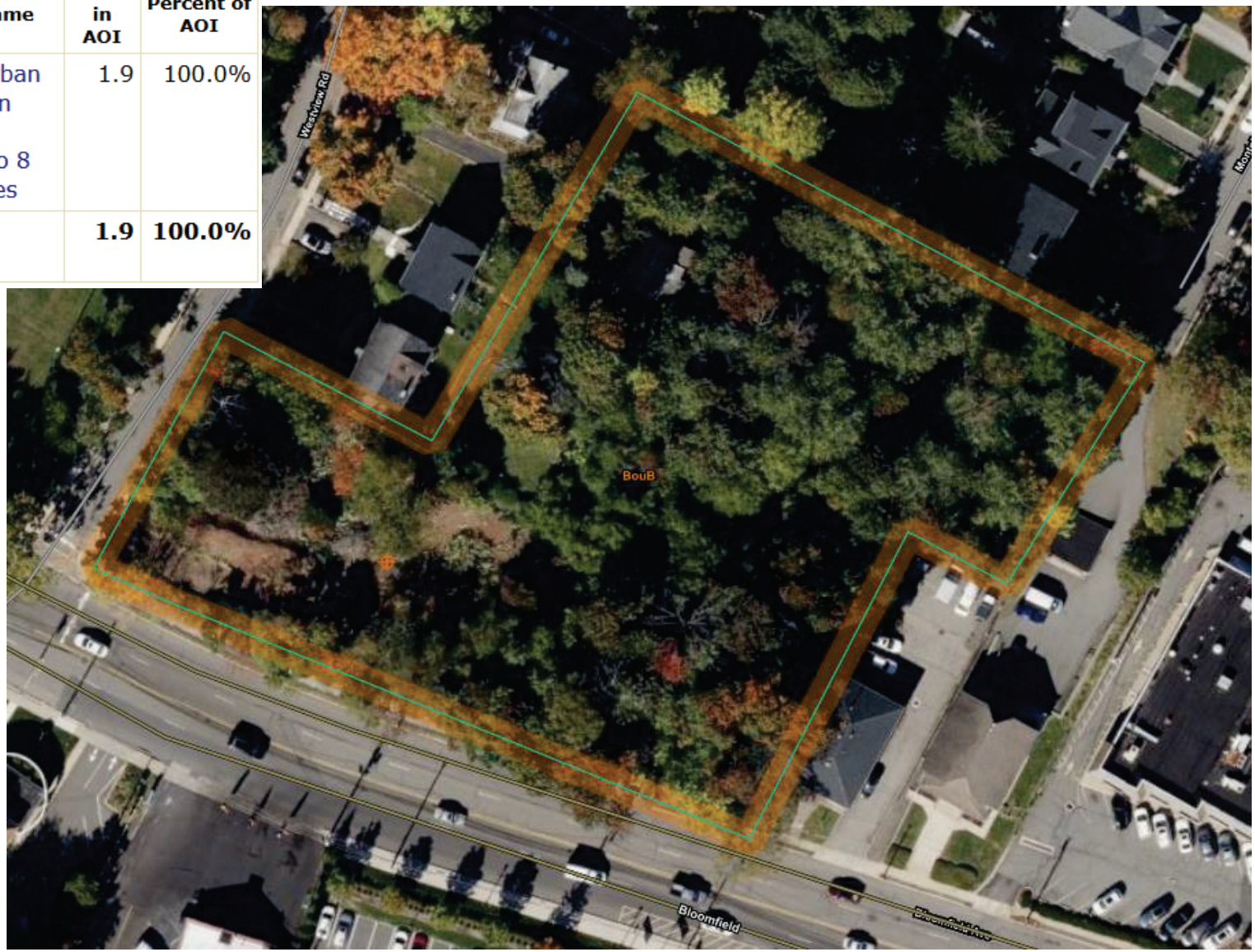
Job No. DMH2C26001 | Scale: NTS

FIGURE 5 – FEMA MAP

Essex County, New Jersey (NJ013)

Essex County, New Jersey (NJ013)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BouB	Boonton - Urban land, Boonton substratum complex, 0 to 8 percent slopes	1.9	100.0%
Totals for Area of Interest		**1.9**	**100.0%**



SOURCE: USDA Web Soil Survey

PENNONI ASSOCIATES INC.
1085 RAYMOND BOULEVARD, SUITE 2102
NEWARK, NJ 07102

176-200 Bloomfield Avenue
Township of Verona, Essex County, NJ
Block 202, Lots 1 & 23

Job No. DMH2C26001 | Scale: NTS

FIGURE 6 – USDA SOIL MAP



SOURCE: NJDEP GeoWeb

PENNONI ASSOCIATES INC.
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NEWARK, NJ 07102

176-200 Bloomfield Avenue
Township of Verona, Essex County, NJ
Block 202, Lots 1 & 23

Job No. DMH2C26001

Scale: NTS

FIGURE 7 – NJDEP GeoWeb MAP



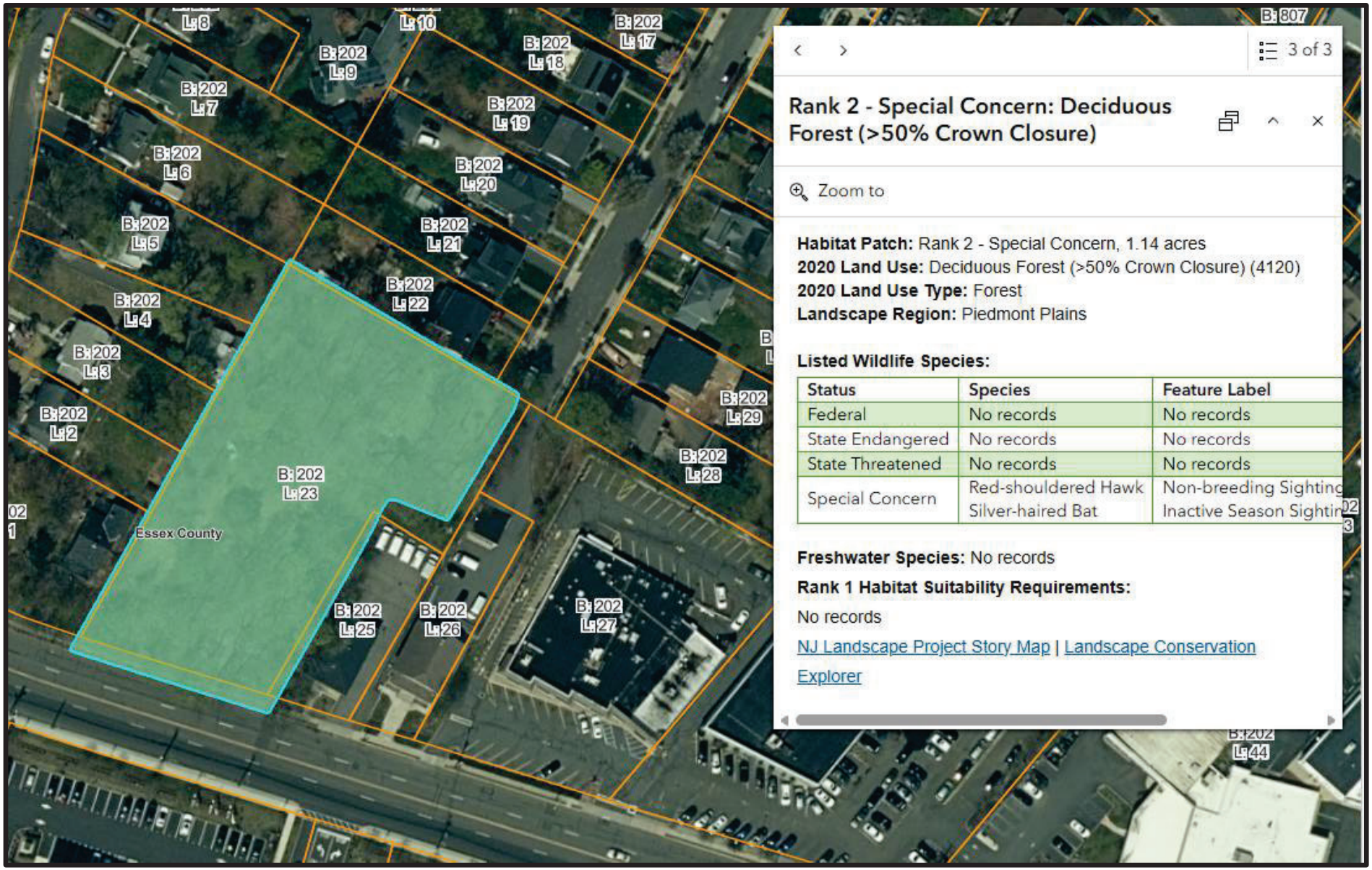
SOURCE: NJDEP GeoWeb

PENNONI ASSOCIATES INC.
1085 RAYMOND BOULEVARD, SUITE 2102
NEWARK, NJ 07102

176-200 Bloomfield Avenue
Township of Verona, Essex County, NJ
Block 202, Lots 1 & 23

Job No. DMH2C26001 | Scale: NTS

FIGURE 8 – NJDEP GeoWeb Mapping – Endangered Species



Status	Species	Feature Label
Federal	No records	No records
State Endangered	No records	No records
State Threatened	No records	No records
Special Concern	Red-shouldered Hawk Silver-haired Bat	Non-breeding Sighting Inactive Season Sightin

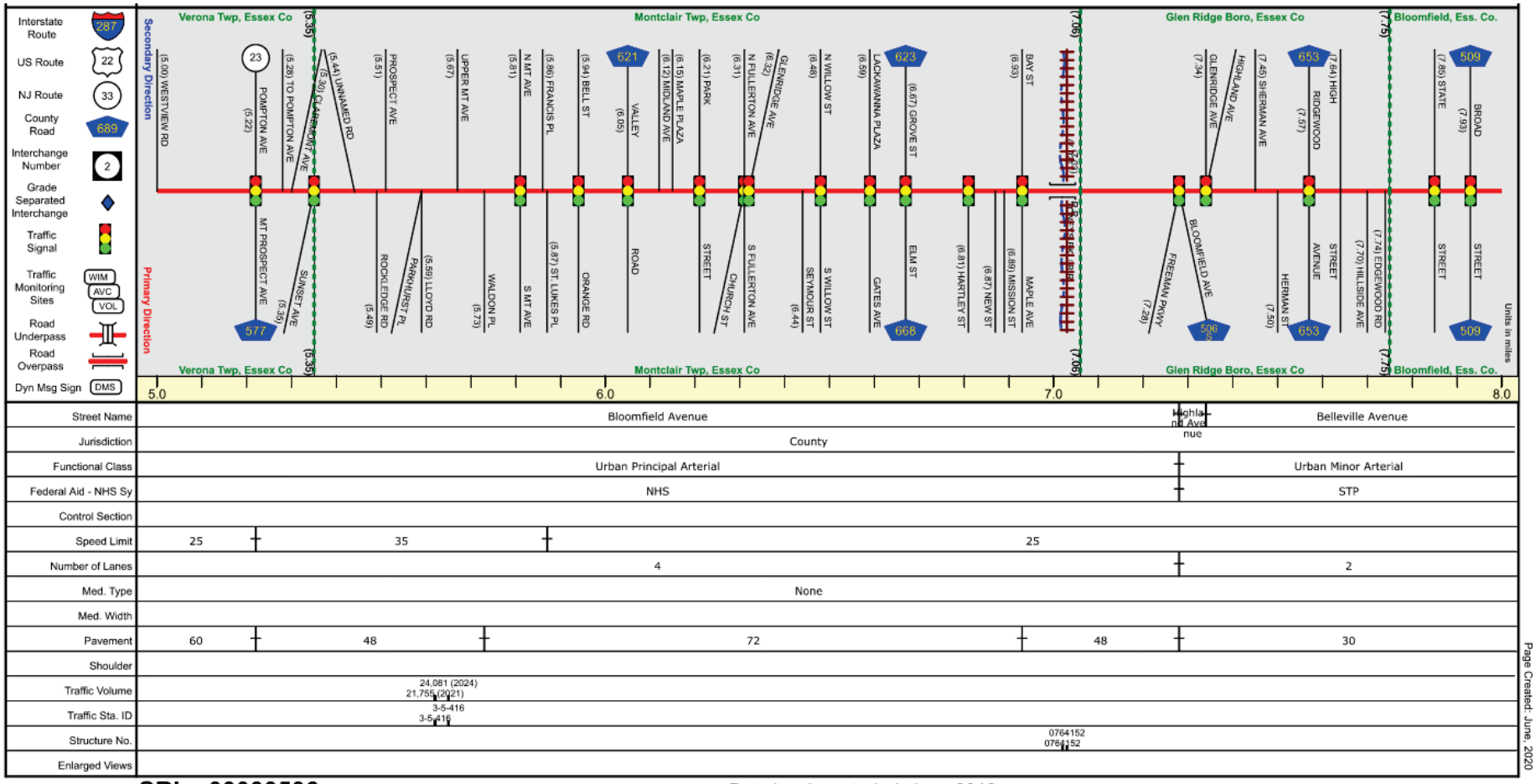
SOURCE: NJDEP GeoWeb

PENNONI ASSOCIATES INC.
1085 RAYMOND BOULEVARD, SUITE 2102
NEWARK, NJ 07102

176-200 Bloomfield Avenue
Township of Verona, Essex County, NJ
Block 202, Lots 1 & 23

Job No. DMH2C26001 | Scale: NTS

FIGURE 8A – NJDEP GeoWeb Mapping – Endangered Species



SRI = 00000506__

Date last inventoried: June 2012

Page Created: June, 2020

SOURCE: NJDOT Straight Line Diagram Viewer

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1085 RAYMOND BOULEVARD, SUITE 2102
NEWARK, NJ 07102

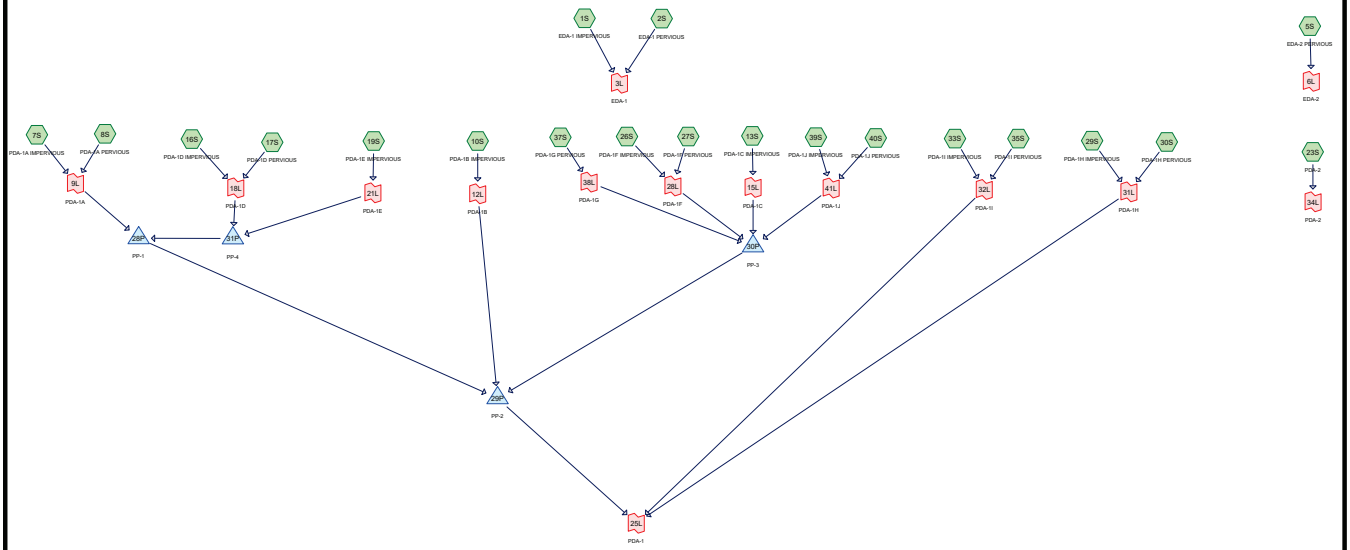
176-200 Bloomfield Avenue
Township of Verona, Essex County, NJ
Block 202, Lots 1 & 23

Job No. DMH2C26001

Scale: NTS

FIGURE 9 – NJDOT Straight Line Diagram Viewer

Appendix B:
Hydrologic and Hydraulic Calculations (Current)



Subcat Reach Pond Link

Routing Diagram for 2026-07-27 - DMH2LLC

Prepared by Pennoni Associates, Inc, Printed 8/17/2026

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61 Subcat 7S: PDA-1A IMPERVIOUS
62 Subcat 8S: PDA-1A PERVIOUS

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105 Link 25L: PDA-1
106 Link 28L: PDA-1F
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108 Link 32L: PDA-1I
109 Link 34L: PDA-2
110 Link 38L: PDA-1G
111 Link 41L: PDA-1J

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113 Subcat 2S: EDA-1 PERVIOUS
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115 Subcat 7S: PDA-1A IMPERVIOUS
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126 Subcat 30S: PDA-1H PERVIOUS
127 Subcat 33S: PDA-1I IMPERVIOUS
128 Subcat 35S: PDA-1I PERVIOUS
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160 Link 28L: PDA-1F
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180 Subcat 30S: PDA-1H PERVIOUS
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182 Subcat 35S: PDA-1I PERVIOUS
183 Subcat 37S: PDA-1G PERVIOUS
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186 Pond 28P: PP-1
187 Pond 29P: PP-2
188 Pond 30P: PP-3
189 Pond 31P: PP-4
190 Link 3L: EDA-1
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197 Link 25L: PDA-1
198 Link 28L: PDA-1F
199 Link 31L: PDA-1H
200 Link 32L: PDA-1I
201 Link 34L: PDA-2
202 Link 38L: PDA-1G
203 Link 41L: PDA-1J

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC	P2 (inches)
1	2-Year-2020	NOAA 24-hr	D	Default	24.00	1	3.47	2	3.47
2	10-Year-2020	NOAA 24-hr	D	Default	24.00	1	5.38	2	3.47
3	100-Year-2020	NOAA 24-hr	D	Default	24.00	1	9.18	2	3.47

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.500	74	>75% Grass cover, Good, HSG C (8S, 17S, 27S, 30S, 35S, 37S, 40S)
0.790	98	Paved parking, HSG C (1S, 7S, 10S, 13S, 16S, 19S, 26S, 29S, 33S, 39S)
1.910	70	Woods, Good, HSG C (2S, 5S, 23S)
3.200	**78**	**TOTAL AREA**

Summary for Subcatchment 1S: EDA-1 IMPERVIOUS

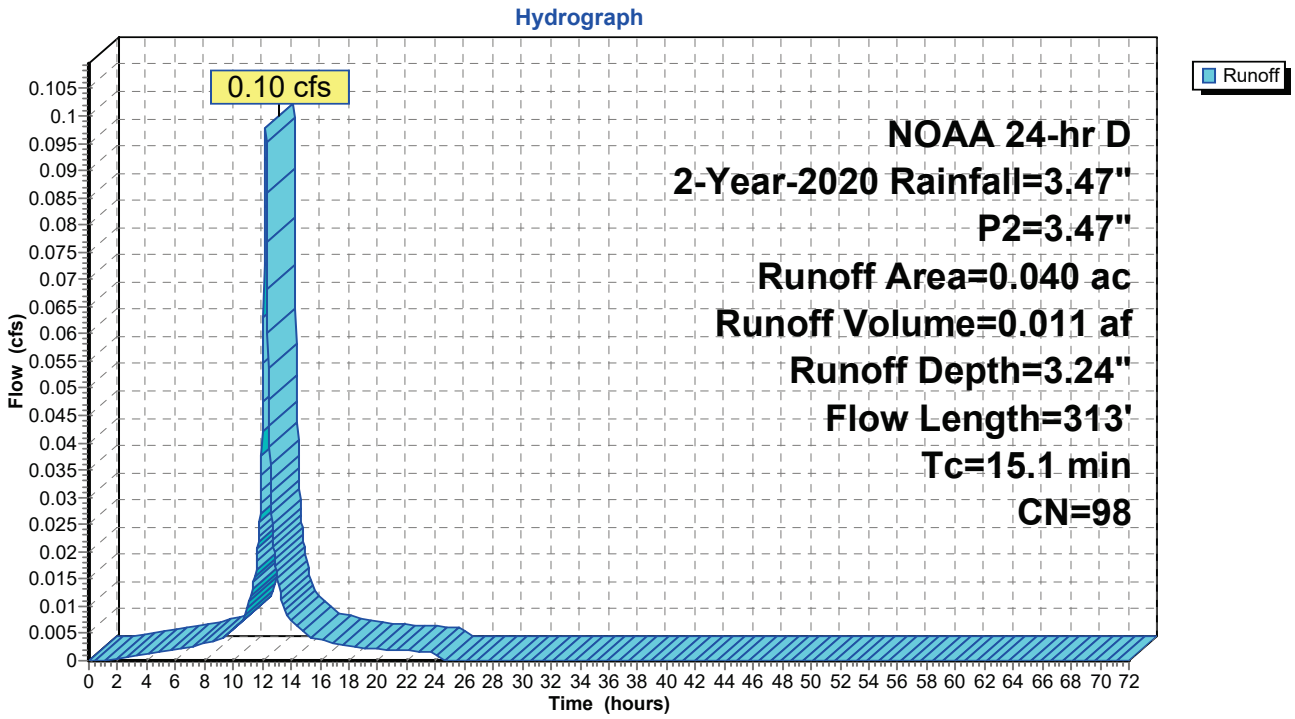
Runoff = 0.10 cfs @ 12.23 hrs, Volume= 0.011 af, Depth= 3.24"
Routed to Link 3L : EDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG C
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0579	0.12		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.47"
1.6	213	0.1867	2.16		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
15.1	313	Total			

Subcatchment 1S: EDA-1 IMPERVIOUS



Summary for Subcatchment 2S: EDA-1 PERVIOUS

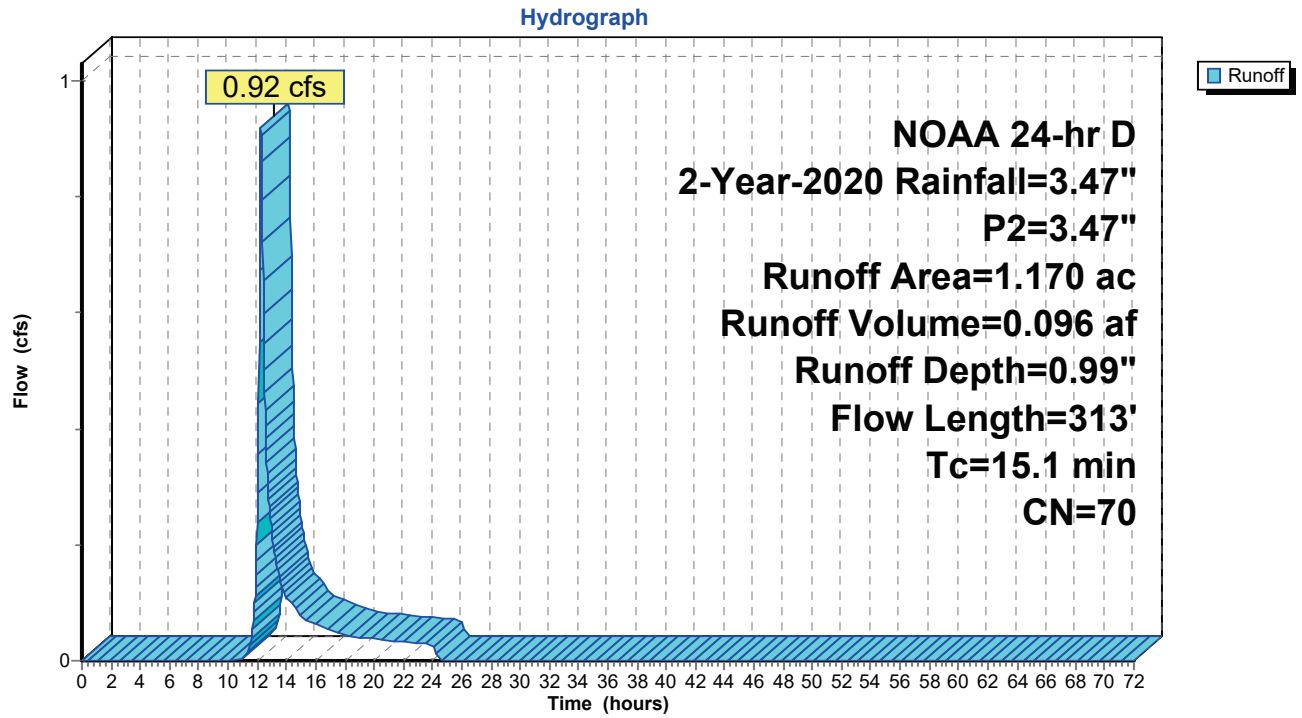
Runoff = 0.92 cfs @ 12.25 hrs, Volume= 0.096 af, Depth= 0.99"
Routed to Link 3L : EDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
1.170	70	Woods, Good, HSG C
1.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0579	0.12		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.47"
1.6	213	0.1867	2.16		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
15.1	313	Total			

Subcatchment 2S: EDA-1 PERVIOUS



Summary for Subcatchment 5S: EDA-2 PERVIOUS

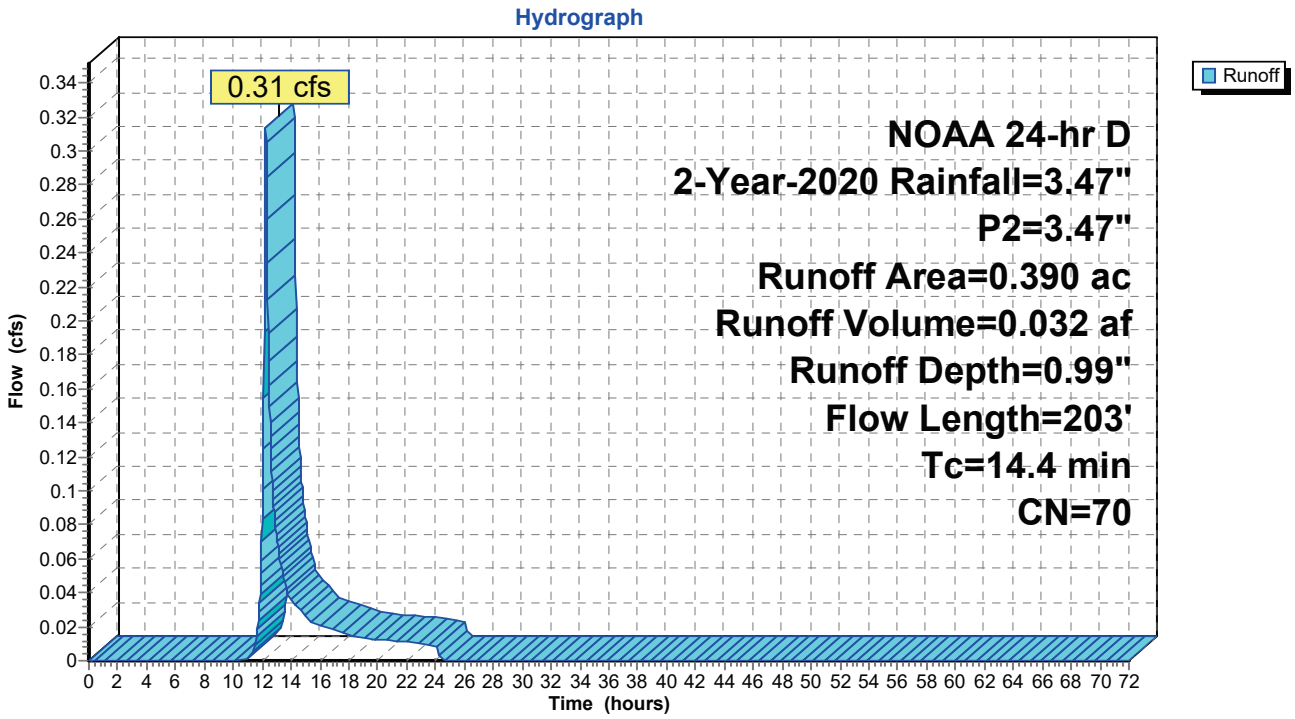
Runoff = 0.31 cfs @ 12.24 hrs, Volume= 0.032 af, Depth= 0.99"
Routed to Link 6L : EDA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.390	70	Woods, Good, HSG C
0.390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0582	0.12		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.47"
0.9	103	0.1619	2.01		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
14.4	203	Total			

Subcatchment 5S: EDA-2 PERVIOUS



Summary for Subcatchment 7S: PDA-1A IMPERVIOUS

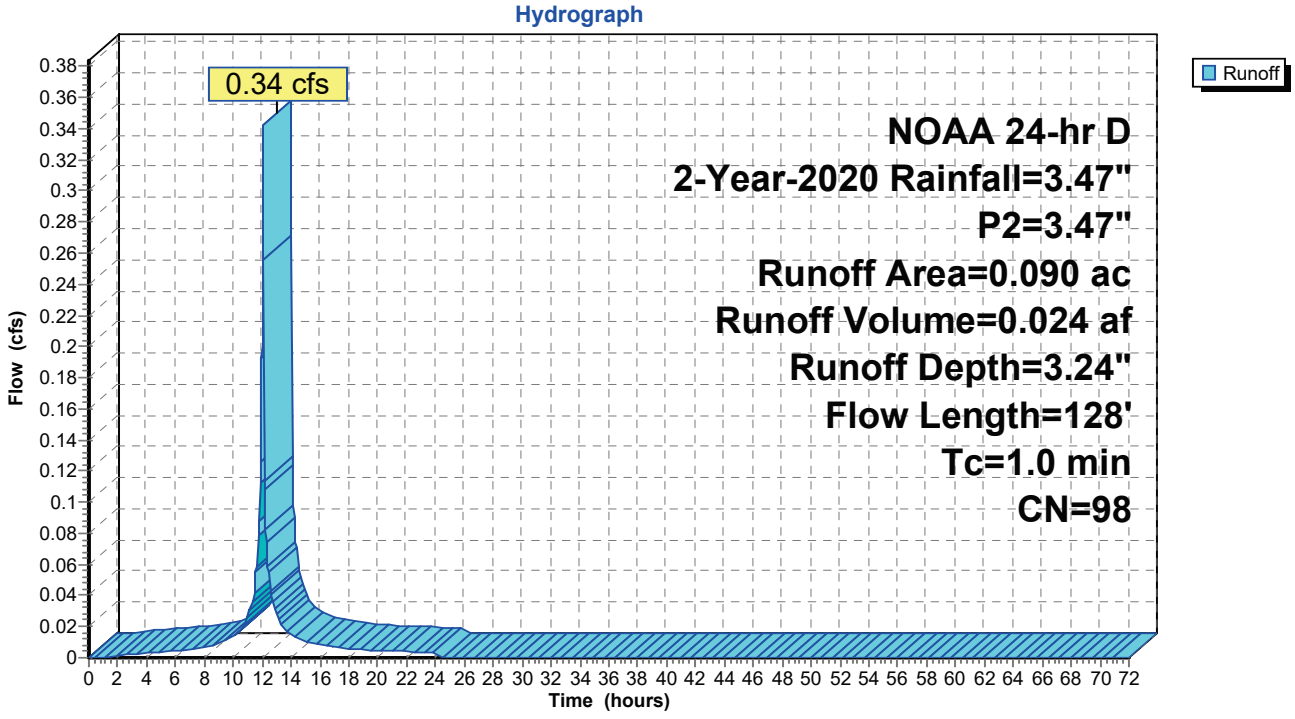
Runoff = 0.34 cfs @ 12.08 hrs, Volume= 0.024 af, Depth= 3.24"
Routed to Link 9L : PDA-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.090	98	Paved parking, HSG C
0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0347	1.22		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.7	85	0.0500	2.00		**Sheet Flow, BC** Smooth surfaces n= 0.011 P2= 3.47"
0.1	28	0.0493	4.51		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
1.0	128	Total			

Subcatchment 7S: PDA-1A IMPERVIOUS



Summary for Subcatchment 8S: PDA-1A PERVIOUS

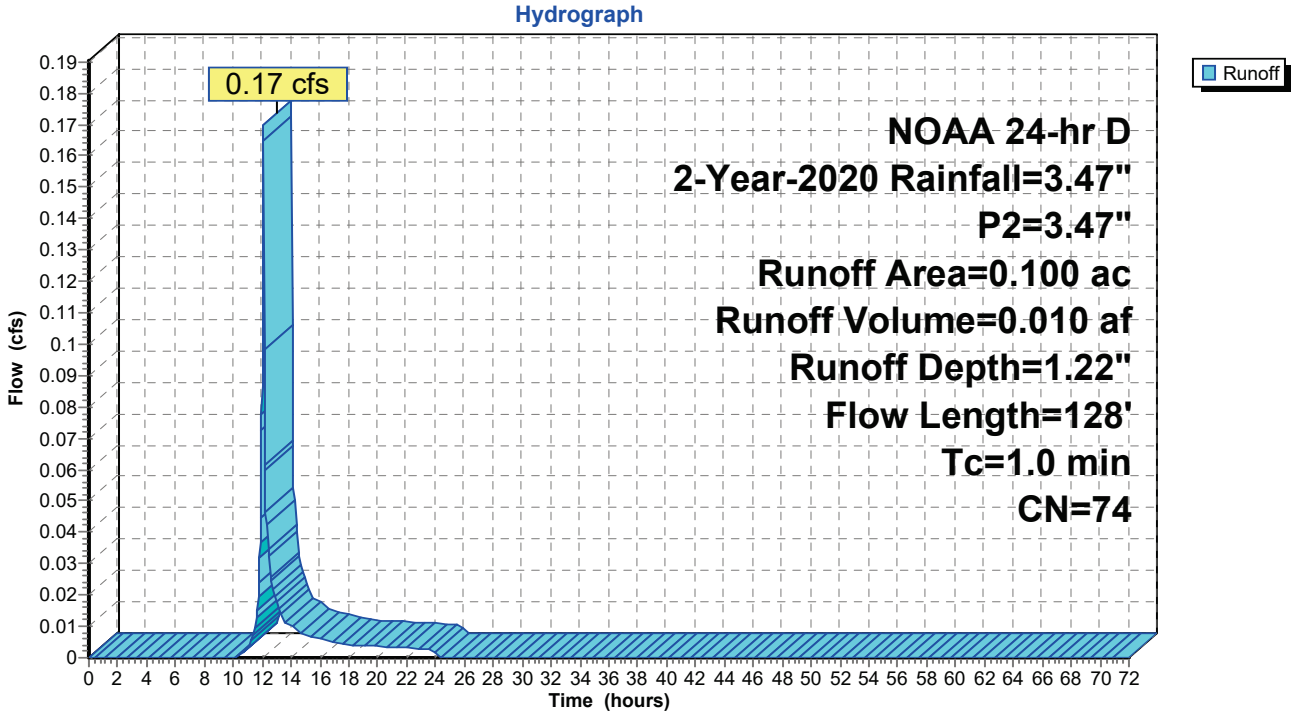
Runoff = 0.17 cfs @ 12.08 hrs, Volume= 0.010 af, Depth= 1.22"
Routed to Link 9L : PDA-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.100	74	>75% Grass cover, Good, HSG C
0.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0347	1.22		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.7	85	0.0500	2.00		**Sheet Flow, BC** Smooth surfaces n= 0.011 P2= 3.47"
0.1	28	0.0493	4.51		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
1.0	128	Total			

Subcatchment 8S: PDA-1A PERVIOUS



Summary for Subcatchment 10S: PDA-1B IMPERVIOUS

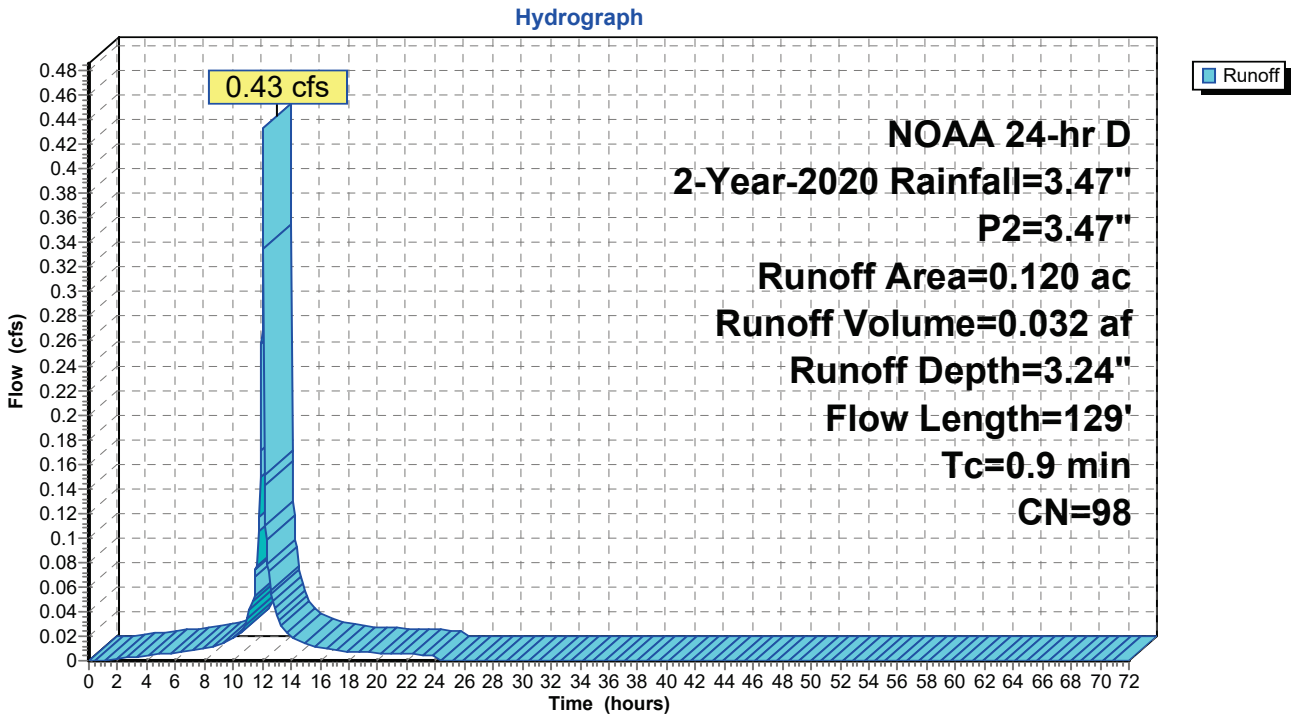
Runoff = 0.43 cfs @ 12.09 hrs, Volume= 0.032 af, Depth= 3.24"
Routed to Link 12L : PDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.120	98	Paved parking, HSG C
0.120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0484	2.04		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.1	29	0.0610	3.98		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
0.9	129	Total			

Subcatchment 10S: PDA-1B IMPERVIOUS



Summary for Subcatchment 13S: PDA-1C IMPERVIOUS

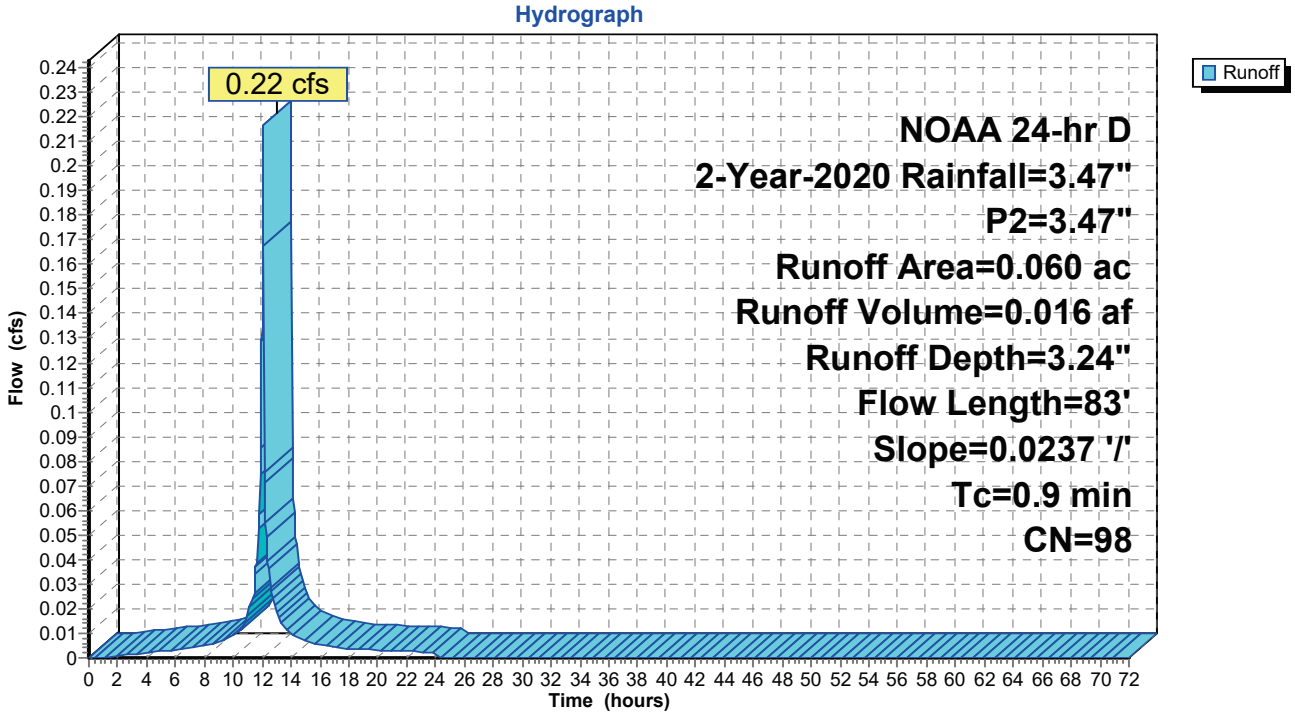
Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.016 af, Depth= 3.24"
Routed to Link 15L : PDA-1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.060	98	Paved parking, HSG C
0.060		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	83	0.0237	1.48		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"

Subcatchment 13S: PDA-1C IMPERVIOUS



Summary for Subcatchment 16S: PDA-1D IMPERVIOUS

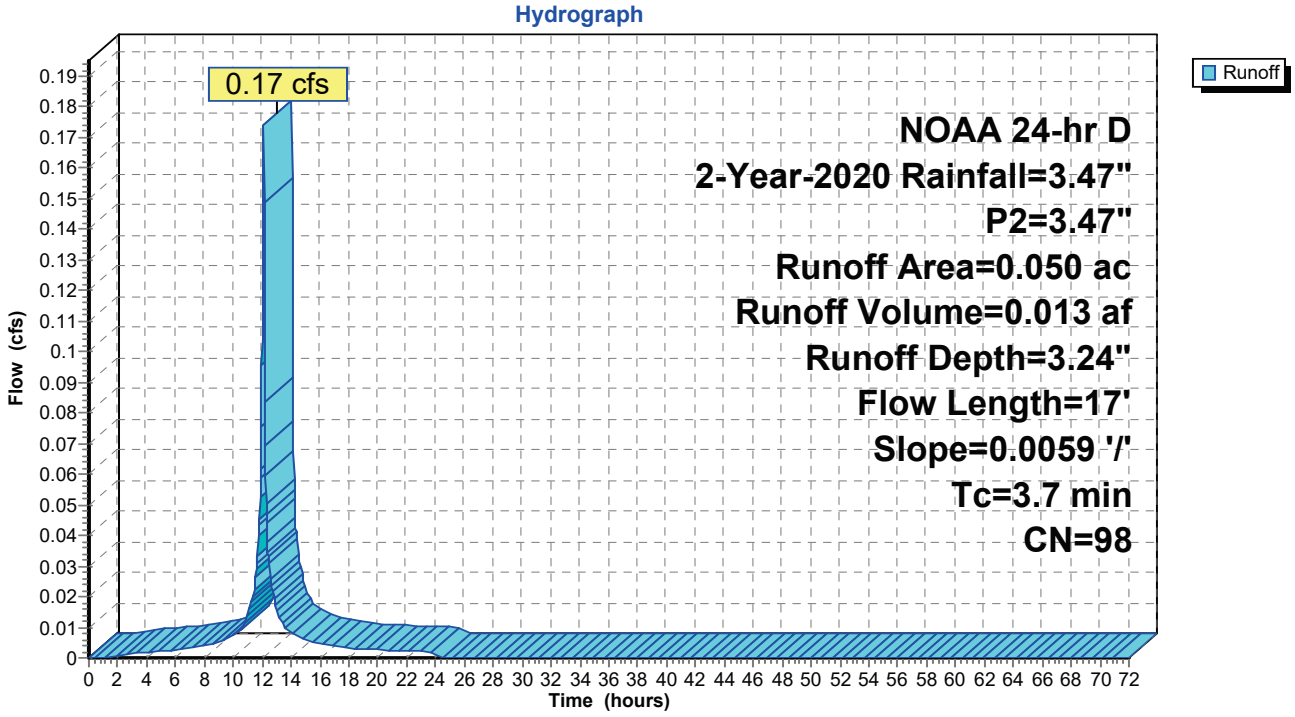
Runoff = 0.17 cfs @ 12.10 hrs, Volume= 0.013 af, Depth= 3.24"
Routed to Link 18L : PDA-1D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.050	98	Paved parking, HSG C
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	17	0.0059	0.08		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"

Subcatchment 16S: PDA-1D IMPERVIOUS



Summary for Subcatchment 17S: PDA-1D PERVIOUS

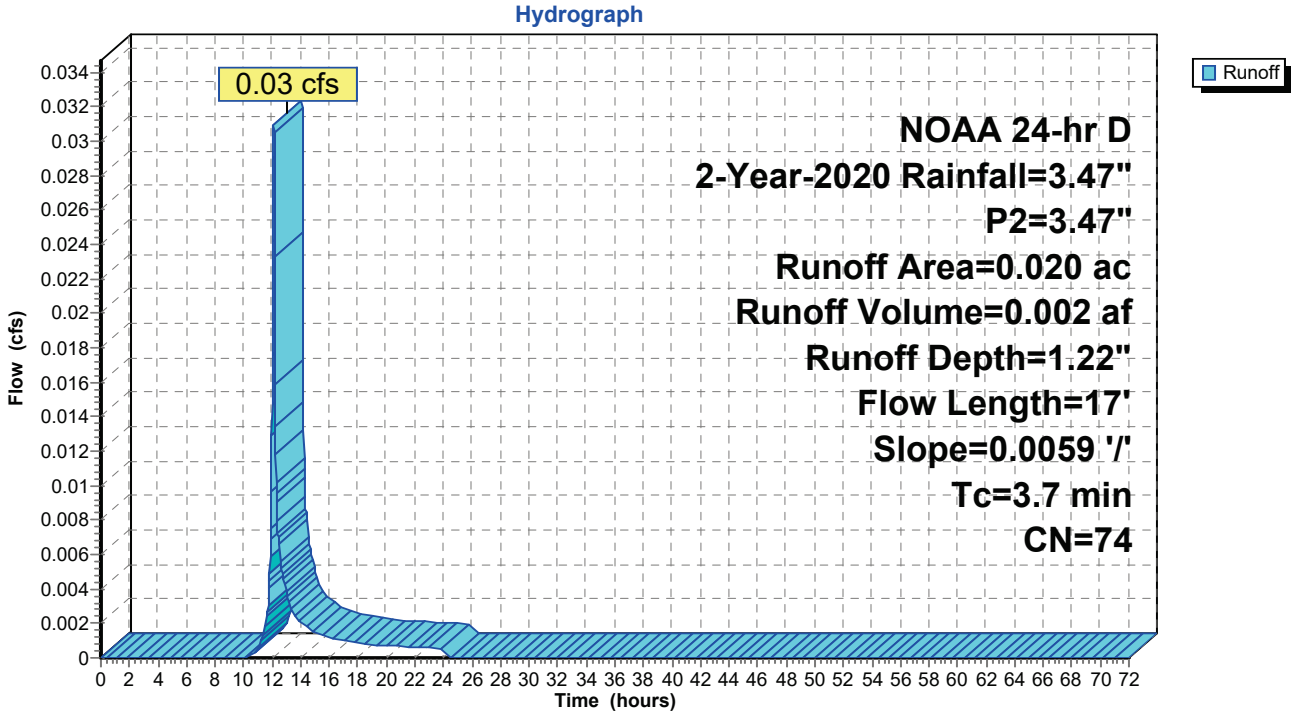
Runoff = 0.03 cfs @ 12.11 hrs, Volume= 0.002 af, Depth= 1.22"
Routed to Link 18L : PDA-1D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.020	74	>75% Grass cover, Good, HSG C
0.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	17	0.0059	0.08		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"

Subcatchment 17S: PDA-1D PERVIOUS



Summary for Subcatchment 19S: PDA-1E IMPERVIOUS

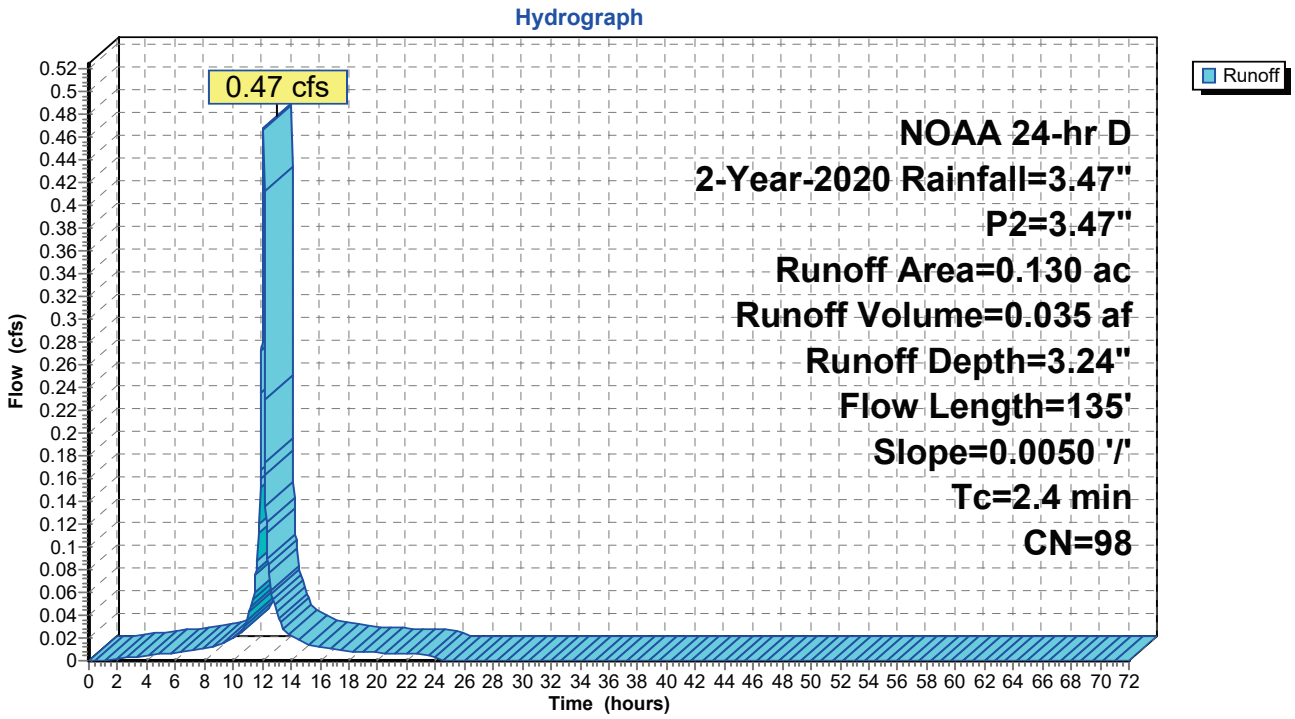
Runoff = 0.47 cfs @ 12.08 hrs, Volume= 0.035 af, Depth= 3.24"
Routed to Link 21L : PDA-1E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.130	98	Paved parking, HSG C
0.130		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	100	0.0050	0.82		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.4	35	0.0050	1.44		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
2.4	135	Total			

Subcatchment 19S: PDA-1E IMPERVIOUS



Summary for Subcatchment 23S: PDA-2

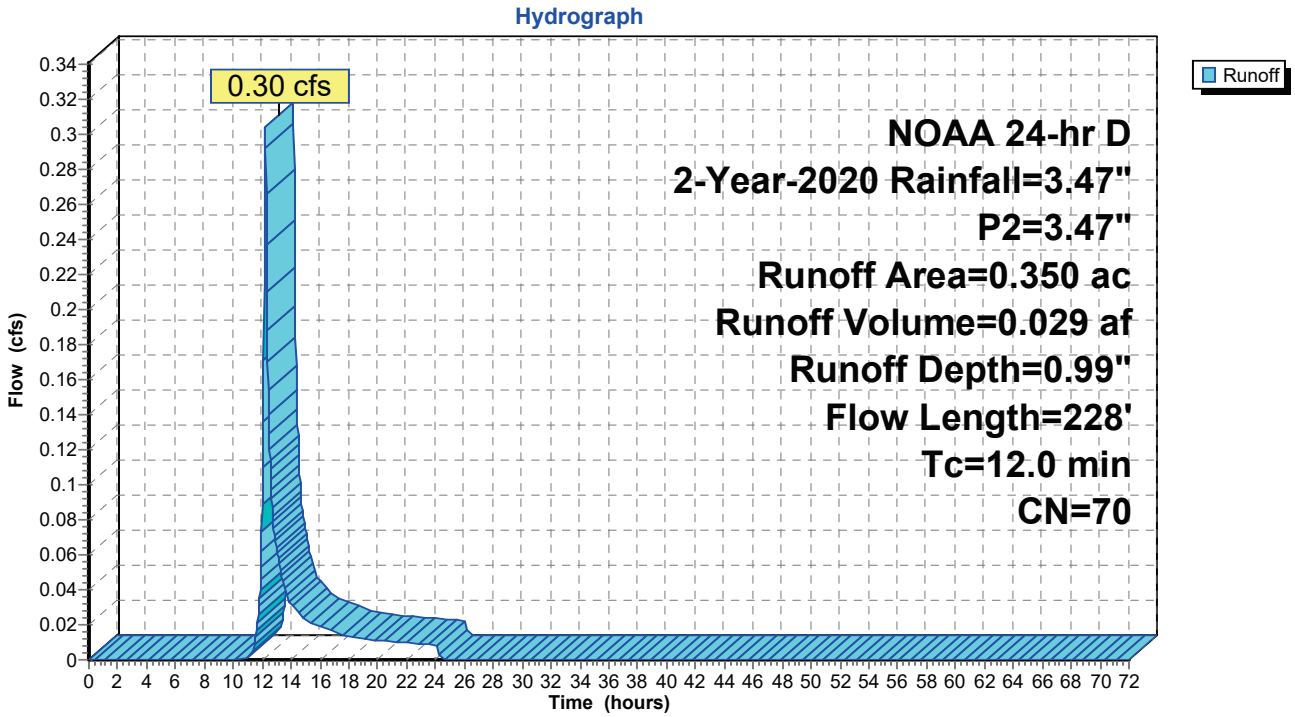
Runoff = 0.30 cfs @ 12.21 hrs, Volume= 0.029 af, Depth= 0.99"
Routed to Link 34L : PDA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.350	70	Woods, Good, HSG C
0.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	62	0.0385	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.47"
0.4	36	0.1011	1.59		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.2	49	0.0543	3.75		**Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps
0.6	81	0.1763	2.10		**Shallow Concentrated Flow, DE** Woodland Kv= 5.0 fps
12.0	228	Total			

Subcatchment 23S: PDA-2



Summary for Subcatchment 26S: PDA-1F IMPERVIOUS

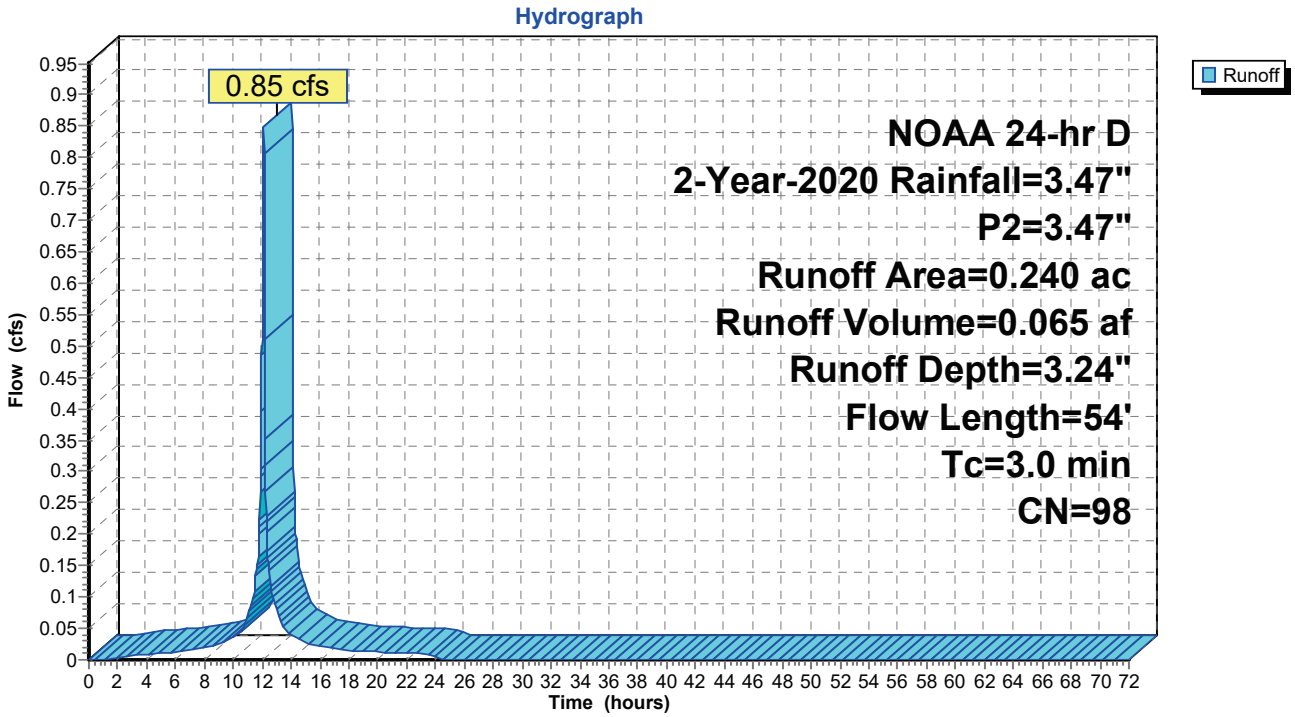
Runoff = 0.85 cfs @ 12.09 hrs, Volume= 0.065 af, Depth= 3.24"
Routed to Link 28L : PDA-1F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG C
0.240		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	7	0.0071	0.56		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
1.4	18	0.0794	0.22		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
0.2	20	0.0375	1.33		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 3.47"
1.2	9	0.0278	0.12		**Sheet Flow, DE** Grass: Short n= 0.150 P2= 3.47"
3.0	54	Total			

Subcatchment 26S: PDA-1F IMPERVIOUS



Summary for Subcatchment 27S: PDA-1F PERVIOUS

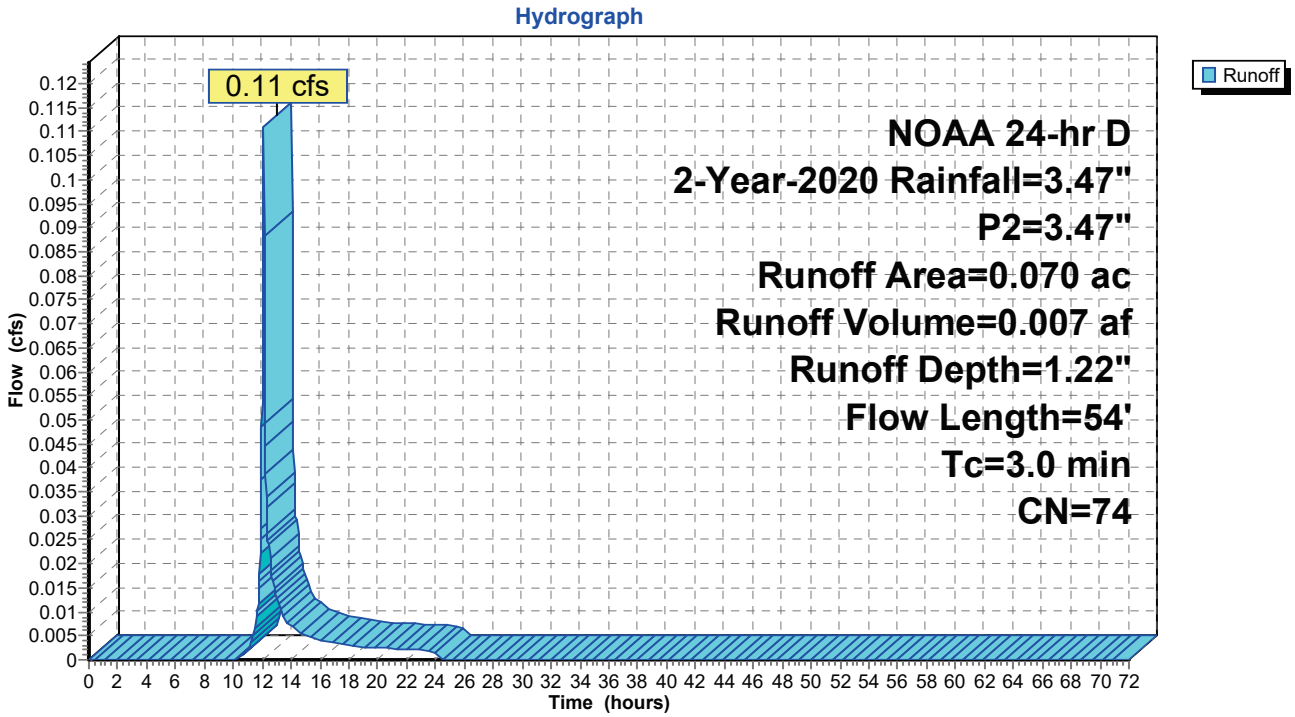
Runoff = 0.11 cfs @ 12.11 hrs, Volume= 0.007 af, Depth= 1.22"
Routed to Link 28L : PDA-1F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.070	74	>75% Grass cover, Good, HSG C
0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	7	0.0071	0.56		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
1.4	18	0.0794	0.22		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
0.2	20	0.0375	1.33		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 3.47"
1.2	9	0.0278	0.12		**Sheet Flow, DE** Grass: Short n= 0.150 P2= 3.47"
3.0	54	Total			

Subcatchment 27S: PDA-1F PERVIOUS



Summary for Subcatchment 29S: PDA-1H IMPERVIOUS

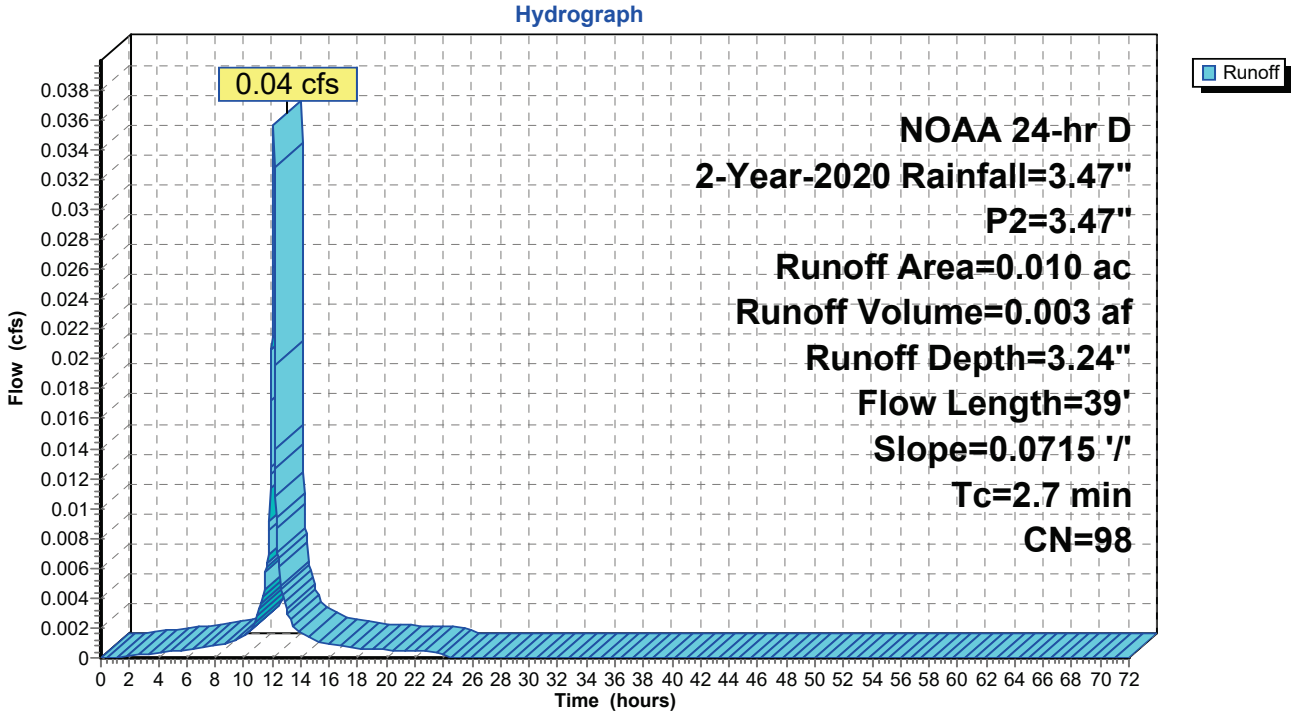
Runoff = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af, Depth= 3.24"
Routed to Link 31L : PDA-1H

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.010	98	Paved parking, HSG C
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	39	0.0715	0.24		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"

Subcatchment 29S: PDA-1H IMPERVIOUS



Summary for Subcatchment 30S: PDA-1H PERVIOUS

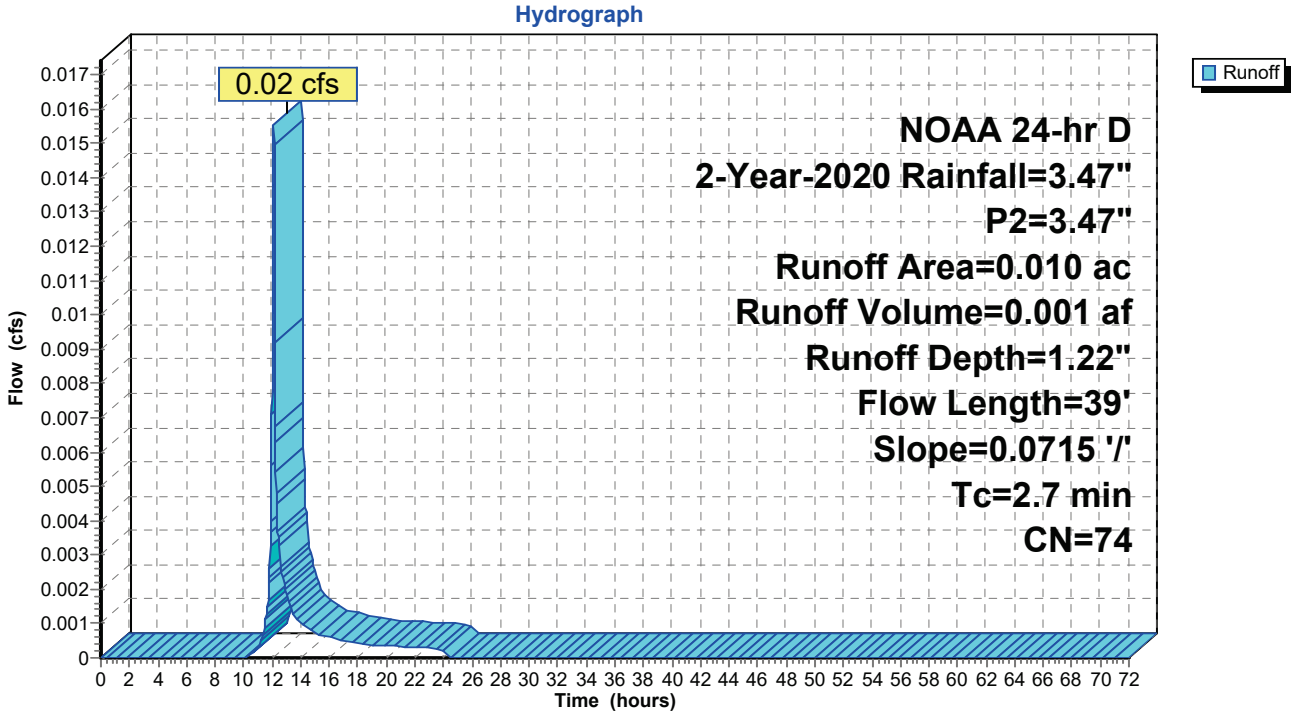
Runoff = 0.02 cfs @ 12.10 hrs, Volume= 0.001 af, Depth= 1.22"
Routed to Link 31L : PDA-1H

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.010	74	>75% Grass cover, Good, HSG C
0.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	39	0.0715	0.24		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"

Subcatchment 30S: PDA-1H PERVIOUS



Summary for Subcatchment 33S: PDA-1I IMPERVIOUS

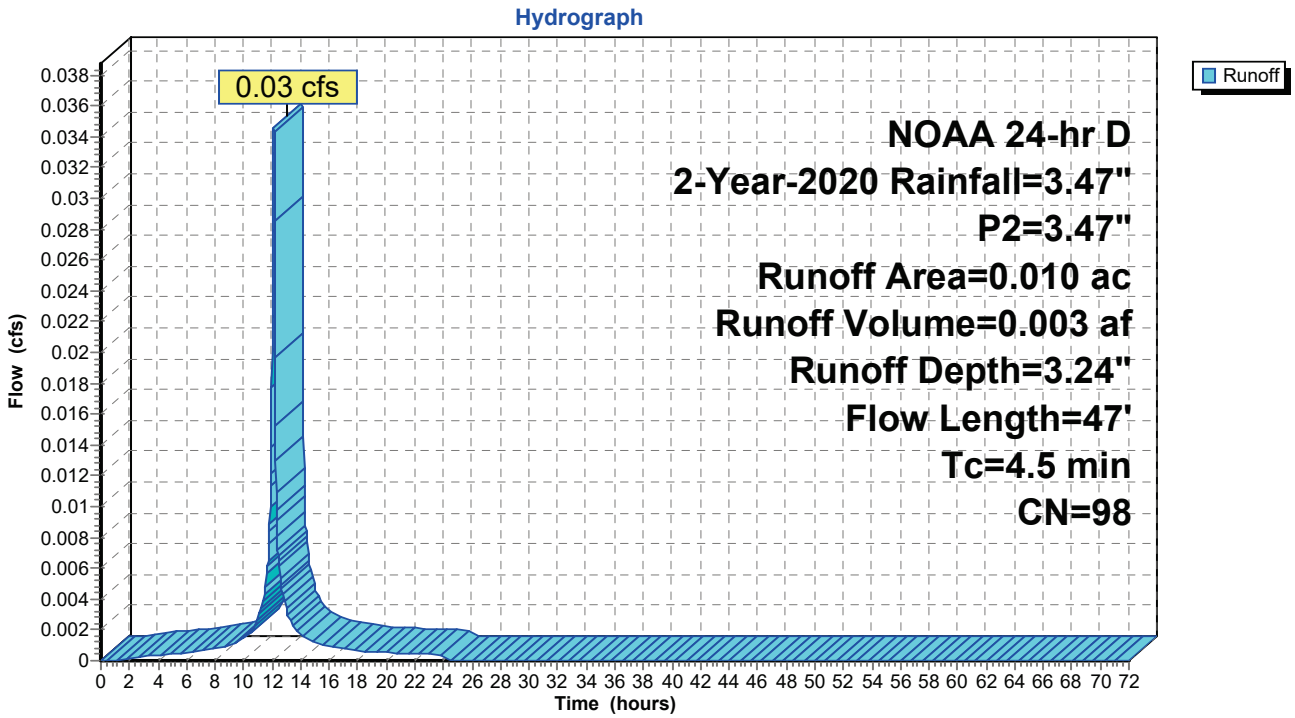
Runoff = 0.03 cfs @ 12.11 hrs, Volume= 0.003 af, Depth= 3.24"
Routed to Link 32L : PDA-1I

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.010	98	Paved parking, HSG C
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	21	0.0109	0.10		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"
1.1	26	0.2700	0.38		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
4.5	47	Total			

Subcatchment 33S: PDA-1I IMPERVIOUS



Summary for Subcatchment 35S: PDA-1I PERVIOUS

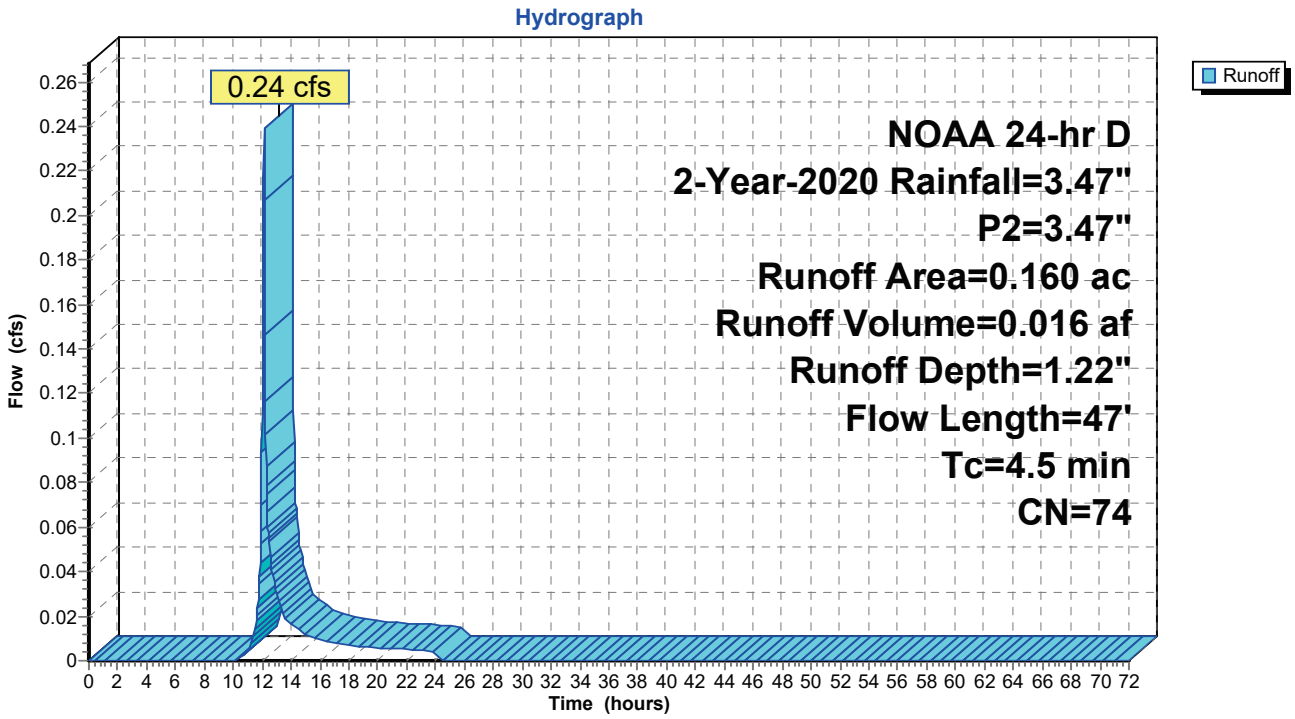
Runoff = 0.24 cfs @ 12.12 hrs, Volume= 0.016 af, Depth= 1.22"
Routed to Link 32L : PDA-1I

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.160	74	>75% Grass cover, Good, HSG C
0.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	21	0.0109	0.10		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"
1.1	26	0.2700	0.38		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
4.5	47	Total			

Subcatchment 35S: PDA-1I PERVIOUS



Summary for Subcatchment 37S: PDA-1G PERVIOUS

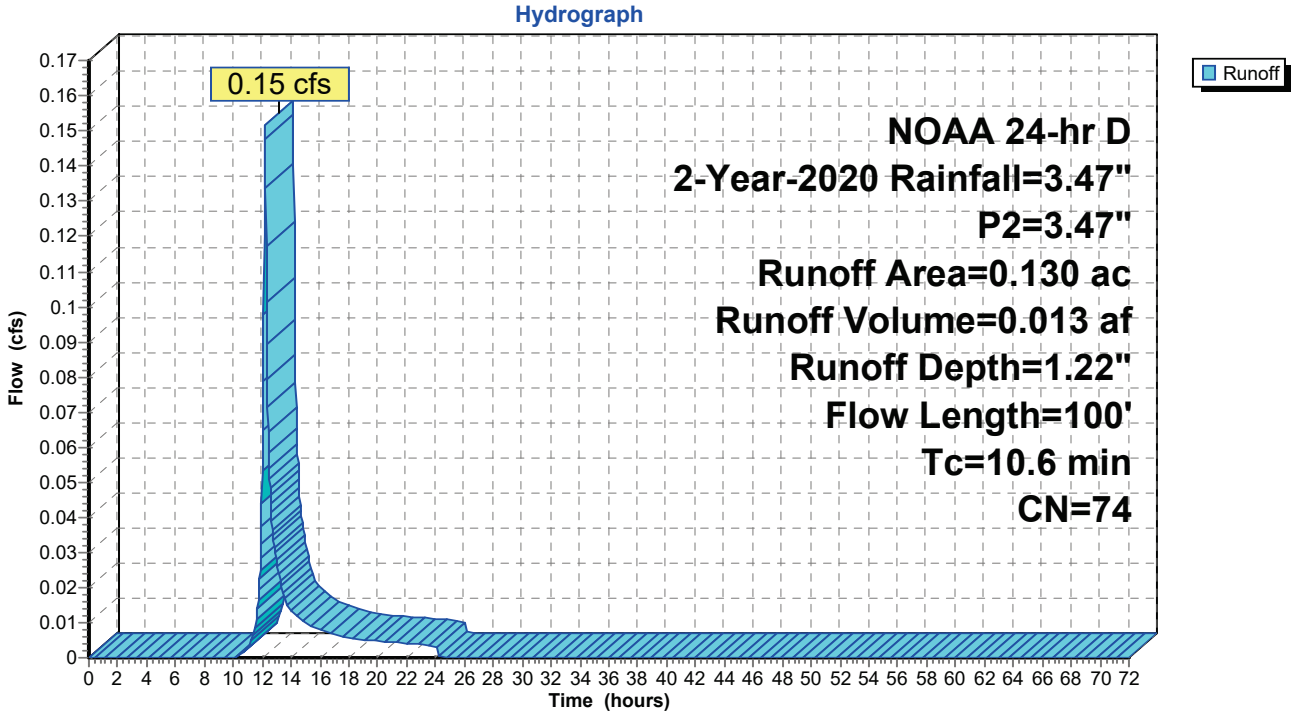
Runoff = 0.15 cfs @ 12.19 hrs, Volume= 0.013 af, Depth= 1.22"
Routed to Link 38L : PDA-1G

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.130	74	>75% Grass cover, Good, HSG C
0.130		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	66	0.0486	0.11		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.47"
0.1	16	0.1031	5.17		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
0.1	18	0.0365	3.08		**Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps
10.6	100	Total			

Subcatchment 37S: PDA-1G PERVIOUS



Summary for Subcatchment 39S: PDA-1J IMPERVIOUS

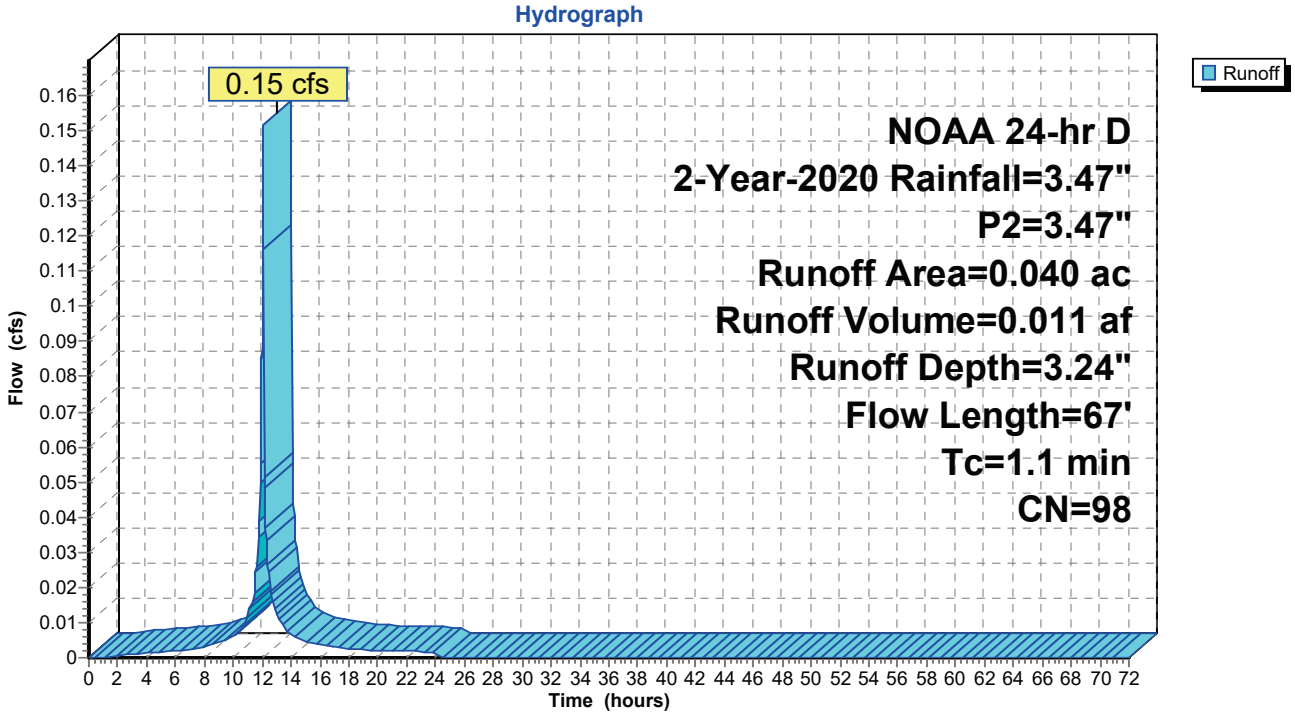
Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.24"
Routed to Link 41L : PDA-1J

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG C
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	6	0.0150	0.73		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.5	7	0.1371	0.22		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
0.5	54	0.0565	1.92		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 3.47"
1.1	67	Total			

Subcatchment 39S: PDA-1J IMPERVIOUS



Summary for Subcatchment 40S: PDA-1J PERVIOUS

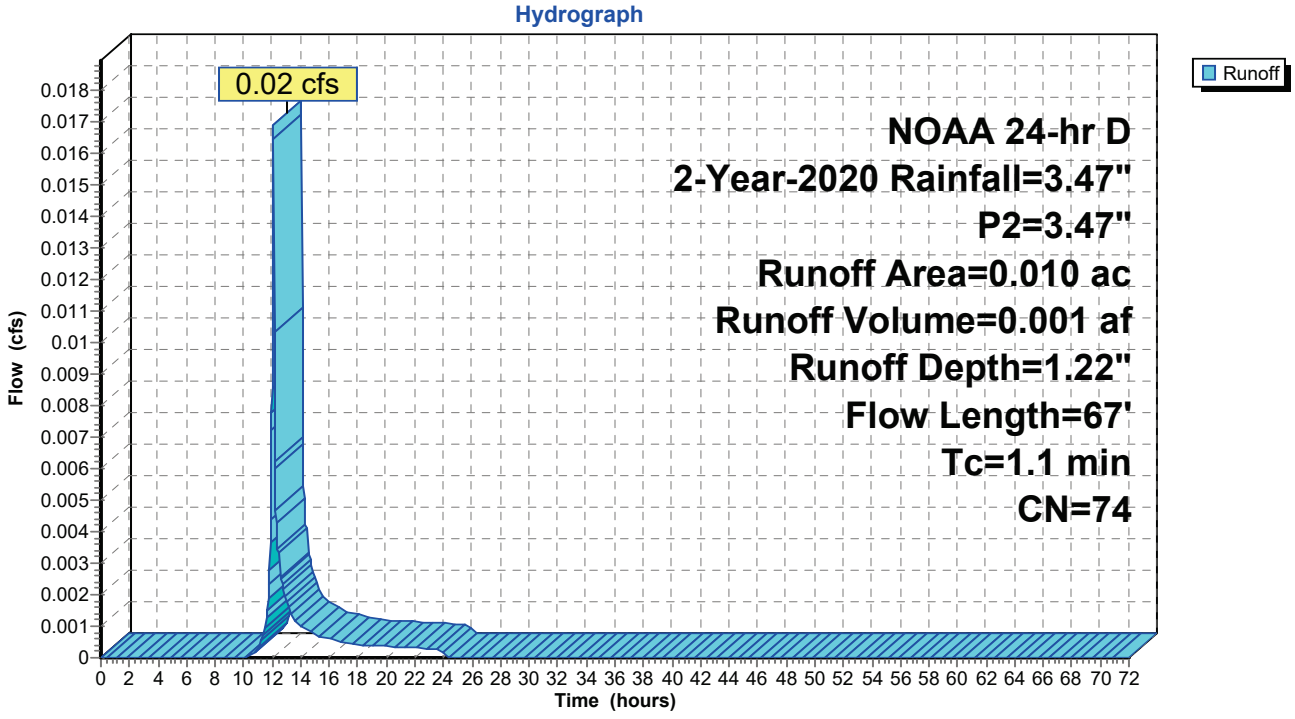
Runoff = 0.02 cfs @ 12.08 hrs, Volume= 0.001 af, Depth= 1.22"
Routed to Link 41L : PDA-1J

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2020 Rainfall=3.47", P2=3.47"

Area (ac)	CN	Description
0.010	74	>75% Grass cover, Good, HSG C
0.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	6	0.0150	0.73		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.5	7	0.1371	0.22		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
0.5	54	0.0565	1.92		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 3.47"
1.1	67	Total			

Subcatchment 40S: PDA-1J PERVIOUS



Summary for Pond 28P: PP-1

Inflow Area = 0.390 ac, 69.23% Impervious, Inflow Depth = 2.62" for 2-Year-2020 event
Inflow = 0.69 cfs @ 12.08 hrs, Volume= 0.085 af
Outflow = 0.18 cfs @ 13.14 hrs, Volume= 0.085 af, Atten= 74%, Lag= 63.7 min
Primary = 0.18 cfs @ 13.14 hrs, Volume= 0.085 af
Routed to Pond 29P : PP-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 446.73' @ 13.14 hrs Surf.Area= 0.048 ac Storage= 0.024 af

Plug-Flow detention time= 85.6 min calculated for 0.085 af (100% of inflow)
Center-of-Mass det. time= 84.8 min (869.2 - 784.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.45'	0.090 af	**18.00'W x 117.00'L x 6.29'H Field A** 0.304 af Overall - 0.079 af Embedded = 0.225 af x 40.0% Voids
#2A	446.45'	0.066 af	**ADS N-12 48"** x 8 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf Row Length Adjustment= +25.00' x 12.40 sf x 2 rows 11.08' Header x 12.40 sf x 2 = 274.9 cf Inside
		0.156 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	445.45'	**15.0" Round Culvert** L= 23.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 445.45' / 445.38' S= 0.0030 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	445.45'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	449.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.18 cfs @ 13.14 hrs HW=446.73' TW=445.22' (Dynamic Tailwater)
1=Culvert (Passes 0.18 cfs of 3.35 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.18 cfs @ 5.21 fps)
3=Orifice/Grate (Controls 0.00 cfs)

Pond 28P: PP-1 - Chamber Wizard Field A

Chamber Model = ADS N-12 48" (ADS N-12® Pipe)
Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf
Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf
Row Length Adjustment= +25.00' x 12.40 sf x 2 rows

54.0" Wide + 25.0" Spacing = 79.0" C-C Row Spacing

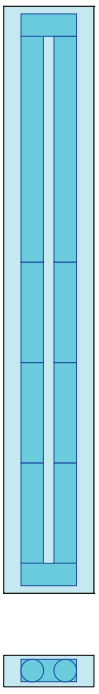
4 Chambers/Row x 20.00' Long +25.00' Row Adjustment +4.50' Header x 2 = 114.00' Row Length +18.0" End Stone x 2 = 117.00' Base Length
2 Rows x 54.0" Wide + 25.0" Spacing x 1 + 41.5" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 54.0" Chamber Height + 9.5" Stone Cover = 6.29' Field Height

8 Chambers x 248.0 cf +25.00' Row Adjustment x 12.40 sf x 2 Rows + 11.08' Header x 12.40 sf x 2 = 2,878.9 cf Chamber Storage
8 Chambers x 297.0 cf +25.00' Row Adjustment x 14.85 sf x 2 Rows + 11.08' Header x 14.85 sf x 2 = 3,447.4 cf Displacement

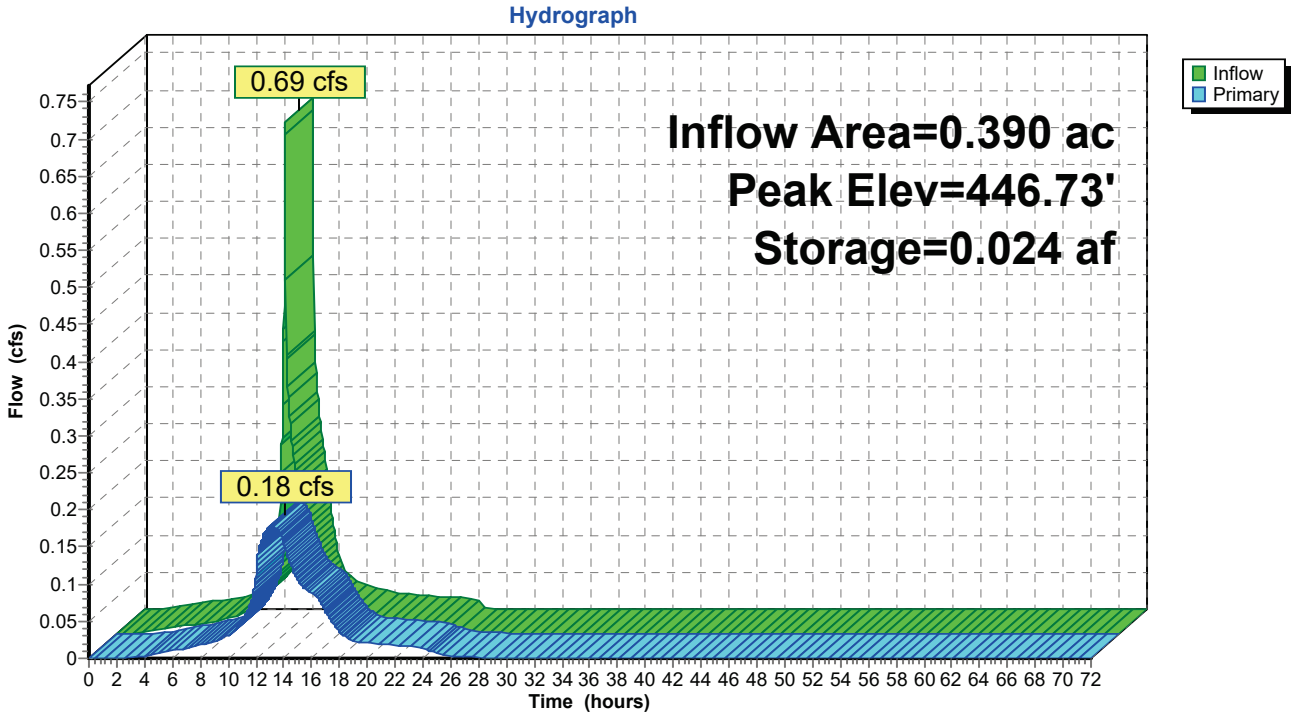
13,250.6 cf Field - 3,447.4 cf Chambers = 9,803.2 cf Stone x 40.0% Voids = 3,921.3 cf Stone Storage

Chamber Storage + Stone Storage = 6,800.1 cf = 0.156 af
Overall Storage Efficiency = 51.3%
Overall System Size = 117.00' x 18.00' x 6.29'

8 Chambers
490.8 cy Field
363.1 cy Stone



Pond 28P: PP-1


Hydrograph
0.69 cfs
0.18 cfs
Inflow Area=0.390 ac
Peak Elev=446.73'
Storage=0.024 af
Inflow
Primary
Flow (cfs)
Time (hours)
0 0.05 0.1 0.15 0.2 0.25 0.3 0.35 0.4 0.45 0.5 0.55 0.6 0.65 0.7 0.75
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72

Stage-Discharge for Pond 28P: PP-1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
445.45	0.00	448.10	0.26	450.75	0.81
445.50	0.00	448.15	0.26	450.80	0.82
445.55	0.02	448.20	0.27	450.85	0.83
445.60	0.03	448.25	0.27	450.90	0.85
445.65	0.05	448.30	0.27	450.95	0.86
445.70	0.06	448.35	0.27	451.00	0.87
445.75	0.07	448.40	0.28	451.05	0.88
445.80	0.08	448.45	0.28	451.10	0.89
445.85	0.09	448.50	0.28	451.15	0.90
445.90	0.10	448.55	0.28	451.20	0.91
445.95	0.10	448.60	0.29	451.25	0.92
446.00	0.11	448.65	0.29	451.30	0.93
446.05	0.12	448.70	0.29	451.35	0.94
446.10	0.12	448.75	0.29	451.40	0.95
446.15	0.13	448.80	0.30	451.45	0.96
446.20	0.13	448.85	0.30	451.50	0.97
446.25	0.14	448.90	0.30	451.55	0.98
446.30	0.14	448.95	0.30	451.60	0.99
446.35	0.15	449.00	0.30	451.65	1.00
446.40	0.15	449.05	0.31	451.70	**1.01**
446.45	0.16	449.10	0.31		
446.50	0.16	449.15	0.31		
446.55	0.16	449.20	0.31		
446.60	0.17	449.25	0.32		
446.65	0.17	449.30	0.32		
446.70	0.18	449.35	0.32		
446.75	0.18	449.40	0.32		
446.80	0.18	449.45	0.32		
446.85	0.19	449.50	0.33		
446.90	0.19	449.55	0.33		
446.95	0.19	449.60	0.35		
447.00	0.20	449.65	0.38		
447.05	0.20	449.70	0.42		
447.10	0.20	449.75	0.46		
447.15	0.21	449.80	0.49		
447.20	0.21	449.85	0.52		
447.25	0.21	449.90	0.55		
447.30	0.22	449.95	0.57		
447.35	0.22	450.00	0.59		
447.40	0.22	450.05	0.61		
447.45	0.23	450.10	0.63		
447.50	0.23	450.15	0.64		
447.55	0.23	450.20	0.66		
447.60	0.23	450.25	0.68		
447.65	0.24	450.30	0.69		
447.70	0.24	450.35	0.71		
447.75	0.24	450.40	0.72		
447.80	0.25	450.45	0.74		
447.85	0.25	450.50	0.75		
447.90	0.25	450.55	0.76		
447.95	0.25	450.60	0.77		
448.00	0.26	450.65	0.79		
448.05	0.26	450.70	0.80		

Stage-Area-Storage for Pond 28P: PP-1

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
445.45	0.000	448.10	0.061	450.75	0.137
445.50	0.001	448.15	0.063	450.80	0.138
445.55	0.002	448.20	0.064	450.85	0.139
445.60	0.003	448.25	0.066	450.90	0.140
445.65	0.004	448.30	0.067	450.95	0.141
445.70	0.005	448.35	0.069	451.00	0.142
445.75	0.006	448.40	0.071	451.05	0.143
445.80	0.007	448.45	0.072	451.10	0.144
445.85	0.008	448.50	0.074	451.15	0.145
445.90	0.009	448.55	0.075	451.20	0.146
445.95	0.010	448.60	0.077	451.25	0.147
446.00	0.011	448.65	0.078	451.30	0.148
446.05	0.012	448.70	0.080	451.35	0.149
446.10	0.013	448.75	0.082	451.40	0.149
446.15	0.014	448.80	0.083	451.45	0.150
446.20	0.015	448.85	0.085	451.50	0.151
446.25	0.015	448.90	0.086	451.55	0.152
446.30	0.016	448.95	0.088	451.60	0.153
446.35	0.017	449.00	0.090	451.65	0.154
446.40	0.018	449.05	0.091	451.70	**0.155**
446.45	0.019	449.10	0.093		
446.50	0.020	449.15	0.094		
446.55	0.021	449.20	0.096		
446.60	0.022	449.25	0.097		
446.65	0.023	449.30	0.099		
446.70	0.023	449.35	0.100		
446.75	0.024	449.40	0.102		
446.80	0.025	449.45	0.103		
446.85	0.026	449.50	0.105		
446.90	0.028	449.55	0.107		
446.95	0.029	449.60	0.108		
447.00	0.030	449.65	0.110		
447.05	0.031	449.70	0.111		
447.10	0.032	449.75	0.112		
447.15	0.034	449.80	0.114		
447.20	0.035	449.85	0.115		
447.25	0.036	449.90	0.117		
447.30	0.038	449.95	0.118		
447.35	0.039	450.00	0.120		
447.40	0.040	450.05	0.121		
447.45	0.042	450.10	0.122		
447.50	0.043	450.15	0.124		
447.55	0.045	450.20	0.125		
447.60	0.046	450.25	0.126		
447.65	0.048	450.30	0.128		
447.70	0.049	450.35	0.129		
447.75	0.051	450.40	0.130		
447.80	0.052	450.45	0.131		
447.85	0.054	450.50	0.133		
447.90	0.055	450.55	0.134		
447.95	0.057	450.60	0.135		
448.00	0.058	450.65	0.136		
448.05	0.060	450.70	0.137		

Summary for Pond 29P: PP-2

Inflow Area = 1.060 ac, 68.87% Impervious, Inflow Depth = 2.61" for 2-Year-2020 event
Inflow = 0.81 cfs @ 12.08 hrs, Volume= 0.230 af
Outflow = 0.27 cfs @ 14.88 hrs, Volume= 0.230 af, Atten= 67%, Lag= 168.1 min
Primary = 0.27 cfs @ 14.88 hrs, Volume= 0.230 af
Routed to Link 25L : PDA-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 445.74' @ 14.88 hrs Surf.Area= 0.048 ac Storage= 0.066 af

Plug-Flow detention time= 124.3 min calculated for 0.230 af (100% of inflow)
Center-of-Mass det. time= 123.9 min (958.7 - 834.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	442.94'	0.108 af	**18.00'W x 116.17'L x 8.17'H Field A** 0.392 af Overall - 0.121 af Embedded = 0.271 af x 40.0% Voids
#2A	443.94'	0.102 af	**ADS N-12 60"** x 6 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf Row Length Adjustment= +42.00' x 19.30 sf x 2 rows 13.17' Header x 19.30 sf x 2 = 508.3 cf Inside
		0.210 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	442.94'	**15.0" Round Culvert** L= 23.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 442.94' / 442.87' S= 0.0030 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	442.94'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	446.75'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.27 cfs @ 14.88 hrs HW=445.74' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.27 cfs of 6.88 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.27 cfs @ 7.91 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 29P: PP-2 - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf
Row Length Adjustment= +42.00' x 19.30 sf x 2 rows

67.0" Wide + 24.0" Spacing = 91.0" C-C Row Spacing

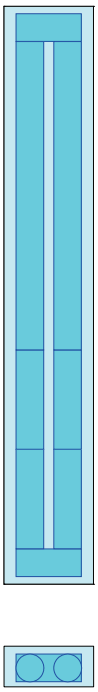
3 Chambers/Row x 20.00' Long +42.00' Row Adjustment +5.58' Header x 2 = 113.17' Row Length +18.0" End Stone x 2 = 116.17' Base Length
2 Rows x 67.0" Wide + 24.0" Spacing x 1 + 29.0" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 67.0" Chamber Height + 19.0" Stone Cover = 8.17' Field Height

6 Chambers x 386.0 cf +42.00' Row Adjustment x 19.30 sf x 2 Rows + 13.17' Header x 19.30 sf x 2 = 4,445.5 cf Chamber Storage
6 Chambers x 458.4 cf +42.00' Row Adjustment x 22.92 sf x 2 Rows + 13.17' Header x 22.92 sf x 2 = 5,279.5 cf Displacement

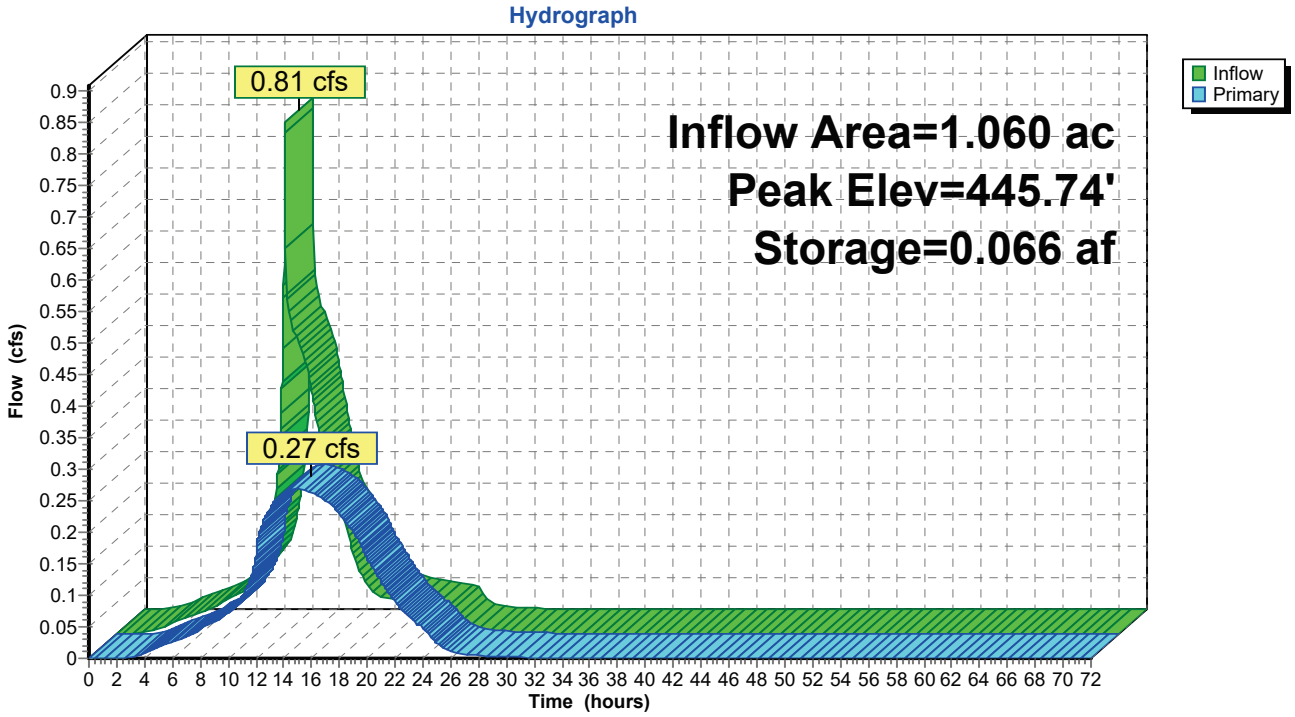
17,078.6 cf Field - 5,279.5 cf Chambers = 11,799.2 cf Stone x 40.0% Voids = 4,719.7 cf Stone Storage

Chamber Storage + Stone Storage = 9,165.1 cf = 0.210 af
Overall Storage Efficiency = 53.7%
Overall System Size = 116.17' x 18.00' x 8.17'

6 Chambers
632.5 cy Field
437.0 cy Stone



Pond 29P: PP-2


Hydrograph
0.81 cfs
0.27 cfs
Inflow Area=1.060 ac
Peak Elev=445.74'
Storage=0.066 af
Inflow
Primary
Flow (cfs)
Time (hours)
0 0.05 0.1 0.15 0.2 0.25 0.3 0.35 0.4 0.45 0.5 0.55 0.6 0.65 0.7 0.75 0.8 0.85 0.9
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72

Stage-Discharge for Pond 29P: PP-2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
442.94	0.00	445.59	0.26	448.24	2.48	450.89	4.19
442.99	0.00	445.64	0.26	448.29	2.52	450.94	4.21
443.04	0.02	445.69	0.27	448.34	2.57	450.99	4.24
443.09	0.03	445.74	0.27	448.39	2.61	451.04	4.26
443.14	0.05	445.79	0.27	448.44	2.65	451.09	**4.29**
443.19	0.06	445.84	0.27	448.49	2.69		
443.24	0.07	445.89	0.28	448.54	2.73		
443.29	0.08	445.94	0.28	448.59	2.77		
443.34	0.09	445.99	0.28	448.64	2.81		
443.39	0.10	446.04	0.28	448.69	2.85		
443.44	0.10	446.09	0.29	448.74	2.89		
443.49	0.11	446.14	0.29	448.79	2.92		
443.54	0.12	446.19	0.29	448.84	2.96		
443.59	0.12	446.24	0.29	448.89	3.00		
443.64	0.13	446.29	0.30	448.94	3.03		
443.69	0.13	446.34	0.30	448.99	3.07		
443.74	0.14	446.39	0.30	449.04	3.10		
443.79	0.14	446.44	0.30	449.09	3.14		
443.84	0.15	446.49	0.30	449.14	3.17		
443.89	0.15	446.54	0.31	449.19	3.21		
443.94	0.16	446.59	0.31	449.24	3.24		
443.99	0.16	446.64	0.31	449.29	3.27		
444.04	0.16	446.69	0.31	449.34	3.30		
444.09	0.17	446.74	0.32	449.39	3.34		
444.14	0.17	446.79	0.33	449.44	3.37		
444.19	0.18	446.84	0.37	449.49	3.40		
444.24	0.18	446.89	0.44	449.54	3.43		
444.29	0.18	446.94	0.53	449.59	3.46		
444.34	0.19	446.99	0.64	449.64	3.49		
444.39	0.19	447.04	0.76	449.69	3.52		
444.44	0.19	447.09	0.89	449.74	3.55		
444.49	0.20	447.14	1.03	449.79	3.58		
444.54	0.20	447.19	1.16	449.84	3.61		
444.59	0.20	447.24	1.27	449.89	3.64		
444.64	0.21	447.29	1.36	449.94	3.67		
444.69	0.21	447.34	1.44	449.99	3.70		
444.74	0.21	447.39	1.52	450.04	3.73		
444.79	0.22	447.44	1.60	450.09	3.76		
444.84	0.22	447.49	1.67	450.14	3.79		
444.89	0.22	447.54	1.74	450.19	3.82		
444.94	0.23	447.59	1.80	450.24	3.84		
444.99	0.23	447.64	1.86	450.29	3.87		
445.04	0.23	447.69	1.92	450.34	3.90		
445.09	0.23	447.74	1.98	450.39	3.93		
445.14	0.24	447.79	2.04	450.44	3.95		
445.19	0.24	447.84	2.09	450.49	3.98		
445.24	0.24	447.89	2.15	450.54	4.01		
445.29	0.25	447.94	2.20	450.59	4.03		
445.34	0.25	447.99	2.25	450.64	4.06		
445.39	0.25	448.04	2.30	450.69	4.09		
445.44	0.25	448.09	2.34	450.74	4.11		
445.49	0.26	448.14	2.39	450.79	4.14		
445.54	0.26	448.19	2.43	450.84	4.16		

Stage-Area-Storage for Pond 29P: PP-2

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
442.94	0.000	448.24	0.150
443.04	0.002	448.34	0.153
443.14	0.004	448.44	0.156
443.24	0.006	448.54	0.159
443.34	0.008	448.64	0.161
443.44	0.010	448.74	0.164
443.54	0.012	448.84	0.167
443.64	0.013	448.94	0.169
443.74	0.015	449.04	0.172
443.84	0.017	449.14	0.174
443.94	0.019	449.24	0.176
444.04	0.021	449.34	0.177
444.14	0.022	449.44	0.179
444.24	0.024	449.54	0.180
444.34	0.026	449.64	0.182
444.44	0.028	449.74	0.184
444.54	0.030	449.84	0.186
444.64	0.033	449.94	0.188
444.74	0.035	450.04	0.190
444.84	0.038	450.14	0.192
444.94	0.041	450.24	0.194
445.04	0.044	450.34	0.196
445.14	0.047	450.44	0.198
445.24	0.050	450.54	0.200
445.34	0.053	450.64	0.201
445.44	0.056	450.74	0.203
445.54	0.059	450.84	0.205
445.64	0.063	450.94	0.207
445.74	0.066	451.04	**0.209**
445.84	0.069		
445.94	0.073		
446.04	0.076		
446.14	0.079		
446.24	0.083		
446.34	0.086		
446.44	0.090		
446.54	0.093		
446.64	0.096		
446.74	0.100		
446.84	0.103		
446.94	0.107		
447.04	0.110		
447.14	0.114		
447.24	0.117		
447.34	0.120		
447.44	0.124		
447.54	0.127		
447.64	0.130		
447.74	0.134		
447.84	0.137		
447.94	0.140		
448.04	0.143		
448.14	0.147		

Summary for Pond 30P: PP-3

Inflow Area = 0.550 ac, 61.82% Impervious, Inflow Depth = 2.47" for 2-Year-2020 event
Inflow = 1.43 cfs @ 12.09 hrs, Volume= 0.113 af
Outflow = 0.26 cfs @ 12.53 hrs, Volume= 0.113 af, Atten= 82%, Lag= 26.8 min
Primary = 0.26 cfs @ 12.53 hrs, Volume= 0.113 af
Routed to Pond 29P : PP-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 448.10' @ 12.53 hrs Surf.Area= 0.026 ac Storage= 0.033 af

Plug-Flow detention time= 57.0 min calculated for 0.113 af (100% of inflow)
Center-of-Mass det. time= 57.4 min (832.8 - 775.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.44'	0.078 af	**18.00'W x 62.17'L x 10.08'H Field A** 0.259 af Overall - 0.064 af Embedded = 0.195 af x 40.0% Voids
#2A	446.44'	0.054 af	**ADS N-12 60"** x 4 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf Row Length Adjustment= +8.00' x 19.30 sf x 2 rows 13.17' Header x 19.30 sf x 2 = 508.3 cf Inside
		0.132 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	445.44'	**15.0" Round Culvert** L= 19.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 445.44' / 445.38' S= 0.0031 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	445.44'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	450.44'	**5.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	455.00'	**6.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.26 cfs @ 12.53 hrs HW=448.10' TW=444.80' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.26 cfs of 6.65 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.26 cfs @ 7.69 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 30P: PP-3 - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf
Row Length Adjustment= +8.00' x 19.30 sf x 2 rows

67.0" Wide + 24.0" Spacing = 91.0" C-C Row Spacing

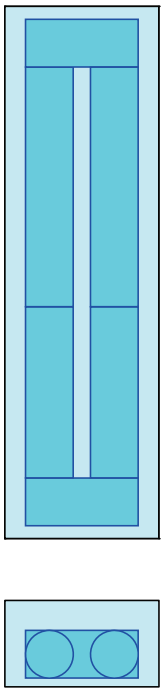
2 Chambers/Row x 20.00' Long +8.00' Row Adjustment +5.58' Header x 2 = 59.17' Row Length +18.0" End Stone x 2 = 62.17' Base Length
2 Rows x 67.0" Wide + 24.0" Spacing x 1 + 29.0" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 67.0" Chamber Height + 42.0" Stone Cover = 10.08' Field Height

4 Chambers x 386.0 cf +8.00' Row Adjustment x 19.30 sf x 2 Rows + 13.17' Header x 19.30 sf x 2 = 2,361.1 cf Chamber Storage
4 Chambers x 458.4 cf +8.00' Row Adjustment x 22.92 sf x 2 Rows + 13.17' Header x 22.92 sf x 2 = 2,804.0 cf Displacement

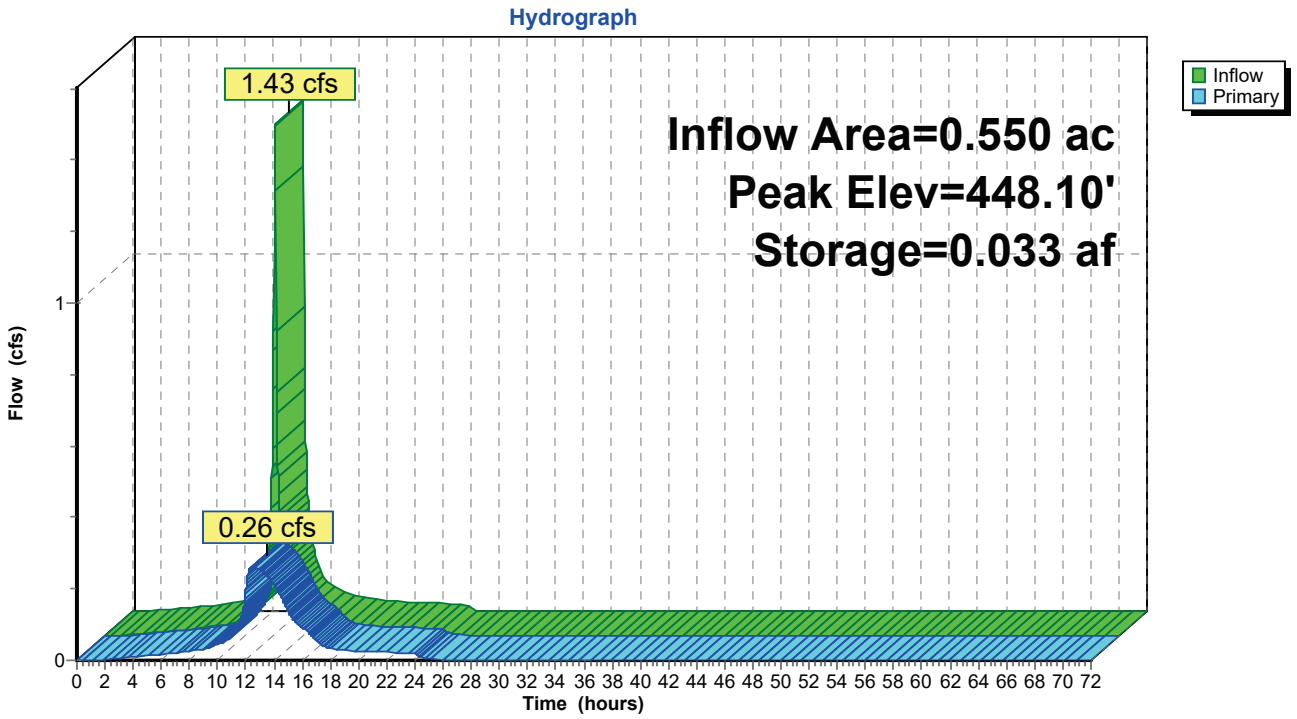
11,284.6 cf Field - 2,804.0 cf Chambers = 8,480.6 cf Stone x 40.0% Voids = 3,392.2 cf Stone Storage

Chamber Storage + Stone Storage = 5,753.3 cf = 0.132 af
Overall Storage Efficiency = 51.0%
Overall System Size = 62.17' x 18.00' x 10.08'

4 Chambers
417.9 cy Field
314.1 cy Stone



Pond 30P: PP-3


Hydrograph
1.43 cfs
0.26 cfs
Inflow Area=0.550 ac
Peak Elev=448.10'
Storage=0.033 af
Inflow
Primary
Flow (cfs)
0
1
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 30P: PP-3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
445.44	0.00	448.09	0.26	450.74	0.77	453.39	2.63
445.49	0.00	448.14	0.26	450.79	0.87	453.44	2.66
445.54	0.02	448.19	0.27	450.84	0.96	453.49	2.68
445.59	0.03	448.24	0.27	450.89	1.03	453.54	2.70
445.64	0.05	448.29	0.27	450.94	1.09	453.59	2.72
445.69	0.06	448.34	0.27	450.99	1.15	453.64	2.74
445.74	0.07	448.39	0.28	451.04	1.21	453.69	2.76
445.79	0.08	448.44	0.28	451.09	1.26	453.74	2.78
445.84	0.09	448.49	0.28	451.14	1.31	453.79	2.80
445.89	0.10	448.54	0.28	451.19	1.36	453.84	2.82
445.94	0.10	448.59	0.29	451.24	1.40	453.89	2.84
445.99	0.11	448.64	0.29	451.29	1.45	453.94	2.86
446.04	0.12	448.69	0.29	451.34	1.49	453.99	2.88
446.09	0.12	448.74	0.29	451.39	1.53	454.04	2.90
446.14	0.13	448.79	0.30	451.44	1.57	454.09	2.92
446.19	0.13	448.84	0.30	451.49	1.60	454.14	2.93
446.24	0.14	448.89	0.30	451.54	1.64	454.19	2.95
446.29	0.14	448.94	0.30	451.59	1.68	454.24	2.97
446.34	0.15	448.99	0.30	451.64	1.71	454.29	2.99
446.39	0.15	449.04	0.31	451.69	1.75	454.34	3.01
446.44	0.16	449.09	0.31	451.74	1.78	454.39	3.03
446.49	0.16	449.14	0.31	451.79	1.81	454.44	3.05
446.54	0.16	449.19	0.31	451.84	1.85	454.49	3.06
446.59	0.17	449.24	0.32	451.89	1.88	454.54	3.08
446.64	0.17	449.29	0.32	451.94	1.91	454.59	3.10
446.69	0.18	449.34	0.32	451.99	1.94	454.64	3.12
446.74	0.18	449.39	0.32	452.04	1.97	454.69	3.14
446.79	0.18	449.44	0.32	452.09	2.00	454.74	3.15
446.84	0.19	449.49	0.33	452.14	2.03	454.79	3.17
446.89	0.19	449.54	0.33	452.19	2.05	454.84	3.19
446.94	0.19	449.59	0.33	452.24	2.08	454.89	3.21
446.99	0.20	449.64	0.33	452.29	2.11	454.94	3.22
447.04	0.20	449.69	0.33	452.34	2.14	454.99	3.24
447.09	0.20	449.74	0.34	452.39	2.16	455.04	3.39
447.14	0.21	449.79	0.34	452.44	2.19	455.09	3.73
447.19	0.21	449.84	0.34	452.49	2.21	455.14	4.17
447.24	0.21	449.89	0.34	452.54	2.24	455.19	4.70
447.29	0.22	449.94	0.34	452.59	2.27	455.24	5.32
447.34	0.22	449.99	0.35	452.64	2.29	455.29	6.02
447.39	0.22	450.04	0.35	452.69	2.31	455.34	6.79
447.44	0.23	450.09	0.35	452.74	2.34	455.39	7.63
447.49	0.23	450.14	0.35	452.79	2.36	455.44	8.56
447.54	0.23	450.19	0.35	452.84	2.39	455.49	**9.56**
447.59	0.23	450.24	0.36	452.89	2.41		
447.64	0.24	450.29	0.36	452.94	2.43		
447.69	0.24	450.34	0.36	452.99	2.46		
447.74	0.24	450.39	0.36	453.04	2.48		
447.79	0.25	450.44	0.36	453.09	2.50		
447.84	0.25	450.49	0.38	453.14	2.53		
447.89	0.25	450.54	0.42	453.19	2.55		
447.94	0.25	450.59	0.49	453.24	2.57		
447.99	0.26	450.64	0.57	453.29	2.59		
448.04	0.26	450.69	0.66	453.34	2.61		

Stage-Area-Storage for Pond 30P: PP-3

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
445.44	0.000	450.74	0.080
445.54	0.001	450.84	0.082
445.64	0.002	450.94	0.083
445.74	0.003	451.04	0.085
445.84	0.004	451.14	0.086
445.94	0.005	451.24	0.088
446.04	0.006	451.34	0.089
446.14	0.007	451.44	0.090
446.24	0.008	451.54	0.092
446.34	0.009	451.64	0.093
446.44	0.010	451.74	0.094
446.54	0.011	451.84	0.094
446.64	0.012	451.94	0.095
446.74	0.013	452.04	0.096
446.84	0.014	452.14	0.097
446.94	0.015	452.24	0.098
447.04	0.016	452.34	0.099
447.14	0.018	452.44	0.100
447.24	0.019	452.54	0.101
447.34	0.020	452.64	0.102
447.44	0.022	452.74	0.103
447.54	0.024	452.84	0.104
447.64	0.025	452.94	0.106
447.74	0.027	453.04	0.107
447.84	0.028	453.14	0.108
447.94	0.030	453.24	0.109
448.04	0.032	453.34	0.110
448.14	0.034	453.44	0.111
448.24	0.035	453.54	0.112
448.34	0.037	453.64	0.113
448.44	0.039	453.74	0.114
448.54	0.041	453.84	0.115
448.64	0.042	453.94	0.116
448.74	0.044	454.04	0.117
448.84	0.046	454.14	0.118
448.94	0.048	454.24	0.119
449.04	0.050	454.34	0.120
449.14	0.052	454.44	0.121
449.24	0.053	454.54	0.122
449.34	0.055	454.64	0.123
449.44	0.057	454.74	0.124
449.54	0.059	454.84	0.125
449.64	0.061	454.94	0.126
449.74	0.062	455.04	0.127
449.84	0.064	455.14	0.128
449.94	0.066	455.24	0.129
450.04	0.068	455.34	0.130
450.14	0.070	455.44	**0.131**
450.24	0.071		
450.34	0.073		
450.44	0.075		
450.54	0.077		
450.64	0.078		

Summary for Pond 31P: PP-4

Inflow Area = 0.200 ac, 90.00% Impervious, Inflow Depth = 3.03" for 2-Year-2020 event
Inflow = 0.67 cfs @ 12.09 hrs, Volume= 0.051 af
Outflow = 0.20 cfs @ 12.25 hrs, Volume= 0.051 af, Atten= 70%, Lag= 9.5 min
Primary = 0.20 cfs @ 12.25 hrs, Volume= 0.051 af
Routed to Pond 28P : PP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 453.59' @ 12.25 hrs Surf.Area= 0.014 ac Storage= 0.010 af

Plug-Flow detention time= 25.4 min calculated for 0.051 af (100% of inflow)
Center-of-Mass det. time= 25.8 min (783.9 - 758.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	451.95'	0.023 af	**18.00'W x 33.00'L x 5.83'H Field A** 0.080 af Overall - 0.022 af Embedded = 0.058 af x 40.0% Voids
#2A	452.45'	0.018 af	**ADS N-12 48"** x 2 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf Row Length Adjustment= +1.00' x 12.40 sf x 2 rows 11.08' Header x 12.40 sf x 2 = 274.9 cf Inside
		0.041 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	449.63'	**15.0" Round Culvert** L= 29.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 449.63' / 449.55' S= 0.0028 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	451.95'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	453.95'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	457.00'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.20 cfs @ 12.25 hrs HW=453.59' TW=446.39' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.20 cfs of 8.51 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.20 cfs @ 5.96 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 31P: PP-4 - Chamber Wizard Field A

Chamber Model = ADS N-12 48" (ADS N-12® Pipe)
Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf
Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf
Row Length Adjustment= +1.00' x 12.40 sf x 2 rows

54.0" Wide + 25.0" Spacing = 79.0" C-C Row Spacing

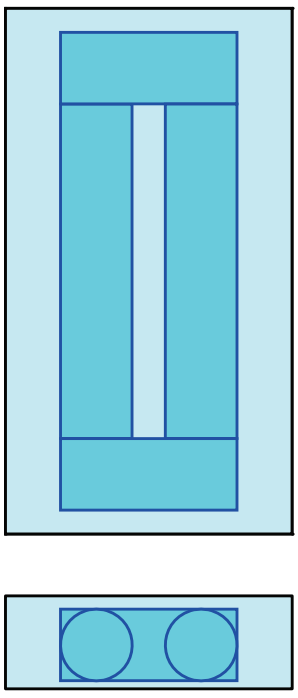
1 Chambers/Row x 20.00' Long +1.00' Row Adjustment +4.50' Header x 2 = 30.00' Row Length +18.0" End Stone x 2 = 33.00' Base Length
2 Rows x 54.0" Wide + 25.0" Spacing x 1 + 41.5" Side Stone x 2 = 18.00' Base Width
6.0" Stone Base + 54.0" Chamber Height + 10.0" Stone Cover = 5.83' Field Height

2 Chambers x 248.0 cf +1.00' Row Adjustment x 12.40 sf x 2 Rows + 11.08' Header x 12.40 sf x 2 = 795.7 cf Chamber Storage
2 Chambers x 297.0 cf +1.00' Row Adjustment x 14.85 sf x 2 Rows + 11.08' Header x 14.85 sf x 2 = 952.8 cf Displacement

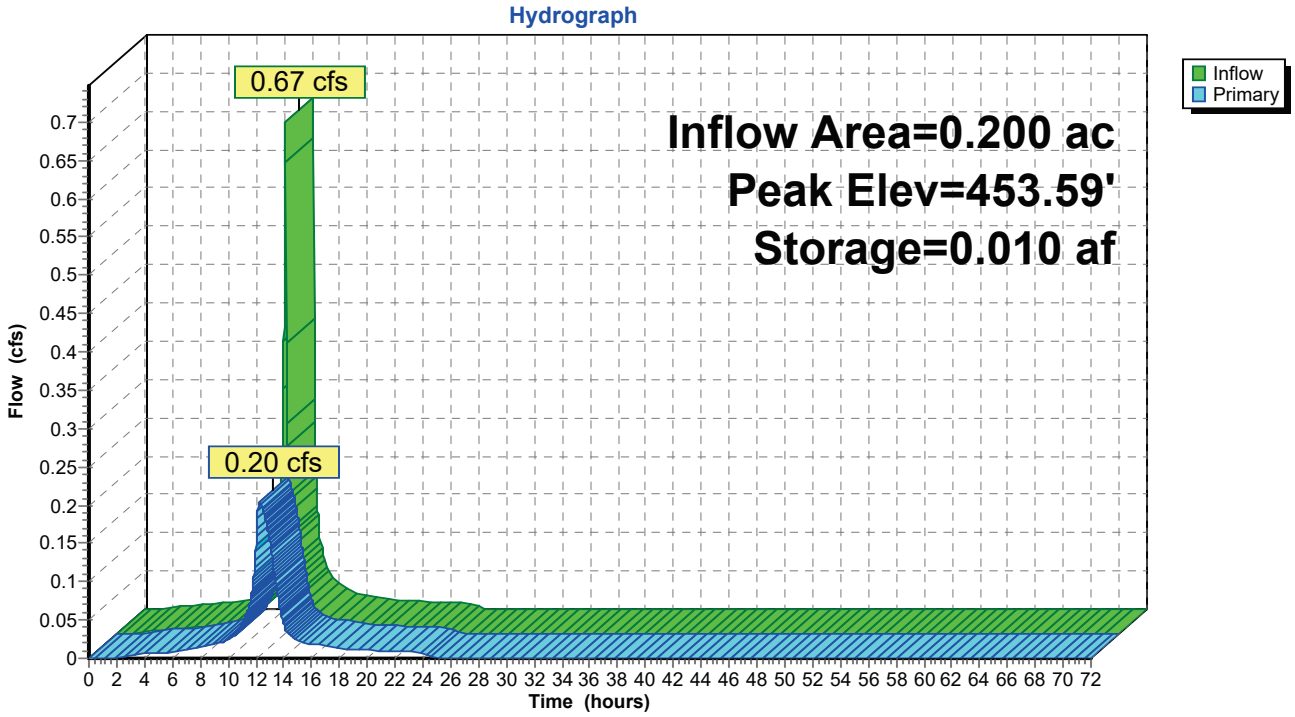
3,465.1 cf Field - 952.8 cf Chambers = 2,512.3 cf Stone x 40.0% Voids = 1,004.9 cf Stone Storage

Chamber Storage + Stone Storage = 1,800.6 cf = 0.041 af
Overall Storage Efficiency = 52.0%
Overall System Size = 33.00' x 18.00' x 5.83'

2 Chambers
128.3 cy Field
93.0 cy Stone



Pond 31P: PP-4


Hydrograph
0.67 cfs
0.20 cfs
Inflow Area=0.200 ac
Peak Elev=453.59'
Storage=0.010 af
Inflow
Primary
Flow (cfs)
Time (hours)

Stage-Discharge for Pond 31P: PP-4

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
451.95	0.00	454.60	0.55	457.25	2.89
452.00	0.00	454.65	0.57	457.30	3.48
452.05	0.02	454.70	0.59	457.35	4.13
452.10	0.03	454.75	0.60	457.40	4.83
452.15	0.05	454.80	0.62	457.45	5.62
452.20	0.06	454.85	0.63	457.50	6.46
452.25	0.07	454.90	0.65	457.55	7.36
452.30	0.08	454.95	0.66	457.60	8.33
452.35	0.09	455.00	0.68	457.65	9.39
452.40	0.10	455.05	0.69	457.70	10.53
452.45	0.10	455.10	0.70	457.75	**11.73**
452.50	0.11	455.15	0.72		
452.55	0.12	455.20	0.73		
452.60	0.12	455.25	0.74		
452.65	0.13	455.30	0.75		
452.70	0.13	455.35	0.76		
452.75	0.14	455.40	0.78		
452.80	0.14	455.45	0.79		
452.85	0.15	455.50	0.80		
452.90	0.15	455.55	0.81		
452.95	0.16	455.60	0.82		
453.00	0.16	455.65	0.83		
453.05	0.16	455.70	0.84		
453.10	0.17	455.75	0.85		
453.15	0.17	455.80	0.86		
453.20	0.18	455.85	0.87		
453.25	0.18	455.90	0.88		
453.30	0.18	455.95	0.89		
453.35	0.19	456.00	0.90		
453.40	0.19	456.05	0.91		
453.45	0.19	456.10	0.92		
453.50	0.20	456.15	0.93		
453.55	0.20	456.20	0.94		
453.60	0.20	456.25	0.95		
453.65	0.21	456.30	0.96		
453.70	0.21	456.35	0.97		
453.75	0.21	456.40	0.98		
453.80	0.22	456.45	0.99		
453.85	0.22	456.50	0.99		
453.90	0.22	456.55	1.00		
453.95	0.23	456.60	1.01		
454.00	0.24	456.65	1.02		
454.05	0.26	456.70	1.03		
454.10	0.28	456.75	1.04		
454.15	0.32	456.80	1.05		
454.20	0.36	456.85	1.05		
454.25	0.40	456.90	1.06		
454.30	0.43	456.95	1.07		
454.35	0.45	457.00	1.08		
454.40	0.48	457.05	1.24		
454.45	0.50	457.10	1.54		
454.50	0.52	457.15	1.92		
454.55	0.54	457.20	2.36		

Stage-Area-Storage for Pond 31P: PP-4

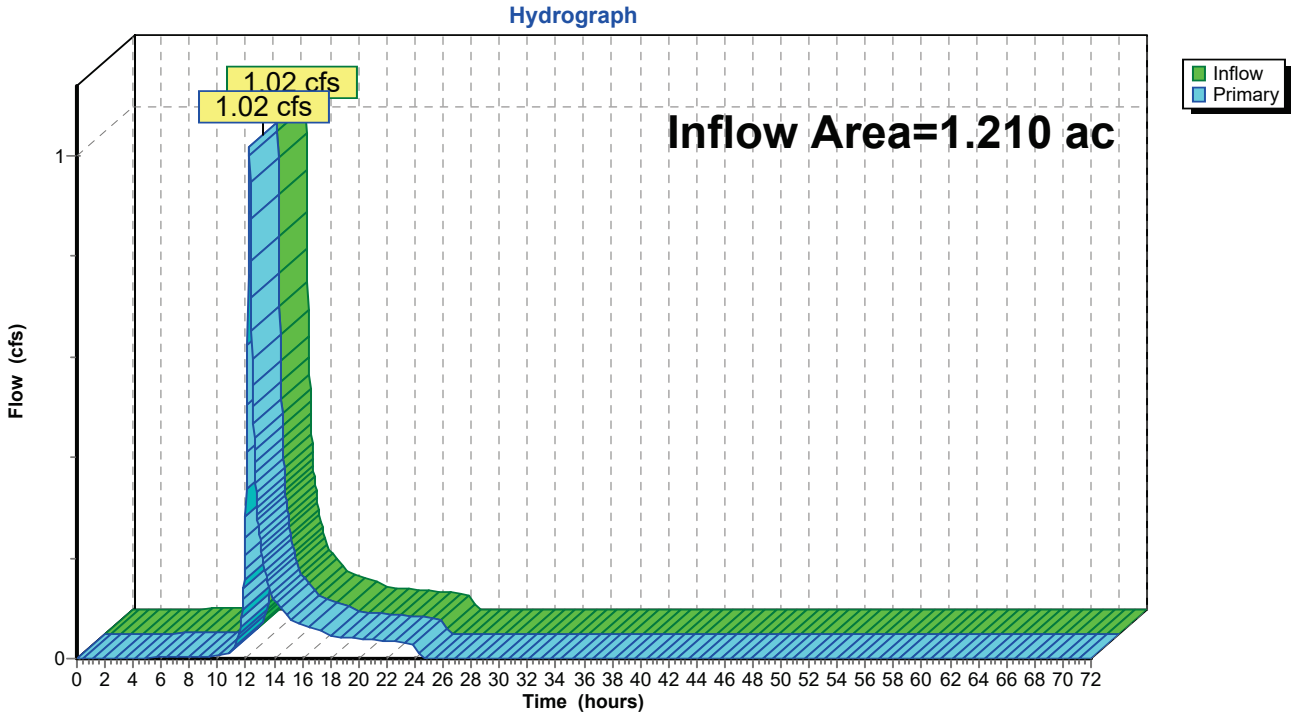
Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
451.95	0.000	454.60	0.019	457.25	0.038
452.00	0.000	454.65	0.019	457.30	0.039
452.05	0.001	454.70	0.020	457.35	0.039
452.10	0.001	454.75	0.020	457.40	0.039
452.15	0.001	454.80	0.021	457.45	0.040
452.20	0.001	454.85	0.021	457.50	0.040
452.25	0.002	454.90	0.022	457.55	0.040
452.30	0.002	454.95	0.022	457.60	0.040
452.35	0.002	455.00	0.022	457.65	0.041
452.40	0.002	455.05	0.023	457.70	0.041
452.45	0.003	455.10	0.023	457.75	**0.041**
452.50	0.003	455.15	0.024		
452.55	0.003	455.20	0.024		
452.60	0.003	455.25	0.025		
452.65	0.004	455.30	0.025		
452.70	0.004	455.35	0.025		
452.75	0.004	455.40	0.026		
452.80	0.004	455.45	0.026		
452.85	0.005	455.50	0.027		
452.90	0.005	455.55	0.027		
452.95	0.005	455.60	0.028		
453.00	0.006	455.65	0.028		
453.05	0.006	455.70	0.028		
453.10	0.006	455.75	0.029		
453.15	0.007	455.80	0.029		
453.20	0.007	455.85	0.030		
453.25	0.008	455.90	0.030		
453.30	0.008	455.95	0.030		
453.35	0.008	456.00	0.031		
453.40	0.009	456.05	0.031		
453.45	0.009	456.10	0.032		
453.50	0.009	456.15	0.032		
453.55	0.010	456.20	0.032		
453.60	0.010	456.25	0.033		
453.65	0.011	456.30	0.033		
453.70	0.011	456.35	0.033		
453.75	0.012	456.40	0.034		
453.80	0.012	456.45	0.034		
453.85	0.012	456.50	0.034		
453.90	0.013	456.55	0.035		
453.95	0.013	456.60	0.035		
454.00	0.014	456.65	0.035		
454.05	0.014	456.70	0.036		
454.10	0.014	456.75	0.036		
454.15	0.015	456.80	0.036		
454.20	0.015	456.85	0.036		
454.25	0.016	456.90	0.037		
454.30	0.016	456.95	0.037		
454.35	0.017	457.00	0.037		
454.40	0.017	457.05	0.037		
454.45	0.018	457.10	0.038		
454.50	0.018	457.15	0.038		
454.55	0.018	457.20	0.038		

Summary for Link 3L: EDA-1

Inflow Area = 1.210 ac, 3.31% Impervious, Inflow Depth = 1.06" for 2-Year-2020 event
Inflow = 1.02 cfs @ 12.25 hrs, Volume= 0.107 af
Primary = 1.02 cfs @ 12.25 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 3L: EDA-1

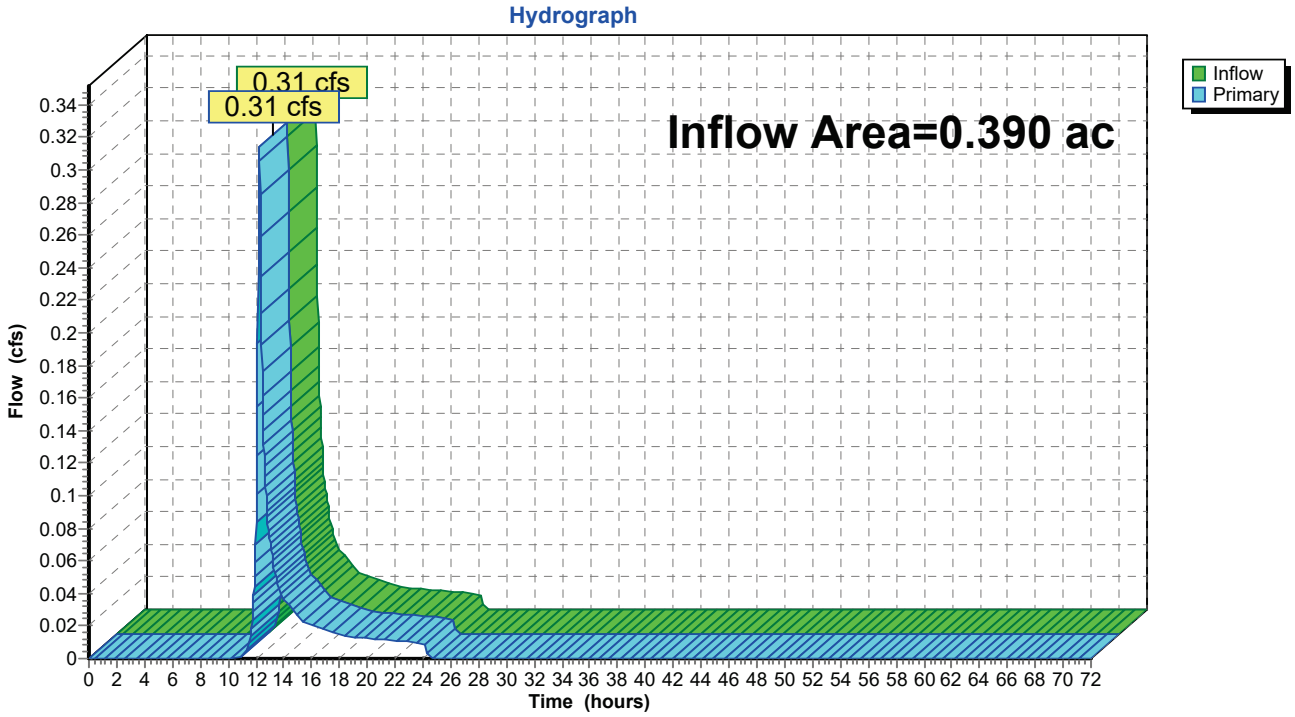


Summary for Link 6L: EDA-2

Inflow Area = 0.390 ac, 0.00% Impervious, Inflow Depth = 0.99" for 2-Year-2020 event
Inflow = 0.31 cfs @ 12.24 hrs, Volume= 0.032 af
Primary = 0.31 cfs @ 12.24 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 6L: EDA-2

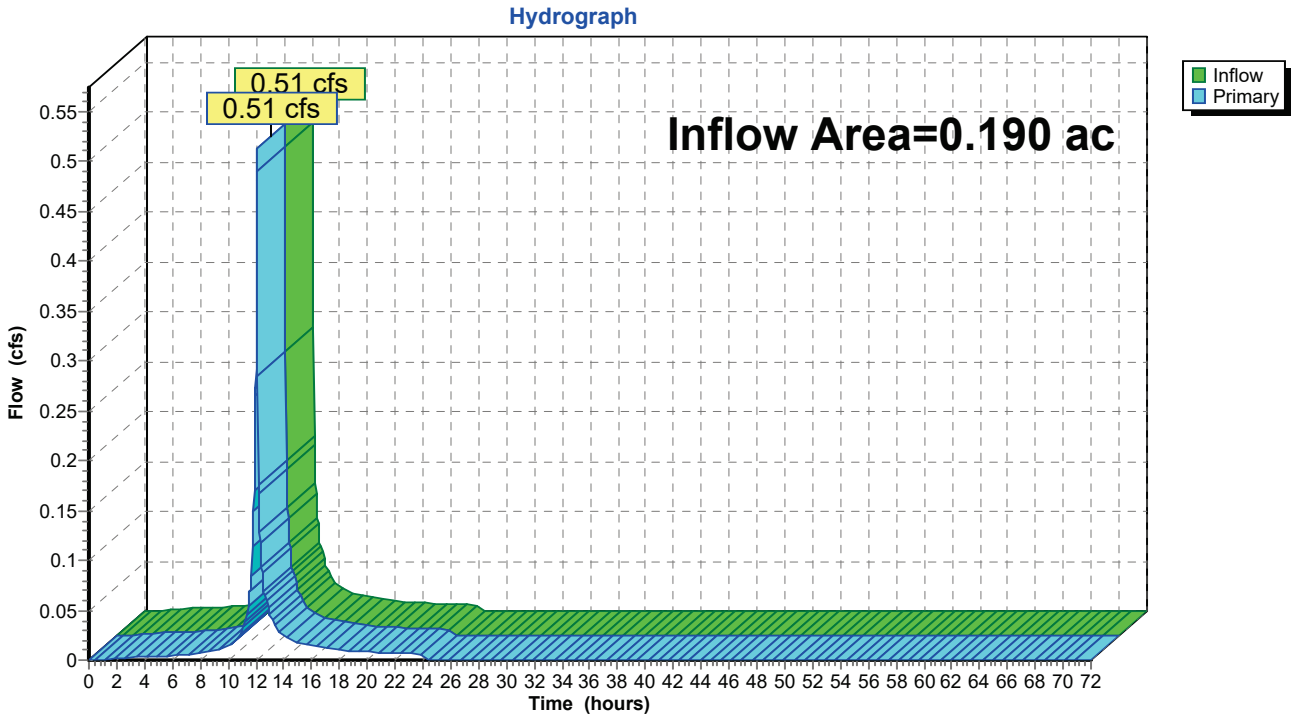


Summary for Link 9L: PDA-1A

Inflow Area = 0.190 ac, 47.37% Impervious, Inflow Depth = 2.17" for 2-Year-2020 event
Inflow = 0.51 cfs @ 12.08 hrs, Volume= 0.034 af
Primary = 0.51 cfs @ 12.08 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 28P : PP-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 9L: PDA-1A

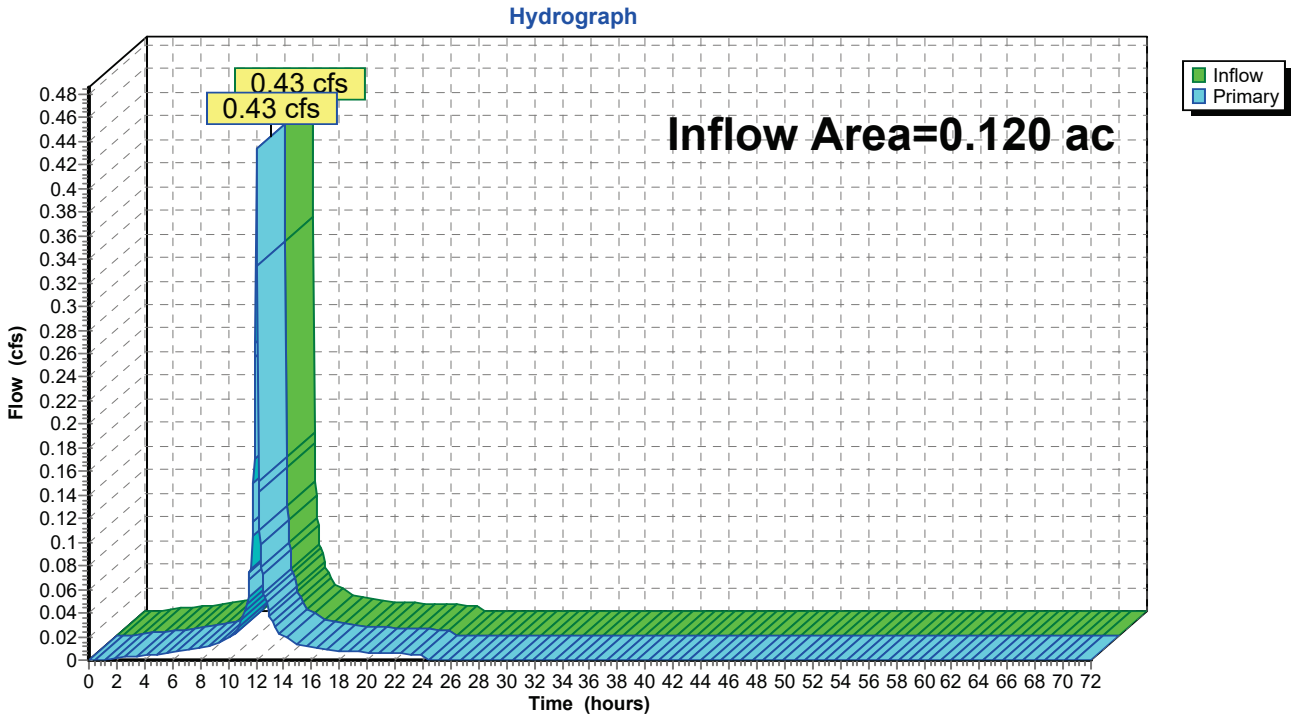


Summary for Link 12L: PDA-1B

Inflow Area = 0.120 ac,100.00% Impervious, Inflow Depth = 3.24" for 2-Year-2020 event
Inflow = 0.43 cfs @ 12.09 hrs, Volume= 0.032 af
Primary = 0.43 cfs @ 12.09 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 29P : PP-2

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 12L: PDA-1B

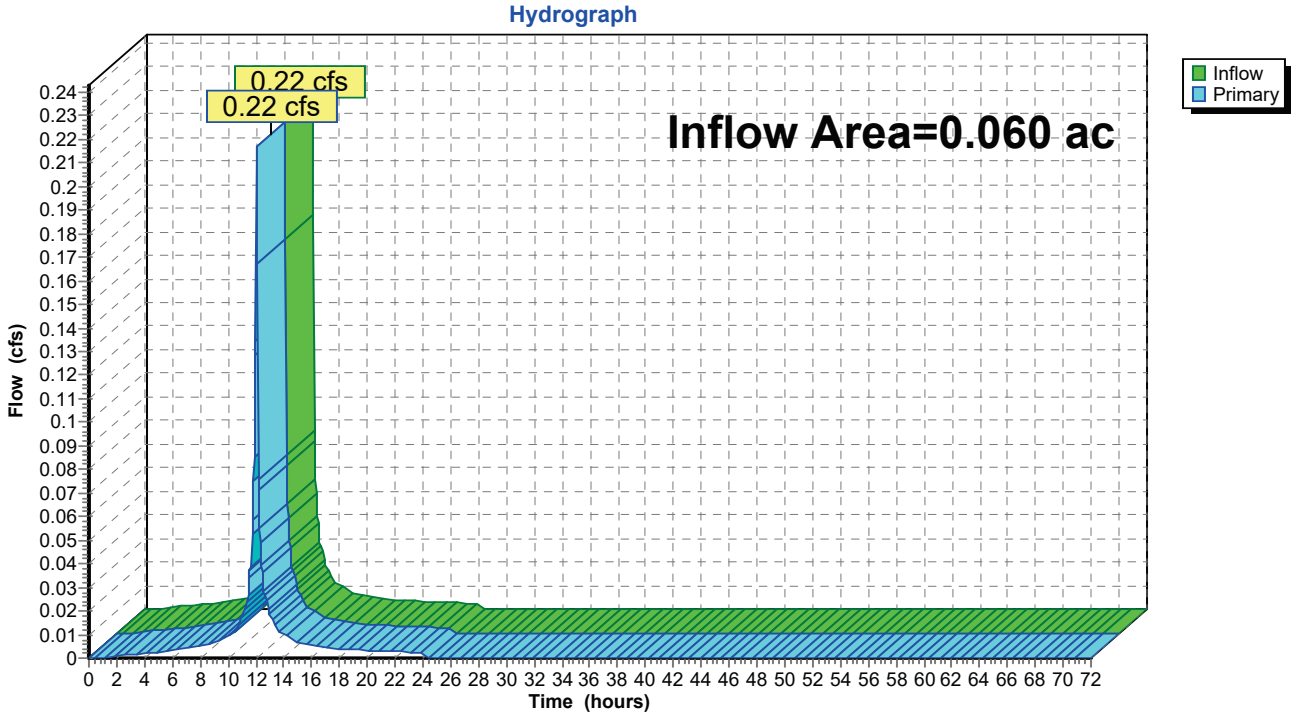


Summary for Link 15L: PDA-1C

Inflow Area = 0.060 ac,100.00% Impervious, Inflow Depth = 3.24" for 2-Year-2020 event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.016 af
Primary = 0.22 cfs @ 12.09 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 15L: PDA-1C

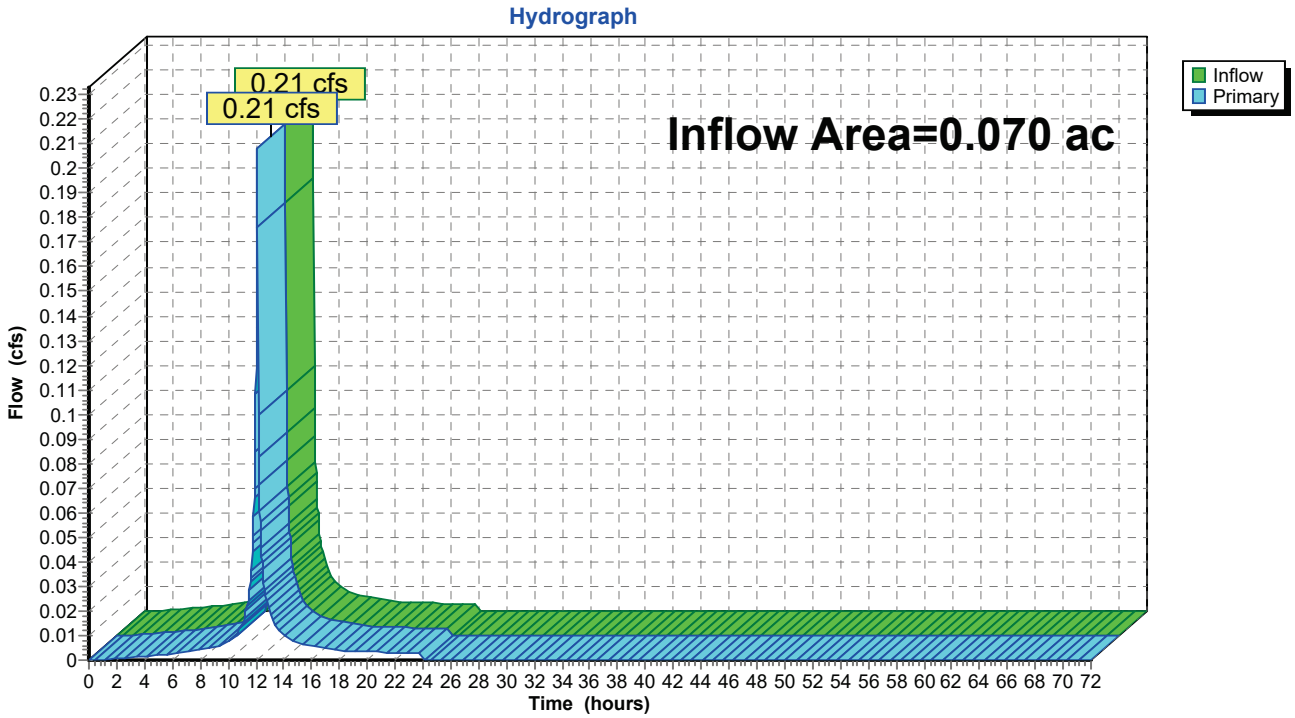


Summary for Link 18L: PDA-1D

Inflow Area = 0.070 ac, 71.43% Impervious, Inflow Depth = 2.66" for 2-Year-2020 event
Inflow = 0.21 cfs @ 12.11 hrs, Volume= 0.016 af
Primary = 0.21 cfs @ 12.11 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 31P : PP-4

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 18L: PDA-1D

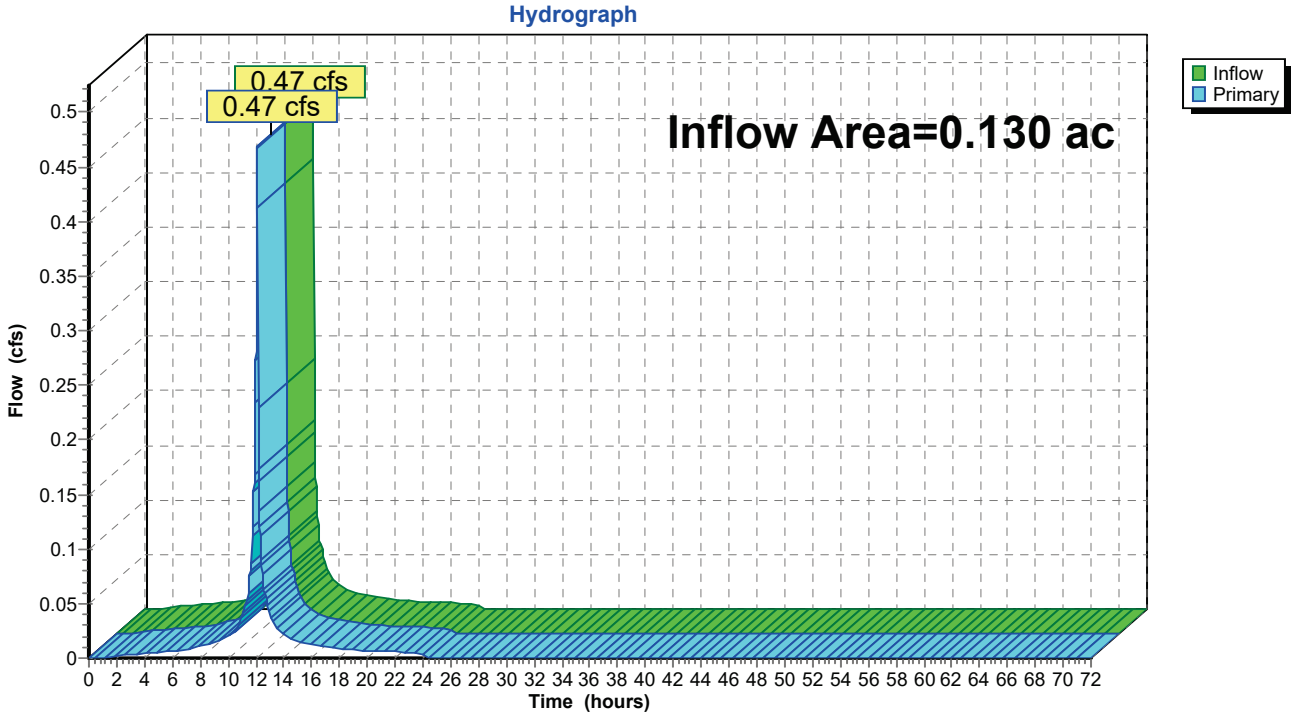


Summary for Link 21L: PDA-1E

Inflow Area = 0.130 ac,100.00% Impervious, Inflow Depth = 3.24" for 2-Year-2020 event
Inflow = 0.47 cfs @ 12.08 hrs, Volume= 0.035 af
Primary = 0.47 cfs @ 12.08 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 31P : PP-4

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 21L: PDA-1E

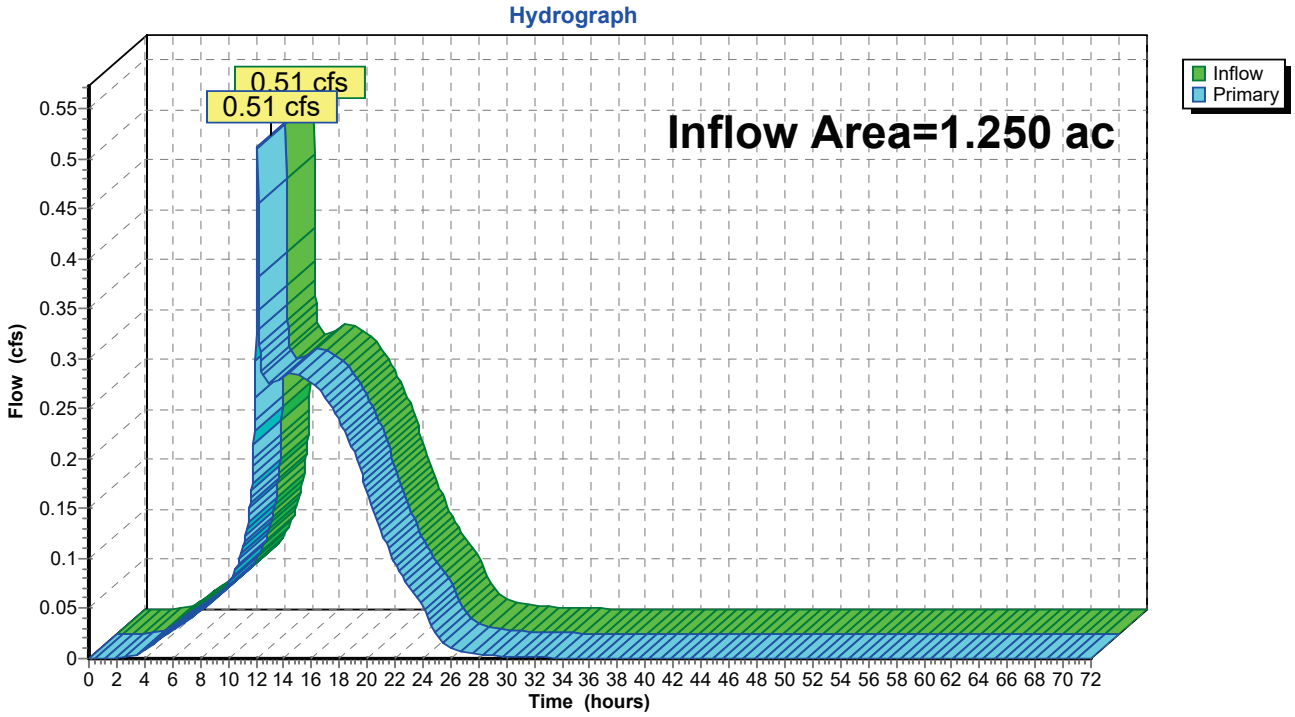


Summary for Link 25L: PDA-1

Inflow Area = 1.250 ac, 60.00% Impervious, Inflow Depth = 2.43" for 2-Year-2020 event
Inflow = 0.51 cfs @ 12.11 hrs, Volume= 0.253 af
Primary = 0.51 cfs @ 12.11 hrs, Volume= 0.253 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 25L: PDA-1

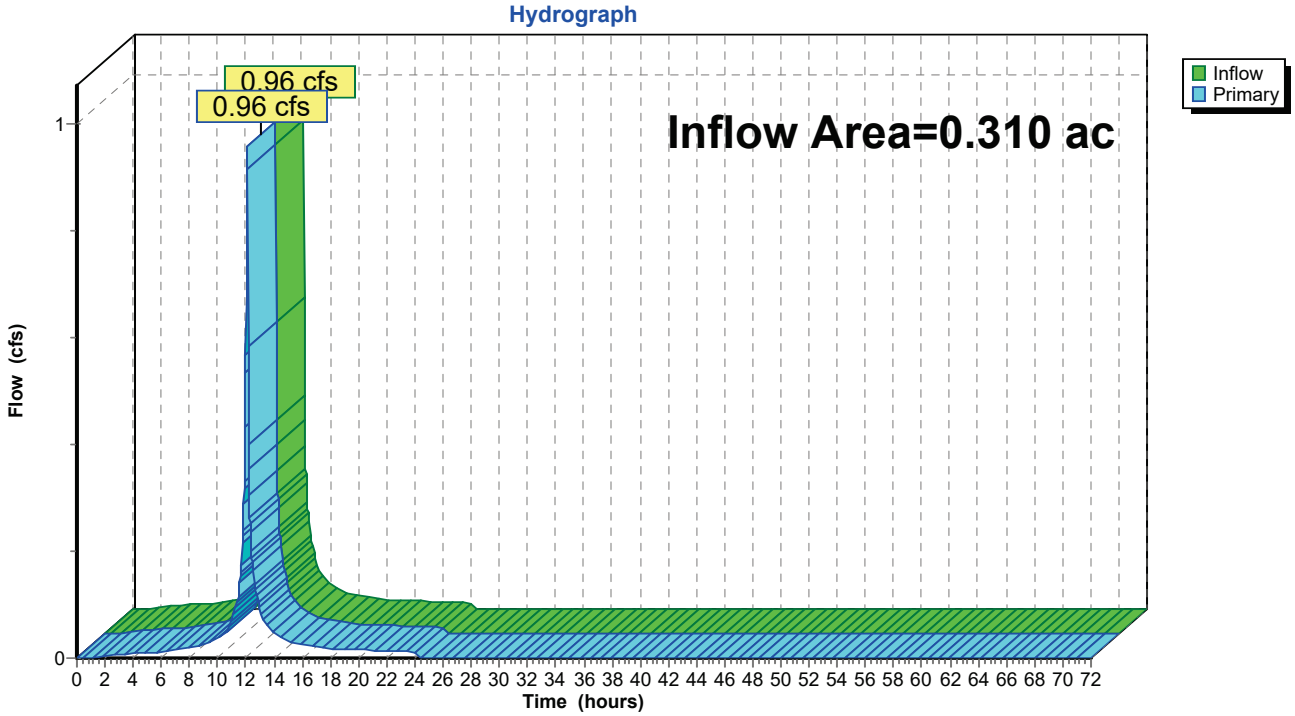


Summary for Link 28L: PDA-1F

Inflow Area = 0.310 ac, 77.42% Impervious, Inflow Depth = 2.78" for 2-Year-2020 event
Inflow = 0.96 cfs @ 12.09 hrs, Volume= 0.072 af
Primary = 0.96 cfs @ 12.09 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 28L: PDA-1F

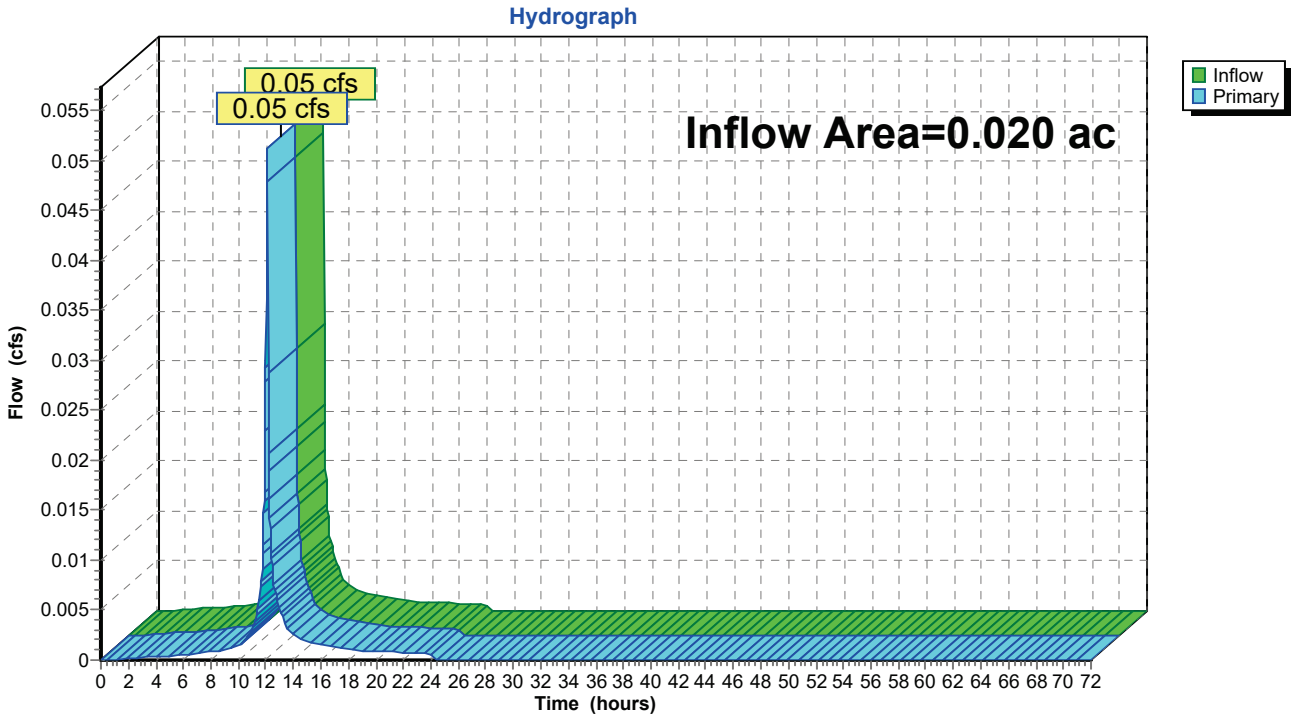


Summary for Link 31L: PDA-1H

Inflow Area = 0.020 ac, 50.00% Impervious, Inflow Depth = 2.23" for 2-Year-2020 event
Inflow = 0.05 cfs @ 12.09 hrs, Volume= 0.004 af
Primary = 0.05 cfs @ 12.09 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min
Routed to Link 25L : PDA-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 31L: PDA-1H

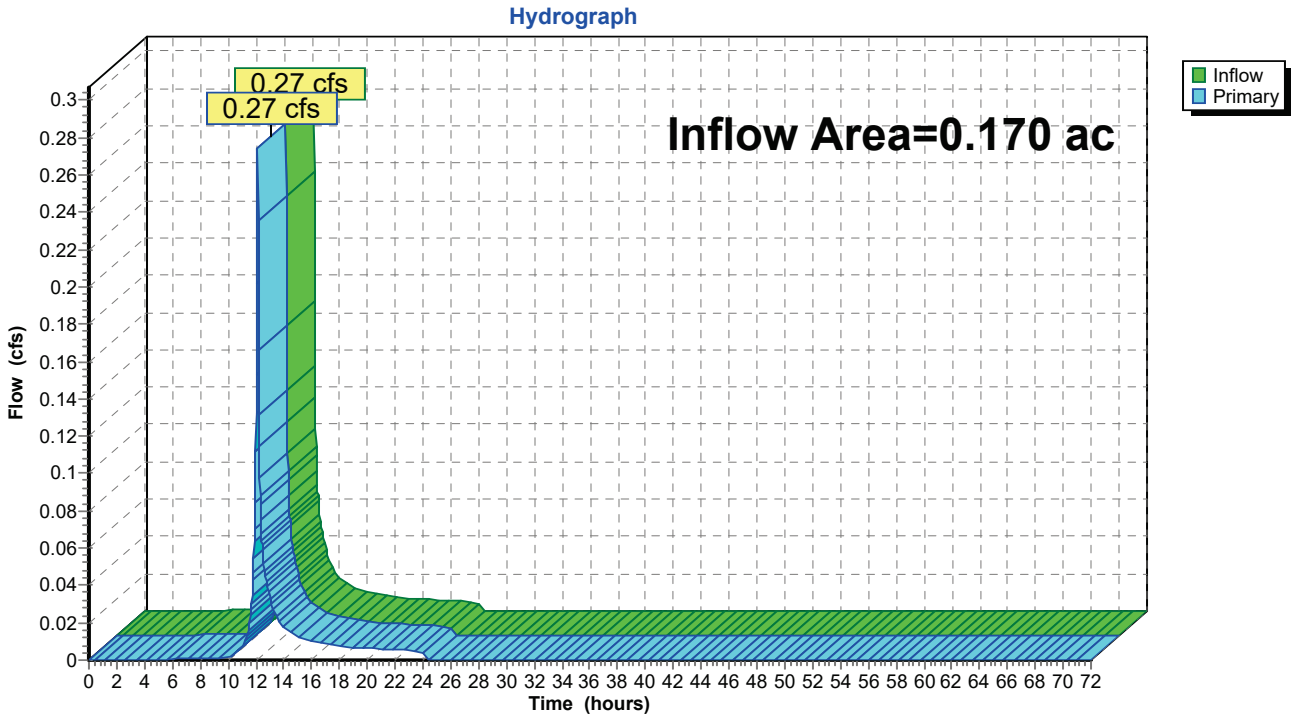


Summary for Link 32L: PDA-1I

Inflow Area = 0.170 ac, 5.88% Impervious, Inflow Depth = 1.34" for 2-Year-2020 event
Inflow = 0.27 cfs @ 12.12 hrs, Volume= 0.019 af
Primary = 0.27 cfs @ 12.12 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min
Routed to Link 25L : PDA-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 32L: PDA-1I

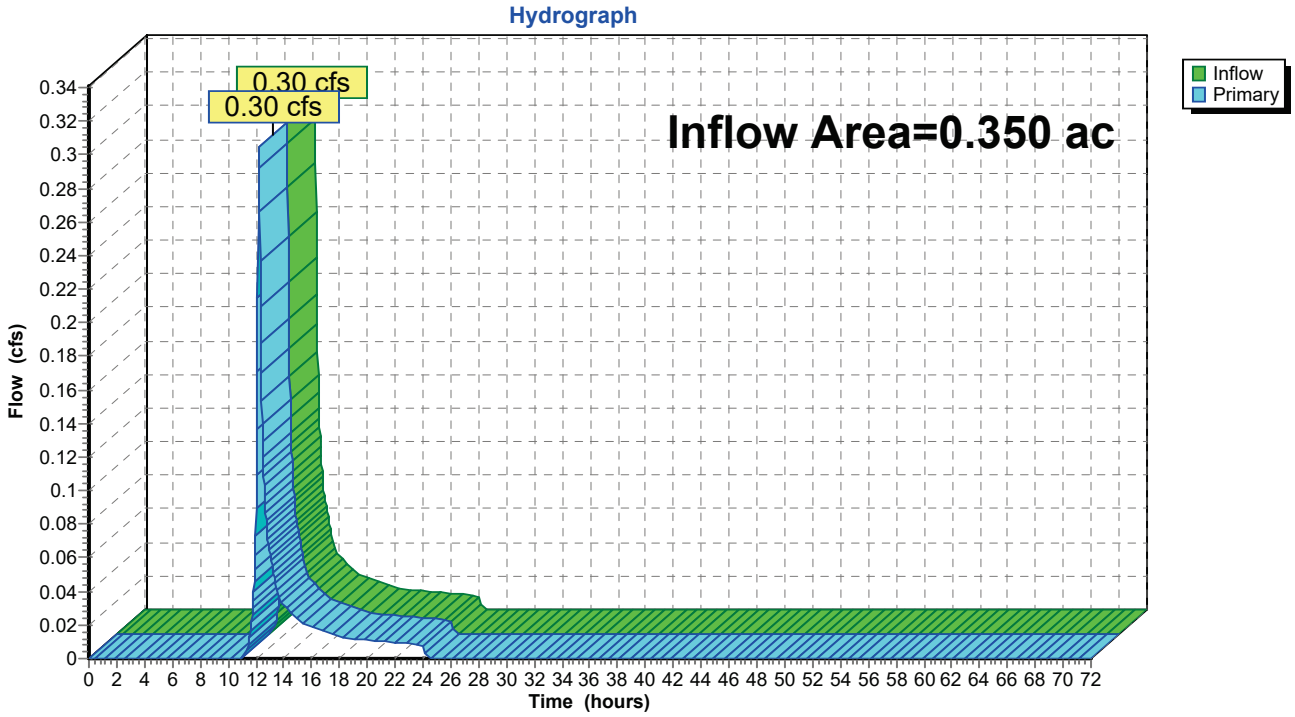


Summary for Link 34L: PDA-2

Inflow Area = 0.350 ac, 0.00% Impervious, Inflow Depth = 0.99" for 2-Year-2020 event
Inflow = 0.30 cfs @ 12.21 hrs, Volume= 0.029 af
Primary = 0.30 cfs @ 12.21 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 34L: PDA-2

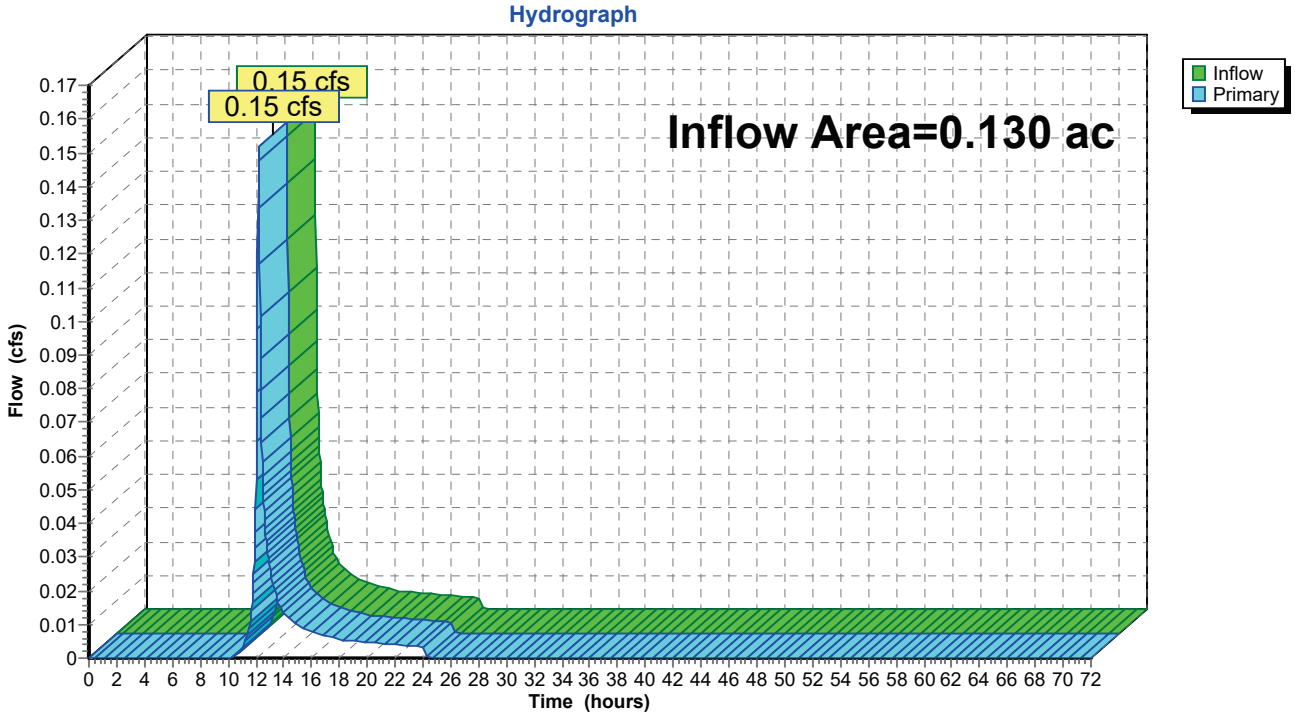


Summary for Link 38L: PDA-1G

Inflow Area = 0.130 ac, 0.00% Impervious, Inflow Depth = 1.22" for 2-Year-2020 event
Inflow = 0.15 cfs @ 12.19 hrs, Volume= 0.013 af
Primary = 0.15 cfs @ 12.19 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 38L: PDA-1G

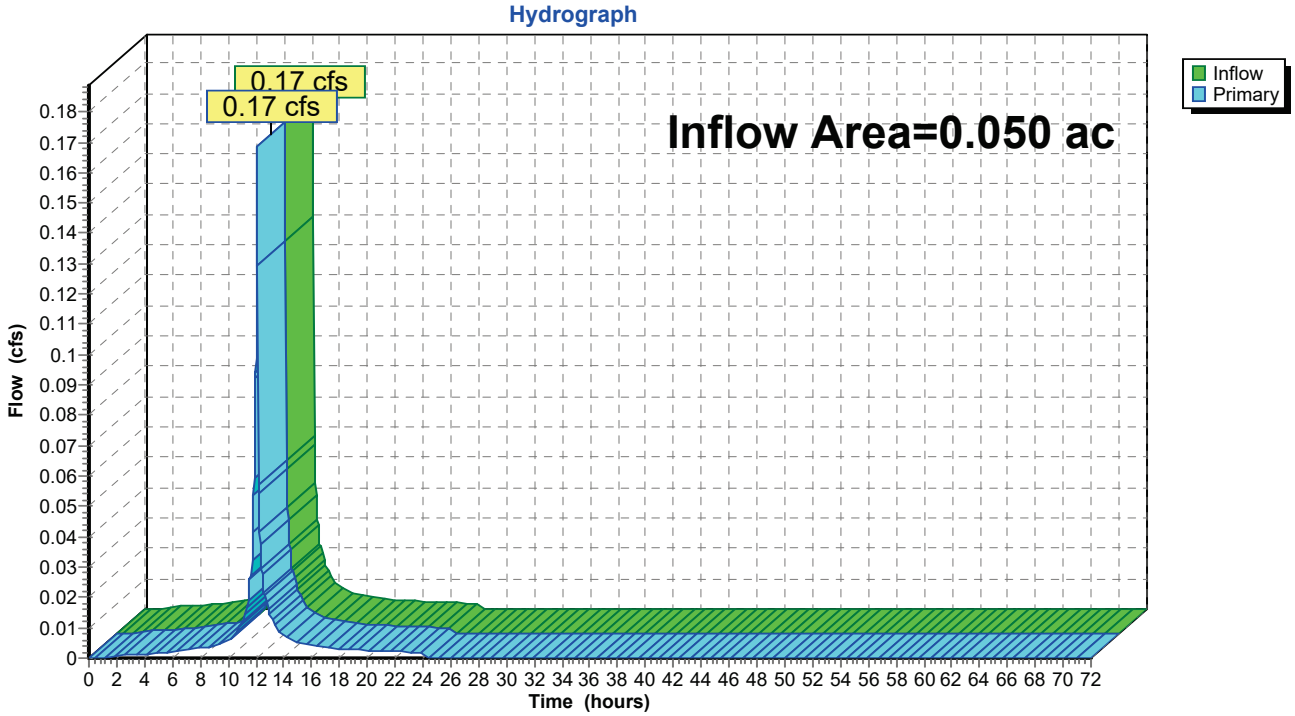


Summary for Link 41L: PDA-1J

Inflow Area = 0.050 ac, 80.00% Impervious, Inflow Depth = 2.83" for 2-Year-2020 event
Inflow = 0.17 cfs @ 12.08 hrs, Volume= 0.012 af
Primary = 0.17 cfs @ 12.08 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 41L: PDA-1J



Summary for Subcatchment 1S: EDA-1 IMPERVIOUS

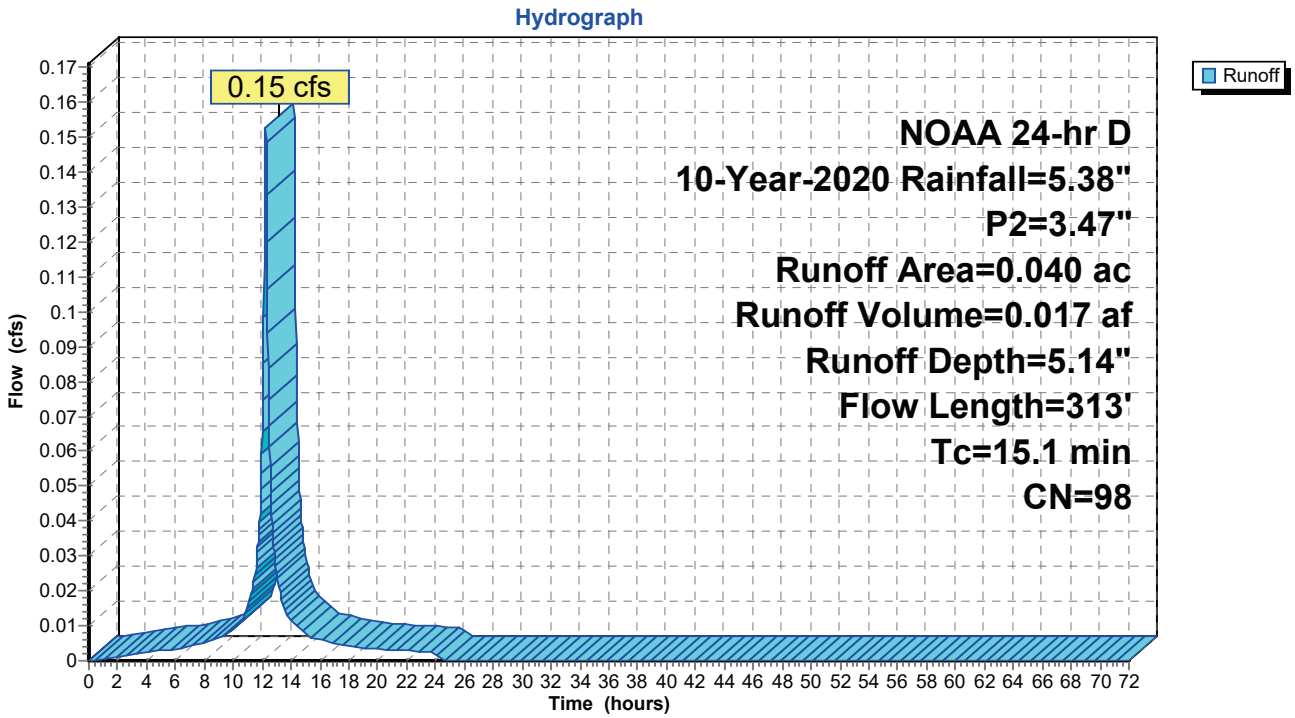
Runoff = 0.15 cfs @ 12.23 hrs, Volume= 0.017 af, Depth= 5.14"
Routed to Link 3L : EDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG C
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0579	0.12		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.47"
1.6	213	0.1867	2.16		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
15.1	313	Total			

Subcatchment 1S: EDA-1 IMPERVIOUS



Summary for Subcatchment 2S: EDA-1 PERVIOUS

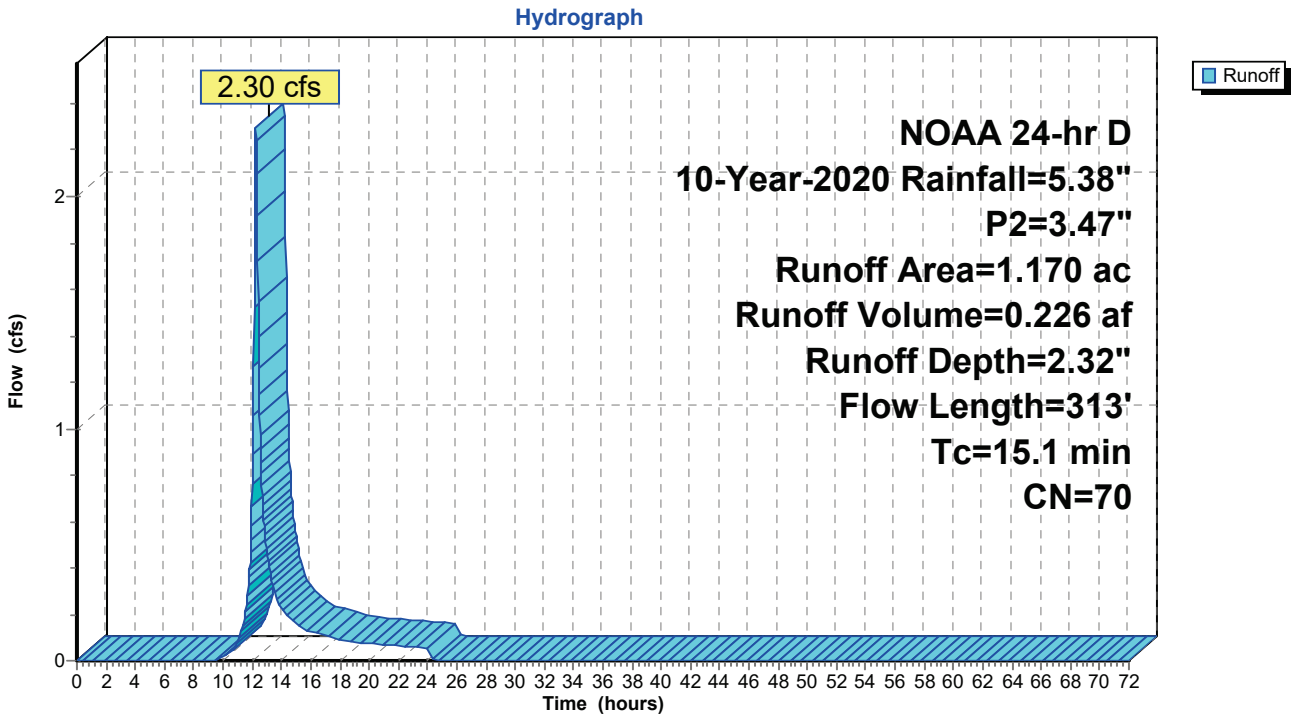
Runoff = 2.30 cfs @ 12.24 hrs, Volume= 0.226 af, Depth= 2.32"
Routed to Link 3L : EDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
1.170	70	Woods, Good, HSG C
1.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0579	0.12		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.47"
1.6	213	0.1867	2.16		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
15.1	313	Total			

Subcatchment 2S: EDA-1 PERVIOUS



Summary for Subcatchment 5S: EDA-2 PERVIOUS

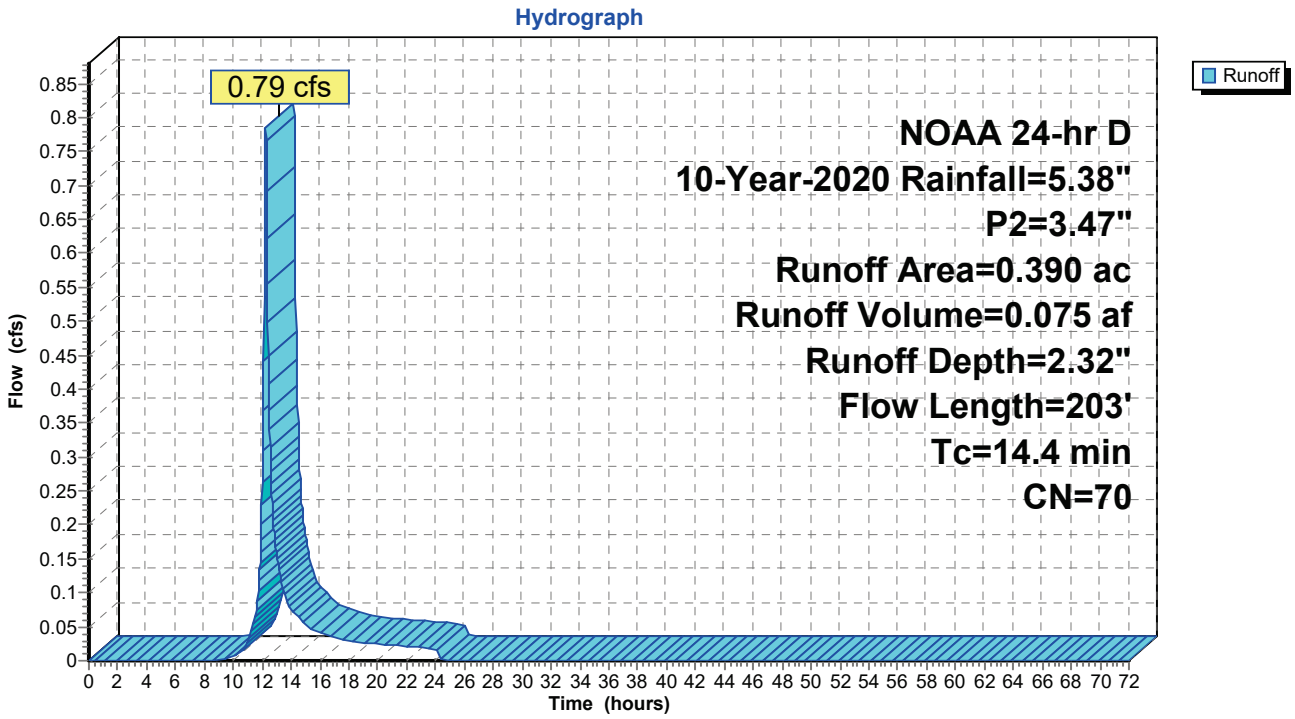
Runoff = 0.79 cfs @ 12.23 hrs, Volume= 0.075 af, Depth= 2.32"
Routed to Link 6L : EDA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.390	70	Woods, Good, HSG C
0.390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0582	0.12		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.47"
0.9	103	0.1619	2.01		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
14.4	203	Total			

Subcatchment 5S: EDA-2 PERVIOUS



Summary for Subcatchment 7S: PDA-1A IMPERVIOUS

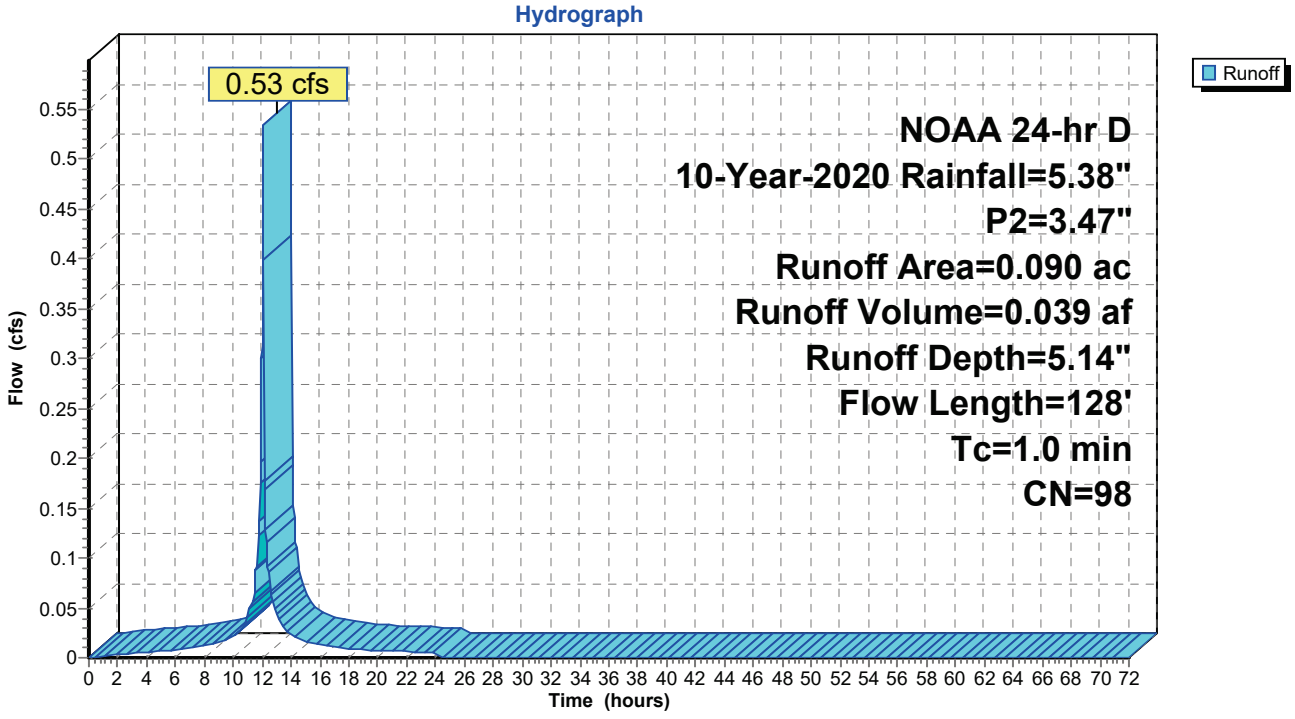
Runoff = 0.53 cfs @ 12.08 hrs, Volume= 0.039 af, Depth= 5.14"
Routed to Link 9L : PDA-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.090	98	Paved parking, HSG C
0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0347	1.22		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.7	85	0.0500	2.00		**Sheet Flow, BC** Smooth surfaces n= 0.011 P2= 3.47"
0.1	28	0.0493	4.51		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
1.0	128	Total			

Subcatchment 7S: PDA-1A IMPERVIOUS



Summary for Subcatchment 8S: PDA-1A PERVIOUS

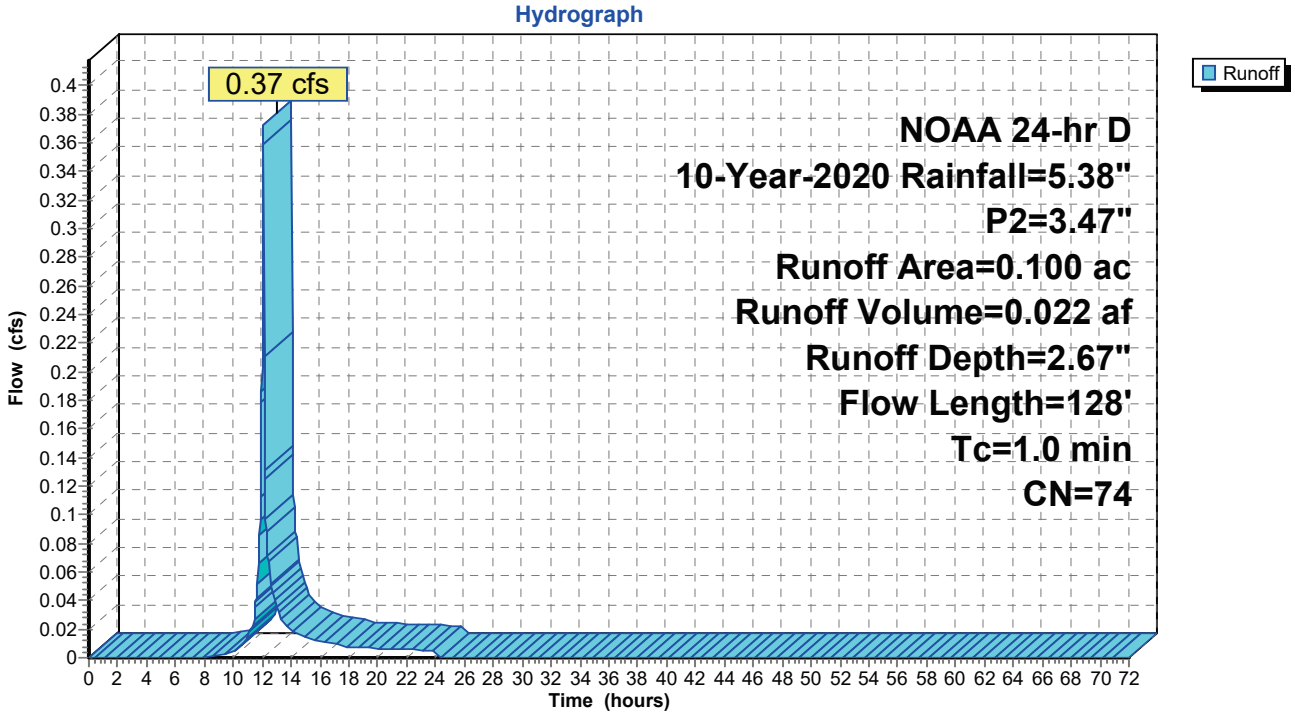
Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 2.67"
Routed to Link 9L : PDA-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.100	74	>75% Grass cover, Good, HSG C
0.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0347	1.22		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.7	85	0.0500	2.00		**Sheet Flow, BC** Smooth surfaces n= 0.011 P2= 3.47"
0.1	28	0.0493	4.51		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
1.0	128	Total			

Subcatchment 8S: PDA-1A PERVIOUS



Summary for Subcatchment 10S: PDA-1B IMPERVIOUS

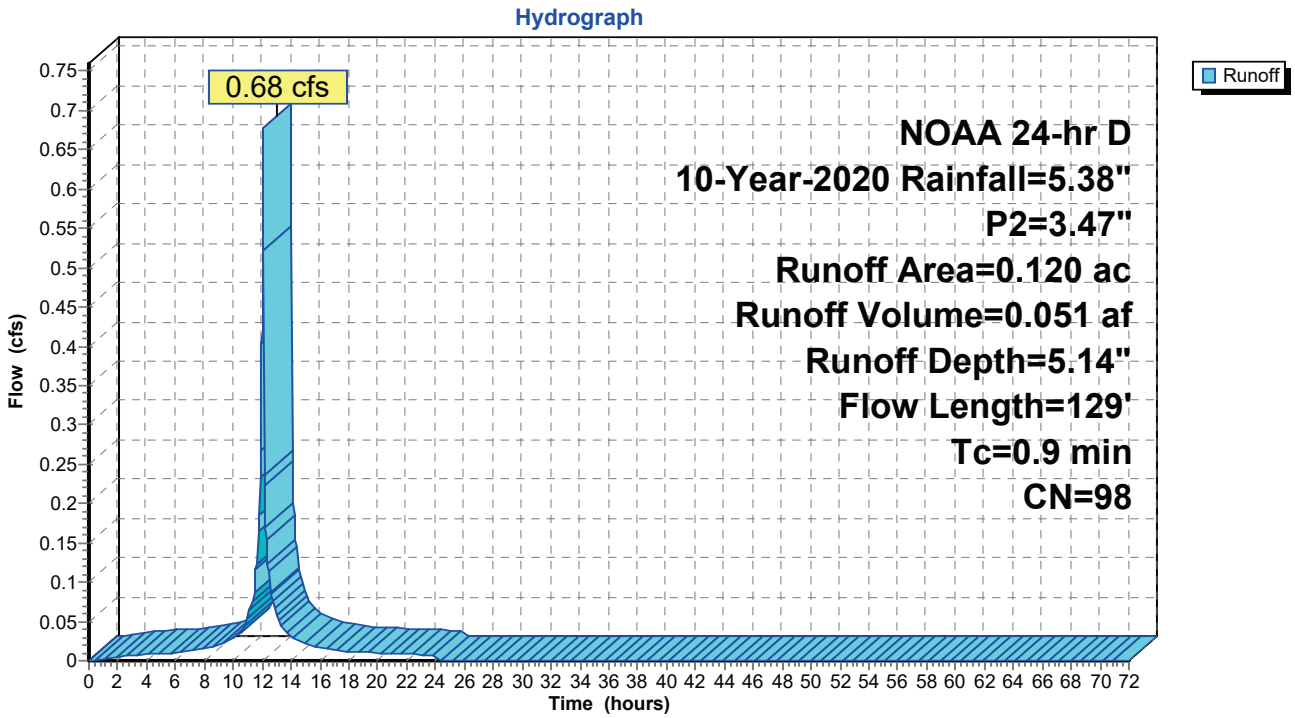
Runoff = 0.68 cfs @ 12.07 hrs, Volume= 0.051 af, Depth= 5.14"
Routed to Link 12L : PDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.120	98	Paved parking, HSG C
0.120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0484	2.04		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.1	29	0.0610	3.98		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
0.9	129	Total			

Subcatchment 10S: PDA-1B IMPERVIOUS



Summary for Subcatchment 13S: PDA-1C IMPERVIOUS

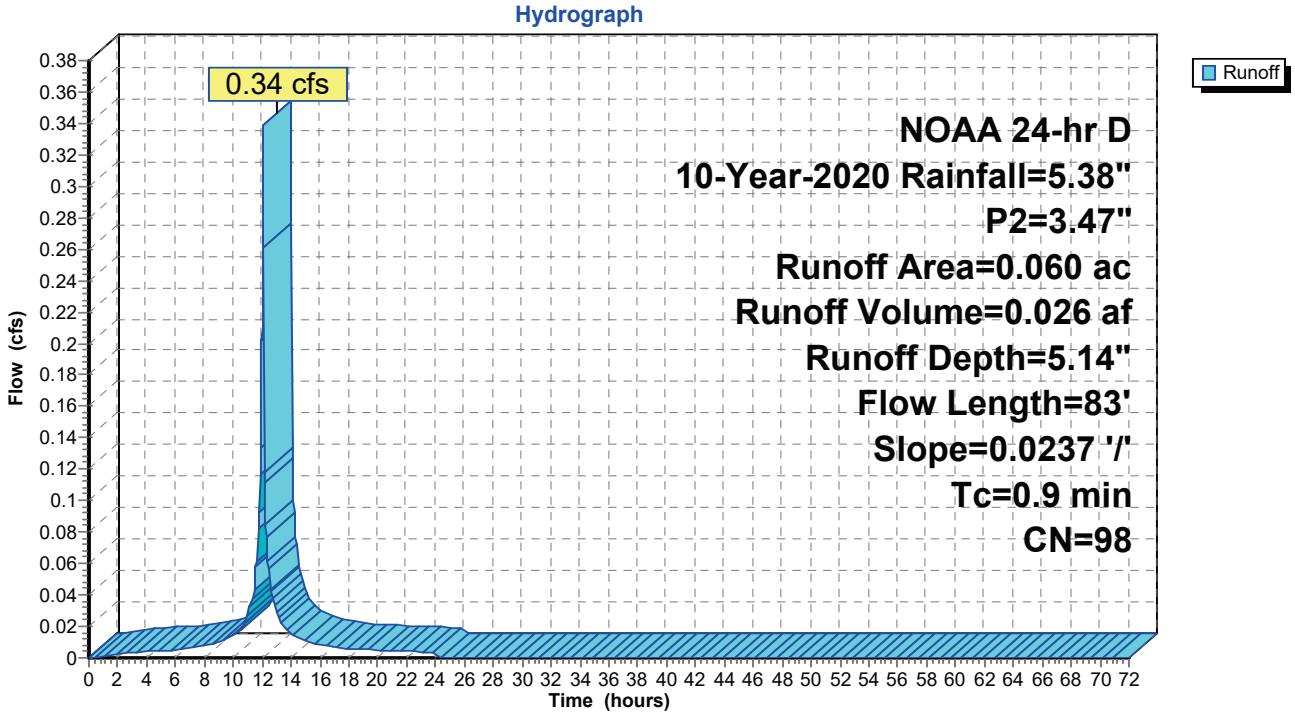
Runoff = 0.34 cfs @ 12.07 hrs, Volume= 0.026 af, Depth= 5.14"
Routed to Link 15L : PDA-1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.060	98	Paved parking, HSG C
0.060		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	83	0.0237	1.48		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"

Subcatchment 13S: PDA-1C IMPERVIOUS



Summary for Subcatchment 16S: PDA-1D IMPERVIOUS

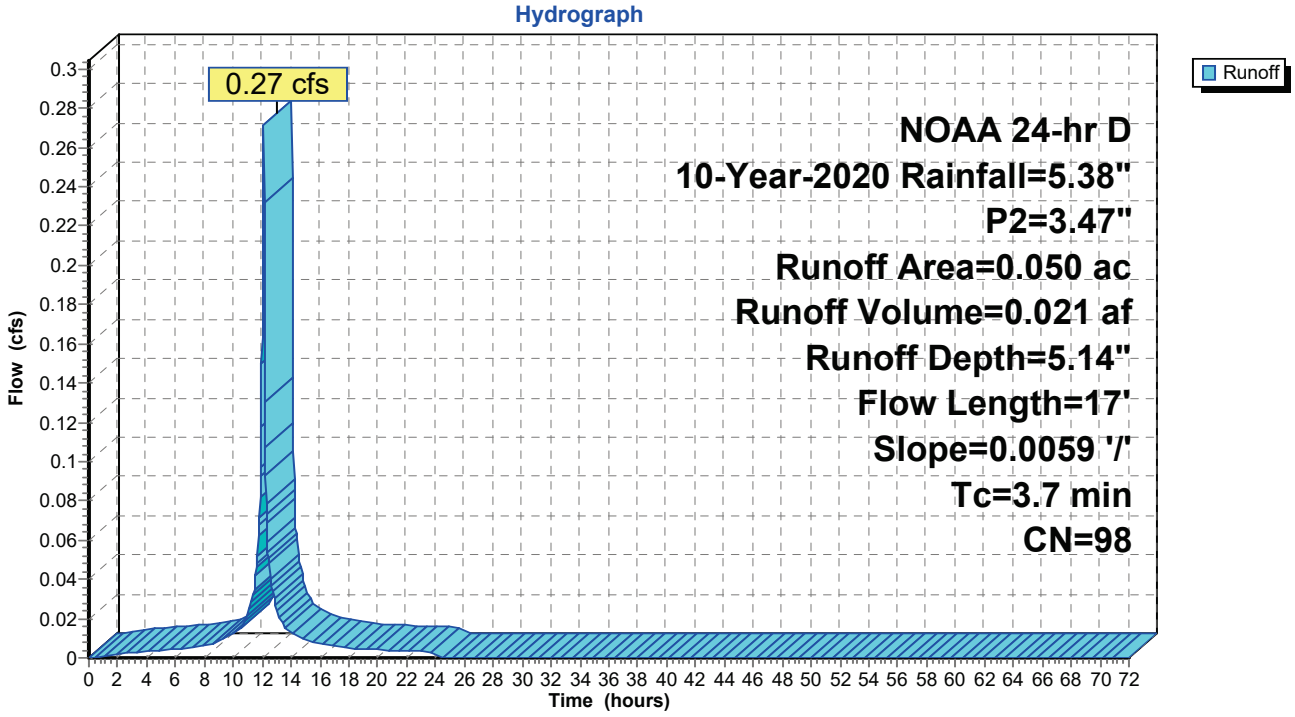
Runoff = 0.27 cfs @ 12.10 hrs, Volume= 0.021 af, Depth= 5.14"
Routed to Link 18L : PDA-1D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.050	98	Paved parking, HSG C
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	17	0.0059	0.08		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"

Subcatchment 16S: PDA-1D IMPERVIOUS



Summary for Subcatchment 17S: PDA-1D PERVIOUS

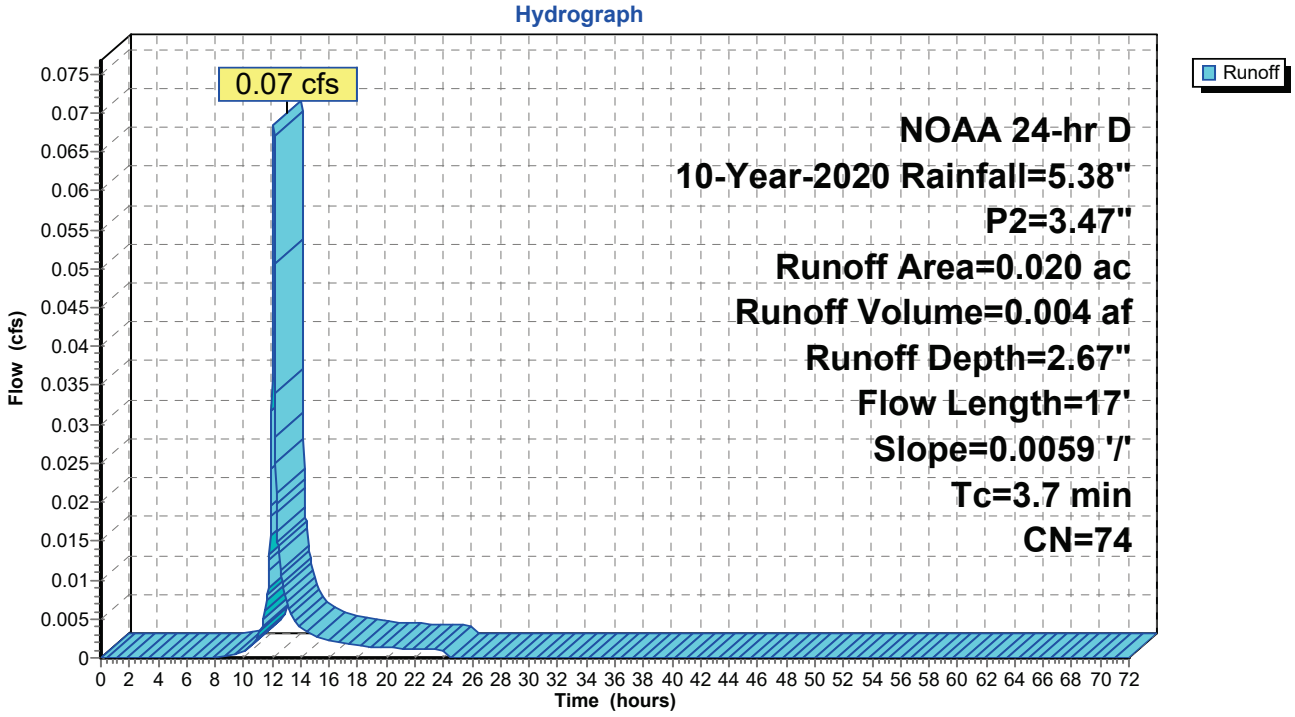
Runoff = 0.07 cfs @ 12.11 hrs, Volume= 0.004 af, Depth= 2.67"
Routed to Link 18L : PDA-1D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.020	74	>75% Grass cover, Good, HSG C
0.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	17	0.0059	0.08		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"

Subcatchment 17S: PDA-1D PERVIOUS



Summary for Subcatchment 19S: PDA-1E IMPERVIOUS

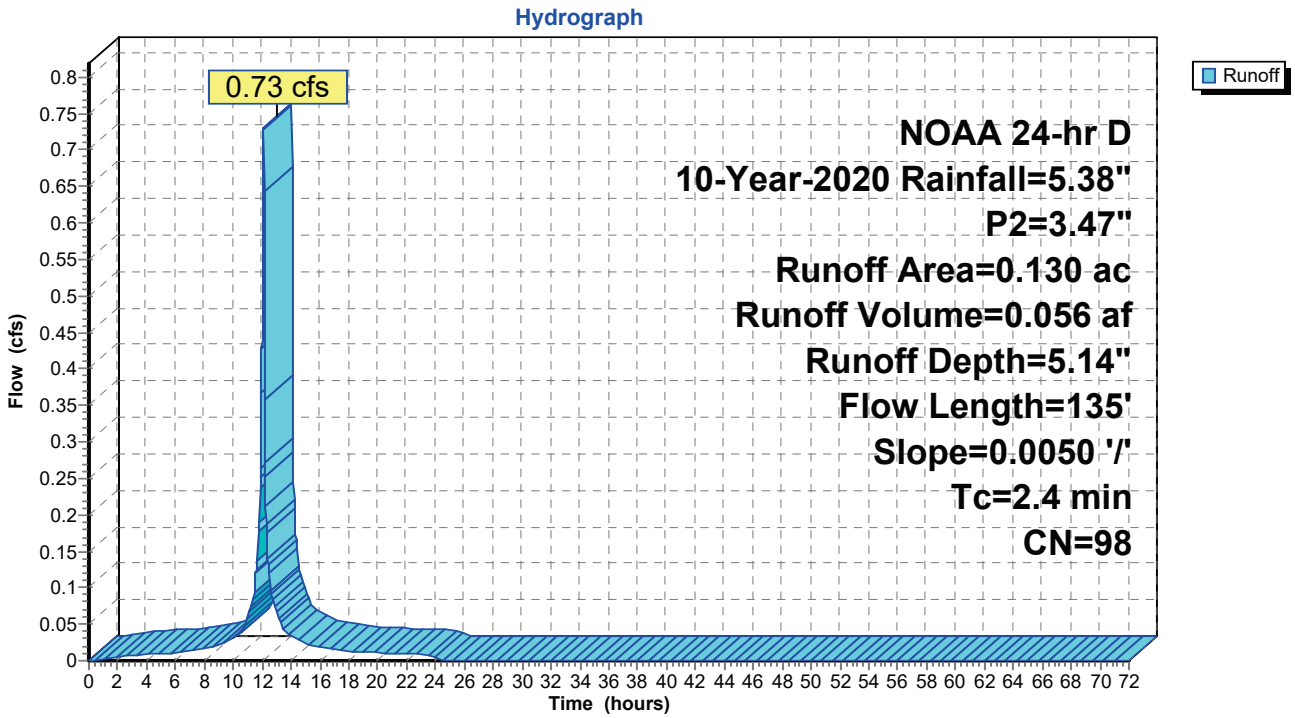
Runoff = 0.73 cfs @ 12.08 hrs, Volume= 0.056 af, Depth= 5.14"
Routed to Link 21L : PDA-1E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.130	98	Paved parking, HSG C
0.130		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	100	0.0050	0.82		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.4	35	0.0050	1.44		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
2.4	135	Total			

Subcatchment 19S: PDA-1E IMPERVIOUS



Summary for Subcatchment 23S: PDA-2

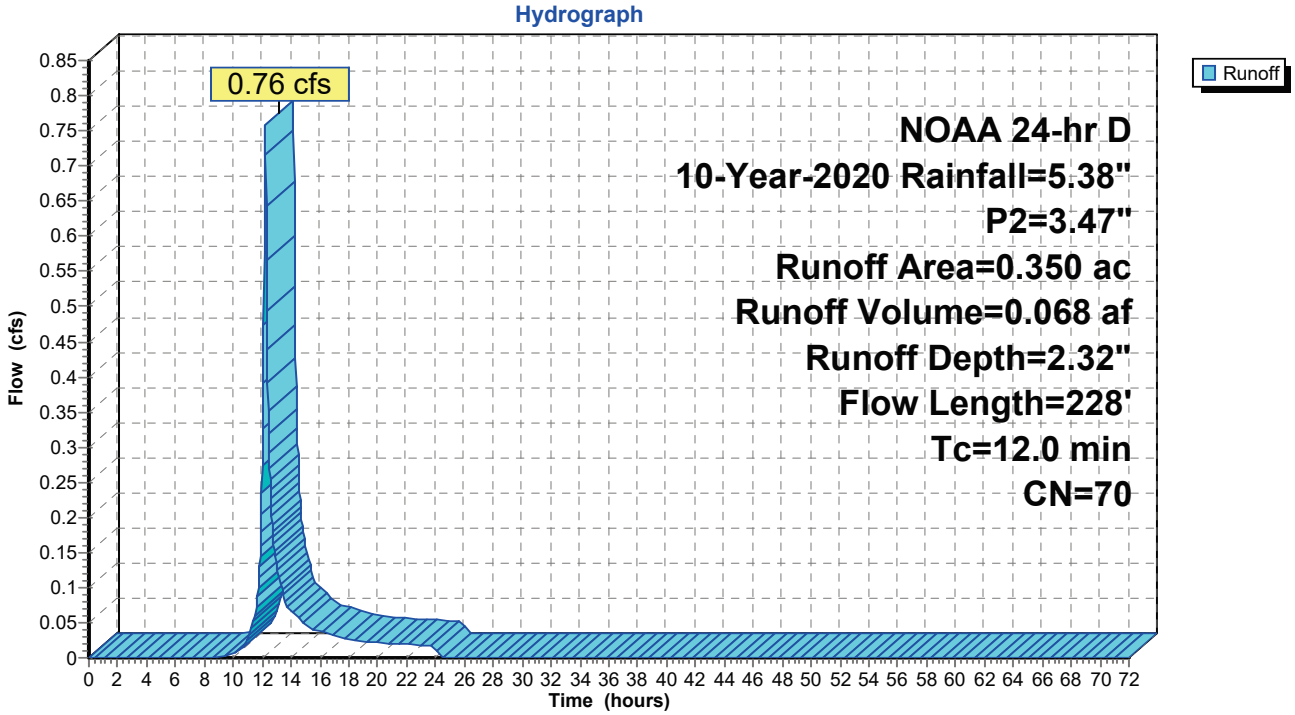
Runoff = 0.76 cfs @ 12.20 hrs, Volume= 0.068 af, Depth= 2.32"
Routed to Link 34L : PDA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.350	70	Woods, Good, HSG C
0.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	62	0.0385	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.47"
0.4	36	0.1011	1.59		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.2	49	0.0543	3.75		**Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps
0.6	81	0.1763	2.10		**Shallow Concentrated Flow, DE** Woodland Kv= 5.0 fps
12.0	228	Total			

Subcatchment 23S: PDA-2



Summary for Subcatchment 26S: PDA-1F IMPERVIOUS

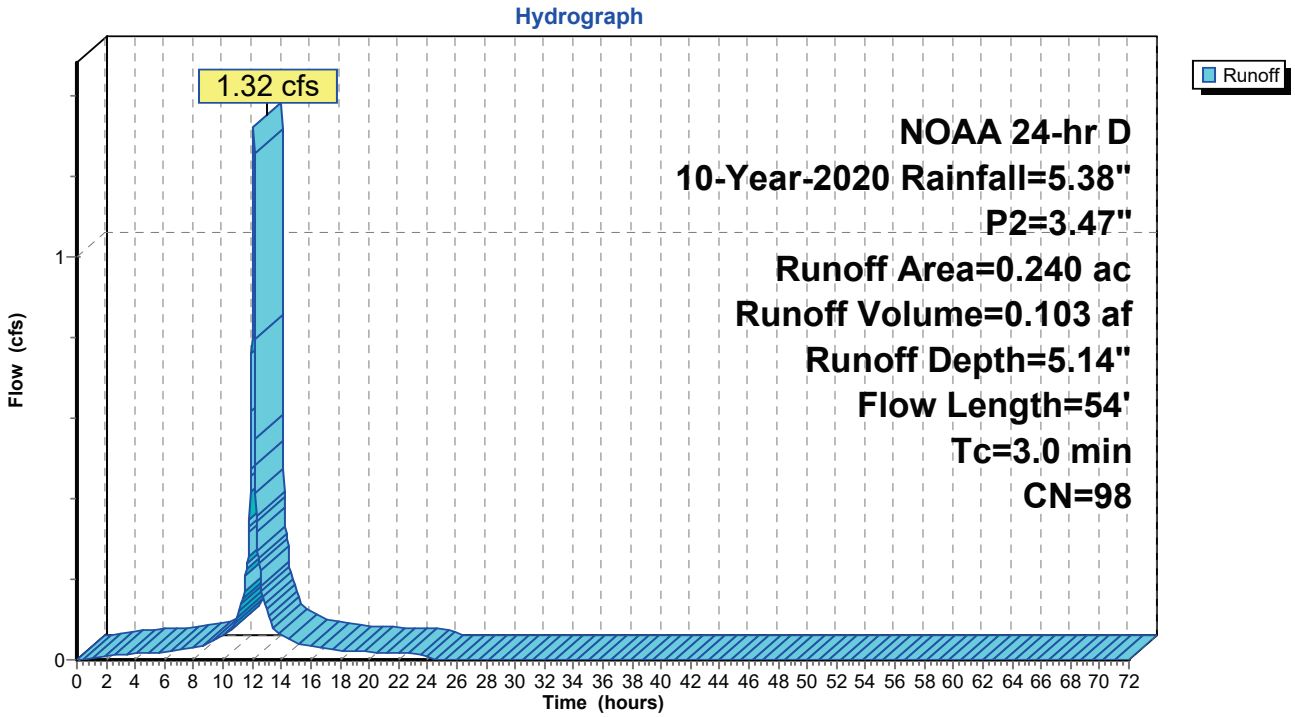
Runoff = 1.32 cfs @ 12.09 hrs, Volume= 0.103 af, Depth= 5.14"
Routed to Link 28L : PDA-1F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG C
0.240		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	7	0.0071	0.56		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
1.4	18	0.0794	0.22		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
0.2	20	0.0375	1.33		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 3.47"
1.2	9	0.0278	0.12		**Sheet Flow, DE** Grass: Short n= 0.150 P2= 3.47"
3.0	54	Total			

Subcatchment 26S: PDA-1F IMPERVIOUS



Summary for Subcatchment 27S: PDA-1F PERVIOUS

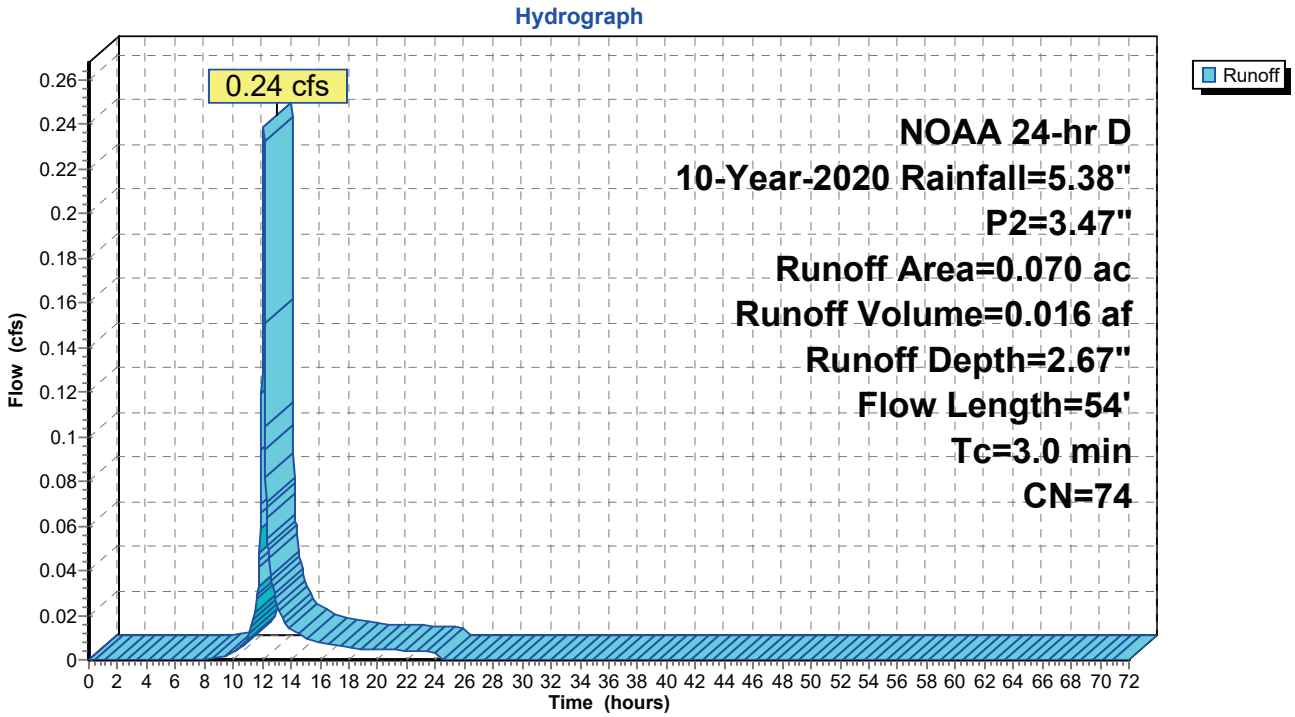
Runoff = 0.24 cfs @ 12.10 hrs, Volume= 0.016 af, Depth= 2.67"
Routed to Link 28L : PDA-1F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.070	74	>75% Grass cover, Good, HSG C
0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	7	0.0071	0.56		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
1.4	18	0.0794	0.22		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
0.2	20	0.0375	1.33		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 3.47"
1.2	9	0.0278	0.12		**Sheet Flow, DE** Grass: Short n= 0.150 P2= 3.47"
3.0	54	Total			

Subcatchment 27S: PDA-1F PERVIOUS



Summary for Subcatchment 29S: PDA-1H IMPERVIOUS

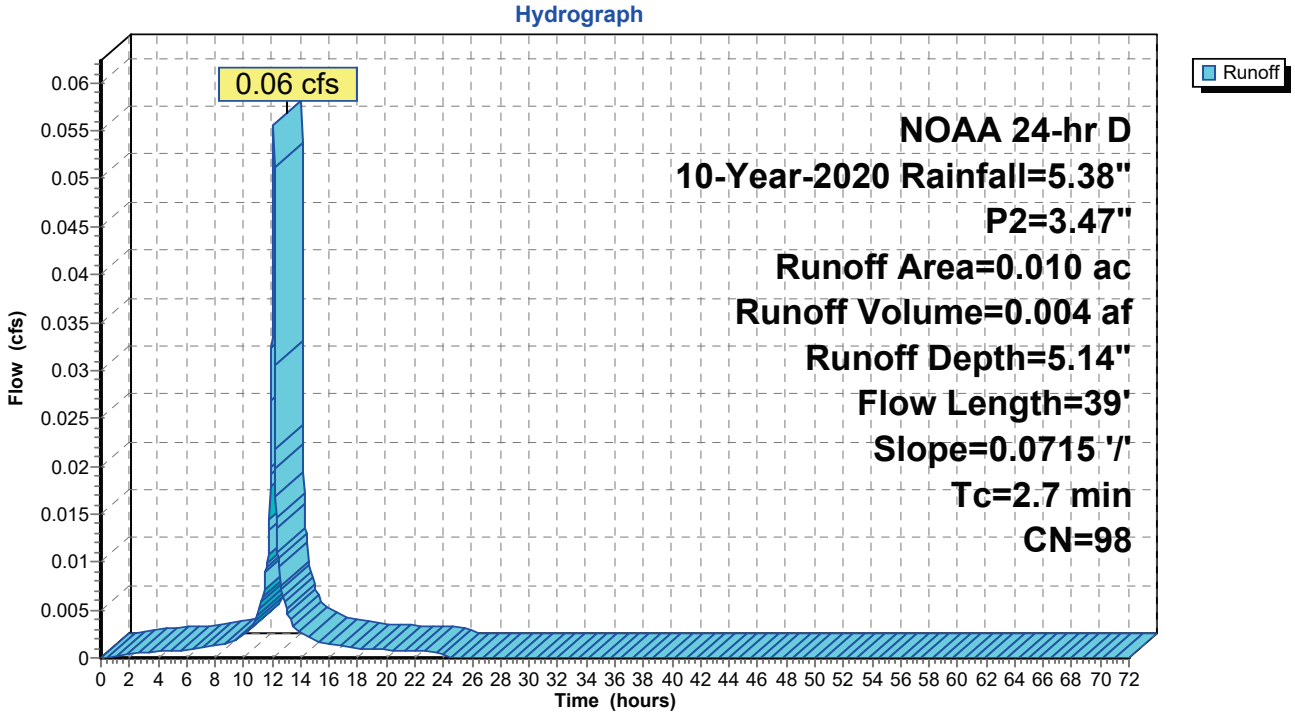
Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af, Depth= 5.14"
Routed to Link 31L : PDA-1H

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.010	98	Paved parking, HSG C
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	39	0.0715	0.24		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"

Subcatchment 29S: PDA-1H IMPERVIOUS



Summary for Subcatchment 30S: PDA-1H PERVIOUS

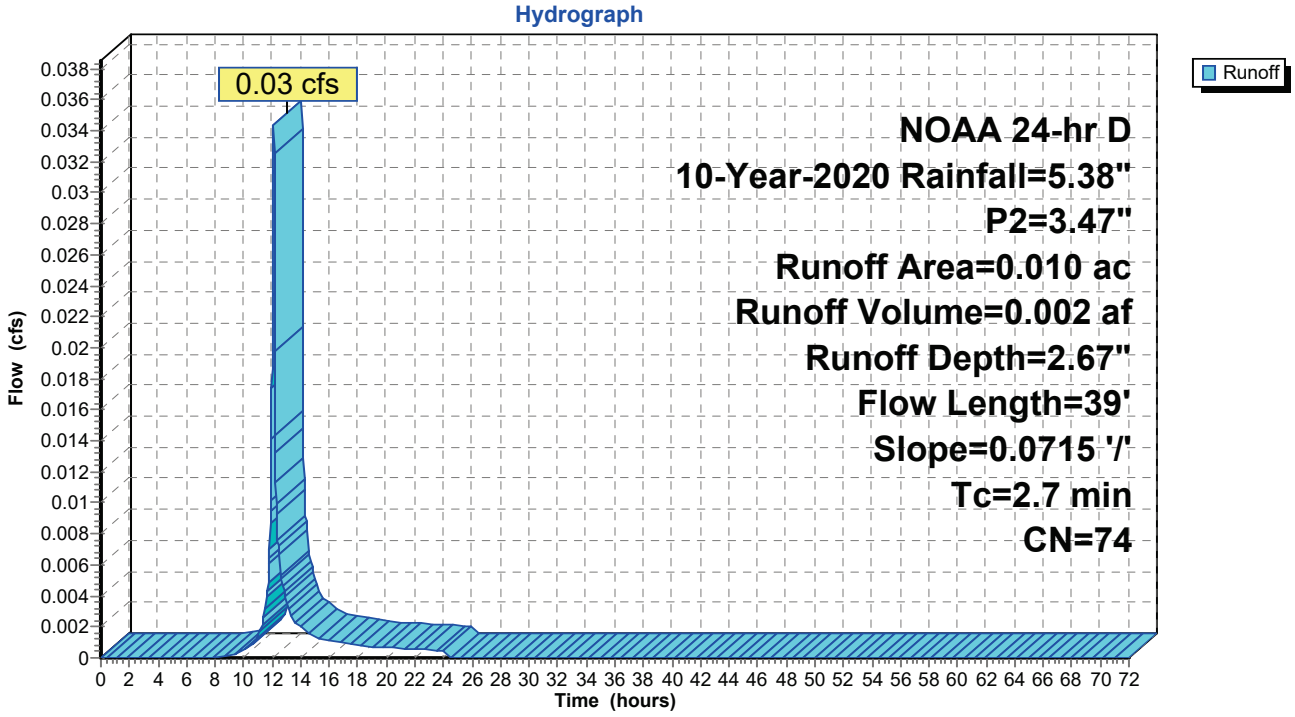
Runoff = 0.03 cfs @ 12.09 hrs, Volume= 0.002 af, Depth= 2.67"
Routed to Link 31L : PDA-1H

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.010	74	>75% Grass cover, Good, HSG C
0.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	39	0.0715	0.24		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"

Subcatchment 30S: PDA-1H PERVIOUS



Summary for Subcatchment 33S: PDA-1I IMPERVIOUS

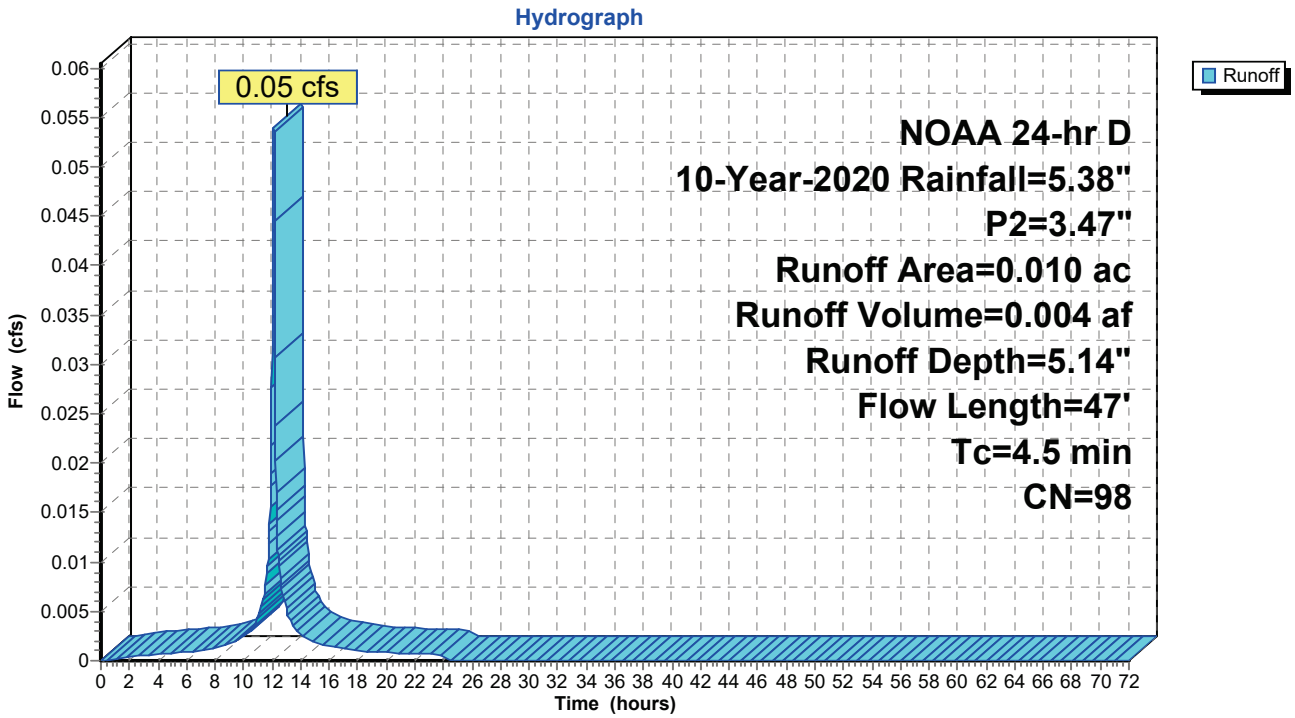
Runoff = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af, Depth= 5.14"
Routed to Link 32L : PDA-1I

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.010	98	Paved parking, HSG C
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	21	0.0109	0.10		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"
1.1	26	0.2700	0.38		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
4.5	47	Total			

Subcatchment 33S: PDA-1I IMPERVIOUS



Summary for Subcatchment 35S: PDA-1I PERVIOUS

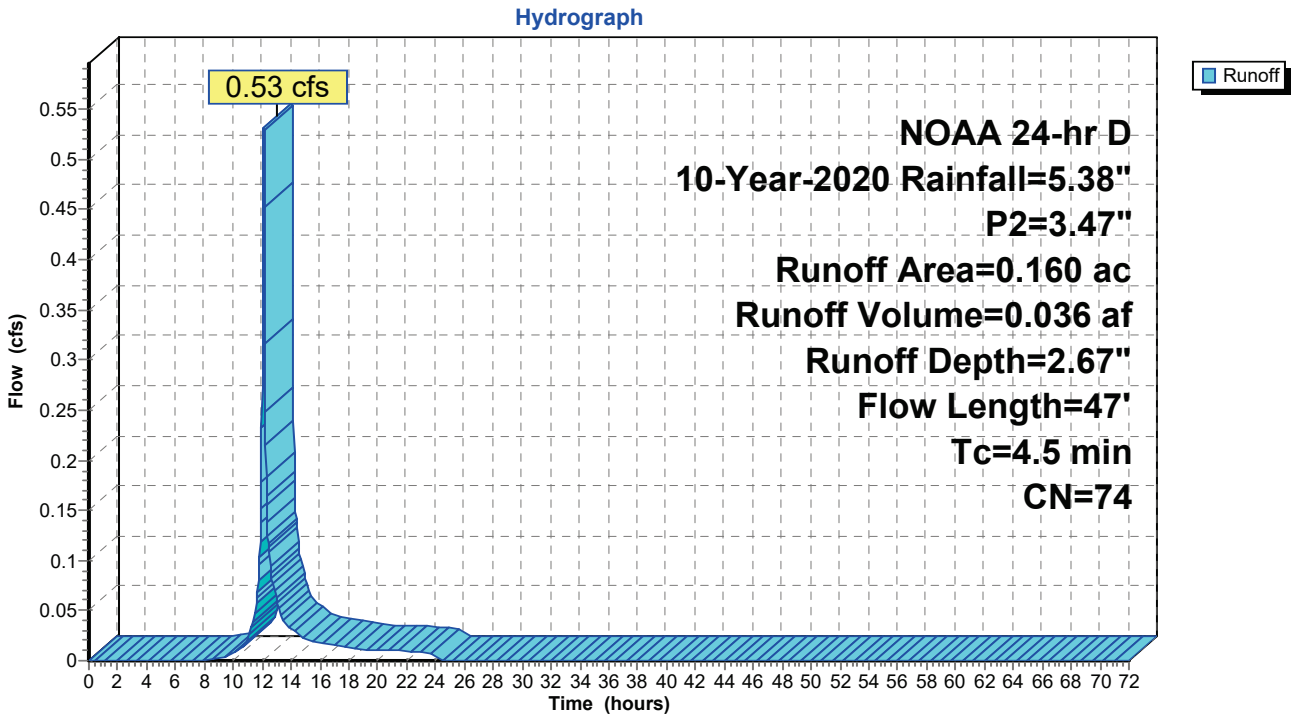
Runoff = 0.53 cfs @ 12.11 hrs, Volume= 0.036 af, Depth= 2.67"
Routed to Link 32L : PDA-1I

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.160	74	>75% Grass cover, Good, HSG C
0.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	21	0.0109	0.10		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"
1.1	26	0.2700	0.38		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
4.5	47	Total			

Subcatchment 35S: PDA-1I PERVIOUS



Summary for Subcatchment 37S: PDA-1G PERVIOUS

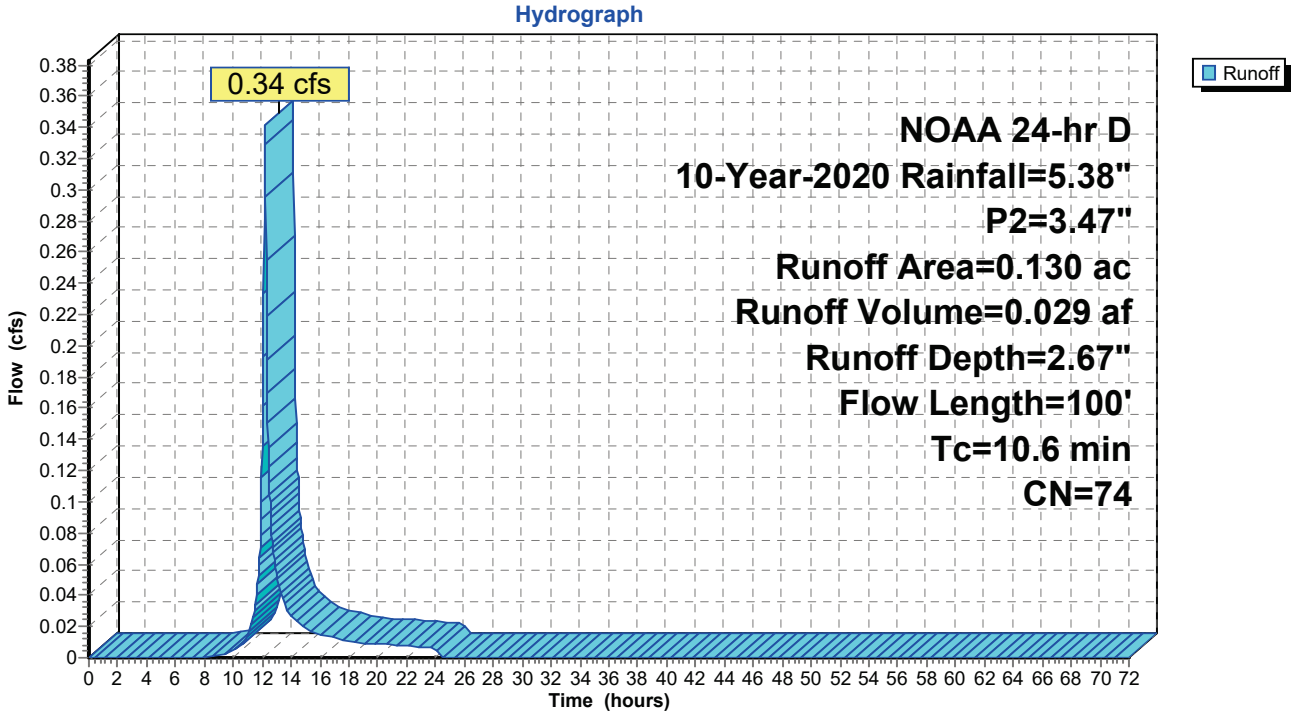
Runoff = 0.34 cfs @ 12.18 hrs, Volume= 0.029 af, Depth= 2.67"
Routed to Link 38L : PDA-1G

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.130	74	>75% Grass cover, Good, HSG C
0.130		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	66	0.0486	0.11		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.47"
0.1	16	0.1031	5.17		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
0.1	18	0.0365	3.08		**Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps
10.6	100	Total			

Subcatchment 37S: PDA-1G PERVIOUS



Summary for Subcatchment 39S: PDA-1J IMPERVIOUS

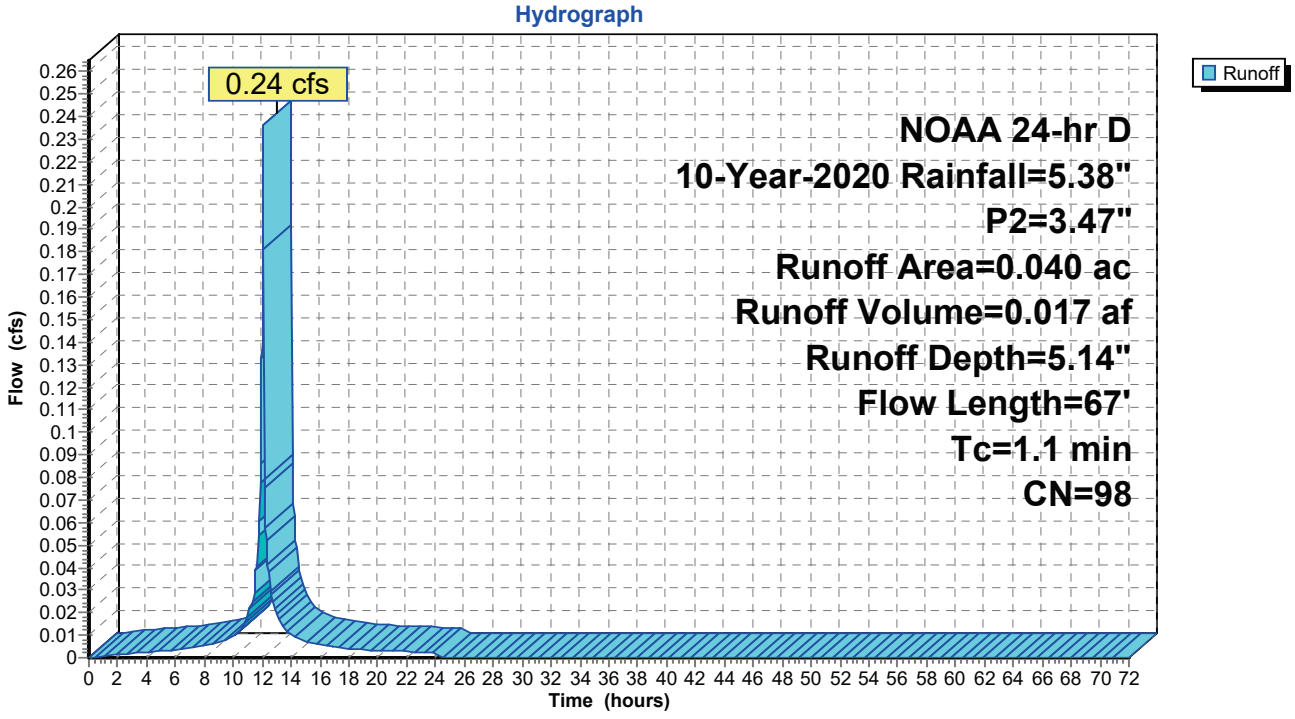
Runoff = 0.24 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 5.14"
Routed to Link 41L : PDA-1J

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG C
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	6	0.0150	0.73		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.5	7	0.1371	0.22		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
0.5	54	0.0565	1.92		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 3.47"
1.1	67	Total			

Subcatchment 39S: PDA-1J IMPERVIOUS



Summary for Subcatchment 40S: PDA-1J PERVIOUS

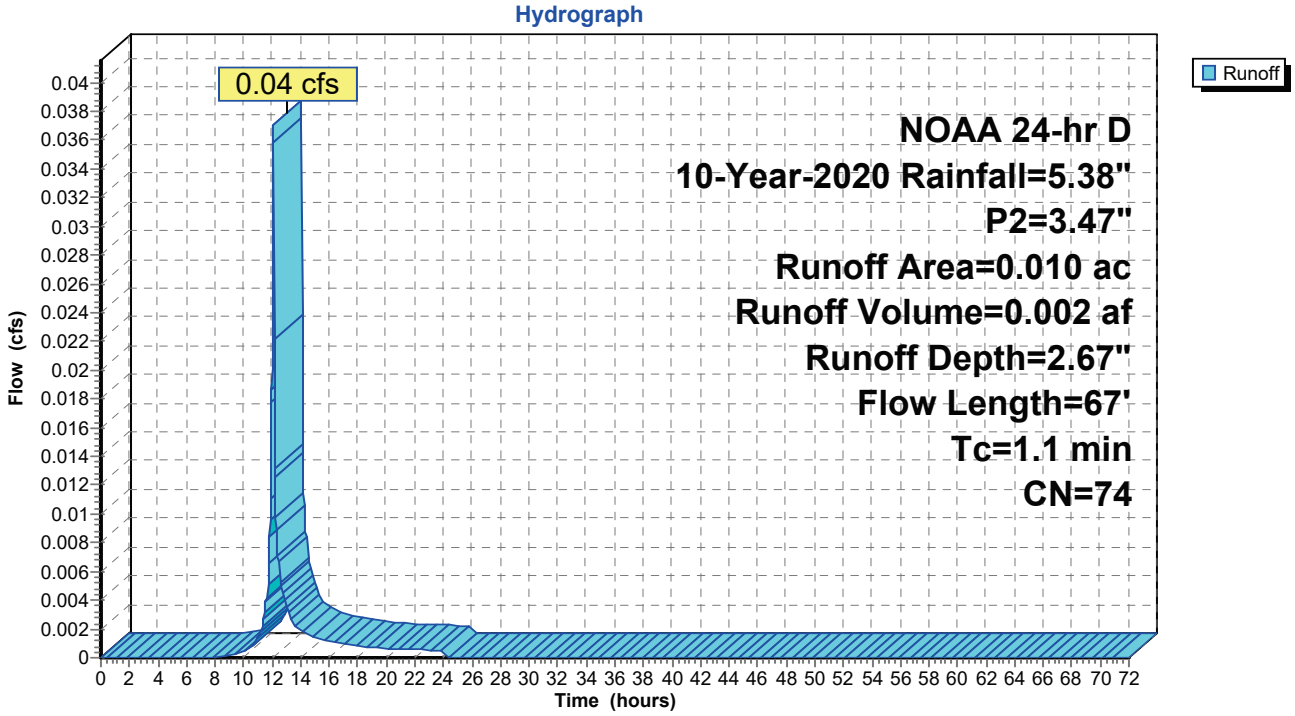
Runoff = 0.04 cfs @ 12.08 hrs, Volume= 0.002 af, Depth= 2.67"
Routed to Link 41L : PDA-1J

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2020 Rainfall=5.38", P2=3.47"

Area (ac)	CN	Description
0.010	74	>75% Grass cover, Good, HSG C
0.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	6	0.0150	0.73		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.5	7	0.1371	0.22		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
0.5	54	0.0565	1.92		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 3.47"
1.1	67	Total			

Subcatchment 40S: PDA-1J PERVIOUS



Summary for Pond 28P: PP-1

Inflow Area = 0.390 ac, 69.23% Impervious, Inflow Depth = 4.38" for 10-Year-2020 event
Inflow = 1.12 cfs @ 12.08 hrs, Volume= 0.142 af
Outflow = 0.22 cfs @ 12.58 hrs, Volume= 0.142 af, Atten= 80%, Lag= 30.2 min
Primary = 0.22 cfs @ 12.58 hrs, Volume= 0.142 af
Routed to Pond 29P : PP-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 447.60' @ 13.75 hrs Surf.Area= 0.048 ac Storage= 0.046 af

Plug-Flow detention time= 146.6 min calculated for 0.142 af (100% of inflow)
Center-of-Mass det. time= 146.9 min (924.2 - 777.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.45'	0.090 af	**18.00'W x 117.00'L x 6.29'H Field A** 0.304 af Overall - 0.079 af Embedded = 0.225 af x 40.0% Voids
#2A	446.45'	0.066 af	**ADS N-12 48"** x 8 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf Row Length Adjustment= +25.00' x 12.40 sf x 2 rows 11.08' Header x 12.40 sf x 2 = 274.9 cf Inside
		0.156 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	445.45'	**15.0" Round Culvert** L= 23.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 445.45' / 445.38' S= 0.0030 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	445.45'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	449.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.22 cfs @ 12.58 hrs HW=447.40' TW=445.58' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.22 cfs of 5.37 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.22 cfs @ 6.50 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 28P: PP-1 - Chamber Wizard Field A

Chamber Model = ADS N-12 48" (ADS N-12® Pipe)
Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf
Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf
Row Length Adjustment= +25.00' x 12.40 sf x 2 rows

54.0" Wide + 25.0" Spacing = 79.0" C-C Row Spacing

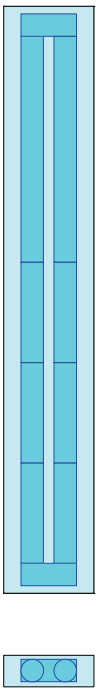
4 Chambers/Row x 20.00' Long +25.00' Row Adjustment +4.50' Header x 2 = 114.00' Row Length +18.0" End Stone x 2 = 117.00' Base Length
2 Rows x 54.0" Wide + 25.0" Spacing x 1 + 41.5" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 54.0" Chamber Height + 9.5" Stone Cover = 6.29' Field Height

8 Chambers x 248.0 cf +25.00' Row Adjustment x 12.40 sf x 2 Rows + 11.08' Header x 12.40 sf x 2 = 2,878.9 cf Chamber Storage
8 Chambers x 297.0 cf +25.00' Row Adjustment x 14.85 sf x 2 Rows + 11.08' Header x 14.85 sf x 2 = 3,447.4 cf Displacement

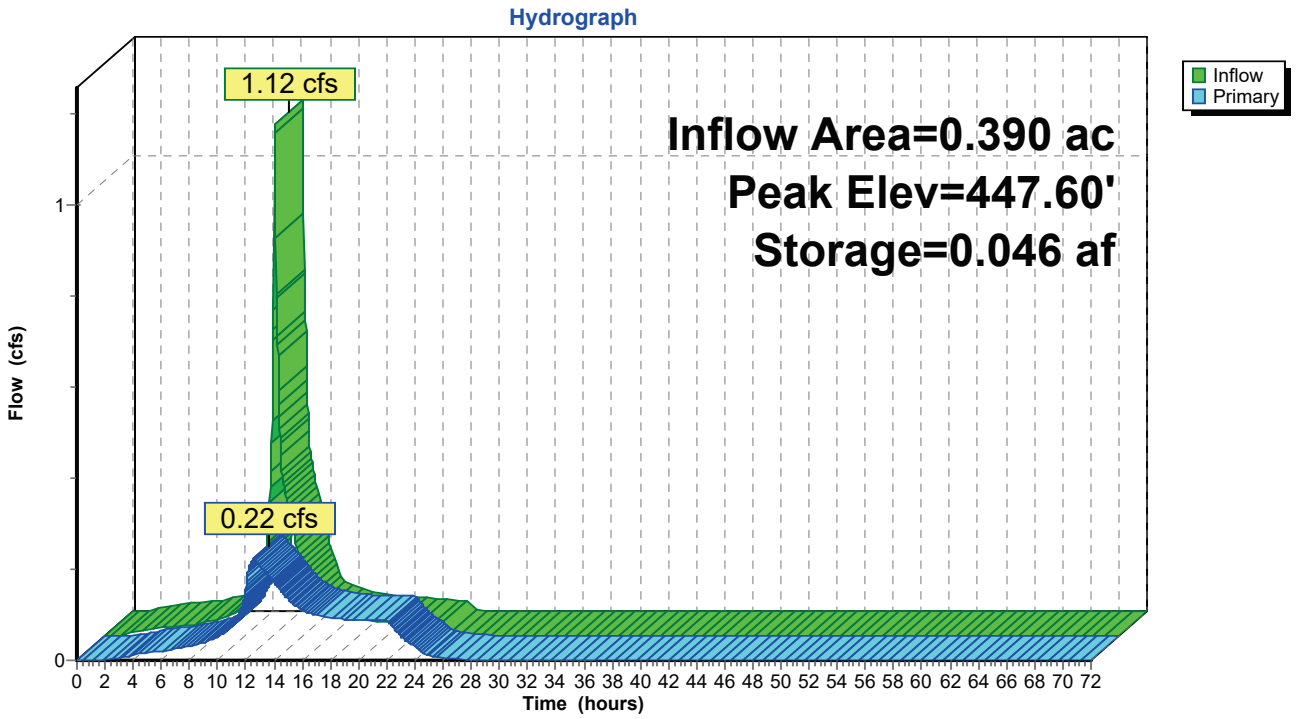
13,250.6 cf Field - 3,447.4 cf Chambers = 9,803.2 cf Stone x 40.0% Voids = 3,921.3 cf Stone Storage

Chamber Storage + Stone Storage = 6,800.1 cf = 0.156 af
Overall Storage Efficiency = 51.3%
Overall System Size = 117.00' x 18.00' x 6.29'

8 Chambers
490.8 cy Field
363.1 cy Stone



Pond 28P: PP-1


Hydrograph
1.12 cfs
0.22 cfs
Inflow Area=0.390 ac
Peak Elev=447.60'
Storage=0.046 af
Inflow
Primary
Flow (cfs)
0
1
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 28P: PP-1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
445.45	0.00	448.10	0.26	450.75	0.81
445.50	0.00	448.15	0.26	450.80	0.82
445.55	0.02	448.20	0.27	450.85	0.83
445.60	0.03	448.25	0.27	450.90	0.85
445.65	0.05	448.30	0.27	450.95	0.86
445.70	0.06	448.35	0.27	451.00	0.87
445.75	0.07	448.40	0.28	451.05	0.88
445.80	0.08	448.45	0.28	451.10	0.89
445.85	0.09	448.50	0.28	451.15	0.90
445.90	0.10	448.55	0.28	451.20	0.91
445.95	0.10	448.60	0.29	451.25	0.92
446.00	0.11	448.65	0.29	451.30	0.93
446.05	0.12	448.70	0.29	451.35	0.94
446.10	0.12	448.75	0.29	451.40	0.95
446.15	0.13	448.80	0.30	451.45	0.96
446.20	0.13	448.85	0.30	451.50	0.97
446.25	0.14	448.90	0.30	451.55	0.98
446.30	0.14	448.95	0.30	451.60	0.99
446.35	0.15	449.00	0.30	451.65	1.00
446.40	0.15	449.05	0.31	451.70	**1.01**
446.45	0.16	449.10	0.31		
446.50	0.16	449.15	0.31		
446.55	0.16	449.20	0.31		
446.60	0.17	449.25	0.32		
446.65	0.17	449.30	0.32		
446.70	0.18	449.35	0.32		
446.75	0.18	449.40	0.32		
446.80	0.18	449.45	0.32		
446.85	0.19	449.50	0.33		
446.90	0.19	449.55	0.33		
446.95	0.19	449.60	0.35		
447.00	0.20	449.65	0.38		
447.05	0.20	449.70	0.42		
447.10	0.20	449.75	0.46		
447.15	0.21	449.80	0.49		
447.20	0.21	449.85	0.52		
447.25	0.21	449.90	0.55		
447.30	0.22	449.95	0.57		
447.35	0.22	450.00	0.59		
447.40	0.22	450.05	0.61		
447.45	0.23	450.10	0.63		
447.50	0.23	450.15	0.64		
447.55	0.23	450.20	0.66		
447.60	0.23	450.25	0.68		
447.65	0.24	450.30	0.69		
447.70	0.24	450.35	0.71		
447.75	0.24	450.40	0.72		
447.80	0.25	450.45	0.74		
447.85	0.25	450.50	0.75		
447.90	0.25	450.55	0.76		
447.95	0.25	450.60	0.77		
448.00	0.26	450.65	0.79		
448.05	0.26	450.70	0.80		

Stage-Area-Storage for Pond 28P: PP-1

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
445.45	0.000	448.10	0.061	450.75	0.137
445.50	0.001	448.15	0.063	450.80	0.138
445.55	0.002	448.20	0.064	450.85	0.139
445.60	0.003	448.25	0.066	450.90	0.140
445.65	0.004	448.30	0.067	450.95	0.141
445.70	0.005	448.35	0.069	451.00	0.142
445.75	0.006	448.40	0.071	451.05	0.143
445.80	0.007	448.45	0.072	451.10	0.144
445.85	0.008	448.50	0.074	451.15	0.145
445.90	0.009	448.55	0.075	451.20	0.146
445.95	0.010	448.60	0.077	451.25	0.147
446.00	0.011	448.65	0.078	451.30	0.148
446.05	0.012	448.70	0.080	451.35	0.149
446.10	0.013	448.75	0.082	451.40	0.149
446.15	0.014	448.80	0.083	451.45	0.150
446.20	0.015	448.85	0.085	451.50	0.151
446.25	0.015	448.90	0.086	451.55	0.152
446.30	0.016	448.95	0.088	451.60	0.153
446.35	0.017	449.00	0.090	451.65	0.154
446.40	0.018	449.05	0.091	451.70	**0.155**
446.45	0.019	449.10	0.093		
446.50	0.020	449.15	0.094		
446.55	0.021	449.20	0.096		
446.60	0.022	449.25	0.097		
446.65	0.023	449.30	0.099		
446.70	0.023	449.35	0.100		
446.75	0.024	449.40	0.102		
446.80	0.025	449.45	0.103		
446.85	0.026	449.50	0.105		
446.90	0.028	449.55	0.107		
446.95	0.029	449.60	0.108		
447.00	0.030	449.65	0.110		
447.05	0.031	449.70	0.111		
447.10	0.032	449.75	0.112		
447.15	0.034	449.80	0.114		
447.20	0.035	449.85	0.115		
447.25	0.036	449.90	0.117		
447.30	0.038	449.95	0.118		
447.35	0.039	450.00	0.120		
447.40	0.040	450.05	0.121		
447.45	0.042	450.10	0.122		
447.50	0.043	450.15	0.124		
447.55	0.045	450.20	0.125		
447.60	0.046	450.25	0.126		
447.65	0.048	450.30	0.128		
447.70	0.049	450.35	0.129		
447.75	0.051	450.40	0.130		
447.80	0.052	450.45	0.131		
447.85	0.054	450.50	0.133		
447.90	0.055	450.55	0.134		
447.95	0.057	450.60	0.135		
448.00	0.058	450.65	0.136		
448.05	0.060	450.70	0.137		

Summary for Pond 29P: PP-2

Inflow Area = 1.060 ac, 68.87% Impervious, Inflow Depth = 4.37" for 10-Year-2020 event
Inflow = 1.18 cfs @ 12.08 hrs, Volume= 0.386 af
Outflow = 0.34 cfs @ 15.51 hrs, Volume= 0.386 af, Atten= 71%, Lag= 205.8 min
Primary = 0.34 cfs @ 15.51 hrs, Volume= 0.386 af
Routed to Link 25L : PDA-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 446.81' @ 15.51 hrs Surf.Area= 0.048 ac Storage= 0.102 af

Plug-Flow detention time= 168.2 min calculated for 0.386 af (100% of inflow)
Center-of-Mass det. time= 168.1 min (1,040.8 - 872.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	442.94'	0.108 af	**18.00'W x 116.17'L x 8.17'H Field A** 0.392 af Overall - 0.121 af Embedded = 0.271 af x 40.0% Voids
#2A	443.94'	0.102 af	**ADS N-12 60"** x 6 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf Row Length Adjustment= +42.00' x 19.30 sf x 2 rows 13.17' Header x 19.30 sf x 2 = 508.3 cf Inside
		0.210 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	442.94'	**15.0" Round Culvert** L= 23.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 442.94' / 442.87' S= 0.0030 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	442.94'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	446.75'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.34 cfs @ 15.51 hrs HW=446.81' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.34 cfs of 8.40 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.32 cfs @ 9.34 fps)
  └**3=Orifice/Grate** (Orifice Controls 0.02 cfs @ 0.83 fps)

Pond 29P: PP-2 - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf
Row Length Adjustment= +42.00' x 19.30 sf x 2 rows

67.0" Wide + 24.0" Spacing = 91.0" C-C Row Spacing

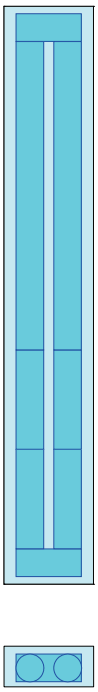
3 Chambers/Row x 20.00' Long +42.00' Row Adjustment +5.58' Header x 2 = 113.17' Row Length +18.0" End Stone x 2 = 116.17' Base Length
2 Rows x 67.0" Wide + 24.0" Spacing x 1 + 29.0" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 67.0" Chamber Height + 19.0" Stone Cover = 8.17' Field Height

6 Chambers x 386.0 cf +42.00' Row Adjustment x 19.30 sf x 2 Rows + 13.17' Header x 19.30 sf x 2 = 4,445.5 cf Chamber Storage
6 Chambers x 458.4 cf +42.00' Row Adjustment x 22.92 sf x 2 Rows + 13.17' Header x 22.92 sf x 2 = 5,279.5 cf Displacement

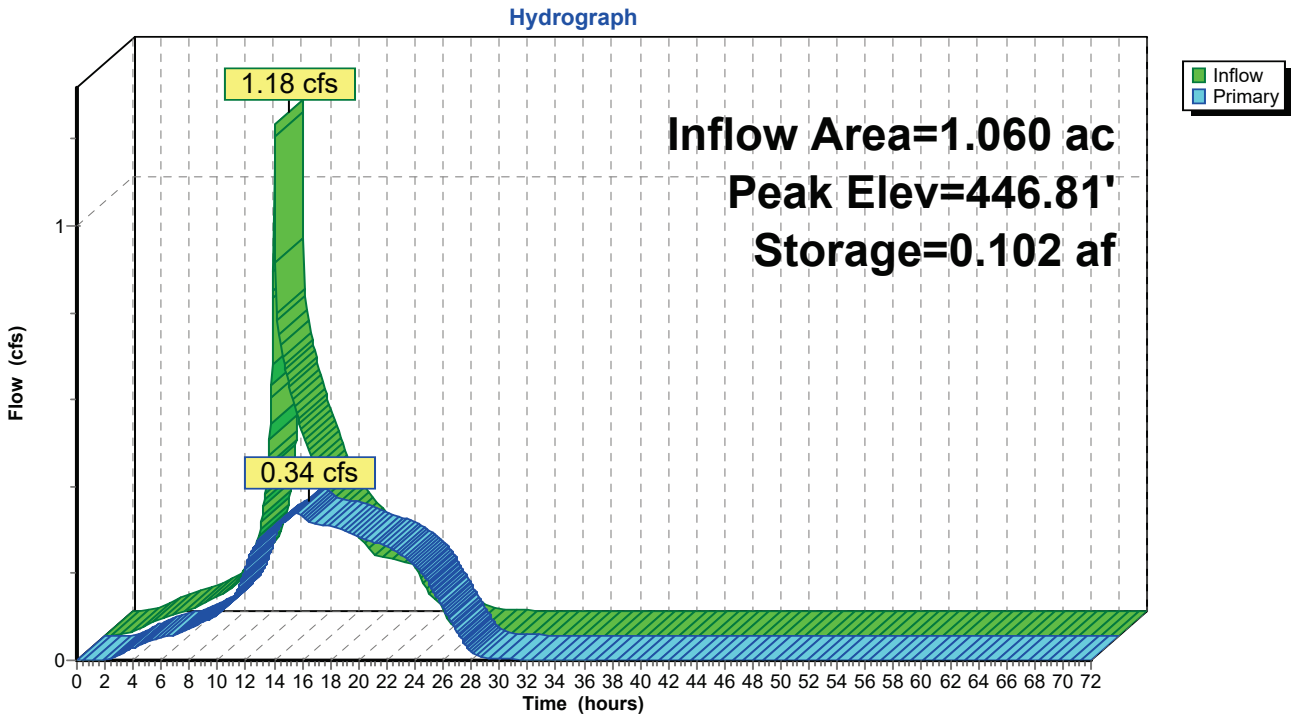
17,078.6 cf Field - 5,279.5 cf Chambers = 11,799.2 cf Stone x 40.0% Voids = 4,719.7 cf Stone Storage

Chamber Storage + Stone Storage = 9,165.1 cf = 0.210 af
Overall Storage Efficiency = 53.7%
Overall System Size = 116.17' x 18.00' x 8.17'

6 Chambers
632.5 cy Field
437.0 cy Stone



Pond 29P: PP-2


Hydrograph
1.18 cfs
0.34 cfs
Inflow Area=1.060 ac
Peak Elev=446.81'
Storage=0.102 af
Inflow
Primary
Flow (cfs)
0
1
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 29P: PP-2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
442.94	0.00	445.59	0.26	448.24	2.48	450.89	4.19
442.99	0.00	445.64	0.26	448.29	2.52	450.94	4.21
443.04	0.02	445.69	0.27	448.34	2.57	450.99	4.24
443.09	0.03	445.74	0.27	448.39	2.61	451.04	4.26
443.14	0.05	445.79	0.27	448.44	2.65	451.09	**4.29**
443.19	0.06	445.84	0.27	448.49	2.69		
443.24	0.07	445.89	0.28	448.54	2.73		
443.29	0.08	445.94	0.28	448.59	2.77		
443.34	0.09	445.99	0.28	448.64	2.81		
443.39	0.10	446.04	0.28	448.69	2.85		
443.44	0.10	446.09	0.29	448.74	2.89		
443.49	0.11	446.14	0.29	448.79	2.92		
443.54	0.12	446.19	0.29	448.84	2.96		
443.59	0.12	446.24	0.29	448.89	3.00		
443.64	0.13	446.29	0.30	448.94	3.03		
443.69	0.13	446.34	0.30	448.99	3.07		
443.74	0.14	446.39	0.30	449.04	3.10		
443.79	0.14	446.44	0.30	449.09	3.14		
443.84	0.15	446.49	0.30	449.14	3.17		
443.89	0.15	446.54	0.31	449.19	3.21		
443.94	0.16	446.59	0.31	449.24	3.24		
443.99	0.16	446.64	0.31	449.29	3.27		
444.04	0.16	446.69	0.31	449.34	3.30		
444.09	0.17	446.74	0.32	449.39	3.34		
444.14	0.17	446.79	0.33	449.44	3.37		
444.19	0.18	446.84	0.37	449.49	3.40		
444.24	0.18	446.89	0.44	449.54	3.43		
444.29	0.18	446.94	0.53	449.59	3.46		
444.34	0.19	446.99	0.64	449.64	3.49		
444.39	0.19	447.04	0.76	449.69	3.52		
444.44	0.19	447.09	0.89	449.74	3.55		
444.49	0.20	447.14	1.03	449.79	3.58		
444.54	0.20	447.19	1.16	449.84	3.61		
444.59	0.20	447.24	1.27	449.89	3.64		
444.64	0.21	447.29	1.36	449.94	3.67		
444.69	0.21	447.34	1.44	449.99	3.70		
444.74	0.21	447.39	1.52	450.04	3.73		
444.79	0.22	447.44	1.60	450.09	3.76		
444.84	0.22	447.49	1.67	450.14	3.79		
444.89	0.22	447.54	1.74	450.19	3.82		
444.94	0.23	447.59	1.80	450.24	3.84		
444.99	0.23	447.64	1.86	450.29	3.87		
445.04	0.23	447.69	1.92	450.34	3.90		
445.09	0.23	447.74	1.98	450.39	3.93		
445.14	0.24	447.79	2.04	450.44	3.95		
445.19	0.24	447.84	2.09	450.49	3.98		
445.24	0.24	447.89	2.15	450.54	4.01		
445.29	0.25	447.94	2.20	450.59	4.03		
445.34	0.25	447.99	2.25	450.64	4.06		
445.39	0.25	448.04	2.30	450.69	4.09		
445.44	0.25	448.09	2.34	450.74	4.11		
445.49	0.26	448.14	2.39	450.79	4.14		
445.54	0.26	448.19	2.43	450.84	4.16		

Stage-Area-Storage for Pond 29P: PP-2

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
442.94	0.000	448.24	0.150
443.04	0.002	448.34	0.153
443.14	0.004	448.44	0.156
443.24	0.006	448.54	0.159
443.34	0.008	448.64	0.161
443.44	0.010	448.74	0.164
443.54	0.012	448.84	0.167
443.64	0.013	448.94	0.169
443.74	0.015	449.04	0.172
443.84	0.017	449.14	0.174
443.94	0.019	449.24	0.176
444.04	0.021	449.34	0.177
444.14	0.022	449.44	0.179
444.24	0.024	449.54	0.180
444.34	0.026	449.64	0.182
444.44	0.028	449.74	0.184
444.54	0.030	449.84	0.186
444.64	0.033	449.94	0.188
444.74	0.035	450.04	0.190
444.84	0.038	450.14	0.192
444.94	0.041	450.24	0.194
445.04	0.044	450.34	0.196
445.14	0.047	450.44	0.198
445.24	0.050	450.54	0.200
445.34	0.053	450.64	0.201
445.44	0.056	450.74	0.203
445.54	0.059	450.84	0.205
445.64	0.063	450.94	0.207
445.74	0.066	451.04	**0.209**
445.84	0.069		
445.94	0.073		
446.04	0.076		
446.14	0.079		
446.24	0.083		
446.34	0.086		
446.44	0.090		
446.54	0.093		
446.64	0.096		
446.74	0.100		
446.84	0.103		
446.94	0.107		
447.04	0.110		
447.14	0.114		
447.24	0.117		
447.34	0.120		
447.44	0.124		
447.54	0.127		
447.64	0.130		
447.74	0.134		
447.84	0.137		
447.94	0.140		
448.04	0.143		
448.14	0.147		

Summary for Pond 30P: PP-3

Inflow Area = 0.550 ac, 61.82% Impervious, Inflow Depth = 4.20" for 10-Year-2020 event
Inflow = 2.40 cfs @ 12.09 hrs, Volume= 0.192 af
Outflow = 0.34 cfs @ 12.57 hrs, Volume= 0.192 af, Atten= 86%, Lag= 28.8 min
Primary = 0.34 cfs @ 12.57 hrs, Volume= 0.192 af
Routed to Pond 29P : PP-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 449.84' @ 12.71 hrs Surf.Area= 0.026 ac Storage= 0.064 af

Plug-Flow detention time= 99.7 min calculated for 0.192 af (100% of inflow)
Center-of-Mass det. time= 100.0 min (869.2 - 769.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.44'	0.078 af	**18.00'W x 62.17'L x 10.08'H Field A** 0.259 af Overall - 0.064 af Embedded = 0.195 af x 40.0% Voids
#2A	446.44'	0.054 af	**ADS N-12 60"** x 4 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf Row Length Adjustment= +8.00' x 19.30 sf x 2 rows 13.17' Header x 19.30 sf x 2 = 508.3 cf Inside
		0.132 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	445.44'	**15.0" Round Culvert** L= 19.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 445.44' / 445.38' S= 0.0031 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	445.44'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	450.44'	**5.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	455.00'	**6.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.34 cfs @ 12.57 hrs HW=449.82' TW=445.56' (Dynamic Tailwater)
1=Culvert (Passes 0.34 cfs of 9.04 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.34 cfs @ 9.94 fps)
3=Orifice/Grate (Controls 0.00 cfs)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 30P: PP-3 - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf
Row Length Adjustment= +8.00' x 19.30 sf x 2 rows

67.0" Wide + 24.0" Spacing = 91.0" C-C Row Spacing

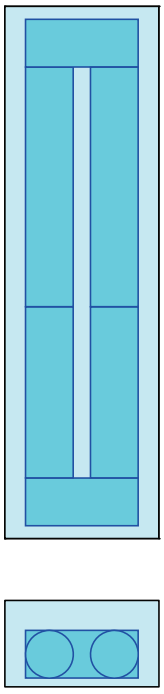
2 Chambers/Row x 20.00' Long +8.00' Row Adjustment +5.58' Header x 2 = 59.17' Row Length +18.0" End Stone x 2 = 62.17' Base Length
2 Rows x 67.0" Wide + 24.0" Spacing x 1 + 29.0" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 67.0" Chamber Height + 42.0" Stone Cover = 10.08' Field Height

4 Chambers x 386.0 cf +8.00' Row Adjustment x 19.30 sf x 2 Rows + 13.17' Header x 19.30 sf x 2 = 2,361.1 cf Chamber Storage
4 Chambers x 458.4 cf +8.00' Row Adjustment x 22.92 sf x 2 Rows + 13.17' Header x 22.92 sf x 2 = 2,804.0 cf Displacement

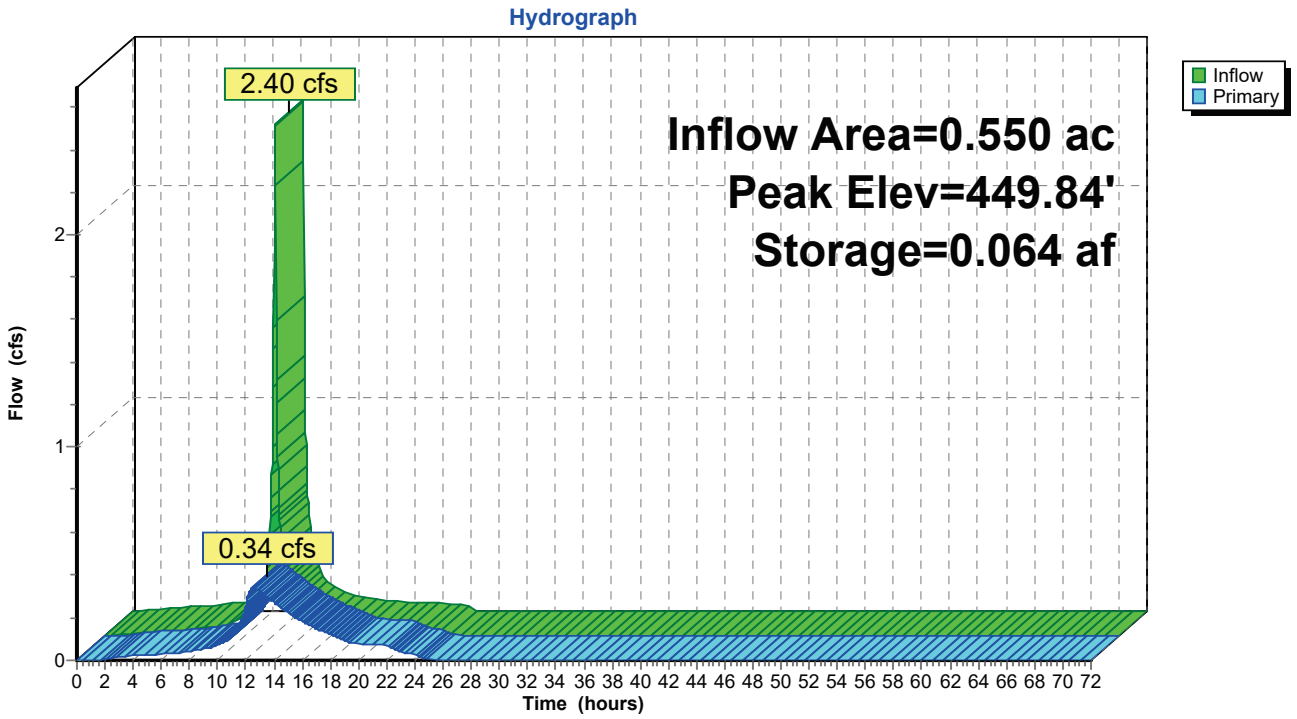
11,284.6 cf Field - 2,804.0 cf Chambers = 8,480.6 cf Stone x 40.0% Voids = 3,392.2 cf Stone Storage

Chamber Storage + Stone Storage = 5,753.3 cf = 0.132 af
Overall Storage Efficiency = 51.0%
Overall System Size = 62.17' x 18.00' x 10.08'

4 Chambers
417.9 cy Field
314.1 cy Stone



Pond 30P: PP-3


Hydrograph
2.40 cfs
0.34 cfs
Inflow Area=0.550 ac
Peak Elev=449.84'
Storage=0.064 af
Inflow
Primary
Flow (cfs)
0
1
2
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 30P: PP-3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
445.44	0.00	448.09	0.26	450.74	0.77	453.39	2.63
445.49	0.00	448.14	0.26	450.79	0.87	453.44	2.66
445.54	0.02	448.19	0.27	450.84	0.96	453.49	2.68
445.59	0.03	448.24	0.27	450.89	1.03	453.54	2.70
445.64	0.05	448.29	0.27	450.94	1.09	453.59	2.72
445.69	0.06	448.34	0.27	450.99	1.15	453.64	2.74
445.74	0.07	448.39	0.28	451.04	1.21	453.69	2.76
445.79	0.08	448.44	0.28	451.09	1.26	453.74	2.78
445.84	0.09	448.49	0.28	451.14	1.31	453.79	2.80
445.89	0.10	448.54	0.28	451.19	1.36	453.84	2.82
445.94	0.10	448.59	0.29	451.24	1.40	453.89	2.84
445.99	0.11	448.64	0.29	451.29	1.45	453.94	2.86
446.04	0.12	448.69	0.29	451.34	1.49	453.99	2.88
446.09	0.12	448.74	0.29	451.39	1.53	454.04	2.90
446.14	0.13	448.79	0.30	451.44	1.57	454.09	2.92
446.19	0.13	448.84	0.30	451.49	1.60	454.14	2.93
446.24	0.14	448.89	0.30	451.54	1.64	454.19	2.95
446.29	0.14	448.94	0.30	451.59	1.68	454.24	2.97
446.34	0.15	448.99	0.30	451.64	1.71	454.29	2.99
446.39	0.15	449.04	0.31	451.69	1.75	454.34	3.01
446.44	0.16	449.09	0.31	451.74	1.78	454.39	3.03
446.49	0.16	449.14	0.31	451.79	1.81	454.44	3.05
446.54	0.16	449.19	0.31	451.84	1.85	454.49	3.06
446.59	0.17	449.24	0.32	451.89	1.88	454.54	3.08
446.64	0.17	449.29	0.32	451.94	1.91	454.59	3.10
446.69	0.18	449.34	0.32	451.99	1.94	454.64	3.12
446.74	0.18	449.39	0.32	452.04	1.97	454.69	3.14
446.79	0.18	449.44	0.32	452.09	2.00	454.74	3.15
446.84	0.19	449.49	0.33	452.14	2.03	454.79	3.17
446.89	0.19	449.54	0.33	452.19	2.05	454.84	3.19
446.94	0.19	449.59	0.33	452.24	2.08	454.89	3.21
446.99	0.20	449.64	0.33	452.29	2.11	454.94	3.22
447.04	0.20	449.69	0.33	452.34	2.14	454.99	3.24
447.09	0.20	449.74	0.34	452.39	2.16	455.04	3.39
447.14	0.21	449.79	0.34	452.44	2.19	455.09	3.73
447.19	0.21	449.84	0.34	452.49	2.21	455.14	4.17
447.24	0.21	449.89	0.34	452.54	2.24	455.19	4.70
447.29	0.22	449.94	0.34	452.59	2.27	455.24	5.32
447.34	0.22	449.99	0.35	452.64	2.29	455.29	6.02
447.39	0.22	450.04	0.35	452.69	2.31	455.34	6.79
447.44	0.23	450.09	0.35	452.74	2.34	455.39	7.63
447.49	0.23	450.14	0.35	452.79	2.36	455.44	8.56
447.54	0.23	450.19	0.35	452.84	2.39	455.49	**9.56**
447.59	0.23	450.24	0.36	452.89	2.41		
447.64	0.24	450.29	0.36	452.94	2.43		
447.69	0.24	450.34	0.36	452.99	2.46		
447.74	0.24	450.39	0.36	453.04	2.48		
447.79	0.25	450.44	0.36	453.09	2.50		
447.84	0.25	450.49	0.38	453.14	2.53		
447.89	0.25	450.54	0.42	453.19	2.55		
447.94	0.25	450.59	0.49	453.24	2.57		
447.99	0.26	450.64	0.57	453.29	2.59		
448.04	0.26	450.69	0.66	453.34	2.61		

Stage-Area-Storage for Pond 30P: PP-3

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
445.44	0.000	450.74	0.080
445.54	0.001	450.84	0.082
445.64	0.002	450.94	0.083
445.74	0.003	451.04	0.085
445.84	0.004	451.14	0.086
445.94	0.005	451.24	0.088
446.04	0.006	451.34	0.089
446.14	0.007	451.44	0.090
446.24	0.008	451.54	0.092
446.34	0.009	451.64	0.093
446.44	0.010	451.74	0.094
446.54	0.011	451.84	0.094
446.64	0.012	451.94	0.095
446.74	0.013	452.04	0.096
446.84	0.014	452.14	0.097
446.94	0.015	452.24	0.098
447.04	0.016	452.34	0.099
447.14	0.018	452.44	0.100
447.24	0.019	452.54	0.101
447.34	0.020	452.64	0.102
447.44	0.022	452.74	0.103
447.54	0.024	452.84	0.104
447.64	0.025	452.94	0.106
447.74	0.027	453.04	0.107
447.84	0.028	453.14	0.108
447.94	0.030	453.24	0.109
448.04	0.032	453.34	0.110
448.14	0.034	453.44	0.111
448.24	0.035	453.54	0.112
448.34	0.037	453.64	0.113
448.44	0.039	453.74	0.114
448.54	0.041	453.84	0.115
448.64	0.042	453.94	0.116
448.74	0.044	454.04	0.117
448.84	0.046	454.14	0.118
448.94	0.048	454.24	0.119
449.04	0.050	454.34	0.120
449.14	0.052	454.44	0.121
449.24	0.053	454.54	0.122
449.34	0.055	454.64	0.123
449.44	0.057	454.74	0.124
449.54	0.059	454.84	0.125
449.64	0.061	454.94	0.126
449.74	0.062	455.04	0.127
449.84	0.064	455.14	0.128
449.94	0.066	455.24	0.129
450.04	0.068	455.34	0.130
450.14	0.070	455.44	**0.131**
450.24	0.071		
450.34	0.073		
450.44	0.075		
450.54	0.077		
450.64	0.078		

Summary for Pond 31P: PP-4

Inflow Area = 0.200 ac, 90.00% Impervious, Inflow Depth = 4.90" for 10-Year-2020 event
Inflow = 1.06 cfs @ 12.09 hrs, Volume= 0.082 af
Outflow = 0.45 cfs @ 12.19 hrs, Volume= 0.082 af, Atten= 58%, Lag= 5.8 min
Primary = 0.45 cfs @ 12.19 hrs, Volume= 0.082 af
Routed to Pond 28P : PP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 454.35' @ 12.19 hrs Surf.Area= 0.014 ac Storage= 0.017 af

Plug-Flow detention time= 26.0 min calculated for 0.082 af (100% of inflow)
Center-of-Mass det. time= 26.2 min (776.5 - 750.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	451.95'	0.023 af	**18.00'W x 33.00'L x 5.83'H Field A** 0.080 af Overall - 0.022 af Embedded = 0.058 af x 40.0% Voids
#2A	452.45'	0.018 af	**ADS N-12 48"** x 2 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf Row Length Adjustment= +1.00' x 12.40 sf x 2 rows 11.08' Header x 12.40 sf x 2 = 274.9 cf Inside
		0.041 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	449.63'	**15.0" Round Culvert** L= 29.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 449.63' / 449.55' S= 0.0028 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	451.95'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	453.95'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	457.00'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.45 cfs @ 12.19 hrs HW=454.35' TW=447.03' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.45 cfs of 9.43 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.25 cfs @ 7.29 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.20 cfs @ 2.30 fps)
  └─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 31P: PP-4 - Chamber Wizard Field A

Chamber Model = ADS N-12 48" (ADS N-12® Pipe)
Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf
Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf
Row Length Adjustment= +1.00' x 12.40 sf x 2 rows

54.0" Wide + 25.0" Spacing = 79.0" C-C Row Spacing

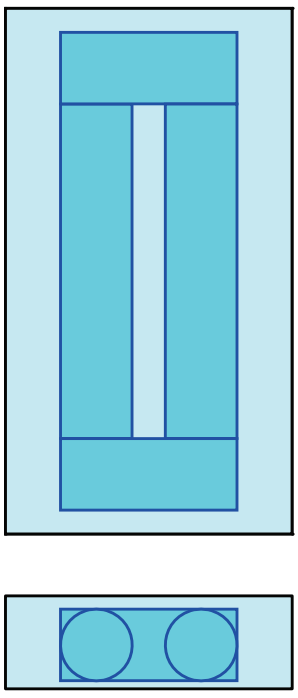
1 Chambers/Row x 20.00' Long +1.00' Row Adjustment +4.50' Header x 2 = 30.00' Row Length +18.0" End Stone x 2 = 33.00' Base Length
2 Rows x 54.0" Wide + 25.0" Spacing x 1 + 41.5" Side Stone x 2 = 18.00' Base Width
6.0" Stone Base + 54.0" Chamber Height + 10.0" Stone Cover = 5.83' Field Height

2 Chambers x 248.0 cf +1.00' Row Adjustment x 12.40 sf x 2 Rows + 11.08' Header x 12.40 sf x 2 = 795.7 cf Chamber Storage
2 Chambers x 297.0 cf +1.00' Row Adjustment x 14.85 sf x 2 Rows + 11.08' Header x 14.85 sf x 2 = 952.8 cf Displacement

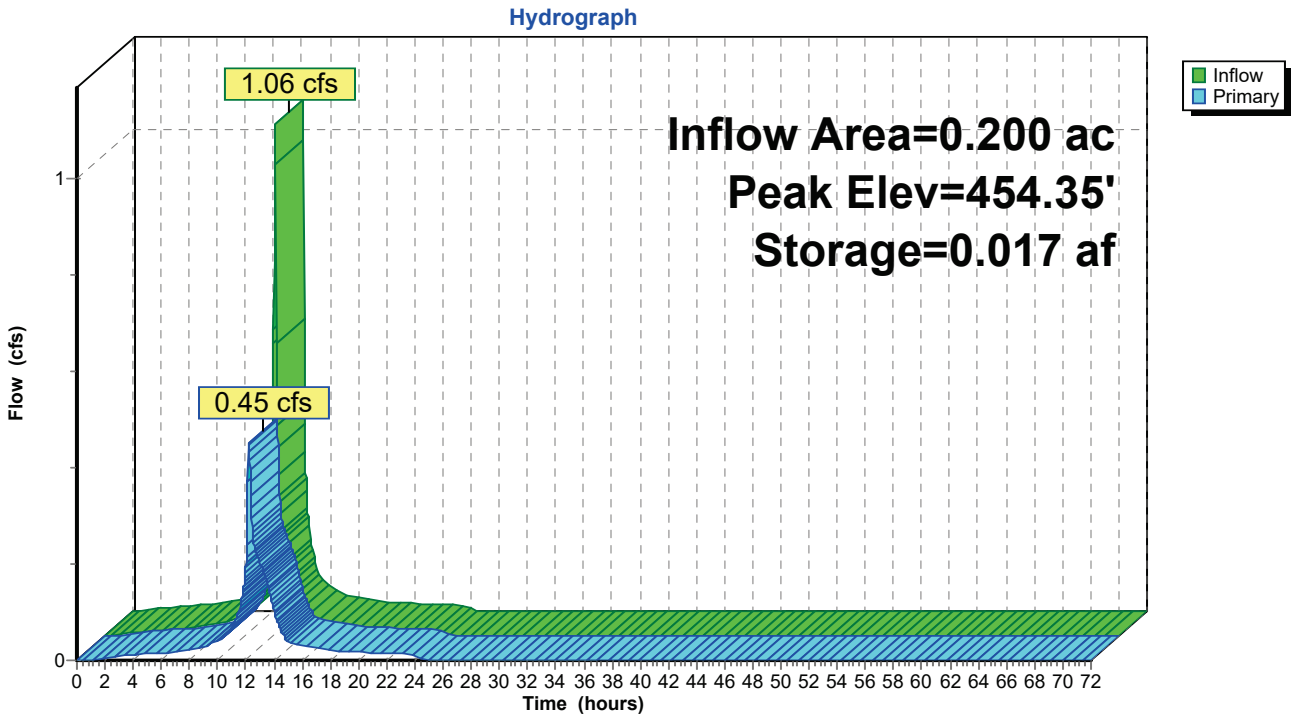
3,465.1 cf Field - 952.8 cf Chambers = 2,512.3 cf Stone x 40.0% Voids = 1,004.9 cf Stone Storage

Chamber Storage + Stone Storage = 1,800.6 cf = 0.041 af
Overall Storage Efficiency = 52.0%
Overall System Size = 33.00' x 18.00' x 5.83'

2 Chambers
128.3 cy Field
93.0 cy Stone



Pond 31P: PP-4


Hydrograph
1.06 cfs
0.45 cfs
Inflow Area=0.200 ac
Peak Elev=454.35'
Storage=0.017 af
Inflow
Primary
Flow (cfs)
0
1
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 31P: PP-4

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
451.95	0.00	454.60	0.55	457.25	2.89
452.00	0.00	454.65	0.57	457.30	3.48
452.05	0.02	454.70	0.59	457.35	4.13
452.10	0.03	454.75	0.60	457.40	4.83
452.15	0.05	454.80	0.62	457.45	5.62
452.20	0.06	454.85	0.63	457.50	6.46
452.25	0.07	454.90	0.65	457.55	7.36
452.30	0.08	454.95	0.66	457.60	8.33
452.35	0.09	455.00	0.68	457.65	9.39
452.40	0.10	455.05	0.69	457.70	10.53
452.45	0.10	455.10	0.70	457.75	**11.73**
452.50	0.11	455.15	0.72		
452.55	0.12	455.20	0.73		
452.60	0.12	455.25	0.74		
452.65	0.13	455.30	0.75		
452.70	0.13	455.35	0.76		
452.75	0.14	455.40	0.78		
452.80	0.14	455.45	0.79		
452.85	0.15	455.50	0.80		
452.90	0.15	455.55	0.81		
452.95	0.16	455.60	0.82		
453.00	0.16	455.65	0.83		
453.05	0.16	455.70	0.84		
453.10	0.17	455.75	0.85		
453.15	0.17	455.80	0.86		
453.20	0.18	455.85	0.87		
453.25	0.18	455.90	0.88		
453.30	0.18	455.95	0.89		
453.35	0.19	456.00	0.90		
453.40	0.19	456.05	0.91		
453.45	0.19	456.10	0.92		
453.50	0.20	456.15	0.93		
453.55	0.20	456.20	0.94		
453.60	0.20	456.25	0.95		
453.65	0.21	456.30	0.96		
453.70	0.21	456.35	0.97		
453.75	0.21	456.40	0.98		
453.80	0.22	456.45	0.99		
453.85	0.22	456.50	0.99		
453.90	0.22	456.55	1.00		
453.95	0.23	456.60	1.01		
454.00	0.24	456.65	1.02		
454.05	0.26	456.70	1.03		
454.10	0.28	456.75	1.04		
454.15	0.32	456.80	1.05		
454.20	0.36	456.85	1.05		
454.25	0.40	456.90	1.06		
454.30	0.43	456.95	1.07		
454.35	0.45	457.00	1.08		
454.40	0.48	457.05	1.24		
454.45	0.50	457.10	1.54		
454.50	0.52	457.15	1.92		
454.55	0.54	457.20	2.36		

Stage-Area-Storage for Pond 31P: PP-4

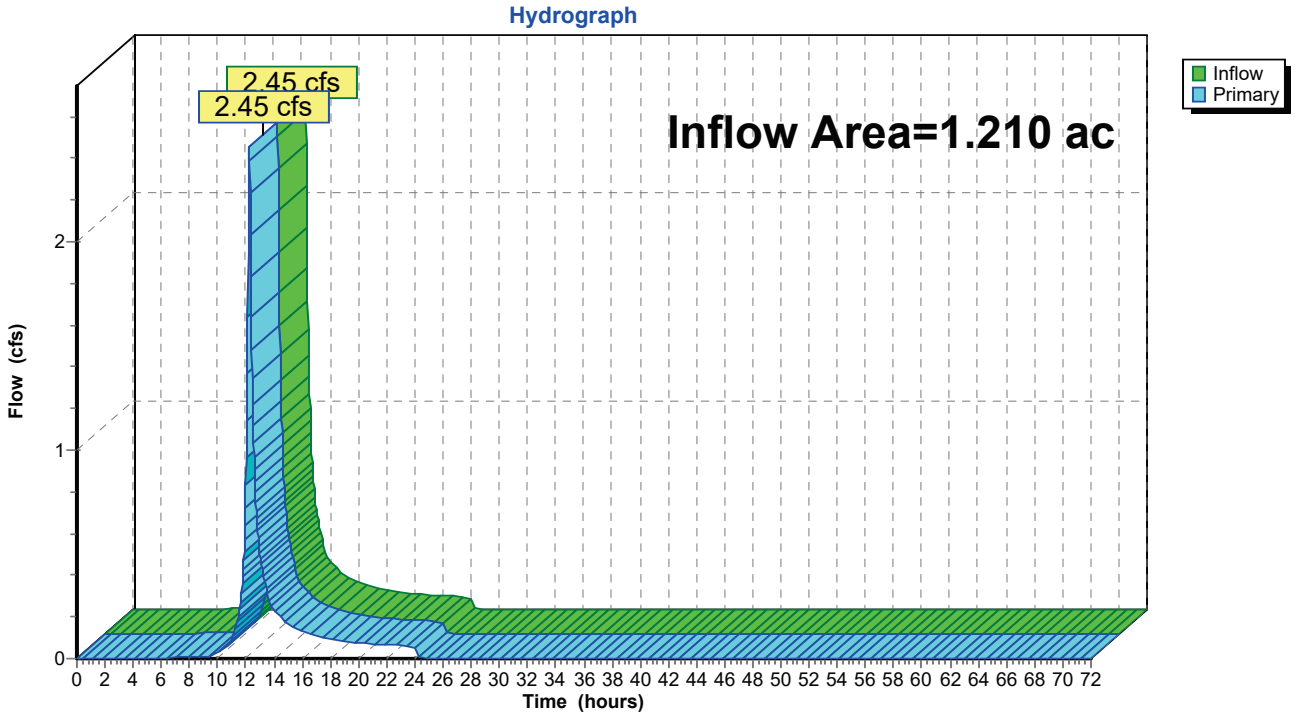
Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
451.95	0.000	454.60	0.019	457.25	0.038
452.00	0.000	454.65	0.019	457.30	0.039
452.05	0.001	454.70	0.020	457.35	0.039
452.10	0.001	454.75	0.020	457.40	0.039
452.15	0.001	454.80	0.021	457.45	0.040
452.20	0.001	454.85	0.021	457.50	0.040
452.25	0.002	454.90	0.022	457.55	0.040
452.30	0.002	454.95	0.022	457.60	0.040
452.35	0.002	455.00	0.022	457.65	0.041
452.40	0.002	455.05	0.023	457.70	0.041
452.45	0.003	455.10	0.023	457.75	**0.041**
452.50	0.003	455.15	0.024		
452.55	0.003	455.20	0.024		
452.60	0.003	455.25	0.025		
452.65	0.004	455.30	0.025		
452.70	0.004	455.35	0.025		
452.75	0.004	455.40	0.026		
452.80	0.004	455.45	0.026		
452.85	0.005	455.50	0.027		
452.90	0.005	455.55	0.027		
452.95	0.005	455.60	0.028		
453.00	0.006	455.65	0.028		
453.05	0.006	455.70	0.028		
453.10	0.006	455.75	0.029		
453.15	0.007	455.80	0.029		
453.20	0.007	455.85	0.030		
453.25	0.008	455.90	0.030		
453.30	0.008	455.95	0.030		
453.35	0.008	456.00	0.031		
453.40	0.009	456.05	0.031		
453.45	0.009	456.10	0.032		
453.50	0.009	456.15	0.032		
453.55	0.010	456.20	0.032		
453.60	0.010	456.25	0.033		
453.65	0.011	456.30	0.033		
453.70	0.011	456.35	0.033		
453.75	0.012	456.40	0.034		
453.80	0.012	456.45	0.034		
453.85	0.012	456.50	0.034		
453.90	0.013	456.55	0.035		
453.95	0.013	456.60	0.035		
454.00	0.014	456.65	0.035		
454.05	0.014	456.70	0.036		
454.10	0.014	456.75	0.036		
454.15	0.015	456.80	0.036		
454.20	0.015	456.85	0.036		
454.25	0.016	456.90	0.037		
454.30	0.016	456.95	0.037		
454.35	0.017	457.00	0.037		
454.40	0.017	457.05	0.037		
454.45	0.018	457.10	0.038		
454.50	0.018	457.15	0.038		
454.55	0.018	457.20	0.038		

Summary for Link 3L: EDA-1

Inflow Area = 1.210 ac, 3.31% Impervious, Inflow Depth = 2.42" for 10-Year-2020 event
Inflow = 2.45 cfs @ 12.24 hrs, Volume= 0.244 af
Primary = 2.45 cfs @ 12.24 hrs, Volume= 0.244 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 3L: EDA-1

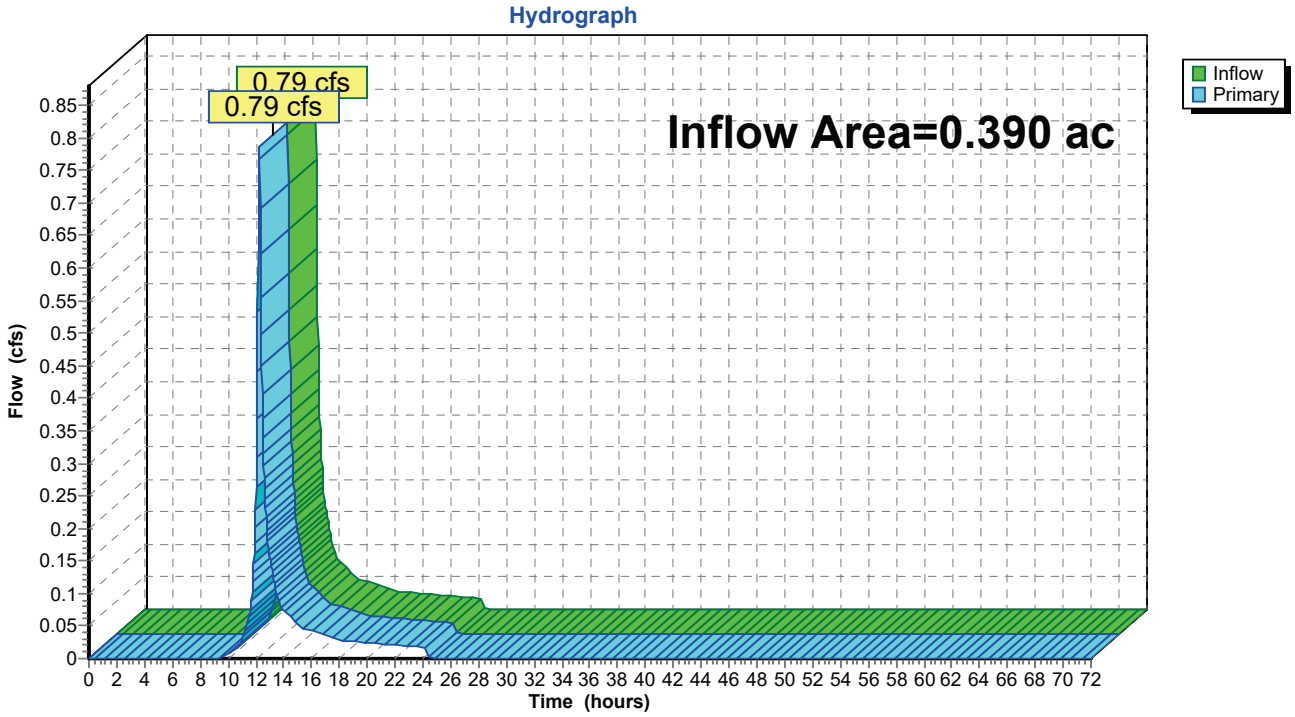


Summary for Link 6L: EDA-2

Inflow Area = 0.390 ac, 0.00% Impervious, Inflow Depth = 2.32" for 10-Year-2020 event
Inflow = 0.79 cfs @ 12.23 hrs, Volume= 0.075 af
Primary = 0.79 cfs @ 12.23 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 6L: EDA-2

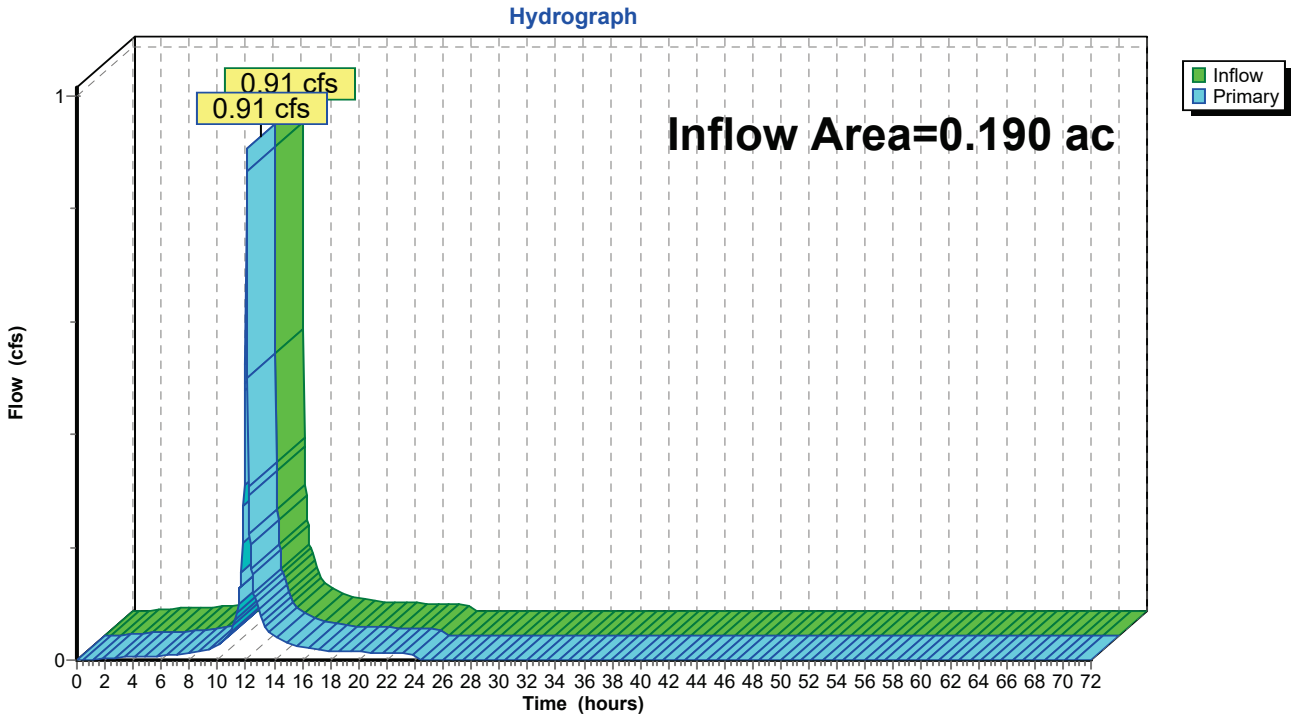


Summary for Link 9L: PDA-1A

Inflow Area = 0.190 ac, 47.37% Impervious, Inflow Depth = 3.84" for 10-Year-2020 event
Inflow = 0.91 cfs @ 12.08 hrs, Volume= 0.061 af
Primary = 0.91 cfs @ 12.08 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 28P : PP-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 9L: PDA-1A

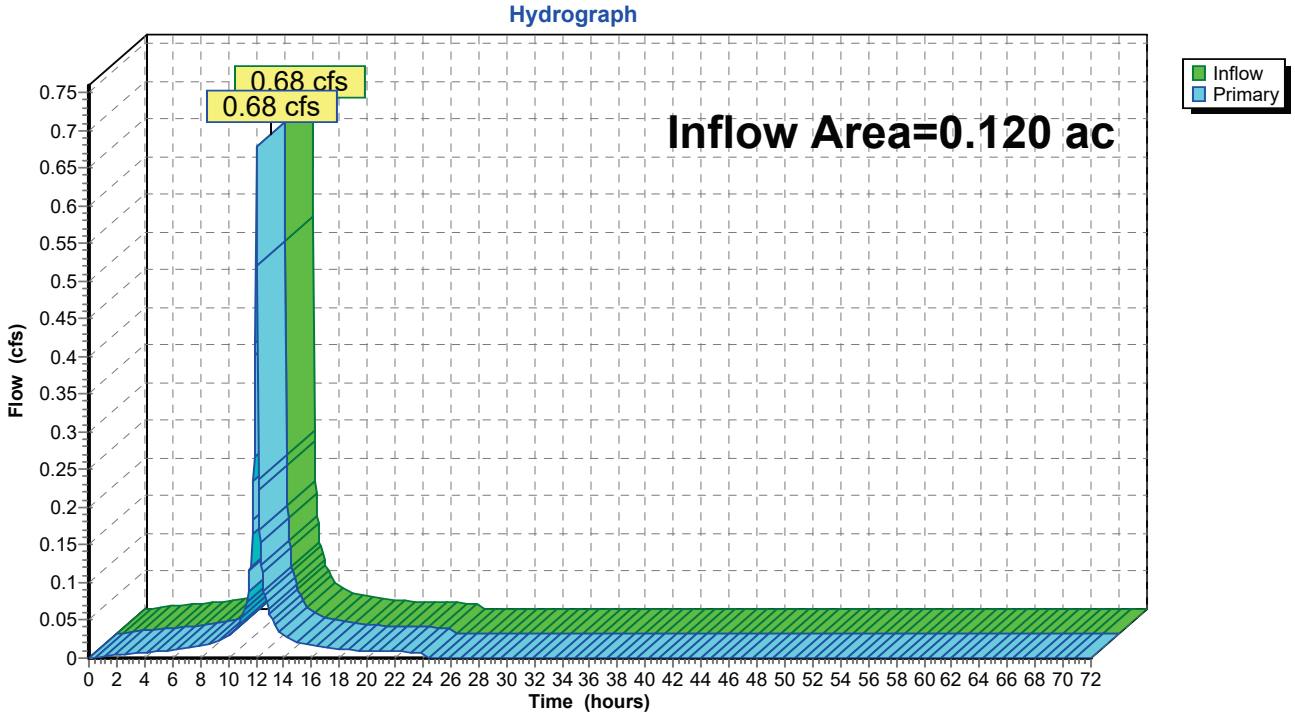


Summary for Link 12L: PDA-1B

Inflow Area = 0.120 ac,100.00% Impervious, Inflow Depth = 5.14" for 10-Year-2020 event
Inflow = 0.68 cfs @ 12.07 hrs, Volume= 0.051 af
Primary = 0.68 cfs @ 12.07 hrs, Volume= 0.051 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 29P : PP-2

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 12L: PDA-1B

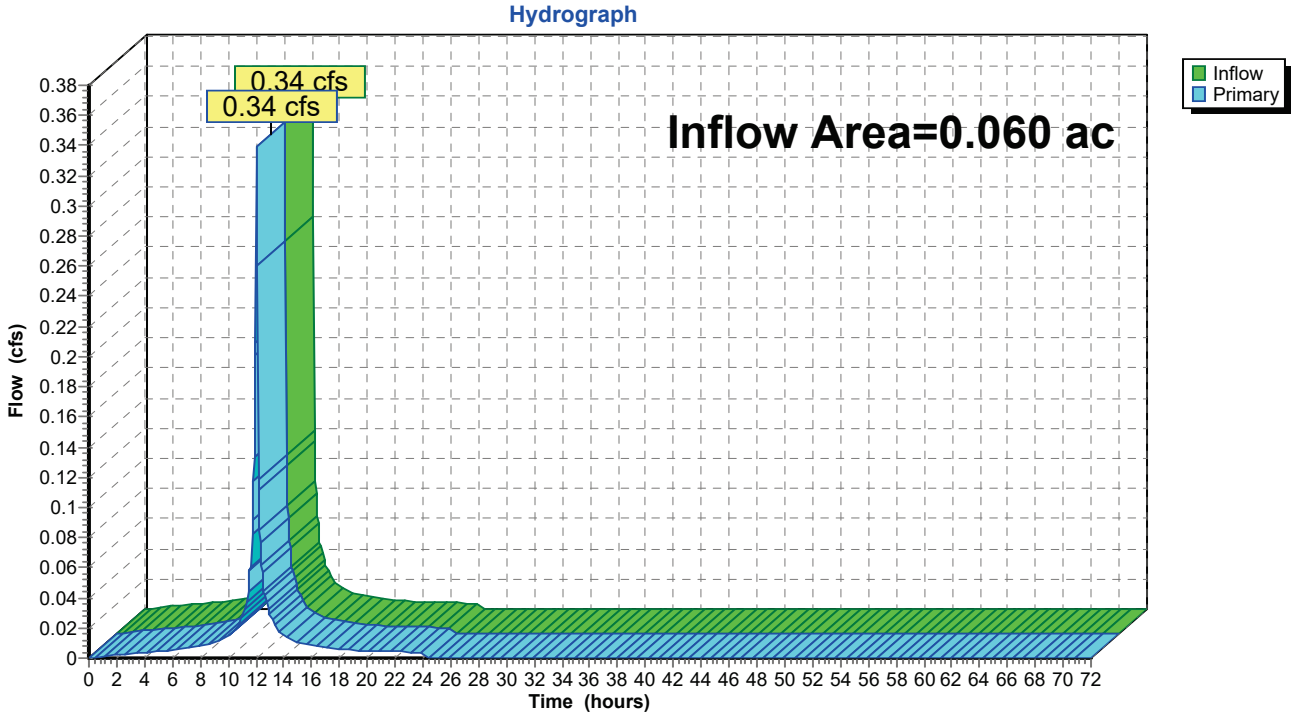


Summary for Link 15L: PDA-1C

Inflow Area = 0.060 ac,100.00% Impervious, Inflow Depth = 5.14" for 10-Year-2020 event
Inflow = 0.34 cfs @ 12.07 hrs, Volume= 0.026 af
Primary = 0.34 cfs @ 12.07 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 15L: PDA-1C

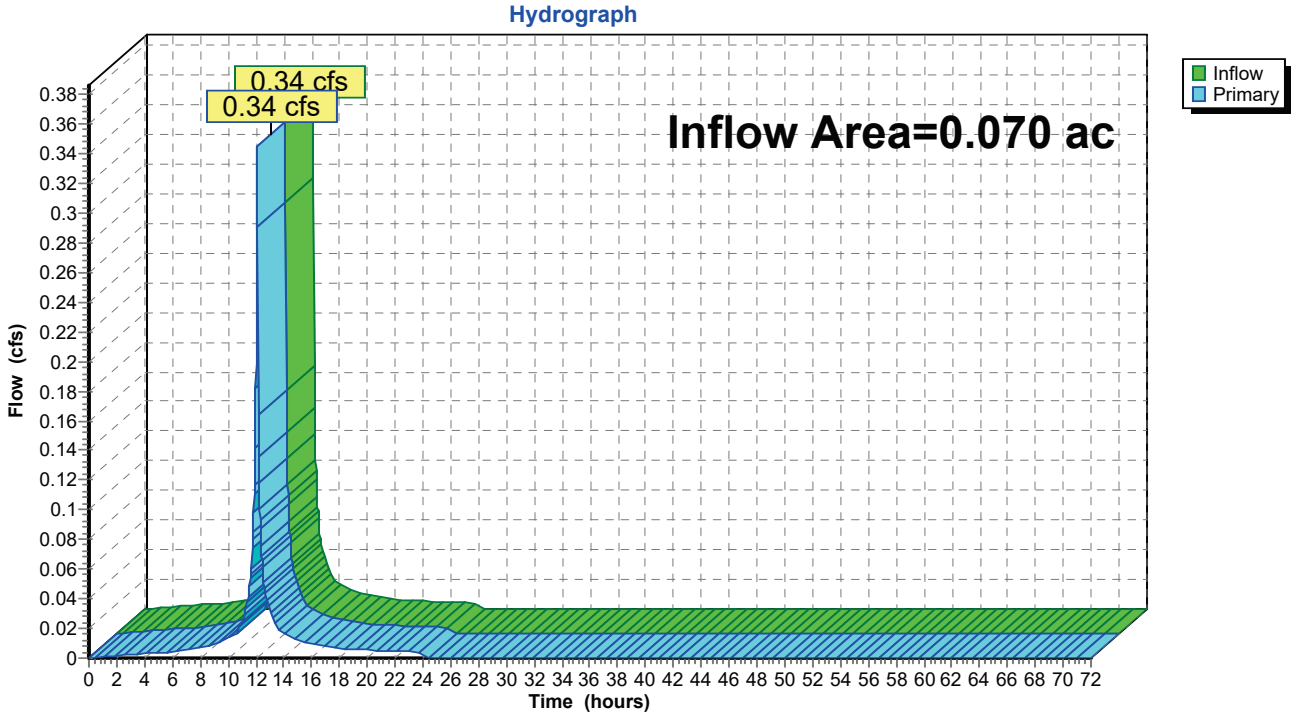


Summary for Link 18L: PDA-1D

Inflow Area = 0.070 ac, 71.43% Impervious, Inflow Depth = 4.44" for 10-Year-2020 event
Inflow = 0.34 cfs @ 12.11 hrs, Volume= 0.026 af
Primary = 0.34 cfs @ 12.11 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 31P : PP-4

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 18L: PDA-1D

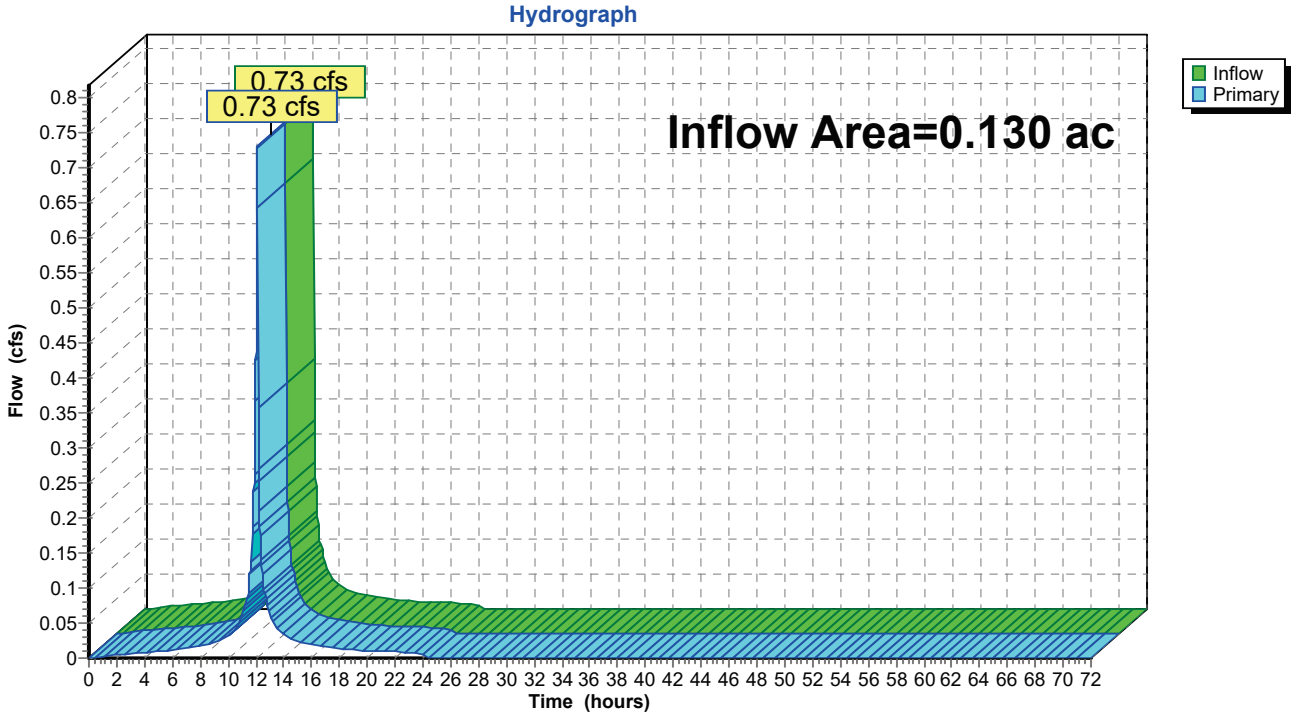


Summary for Link 21L: PDA-1E

Inflow Area = 0.130 ac,100.00% Impervious, Inflow Depth = 5.14" for 10-Year-2020 event
Inflow = 0.73 cfs @ 12.08 hrs, Volume= 0.056 af
Primary = 0.73 cfs @ 12.08 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 31P : PP-4

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 21L: PDA-1E

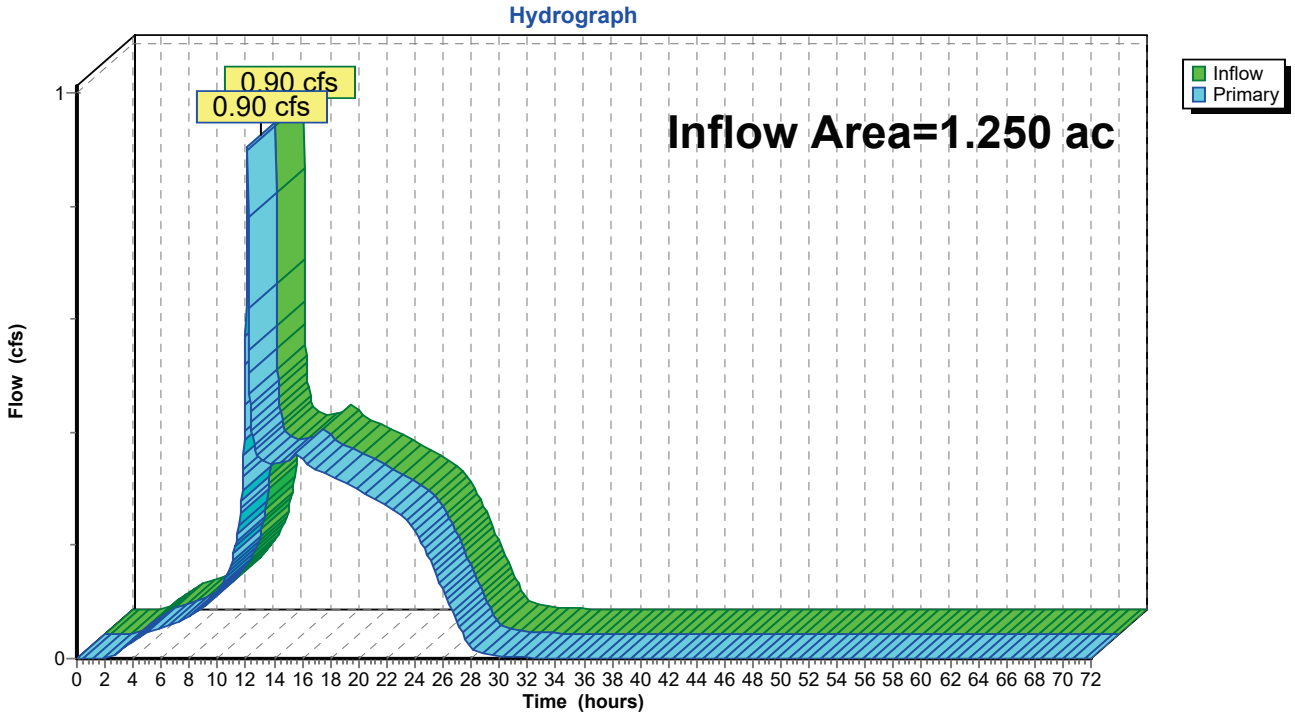


Summary for Link 25L: PDA-1

Inflow Area = 1.250 ac, 60.00% Impervious, Inflow Depth = 4.15" for 10-Year-2020 event
Inflow = 0.90 cfs @ 12.11 hrs, Volume= 0.433 af
Primary = 0.90 cfs @ 12.11 hrs, Volume= 0.433 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 25L: PDA-1

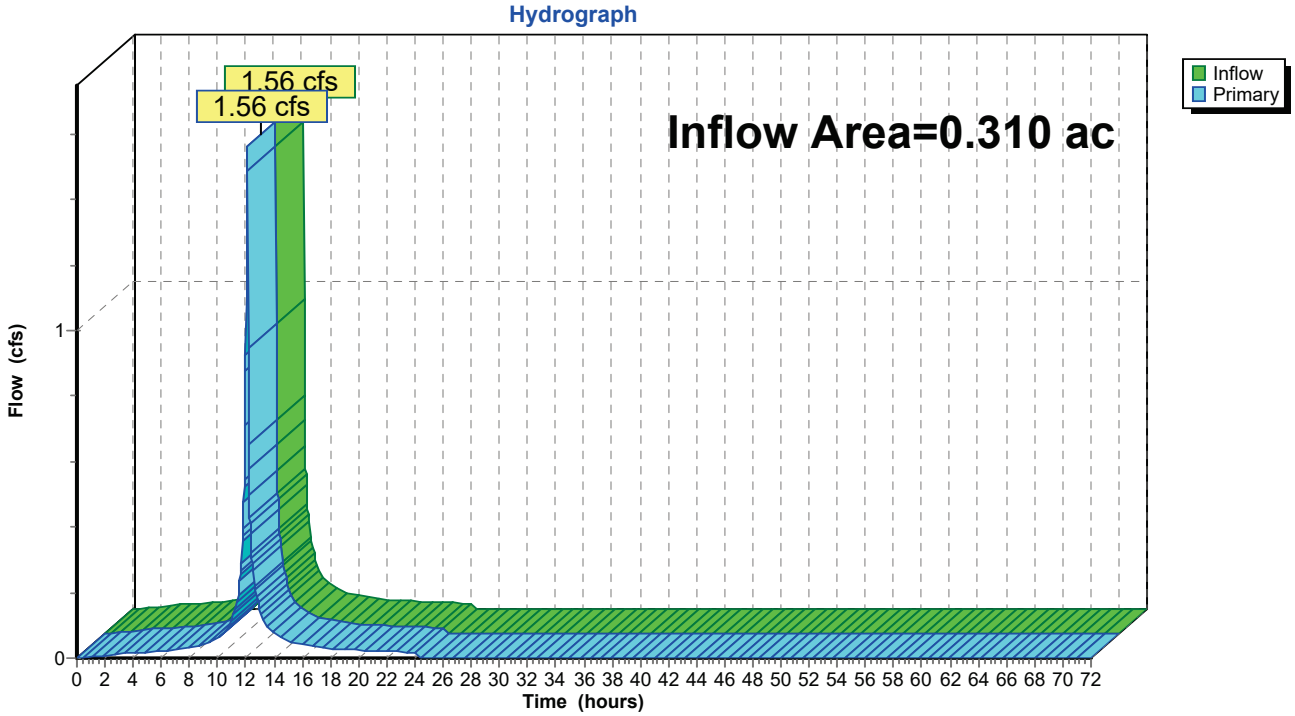


Summary for Link 28L: PDA-1F

Inflow Area = 0.310 ac, 77.42% Impervious, Inflow Depth = 4.58" for 10-Year-2020 event
Inflow = 1.56 cfs @ 12.09 hrs, Volume= 0.118 af
Primary = 1.56 cfs @ 12.09 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 28L: PDA-1F

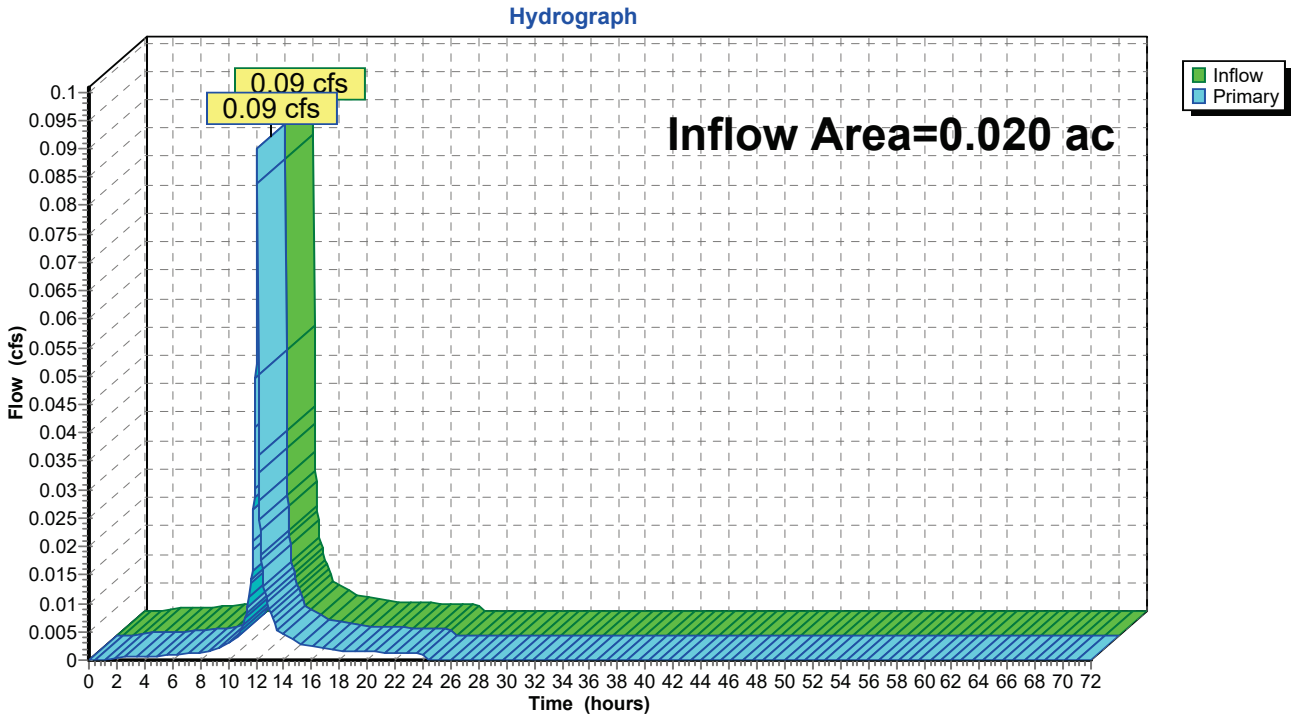


Summary for Link 31L: PDA-1H

Inflow Area = 0.020 ac, 50.00% Impervious, Inflow Depth = 3.91" for 10-Year-2020 event
Inflow = 0.09 cfs @ 12.09 hrs, Volume= 0.007 af
Primary = 0.09 cfs @ 12.09 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min
Routed to Link 25L : PDA-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 31L: PDA-1H

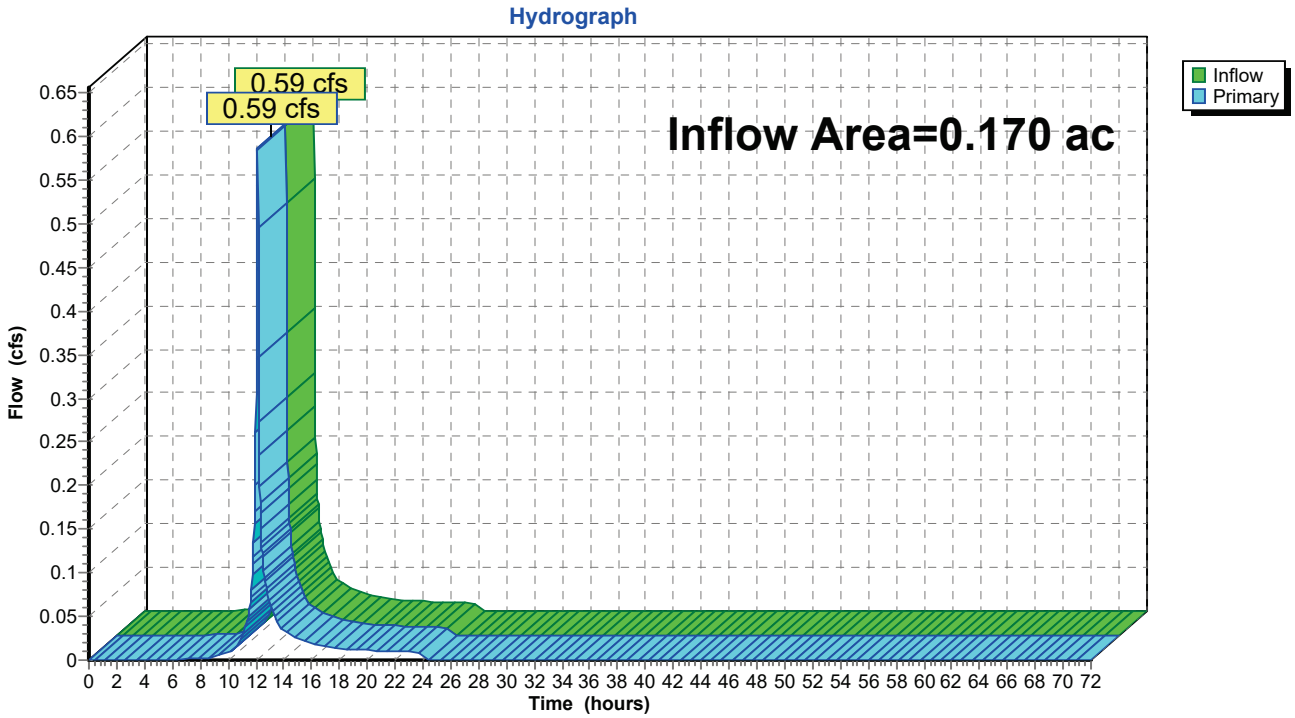


Summary for Link 32L: PDA-1I

Inflow Area = 0.170 ac, 5.88% Impervious, Inflow Depth = 2.82" for 10-Year-2020 event
Inflow = 0.59 cfs @ 12.11 hrs, Volume= 0.040 af
Primary = 0.59 cfs @ 12.11 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min
Routed to Link 25L : PDA-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 32L: PDA-1I

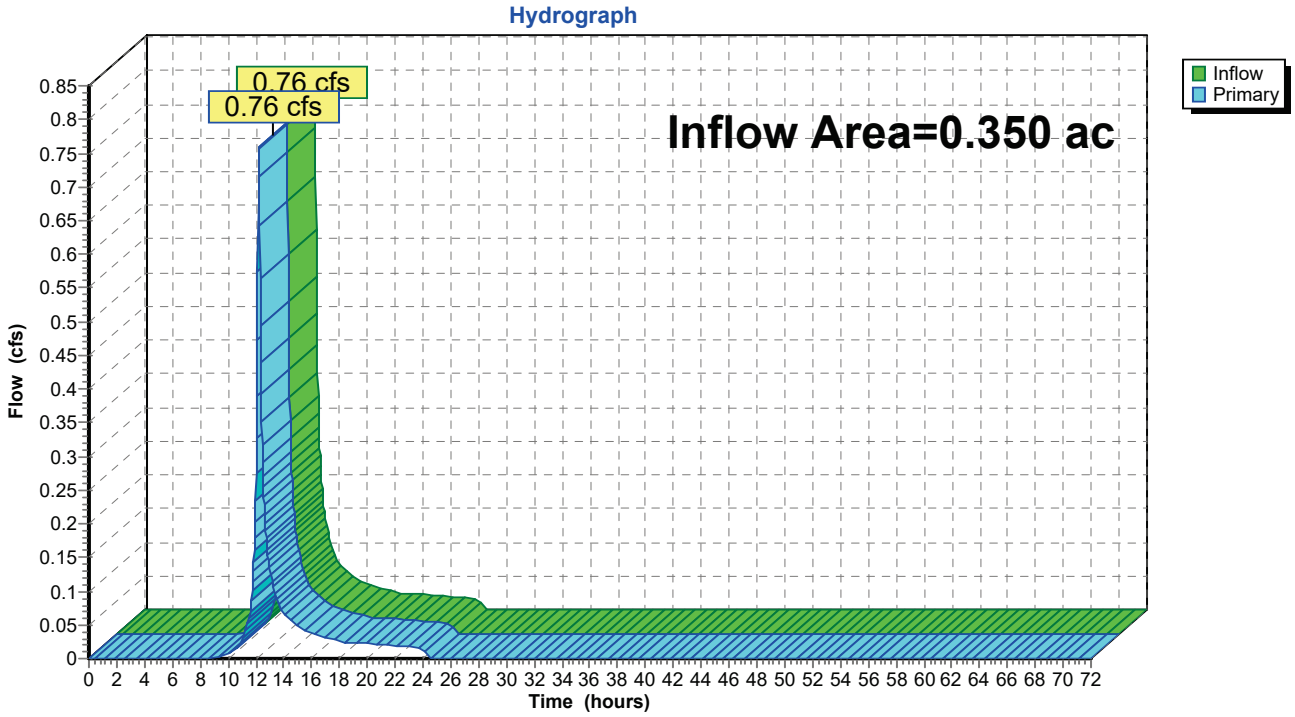


Summary for Link 34L: PDA-2

Inflow Area = 0.350 ac, 0.00% Impervious, Inflow Depth = 2.32" for 10-Year-2020 event
Inflow = 0.76 cfs @ 12.20 hrs, Volume= 0.068 af
Primary = 0.76 cfs @ 12.20 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 34L: PDA-2

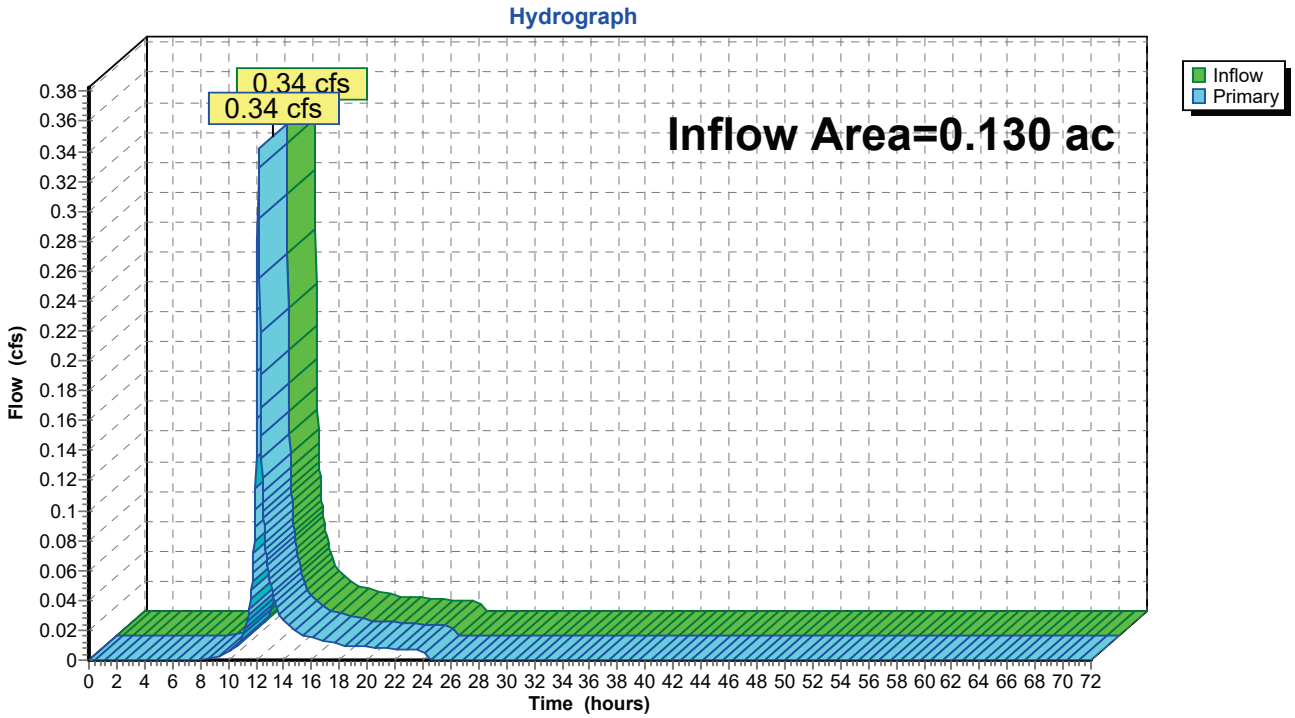


Summary for Link 38L: PDA-1G

Inflow Area = 0.130 ac, 0.00% Impervious, Inflow Depth = 2.67" for 10-Year-2020 event
Inflow = 0.34 cfs @ 12.18 hrs, Volume= 0.029 af
Primary = 0.34 cfs @ 12.18 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 38L: PDA-1G

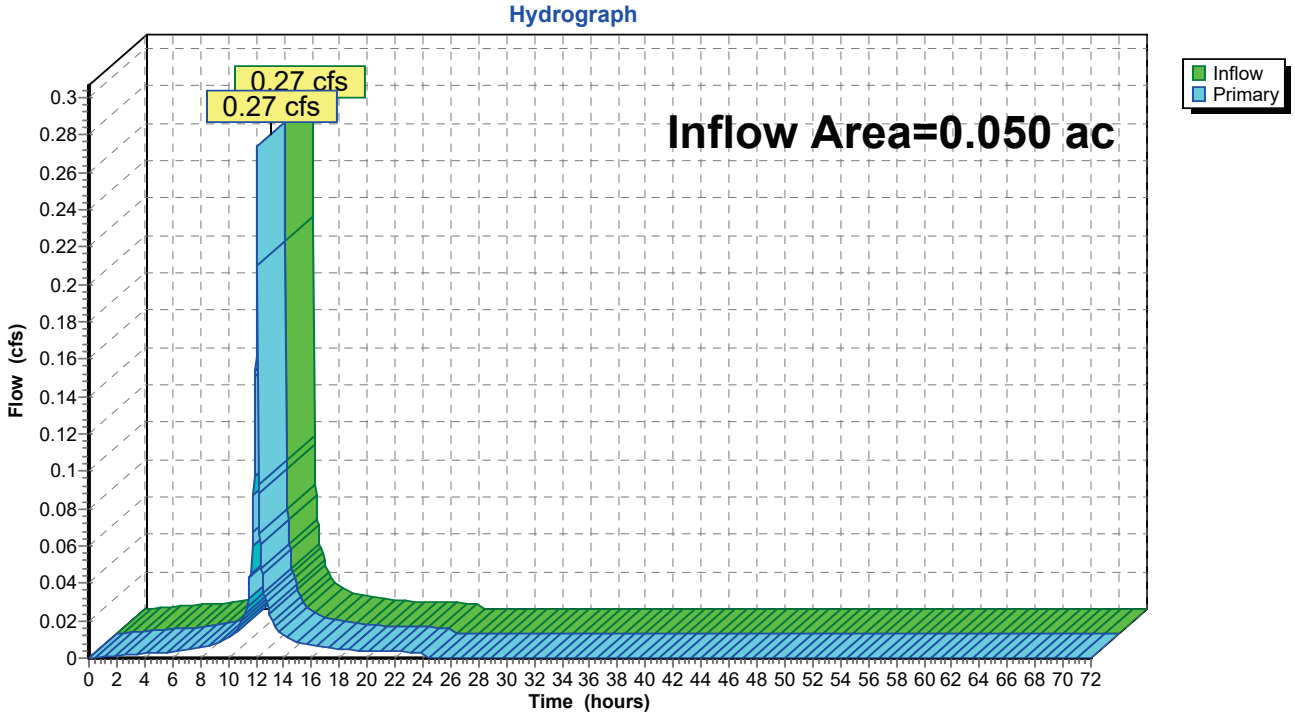


Summary for Link 41L: PDA-1J

Inflow Area = 0.050 ac, 80.00% Impervious, Inflow Depth = 4.65" for 10-Year-2020 event
Inflow = 0.27 cfs @ 12.08 hrs, Volume= 0.019 af
Primary = 0.27 cfs @ 12.08 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 41L: PDA-1J



Summary for Subcatchment 1S: EDA-1 IMPERVIOUS

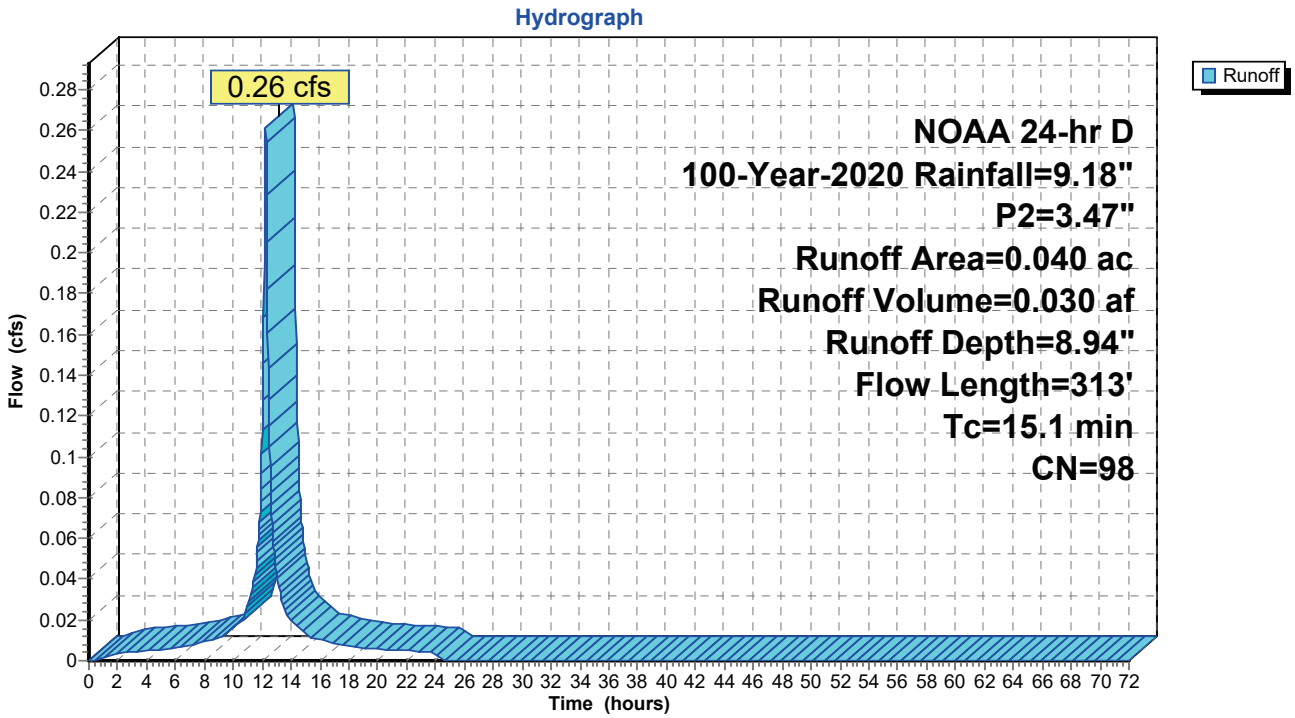
Runoff = 0.26 cfs @ 12.23 hrs, Volume= 0.030 af, Depth= 8.94"
Routed to Link 3L : EDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG C
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0579	0.12		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.47"
1.6	213	0.1867	2.16		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
15.1	313	Total			

Subcatchment 1S: EDA-1 IMPERVIOUS



Summary for Subcatchment 2S: EDA-1 PERVIOUS

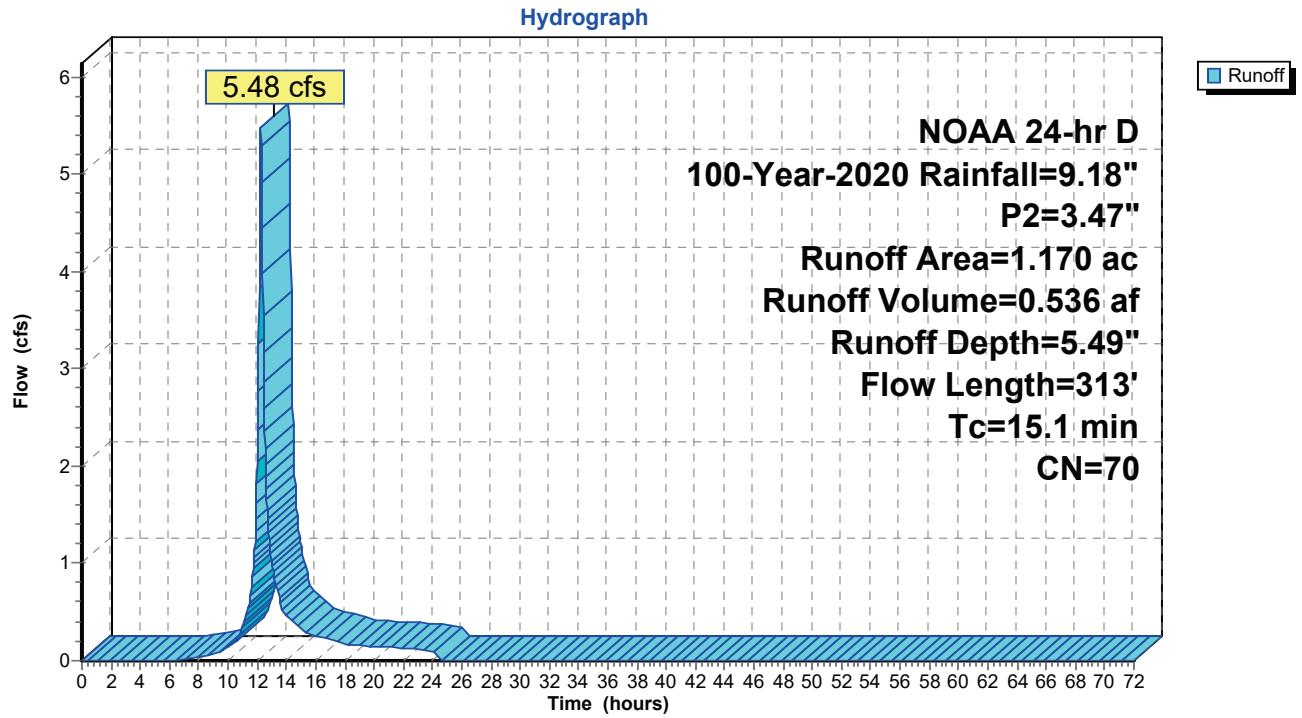
Runoff = 5.48 cfs @ 12.23 hrs, Volume= 0.536 af, Depth= 5.49"
Routed to Link 3L : EDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
1.170	70	Woods, Good, HSG C
1.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0579	0.12		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.47"
1.6	213	0.1867	2.16		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
15.1	313	Total			

Subcatchment 2S: EDA-1 PERVIOUS



Summary for Subcatchment 5S: EDA-2 PERVIOUS

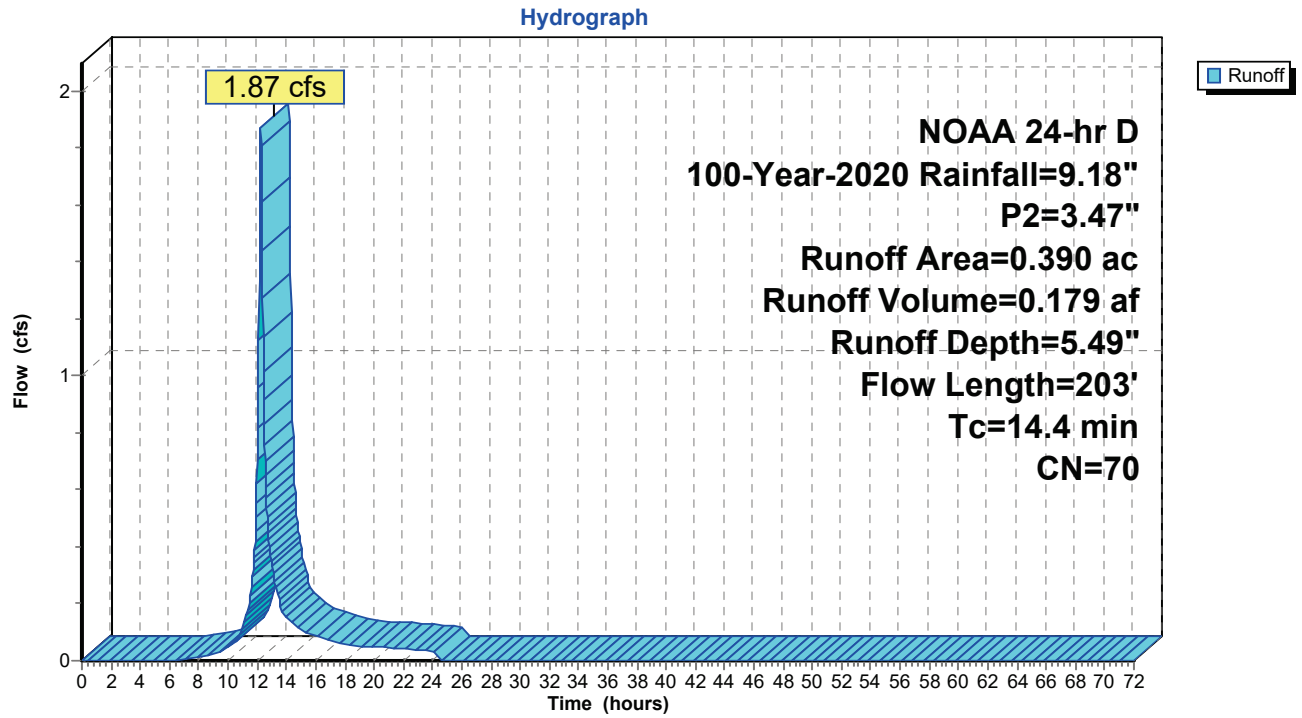
Runoff = 1.87 cfs @ 12.22 hrs, Volume= 0.179 af, Depth= 5.49"
Routed to Link 6L : EDA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.390	70	Woods, Good, HSG C
0.390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0582	0.12		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.47"
0.9	103	0.1619	2.01		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
14.4	203	Total			

Subcatchment 5S: EDA-2 PERVIOUS



Summary for Subcatchment 7S: PDA-1A IMPERVIOUS

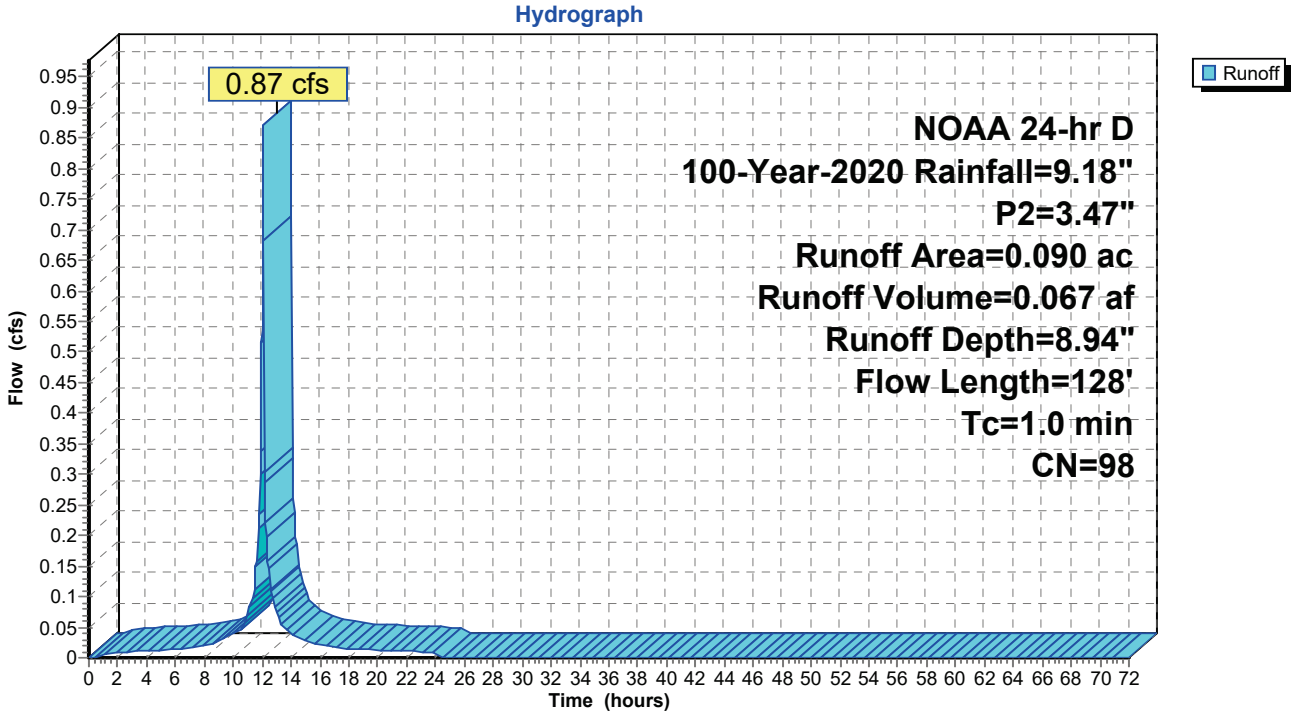
Runoff = 0.87 cfs @ 12.07 hrs, Volume= 0.067 af, Depth= 8.94"
Routed to Link 9L : PDA-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.090	98	Paved parking, HSG C
0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0347	1.22		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.7	85	0.0500	2.00		**Sheet Flow, BC** Smooth surfaces n= 0.011 P2= 3.47"
0.1	28	0.0493	4.51		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
1.0	128	Total			

Subcatchment 7S: PDA-1A IMPERVIOUS



Summary for Subcatchment 8S: PDA-1A PERVIOUS

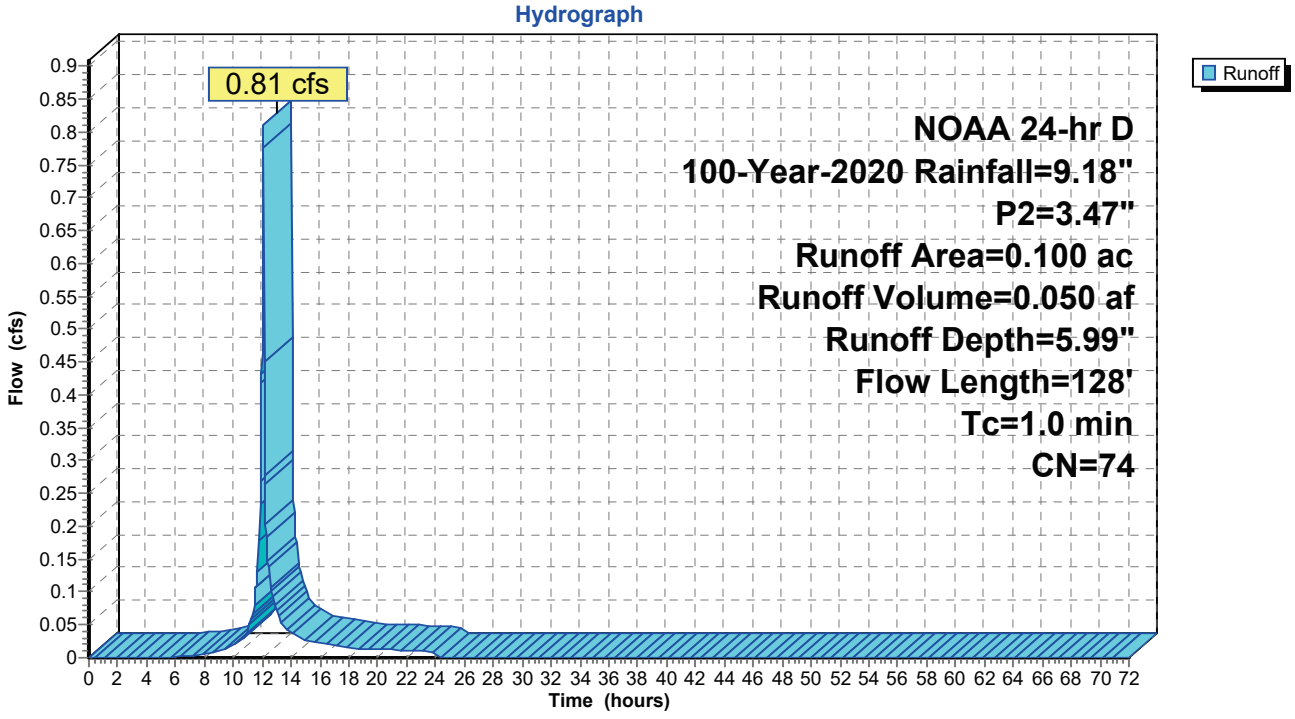
Runoff = 0.81 cfs @ 12.08 hrs, Volume= 0.050 af, Depth= 5.99"
Routed to Link 9L : PDA-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.100	74	>75% Grass cover, Good, HSG C
0.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0347	1.22		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.7	85	0.0500	2.00		**Sheet Flow, BC** Smooth surfaces n= 0.011 P2= 3.47"
0.1	28	0.0493	4.51		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
1.0	128	Total			

Subcatchment 8S: PDA-1A PERVIOUS



Summary for Subcatchment 10S: PDA-1B IMPERVIOUS

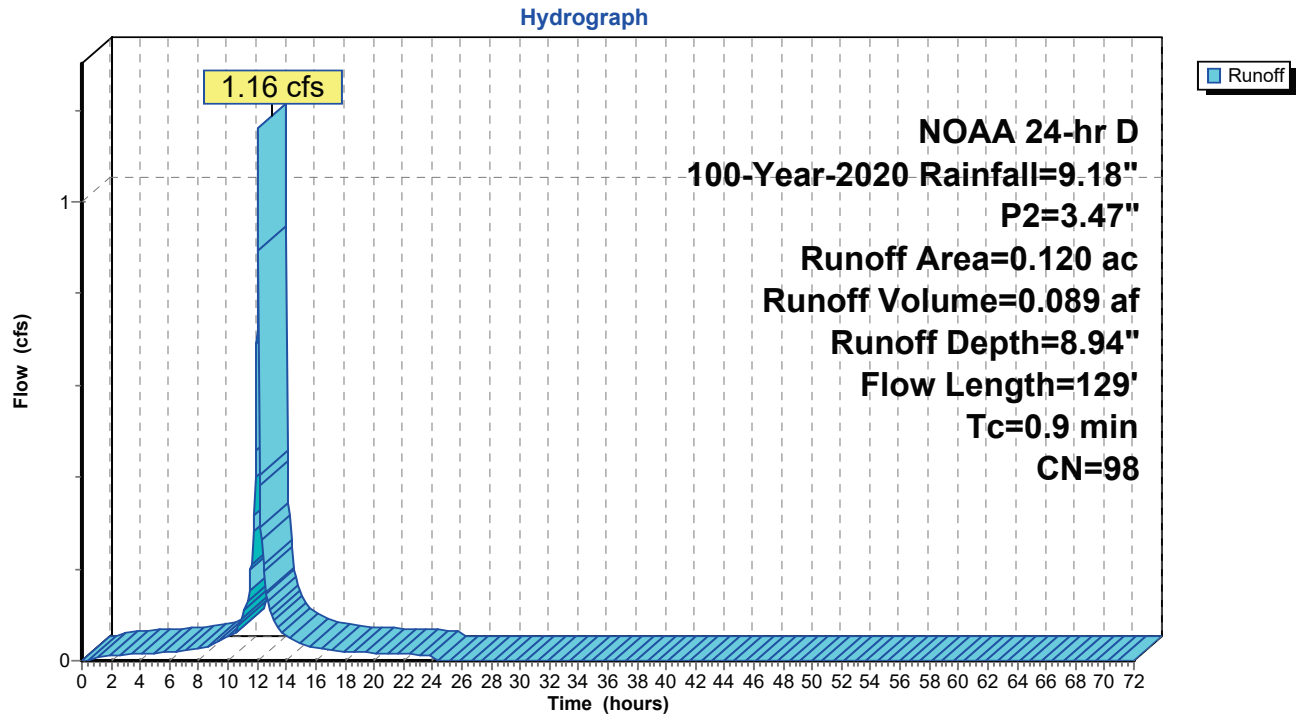
Runoff = 1.16 cfs @ 12.07 hrs, Volume= 0.089 af, Depth= 8.94"
Routed to Link 12L : PDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.120	98	Paved parking, HSG C
0.120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0484	2.04		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.1	29	0.0610	3.98		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
0.9	129	Total			

Subcatchment 10S: PDA-1B IMPERVIOUS



Summary for Subcatchment 13S: PDA-1C IMPERVIOUS

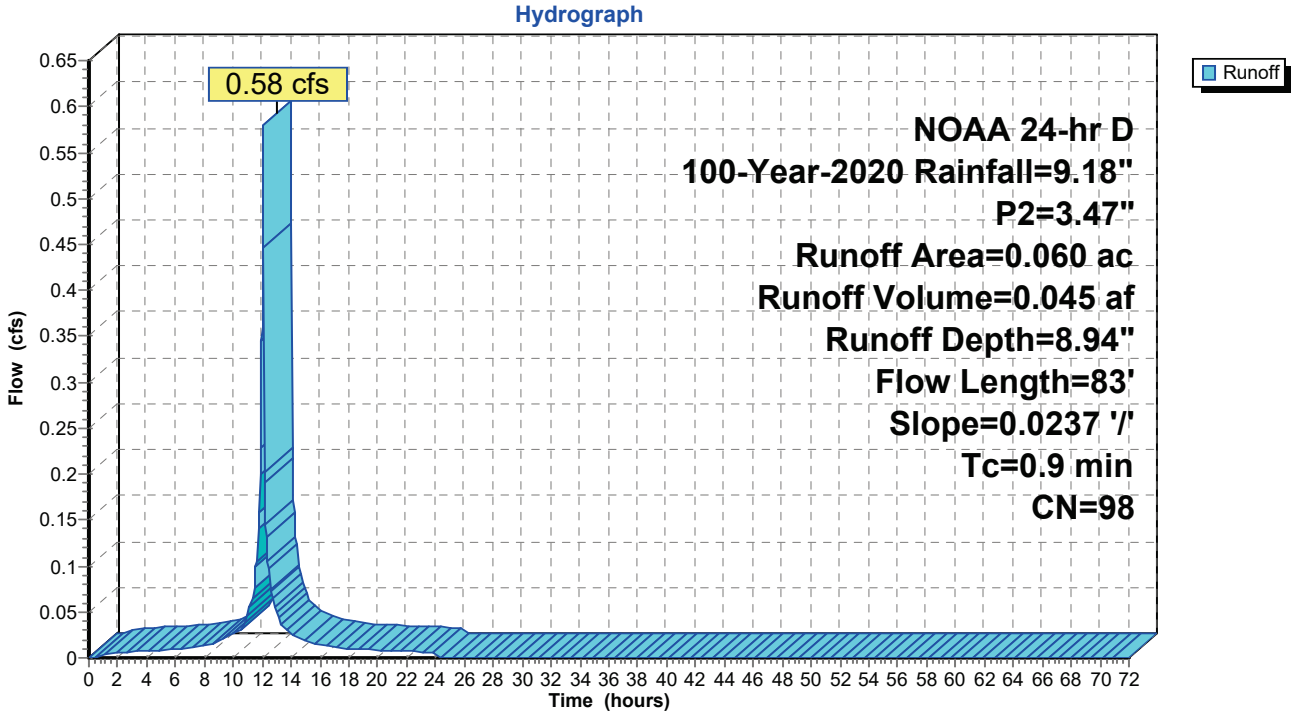
Runoff = 0.58 cfs @ 12.07 hrs, Volume= 0.045 af, Depth= 8.94"
Routed to Link 15L : PDA-1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.060	98	Paved parking, HSG C
0.060		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	83	0.0237	1.48		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"

Subcatchment 13S: PDA-1C IMPERVIOUS



Summary for Subcatchment 16S: PDA-1D IMPERVIOUS

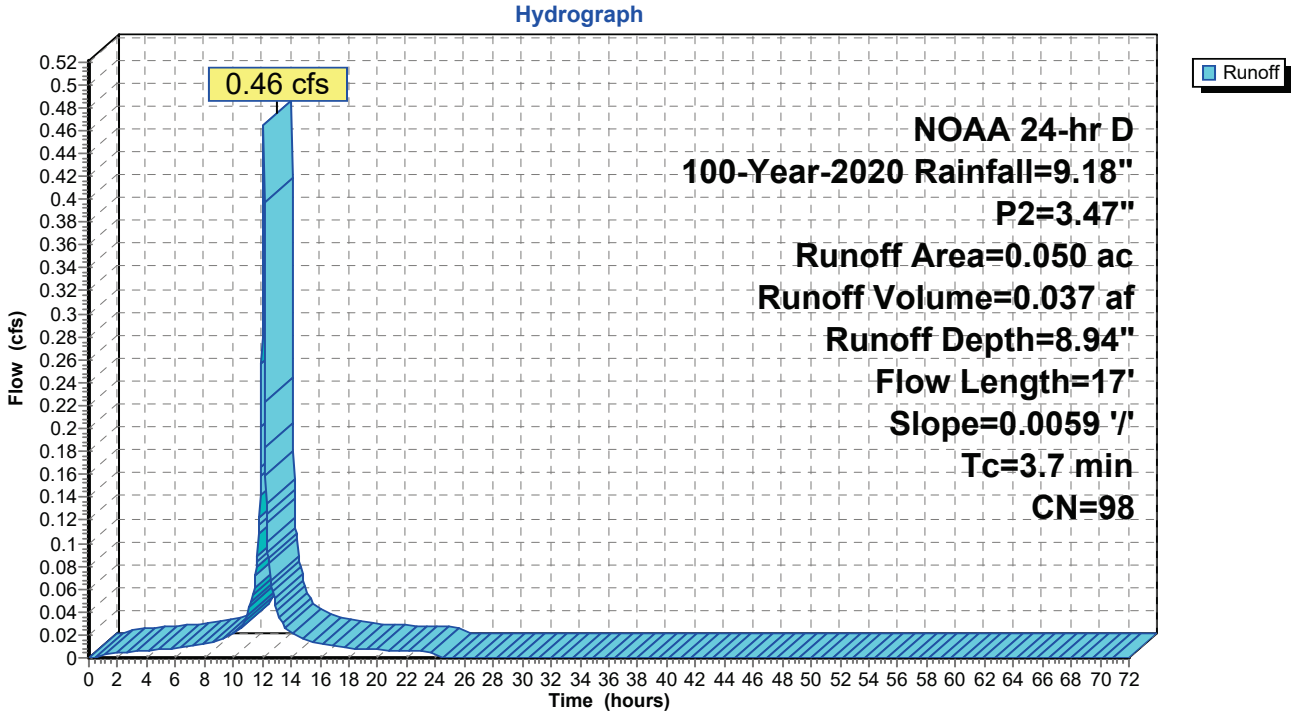
Runoff = 0.46 cfs @ 12.10 hrs, Volume= 0.037 af, Depth= 8.94"
Routed to Link 18L : PDA-1D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.050	98	Paved parking, HSG C
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	17	0.0059	0.08		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"

Subcatchment 16S: PDA-1D IMPERVIOUS



Summary for Subcatchment 17S: PDA-1D PERVIOUS

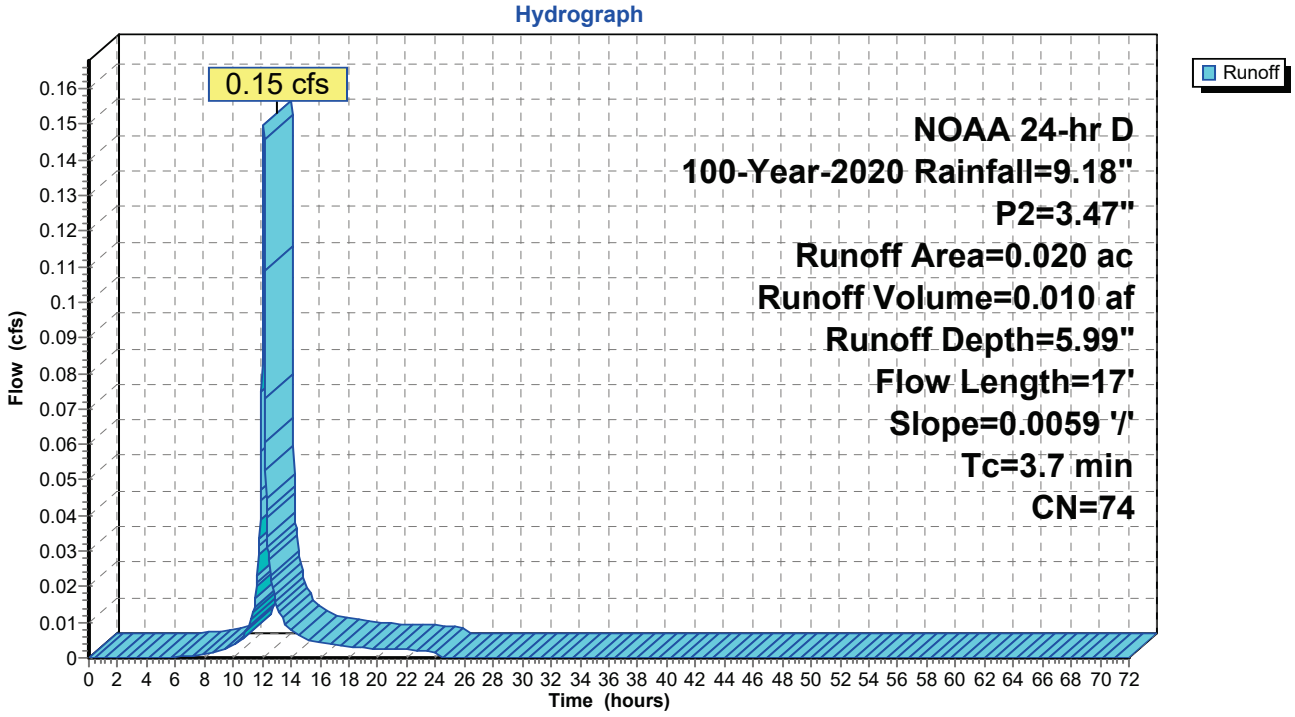
Runoff = 0.15 cfs @ 12.11 hrs, Volume= 0.010 af, Depth= 5.99"
Routed to Link 18L : PDA-1D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.020	74	>75% Grass cover, Good, HSG C
0.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	17	0.0059	0.08		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"

Subcatchment 17S: PDA-1D PERVIOUS



Summary for Subcatchment 19S: PDA-1E IMPERVIOUS

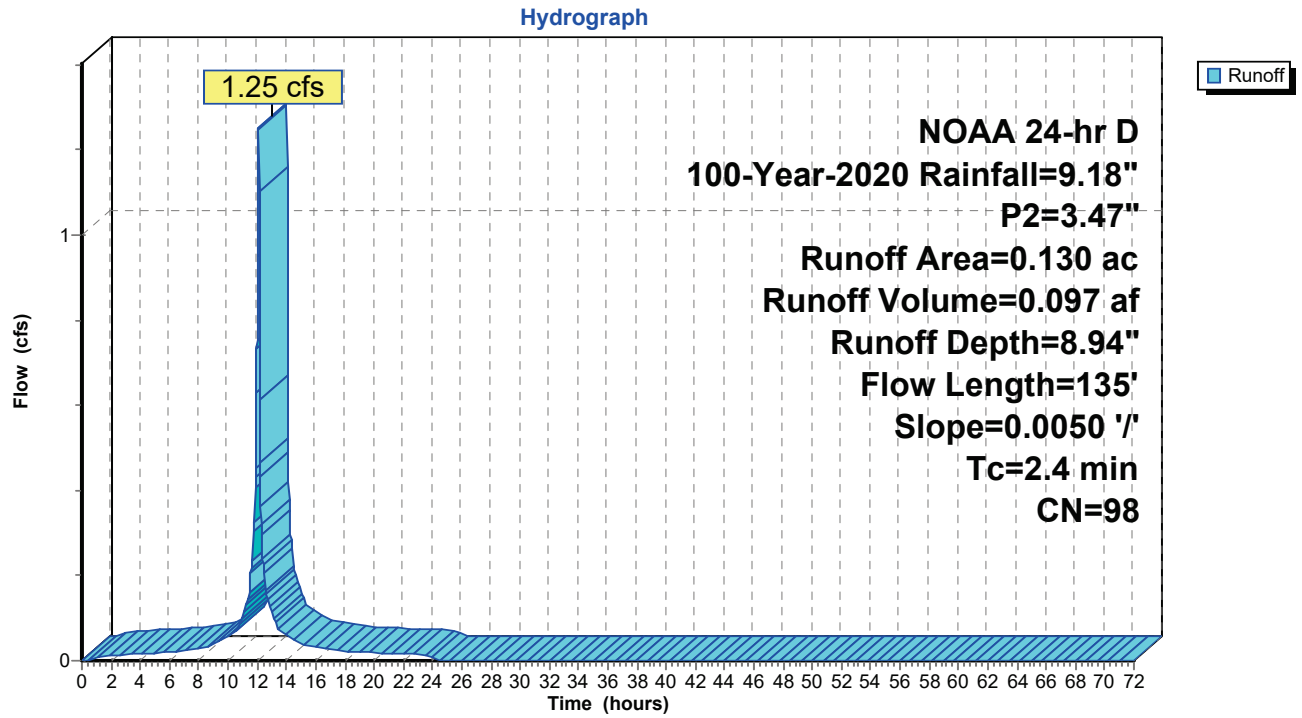
Runoff = 1.25 cfs @ 12.08 hrs, Volume= 0.097 af, Depth= 8.94"
Routed to Link 21L : PDA-1E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.130	98	Paved parking, HSG C
0.130		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	100	0.0050	0.82		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.4	35	0.0050	1.44		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
2.4	135	Total			

Subcatchment 19S: PDA-1E IMPERVIOUS



Summary for Subcatchment 23S: PDA-2

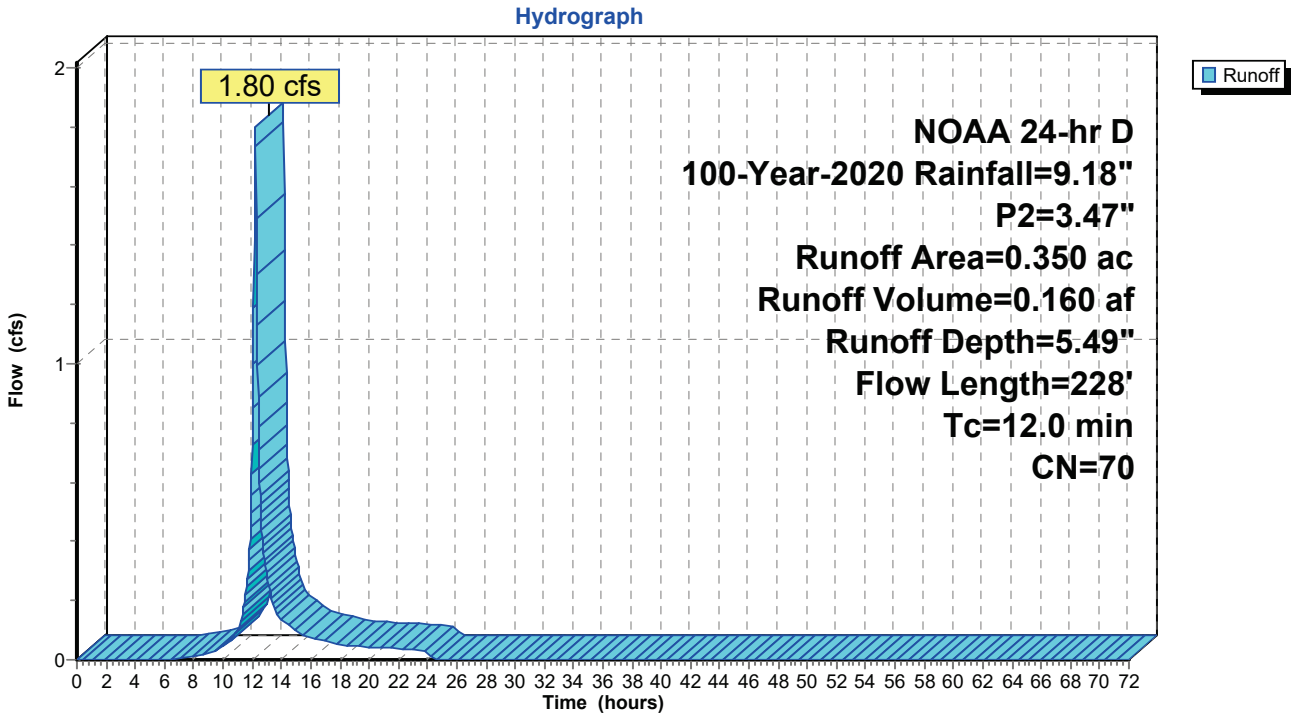
Runoff = 1.80 cfs @ 12.20 hrs, Volume= 0.160 af, Depth= 5.49"
Routed to Link 34L : PDA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.350	70	Woods, Good, HSG C
0.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	62	0.0385	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.47"
0.4	36	0.1011	1.59		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.2	49	0.0543	3.75		**Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps
0.6	81	0.1763	2.10		**Shallow Concentrated Flow, DE** Woodland Kv= 5.0 fps
12.0	228	Total			

Subcatchment 23S: PDA-2



Summary for Subcatchment 26S: PDA-1F IMPERVIOUS

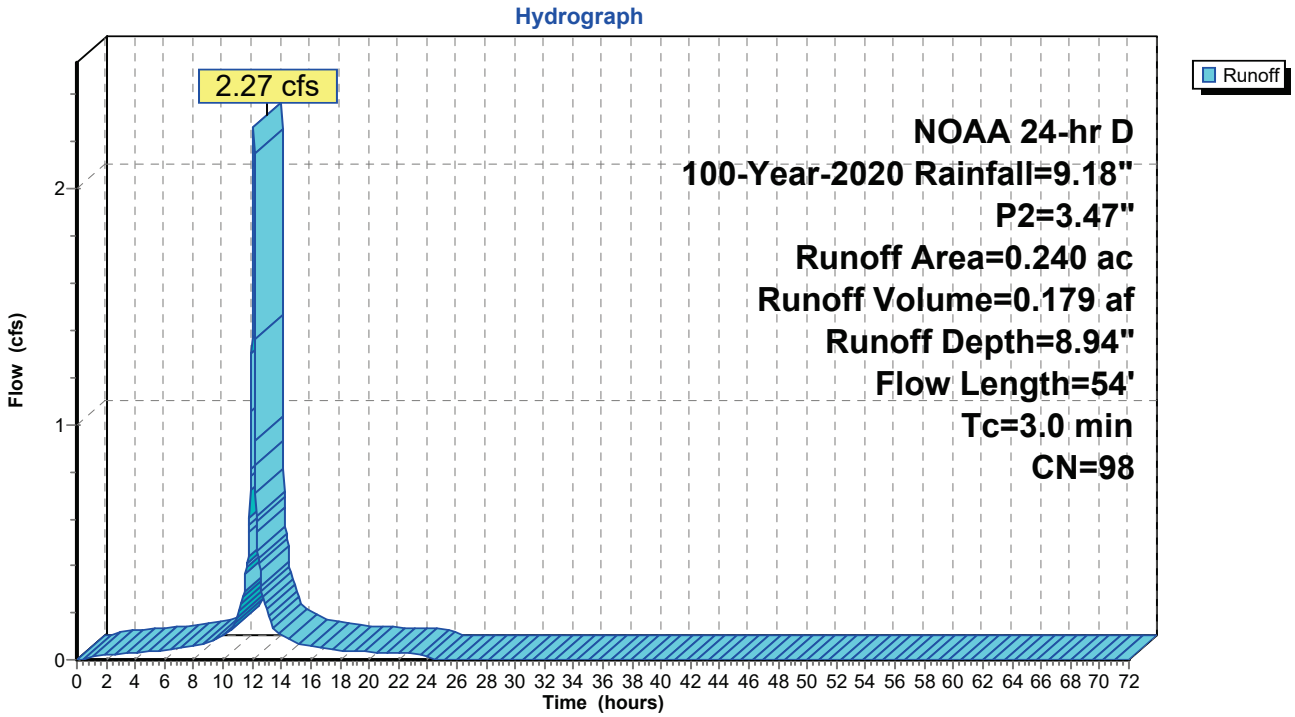
Runoff = 2.27 cfs @ 12.09 hrs, Volume= 0.179 af, Depth= 8.94"
Routed to Link 28L : PDA-1F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG C
0.240		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	7	0.0071	0.56		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
1.4	18	0.0794	0.22		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
0.2	20	0.0375	1.33		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 3.47"
1.2	9	0.0278	0.12		**Sheet Flow, DE** Grass: Short n= 0.150 P2= 3.47"
3.0	54	Total			

Subcatchment 26S: PDA-1F IMPERVIOUS



Summary for Subcatchment 27S: PDA-1F PERVIOUS

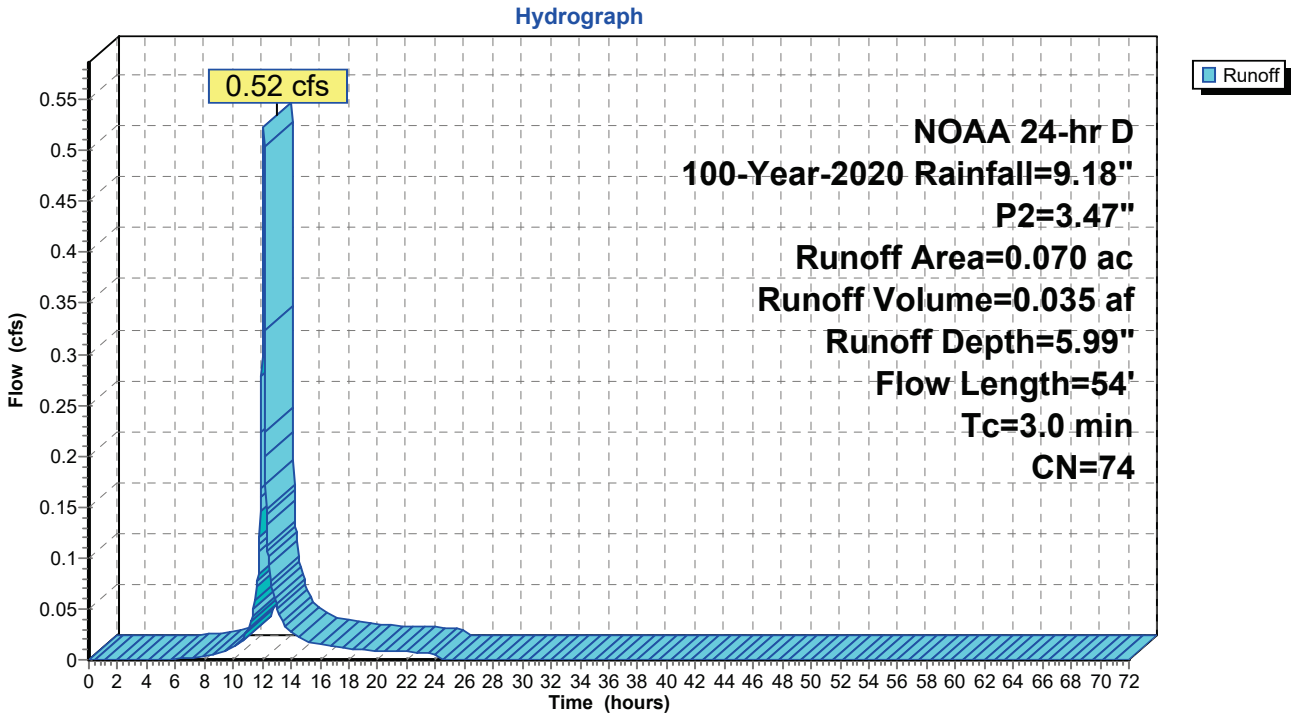
Runoff = 0.52 cfs @ 12.10 hrs, Volume= 0.035 af, Depth= 5.99"
Routed to Link 28L : PDA-1F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.070	74	>75% Grass cover, Good, HSG C
0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	7	0.0071	0.56		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
1.4	18	0.0794	0.22		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
0.2	20	0.0375	1.33		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 3.47"
1.2	9	0.0278	0.12		**Sheet Flow, DE** Grass: Short n= 0.150 P2= 3.47"
3.0	54	Total			

Subcatchment 27S: PDA-1F PERVIOUS



Summary for Subcatchment 29S: PDA-1H IMPERVIOUS

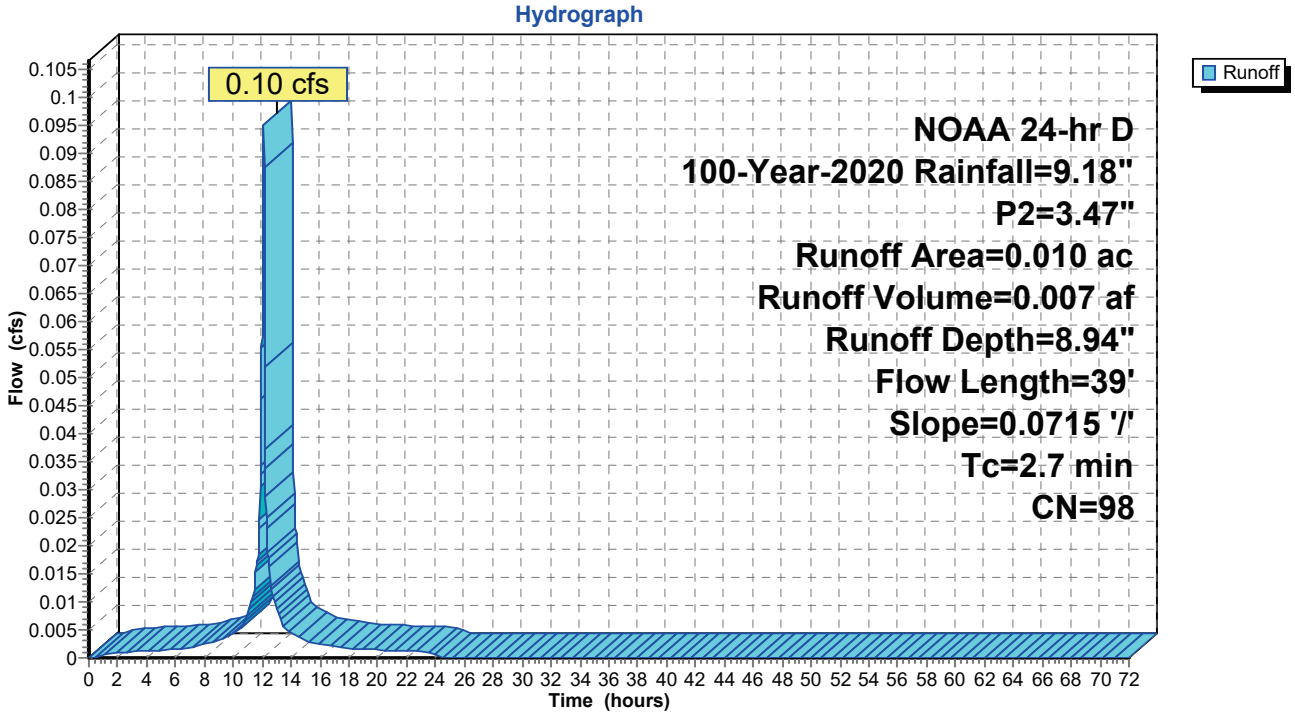
Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af, Depth= 8.94"
Routed to Link 31L : PDA-1H

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.010	98	Paved parking, HSG C
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	39	0.0715	0.24		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"

Subcatchment 29S: PDA-1H IMPERVIOUS



Summary for Subcatchment 30S: PDA-1H PERVIOUS

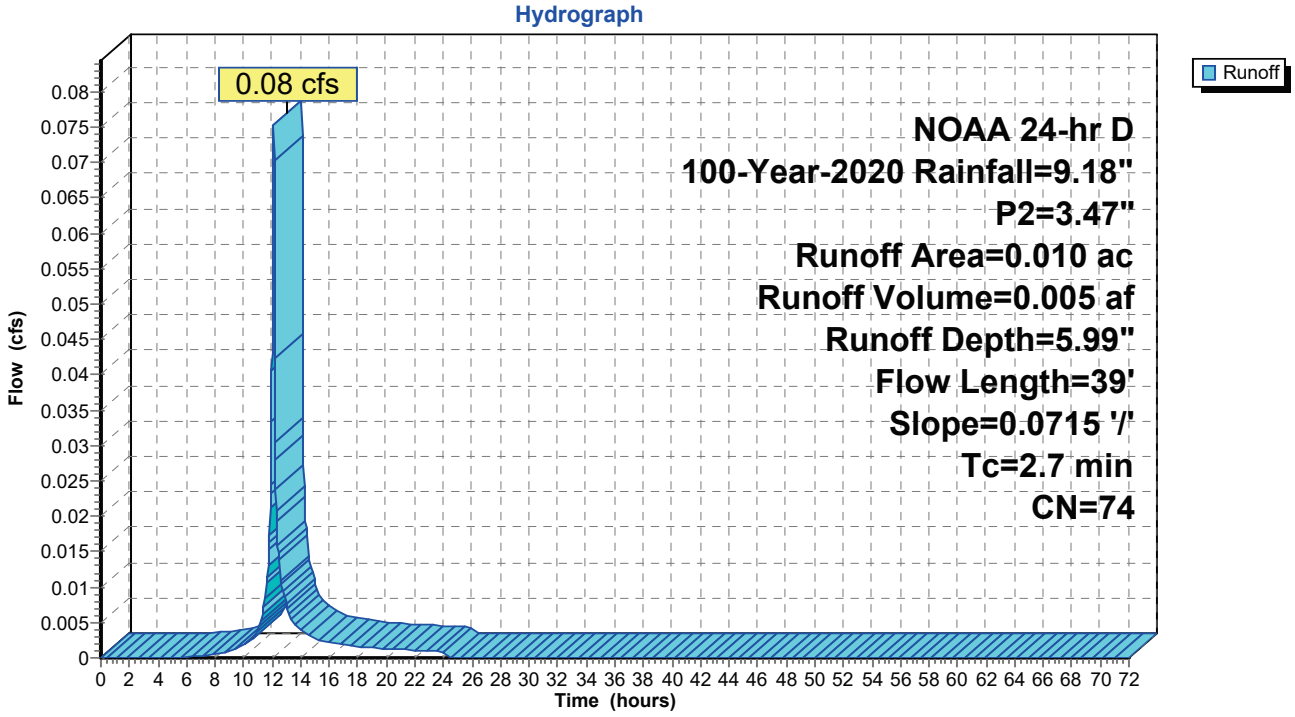
Runoff = 0.08 cfs @ 12.09 hrs, Volume= 0.005 af, Depth= 5.99"
Routed to Link 31L : PDA-1H

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.010	74	>75% Grass cover, Good, HSG C
0.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	39	0.0715	0.24		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"

Subcatchment 30S: PDA-1H PERVIOUS



Summary for Subcatchment 33S: PDA-1I IMPERVIOUS

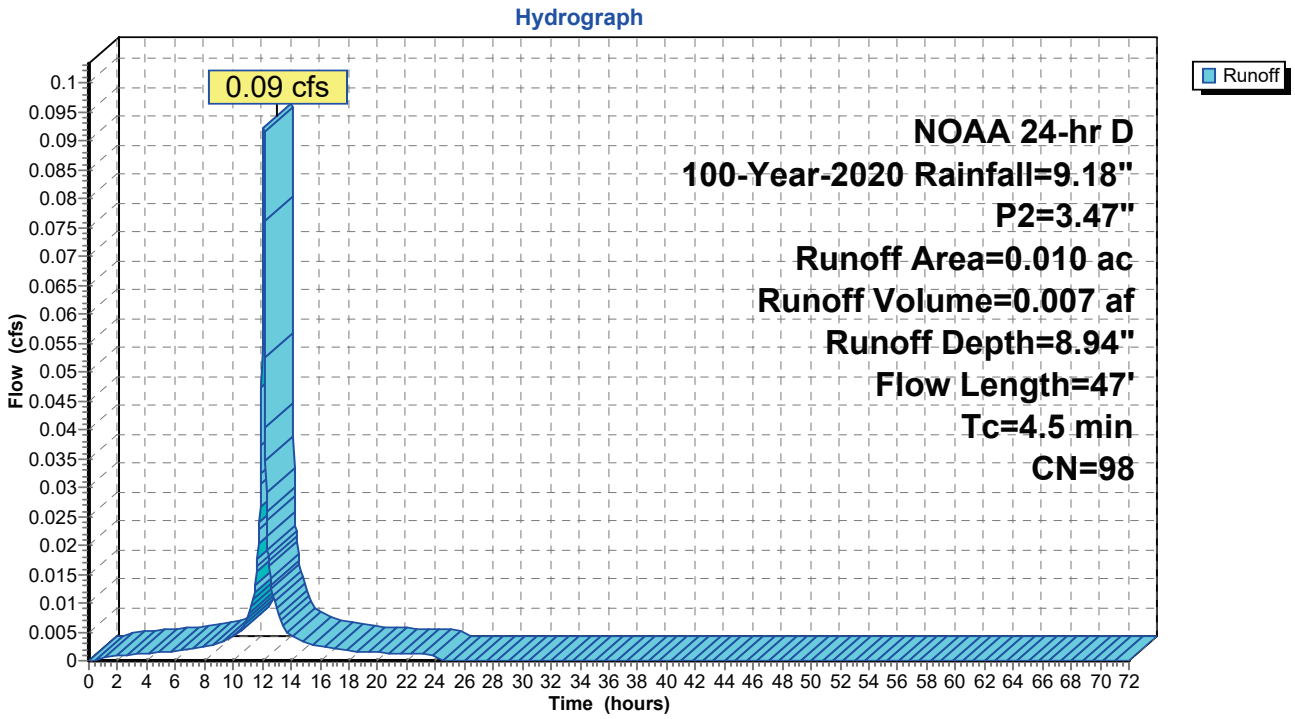
Runoff = 0.09 cfs @ 12.11 hrs, Volume= 0.007 af, Depth= 8.94"
Routed to Link 32L : PDA-1I

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.010	98	Paved parking, HSG C
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	21	0.0109	0.10		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"
1.1	26	0.2700	0.38		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
4.5	47	Total			

Subcatchment 33S: PDA-1I IMPERVIOUS



Summary for Subcatchment 35S: PDA-1I PERVIOUS

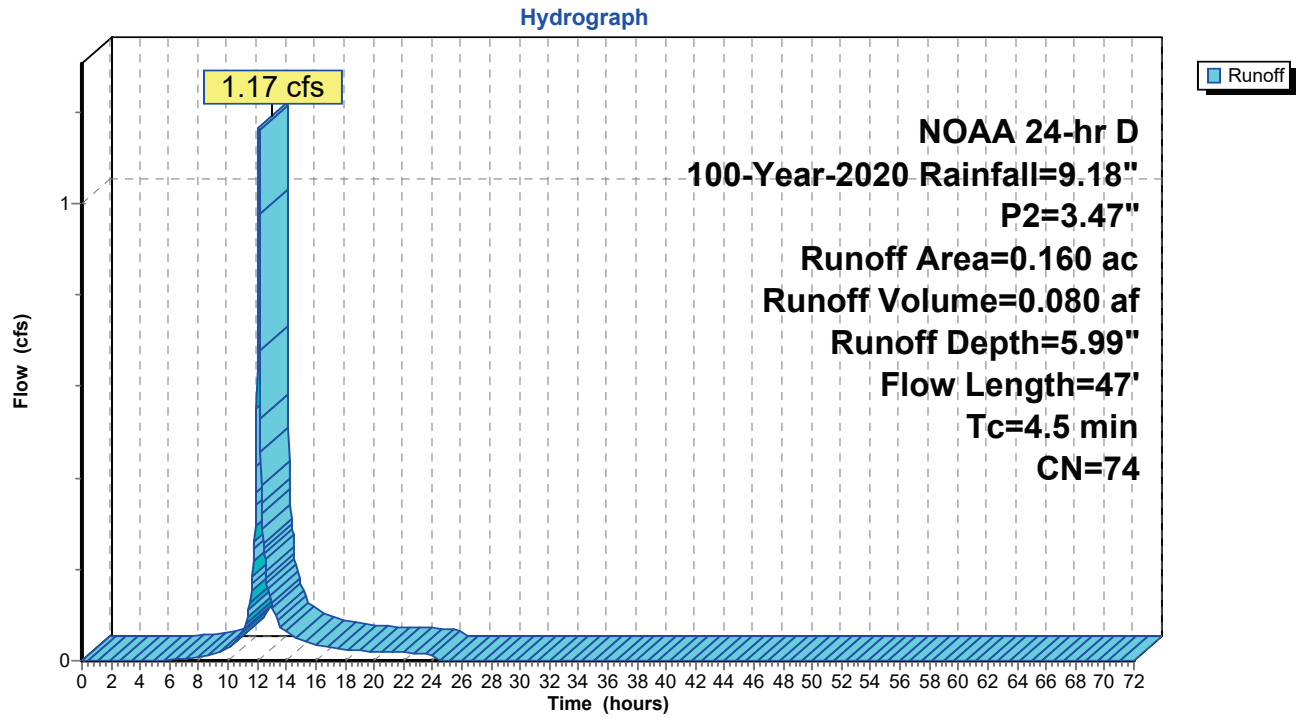
Runoff = 1.17 cfs @ 12.11 hrs, Volume= 0.080 af, Depth= 5.99"
Routed to Link 32L : PDA-1I

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.160	74	>75% Grass cover, Good, HSG C
0.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	21	0.0109	0.10		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.47"
1.1	26	0.2700	0.38		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
4.5	47	Total			

Subcatchment 35S: PDA-1I PERVIOUS



Summary for Subcatchment 37S: PDA-1G PERVIOUS

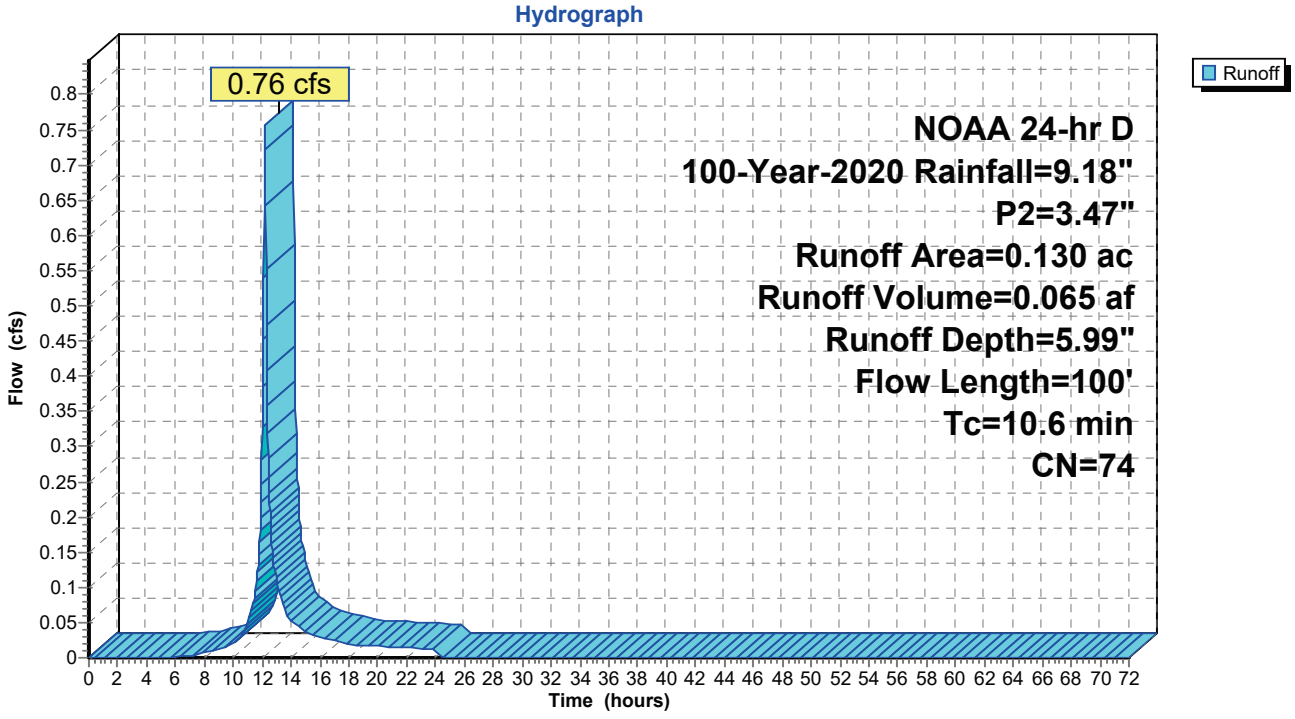
Runoff = 0.76 cfs @ 12.18 hrs, Volume= 0.065 af, Depth= 5.99"
Routed to Link 38L : PDA-1G

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.130	74	>75% Grass cover, Good, HSG C
0.130		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	66	0.0486	0.11		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.47"
0.1	16	0.1031	5.17		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
0.1	18	0.0365	3.08		**Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps
10.6	100	Total			

Subcatchment 37S: PDA-1G PERVIOUS



Summary for Subcatchment 39S: PDA-1J IMPERVIOUS

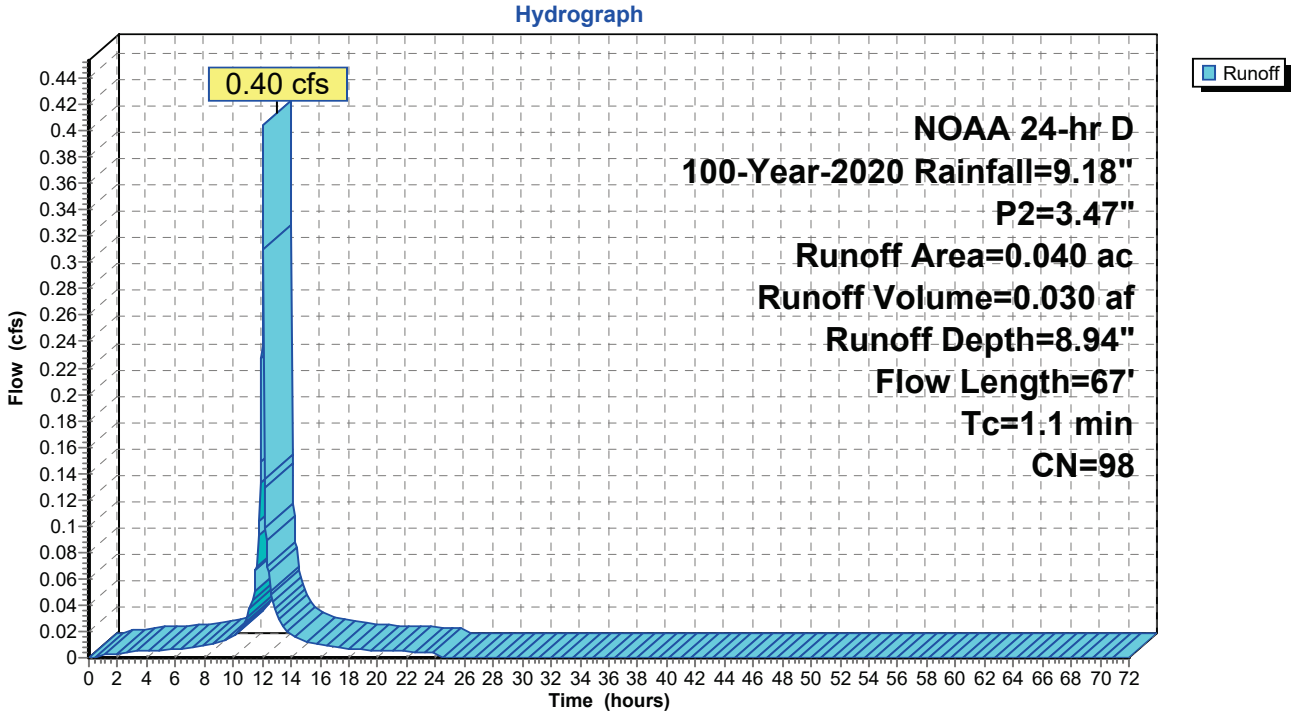
Runoff = 0.40 cfs @ 12.08 hrs, Volume= 0.030 af, Depth= 8.94"
Routed to Link 41L : PDA-1J

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG C
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	6	0.0150	0.73		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.5	7	0.1371	0.22		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
0.5	54	0.0565	1.92		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 3.47"
1.1	67	Total			

Subcatchment 39S: PDA-1J IMPERVIOUS



Summary for Subcatchment 40S: PDA-1J PERVIOUS

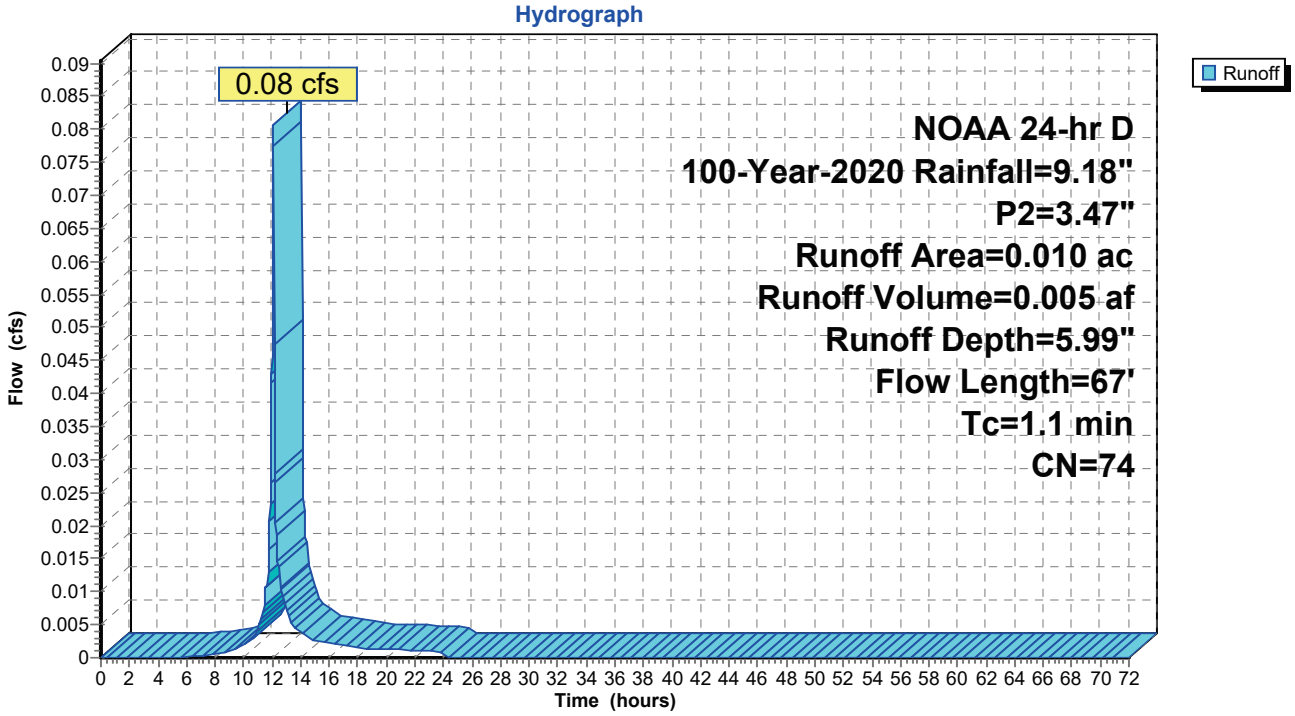
Runoff = 0.08 cfs @ 12.08 hrs, Volume= 0.005 af, Depth= 5.99"
Routed to Link 41L : PDA-1J

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2020 Rainfall=9.18", P2=3.47"

Area (ac)	CN	Description
0.010	74	>75% Grass cover, Good, HSG C
0.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	6	0.0150	0.73		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.47"
0.5	7	0.1371	0.22		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.47"
0.5	54	0.0565	1.92		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 3.47"
1.1	67	Total			

Subcatchment 40S: PDA-1J PERVIOUS



Summary for Pond 28P: PP-1

Inflow Area = 0.390 ac, 69.23% Impervious, Inflow Depth = 8.03" for 100-Year-2020 event
Inflow = 2.42 cfs @ 12.08 hrs, Volume= 0.261 af
Outflow = 0.27 cfs @ 13.80 hrs, Volume= 0.261 af, Atten= 89%, Lag= 103.5 min
Primary = 0.27 cfs @ 13.80 hrs, Volume= 0.261 af
Routed to Pond 29P : PP-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 449.56' @ 13.76 hrs Surf.Area= 0.048 ac Storage= 0.107 af

Plug-Flow detention time= 206.7 min calculated for 0.261 af (100% of inflow)
Center-of-Mass det. time= 206.3 min (974.3 - 768.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.45'	0.090 af	**18.00'W x 117.00'L x 6.29'H Field A** 0.304 af Overall - 0.079 af Embedded = 0.225 af x 40.0% Voids
#2A	446.45'	0.066 af	**ADS N-12 48"** x 8 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf Row Length Adjustment= +25.00' x 12.40 sf x 2 rows 11.08' Header x 12.40 sf x 2 = 274.9 cf Inside
		0.156 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	445.45'	**15.0" Round Culvert** L= 23.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 445.45' / 445.38' S= 0.0030 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	445.45'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	449.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.27 cfs @ 13.80 hrs HW=449.56' TW=447.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.27 cfs of 7.46 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.26 cfs @ 7.70 fps)
  └─**3=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.82 fps)

Pond 28P: PP-1 - Chamber Wizard Field A

Chamber Model = ADS N-12 48" (ADS N-12® Pipe)
Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf
Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf
Row Length Adjustment= +25.00' x 12.40 sf x 2 rows

54.0" Wide + 25.0" Spacing = 79.0" C-C Row Spacing

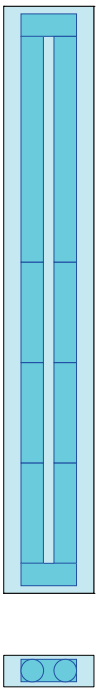
4 Chambers/Row x 20.00' Long +25.00' Row Adjustment +4.50' Header x 2 = 114.00' Row Length +18.0" End Stone x 2 = 117.00' Base Length
2 Rows x 54.0" Wide + 25.0" Spacing x 1 + 41.5" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 54.0" Chamber Height + 9.5" Stone Cover = 6.29' Field Height

8 Chambers x 248.0 cf +25.00' Row Adjustment x 12.40 sf x 2 Rows + 11.08' Header x 12.40 sf x 2 = 2,878.9 cf Chamber Storage
8 Chambers x 297.0 cf +25.00' Row Adjustment x 14.85 sf x 2 Rows + 11.08' Header x 14.85 sf x 2 = 3,447.4 cf Displacement

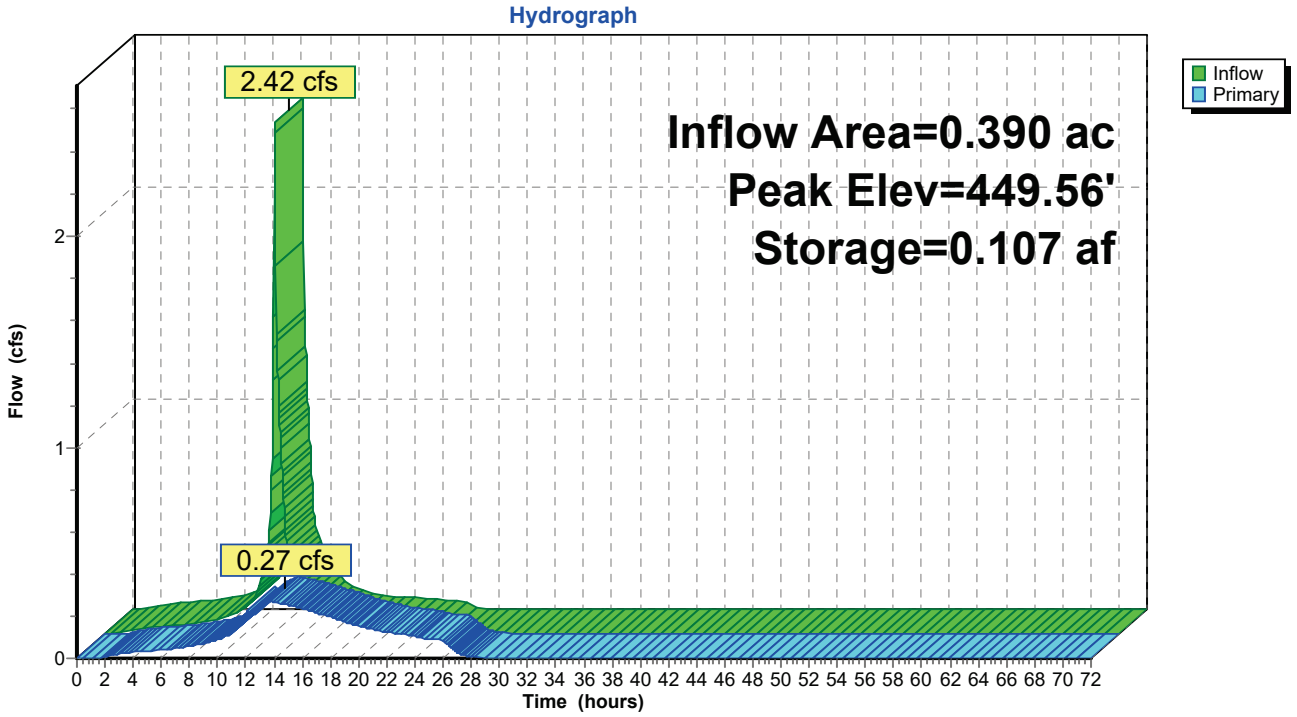
13,250.6 cf Field - 3,447.4 cf Chambers = 9,803.2 cf Stone x 40.0% Voids = 3,921.3 cf Stone Storage

Chamber Storage + Stone Storage = 6,800.1 cf = 0.156 af
Overall Storage Efficiency = 51.3%
Overall System Size = 117.00' x 18.00' x 6.29'

8 Chambers
490.8 cy Field
363.1 cy Stone



Pond 28P: PP-1


Hydrograph
2.42 cfs
0.27 cfs
Inflow Area=0.390 ac
Peak Elev=449.56'
Storage=0.107 af
Inflow
Primary
Flow (cfs)
0
1
2
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 28P: PP-1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
445.45	0.00	448.10	0.26	450.75	0.81
445.50	0.00	448.15	0.26	450.80	0.82
445.55	0.02	448.20	0.27	450.85	0.83
445.60	0.03	448.25	0.27	450.90	0.85
445.65	0.05	448.30	0.27	450.95	0.86
445.70	0.06	448.35	0.27	451.00	0.87
445.75	0.07	448.40	0.28	451.05	0.88
445.80	0.08	448.45	0.28	451.10	0.89
445.85	0.09	448.50	0.28	451.15	0.90
445.90	0.10	448.55	0.28	451.20	0.91
445.95	0.10	448.60	0.29	451.25	0.92
446.00	0.11	448.65	0.29	451.30	0.93
446.05	0.12	448.70	0.29	451.35	0.94
446.10	0.12	448.75	0.29	451.40	0.95
446.15	0.13	448.80	0.30	451.45	0.96
446.20	0.13	448.85	0.30	451.50	0.97
446.25	0.14	448.90	0.30	451.55	0.98
446.30	0.14	448.95	0.30	451.60	0.99
446.35	0.15	449.00	0.30	451.65	1.00
446.40	0.15	449.05	0.31	451.70	**1.01**
446.45	0.16	449.10	0.31		
446.50	0.16	449.15	0.31		
446.55	0.16	449.20	0.31		
446.60	0.17	449.25	0.32		
446.65	0.17	449.30	0.32		
446.70	0.18	449.35	0.32		
446.75	0.18	449.40	0.32		
446.80	0.18	449.45	0.32		
446.85	0.19	449.50	0.33		
446.90	0.19	449.55	0.33		
446.95	0.19	449.60	0.35		
447.00	0.20	449.65	0.38		
447.05	0.20	449.70	0.42		
447.10	0.20	449.75	0.46		
447.15	0.21	449.80	0.49		
447.20	0.21	449.85	0.52		
447.25	0.21	449.90	0.55		
447.30	0.22	449.95	0.57		
447.35	0.22	450.00	0.59		
447.40	0.22	450.05	0.61		
447.45	0.23	450.10	0.63		
447.50	0.23	450.15	0.64		
447.55	0.23	450.20	0.66		
447.60	0.23	450.25	0.68		
447.65	0.24	450.30	0.69		
447.70	0.24	450.35	0.71		
447.75	0.24	450.40	0.72		
447.80	0.25	450.45	0.74		
447.85	0.25	450.50	0.75		
447.90	0.25	450.55	0.76		
447.95	0.25	450.60	0.77		
448.00	0.26	450.65	0.79		
448.05	0.26	450.70	0.80		

Stage-Area-Storage for Pond 28P: PP-1

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
445.45	0.000	448.10	0.061	450.75	0.137
445.50	0.001	448.15	0.063	450.80	0.138
445.55	0.002	448.20	0.064	450.85	0.139
445.60	0.003	448.25	0.066	450.90	0.140
445.65	0.004	448.30	0.067	450.95	0.141
445.70	0.005	448.35	0.069	451.00	0.142
445.75	0.006	448.40	0.071	451.05	0.143
445.80	0.007	448.45	0.072	451.10	0.144
445.85	0.008	448.50	0.074	451.15	0.145
445.90	0.009	448.55	0.075	451.20	0.146
445.95	0.010	448.60	0.077	451.25	0.147
446.00	0.011	448.65	0.078	451.30	0.148
446.05	0.012	448.70	0.080	451.35	0.149
446.10	0.013	448.75	0.082	451.40	0.149
446.15	0.014	448.80	0.083	451.45	0.150
446.20	0.015	448.85	0.085	451.50	0.151
446.25	0.015	448.90	0.086	451.55	0.152
446.30	0.016	448.95	0.088	451.60	0.153
446.35	0.017	449.00	0.090	451.65	0.154
446.40	0.018	449.05	0.091	451.70	**0.155**
446.45	0.019	449.10	0.093		
446.50	0.020	449.15	0.094		
446.55	0.021	449.20	0.096		
446.60	0.022	449.25	0.097		
446.65	0.023	449.30	0.099		
446.70	0.023	449.35	0.100		
446.75	0.024	449.40	0.102		
446.80	0.025	449.45	0.103		
446.85	0.026	449.50	0.105		
446.90	0.028	449.55	0.107		
446.95	0.029	449.60	0.108		
447.00	0.030	449.65	0.110		
447.05	0.031	449.70	0.111		
447.10	0.032	449.75	0.112		
447.15	0.034	449.80	0.114		
447.20	0.035	449.85	0.115		
447.25	0.036	449.90	0.117		
447.30	0.038	449.95	0.118		
447.35	0.039	450.00	0.120		
447.40	0.040	450.05	0.121		
447.45	0.042	450.10	0.122		
447.50	0.043	450.15	0.124		
447.55	0.045	450.20	0.125		
447.60	0.046	450.25	0.126		
447.65	0.048	450.30	0.128		
447.70	0.049	450.35	0.129		
447.75	0.051	450.40	0.130		
447.80	0.052	450.45	0.131		
447.85	0.054	450.50	0.133		
447.90	0.055	450.55	0.134		
447.95	0.057	450.60	0.135		
448.00	0.058	450.65	0.136		
448.05	0.060	450.70	0.137		

Summary for Pond 29P: PP-2

Inflow Area = 1.060 ac, 68.87% Impervious, Inflow Depth = 8.02" for 100-Year-2020 event
Inflow = 2.73 cfs @ 12.10 hrs, Volume= 0.709 af
Outflow = 1.62 cfs @ 12.53 hrs, Volume= 0.708 af, Atten= 41%, Lag= 26.0 min
Primary = 1.62 cfs @ 12.53 hrs, Volume= 0.708 af
Routed to Link 25L : PDA-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 447.45' @ 12.53 hrs Surf.Area= 0.048 ac Storage= 0.124 af

Plug-Flow detention time= 139.8 min calculated for 0.708 af (100% of inflow)
Center-of-Mass det. time= 139.7 min (1,025.4 - 885.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	442.94'	0.108 af	**18.00'W x 116.17'L x 8.17'H Field A** 0.392 af Overall - 0.121 af Embedded = 0.271 af x 40.0% Voids
#2A	443.94'	0.102 af	**ADS N-12 60"** x 6 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf Row Length Adjustment= +42.00' x 19.30 sf x 2 rows 13.17' Header x 19.30 sf x 2 = 508.3 cf Inside
		0.210 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	442.94'	**15.0" Round Culvert** L= 23.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 442.94' / 442.87' S= 0.0030 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	442.94'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	446.75'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.62 cfs @ 12.53 hrs HW=447.45' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.62 cfs of 9.20 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.34 cfs @ 10.11 fps)
  └─**3=Orifice/Grate** (Orifice Controls 1.27 cfs @ 3.24 fps)

Pond 29P: PP-2 - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf
Row Length Adjustment= +42.00' x 19.30 sf x 2 rows

67.0" Wide + 24.0" Spacing = 91.0" C-C Row Spacing

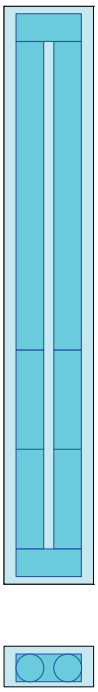
3 Chambers/Row x 20.00' Long +42.00' Row Adjustment +5.58' Header x 2 = 113.17' Row Length +18.0" End Stone x 2 = 116.17' Base Length
2 Rows x 67.0" Wide + 24.0" Spacing x 1 + 29.0" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 67.0" Chamber Height + 19.0" Stone Cover = 8.17' Field Height

6 Chambers x 386.0 cf +42.00' Row Adjustment x 19.30 sf x 2 Rows + 13.17' Header x 19.30 sf x 2 = 4,445.5 cf Chamber Storage
6 Chambers x 458.4 cf +42.00' Row Adjustment x 22.92 sf x 2 Rows + 13.17' Header x 22.92 sf x 2 = 5,279.5 cf Displacement

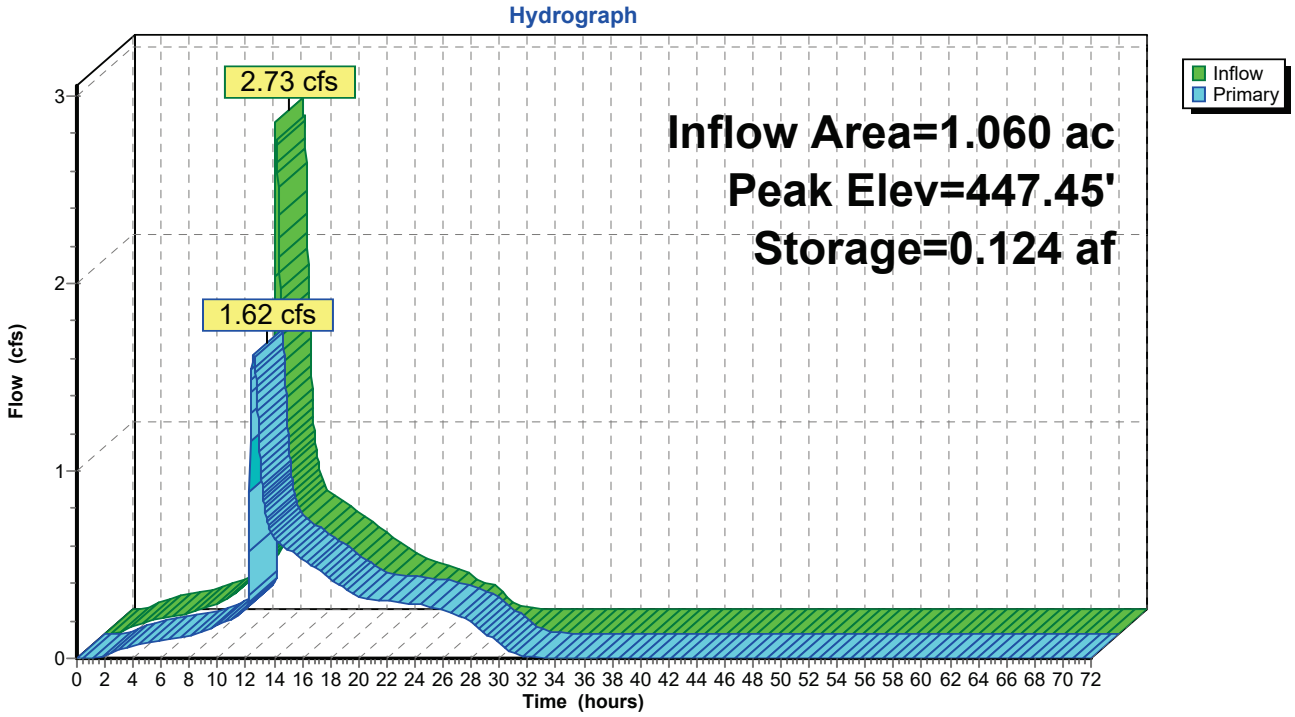
17,078.6 cf Field - 5,279.5 cf Chambers = 11,799.2 cf Stone x 40.0% Voids = 4,719.7 cf Stone Storage

Chamber Storage + Stone Storage = 9,165.1 cf = 0.210 af
Overall Storage Efficiency = 53.7%
Overall System Size = 116.17' x 18.00' x 8.17'

6 Chambers
632.5 cy Field
437.0 cy Stone



Pond 29P: PP-2


Hydrograph
2.73 cfs
1.62 cfs
Inflow Area=1.060 ac
Peak Elev=447.45'
Storage=0.124 af
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72

Stage-Discharge for Pond 29P: PP-2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
442.94	0.00	445.59	0.26	448.24	2.48	450.89	4.19
442.99	0.00	445.64	0.26	448.29	2.52	450.94	4.21
443.04	0.02	445.69	0.27	448.34	2.57	450.99	4.24
443.09	0.03	445.74	0.27	448.39	2.61	451.04	4.26
443.14	0.05	445.79	0.27	448.44	2.65	451.09	**4.29**
443.19	0.06	445.84	0.27	448.49	2.69		
443.24	0.07	445.89	0.28	448.54	2.73		
443.29	0.08	445.94	0.28	448.59	2.77		
443.34	0.09	445.99	0.28	448.64	2.81		
443.39	0.10	446.04	0.28	448.69	2.85		
443.44	0.10	446.09	0.29	448.74	2.89		
443.49	0.11	446.14	0.29	448.79	2.92		
443.54	0.12	446.19	0.29	448.84	2.96		
443.59	0.12	446.24	0.29	448.89	3.00		
443.64	0.13	446.29	0.30	448.94	3.03		
443.69	0.13	446.34	0.30	448.99	3.07		
443.74	0.14	446.39	0.30	449.04	3.10		
443.79	0.14	446.44	0.30	449.09	3.14		
443.84	0.15	446.49	0.30	449.14	3.17		
443.89	0.15	446.54	0.31	449.19	3.21		
443.94	0.16	446.59	0.31	449.24	3.24		
443.99	0.16	446.64	0.31	449.29	3.27		
444.04	0.16	446.69	0.31	449.34	3.30		
444.09	0.17	446.74	0.32	449.39	3.34		
444.14	0.17	446.79	0.33	449.44	3.37		
444.19	0.18	446.84	0.37	449.49	3.40		
444.24	0.18	446.89	0.44	449.54	3.43		
444.29	0.18	446.94	0.53	449.59	3.46		
444.34	0.19	446.99	0.64	449.64	3.49		
444.39	0.19	447.04	0.76	449.69	3.52		
444.44	0.19	447.09	0.89	449.74	3.55		
444.49	0.20	447.14	1.03	449.79	3.58		
444.54	0.20	447.19	1.16	449.84	3.61		
444.59	0.20	447.24	1.27	449.89	3.64		
444.64	0.21	447.29	1.36	449.94	3.67		
444.69	0.21	447.34	1.44	449.99	3.70		
444.74	0.21	447.39	1.52	450.04	3.73		
444.79	0.22	447.44	1.60	450.09	3.76		
444.84	0.22	447.49	1.67	450.14	3.79		
444.89	0.22	447.54	1.74	450.19	3.82		
444.94	0.23	447.59	1.80	450.24	3.84		
444.99	0.23	447.64	1.86	450.29	3.87		
445.04	0.23	447.69	1.92	450.34	3.90		
445.09	0.23	447.74	1.98	450.39	3.93		
445.14	0.24	447.79	2.04	450.44	3.95		
445.19	0.24	447.84	2.09	450.49	3.98		
445.24	0.24	447.89	2.15	450.54	4.01		
445.29	0.25	447.94	2.20	450.59	4.03		
445.34	0.25	447.99	2.25	450.64	4.06		
445.39	0.25	448.04	2.30	450.69	4.09		
445.44	0.25	448.09	2.34	450.74	4.11		
445.49	0.26	448.14	2.39	450.79	4.14		
445.54	0.26	448.19	2.43	450.84	4.16		

Stage-Area-Storage for Pond 29P: PP-2

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
442.94	0.000	448.24	0.150
443.04	0.002	448.34	0.153
443.14	0.004	448.44	0.156
443.24	0.006	448.54	0.159
443.34	0.008	448.64	0.161
443.44	0.010	448.74	0.164
443.54	0.012	448.84	0.167
443.64	0.013	448.94	0.169
443.74	0.015	449.04	0.172
443.84	0.017	449.14	0.174
443.94	0.019	449.24	0.176
444.04	0.021	449.34	0.177
444.14	0.022	449.44	0.179
444.24	0.024	449.54	0.180
444.34	0.026	449.64	0.182
444.44	0.028	449.74	0.184
444.54	0.030	449.84	0.186
444.64	0.033	449.94	0.188
444.74	0.035	450.04	0.190
444.84	0.038	450.14	0.192
444.94	0.041	450.24	0.194
445.04	0.044	450.34	0.196
445.14	0.047	450.44	0.198
445.24	0.050	450.54	0.200
445.34	0.053	450.64	0.201
445.44	0.056	450.74	0.203
445.54	0.059	450.84	0.205
445.64	0.063	450.94	0.207
445.74	0.066	451.04	**0.209**
445.84	0.069		
445.94	0.073		
446.04	0.076		
446.14	0.079		
446.24	0.083		
446.34	0.086		
446.44	0.090		
446.54	0.093		
446.64	0.096		
446.74	0.100		
446.84	0.103		
446.94	0.107		
447.04	0.110		
447.14	0.114		
447.24	0.117		
447.34	0.120		
447.44	0.124		
447.54	0.127		
447.64	0.130		
447.74	0.134		
447.84	0.137		
447.94	0.140		
448.04	0.143		
448.14	0.147		

Summary for Pond 30P: PP-3

Inflow Area = 0.550 ac, 61.82% Impervious, Inflow Depth = 7.81" for 100-Year-2020 event
Inflow = 4.37 cfs @ 12.09 hrs, Volume= 0.358 af
Outflow = 2.04 cfs @ 12.21 hrs, Volume= 0.358 af, Atten= 53%, Lag= 7.3 min
Primary = 2.04 cfs @ 12.21 hrs, Volume= 0.358 af
Routed to Pond 29P : PP-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 452.23' @ 12.21 hrs Surf.Area= 0.026 ac Storage= 0.098 af

Plug-Flow detention time= 97.0 min calculated for 0.358 af (100% of inflow)
Center-of-Mass det. time= 97.2 min (858.5 - 761.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.44'	0.078 af	**18.00'W x 62.17'L x 10.08'H Field A** 0.259 af Overall - 0.064 af Embedded = 0.195 af x 40.0% Voids
#2A	446.44'	0.054 af	**ADS N-12 60"** x 4 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf Row Length Adjustment= +8.00' x 19.30 sf x 2 rows 13.17' Header x 19.30 sf x 2 = 508.3 cf Inside
		0.132 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	445.44'	**15.0" Round Culvert** L= 19.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 445.44' / 445.38' S= 0.0031 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	445.44'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	450.44'	**5.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	455.00'	**6.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=2.03 cfs @ 12.21 hrs HW=452.22' TW=446.80' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.03 cfs of 10.87 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.38 cfs @ 11.22 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 1.65 cfs @ 6.04 fps)
  └─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 30P: PP-3 - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf
Row Length Adjustment= +8.00' x 19.30 sf x 2 rows

67.0" Wide + 24.0" Spacing = 91.0" C-C Row Spacing

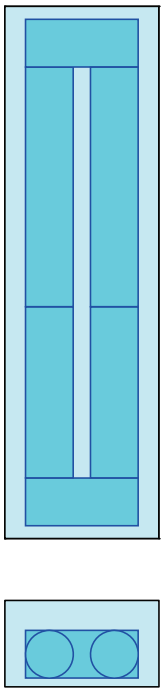
2 Chambers/Row x 20.00' Long +8.00' Row Adjustment +5.58' Header x 2 = 59.17' Row Length +18.0" End Stone x 2 = 62.17' Base Length
2 Rows x 67.0" Wide + 24.0" Spacing x 1 + 29.0" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 67.0" Chamber Height + 42.0" Stone Cover = 10.08' Field Height

4 Chambers x 386.0 cf +8.00' Row Adjustment x 19.30 sf x 2 Rows + 13.17' Header x 19.30 sf x 2 = 2,361.1 cf Chamber Storage
4 Chambers x 458.4 cf +8.00' Row Adjustment x 22.92 sf x 2 Rows + 13.17' Header x 22.92 sf x 2 = 2,804.0 cf Displacement

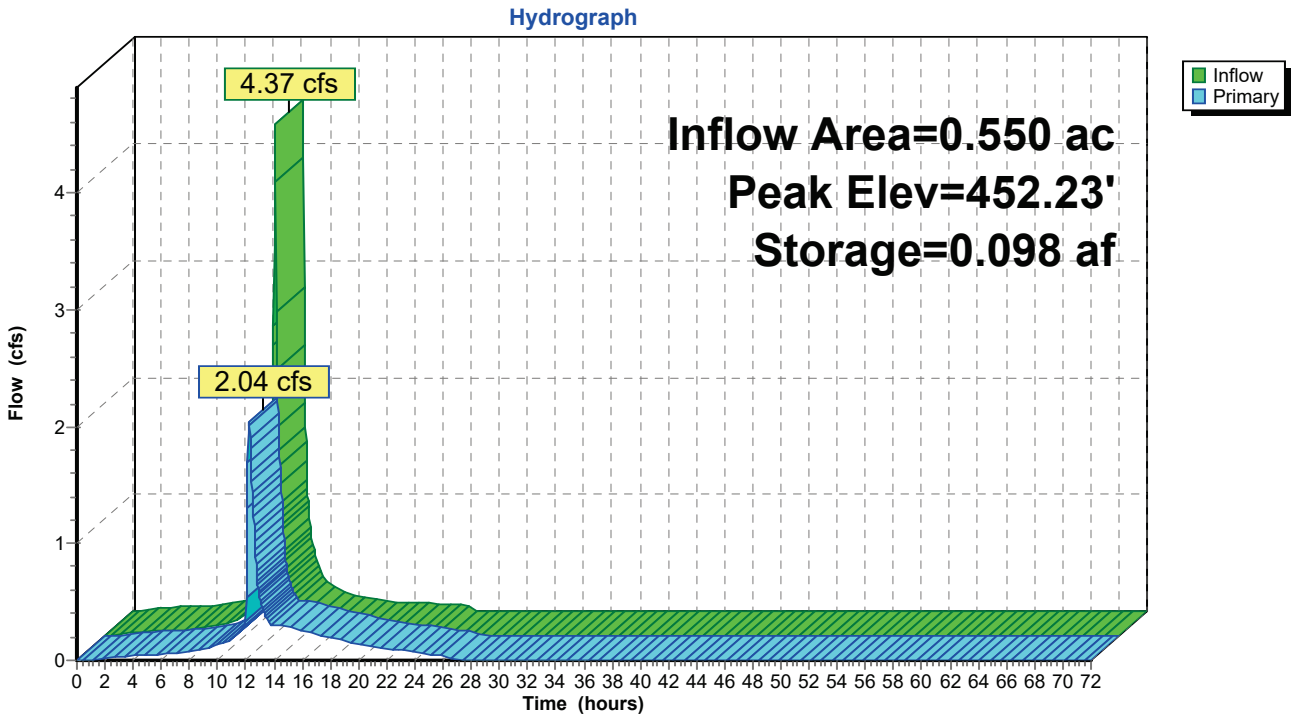
11,284.6 cf Field - 2,804.0 cf Chambers = 8,480.6 cf Stone x 40.0% Voids = 3,392.2 cf Stone Storage

Chamber Storage + Stone Storage = 5,753.3 cf = 0.132 af
Overall Storage Efficiency = 51.0%
Overall System Size = 62.17' x 18.00' x 10.08'

4 Chambers
417.9 cy Field
314.1 cy Stone



Pond 30P: PP-3


Hydrograph
4.37 cfs
2.04 cfs
Inflow Area=0.550 ac
Peak Elev=452.23'
Storage=0.098 af
Inflow
Primary
Flow (cfs)
0
1
2
3
4
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 30P: PP-3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
445.44	0.00	448.09	0.26	450.74	0.77	453.39	2.63
445.49	0.00	448.14	0.26	450.79	0.87	453.44	2.66
445.54	0.02	448.19	0.27	450.84	0.96	453.49	2.68
445.59	0.03	448.24	0.27	450.89	1.03	453.54	2.70
445.64	0.05	448.29	0.27	450.94	1.09	453.59	2.72
445.69	0.06	448.34	0.27	450.99	1.15	453.64	2.74
445.74	0.07	448.39	0.28	451.04	1.21	453.69	2.76
445.79	0.08	448.44	0.28	451.09	1.26	453.74	2.78
445.84	0.09	448.49	0.28	451.14	1.31	453.79	2.80
445.89	0.10	448.54	0.28	451.19	1.36	453.84	2.82
445.94	0.10	448.59	0.29	451.24	1.40	453.89	2.84
445.99	0.11	448.64	0.29	451.29	1.45	453.94	2.86
446.04	0.12	448.69	0.29	451.34	1.49	453.99	2.88
446.09	0.12	448.74	0.29	451.39	1.53	454.04	2.90
446.14	0.13	448.79	0.30	451.44	1.57	454.09	2.92
446.19	0.13	448.84	0.30	451.49	1.60	454.14	2.93
446.24	0.14	448.89	0.30	451.54	1.64	454.19	2.95
446.29	0.14	448.94	0.30	451.59	1.68	454.24	2.97
446.34	0.15	448.99	0.30	451.64	1.71	454.29	2.99
446.39	0.15	449.04	0.31	451.69	1.75	454.34	3.01
446.44	0.16	449.09	0.31	451.74	1.78	454.39	3.03
446.49	0.16	449.14	0.31	451.79	1.81	454.44	3.05
446.54	0.16	449.19	0.31	451.84	1.85	454.49	3.06
446.59	0.17	449.24	0.32	451.89	1.88	454.54	3.08
446.64	0.17	449.29	0.32	451.94	1.91	454.59	3.10
446.69	0.18	449.34	0.32	451.99	1.94	454.64	3.12
446.74	0.18	449.39	0.32	452.04	1.97	454.69	3.14
446.79	0.18	449.44	0.32	452.09	2.00	454.74	3.15
446.84	0.19	449.49	0.33	452.14	2.03	454.79	3.17
446.89	0.19	449.54	0.33	452.19	2.05	454.84	3.19
446.94	0.19	449.59	0.33	452.24	2.08	454.89	3.21
446.99	0.20	449.64	0.33	452.29	2.11	454.94	3.22
447.04	0.20	449.69	0.33	452.34	2.14	454.99	3.24
447.09	0.20	449.74	0.34	452.39	2.16	455.04	3.39
447.14	0.21	449.79	0.34	452.44	2.19	455.09	3.73
447.19	0.21	449.84	0.34	452.49	2.21	455.14	4.17
447.24	0.21	449.89	0.34	452.54	2.24	455.19	4.70
447.29	0.22	449.94	0.34	452.59	2.27	455.24	5.32
447.34	0.22	449.99	0.35	452.64	2.29	455.29	6.02
447.39	0.22	450.04	0.35	452.69	2.31	455.34	6.79
447.44	0.23	450.09	0.35	452.74	2.34	455.39	7.63
447.49	0.23	450.14	0.35	452.79	2.36	455.44	8.56
447.54	0.23	450.19	0.35	452.84	2.39	455.49	**9.56**
447.59	0.23	450.24	0.36	452.89	2.41		
447.64	0.24	450.29	0.36	452.94	2.43		
447.69	0.24	450.34	0.36	452.99	2.46		
447.74	0.24	450.39	0.36	453.04	2.48		
447.79	0.25	450.44	0.36	453.09	2.50		
447.84	0.25	450.49	0.38	453.14	2.53		
447.89	0.25	450.54	0.42	453.19	2.55		
447.94	0.25	450.59	0.49	453.24	2.57		
447.99	0.26	450.64	0.57	453.29	2.59		
448.04	0.26	450.69	0.66	453.34	2.61		

Stage-Area-Storage for Pond 30P: PP-3

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
445.44	0.000	450.74	0.080
445.54	0.001	450.84	0.082
445.64	0.002	450.94	0.083
445.74	0.003	451.04	0.085
445.84	0.004	451.14	0.086
445.94	0.005	451.24	0.088
446.04	0.006	451.34	0.089
446.14	0.007	451.44	0.090
446.24	0.008	451.54	0.092
446.34	0.009	451.64	0.093
446.44	0.010	451.74	0.094
446.54	0.011	451.84	0.094
446.64	0.012	451.94	0.095
446.74	0.013	452.04	0.096
446.84	0.014	452.14	0.097
446.94	0.015	452.24	0.098
447.04	0.016	452.34	0.099
447.14	0.018	452.44	0.100
447.24	0.019	452.54	0.101
447.34	0.020	452.64	0.102
447.44	0.022	452.74	0.103
447.54	0.024	452.84	0.104
447.64	0.025	452.94	0.106
447.74	0.027	453.04	0.107
447.84	0.028	453.14	0.108
447.94	0.030	453.24	0.109
448.04	0.032	453.34	0.110
448.14	0.034	453.44	0.111
448.24	0.035	453.54	0.112
448.34	0.037	453.64	0.113
448.44	0.039	453.74	0.114
448.54	0.041	453.84	0.115
448.64	0.042	453.94	0.116
448.74	0.044	454.04	0.117
448.84	0.046	454.14	0.118
448.94	0.048	454.24	0.119
449.04	0.050	454.34	0.120
449.14	0.052	454.44	0.121
449.24	0.053	454.54	0.122
449.34	0.055	454.64	0.123
449.44	0.057	454.74	0.124
449.54	0.059	454.84	0.125
449.64	0.061	454.94	0.126
449.74	0.062	455.04	0.127
449.84	0.064	455.14	0.128
449.94	0.066	455.24	0.129
450.04	0.068	455.34	0.130
450.14	0.070	455.44	**0.131**
450.24	0.071		
450.34	0.073		
450.44	0.075		
450.54	0.077		
450.64	0.078		

Summary for Pond 31P: PP-4

Inflow Area = 0.200 ac, 90.00% Impervious, Inflow Depth = 8.64" for 100-Year-2020 event
Inflow = 1.85 cfs @ 12.09 hrs, Volume= 0.144 af
Outflow = 0.84 cfs @ 12.18 hrs, Volume= 0.144 af, Atten= 55%, Lag= 5.3 min
Primary = 0.84 cfs @ 12.18 hrs, Volume= 0.144 af
Routed to Pond 28P : PP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 455.69' @ 12.18 hrs Surf.Area= 0.014 ac Storage= 0.028 af

Plug-Flow detention time= 24.1 min calculated for 0.144 af (100% of inflow)
Center-of-Mass det. time= 24.3 min (767.1 - 742.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	451.95'	0.023 af	**18.00'W x 33.00'L x 5.83'H Field A** 0.080 af Overall - 0.022 af Embedded = 0.058 af x 40.0% Voids
#2A	452.45'	0.018 af	**ADS N-12 48"** x 2 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf Row Length Adjustment= +1.00' x 12.40 sf x 2 rows 11.08' Header x 12.40 sf x 2 = 274.9 cf Inside
		0.041 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	449.63'	**15.0" Round Culvert** L= 29.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 449.63' / 449.55' S= 0.0028 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	451.95'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	453.95'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	457.00'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.84 cfs @ 12.18 hrs HW=455.69' TW=448.19' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.84 cfs of 10.87 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.31 cfs @ 9.18 fps)
  - **3=Orifice/Grate** (Orifice Controls 0.53 cfs @ 6.04 fps)
  - **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 31P: PP-4 - Chamber Wizard Field A

Chamber Model = ADS N-12 48" (ADS N-12® Pipe)
Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf
Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf
Row Length Adjustment= +1.00' x 12.40 sf x 2 rows

54.0" Wide + 25.0" Spacing = 79.0" C-C Row Spacing

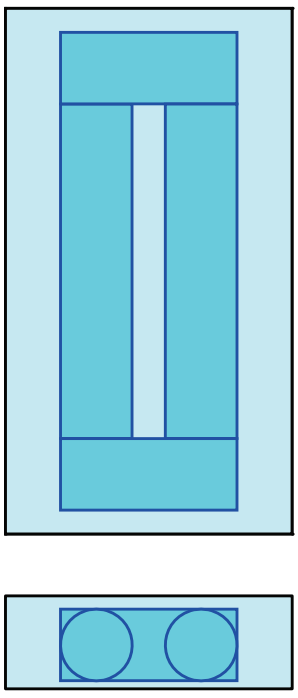
1 Chambers/Row x 20.00' Long +1.00' Row Adjustment +4.50' Header x 2 = 30.00' Row Length +18.0" End Stone x 2 = 33.00' Base Length
2 Rows x 54.0" Wide + 25.0" Spacing x 1 + 41.5" Side Stone x 2 = 18.00' Base Width
6.0" Stone Base + 54.0" Chamber Height + 10.0" Stone Cover = 5.83' Field Height

2 Chambers x 248.0 cf +1.00' Row Adjustment x 12.40 sf x 2 Rows + 11.08' Header x 12.40 sf x 2 = 795.7 cf Chamber Storage
2 Chambers x 297.0 cf +1.00' Row Adjustment x 14.85 sf x 2 Rows + 11.08' Header x 14.85 sf x 2 = 952.8 cf Displacement

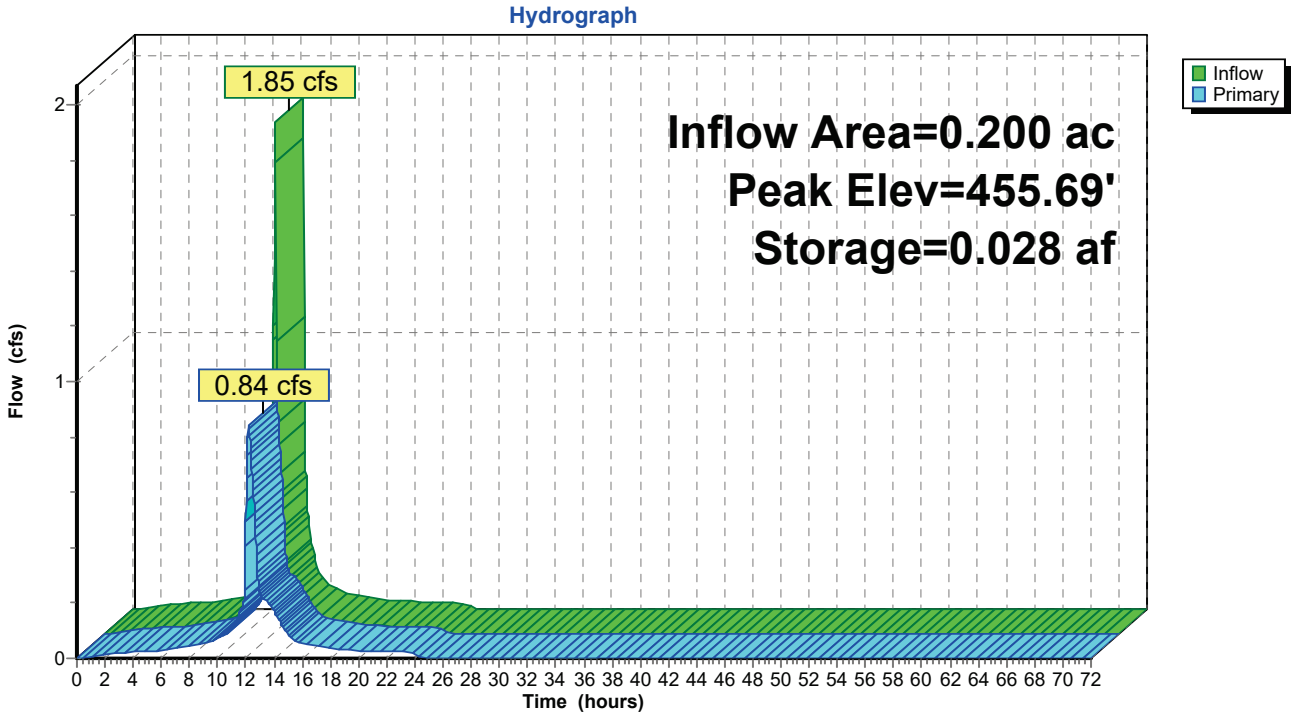
3,465.1 cf Field - 952.8 cf Chambers = 2,512.3 cf Stone x 40.0% Voids = 1,004.9 cf Stone Storage

Chamber Storage + Stone Storage = 1,800.6 cf = 0.041 af
Overall Storage Efficiency = 52.0%
Overall System Size = 33.00' x 18.00' x 5.83'

2 Chambers
128.3 cy Field
93.0 cy Stone



Pond 31P: PP-4


Hydrograph
1.85 cfs
0.84 cfs
Inflow Area=0.200 ac
Peak Elev=455.69'
Storage=0.028 af
Inflow
Primary
Flow (cfs)
0
1
2
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 31P: PP-4

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
451.95	0.00	454.60	0.55	457.25	2.89
452.00	0.00	454.65	0.57	457.30	3.48
452.05	0.02	454.70	0.59	457.35	4.13
452.10	0.03	454.75	0.60	457.40	4.83
452.15	0.05	454.80	0.62	457.45	5.62
452.20	0.06	454.85	0.63	457.50	6.46
452.25	0.07	454.90	0.65	457.55	7.36
452.30	0.08	454.95	0.66	457.60	8.33
452.35	0.09	455.00	0.68	457.65	9.39
452.40	0.10	455.05	0.69	457.70	10.53
452.45	0.10	455.10	0.70	457.75	**11.73**
452.50	0.11	455.15	0.72		
452.55	0.12	455.20	0.73		
452.60	0.12	455.25	0.74		
452.65	0.13	455.30	0.75		
452.70	0.13	455.35	0.76		
452.75	0.14	455.40	0.78		
452.80	0.14	455.45	0.79		
452.85	0.15	455.50	0.80		
452.90	0.15	455.55	0.81		
452.95	0.16	455.60	0.82		
453.00	0.16	455.65	0.83		
453.05	0.16	455.70	0.84		
453.10	0.17	455.75	0.85		
453.15	0.17	455.80	0.86		
453.20	0.18	455.85	0.87		
453.25	0.18	455.90	0.88		
453.30	0.18	455.95	0.89		
453.35	0.19	456.00	0.90		
453.40	0.19	456.05	0.91		
453.45	0.19	456.10	0.92		
453.50	0.20	456.15	0.93		
453.55	0.20	456.20	0.94		
453.60	0.20	456.25	0.95		
453.65	0.21	456.30	0.96		
453.70	0.21	456.35	0.97		
453.75	0.21	456.40	0.98		
453.80	0.22	456.45	0.99		
453.85	0.22	456.50	0.99		
453.90	0.22	456.55	1.00		
453.95	0.23	456.60	1.01		
454.00	0.24	456.65	1.02		
454.05	0.26	456.70	1.03		
454.10	0.28	456.75	1.04		
454.15	0.32	456.80	1.05		
454.20	0.36	456.85	1.05		
454.25	0.40	456.90	1.06		
454.30	0.43	456.95	1.07		
454.35	0.45	457.00	1.08		
454.40	0.48	457.05	1.24		
454.45	0.50	457.10	1.54		
454.50	0.52	457.15	1.92		
454.55	0.54	457.20	2.36		

Stage-Area-Storage for Pond 31P: PP-4

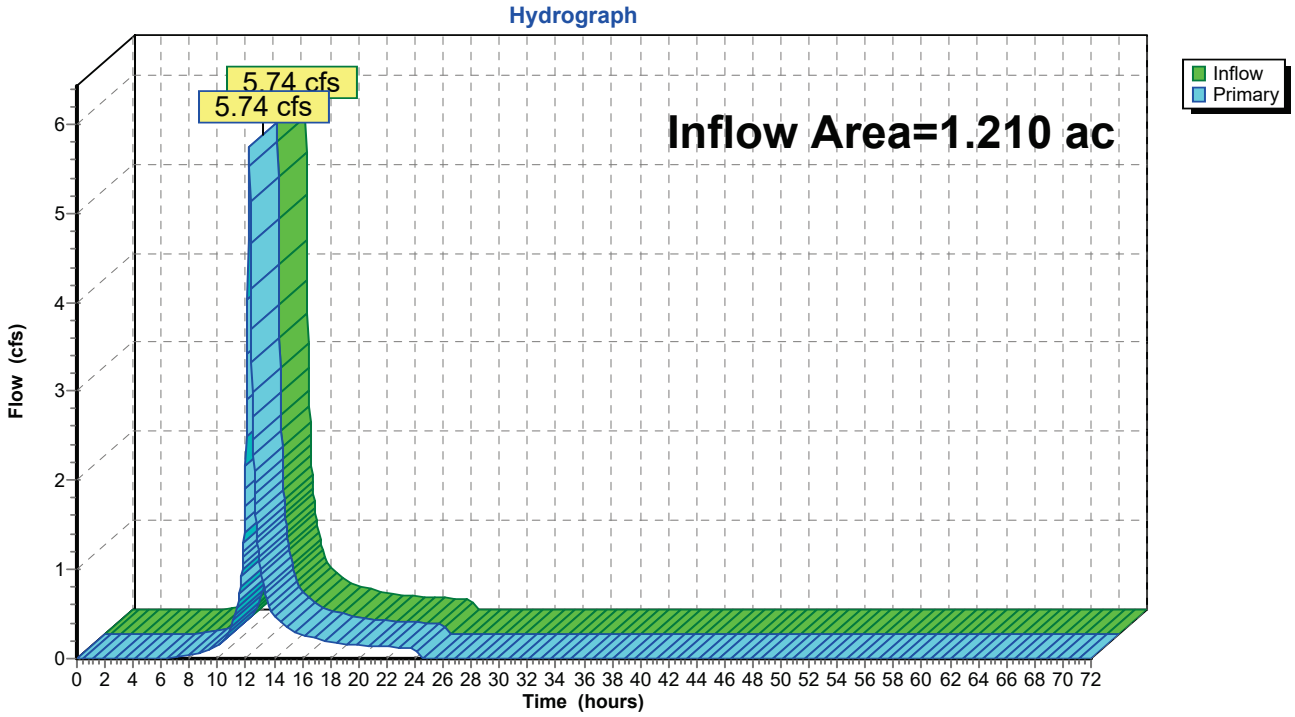
Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
451.95	0.000	454.60	0.019	457.25	0.038
452.00	0.000	454.65	0.019	457.30	0.039
452.05	0.001	454.70	0.020	457.35	0.039
452.10	0.001	454.75	0.020	457.40	0.039
452.15	0.001	454.80	0.021	457.45	0.040
452.20	0.001	454.85	0.021	457.50	0.040
452.25	0.002	454.90	0.022	457.55	0.040
452.30	0.002	454.95	0.022	457.60	0.040
452.35	0.002	455.00	0.022	457.65	0.041
452.40	0.002	455.05	0.023	457.70	0.041
452.45	0.003	455.10	0.023	457.75	**0.041**
452.50	0.003	455.15	0.024		
452.55	0.003	455.20	0.024		
452.60	0.003	455.25	0.025		
452.65	0.004	455.30	0.025		
452.70	0.004	455.35	0.025		
452.75	0.004	455.40	0.026		
452.80	0.004	455.45	0.026		
452.85	0.005	455.50	0.027		
452.90	0.005	455.55	0.027		
452.95	0.005	455.60	0.028		
453.00	0.006	455.65	0.028		
453.05	0.006	455.70	0.028		
453.10	0.006	455.75	0.029		
453.15	0.007	455.80	0.029		
453.20	0.007	455.85	0.030		
453.25	0.008	455.90	0.030		
453.30	0.008	455.95	0.030		
453.35	0.008	456.00	0.031		
453.40	0.009	456.05	0.031		
453.45	0.009	456.10	0.032		
453.50	0.009	456.15	0.032		
453.55	0.010	456.20	0.032		
453.60	0.010	456.25	0.033		
453.65	0.011	456.30	0.033		
453.70	0.011	456.35	0.033		
453.75	0.012	456.40	0.034		
453.80	0.012	456.45	0.034		
453.85	0.012	456.50	0.034		
453.90	0.013	456.55	0.035		
453.95	0.013	456.60	0.035		
454.00	0.014	456.65	0.035		
454.05	0.014	456.70	0.036		
454.10	0.014	456.75	0.036		
454.15	0.015	456.80	0.036		
454.20	0.015	456.85	0.036		
454.25	0.016	456.90	0.037		
454.30	0.016	456.95	0.037		
454.35	0.017	457.00	0.037		
454.40	0.017	457.05	0.037		
454.45	0.018	457.10	0.038		
454.50	0.018	457.15	0.038		
454.55	0.018	457.20	0.038		

Summary for Link 3L: EDA-1

Inflow Area = 1.210 ac, 3.31% Impervious, Inflow Depth = 5.61" for 100-Year-2020 event
Inflow = 5.74 cfs @ 12.23 hrs, Volume= 0.565 af
Primary = 5.74 cfs @ 12.23 hrs, Volume= 0.565 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 3L: EDA-1

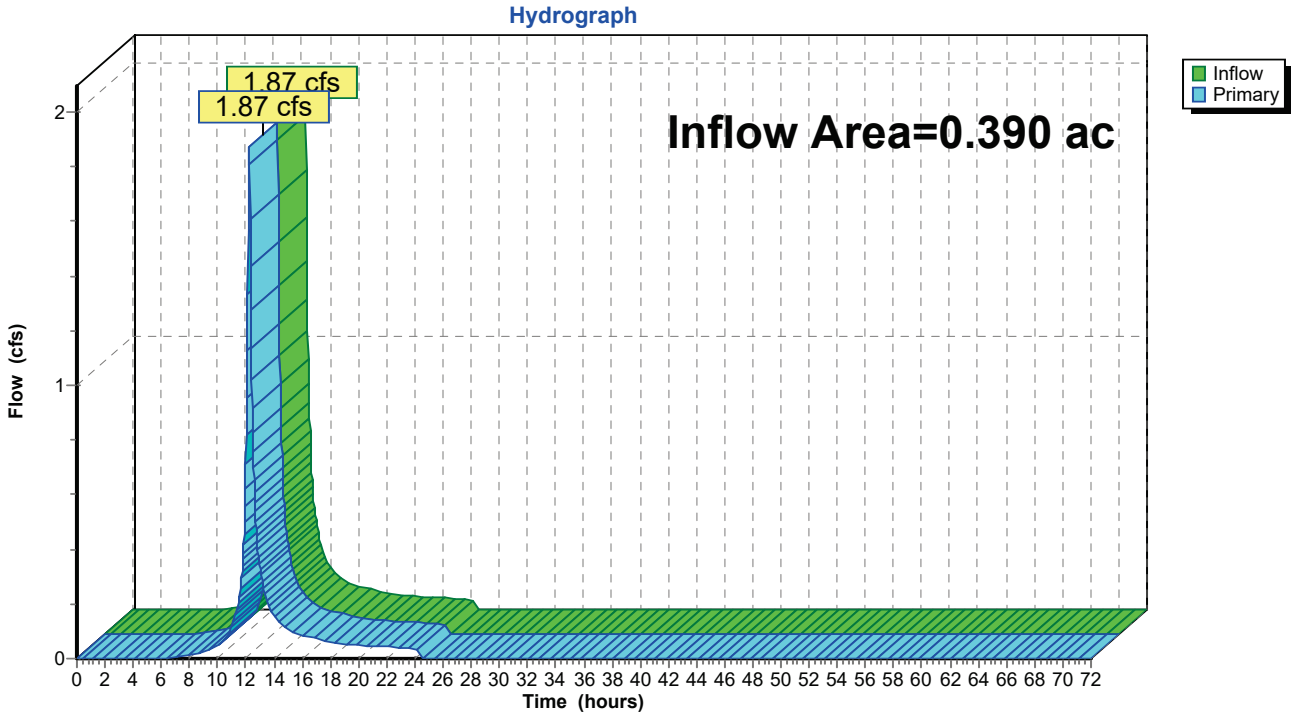


Summary for Link 6L: EDA-2

Inflow Area = 0.390 ac, 0.00% Impervious, Inflow Depth = 5.49" for 100-Year-2020 event
Inflow = 1.87 cfs @ 12.22 hrs, Volume= 0.179 af
Primary = 1.87 cfs @ 12.22 hrs, Volume= 0.179 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 6L: EDA-2

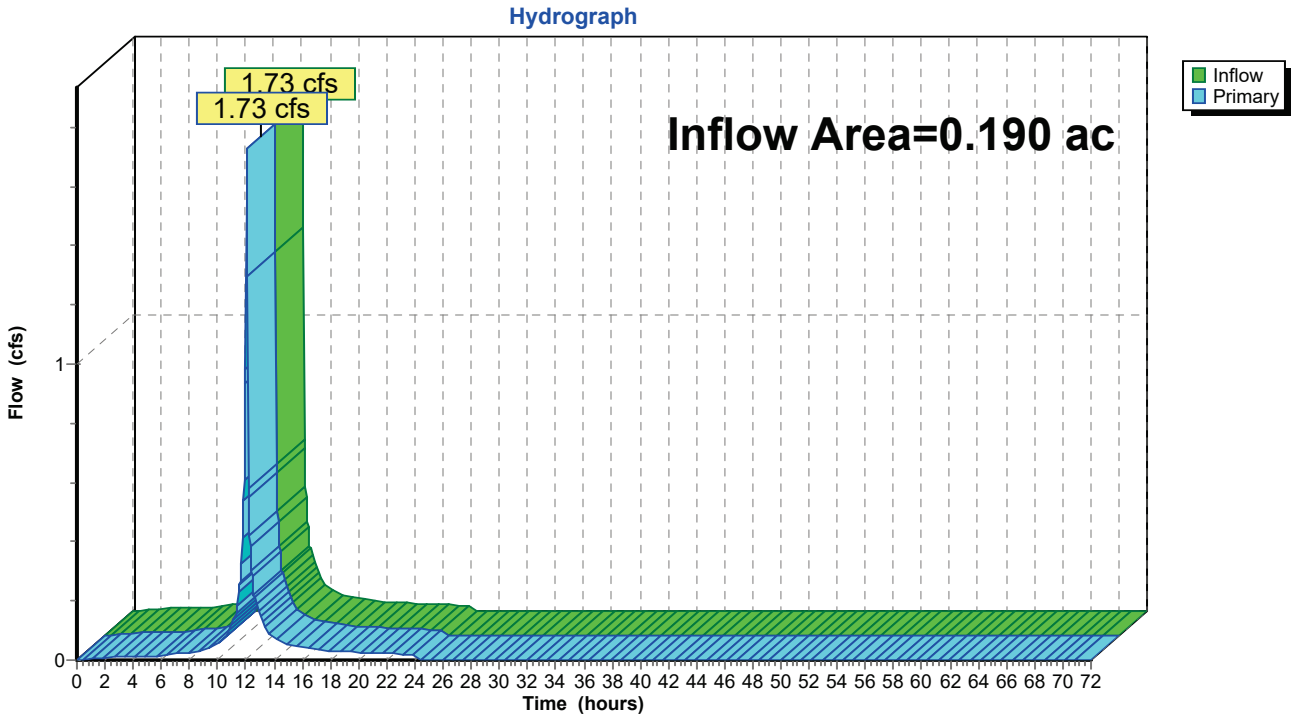


Summary for Link 9L: PDA-1A

Inflow Area = 0.190 ac, 47.37% Impervious, Inflow Depth = 7.39" for 100-Year-2020 event
Inflow = 1.73 cfs @ 12.08 hrs, Volume= 0.117 af
Primary = 1.73 cfs @ 12.08 hrs, Volume= 0.117 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 28P : PP-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 9L: PDA-1A

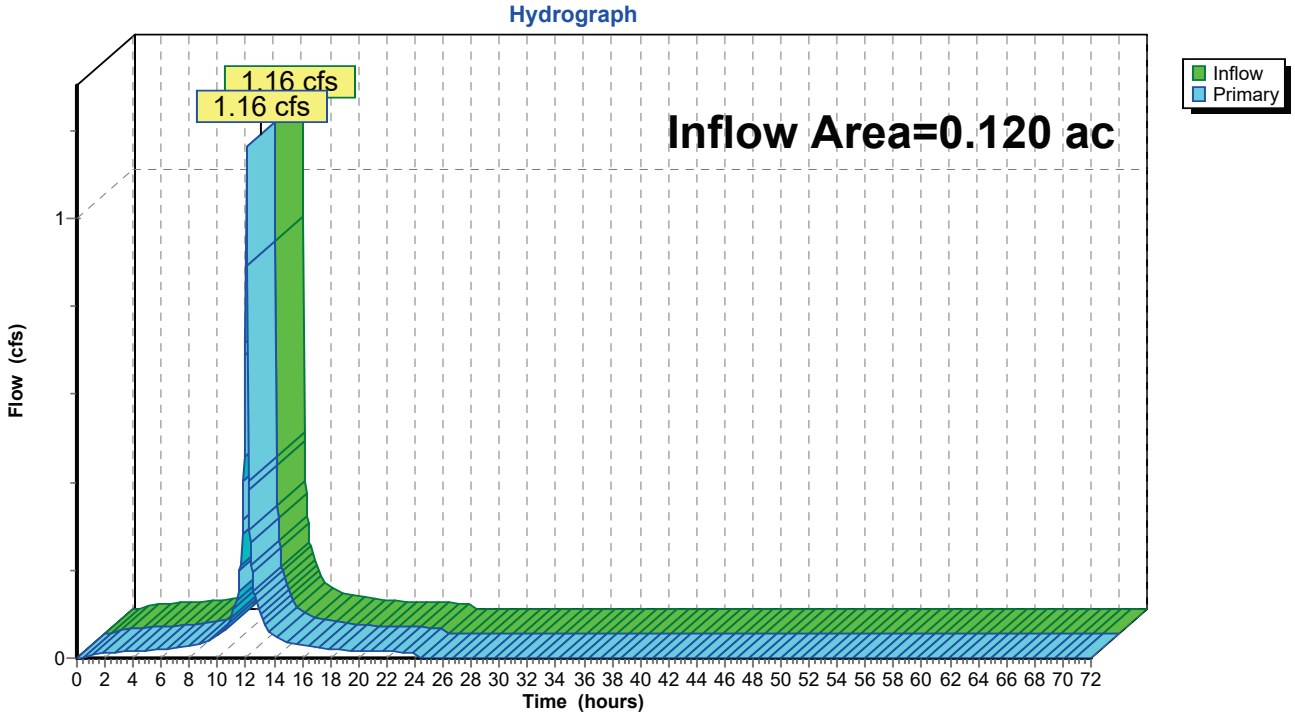


Summary for Link 12L: PDA-1B

Inflow Area = 0.120 ac,100.00% Impervious, Inflow Depth = 8.94" for 100-Year-2020 event
Inflow = 1.16 cfs @ 12.07 hrs, Volume= 0.089 af
Primary = 1.16 cfs @ 12.07 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 29P : PP-2

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 12L: PDA-1B

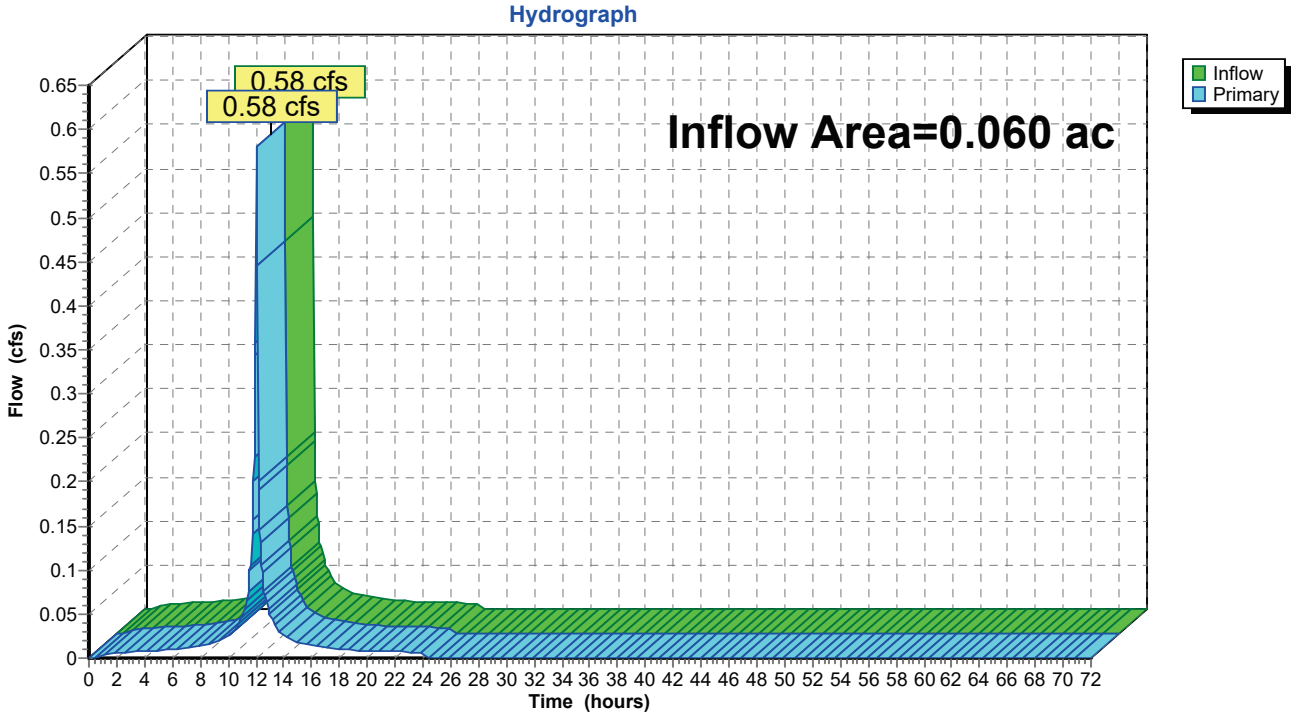


Summary for Link 15L: PDA-1C

Inflow Area = 0.060 ac,100.00% Impervious, Inflow Depth = 8.94" for 100-Year-2020 event
Inflow = 0.58 cfs @ 12.07 hrs, Volume= 0.045 af
Primary = 0.58 cfs @ 12.07 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 15L: PDA-1C

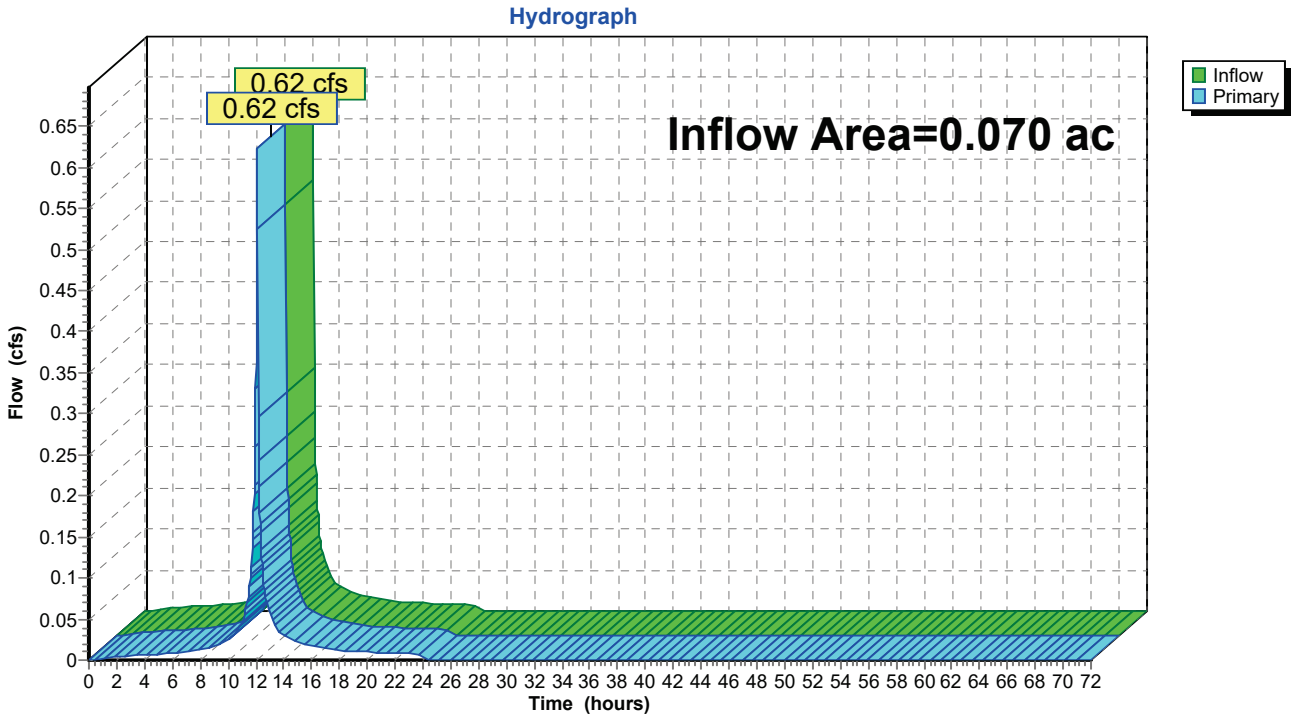


Summary for Link 18L: PDA-1D

Inflow Area = 0.070 ac, 71.43% Impervious, Inflow Depth = 8.10" for 100-Year-2020 event
Inflow = 0.62 cfs @ 12.11 hrs, Volume= 0.047 af
Primary = 0.62 cfs @ 12.11 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 31P : PP-4

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 18L: PDA-1D

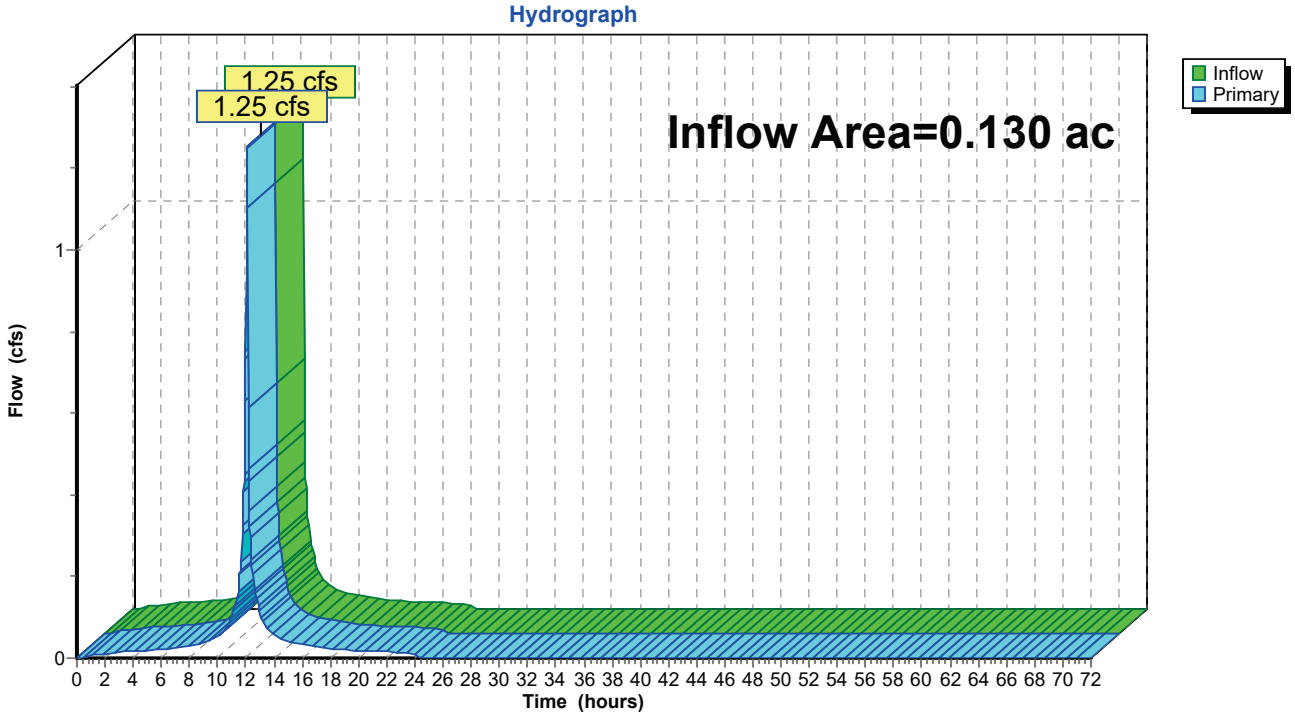


Summary for Link 21L: PDA-1E

Inflow Area = 0.130 ac,100.00% Impervious, Inflow Depth = 8.94" for 100-Year-2020 event
Inflow = 1.25 cfs @ 12.08 hrs, Volume= 0.097 af
Primary = 1.25 cfs @ 12.08 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 31P : PP-4

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 21L: PDA-1E

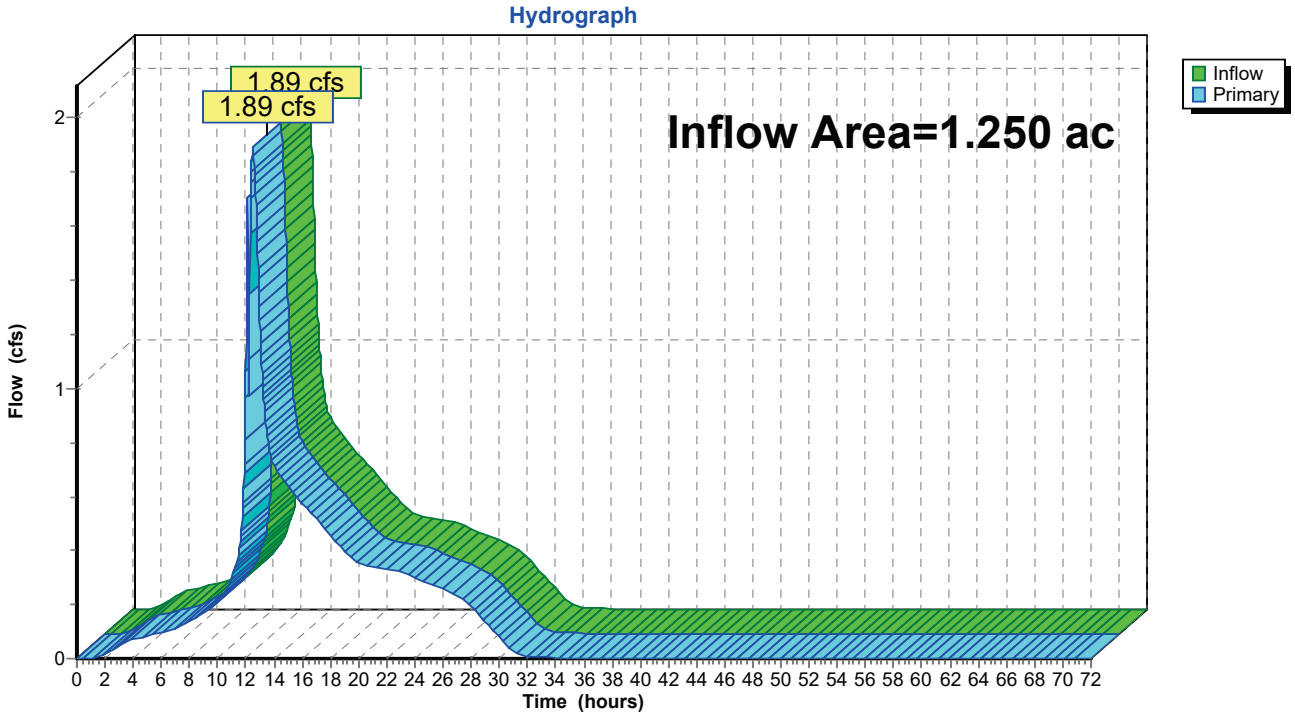


Summary for Link 25L: PDA-1

Inflow Area = 1.250 ac, 60.00% Impervious, Inflow Depth = 7.76" for 100-Year-2020 event
Inflow = 1.89 cfs @ 12.51 hrs, Volume= 0.808 af
Primary = 1.89 cfs @ 12.51 hrs, Volume= 0.808 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 25L: PDA-1

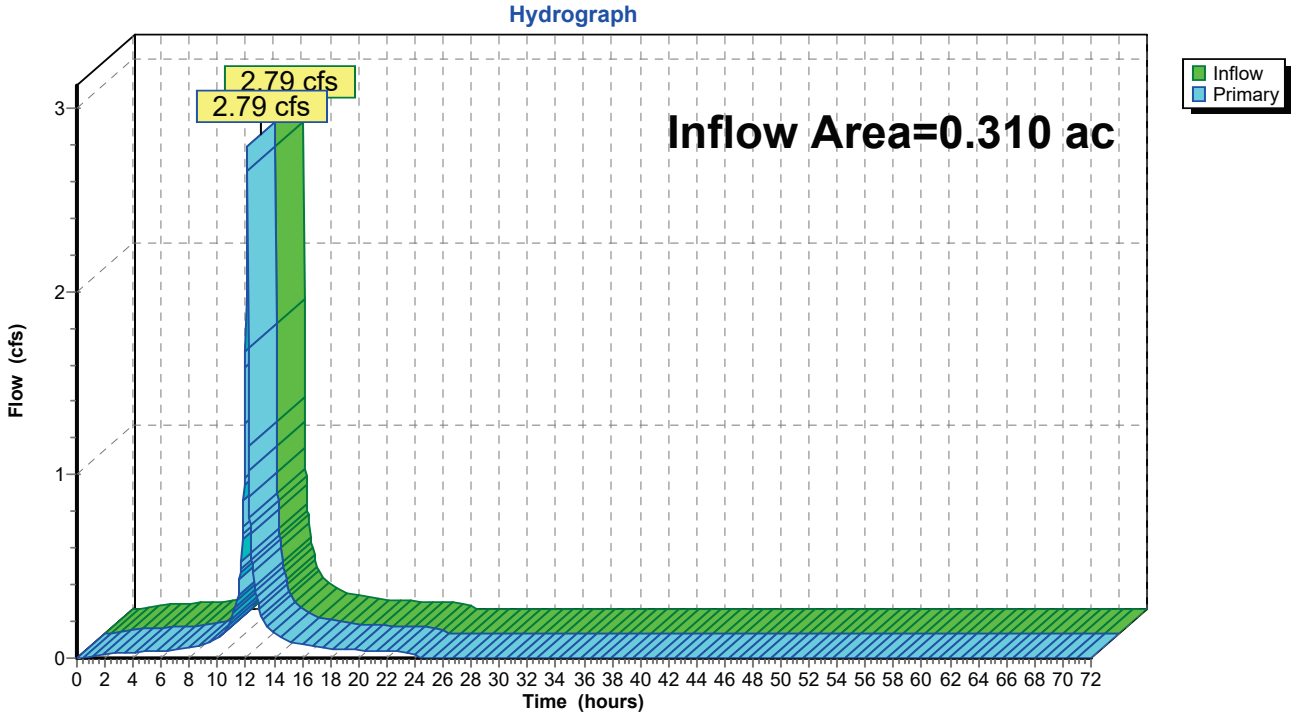


Summary for Link 28L: PDA-1F

Inflow Area = 0.310 ac, 77.42% Impervious, Inflow Depth = 8.27" for 100-Year-2020 event
Inflow = 2.79 cfs @ 12.09 hrs, Volume= 0.214 af
Primary = 2.79 cfs @ 12.09 hrs, Volume= 0.214 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 28L: PDA-1F

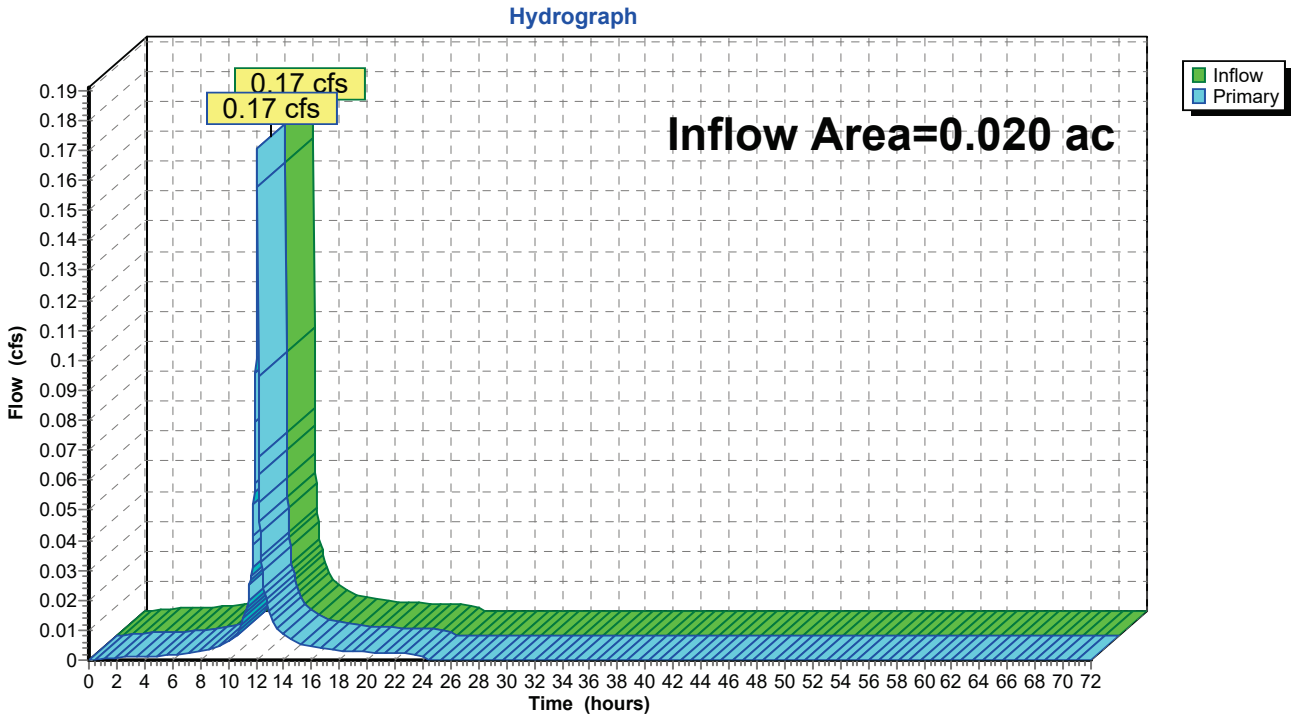


Summary for Link 31L: PDA-1H

Inflow Area = 0.020 ac, 50.00% Impervious, Inflow Depth = 7.47" for 100-Year-2020 event
Inflow = 0.17 cfs @ 12.09 hrs, Volume= 0.012 af
Primary = 0.17 cfs @ 12.09 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Routed to Link 25L : PDA-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 31L: PDA-1H

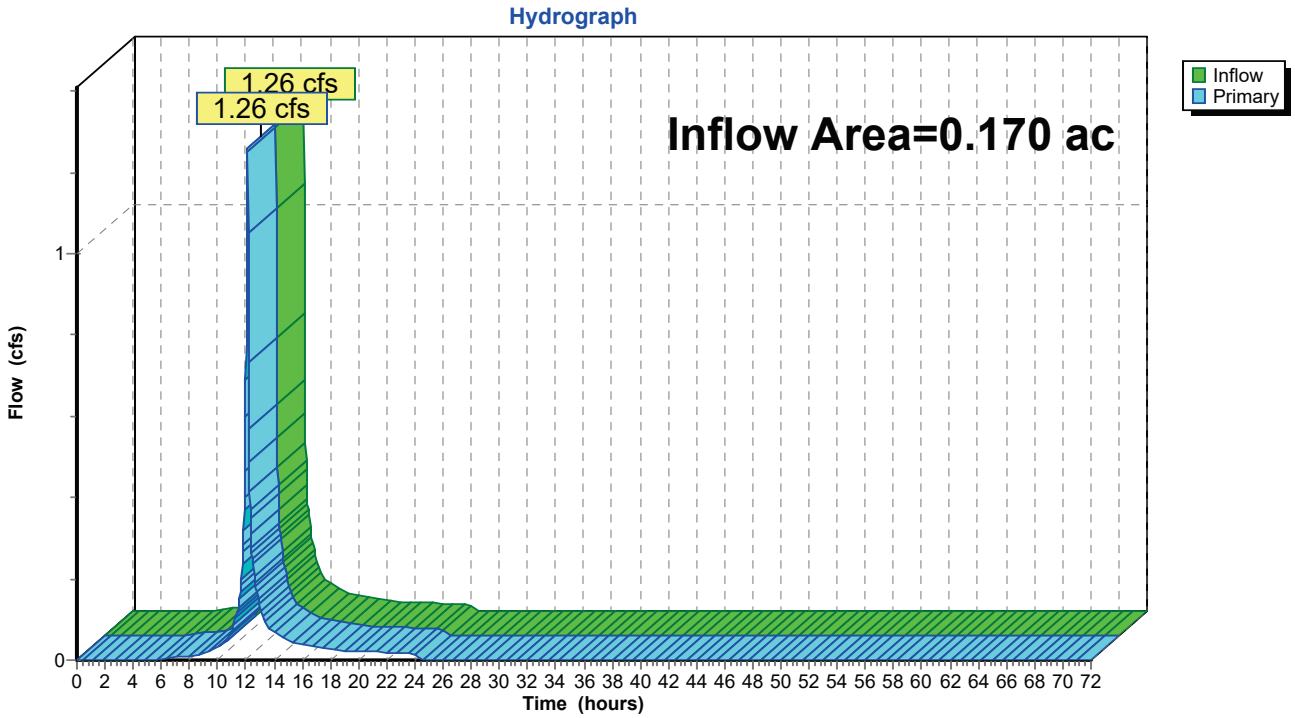


Summary for Link 32L: PDA-1I

Inflow Area = 0.170 ac, 5.88% Impervious, Inflow Depth = 6.17" for 100-Year-2020 event
Inflow = 1.26 cfs @ 12.11 hrs, Volume= 0.087 af
Primary = 1.26 cfs @ 12.11 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min
Routed to Link 25L : PDA-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 32L: PDA-1I

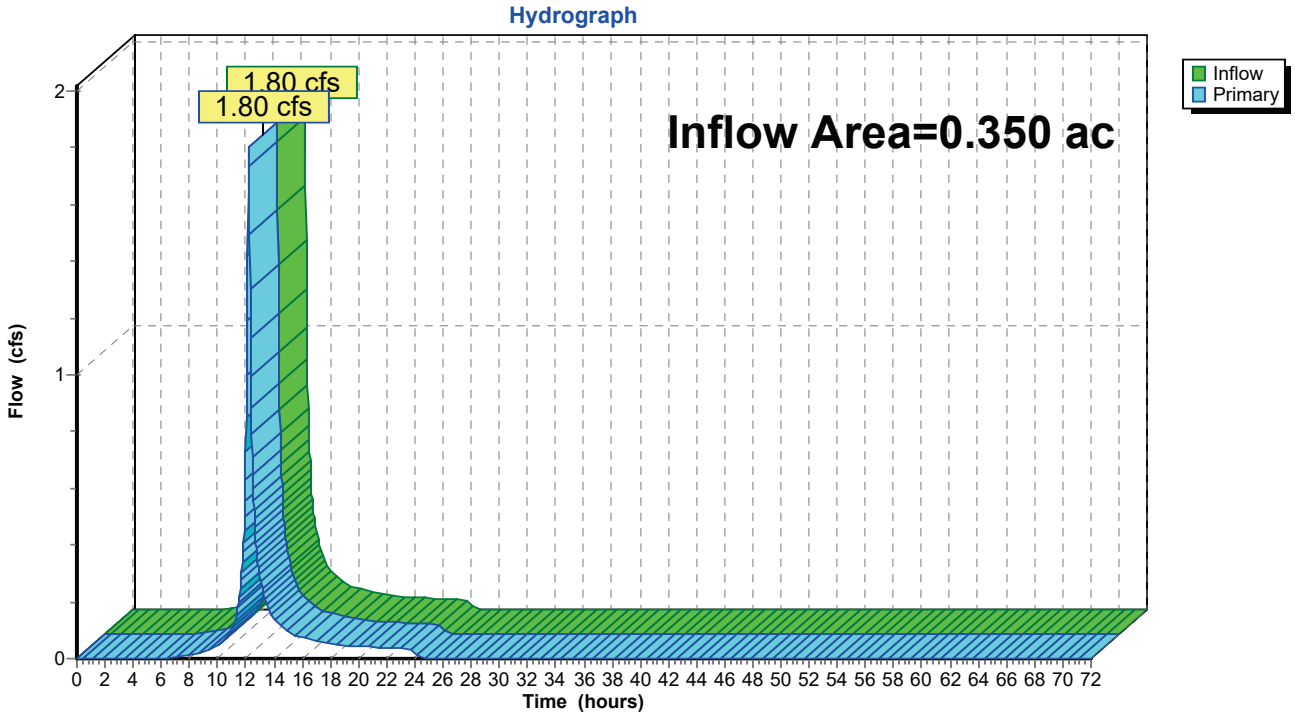


Summary for Link 34L: PDA-2

Inflow Area = 0.350 ac, 0.00% Impervious, Inflow Depth = 5.49" for 100-Year-2020 event
Inflow = 1.80 cfs @ 12.20 hrs, Volume= 0.160 af
Primary = 1.80 cfs @ 12.20 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 34L: PDA-2

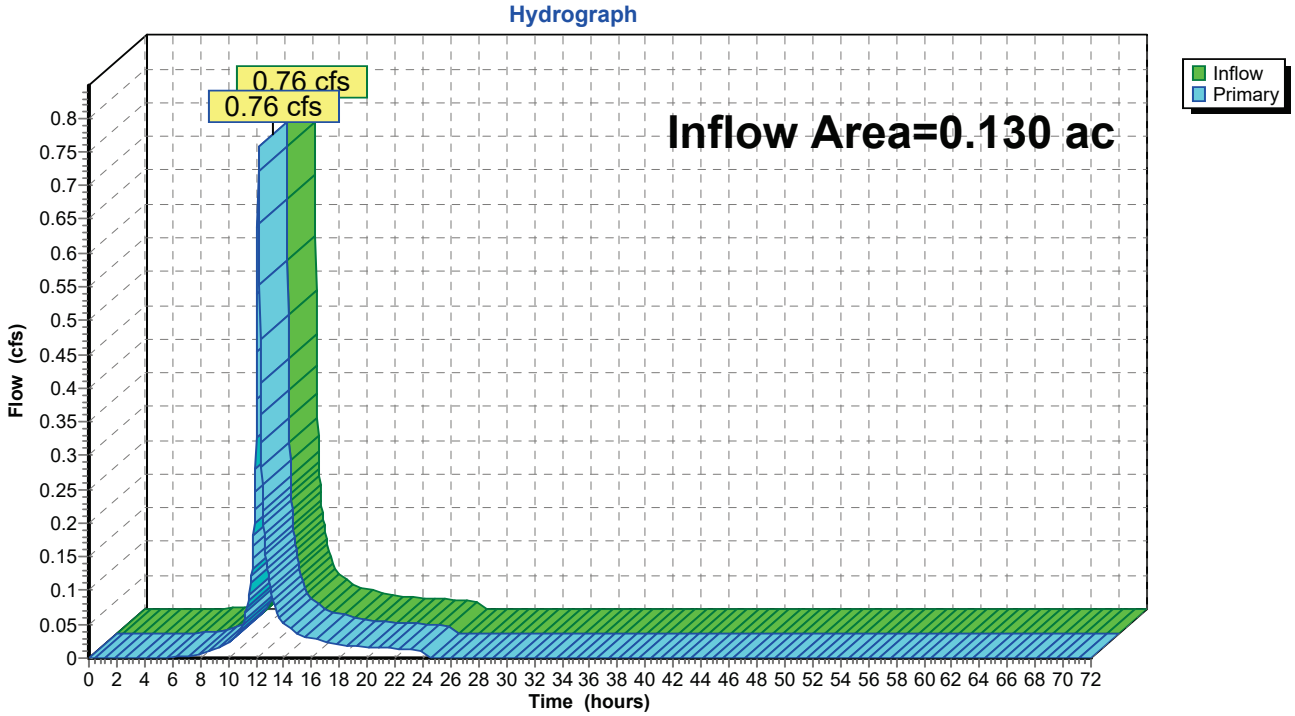


Summary for Link 38L: PDA-1G

Inflow Area = 0.130 ac, 0.00% Impervious, Inflow Depth = 5.99" for 100-Year-2020 event
Inflow = 0.76 cfs @ 12.18 hrs, Volume= 0.065 af
Primary = 0.76 cfs @ 12.18 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 38L: PDA-1G

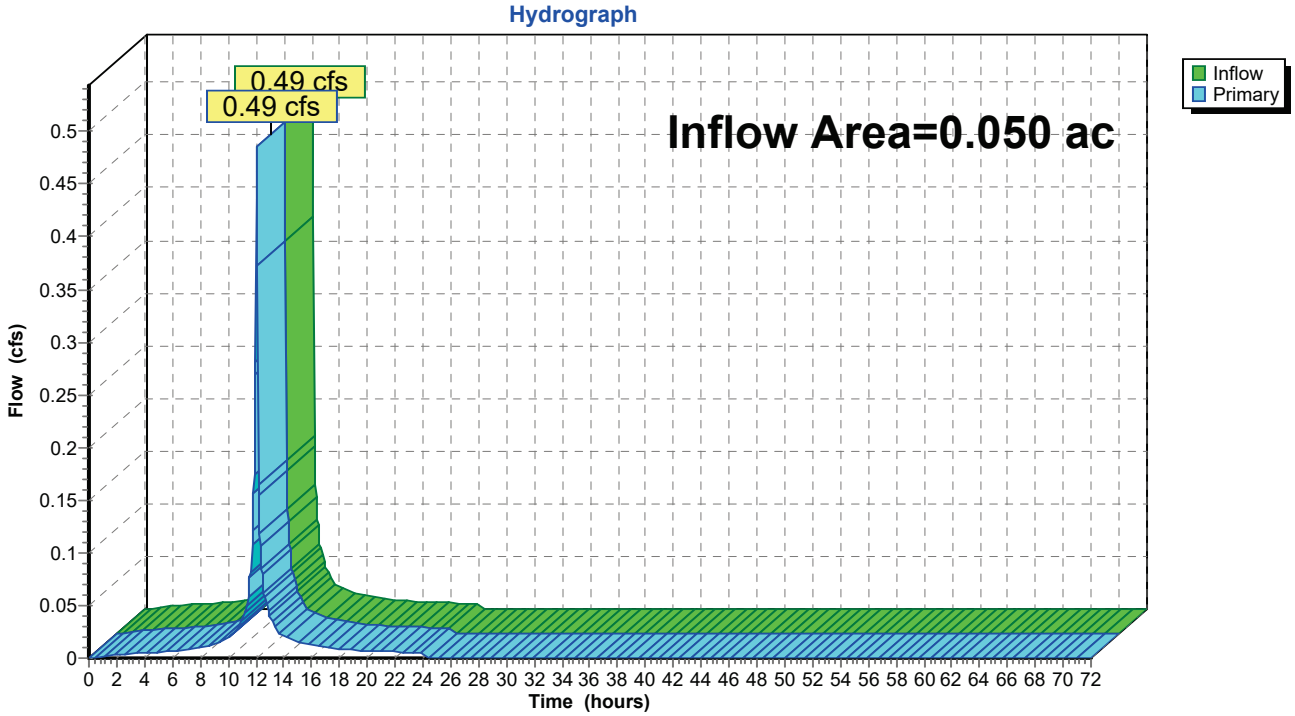


Summary for Link 41L: PDA-1J

Inflow Area = 0.050 ac, 80.00% Impervious, Inflow Depth = 8.35" for 100-Year-2020 event
Inflow = 0.49 cfs @ 12.08 hrs, Volume= 0.035 af
Primary = 0.49 cfs @ 12.08 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 41L: PDA-1J



Events for Subcatchment 1S: EDA-1 IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.10	0.011	3.24
10-Year-2020	5.38	0.15	0.017	5.14
100-Year-2020	**9.18**	**0.26**	**0.030**	**8.94**

Events for Subcatchment 2S: EDA-1 PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.92	0.096	0.99
10-Year-2020	5.38	2.30	0.226	2.32
100-Year-2020	**9.18**	**5.48**	**0.536**	**5.49**

Events for Subcatchment 5S: EDA-2 PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.31	0.032	0.99
10-Year-2020	5.38	0.79	0.075	2.32
100-Year-2020	**9.18**	**1.87**	**0.179**	**5.49**

Events for Subcatchment 7S: PDA-1A IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.34	0.024	3.24
10-Year-2020	5.38	0.53	0.039	5.14
100-Year-2020	**9.18**	**0.87**	**0.067**	**8.94**

Events for Subcatchment 8S: PDA-1A PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.17	0.010	1.22
10-Year-2020	5.38	0.37	0.022	2.67
100-Year-2020	**9.18**	**0.81**	**0.050**	**5.99**

Events for Subcatchment 10S: PDA-1B IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.43	0.032	3.24
10-Year-2020	5.38	0.68	0.051	5.14
100-Year-2020	**9.18**	**1.16**	**0.089**	**8.94**

Events for Subcatchment 13S: PDA-1C IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.22	0.016	3.24
10-Year-2020	5.38	0.34	0.026	5.14
100-Year-2020	**9.18**	**0.58**	**0.045**	**8.94**

Events for Subcatchment 16S: PDA-1D IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.17	0.013	3.24
10-Year-2020	5.38	0.27	0.021	5.14
100-Year-2020	**9.18**	**0.46**	**0.037**	**8.94**

Events for Subcatchment 17S: PDA-1D PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.03	0.002	1.22
10-Year-2020	5.38	0.07	0.004	2.67
100-Year-2020	**9.18**	**0.15**	**0.010**	**5.99**

Events for Subcatchment 19S: PDA-1E IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.47	0.035	3.24
10-Year-2020	5.38	0.73	0.056	5.14
100-Year-2020	**9.18**	**1.25**	**0.097**	**8.94**

Events for Subcatchment 23S: PDA-2

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.30	0.029	0.99
10-Year-2020	5.38	0.76	0.068	2.32
100-Year-2020	**9.18**	**1.80**	**0.160**	**5.49**

Events for Subcatchment 26S: PDA-1F IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.85	0.065	3.24
10-Year-2020	5.38	1.32	0.103	5.14
100-Year-2020	**9.18**	**2.27**	**0.179**	**8.94**

Events for Subcatchment 27S: PDA-1F PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.11	0.007	1.22
10-Year-2020	5.38	0.24	0.016	2.67
100-Year-2020	**9.18**	**0.52**	**0.035**	**5.99**

Events for Subcatchment 29S: PDA-1H IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.04	0.003	3.24
10-Year-2020	5.38	0.06	0.004	5.14
100-Year-2020	**9.18**	**0.10**	**0.007**	**8.94**

Events for Subcatchment 30S: PDA-1H PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.02	0.001	1.22
10-Year-2020	5.38	0.03	0.002	2.67
100-Year-2020	**9.18**	**0.08**	**0.005**	**5.99**

Events for Subcatchment 33S: PDA-1I IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.03	0.003	3.24
10-Year-2020	5.38	0.05	0.004	5.14
100-Year-2020	**9.18**	**0.09**	**0.007**	**8.94**

Events for Subcatchment 35S: PDA-1I PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.24	0.016	1.22
10-Year-2020	5.38	0.53	0.036	2.67
100-Year-2020	**9.18**	**1.17**	**0.080**	**5.99**

Events for Subcatchment 37S: PDA-1G PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.15	0.013	1.22
10-Year-2020	5.38	0.34	0.029	2.67
100-Year-2020	**9.18**	**0.76**	**0.065**	**5.99**

Events for Subcatchment 39S: PDA-1J IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.15	0.011	3.24
10-Year-2020	5.38	0.24	0.017	5.14
100-Year-2020	**9.18**	**0.40**	**0.030**	**8.94**

Events for Subcatchment 40S: PDA-1J PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2020	3.47	0.02	0.001	1.22
10-Year-2020	5.38	0.04	0.002	2.67
100-Year-2020	**9.18**	**0.08**	**0.005**	**5.99**

Events for Pond 28P: PP-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2-Year-2020	0.69	0.18	446.73	0.024
10-Year-2020	1.12	0.22	447.60	0.046
100-Year-2020	**2.42**	**0.27**	**449.56**	**0.107**

Events for Pond 29P: PP-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2-Year-2020	0.81	0.27	445.74	0.066
10-Year-2020	1.18	0.34	446.81	0.102
100-Year-2020	**2.73**	**1.62**	**447.45**	**0.124**

Events for Pond 30P: PP-3

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2-Year-2020	1.43	0.26	448.10	0.033
10-Year-2020	2.40	0.34	449.84	0.064
100-Year-2020	**4.37**	**2.04**	**452.23**	**0.098**

Events for Pond 31P: PP-4

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2-Year-2020	0.67	0.20	453.59	0.010
10-Year-2020	1.06	0.45	454.35	0.017
100-Year-2020	**1.85**	**0.84**	**455.69**	**0.028**

Events for Link 3L: EDA-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2020	1.02	1.02	**0.00**
10-Year-2020	2.45	2.45	0.00
100-Year-2020	**5.74**	**5.74**	0.00

Events for Link 6L: EDA-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2020	0.31	0.31	**0.00**
10-Year-2020	0.79	0.79	0.00
100-Year-2020	**1.87**	**1.87**	0.00

Events for Link 9L: PDA-1A

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2020	0.51	0.51	**0.00**
10-Year-2020	0.91	0.91	0.00
100-Year-2020	**1.73**	**1.73**	0.00

Events for Link 12L: PDA-1B

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2020	0.43	0.43	**0.00**
10-Year-2020	0.68	0.68	0.00
100-Year-2020	**1.16**	**1.16**	0.00

Events for Link 15L: PDA-1C

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2020	0.22	0.22	**0.00**
10-Year-2020	0.34	0.34	0.00
100-Year-2020	**0.58**	**0.58**	0.00

Events for Link 18L: PDA-1D

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2020	0.21	0.21	**0.00**
10-Year-2020	0.34	0.34	0.00
100-Year-2020	**0.62**	**0.62**	0.00

Events for Link 21L: PDA-1E

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2020	0.47	0.47	**0.00**
10-Year-2020	0.73	0.73	0.00
100-Year-2020	**1.25**	**1.25**	0.00

Events for Link 25L: PDA-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2020	0.51	0.51	**0.00**
10-Year-2020	0.90	0.90	0.00
100-Year-2020	**1.89**	**1.89**	0.00

Events for Link 28L: PDA-1F

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2020	0.96	0.96	**0.00**
10-Year-2020	1.56	1.56	0.00
100-Year-2020	**2.79**	**2.79**	0.00

Events for Link 31L: PDA-1H

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2020	0.05	0.05	**0.00**
10-Year-2020	0.09	0.09	0.00
100-Year-2020	**0.17**	**0.17**	0.00

Events for Link 32L: PDA-1I

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2020	0.27	0.27	**0.00**
10-Year-2020	0.59	0.59	0.00
100-Year-2020	**1.26**	**1.26**	0.00

Events for Link 34L: PDA-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2020	0.30	0.30	**0.00**
10-Year-2020	0.76	0.76	0.00
100-Year-2020	**1.80**	**1.80**	0.00

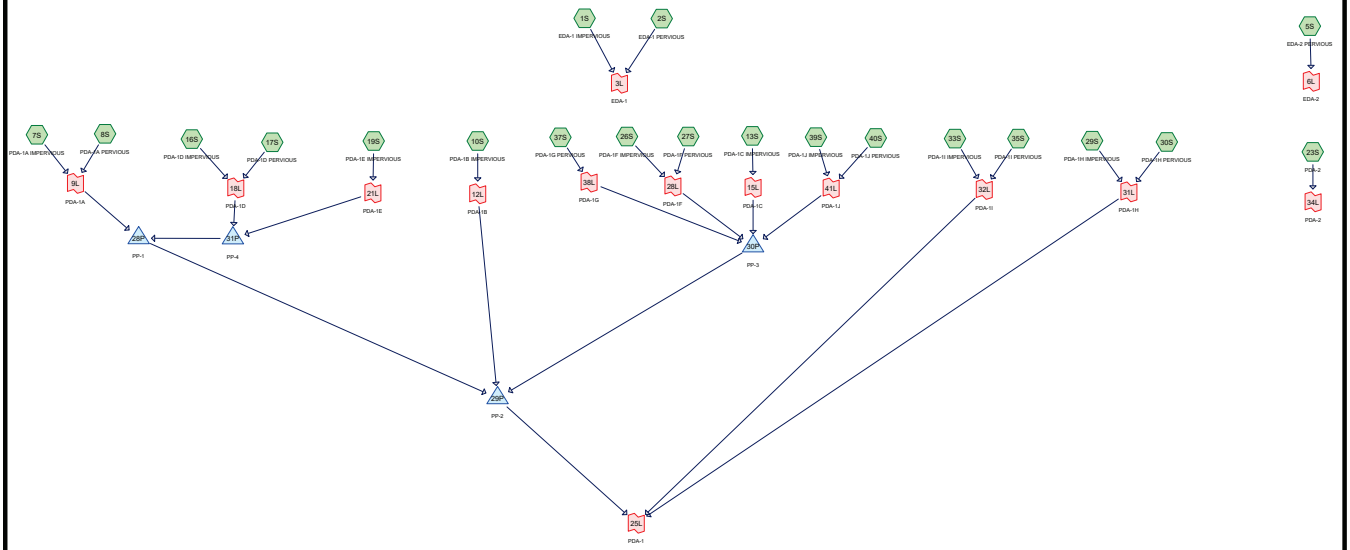
Events for Link 38L: PDA-1G

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2020	0.15	0.15	**0.00**
10-Year-2020	0.34	0.34	0.00
100-Year-2020	**0.76**	**0.76**	0.00

Events for Link 41L: PDA-1J

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2020	0.17	0.17	**0.00**
10-Year-2020	0.27	0.27	0.00
100-Year-2020	**0.49**	**0.49**	0.00

Appendix C:
Hydrologic and Hydraulic Calculations (Future)



Subcat Reach Pond Link

Routing Diagram for 2026-07-27 - DMH2LLC

Prepared by Pennoni Associates, Inc, Printed 8/17/2026

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67 Subcat 19S: PDA-1E IMPERVIOUS
68 Subcat 23S: PDA-2
69 Subcat 26S: PDA-1F IMPERVIOUS
70 Subcat 27S: PDA-1F PERVIOUS
71 Subcat 29S: PDA-1H IMPERVIOUS
72 Subcat 30S: PDA-1H PERVIOUS
73 Subcat 33S: PDA-1I IMPERVIOUS
74 Subcat 35S: PDA-1I PERVIOUS
75 Subcat 37S: PDA-1G PERVIOUS
76 Subcat 39S: PDA-1J IMPERVIOUS
77 Subcat 40S: PDA-1J PERVIOUS
78 Pond 28P: PP-1
83 Pond 29P: PP-2
88 Pond 30P: PP-3
93 Pond 31P: PP-4
98 Link 3L: EDA-1
99 Link 6L: EDA-2
100 Link 9L: PDA-1A
101 Link 12L: PDA-1B
102 Link 15L: PDA-1C
103 Link 18L: PDA-1D
104 Link 21L: PDA-1E
105 Link 25L: PDA-1
106 Link 28L: PDA-1F
107 Link 31L: PDA-1H
108 Link 32L: PDA-1I
109 Link 34L: PDA-2
110 Link 38L: PDA-1G
111 Link 41L: PDA-1J

100-Year-2050 Event
112 Subcat 1S: EDA-1 IMPERVIOUS
113 Subcat 2S: EDA-1 PERVIOUS
114 Subcat 5S: EDA-2 PERVIOUS
115 Subcat 7S: PDA-1A IMPERVIOUS
116 Subcat 8S: PDA-1A PERVIOUS
117 Subcat 10S: PDA-1B IMPERVIOUS
118 Subcat 13S: PDA-1C IMPERVIOUS
119 Subcat 16S: PDA-1D IMPERVIOUS
120 Subcat 17S: PDA-1D PERVIOUS
121 Subcat 19S: PDA-1E IMPERVIOUS
122 Subcat 23S: PDA-2
123 Subcat 26S: PDA-1F IMPERVIOUS
124 Subcat 27S: PDA-1F PERVIOUS
125 Subcat 29S: PDA-1H IMPERVIOUS
126 Subcat 30S: PDA-1H PERVIOUS
127 Subcat 33S: PDA-1I IMPERVIOUS
128 Subcat 35S: PDA-1I PERVIOUS
129 Subcat 37S: PDA-1G PERVIOUS

130 Subcat 39S: PDA-1J IMPERVIOUS
131 Subcat 40S: PDA-1J PERVIOUS
132 Pond 28P: PP-1
137 Pond 29P: PP-2
142 Pond 30P: PP-3
147 Pond 31P: PP-4
152 Link 3L: EDA-1
153 Link 6L: EDA-2
154 Link 9L: PDA-1A
155 Link 12L: PDA-1B
156 Link 15L: PDA-1C
157 Link 18L: PDA-1D
158 Link 21L: PDA-1E
159 Link 25L: PDA-1
160 Link 28L: PDA-1F
161 Link 31L: PDA-1H
162 Link 32L: PDA-1I
163 Link 34L: PDA-2
164 Link 38L: PDA-1G
165 Link 41L: PDA-1J

Multi-Event Tables

166 Subcat 1S: EDA-1 IMPERVIOUS
167 Subcat 2S: EDA-1 PERVIOUS
168 Subcat 5S: EDA-2 PERVIOUS
169 Subcat 7S: PDA-1A IMPERVIOUS
170 Subcat 8S: PDA-1A PERVIOUS
171 Subcat 10S: PDA-1B IMPERVIOUS
172 Subcat 13S: PDA-1C IMPERVIOUS
173 Subcat 16S: PDA-1D IMPERVIOUS
174 Subcat 17S: PDA-1D PERVIOUS
175 Subcat 19S: PDA-1E IMPERVIOUS
176 Subcat 23S: PDA-2
177 Subcat 26S: PDA-1F IMPERVIOUS
178 Subcat 27S: PDA-1F PERVIOUS
179 Subcat 29S: PDA-1H IMPERVIOUS
180 Subcat 30S: PDA-1H PERVIOUS
181 Subcat 33S: PDA-1I IMPERVIOUS
182 Subcat 35S: PDA-1I PERVIOUS
183 Subcat 37S: PDA-1G PERVIOUS
184 Subcat 39S: PDA-1J IMPERVIOUS
185 Subcat 40S: PDA-1J PERVIOUS
186 Pond 28P: PP-1
187 Pond 29P: PP-2
188 Pond 30P: PP-3
189 Pond 31P: PP-4
190 Link 3L: EDA-1
191 Link 6L: EDA-2
192 Link 9L: PDA-1A
193 Link 12L: PDA-1B
194 Link 15L: PDA-1C
195 Link 18L: PDA-1D
196 Link 21L: PDA-1E

197 Link 25L: PDA-1
198 Link 28L: PDA-1F
199 Link 31L: PDA-1H
200 Link 32L: PDA-1I
201 Link 34L: PDA-2
202 Link 38L: PDA-1G
203 Link 41L: PDA-1J

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC	P2 (inches)
1	2-Year-2050	NOAA 24-hr	D	Default	24.00	1	4.09	2	4.09
2	10-Year-2050	NOAA 24-hr	D	Default	24.00	1	6.37	2	4.09
3	100-Year-2050	NOAA 24-hr	D	Default	24.00	1	11.52	2	4.09

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.500	74	>75% Grass cover, Good, HSG C (8S, 17S, 27S, 30S, 35S, 37S, 40S)
0.790	98	Paved parking, HSG C (1S, 7S, 10S, 13S, 16S, 19S, 26S, 29S, 33S, 39S)
1.910	70	Woods, Good, HSG C (2S, 5S, 23S)
3.200	**78**	**TOTAL AREA**

Summary for Subcatchment 1S: EDA-1 IMPERVIOUS

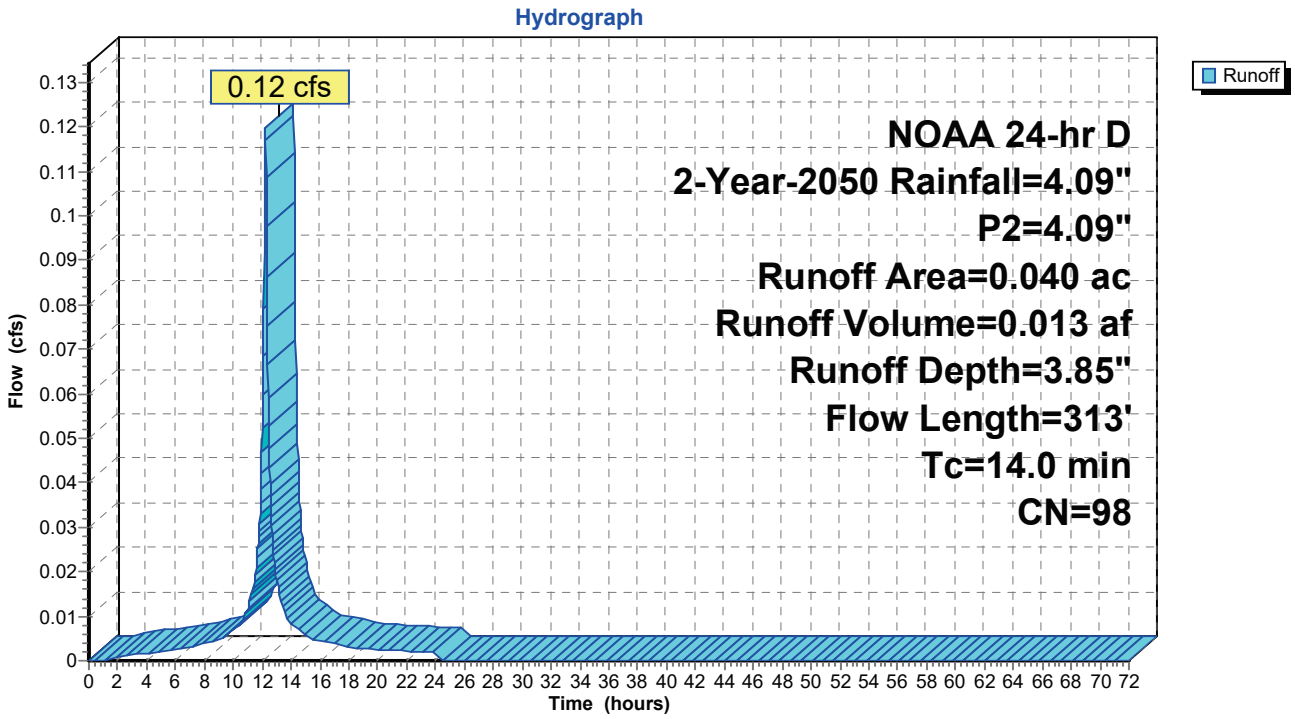
Runoff = 0.12 cfs @ 12.21 hrs, Volume= 0.013 af, Depth= 3.85"
Routed to Link 3L : EDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG C
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0579	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 4.09"
1.6	213	0.1867	2.16		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
14.0	313	Total			

Subcatchment 1S: EDA-1 IMPERVIOUS



Summary for Subcatchment 2S: EDA-1 PERVIOUS

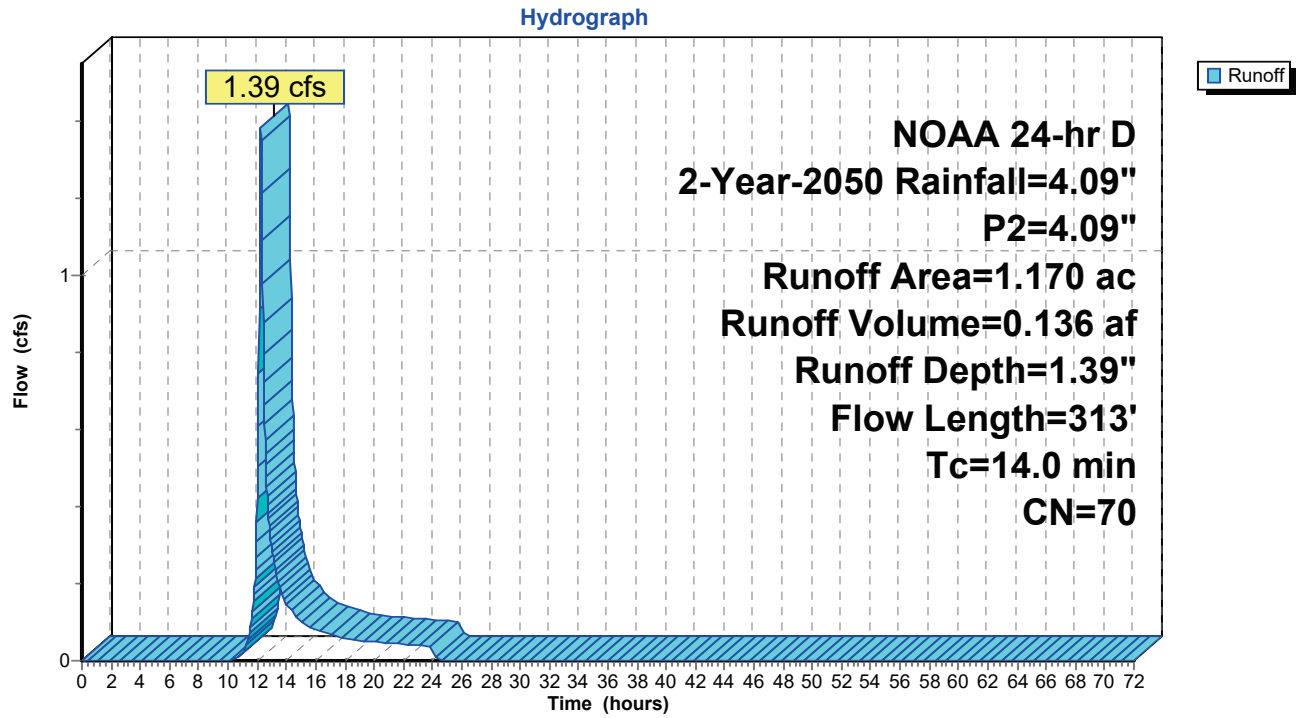
Runoff = 1.39 cfs @ 12.23 hrs, Volume= 0.136 af, Depth= 1.39"
Routed to Link 3L : EDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
1.170	70	Woods, Good, HSG C
1.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0579	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 4.09"
1.6	213	0.1867	2.16		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
14.0	313	Total			

Subcatchment 2S: EDA-1 PERVIOUS



Summary for Subcatchment 5S: EDA-2 PERVIOUS

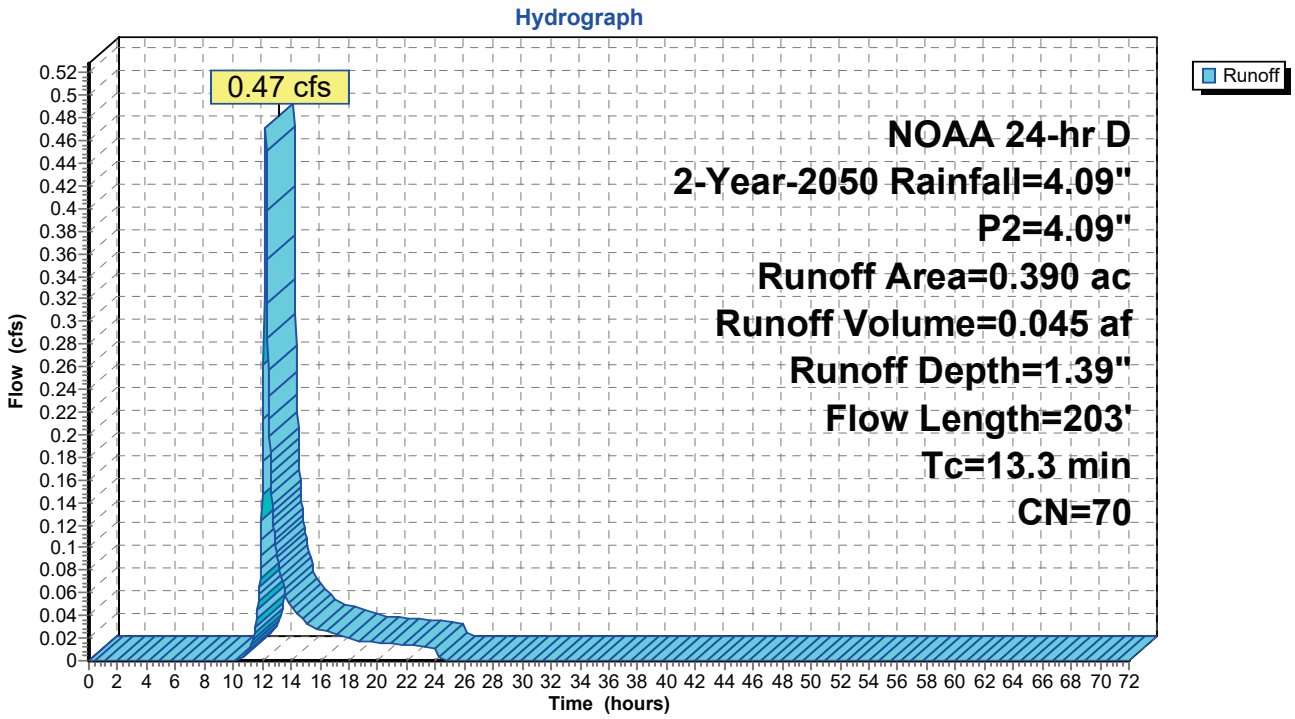
Runoff = 0.47 cfs @ 12.22 hrs, Volume= 0.045 af, Depth= 1.39"
Routed to Link 6L : EDA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.390	70	Woods, Good, HSG C
0.390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0582	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 4.09"
0.9	103	0.1619	2.01		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
13.3	203	Total			

Subcatchment 5S: EDA-2 PERVIOUS



Summary for Subcatchment 7S: PDA-1A IMPERVIOUS

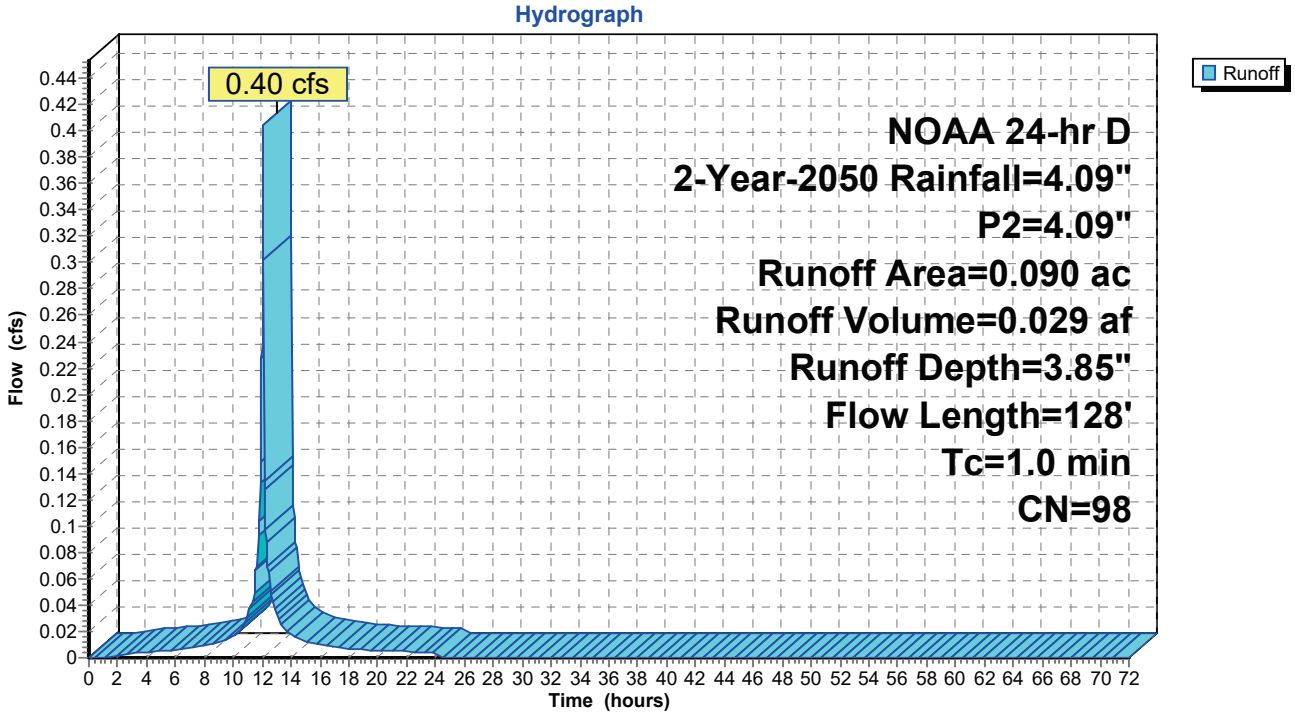
Runoff = 0.40 cfs @ 12.08 hrs, Volume= 0.029 af, Depth= 3.85"
Routed to Link 9L : PDA-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.090	98	Paved parking, HSG C
0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0347	1.33		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.7	85	0.0500	2.17		**Sheet Flow, BC** Smooth surfaces n= 0.011 P2= 4.09"
0.1	28	0.0493	4.51		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
1.0	128	Total			

Subcatchment 7S: PDA-1A IMPERVIOUS



Summary for Subcatchment 8S: PDA-1A PERVIOUS

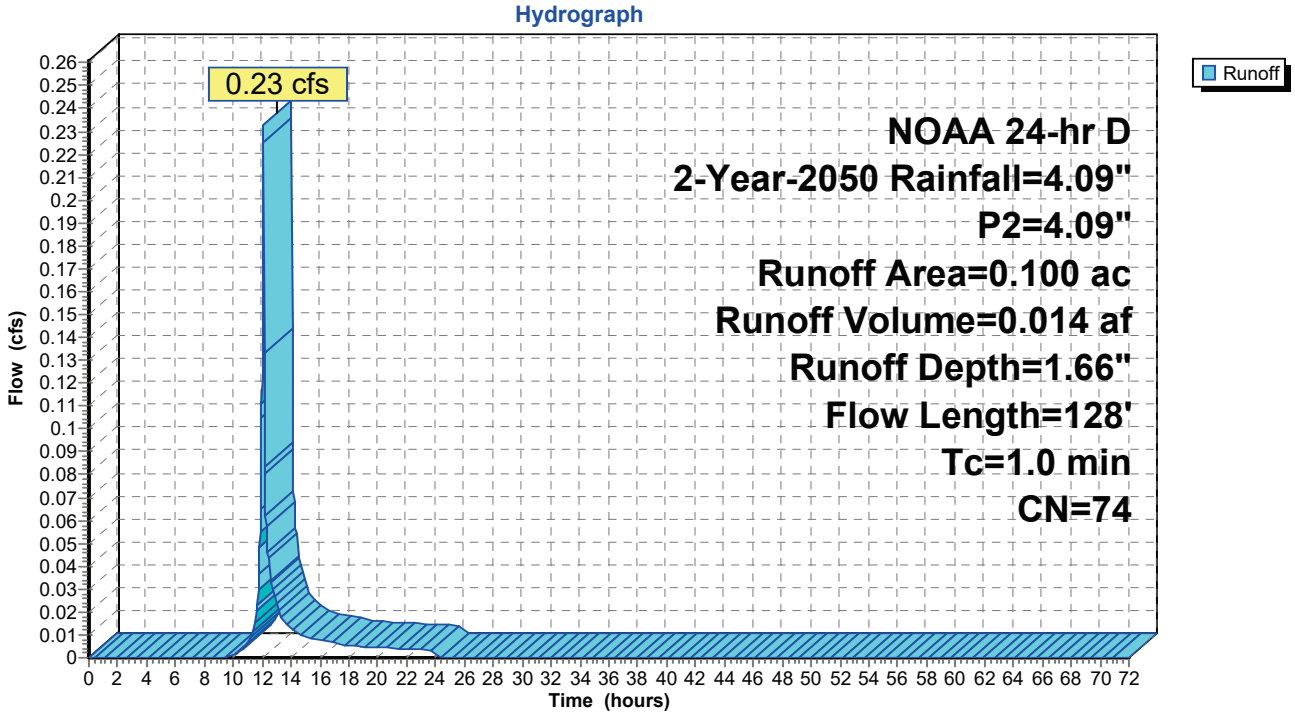
Runoff = 0.23 cfs @ 12.08 hrs, Volume= 0.014 af, Depth= 1.66"
Routed to Link 9L : PDA-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.100	74	>75% Grass cover, Good, HSG C
0.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0347	1.33		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.7	85	0.0500	2.17		**Sheet Flow, BC** Smooth surfaces n= 0.011 P2= 4.09"
0.1	28	0.0493	4.51		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
1.0	128	Total			

Subcatchment 8S: PDA-1A PERVIOUS



Summary for Subcatchment 10S: PDA-1B IMPERVIOUS

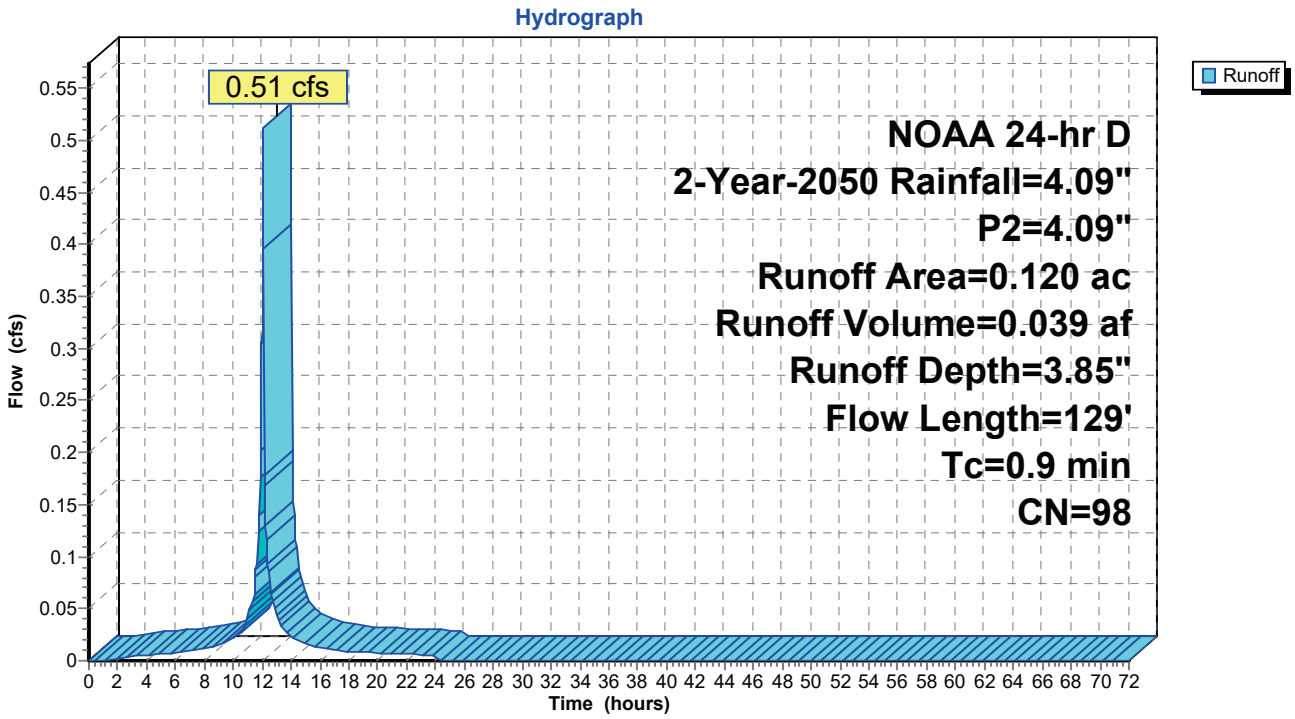
Runoff = 0.51 cfs @ 12.09 hrs, Volume= 0.039 af, Depth= 3.85"
Routed to Link 12L : PDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.120	98	Paved parking, HSG C
0.120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0484	2.21		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.1	29	0.0610	3.98		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
0.9	129	Total			

Subcatchment 10S: PDA-1B IMPERVIOUS



Summary for Subcatchment 13S: PDA-1C IMPERVIOUS

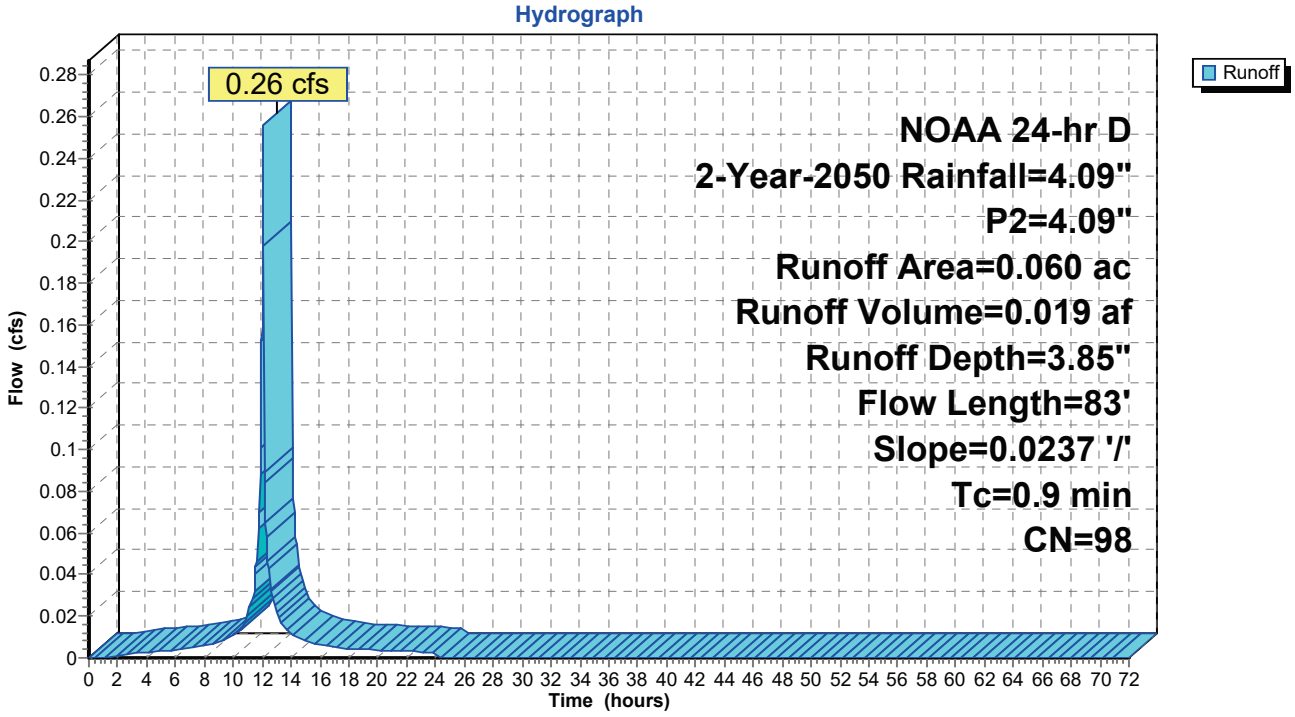
Runoff = 0.26 cfs @ 12.09 hrs, Volume= 0.019 af, Depth= 3.85"
Routed to Link 15L : PDA-1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.060	98	Paved parking, HSG C
0.060		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	83	0.0237	1.60		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"

Subcatchment 13S: PDA-1C IMPERVIOUS



Summary for Subcatchment 16S: PDA-1D IMPERVIOUS

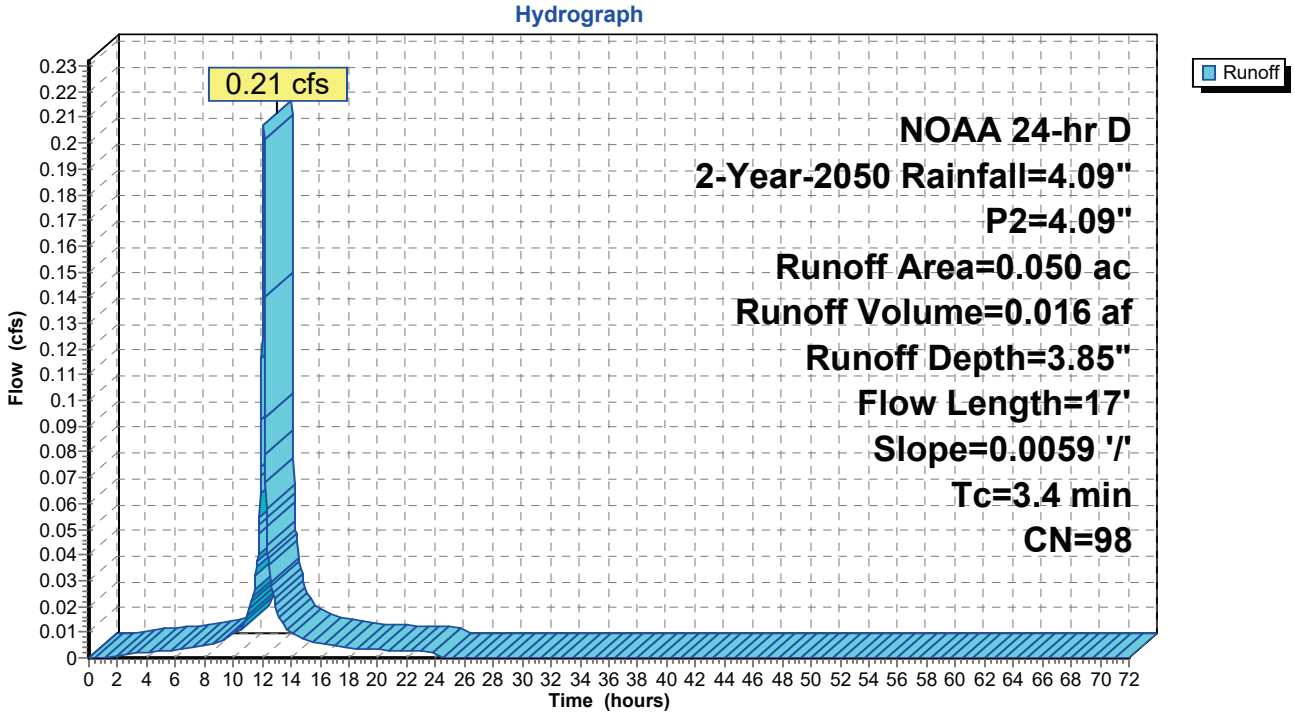
Runoff = 0.21 cfs @ 12.10 hrs, Volume= 0.016 af, Depth= 3.85"
Routed to Link 18L : PDA-1D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.050	98	Paved parking, HSG C
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	17	0.0059	0.08		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"

Subcatchment 16S: PDA-1D IMPERVIOUS



Summary for Subcatchment 17S: PDA-1D PERVIOUS

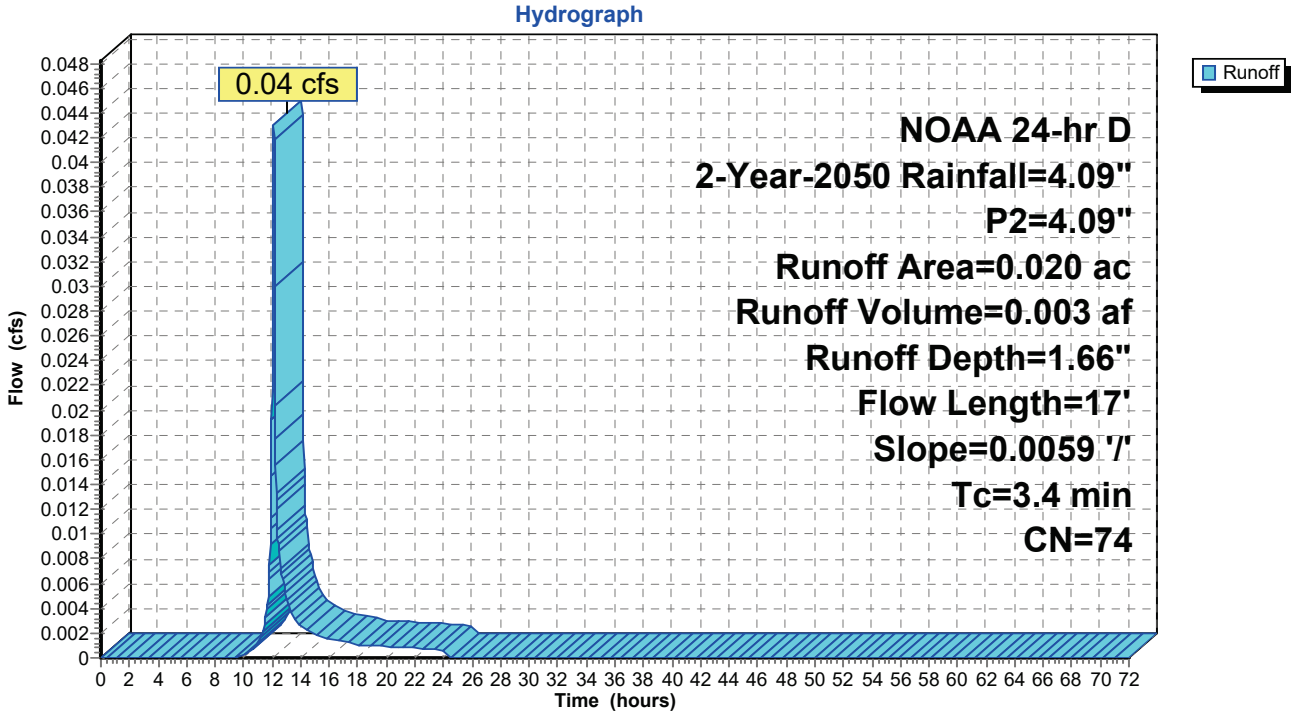
Runoff = 0.04 cfs @ 12.11 hrs, Volume= 0.003 af, Depth= 1.66"
Routed to Link 18L : PDA-1D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.020	74	>75% Grass cover, Good, HSG C
0.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	17	0.0059	0.08		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"

Subcatchment 17S: PDA-1D PERVIOUS



Summary for Subcatchment 19S: PDA-1E IMPERVIOUS

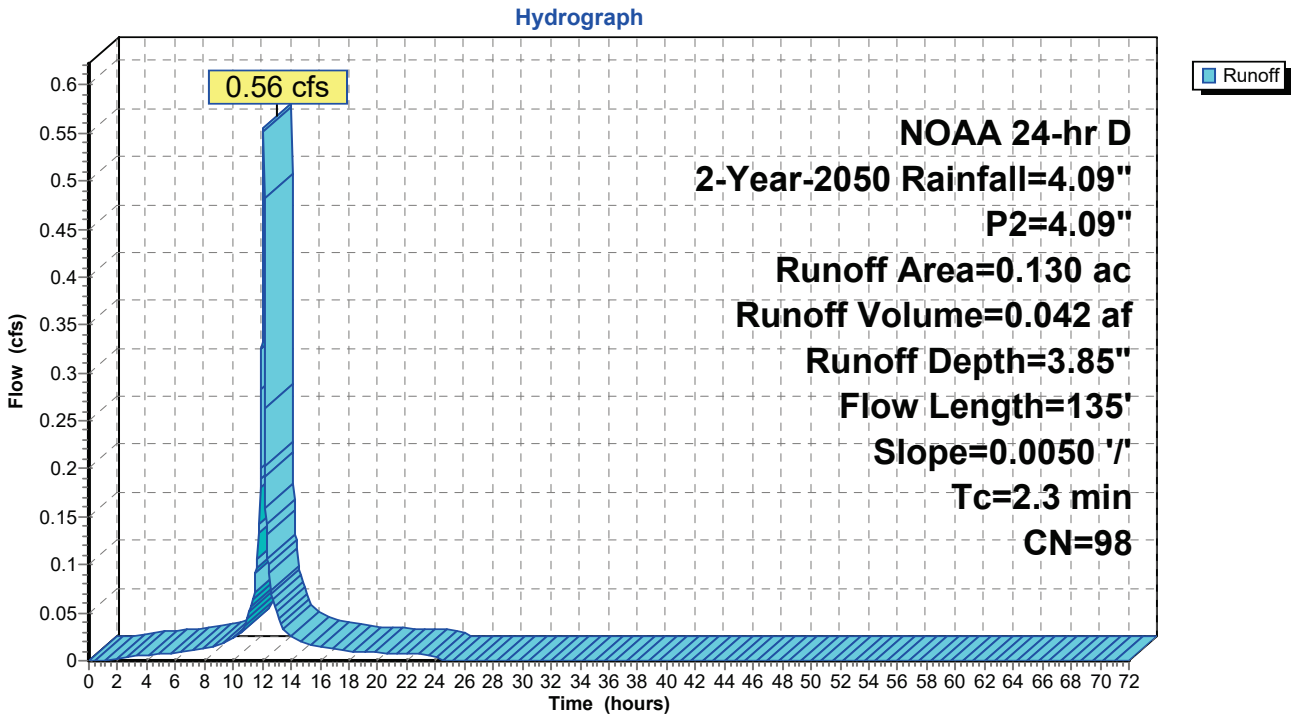
Runoff = 0.56 cfs @ 12.08 hrs, Volume= 0.042 af, Depth= 3.85"
Routed to Link 21L : PDA-1E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.130	98	Paved parking, HSG C
0.130		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0050	0.89		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.4	35	0.0050	1.44		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
2.3	135	Total			

Subcatchment 19S: PDA-1E IMPERVIOUS



Summary for Subcatchment 23S: PDA-2

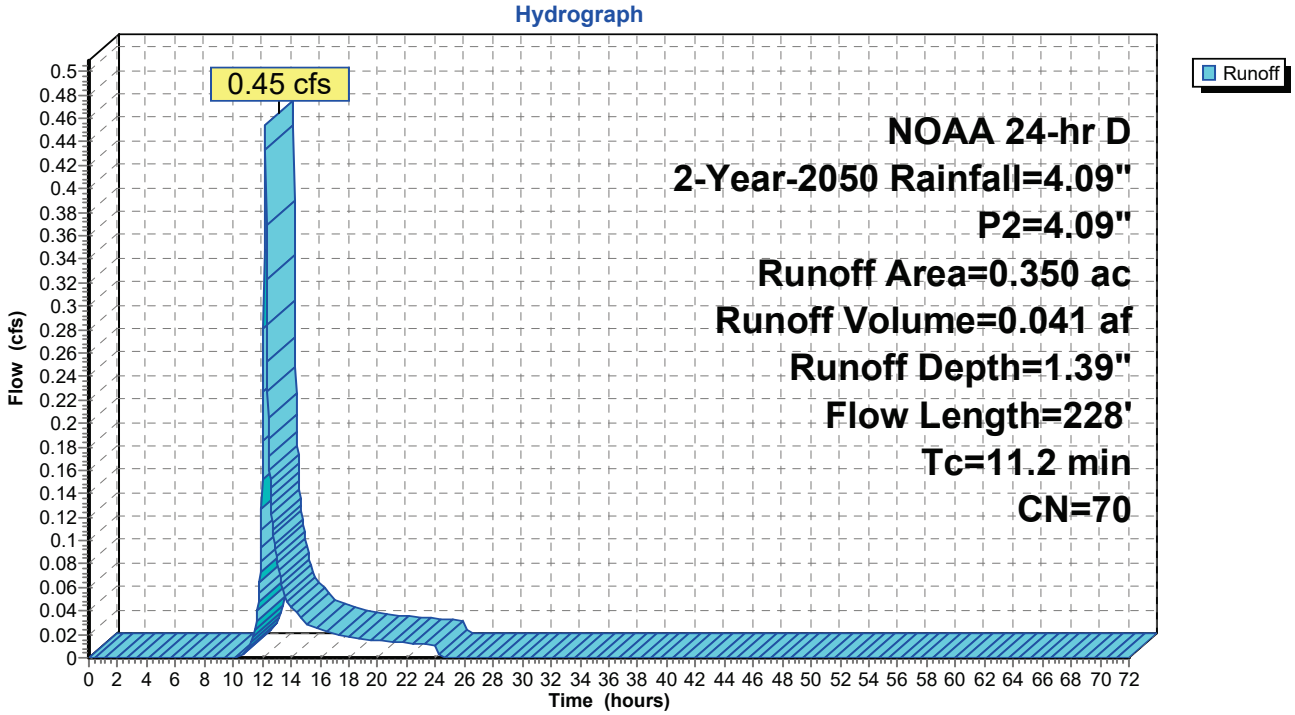
Runoff = 0.45 cfs @ 12.19 hrs, Volume= 0.041 af, Depth= 1.39"
Routed to Link 34L : PDA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.350	70	Woods, Good, HSG C
0.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	62	0.0385	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 4.09"
0.4	36	0.1011	1.59		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.2	49	0.0543	3.75		**Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps
0.6	81	0.1763	2.10		**Shallow Concentrated Flow, DE** Woodland Kv= 5.0 fps
11.2	228	Total			

Subcatchment 23S: PDA-2



Summary for Subcatchment 26S: PDA-1F IMPERVIOUS

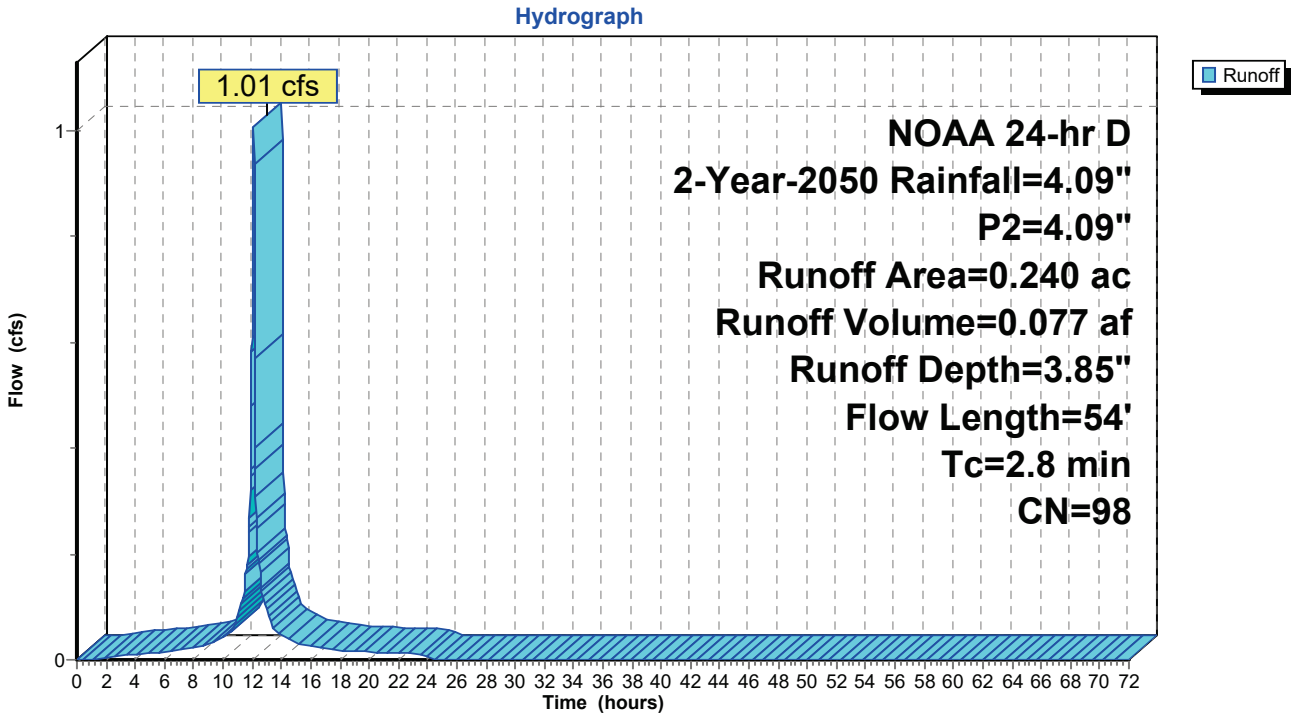
Runoff = 1.01 cfs @ 12.09 hrs, Volume= 0.077 af, Depth= 3.85"
Routed to Link 28L : PDA-1F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG C
0.240		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	7	0.0071	0.60		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
1.3	18	0.0794	0.24		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
0.2	20	0.0375	1.45		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 4.09"
1.1	9	0.0278	0.14		**Sheet Flow, DE** Grass: Short n= 0.150 P2= 4.09"
2.8	54	Total			

Subcatchment 26S: PDA-1F IMPERVIOUS



Summary for Subcatchment 27S: PDA-1F PERVIOUS

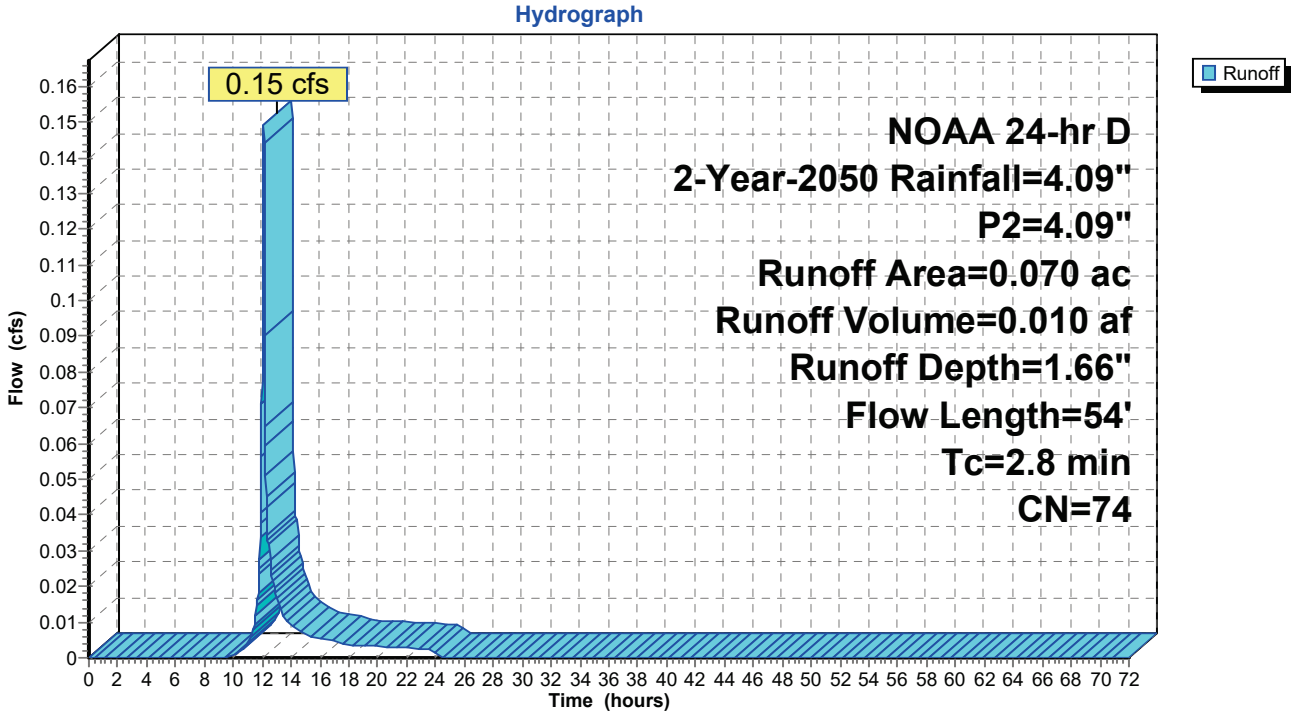
Runoff = 0.15 cfs @ 12.10 hrs, Volume= 0.010 af, Depth= 1.66"
Routed to Link 28L : PDA-1F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.070	74	>75% Grass cover, Good, HSG C
0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	7	0.0071	0.60		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
1.3	18	0.0794	0.24		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
0.2	20	0.0375	1.45		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 4.09"
1.1	9	0.0278	0.14		**Sheet Flow, DE** Grass: Short n= 0.150 P2= 4.09"
2.8	54	Total			

Subcatchment 27S: PDA-1F PERVIOUS



Summary for Subcatchment 29S: PDA-1H IMPERVIOUS

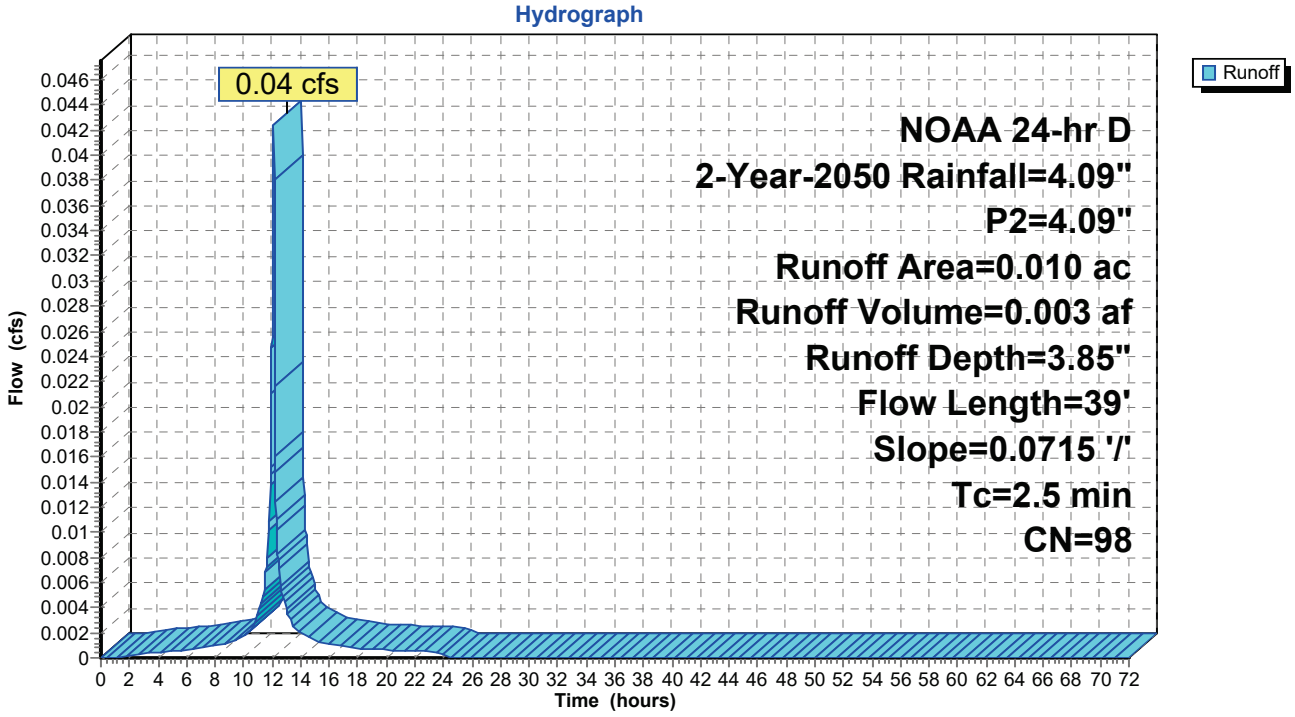
Runoff = 0.04 cfs @ 12.08 hrs, Volume= 0.003 af, Depth= 3.85"
Routed to Link 31L : PDA-1H

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.010	98	Paved parking, HSG C
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	39	0.0715	0.27		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"

Subcatchment 29S: PDA-1H IMPERVIOUS



Summary for Subcatchment 30S: PDA-1H PERVIOUS

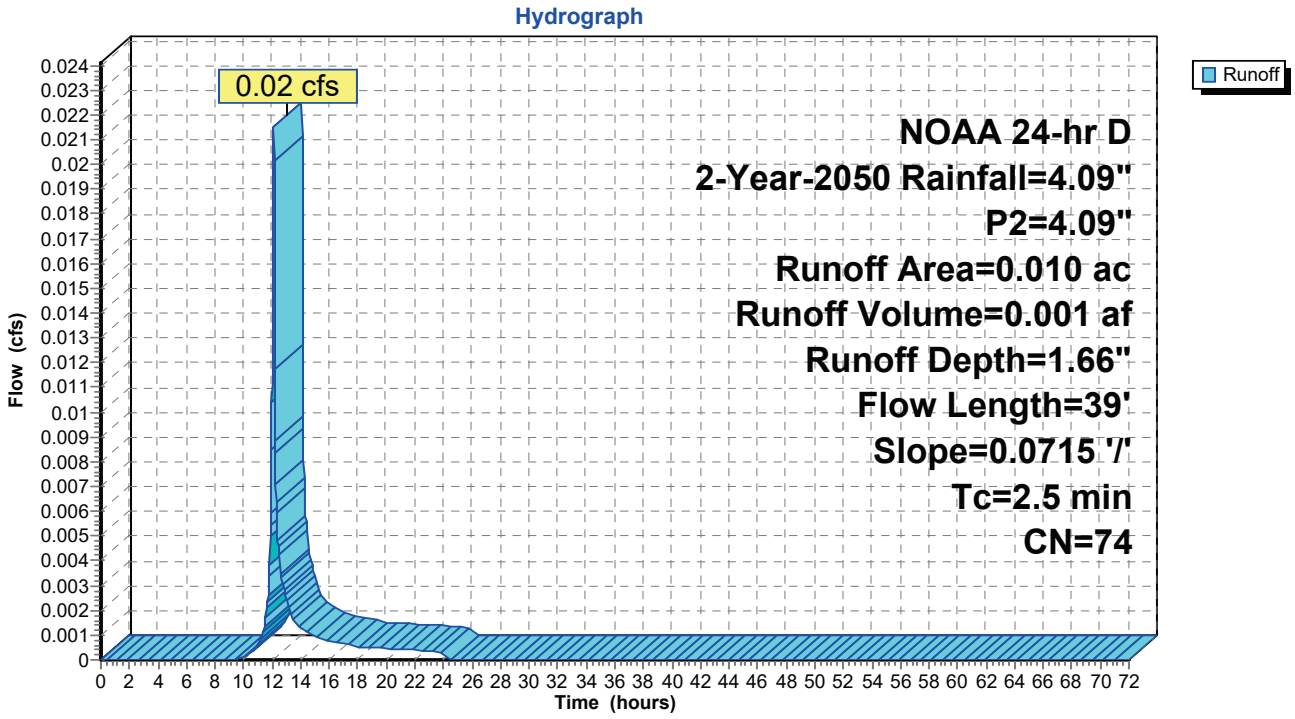
Runoff = 0.02 cfs @ 12.09 hrs, Volume= 0.001 af, Depth= 1.66"
Routed to Link 31L : PDA-1H

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.010	74	>75% Grass cover, Good, HSG C
0.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	39	0.0715	0.27		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"

Subcatchment 30S: PDA-1H PERVIOUS



Summary for Subcatchment 33S: PDA-1I IMPERVIOUS

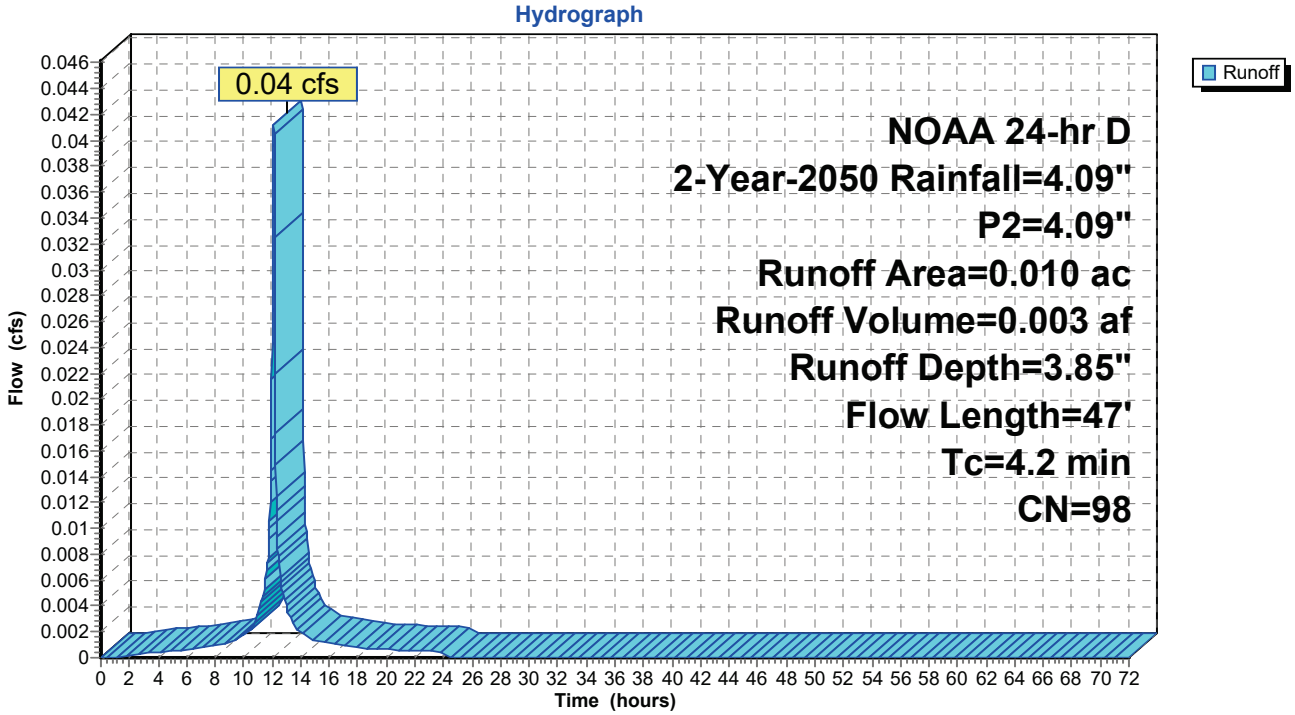
Runoff = 0.04 cfs @ 12.11 hrs, Volume= 0.003 af, Depth= 3.85"
Routed to Link 32L : PDA-1I

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.010	98	Paved parking, HSG C
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	21	0.0109	0.11		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"
1.0	26	0.2700	0.42		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
4.2	47	Total			

Subcatchment 33S: PDA-1I IMPERVIOUS



Summary for Subcatchment 35S: PDA-1I PERVIOUS

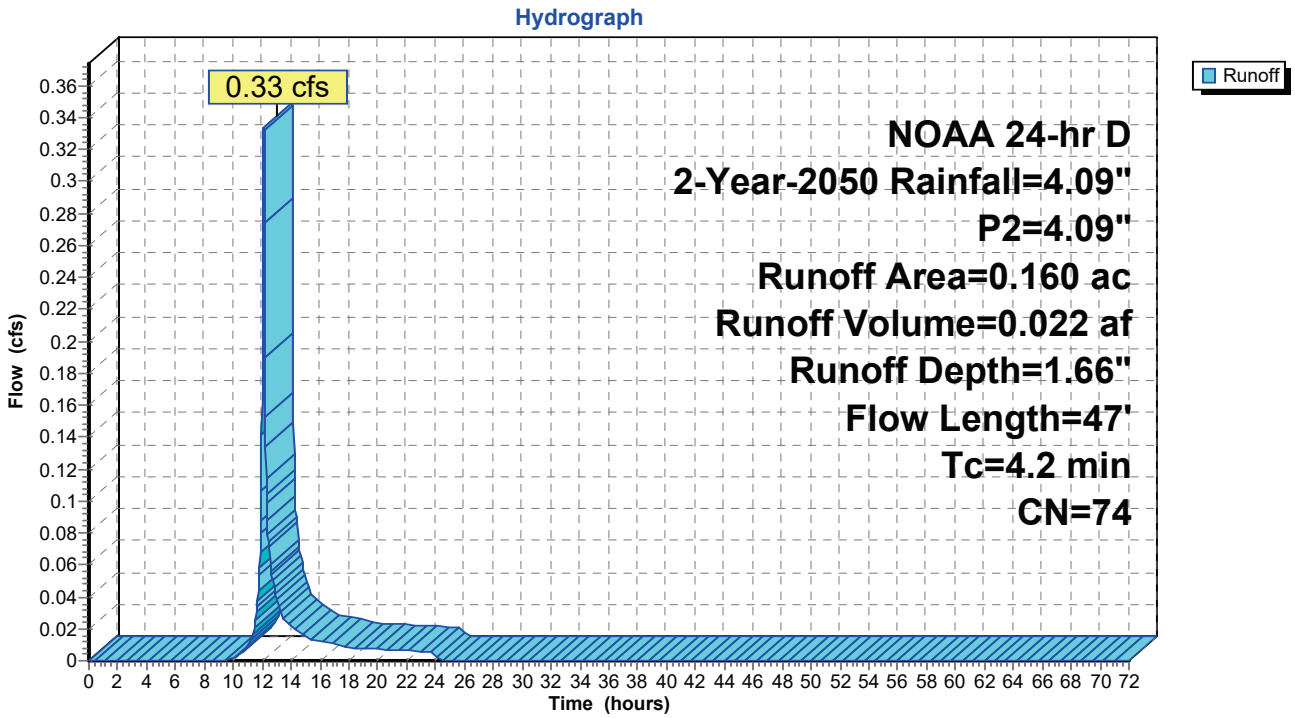
Runoff = 0.33 cfs @ 12.11 hrs, Volume= 0.022 af, Depth= 1.66"
Routed to Link 32L : PDA-1I

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.160	74	>75% Grass cover, Good, HSG C
0.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	21	0.0109	0.11		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"
1.0	26	0.2700	0.42		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
4.2	47	Total			

Subcatchment 35S: PDA-1I PERVIOUS



Summary for Subcatchment 37S: PDA-1G PERVIOUS

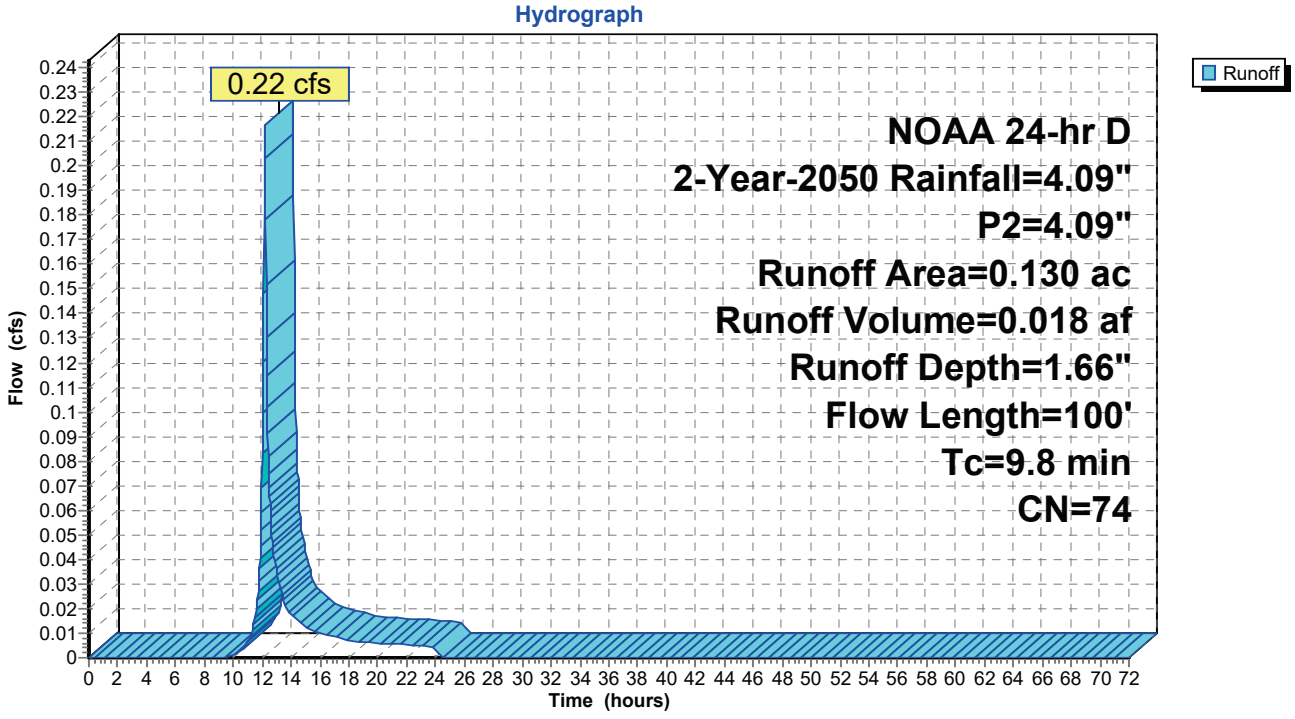
Runoff = 0.22 cfs @ 12.18 hrs, Volume= 0.018 af, Depth= 1.66"
Routed to Link 38L : PDA-1G

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.130	74	>75% Grass cover, Good, HSG C
0.130		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	66	0.0486	0.12		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 4.09"
0.1	16	0.1031	5.17		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
0.1	18	0.0365	3.08		**Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps
9.8	100	Total			

Subcatchment 37S: PDA-1G PERVIOUS



Summary for Subcatchment 39S: PDA-1J IMPERVIOUS

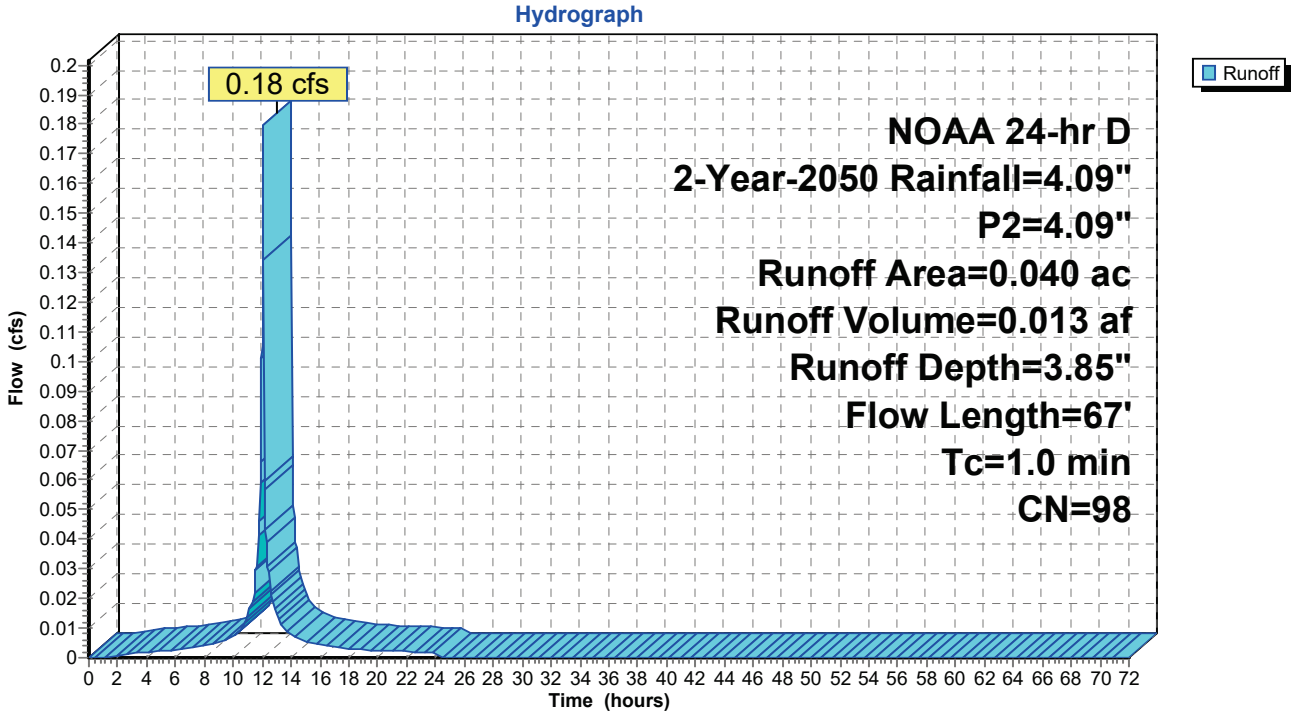
Runoff = 0.18 cfs @ 12.08 hrs, Volume= 0.013 af, Depth= 3.85"
Routed to Link 41L : PDA-1J

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG C
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	6	0.0150	0.79		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.5	7	0.1371	0.24		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
0.4	54	0.0565	2.08		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 4.09"
1.0	67	Total			

Subcatchment 39S: PDA-1J IMPERVIOUS



Summary for Subcatchment 40S: PDA-1J PERVIOUS

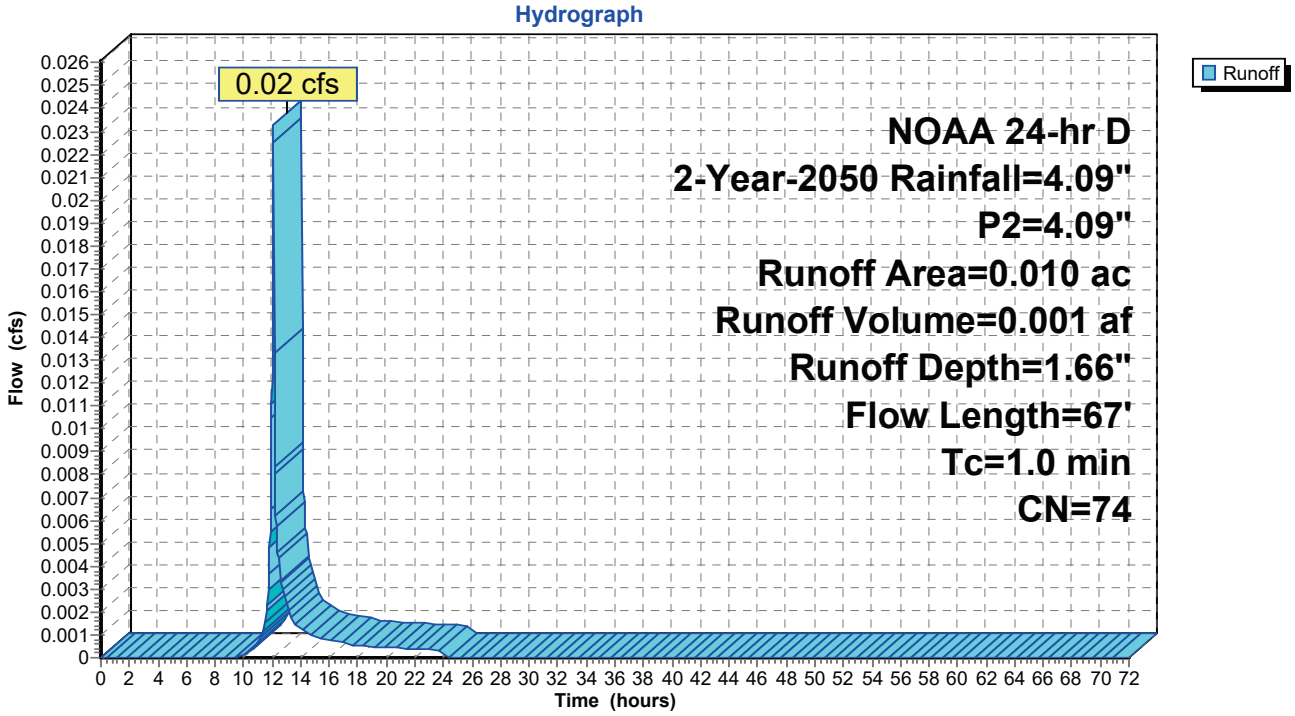
Runoff = 0.02 cfs @ 12.08 hrs, Volume= 0.001 af, Depth= 1.66"
Routed to Link 41L : PDA-1J

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 2-Year-2050 Rainfall=4.09", P2=4.09"

Area (ac)	CN	Description
0.010	74	>75% Grass cover, Good, HSG C
0.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	6	0.0150	0.79		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.5	7	0.1371	0.24		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
0.4	54	0.0565	2.08		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 4.09"
1.0	67	Total			

Subcatchment 40S: PDA-1J PERVIOUS



Summary for Pond 28P: PP-1

Inflow Area = 0.390 ac, 69.23% Impervious, Inflow Depth = 3.18" for 2-Year-2050 event
Inflow = 0.83 cfs @ 12.08 hrs, Volume= 0.103 af
Outflow = 0.20 cfs @ 13.22 hrs, Volume= 0.103 af, Atten= 76%, Lag= 68.4 min
Primary = 0.20 cfs @ 13.22 hrs, Volume= 0.103 af
Routed to Pond 29P : PP-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 446.99' @ 13.31 hrs Surf.Area= 0.048 ac Storage= 0.030 af

Plug-Flow detention time= 100.9 min calculated for 0.103 af (100% of inflow)
Center-of-Mass det. time= 100.2 min (882.4 - 782.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.45'	0.090 af	**18.00'W x 117.00'L x 6.29'H Field A** 0.304 af Overall - 0.079 af Embedded = 0.225 af x 40.0% Voids
#2A	446.45'	0.066 af	**ADS N-12 48"** x 8 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf Row Length Adjustment= +25.00' x 12.40 sf x 2 rows 11.08' Header x 12.40 sf x 2 = 274.9 cf Inside
		0.156 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	445.45'	**15.0" Round Culvert** L= 23.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 445.45' / 445.38' S= 0.0030 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	445.45'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	449.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.20 cfs @ 13.22 hrs HW=446.99' TW=445.56' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.20 cfs of 4.24 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.20 cfs @ 5.75 fps)
3=Orifice/Grate (Controls 0.00 cfs)

Pond 28P: PP-1 - Chamber Wizard Field A

Chamber Model = ADS N-12 48" (ADS N-12® Pipe)
Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf
Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf
Row Length Adjustment= +25.00' x 12.40 sf x 2 rows

54.0" Wide + 25.0" Spacing = 79.0" C-C Row Spacing

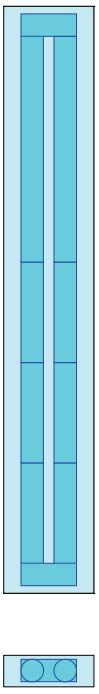
4 Chambers/Row x 20.00' Long +25.00' Row Adjustment +4.50' Header x 2 = 114.00' Row Length +18.0" End Stone x 2 = 117.00' Base Length
2 Rows x 54.0" Wide + 25.0" Spacing x 1 + 41.5" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 54.0" Chamber Height + 9.5" Stone Cover = 6.29' Field Height

8 Chambers x 248.0 cf +25.00' Row Adjustment x 12.40 sf x 2 Rows + 11.08' Header x 12.40 sf x 2 = 2,878.9 cf Chamber Storage
8 Chambers x 297.0 cf +25.00' Row Adjustment x 14.85 sf x 2 Rows + 11.08' Header x 14.85 sf x 2 = 3,447.4 cf Displacement

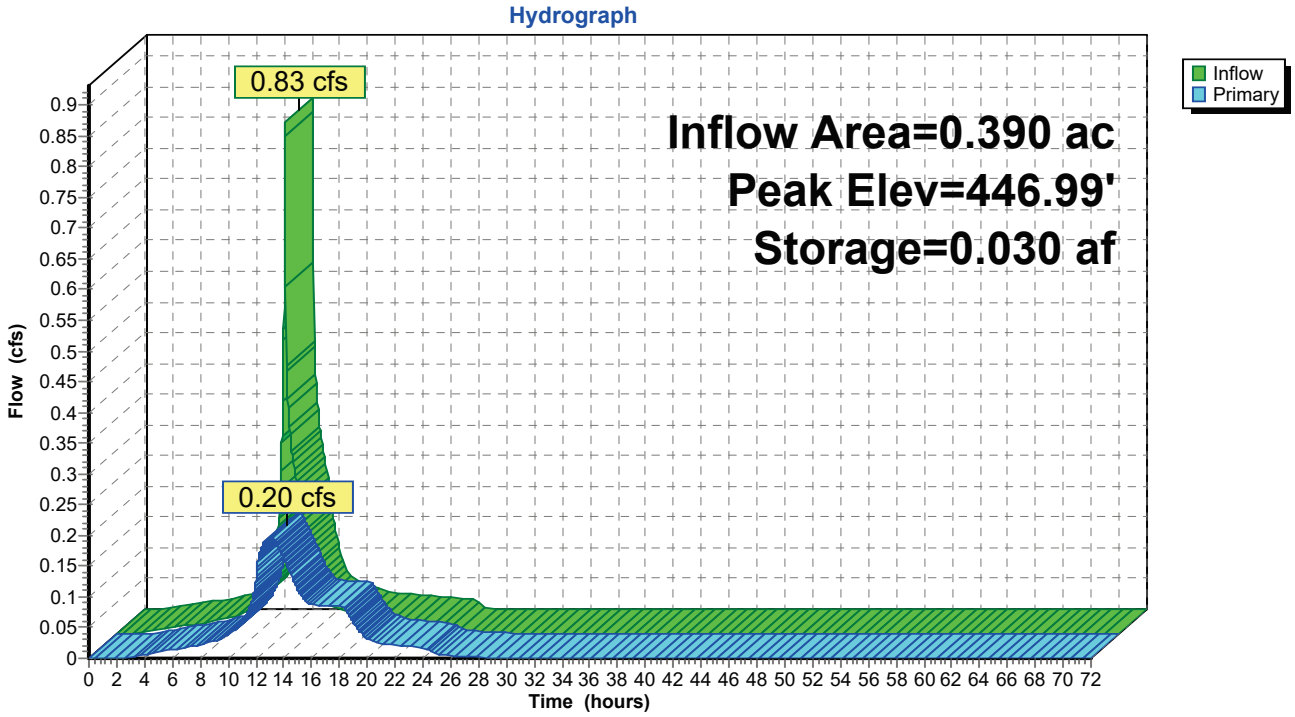
13,250.6 cf Field - 3,447.4 cf Chambers = 9,803.2 cf Stone x 40.0% Voids = 3,921.3 cf Stone Storage

Chamber Storage + Stone Storage = 6,800.1 cf = 0.156 af
Overall Storage Efficiency = 51.3%
Overall System Size = 117.00' x 18.00' x 6.29'

8 Chambers
490.8 cy Field
363.1 cy Stone



Pond 28P: PP-1


Hydrograph
0.83 cfs
0.20 cfs
Inflow Area=0.390 ac
Peak Elev=446.99'
Storage=0.030 af
Inflow
Primary
Flow (cfs)
Time (hours)

Stage-Discharge for Pond 28P: PP-1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
445.45	0.00	448.10	0.26	450.75	0.81
445.50	0.00	448.15	0.26	450.80	0.82
445.55	0.02	448.20	0.27	450.85	0.83
445.60	0.03	448.25	0.27	450.90	0.85
445.65	0.05	448.30	0.27	450.95	0.86
445.70	0.06	448.35	0.27	451.00	0.87
445.75	0.07	448.40	0.28	451.05	0.88
445.80	0.08	448.45	0.28	451.10	0.89
445.85	0.09	448.50	0.28	451.15	0.90
445.90	0.10	448.55	0.28	451.20	0.91
445.95	0.10	448.60	0.29	451.25	0.92
446.00	0.11	448.65	0.29	451.30	0.93
446.05	0.12	448.70	0.29	451.35	0.94
446.10	0.12	448.75	0.29	451.40	0.95
446.15	0.13	448.80	0.30	451.45	0.96
446.20	0.13	448.85	0.30	451.50	0.97
446.25	0.14	448.90	0.30	451.55	0.98
446.30	0.14	448.95	0.30	451.60	0.99
446.35	0.15	449.00	0.30	451.65	1.00
446.40	0.15	449.05	0.31	451.70	**1.01**
446.45	0.16	449.10	0.31		
446.50	0.16	449.15	0.31		
446.55	0.16	449.20	0.31		
446.60	0.17	449.25	0.32		
446.65	0.17	449.30	0.32		
446.70	0.18	449.35	0.32		
446.75	0.18	449.40	0.32		
446.80	0.18	449.45	0.32		
446.85	0.19	449.50	0.33		
446.90	0.19	449.55	0.33		
446.95	0.19	449.60	0.35		
447.00	0.20	449.65	0.38		
447.05	0.20	449.70	0.42		
447.10	0.20	449.75	0.46		
447.15	0.21	449.80	0.49		
447.20	0.21	449.85	0.52		
447.25	0.21	449.90	0.55		
447.30	0.22	449.95	0.57		
447.35	0.22	450.00	0.59		
447.40	0.22	450.05	0.61		
447.45	0.23	450.10	0.63		
447.50	0.23	450.15	0.64		
447.55	0.23	450.20	0.66		
447.60	0.23	450.25	0.68		
447.65	0.24	450.30	0.69		
447.70	0.24	450.35	0.71		
447.75	0.24	450.40	0.72		
447.80	0.25	450.45	0.74		
447.85	0.25	450.50	0.75		
447.90	0.25	450.55	0.76		
447.95	0.25	450.60	0.77		
448.00	0.26	450.65	0.79		
448.05	0.26	450.70	0.80		

Stage-Area-Storage for Pond 28P: PP-1

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
445.45	0.000	448.10	0.061	450.75	0.137
445.50	0.001	448.15	0.063	450.80	0.138
445.55	0.002	448.20	0.064	450.85	0.139
445.60	0.003	448.25	0.066	450.90	0.140
445.65	0.004	448.30	0.067	450.95	0.141
445.70	0.005	448.35	0.069	451.00	0.142
445.75	0.006	448.40	0.071	451.05	0.143
445.80	0.007	448.45	0.072	451.10	0.144
445.85	0.008	448.50	0.074	451.15	0.145
445.90	0.009	448.55	0.075	451.20	0.146
445.95	0.010	448.60	0.077	451.25	0.147
446.00	0.011	448.65	0.078	451.30	0.148
446.05	0.012	448.70	0.080	451.35	0.149
446.10	0.013	448.75	0.082	451.40	0.149
446.15	0.014	448.80	0.083	451.45	0.150
446.20	0.015	448.85	0.085	451.50	0.151
446.25	0.015	448.90	0.086	451.55	0.152
446.30	0.016	448.95	0.088	451.60	0.153
446.35	0.017	449.00	0.090	451.65	0.154
446.40	0.018	449.05	0.091	451.70	**0.155**
446.45	0.019	449.10	0.093		
446.50	0.020	449.15	0.094		
446.55	0.021	449.20	0.096		
446.60	0.022	449.25	0.097		
446.65	0.023	449.30	0.099		
446.70	0.023	449.35	0.100		
446.75	0.024	449.40	0.102		
446.80	0.025	449.45	0.103		
446.85	0.026	449.50	0.105		
446.90	0.028	449.55	0.107		
446.95	0.029	449.60	0.108		
447.00	0.030	449.65	0.110		
447.05	0.031	449.70	0.111		
447.10	0.032	449.75	0.112		
447.15	0.034	449.80	0.114		
447.20	0.035	449.85	0.115		
447.25	0.036	449.90	0.117		
447.30	0.038	449.95	0.118		
447.35	0.039	450.00	0.120		
447.40	0.040	450.05	0.121		
447.45	0.042	450.10	0.122		
447.50	0.043	450.15	0.124		
447.55	0.045	450.20	0.125		
447.60	0.046	450.25	0.126		
447.65	0.048	450.30	0.128		
447.70	0.049	450.35	0.129		
447.75	0.051	450.40	0.130		
447.80	0.052	450.45	0.131		
447.85	0.054	450.50	0.133		
447.90	0.055	450.55	0.134		
447.95	0.057	450.60	0.135		
448.00	0.058	450.65	0.136		
448.05	0.060	450.70	0.137		

Summary for Pond 29P: PP-2

Inflow Area = 1.060 ac, 68.87% Impervious, Inflow Depth = 3.17" for 2-Year-2050 event
Inflow = 0.93 cfs @ 12.08 hrs, Volume= 0.280 af
Outflow = 0.29 cfs @ 15.16 hrs, Volume= 0.280 af, Atten= 69%, Lag= 184.7 min
Primary = 0.29 cfs @ 15.16 hrs, Volume= 0.280 af
Routed to Link 25L : PDA-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 446.12' @ 15.16 hrs Surf.Area= 0.048 ac Storage= 0.079 af

Plug-Flow detention time= 139.9 min calculated for 0.280 af (100% of inflow)
Center-of-Mass det. time= 139.6 min (983.8 - 844.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	442.94'	0.108 af	**18.00'W x 116.17'L x 8.17'H Field A** 0.392 af Overall - 0.121 af Embedded = 0.271 af x 40.0% Voids
#2A	443.94'	0.102 af	**ADS N-12 60"** x 6 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf Row Length Adjustment= +42.00' x 19.30 sf x 2 rows 13.17' Header x 19.30 sf x 2 = 508.3 cf Inside
		0.210 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	442.94'	**15.0" Round Culvert** L= 23.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 442.94' / 442.87' S= 0.0030 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	442.94'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	446.75'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.29 cfs @ 15.16 hrs HW=446.12' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.29 cfs of 7.46 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.29 cfs @ 8.44 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 29P: PP-2 - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf
Row Length Adjustment= +42.00' x 19.30 sf x 2 rows

67.0" Wide + 24.0" Spacing = 91.0" C-C Row Spacing

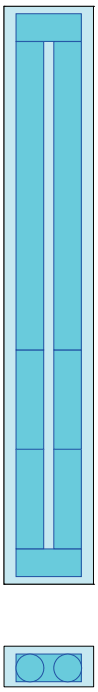
3 Chambers/Row x 20.00' Long +42.00' Row Adjustment +5.58' Header x 2 = 113.17' Row Length +18.0" End Stone x 2 = 116.17' Base Length
2 Rows x 67.0" Wide + 24.0" Spacing x 1 + 29.0" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 67.0" Chamber Height + 19.0" Stone Cover = 8.17' Field Height

6 Chambers x 386.0 cf +42.00' Row Adjustment x 19.30 sf x 2 Rows + 13.17' Header x 19.30 sf x 2 = 4,445.5 cf Chamber Storage
6 Chambers x 458.4 cf +42.00' Row Adjustment x 22.92 sf x 2 Rows + 13.17' Header x 22.92 sf x 2 = 5,279.5 cf Displacement

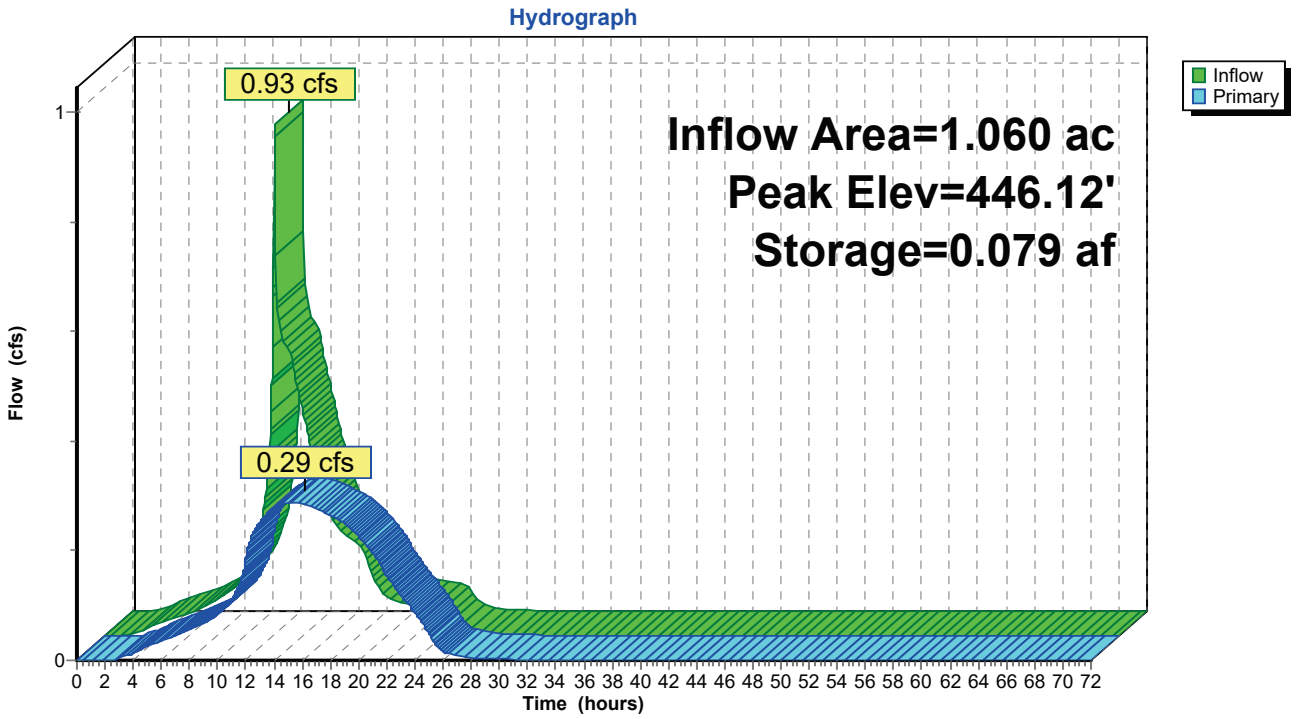
17,078.6 cf Field - 5,279.5 cf Chambers = 11,799.2 cf Stone x 40.0% Voids = 4,719.7 cf Stone Storage

Chamber Storage + Stone Storage = 9,165.1 cf = 0.210 af
Overall Storage Efficiency = 53.7%
Overall System Size = 116.17' x 18.00' x 8.17'

6 Chambers
632.5 cy Field
437.0 cy Stone



Pond 29P: PP-2


Hydrograph
Inflow
Primary
0.93 cfs
0.29 cfs
Inflow Area=1.060 ac
Peak Elev=446.12'
Storage=0.079 af
Flow (cfs)
0
1
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 29P: PP-2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
442.94	0.00	445.59	0.26	448.24	2.48	450.89	4.19
442.99	0.00	445.64	0.26	448.29	2.52	450.94	4.21
443.04	0.02	445.69	0.27	448.34	2.57	450.99	4.24
443.09	0.03	445.74	0.27	448.39	2.61	451.04	4.26
443.14	0.05	445.79	0.27	448.44	2.65	451.09	**4.29**
443.19	0.06	445.84	0.27	448.49	2.69		
443.24	0.07	445.89	0.28	448.54	2.73		
443.29	0.08	445.94	0.28	448.59	2.77		
443.34	0.09	445.99	0.28	448.64	2.81		
443.39	0.10	446.04	0.28	448.69	2.85		
443.44	0.10	446.09	0.29	448.74	2.89		
443.49	0.11	446.14	0.29	448.79	2.92		
443.54	0.12	446.19	0.29	448.84	2.96		
443.59	0.12	446.24	0.29	448.89	3.00		
443.64	0.13	446.29	0.30	448.94	3.03		
443.69	0.13	446.34	0.30	448.99	3.07		
443.74	0.14	446.39	0.30	449.04	3.10		
443.79	0.14	446.44	0.30	449.09	3.14		
443.84	0.15	446.49	0.30	449.14	3.17		
443.89	0.15	446.54	0.31	449.19	3.21		
443.94	0.16	446.59	0.31	449.24	3.24		
443.99	0.16	446.64	0.31	449.29	3.27		
444.04	0.16	446.69	0.31	449.34	3.30		
444.09	0.17	446.74	0.32	449.39	3.34		
444.14	0.17	446.79	0.33	449.44	3.37		
444.19	0.18	446.84	0.37	449.49	3.40		
444.24	0.18	446.89	0.44	449.54	3.43		
444.29	0.18	446.94	0.53	449.59	3.46		
444.34	0.19	446.99	0.64	449.64	3.49		
444.39	0.19	447.04	0.76	449.69	3.52		
444.44	0.19	447.09	0.89	449.74	3.55		
444.49	0.20	447.14	1.03	449.79	3.58		
444.54	0.20	447.19	1.16	449.84	3.61		
444.59	0.20	447.24	1.27	449.89	3.64		
444.64	0.21	447.29	1.36	449.94	3.67		
444.69	0.21	447.34	1.44	449.99	3.70		
444.74	0.21	447.39	1.52	450.04	3.73		
444.79	0.22	447.44	1.60	450.09	3.76		
444.84	0.22	447.49	1.67	450.14	3.79		
444.89	0.22	447.54	1.74	450.19	3.82		
444.94	0.23	447.59	1.80	450.24	3.84		
444.99	0.23	447.64	1.86	450.29	3.87		
445.04	0.23	447.69	1.92	450.34	3.90		
445.09	0.23	447.74	1.98	450.39	3.93		
445.14	0.24	447.79	2.04	450.44	3.95		
445.19	0.24	447.84	2.09	450.49	3.98		
445.24	0.24	447.89	2.15	450.54	4.01		
445.29	0.25	447.94	2.20	450.59	4.03		
445.34	0.25	447.99	2.25	450.64	4.06		
445.39	0.25	448.04	2.30	450.69	4.09		
445.44	0.25	448.09	2.34	450.74	4.11		
445.49	0.26	448.14	2.39	450.79	4.14		
445.54	0.26	448.19	2.43	450.84	4.16		

Stage-Area-Storage for Pond 29P: PP-2

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
442.94	0.000	448.24	0.150
443.04	0.002	448.34	0.153
443.14	0.004	448.44	0.156
443.24	0.006	448.54	0.159
443.34	0.008	448.64	0.161
443.44	0.010	448.74	0.164
443.54	0.012	448.84	0.167
443.64	0.013	448.94	0.169
443.74	0.015	449.04	0.172
443.84	0.017	449.14	0.174
443.94	0.019	449.24	0.176
444.04	0.021	449.34	0.177
444.14	0.022	449.44	0.179
444.24	0.024	449.54	0.180
444.34	0.026	449.64	0.182
444.44	0.028	449.74	0.184
444.54	0.030	449.84	0.186
444.64	0.033	449.94	0.188
444.74	0.035	450.04	0.190
444.84	0.038	450.14	0.192
444.94	0.041	450.24	0.194
445.04	0.044	450.34	0.196
445.14	0.047	450.44	0.198
445.24	0.050	450.54	0.200
445.34	0.053	450.64	0.201
445.44	0.056	450.74	0.203
445.54	0.059	450.84	0.205
445.64	0.063	450.94	0.207
445.74	0.066	451.04	**0.209**
445.84	0.069		
445.94	0.073		
446.04	0.076		
446.14	0.079		
446.24	0.083		
446.34	0.086		
446.44	0.090		
446.54	0.093		
446.64	0.096		
446.74	0.100		
446.84	0.103		
446.94	0.107		
447.04	0.110		
447.14	0.114		
447.24	0.117		
447.34	0.120		
447.44	0.124		
447.54	0.127		
447.64	0.130		
447.74	0.134		
447.84	0.137		
447.94	0.140		
448.04	0.143		
448.14	0.147		

Summary for Pond 30P: PP-3

Inflow Area = 0.550 ac, 61.82% Impervious, Inflow Depth = 3.02" for 2-Year-2050 event
Inflow = 1.76 cfs @ 12.08 hrs, Volume= 0.138 af
Outflow = 0.29 cfs @ 12.56 hrs, Volume= 0.138 af, Atten= 84%, Lag= 28.7 min
Primary = 0.29 cfs @ 12.56 hrs, Volume= 0.138 af
Routed to Pond 29P : PP-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 448.64' @ 12.56 hrs Surf.Area= 0.026 ac Storage= 0.042 af

Plug-Flow detention time= 69.0 min calculated for 0.138 af (100% of inflow)
Center-of-Mass det. time= 69.4 min (842.3 - 772.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.44'	0.078 af	**18.00'W x 62.17'L x 10.08'H Field A** 0.259 af Overall - 0.064 af Embedded = 0.195 af x 40.0% Voids
#2A	446.44'	0.054 af	**ADS N-12 60"** x 4 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf Row Length Adjustment= +8.00' x 19.30 sf x 2 rows 13.17' Header x 19.30 sf x 2 = 508.3 cf Inside
		0.132 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	445.44'	**15.0" Round Culvert** L= 19.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 445.44' / 445.38' S= 0.0031 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	445.44'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	450.44'	**5.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	455.00'	**6.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.29 cfs @ 12.56 hrs HW=448.64' TW=445.07' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.29 cfs of 7.48 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.29 cfs @ 8.47 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 30P: PP-3 - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf
Row Length Adjustment= +8.00' x 19.30 sf x 2 rows

67.0" Wide + 24.0" Spacing = 91.0" C-C Row Spacing

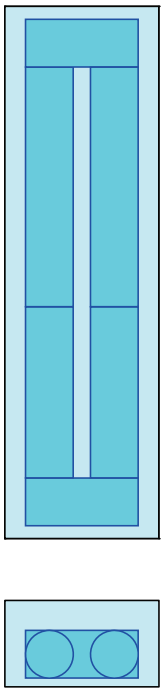
2 Chambers/Row x 20.00' Long +8.00' Row Adjustment +5.58' Header x 2 = 59.17' Row Length +18.0" End Stone x 2 = 62.17' Base Length
2 Rows x 67.0" Wide + 24.0" Spacing x 1 + 29.0" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 67.0" Chamber Height + 42.0" Stone Cover = 10.08' Field Height

4 Chambers x 386.0 cf +8.00' Row Adjustment x 19.30 sf x 2 Rows + 13.17' Header x 19.30 sf x 2 = 2,361.1 cf Chamber Storage
4 Chambers x 458.4 cf +8.00' Row Adjustment x 22.92 sf x 2 Rows + 13.17' Header x 22.92 sf x 2 = 2,804.0 cf Displacement

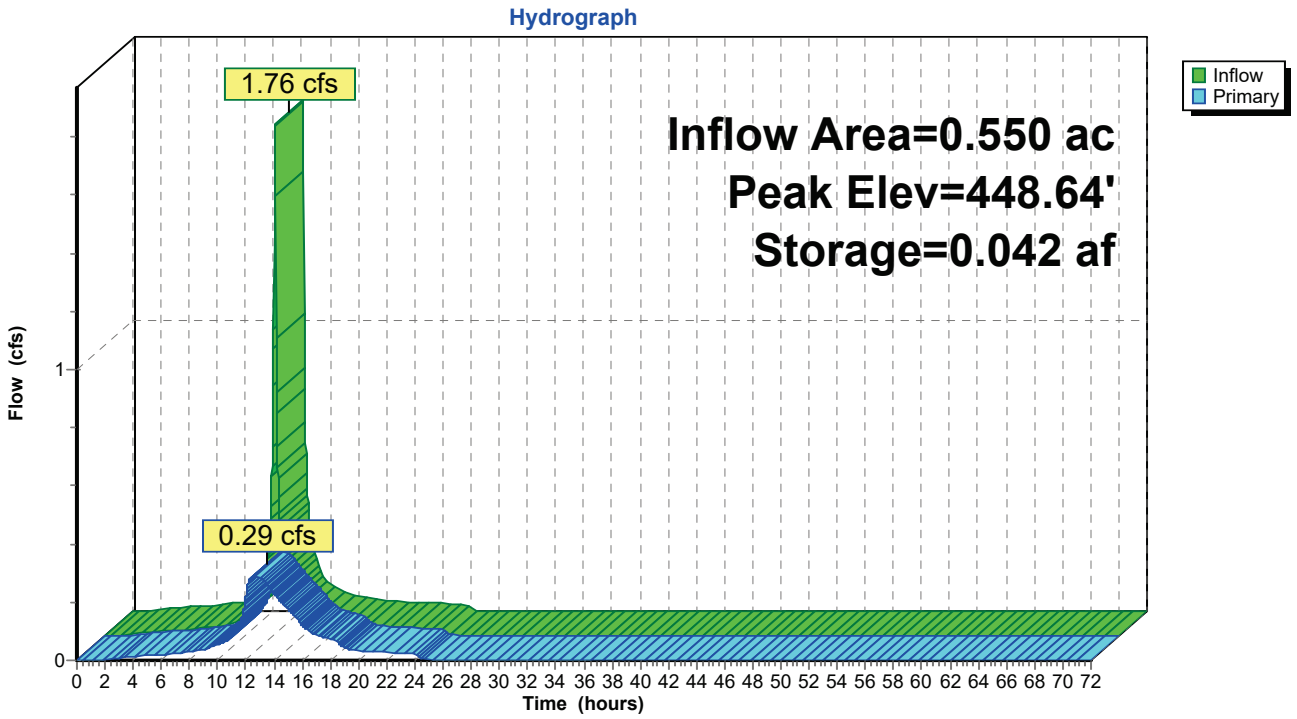
11,284.6 cf Field - 2,804.0 cf Chambers = 8,480.6 cf Stone x 40.0% Voids = 3,392.2 cf Stone Storage

Chamber Storage + Stone Storage = 5,753.3 cf = 0.132 af
Overall Storage Efficiency = 51.0%
Overall System Size = 62.17' x 18.00' x 10.08'

4 Chambers
417.9 cy Field
314.1 cy Stone



Pond 30P: PP-3


Hydrograph
1.76 cfs
0.29 cfs
Inflow Area=0.550 ac
Peak Elev=448.64'
Storage=0.042 af
Inflow
Primary
Flow (cfs)
0
1
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 30P: PP-3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
445.44	0.00	448.09	0.26	450.74	0.77	453.39	2.63
445.49	0.00	448.14	0.26	450.79	0.87	453.44	2.66
445.54	0.02	448.19	0.27	450.84	0.96	453.49	2.68
445.59	0.03	448.24	0.27	450.89	1.03	453.54	2.70
445.64	0.05	448.29	0.27	450.94	1.09	453.59	2.72
445.69	0.06	448.34	0.27	450.99	1.15	453.64	2.74
445.74	0.07	448.39	0.28	451.04	1.21	453.69	2.76
445.79	0.08	448.44	0.28	451.09	1.26	453.74	2.78
445.84	0.09	448.49	0.28	451.14	1.31	453.79	2.80
445.89	0.10	448.54	0.28	451.19	1.36	453.84	2.82
445.94	0.10	448.59	0.29	451.24	1.40	453.89	2.84
445.99	0.11	448.64	0.29	451.29	1.45	453.94	2.86
446.04	0.12	448.69	0.29	451.34	1.49	453.99	2.88
446.09	0.12	448.74	0.29	451.39	1.53	454.04	2.90
446.14	0.13	448.79	0.30	451.44	1.57	454.09	2.92
446.19	0.13	448.84	0.30	451.49	1.60	454.14	2.93
446.24	0.14	448.89	0.30	451.54	1.64	454.19	2.95
446.29	0.14	448.94	0.30	451.59	1.68	454.24	2.97
446.34	0.15	448.99	0.30	451.64	1.71	454.29	2.99
446.39	0.15	449.04	0.31	451.69	1.75	454.34	3.01
446.44	0.16	449.09	0.31	451.74	1.78	454.39	3.03
446.49	0.16	449.14	0.31	451.79	1.81	454.44	3.05
446.54	0.16	449.19	0.31	451.84	1.85	454.49	3.06
446.59	0.17	449.24	0.32	451.89	1.88	454.54	3.08
446.64	0.17	449.29	0.32	451.94	1.91	454.59	3.10
446.69	0.18	449.34	0.32	451.99	1.94	454.64	3.12
446.74	0.18	449.39	0.32	452.04	1.97	454.69	3.14
446.79	0.18	449.44	0.32	452.09	2.00	454.74	3.15
446.84	0.19	449.49	0.33	452.14	2.03	454.79	3.17
446.89	0.19	449.54	0.33	452.19	2.05	454.84	3.19
446.94	0.19	449.59	0.33	452.24	2.08	454.89	3.21
446.99	0.20	449.64	0.33	452.29	2.11	454.94	3.22
447.04	0.20	449.69	0.33	452.34	2.14	454.99	3.24
447.09	0.20	449.74	0.34	452.39	2.16	455.04	3.39
447.14	0.21	449.79	0.34	452.44	2.19	455.09	3.73
447.19	0.21	449.84	0.34	452.49	2.21	455.14	4.17
447.24	0.21	449.89	0.34	452.54	2.24	455.19	4.70
447.29	0.22	449.94	0.34	452.59	2.27	455.24	5.32
447.34	0.22	449.99	0.35	452.64	2.29	455.29	6.02
447.39	0.22	450.04	0.35	452.69	2.31	455.34	6.79
447.44	0.23	450.09	0.35	452.74	2.34	455.39	7.63
447.49	0.23	450.14	0.35	452.79	2.36	455.44	8.56
447.54	0.23	450.19	0.35	452.84	2.39	455.49	**9.56**
447.59	0.23	450.24	0.36	452.89	2.41		
447.64	0.24	450.29	0.36	452.94	2.43		
447.69	0.24	450.34	0.36	452.99	2.46		
447.74	0.24	450.39	0.36	453.04	2.48		
447.79	0.25	450.44	0.36	453.09	2.50		
447.84	0.25	450.49	0.38	453.14	2.53		
447.89	0.25	450.54	0.42	453.19	2.55		
447.94	0.25	450.59	0.49	453.24	2.57		
447.99	0.26	450.64	0.57	453.29	2.59		
448.04	0.26	450.69	0.66	453.34	2.61		

Stage-Area-Storage for Pond 30P: PP-3

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
445.44	0.000	450.74	0.080
445.54	0.001	450.84	0.082
445.64	0.002	450.94	0.083
445.74	0.003	451.04	0.085
445.84	0.004	451.14	0.086
445.94	0.005	451.24	0.088
446.04	0.006	451.34	0.089
446.14	0.007	451.44	0.090
446.24	0.008	451.54	0.092
446.34	0.009	451.64	0.093
446.44	0.010	451.74	0.094
446.54	0.011	451.84	0.094
446.64	0.012	451.94	0.095
446.74	0.013	452.04	0.096
446.84	0.014	452.14	0.097
446.94	0.015	452.24	0.098
447.04	0.016	452.34	0.099
447.14	0.018	452.44	0.100
447.24	0.019	452.54	0.101
447.34	0.020	452.64	0.102
447.44	0.022	452.74	0.103
447.54	0.024	452.84	0.104
447.64	0.025	452.94	0.106
447.74	0.027	453.04	0.107
447.84	0.028	453.14	0.108
447.94	0.030	453.24	0.109
448.04	0.032	453.34	0.110
448.14	0.034	453.44	0.111
448.24	0.035	453.54	0.112
448.34	0.037	453.64	0.113
448.44	0.039	453.74	0.114
448.54	0.041	453.84	0.115
448.64	0.042	453.94	0.116
448.74	0.044	454.04	0.117
448.84	0.046	454.14	0.118
448.94	0.048	454.24	0.119
449.04	0.050	454.34	0.120
449.14	0.052	454.44	0.121
449.24	0.053	454.54	0.122
449.34	0.055	454.64	0.123
449.44	0.057	454.74	0.124
449.54	0.059	454.84	0.125
449.64	0.061	454.94	0.126
449.74	0.062	455.04	0.127
449.84	0.064	455.14	0.128
449.94	0.066	455.24	0.129
450.04	0.068	455.34	0.130
450.14	0.070	455.44	**0.131**
450.24	0.071		
450.34	0.073		
450.44	0.075		
450.54	0.077		
450.64	0.078		

Summary for Pond 31P: PP-4

Inflow Area = 0.200 ac, 90.00% Impervious, Inflow Depth = 3.64" for 2-Year-2050 event
Inflow = 0.80 cfs @ 12.09 hrs, Volume= 0.061 af
Outflow = 0.22 cfs @ 12.26 hrs, Volume= 0.061 af, Atten= 72%, Lag= 10.7 min
Primary = 0.22 cfs @ 12.26 hrs, Volume= 0.061 af
Routed to Pond 28P : PP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 453.90' @ 12.26 hrs Surf.Area= 0.014 ac Storage= 0.013 af

Plug-Flow detention time= 26.6 min calculated for 0.061 af (100% of inflow)
Center-of-Mass det. time= 26.8 min (781.7 - 754.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	451.95'	0.023 af	**18.00'W x 33.00'L x 5.83'H Field A** 0.080 af Overall - 0.022 af Embedded = 0.058 af x 40.0% Voids
#2A	452.45'	0.018 af	**ADS N-12 48"** x 2 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf Row Length Adjustment= +1.00' x 12.40 sf x 2 rows 11.08' Header x 12.40 sf x 2 = 274.9 cf Inside
		0.041 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	449.63'	**15.0" Round Culvert** L= 29.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 449.63' / 449.55' S= 0.0028 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	451.95'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	453.95'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	457.00'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.22 cfs @ 12.26 hrs HW=453.89' TW=446.64' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.22 cfs of 8.90 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.22 cfs @ 6.53 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 31P: PP-4 - Chamber Wizard Field A

Chamber Model = ADS N-12 48" (ADS N-12® Pipe)
Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf
Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf
Row Length Adjustment= +1.00' x 12.40 sf x 2 rows

54.0" Wide + 25.0" Spacing = 79.0" C-C Row Spacing

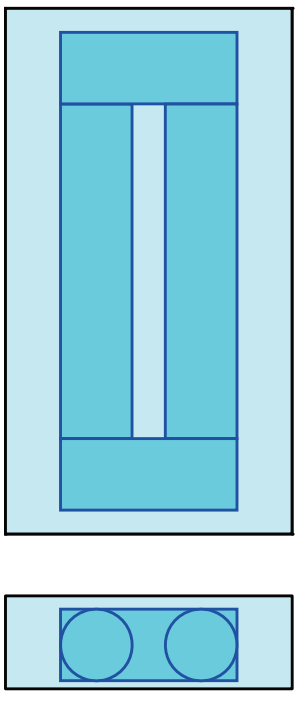
1 Chambers/Row x 20.00' Long +1.00' Row Adjustment +4.50' Header x 2 = 30.00' Row Length +18.0" End Stone x 2 = 33.00' Base Length
2 Rows x 54.0" Wide + 25.0" Spacing x 1 + 41.5" Side Stone x 2 = 18.00' Base Width
6.0" Stone Base + 54.0" Chamber Height + 10.0" Stone Cover = 5.83' Field Height

2 Chambers x 248.0 cf +1.00' Row Adjustment x 12.40 sf x 2 Rows + 11.08' Header x 12.40 sf x 2 = 795.7 cf Chamber Storage
2 Chambers x 297.0 cf +1.00' Row Adjustment x 14.85 sf x 2 Rows + 11.08' Header x 14.85 sf x 2 = 952.8 cf Displacement

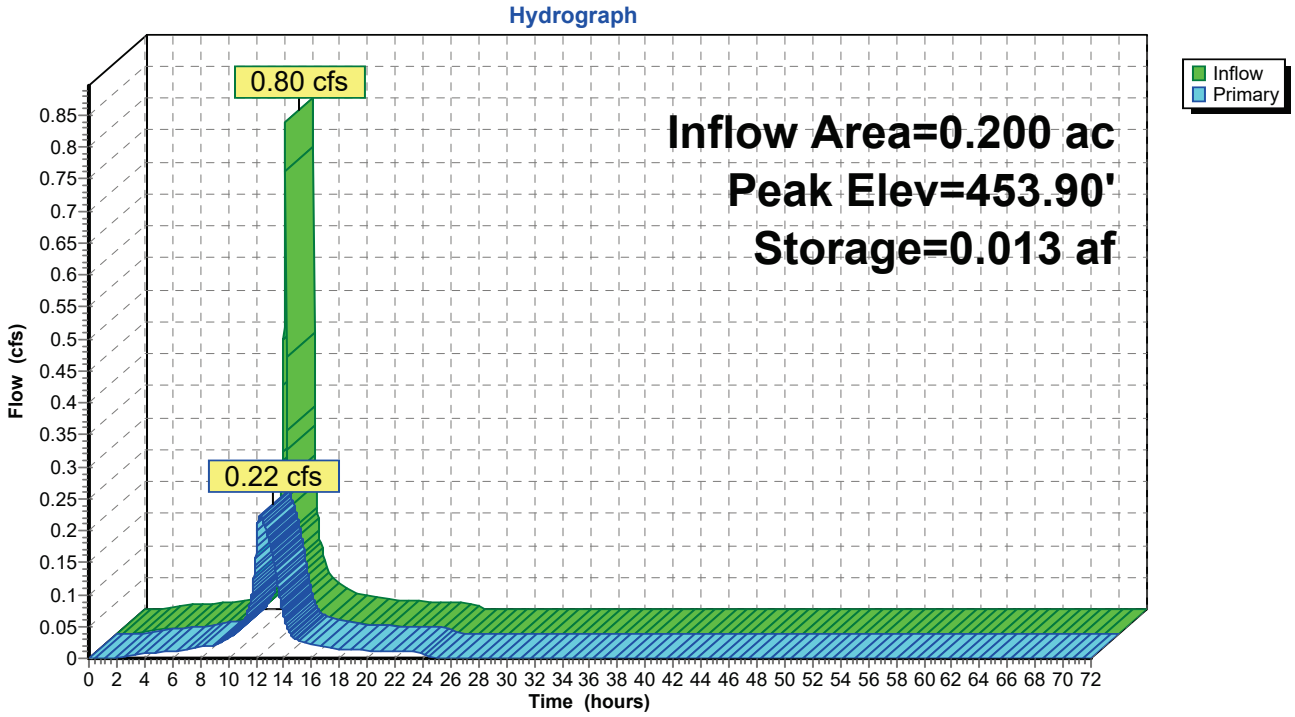
3,465.1 cf Field - 952.8 cf Chambers = 2,512.3 cf Stone x 40.0% Voids = 1,004.9 cf Stone Storage

Chamber Storage + Stone Storage = 1,800.6 cf = 0.041 af
Overall Storage Efficiency = 52.0%
Overall System Size = 33.00' x 18.00' x 5.83'

2 Chambers
128.3 cy Field
93.0 cy Stone



Pond 31P: PP-4


Hydrograph
0.80 cfs
0.22 cfs
Inflow Area=0.200 ac
Peak Elev=453.90'
Storage=0.013 af
Inflow
Primary
Flow (cfs)
Time (hours)

Stage-Discharge for Pond 31P: PP-4

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
451.95	0.00	454.60	0.55	457.25	2.89
452.00	0.00	454.65	0.57	457.30	3.48
452.05	0.02	454.70	0.59	457.35	4.13
452.10	0.03	454.75	0.60	457.40	4.83
452.15	0.05	454.80	0.62	457.45	5.62
452.20	0.06	454.85	0.63	457.50	6.46
452.25	0.07	454.90	0.65	457.55	7.36
452.30	0.08	454.95	0.66	457.60	8.33
452.35	0.09	455.00	0.68	457.65	9.39
452.40	0.10	455.05	0.69	457.70	10.53
452.45	0.10	455.10	0.70	457.75	**11.73**
452.50	0.11	455.15	0.72		
452.55	0.12	455.20	0.73		
452.60	0.12	455.25	0.74		
452.65	0.13	455.30	0.75		
452.70	0.13	455.35	0.76		
452.75	0.14	455.40	0.78		
452.80	0.14	455.45	0.79		
452.85	0.15	455.50	0.80		
452.90	0.15	455.55	0.81		
452.95	0.16	455.60	0.82		
453.00	0.16	455.65	0.83		
453.05	0.16	455.70	0.84		
453.10	0.17	455.75	0.85		
453.15	0.17	455.80	0.86		
453.20	0.18	455.85	0.87		
453.25	0.18	455.90	0.88		
453.30	0.18	455.95	0.89		
453.35	0.19	456.00	0.90		
453.40	0.19	456.05	0.91		
453.45	0.19	456.10	0.92		
453.50	0.20	456.15	0.93		
453.55	0.20	456.20	0.94		
453.60	0.20	456.25	0.95		
453.65	0.21	456.30	0.96		
453.70	0.21	456.35	0.97		
453.75	0.21	456.40	0.98		
453.80	0.22	456.45	0.99		
453.85	0.22	456.50	0.99		
453.90	0.22	456.55	1.00		
453.95	0.23	456.60	1.01		
454.00	0.24	456.65	1.02		
454.05	0.26	456.70	1.03		
454.10	0.28	456.75	1.04		
454.15	0.32	456.80	1.05		
454.20	0.36	456.85	1.05		
454.25	0.40	456.90	1.06		
454.30	0.43	456.95	1.07		
454.35	0.45	457.00	1.08		
454.40	0.48	457.05	1.24		
454.45	0.50	457.10	1.54		
454.50	0.52	457.15	1.92		
454.55	0.54	457.20	2.36		

Stage-Area-Storage for Pond 31P: PP-4

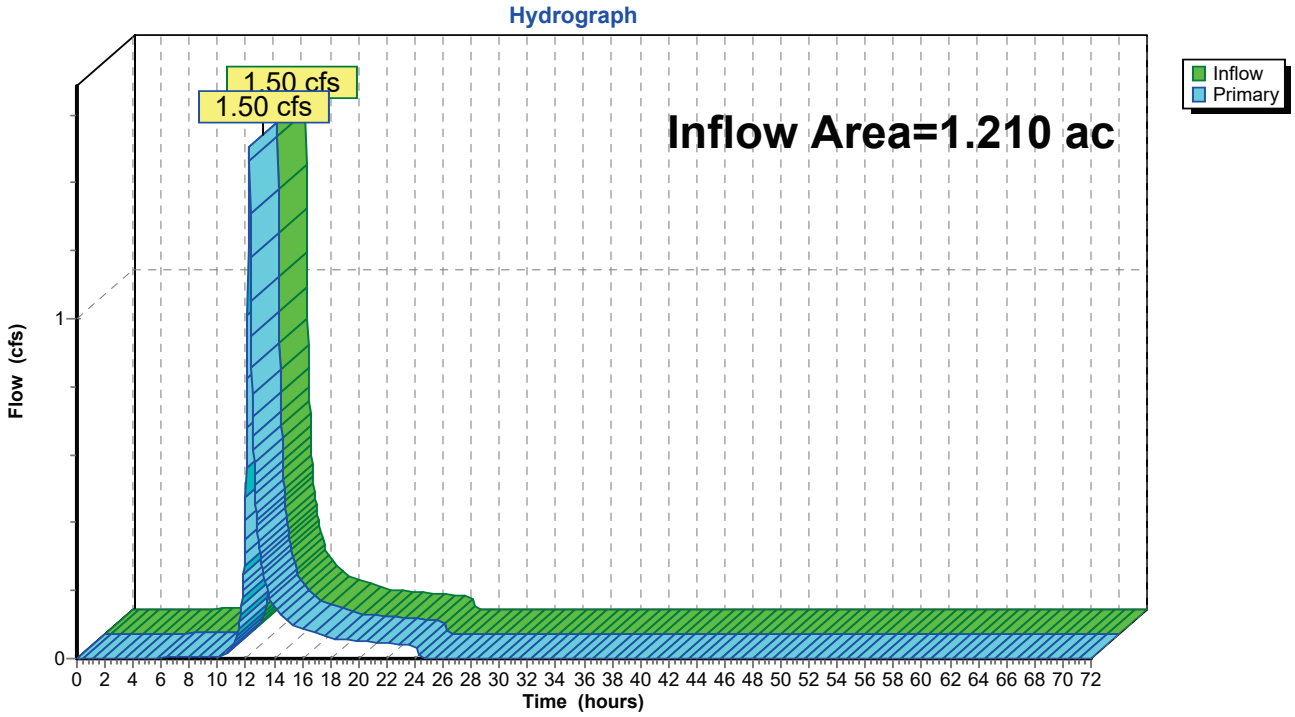
Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
451.95	0.000	454.60	0.019	457.25	0.038
452.00	0.000	454.65	0.019	457.30	0.039
452.05	0.001	454.70	0.020	457.35	0.039
452.10	0.001	454.75	0.020	457.40	0.039
452.15	0.001	454.80	0.021	457.45	0.040
452.20	0.001	454.85	0.021	457.50	0.040
452.25	0.002	454.90	0.022	457.55	0.040
452.30	0.002	454.95	0.022	457.60	0.040
452.35	0.002	455.00	0.022	457.65	0.041
452.40	0.002	455.05	0.023	457.70	0.041
452.45	0.003	455.10	0.023	457.75	**0.041**
452.50	0.003	455.15	0.024		
452.55	0.003	455.20	0.024		
452.60	0.003	455.25	0.025		
452.65	0.004	455.30	0.025		
452.70	0.004	455.35	0.025		
452.75	0.004	455.40	0.026		
452.80	0.004	455.45	0.026		
452.85	0.005	455.50	0.027		
452.90	0.005	455.55	0.027		
452.95	0.005	455.60	0.028		
453.00	0.006	455.65	0.028		
453.05	0.006	455.70	0.028		
453.10	0.006	455.75	0.029		
453.15	0.007	455.80	0.029		
453.20	0.007	455.85	0.030		
453.25	0.008	455.90	0.030		
453.30	0.008	455.95	0.030		
453.35	0.008	456.00	0.031		
453.40	0.009	456.05	0.031		
453.45	0.009	456.10	0.032		
453.50	0.009	456.15	0.032		
453.55	0.010	456.20	0.032		
453.60	0.010	456.25	0.033		
453.65	0.011	456.30	0.033		
453.70	0.011	456.35	0.033		
453.75	0.012	456.40	0.034		
453.80	0.012	456.45	0.034		
453.85	0.012	456.50	0.034		
453.90	0.013	456.55	0.035		
453.95	0.013	456.60	0.035		
454.00	0.014	456.65	0.035		
454.05	0.014	456.70	0.036		
454.10	0.014	456.75	0.036		
454.15	0.015	456.80	0.036		
454.20	0.015	456.85	0.036		
454.25	0.016	456.90	0.037		
454.30	0.016	456.95	0.037		
454.35	0.017	457.00	0.037		
454.40	0.017	457.05	0.037		
454.45	0.018	457.10	0.038		
454.50	0.018	457.15	0.038		
454.55	0.018	457.20	0.038		

Summary for Link 3L: EDA-1

Inflow Area = 1.210 ac, 3.31% Impervious, Inflow Depth = 1.47" for 2-Year-2050 event
Inflow = 1.50 cfs @ 12.23 hrs, Volume= 0.148 af
Primary = 1.50 cfs @ 12.23 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 3L: EDA-1

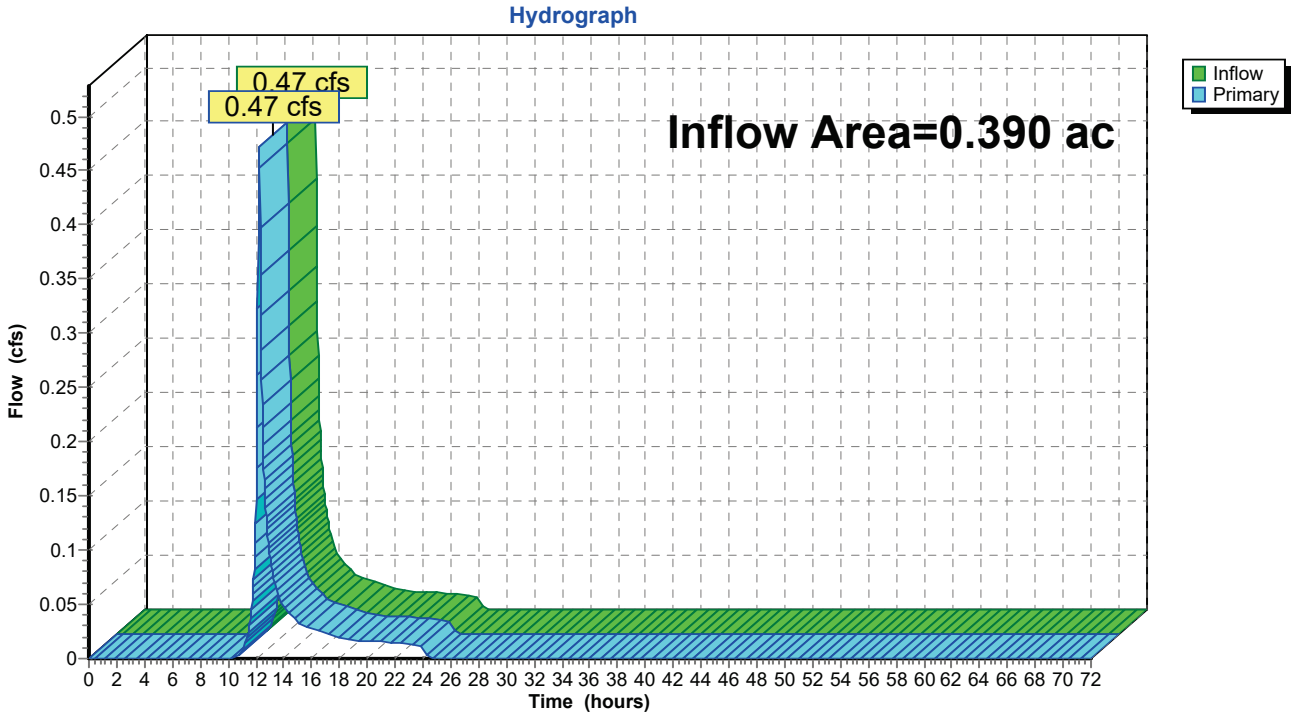


Summary for Link 6L: EDA-2

Inflow Area = 0.390 ac, 0.00% Impervious, Inflow Depth = 1.39" for 2-Year-2050 event
Inflow = 0.47 cfs @ 12.22 hrs, Volume= 0.045 af
Primary = 0.47 cfs @ 12.22 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 6L: EDA-2

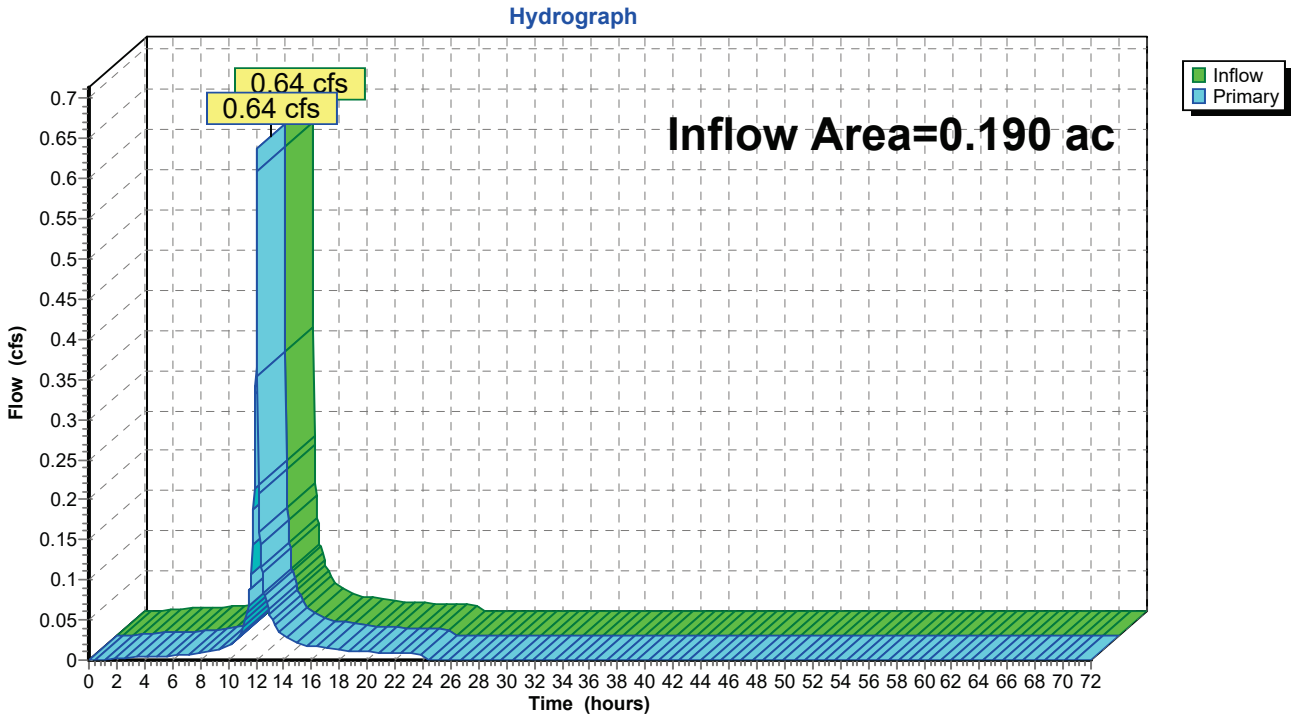


Summary for Link 9L: PDA-1A

Inflow Area = 0.190 ac, 47.37% Impervious, Inflow Depth = 2.70" for 2-Year-2050 event
Inflow = 0.64 cfs @ 12.08 hrs, Volume= 0.043 af
Primary = 0.64 cfs @ 12.08 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 28P : PP-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 9L: PDA-1A

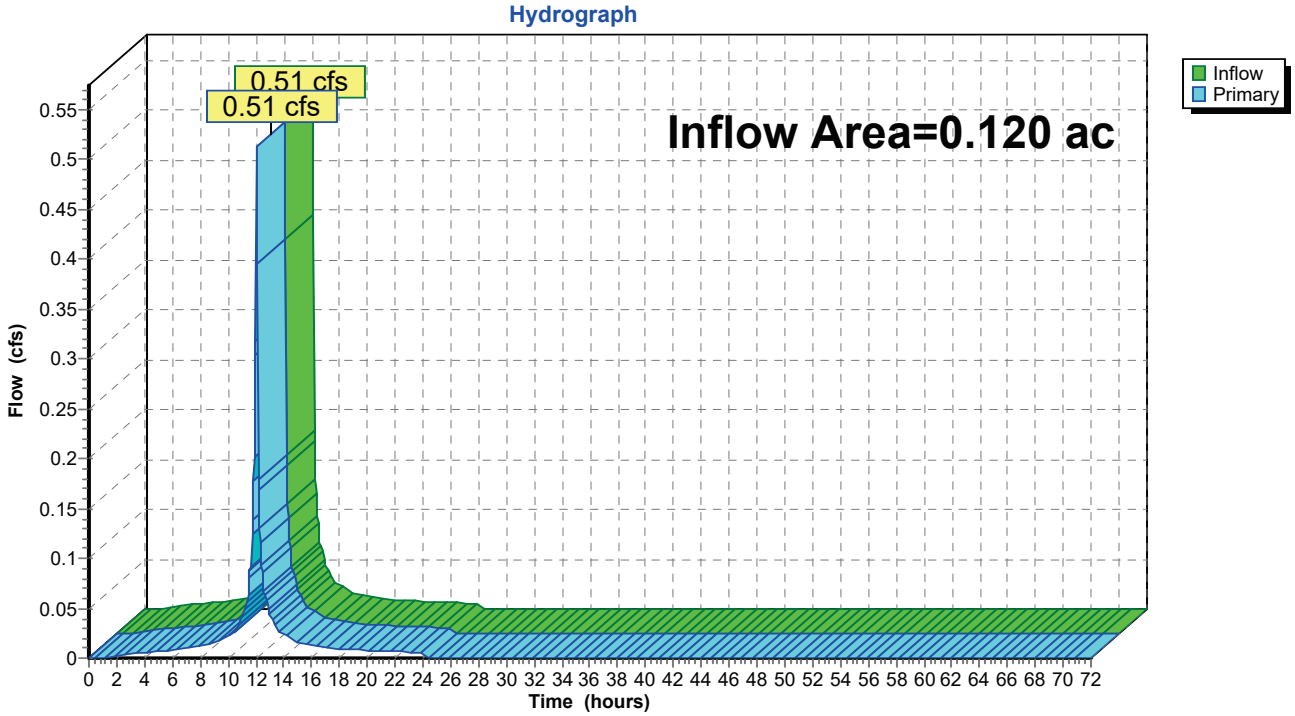


Summary for Link 12L: PDA-1B

Inflow Area = 0.120 ac,100.00% Impervious, Inflow Depth = 3.85" for 2-Year-2050 event
Inflow = 0.51 cfs @ 12.09 hrs, Volume= 0.039 af
Primary = 0.51 cfs @ 12.09 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 29P : PP-2

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 12L: PDA-1B

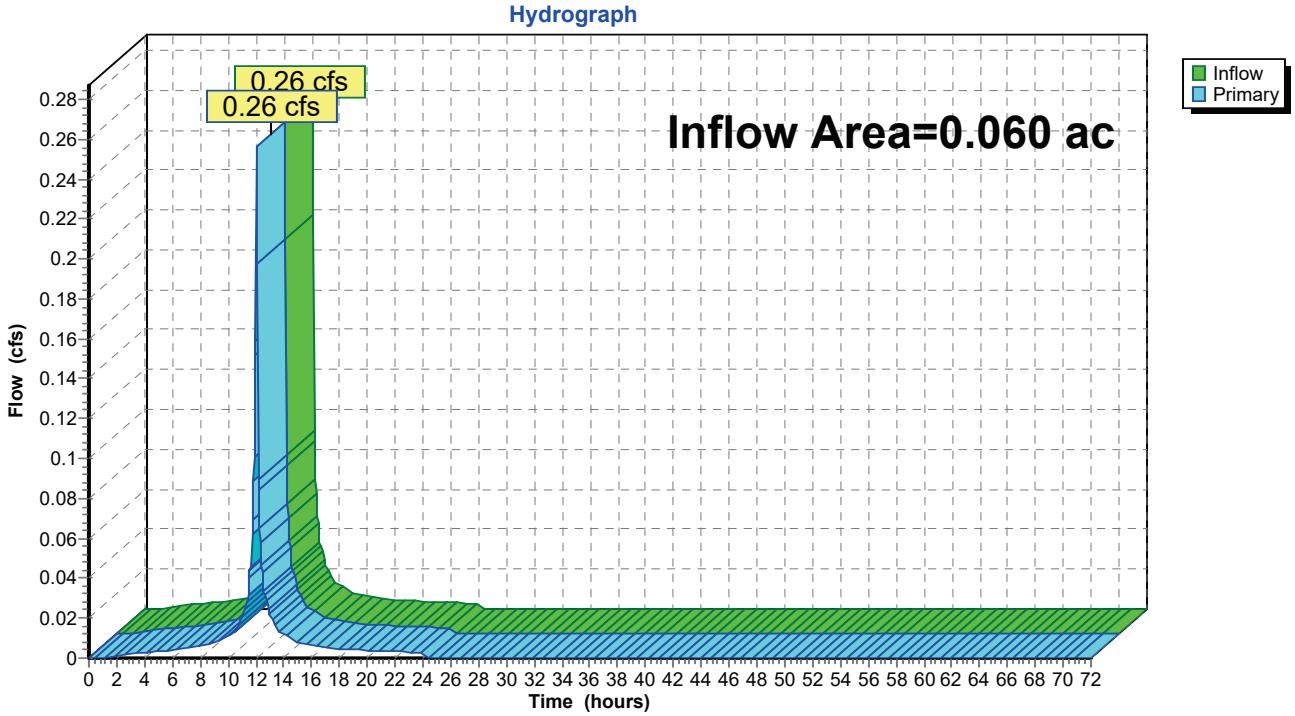


Summary for Link 15L: PDA-1C

Inflow Area = 0.060 ac,100.00% Impervious, Inflow Depth = 3.85" for 2-Year-2050 event
Inflow = 0.26 cfs @ 12.09 hrs, Volume= 0.019 af
Primary = 0.26 cfs @ 12.09 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 15L: PDA-1C

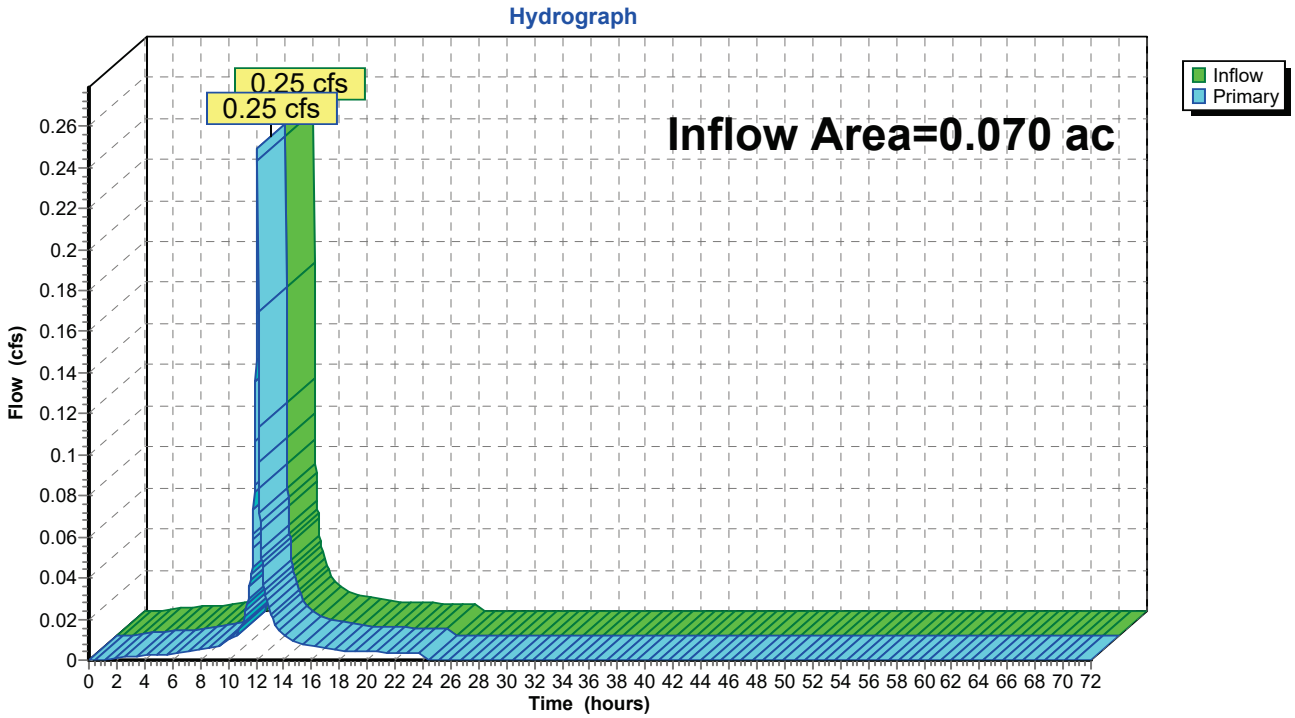


Summary for Link 18L: PDA-1D

Inflow Area = 0.070 ac, 71.43% Impervious, Inflow Depth = 3.23" for 2-Year-2050 event
Inflow = 0.25 cfs @ 12.10 hrs, Volume= 0.019 af
Primary = 0.25 cfs @ 12.10 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 31P : PP-4

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 18L: PDA-1D

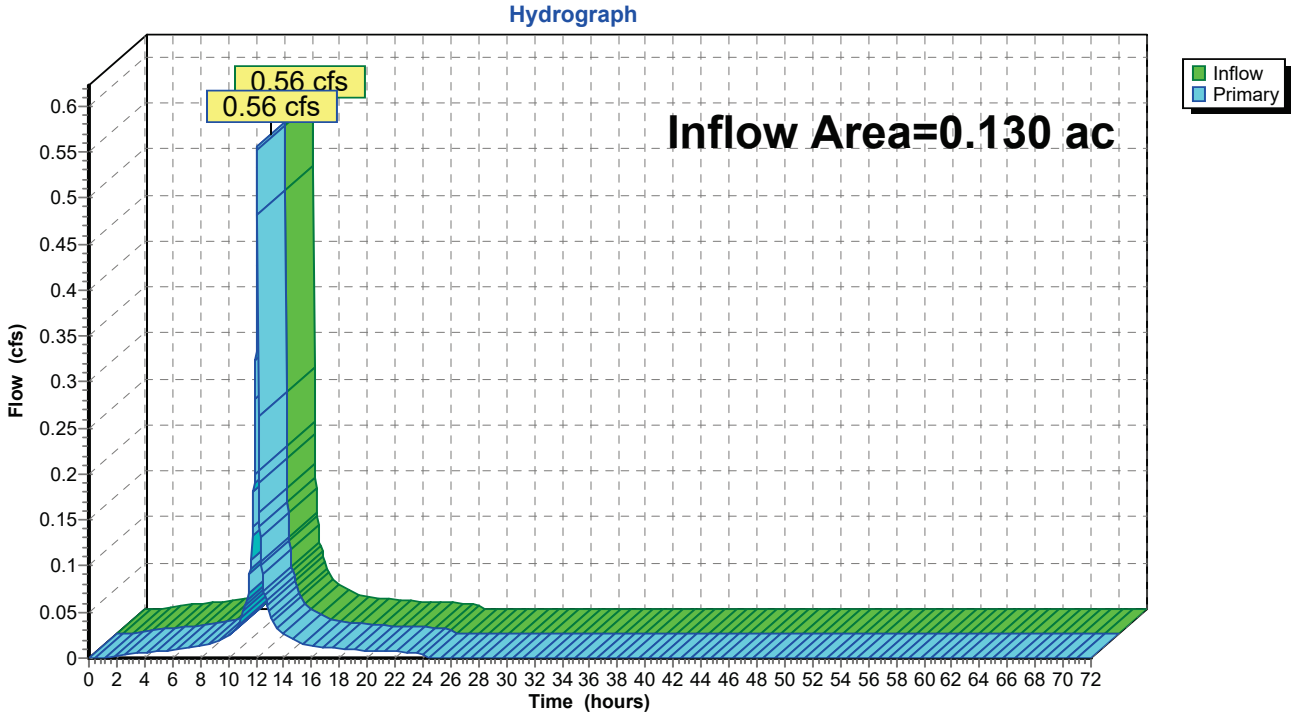


Summary for Link 21L: PDA-1E

Inflow Area = 0.130 ac,100.00% Impervious, Inflow Depth = 3.85" for 2-Year-2050 event
Inflow = 0.56 cfs @ 12.08 hrs, Volume= 0.042 af
Primary = 0.56 cfs @ 12.08 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 31P : PP-4

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 21L: PDA-1E

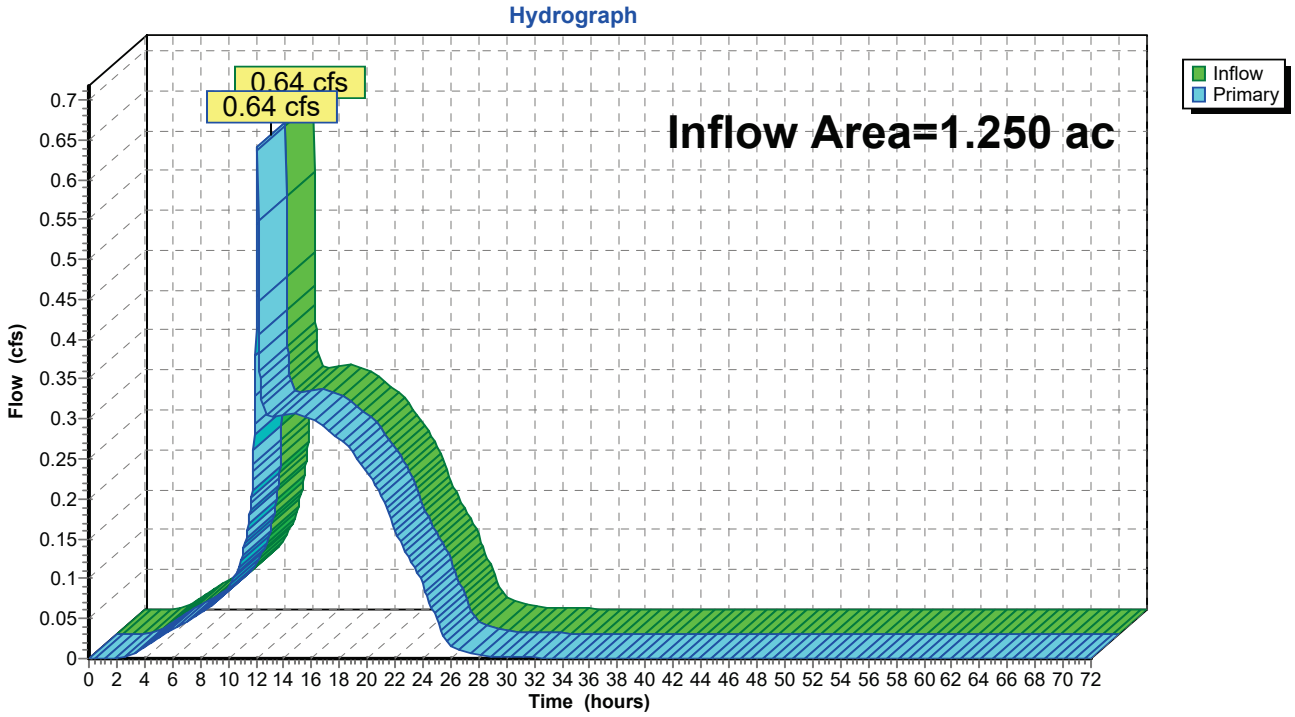


Summary for Link 25L: PDA-1

Inflow Area = 1.250 ac, 60.00% Impervious, Inflow Depth = 2.98" for 2-Year-2050 event
Inflow = 0.64 cfs @ 12.11 hrs, Volume= 0.310 af
Primary = 0.64 cfs @ 12.11 hrs, Volume= 0.310 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 25L: PDA-1

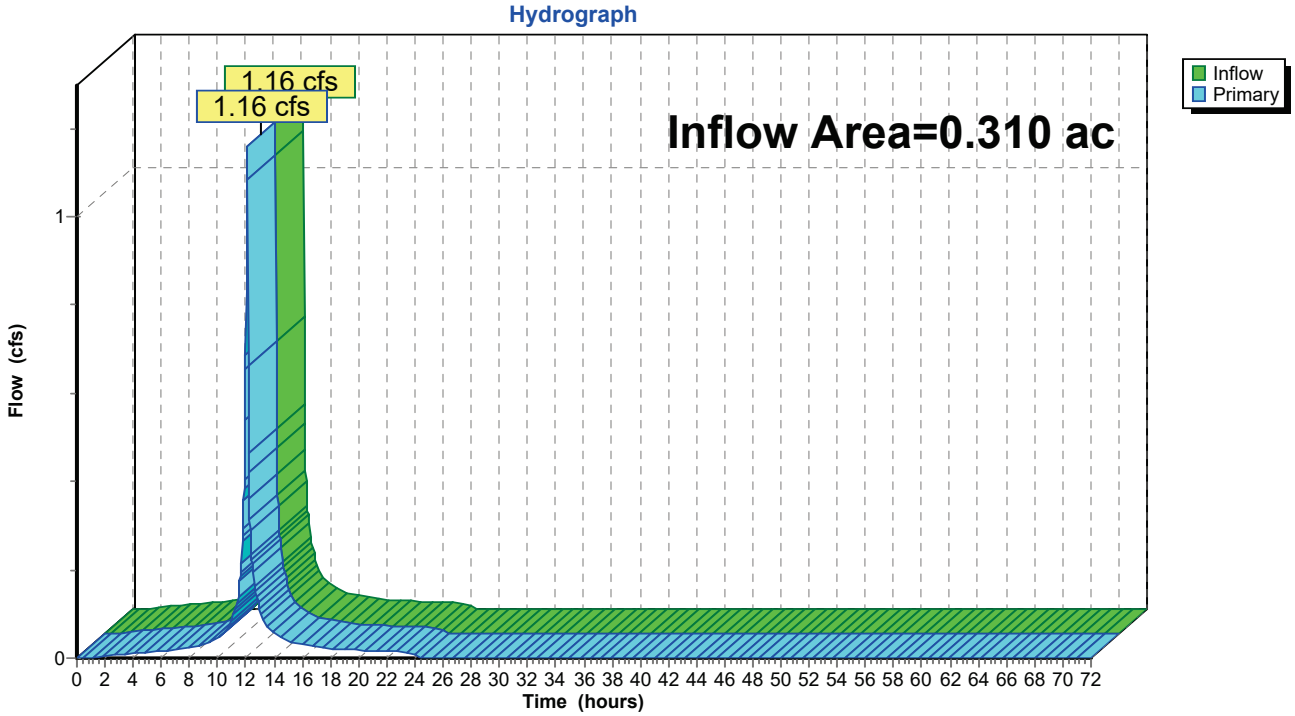


Summary for Link 28L: PDA-1F

Inflow Area = 0.310 ac, 77.42% Impervious, Inflow Depth = 3.36" for 2-Year-2050 event
Inflow = 1.16 cfs @ 12.09 hrs, Volume= 0.087 af
Primary = 1.16 cfs @ 12.09 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 28L: PDA-1F

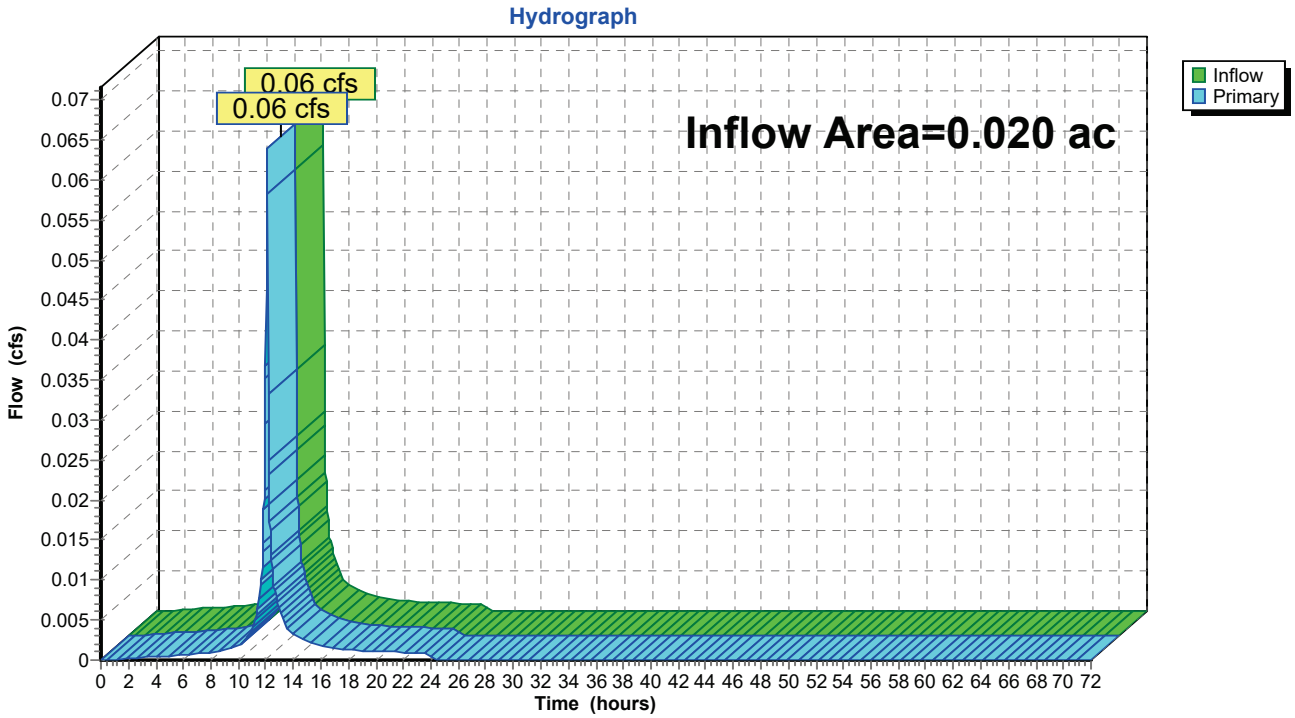


Summary for Link 31L: PDA-1H

Inflow Area = 0.020 ac, 50.00% Impervious, Inflow Depth = 2.76" for 2-Year-2050 event
Inflow = 0.06 cfs @ 12.09 hrs, Volume= 0.005 af
Primary = 0.06 cfs @ 12.09 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min
Routed to Link 25L : PDA-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 31L: PDA-1H

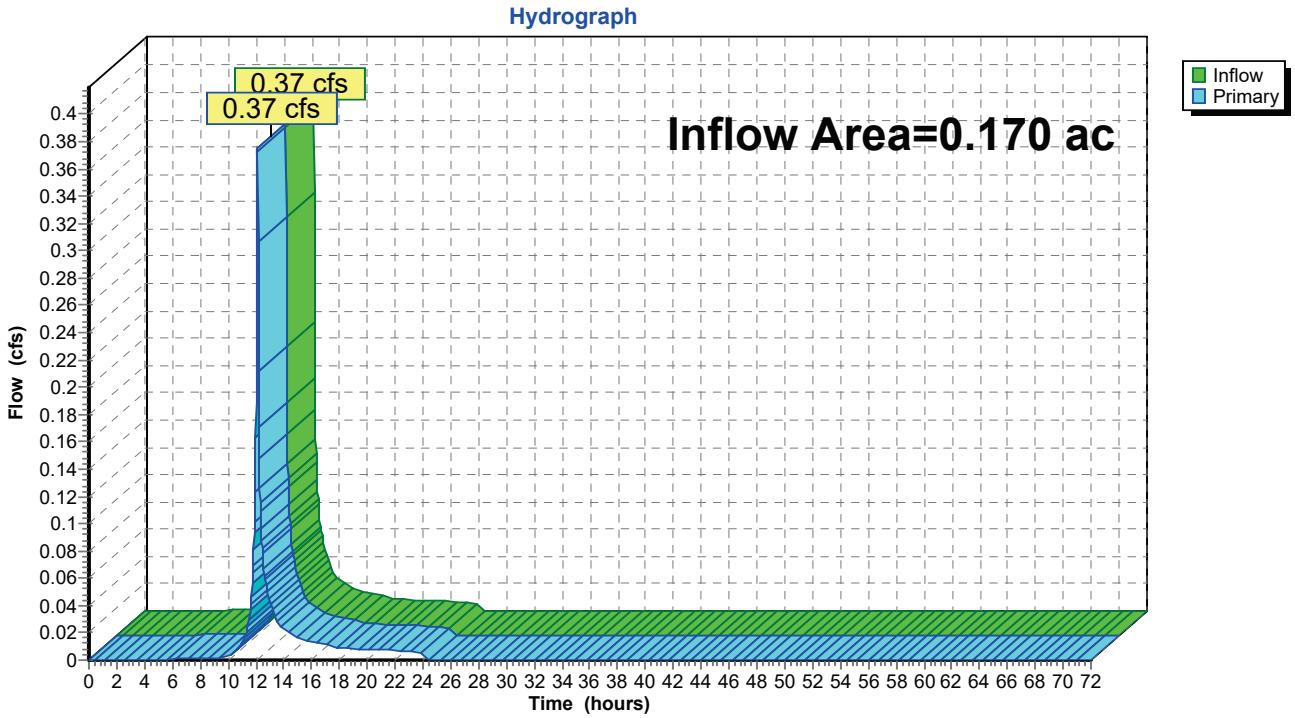


Summary for Link 32L: PDA-1I

Inflow Area = 0.170 ac, 5.88% Impervious, Inflow Depth = 1.79" for 2-Year-2050 event
Inflow = 0.37 cfs @ 12.11 hrs, Volume= 0.025 af
Primary = 0.37 cfs @ 12.11 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min
Routed to Link 25L : PDA-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 32L: PDA-1I

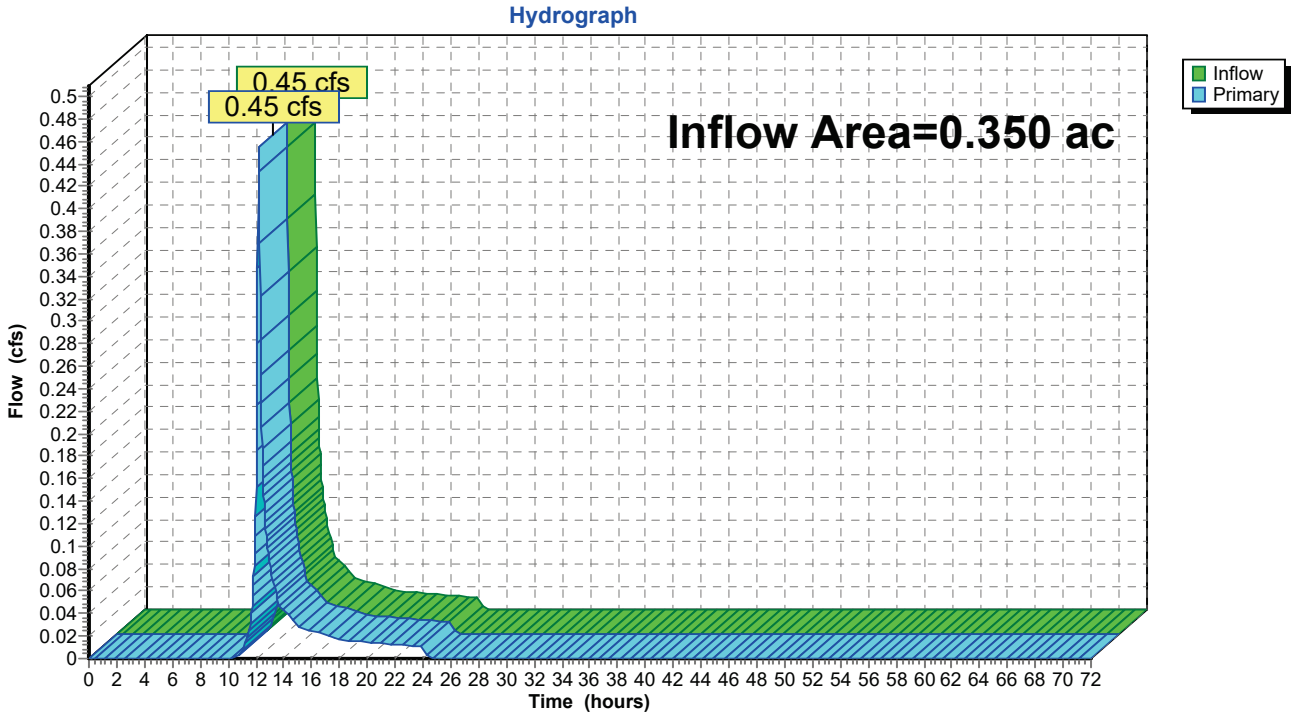


Summary for Link 34L: PDA-2

Inflow Area = 0.350 ac, 0.00% Impervious, Inflow Depth = 1.39" for 2-Year-2050 event
Inflow = 0.45 cfs @ 12.19 hrs, Volume= 0.041 af
Primary = 0.45 cfs @ 12.19 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 34L: PDA-2

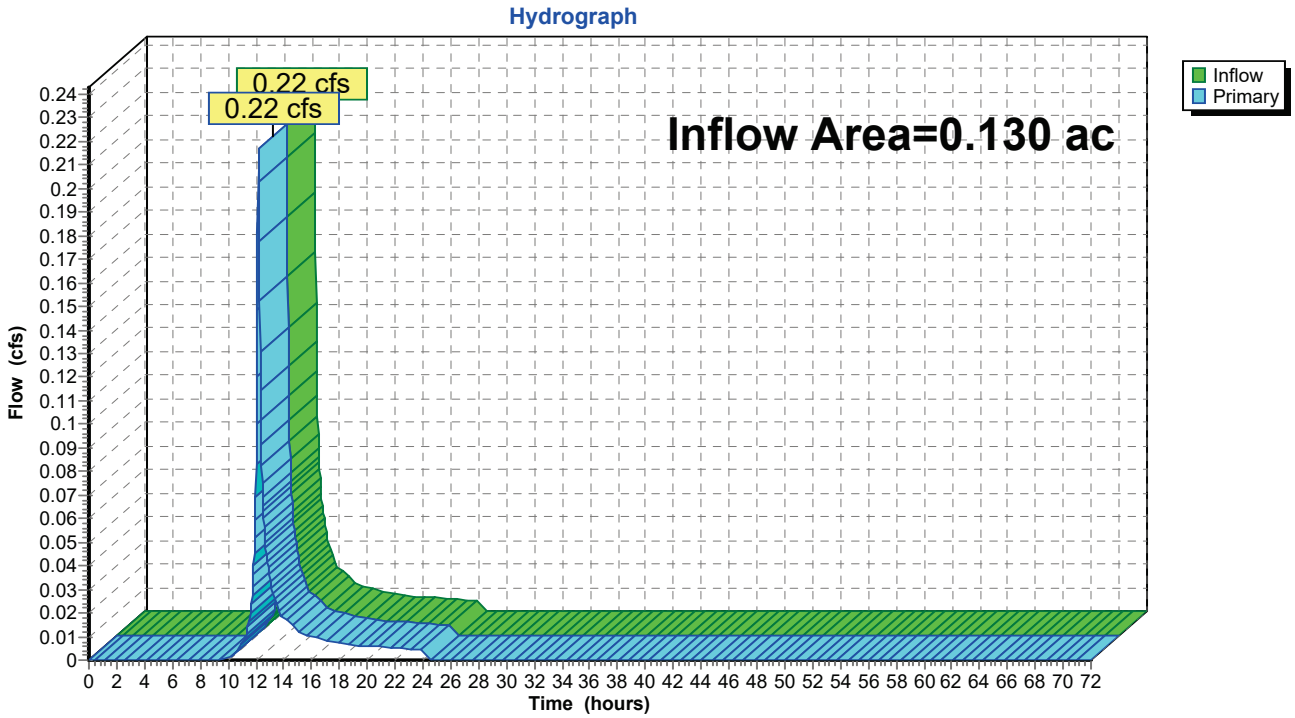


Summary for Link 38L: PDA-1G

Inflow Area = 0.130 ac, 0.00% Impervious, Inflow Depth = 1.66" for 2-Year-2050 event
Inflow = 0.22 cfs @ 12.18 hrs, Volume= 0.018 af
Primary = 0.22 cfs @ 12.18 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 38L: PDA-1G

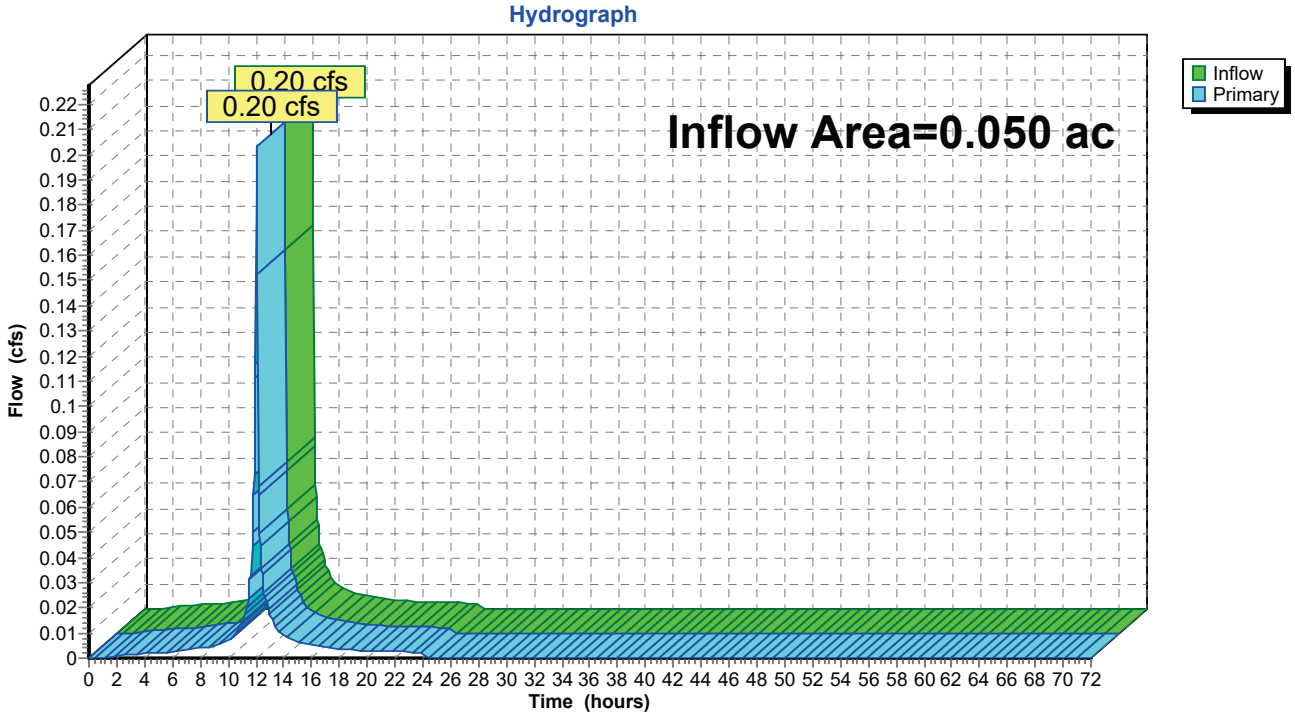


Summary for Link 41L: PDA-1J

Inflow Area = 0.050 ac, 80.00% Impervious, Inflow Depth = 3.42" for 2-Year-2050 event
Inflow = 0.20 cfs @ 12.08 hrs, Volume= 0.014 af
Primary = 0.20 cfs @ 12.08 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 41L: PDA-1J



Summary for Subcatchment 1S: EDA-1 IMPERVIOUS

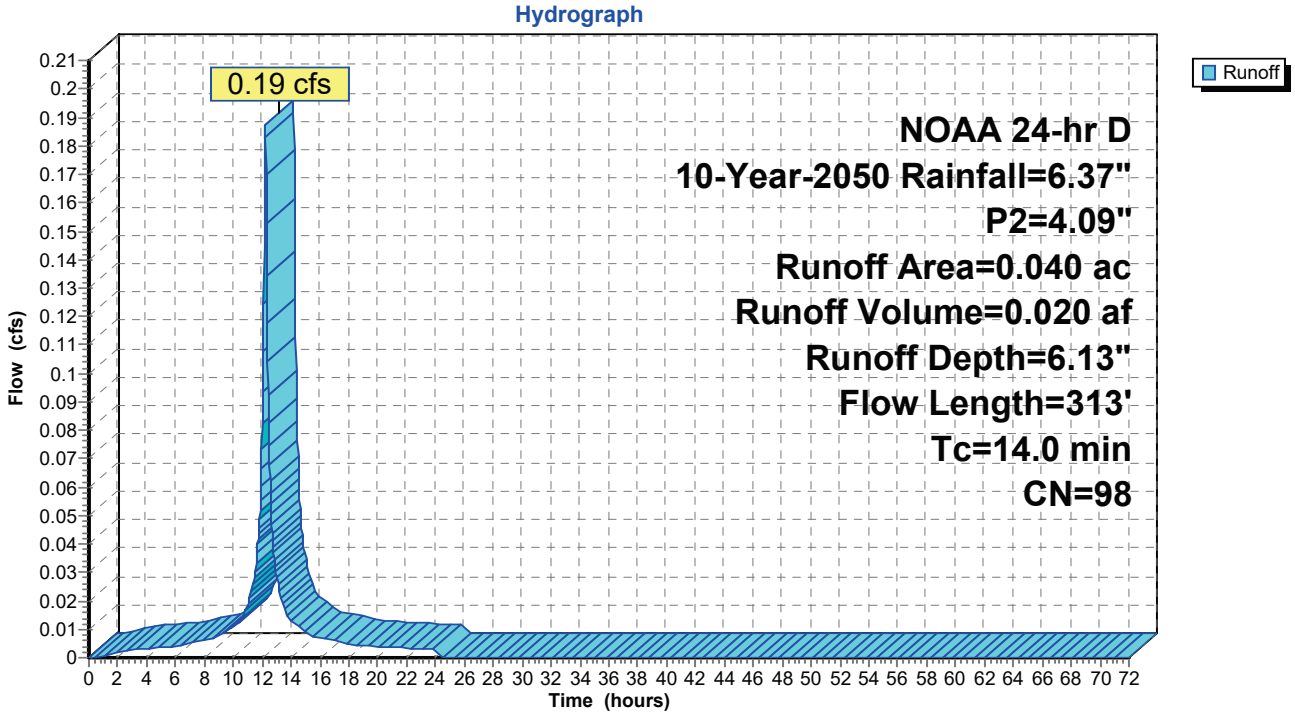
Runoff = 0.19 cfs @ 12.21 hrs, Volume= 0.020 af, Depth= 6.13"
Routed to Link 3L : EDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG C
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0579	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 4.09"
1.6	213	0.1867	2.16		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
14.0	313	Total			

Subcatchment 1S: EDA-1 IMPERVIOUS



Summary for Subcatchment 2S: EDA-1 PERVIOUS

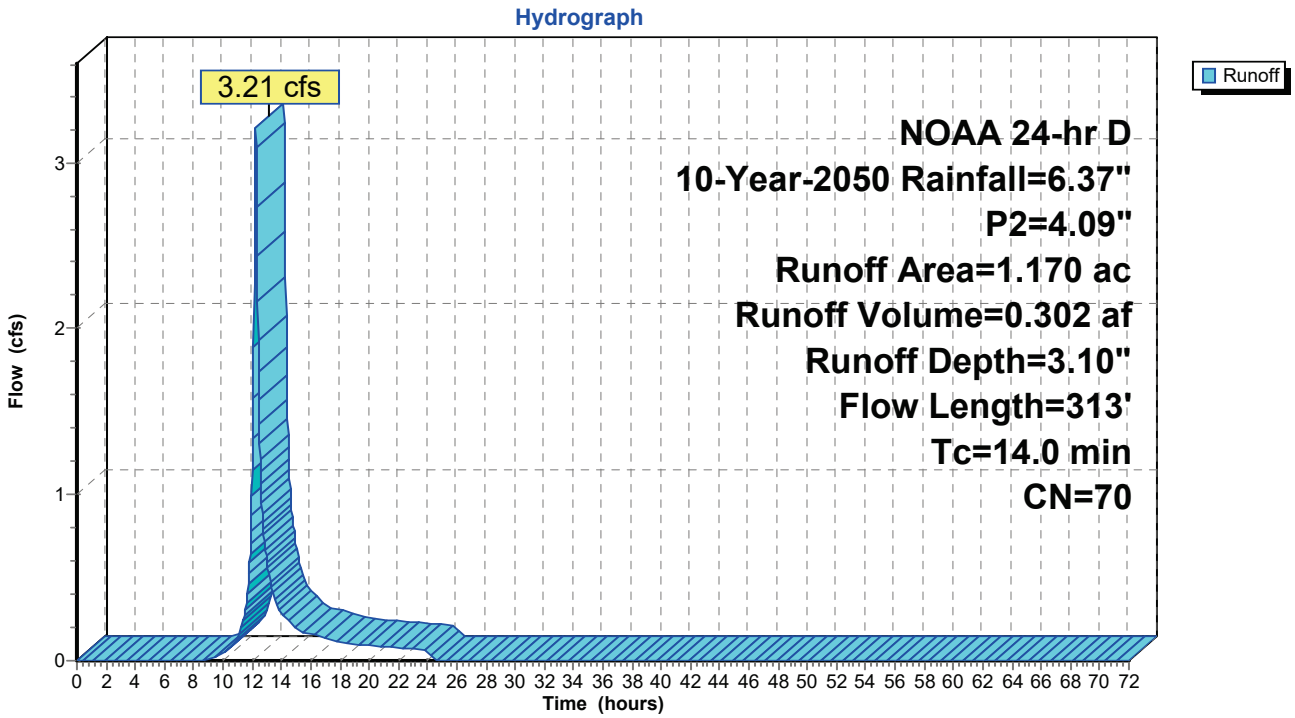
Runoff = 3.21 cfs @ 12.22 hrs, Volume= 0.302 af, Depth= 3.10"
Routed to Link 3L : EDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
1.170	70	Woods, Good, HSG C
1.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0579	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 4.09"
1.6	213	0.1867	2.16		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
14.0	313	Total			

Subcatchment 2S: EDA-1 PERVIOUS



Summary for Subcatchment 5S: EDA-2 PERVIOUS

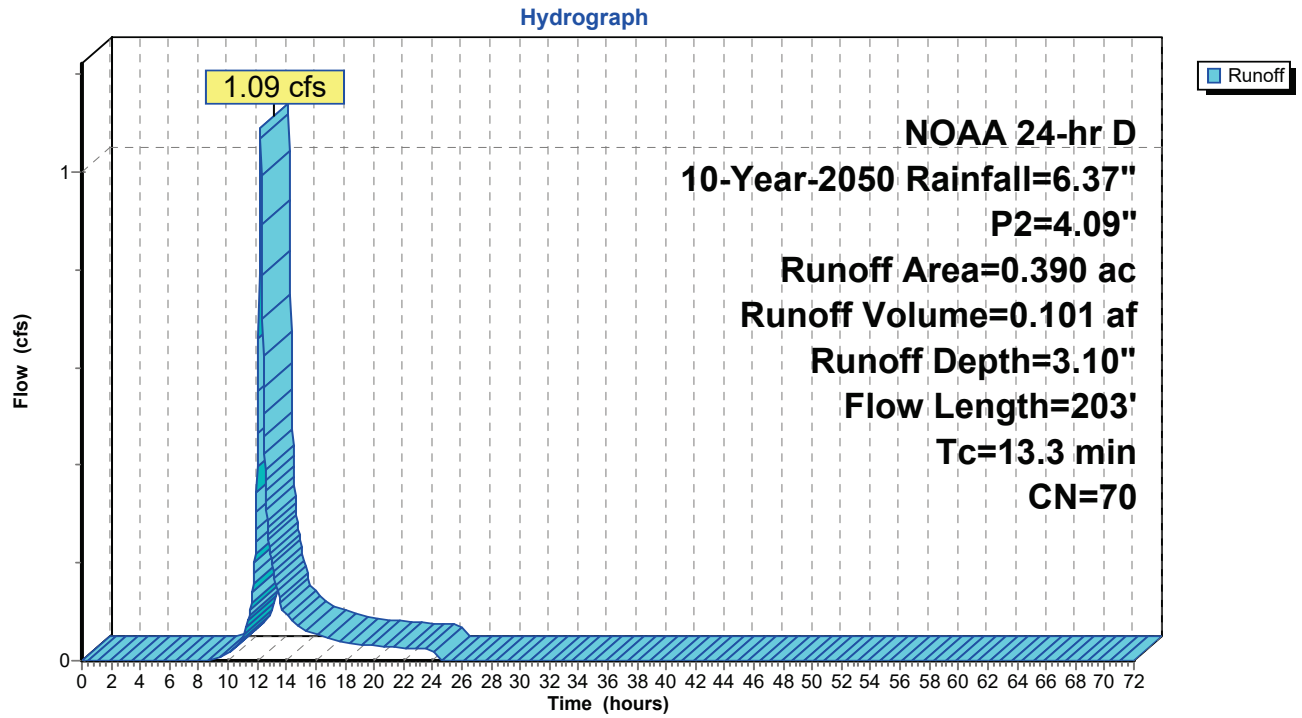
Runoff = 1.09 cfs @ 12.22 hrs, Volume= 0.101 af, Depth= 3.10"
Routed to Link 6L : EDA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.390	70	Woods, Good, HSG C
0.390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0582	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 4.09"
0.9	103	0.1619	2.01		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
13.3	203	Total			

Subcatchment 5S: EDA-2 PERVIOUS



Summary for Subcatchment 7S: PDA-1A IMPERVIOUS

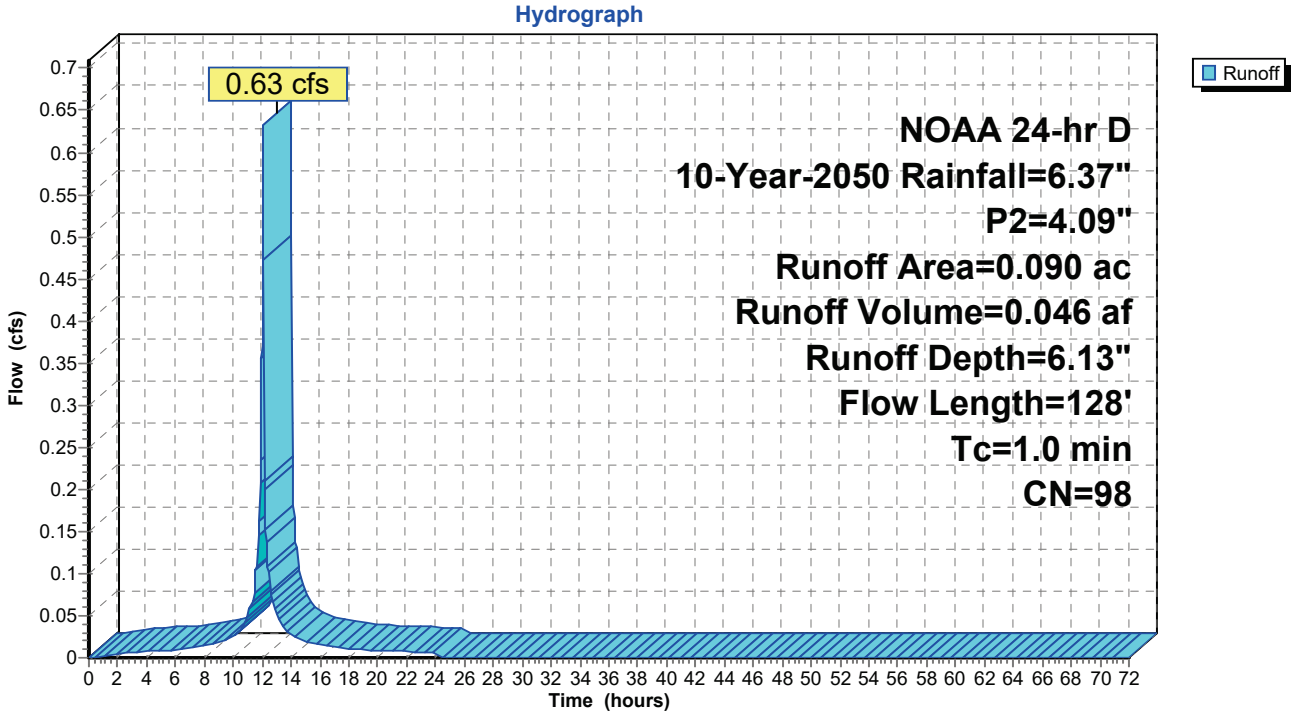
Runoff = 0.63 cfs @ 12.08 hrs, Volume= 0.046 af, Depth= 6.13"
Routed to Link 9L : PDA-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.090	98	Paved parking, HSG C
0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0347	1.33		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.7	85	0.0500	2.17		**Sheet Flow, BC** Smooth surfaces n= 0.011 P2= 4.09"
0.1	28	0.0493	4.51		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
1.0	128	Total			

Subcatchment 7S: PDA-1A IMPERVIOUS



Summary for Subcatchment 8S: PDA-1A PERVIOUS

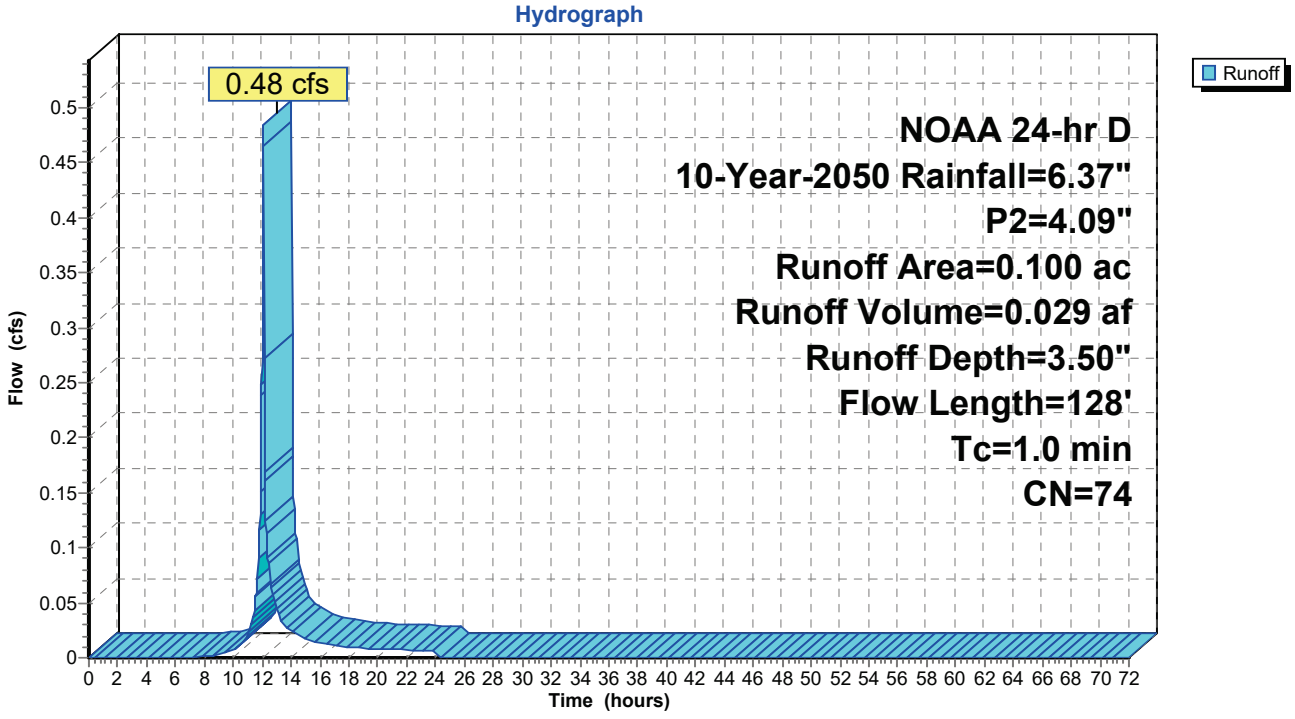
Runoff = 0.48 cfs @ 12.08 hrs, Volume= 0.029 af, Depth= 3.50"
Routed to Link 9L : PDA-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.100	74	>75% Grass cover, Good, HSG C
0.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0347	1.33		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.7	85	0.0500	2.17		**Sheet Flow, BC** Smooth surfaces n= 0.011 P2= 4.09"
0.1	28	0.0493	4.51		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
1.0	128	Total			

Subcatchment 8S: PDA-1A PERVIOUS



Summary for Subcatchment 10S: PDA-1B IMPERVIOUS

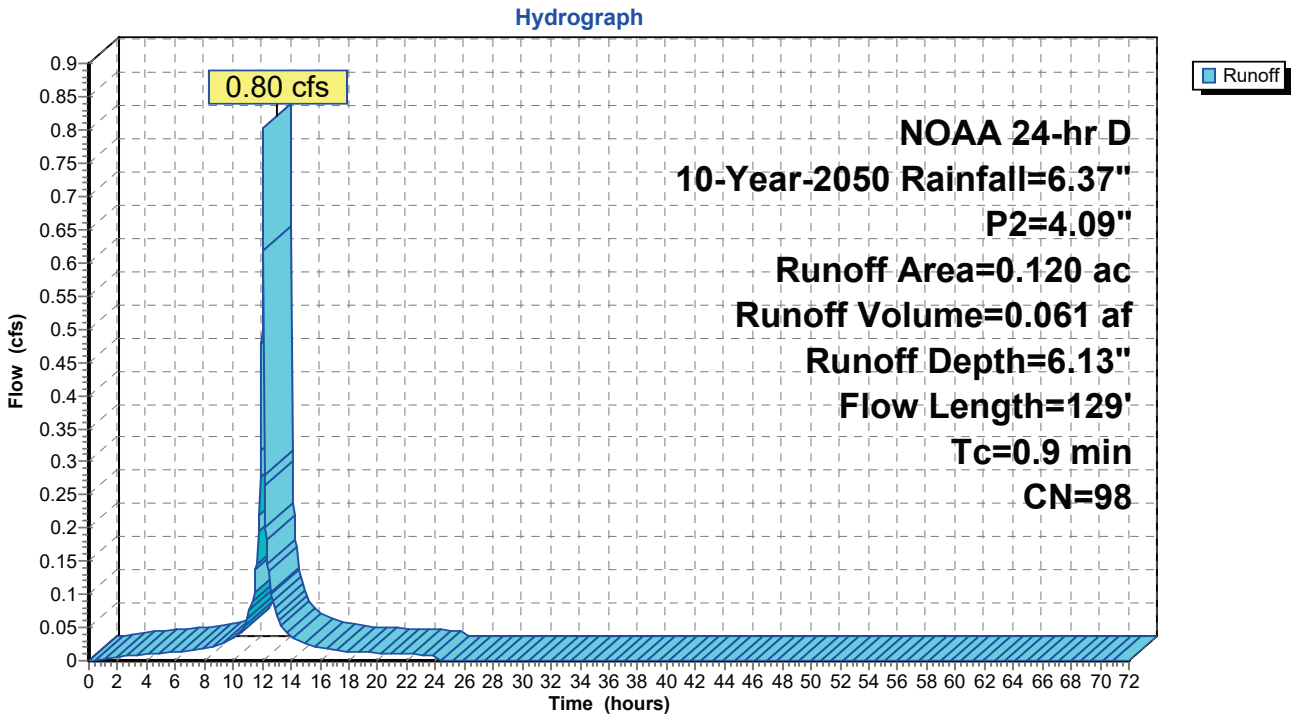
Runoff = 0.80 cfs @ 12.07 hrs, Volume= 0.061 af, Depth= 6.13"
Routed to Link 12L : PDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.120	98	Paved parking, HSG C
0.120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0484	2.21		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.1	29	0.0610	3.98		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
0.9	129	Total			

Subcatchment 10S: PDA-1B IMPERVIOUS



Summary for Subcatchment 13S: PDA-1C IMPERVIOUS

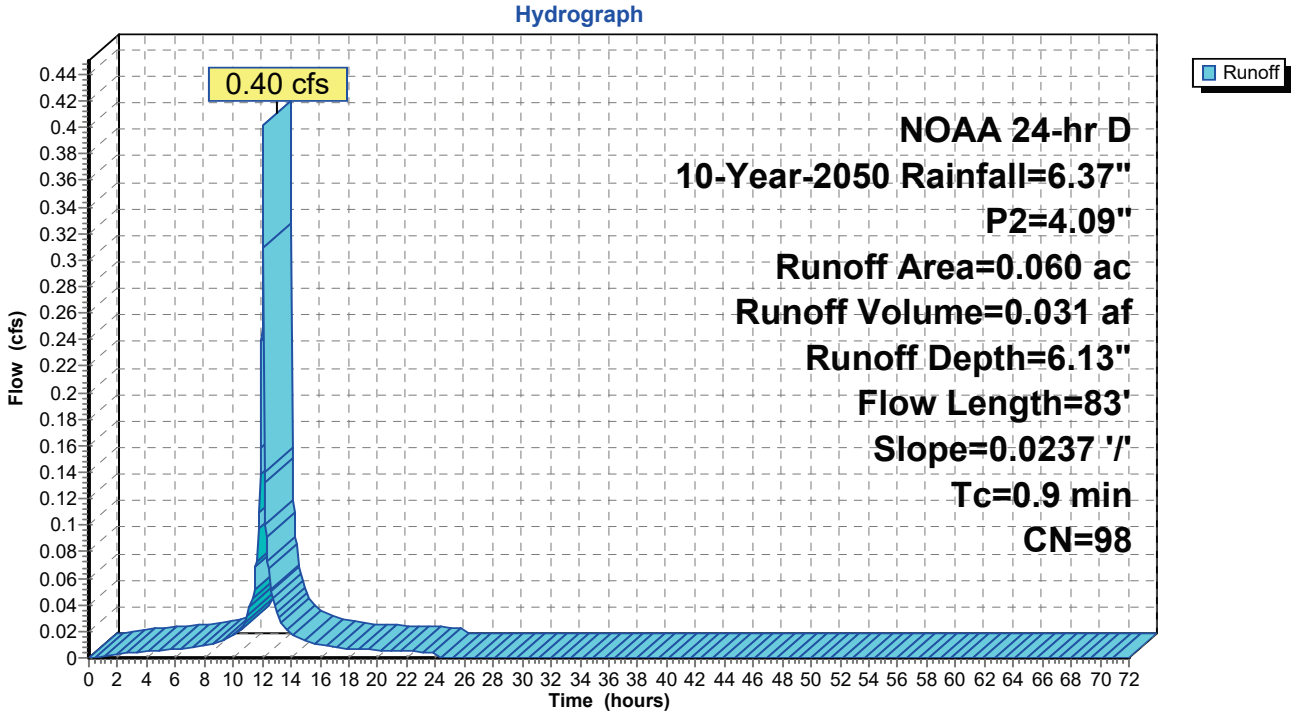
Runoff = 0.40 cfs @ 12.07 hrs, Volume= 0.031 af, Depth= 6.13"
Routed to Link 15L : PDA-1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.060	98	Paved parking, HSG C
0.060		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	83	0.0237	1.60		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"

Subcatchment 13S: PDA-1C IMPERVIOUS



Summary for Subcatchment 16S: PDA-1D IMPERVIOUS

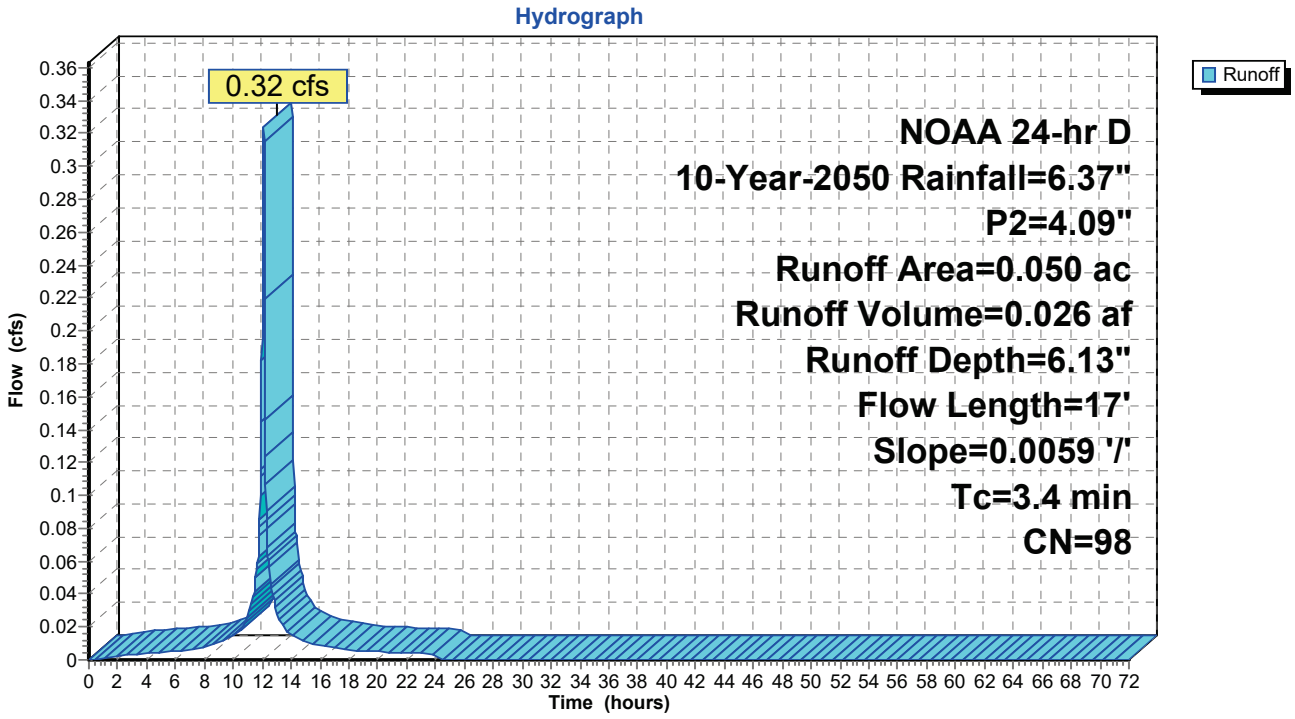
Runoff = 0.32 cfs @ 12.10 hrs, Volume= 0.026 af, Depth= 6.13"
Routed to Link 18L : PDA-1D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.050	98	Paved parking, HSG C
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	17	0.0059	0.08		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"

Subcatchment 16S: PDA-1D IMPERVIOUS



Summary for Subcatchment 17S: PDA-1D PERVIOUS

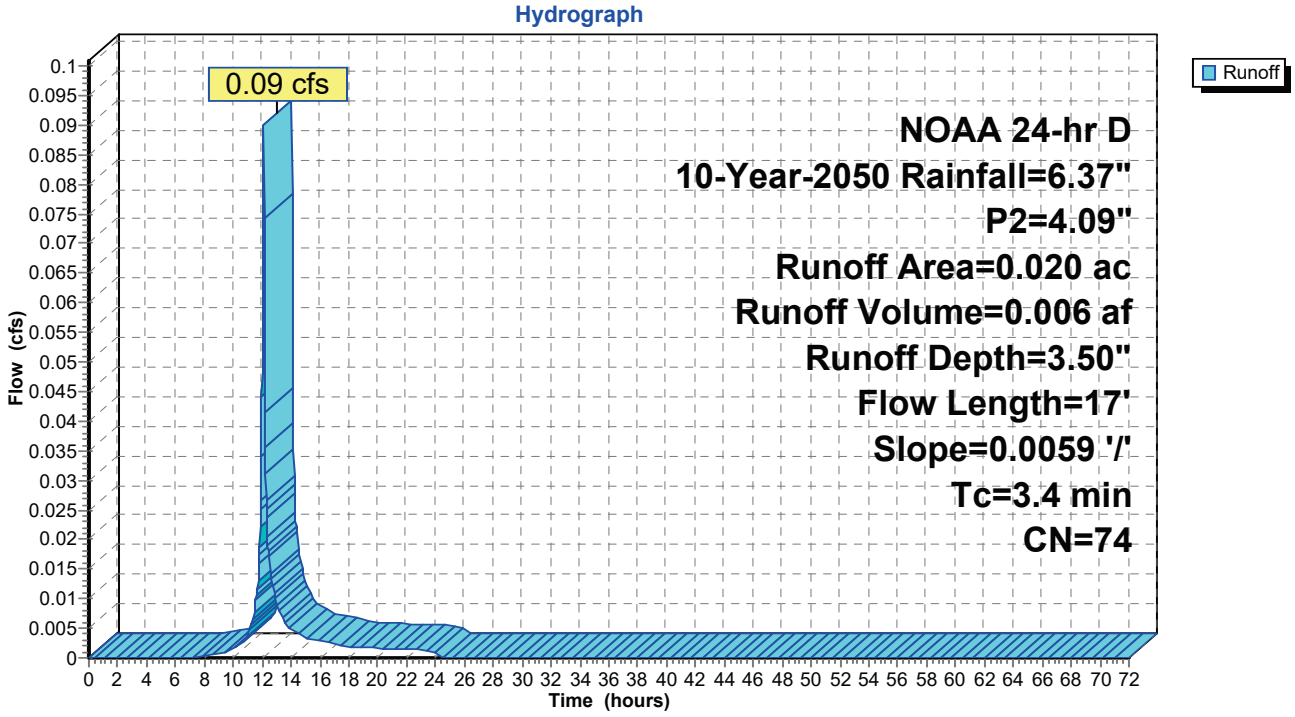
Runoff = 0.09 cfs @ 12.11 hrs, Volume= 0.006 af, Depth= 3.50"
Routed to Link 18L : PDA-1D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.020	74	>75% Grass cover, Good, HSG C
0.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	17	0.0059	0.08		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"

Subcatchment 17S: PDA-1D PERVIOUS



Summary for Subcatchment 19S: PDA-1E IMPERVIOUS

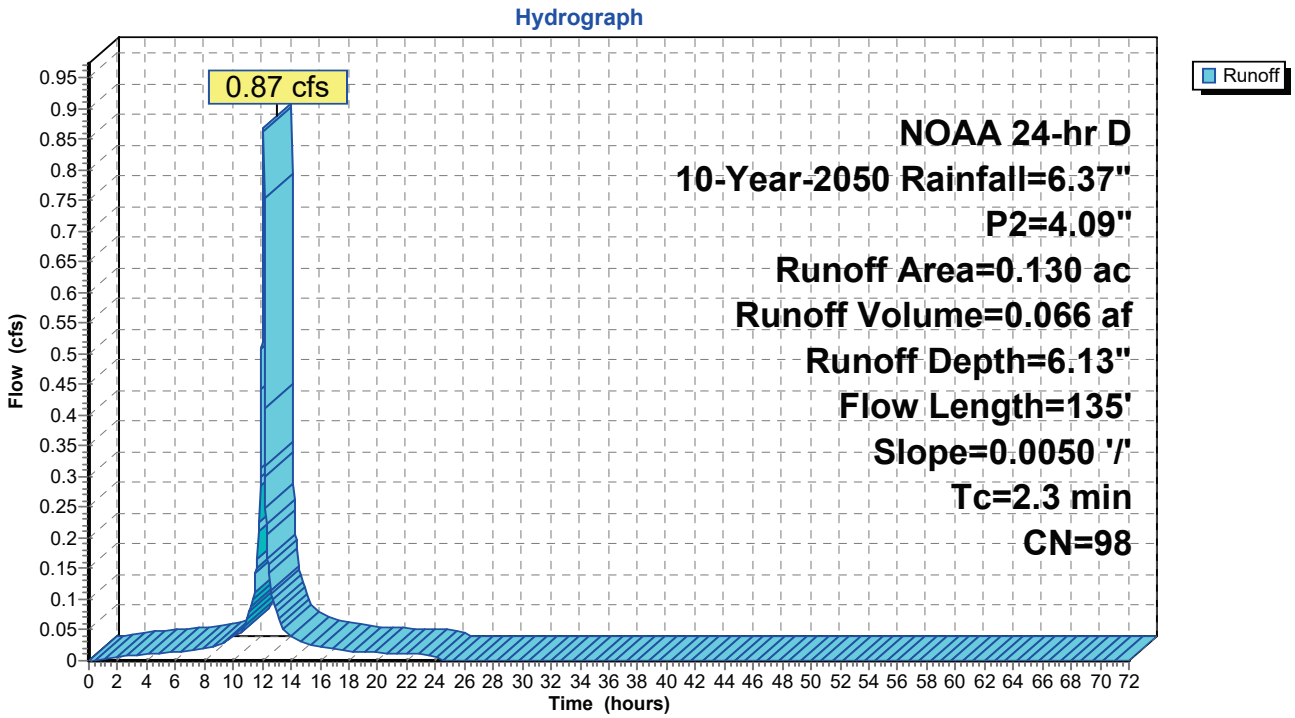
Runoff = 0.87 cfs @ 12.08 hrs, Volume= 0.066 af, Depth= 6.13"
Routed to Link 21L : PDA-1E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.130	98	Paved parking, HSG C
0.130		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0050	0.89		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.4	35	0.0050	1.44		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
2.3	135	Total			

Subcatchment 19S: PDA-1E IMPERVIOUS



Summary for Subcatchment 23S: PDA-2

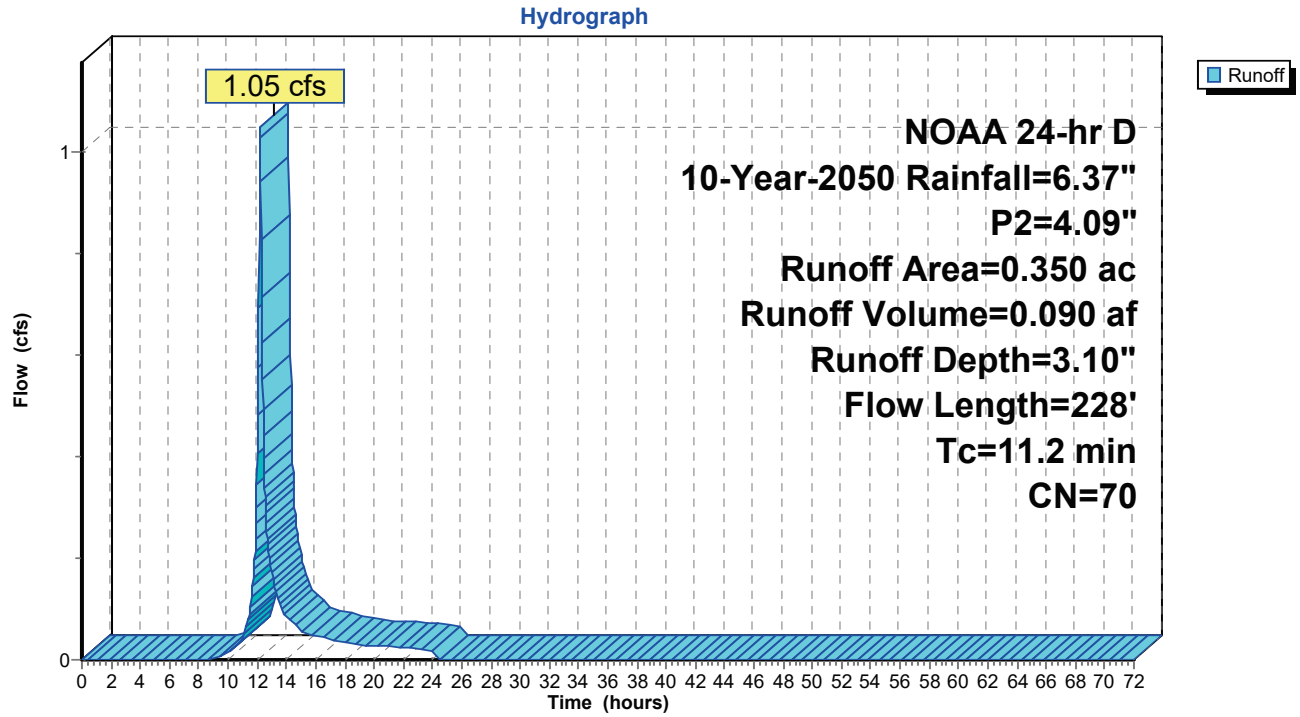
Runoff = 1.05 cfs @ 12.19 hrs, Volume= 0.090 af, Depth= 3.10"
Routed to Link 34L : PDA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.350	70	Woods, Good, HSG C
0.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	62	0.0385	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 4.09"
0.4	36	0.1011	1.59		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.2	49	0.0543	3.75		**Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps
0.6	81	0.1763	2.10		**Shallow Concentrated Flow, DE** Woodland Kv= 5.0 fps
11.2	228	Total			

Subcatchment 23S: PDA-2



Summary for Subcatchment 26S: PDA-1F IMPERVIOUS

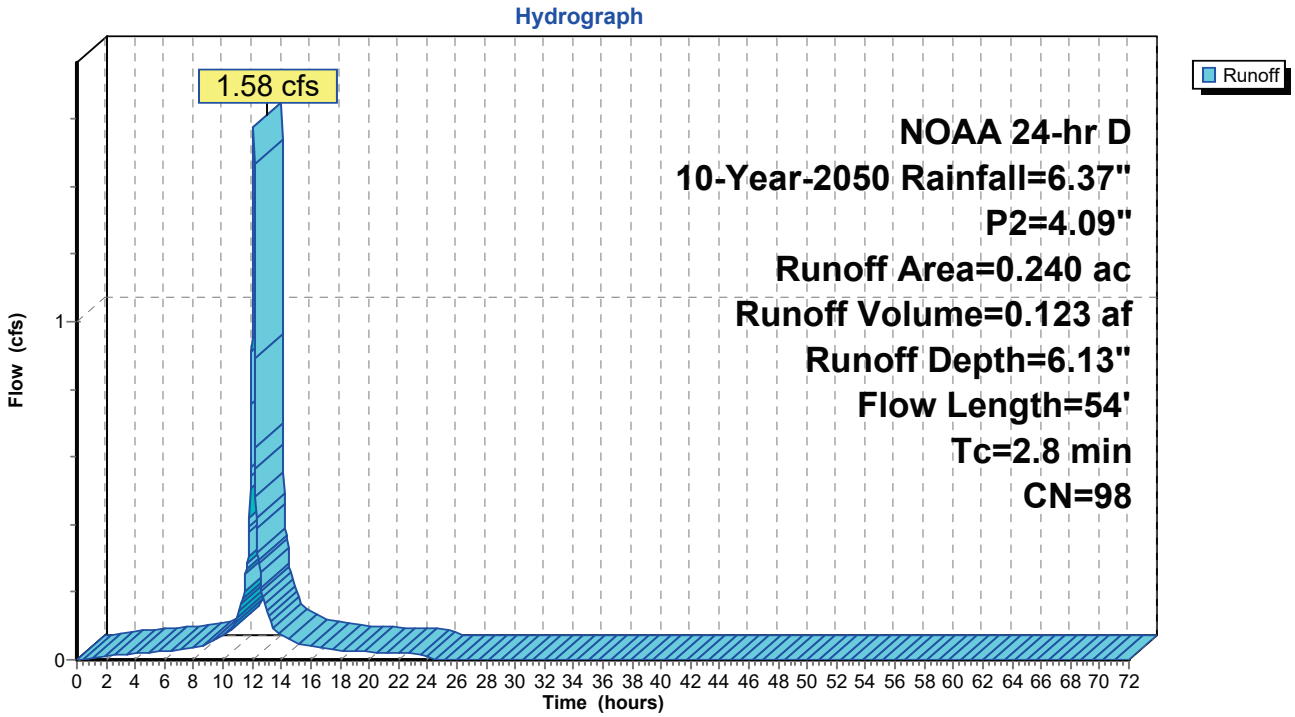
Runoff = 1.58 cfs @ 12.09 hrs, Volume= 0.123 af, Depth= 6.13"
Routed to Link 28L : PDA-1F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG C
0.240		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	7	0.0071	0.60		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
1.3	18	0.0794	0.24		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
0.2	20	0.0375	1.45		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 4.09"
1.1	9	0.0278	0.14		**Sheet Flow, DE** Grass: Short n= 0.150 P2= 4.09"
2.8	54	Total			

Subcatchment 26S: PDA-1F IMPERVIOUS



Summary for Subcatchment 27S: PDA-1F PERVIOUS

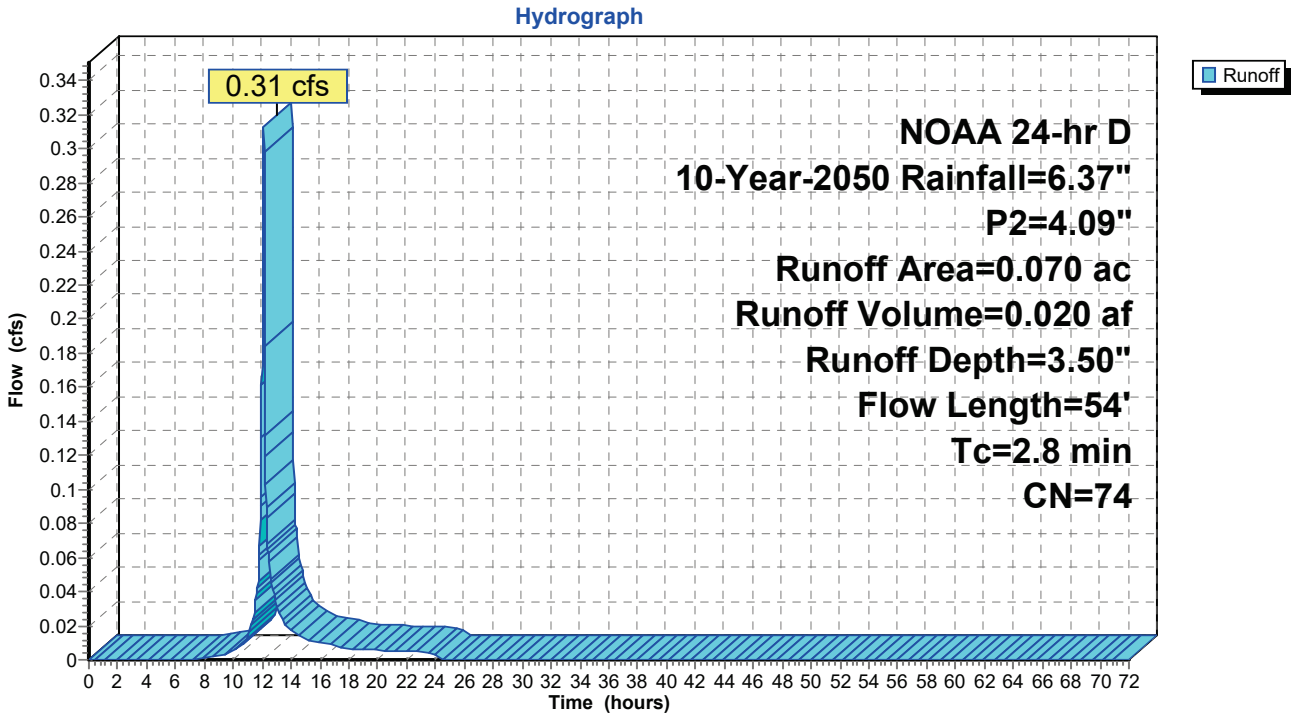
Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.020 af, Depth= 3.50"
Routed to Link 28L : PDA-1F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.070	74	>75% Grass cover, Good, HSG C
0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	7	0.0071	0.60		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
1.3	18	0.0794	0.24		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
0.2	20	0.0375	1.45		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 4.09"
1.1	9	0.0278	0.14		**Sheet Flow, DE** Grass: Short n= 0.150 P2= 4.09"
2.8	54	Total			

Subcatchment 27S: PDA-1F PERVIOUS



Summary for Subcatchment 29S: PDA-1H IMPERVIOUS

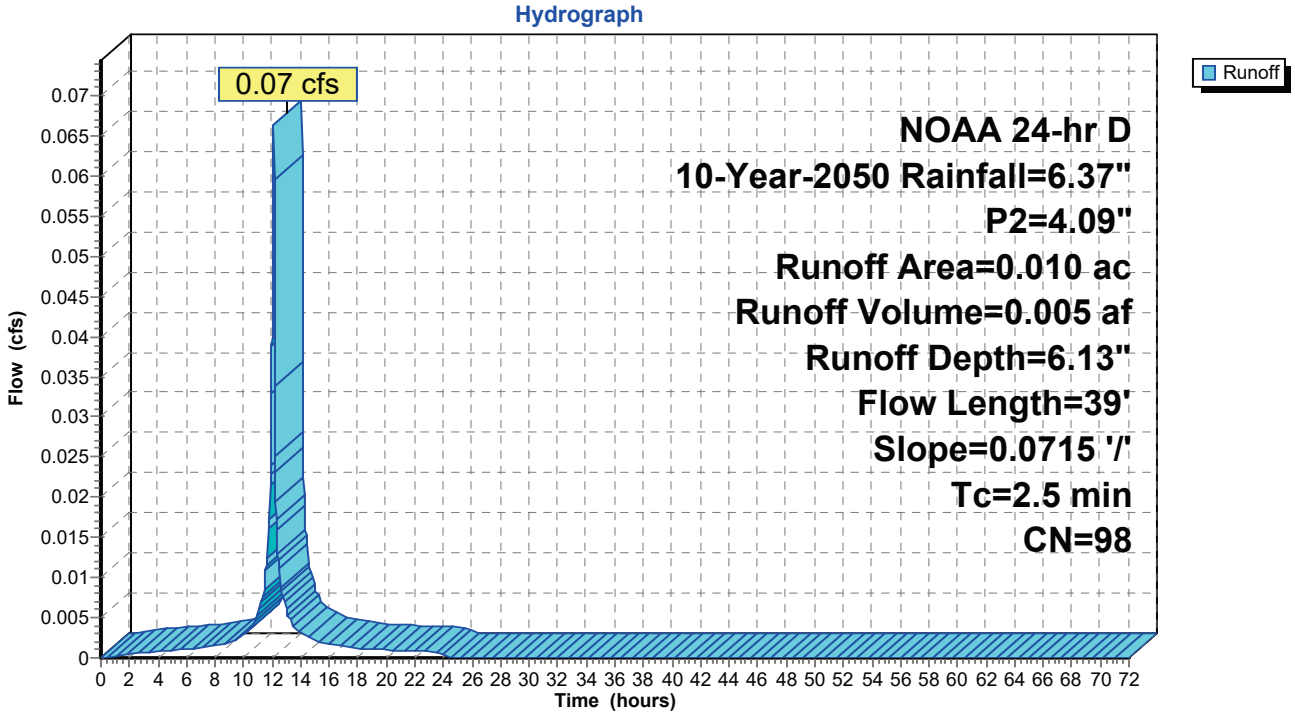
Runoff = 0.07 cfs @ 12.08 hrs, Volume= 0.005 af, Depth= 6.13"
Routed to Link 31L : PDA-1H

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.010	98	Paved parking, HSG C
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	39	0.0715	0.27		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"

Subcatchment 29S: PDA-1H IMPERVIOUS



Summary for Subcatchment 30S: PDA-1H PERVIOUS

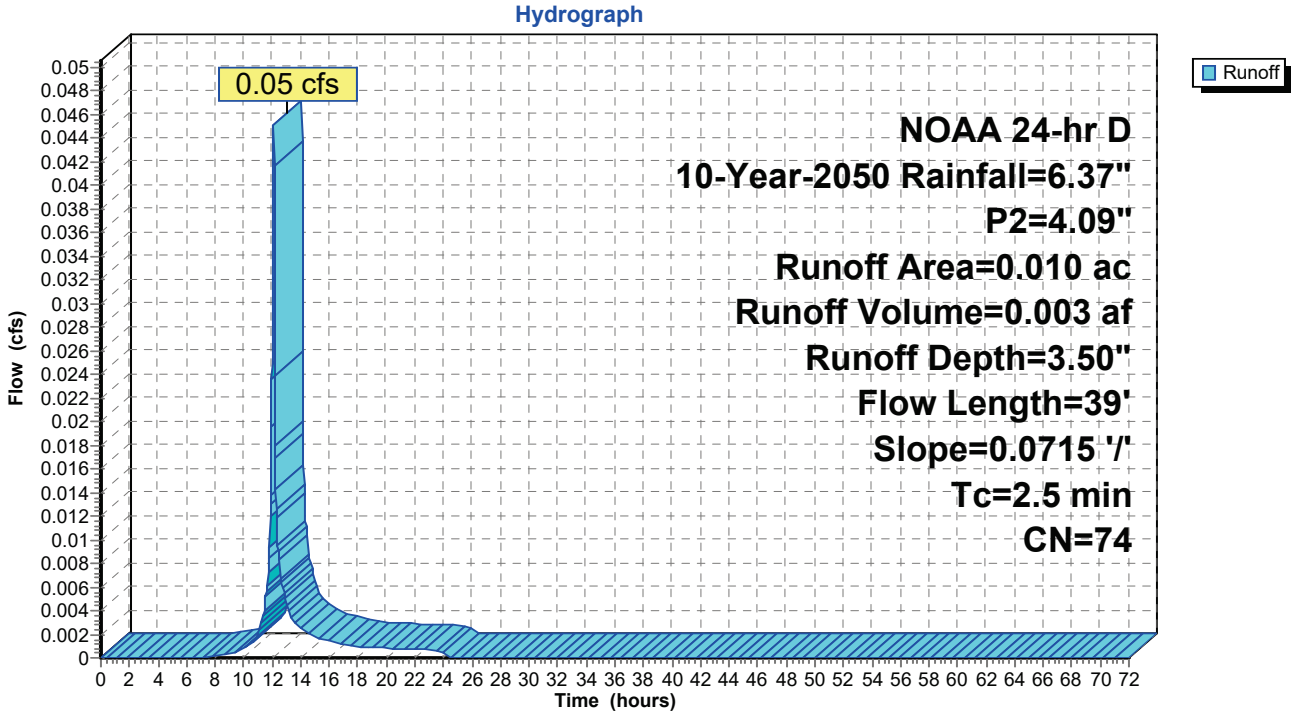
Runoff = 0.05 cfs @ 12.09 hrs, Volume= 0.003 af, Depth= 3.50"
Routed to Link 31L : PDA-1H

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.010	74	>75% Grass cover, Good, HSG C
0.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	39	0.0715	0.27		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"

Subcatchment 30S: PDA-1H PERVIOUS



Summary for Subcatchment 33S: PDA-1I IMPERVIOUS

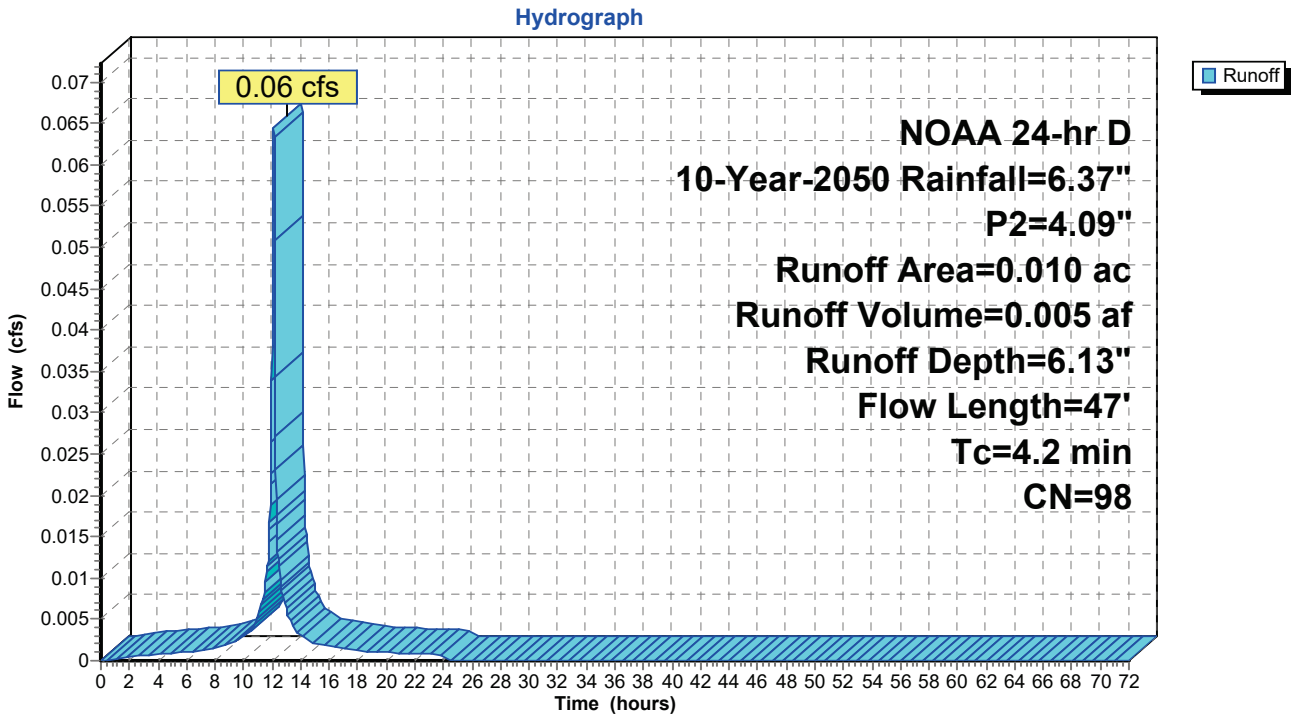
Runoff = 0.06 cfs @ 12.11 hrs, Volume= 0.005 af, Depth= 6.13"
Routed to Link 32L : PDA-1I

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.010	98	Paved parking, HSG C
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	21	0.0109	0.11		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"
1.0	26	0.2700	0.42		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
4.2	47	Total			

Subcatchment 33S: PDA-1I IMPERVIOUS



Summary for Subcatchment 35S: PDA-1I PERVIOUS

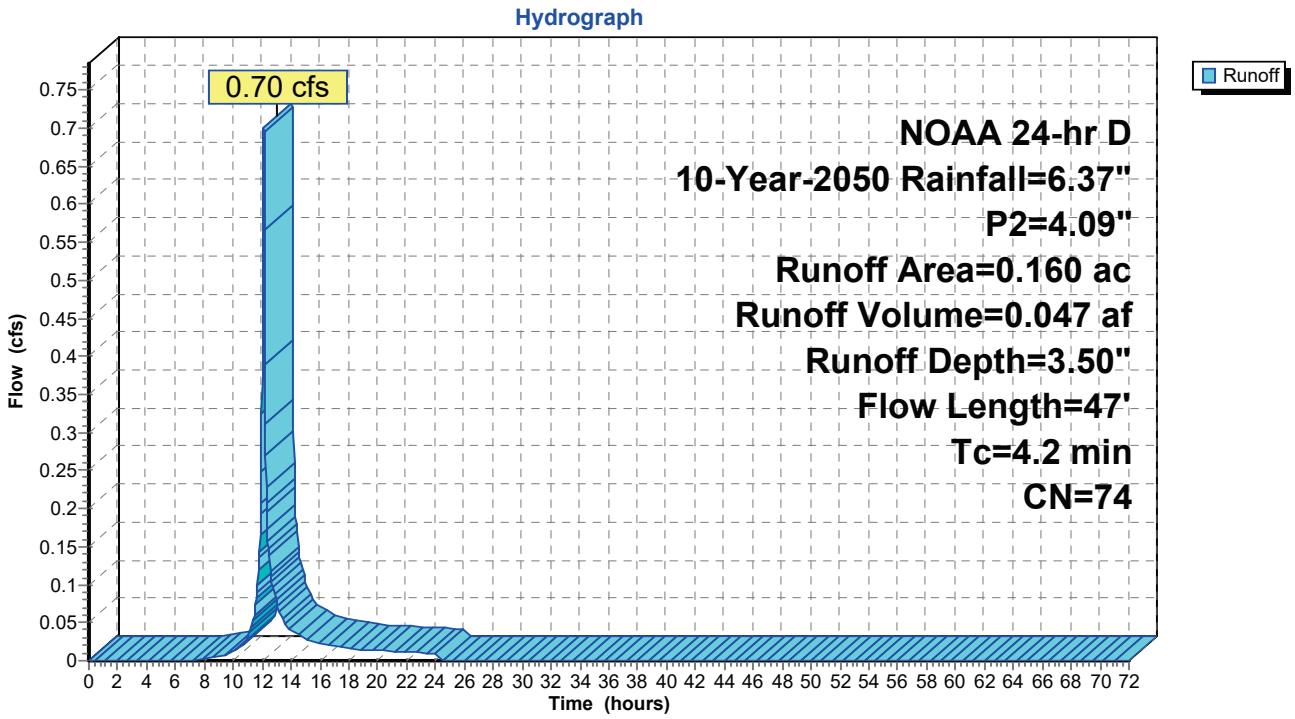
Runoff = 0.70 cfs @ 12.11 hrs, Volume= 0.047 af, Depth= 3.50"
Routed to Link 32L : PDA-1I

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.160	74	>75% Grass cover, Good, HSG C
0.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	21	0.0109	0.11		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"
1.0	26	0.2700	0.42		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
4.2	47	Total			

Subcatchment 35S: PDA-1I PERVIOUS



Summary for Subcatchment 37S: PDA-1G PERVIOUS

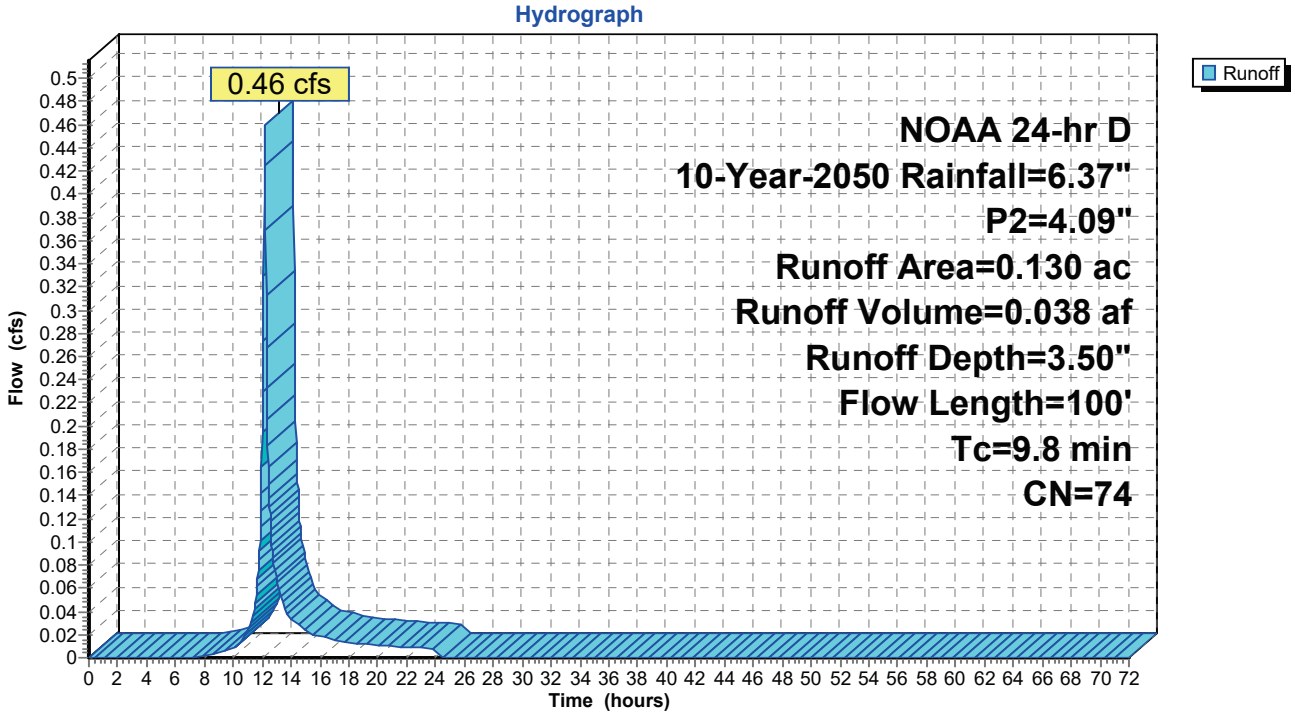
Runoff = 0.46 cfs @ 12.17 hrs, Volume= 0.038 af, Depth= 3.50"
Routed to Link 38L : PDA-1G

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.130	74	>75% Grass cover, Good, HSG C
0.130		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	66	0.0486	0.12		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 4.09"
0.1	16	0.1031	5.17		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
0.1	18	0.0365	3.08		**Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps
9.8	100	Total			

Subcatchment 37S: PDA-1G PERVIOUS



Summary for Subcatchment 39S: PDA-1J IMPERVIOUS

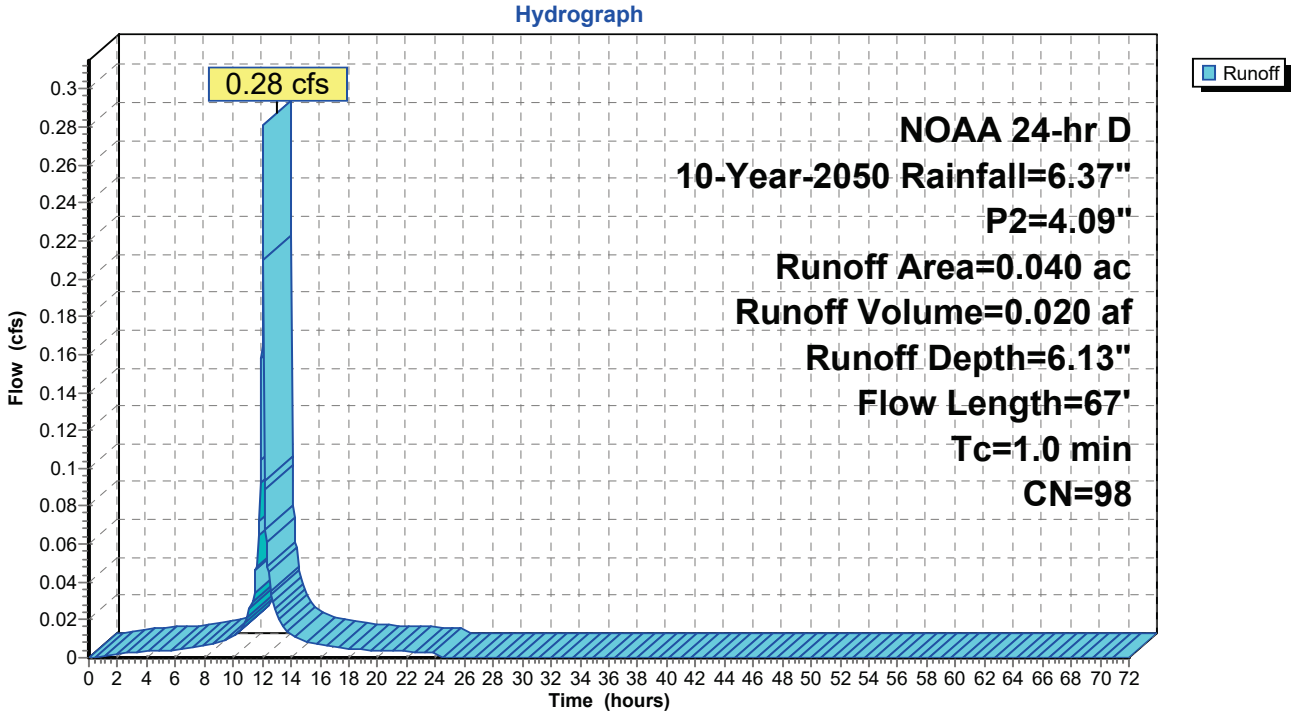
Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.020 af, Depth= 6.13"
Routed to Link 41L : PDA-1J

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG C
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	6	0.0150	0.79		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.5	7	0.1371	0.24		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
0.4	54	0.0565	2.08		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 4.09"
1.0	67	Total			

Subcatchment 39S: PDA-1J IMPERVIOUS



Summary for Subcatchment 40S: PDA-1J PERVIOUS

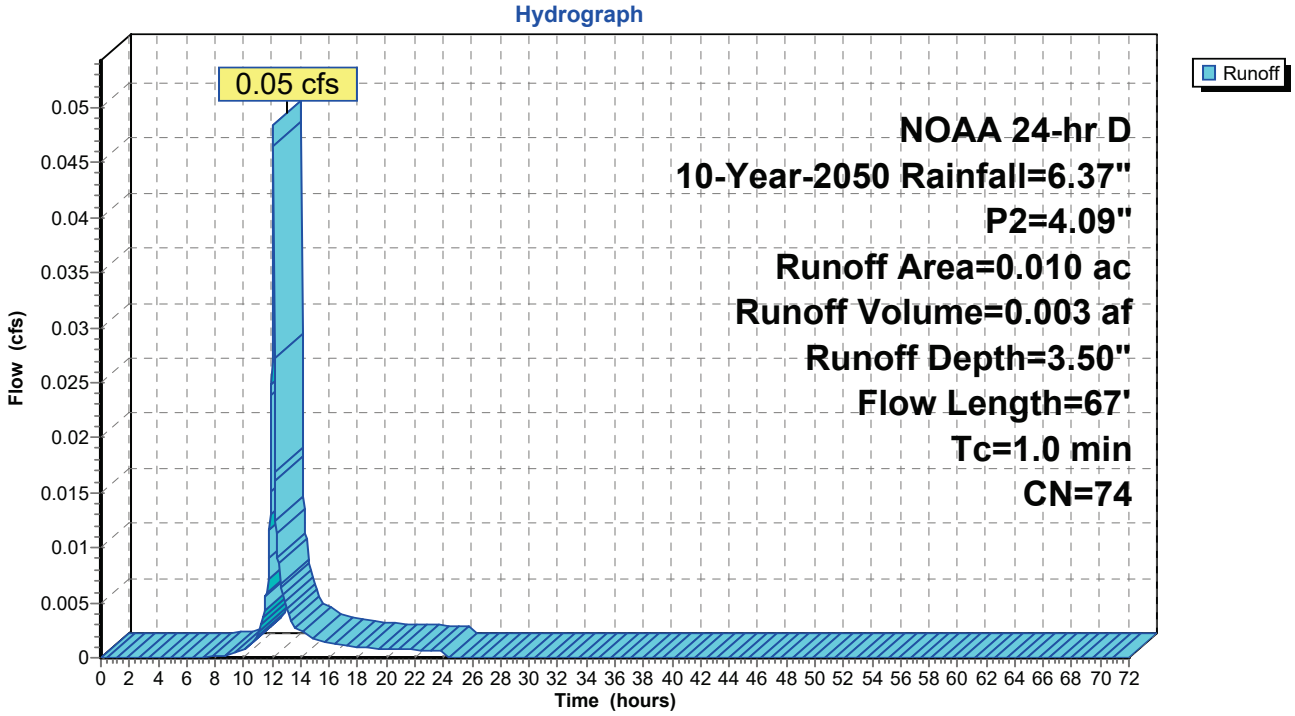
Runoff = 0.05 cfs @ 12.08 hrs, Volume= 0.003 af, Depth= 3.50"
Routed to Link 41L : PDA-1J

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 10-Year-2050 Rainfall=6.37", P2=4.09"

Area (ac)	CN	Description
0.010	74	>75% Grass cover, Good, HSG C
0.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	6	0.0150	0.79		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.5	7	0.1371	0.24		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
0.4	54	0.0565	2.08		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 4.09"
1.0	67	Total			

Subcatchment 40S: PDA-1J PERVIOUS



Summary for Pond 28P: PP-1

Inflow Area = 0.390 ac, 69.23% Impervious, Inflow Depth = 5.32" for 10-Year-2050 event
Inflow = 1.54 cfs @ 12.08 hrs, Volume= 0.173 af
Outflow = 0.23 cfs @ 12.33 hrs, Volume= 0.173 af, Atten= 85%, Lag= 14.9 min
Primary = 0.23 cfs @ 12.33 hrs, Volume= 0.173 af
Routed to Pond 29P : PP-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 448.14' @ 13.97 hrs Surf.Area= 0.048 ac Storage= 0.062 af

Plug-Flow detention time= 168.9 min calculated for 0.173 af (100% of inflow)
Center-of-Mass det. time= 169.2 min (943.3 - 774.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.45'	0.090 af	**18.00'W x 117.00'L x 6.29'H Field A** 0.304 af Overall - 0.079 af Embedded = 0.225 af x 40.0% Voids
#2A	446.45'	0.066 af	**ADS N-12 48"** x 8 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf Row Length Adjustment= +25.00' x 12.40 sf x 2 rows 11.08' Header x 12.40 sf x 2 = 274.9 cf Inside
		0.156 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	445.45'	**15.0" Round Culvert** L= 23.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 445.45' / 445.38' S= 0.0030 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	445.45'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	449.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.23 cfs @ 12.33 hrs HW=447.61' TW=445.65' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.23 cfs of 5.78 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.23 cfs @ 6.74 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 28P: PP-1 - Chamber Wizard Field A

Chamber Model = ADS N-12 48" (ADS N-12® Pipe)
Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf
Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf
Row Length Adjustment= +25.00' x 12.40 sf x 2 rows

54.0" Wide + 25.0" Spacing = 79.0" C-C Row Spacing

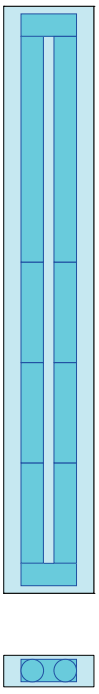
4 Chambers/Row x 20.00' Long +25.00' Row Adjustment +4.50' Header x 2 = 114.00' Row Length +18.0" End Stone x 2 = 117.00' Base Length
2 Rows x 54.0" Wide + 25.0" Spacing x 1 + 41.5" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 54.0" Chamber Height + 9.5" Stone Cover = 6.29' Field Height

8 Chambers x 248.0 cf +25.00' Row Adjustment x 12.40 sf x 2 Rows + 11.08' Header x 12.40 sf x 2 = 2,878.9 cf Chamber Storage
8 Chambers x 297.0 cf +25.00' Row Adjustment x 14.85 sf x 2 Rows + 11.08' Header x 14.85 sf x 2 = 3,447.4 cf Displacement

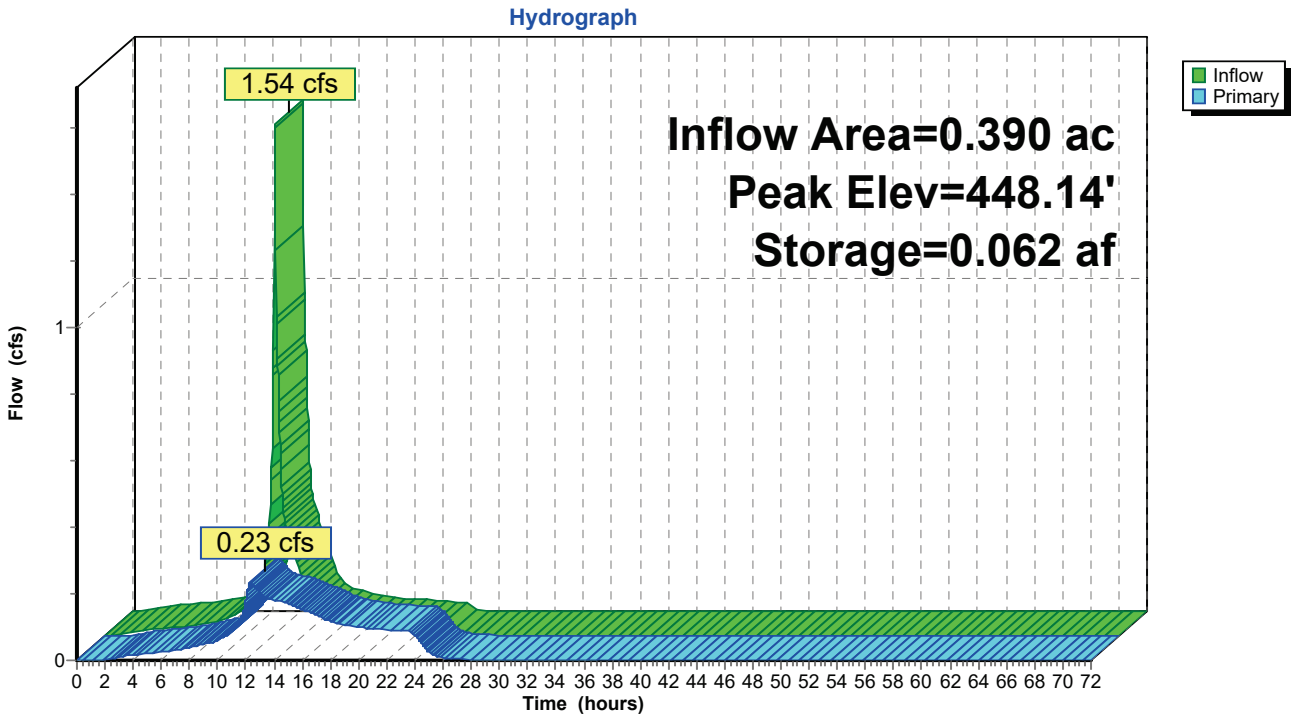
13,250.6 cf Field - 3,447.4 cf Chambers = 9,803.2 cf Stone x 40.0% Voids = 3,921.3 cf Stone Storage

Chamber Storage + Stone Storage = 6,800.1 cf = 0.156 af
Overall Storage Efficiency = 51.3%
Overall System Size = 117.00' x 18.00' x 6.29'

8 Chambers
490.8 cy Field
363.1 cy Stone



Pond 28P: PP-1


Hydrograph
1.54 cfs
0.23 cfs
Inflow Area=0.390 ac
Peak Elev=448.14'
Storage=0.062 af
Inflow
Primary
Flow (cfs)
0
1
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 28P: PP-1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
445.45	0.00	448.10	0.26	450.75	0.81
445.50	0.00	448.15	0.26	450.80	0.82
445.55	0.02	448.20	0.27	450.85	0.83
445.60	0.03	448.25	0.27	450.90	0.85
445.65	0.05	448.30	0.27	450.95	0.86
445.70	0.06	448.35	0.27	451.00	0.87
445.75	0.07	448.40	0.28	451.05	0.88
445.80	0.08	448.45	0.28	451.10	0.89
445.85	0.09	448.50	0.28	451.15	0.90
445.90	0.10	448.55	0.28	451.20	0.91
445.95	0.10	448.60	0.29	451.25	0.92
446.00	0.11	448.65	0.29	451.30	0.93
446.05	0.12	448.70	0.29	451.35	0.94
446.10	0.12	448.75	0.29	451.40	0.95
446.15	0.13	448.80	0.30	451.45	0.96
446.20	0.13	448.85	0.30	451.50	0.97
446.25	0.14	448.90	0.30	451.55	0.98
446.30	0.14	448.95	0.30	451.60	0.99
446.35	0.15	449.00	0.30	451.65	1.00
446.40	0.15	449.05	0.31	451.70	**1.01**
446.45	0.16	449.10	0.31		
446.50	0.16	449.15	0.31		
446.55	0.16	449.20	0.31		
446.60	0.17	449.25	0.32		
446.65	0.17	449.30	0.32		
446.70	0.18	449.35	0.32		
446.75	0.18	449.40	0.32		
446.80	0.18	449.45	0.32		
446.85	0.19	449.50	0.33		
446.90	0.19	449.55	0.33		
446.95	0.19	449.60	0.35		
447.00	0.20	449.65	0.38		
447.05	0.20	449.70	0.42		
447.10	0.20	449.75	0.46		
447.15	0.21	449.80	0.49		
447.20	0.21	449.85	0.52		
447.25	0.21	449.90	0.55		
447.30	0.22	449.95	0.57		
447.35	0.22	450.00	0.59		
447.40	0.22	450.05	0.61		
447.45	0.23	450.10	0.63		
447.50	0.23	450.15	0.64		
447.55	0.23	450.20	0.66		
447.60	0.23	450.25	0.68		
447.65	0.24	450.30	0.69		
447.70	0.24	450.35	0.71		
447.75	0.24	450.40	0.72		
447.80	0.25	450.45	0.74		
447.85	0.25	450.50	0.75		
447.90	0.25	450.55	0.76		
447.95	0.25	450.60	0.77		
448.00	0.26	450.65	0.79		
448.05	0.26	450.70	0.80		

Stage-Area-Storage for Pond 28P: PP-1

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
445.45	0.000	448.10	0.061	450.75	0.137
445.50	0.001	448.15	0.063	450.80	0.138
445.55	0.002	448.20	0.064	450.85	0.139
445.60	0.003	448.25	0.066	450.90	0.140
445.65	0.004	448.30	0.067	450.95	0.141
445.70	0.005	448.35	0.069	451.00	0.142
445.75	0.006	448.40	0.071	451.05	0.143
445.80	0.007	448.45	0.072	451.10	0.144
445.85	0.008	448.50	0.074	451.15	0.145
445.90	0.009	448.55	0.075	451.20	0.146
445.95	0.010	448.60	0.077	451.25	0.147
446.00	0.011	448.65	0.078	451.30	0.148
446.05	0.012	448.70	0.080	451.35	0.149
446.10	0.013	448.75	0.082	451.40	0.149
446.15	0.014	448.80	0.083	451.45	0.150
446.20	0.015	448.85	0.085	451.50	0.151
446.25	0.015	448.90	0.086	451.55	0.152
446.30	0.016	448.95	0.088	451.60	0.153
446.35	0.017	449.00	0.090	451.65	0.154
446.40	0.018	449.05	0.091	451.70	**0.155**
446.45	0.019	449.10	0.093		
446.50	0.020	449.15	0.094		
446.55	0.021	449.20	0.096		
446.60	0.022	449.25	0.097		
446.65	0.023	449.30	0.099		
446.70	0.023	449.35	0.100		
446.75	0.024	449.40	0.102		
446.80	0.025	449.45	0.103		
446.85	0.026	449.50	0.105		
446.90	0.028	449.55	0.107		
446.95	0.029	449.60	0.108		
447.00	0.030	449.65	0.110		
447.05	0.031	449.70	0.111		
447.10	0.032	449.75	0.112		
447.15	0.034	449.80	0.114		
447.20	0.035	449.85	0.115		
447.25	0.036	449.90	0.117		
447.30	0.038	449.95	0.118		
447.35	0.039	450.00	0.120		
447.40	0.040	450.05	0.121		
447.45	0.042	450.10	0.122		
447.50	0.043	450.15	0.124		
447.55	0.045	450.20	0.125		
447.60	0.046	450.25	0.126		
447.65	0.048	450.30	0.128		
447.70	0.049	450.35	0.129		
447.75	0.051	450.40	0.130		
447.80	0.052	450.45	0.131		
447.85	0.054	450.50	0.133		
447.90	0.055	450.55	0.134		
447.95	0.057	450.60	0.135		
448.00	0.058	450.65	0.136		
448.05	0.060	450.70	0.137		

Summary for Pond 29P: PP-2

Inflow Area = 1.060 ac, 68.87% Impervious, Inflow Depth = 5.31" for 10-Year-2050 event
Inflow = 1.36 cfs @ 12.08 hrs, Volume= 0.469 af
Outflow = 0.50 cfs @ 14.24 hrs, Volume= 0.469 af, Atten= 63%, Lag= 129.7 min
Primary = 0.50 cfs @ 14.24 hrs, Volume= 0.469 af
Routed to Link 25L : PDA-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 446.92' @ 14.24 hrs Surf.Area= 0.048 ac Storage= 0.106 af

Plug-Flow detention time= 165.3 min calculated for 0.469 af (100% of inflow)
Center-of-Mass det. time= 164.8 min (1,048.3 - 883.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	442.94'	0.108 af	**18.00'W x 116.17'L x 8.17'H Field A** 0.392 af Overall - 0.121 af Embedded = 0.271 af x 40.0% Voids
#2A	443.94'	0.102 af	**ADS N-12 60"** x 6 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf Row Length Adjustment= +42.00' x 19.30 sf x 2 rows 13.17' Header x 19.30 sf x 2 = 508.3 cf Inside
		0.210 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	442.94'	**15.0" Round Culvert** L= 23.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 442.94' / 442.87' S= 0.0030 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	442.94'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	446.75'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.50 cfs @ 14.24 hrs HW=446.92' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.50 cfs of 8.55 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.32 cfs @ 9.48 fps)
  └**3=Orifice/Grate** (Orifice Controls 0.17 cfs @ 1.42 fps)

Pond 29P: PP-2 - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf
Row Length Adjustment= +42.00' x 19.30 sf x 2 rows

67.0" Wide + 24.0" Spacing = 91.0" C-C Row Spacing

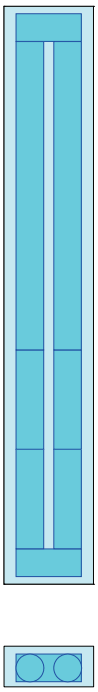
3 Chambers/Row x 20.00' Long +42.00' Row Adjustment +5.58' Header x 2 = 113.17' Row Length +18.0" End Stone x 2 = 116.17' Base Length
2 Rows x 67.0" Wide + 24.0" Spacing x 1 + 29.0" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 67.0" Chamber Height + 19.0" Stone Cover = 8.17' Field Height

6 Chambers x 386.0 cf +42.00' Row Adjustment x 19.30 sf x 2 Rows + 13.17' Header x 19.30 sf x 2 = 4,445.5 cf Chamber Storage
6 Chambers x 458.4 cf +42.00' Row Adjustment x 22.92 sf x 2 Rows + 13.17' Header x 22.92 sf x 2 = 5,279.5 cf Displacement

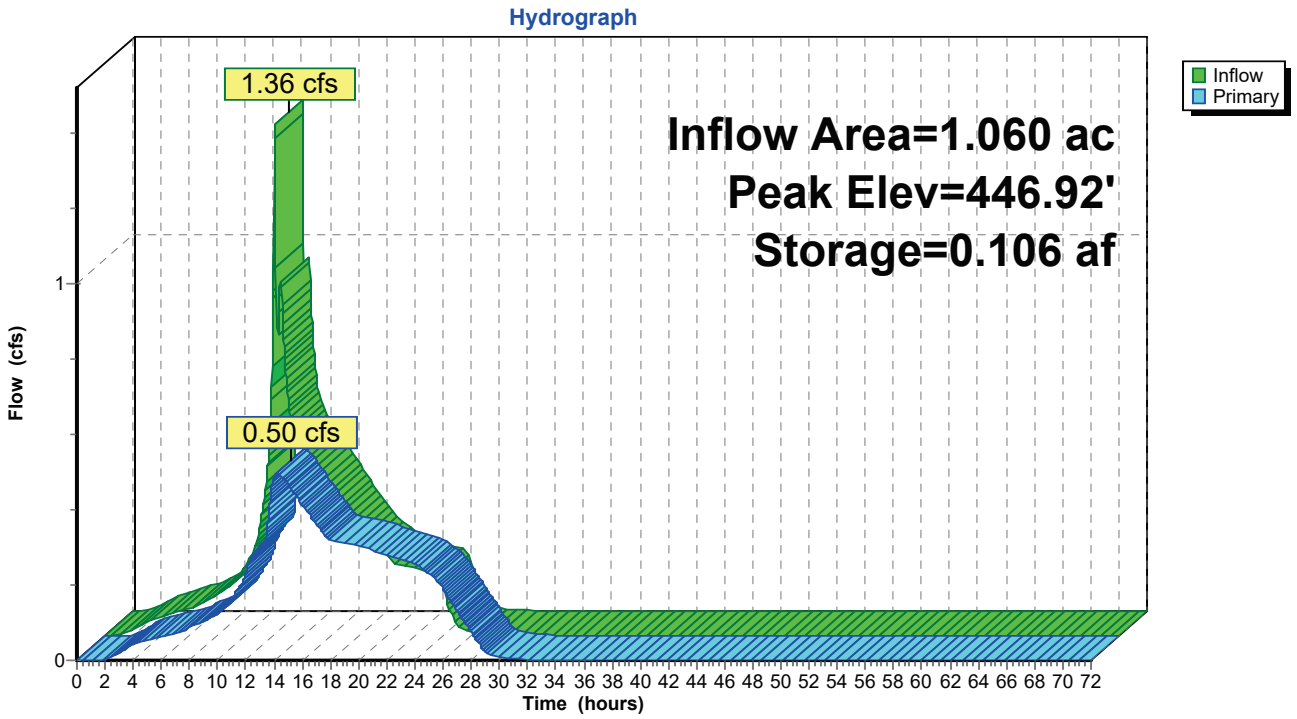
17,078.6 cf Field - 5,279.5 cf Chambers = 11,799.2 cf Stone x 40.0% Voids = 4,719.7 cf Stone Storage

Chamber Storage + Stone Storage = 9,165.1 cf = 0.210 af
Overall Storage Efficiency = 53.7%
Overall System Size = 116.17' x 18.00' x 8.17'

6 Chambers
632.5 cy Field
437.0 cy Stone



Pond 29P: PP-2


Hydrograph
1.36 cfs
0.50 cfs
Inflow Area=1.060 ac
Peak Elev=446.92'
Storage=0.106 af
Inflow
Primary
Flow (cfs)
0
1
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 29P: PP-2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
442.94	0.00	445.59	0.26	448.24	2.48	450.89	4.19
442.99	0.00	445.64	0.26	448.29	2.52	450.94	4.21
443.04	0.02	445.69	0.27	448.34	2.57	450.99	4.24
443.09	0.03	445.74	0.27	448.39	2.61	451.04	4.26
443.14	0.05	445.79	0.27	448.44	2.65	451.09	**4.29**
443.19	0.06	445.84	0.27	448.49	2.69		
443.24	0.07	445.89	0.28	448.54	2.73		
443.29	0.08	445.94	0.28	448.59	2.77		
443.34	0.09	445.99	0.28	448.64	2.81		
443.39	0.10	446.04	0.28	448.69	2.85		
443.44	0.10	446.09	0.29	448.74	2.89		
443.49	0.11	446.14	0.29	448.79	2.92		
443.54	0.12	446.19	0.29	448.84	2.96		
443.59	0.12	446.24	0.29	448.89	3.00		
443.64	0.13	446.29	0.30	448.94	3.03		
443.69	0.13	446.34	0.30	448.99	3.07		
443.74	0.14	446.39	0.30	449.04	3.10		
443.79	0.14	446.44	0.30	449.09	3.14		
443.84	0.15	446.49	0.30	449.14	3.17		
443.89	0.15	446.54	0.31	449.19	3.21		
443.94	0.16	446.59	0.31	449.24	3.24		
443.99	0.16	446.64	0.31	449.29	3.27		
444.04	0.16	446.69	0.31	449.34	3.30		
444.09	0.17	446.74	0.32	449.39	3.34		
444.14	0.17	446.79	0.33	449.44	3.37		
444.19	0.18	446.84	0.37	449.49	3.40		
444.24	0.18	446.89	0.44	449.54	3.43		
444.29	0.18	446.94	0.53	449.59	3.46		
444.34	0.19	446.99	0.64	449.64	3.49		
444.39	0.19	447.04	0.76	449.69	3.52		
444.44	0.19	447.09	0.89	449.74	3.55		
444.49	0.20	447.14	1.03	449.79	3.58		
444.54	0.20	447.19	1.16	449.84	3.61		
444.59	0.20	447.24	1.27	449.89	3.64		
444.64	0.21	447.29	1.36	449.94	3.67		
444.69	0.21	447.34	1.44	449.99	3.70		
444.74	0.21	447.39	1.52	450.04	3.73		
444.79	0.22	447.44	1.60	450.09	3.76		
444.84	0.22	447.49	1.67	450.14	3.79		
444.89	0.22	447.54	1.74	450.19	3.82		
444.94	0.23	447.59	1.80	450.24	3.84		
444.99	0.23	447.64	1.86	450.29	3.87		
445.04	0.23	447.69	1.92	450.34	3.90		
445.09	0.23	447.74	1.98	450.39	3.93		
445.14	0.24	447.79	2.04	450.44	3.95		
445.19	0.24	447.84	2.09	450.49	3.98		
445.24	0.24	447.89	2.15	450.54	4.01		
445.29	0.25	447.94	2.20	450.59	4.03		
445.34	0.25	447.99	2.25	450.64	4.06		
445.39	0.25	448.04	2.30	450.69	4.09		
445.44	0.25	448.09	2.34	450.74	4.11		
445.49	0.26	448.14	2.39	450.79	4.14		
445.54	0.26	448.19	2.43	450.84	4.16		

Stage-Area-Storage for Pond 29P: PP-2

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
442.94	0.000	448.24	0.150
443.04	0.002	448.34	0.153
443.14	0.004	448.44	0.156
443.24	0.006	448.54	0.159
443.34	0.008	448.64	0.161
443.44	0.010	448.74	0.164
443.54	0.012	448.84	0.167
443.64	0.013	448.94	0.169
443.74	0.015	449.04	0.172
443.84	0.017	449.14	0.174
443.94	0.019	449.24	0.176
444.04	0.021	449.34	0.177
444.14	0.022	449.44	0.179
444.24	0.024	449.54	0.180
444.34	0.026	449.64	0.182
444.44	0.028	449.74	0.184
444.54	0.030	449.84	0.186
444.64	0.033	449.94	0.188
444.74	0.035	450.04	0.190
444.84	0.038	450.14	0.192
444.94	0.041	450.24	0.194
445.04	0.044	450.34	0.196
445.14	0.047	450.44	0.198
445.24	0.050	450.54	0.200
445.34	0.053	450.64	0.201
445.44	0.056	450.74	0.203
445.54	0.059	450.84	0.205
445.64	0.063	450.94	0.207
445.74	0.066	451.04	**0.209**
445.84	0.069		
445.94	0.073		
446.04	0.076		
446.14	0.079		
446.24	0.083		
446.34	0.086		
446.44	0.090		
446.54	0.093		
446.64	0.096		
446.74	0.100		
446.84	0.103		
446.94	0.107		
447.04	0.110		
447.14	0.114		
447.24	0.117		
447.34	0.120		
447.44	0.124		
447.54	0.127		
447.64	0.130		
447.74	0.134		
447.84	0.137		
447.94	0.140		
448.04	0.143		
448.14	0.147		

Summary for Pond 30P: PP-3

Inflow Area = 0.550 ac, 61.82% Impervious, Inflow Depth = 5.13" for 10-Year-2050 event
Inflow = 2.94 cfs @ 12.08 hrs, Volume= 0.235 af
Outflow = 0.58 cfs @ 12.50 hrs, Volume= 0.235 af, Atten= 80%, Lag= 24.9 min
Primary = 0.58 cfs @ 12.50 hrs, Volume= 0.235 af
Routed to Pond 29P : PP-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 450.65' @ 12.50 hrs Surf.Area= 0.026 ac Storage= 0.078 af

Plug-Flow detention time= 110.1 min calculated for 0.235 af (100% of inflow)
Center-of-Mass det. time= 110.3 min (876.8 - 766.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.44'	0.078 af	**18.00'W x 62.17'L x 10.08'H Field A** 0.259 af Overall - 0.064 af Embedded = 0.195 af x 40.0% Voids
#2A	446.44'	0.054 af	**ADS N-12 60"** x 4 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf Row Length Adjustment= +8.00' x 19.30 sf x 2 rows 13.17' Header x 19.30 sf x 2 = 508.3 cf Inside
		0.132 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	445.44'	**15.0" Round Culvert** L= 19.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 445.44' / 445.38' S= 0.0031 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	445.44'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	450.44'	**5.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	455.00'	**6.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.58 cfs @ 12.50 hrs HW=450.65' TW=445.92' (Dynamic Tailwater)
1=Culvert (Passes 0.58 cfs of 9.99 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.36 cfs @ 10.48 fps)
3=Orifice/Grate (Orifice Controls 0.22 cfs @ 1.57 fps)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 30P: PP-3 - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf
Row Length Adjustment= +8.00' x 19.30 sf x 2 rows

67.0" Wide + 24.0" Spacing = 91.0" C-C Row Spacing

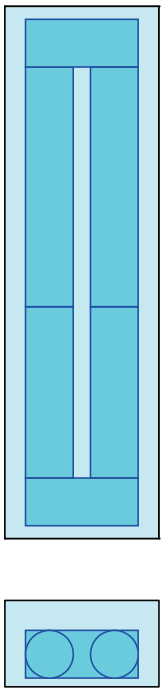
2 Chambers/Row x 20.00' Long +8.00' Row Adjustment +5.58' Header x 2 = 59.17' Row Length +18.0" End Stone x 2 = 62.17' Base Length
2 Rows x 67.0" Wide + 24.0" Spacing x 1 + 29.0" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 67.0" Chamber Height + 42.0" Stone Cover = 10.08' Field Height

4 Chambers x 386.0 cf +8.00' Row Adjustment x 19.30 sf x 2 Rows + 13.17' Header x 19.30 sf x 2 = 2,361.1 cf Chamber Storage
4 Chambers x 458.4 cf +8.00' Row Adjustment x 22.92 sf x 2 Rows + 13.17' Header x 22.92 sf x 2 = 2,804.0 cf Displacement

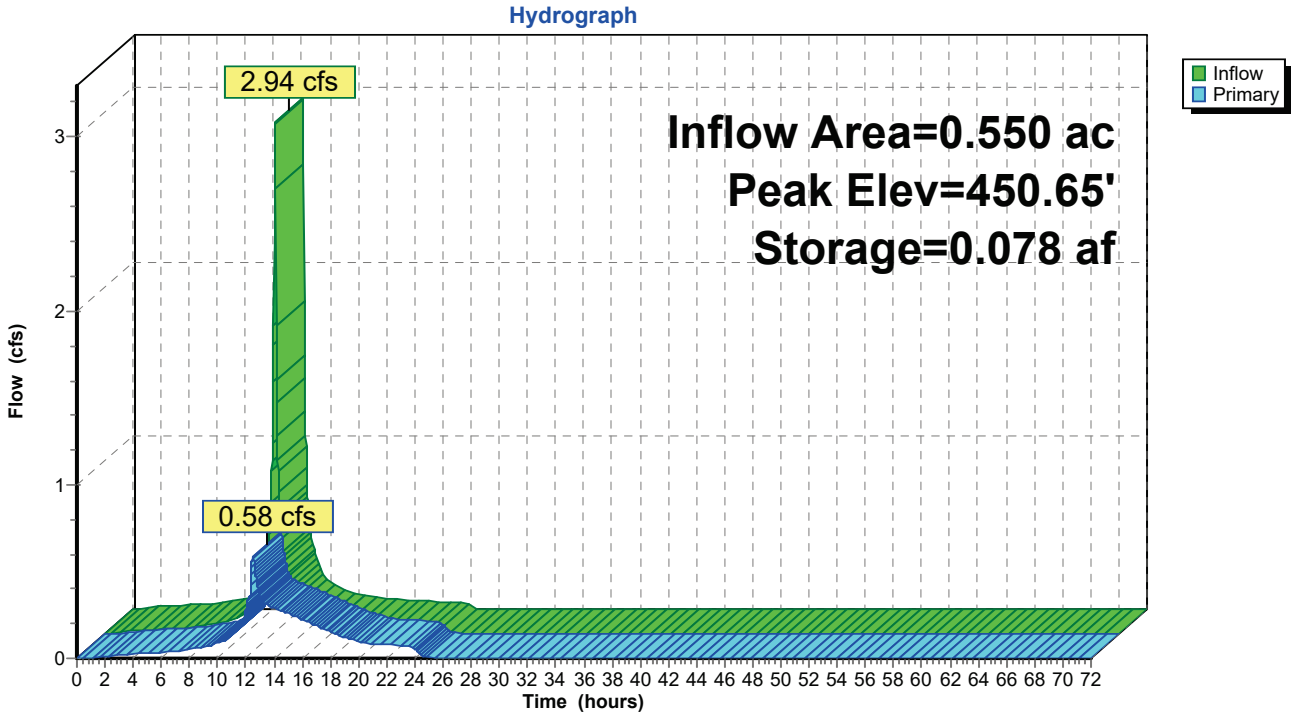
11,284.6 cf Field - 2,804.0 cf Chambers = 8,480.6 cf Stone x 40.0% Voids = 3,392.2 cf Stone Storage

Chamber Storage + Stone Storage = 5,753.3 cf = 0.132 af
Overall Storage Efficiency = 51.0%
Overall System Size = 62.17' x 18.00' x 10.08'

4 Chambers
417.9 cy Field
314.1 cy Stone



Pond 30P: PP-3


Hydrograph
2.94 cfs
0.58 cfs
Inflow Area=0.550 ac
Peak Elev=450.65'
Storage=0.078 af
Inflow
Primary
Flow (cfs)
0
1
2
3
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 30P: PP-3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
445.44	0.00	448.09	0.26	450.74	0.77	453.39	2.63
445.49	0.00	448.14	0.26	450.79	0.87	453.44	2.66
445.54	0.02	448.19	0.27	450.84	0.96	453.49	2.68
445.59	0.03	448.24	0.27	450.89	1.03	453.54	2.70
445.64	0.05	448.29	0.27	450.94	1.09	453.59	2.72
445.69	0.06	448.34	0.27	450.99	1.15	453.64	2.74
445.74	0.07	448.39	0.28	451.04	1.21	453.69	2.76
445.79	0.08	448.44	0.28	451.09	1.26	453.74	2.78
445.84	0.09	448.49	0.28	451.14	1.31	453.79	2.80
445.89	0.10	448.54	0.28	451.19	1.36	453.84	2.82
445.94	0.10	448.59	0.29	451.24	1.40	453.89	2.84
445.99	0.11	448.64	0.29	451.29	1.45	453.94	2.86
446.04	0.12	448.69	0.29	451.34	1.49	453.99	2.88
446.09	0.12	448.74	0.29	451.39	1.53	454.04	2.90
446.14	0.13	448.79	0.30	451.44	1.57	454.09	2.92
446.19	0.13	448.84	0.30	451.49	1.60	454.14	2.93
446.24	0.14	448.89	0.30	451.54	1.64	454.19	2.95
446.29	0.14	448.94	0.30	451.59	1.68	454.24	2.97
446.34	0.15	448.99	0.30	451.64	1.71	454.29	2.99
446.39	0.15	449.04	0.31	451.69	1.75	454.34	3.01
446.44	0.16	449.09	0.31	451.74	1.78	454.39	3.03
446.49	0.16	449.14	0.31	451.79	1.81	454.44	3.05
446.54	0.16	449.19	0.31	451.84	1.85	454.49	3.06
446.59	0.17	449.24	0.32	451.89	1.88	454.54	3.08
446.64	0.17	449.29	0.32	451.94	1.91	454.59	3.10
446.69	0.18	449.34	0.32	451.99	1.94	454.64	3.12
446.74	0.18	449.39	0.32	452.04	1.97	454.69	3.14
446.79	0.18	449.44	0.32	452.09	2.00	454.74	3.15
446.84	0.19	449.49	0.33	452.14	2.03	454.79	3.17
446.89	0.19	449.54	0.33	452.19	2.05	454.84	3.19
446.94	0.19	449.59	0.33	452.24	2.08	454.89	3.21
446.99	0.20	449.64	0.33	452.29	2.11	454.94	3.22
447.04	0.20	449.69	0.33	452.34	2.14	454.99	3.24
447.09	0.20	449.74	0.34	452.39	2.16	455.04	3.39
447.14	0.21	449.79	0.34	452.44	2.19	455.09	3.73
447.19	0.21	449.84	0.34	452.49	2.21	455.14	4.17
447.24	0.21	449.89	0.34	452.54	2.24	455.19	4.70
447.29	0.22	449.94	0.34	452.59	2.27	455.24	5.32
447.34	0.22	449.99	0.35	452.64	2.29	455.29	6.02
447.39	0.22	450.04	0.35	452.69	2.31	455.34	6.79
447.44	0.23	450.09	0.35	452.74	2.34	455.39	7.63
447.49	0.23	450.14	0.35	452.79	2.36	455.44	8.56
447.54	0.23	450.19	0.35	452.84	2.39	455.49	**9.56**
447.59	0.23	450.24	0.36	452.89	2.41		
447.64	0.24	450.29	0.36	452.94	2.43		
447.69	0.24	450.34	0.36	452.99	2.46		
447.74	0.24	450.39	0.36	453.04	2.48		
447.79	0.25	450.44	0.36	453.09	2.50		
447.84	0.25	450.49	0.38	453.14	2.53		
447.89	0.25	450.54	0.42	453.19	2.55		
447.94	0.25	450.59	0.49	453.24	2.57		
447.99	0.26	450.64	0.57	453.29	2.59		
448.04	0.26	450.69	0.66	453.34	2.61		

Stage-Area-Storage for Pond 30P: PP-3

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
445.44	0.000	450.74	0.080
445.54	0.001	450.84	0.082
445.64	0.002	450.94	0.083
445.74	0.003	451.04	0.085
445.84	0.004	451.14	0.086
445.94	0.005	451.24	0.088
446.04	0.006	451.34	0.089
446.14	0.007	451.44	0.090
446.24	0.008	451.54	0.092
446.34	0.009	451.64	0.093
446.44	0.010	451.74	0.094
446.54	0.011	451.84	0.094
446.64	0.012	451.94	0.095
446.74	0.013	452.04	0.096
446.84	0.014	452.14	0.097
446.94	0.015	452.24	0.098
447.04	0.016	452.34	0.099
447.14	0.018	452.44	0.100
447.24	0.019	452.54	0.101
447.34	0.020	452.64	0.102
447.44	0.022	452.74	0.103
447.54	0.024	452.84	0.104
447.64	0.025	452.94	0.106
447.74	0.027	453.04	0.107
447.84	0.028	453.14	0.108
447.94	0.030	453.24	0.109
448.04	0.032	453.34	0.110
448.14	0.034	453.44	0.111
448.24	0.035	453.54	0.112
448.34	0.037	453.64	0.113
448.44	0.039	453.74	0.114
448.54	0.041	453.84	0.115
448.64	0.042	453.94	0.116
448.74	0.044	454.04	0.117
448.84	0.046	454.14	0.118
448.94	0.048	454.24	0.119
449.04	0.050	454.34	0.120
449.14	0.052	454.44	0.121
449.24	0.053	454.54	0.122
449.34	0.055	454.64	0.123
449.44	0.057	454.74	0.124
449.54	0.059	454.84	0.125
449.64	0.061	454.94	0.126
449.74	0.062	455.04	0.127
449.84	0.064	455.14	0.128
449.94	0.066	455.24	0.129
450.04	0.068	455.34	0.130
450.14	0.070	455.44	**0.131**
450.24	0.071		
450.34	0.073		
450.44	0.075		
450.54	0.077		
450.64	0.078		

Summary for Pond 31P: PP-4

Inflow Area = 0.200 ac, 90.00% Impervious, Inflow Depth = 5.87" for 10-Year-2050 event
Inflow = 1.27 cfs @ 12.09 hrs, Volume= 0.098 af
Outflow = 0.58 cfs @ 12.17 hrs, Volume= 0.098 af, Atten= 54%, Lag= 5.0 min
Primary = 0.58 cfs @ 12.17 hrs, Volume= 0.098 af
Routed to Pond 28P : PP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 454.68' @ 12.17 hrs Surf.Area= 0.014 ac Storage= 0.020 af

Plug-Flow detention time= 25.1 min calculated for 0.098 af (100% of inflow)
Center-of-Mass det. time= 25.3 min (772.9 - 747.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	451.95'	0.023 af	**18.00'W x 33.00'L x 5.83'H Field A** 0.080 af Overall - 0.022 af Embedded = 0.058 af x 40.0% Voids
#2A	452.45'	0.018 af	**ADS N-12 48"** x 2 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf Row Length Adjustment= +1.00' x 12.40 sf x 2 rows 11.08' Header x 12.40 sf x 2 = 274.9 cf Inside
		0.041 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	449.63'	**15.0" Round Culvert** L= 29.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 449.63' / 449.55' S= 0.0028 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	451.95'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	453.95'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	457.00'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.58 cfs @ 12.17 hrs HW=454.68' TW=447.32' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.58 cfs of 9.81 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.27 cfs @ 7.80 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.31 cfs @ 3.61 fps)
  └**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 31P: PP-4 - Chamber Wizard Field A

Chamber Model = ADS N-12 48" (ADS N-12® Pipe)
Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf
Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf
Row Length Adjustment= +1.00' x 12.40 sf x 2 rows

54.0" Wide + 25.0" Spacing = 79.0" C-C Row Spacing

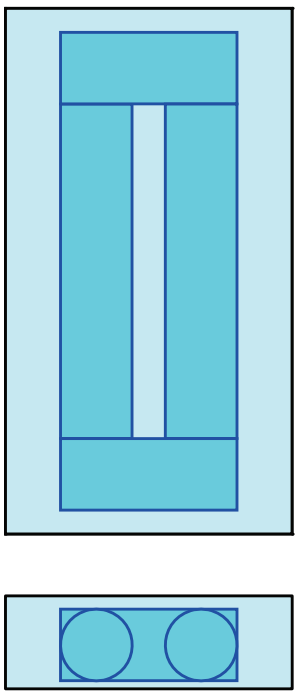
1 Chambers/Row x 20.00' Long +1.00' Row Adjustment +4.50' Header x 2 = 30.00' Row Length +18.0" End Stone x 2 = 33.00' Base Length
2 Rows x 54.0" Wide + 25.0" Spacing x 1 + 41.5" Side Stone x 2 = 18.00' Base Width
6.0" Stone Base + 54.0" Chamber Height + 10.0" Stone Cover = 5.83' Field Height

2 Chambers x 248.0 cf +1.00' Row Adjustment x 12.40 sf x 2 Rows + 11.08' Header x 12.40 sf x 2 = 795.7 cf Chamber Storage
2 Chambers x 297.0 cf +1.00' Row Adjustment x 14.85 sf x 2 Rows + 11.08' Header x 14.85 sf x 2 = 952.8 cf Displacement

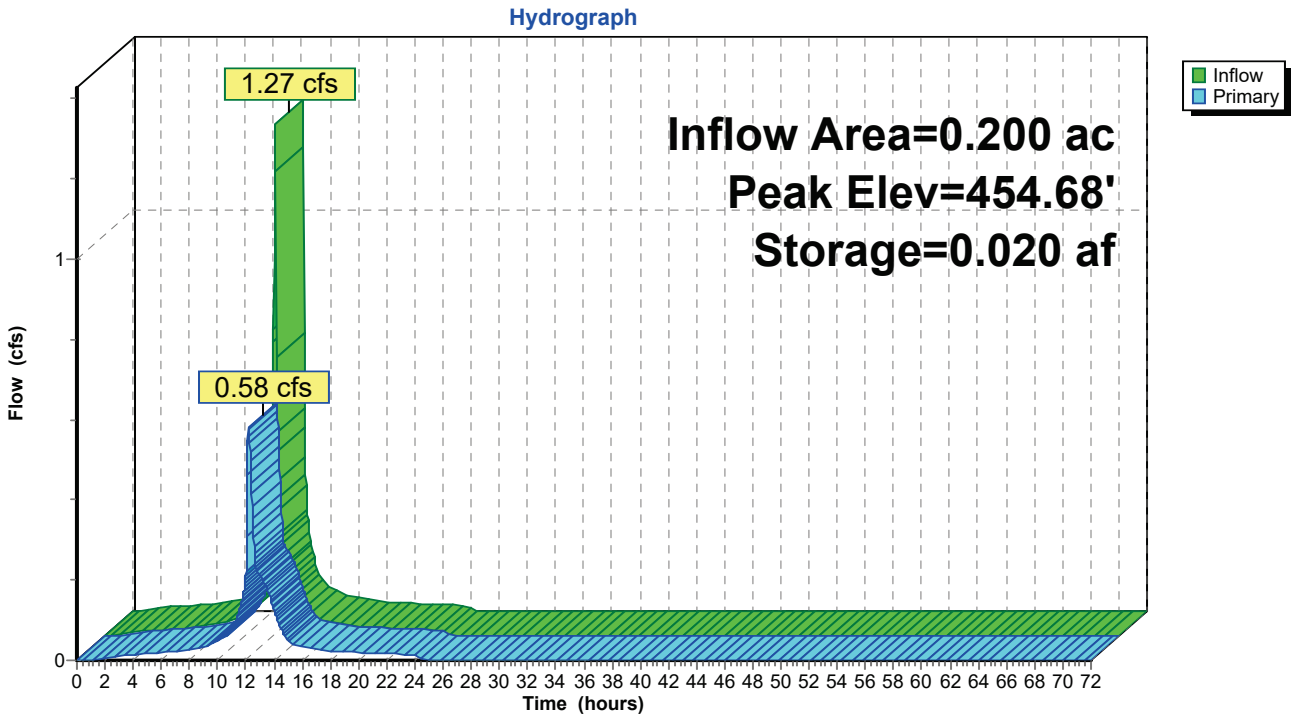
3,465.1 cf Field - 952.8 cf Chambers = 2,512.3 cf Stone x 40.0% Voids = 1,004.9 cf Stone Storage

Chamber Storage + Stone Storage = 1,800.6 cf = 0.041 af
Overall Storage Efficiency = 52.0%
Overall System Size = 33.00' x 18.00' x 5.83'

2 Chambers
128.3 cy Field
93.0 cy Stone



Pond 31P: PP-4


Hydrograph
1.27 cfs
0.58 cfs
Inflow Area=0.200 ac
Peak Elev=454.68'
Storage=0.020 af
Inflow
Primary
Flow (cfs)
0
1
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 31P: PP-4

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
451.95	0.00	454.60	0.55	457.25	2.89
452.00	0.00	454.65	0.57	457.30	3.48
452.05	0.02	454.70	0.59	457.35	4.13
452.10	0.03	454.75	0.60	457.40	4.83
452.15	0.05	454.80	0.62	457.45	5.62
452.20	0.06	454.85	0.63	457.50	6.46
452.25	0.07	454.90	0.65	457.55	7.36
452.30	0.08	454.95	0.66	457.60	8.33
452.35	0.09	455.00	0.68	457.65	9.39
452.40	0.10	455.05	0.69	457.70	10.53
452.45	0.10	455.10	0.70	457.75	**11.73**
452.50	0.11	455.15	0.72		
452.55	0.12	455.20	0.73		
452.60	0.12	455.25	0.74		
452.65	0.13	455.30	0.75		
452.70	0.13	455.35	0.76		
452.75	0.14	455.40	0.78		
452.80	0.14	455.45	0.79		
452.85	0.15	455.50	0.80		
452.90	0.15	455.55	0.81		
452.95	0.16	455.60	0.82		
453.00	0.16	455.65	0.83		
453.05	0.16	455.70	0.84		
453.10	0.17	455.75	0.85		
453.15	0.17	455.80	0.86		
453.20	0.18	455.85	0.87		
453.25	0.18	455.90	0.88		
453.30	0.18	455.95	0.89		
453.35	0.19	456.00	0.90		
453.40	0.19	456.05	0.91		
453.45	0.19	456.10	0.92		
453.50	0.20	456.15	0.93		
453.55	0.20	456.20	0.94		
453.60	0.20	456.25	0.95		
453.65	0.21	456.30	0.96		
453.70	0.21	456.35	0.97		
453.75	0.21	456.40	0.98		
453.80	0.22	456.45	0.99		
453.85	0.22	456.50	0.99		
453.90	0.22	456.55	1.00		
453.95	0.23	456.60	1.01		
454.00	0.24	456.65	1.02		
454.05	0.26	456.70	1.03		
454.10	0.28	456.75	1.04		
454.15	0.32	456.80	1.05		
454.20	0.36	456.85	1.05		
454.25	0.40	456.90	1.06		
454.30	0.43	456.95	1.07		
454.35	0.45	457.00	1.08		
454.40	0.48	457.05	1.24		
454.45	0.50	457.10	1.54		
454.50	0.52	457.15	1.92		
454.55	0.54	457.20	2.36		

Stage-Area-Storage for Pond 31P: PP-4

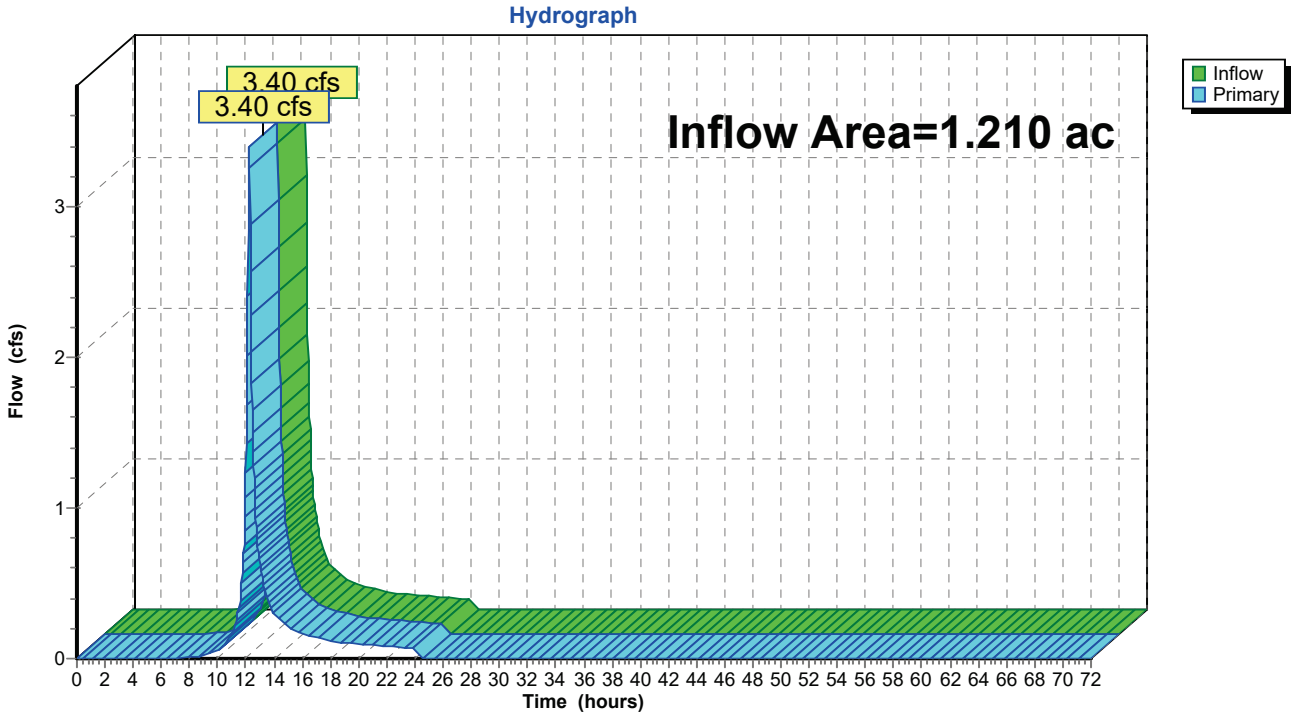
Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
451.95	0.000	454.60	0.019	457.25	0.038
452.00	0.000	454.65	0.019	457.30	0.039
452.05	0.001	454.70	0.020	457.35	0.039
452.10	0.001	454.75	0.020	457.40	0.039
452.15	0.001	454.80	0.021	457.45	0.040
452.20	0.001	454.85	0.021	457.50	0.040
452.25	0.002	454.90	0.022	457.55	0.040
452.30	0.002	454.95	0.022	457.60	0.040
452.35	0.002	455.00	0.022	457.65	0.041
452.40	0.002	455.05	0.023	457.70	0.041
452.45	0.003	455.10	0.023	457.75	**0.041**
452.50	0.003	455.15	0.024		
452.55	0.003	455.20	0.024		
452.60	0.003	455.25	0.025		
452.65	0.004	455.30	0.025		
452.70	0.004	455.35	0.025		
452.75	0.004	455.40	0.026		
452.80	0.004	455.45	0.026		
452.85	0.005	455.50	0.027		
452.90	0.005	455.55	0.027		
452.95	0.005	455.60	0.028		
453.00	0.006	455.65	0.028		
453.05	0.006	455.70	0.028		
453.10	0.006	455.75	0.029		
453.15	0.007	455.80	0.029		
453.20	0.007	455.85	0.030		
453.25	0.008	455.90	0.030		
453.30	0.008	455.95	0.030		
453.35	0.008	456.00	0.031		
453.40	0.009	456.05	0.031		
453.45	0.009	456.10	0.032		
453.50	0.009	456.15	0.032		
453.55	0.010	456.20	0.032		
453.60	0.010	456.25	0.033		
453.65	0.011	456.30	0.033		
453.70	0.011	456.35	0.033		
453.75	0.012	456.40	0.034		
453.80	0.012	456.45	0.034		
453.85	0.012	456.50	0.034		
453.90	0.013	456.55	0.035		
453.95	0.013	456.60	0.035		
454.00	0.014	456.65	0.035		
454.05	0.014	456.70	0.036		
454.10	0.014	456.75	0.036		
454.15	0.015	456.80	0.036		
454.20	0.015	456.85	0.036		
454.25	0.016	456.90	0.037		
454.30	0.016	456.95	0.037		
454.35	0.017	457.00	0.037		
454.40	0.017	457.05	0.037		
454.45	0.018	457.10	0.038		
454.50	0.018	457.15	0.038		
454.55	0.018	457.20	0.038		

Summary for Link 3L: EDA-1

Inflow Area = 1.210 ac, 3.31% Impervious, Inflow Depth = 3.20" for 10-Year-2050 event
Inflow = 3.40 cfs @ 12.22 hrs, Volume= 0.323 af
Primary = 3.40 cfs @ 12.22 hrs, Volume= 0.323 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 3L: EDA-1

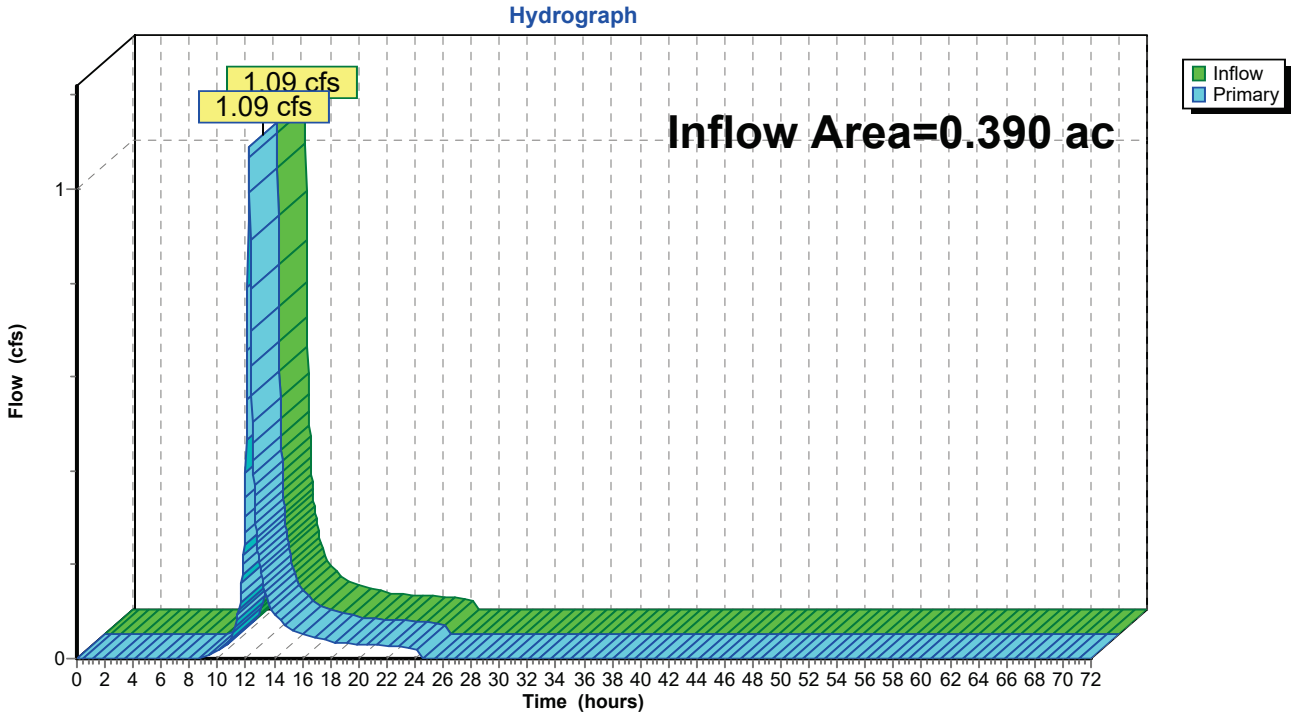


Summary for Link 6L: EDA-2

Inflow Area = 0.390 ac, 0.00% Impervious, Inflow Depth = 3.10" for 10-Year-2050 event
Inflow = 1.09 cfs @ 12.22 hrs, Volume= 0.101 af
Primary = 1.09 cfs @ 12.22 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 6L: EDA-2

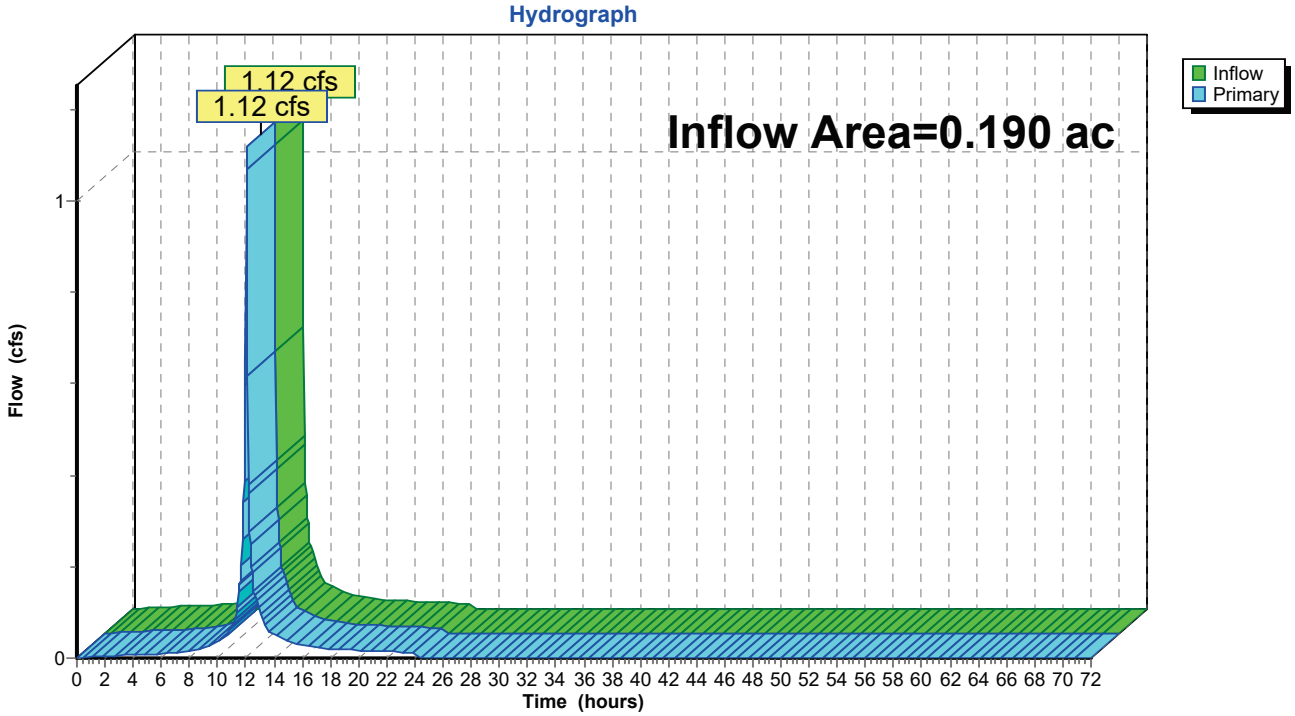


Summary for Link 9L: PDA-1A

Inflow Area = 0.190 ac, 47.37% Impervious, Inflow Depth = 4.75" for 10-Year-2050 event
Inflow = 1.12 cfs @ 12.08 hrs, Volume= 0.075 af
Primary = 1.12 cfs @ 12.08 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 28P : PP-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 9L: PDA-1A

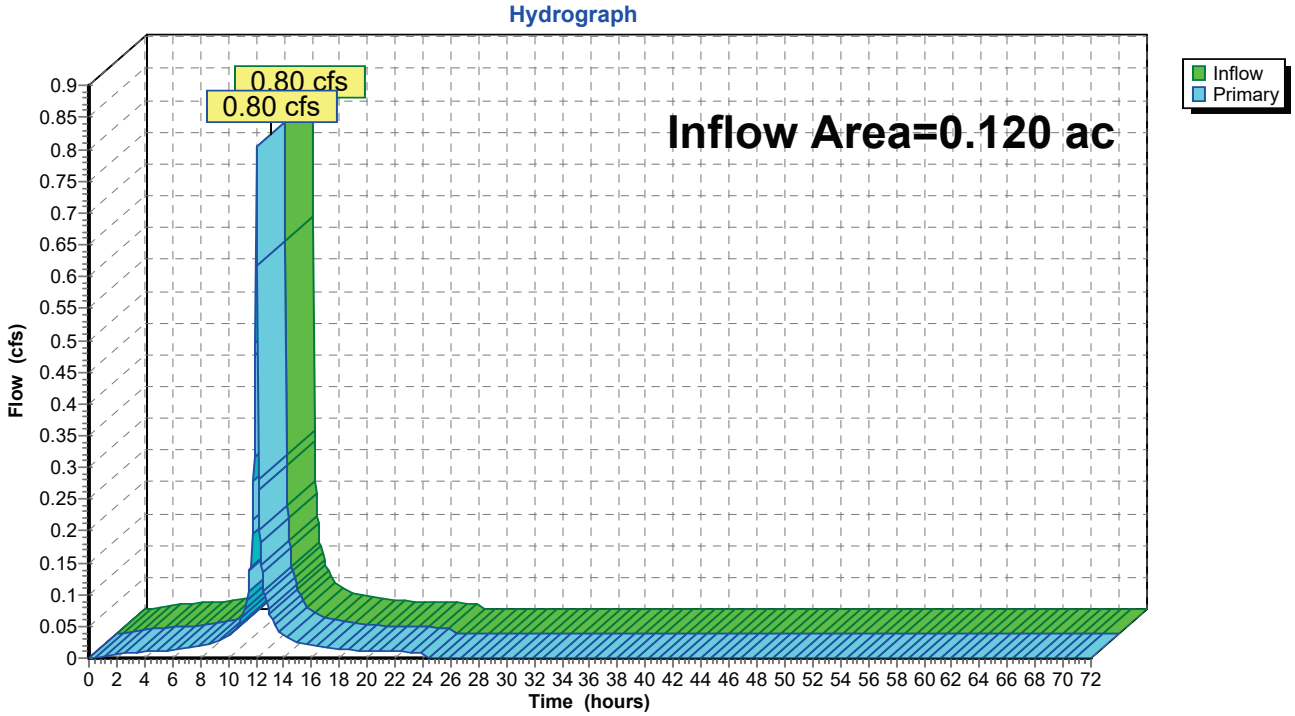


Summary for Link 12L: PDA-1B

Inflow Area = 0.120 ac,100.00% Impervious, Inflow Depth = 6.13" for 10-Year-2050 event
Inflow = 0.80 cfs @ 12.07 hrs, Volume= 0.061 af
Primary = 0.80 cfs @ 12.07 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 29P : PP-2

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 12L: PDA-1B

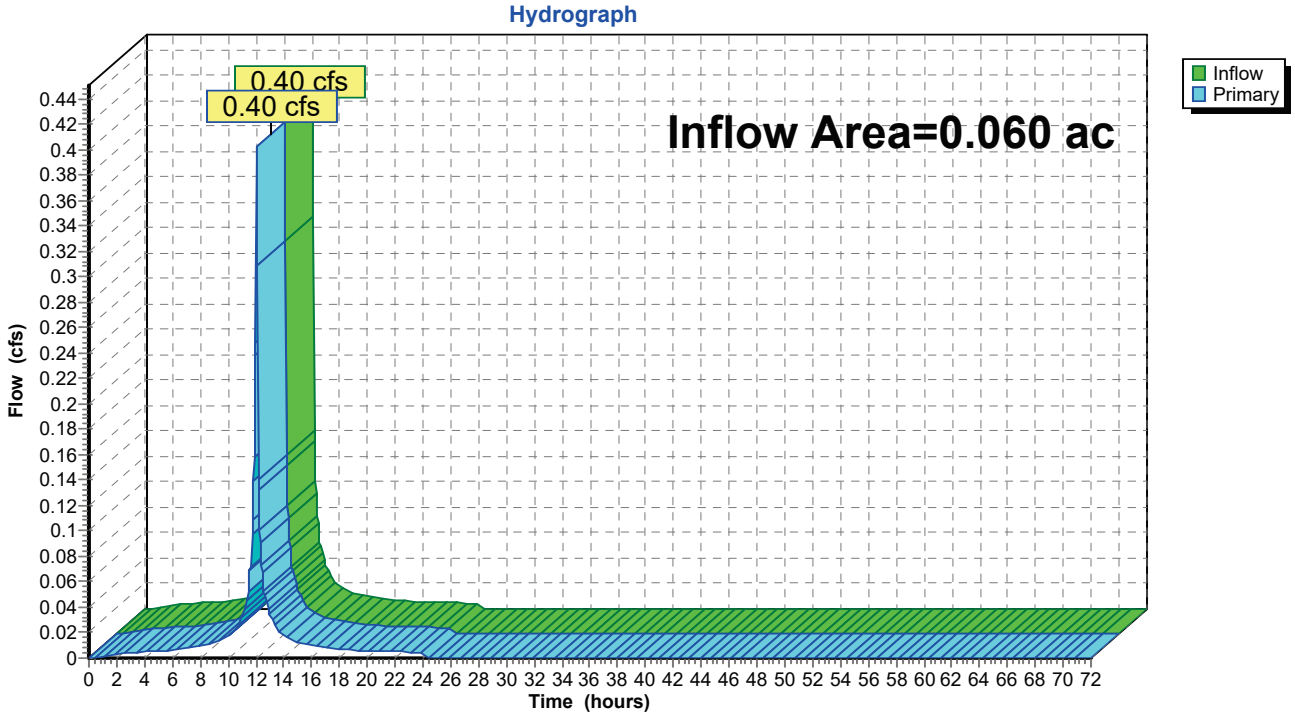


Summary for Link 15L: PDA-1C

Inflow Area = 0.060 ac,100.00% Impervious, Inflow Depth = 6.13" for 10-Year-2050 event
Inflow = 0.40 cfs @ 12.07 hrs, Volume= 0.031 af
Primary = 0.40 cfs @ 12.07 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 15L: PDA-1C

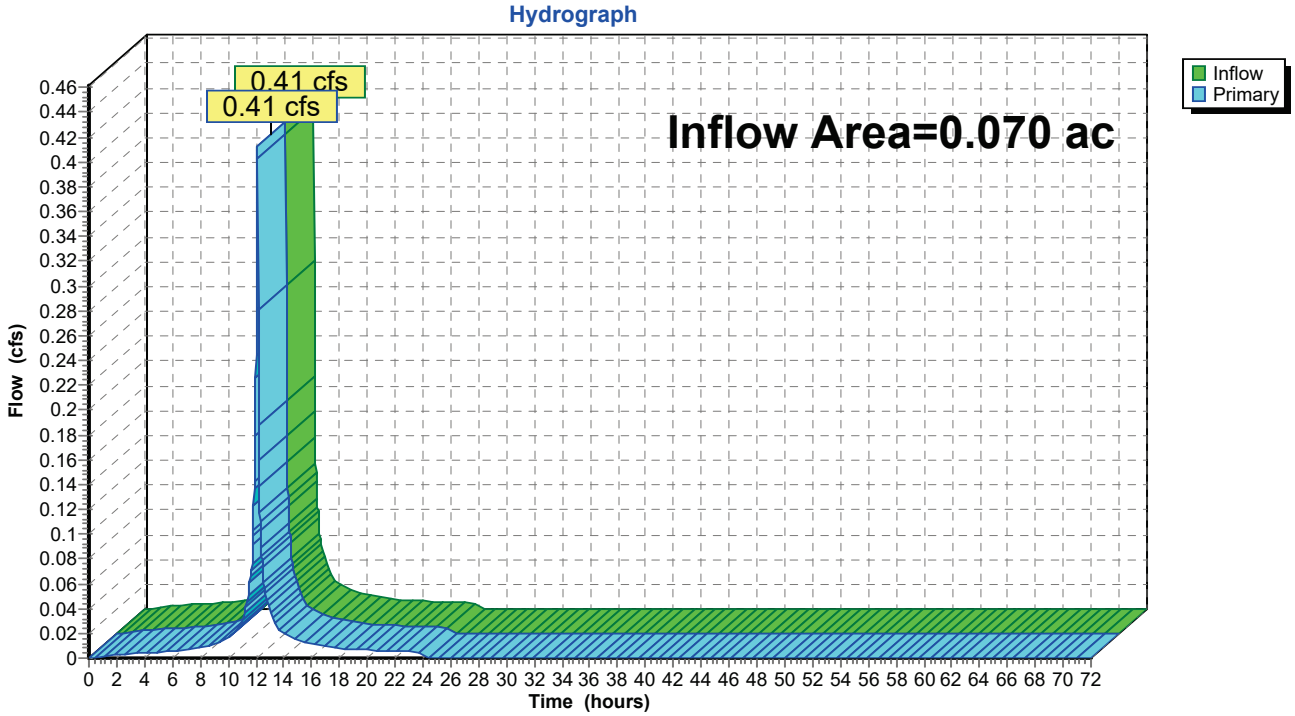


Summary for Link 18L: PDA-1D

Inflow Area = 0.070 ac, 71.43% Impervious, Inflow Depth = 5.38" for 10-Year-2050 event
Inflow = 0.41 cfs @ 12.10 hrs, Volume= 0.031 af
Primary = 0.41 cfs @ 12.10 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 31P : PP-4

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 18L: PDA-1D

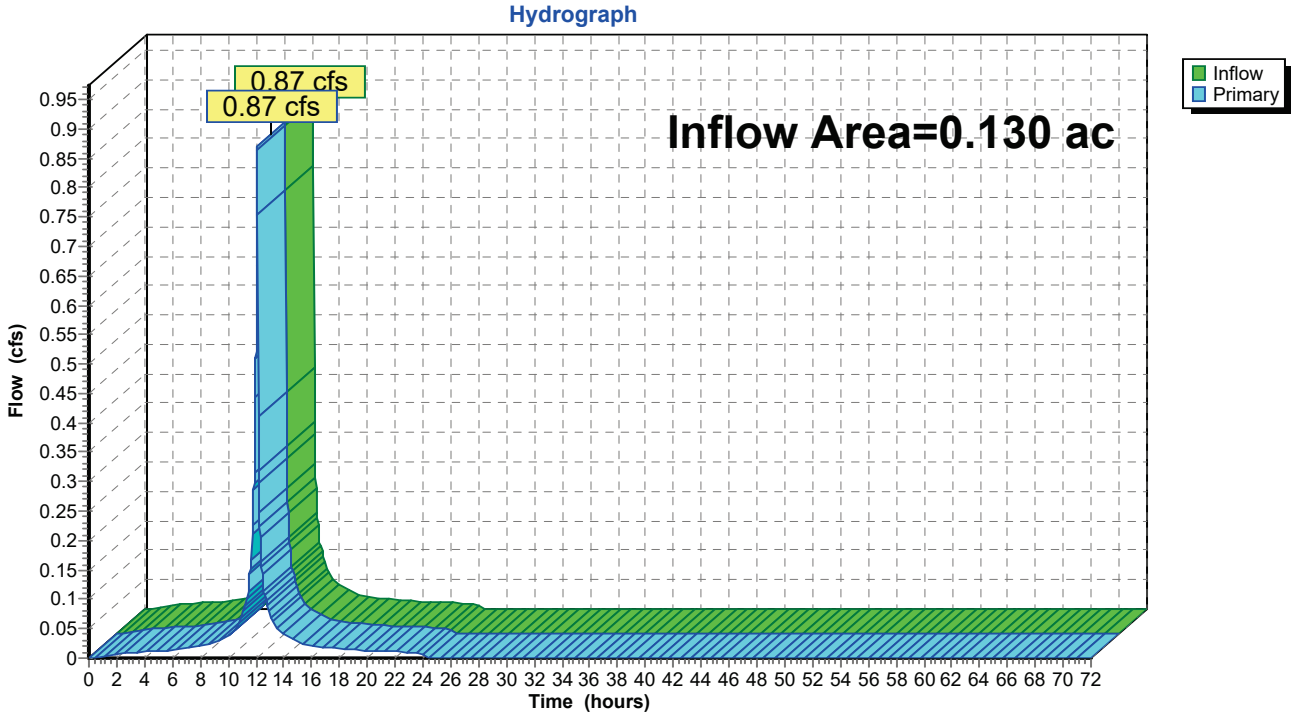


Summary for Link 21L: PDA-1E

Inflow Area = 0.130 ac,100.00% Impervious, Inflow Depth = 6.13" for 10-Year-2050 event
Inflow = 0.87 cfs @ 12.08 hrs, Volume= 0.066 af
Primary = 0.87 cfs @ 12.08 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 31P : PP-4

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 21L: PDA-1E

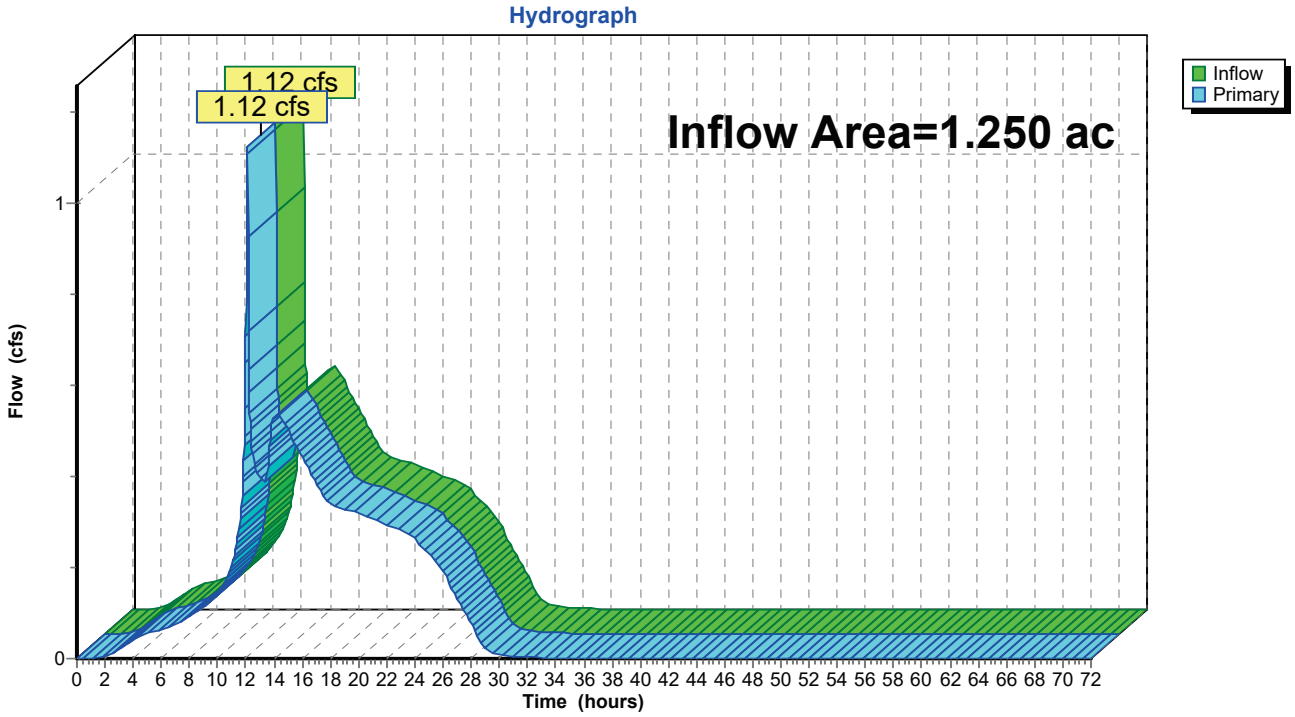


Summary for Link 25L: PDA-1

Inflow Area = 1.250 ac, 60.00% Impervious, Inflow Depth = 5.08" for 10-Year-2050 event
Inflow = 1.12 cfs @ 12.11 hrs, Volume= 0.529 af
Primary = 1.12 cfs @ 12.11 hrs, Volume= 0.529 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 25L: PDA-1

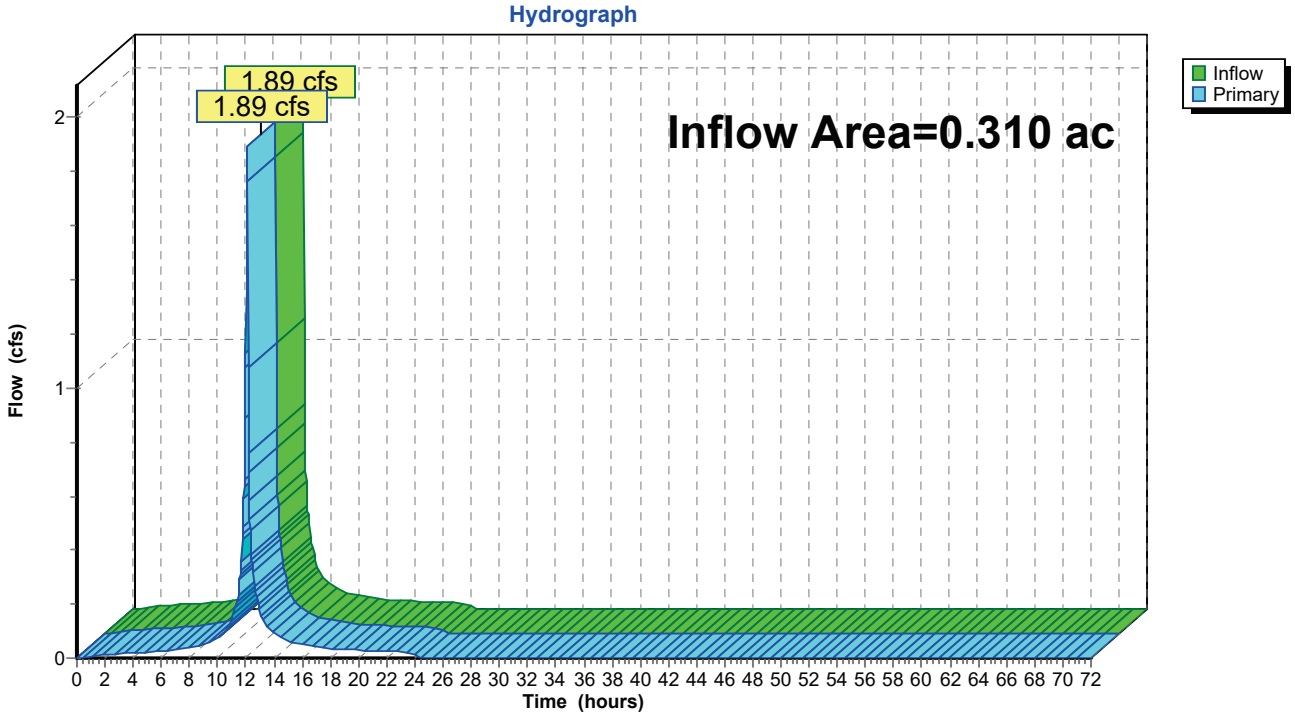


Summary for Link 28L: PDA-1F

Inflow Area = 0.310 ac, 77.42% Impervious, Inflow Depth = 5.54" for 10-Year-2050 event
Inflow = 1.89 cfs @ 12.09 hrs, Volume= 0.143 af
Primary = 1.89 cfs @ 12.09 hrs, Volume= 0.143 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 28L: PDA-1F

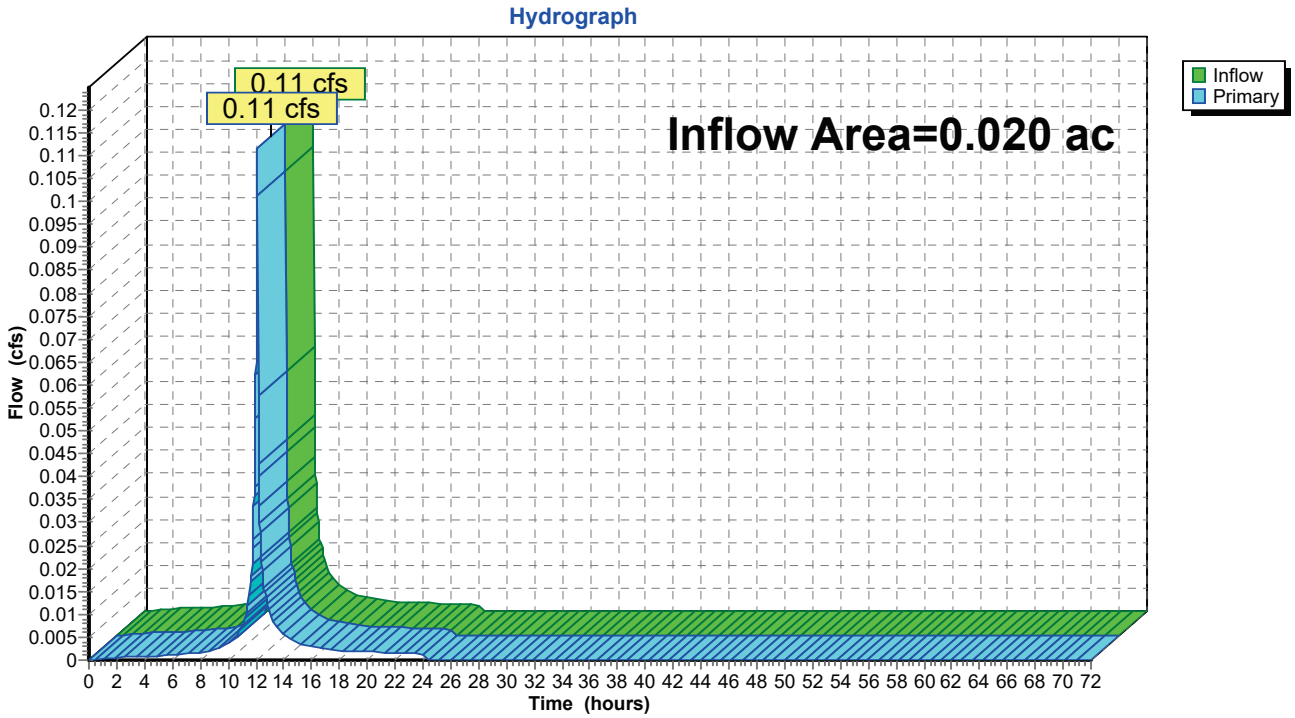


Summary for Link 31L: PDA-1H

Inflow Area = 0.020 ac, 50.00% Impervious, Inflow Depth = 4.81" for 10-Year-2050 event
Inflow = 0.11 cfs @ 12.09 hrs, Volume= 0.008 af
Primary = 0.11 cfs @ 12.09 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min
Routed to Link 25L : PDA-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 31L: PDA-1H

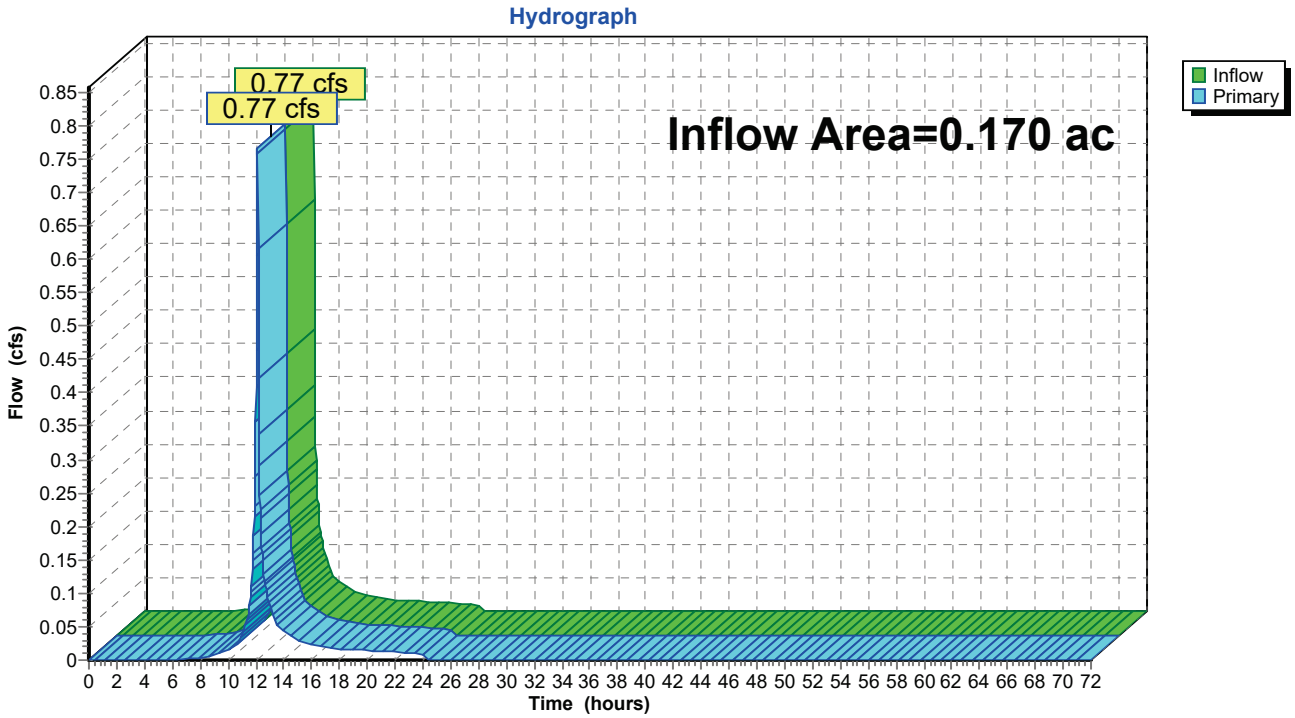


Summary for Link 32L: PDA-1I

Inflow Area = 0.170 ac, 5.88% Impervious, Inflow Depth = 3.65" for 10-Year-2050 event
Inflow = 0.77 cfs @ 12.11 hrs, Volume= 0.052 af
Primary = 0.77 cfs @ 12.11 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.0 min
Routed to Link 25L : PDA-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 32L: PDA-1I

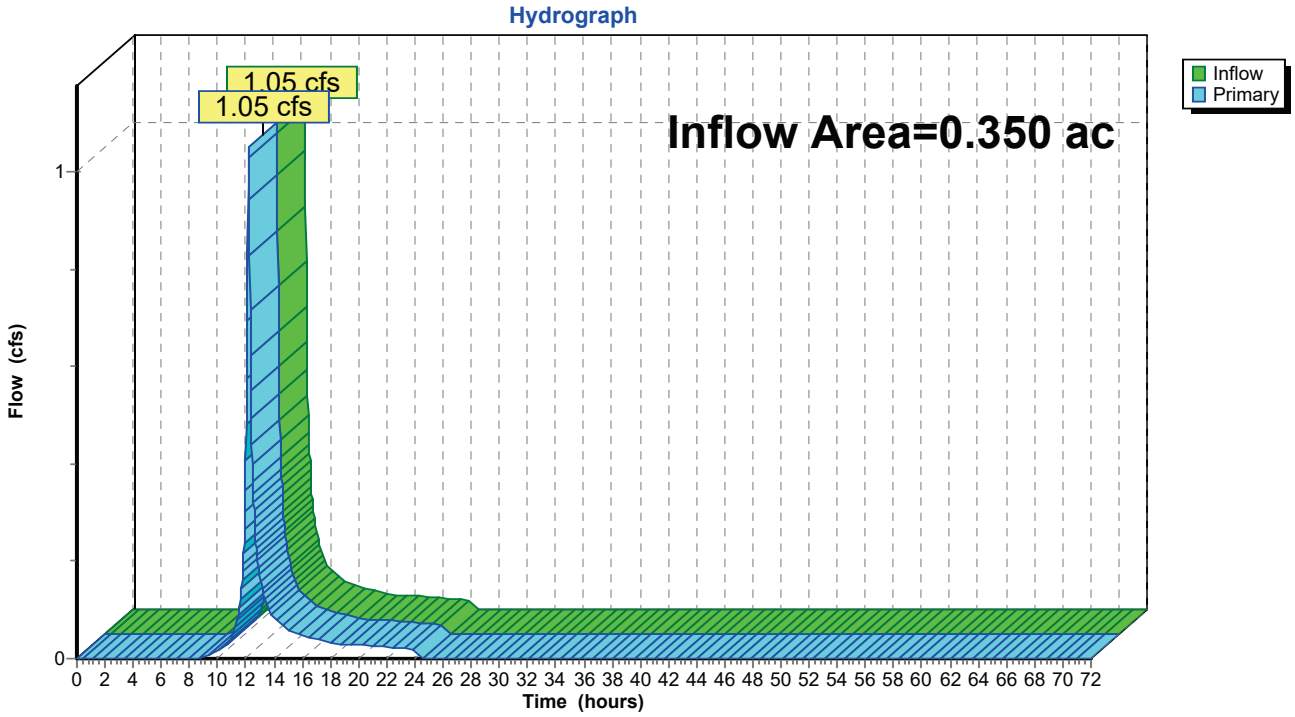


Summary for Link 34L: PDA-2

Inflow Area = 0.350 ac, 0.00% Impervious, Inflow Depth = 3.10" for 10-Year-2050 event
Inflow = 1.05 cfs @ 12.19 hrs, Volume= 0.090 af
Primary = 1.05 cfs @ 12.19 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 34L: PDA-2

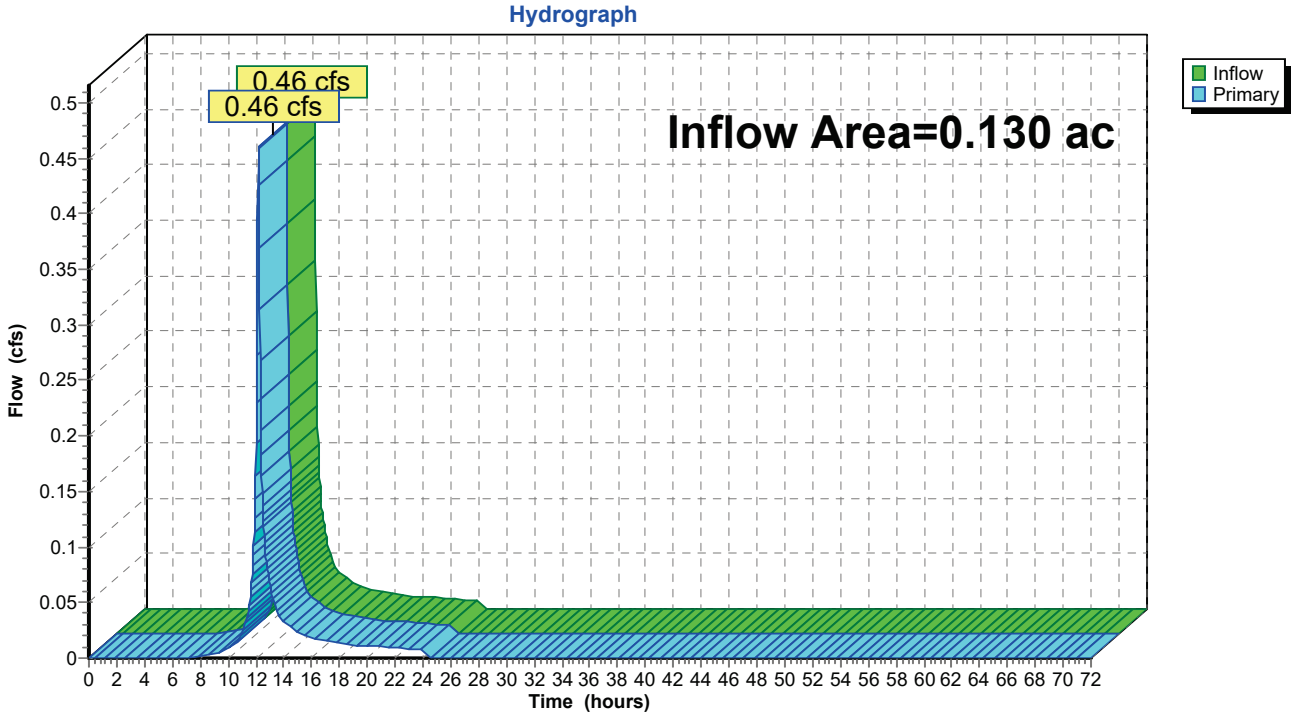


Summary for Link 38L: PDA-1G

Inflow Area = 0.130 ac, 0.00% Impervious, Inflow Depth = 3.50" for 10-Year-2050 event
Inflow = 0.46 cfs @ 12.17 hrs, Volume= 0.038 af
Primary = 0.46 cfs @ 12.17 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 38L: PDA-1G

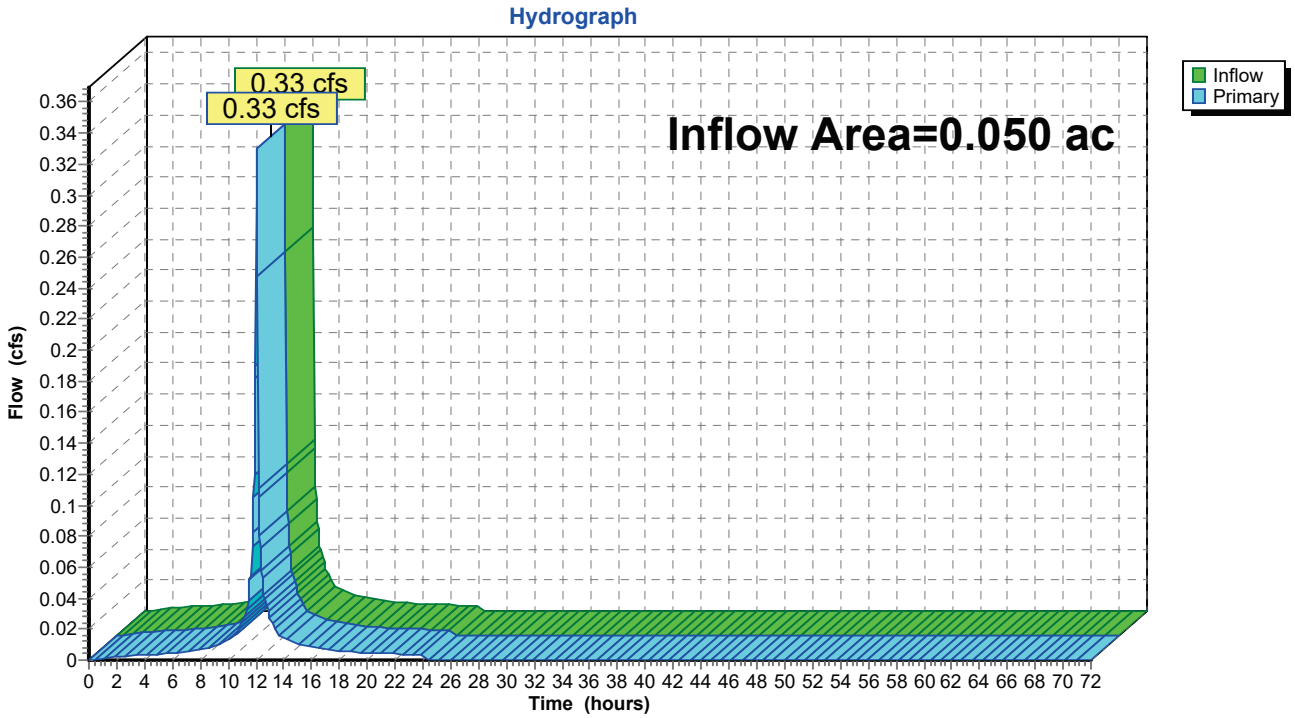


Summary for Link 41L: PDA-1J

Inflow Area = 0.050 ac, 80.00% Impervious, Inflow Depth = 5.60" for 10-Year-2050 event
Inflow = 0.33 cfs @ 12.08 hrs, Volume= 0.023 af
Primary = 0.33 cfs @ 12.08 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 41L: PDA-1J



Summary for Subcatchment 1S: EDA-1 IMPERVIOUS

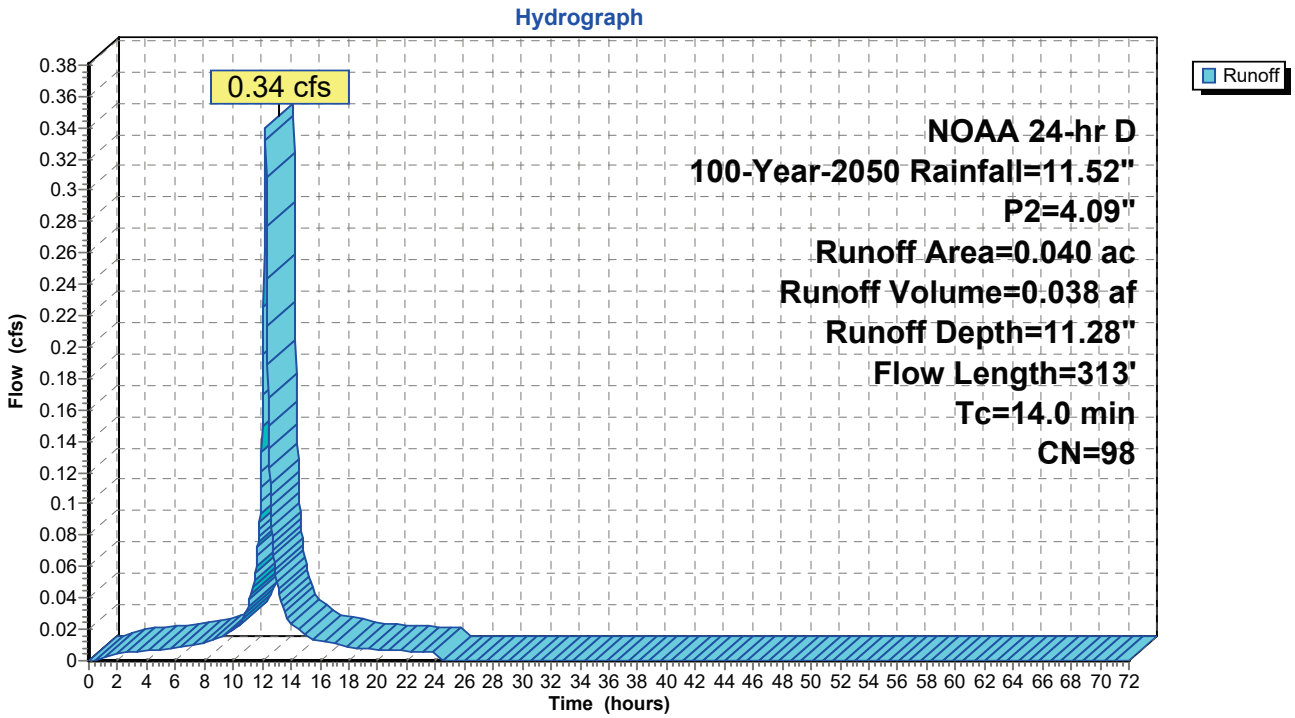
Runoff = 0.34 cfs @ 12.21 hrs, Volume= 0.038 af, Depth=11.28"
Routed to Link 3L : EDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG C
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0579	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 4.09"
1.6	213	0.1867	2.16		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
14.0	313	Total			

Subcatchment 1S: EDA-1 IMPERVIOUS



Summary for Subcatchment 2S: EDA-1 PERVIOUS

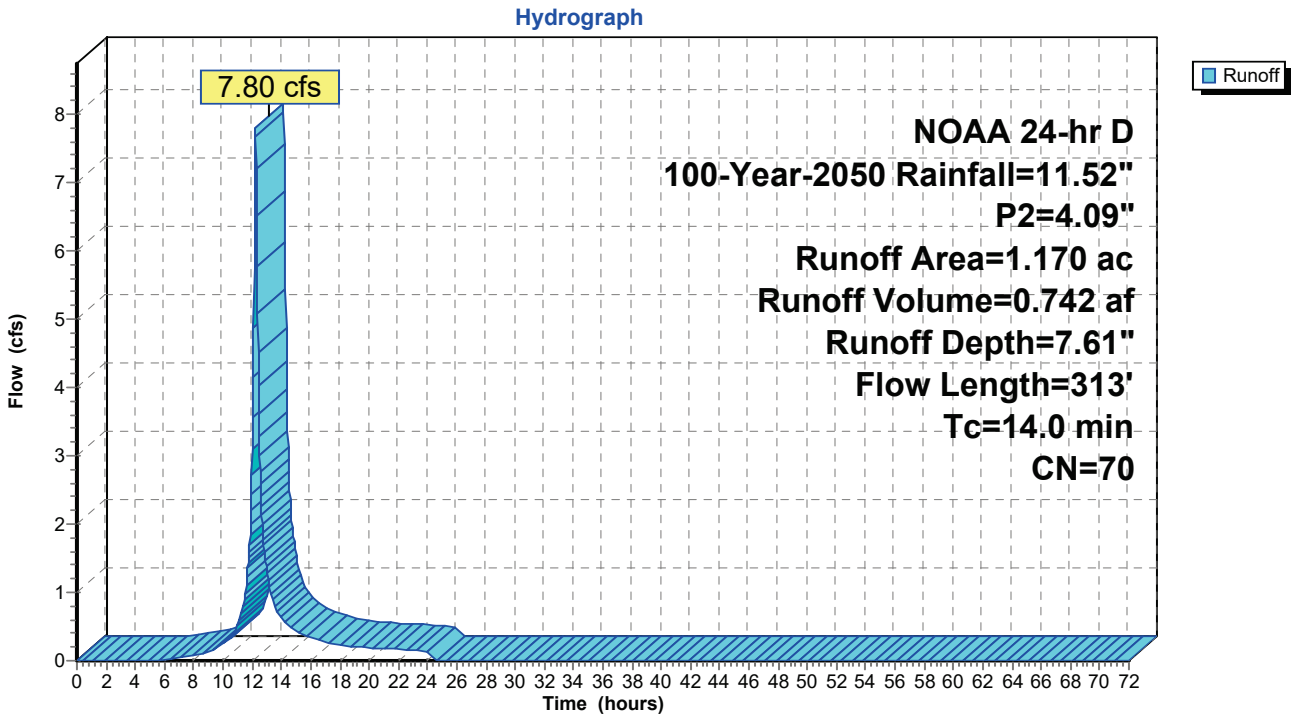
Runoff = 7.80 cfs @ 12.22 hrs, Volume= 0.742 af, Depth= 7.61"
Routed to Link 3L : EDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
1.170	70	Woods, Good, HSG C
1.170		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0579	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 4.09"
1.6	213	0.1867	2.16		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
14.0	313	Total			

Subcatchment 2S: EDA-1 PERVIOUS



Summary for Subcatchment 5S: EDA-2 PERVIOUS

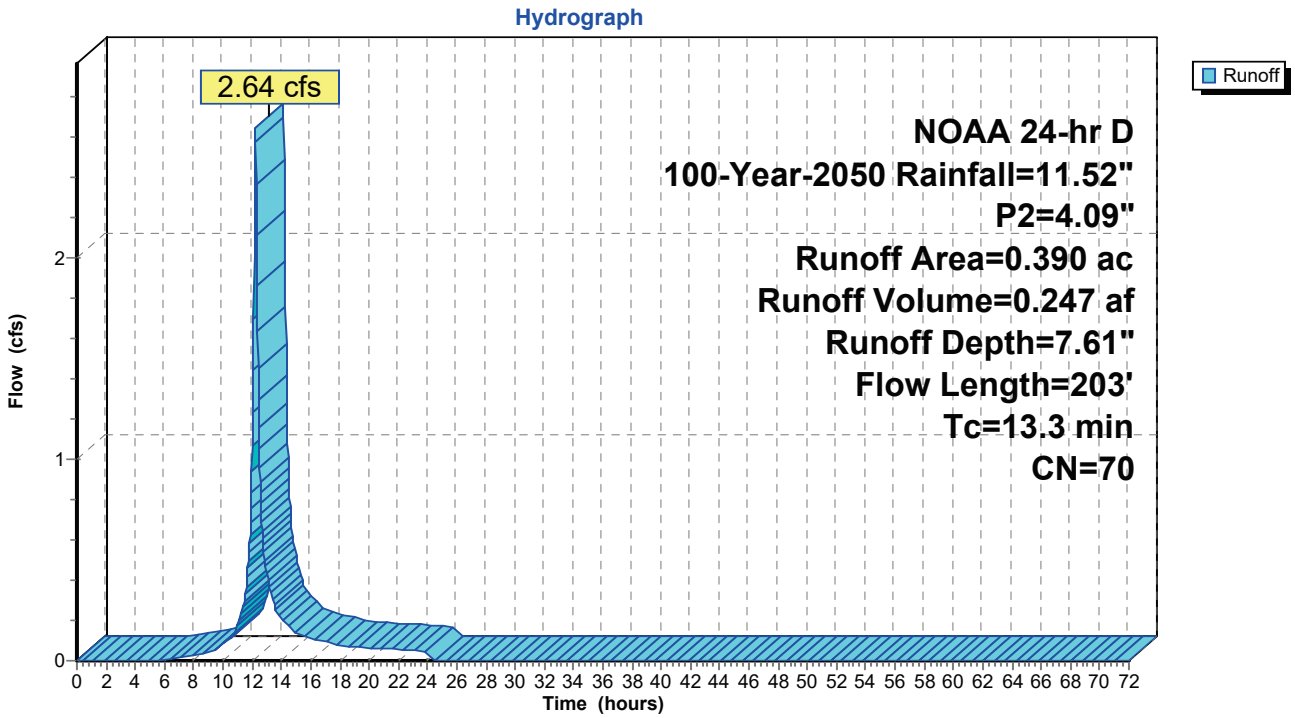
Runoff = 2.64 cfs @ 12.21 hrs, Volume= 0.247 af, Depth= 7.61"
Routed to Link 6L : EDA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.390	70	Woods, Good, HSG C
0.390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0582	0.13		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 4.09"
0.9	103	0.1619	2.01		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
13.3	203	Total			

Subcatchment 5S: EDA-2 PERVIOUS



Summary for Subcatchment 7S: PDA-1A IMPERVIOUS

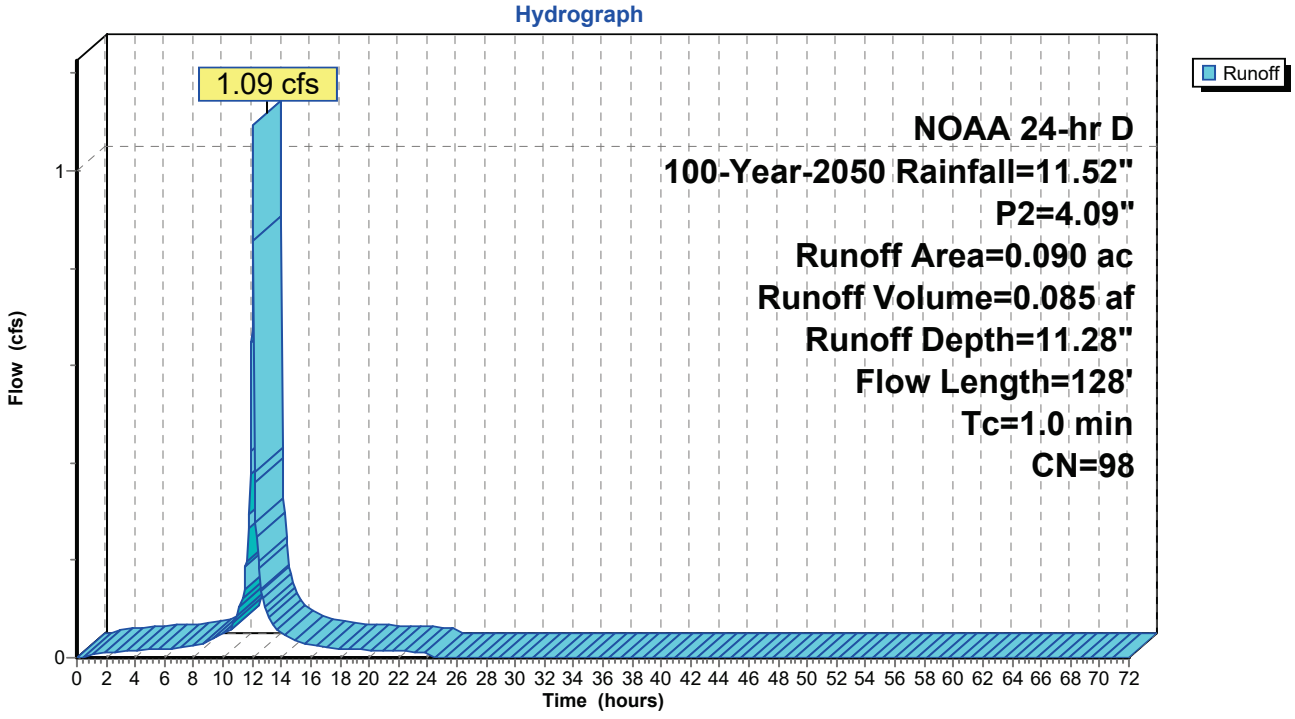
Runoff = 1.09 cfs @ 12.07 hrs, Volume= 0.085 af, Depth=11.28"
Routed to Link 9L : PDA-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.090	98	Paved parking, HSG C
0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0347	1.33		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.7	85	0.0500	2.17		**Sheet Flow, BC** Smooth surfaces n= 0.011 P2= 4.09"
0.1	28	0.0493	4.51		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
1.0	128	Total			

Subcatchment 7S: PDA-1A IMPERVIOUS



Summary for Subcatchment 8S: PDA-1A PERVIOUS

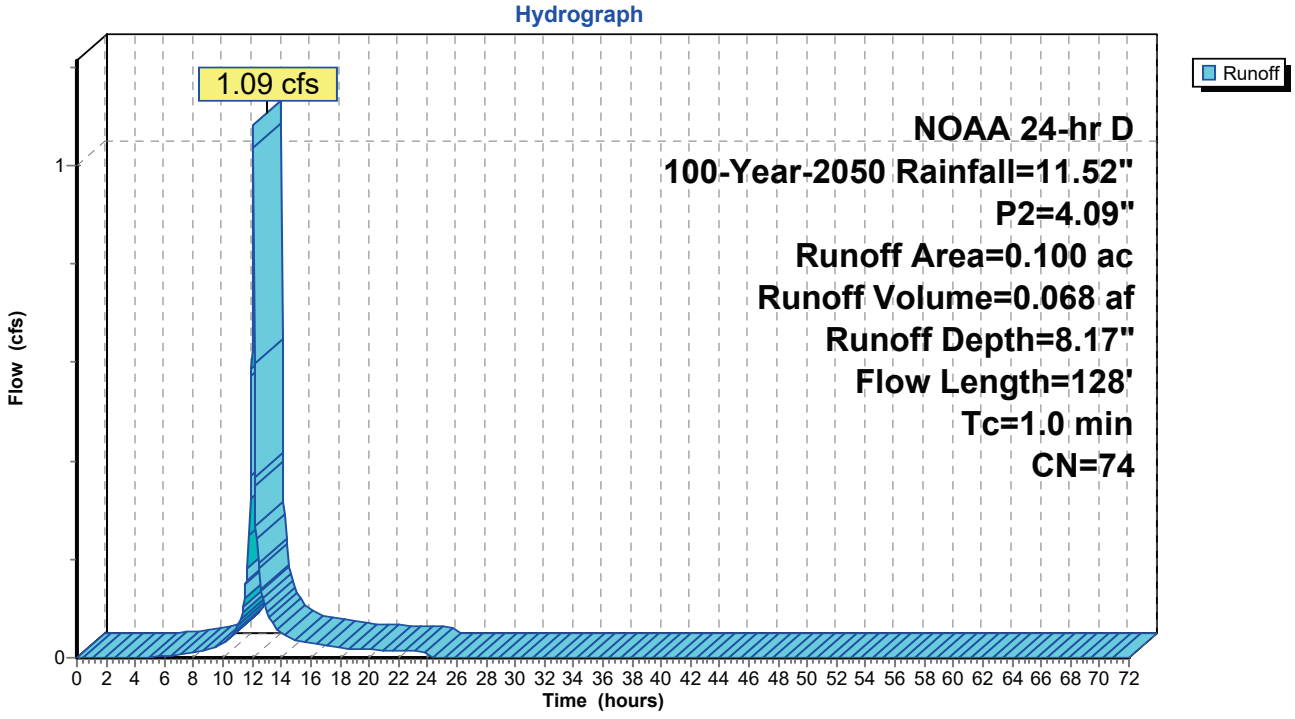
Runoff = 1.09 cfs @ 12.08 hrs, Volume= 0.068 af, Depth= 8.17"
Routed to Link 9L : PDA-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.100	74	>75% Grass cover, Good, HSG C
0.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0347	1.33		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.7	85	0.0500	2.17		**Sheet Flow, BC** Smooth surfaces n= 0.011 P2= 4.09"
0.1	28	0.0493	4.51		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
1.0	128	Total			

Subcatchment 8S: PDA-1A PERVIOUS



Summary for Subcatchment 10S: PDA-1B IMPERVIOUS

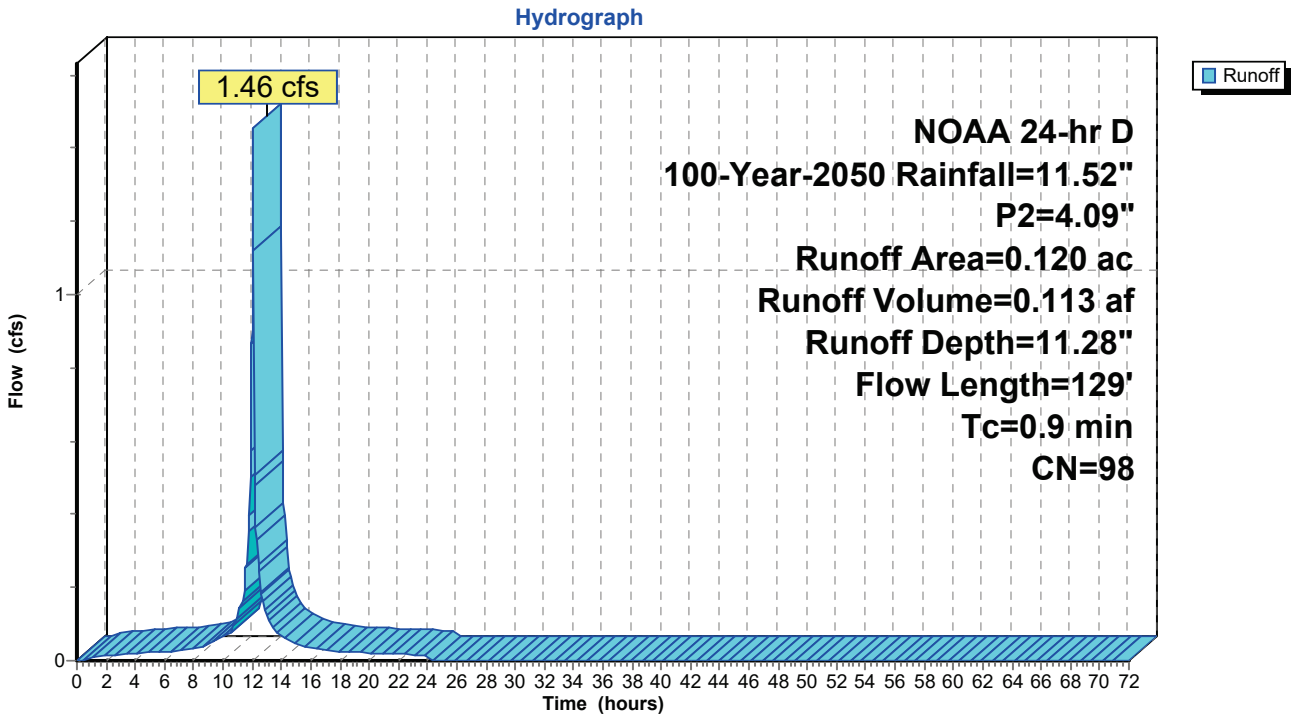
Runoff = 1.46 cfs @ 12.07 hrs, Volume= 0.113 af, Depth=11.28"
Routed to Link 12L : PDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.120	98	Paved parking, HSG C
0.120		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0484	2.21		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.1	29	0.0610	3.98		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
0.9	129	Total			

Subcatchment 10S: PDA-1B IMPERVIOUS



Summary for Subcatchment 13S: PDA-1C IMPERVIOUS

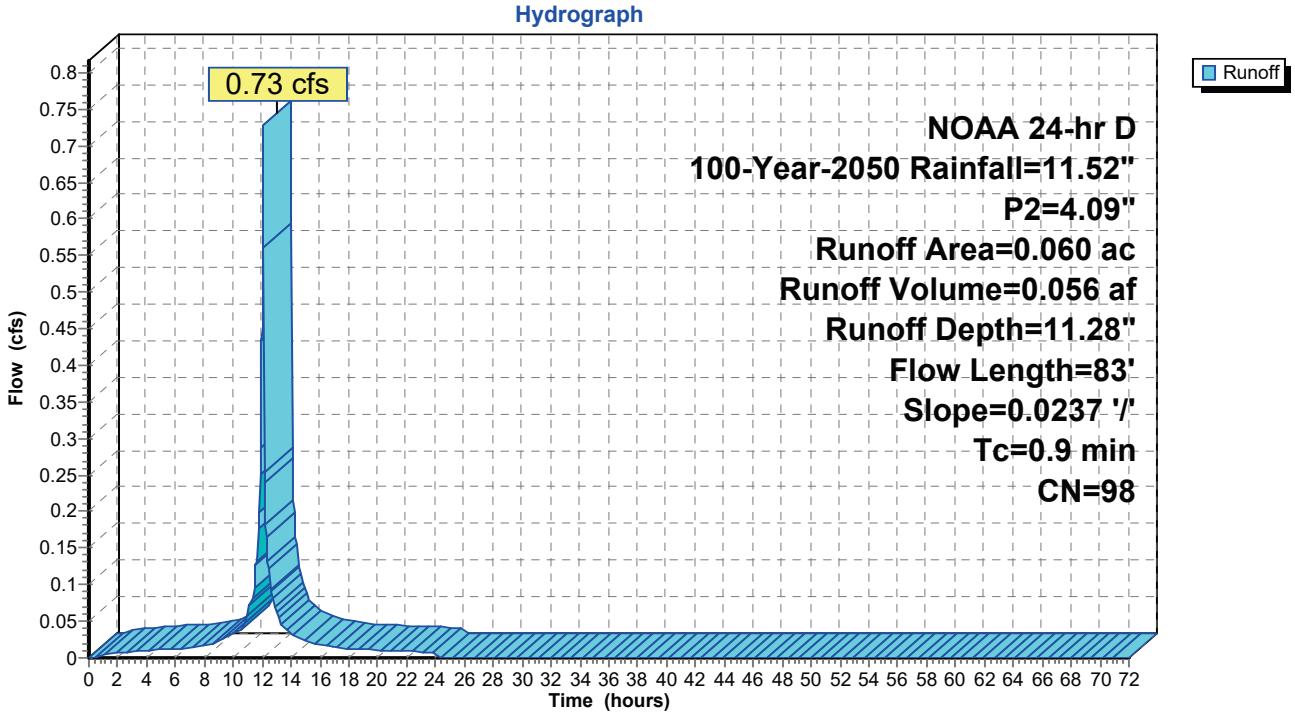
Runoff = 0.73 cfs @ 12.07 hrs, Volume= 0.056 af, Depth=11.28"
Routed to Link 15L : PDA-1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.060	98	Paved parking, HSG C
0.060		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	83	0.0237	1.60		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"

Subcatchment 13S: PDA-1C IMPERVIOUS



Summary for Subcatchment 16S: PDA-1D IMPERVIOUS

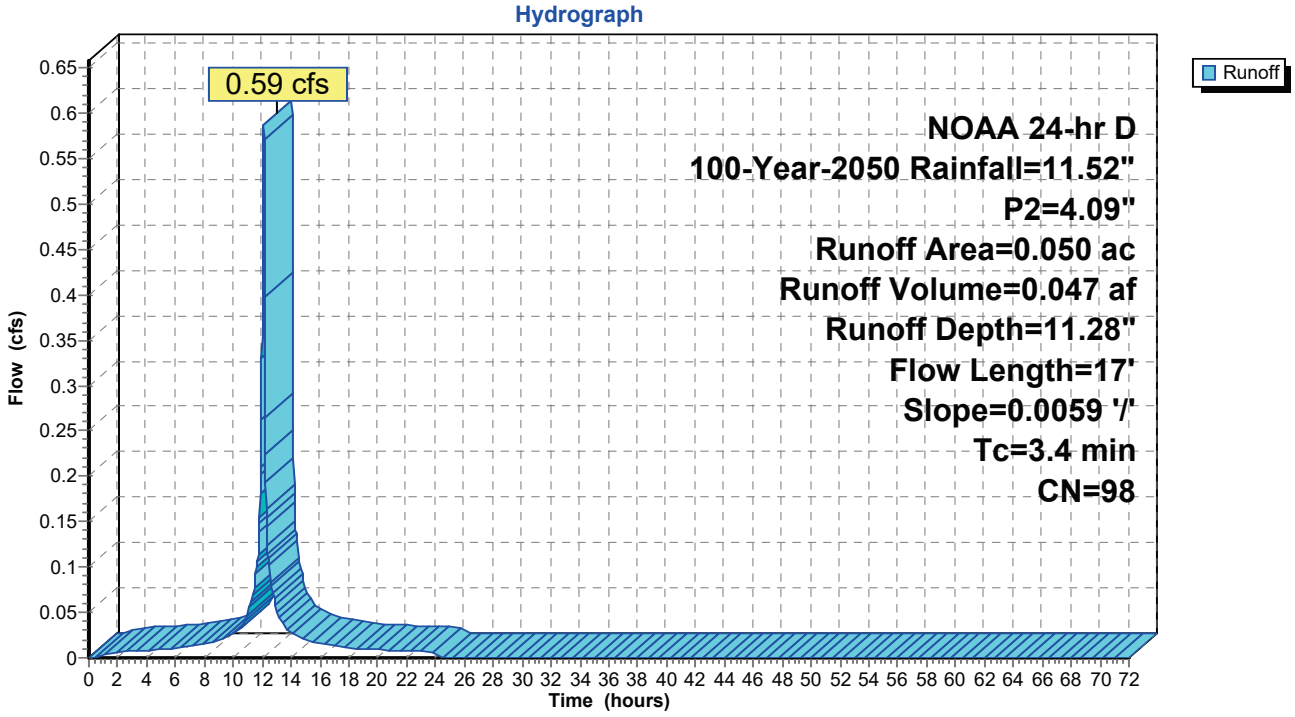
Runoff = 0.59 cfs @ 12.10 hrs, Volume= 0.047 af, Depth=11.28"
Routed to Link 18L : PDA-1D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.050	98	Paved parking, HSG C
0.050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	17	0.0059	0.08		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"

Subcatchment 16S: PDA-1D IMPERVIOUS



Summary for Subcatchment 17S: PDA-1D PERVIOUS

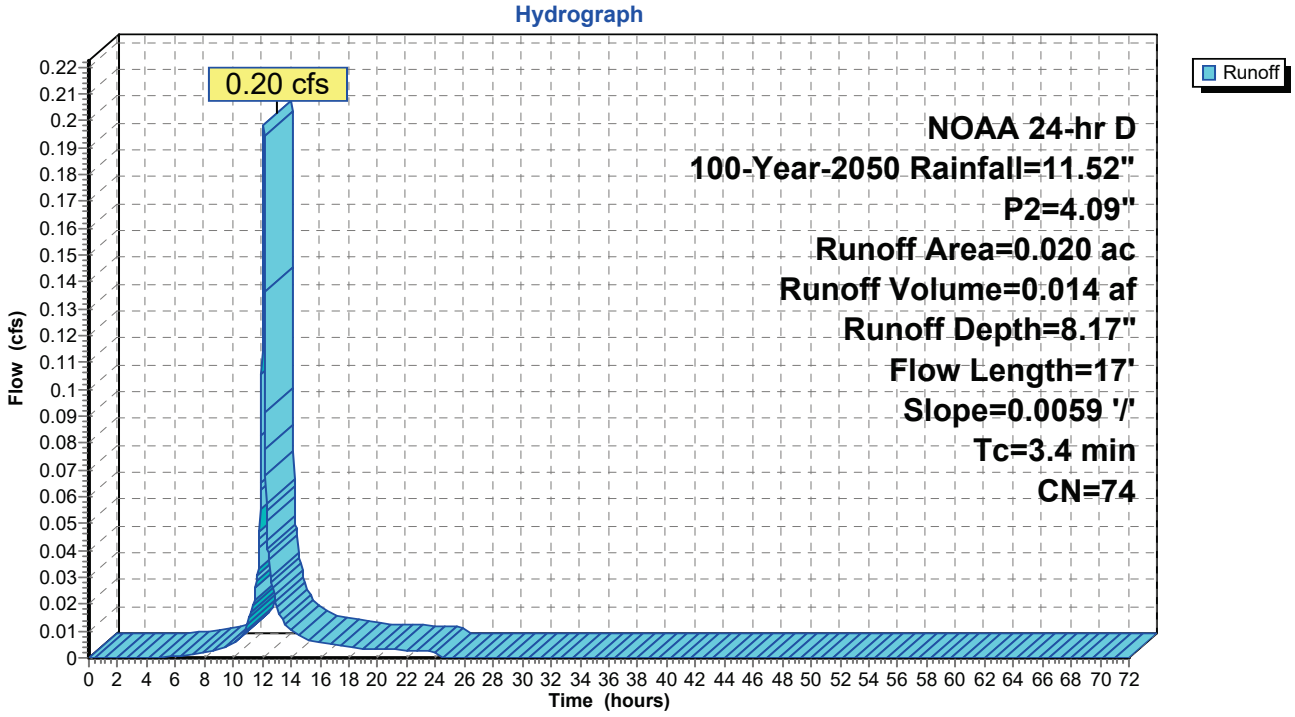
Runoff = 0.20 cfs @ 12.10 hrs, Volume= 0.014 af, Depth= 8.17"
Routed to Link 18L : PDA-1D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.020	74	>75% Grass cover, Good, HSG C
0.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	17	0.0059	0.08		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"

Subcatchment 17S: PDA-1D PERVIOUS



Summary for Subcatchment 19S: PDA-1E IMPERVIOUS

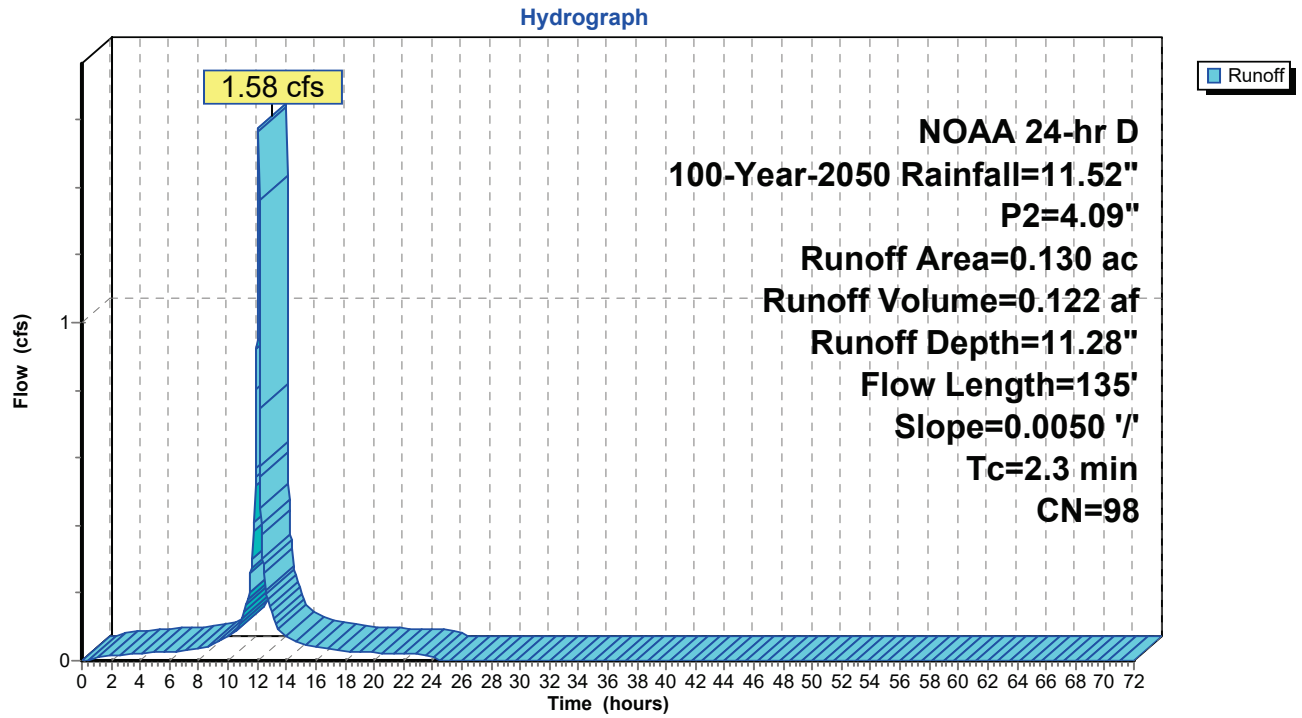
Runoff = 1.58 cfs @ 12.08 hrs, Volume= 0.122 af, Depth=11.28"
Routed to Link 21L : PDA-1E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.130	98	Paved parking, HSG C
0.130		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0050	0.89		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.4	35	0.0050	1.44		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
2.3	135	Total			

Subcatchment 19S: PDA-1E IMPERVIOUS



Summary for Subcatchment 23S: PDA-2

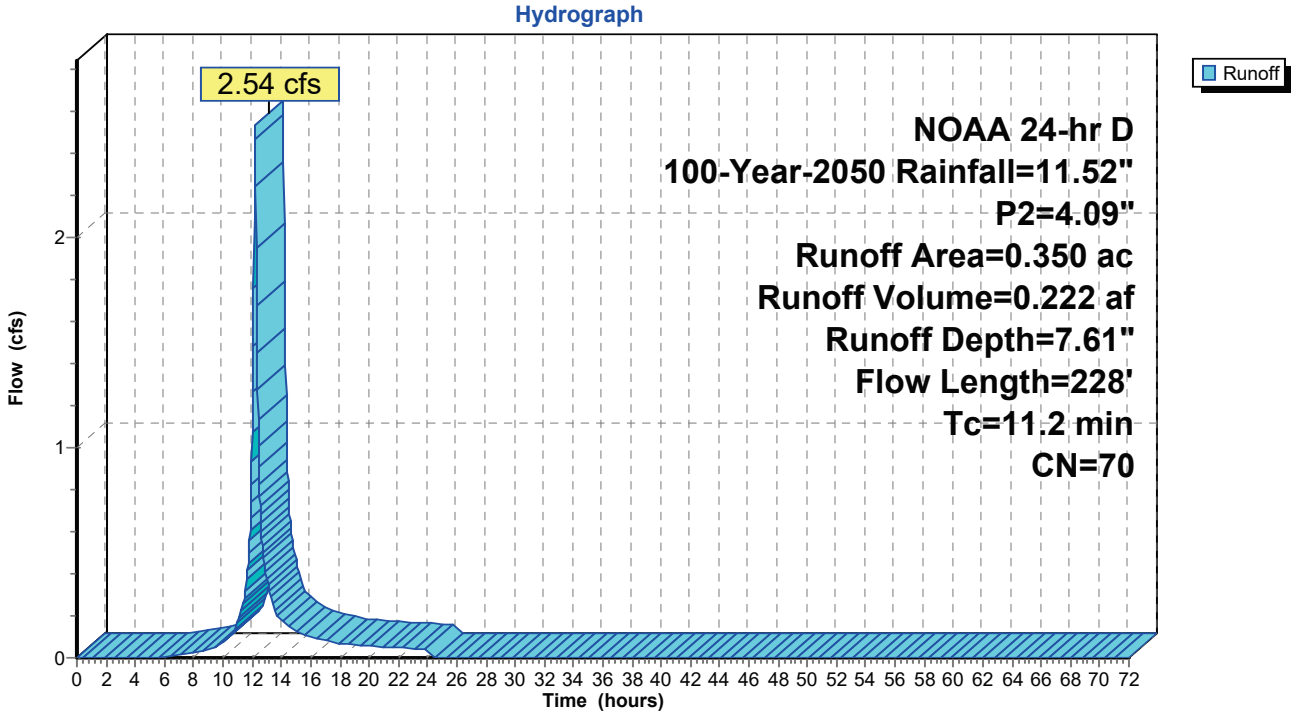
Runoff = 2.54 cfs @ 12.19 hrs, Volume= 0.222 af, Depth= 7.61"
Routed to Link 34L : PDA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.350	70	Woods, Good, HSG C
0.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	62	0.0385	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 4.09"
0.4	36	0.1011	1.59		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.2	49	0.0543	3.75		**Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps
0.6	81	0.1763	2.10		**Shallow Concentrated Flow, DE** Woodland Kv= 5.0 fps
11.2	228	Total			

Subcatchment 23S: PDA-2



Summary for Subcatchment 26S: PDA-1F IMPERVIOUS

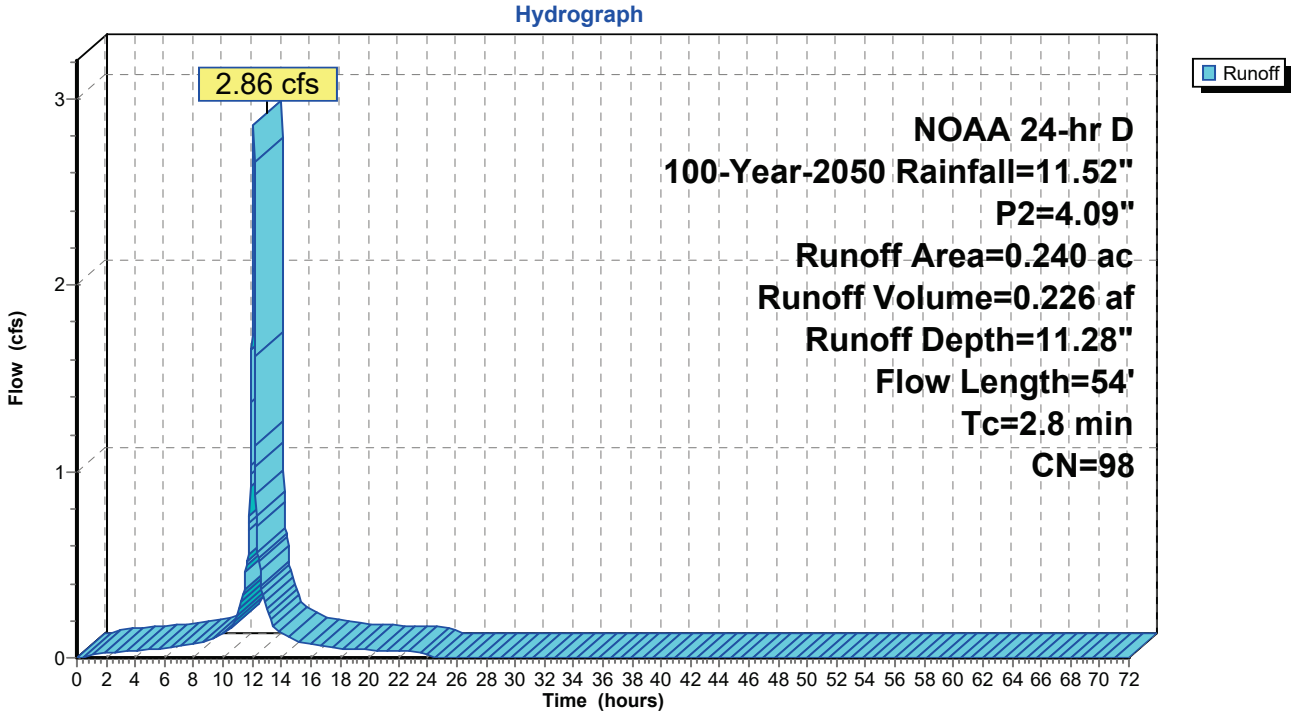
Runoff = 2.86 cfs @ 12.09 hrs, Volume= 0.226 af, Depth=11.28"
Routed to Link 28L : PDA-1F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG C
0.240		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	7	0.0071	0.60		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
1.3	18	0.0794	0.24		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
0.2	20	0.0375	1.45		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 4.09"
1.1	9	0.0278	0.14		**Sheet Flow, DE** Grass: Short n= 0.150 P2= 4.09"
2.8	54	Total			

Subcatchment 26S: PDA-1F IMPERVIOUS



Summary for Subcatchment 27S: PDA-1F PERVIOUS

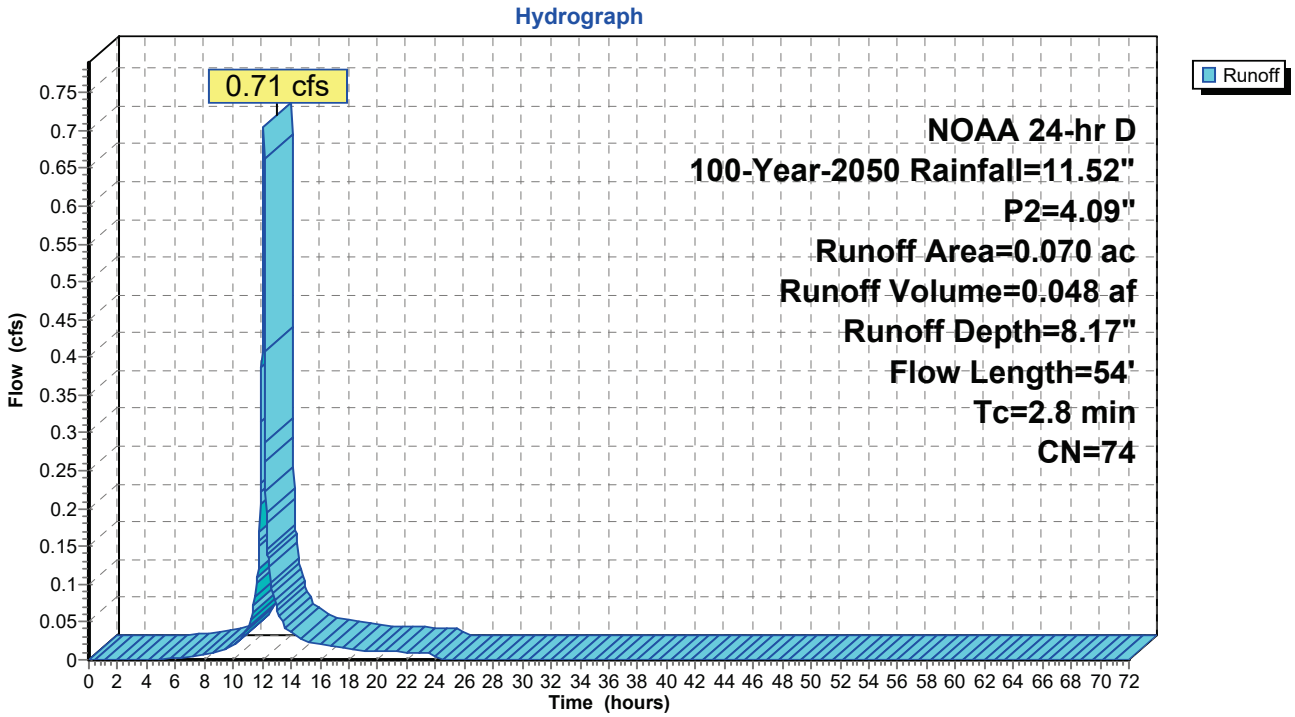
Runoff = 0.71 cfs @ 12.09 hrs, Volume= 0.048 af, Depth= 8.17"
Routed to Link 28L : PDA-1F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.070	74	>75% Grass cover, Good, HSG C
0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	7	0.0071	0.60		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
1.3	18	0.0794	0.24		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
0.2	20	0.0375	1.45		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 4.09"
1.1	9	0.0278	0.14		**Sheet Flow, DE** Grass: Short n= 0.150 P2= 4.09"
2.8	54	Total			

Subcatchment 27S: PDA-1F PERVIOUS



Summary for Subcatchment 29S: PDA-1H IMPERVIOUS

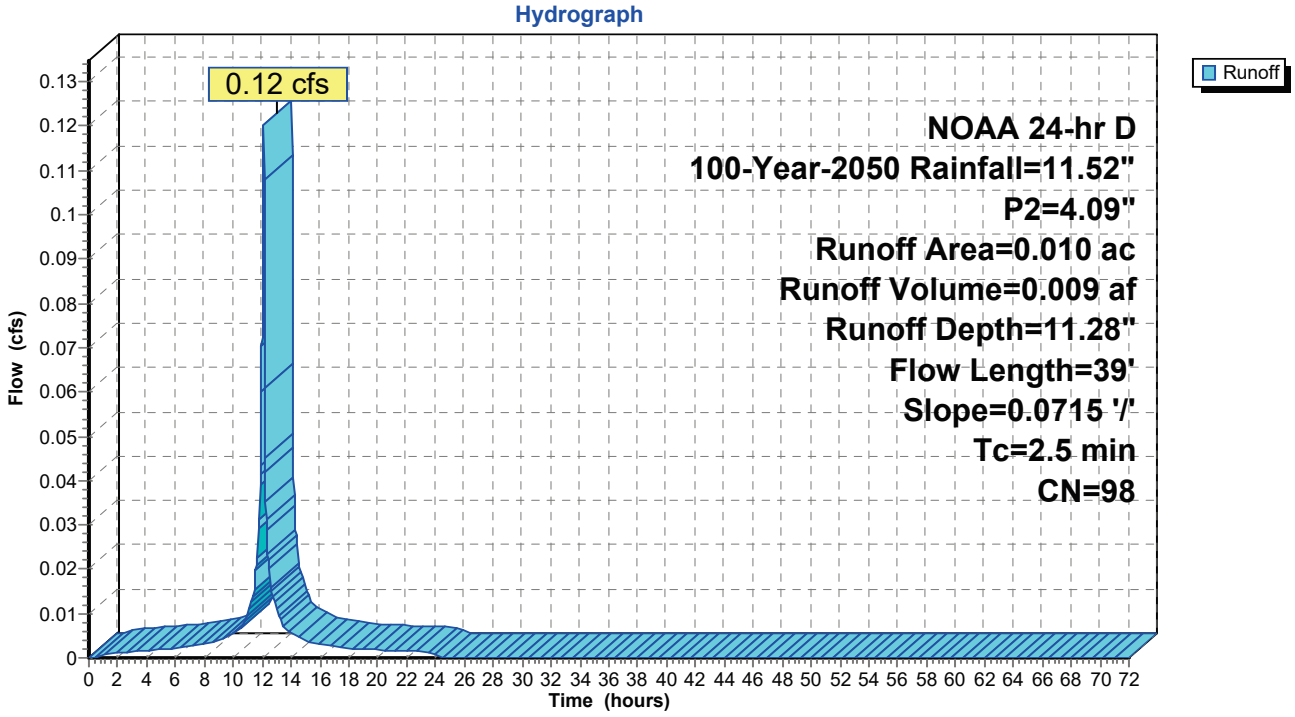
Runoff = 0.12 cfs @ 12.08 hrs, Volume= 0.009 af, Depth=11.28"
Routed to Link 31L : PDA-1H

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.010	98	Paved parking, HSG C
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	39	0.0715	0.27		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"

Subcatchment 29S: PDA-1H IMPERVIOUS



Summary for Subcatchment 30S: PDA-1H PERVIOUS

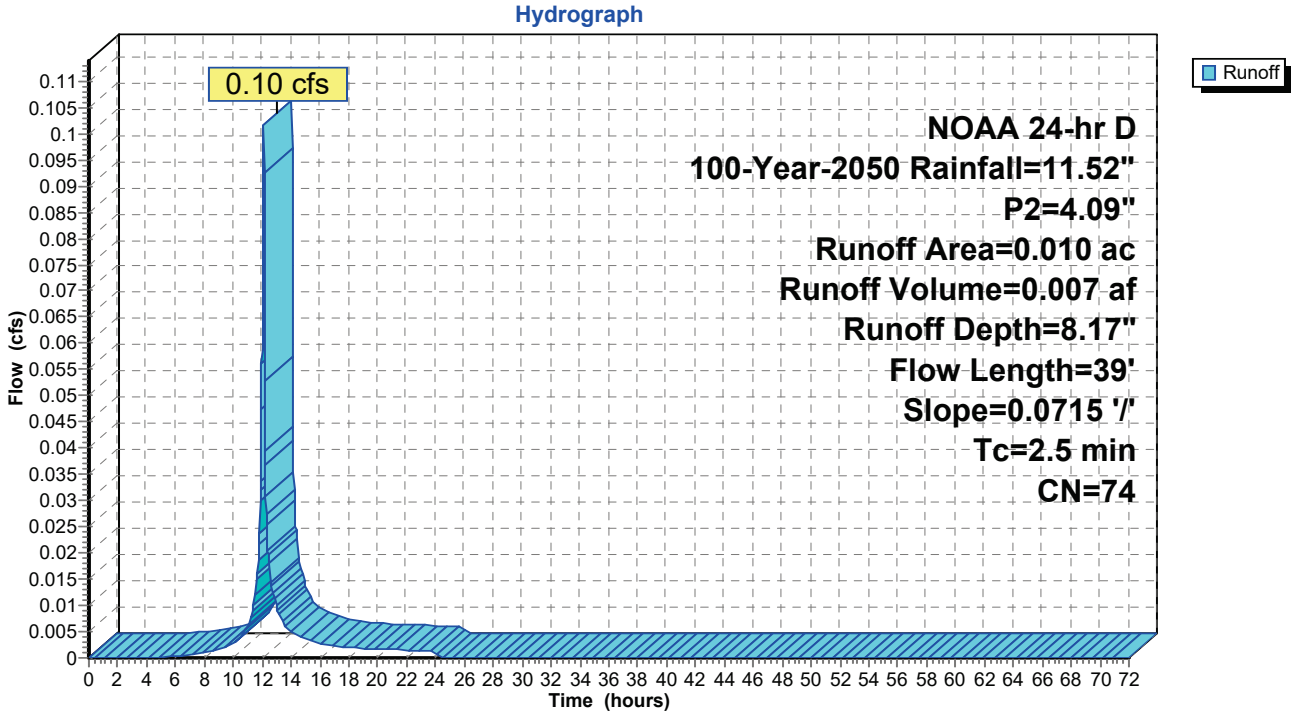
Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af, Depth= 8.17"
Routed to Link 31L : PDA-1H

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.010	74	>75% Grass cover, Good, HSG C
0.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	39	0.0715	0.27		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"

Subcatchment 30S: PDA-1H PERVIOUS



Summary for Subcatchment 33S: PDA-1I IMPERVIOUS

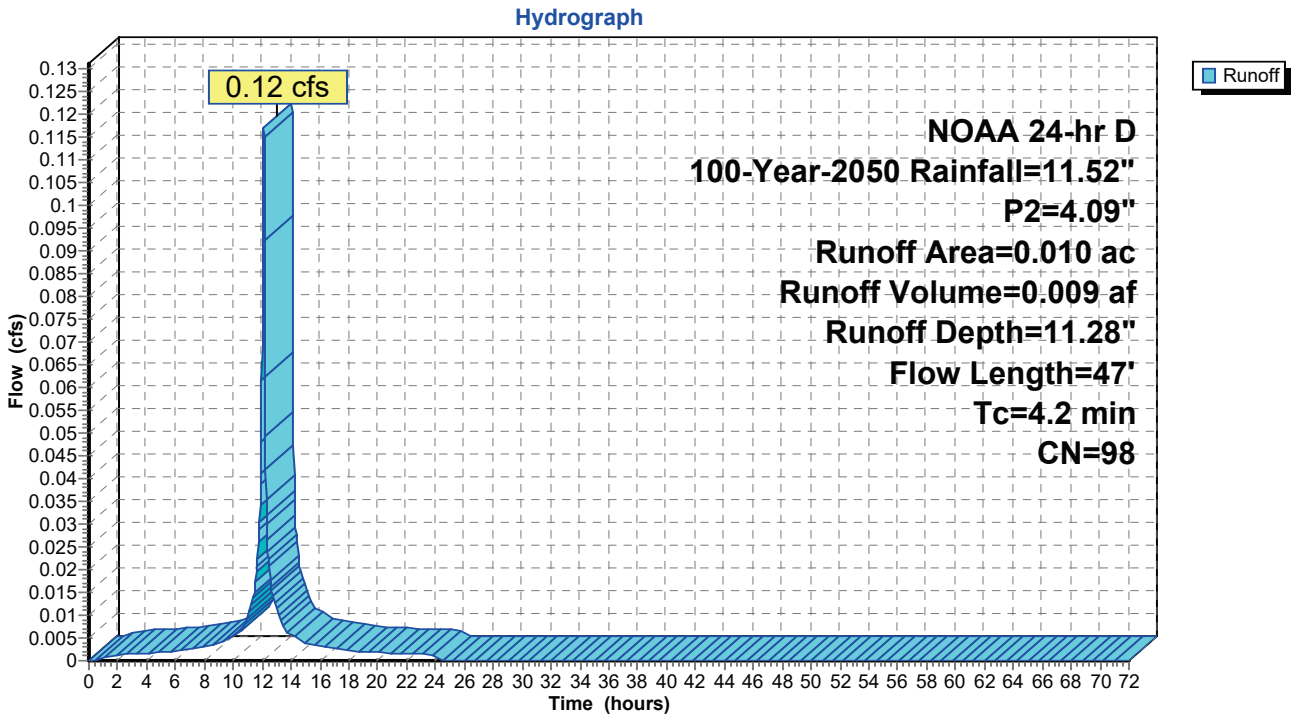
Runoff = 0.12 cfs @ 12.11 hrs, Volume= 0.009 af, Depth=11.28"
Routed to Link 32L : PDA-1I

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.010	98	Paved parking, HSG C
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	21	0.0109	0.11		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"
1.0	26	0.2700	0.42		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
4.2	47	Total			

Subcatchment 33S: PDA-1I IMPERVIOUS



Summary for Subcatchment 35S: PDA-1I PERVIOUS

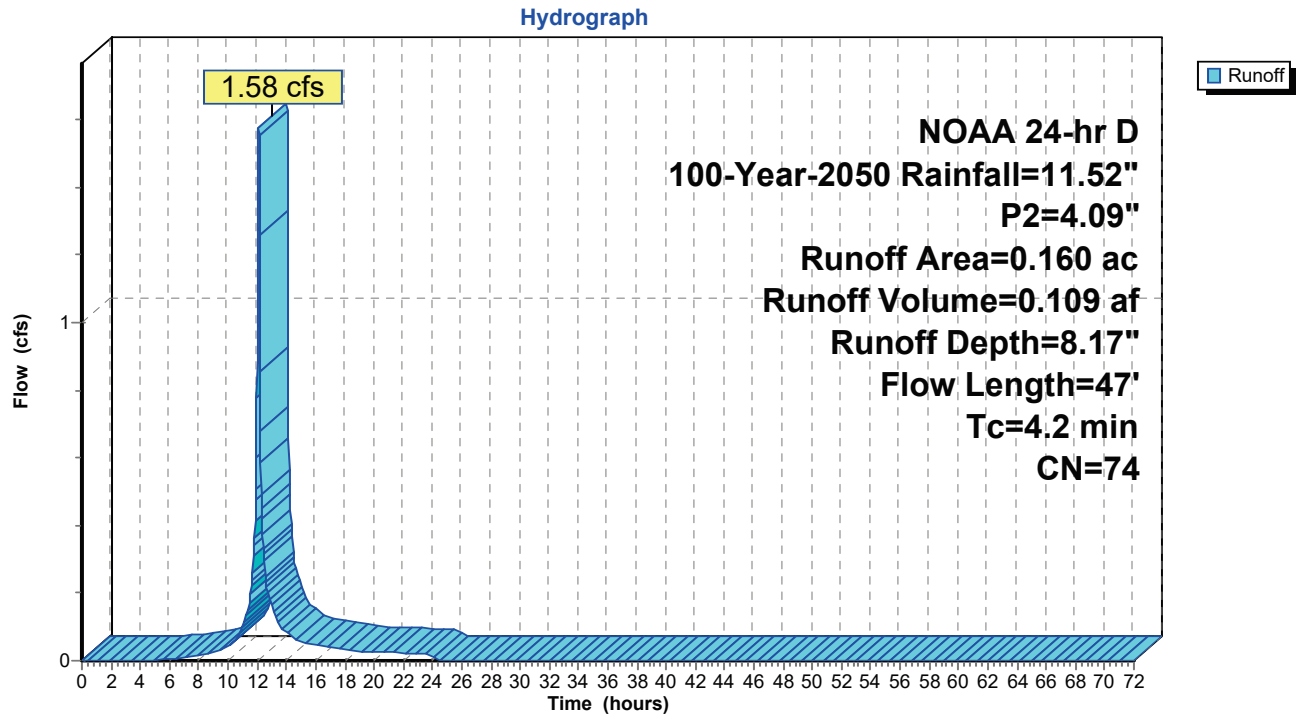
Runoff = 1.58 cfs @ 12.11 hrs, Volume= 0.109 af, Depth= 8.17"
Routed to Link 32L : PDA-1I

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.160	74	>75% Grass cover, Good, HSG C
0.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	21	0.0109	0.11		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 4.09"
1.0	26	0.2700	0.42		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
4.2	47	Total			

Subcatchment 35S: PDA-1I PERVIOUS



Summary for Subcatchment 37S: PDA-1G PERVIOUS

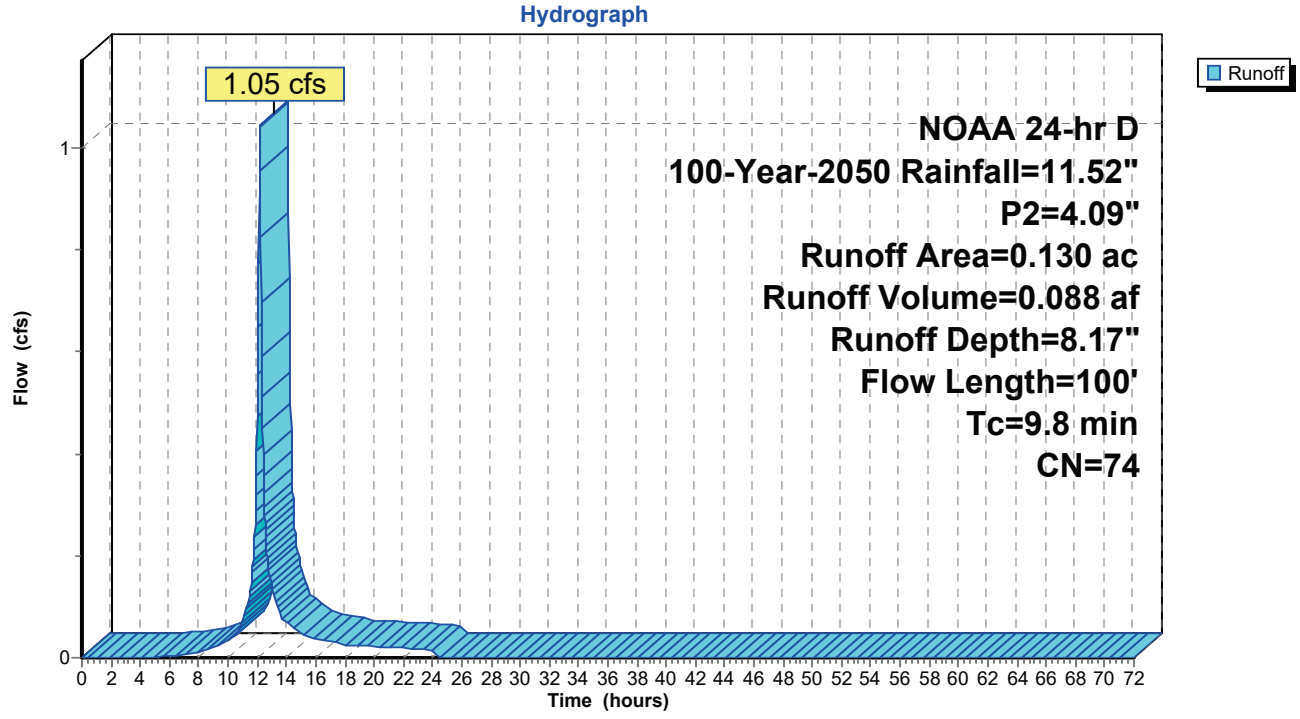
Runoff = 1.05 cfs @ 12.17 hrs, Volume= 0.088 af, Depth= 8.17"
Routed to Link 38L : PDA-1G

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.130	74	>75% Grass cover, Good, HSG C
0.130		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	66	0.0486	0.12		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 4.09"
0.1	16	0.1031	5.17		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
0.1	18	0.0365	3.08		**Shallow Concentrated Flow, CD** Unpaved Kv= 16.1 fps
9.8	100	Total			

Subcatchment 37S: PDA-1G PERVIOUS



Summary for Subcatchment 39S: PDA-1J IMPERVIOUS

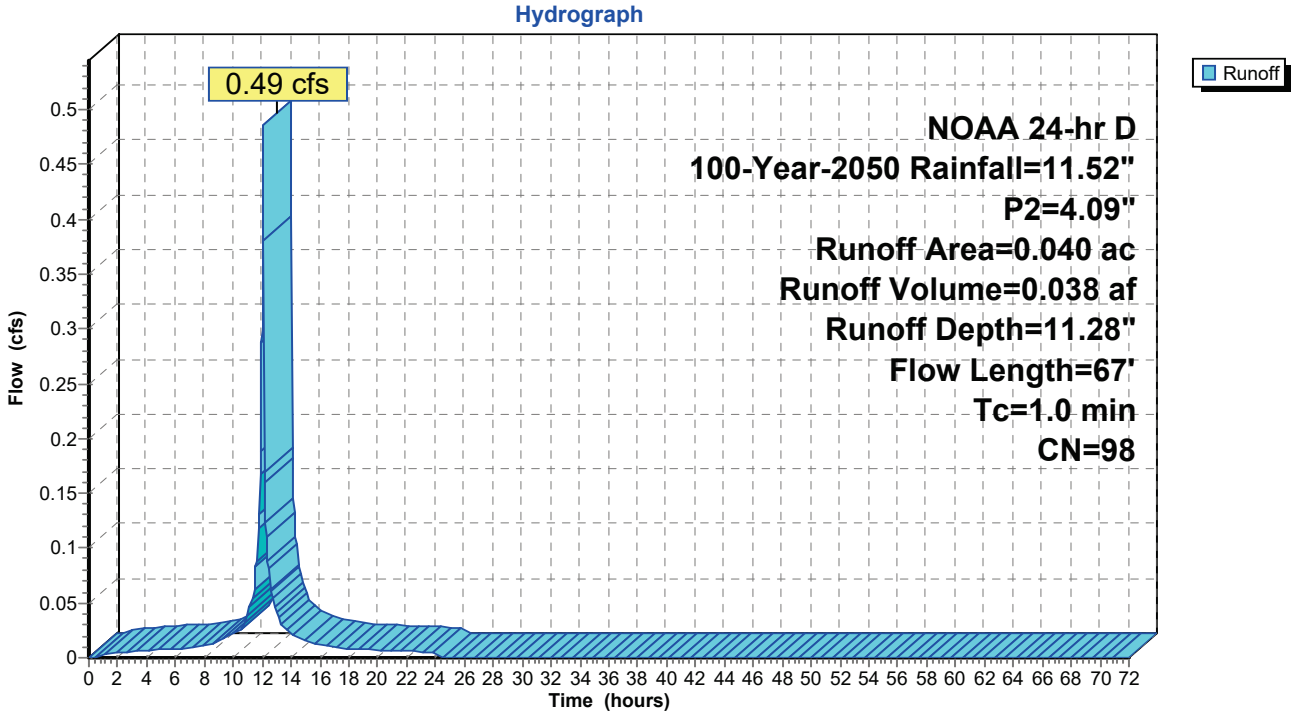
Runoff = 0.49 cfs @ 12.07 hrs, Volume= 0.038 af, Depth=11.28"
Routed to Link 41L : PDA-1J

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG C
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	6	0.0150	0.79		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.5	7	0.1371	0.24		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
0.4	54	0.0565	2.08		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 4.09"
1.0	67	Total			

Subcatchment 39S: PDA-1J IMPERVIOUS



Summary for Subcatchment 40S: PDA-1J PERVIOUS

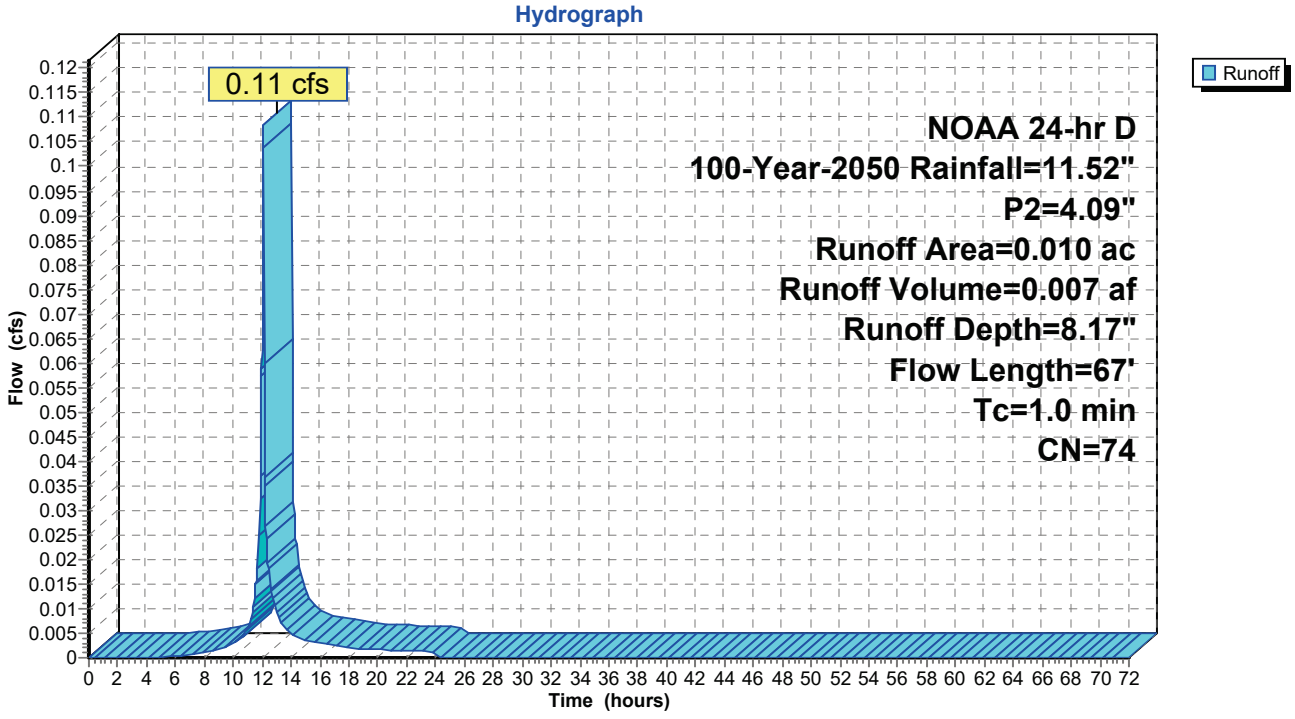
Runoff = 0.11 cfs @ 12.08 hrs, Volume= 0.007 af, Depth= 8.17"
Routed to Link 41L : PDA-1J

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
NOAA 24-hr D 100-Year-2050 Rainfall=11.52", P2=4.09"

Area (ac)	CN	Description
0.010	74	>75% Grass cover, Good, HSG C
0.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	6	0.0150	0.79		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 4.09"
0.5	7	0.1371	0.24		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 4.09"
0.4	54	0.0565	2.08		**Sheet Flow, CD** Smooth surfaces n= 0.011 P2= 4.09"
1.0	67	Total			

Subcatchment 40S: PDA-1J PERVIOUS



Summary for Pond 28P: PP-1

Inflow Area = 0.390 ac, 69.23% Impervious, Inflow Depth = 10.32" for 100-Year-2050 event
Inflow = 3.09 cfs @ 12.08 hrs, Volume= 0.335 af
Outflow = 0.60 cfs @ 12.98 hrs, Volume= 0.335 af, Atten= 80%, Lag= 54.1 min
Primary = 0.60 cfs @ 12.98 hrs, Volume= 0.335 af
Routed to Pond 29P : PP-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 450.34' @ 12.92 hrs Surf.Area= 0.048 ac Storage= 0.129 af

Plug-Flow detention time= 190.6 min calculated for 0.335 af (100% of inflow)
Center-of-Mass det. time= 190.3 min (954.7 - 764.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.45'	0.090 af	**18.00'W x 117.00'L x 6.29'H Field A** 0.304 af Overall - 0.079 af Embedded = 0.225 af x 40.0% Voids
#2A	446.45'	0.066 af	**ADS N-12 48"** x 8 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf Row Length Adjustment= +25.00' x 12.40 sf x 2 rows 11.08' Header x 12.40 sf x 2 = 274.9 cf Inside
		0.156 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	445.45'	**15.0" Round Culvert** L= 23.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 445.45' / 445.38' S= 0.0030 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	445.45'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	449.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.61 cfs @ 12.98 hrs HW=450.34' TW=447.77' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.61 cfs of 7.47 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.26 cfs @ 7.71 fps)
3=Orifice/Grate (Orifice Controls 0.34 cfs @ 3.94 fps)

Pond 28P: PP-1 - Chamber Wizard Field A

Chamber Model = ADS N-12 48" (ADS N-12® Pipe)
Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf
Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf
Row Length Adjustment= +25.00' x 12.40 sf x 2 rows

54.0" Wide + 25.0" Spacing = 79.0" C-C Row Spacing

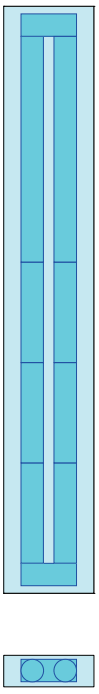
4 Chambers/Row x 20.00' Long +25.00' Row Adjustment +4.50' Header x 2 = 114.00' Row Length +18.0" End Stone x 2 = 117.00' Base Length
2 Rows x 54.0" Wide + 25.0" Spacing x 1 + 41.5" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 54.0" Chamber Height + 9.5" Stone Cover = 6.29' Field Height

8 Chambers x 248.0 cf +25.00' Row Adjustment x 12.40 sf x 2 Rows + 11.08' Header x 12.40 sf x 2 = 2,878.9 cf Chamber Storage
8 Chambers x 297.0 cf +25.00' Row Adjustment x 14.85 sf x 2 Rows + 11.08' Header x 14.85 sf x 2 = 3,447.4 cf Displacement

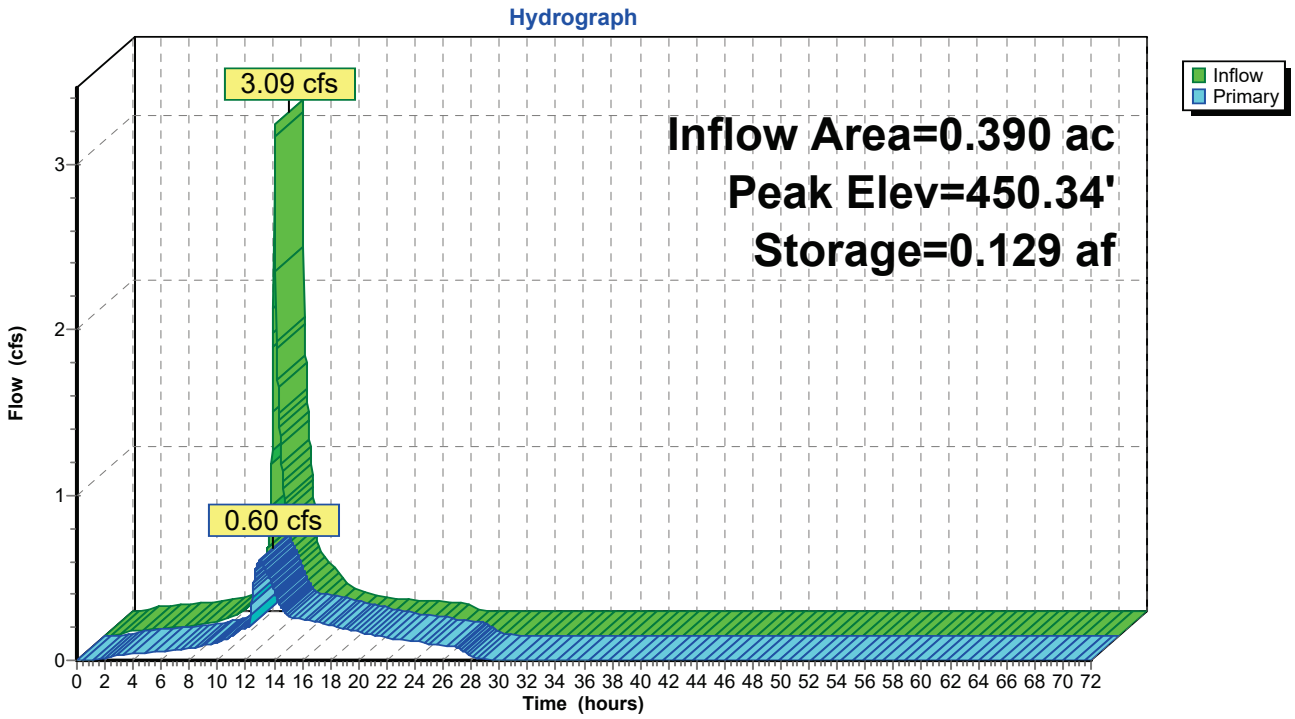
13,250.6 cf Field - 3,447.4 cf Chambers = 9,803.2 cf Stone x 40.0% Voids = 3,921.3 cf Stone Storage

Chamber Storage + Stone Storage = 6,800.1 cf = 0.156 af
Overall Storage Efficiency = 51.3%
Overall System Size = 117.00' x 18.00' x 6.29'

8 Chambers
490.8 cy Field
363.1 cy Stone



Pond 28P: PP-1


Hydrograph
3.09 cfs
0.60 cfs
Inflow Area=0.390 ac
Peak Elev=450.34'
Storage=0.129 af
Inflow
Primary
Flow (cfs)
0
1
2
3
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 28P: PP-1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
445.45	0.00	448.10	0.26	450.75	0.81
445.50	0.00	448.15	0.26	450.80	0.82
445.55	0.02	448.20	0.27	450.85	0.83
445.60	0.03	448.25	0.27	450.90	0.85
445.65	0.05	448.30	0.27	450.95	0.86
445.70	0.06	448.35	0.27	451.00	0.87
445.75	0.07	448.40	0.28	451.05	0.88
445.80	0.08	448.45	0.28	451.10	0.89
445.85	0.09	448.50	0.28	451.15	0.90
445.90	0.10	448.55	0.28	451.20	0.91
445.95	0.10	448.60	0.29	451.25	0.92
446.00	0.11	448.65	0.29	451.30	0.93
446.05	0.12	448.70	0.29	451.35	0.94
446.10	0.12	448.75	0.29	451.40	0.95
446.15	0.13	448.80	0.30	451.45	0.96
446.20	0.13	448.85	0.30	451.50	0.97
446.25	0.14	448.90	0.30	451.55	0.98
446.30	0.14	448.95	0.30	451.60	0.99
446.35	0.15	449.00	0.30	451.65	1.00
446.40	0.15	449.05	0.31	451.70	**1.01**
446.45	0.16	449.10	0.31		
446.50	0.16	449.15	0.31		
446.55	0.16	449.20	0.31		
446.60	0.17	449.25	0.32		
446.65	0.17	449.30	0.32		
446.70	0.18	449.35	0.32		
446.75	0.18	449.40	0.32		
446.80	0.18	449.45	0.32		
446.85	0.19	449.50	0.33		
446.90	0.19	449.55	0.33		
446.95	0.19	449.60	0.35		
447.00	0.20	449.65	0.38		
447.05	0.20	449.70	0.42		
447.10	0.20	449.75	0.46		
447.15	0.21	449.80	0.49		
447.20	0.21	449.85	0.52		
447.25	0.21	449.90	0.55		
447.30	0.22	449.95	0.57		
447.35	0.22	450.00	0.59		
447.40	0.22	450.05	0.61		
447.45	0.23	450.10	0.63		
447.50	0.23	450.15	0.64		
447.55	0.23	450.20	0.66		
447.60	0.23	450.25	0.68		
447.65	0.24	450.30	0.69		
447.70	0.24	450.35	0.71		
447.75	0.24	450.40	0.72		
447.80	0.25	450.45	0.74		
447.85	0.25	450.50	0.75		
447.90	0.25	450.55	0.76		
447.95	0.25	450.60	0.77		
448.00	0.26	450.65	0.79		
448.05	0.26	450.70	0.80		

Stage-Area-Storage for Pond 28P: PP-1

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
445.45	0.000	448.10	0.061	450.75	0.137
445.50	0.001	448.15	0.063	450.80	0.138
445.55	0.002	448.20	0.064	450.85	0.139
445.60	0.003	448.25	0.066	450.90	0.140
445.65	0.004	448.30	0.067	450.95	0.141
445.70	0.005	448.35	0.069	451.00	0.142
445.75	0.006	448.40	0.071	451.05	0.143
445.80	0.007	448.45	0.072	451.10	0.144
445.85	0.008	448.50	0.074	451.15	0.145
445.90	0.009	448.55	0.075	451.20	0.146
445.95	0.010	448.60	0.077	451.25	0.147
446.00	0.011	448.65	0.078	451.30	0.148
446.05	0.012	448.70	0.080	451.35	0.149
446.10	0.013	448.75	0.082	451.40	0.149
446.15	0.014	448.80	0.083	451.45	0.150
446.20	0.015	448.85	0.085	451.50	0.151
446.25	0.015	448.90	0.086	451.55	0.152
446.30	0.016	448.95	0.088	451.60	0.153
446.35	0.017	449.00	0.090	451.65	0.154
446.40	0.018	449.05	0.091	451.70	**0.155**
446.45	0.019	449.10	0.093		
446.50	0.020	449.15	0.094		
446.55	0.021	449.20	0.096		
446.60	0.022	449.25	0.097		
446.65	0.023	449.30	0.099		
446.70	0.023	449.35	0.100		
446.75	0.024	449.40	0.102		
446.80	0.025	449.45	0.103		
446.85	0.026	449.50	0.105		
446.90	0.028	449.55	0.107		
446.95	0.029	449.60	0.108		
447.00	0.030	449.65	0.110		
447.05	0.031	449.70	0.111		
447.10	0.032	449.75	0.112		
447.15	0.034	449.80	0.114		
447.20	0.035	449.85	0.115		
447.25	0.036	449.90	0.117		
447.30	0.038	449.95	0.118		
447.35	0.039	450.00	0.120		
447.40	0.040	450.05	0.121		
447.45	0.042	450.10	0.122		
447.50	0.043	450.15	0.124		
447.55	0.045	450.20	0.125		
447.60	0.046	450.25	0.126		
447.65	0.048	450.30	0.128		
447.70	0.049	450.35	0.129		
447.75	0.051	450.40	0.130		
447.80	0.052	450.45	0.131		
447.85	0.054	450.50	0.133		
447.90	0.055	450.55	0.134		
447.95	0.057	450.60	0.135		
448.00	0.058	450.65	0.136		
448.05	0.060	450.70	0.137		

Summary for Pond 29P: PP-2

Inflow Area = 1.060 ac, 68.87% Impervious, Inflow Depth = 10.31" for 100-Year-2050 event
Inflow = 4.15 cfs @ 12.09 hrs, Volume= 0.911 af
Outflow = 2.51 cfs @ 12.52 hrs, Volume= 0.910 af, Atten= 39%, Lag= 26.1 min
Primary = 2.51 cfs @ 12.52 hrs, Volume= 0.910 af
Routed to Link 25L : PDA-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 448.28' @ 12.52 hrs Surf.Area= 0.048 ac Storage= 0.151 af

Plug-Flow detention time= 122.2 min calculated for 0.910 af (100% of inflow)
Center-of-Mass det. time= 122.2 min (995.0 - 872.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	442.94'	0.108 af	**18.00'W x 116.17'L x 8.17'H Field A** 0.392 af Overall - 0.121 af Embedded = 0.271 af x 40.0% Voids
#2A	443.94'	0.102 af	**ADS N-12 60"** x 6 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf Row Length Adjustment= +42.00' x 19.30 sf x 2 rows 13.17' Header x 19.30 sf x 2 = 508.3 cf Inside
		0.210 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	442.94'	**15.0" Round Culvert** L= 23.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 442.94' / 442.87' S= 0.0030 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	442.94'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	446.75'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.51 cfs @ 12.52 hrs HW=448.28' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 2.51 cfs of 10.13 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.38 cfs @ 11.01 fps)
  └**3=Orifice/Grate** (Orifice Controls 2.14 cfs @ 5.44 fps)

Pond 29P: PP-2 - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf
Row Length Adjustment= +42.00' x 19.30 sf x 2 rows

67.0" Wide + 24.0" Spacing = 91.0" C-C Row Spacing

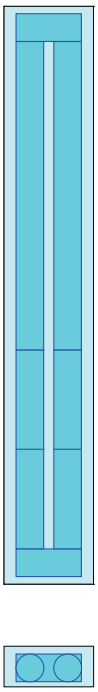
3 Chambers/Row x 20.00' Long +42.00' Row Adjustment +5.58' Header x 2 = 113.17' Row Length +18.0" End Stone x 2 = 116.17' Base Length
2 Rows x 67.0" Wide + 24.0" Spacing x 1 + 29.0" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 67.0" Chamber Height + 19.0" Stone Cover = 8.17' Field Height

6 Chambers x 386.0 cf +42.00' Row Adjustment x 19.30 sf x 2 Rows + 13.17' Header x 19.30 sf x 2 = 4,445.5 cf Chamber Storage
6 Chambers x 458.4 cf +42.00' Row Adjustment x 22.92 sf x 2 Rows + 13.17' Header x 22.92 sf x 2 = 5,279.5 cf Displacement

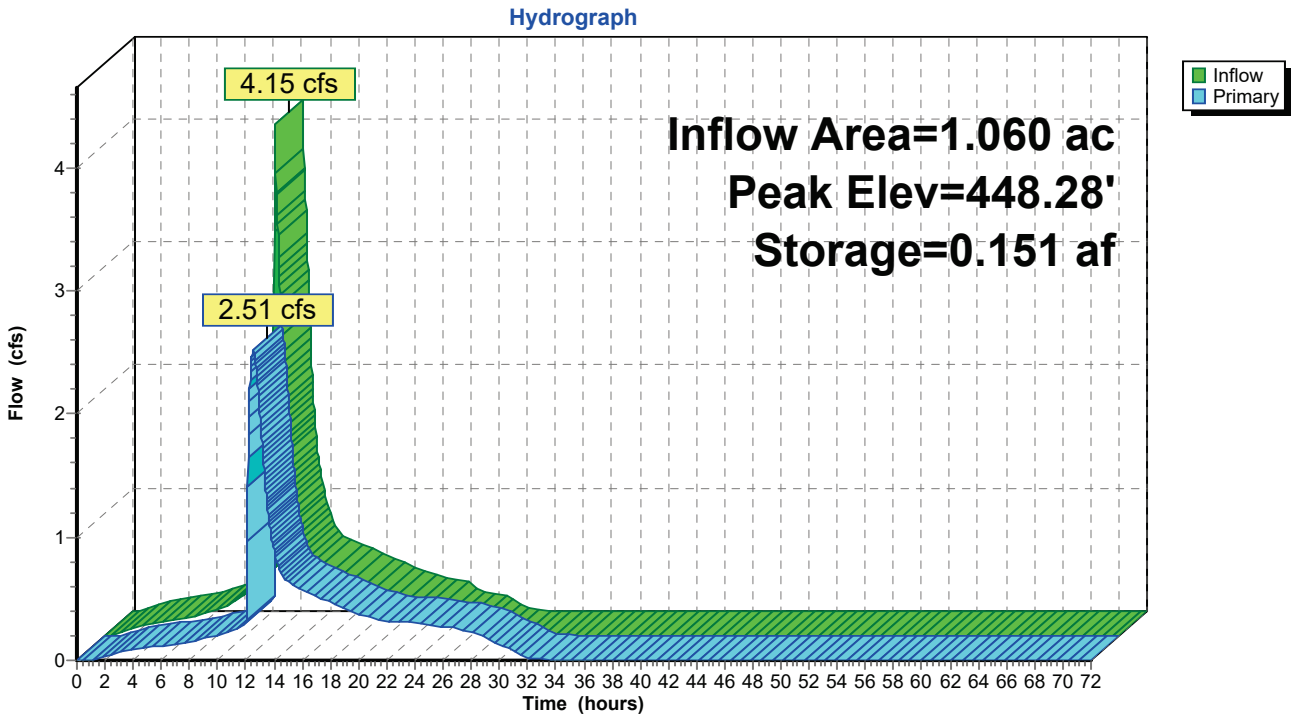
17,078.6 cf Field - 5,279.5 cf Chambers = 11,799.2 cf Stone x 40.0% Voids = 4,719.7 cf Stone Storage

Chamber Storage + Stone Storage = 9,165.1 cf = 0.210 af
Overall Storage Efficiency = 53.7%
Overall System Size = 116.17' x 18.00' x 8.17'

6 Chambers
632.5 cy Field
437.0 cy Stone



Pond 29P: PP-2


Hydrograph
4.15 cfs
2.51 cfs
Inflow Area=1.060 ac
Peak Elev=448.28'
Storage=0.151 af
Inflow
Primary
Flow (cfs)
0
1
2
3
4
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 29P: PP-2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
442.94	0.00	445.59	0.26	448.24	2.48	450.89	4.19
442.99	0.00	445.64	0.26	448.29	2.52	450.94	4.21
443.04	0.02	445.69	0.27	448.34	2.57	450.99	4.24
443.09	0.03	445.74	0.27	448.39	2.61	451.04	4.26
443.14	0.05	445.79	0.27	448.44	2.65	451.09	**4.29**
443.19	0.06	445.84	0.27	448.49	2.69		
443.24	0.07	445.89	0.28	448.54	2.73		
443.29	0.08	445.94	0.28	448.59	2.77		
443.34	0.09	445.99	0.28	448.64	2.81		
443.39	0.10	446.04	0.28	448.69	2.85		
443.44	0.10	446.09	0.29	448.74	2.89		
443.49	0.11	446.14	0.29	448.79	2.92		
443.54	0.12	446.19	0.29	448.84	2.96		
443.59	0.12	446.24	0.29	448.89	3.00		
443.64	0.13	446.29	0.30	448.94	3.03		
443.69	0.13	446.34	0.30	448.99	3.07		
443.74	0.14	446.39	0.30	449.04	3.10		
443.79	0.14	446.44	0.30	449.09	3.14		
443.84	0.15	446.49	0.30	449.14	3.17		
443.89	0.15	446.54	0.31	449.19	3.21		
443.94	0.16	446.59	0.31	449.24	3.24		
443.99	0.16	446.64	0.31	449.29	3.27		
444.04	0.16	446.69	0.31	449.34	3.30		
444.09	0.17	446.74	0.32	449.39	3.34		
444.14	0.17	446.79	0.33	449.44	3.37		
444.19	0.18	446.84	0.37	449.49	3.40		
444.24	0.18	446.89	0.44	449.54	3.43		
444.29	0.18	446.94	0.53	449.59	3.46		
444.34	0.19	446.99	0.64	449.64	3.49		
444.39	0.19	447.04	0.76	449.69	3.52		
444.44	0.19	447.09	0.89	449.74	3.55		
444.49	0.20	447.14	1.03	449.79	3.58		
444.54	0.20	447.19	1.16	449.84	3.61		
444.59	0.20	447.24	1.27	449.89	3.64		
444.64	0.21	447.29	1.36	449.94	3.67		
444.69	0.21	447.34	1.44	449.99	3.70		
444.74	0.21	447.39	1.52	450.04	3.73		
444.79	0.22	447.44	1.60	450.09	3.76		
444.84	0.22	447.49	1.67	450.14	3.79		
444.89	0.22	447.54	1.74	450.19	3.82		
444.94	0.23	447.59	1.80	450.24	3.84		
444.99	0.23	447.64	1.86	450.29	3.87		
445.04	0.23	447.69	1.92	450.34	3.90		
445.09	0.23	447.74	1.98	450.39	3.93		
445.14	0.24	447.79	2.04	450.44	3.95		
445.19	0.24	447.84	2.09	450.49	3.98		
445.24	0.24	447.89	2.15	450.54	4.01		
445.29	0.25	447.94	2.20	450.59	4.03		
445.34	0.25	447.99	2.25	450.64	4.06		
445.39	0.25	448.04	2.30	450.69	4.09		
445.44	0.25	448.09	2.34	450.74	4.11		
445.49	0.26	448.14	2.39	450.79	4.14		
445.54	0.26	448.19	2.43	450.84	4.16		

Stage-Area-Storage for Pond 29P: PP-2

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
442.94	0.000	448.24	0.150
443.04	0.002	448.34	0.153
443.14	0.004	448.44	0.156
443.24	0.006	448.54	0.159
443.34	0.008	448.64	0.161
443.44	0.010	448.74	0.164
443.54	0.012	448.84	0.167
443.64	0.013	448.94	0.169
443.74	0.015	449.04	0.172
443.84	0.017	449.14	0.174
443.94	0.019	449.24	0.176
444.04	0.021	449.34	0.177
444.14	0.022	449.44	0.179
444.24	0.024	449.54	0.180
444.34	0.026	449.64	0.182
444.44	0.028	449.74	0.184
444.54	0.030	449.84	0.186
444.64	0.033	449.94	0.188
444.74	0.035	450.04	0.190
444.84	0.038	450.14	0.192
444.94	0.041	450.24	0.194
445.04	0.044	450.34	0.196
445.14	0.047	450.44	0.198
445.24	0.050	450.54	0.200
445.34	0.053	450.64	0.201
445.44	0.056	450.74	0.203
445.54	0.059	450.84	0.205
445.64	0.063	450.94	0.207
445.74	0.066	451.04	**0.209**
445.84	0.069		
445.94	0.073		
446.04	0.076		
446.14	0.079		
446.24	0.083		
446.34	0.086		
446.44	0.090		
446.54	0.093		
446.64	0.096		
446.74	0.100		
446.84	0.103		
446.94	0.107		
447.04	0.110		
447.14	0.114		
447.24	0.117		
447.34	0.120		
447.44	0.124		
447.54	0.127		
447.64	0.130		
447.74	0.134		
447.84	0.137		
447.94	0.140		
448.04	0.143		
448.14	0.147		

Summary for Pond 30P: PP-3

Inflow Area = 0.550 ac, 61.82% Impervious, Inflow Depth = 10.09" for 100-Year-2050 event
Inflow = 5.67 cfs @ 12.09 hrs, Volume= 0.462 af
Outflow = 2.91 cfs @ 12.18 hrs, Volume= 0.462 af, Atten= 49%, Lag= 5.9 min
Primary = 2.91 cfs @ 12.18 hrs, Volume= 0.462 af
Routed to Pond 29P : PP-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 454.22' @ 12.19 hrs Surf.Area= 0.026 ac Storage= 0.119 af

Plug-Flow detention time= 89.6 min calculated for 0.462 af (100% of inflow)
Center-of-Mass det. time= 89.8 min (847.4 - 757.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.44'	0.078 af	**18.00'W x 62.17'L x 10.08'H Field A** 0.259 af Overall - 0.064 af Embedded = 0.195 af x 40.0% Voids
#2A	446.44'	0.054 af	**ADS N-12 60"** x 4 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf Row Length Adjustment= +8.00' x 19.30 sf x 2 rows 13.17' Header x 19.30 sf x 2 = 508.3 cf Inside
		0.132 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	445.44'	**15.0" Round Culvert** L= 19.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 445.44' / 445.38' S= 0.0031 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	445.44'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	450.44'	**5.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	455.00'	**6.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=2.90 cfs @ 12.18 hrs HW=454.22' TW=447.63' (Dynamic Tailwater)
└**1=Culvert** (Passes 2.90 cfs of 11.97 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.42 cfs @ 12.36 fps)
  ├**3=Orifice/Grate** (Orifice Controls 2.48 cfs @ 9.10 fps)
  └**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 30P: PP-3 - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf
Row Length Adjustment= +8.00' x 19.30 sf x 2 rows

67.0" Wide + 24.0" Spacing = 91.0" C-C Row Spacing

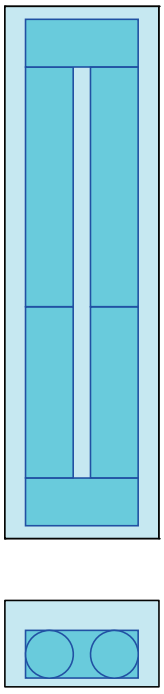
2 Chambers/Row x 20.00' Long +8.00' Row Adjustment +5.58' Header x 2 = 59.17' Row Length +18.0" End Stone x 2 = 62.17' Base Length
2 Rows x 67.0" Wide + 24.0" Spacing x 1 + 29.0" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 67.0" Chamber Height + 42.0" Stone Cover = 10.08' Field Height

4 Chambers x 386.0 cf +8.00' Row Adjustment x 19.30 sf x 2 Rows + 13.17' Header x 19.30 sf x 2 = 2,361.1 cf Chamber Storage
4 Chambers x 458.4 cf +8.00' Row Adjustment x 22.92 sf x 2 Rows + 13.17' Header x 22.92 sf x 2 = 2,804.0 cf Displacement

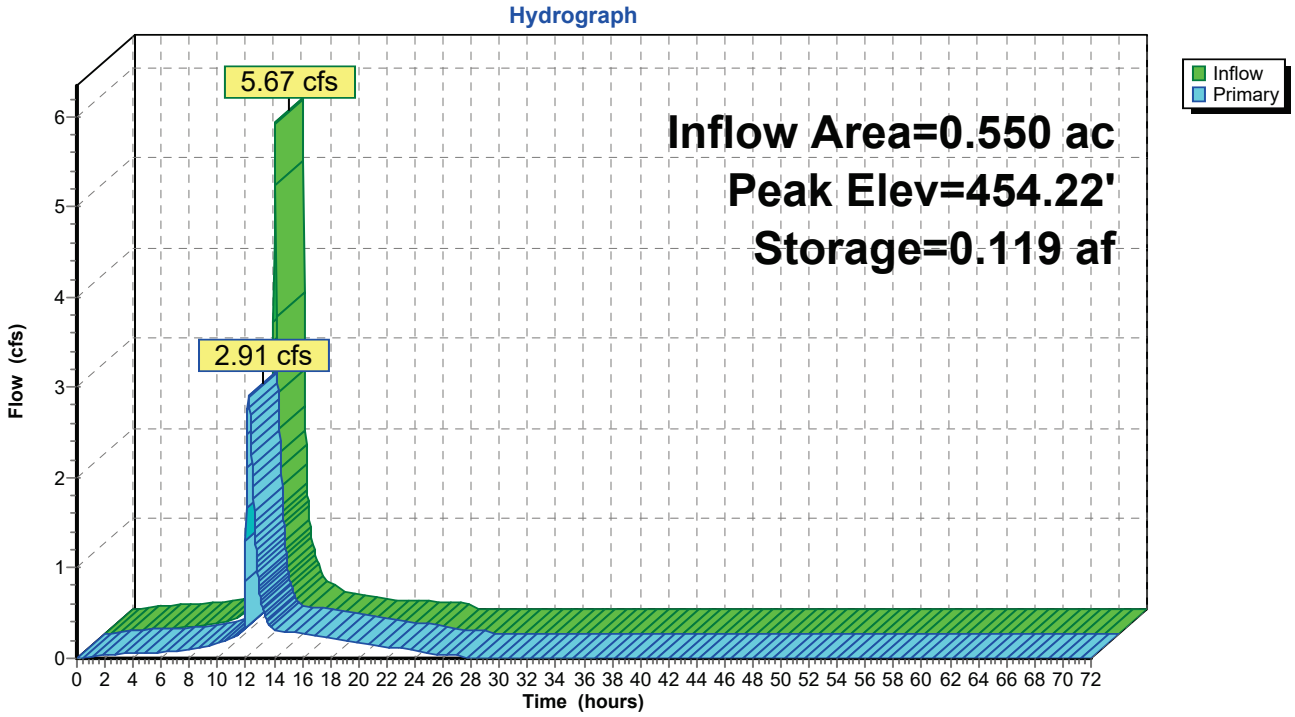
11,284.6 cf Field - 2,804.0 cf Chambers = 8,480.6 cf Stone x 40.0% Voids = 3,392.2 cf Stone Storage

Chamber Storage + Stone Storage = 5,753.3 cf = 0.132 af
Overall Storage Efficiency = 51.0%
Overall System Size = 62.17' x 18.00' x 10.08'

4 Chambers
417.9 cy Field
314.1 cy Stone



Pond 30P: PP-3


Hydrograph
5.67 cfs
2.91 cfs
Inflow Area=0.550 ac
Peak Elev=454.22'
Storage=0.119 af
Inflow
Primary
Flow (cfs)
0 1 2 3 4 5 6
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72

Stage-Discharge for Pond 30P: PP-3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
445.44	0.00	448.09	0.26	450.74	0.77	453.39	2.63
445.49	0.00	448.14	0.26	450.79	0.87	453.44	2.66
445.54	0.02	448.19	0.27	450.84	0.96	453.49	2.68
445.59	0.03	448.24	0.27	450.89	1.03	453.54	2.70
445.64	0.05	448.29	0.27	450.94	1.09	453.59	2.72
445.69	0.06	448.34	0.27	450.99	1.15	453.64	2.74
445.74	0.07	448.39	0.28	451.04	1.21	453.69	2.76
445.79	0.08	448.44	0.28	451.09	1.26	453.74	2.78
445.84	0.09	448.49	0.28	451.14	1.31	453.79	2.80
445.89	0.10	448.54	0.28	451.19	1.36	453.84	2.82
445.94	0.10	448.59	0.29	451.24	1.40	453.89	2.84
445.99	0.11	448.64	0.29	451.29	1.45	453.94	2.86
446.04	0.12	448.69	0.29	451.34	1.49	453.99	2.88
446.09	0.12	448.74	0.29	451.39	1.53	454.04	2.90
446.14	0.13	448.79	0.30	451.44	1.57	454.09	2.92
446.19	0.13	448.84	0.30	451.49	1.60	454.14	2.93
446.24	0.14	448.89	0.30	451.54	1.64	454.19	2.95
446.29	0.14	448.94	0.30	451.59	1.68	454.24	2.97
446.34	0.15	448.99	0.30	451.64	1.71	454.29	2.99
446.39	0.15	449.04	0.31	451.69	1.75	454.34	3.01
446.44	0.16	449.09	0.31	451.74	1.78	454.39	3.03
446.49	0.16	449.14	0.31	451.79	1.81	454.44	3.05
446.54	0.16	449.19	0.31	451.84	1.85	454.49	3.06
446.59	0.17	449.24	0.32	451.89	1.88	454.54	3.08
446.64	0.17	449.29	0.32	451.94	1.91	454.59	3.10
446.69	0.18	449.34	0.32	451.99	1.94	454.64	3.12
446.74	0.18	449.39	0.32	452.04	1.97	454.69	3.14
446.79	0.18	449.44	0.32	452.09	2.00	454.74	3.15
446.84	0.19	449.49	0.33	452.14	2.03	454.79	3.17
446.89	0.19	449.54	0.33	452.19	2.05	454.84	3.19
446.94	0.19	449.59	0.33	452.24	2.08	454.89	3.21
446.99	0.20	449.64	0.33	452.29	2.11	454.94	3.22
447.04	0.20	449.69	0.33	452.34	2.14	454.99	3.24
447.09	0.20	449.74	0.34	452.39	2.16	455.04	3.39
447.14	0.21	449.79	0.34	452.44	2.19	455.09	3.73
447.19	0.21	449.84	0.34	452.49	2.21	455.14	4.17
447.24	0.21	449.89	0.34	452.54	2.24	455.19	4.70
447.29	0.22	449.94	0.34	452.59	2.27	455.24	5.32
447.34	0.22	449.99	0.35	452.64	2.29	455.29	6.02
447.39	0.22	450.04	0.35	452.69	2.31	455.34	6.79
447.44	0.23	450.09	0.35	452.74	2.34	455.39	7.63
447.49	0.23	450.14	0.35	452.79	2.36	455.44	8.56
447.54	0.23	450.19	0.35	452.84	2.39	455.49	**9.56**
447.59	0.23	450.24	0.36	452.89	2.41		
447.64	0.24	450.29	0.36	452.94	2.43		
447.69	0.24	450.34	0.36	452.99	2.46		
447.74	0.24	450.39	0.36	453.04	2.48		
447.79	0.25	450.44	0.36	453.09	2.50		
447.84	0.25	450.49	0.38	453.14	2.53		
447.89	0.25	450.54	0.42	453.19	2.55		
447.94	0.25	450.59	0.49	453.24	2.57		
447.99	0.26	450.64	0.57	453.29	2.59		
448.04	0.26	450.69	0.66	453.34	2.61		

Stage-Area-Storage for Pond 30P: PP-3

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
445.44	0.000	450.74	0.080
445.54	0.001	450.84	0.082
445.64	0.002	450.94	0.083
445.74	0.003	451.04	0.085
445.84	0.004	451.14	0.086
445.94	0.005	451.24	0.088
446.04	0.006	451.34	0.089
446.14	0.007	451.44	0.090
446.24	0.008	451.54	0.092
446.34	0.009	451.64	0.093
446.44	0.010	451.74	0.094
446.54	0.011	451.84	0.094
446.64	0.012	451.94	0.095
446.74	0.013	452.04	0.096
446.84	0.014	452.14	0.097
446.94	0.015	452.24	0.098
447.04	0.016	452.34	0.099
447.14	0.018	452.44	0.100
447.24	0.019	452.54	0.101
447.34	0.020	452.64	0.102
447.44	0.022	452.74	0.103
447.54	0.024	452.84	0.104
447.64	0.025	452.94	0.106
447.74	0.027	453.04	0.107
447.84	0.028	453.14	0.108
447.94	0.030	453.24	0.109
448.04	0.032	453.34	0.110
448.14	0.034	453.44	0.111
448.24	0.035	453.54	0.112
448.34	0.037	453.64	0.113
448.44	0.039	453.74	0.114
448.54	0.041	453.84	0.115
448.64	0.042	453.94	0.116
448.74	0.044	454.04	0.117
448.84	0.046	454.14	0.118
448.94	0.048	454.24	0.119
449.04	0.050	454.34	0.120
449.14	0.052	454.44	0.121
449.24	0.053	454.54	0.122
449.34	0.055	454.64	0.123
449.44	0.057	454.74	0.124
449.54	0.059	454.84	0.125
449.64	0.061	454.94	0.126
449.74	0.062	455.04	0.127
449.84	0.064	455.14	0.128
449.94	0.066	455.24	0.129
450.04	0.068	455.34	0.130
450.14	0.070	455.44	**0.131**
450.24	0.071		
450.34	0.073		
450.44	0.075		
450.54	0.077		
450.64	0.078		

Summary for Pond 31P: PP-4

Inflow Area = 0.200 ac, 90.00% Impervious, Inflow Depth = 10.97" for 100-Year-2050 event
Inflow = 2.35 cfs @ 12.09 hrs, Volume= 0.183 af
Outflow = 1.04 cfs @ 12.18 hrs, Volume= 0.183 af, Atten= 56%, Lag= 5.3 min
Primary = 1.04 cfs @ 12.18 hrs, Volume= 0.183 af
Routed to Pond 28P : PP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 456.74' @ 12.18 hrs Surf.Area= 0.014 ac Storage= 0.036 af

Plug-Flow detention time= 24.7 min calculated for 0.183 af (100% of inflow)
Center-of-Mass det. time= 24.2 min (764.2 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	451.95'	0.023 af	**18.00'W x 33.00'L x 5.83'H Field A** 0.080 af Overall - 0.022 af Embedded = 0.058 af x 40.0% Voids
#2A	452.45'	0.018 af	**ADS N-12 48"** x 2 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf Row Length Adjustment= +1.00' x 12.40 sf x 2 rows 11.08' Header x 12.40 sf x 2 = 274.9 cf Inside
		0.041 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	449.63'	**15.0" Round Culvert** L= 29.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 449.63' / 449.55' S= 0.0028 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	451.95'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	453.95'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	457.00'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.03 cfs @ 12.18 hrs HW=456.73' TW=448.95' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.03 cfs of 11.87 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.35 cfs @ 10.41 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.68 cfs @ 7.79 fps)
  └─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 31P: PP-4 - Chamber Wizard Field A

Chamber Model = ADS N-12 48" (ADS N-12® Pipe)
Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf
Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf
Row Length Adjustment= +1.00' x 12.40 sf x 2 rows

54.0" Wide + 25.0" Spacing = 79.0" C-C Row Spacing

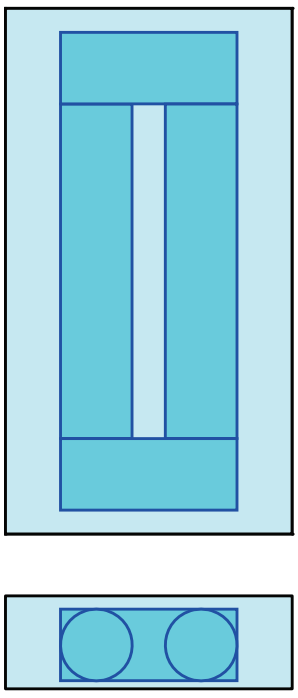
1 Chambers/Row x 20.00' Long +1.00' Row Adjustment +4.50' Header x 2 = 30.00' Row Length +18.0" End Stone x 2 = 33.00' Base Length
2 Rows x 54.0" Wide + 25.0" Spacing x 1 + 41.5" Side Stone x 2 = 18.00' Base Width
6.0" Stone Base + 54.0" Chamber Height + 10.0" Stone Cover = 5.83' Field Height

2 Chambers x 248.0 cf +1.00' Row Adjustment x 12.40 sf x 2 Rows + 11.08' Header x 12.40 sf x 2 = 795.7 cf Chamber Storage
2 Chambers x 297.0 cf +1.00' Row Adjustment x 14.85 sf x 2 Rows + 11.08' Header x 14.85 sf x 2 = 952.8 cf Displacement

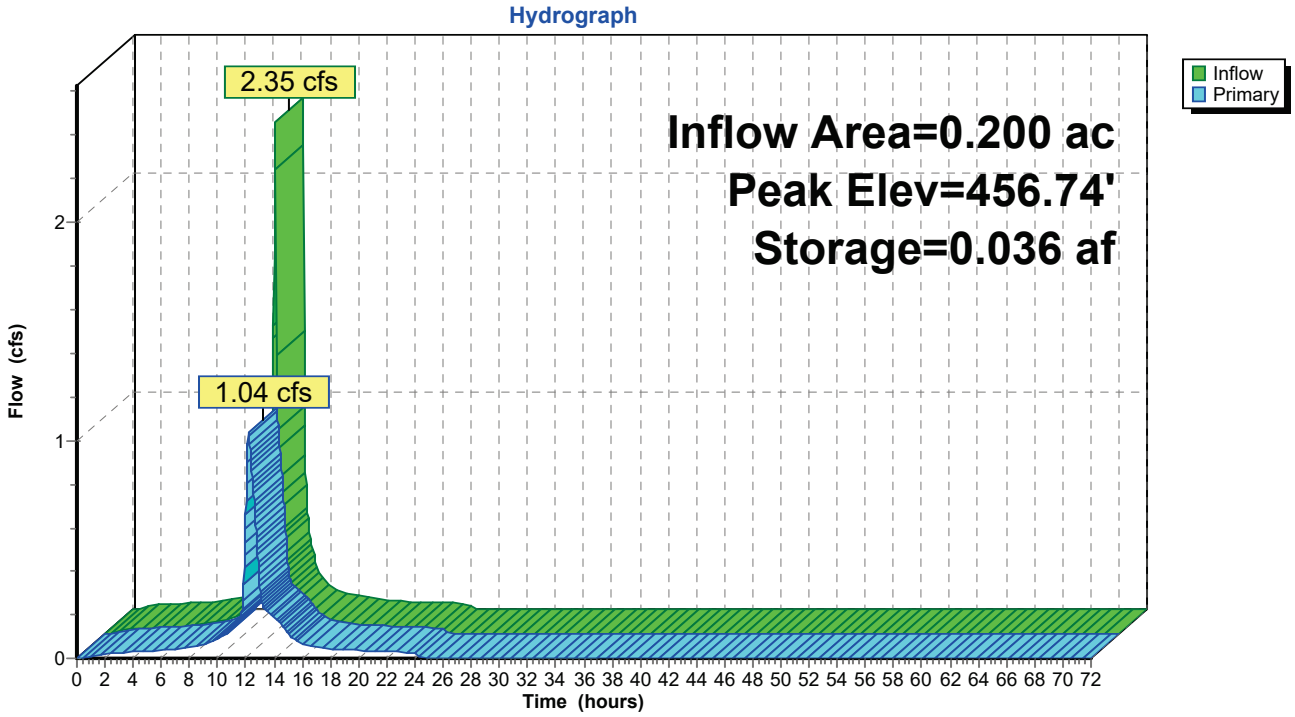
3,465.1 cf Field - 952.8 cf Chambers = 2,512.3 cf Stone x 40.0% Voids = 1,004.9 cf Stone Storage

Chamber Storage + Stone Storage = 1,800.6 cf = 0.041 af
Overall Storage Efficiency = 52.0%
Overall System Size = 33.00' x 18.00' x 5.83'

2 Chambers
128.3 cy Field
93.0 cy Stone



Pond 31P: PP-4


Hydrograph
2.35 cfs
1.04 cfs
Inflow Area=0.200 ac
Peak Elev=456.74'
Storage=0.036 af
Inflow
Primary
Flow (cfs)
0
1
2
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 31P: PP-4

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
451.95	0.00	454.60	0.55	457.25	2.89
452.00	0.00	454.65	0.57	457.30	3.48
452.05	0.02	454.70	0.59	457.35	4.13
452.10	0.03	454.75	0.60	457.40	4.83
452.15	0.05	454.80	0.62	457.45	5.62
452.20	0.06	454.85	0.63	457.50	6.46
452.25	0.07	454.90	0.65	457.55	7.36
452.30	0.08	454.95	0.66	457.60	8.33
452.35	0.09	455.00	0.68	457.65	9.39
452.40	0.10	455.05	0.69	457.70	10.53
452.45	0.10	455.10	0.70	457.75	**11.73**
452.50	0.11	455.15	0.72		
452.55	0.12	455.20	0.73		
452.60	0.12	455.25	0.74		
452.65	0.13	455.30	0.75		
452.70	0.13	455.35	0.76		
452.75	0.14	455.40	0.78		
452.80	0.14	455.45	0.79		
452.85	0.15	455.50	0.80		
452.90	0.15	455.55	0.81		
452.95	0.16	455.60	0.82		
453.00	0.16	455.65	0.83		
453.05	0.16	455.70	0.84		
453.10	0.17	455.75	0.85		
453.15	0.17	455.80	0.86		
453.20	0.18	455.85	0.87		
453.25	0.18	455.90	0.88		
453.30	0.18	455.95	0.89		
453.35	0.19	456.00	0.90		
453.40	0.19	456.05	0.91		
453.45	0.19	456.10	0.92		
453.50	0.20	456.15	0.93		
453.55	0.20	456.20	0.94		
453.60	0.20	456.25	0.95		
453.65	0.21	456.30	0.96		
453.70	0.21	456.35	0.97		
453.75	0.21	456.40	0.98		
453.80	0.22	456.45	0.99		
453.85	0.22	456.50	0.99		
453.90	0.22	456.55	1.00		
453.95	0.23	456.60	1.01		
454.00	0.24	456.65	1.02		
454.05	0.26	456.70	1.03		
454.10	0.28	456.75	1.04		
454.15	0.32	456.80	1.05		
454.20	0.36	456.85	1.05		
454.25	0.40	456.90	1.06		
454.30	0.43	456.95	1.07		
454.35	0.45	457.00	1.08		
454.40	0.48	457.05	1.24		
454.45	0.50	457.10	1.54		
454.50	0.52	457.15	1.92		
454.55	0.54	457.20	2.36		

Stage-Area-Storage for Pond 31P: PP-4

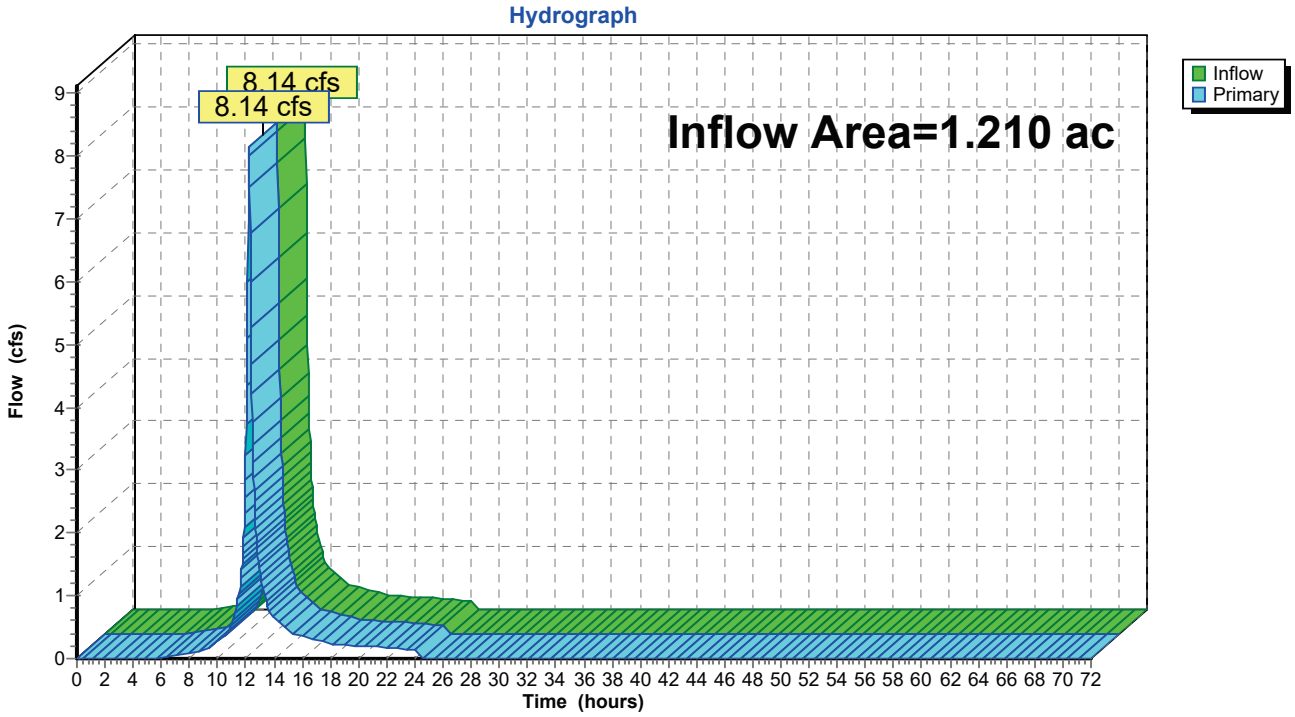
Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
451.95	0.000	454.60	0.019	457.25	0.038
452.00	0.000	454.65	0.019	457.30	0.039
452.05	0.001	454.70	0.020	457.35	0.039
452.10	0.001	454.75	0.020	457.40	0.039
452.15	0.001	454.80	0.021	457.45	0.040
452.20	0.001	454.85	0.021	457.50	0.040
452.25	0.002	454.90	0.022	457.55	0.040
452.30	0.002	454.95	0.022	457.60	0.040
452.35	0.002	455.00	0.022	457.65	0.041
452.40	0.002	455.05	0.023	457.70	0.041
452.45	0.003	455.10	0.023	457.75	**0.041**
452.50	0.003	455.15	0.024		
452.55	0.003	455.20	0.024		
452.60	0.003	455.25	0.025		
452.65	0.004	455.30	0.025		
452.70	0.004	455.35	0.025		
452.75	0.004	455.40	0.026		
452.80	0.004	455.45	0.026		
452.85	0.005	455.50	0.027		
452.90	0.005	455.55	0.027		
452.95	0.005	455.60	0.028		
453.00	0.006	455.65	0.028		
453.05	0.006	455.70	0.028		
453.10	0.006	455.75	0.029		
453.15	0.007	455.80	0.029		
453.20	0.007	455.85	0.030		
453.25	0.008	455.90	0.030		
453.30	0.008	455.95	0.030		
453.35	0.008	456.00	0.031		
453.40	0.009	456.05	0.031		
453.45	0.009	456.10	0.032		
453.50	0.009	456.15	0.032		
453.55	0.010	456.20	0.032		
453.60	0.010	456.25	0.033		
453.65	0.011	456.30	0.033		
453.70	0.011	456.35	0.033		
453.75	0.012	456.40	0.034		
453.80	0.012	456.45	0.034		
453.85	0.012	456.50	0.034		
453.90	0.013	456.55	0.035		
453.95	0.013	456.60	0.035		
454.00	0.014	456.65	0.035		
454.05	0.014	456.70	0.036		
454.10	0.014	456.75	0.036		
454.15	0.015	456.80	0.036		
454.20	0.015	456.85	0.036		
454.25	0.016	456.90	0.037		
454.30	0.016	456.95	0.037		
454.35	0.017	457.00	0.037		
454.40	0.017	457.05	0.037		
454.45	0.018	457.10	0.038		
454.50	0.018	457.15	0.038		
454.55	0.018	457.20	0.038		

Summary for Link 3L: EDA-1

Inflow Area = 1.210 ac, 3.31% Impervious, Inflow Depth = 7.73" for 100-Year-2050 event
Inflow = 8.14 cfs @ 12.22 hrs, Volume= 0.779 af
Primary = 8.14 cfs @ 12.22 hrs, Volume= 0.779 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 3L: EDA-1

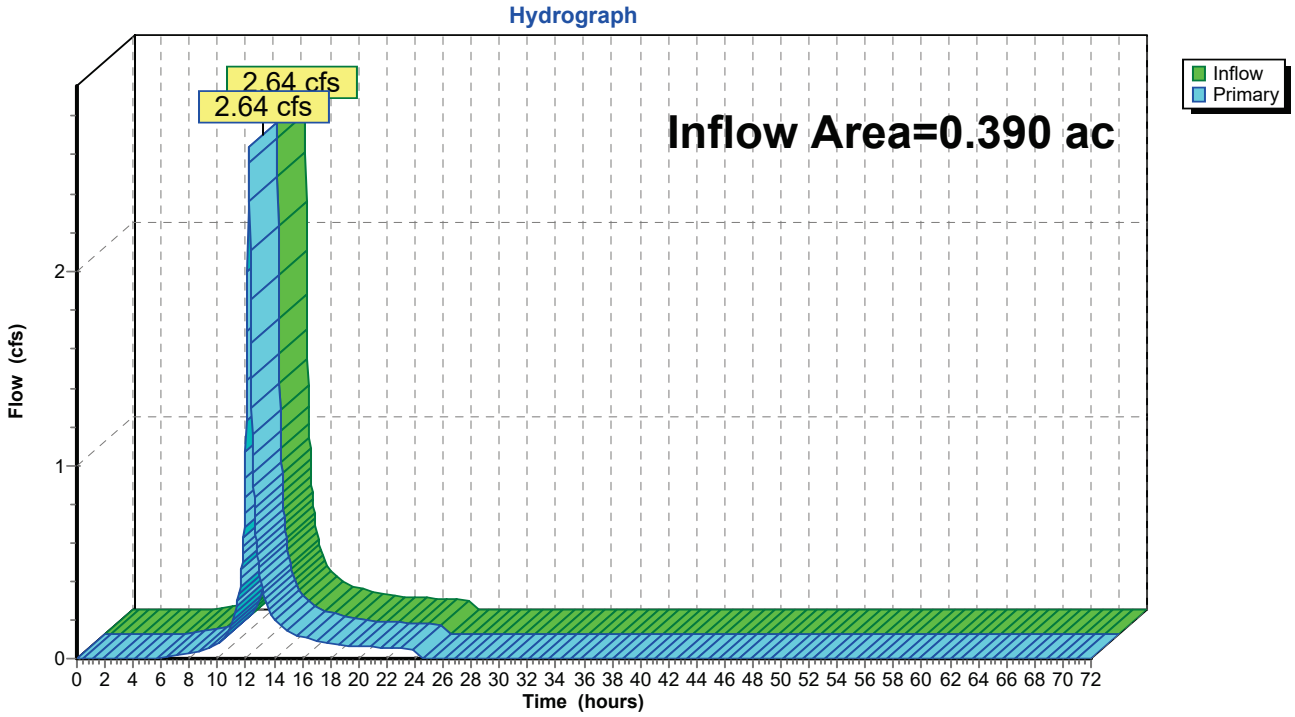


Summary for Link 6L: EDA-2

Inflow Area = 0.390 ac, 0.00% Impervious, Inflow Depth = 7.61" for 100-Year-2050 event
Inflow = 2.64 cfs @ 12.21 hrs, Volume= 0.247 af
Primary = 2.64 cfs @ 12.21 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 6L: EDA-2

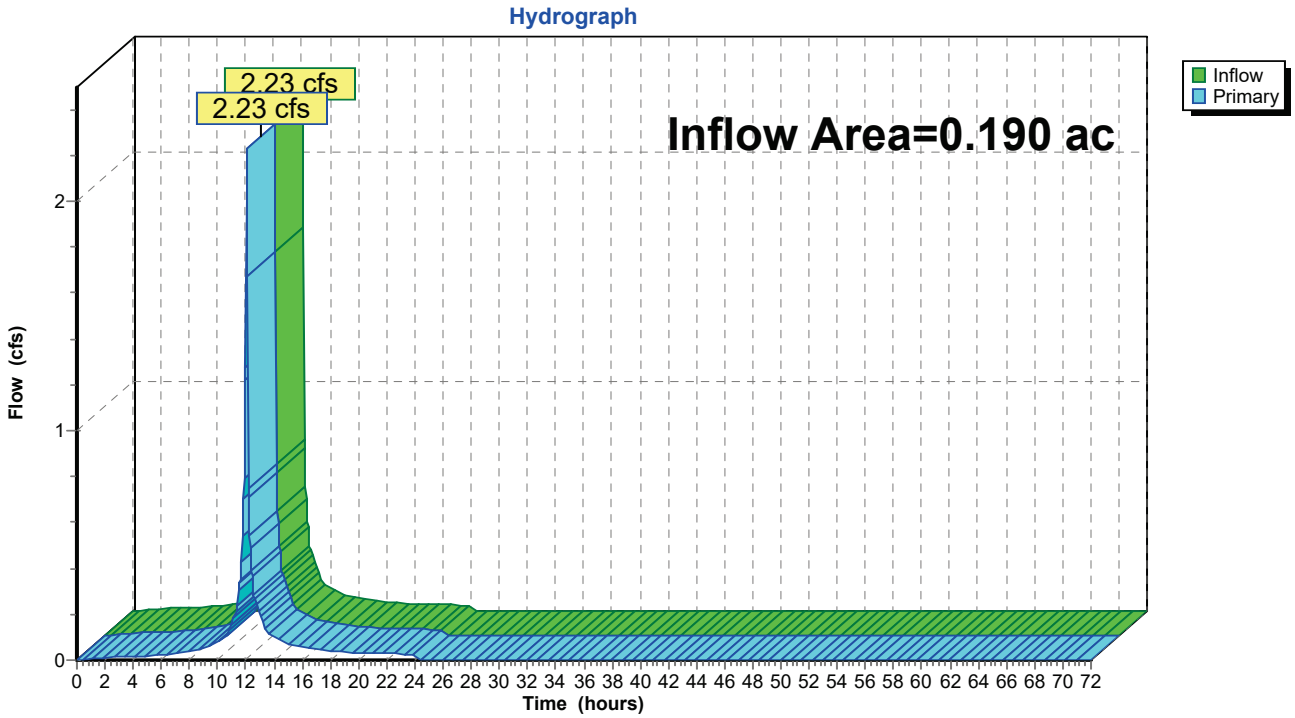


Summary for Link 9L: PDA-1A

Inflow Area = 0.190 ac, 47.37% Impervious, Inflow Depth = 9.64" for 100-Year-2050 event
Inflow = 2.23 cfs @ 12.08 hrs, Volume= 0.153 af
Primary = 2.23 cfs @ 12.08 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 28P : PP-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 9L: PDA-1A

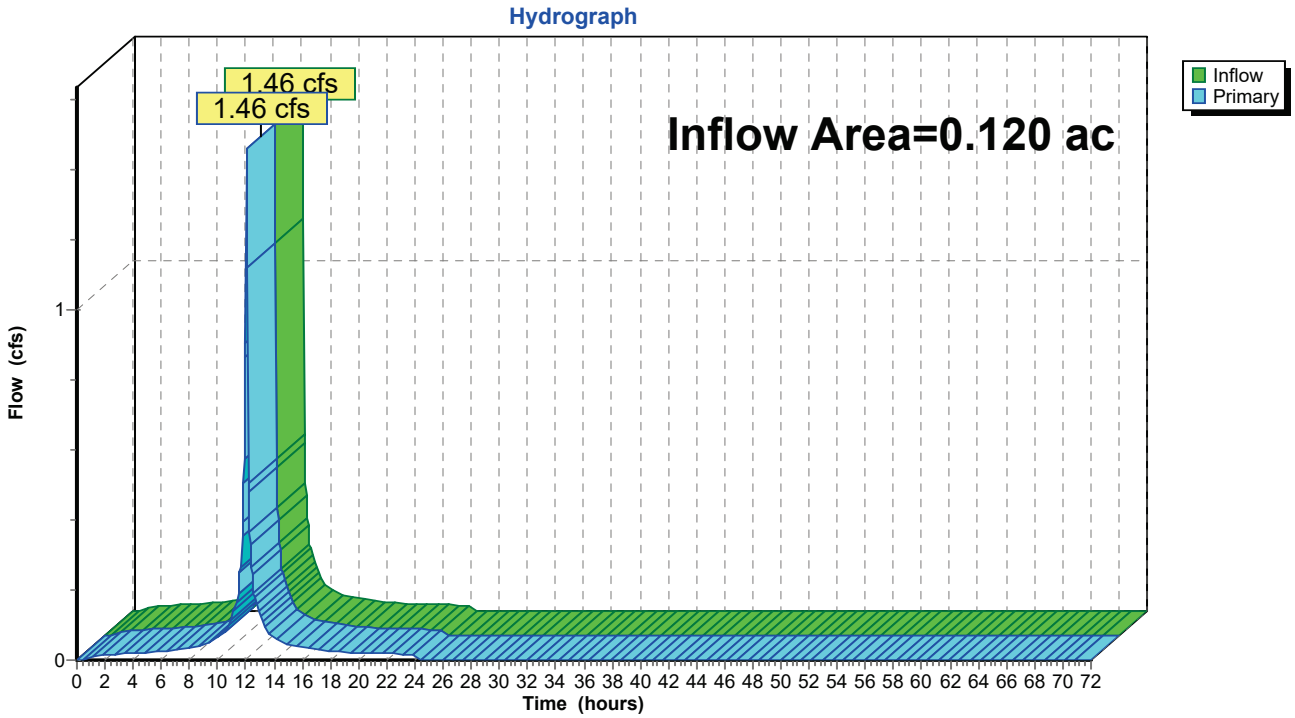


Summary for Link 12L: PDA-1B

Inflow Area = 0.120 ac,100.00% Impervious, Inflow Depth = 11.28" for 100-Year-2050 event
Inflow = 1.46 cfs @ 12.07 hrs, Volume= 0.113 af
Primary = 1.46 cfs @ 12.07 hrs, Volume= 0.113 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 29P : PP-2

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 12L: PDA-1B

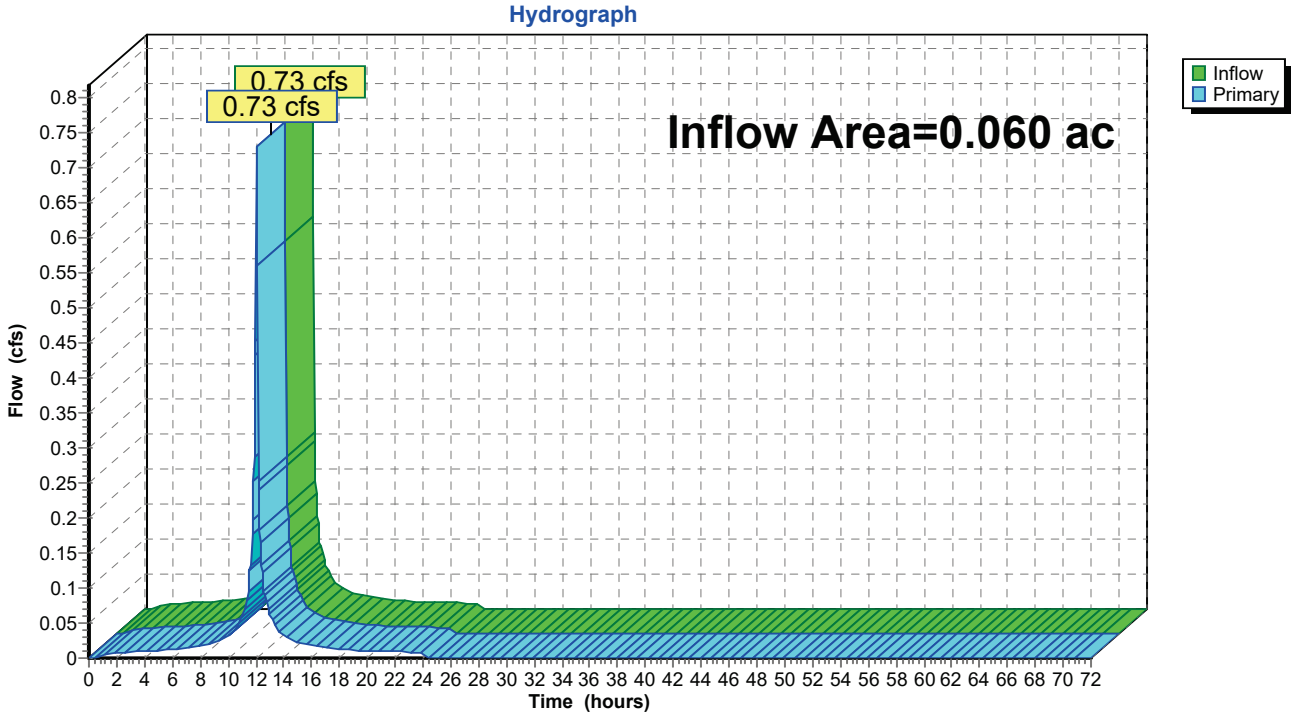


Summary for Link 15L: PDA-1C

Inflow Area = 0.060 ac,100.00% Impervious, Inflow Depth = 11.28" for 100-Year-2050 event
Inflow = 0.73 cfs @ 12.07 hrs, Volume= 0.056 af
Primary = 0.73 cfs @ 12.07 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 15L: PDA-1C

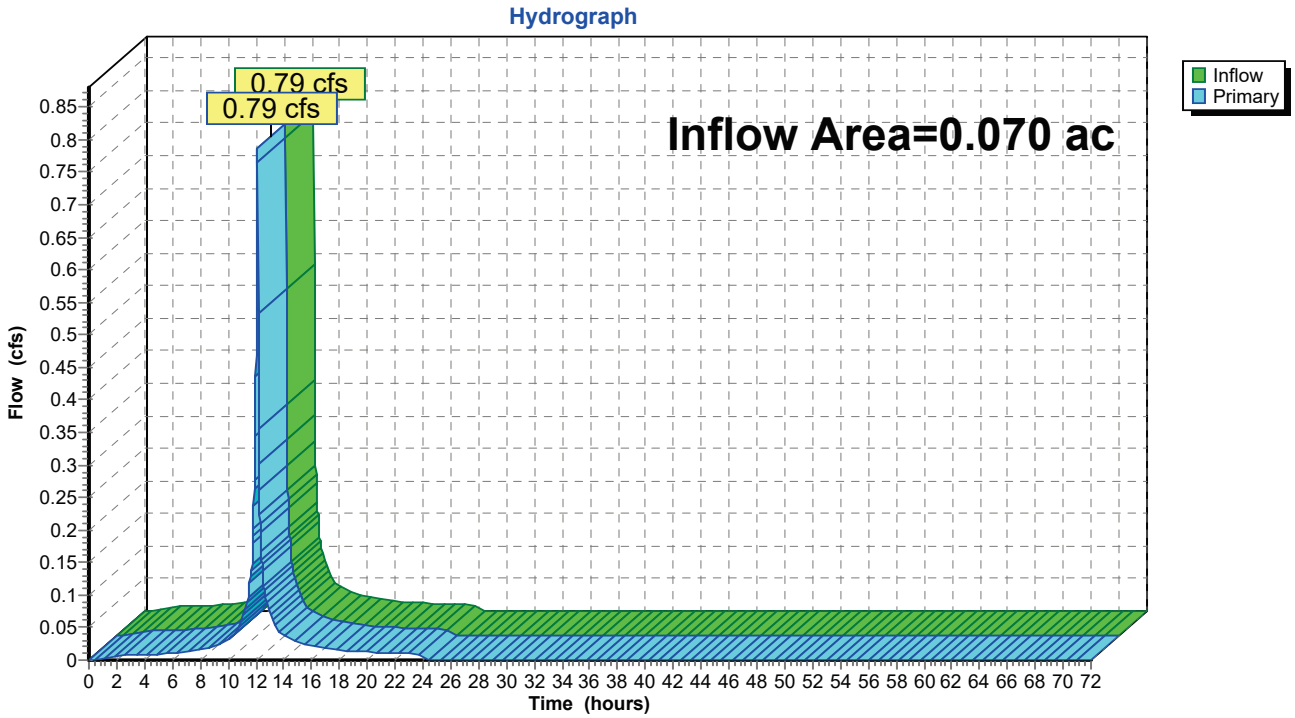


Summary for Link 18L: PDA-1D

Inflow Area = 0.070 ac, 71.43% Impervious, Inflow Depth = 10.39" for 100-Year-2050 event
Inflow = 0.79 cfs @ 12.10 hrs, Volume= 0.061 af
Primary = 0.79 cfs @ 12.10 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 31P : PP-4

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 18L: PDA-1D

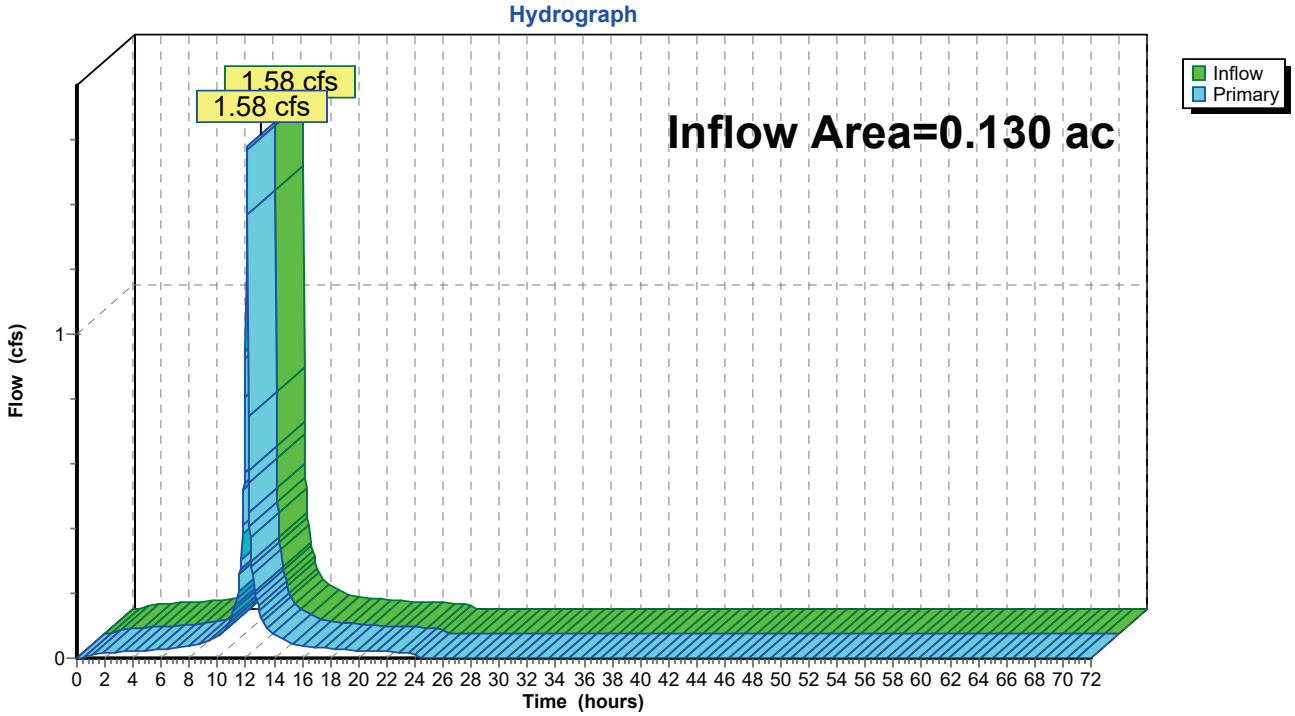


Summary for Link 21L: PDA-1E

Inflow Area = 0.130 ac,100.00% Impervious, Inflow Depth = 11.28" for 100-Year-2050 event
Inflow = 1.58 cfs @ 12.08 hrs, Volume= 0.122 af
Primary = 1.58 cfs @ 12.08 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 31P : PP-4

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 21L: PDA-1E

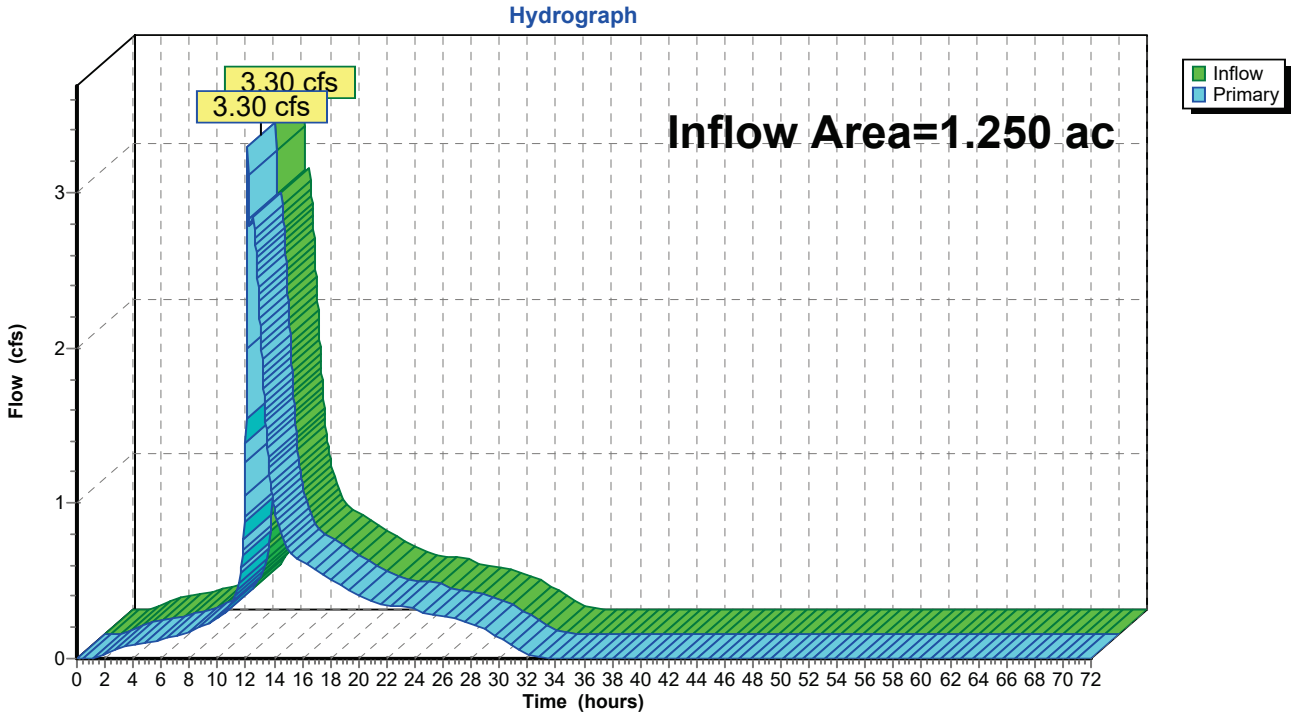


Summary for Link 25L: PDA-1

Inflow Area = 1.250 ac, 60.00% Impervious, Inflow Depth = 10.03" for 100-Year-2050 event
Inflow = 3.30 cfs @ 12.13 hrs, Volume= 1.045 af
Primary = 3.30 cfs @ 12.13 hrs, Volume= 1.045 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 25L: PDA-1

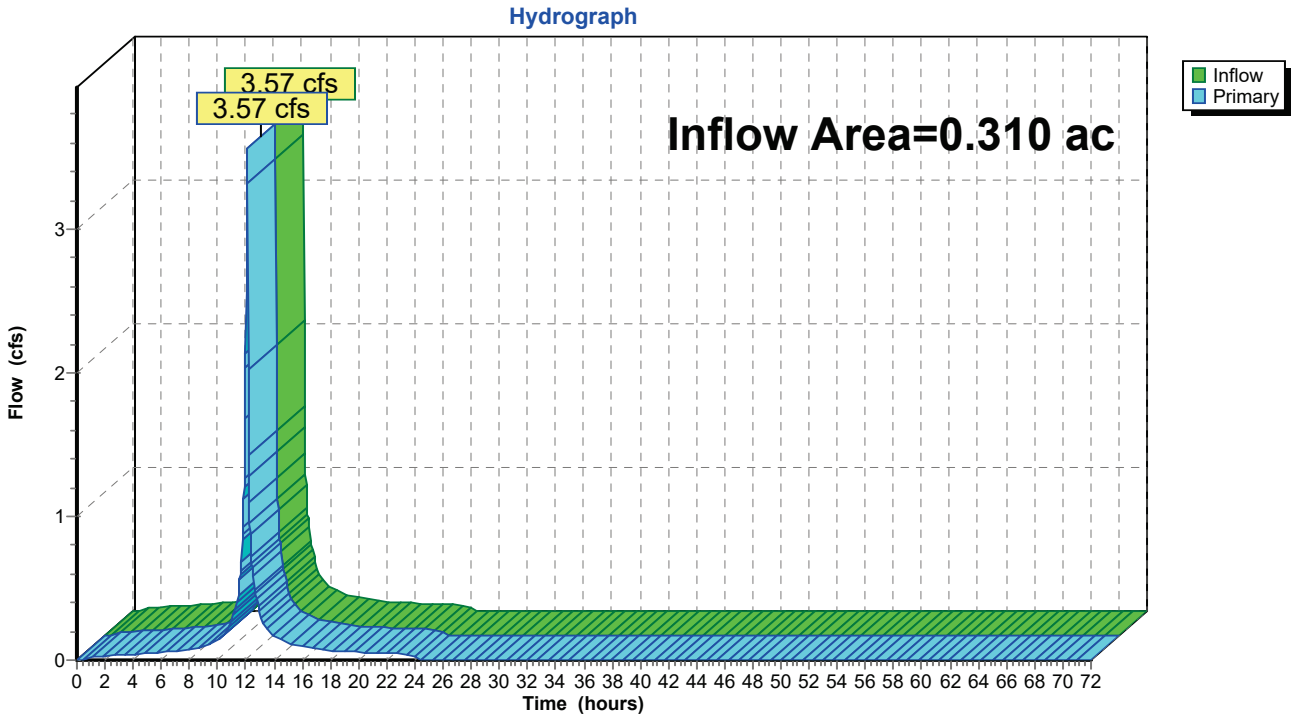


Summary for Link 28L: PDA-1F

Inflow Area = 0.310 ac, 77.42% Impervious, Inflow Depth = 10.58" for 100-Year-2050 event
Inflow = 3.57 cfs @ 12.09 hrs, Volume= 0.273 af
Primary = 3.57 cfs @ 12.09 hrs, Volume= 0.273 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 28L: PDA-1F

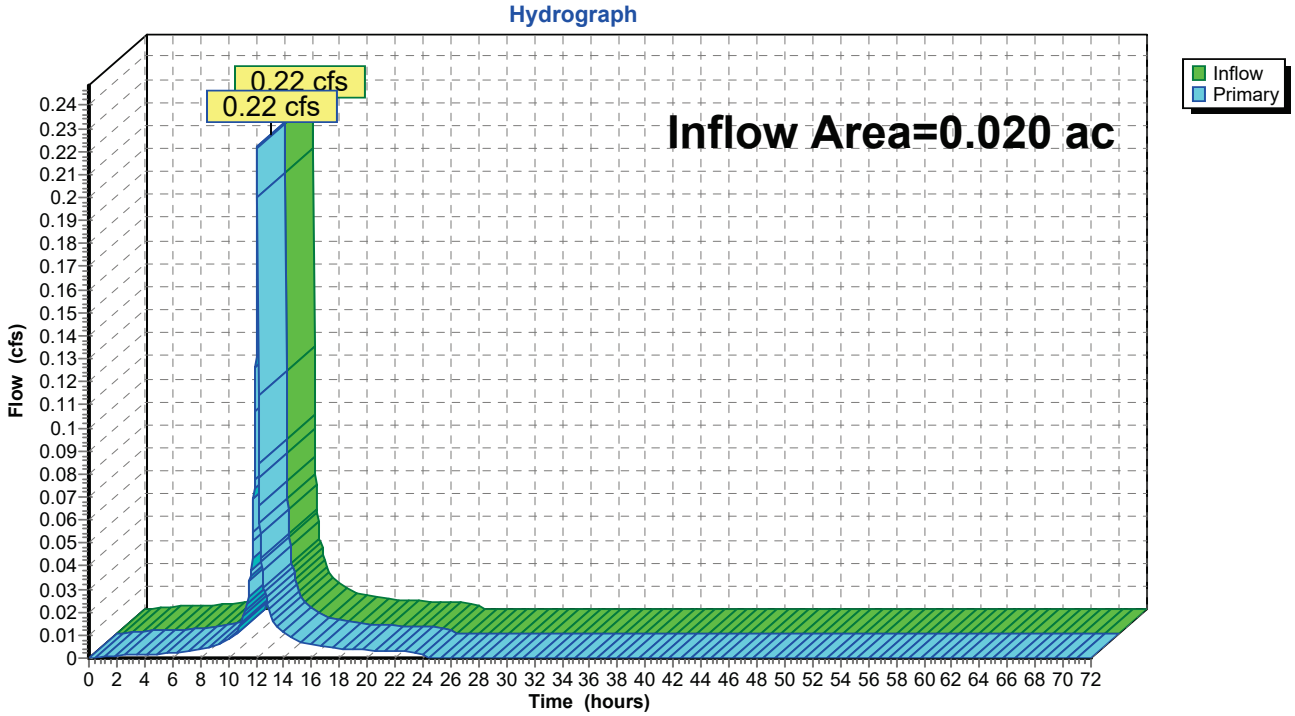


Summary for Link 31L: PDA-1H

Inflow Area = 0.020 ac, 50.00% Impervious, Inflow Depth = 9.72" for 100-Year-2050 event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.016 af
Primary = 0.22 cfs @ 12.09 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min
Routed to Link 25L : PDA-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 31L: PDA-1H

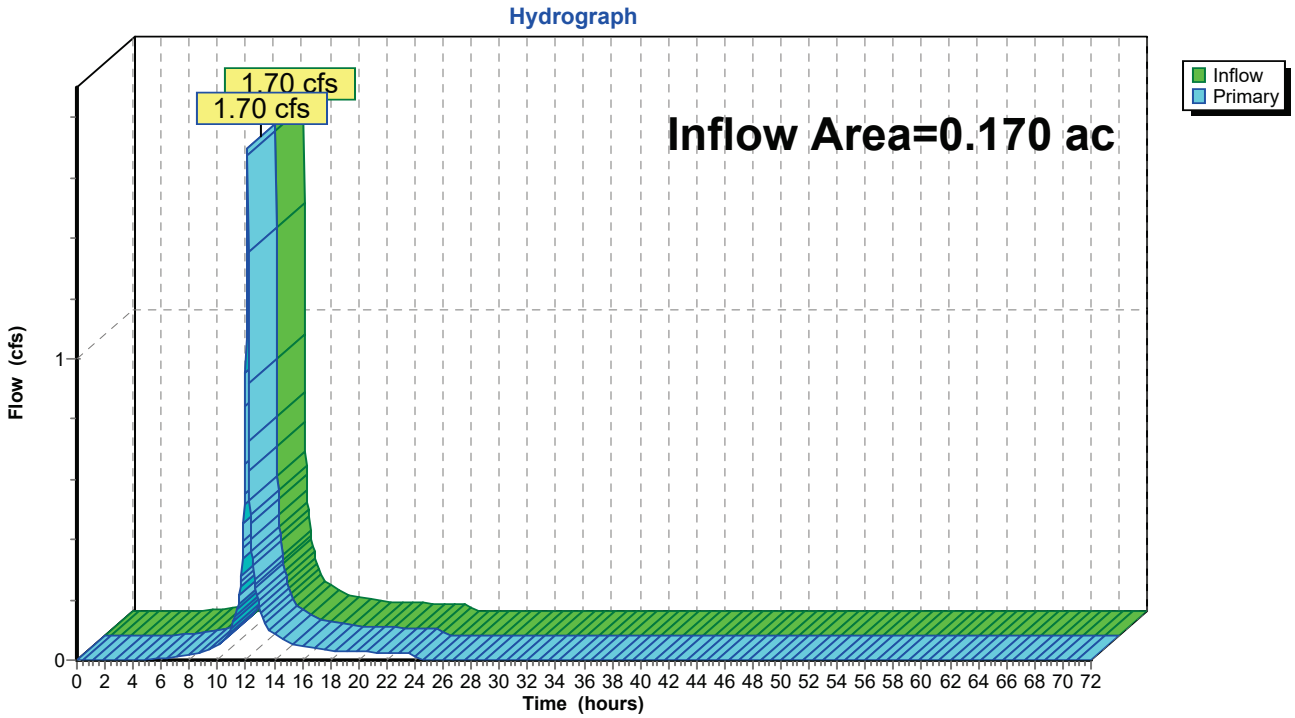


Summary for Link 32L: PDA-1I

Inflow Area = 0.170 ac, 5.88% Impervious, Inflow Depth = 8.35" for 100-Year-2050 event
Inflow = 1.70 cfs @ 12.11 hrs, Volume= 0.118 af
Primary = 1.70 cfs @ 12.11 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.0 min
Routed to Link 25L : PDA-1

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 32L: PDA-1I

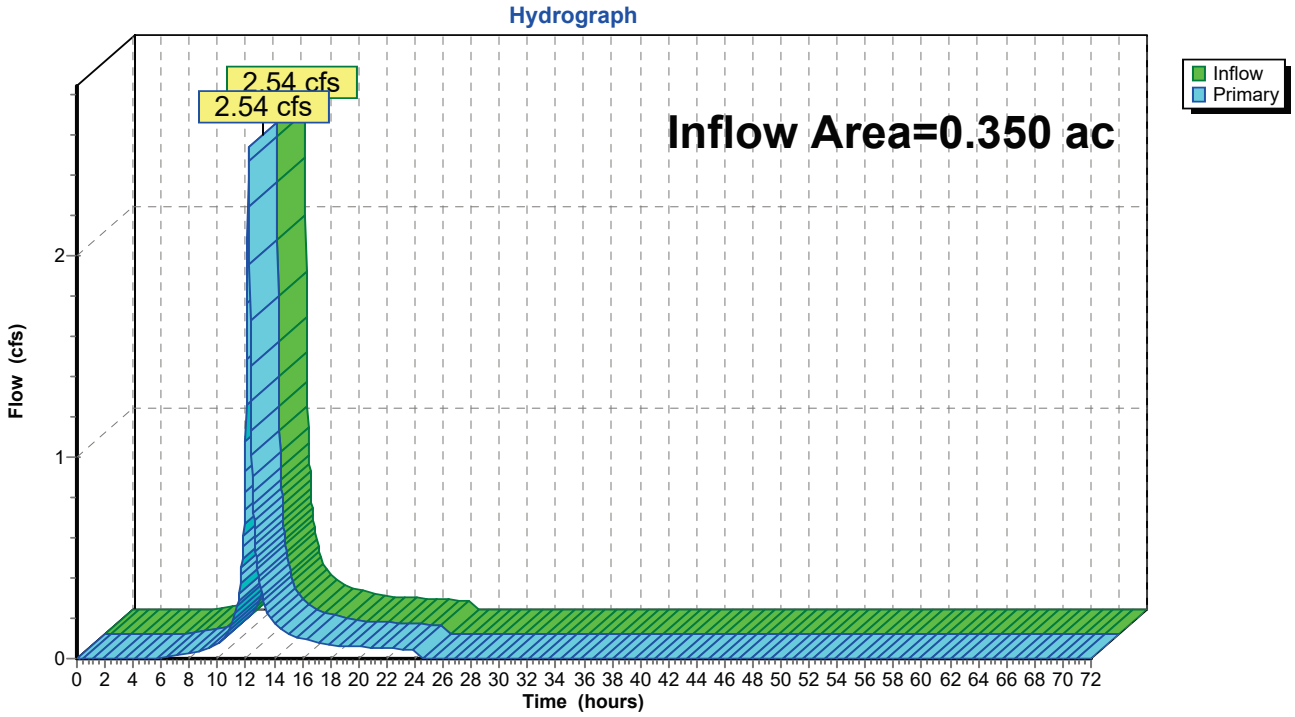


Summary for Link 34L: PDA-2

Inflow Area = 0.350 ac, 0.00% Impervious, Inflow Depth = 7.61" for 100-Year-2050 event
Inflow = 2.54 cfs @ 12.19 hrs, Volume= 0.222 af
Primary = 2.54 cfs @ 12.19 hrs, Volume= 0.222 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 34L: PDA-2

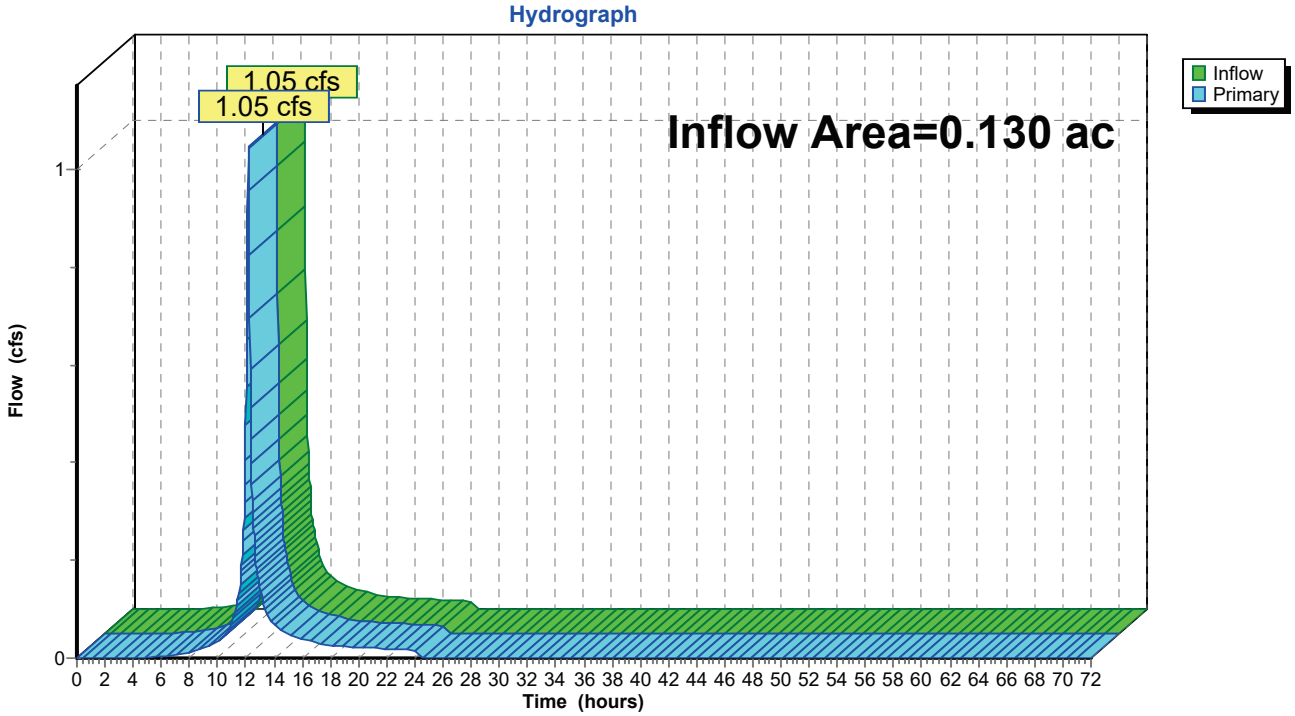


Summary for Link 38L: PDA-1G

Inflow Area = 0.130 ac, 0.00% Impervious, Inflow Depth = 8.17" for 100-Year-2050 event
Inflow = 1.05 cfs @ 12.17 hrs, Volume= 0.088 af
Primary = 1.05 cfs @ 12.17 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 38L: PDA-1G

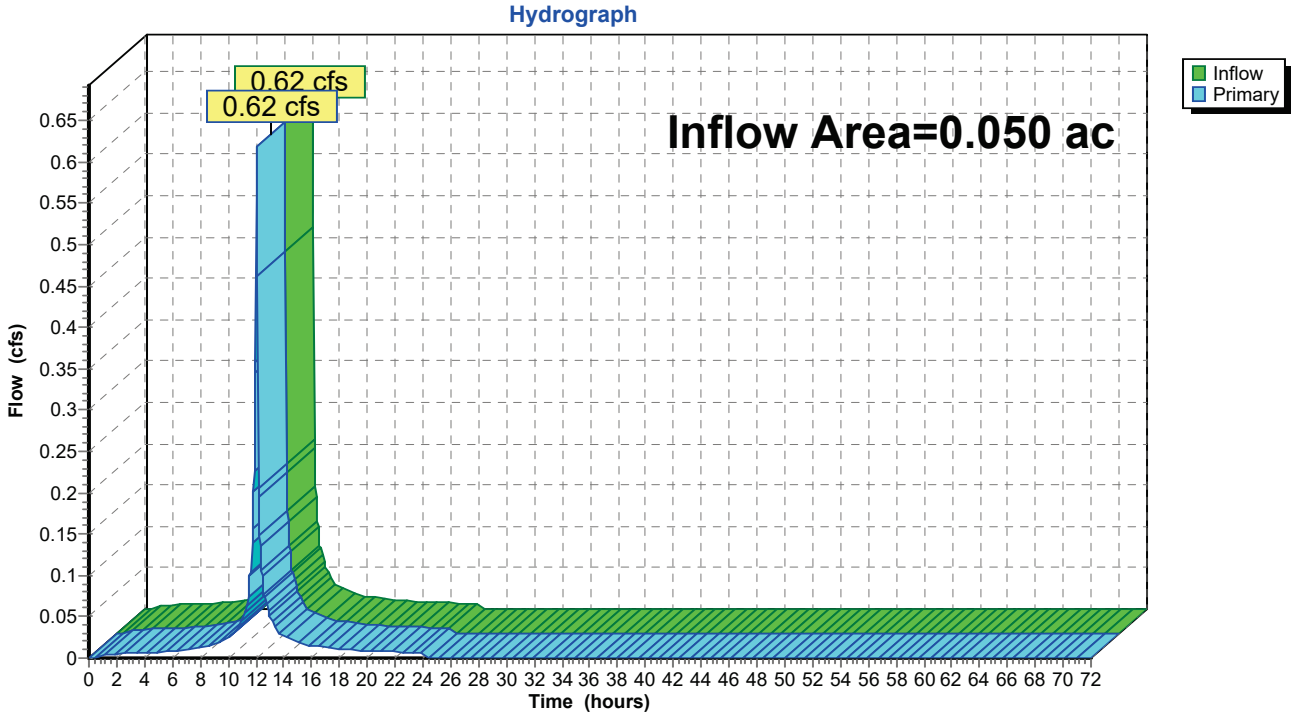


Summary for Link 41L: PDA-1J

Inflow Area = 0.050 ac, 80.00% Impervious, Inflow Depth = 10.66" for 100-Year-2050 event
Inflow = 0.62 cfs @ 12.08 hrs, Volume= 0.044 af
Primary = 0.62 cfs @ 12.08 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 30P : PP-3

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link 41L: PDA-1J



Events for Subcatchment 1S: EDA-1 IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.12	0.013	3.85
10-Year-2050	6.37	0.19	0.020	6.13
100-Year-2050	**11.52**	**0.34**	**0.038**	**11.28**

Events for Subcatchment 2S: EDA-1 PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	1.39	0.136	1.39
10-Year-2050	6.37	3.21	0.302	3.10
100-Year-2050	**11.52**	**7.80**	**0.742**	**7.61**

Events for Subcatchment 5S: EDA-2 PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.47	0.045	1.39
10-Year-2050	6.37	1.09	0.101	3.10
100-Year-2050	**11.52**	**2.64**	**0.247**	**7.61**

Events for Subcatchment 7S: PDA-1A IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.40	0.029	3.85
10-Year-2050	6.37	0.63	0.046	6.13
100-Year-2050	**11.52**	**1.09**	**0.085**	**11.28**

Events for Subcatchment 8S: PDA-1A PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.23	0.014	1.66
10-Year-2050	6.37	0.48	0.029	3.50
100-Year-2050	**11.52**	**1.09**	**0.068**	**8.17**

Events for Subcatchment 10S: PDA-1B IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.51	0.039	3.85
10-Year-2050	6.37	0.80	0.061	6.13
100-Year-2050	**11.52**	**1.46**	**0.113**	**11.28**

Events for Subcatchment 13S: PDA-1C IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.26	0.019	3.85
10-Year-2050	6.37	0.40	0.031	6.13
100-Year-2050	**11.52**	**0.73**	**0.056**	**11.28**

Events for Subcatchment 16S: PDA-1D IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.21	0.016	3.85
10-Year-2050	6.37	0.32	0.026	6.13
100-Year-2050	**11.52**	**0.59**	**0.047**	**11.28**

Events for Subcatchment 17S: PDA-1D PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.04	0.003	1.66
10-Year-2050	6.37	0.09	0.006	3.50
100-Year-2050	**11.52**	**0.20**	**0.014**	**8.17**

Events for Subcatchment 19S: PDA-1E IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.56	0.042	3.85
10-Year-2050	6.37	0.87	0.066	6.13
100-Year-2050	**11.52**	**1.58**	**0.122**	**11.28**

Events for Subcatchment 23S: PDA-2

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.45	0.041	1.39
10-Year-2050	6.37	1.05	0.090	3.10
100-Year-2050	**11.52**	**2.54**	**0.222**	**7.61**

Events for Subcatchment 26S: PDA-1F IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	1.01	0.077	3.85
10-Year-2050	6.37	1.58	0.123	6.13
100-Year-2050	**11.52**	**2.86**	**0.226**	**11.28**

Events for Subcatchment 27S: PDA-1F PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.15	0.010	1.66
10-Year-2050	6.37	0.31	0.020	3.50
100-Year-2050	**11.52**	**0.71**	**0.048**	**8.17**

Events for Subcatchment 29S: PDA-1H IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.04	0.003	3.85
10-Year-2050	6.37	0.07	0.005	6.13
100-Year-2050	**11.52**	**0.12**	**0.009**	**11.28**

Events for Subcatchment 30S: PDA-1H PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.02	0.001	1.66
10-Year-2050	6.37	0.05	0.003	3.50
100-Year-2050	**11.52**	**0.10**	**0.007**	**8.17**

Events for Subcatchment 33S: PDA-1I IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.04	0.003	3.85
10-Year-2050	6.37	0.06	0.005	6.13
100-Year-2050	**11.52**	**0.12**	**0.009**	**11.28**

Events for Subcatchment 35S: PDA-1I PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.33	0.022	1.66
10-Year-2050	6.37	0.70	0.047	3.50
100-Year-2050	**11.52**	**1.58**	**0.109**	**8.17**

Events for Subcatchment 37S: PDA-1G PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.22	0.018	1.66
10-Year-2050	6.37	0.46	0.038	3.50
100-Year-2050	**11.52**	**1.05**	**0.088**	**8.17**

Events for Subcatchment 39S: PDA-1J IMPERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.18	0.013	3.85
10-Year-2050	6.37	0.28	0.020	6.13
100-Year-2050	**11.52**	**0.49**	**0.038**	**11.28**

Events for Subcatchment 40S: PDA-1J PERVIOUS

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year-2050	4.09	0.02	0.001	1.66
10-Year-2050	6.37	0.05	0.003	3.50
100-Year-2050	**11.52**	**0.11**	**0.007**	**8.17**

Events for Pond 28P: PP-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2-Year-2050	0.83	0.20	446.99	0.030
10-Year-2050	1.54	0.23	448.14	0.062
100-Year-2050	**3.09**	**0.60**	**450.34**	**0.129**

Events for Pond 29P: PP-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2-Year-2050	0.93	0.29	446.12	0.079
10-Year-2050	1.36	0.50	446.92	0.106
100-Year-2050	**4.15**	**2.51**	**448.28**	**0.151**

Events for Pond 30P: PP-3

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2-Year-2050	1.76	0.29	448.64	0.042
10-Year-2050	2.94	0.58	450.65	0.078
100-Year-2050	**5.67**	**2.91**	**454.22**	**0.119**

Events for Pond 31P: PP-4

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2-Year-2050	0.80	0.22	453.90	0.013
10-Year-2050	1.27	0.58	454.68	0.020
100-Year-2050	**2.35**	**1.04**	**456.74**	**0.036**

Events for Link 3L: EDA-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2050	1.50	1.50	**0.00**
10-Year-2050	3.40	3.40	0.00
100-Year-2050	**8.14**	**8.14**	0.00

Events for Link 6L: EDA-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2050	0.47	0.47	**0.00**
10-Year-2050	1.09	1.09	0.00
100-Year-2050	**2.64**	**2.64**	0.00

Events for Link 9L: PDA-1A

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2050	0.64	0.64	**0.00**
10-Year-2050	1.12	1.12	0.00
100-Year-2050	**2.23**	**2.23**	0.00

Events for Link 12L: PDA-1B

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2050	0.51	0.51	**0.00**
10-Year-2050	0.80	0.80	0.00
100-Year-2050	**1.46**	**1.46**	0.00

Events for Link 15L: PDA-1C

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2050	0.26	0.26	**0.00**
10-Year-2050	0.40	0.40	0.00
100-Year-2050	**0.73**	**0.73**	0.00

Events for Link 18L: PDA-1D

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2050	0.25	0.25	**0.00**
10-Year-2050	0.41	0.41	0.00
100-Year-2050	**0.79**	**0.79**	0.00

Events for Link 21L: PDA-1E

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2050	0.56	0.56	**0.00**
10-Year-2050	0.87	0.87	0.00
100-Year-2050	**1.58**	**1.58**	0.00

Events for Link 25L: PDA-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2050	0.64	0.64	**0.00**
10-Year-2050	1.12	1.12	0.00
100-Year-2050	**3.30**	**3.30**	0.00

Events for Link 28L: PDA-1F

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2050	1.16	1.16	**0.00**
10-Year-2050	1.89	1.89	0.00
100-Year-2050	**3.57**	**3.57**	0.00

Events for Link 31L: PDA-1H

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2050	0.06	0.06	**0.00**
10-Year-2050	0.11	0.11	0.00
100-Year-2050	**0.22**	**0.22**	0.00

Events for Link 32L: PDA-1I

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2050	0.37	0.37	**0.00**
10-Year-2050	0.77	0.77	0.00
100-Year-2050	**1.70**	**1.70**	0.00

Events for Link 34L: PDA-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2050	0.45	0.45	**0.00**
10-Year-2050	1.05	1.05	0.00
100-Year-2050	**2.54**	**2.54**	0.00

Events for Link 38L: PDA-1G

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2050	0.22	0.22	**0.00**
10-Year-2050	0.46	0.46	0.00
100-Year-2050	**1.05**	**1.05**	0.00

Events for Link 41L: PDA-1J

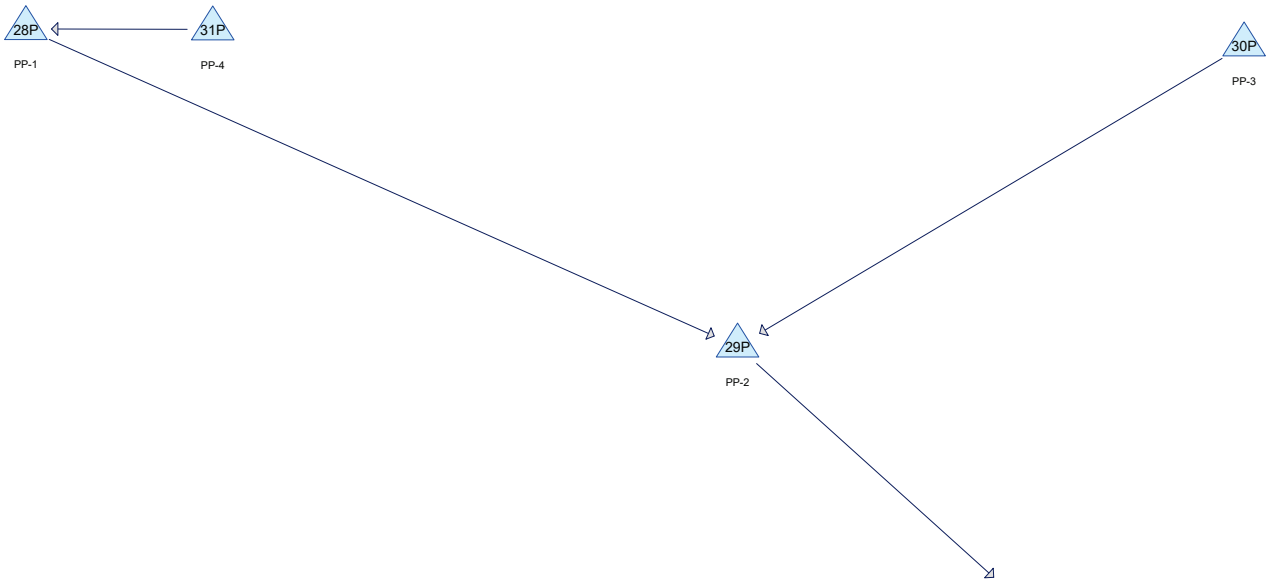
Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-Year-2050	0.20	0.20	**0.00**
10-Year-2050	0.33	0.33	0.00
100-Year-2050	**0.62**	**0.62**	0.00

Appendix D:
Storm Sewer Conveyance

INLET AREA CALCULATIONS

PREP. BY:	DM
DATE:	8/17/2026
REVISED:	
PROJECT:	PROPOSED RESIDENTIAL DEVELOPMENT - 176-200 BLOOMFIELD AVE
JOB #:	DMH2C26001

PROPOSED INLET DRAINAGE AREA	INLET ID	PERVIOUS (HSG D)				IMPERVIOUS				TOTAL INLET AREA (AC)	TOTAL INLET C x A	(Cw) INLET COEFFICIENT C x A / A (TOTAL)
		GRASS/LAWN		GRAVEL		BUILDING ROOF		ROAD/DRIVEWAY				
		AREA (AC)	C 0.51 C x A	AREA (AC)	C 0.84 C x A	AREA (AC)	C 0.99 C x A	AREA (AC)	C 0.99 C x A			
IA-1	I-1	0.01	0.005	0.00	0.000	0.00	0.000	0.01	0.010	**0.02**	0.015	**0.75**
IA-2	I-2	0.10	0.051	0.00	0.000	0.00	0.000	0.09	0.089	**0.19**	0.140	**0.74**
IA-3	I-3	0.00	0.000	0.00	0.000	0.00	0.000	0.12	0.119	**0.12**	0.119	**0.99**
IA-4	I-4	0.00	0.000	0.00	0.000	0.00	0.000	0.06	0.059	**0.06**	0.059	**0.98**
IA-5	I-5	0.01	0.005	0.00	0.000	0.00	0.000	0.04	0.040	**0.05**	0.045	**0.90**
IA-6	I-6	0.02	0.010	0.00	0.000	0.00	0.000	0.02	0.020	**0.04**	0.030	**0.75**
IA-7	I-7	0.00	0.000	0.00	0.000	0.00	0.000	0.08	0.079	**0.08**	0.079	**0.99**
IA-8	I-8	0.02	0.010	0.00	0.000	0.00	0.000	0.08	0.079	**0.10**	0.089	**0.89**
IA-9	I-9	0.13	0.066	0.00	0.000	0.00	0.000	0.00	0.000	**0.13**	0.066	**0.51**
IA-10	I-10	0.03	0.015	0.00	0.000	0.00	0.000	0.06	0.059	**0.09**	0.075	**0.83**
IA-11	I-11	0.00	0.000	0.00	0.000	0.00	0.000	0.13	0.129	**0.13**	0.129	**0.99**
SUM		0.32		0.00		0.00		0.69		1.01		



Subcat Reach Pond Link

Routing Diagram for 2026-07-31 - DMH2LLC - CONVEYANCE
Prepared by Pennoni Associates, Inc, Printed 8/17/2026
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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	25-Year	NOAA 24-hr	D	Default	24.00	1	6.44	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.000	**0**	**TOTAL AREA**

Summary for Pond 28P: PP-1

Inflow Area = 0.390 ac, 69.23% Impervious, Inflow Depth = 5.39" for 25-Year event
Inflow = 1.56 cfs @ 12.08 hrs, Volume= 0.175 af
Outflow = 0.23 cfs @ 12.32 hrs, Volume= 0.175 af, Atten= 85%, Lag= 14.3 min
Primary = 0.23 cfs @ 12.32 hrs, Volume= 0.175 af
Routed to Pond 29P : PP-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 448.18' @ 13.97 hrs Surf.Area= 0.048 ac Storage= 0.064 af

Plug-Flow detention time= 171.0 min calculated for 0.175 af (100% of inflow)
Center-of-Mass det. time= 170.5 min (944.4 - 773.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.45'	0.090 af	**18.00'W x 117.00'L x 6.29'H Field A** 0.304 af Overall - 0.079 af Embedded = 0.225 af x 40.0% Voids
#2A	446.45'	0.066 af	**ADS N-12 48"** x 8 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf Row Length Adjustment= +25.00' x 12.40 sf x 2 rows 11.08' Header x 12.40 sf x 2 = 274.9 cf Inside
		0.156 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	445.45'	**15.0" Round Culvert** L= 23.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 445.45' / 445.38' S= 0.0030 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	445.45'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	449.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.23 cfs @ 12.32 hrs HW=447.62' TW=445.67' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.23 cfs of 5.80 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.23 cfs @ 6.73 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 28P: PP-1 - Chamber Wizard Field A

Chamber Model = ADS N-12 48" (ADS N-12® Pipe)
Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf
Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf
Row Length Adjustment= +25.00' x 12.40 sf x 2 rows

54.0" Wide + 25.0" Spacing = 79.0" C-C Row Spacing

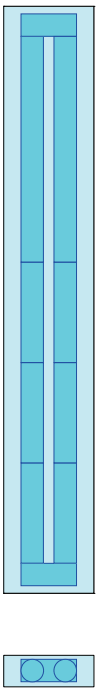
4 Chambers/Row x 20.00' Long +25.00' Row Adjustment +4.50' Header x 2 = 114.00' Row Length +18.0" End Stone x 2 = 117.00' Base Length
2 Rows x 54.0" Wide + 25.0" Spacing x 1 + 41.5" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 54.0" Chamber Height + 9.5" Stone Cover = 6.29' Field Height

8 Chambers x 248.0 cf +25.00' Row Adjustment x 12.40 sf x 2 Rows + 11.08' Header x 12.40 sf x 2 = 2,878.9 cf Chamber Storage
8 Chambers x 297.0 cf +25.00' Row Adjustment x 14.85 sf x 2 Rows + 11.08' Header x 14.85 sf x 2 = 3,447.4 cf Displacement

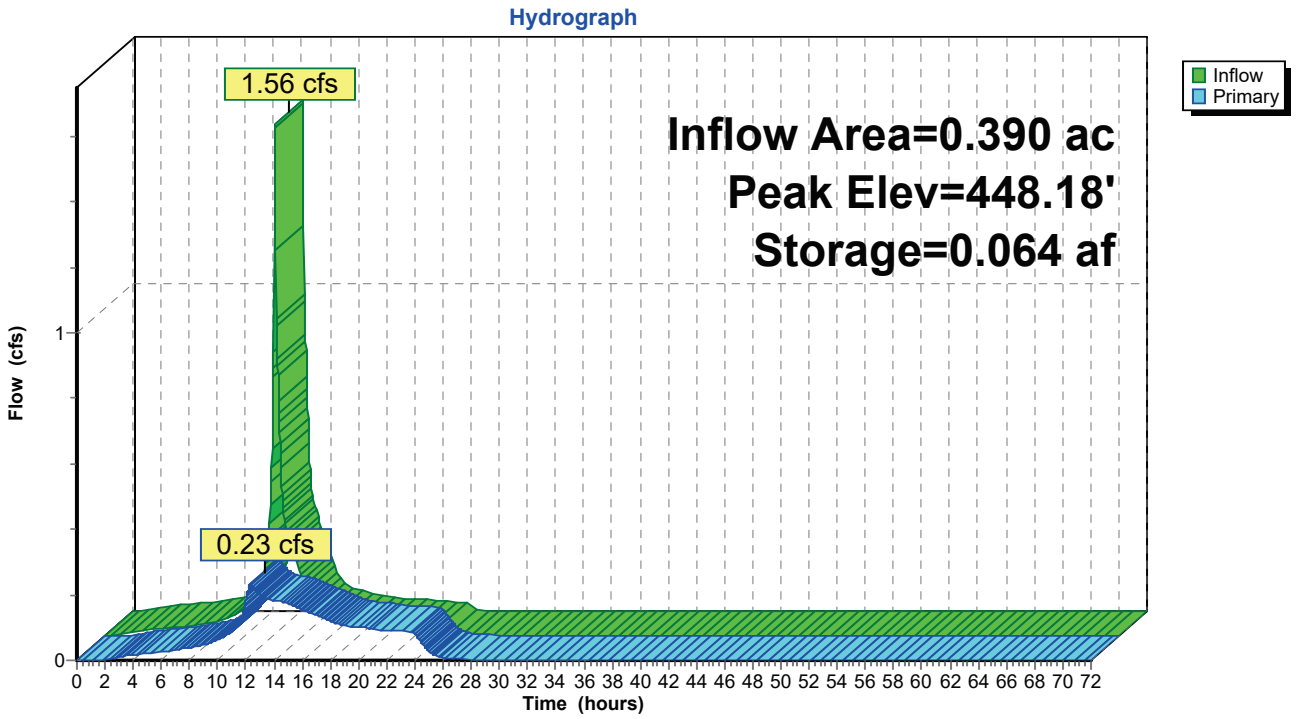
13,250.6 cf Field - 3,447.4 cf Chambers = 9,803.2 cf Stone x 40.0% Voids = 3,921.3 cf Stone Storage

Chamber Storage + Stone Storage = 6,800.1 cf = 0.156 af
Overall Storage Efficiency = 51.3%
Overall System Size = 117.00' x 18.00' x 6.29'

8 Chambers
490.8 cy Field
363.1 cy Stone



Pond 28P: PP-1


Hydrograph
1.56 cfs
0.23 cfs
Inflow Area=0.390 ac
Peak Elev=448.18'
Storage=0.064 af
Inflow
Primary
Flow (cfs)
0
1
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 28P: PP-1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
445.45	0.00	448.10	0.26	450.75	0.81
445.50	0.00	448.15	0.26	450.80	0.82
445.55	0.02	448.20	0.27	450.85	0.83
445.60	0.03	448.25	0.27	450.90	0.85
445.65	0.05	448.30	0.27	450.95	0.86
445.70	0.06	448.35	0.27	451.00	0.87
445.75	0.07	448.40	0.28	451.05	0.88
445.80	0.08	448.45	0.28	451.10	0.89
445.85	0.09	448.50	0.28	451.15	0.90
445.90	0.10	448.55	0.28	451.20	0.91
445.95	0.10	448.60	0.29	451.25	0.92
446.00	0.11	448.65	0.29	451.30	0.93
446.05	0.12	448.70	0.29	451.35	0.94
446.10	0.12	448.75	0.29	451.40	0.95
446.15	0.13	448.80	0.30	451.45	0.96
446.20	0.13	448.85	0.30	451.50	0.97
446.25	0.14	448.90	0.30	451.55	0.98
446.30	0.14	448.95	0.30	451.60	0.99
446.35	0.15	449.00	0.30	451.65	1.00
446.40	0.15	449.05	0.31	451.70	**1.01**
446.45	0.16	449.10	0.31		
446.50	0.16	449.15	0.31		
446.55	0.16	449.20	0.31		
446.60	0.17	449.25	0.32		
446.65	0.17	449.30	0.32		
446.70	0.18	449.35	0.32		
446.75	0.18	449.40	0.32		
446.80	0.18	449.45	0.32		
446.85	0.19	449.50	0.33		
446.90	0.19	449.55	0.33		
446.95	0.19	449.60	0.35		
447.00	0.20	449.65	0.38		
447.05	0.20	449.70	0.42		
447.10	0.20	449.75	0.46		
447.15	0.21	449.80	0.49		
447.20	0.21	449.85	0.52		
447.25	0.21	449.90	0.55		
447.30	0.22	449.95	0.57		
447.35	0.22	450.00	0.59		
447.40	0.22	450.05	0.61		
447.45	0.23	450.10	0.63		
447.50	0.23	450.15	0.64		
447.55	0.23	450.20	0.66		
447.60	0.23	450.25	0.68		
447.65	0.24	450.30	0.69		
447.70	0.24	450.35	0.71		
447.75	0.24	450.40	0.72		
447.80	0.25	450.45	0.74		
447.85	0.25	450.50	0.75		
447.90	0.25	450.55	0.76		
447.95	0.25	450.60	0.77		
448.00	0.26	450.65	0.79		
448.05	0.26	450.70	0.80		

Stage-Area-Storage for Pond 28P: PP-1

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
445.45	0.000	448.10	0.061	450.75	0.137
445.50	0.001	448.15	0.063	450.80	0.138
445.55	0.002	448.20	0.064	450.85	0.139
445.60	0.003	448.25	0.066	450.90	0.140
445.65	0.004	448.30	0.067	450.95	0.141
445.70	0.005	448.35	0.069	451.00	0.142
445.75	0.006	448.40	0.071	451.05	0.143
445.80	0.007	448.45	0.072	451.10	0.144
445.85	0.008	448.50	0.074	451.15	0.145
445.90	0.009	448.55	0.075	451.20	0.146
445.95	0.010	448.60	0.077	451.25	0.147
446.00	0.011	448.65	0.078	451.30	0.148
446.05	0.012	448.70	0.080	451.35	0.149
446.10	0.013	448.75	0.082	451.40	0.149
446.15	0.014	448.80	0.083	451.45	0.150
446.20	0.015	448.85	0.085	451.50	0.151
446.25	0.015	448.90	0.086	451.55	0.152
446.30	0.016	448.95	0.088	451.60	0.153
446.35	0.017	449.00	0.090	451.65	0.154
446.40	0.018	449.05	0.091	451.70	**0.155**
446.45	0.019	449.10	0.093		
446.50	0.020	449.15	0.094		
446.55	0.021	449.20	0.096		
446.60	0.022	449.25	0.097		
446.65	0.023	449.30	0.099		
446.70	0.023	449.35	0.100		
446.75	0.024	449.40	0.102		
446.80	0.025	449.45	0.103		
446.85	0.026	449.50	0.105		
446.90	0.028	449.55	0.107		
446.95	0.029	449.60	0.108		
447.00	0.030	449.65	0.110		
447.05	0.031	449.70	0.111		
447.10	0.032	449.75	0.112		
447.15	0.034	449.80	0.114		
447.20	0.035	449.85	0.115		
447.25	0.036	449.90	0.117		
447.30	0.038	449.95	0.118		
447.35	0.039	450.00	0.120		
447.40	0.040	450.05	0.121		
447.45	0.042	450.10	0.122		
447.50	0.043	450.15	0.124		
447.55	0.045	450.20	0.125		
447.60	0.046	450.25	0.126		
447.65	0.048	450.30	0.128		
447.70	0.049	450.35	0.129		
447.75	0.051	450.40	0.130		
447.80	0.052	450.45	0.131		
447.85	0.054	450.50	0.133		
447.90	0.055	450.55	0.134		
447.95	0.057	450.60	0.135		
448.00	0.058	450.65	0.136		
448.05	0.060	450.70	0.137		

Summary for Pond 29P: PP-2

Inflow Area = 1.060 ac, 68.87% Impervious, Inflow Depth = 5.38" for 25-Year event
Inflow = 1.37 cfs @ 12.08 hrs, Volume= 0.475 af
Outflow = 0.50 cfs @ 14.15 hrs, Volume= 0.475 af, Atten= 63%, Lag= 124.4 min
Primary = 0.50 cfs @ 14.15 hrs, Volume= 0.475 af
Routed to Link 25L : PDA-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 446.93' @ 14.15 hrs Surf.Area= 0.048 ac Storage= 0.106 af

Plug-Flow detention time= 164.7 min calculated for 0.475 af (100% of inflow)
Center-of-Mass det. time= 164.2 min (1,047.9 - 883.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	442.94'	0.108 af	**18.00'W x 116.17'L x 8.17'H Field A** 0.392 af Overall - 0.121 af Embedded = 0.271 af x 40.0% Voids
#2A	443.94'	0.102 af	**ADS N-12 60"** x 6 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf Row Length Adjustment= +42.00' x 19.30 sf x 2 rows 13.17' Header x 19.30 sf x 2 = 508.3 cf Inside
		0.210 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	442.94'	**15.0" Round Culvert** L= 23.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 442.94' / 442.87' S= 0.0030 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	442.94'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	446.75'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.50 cfs @ 14.15 hrs HW=446.93' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.50 cfs of 8.55 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.32 cfs @ 9.49 fps)
  └─**3=Orifice/Grate** (Orifice Controls 0.18 cfs @ 1.44 fps)

Pond 29P: PP-2 - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf
Row Length Adjustment= +42.00' x 19.30 sf x 2 rows

67.0" Wide + 24.0" Spacing = 91.0" C-C Row Spacing

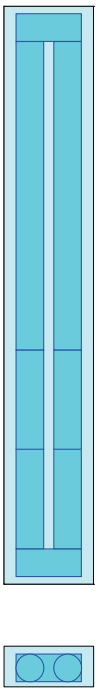
3 Chambers/Row x 20.00' Long +42.00' Row Adjustment +5.58' Header x 2 = 113.17' Row Length +18.0" End Stone x 2 = 116.17' Base Length
2 Rows x 67.0" Wide + 24.0" Spacing x 1 + 29.0" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 67.0" Chamber Height + 19.0" Stone Cover = 8.17' Field Height

6 Chambers x 386.0 cf +42.00' Row Adjustment x 19.30 sf x 2 Rows + 13.17' Header x 19.30 sf x 2 = 4,445.5 cf Chamber Storage
6 Chambers x 458.4 cf +42.00' Row Adjustment x 22.92 sf x 2 Rows + 13.17' Header x 22.92 sf x 2 = 5,279.5 cf Displacement

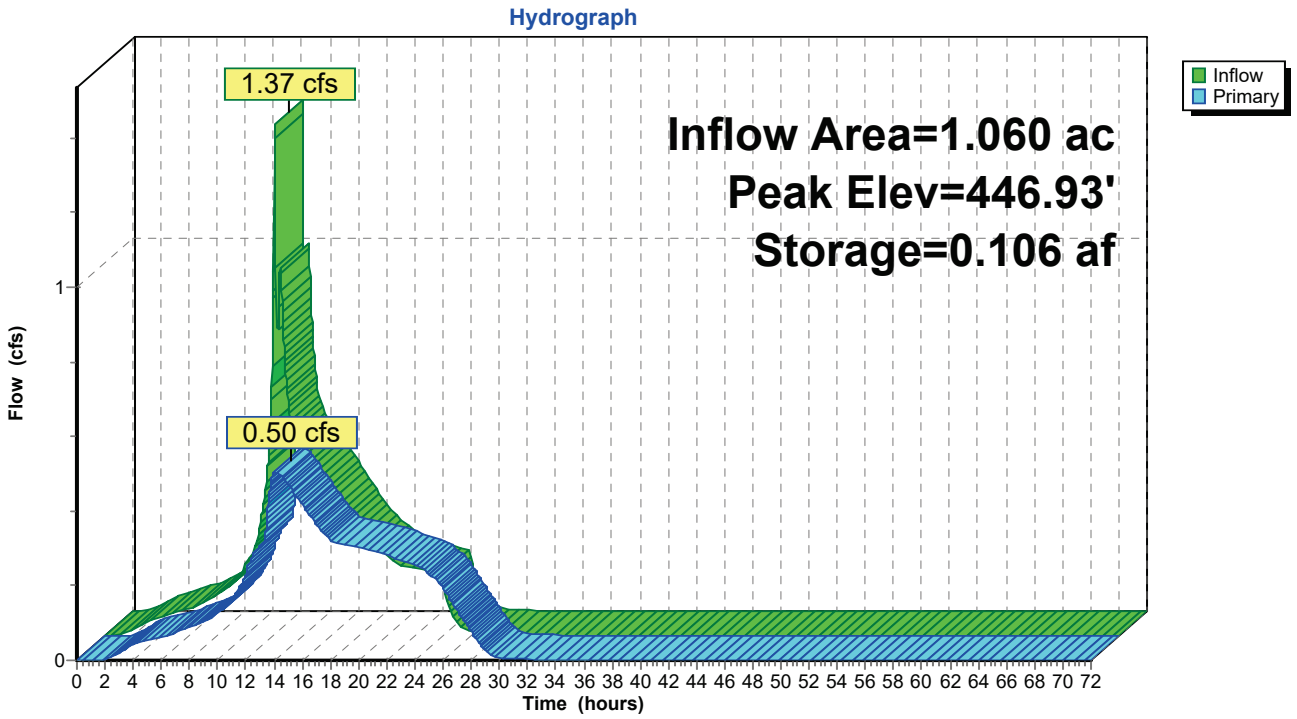
17,078.6 cf Field - 5,279.5 cf Chambers = 11,799.2 cf Stone x 40.0% Voids = 4,719.7 cf Stone Storage

Chamber Storage + Stone Storage = 9,165.1 cf = 0.210 af
Overall Storage Efficiency = 53.7%
Overall System Size = 116.17' x 18.00' x 8.17'

6 Chambers
632.5 cy Field
437.0 cy Stone



Pond 29P: PP-2


Hydrograph
1.37 cfs
0.50 cfs
Inflow Area=1.060 ac
Peak Elev=446.93'
Storage=0.106 af
Inflow
Primary
Flow (cfs)
0
1
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 29P: PP-2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
442.94	0.00	445.59	0.26	448.24	2.48	450.89	4.19
442.99	0.00	445.64	0.26	448.29	2.52	450.94	4.21
443.04	0.02	445.69	0.27	448.34	2.57	450.99	4.24
443.09	0.03	445.74	0.27	448.39	2.61	451.04	4.26
443.14	0.05	445.79	0.27	448.44	2.65	451.09	**4.29**
443.19	0.06	445.84	0.27	448.49	2.69		
443.24	0.07	445.89	0.28	448.54	2.73		
443.29	0.08	445.94	0.28	448.59	2.77		
443.34	0.09	445.99	0.28	448.64	2.81		
443.39	0.10	446.04	0.28	448.69	2.85		
443.44	0.10	446.09	0.29	448.74	2.89		
443.49	0.11	446.14	0.29	448.79	2.92		
443.54	0.12	446.19	0.29	448.84	2.96		
443.59	0.12	446.24	0.29	448.89	3.00		
443.64	0.13	446.29	0.30	448.94	3.03		
443.69	0.13	446.34	0.30	448.99	3.07		
443.74	0.14	446.39	0.30	449.04	3.10		
443.79	0.14	446.44	0.30	449.09	3.14		
443.84	0.15	446.49	0.30	449.14	3.17		
443.89	0.15	446.54	0.31	449.19	3.21		
443.94	0.16	446.59	0.31	449.24	3.24		
443.99	0.16	446.64	0.31	449.29	3.27		
444.04	0.16	446.69	0.31	449.34	3.30		
444.09	0.17	446.74	0.32	449.39	3.34		
444.14	0.17	446.79	0.33	449.44	3.37		
444.19	0.18	446.84	0.37	449.49	3.40		
444.24	0.18	446.89	0.44	449.54	3.43		
444.29	0.18	446.94	0.53	449.59	3.46		
444.34	0.19	446.99	0.64	449.64	3.49		
444.39	0.19	447.04	0.76	449.69	3.52		
444.44	0.19	447.09	0.89	449.74	3.55		
444.49	0.20	447.14	1.03	449.79	3.58		
444.54	0.20	447.19	1.16	449.84	3.61		
444.59	0.20	447.24	1.27	449.89	3.64		
444.64	0.21	447.29	1.36	449.94	3.67		
444.69	0.21	447.34	1.44	449.99	3.70		
444.74	0.21	447.39	1.52	450.04	3.73		
444.79	0.22	447.44	1.60	450.09	3.76		
444.84	0.22	447.49	1.67	450.14	3.79		
444.89	0.22	447.54	1.74	450.19	3.82		
444.94	0.23	447.59	1.80	450.24	3.84		
444.99	0.23	447.64	1.86	450.29	3.87		
445.04	0.23	447.69	1.92	450.34	3.90		
445.09	0.23	447.74	1.98	450.39	3.93		
445.14	0.24	447.79	2.04	450.44	3.95		
445.19	0.24	447.84	2.09	450.49	3.98		
445.24	0.24	447.89	2.15	450.54	4.01		
445.29	0.25	447.94	2.20	450.59	4.03		
445.34	0.25	447.99	2.25	450.64	4.06		
445.39	0.25	448.04	2.30	450.69	4.09		
445.44	0.25	448.09	2.34	450.74	4.11		
445.49	0.26	448.14	2.39	450.79	4.14		
445.54	0.26	448.19	2.43	450.84	4.16		

Stage-Area-Storage for Pond 29P: PP-2

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
442.94	0.000	448.24	0.150
443.04	0.002	448.34	0.153
443.14	0.004	448.44	0.156
443.24	0.006	448.54	0.159
443.34	0.008	448.64	0.161
443.44	0.010	448.74	0.164
443.54	0.012	448.84	0.167
443.64	0.013	448.94	0.169
443.74	0.015	449.04	0.172
443.84	0.017	449.14	0.174
443.94	0.019	449.24	0.176
444.04	0.021	449.34	0.177
444.14	0.022	449.44	0.179
444.24	0.024	449.54	0.180
444.34	0.026	449.64	0.182
444.44	0.028	449.74	0.184
444.54	0.030	449.84	0.186
444.64	0.033	449.94	0.188
444.74	0.035	450.04	0.190
444.84	0.038	450.14	0.192
444.94	0.041	450.24	0.194
445.04	0.044	450.34	0.196
445.14	0.047	450.44	0.198
445.24	0.050	450.54	0.200
445.34	0.053	450.64	0.201
445.44	0.056	450.74	0.203
445.54	0.059	450.84	0.205
445.64	0.063	450.94	0.207
445.74	0.066	451.04	**0.209**
445.84	0.069		
445.94	0.073		
446.04	0.076		
446.14	0.079		
446.24	0.083		
446.34	0.086		
446.44	0.090		
446.54	0.093		
446.64	0.096		
446.74	0.100		
446.84	0.103		
446.94	0.107		
447.04	0.110		
447.14	0.114		
447.24	0.117		
447.34	0.120		
447.44	0.124		
447.54	0.127		
447.64	0.130		
447.74	0.134		
447.84	0.137		
447.94	0.140		
448.04	0.143		
448.14	0.147		

Summary for Pond 30P: PP-3

Inflow Area = 0.550 ac, 61.82% Impervious, Inflow Depth = 5.19" for 25-Year event
Inflow = 2.98 cfs @ 12.08 hrs, Volume= 0.238 af
Outflow = 0.62 cfs @ 12.46 hrs, Volume= 0.238 af, Atten= 79%, Lag= 22.6 min
Primary = 0.62 cfs @ 12.46 hrs, Volume= 0.238 af
Routed to Pond 29P : PP-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 450.67' @ 12.47 hrs Surf.Area= 0.026 ac Storage= 0.079 af

Plug-Flow detention time= 109.8 min calculated for 0.238 af (100% of inflow)
Center-of-Mass det. time= 110.1 min (876.4 - 766.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.44'	0.078 af	**18.00'W x 62.17'L x 10.08'H Field A** 0.259 af Overall - 0.064 af Embedded = 0.195 af x 40.0% Voids
#2A	446.44'	0.054 af	**ADS N-12 60"** x 4 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf Row Length Adjustment= +8.00' x 19.30 sf x 2 rows 13.17' Header x 19.30 sf x 2 = 508.3 cf Inside
		0.132 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	445.44'	**15.0" Round Culvert** L= 19.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 445.44' / 445.38' S= 0.0031 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	445.44'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	450.44'	**5.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	455.00'	**6.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.61 cfs @ 12.46 hrs HW=450.67' TW=445.90' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.61 cfs of 10.01 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.36 cfs @ 10.51 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.25 cfs @ 1.64 fps)
  └─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 30P: PP-3 - Chamber Wizard Field A

Chamber Model = ADS N-12 60" (ADS N-12® Pipe)
Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf
Outside= 67.0"W x 67.0"H => 22.92 sf x 20.00'L = 458.4 cf
Row Length Adjustment= +8.00' x 19.30 sf x 2 rows

67.0" Wide + 24.0" Spacing = 91.0" C-C Row Spacing

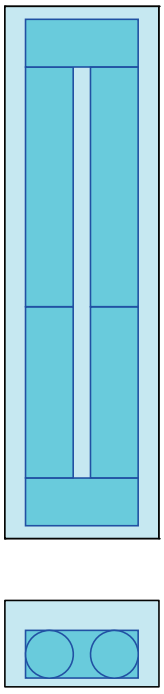
2 Chambers/Row x 20.00' Long +8.00' Row Adjustment +5.58' Header x 2 = 59.17' Row Length +18.0" End Stone x 2 = 62.17' Base Length
2 Rows x 67.0" Wide + 24.0" Spacing x 1 + 29.0" Side Stone x 2 = 18.00' Base Width
12.0" Stone Base + 67.0" Chamber Height + 42.0" Stone Cover = 10.08' Field Height

4 Chambers x 386.0 cf +8.00' Row Adjustment x 19.30 sf x 2 Rows + 13.17' Header x 19.30 sf x 2 = 2,361.1 cf Chamber Storage
4 Chambers x 458.4 cf +8.00' Row Adjustment x 22.92 sf x 2 Rows + 13.17' Header x 22.92 sf x 2 = 2,804.0 cf Displacement

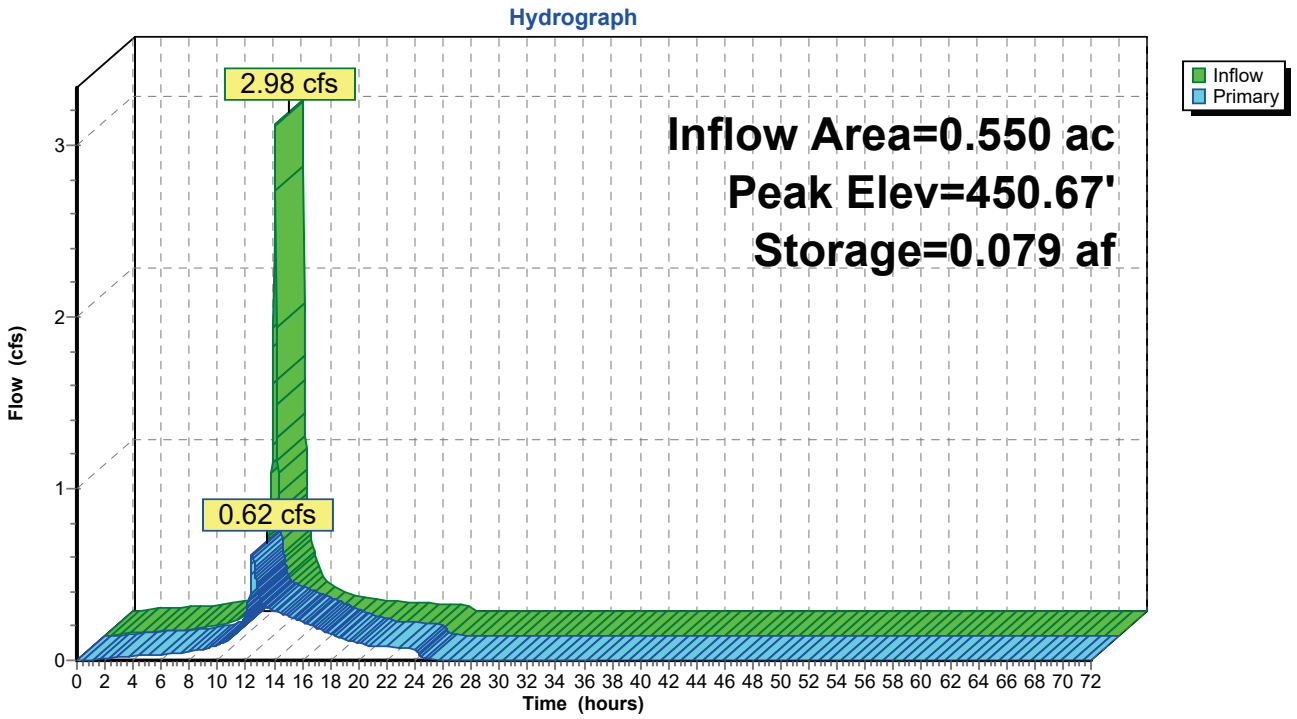
11,284.6 cf Field - 2,804.0 cf Chambers = 8,480.6 cf Stone x 40.0% Voids = 3,392.2 cf Stone Storage

Chamber Storage + Stone Storage = 5,753.3 cf = 0.132 af
Overall Storage Efficiency = 51.0%
Overall System Size = 62.17' x 18.00' x 10.08'

4 Chambers
417.9 cy Field
314.1 cy Stone



Pond 30P: PP-3


Hydrograph
2.98 cfs
0.62 cfs
Inflow Area=0.550 ac
Peak Elev=450.67'
Storage=0.079 af
Inflow
Primary
Flow (cfs)
0
1
2
3
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 30P: PP-3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
445.44	0.00	448.09	0.26	450.74	0.77	453.39	2.63
445.49	0.00	448.14	0.26	450.79	0.87	453.44	2.66
445.54	0.02	448.19	0.27	450.84	0.96	453.49	2.68
445.59	0.03	448.24	0.27	450.89	1.03	453.54	2.70
445.64	0.05	448.29	0.27	450.94	1.09	453.59	2.72
445.69	0.06	448.34	0.27	450.99	1.15	453.64	2.74
445.74	0.07	448.39	0.28	451.04	1.21	453.69	2.76
445.79	0.08	448.44	0.28	451.09	1.26	453.74	2.78
445.84	0.09	448.49	0.28	451.14	1.31	453.79	2.80
445.89	0.10	448.54	0.28	451.19	1.36	453.84	2.82
445.94	0.10	448.59	0.29	451.24	1.40	453.89	2.84
445.99	0.11	448.64	0.29	451.29	1.45	453.94	2.86
446.04	0.12	448.69	0.29	451.34	1.49	453.99	2.88
446.09	0.12	448.74	0.29	451.39	1.53	454.04	2.90
446.14	0.13	448.79	0.30	451.44	1.57	454.09	2.92
446.19	0.13	448.84	0.30	451.49	1.60	454.14	2.93
446.24	0.14	448.89	0.30	451.54	1.64	454.19	2.95
446.29	0.14	448.94	0.30	451.59	1.68	454.24	2.97
446.34	0.15	448.99	0.30	451.64	1.71	454.29	2.99
446.39	0.15	449.04	0.31	451.69	1.75	454.34	3.01
446.44	0.16	449.09	0.31	451.74	1.78	454.39	3.03
446.49	0.16	449.14	0.31	451.79	1.81	454.44	3.05
446.54	0.16	449.19	0.31	451.84	1.85	454.49	3.06
446.59	0.17	449.24	0.32	451.89	1.88	454.54	3.08
446.64	0.17	449.29	0.32	451.94	1.91	454.59	3.10
446.69	0.18	449.34	0.32	451.99	1.94	454.64	3.12
446.74	0.18	449.39	0.32	452.04	1.97	454.69	3.14
446.79	0.18	449.44	0.32	452.09	2.00	454.74	3.15
446.84	0.19	449.49	0.33	452.14	2.03	454.79	3.17
446.89	0.19	449.54	0.33	452.19	2.05	454.84	3.19
446.94	0.19	449.59	0.33	452.24	2.08	454.89	3.21
446.99	0.20	449.64	0.33	452.29	2.11	454.94	3.22
447.04	0.20	449.69	0.33	452.34	2.14	454.99	3.24
447.09	0.20	449.74	0.34	452.39	2.16	455.04	3.39
447.14	0.21	449.79	0.34	452.44	2.19	455.09	3.73
447.19	0.21	449.84	0.34	452.49	2.21	455.14	4.17
447.24	0.21	449.89	0.34	452.54	2.24	455.19	4.70
447.29	0.22	449.94	0.34	452.59	2.27	455.24	5.32
447.34	0.22	449.99	0.35	452.64	2.29	455.29	6.02
447.39	0.22	450.04	0.35	452.69	2.31	455.34	6.79
447.44	0.23	450.09	0.35	452.74	2.34	455.39	7.63
447.49	0.23	450.14	0.35	452.79	2.36	455.44	8.56
447.54	0.23	450.19	0.35	452.84	2.39	455.49	**9.56**
447.59	0.23	450.24	0.36	452.89	2.41		
447.64	0.24	450.29	0.36	452.94	2.43		
447.69	0.24	450.34	0.36	452.99	2.46		
447.74	0.24	450.39	0.36	453.04	2.48		
447.79	0.25	450.44	0.36	453.09	2.50		
447.84	0.25	450.49	0.38	453.14	2.53		
447.89	0.25	450.54	0.42	453.19	2.55		
447.94	0.25	450.59	0.49	453.24	2.57		
447.99	0.26	450.64	0.57	453.29	2.59		
448.04	0.26	450.69	0.66	453.34	2.61		

Stage-Area-Storage for Pond 30P: PP-3

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
445.44	0.000	450.74	0.080
445.54	0.001	450.84	0.082
445.64	0.002	450.94	0.083
445.74	0.003	451.04	0.085
445.84	0.004	451.14	0.086
445.94	0.005	451.24	0.088
446.04	0.006	451.34	0.089
446.14	0.007	451.44	0.090
446.24	0.008	451.54	0.092
446.34	0.009	451.64	0.093
446.44	0.010	451.74	0.094
446.54	0.011	451.84	0.094
446.64	0.012	451.94	0.095
446.74	0.013	452.04	0.096
446.84	0.014	452.14	0.097
446.94	0.015	452.24	0.098
447.04	0.016	452.34	0.099
447.14	0.018	452.44	0.100
447.24	0.019	452.54	0.101
447.34	0.020	452.64	0.102
447.44	0.022	452.74	0.103
447.54	0.024	452.84	0.104
447.64	0.025	452.94	0.106
447.74	0.027	453.04	0.107
447.84	0.028	453.14	0.108
447.94	0.030	453.24	0.109
448.04	0.032	453.34	0.110
448.14	0.034	453.44	0.111
448.24	0.035	453.54	0.112
448.34	0.037	453.64	0.113
448.44	0.039	453.74	0.114
448.54	0.041	453.84	0.115
448.64	0.042	453.94	0.116
448.74	0.044	454.04	0.117
448.84	0.046	454.14	0.118
448.94	0.048	454.24	0.119
449.04	0.050	454.34	0.120
449.14	0.052	454.44	0.121
449.24	0.053	454.54	0.122
449.34	0.055	454.64	0.123
449.44	0.057	454.74	0.124
449.54	0.059	454.84	0.125
449.64	0.061	454.94	0.126
449.74	0.062	455.04	0.127
449.84	0.064	455.14	0.128
449.94	0.066	455.24	0.129
450.04	0.068	455.34	0.130
450.14	0.070	455.44	**0.131**
450.24	0.071		
450.34	0.073		
450.44	0.075		
450.54	0.077		
450.64	0.078		

Summary for Pond 31P: PP-4

Inflow Area = 0.200 ac, 90.00% Impervious, Inflow Depth = 5.94" for 25-Year event
Inflow = 1.29 cfs @ 12.09 hrs, Volume= 0.099 af
Outflow = 0.59 cfs @ 12.17 hrs, Volume= 0.099 af, Atten= 54%, Lag= 5.0 min
Primary = 0.59 cfs @ 12.17 hrs, Volume= 0.099 af
Routed to Pond 28P : PP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 454.71' @ 12.17 hrs Surf.Area= 0.014 ac Storage= 0.020 af

Plug-Flow detention time= 25.1 min calculated for 0.099 af (100% of inflow)
Center-of-Mass det. time= 25.3 min (772.7 - 747.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	451.95'	0.023 af	**18.00'W x 33.00'L x 5.83'H Field A** 0.080 af Overall - 0.022 af Embedded = 0.058 af x 40.0% Voids
#2A	452.45'	0.018 af	**ADS N-12 48"** x 2 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf Row Length Adjustment= +1.00' x 12.40 sf x 2 rows 11.08' Header x 12.40 sf x 2 = 274.9 cf Inside
		0.041 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	449.63'	**15.0" Round Culvert** L= 29.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 449.63' / 449.55' S= 0.0028 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	451.95'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	453.95'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	457.00'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.59 cfs @ 12.17 hrs HW=454.70' TW=447.34' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.59 cfs of 9.84 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.27 cfs @ 7.84 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.32 cfs @ 3.69 fps)
  └**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 31P: PP-4 - Chamber Wizard Field A

Chamber Model = ADS N-12 48" (ADS N-12® Pipe)
Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf
Outside= 54.0"W x 54.0"H => 14.85 sf x 20.00'L = 297.0 cf
Row Length Adjustment= +1.00' x 12.40 sf x 2 rows

54.0" Wide + 25.0" Spacing = 79.0" C-C Row Spacing

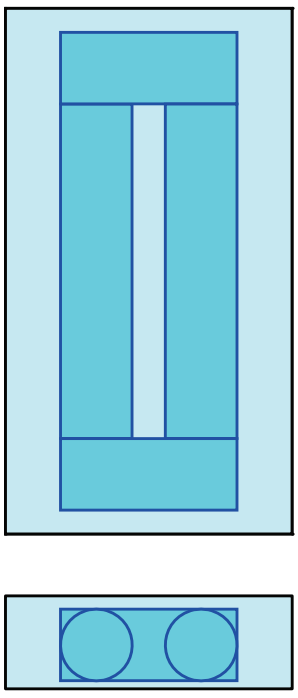
1 Chambers/Row x 20.00' Long +1.00' Row Adjustment +4.50' Header x 2 = 30.00' Row Length +18.0" End Stone x 2 = 33.00' Base Length
2 Rows x 54.0" Wide + 25.0" Spacing x 1 + 41.5" Side Stone x 2 = 18.00' Base Width
6.0" Stone Base + 54.0" Chamber Height + 10.0" Stone Cover = 5.83' Field Height

2 Chambers x 248.0 cf +1.00' Row Adjustment x 12.40 sf x 2 Rows + 11.08' Header x 12.40 sf x 2 = 795.7 cf Chamber Storage
2 Chambers x 297.0 cf +1.00' Row Adjustment x 14.85 sf x 2 Rows + 11.08' Header x 14.85 sf x 2 = 952.8 cf Displacement

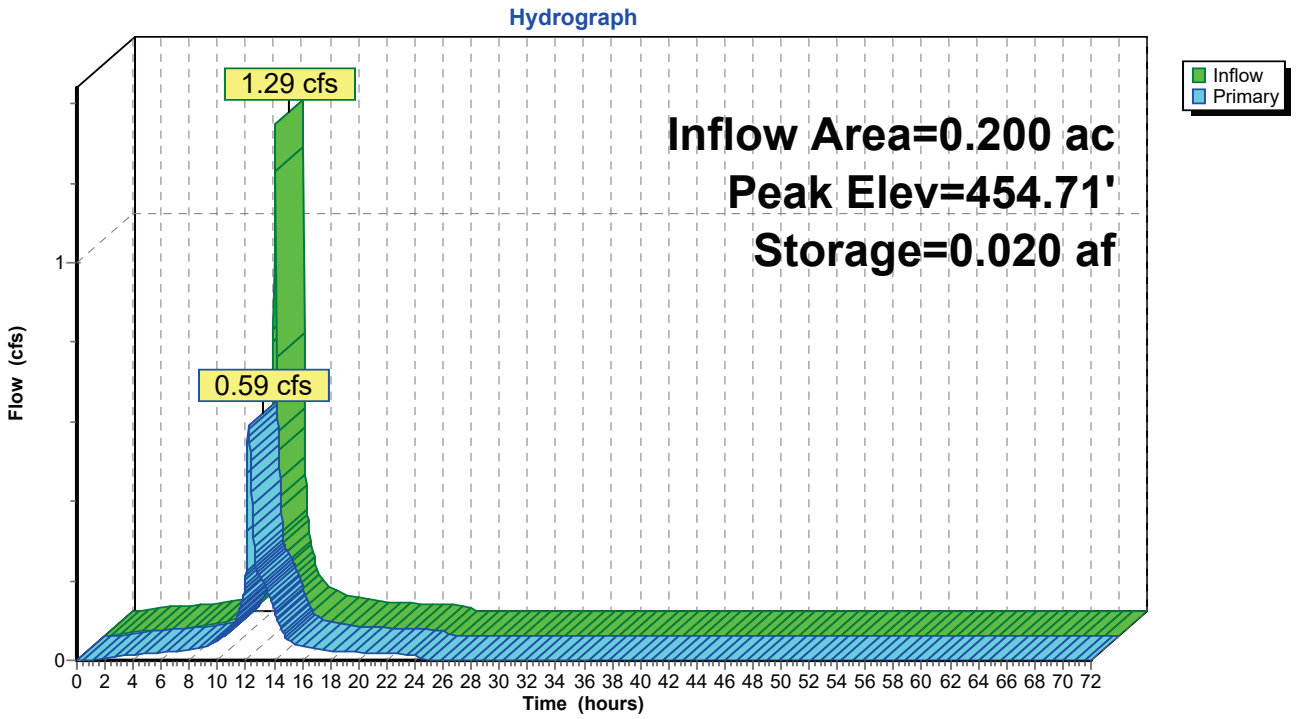
3,465.1 cf Field - 952.8 cf Chambers = 2,512.3 cf Stone x 40.0% Voids = 1,004.9 cf Stone Storage

Chamber Storage + Stone Storage = 1,800.6 cf = 0.041 af
Overall Storage Efficiency = 52.0%
Overall System Size = 33.00' x 18.00' x 5.83'

2 Chambers
128.3 cy Field
93.0 cy Stone



Pond 31P: PP-4


Hydrograph
1.29 cfs
0.59 cfs
Inflow Area=0.200 ac
Peak Elev=454.71'
Storage=0.020 af
Inflow
Primary
Flow (cfs)
0
1
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Stage-Discharge for Pond 31P: PP-4

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
451.95	0.00	454.60	0.55	457.25	2.89
452.00	0.00	454.65	0.57	457.30	3.48
452.05	0.02	454.70	0.59	457.35	4.13
452.10	0.03	454.75	0.60	457.40	4.83
452.15	0.05	454.80	0.62	457.45	5.62
452.20	0.06	454.85	0.63	457.50	6.46
452.25	0.07	454.90	0.65	457.55	7.36
452.30	0.08	454.95	0.66	457.60	8.33
452.35	0.09	455.00	0.68	457.65	9.39
452.40	0.10	455.05	0.69	457.70	10.53
452.45	0.10	455.10	0.70	457.75	**11.73**
452.50	0.11	455.15	0.72		
452.55	0.12	455.20	0.73		
452.60	0.12	455.25	0.74		
452.65	0.13	455.30	0.75		
452.70	0.13	455.35	0.76		
452.75	0.14	455.40	0.78		
452.80	0.14	455.45	0.79		
452.85	0.15	455.50	0.80		
452.90	0.15	455.55	0.81		
452.95	0.16	455.60	0.82		
453.00	0.16	455.65	0.83		
453.05	0.16	455.70	0.84		
453.10	0.17	455.75	0.85		
453.15	0.17	455.80	0.86		
453.20	0.18	455.85	0.87		
453.25	0.18	455.90	0.88		
453.30	0.18	455.95	0.89		
453.35	0.19	456.00	0.90		
453.40	0.19	456.05	0.91		
453.45	0.19	456.10	0.92		
453.50	0.20	456.15	0.93		
453.55	0.20	456.20	0.94		
453.60	0.20	456.25	0.95		
453.65	0.21	456.30	0.96		
453.70	0.21	456.35	0.97		
453.75	0.21	456.40	0.98		
453.80	0.22	456.45	0.99		
453.85	0.22	456.50	0.99		
453.90	0.22	456.55	1.00		
453.95	0.23	456.60	1.01		
454.00	0.24	456.65	1.02		
454.05	0.26	456.70	1.03		
454.10	0.28	456.75	1.04		
454.15	0.32	456.80	1.05		
454.20	0.36	456.85	1.05		
454.25	0.40	456.90	1.06		
454.30	0.43	456.95	1.07		
454.35	0.45	457.00	1.08		
454.40	0.48	457.05	1.24		
454.45	0.50	457.10	1.54		
454.50	0.52	457.15	1.92		
454.55	0.54	457.20	2.36		

Stage-Area-Storage for Pond 31P: PP-4

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
451.95	0.000	454.60	0.019	457.25	0.038
452.00	0.000	454.65	0.019	457.30	0.039
452.05	0.001	454.70	0.020	457.35	0.039
452.10	0.001	454.75	0.020	457.40	0.039
452.15	0.001	454.80	0.021	457.45	0.040
452.20	0.001	454.85	0.021	457.50	0.040
452.25	0.002	454.90	0.022	457.55	0.040
452.30	0.002	454.95	0.022	457.60	0.040
452.35	0.002	455.00	0.022	457.65	0.041
452.40	0.002	455.05	0.023	457.70	0.041
452.45	0.003	455.10	0.023	457.75	**0.041**
452.50	0.003	455.15	0.024		
452.55	0.003	455.20	0.024		
452.60	0.003	455.25	0.025		
452.65	0.004	455.30	0.025		
452.70	0.004	455.35	0.025		
452.75	0.004	455.40	0.026		
452.80	0.004	455.45	0.026		
452.85	0.005	455.50	0.027		
452.90	0.005	455.55	0.027		
452.95	0.005	455.60	0.028		
453.00	0.006	455.65	0.028		
453.05	0.006	455.70	0.028		
453.10	0.006	455.75	0.029		
453.15	0.007	455.80	0.029		
453.20	0.007	455.85	0.030		
453.25	0.008	455.90	0.030		
453.30	0.008	455.95	0.030		
453.35	0.008	456.00	0.031		
453.40	0.009	456.05	0.031		
453.45	0.009	456.10	0.032		
453.50	0.009	456.15	0.032		
453.55	0.010	456.20	0.032		
453.60	0.010	456.25	0.033		
453.65	0.011	456.30	0.033		
453.70	0.011	456.35	0.033		
453.75	0.012	456.40	0.034		
453.80	0.012	456.45	0.034		
453.85	0.012	456.50	0.034		
453.90	0.013	456.55	0.035		
453.95	0.013	456.60	0.035		
454.00	0.014	456.65	0.035		
454.05	0.014	456.70	0.036		
454.10	0.014	456.75	0.036		
454.15	0.015	456.80	0.036		
454.20	0.015	456.85	0.036		
454.25	0.016	456.90	0.037		
454.30	0.016	456.95	0.037		
454.35	0.017	457.00	0.037		
454.40	0.017	457.05	0.037		
454.45	0.018	457.10	0.038		
454.50	0.018	457.15	0.038		
454.55	0.018	457.20	0.038		

Events for Pond 28P: PP-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
25-Year	**1.56**	**0.23**	**448.18**	**0.064**

Events for Pond 29P: PP-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
25-Year	**1.37**	**0.50**	**446.93**	**0.106**

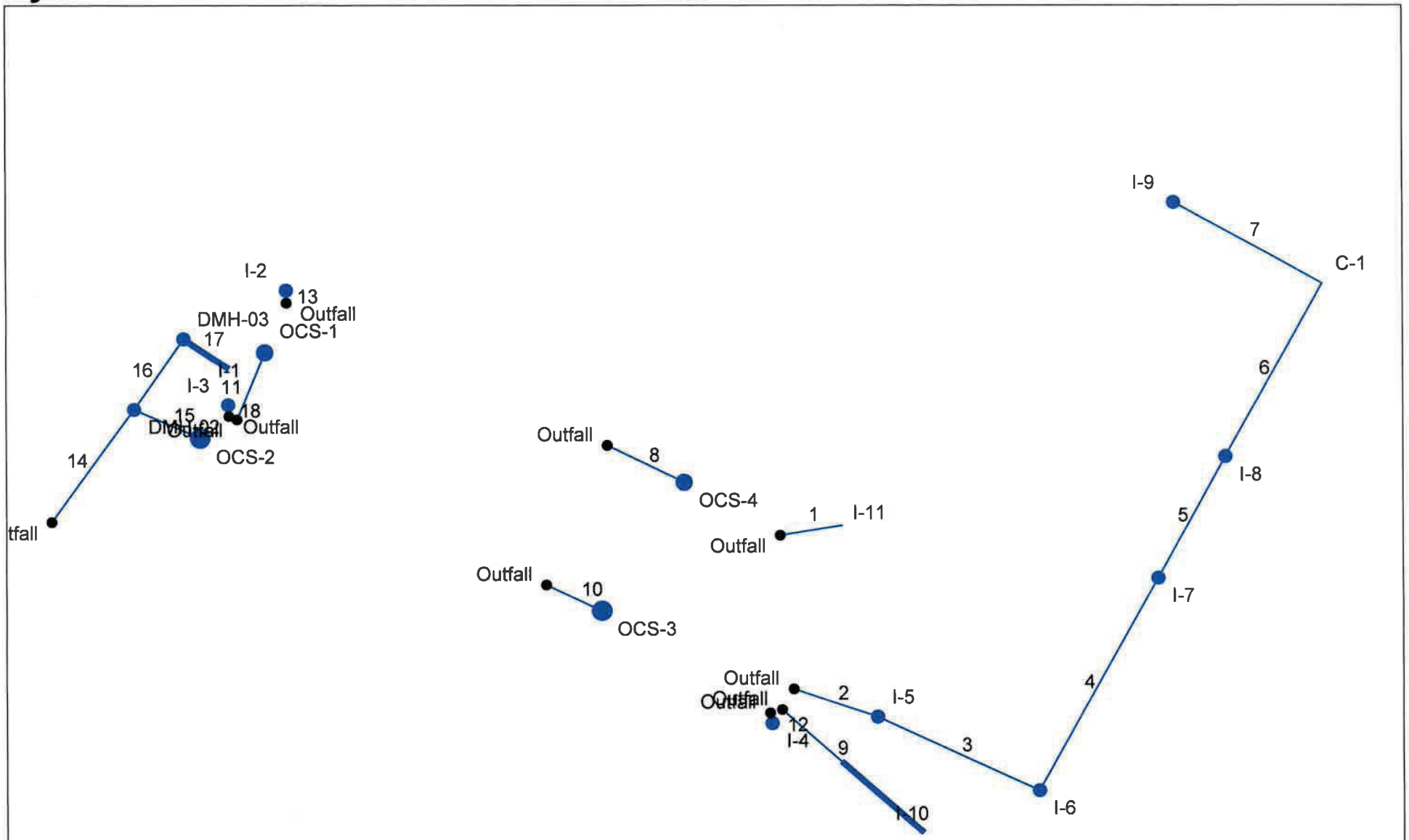
Events for Pond 30P: PP-3

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
25-Year	**2.98**	**0.62**	**450.67**	**0.079**

Events for Pond 31P: PP-4

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
25-Year	**1.29**	**0.59**	**454.71**	**0.020**

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: DMH2C26001 - Conveyance.stm	Number of lines: 18	Date: 8/17/2026

Report

Line No.	Inlet ID	Line ID	Runoff Coeff (C)	Drng Area (ac)	Incr CxA	Inlet Time (min)	i Inlet (in/hr)	Incr Q (cfs)	Total Area (ac)	Total CxA	Pipe Travel (min)	Tc (min)	i Sys (in/hr)	Total Runoff (cfs)	Line Size (in)	n-val Pipe	Line Length (ft)	Line Slope (%)	Capac Full (cfs)	Vel Ave (ft/s)	Flow Rate (cfs)
1	I-11	I-11 to PP-4	0.99	0.13	0.13	10.0	5.79	0.74	0.13	0.13	0.54	10.0	5.79	0.74	15	0.012	19.836	0.30	3.85	2.39	0.74
2	I-5	I-5 to PP-3	0.90	0.05	0.05	10.0	5.79	0.26	0.40	0.31	0.34	19.4	4.37	1.35	15	0.012	28.096	0.28	3.73	3.00	1.35
3	I-6	I-6 to I-5	0.75	0.04	0.03	10.0	5.79	0.17	0.35	0.26	0.79	18.6	4.46	1.18	15	0.012	56.517	0.32	3.95	2.75	1.18
4	I-7	I-7 to I-6	0.99	0.08	0.08	10.0	5.79	0.46	0.31	0.23	1.22	17.4	4.60	1.08	15	0.012	78.693	0.29	3.78	2.37	1.08
5	I-8	I-8 to I-7	0.89	0.10	0.09	10.0	5.79	0.52	0.23	0.16	1.04	16.3	4.73	0.74	15	0.012	44.759	0.31	3.91	2.31	0.74
6	C-1	C-1 to I-8	0.00	0.00	0.00	0.0	0.00	0.00	0.13	0.07	3.45	12.9	5.25	0.35	15	0.012	64.071	0.30	3.81	1.76	0.35
7	I-9	I-9 to C-1	0.51	0.13	0.07	10.0	5.79	0.38	0.13	0.07	2.88	10.0	5.79	0.38	15	0.012	54.037	0.30	3.81	1.84	0.38
8	OCS-4	I-3 to DMH-05	0.00	0.00	0.00	0.0	0.00	0.59	0.00	0.00	0.94	0.0	0.00	0.00	15	0.012	27.049	0.30	3.80	2.32	0.59
9	I-10	I-10 to PP-3	0.83	0.09	0.07	10.0	5.79	0.43	0.09	0.07	2.02	10.0	5.79	0.43	15	0.012	42.654	0.30	3.86	2.13	0.43
10	OCS-3	OCS-3 to PP-2	0.00	0.00	0.00	0.0	0.00	0.62	0.00	0.00	0.64	0.0	0.00	0.00	15	0.012	19.511	0.31	3.88	2.39	0.62
11	OCS-1	OCS-1 to PP-2	0.00	0.00	0.00	0.0	0.00	0.23	0.00	0.00	2.09	0.0	0.00	0.00	15	0.012	23.525	0.30	3.82	1.77	0.23
12	I-4	I-4 to PP-3	0.98	0.06	0.06	10.0	5.79	0.34	0.06	0.06	0.20	10.0	5.79	0.34	15	0.012	3.395	0.29	3.80	2.10	0.34
13	I-2	I-2 to PP-1	0.74	0.19	0.14	10.0	5.79	0.81	0.19	0.14	0.10	10.0	5.79	0.81	15	0.012	3.988	0.25	3.50	2.69	0.81
14	DMH-02	DMH-02 to DMH-01	0.00	0.00	0.00	0.0	0.00	0.00	0.02	0.02	1.57	18.6	4.46	0.07	15	0.012	44.920	0.31	3.91	2.32	0.57
15	OCS-2	OCS-2 to DMH-02	0.00	0.00	0.00	0.0	0.00	0.50	0.00	0.00	0.94	0.0	0.00	0.00	15	0.012	23.064	0.30	3.85	2.16	0.50
16	DMH-03	DMH-03 to DMH-02	0.00	0.00	0.00	0.0	0.00	0.00	0.02	0.02	6.56	12.0	5.40	0.08	15	0.012	27.778	0.30	3.82	1.26	0.08
17	I-1	I-1 to DMH-03	0.75	0.02	0.02	10.0	5.79	0.09	0.02	0.02	2.00	10.0	5.79	0.09	15	0.012	8.495	0.35	4.16	1.37	0.09
18	I-3	I-3 to PP-2	0.99	0.12	0.12	10.0	5.79	0.69	0.12	0.12	0.11	10.0	5.79	0.69	15	0.012	3.723	0.27	3.63	2.58	0.69

Project File: DMH2C26001 - Conveyance.stm | Number of lines: 18 | Date: 8/17/2026

NOTES: Intensity = 51.50 / (Inlet time + 10.00) ^ 0.73 -- Return period = 25 Yrs. ; ** Critical depth

Appendix E:
Water Quality Calculations

WATER QUALITY CRITERIA PER NJAC 7:8-5.3(b)

The maximum area of additional inflow within a contributory drainage area cannot exceed three times the area occupied by the BMP for Pervious Paving Systems.

Drainage Area PDA-1A

	AREA	UNIT/DESCRIP	CALCULATION
Area of Basin #1	2,106	SF	NA
Area of PDA-1A	8,081	SF	NA
Max Inflow Area to Basin #1	5,975	SF	8,081 – 2,106 = 5,975
3 X Area of Basin #1	6,318	SF	2,106 X 3 = 6,318

Max Inflow Area to Basin #1 = **5,975 SF ≤ 6,318 SF** (3 times the area of Basin #1)

Drainage Area PDA-1B

	AREA	UNIT/DESCRIP	CALCULATION
Area of Basin #2	2,106	SF	NA
Area of PDA-1B	5,362	SF	NA
Max Inflow Area to Basin #2	3,256	SF	5,362 – 2,106 = 3,256
3 X Area of Basin #2	6,318	SF	2,106 X 3 = 6,318

Max Inflow Area to Basin #2 = **3,256 SF ≤ 6,318 SF** (3 times the area of Basin #2)

Drainage Area PDA-1C

	AREA	UNIT/DESCRIP	CALCULATION
Area of Basin #3	1,134	SF	NA
Area of PDA-1C	2,808	SF	NA
Max Inflow Area to Basin #3	1,674	SF	2,808 – 1,134 = 1,674
3 X Area of Basin #3	3,402	SF	1,134 X 3 = 3,402

Max Inflow Area to Basin #3 = **1,674 SF ≤ 3,402 SF** (3 times the area of Basin #3)

Drainage Area PDA-1D

	AREA	UNIT/DESCRIP	CALCULATION
Area of Basin #4	594	SF	NA
Area of PDA-1D	1,304	SF	NA
Max Inflow Area to Basin #4	710	SF	1,304– 594 = 710
3 X Area of Basin #4	1,782	SF	594 X 3 = 1,782

Max Inflow Area to Basin #4 = **710 SF ≤ 1,782 SF** (3 times the area of Basin #4)

Appendix F:
Post Construction Sheet Flow Calculations

POST CONSTRUCTION SHEET FLOW CALCULATIONS

McCuen-Spiess Limitation

$$L = \frac{100\sqrt{S}}{n}$$

where S is the slope, in ft/ft, and n is the Manning's roughness coefficient for sheet flow.

Post-Construction Drainage Areas

	INPUT	UNIT/DESCRIP	SHEET FLOW LENGTH CHECK	
Drainage Area	PDA-1A		Is (L) greater than or equal to 100 feet?	**Yes**
Slope (S)	0.035	ft/ft		
Manning's Coefficient (n)	0.011	Grass (Short)		
Sheet Flow Length (L)	**1,701**	ft		
PDA-1-A Sheet Flow Length (L)	**100 ft**			

POST CONSTRUCTION SHEET FLOW CALCULATIONS

McCuen-Spiess Limitation

$$L = \frac{100\sqrt{S}}{n}$$

where S is the slope, in ft/ft, and n is the Manning's roughness coefficient for sheet flow.

Post-Construction Drainage Areas

	INPUT	UNIT/DESCRIP	SHEET FLOW LENGTH CHECK	
Drainage Area	PDA-1B		Is (L) greater than or equal to 100 feet?	**Yes**
Slope (*S*)	0.048	ft/ft		
Manning's Coefficient (*n*)	0.011	Grass (Short)		
Sheet Flow Length (L)	**1,992**	ft		
PDA-1-A Sheet Flow Length (L)	**100 ft**			

POST CONSTRUCTION SHEET FLOW CALCULATIONS

McCuen-Spiess Limitation

$$L = \frac{100\sqrt{S}}{n}$$

where S is the slope, in ft/ft, and n is the Manning's roughness coefficient for sheet flow.

Post-Construction Drainage Areas

	INPUT	UNIT/DESCRIP	SHEET FLOW LENGTH CHECK	
Drainage Area	PDA-1E		Is (L) greater than or equal to 100 feet?	**Yes**
Slope (S)	0.005	ft/ft		
Manning's Coefficient (n)	0.011	Grass (Short)		
Sheet Flow Length (L)	**643**	ft		
PDA-1-A Sheet Flow Length (L)	**100 ft**			

POST CONSTRUCTION SHEET FLOW CALCULATIONS

McCuen-Spiess Limitation

$$L = \frac{100\sqrt{S}}{n}$$

where S is the slope, in ft/ft, and n is the Manning's roughness coefficient for sheet flow.

Post-Construction Drainage Areas

	INPUT	UNIT/DESCRIP	SHEET FLOW LENGTH CHECK	
Drainage Area	PDA-1G		Is (L) greater than or equal to 100 feet?	**No**
Slope (*S*)	0.069	ft/ft		
Manning's Coefficient (*n*)	0.40	Grass (Short)		
Sheet Flow Length (L)	**66**	ft		
PDA-1-A Sheet Flow Length (L)	**66 ft**			

POST CONSTRUCTION SHEET FLOW CALCULATIONS

McCuen-Spiess Limitation

$$L = \frac{100\sqrt{S}}{n}$$

where S is the slope, in ft/ft, and n is the Manning's roughness coefficient for sheet flow.

Post-Construction Drainage Areas

	INPUT	UNIT/DESCRIP	SHEET FLOW LENGTH CHECK	
Drainage Area	PDA-2		Is (L) greater than or equal to 100 feet?	**No**
Slope (*S*)	0.061	ft/ft		
Manning's Coefficient (*n*)	0.40	Grass (Short)		
Sheet Flow Length (L)	**62**	ft		
PDA-1-A Sheet Flow Length (L)	**62 ft**			

Appendix G:
Reference Material

NEW JERSEY 24 HOUR RAINFALL FREQUENCY DATA

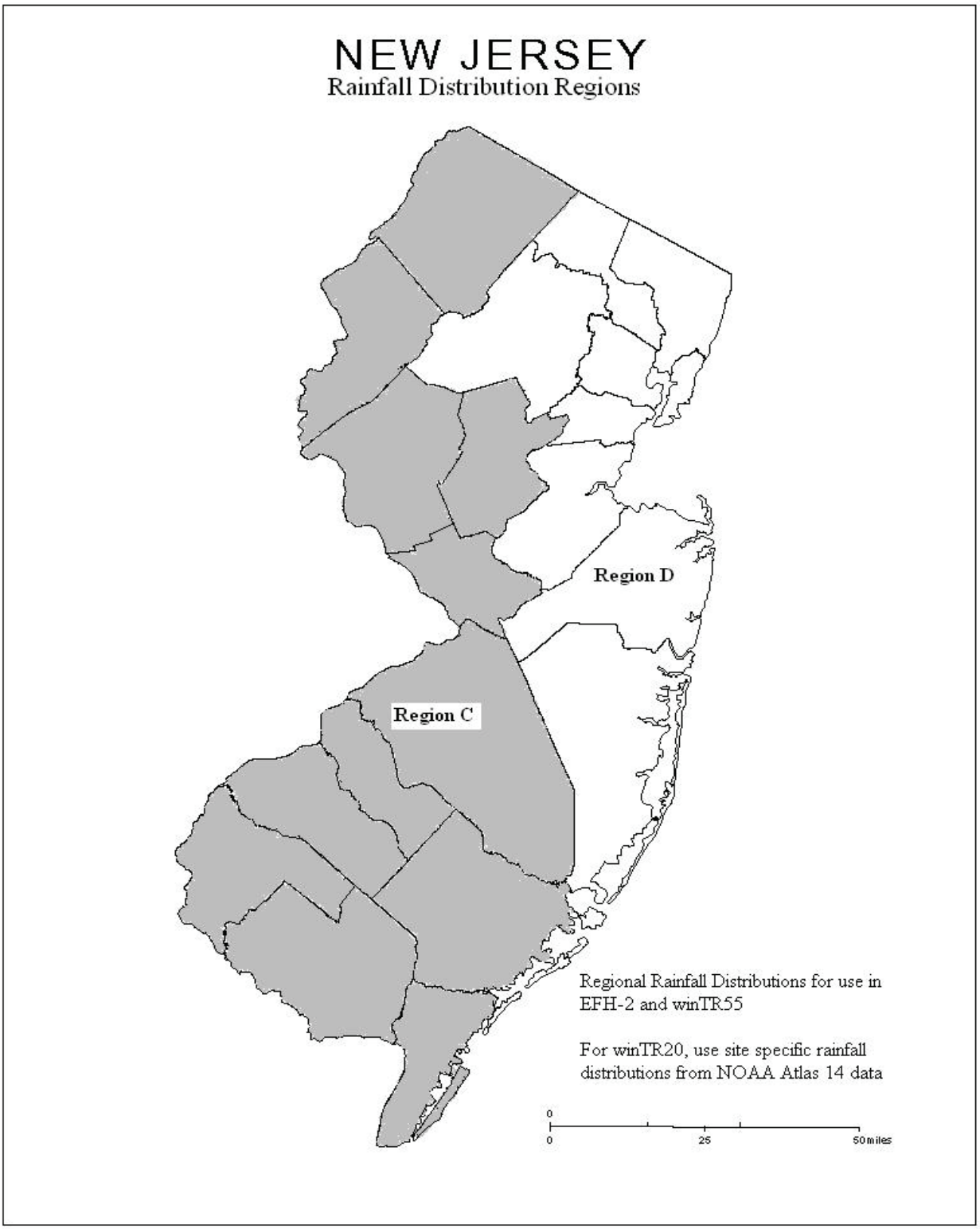
Rainfall amounts in Inches

County	1 year	2 year	5 year	10 year	25 year	50 year	100 year
Atlantic	2.72	3.31	4.30	5.16	6.46	7.61	8.90
Bergen	2.75	3.34	4.27	5.07	6.28	7.32	8.47
Burlington	2.77	3.36	4.34	5.18	6.45	7.56	8.81
Camden	2.73	3.31	4.25	5.06	6.28	7.34	8.52
Cape May	2.67	3.25	4.22	5.07	6.34	7.47	8.73
Cumberland	2.69	3.27	4.25	5.09	6.37	7.49	8.76
Essex	2.85	3.44	4.40	5.22	6.44	7.49	8.66
Gloucester	2.71	3.29	4.24	5.05	6.29	7.36	8.55
Hudson	2.73	3.31	4.23	5.02	6.19	7.20	8.31
Hunterdon	2.80	3.38	4.26	5.00	6.09	7.02	8.03
Mercer	2.74	3.31	4.23	5.01	6.19	7.20	8.33
Middlesex	2.76	3.35	4.30	5.12	6.36	7.43	8.63
Monmouth	2.79	3.38	4.38	5.23	6.53	7.66	8.94
Morris	2.94	3.54	4.47	5.24	6.37	7.32	8.35
Ocean	2.81	3.42	4.45	5.33	6.68	7.87	9.20
Passaic	2.87	3.47	4.42	5.23	6.43	7.47	8.62
Salem	2.69	3.26	4.20	5.00	6.22	7.28	8.45
Somerset	2.76	3.34	4.25	5.01	6.15	7.13	8.21
Sussex	2.68	3.22	4.02	4.70	5.72	6.60	7.58
Union	2.80	3.39	4.35	5.17	6.42	7.49	8.69
Warren	2.78	3.34	4.18	4.89	5.93	6.83	7.82

Notes: The average point rainfall amounts listed above were developed from data contained in NOAA Atlas 14 Volume 2.

Point rainfall estimates for specific locations may be obtained from the Precipitation Frequency Data Server located at http://www.nws.noaa.gov/ohd/hdsc/

For most hydrologic design procedures, the rainfall amounts listed above may be rounded to the nearest tenth of an inch.


NEW JERSEY
Rainfall Distribution Regions
Region D
Region C
Regional Rainfall Distributions for use in EFH-2 and winTR55
For winTR20, use site specific rainfall distributions from NOAA Atlas 14 data
0
0
25
50 miles

b. N.J.A.C.7:8-5.7(c) requires the precipitation depths of the current 2-, 10- and 100-year storm events be determined by multiplying the NOAA rainfall data with the current precipitation adjustment factors in Table 5-5 at N.J.A.C.7:8-5.7(c)2. N.J.A.C.7:8-5.7(d) requires the precipitation depths of the projected 2-, 10- and 100-year storm events be determined by multiplying the NOAA rainfall data with the future precipitation change factors in Table 5-6 at N.J.A.C.7:8-5.7(d). Table 5-5 and Table 5-6 from the Rules are reproduced below.

Current Precipitation Adjustment Factors at N.J.A.C. 7:8-5.7(c) as Table 5-5

County	Current Precipitation Adjustment Factors		
	2-year Design Storm	10-year Design Storm	100-year Design Storm
Atlantic	1.01	1.02	1.03
Bergen	1.01	1.03	1.06
Burlington	0.99	1.01	1.04
Camden	1.03	1.04	1.05
Cape May	1.03	1.03	1.04
Cumberland	1.03	1.03	1.01
Essex	1.01	1.03	1.06
Gloucester	1.05	1.06	1.06
Hudson	1.03	1.05	1.09
Hunterdon	1.02	1.05	1.13
Mercer	1.01	1.02	1.04
Middlesex	1.00	1.01	1.03
Monmouth	1.00	1.01	1.02
Morris	1.01	1.03	1.06
Ocean	1.00	1.01	1.03
Passaic	1.00	1.02	1.05
Salem	1.02	1.03	1.03
Somerset	1.00	1.03	1.09
Sussex	1.03	1.04	1.07
Union	1.01	1.03	1.06
Warren	1.02	1.07	1.15

Future Precipitation Change Factors at N.J.A.C. 7:8-5.7(d) as Table 5-6

County	Future Precipitation Change Factors		
	2-year Design Storm	10-year Design Storm	100-year Design Storm
Atlantic	1.22	1.24	1.39
Bergen	1.20	1.23	1.37
Burlington	1.17	1.18	1.32
Camden	1.18	1.22	1.39
Cape May	1.21	1.24	1.32
Cumberland	1.20	1.21	1.39
Essex	1.19	1.22	1.33
Gloucester	1.19	1.23	1.41
Hudson	1.19	1.19	1.23
Hunterdon	1.19	1.23	1.42
Mercer	1.16	1.17	1.36
Middlesex	1.19	1.21	1.33
Monmouth	1.19	1.19	1.26
Morris	1.23	1.28	1.46
Ocean	1.18	1.19	1.24
Passaic	1.21	1.27	1.50
Salem	1.20	1.23	1.32
Somerset	1.19	1.24	1.48
Sussex	1.24	1.29	1.50
Union	1.20	1.23	1.35
Warren	1.20	1.25	1.37

NOAA Atlas 14, Volume 2, Version 3
Location name: Verona, New Jersey, USA*
Latitude: 40.8264°, Longitude: -74.2335°
Elevation: 486 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.336** (0.307-0.369)	**0.402** (0.367-0.441)	**0.475** (0.433-0.521)	**0.530** (0.482-0.580)	**0.595** (0.540-0.652)	**0.641** (0.579-0.702)	**0.687** (0.617-0.752)	**0.730** (0.653-0.800)	**0.782** (0.692-0.859)	**0.819** (0.720-0.902)
10-min	**0.535** (0.489-0.587)	**0.639** (0.585-0.702)	**0.757** (0.690-0.831)	**0.840** (0.764-0.921)	**0.943** (0.855-1.03)	**1.01** (0.916-1.11)	**1.08** (0.974-1.19)	**1.14** (1.02-1.25)	**1.22** (1.08-1.34)	**1.28** (1.12-1.40)
15-min	**0.666** (0.608-0.731)	**0.800** (0.732-0.878)	**0.953** (0.869-1.05)	**1.06** (0.964-1.16)	**1.19** (1.08-1.30)	**1.28** (1.15-1.40)	**1.36** (1.23-1.49)	**1.44** (1.29-1.58)	**1.54** (1.36-1.69)	**1.60** (1.40-1.76)
30-min	**0.909** (0.830-0.997)	**1.10** (1.01-1.21)	**1.35** (1.23-1.48)	**1.52** (1.39-1.67)	**1.75** (1.58-1.91)	**1.91** (1.72-2.09)	**2.07** (1.86-2.27)	**2.22** (1.98-2.43)	**2.41** (2.14-2.65)	**2.55** (2.24-2.81)
60-min	**1.13** (1.03-1.24)	**1.38** (1.26-1.51)	**1.72** (1.57-1.89)	**1.98** (1.80-2.17)	**2.32** (2.10-2.54)	**2.57** (2.32-2.82)	**2.84** (2.55-3.11)	**3.10** (2.76-3.39)	**3.44** (3.05-3.78)	**3.70** (3.26-4.08)
2-hr	**1.38** (1.26-1.52)	**1.68** (1.54-1.85)	**2.13** (1.95-2.34)	**2.49** (2.26-2.73)	**2.97** (2.68-3.25)	**3.37** (3.02-3.69)	**3.78** (3.37-4.13)	**4.20** (3.72-4.60)	**4.80** (4.20-5.26)	**5.28** (4.57-5.79)
3-hr	**1.55** (1.42-1.70)	**1.88** (1.72-2.07)	**2.39** (2.18-2.62)	**2.78** (2.54-3.05)	**3.33** (3.01-3.64)	**3.78** (3.40-4.13)	**4.23** (3.79-4.62)	**4.71** (4.18-5.15)	**5.38** (4.72-5.88)	**5.91** (5.13-6.48)
6-hr	**2.00** (1.84-2.19)	**2.43** (2.23-2.66)	**3.07** (2.81-3.35)	**3.60** (3.28-3.92)	**4.34** (3.93-4.72)	**4.96** (4.46-5.39)	**5.62** (5.01-6.10)	**6.33** (5.59-6.87)	**7.36** (6.39-7.99)	**8.20** (7.05-8.92)
12-hr	**2.49** (2.28-2.75)	**3.03** (2.76-3.34)	**3.85** (3.51-4.24)	**4.54** (4.12-4.98)	**5.55** (4.99-6.06)	**6.42** (5.73-7.00)	**7.36** (6.49-8.01)	**8.40** (7.32-9.14)	**9.93** (8.49-10.8)	**11.2** (9.46-12.2)
24-hr	**2.82** (2.62-3.07)	**3.42** (3.17-3.72)	**4.38** (4.05-4.76)	**5.21** (4.79-5.65)	**6.44** (5.89-6.98)	**7.51** (6.82-8.14)	**8.70** (7.81-9.43)	**10.0** (8.90-10.9)	**12.0** (10.5-13.1)	**13.8** (11.8-15.0)
2-day	**3.34** (3.08-3.63)	**4.04** (3.74-4.40)	**5.16** (4.76-5.61)	**6.09** (5.61-6.62)	**7.46** (6.83-8.11)	**8.63** (7.84-9.38)	**9.90** (8.92-10.8)	**11.3** (10.1-12.3)	**13.4** (11.7-14.6)	**15.1** (13.1-16.6)
3-day	**3.51** (3.25-3.80)	**4.25** (3.94-4.60)	**5.40** (5.00-5.85)	**6.35** (5.86-6.88)	**7.74** (7.10-8.38)	**8.91** (8.12-9.65)	**10.2** (9.20-11.0)	**11.5** (10.3-12.6)	**13.6** (12.0-14.8)	**15.2** (13.3-16.8)
4-day	**3.68** (3.42-3.98)	**4.45** (4.14-4.81)	**5.64** (5.23-6.10)	**6.61** (6.12-7.15)	**8.02** (7.37-8.66)	**9.19** (8.39-9.93)	**10.4** (9.47-11.3)	**11.8** (10.6-12.8)	**13.8** (12.2-15.0)	**15.4** (13.5-16.9)
7-day	**4.35** (4.06-4.69)	**5.23** (4.87-5.63)	**6.50** (6.05-6.99)	**7.54** (7.00-8.11)	**9.04** (8.34-9.72)	**10.3** (9.43-11.1)	**11.6** (10.6-12.5)	**13.0** (11.8-14.1)	**15.1** (13.4-16.4)	**16.7** (14.7-18.3)
10-day	**5.00** (4.68-5.36)	**5.97** (5.59-6.40)	**7.31** (6.83-7.84)	**8.40** (7.83-9.01)	**9.95** (9.23-10.7)	**11.2** (10.4-12.0)	**12.6** (11.5-13.5)	**14.0** (12.7-15.1)	**16.0** (14.3-17.3)	**17.6** (15.6-19.2)
20-day	**6.75** (6.35-7.19)	**8.01** (7.54-8.53)	**9.57** (8.99-10.2)	**10.8** (10.1-11.5)	**12.4** (11.6-13.2)	**13.7** (12.8-14.6)	**15.0** (13.9-16.0)	**16.3** (15.0-17.5)	**18.1** (16.5-19.5)	**19.5** (17.6-21.0)
30-day	**8.42** (7.96-8.90)	**9.93** (9.39-10.5)	**11.6** (11.0-12.3)	**12.9** (12.2-13.7)	**14.6** (13.7-15.4)	**15.8** (14.9-16.8)	**17.1** (16.0-18.1)	**18.3** (17.0-19.4)	**19.8** (18.4-21.2)	**21.0** (19.3-22.5)
45-day	**10.7** (10.1-11.3)	**12.6** (11.9-13.2)	**14.5** (13.7-15.3)	**16.0** (15.1-16.8)	**17.8** (16.8-18.8)	**19.2** (18.1-20.3)	**20.6** (19.3-21.7)	**21.9** (20.5-23.1)	**23.5** (21.9-24.9)	**24.7** (22.9-26.3)
60-day	**12.8** (12.2-13.5)	**15.0** (14.3-15.8)	**17.2** (16.3-18.1)	**18.8** (17.8-19.8)	**20.8** (19.7-21.9)	**22.2** (21.0-23.4)	**23.6** (22.3-24.9)	**24.9** (23.4-26.3)	**26.4** (24.7-28.0)	**27.5** (25.7-29.2)

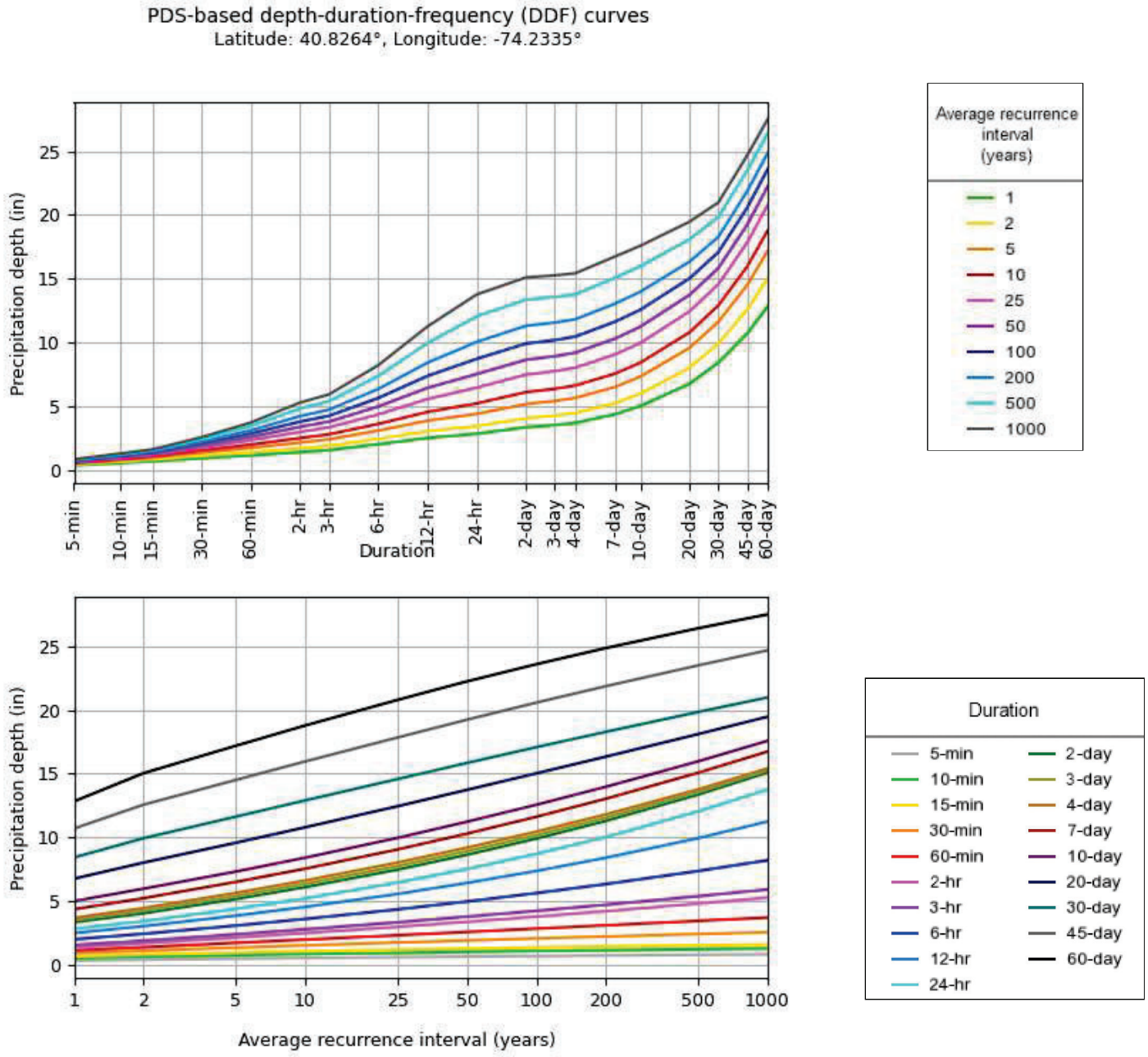
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



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Maps & aerials

Small scale terrain

Table 2-2a Runoff curve numbers for urban areas [1/]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2/]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3/]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4/]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5/]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1] Average runoff condition, and $I_a = 0.2S$.

[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2b Runoff curve numbers for cultivated agricultural lands [1/]

Cover description			Curve numbers for hydrologic soil group			
Cover type	Treatment [2/]	Hydrologic condition [3/]	A	B	C	D
Fallow	Bare soil	—	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
	C&T+ CR	Poor	65	73	79	81
		Good	61	70	77	80
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
	C&T+ CR	Poor	60	71	78	81
		Good	58	69	77	80
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

[1] Average runoff condition, and I_a=0.2S

[2] Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.

[3] Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good ≥ 20%), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

Table 10.3-B

Recommended Coefficient of Runoff Values for Various Selected Land Uses

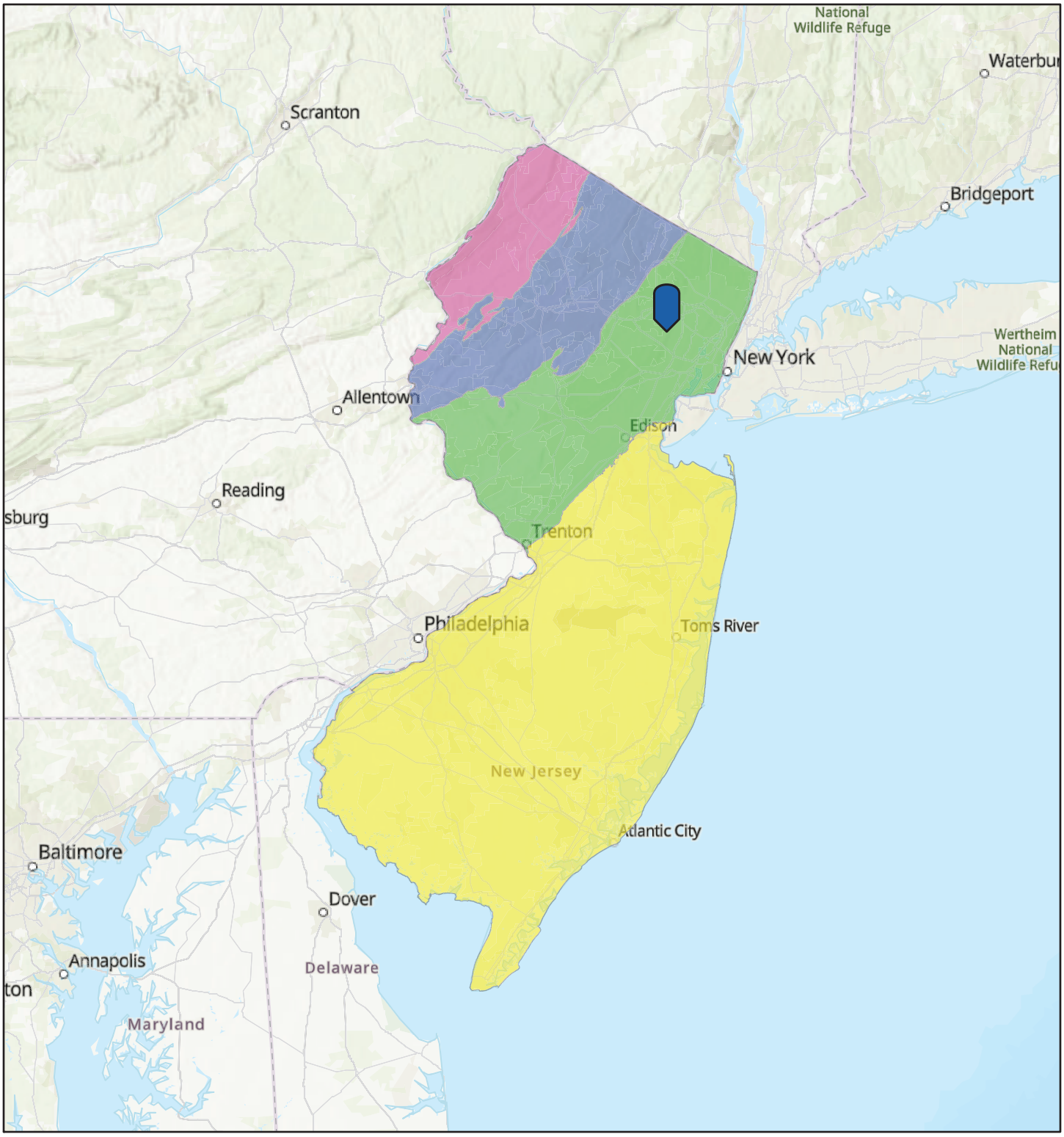
Land Use	Description	Hydrologic Soils Group			
		A	B	C	D
Cultivated Land	without conservation treatment with	0.49	0.67	0.81	0.88
	conservation treatment	0.27	0.43	0.67	0.67
Pasture or Range Land	poor condition	0.38	0.63	0.78	0.84
Meadow	good condition	---	0.25	0.51	0.65
	good condition	---	---	0.41	0.61
Wood or Forest Land	thin stand, poor cover, no mulch	---	0.34	0.59	0.70
	good cover	---	---	0.45	0.59
Open Spaces, Lawns, Parks, Golf Courses, Cemeteries					
Good Condition	grass cover on 75% or more	---	0.25	0.51	0.65
Fair Condition	grass cover on 50% to 75%	---	0.45	0.63	0.74
Commercial and Business Area	85% impervious	0.84	0.90	0.93	0.96
Industrial Districts	72% impervious	0.67	0.81	0.88	0.92
Residential	average % impervious				
Average Lot Size					
(acres) 1/8	65	0.59	0.76	0.86	0.90
1/4	38	0.29	0.55	0.70	0.80
1/3	30	---	0.49	0.67	0.78
1/2	25	---	0.45	0.65	0.76
1	20	---	0.41	0.63	0.74
Paved Areas	parking lots, roofs, driveways, etc.	0.99	0.99	0.99	0.96
Streets and Roads	paved with curbs & storm	0.99	0.99	0.99	0.99
	sewers	0.57	0.76	0.84	0.88
	gravel	0.49	0.69	0.80	0.84
	dirt				

NOTE: Values are based on NRCS definitions and are average values. Source: Technical Manual Flood Hazard Area Control Act Rules, Bureaus of Inland and Coastal Regulations, NJDEP Flood Hazard Area Permits, New Jersey Department of Environmental Protection

10.3.4 US Natural Resources Conservation Service (NRCS) Methodology

Techniques developed by the US Natural Resources Conservation Service (NRCS) for calculating rates of runoff require the same basic data as the Rational Method: drainage area, a runoff factor, Time of Concentration, and rainfall. The NRCS approach, however, is more sophisticated in that it also considers the time distribution of the rainfall, the initial rainfall losses to interception, and depression storage. With the NRCS method, the direct runoff can be calculated for any storm, either real or fabricated, by subtracting infiltration and other losses from the rainfall to obtain the precipitation excess. Details of the methodology can be found in the NRCS National Engineering Handbook, Section 4.

Physiographic Provinces of New Jersey



4/16/2026

1:2,315,681

0 15 30 60 mi

0 20 40 80 km

Physiographic Provinces of New Jersey - Physiographic Provinces

- Coastal Plain
- Highlands
- Piedmont
- Valley and Ridge

World_Hillshade

The digital development of this data set was completed by Ronald Pristas., Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Esri, USGS

NOAA Atlas 14, Volume 2, Version 3
Location name: Verona, New Jersey, USA*
Latitude: 40.8264°, Longitude: -74.2335°
Elevation: 486 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**4.03** (3.68-4.43)	**4.82** (4.40-5.29)	**5.70** (5.20-6.25)	**6.36** (5.78-6.96)	**7.14** (6.48-7.82)	**7.69** (6.95-8.42)	**8.24** (7.40-9.02)	**8.76** (7.84-9.60)	**9.38** (8.30-10.3)	**9.83** (8.64-10.8)
10-min	**3.21** (2.93-3.52)	**3.83** (3.51-4.21)	**4.54** (4.14-4.99)	**5.04** (4.58-5.53)	**5.66** (5.13-6.20)	**6.08** (5.50-6.67)	**6.50** (5.84-7.12)	**6.87** (6.14-7.52)	**7.34** (6.49-8.06)	**7.65** (6.72-8.42)
15-min	**2.66** (2.43-2.92)	**3.20** (2.93-3.51)	**3.81** (3.48-4.18)	**4.24** (3.86-4.64)	**4.75** (4.31-5.20)	**5.11** (4.61-5.60)	**5.46** (4.91-5.98)	**5.76** (5.14-6.30)	**6.14** (5.44-6.75)	**6.39** (5.61-7.03)
30-min	**1.82** (1.66-1.99)	**2.20** (2.01-2.41)	**2.69** (2.46-2.96)	**3.05** (2.77-3.34)	**3.49** (3.17-3.83)	**3.81** (3.45-4.18)	**4.14** (3.72-4.53)	**4.44** (3.97-4.86)	**4.83** (4.27-5.30)	**5.11** (4.49-5.62)
60-min	**1.13** (1.03-1.24)	**1.38** (1.26-1.51)	**1.72** (1.57-1.89)	**1.98** (1.80-2.17)	**2.32** (2.10-2.54)	**2.57** (2.32-2.82)	**2.84** (2.55-3.11)	**3.10** (2.76-3.39)	**3.44** (3.05-3.78)	**3.70** (3.26-4.08)
2-hr	**0.692** (0.631-0.759)	**0.842** (0.769-0.926)	**1.07** (0.973-1.17)	**1.24** (1.13-1.36)	**1.48** (1.34-1.63)	**1.68** (1.51-1.84)	**1.89** (1.68-2.07)	**2.10** (1.86-2.30)	**2.40** (2.10-2.63)	**2.64** (2.28-2.90)
3-hr	**0.515** (0.471-0.565)	**0.627** (0.574-0.688)	**0.795** (0.726-0.873)	**0.926** (0.844-1.02)	**1.11** (1.00-1.21)	**1.26** (1.13-1.37)	**1.41** (1.26-1.54)	**1.57** (1.39-1.71)	**1.79** (1.57-1.96)	**1.97** (1.71-2.16)
6-hr	**0.334** (0.306-0.365)	**0.405** (0.372-0.443)	**0.513** (0.469-0.560)	**0.600** (0.547-0.654)	**0.724** (0.655-0.788)	**0.828** (0.744-0.899)	**0.939** (0.836-1.02)	**1.06** (0.933-1.15)	**1.23** (1.07-1.33)	**1.37** (1.18-1.49)
12-hr	**0.206** (0.188-0.228)	**0.251** (0.229-0.276)	**0.319** (0.291-0.351)	**0.376** (0.342-0.413)	**0.460** (0.414-0.502)	**0.533** (0.475-0.580)	**0.610** (0.538-0.664)	**0.697** (0.607-0.758)	**0.824** (0.704-0.897)	**0.932** (0.785-1.02)
24-hr	**0.117** (0.109-0.128)	**0.142** (0.131-0.155)	**0.182** (0.168-0.198)	**0.216** (0.199-0.235)	**0.268** (0.245-0.290)	**0.312** (0.284-0.339)	**0.362** (0.325-0.393)	**0.417** (0.370-0.453)	**0.501** (0.436-0.546)	**0.573** (0.492-0.626)
2-day	**0.069** (0.064-0.075)	**0.084** (0.077-0.091)	**0.107** (0.099-0.116)	**0.126** (0.116-0.137)	**0.155** (0.142-0.168)	**0.179** (0.163-0.195)	**0.206** (0.185-0.224)	**0.235** (0.210-0.256)	**0.278** (0.244-0.305)	**0.314** (0.272-0.346)
3-day	**0.048** (0.045-0.052)	**0.058** (0.054-0.063)	**0.074** (0.069-0.081)	**0.088** (0.081-0.095)	**0.107** (0.098-0.116)	**0.123** (0.112-0.134)	**0.141** (0.127-0.153)	**0.160** (0.143-0.174)	**0.188** (0.166-0.205)	**0.211** (0.184-0.233)
4-day	**0.038** (0.035-0.041)	**0.046** (0.043-0.050)	**0.058** (0.054-0.063)	**0.068** (0.063-0.074)	**0.083** (0.076-0.090)	**0.095** (0.087-0.103)	**0.108** (0.098-0.117)	**0.122** (0.110-0.133)	**0.143** (0.126-0.156)	**0.160** (0.140-0.176)
7-day	**0.025** (0.024-0.027)	**0.031** (0.029-0.033)	**0.038** (0.035-0.041)	**0.044** (0.041-0.048)	**0.053** (0.049-0.057)	**0.061** (0.056-0.065)	**0.069** (0.062-0.074)	**0.077** (0.069-0.083)	**0.089** (0.079-0.097)	**0.099** (0.087-0.108)
10-day	**0.020** (0.019-0.022)	**0.024** (0.023-0.026)	**0.030** (0.028-0.032)	**0.035** (0.032-0.037)	**0.041** (0.038-0.044)	**0.046** (0.043-0.050)	**0.052** (0.047-0.056)	**0.058** (0.052-0.062)	**0.066** (0.059-0.072)	**0.073** (0.064-0.079)
20-day	**0.014** (0.013-0.014)	**0.016** (0.015-0.017)	**0.019** (0.018-0.021)	**0.022** (0.021-0.023)	**0.025** (0.024-0.027)	**0.028** (0.026-0.030)	**0.031** (0.028-0.033)	**0.034** (0.031-0.036)	**0.037** (0.034-0.040)	**0.040** (0.036-0.043)
30-day	**0.011** (0.011-0.012)	**0.013** (0.013-0.014)	**0.016** (0.015-0.017)	**0.017** (0.016-0.018)	**0.020** (0.019-0.021)	**0.021** (0.020-0.023)	**0.023** (0.022-0.025)	**0.025** (0.023-0.026)	**0.027** (0.025-0.029)	**0.029** (0.026-0.031)
45-day	**0.009** (0.009-0.010)	**0.011** (0.011-0.012)	**0.013** (0.012-0.014)	**0.014** (0.013-0.015)	**0.016** (0.015-0.017)	**0.017** (0.016-0.018)	**0.019** (0.017-0.020)	**0.020** (0.018-0.021)	**0.021** (0.020-0.023)	**0.022** (0.021-0.024)
60-day	**0.008** (0.008-0.009)	**0.010** (0.009-0.010)	**0.011** (0.011-0.012)	**0.013** (0.012-0.013)	**0.014** (0.013-0.015)	**0.015** (0.014-0.016)	**0.016** (0.015-0.017)	**0.017** (0.016-0.018)	**0.018** (0.017-0.019)	**0.019** (0.017-0.020)

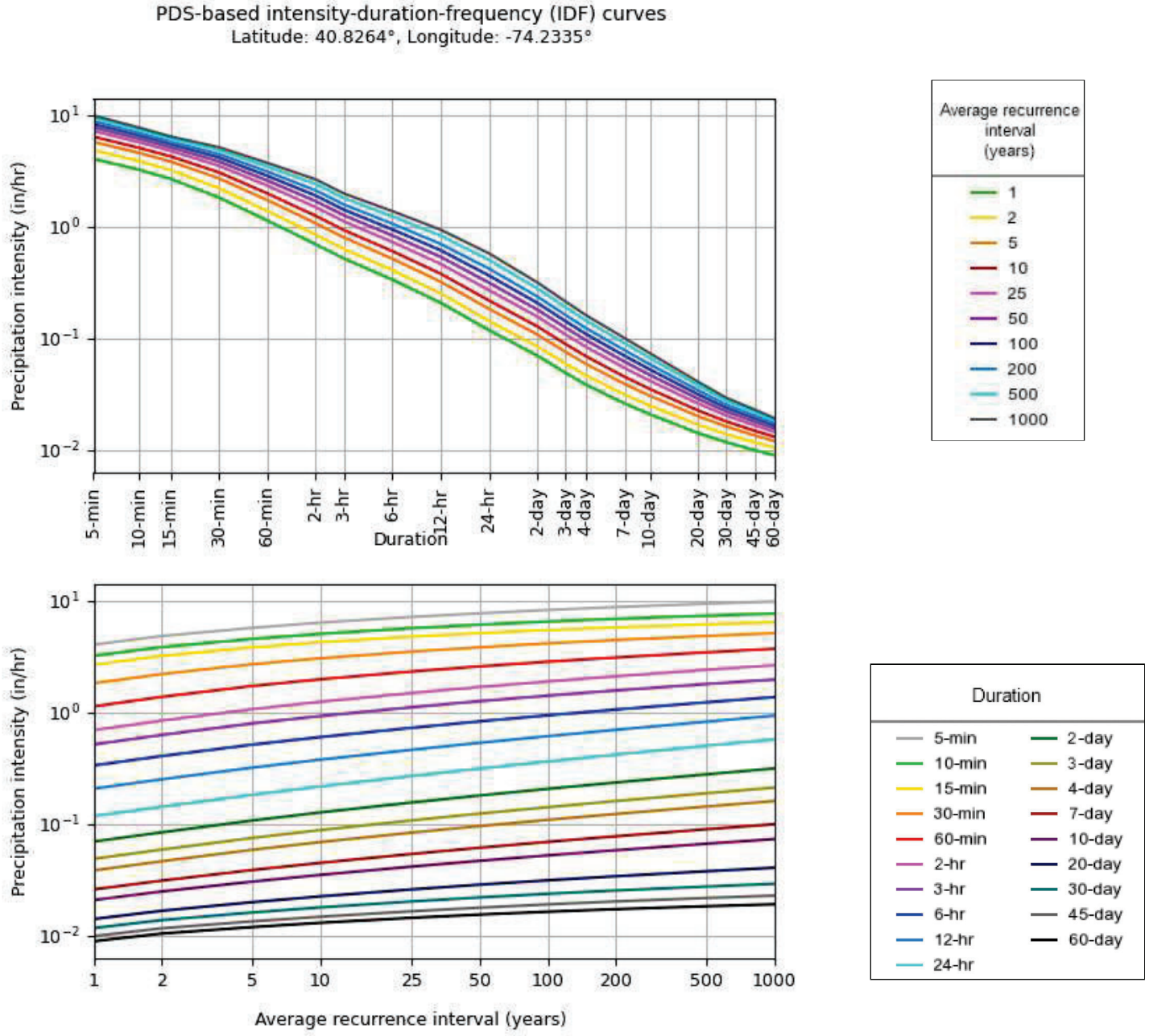
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



NOAA Atlas 14, Volume 2, Version 3

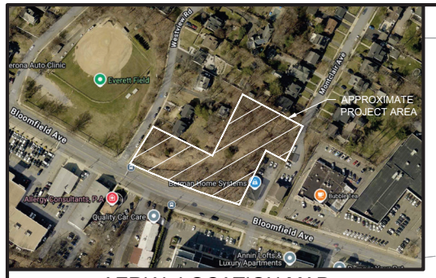
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Maps & aerials

Small scale terrain

Appendix H:
Drainage Area Maps



AERIAL LOCATION MAP
1"=200'

0 20' 40'

NOT FOR CONSTRUCTION

Pennoni

N.J COA GA28033300

PENNONI ASSOCIATES INC.
1085 Raymond Boulevard, Suite 2102
Newark, NJ 07102
T 973.265.9775 F 973.265.9774

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28033300

RICHARD N. PROCANIK, PE
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE NO. 24GE05407700

DATE:

NOTE: THIS DRAWING IS NOT A LEGAL DOCUMENT WITHOUT THE SIGNATURE AND RAISED SEAL OF A PROFESSIONAL ENGINEER

PROPOSED RESIDENTIAL DEVELOPMENT

176-200 BLOOMFIELD AVENUE (BLOCK 202, LOTS 1 & 23)
TOWNSHIP OF VERONA, ESSEX COUNTY, NEW JERSEY

PRE-CONSTRUCTION DRAINAGE AREA MAP

DMH2, LLC
3155 ROUTE 10 EAST - SUITE 214
DENVILLE, NJ 07834

NO.	DATE	REVISIONS	BY

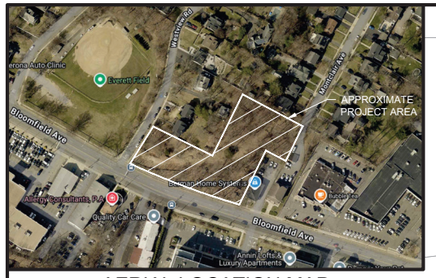
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PROJECT	DMH2C26001
DATE	2026-08-17
DRAWING SCALE	1"=20'
DRAWN BY	JD
APPROVED BY	RP

CS9201

SHEET 1 OF 3

PLOTTED: 4/30/2014 1:23 PM, BY: John DeMartini PLOTSTYLE: Pennoni MCS.ctb
U:\Accounts\DMH2C\DMH2C26001 - 176-200 Bloomfield Ave, Verona\DESIGN_SHEETS\CS9201.dwg



AERIAL LOCATION MAP
1"=200'

WESTVIEW ROAD
33' R.O.W.
(PER TAX MAP)

BLOOMFIELD AVENUE
(COUNTY ROUTE 506)
75' R.O.W.
(PER TAX MAP)

BLOCK 202
LOTS 1 & 23
N/F DMH2, LLC
DB 12373/552026
71,364 S.F.
1.64 AC.

PROPOSED 3-STORY
RESIDENTIAL BUILDING
(28 UNITS)
11,821 SF FOOTPRINT
FFE 461.33

LIMIT OF DISTURBANCE
1.39 AC

PDA-1A
IMPER 0.09 AC
PER 0.10 AC
TOTAL 0.19 AC

PDA-1A
MV 0.05 AC

PDA-1B
IMPER 0.12 AC
PER 0.00 AC
TOTAL 0.12 AC

PDA-1B
MV 0.12 AC

PDA-1C
IMPER 0.06 AC
PER 0.00 AC
TOTAL 0.06 AC

PDA-1C
MV 0.06 AC

PDA-1D
IMPER 0.05 AC
PER 0.02 AC
TOTAL 0.07 AC

PDA-1D
MV 0.01 AC

PDA-1E
IMPER 0.13 AC
PER 0.00 AC
TOTAL 0.13 AC

PDA-1F
IMPER 0.24 AC
PER 0.07 AC
TOTAL 0.31 AC

PDA-1F
MV 0.05 AC

PDA-1G
IMPER 0.00 AC
PER 0.13 AC
TOTAL 0.13 AC

PDA-1H
IMPER 0.01 AC
PER 0.01 AC
TOTAL 0.02 AC

PDA-1H
MV 0.01 AC

PDA-1I
IMPER 0.01 AC
PER 0.16 AC
TOTAL 0.17 AC

PDA-1J
IMPER 0.04 AC
PER 0.01 AC
TOTAL 0.05 AC

PDA-1J
MV 0.03 AC

PDA-2
IMPER 0.00 AC
PER 0.35 AC
TOTAL 0.35 AC

SHEET FLOW (SHF) TO SHALLOW CONCENTRATED FLOW (SCF) (TYP.)

TC FLOWPATH (TYP.)

SAN. MH RIM: 462.88
SAN. MH RIM: 446.80
SAN. MH RIM: 449.38
SAN. MH RIM: 454.30
TEL MH RIM: 446.41
ELEC. MH RIM: 447.41
ELEC. MH RIM: 454.79
UNKNOWN MH RIM: 454.94 INACCESSIBLE
INLET B GR: 486.43
INLET B GR: 486.46
UP # 1430
UP # BT697VB
UP # NO #

FOUND PIPE
2 STORY FRAME DWELLING
DECK
SHED
GARAGE
2 STORY MASONRY BUILDING
WOOD WALL
BLOCK WALL
PAVER WALL
5' PVC FENCE
3' CHAINLINK FENCE
4' CHAINLINK FENCE
BOLLARD (TYP)
ASPHALT
CONCRETE WALK
STOP
POST & RAIL FENCE
15" RCP
10" VCP
NORTH

0 20' 40'

NOT FOR CONSTRUCTION

PENNONI ASSOCIATES INC.
1085 Raymond Boulevard, Suite 2102
Newark, NJ 07102
T 973.265.9775 F 973.265.9774
NJ COA GA28033300

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28033300

RICHARD N. PROCANIK, PE
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE NO. 24GE05457077

DATE:

NOTE: THIS DRAWING IS NOT A LEGAL DOCUMENT WITHOUT THE SIGNATURE AND RAISED SEAL OF A PROFESSIONAL ENGINEER

PROPOSED RESIDENTIAL DEVELOPMENT
176-200 BLOOMFIELD AVENUE (BLOCK 202, LOTS 1 & 23)
TOWNSHIP OF VERONA, ESSEX COUNTY, NEW JERSEY

POST-CONSTRUCTION DRAINAGE AREA MAP

DMH2, LLC
3155 ROUTE 10 EAST - SUITE 214
DENVILLE, NJ 07834

NO.	DATE	REVISIONS	BY

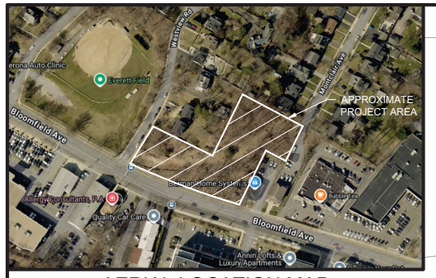
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PROJECT	DMH2C26001
DATE	2026-08-17
DRAWING SCALE	1"=20'
DRAWN BY	JD
APPROVED BY	RP

CS9301

SHEET 2 OF 3

PLOTTED: 4/30/2014 1:23 PM, BY: John DeMartinis PLOTSTYLE: Pennoni MCS.stb
U:\Accounts\DMH2C\DMH2C26001 - 176-200 Bloomfield Ave, Verona\DESIGN_SHEETS\CS9301.dwg



AERIAL LOCATION MAP
1"=200'

IA-9
IMPER 0.00AC
PER 0.13 AC
TOTAL 0.13 AC

PDA-1G
IMPER 0.00 AC
PER 0.13 AC
TOTAL 0.13 AC

LIMIT OF DISTURBANCE
1.39 AC

IA-11
IMPER 0.16 AC
PER 0.00 AC
TOTAL 0.13 AC

BLOCK 202
LOTS 1 & 23
N/F DMH2, LLC
DB 12373/552026
71,364 S.F.
1.64 AC.

PROPOSED 3-STORY
RESIDENTIAL BUILDING
(28 UNITS)
11,821 SF FOOTPRINT
FFE 461.33

IA-8
IMPER 0.08 AC
PER 0.02 AC
TOTAL 0.10 AC

IA-7
IMPER 0.08 AC
PER 0.00 AC
TOTAL 0.08 AC

IA-6
IMPER 0.02 AC
PER 0.02 AC
TOTAL 0.04 AC

IA-10
IMPER 0.06 AC
PER 0.03 AC
TOTAL 0.09 AC

IA-5
IMPER 0.04 AC
PER 0.01 AC
TOTAL 0.05 AC

IA-4
IMPER 0.06 AC
PER 0.00 AC
TOTAL 0.06 AC

IA-3
IMPER 0.12 AC
PER 0.00 AC
TOTAL 0.12 AC

IA-2
IMPER 0.09 AC
PER 0.10 AC
TOTAL 0.19 AC

IA-1
IMPER 0.01 AC
PER 0.01 AC
TOTAL 0.02 AC

WESTVIEW ROAD
33' R.O.W.
(PER TAX MAP)

BLOOMFIELD AVENUE
(COUNTY ROUTE 506)
75' R.O.W.
(PER TAX MAP)

SHED
2 STORY FRAME DWELLING
DECK
FOUND PIPE
SAN. MH RIM: 462.88
4' CHAINLINK FENCE
BOLLARD (TYP)
INLET B GR: 486.43
INLET B GR: 486.46
ASPHALT
GARAGE
WOOD WALL
3' CHAINLINK FENCE
5' PVC FENCE
PAVER WALL
2 STORY MASONRY BUILDING
STOP
CONCRETE WALK
UP BT697VB
UNKNOWN MH RIM: 454.94 INACCESSIBLE
SAN. MH RIM: 454.30
ELEC. MH RIM: 454.79
SAN. MH RIM: 446.80
SAN. MH RIM: 449.38
TEL. MH RIM: 446.41
ELEC. MH RIM: 447.41
NORTH

0 20' 40'

NOT FOR CONSTRUCTION

PENNONI ASSOCIATES INC.
1085 Raymond Boulevard, Suite 2102
Newark, NJ 07102
T 973.265.9775 F 973.265.9774
NJ COA GA28033300

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28033300

RICHARD N. PROCANIK, PE
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE NO. 24GE05540077

DATE:

NOTE: THIS DRAWING IS NOT A LEGAL DOCUMENT WITHOUT THE SIGNATURE AND RAISED SEAL OF A PROFESSIONAL ENGINEER

PROPOSED RESIDENTIAL DEVELOPMENT
176-200 BLOOMFIELD AVENUE (BLOCK 202, LOTS 1 & 23)
TOWNSHIP OF VERONA, ESSEX COUNTY, NEW JERSEY

POST-CONSTRUCTION INLET AREA MAP

DMH2, LLC
3155 ROUTE 10 EAST - SUITE 214
DENVILLE, NJ 07834

NO.	DATE	REVISIONS	BY

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PROJECT	DMH2C26001
DATE	2026-08-17
DRAWING SCALE	1"=20'
DRAWN BY	DM
APPROVED BY	RP

CS9401

SHEET 3 OF 3

PLOTTED: 4/30/2014 1:23 PM, BY: John DeMartinis PLOTSTYLE: Pennoni NCS.ctb
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