POST-CONSTRUCTION STORMWATER MANAGEMENT/ SITE RESTORATION REPORT

HCPP PIPELINE
BURRELL, BLACKLICK, AND CENTER TOWNSHIPS
INDIANA COUNTY, PENNSYLVANIA

Prepared For:

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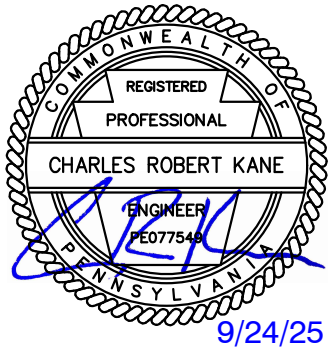

9/24/25

CEC Project 354-010

September 2025

Certification of Plan Preparer:

I do hereby certify to the best of my knowledge, information, and belief, that the Erosion and Sediment Control and Post-Construction Stormwater Management and Site Restoration Plans are true and correct, represent actual field conditions and are in accordance with the 25 Pa. Code Chapters 78 and 102 of the Department's rules and regulations. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

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APPENDICES

1.0 INTRODUCTION

On behalf of Homer City Generation, L.P. (HCG), Civil & Environmental Consultants, Inc. (CEC) presents this Post-Construction Stormwater Management/Site Restoration (PCSM/SR) Report for the HCPP Pipeline project located in Burrell, Black Lick, and Center Townships, Indiana County, Pennsylvania. The PCSM/SR Report was prepared specifically to address the requirements of the Individual NPDES Permit for Discharges of Stormwater Associated with Construction Activities Application. The PCSM Report is part of the Individual NPDES Permit Application Package and accompanies, and is consistent with, the application form and the E&S Report.

Project Description and Location: HCG proposes to construct approximately 5.8 miles of one (1) 30-inch steel gas distribution pipeline and approximately 0.4 mile of one (1) overhead power line within a 70-foot to 125-foot wide limit of disturbance (LOD), as well as temporary workspace areas to support construction. This project will also consist of the construction of an approximately 0.9-acre permanent gravel Metering and Regulation (M&R) and Interconnect Facility with associated permanent gravel access roads, a 900 square foot (sf) gravel pad and associated access road for an electric tap and PCSM Stormwater Control Measures (SCMs).

The proposed project begins in Burrell Township, Indiana County approximately 1.6 miles northwest of the intersection of State Route (S.R.) 119 and State Route (S.R.) 22 at the proposed M&R and Interconnect Facility. The M&R and Interconnect Facility is located off an existing third-party gravel access road that connects to Campbells Mill Rd (S.R. 3011) in Burrell Township, Indiana County, Pennsylvania. From the M&R and Interconnect Facility, one (1) 30-inch steel gas distribution pipeline will traverse in a northerly direction for approximately 5.8 miles, ending at the proposed redeveloped Homer City Generating Station located in Center Township, Indiana County, Pennsylvania. The pipeline will cross Falling Run Road (Twp 449), McConnell Road (Twp 592), Blacklick Road (S.R. 3013), Dickey Road (Twp 455), and Power Plant Road (Twp 680). The electric power tap site is located off of Country Lane Road (Twp 442). From the electric power tap, an overhead electric line will traverse in a northerly direction for approximately 0.4 mile, ending at the M&R and Interconnect Facility.

Approximately nine (9) existing access roads are proposed for construction access to the project. The existing access roads will be temporarily improved, if needed, to support construction activities. Following construction, the temporary access road improvements, temporary construction workspaces and the pipeline right-of-way (ROW) will generally be restored to existing conditions or meadow-good condition in accordance with 25 Pa. Code Chapter 102.8(n).

Post-construction stormwater associated with the proposed permanent gravel M&R and Interconnect Facility and electric power tap site will be managed by stormwater conveyance structures, Rain Garden and Dry Extended Detention Basin SCMs, and riprap apron outlet protection devices to meet the volume management, rate control and water quality requirements in accordance with 25 Pa. Code Chapter 102.8(g).

1.1 PAST, PRESENT, AND PROPOSED LAND USES

The past and present land uses of this project site were determined using aerial mapping. Land uses include woodland, meadow, natural gas infrastructure, agricultural, utility and road ROW, and industrial (Homer City Generating Station). The existing topography consists of rolling hills with elevations ranging from Elevation (El.) 920 to El. 1266 based on a combination of conventional survey methods performed by CEC and LiDAR (Light Detection and Ranging) elevation points. The proposed land use will generally consist of utility and road ROW, the restored pipeline ROW, and the permanent gravel M&R and Interconnect Facility and electric power tap site. Disturbed areas associated with the project other than the proposed permanent facilities will be restored to existing condition or meadow-good condition.

2.0 HYDROLOGIC METHODOLOGY

The hydrologic calculations for the proposed project were completed to address the requirements set forth in 25 PA Code Chapter 102 and the PA Stormwater BMP Manual. This document requires that the volume of runoff from a project site be managed such that the post-development quantity is equal to or less than the pre-development quantity for the 2-year/24-hour design storm event. In addition, 25 PA Code Chapter 102 requires a demonstration that the net change in the peak rate of runoff from the 2-, 10-, 50-, and 100-year/24-hour storm events has been managed such that the preconstruction rates are not exceeded.

The Natural Resources Conservation Service (NRCS) Technical Release No. 20 (TR-20) methodology within the HydroCAD computer program was used to determine the pre- and post-development stormwater peak rates of runoff. The rate of runoff is based on the relationships between the amount of rainfall, soil type, infiltration, land cover, travel time, and the size of the watershed area. The Soil Conservation Service (SCS) Type II storm was utilized in the runoff model for precipitation in accordance with the direction provided by NRCS for this region. The Pennsylvania Department of Environmental Protection (PADEP) PCSM Spreadsheet was used to determine the pre- and post-development stormwater volume of runoff.

3.0 RAINFALL

The rainfall data used to calculate the pre-development and post-development discharge rates for the proposed project was obtained from the National Oceanic and Atmospheric Association (NOAA) Atlas 14 Point Precipitation Frequency Estimates. The rainfall data is summarized in Table 1 below.

TABLE 1
RAINFALL DATA FOR BURRELL TOWNSHIP, WESTMORELAND COUNTY, PENNSYLVANIA

Storm Event (year)	24-Hour Rainfall Depth (inches)
2	2.53
10	3.57
50	4.78
100	5.35

4.0 SOIL TYPES

To estimate runoff from storm rainfall, TR-20 uses the Runoff Curve Number (CN) Method. Determination of a CN is based on the watershed's soil and land cover conditions, which TR-20 models as a hydrologic soil group (HSG), land cover type, and slope. With regard to the proposed project area, the CNs were obtained by analyzing soil types delineated in the *Soil Survey of Westmoreland County, Pennsylvania*. The land cover types for pre-development conditions were determined based on available aerial mapping, and post-development conditions were determined based on anticipated ground cover.

The Soils Map illustrates the soil types and their respective boundaries and is provided as Figure 2 in the Individual E&S Permit application package. The soil types and classifications located in the portion of the proposed development area that requires PCSM are summarized below in Table 2:

TABLE 2
SOIL CLASSIFICATION SUMMARY

SOILS LEGEND		HSG FOR STORMWATER MANAGEMENT AREAS
SYMBOL	NAME	
BeD	Bethesda very channery silt loam, 8 to 25 percent slopes	D
CaB	Cavode silt loam, 3 to 8 percent slopes	C/D
CaC	Cavode silt loam, 8 to 15 percent slopes	C/D
ClB	Clarksburg silt loam, 3 to 8 percent slopes	C/D
ErB	Ernest silt loam, 3 to 8 percent slopes	C/D
ErC	Ernest silt loam, 8 to 15 percent slopes	C/D
FaB	Fairpoint very channery silt loam, 0 to 8 percent slopes	C
FaC	Fairpoint very channery silt loam, 8 to 15 percent slopes	C
FaD	Fairpoint very channery silt loam, 15 to 25 percent slopes	C
FaF	Fairpoint very channery silt loam, 25 to 70 percent slopes	D
GcB	Gilpin channery silt loam, 3 to 8 percent slopes	C

5.0 RECEIVING WATERS

Stormwater runoff from this project drains to the following receiving waters. The receiving waters, as with all streams in Pennsylvania, are classified based upon their designated and existing uses and water quality criteria. Designated uses for waters of the Commonwealth are found in 25 Pa. Code §93.9a-z at http://www.pacode.com/secure/data/025/chapter93/chap93toc.html. Existing uses of waters of this Commonwealth are found at the PADEP website: http://www.depgis.state.pa.us/wave/. The receiving waters were reviewed for siltation impairments via PADEP emap program and Table 3 designates the siltation impairments. The receiving waters, watershed, and designated/existing uses for this project include the following:

TABLE 3
RECEIVING WATERS

STREAM NAME	WATERSHED	DESIGNATED/ EXISTING USE	SILTATION IMPAIRMENTS
Stream 2	Blacklick Creek	CWF/CWF	Yes
Stream 3	Blacklick Creek	CWF/CWF	Yes
Stream 4	Blacklick Creek	CWF/CWF	Yes
Stream 5	Blacklick Creek	CWF/CWF	Yes
Stream 6	Blacklick Creek	CWF/CWF	Yes
Stream 7	Blacklick Creek	CWF/CWF	Yes
Stream 8	Blacklick Creek	CWF/CWF	Yes
Stream 9	Blacklick Creek	CWF/CWF	Yes
Stream 10	Blacklick Creek	CWF/CWF	Yes
Stream 12	Blacklick Creek	CWF/CWF	Yes
Stream 13	Blacklick Creek	CWF/CWF	Yes
Stream 14	Blacklick Creek	CWF/CWF	Yes
Stream 15	Blacklick Creek	CWF/CWF	Yes
Stream 16	Blacklick Creek	CWF/CWF	Yes
Stream 17	Blacklick Creek	CWF/CWF	Yes
Stream 18 (Blacklick Creek)	Blacklick Creek	TSF/TSF	Yes
Stream 20	Blacklick Creek	CWF/CWF	Yes
Stream 21	Blacklick Creek	CWF/CWF	Yes

STREAM NAME	WATERSHED	DESIGNATED/ EXISTING USE	SILTATION IMPAIRMENTS
Stream 22	Blacklick Creek	CWF/CWF	Yes
Stream 25	Blacklick Creek	CWF/CWF	Yes
Stream 28	Blacklick Creek	CWF/CWF	Yes
Stream 41	Blacklick Creek	CWF/CWF	Yes
Stream 42	Blacklick Creek	CWF/CWF	Yes
Stream 44	Blacklick Creek	CWF/CWF	Yes
Stream 46	Blacklick Creek	CWF/CWF	Yes
Stream 48	Blacklick Creek	CWF/CWF	Yes
Stream 49	Blacklick Creek	CWF/CWF	Yes
Stream 50	Blacklick Creek	CWF/CWF	Yes
Stream 51	Blacklick Creek	CWF/CWF	Yes
Stream 52	Blacklick Creek	CWF/CWF	Yes
Stream 54	Blacklick Creek	CWF/CWF	Yes
Stream 56	Blacklick Creek	CWF/CWF	Yes
Stream 59	Blacklick Creek	CWF/CWF	Yes
Stream 60	Blacklick Creek	CWF/CWF	Yes
Stream 61	Blacklick Creek	CWF/CWF	Yes
Stream 62	Blacklick Creek	CWF/CWF	Yes
Stream 63	Blacklick Creek	CWF/CWF	Yes
Stream 64	Blacklick Creek	CWF/CWF	Yes
Stream 65	Blacklick Creek	CWF/CWF	Yes
Stream 66	Blacklick Creek	CWF/CWF	Yes
Stream 67	Blacklick Creek	CWF/CWF	Yes
Stream 68	Blacklick Creek	CWF/CWF	Yes
Stream 69	Blacklick Creek	CWF/CWF	Yes
Stream 70	Blacklick Creek	CWF/CWF	Yes
Stream 71	Blacklick Creek	CWF/CWF	Yes
Stream 72	Blacklick Creek	CWF/CWF	Yes
Stream 73	Blacklick Creek	CWF/CWF	Yes

6.0 PROJECT SITE RUNOFF

This project contains portions of the site which qualify as SR and portions which require PCSM. Portions of the site qualifying for SR will be restored in accordance with 25 Pa. Code Chapter 102.8(n) and portions of the site requiring PCSM have been designed to meet the standard design criteria from 25 Pa. Code Chapter 102.8(g)(2) and (3).

The portion of the project that requires storm runoff calculations are the proposed M&R and Interconnect Facility and the electric power tap site. These areas were analyzed to determine the change in the volume of runoff from the pre-development to post-development conditions for the 2-year/24-hour storm event. The change in peak runoff rate for pre- versus post-development conditions for the facilities were analyzed for the 2-, 10-, 50-, and 100-year/24-hour storm events in accordance with Chapter 102. The remainder of the site will require site restoration. Calculations are not required for portions of the project requiring site restoration.

6.1 PRE-DEVELOPMENT HYDROLOGY

The pre-development hydrology consists of three (3) drainage areas that drain to three (3) points-of-analysis (POAs). The drainage areas to each POA are exhibited on the pre-development drainage maps (HYD-1 and HYD-2) included in Appendix B. Below is a summary of each drainage area which drains to its respective POA.

Drainage Area 1 (DA-1) primarily consists of the portion of the proposed project site draining towards Stream 4 to the southwest of the proposed M&R site and consisting primarily of woodland, open meadow, and an existing access road. DA-1 has an area of 4.04 acres, 3.03 acres of which are within the LOD, and drains toward POA-1.

Drainage Area 2 (DA-2) primarily consists of the portion of the proposed project site draining towards Stream 2 to the southeast of the proposed M&R site and consisting primarily of woodland, open meadow, and an existing access road. DA-2 has an area of 2.79 acres, 2.24 acres of which are within the LOD, and drains toward POA-2.

Drainage Area 3 (DA-3) primarily consists of the portion of the proposed project site draining towards Stream 46 to the north of the proposed electric power tap site and consisting primarily of open meadow. DA-3 has an area of 0.41 acre, 0.27 acre of which are within the LOD, and drains toward POA-3.

The PADEP PCSM Spreadsheets for each POA are provided in Appendix F. The proposed project's limit of disturbance was used as the study area for the 2-year stormwater volume calculations within the spreadsheets. The pre-development hydrology is summarized in Tables 4 and 5.

TABLE 4
PRE-DEVELOPMENT RUNOFF SUMMARY

Design Storm (yr)	Peak Discharge (cfs) POA- 1	Peak Discharge (cfs) POA-2	Peak Discharge (cfs) POA-3
2	3.14	1.73	0.51
10	6.38	3.85	1.00
50	10.60	6.69	1.63
100	12.68	8.12	1.94

TABLE 5
PRE-DEVELOPMENT VOLUME SUMMARY

Design Storm (yr)	Volume (cf)	Volume (cf)	Volume (cf)
	POI-1	POI-2	POI-3
2	6,191	3,944	786

6.2 POST-DEVELOPMENT HYDROLOGY

The post-development site drains to the three (3) POAs identified as per pre-development conditions. The drainage areas to each POA are exhibited on the post-development drainage

maps (HYD-3 and HYD-4) included in Appendix C. Below is a summary of the post-developed drainage areas.

DA-1 is split into one (1) detained and one (1) undetained subareas. The 0.99-acre detained subarea generally consists of the western portion of the M&R site and the eastern portion of the topsoil stockpile, which drain to Rain Garden SCM No. 1. The 3.05-acre undetained subarea generally consists of undisturbed or restoration areas and fill slopes to be restored to meadow-good condition. The combined subareas of DA-1 ultimately discharge to POA-1.

DA-2 is split into two (2) detained and one (1) undetained subareas. A 0.71-acre detained subarea generally consists of the eastern portion of the M&R site, which drain to Dry Extended Detention Basin SCM No. 2 then on to Rain Garden SCM No. 3. A 0.43-acre detained subarea generally consists of the M&R access road and adjacent meadow area which drain directly to Rain Garden SCM No. 3. The 1.65-acre undetained subarea generally consists of undisturbed or restoration areas to be restored to meadow-good condition. The combined subareas of DA-2 ultimately discharge to POA-2.

DA-3 is split into one (1) detained and one (1) undetained subareas. The 0.25-acre detained subarea generally consists of the electic power tap site, access road, and adjacent meadow area, which drain to Rain Garden SCM No. 4. The 0.16-acre undetained subarea generally consists of undisturbed or restoration areas and fill slopes to be restored to meadow-good condition. The combined subareas of DA-3 ultimately discharge to POA-3.

The PADEP PCSM Spreadsheets for each POA are provided in Appendix F. The proposed project's LOD was used as the study area for the 2-year stormwater volume calculations within the spreadsheets. The post-development hydrology is summarized in Tables 6 through 10 below.

TABLE 6

STORMWATER MANAGEMENT POST-DEVELOPMENT PEAK FLOW RATE SUMMARY – POA-1

Design Storm (yr)	Pre-Development Peak Discharge (cfs)	Post-Development Peak Discharge with Proposed PCSM BMPs (cfs)	Difference (cfs)
2	3.14	2.64	-0.50
10	6.38	5.79	-0.59
50	10.60	9.45	-1.15
100	12.68	11.21	-1.47

TABLE 7
STORMWATER MANAGEMENT POST-DEVELOPMENT PEAK FLOW RATE SUMMARY – POA-2

Design Storm (yr)	Pre-Development Peak Discharge (cfs)	Post-Development Peak Discharge with Proposed PCSM BMPs (cfs)	Difference (cfs)
2	1.73	1.17	-0.56
10	3.85	3.01	-0.84
50	6.69	5.03	-1.66
100	8.12	6.03	-2.09

TABLE 8
STORMWATER MANAGEMENT POST-DEVELOPMENT PEAK FLOW RATE SUMMARY – POA-3

Design Storm (yr)	Pre-Development Peak Discharge (cfs)	Post-Development Peak Discharge with Proposed PCSM BMPs (cfs)	Difference (cfs)
2	0.51	0.22	-0.29
10	1.00	0.82	-0.18
50	1.63	1.46	-0.17
100	1.94	1.71	-0.23

TABLE 9

2-YEAR VOLUME SUMMARY

2-Year Storm			
POA	**Total Pre-Dev Volume (cf)**	**Total Post-Dev Volume with SCMs (cf)**	**Difference (cf)**
1	6,191	3,721	-2,470
2	3,944	2,198	-1,746
3	786	668	-118

6.3 SUMMARY

Pre- and post-development conditions were analyzed to determine the peak flow rates and discharge volumes for the project. Based on the runoff summaries provided herein, the total post-development peak discharges for the 2-, 10-, 50-, and 100-year/24-hour storm events and stormwater volume for the 2-year storm event for POAs 1 through 3 are less than or equal to the pre-development values. In addition to meeting the peak rate and volume requirements, the PADEP PCSM Spreadsheets provided in Appendix F demonstrate the proposed SCMs satisfy water quality requirements as well.

7.0 SCM INSTALLATION SEQUENCE AND SCHEDULE OF INSPECTION FOR CRITICAL STAGES OF PCSM SCM INSTALLATION

The PADEP requires that critical stages of the PCSM Plan implementation be observed for compliance with the permit documents by a licensed professional or his/her designee. The critical stage of this PCSM Plan is the construction of the Rain Garden and Dry Extended Detention SCM's.

Rain Garden

Rain Garden SCM Nos. 1, 3, and 4 shall be installed during the site restoration phase of the project. The upgradient drainage area to each SCM shall be stabilized as soon as and to the maximum extent practicable prior to SCM construction in order to prevent undue sediment from settling within the rain garden SCMs.

Maintenance: The rain garden SCMs shall be inspected weekly during construction and after any large rainfall event [0.25-inch (E&S) and 1-inch (PCSM) of runoff or greater in 24 hours]. Any accumulated sediment or debris shall be removed immediately to maintain proper infiltration. Upon completion of construction activity, the rain garden SCMs shall be inspected at least bi-annually to ensure proper function. Remove and replace dead or diseased plants upon inspection and remove invasive plant species as necessary.

Dry Extended Detention Basin

Dry Extended Detention Basin SCM No. 2 shall be installed during the site restoration phase of the project. The upgradient drainage area to the SCM shall be stabilized as soon as and to the maximum extent practicable prior to SCM construction in order to prevent undue sediment from settling within the rain garden SCMs.

Maintenance: The Dry Extended Detention Basin SCM shall be inspected weekly during construction and after any large rainfall event [0.25-inch (E&S) and 1-inch (PCSM) of runoff or

greater in 24 hours]. Any accumulated sediment or debris shall be removed immediately to maintain proper infiltration. Upon completion of construction activity, the Dry Extended Detention Basin SCMs shall be inspected at least bi-annually to ensure proper function. Remove invasive plant species as necessary.

Permanent Stabilization

Permanent stabilization shall occur at the conclusion of the construction phase. Disturbed areas shall be seeded and mulched in accordance with the specification presented herein.

Maintenance: Water as necessary to establish and maintain vegetation. In mowed areas, mow to maintain grass height between 4 and 6 inches tall for first two (2) months of growth during the establishment year and to the desired height thereafter. If string trimmers are used, take measures to avoid damage to bark of trees and shrubs.

8.0 LONG-TERM OPERATION AND MAINTENANCE SCHEDULE

The PCSM BMPs proposed with this project are shown on the PCSM/SR Plan. The maintenance and inspection measures required for the proposed BMPs are indicated below:

Permanent Stabilization:

- Permanent stabilization shall be inspected on a weekly basis and after each runoff event until permit closeout. Seeding and mulching shall be repeated in areas that do not establish at least 70 percent initial vegetation by permit closeout. Once the ROW is stabilized, inspection of the ROW shall occur until permit closeout.

Rain Garden and Dry Extended Detention Basin:

- Stormwater conveyance facilities upgradient of the SCM should be inspected and cleaned at least two (2) times per year and after runoff events greater than 1-inch.
- The vegetation along the surface of the SCM (and contributing drainage area) should be maintained in good condition, and any bare spots revegetated as soon as possible.
- Care should be taken to avoid excessive compaction by mowers. Mow only as appropriate for vegetative species.
- Inspect at least two (2) times per year and after runoff events greater than 0.8-inch and make sure runoff drains down within 72 hours.
- At least two (2) times per year or more if historical maintenance records indicate it is necessary, inspect for accumulation of sediment, damage to outlet control structures, erosion, sign of water contamination/spills, and slope stability of the embankments. Leaf litter should be removed annually.
- As needed, remove accumulated sediment as required to maintain infiltration through the soil media and to maintain water quality functionality. Restore original cross-section. Properly dispose of sediment.

Channels/Vegetated Swales:

- Channels and vegetated swales shall be inspected at least weekly and after each runoff event [0.25-inch (E&S) and 1-inch (PCSM) of runoff or greater in 24 hours].
- Channels and vegetated swales should be maintained to ensure that the specified dimensions and protective lining, if applicable, are available at all times. Channels and vegetated swales should be cleaned whenever total depth is reduced by 25 percent. Damaged linings, bare areas, and erosional features should be promptly corrected.
- Vegetated swales shall be mowed/trimmed periodically to allow for proper swale operation.

9.0 NATURALLY OCCURRING GEOLOGIC FORMATIONS

Refer to the Naturally Occurring Geologic Condition Assessment (Geohazard) Report provided in Section 12 of Individual NPDES Permit Application package.

10.0 OFF-SITE DISCHARGE ANALYSIS

The PADEP requires that proposed off-site discharges of stormwater from site restoration areas and PCSM SCMs to areas other than surface waters must demonstrate that the discharge will not cause erosion, damage, or a nuisance to off-site properties.

The proposed M&R and Interconnect Facility and electric power tap site utilize conveyance channels, inlets and storm pipes to convey runoff from the pads and access roads in a controlled manner. Conveyance channels and storm pipes (including the proposed SCM outfalls) will outlet onto riprap aprons, which have been designed in accordance with the PADEP E&S Manual to reduce the velocity of runoff in order to minimize the potential for erosion. Moreover, the proposed PCSM SCMs will manage the stormwater runoff thereby reducing the overland offsite discharge from the project area. Lastly, the discharges drain to receiving waters located within the properties of the subject project.

11.0 POTENTIAL THERMAL IMPACTS

A majority of the project will not have significant changes in land cover, therefore, the principal source of thermal impacts is related to proposed temporary vegetation disturbance; however, gravel surfaces will be constructed for the M&R and Interconnect Facility and the electric power tap site. Thermal impacts from the temporary disturbance of the pipeline ROW will be minimized by allowing runoff to flow over vegetated surfaces prior to entering any surface waters. Additionally, the pipeline ROW and workspace areas, with the exception of areas previously permitted for a less pervious ground cover (i.e., existing access roads, well pads, etc.), will be restored as soon as practicable to meadow-good condition, which will allow runoff to flow over vegetated surfaces prior to discharging to surface waters thus reducing the effects of thermal impacts on the surface waters. Likewise, vegetation removal will be limited to the extent practicable. Further, maintaining existing tree canopies and riparian buffers will limit ground surface exposure to direct sunlight. Lastly, proposed PCSM SCMs will be installed to minimize thermal impacts due to the gravel cover at the permanent facility sites by allowing runoff to flow over vegetated surfaces and infiltrate prior to discharge to surface waters.

12.0 RIPARIAN FOREST BUFFERS

The PADEP requires a 150-foot riparian forest buffer for projects located within a High Quality (HQ) or special protection watershed. The site is located within the Black Lick Creek, watershed which is not HQ; therefore, the 150-foot riparian buffer requirement is not applicable to this project.

13.0 MATERIAL RECYCLING AND DISPOSAL

Practices and procedures must be in place to ensure the proper handling, storage, control, disposal, and recycling of garbage, fuels, or any substance which may be harmful to human, aquatic, or fish life. The listed items shall be prevented from entering springs, streams, ponds, lakes, wetlands, or a water course or water body. Oils, fuels, lubricants, and coolants shall be placed in suitable containers and disposed of properly. All synthetic erosion control features (e.g., silt fencing, nettings, mats), which are intended for temporary use during construction, shall be completely removed and properly disposed of after their purpose has been served. Orange construction fence, and similar, shall be removed and properly disposed of immediately upon completion of its intended purpose. Only natural fiber materials which will "completely breakdown" within a reasonable timeframe, as to be indistinguishable from the natural environment, may be abandoned in place. Trash and garbage shall be collected and disposed of properly.

14.0 ANTI-DEGRADATION ANALYSIS

Chapter 93 of the PA Code was used to determine if the receiving waters for the project are classified as special protection or siltation impaired. The Blacklick Creek watershed is classified as siltation impaired and Cold Water Fishes (CWF); therefore an antidegradation analysis is required for this project. Antidegradation Best Available Combination of Technologies (ABACT) approved E&S BMPs were utilized throughout the project to prevent degrading discharge. Below is a narrative of the "Non-Discharge" BMPs utilized on this project.

Limited Disturbed Area – The amount of land disturbed within the LODs will be minimized to the extent practicable at all times. Land proposed to be disturbed is that deemed necessary to remediate the slope distress and implement associated E&S BMPs.

Immediate Stabilization – All disturbed area will be restored to meadow–good condition as soon as practicable following construction.

Other - Revegetation – All disturbed areas will be restored to meadow-good condition as soon as practicable following construction, unless otherwise noted on the plan drawings.

ABACTs are proposed for this project and include the following:

- Preparedness, Prevention, and Contingency (PPC) Plan – A PPC Plan will be available on site to identify applicable pollution prevention practices while the site is in operation; and
- ABACT BMPs – Compost filter socks will be utilized upslope of special protection waters during construction to minimize the transport of sediment pollution to the special protection waters. Rock construction entrances upslope of special protection waters will be extended and additional 50 feet (100 feet total) where street sweeping will be conducted or extended to a total length of 150 feet with 50 feet of rolled PennDOT 2RC at the entrance, where street sweeping will not be conducted (i.e., along an existing access road). Waterbars and pumped water filter bags within the special protection

watersheds will include a compost filter sock at the discharge outlets. Disturbed areas will be immediately stabilized with vegetative stabilization, following reaching final grades.

Based on the above summary, ABACT BMPs have been utilized to satisfy the requirements of this antidegradation analysis.

15.0 REFERENCES

1. Commonwealth of Pennsylvania, Pennsylvania Code Title 25, Environmental Resources, Department of Environmental Protection, Chapter 93 Water Quality Standards, Harrisburg, PA 1994.

2. Commonwealth of Pennsylvania, Department of Environmental Protection, Office of Water Management, Erosion and Sediment Pollution Control Program Manual, Harrisburg, PA, March 2012.

3. U.S. Department of Agriculture, National Resources Conservation Service, Custom Soil Resource Report for Westmoreland County, Pennsylvania, prepared in August 2022 on the Web Soil Survey website. http://websoilsurvey.nrcs.usda.gov

4. Davies, W. E., and Pomeroy, J. S., 1979, Landslides and related features, Pennsylvania [Pittsburgh 1- by 2-degree sheet]: U.S. Geological Survey Open-File Map 79–1314, 128 maps. Via: "PA DCNR - Geology - Landslides Publications." *PA DCNR - Geology - Landslides Publications*. N.p., n.d. Web. July 2025.

5. "Pennsylvania Department of Environmental Protection eMapPA." *eMapPA*. N.p., n.d. Web. July 2025.

APPENDIX A

NOAA POINT PRECIPITATION FREQUENCY DATA

NOAA Atlas 14, Volume 2, Version 3
Location name: Blairsville, Pennsylvania, USA*
Latitude: 40.4568°, Longitude: -79.2444°
Elevation: 1107 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	**0.316** (0.286-0.349)	**0.377** (0.342-0.417)	**0.456** (0.413-0.504)	**0.518** (0.468-0.571)	**0.598** (0.538-0.658)	**0.660** (0.592-0.726)	**0.721** (0.644-0.791)	**0.786** (0.698-0.861)	**0.872** (0.769-0.955)	**0.938** (0.823-1.02)
10-min	**0.491** (0.445-0.542)	**0.589** (0.533-0.651)	**0.709** (0.642-0.783)	**0.800** (0.722-0.881)	**0.915** (0.823-1.01)	**1.00** (0.897-1.10)	**1.09** (0.969-1.19)	**1.17** (1.04-1.28)	**1.28** (1.13-1.40)	**1.36** (1.20-1.49)
15-min	**0.602** (0.545-0.664)	**0.720** (0.652-0.796)	**0.871** (0.788-0.961)	**0.984** (0.889-1.08)	**1.13** (1.02-1.24)	**1.24** (1.11-1.36)	**1.35** (1.20-1.48)	**1.46** (1.30-1.60)	**1.60** (1.41-1.75)	**1.71** (1.50-1.86)
30-min	**0.797** (0.722-0.879)	**0.963** (0.873-1.06)	**1.19** (1.08-1.32)	**1.37** (1.23-1.50)	**1.60** (1.44-1.76)	**1.77** (1.59-1.95)	**1.95** (1.74-2.14)	**2.13** (1.89-2.33)	**2.37** (2.09-2.60)	**2.56** (2.24-2.80)
60-min	**0.973** (0.881-1.07)	**1.18** (1.07-1.31)	**1.50** (1.35-1.65)	**1.74** (1.57-1.92)	**2.07** (1.86-2.28)	**2.33** (2.09-2.56)	**2.60** (2.32-2.86)	**2.89** (2.56-3.16)	**3.28** (2.89-3.59)	**3.59** (3.15-3.93)
2-hr	**1.13** (1.03-1.25)	**1.37** (1.25-1.51)	**1.74** (1.58-1.91)	**2.03** (1.84-2.23)	**2.43** (2.19-2.66)	**2.75** (2.48-3.01)	**3.10** (2.77-3.38)	**3.46** (3.08-3.77)	**3.98** (3.50-4.32)	**4.39** (3.84-4.76)
3-hr	**1.22** (1.11-1.34)	**1.47** (1.34-1.62)	**1.85** (1.68-2.04)	**2.16** (1.96-2.38)	**2.59** (2.34-2.84)	**2.95** (2.64-3.23)	**3.32** (2.96-3.63)	**3.72** (3.30-4.06)	**4.30** (3.78-4.67)	**4.76** (4.15-5.17)
6-hr	**1.47** (1.34-1.64)	**1.77** (1.61-1.97)	**2.21** (2.01-2.45)	**2.57** (2.33-2.84)	**3.08** (2.78-3.40)	**3.51** (3.15-3.87)	**3.97** (3.54-4.36)	**4.46** (3.94-4.89)	**5.17** (4.52-5.65)	**5.75** (4.99-6.28)
12-hr	**1.78** (1.63-1.98)	**2.14** (1.95-2.37)	**2.65** (2.41-2.93)	**3.07** (2.78-3.39)	**3.68** (3.32-4.06)	**4.20** (3.76-4.61)	**4.75** (4.23-5.21)	**5.35** (4.72-5.85)	**6.23** (5.44-6.80)	**6.97** (6.03-7.59)
24-hr	**2.12** (1.96-2.31)	**2.53** (2.35-2.76)	**3.10** (2.87-3.37)	**3.57** (3.29-3.87)	**4.23** (3.89-4.58)	**4.78** (4.38-5.16)	**5.35** (4.88-5.77)	**5.96** (5.41-6.41)	**6.82** (6.14-7.33)	**7.52** (6.72-8.07)
2-day	**2.46** (2.29-2.67)	**2.93** (2.72-3.18)	**3.56** (3.30-3.86)	**4.07** (3.77-4.41)	**4.79** (4.42-5.17)	**5.36** (4.93-5.79)	**5.97** (5.47-6.43)	**6.60** (6.02-7.10)	**7.47** (6.77-8.03)	**8.17** (7.35-8.77)
3-day	**2.64** (2.46-2.86)	**3.14** (2.92-3.39)	**3.78** (3.52-4.08)	**4.31** (4.00-4.64)	**5.04** (4.66-5.42)	**5.63** (5.19-6.05)	**6.24** (5.74-6.71)	**6.88** (6.29-7.38)	**7.76** (7.04-8.32)	**8.45** (7.63-9.06)
4-day	**2.83** (2.63-3.04)	**3.35** (3.12-3.60)	**4.01** (3.74-4.31)	**4.55** (4.23-4.88)	**5.30** (4.91-5.68)	**5.90** (5.45-6.32)	**6.52** (6.00-6.98)	**7.16** (6.56-7.67)	**8.04** (7.32-8.61)	**8.73** (7.91-9.35)
7-day	**3.40** (3.19-3.63)	**4.01** (3.77-4.29)	**4.74** (4.45-5.06)	**5.33** (4.99-5.69)	**6.12** (5.72-6.53)	**6.75** (6.30-7.20)	**7.39** (6.86-7.87)	**8.03** (7.43-8.55)	**8.89** (8.19-9.47)	**9.55** (8.75-10.2)
10-day	**3.95** (3.73-4.18)	**4.65** (4.39-4.92)	**5.44** (5.14-5.76)	**6.07** (5.72-6.42)	**6.91** (6.50-7.30)	**7.57** (7.11-7.99)	**8.22** (7.70-8.67)	**8.88** (8.28-9.37)	**9.74** (9.04-10.3)	**10.4** (9.61-11.0)
20-day	**5.56** (5.28-5.86)	**6.52** (6.19-6.87)	**7.51** (7.13-7.92)	**8.30** (7.86-8.75)	**9.33** (8.83-9.83)	**10.1** (9.56-10.7)	**10.9** (10.3-11.5)	**11.6** (11.0-12.3)	**12.6** (11.8-13.3)	**13.3** (12.5-14.1)
30-day	**7.02** (6.70-7.38)	**8.20** (7.83-8.63)	**9.37** (8.94-9.85)	**10.3** (9.81-10.8)	**11.5** (10.9-12.0)	**12.4** (11.8-13.0)	**13.2** (12.6-13.9)	**14.1** (13.3-14.8)	**15.2** (14.3-15.9)	**16.0** (15.0-16.8)
45-day	**9.02** (8.63-9.45)	**10.5** (10.0-11.0)	**11.9** (11.3-12.4)	**12.9** (12.3-13.5)	**14.2** (13.6-14.9)	**15.2** (14.5-16.0)	**16.2** (15.4-16.9)	**17.0** (16.2-17.8)	**18.1** (17.1-19.0)	**18.9** (17.8-19.8)
60-day	**10.9** (10.5-11.4)	**12.7** (12.2-13.3)	**14.2** (13.6-14.8)	**15.4** (14.7-16.0)	**16.8** (16.1-17.6)	**17.9** (17.1-18.7)	**18.8** (18.0-19.7)	**19.8** (18.9-20.6)	**20.9** (19.9-21.8)	**21.6** (20.6-22.6)

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

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

Please refer to NOAA Atlas 14 document for more information.

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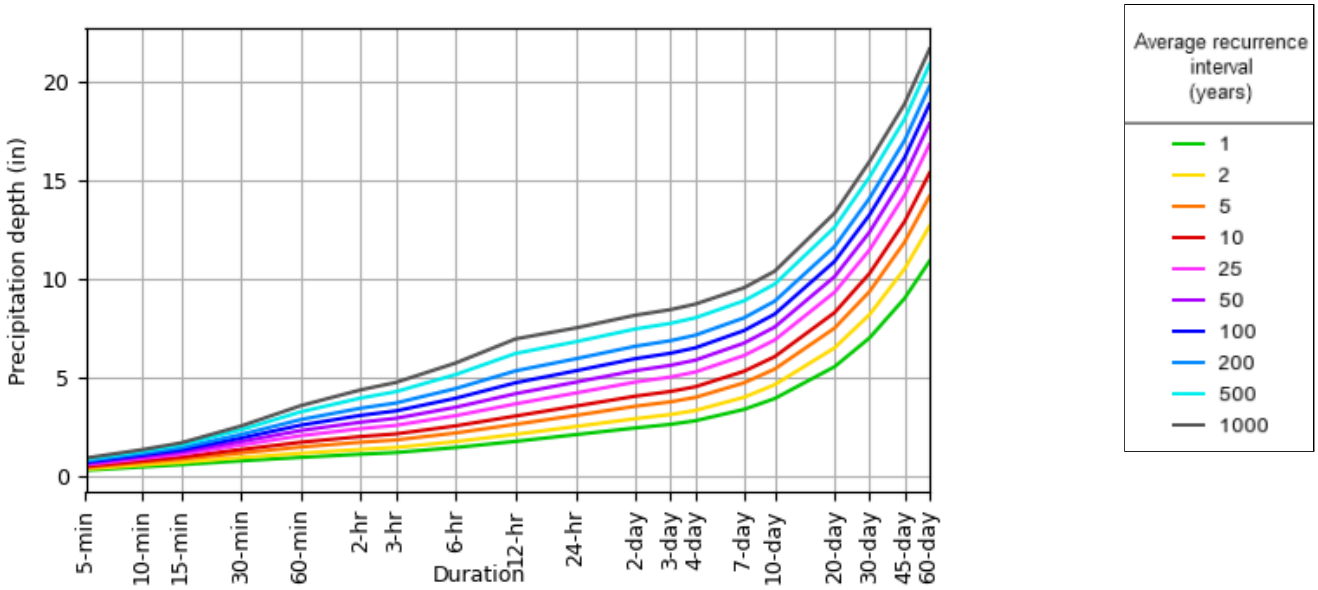
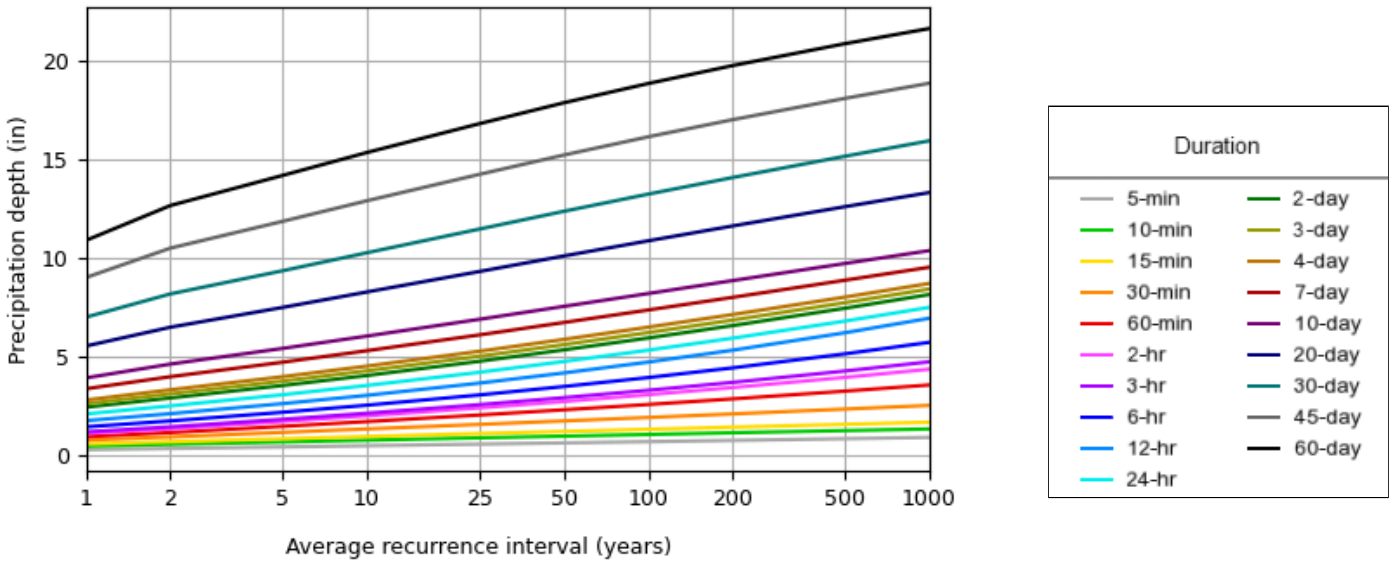
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 40.4568°, Longitude: -79.2444°





NOAA Atlas 14, Volume 2, Version 3

Created (GMT): Mon Mar 31 19:09:55 2025

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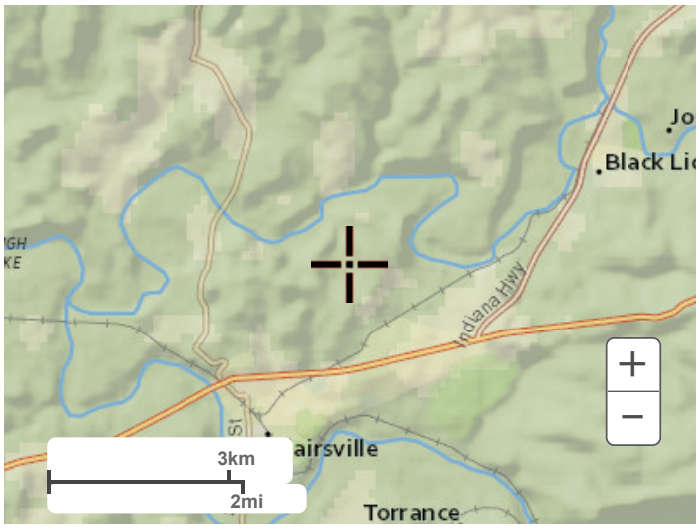
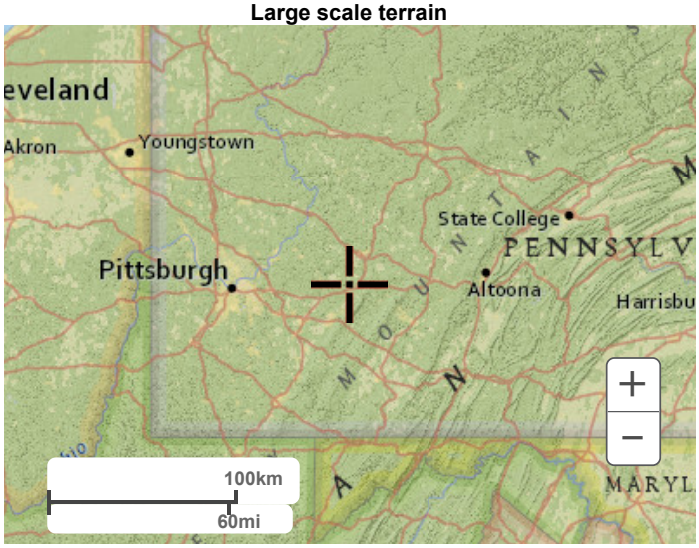
Maps & aerials

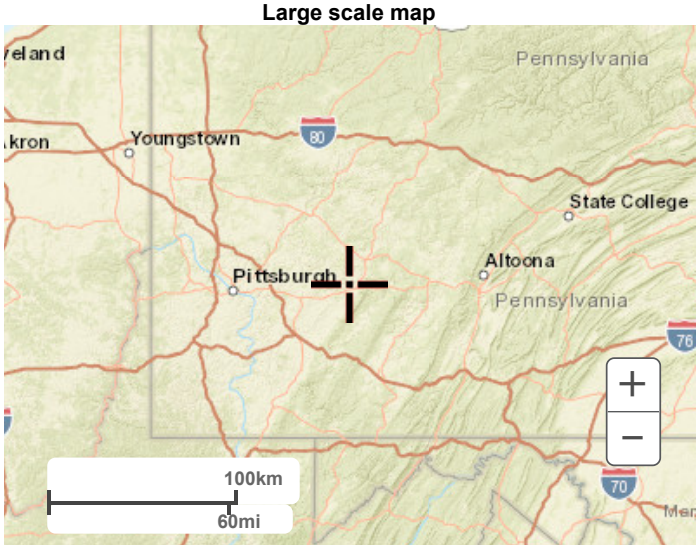
Small scale terrain



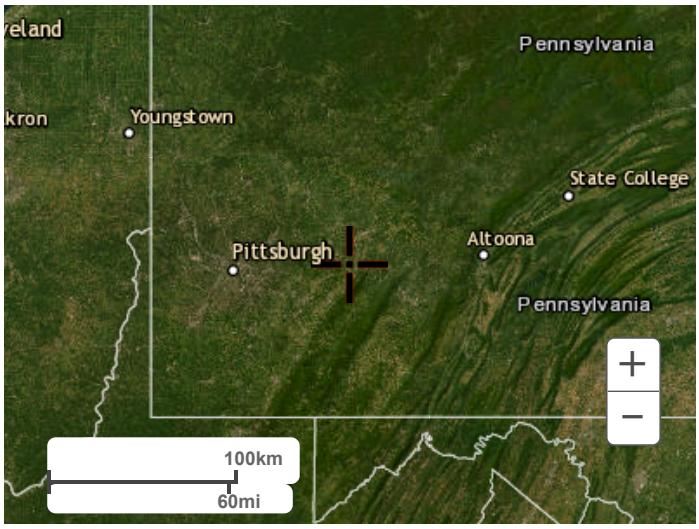
Large scale terrain



Large scale map



Large scale aerial



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

Disclaimer

APPENDIX B

PRE-DEVELOPMENT HYDROLOGY CALCULATIONS AND DRAINAGE AREA MAP

DRAINAGE AREA 1 (DA–1)
AREA: 4.04 AC. (3.03 AC. WITHIN LOD)
CN: 77
Tc: 21.5 MIN.

DA–1 TIME OF CONCENTRATION PATH

DA–2 TIME OF CONCENTRATION PATH

DRAINAGE AREA 2 (DA–2)
AREA: 2.79 AC. (2.24 AC. WITHIN LOD)
CN: 74
Tc: 20.0 MIN.

LEGEND

- EXISTING PROPERTY LINE
- 870 — EXISTING INDEX CONTOUR (10 FT)
- EXISTING INTERMEDIATE CONTOUR (2 FT)
- EXISTING STREAM
- ASSUMED PADEP 50–FT FLOODWAY
- EXISTING PAVED ROADWAY/DRIVEWAY
- G — EXISTING GAS LINE
- OH–E — EXISTING OVERHEAD WIRES
- PRE–DEVELOPMENT DRAINAGE AREA BOUNDARY
- PRE–DEVELOPMENT TIME OF CONCENTRATION FLOW PATH
- SOIL BOUNDARY
- CaC — SOIL CLASSIFICATION

SCALE IN FEET
0 100 200

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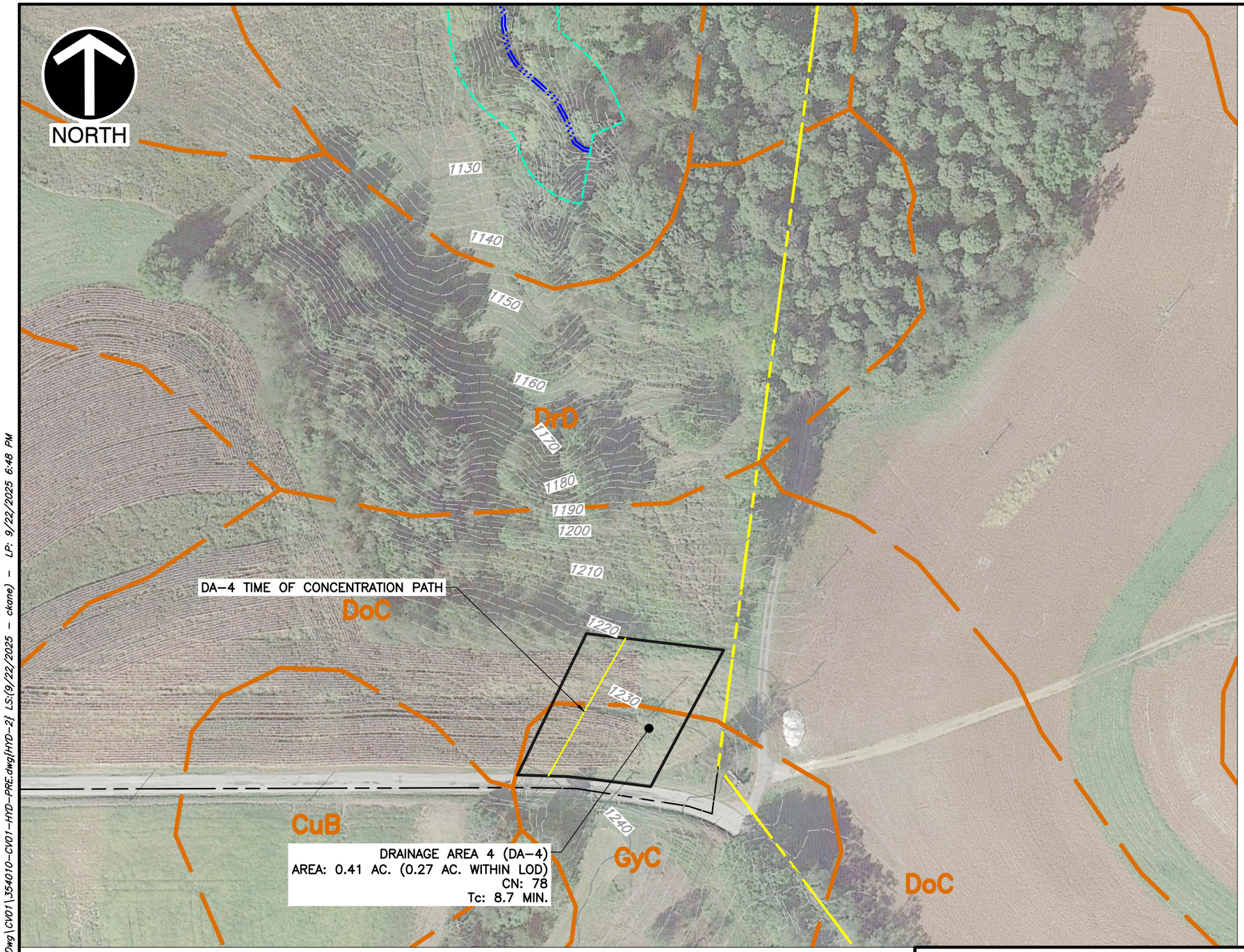
HCPP PIPELINE
BURRELL, BLACKLICK AND CENTER TOWNSHIPS
INDIANA COUNTY, PENNSYLVANIA

PRE-DEVELOPMENT
DRAINAGE MAP

DRAWN BY:	SCT	CHECKED BY:	CRK	APPROVED BY:	CRK	FIGURE NO.:
DATE:	SEPTEMBER 2025	DWG SCALE:	1"=100'	PROJECT NO:	354-010	HYD-1

P:\350-000\354-010\-CADD\Dwg\CV01\354010-CV01-HYD-PRE.dwg[HYD-1] LS:(9/22/2025 - ckane) - LP: 9/22/2025 6:47 PM



LEGEND

- EXISTING PROPERTY LINE
- 870 — EXISTING INDEX CONTOUR (10 FT)
- EXISTING INTERMEDIATE CONTOUR (2 FT)
- EXISTING STREAM
- ASSUMED PADEP 50-FT FLOODWAY
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- PRE-DEVELOPMENT DRAINAGE AREA BOUNDARY
- PRE-DEVELOPMENT TIME OF CONCENTRATION FLOW PATH
- SOIL BOUNDARY
- CoC — SOIL CLASSIFICATION

SCALE IN FEET

0 100 200

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HCPP PIPELINE
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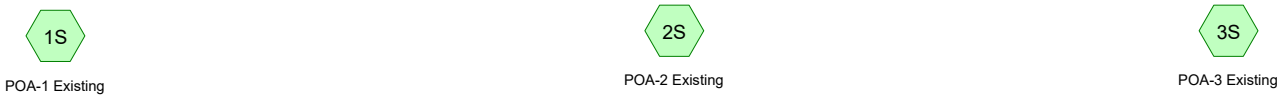
INDIANA COUNTY, PENNSYLVANIA

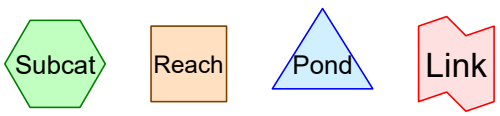
PRE-DEVELOPMENT
DRAINAGE MAP

DRAWN BY:	SCT	CHECKED BY:	CRK	APPROVED BY:	CRK	FIGURE NO.:
DATE:	SEPTEMBER 2025	DWG SCALE:	1"=100'	PROJECT NO:	354-010	HYD-2

P:\350-000\354-010\-CADD\Dwg\CV01\354010-CV01-HYD-PRE.dwg[HYD-2] LS:(9/22/2025 - ckane) - LP: 9/22/2025 6:48 PM

Existing Conditions



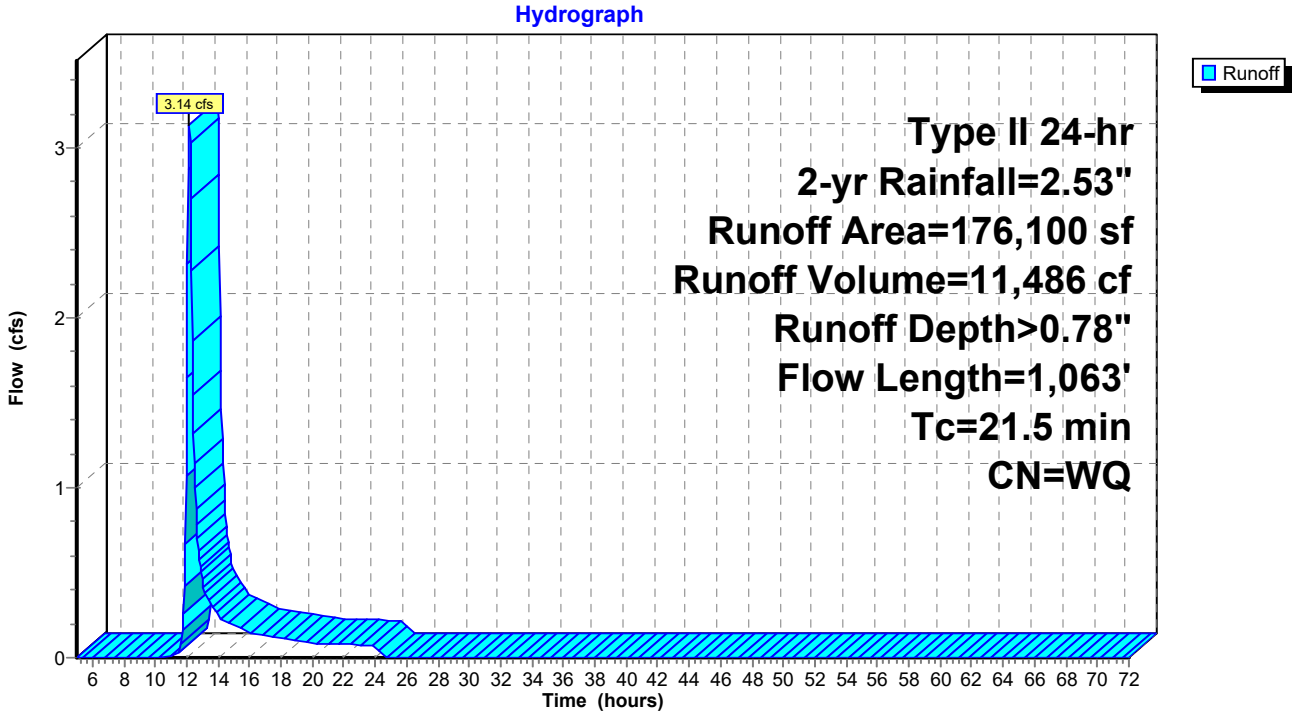


Routing Diagram for 354-010 PCSM Hydrology and SCMs
Prepared by CEC Inc, Printed 9/22/2025

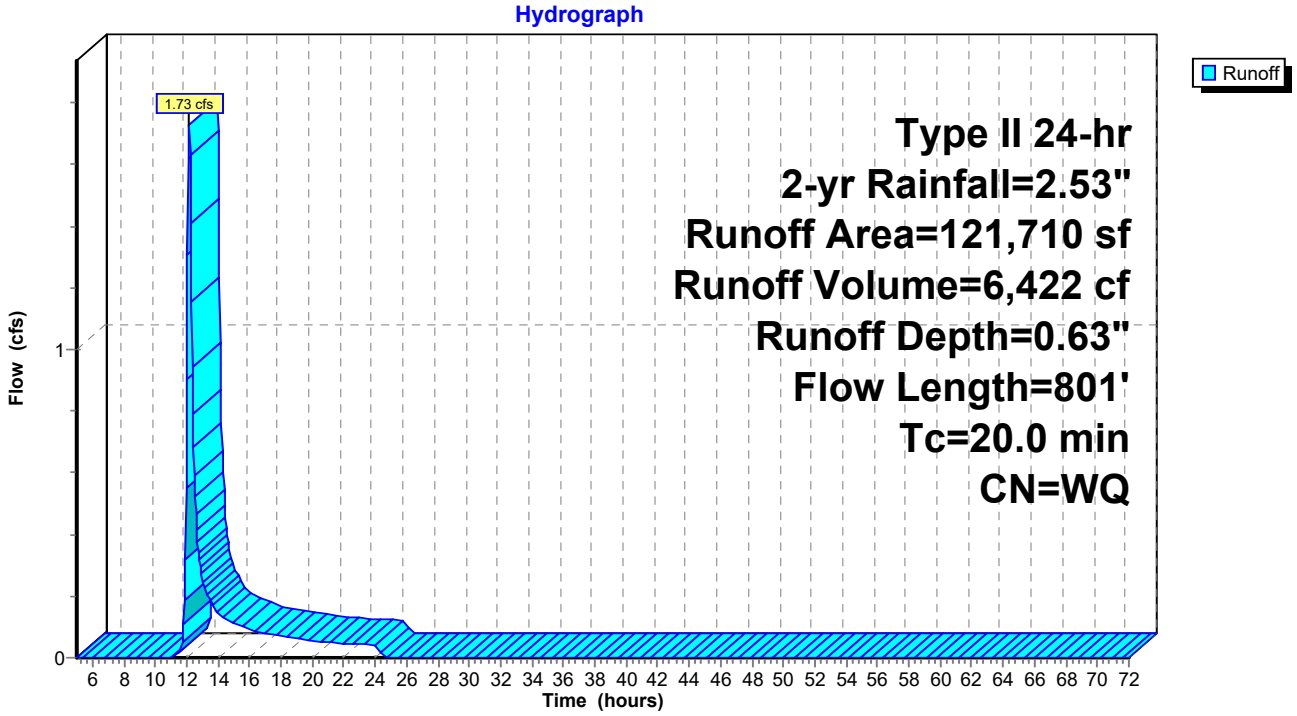
Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type II 24-hr		Default	24.00	1	2.53	2
2	10-yr	Type II 24-hr		Default	24.00	1	3.57	2
3	50-yr	Type II 24-hr		Default	24.00	1	4.78	2
4	100-yr	Type II 24-hr		Default	24.00	1	5.35	2

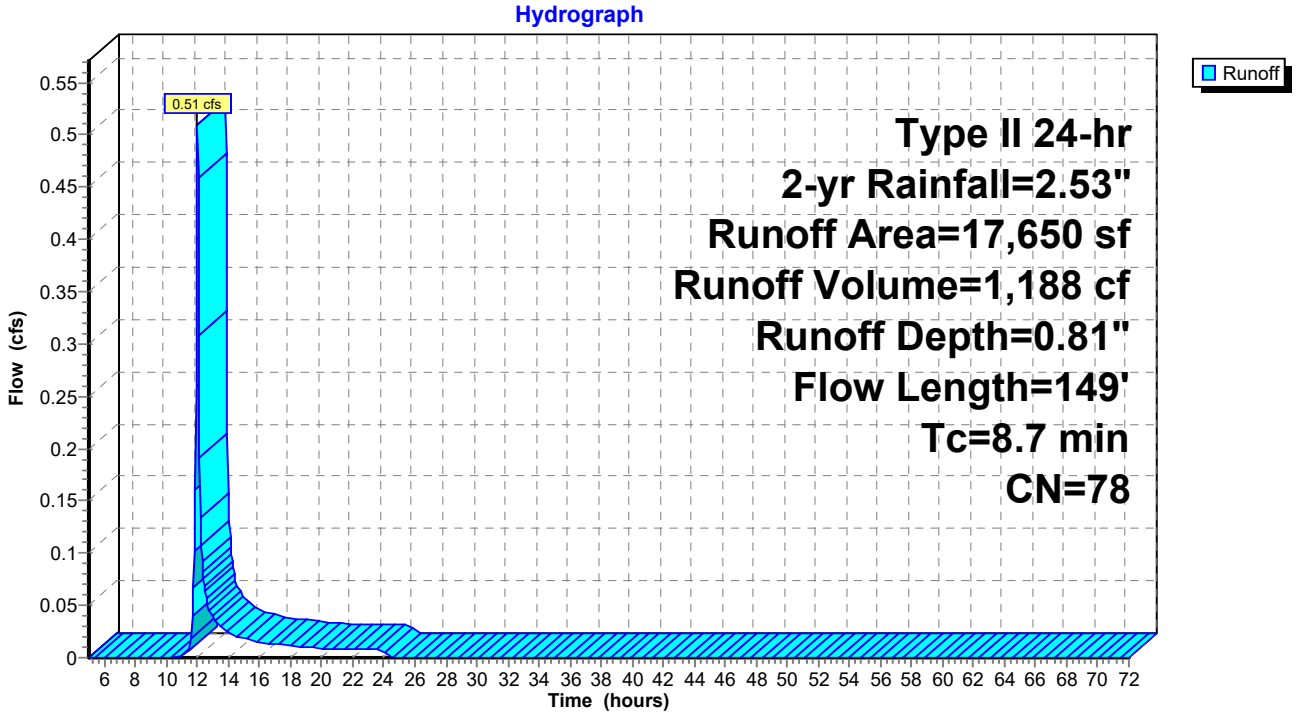
Subcatchment 1S: POA-1 Existing



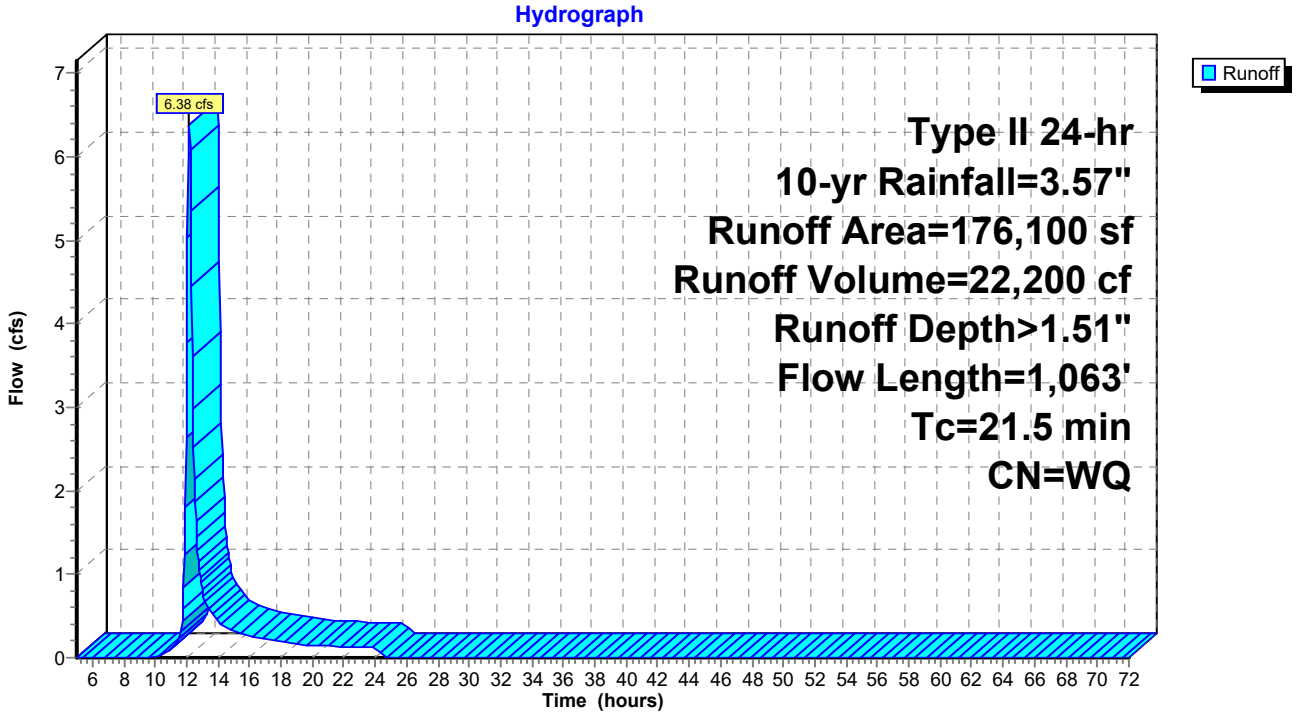
Subcatchment 2S: POA-2 Existing



Subcatchment 3S: POA-3 Existing



Subcatchment 1S: POA-1 Existing



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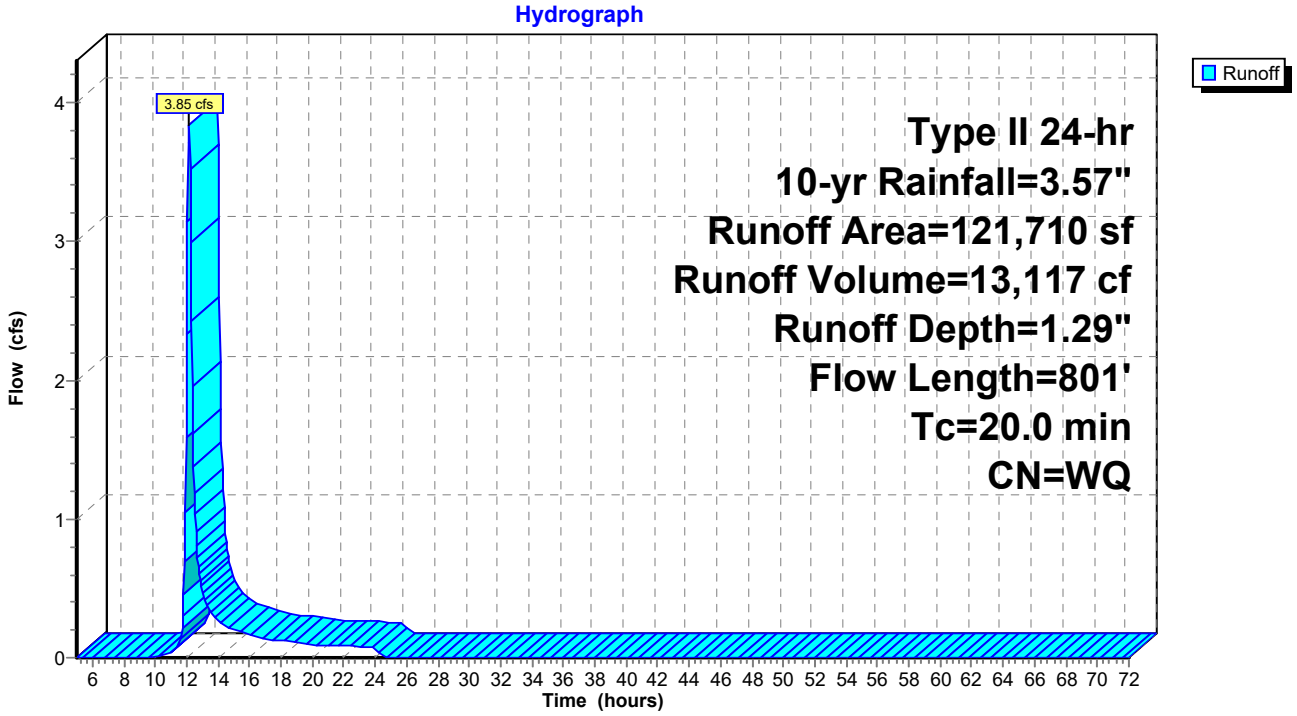
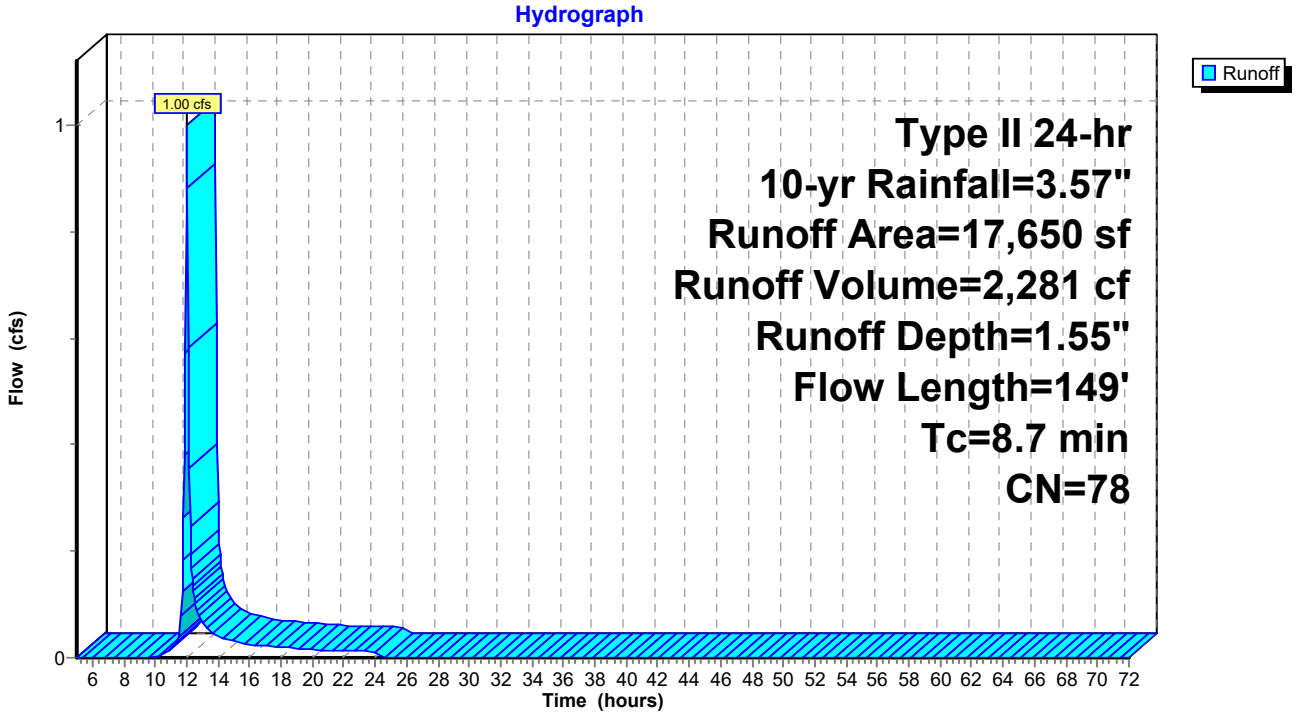


Subcatchment 3S: POA-3 Existing



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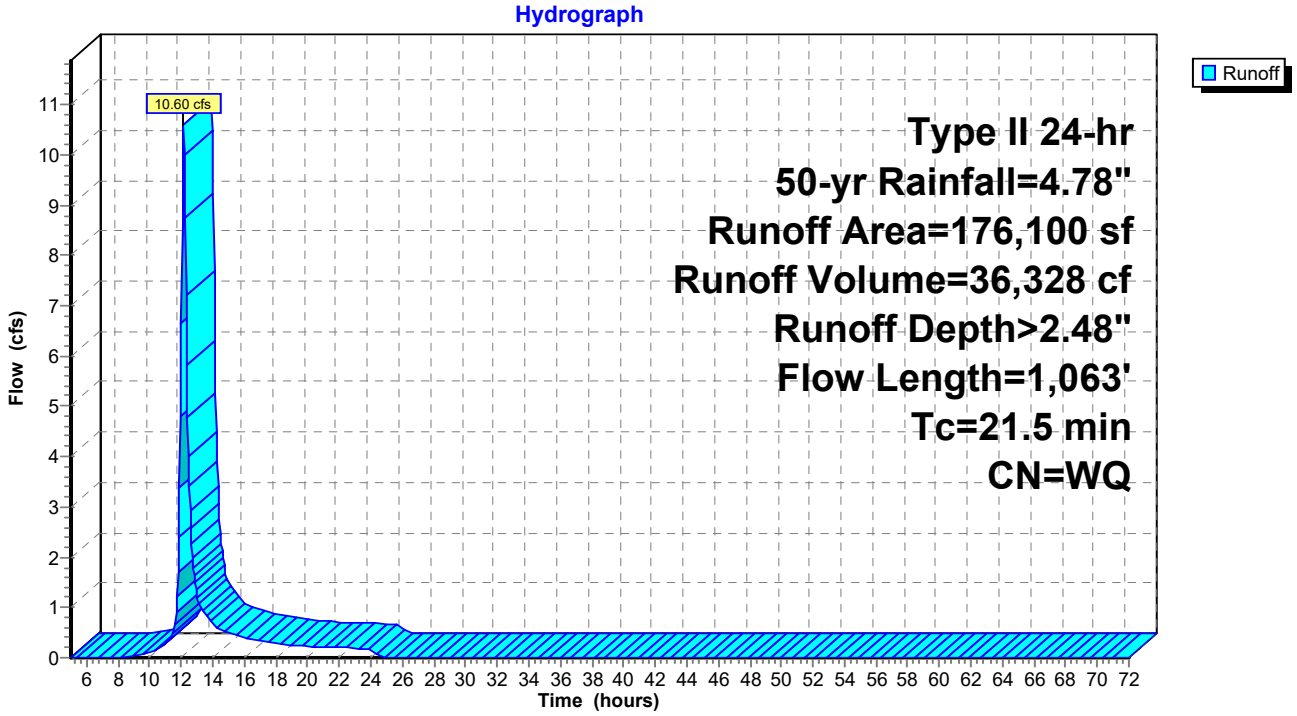
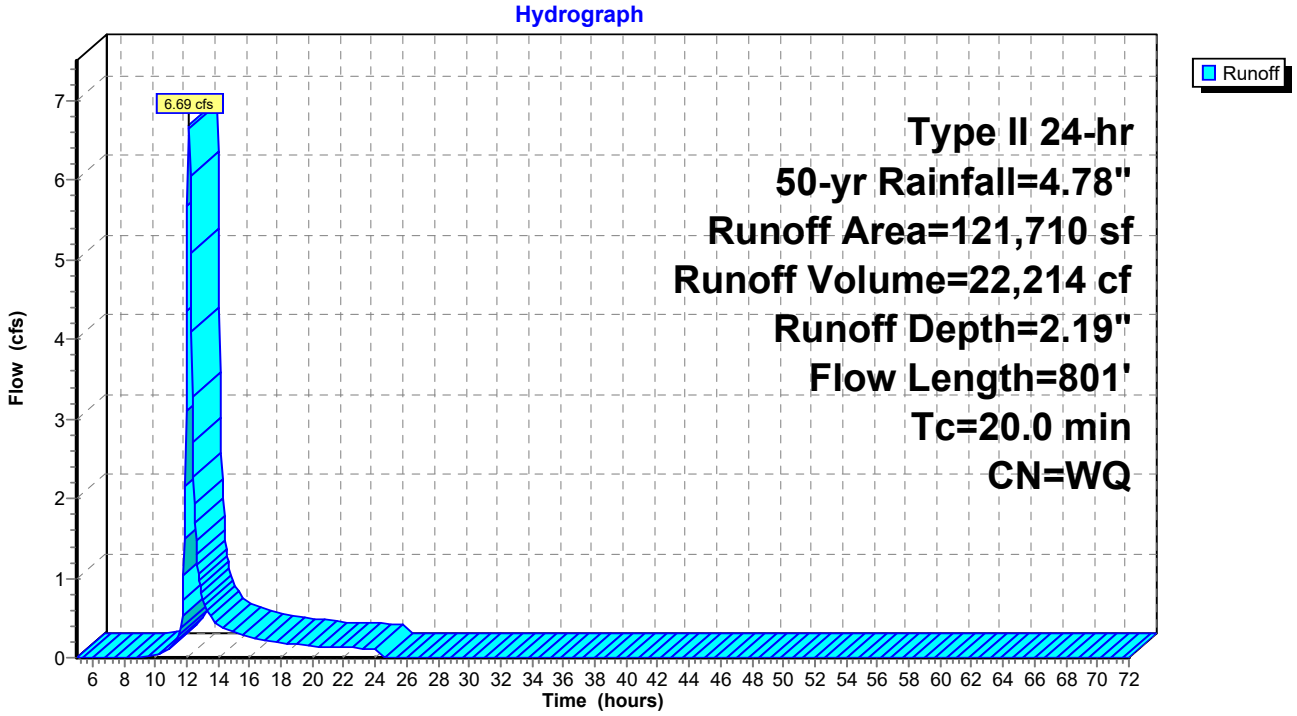
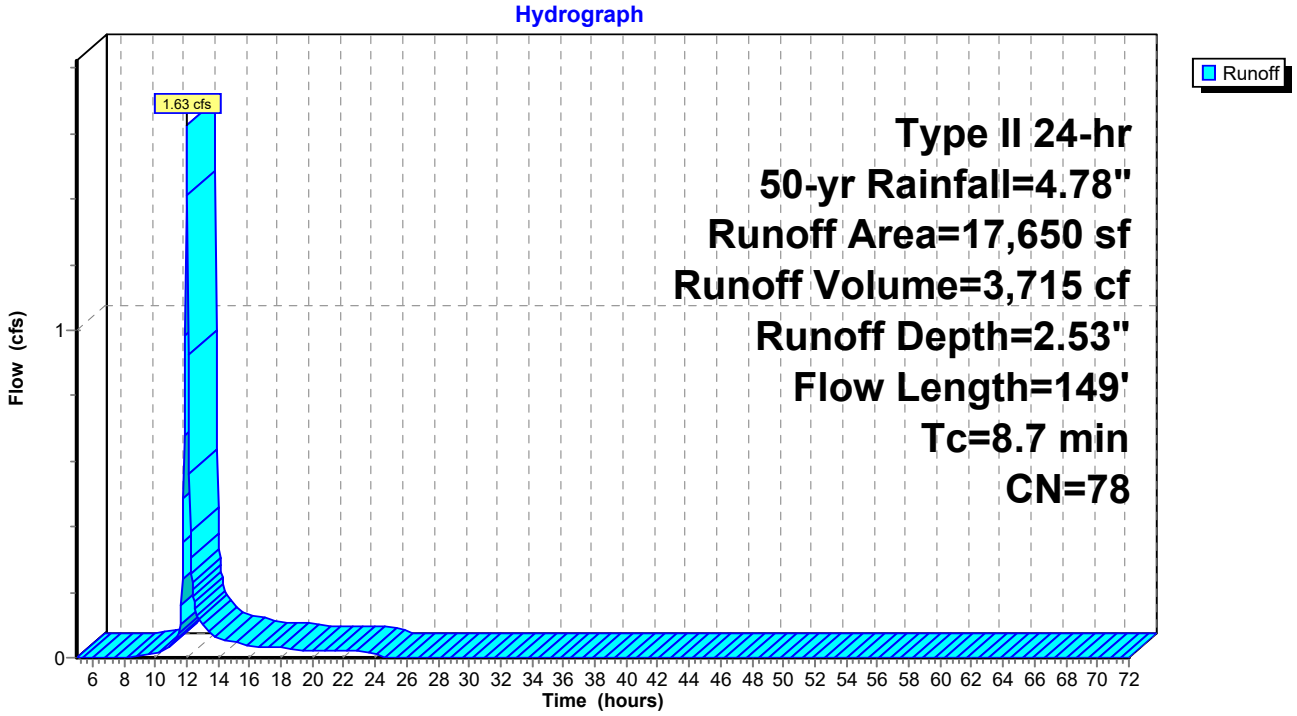


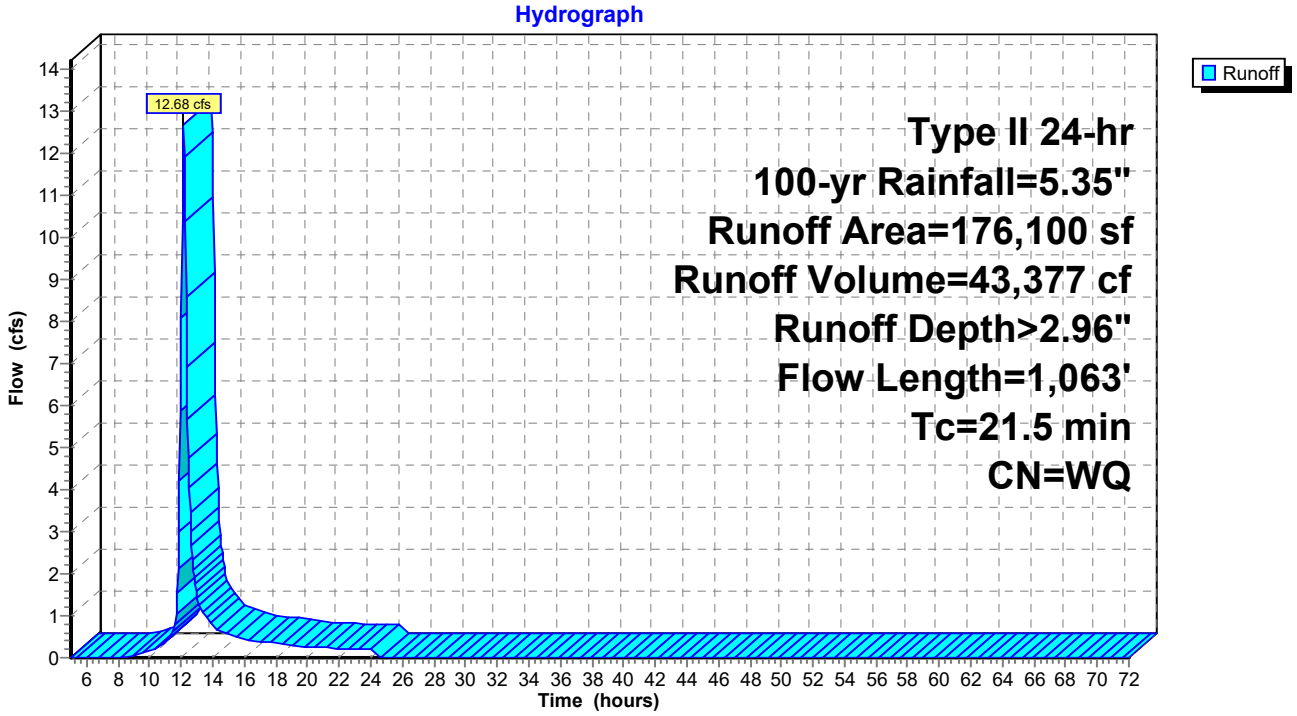
Subcatchment 2S: POA-2 Existing



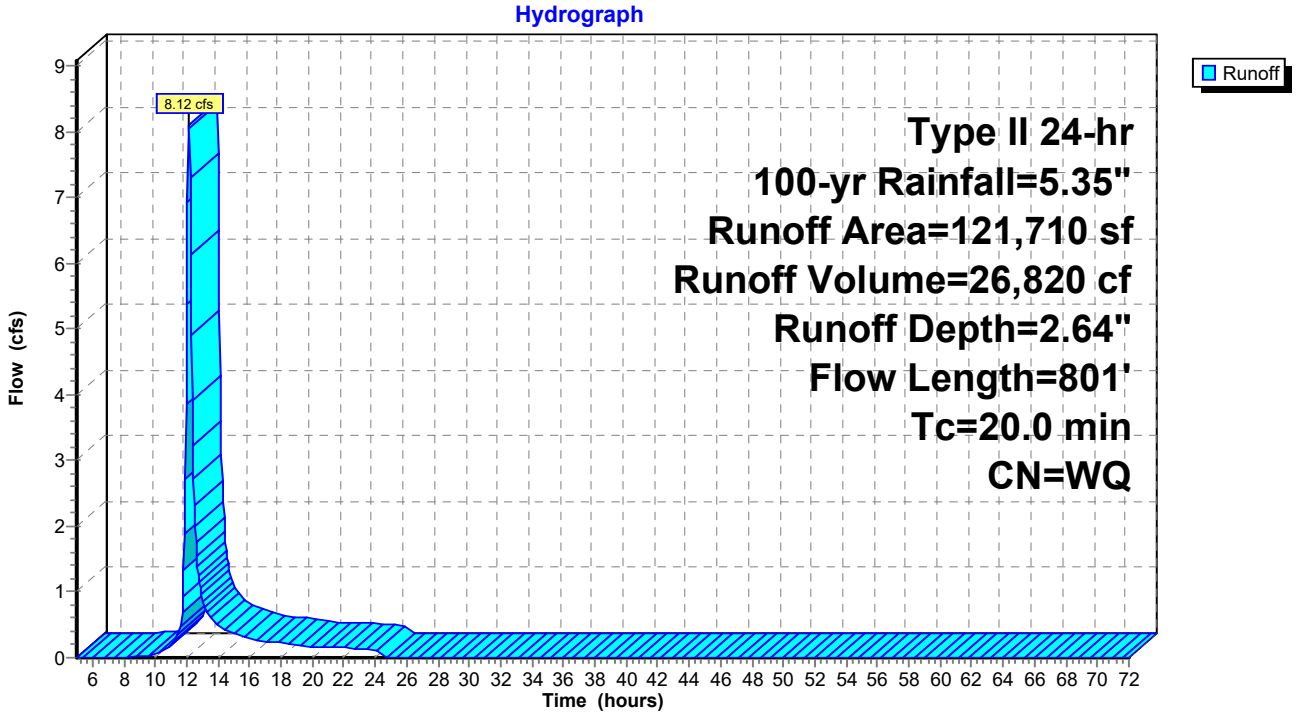
Subcatchment 3S: POA-3 Existing



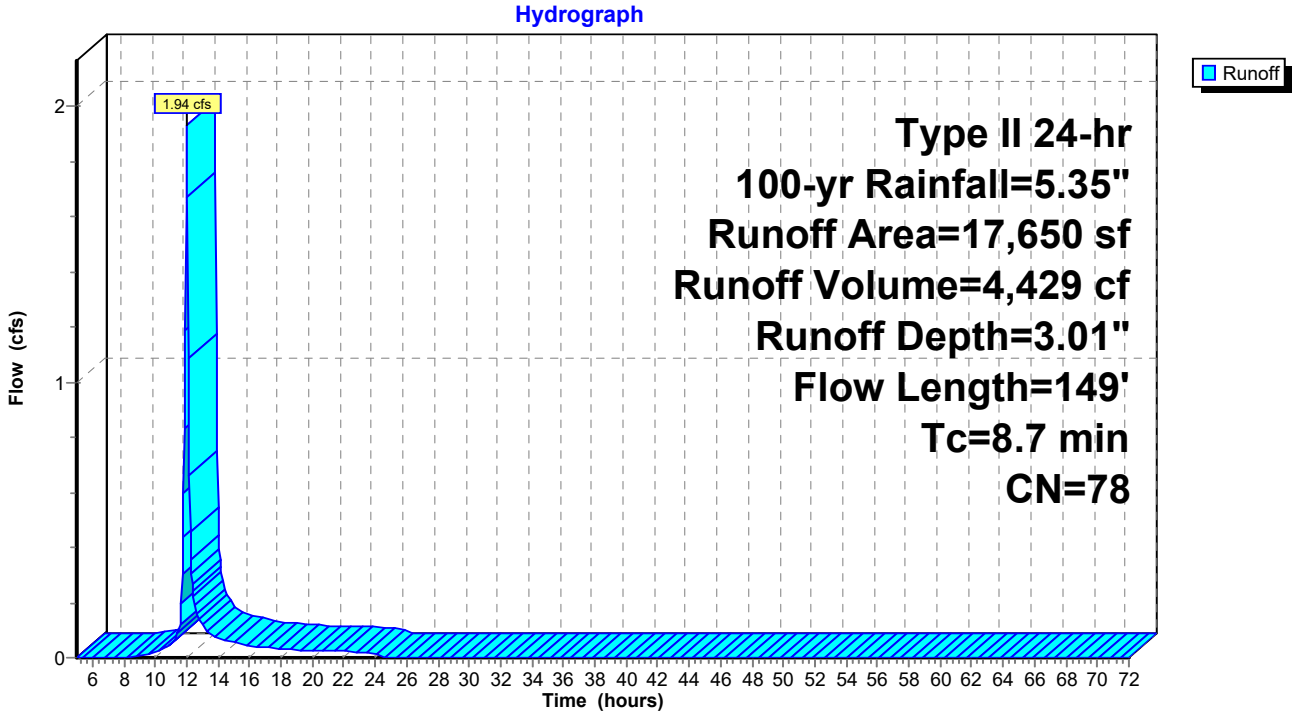
Subcatchment 1S: POA-1 Existing



Subcatchment 2S: POA-2 Existing

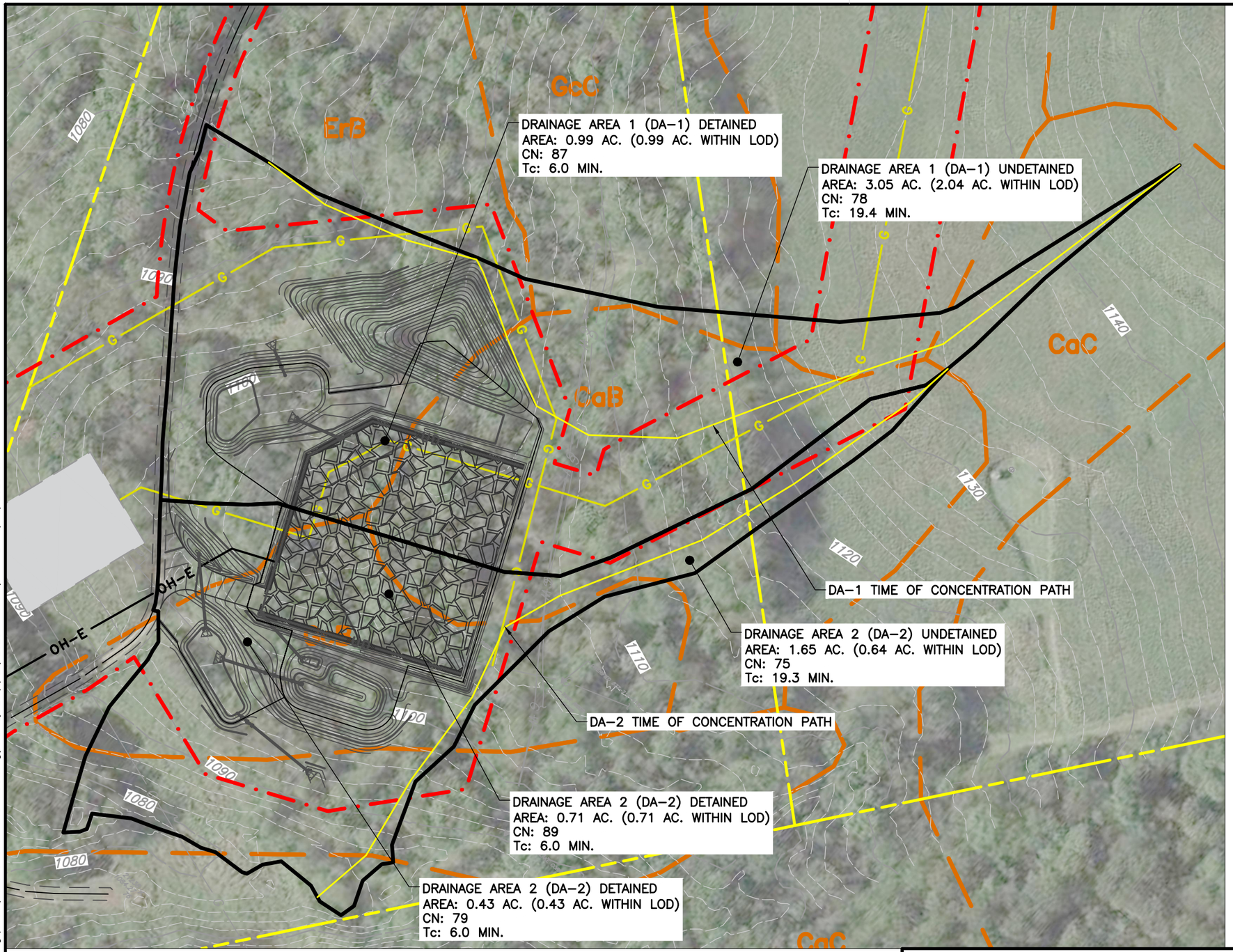


Subcatchment 3S: POA-3 Existing



APPENDIX C

POST-DEVELOPMENT HYDROLOGY CALCULATIONS AND DRAINAGE AREA MAP



LEGEND

- EXISTING PROPERTY LINE
- 870 — EXISTING INDEX CONTOUR (10 FT)
- EXISTING INTERMEDIATE CONTOUR (2 FT)
- EXISTING STREAM
- ASSUMED PADEP 50-FT FLOODWAY
- EXISTING PAVED ROADWAY/DRIVEWAY
- G — EXISTING GAS LINE
- OH-E — EXISTING OVERHEAD WIRES
- POST-DEVELOPMENT DRAINAGE AREA BOUNDARY
- POST-DEVELOPMENT TIME OF CONCENTRATION FLOW PATH
- SOIL BOUNDARY
- CaC — SOIL CLASSIFICATION

SCALE IN FEET

0 100 200

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BURRELL, BLACKLICK AND CENTER TOWNSHIPS
INDIANA COUNTY, PENNSYLVANIA

POST-DEVELOPMENT
DRAINAGE MAP

DRAWN BY:	SCT	CHECKED BY:	CRK	APPROVED BY:	CRK	FIGURE NO.:
DATE:	SEPTEMBER 2025	DWG SCALE:	1"=100'	PROJECT NO:	354-010	HYD-3

P:\350-000\354-010\-CADD\Dwg\CV01\354010-CV01-HYD-POST.dwg[HYD-3] LS:(9/22/2025 - ckane) - LP: 9/22/2025 6:50 PM

NORTH

DRAINAGE AREA 4 (DA–4) UNDETAINED
AREA: 0.16 AC. (0.09 AC. WITHIN LOD)
CN: 78
Tc: 6.0 MIN.

DRAINAGE AREA 4 (DA–4) DETAINED
AREA: 0.25 AC. (0.18 AC. WITHIN LOD)
CN: 80
Tc: 6.0 MIN.

LEGEND

- EXISTING PROPERTY LINE
- 870 — EXISTING INDEX CONTOUR (10 FT)
- EXISTING INTERMEDIATE CONTOUR (2 FT)
- EXISTING STREAM
- ASSUMED PADEP 50–FT FLOODWAY
- EXISTING PAVED ROADWAY/DRIVEWAY
- G — EXISTING GAS LINE
- OH–E — EXISTING OVERHEAD WIRES
- POST–DEVELOPMENT DRAINAGE AREA BOUNDARY
- POST–DEVELOPMENT TIME OF CONCENTRATION FLOW PATH
- SOIL BOUNDARY
- CoC — SOIL CLASSIFICATION

SCALE IN FEET
0 100 200

Civil & Environmental Consultants, Inc.
4350 Northern Pike
Suite 141
Monroeville, PA 15146
Ph: 724.327.5200
www.cecinc.com

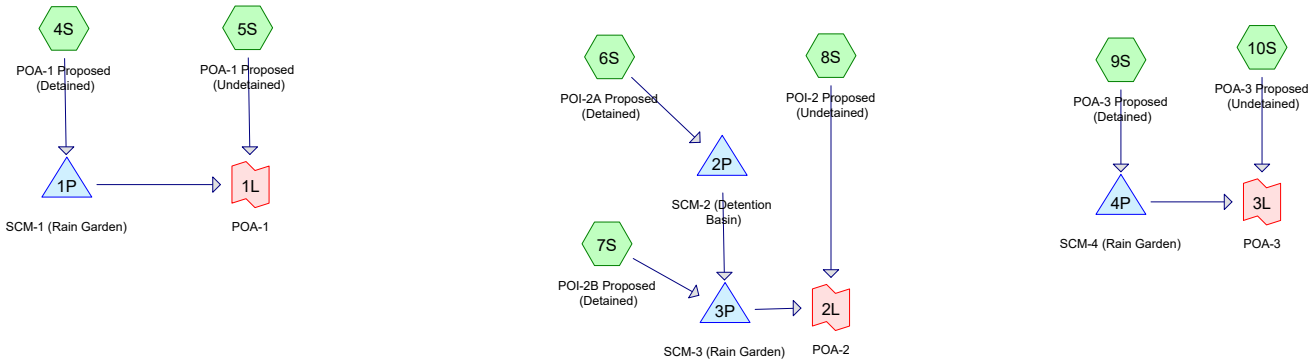
HOMER CITY GENERATION, L.P.
HCPP PIPELINE
BURRELL, BLACKLICK AND CENTER TOWNSHIPS
INDIANA COUNTY, PENNSYLVANIA

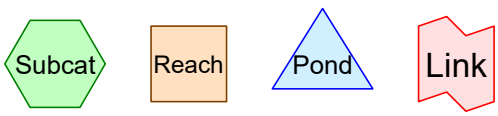
POST-DEVELOPMENT
DRAINAGE MAP

DRAWN BY:	SCT	CHECKED BY:	CRK	APPROVED BY:	CRK	FIGURE NO.:
DATE:	SEPTEMBER 2025	DWG SCALE:	1"=100'	PROJECT NO:	354-010	HYD-4

P:\350-000\354-010\-CADD\Dwg\CV01\354010-CV01-HYD-POST.dwg[HYD-4] LS:(9/22/2025 - ckane) - LP: 9/22/2025 6:50 PM

Proposed Conditions



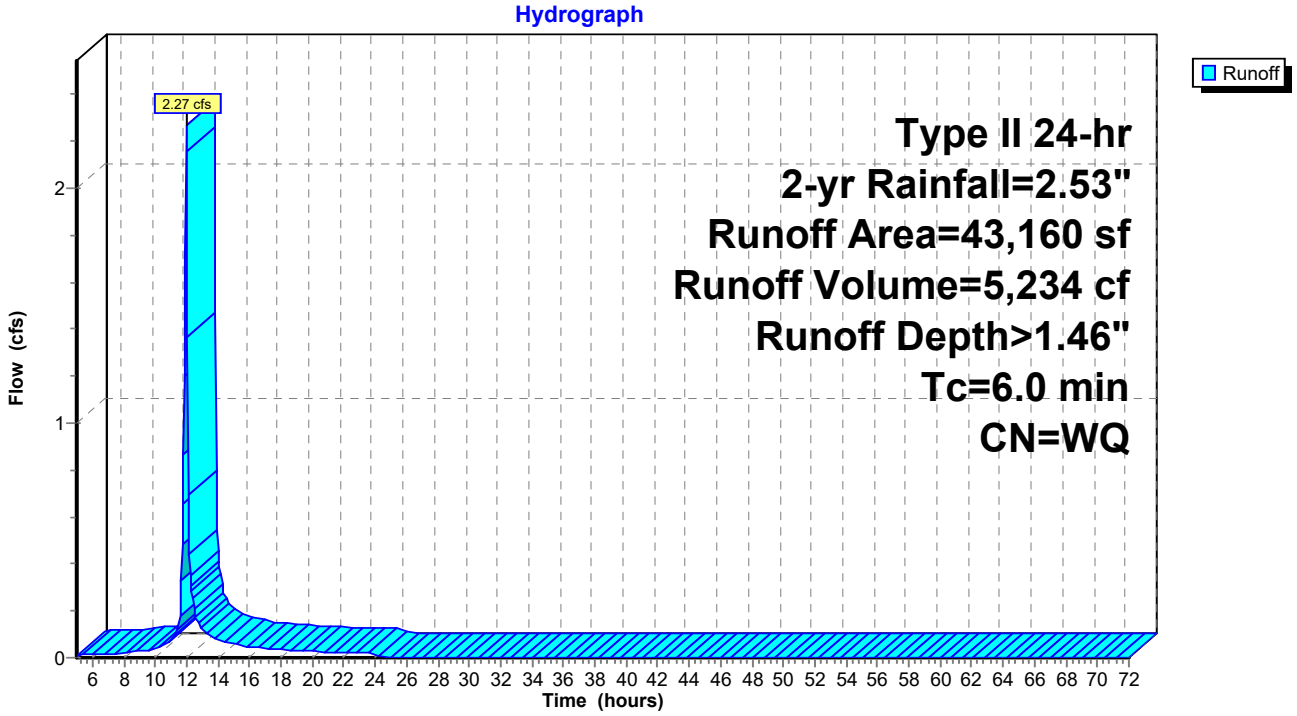


Routing Diagram for 354-010 PCSM Hydrology and SCMs
Prepared by CEC Inc, Printed 9/22/2025

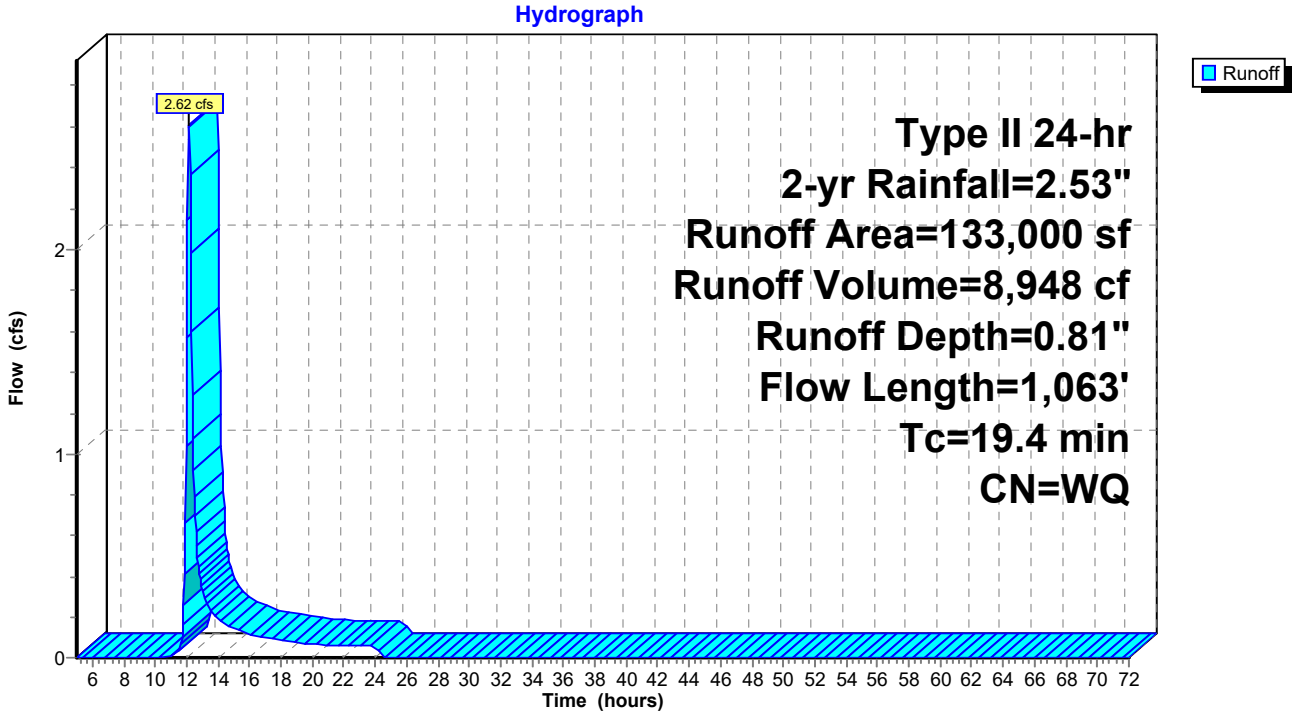
Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type II 24-hr		Default	24.00	1	2.53	2
2	10-yr	Type II 24-hr		Default	24.00	1	3.57	2
3	50-yr	Type II 24-hr		Default	24.00	1	4.78	2
4	100-yr	Type II 24-hr		Default	24.00	1	5.35	2

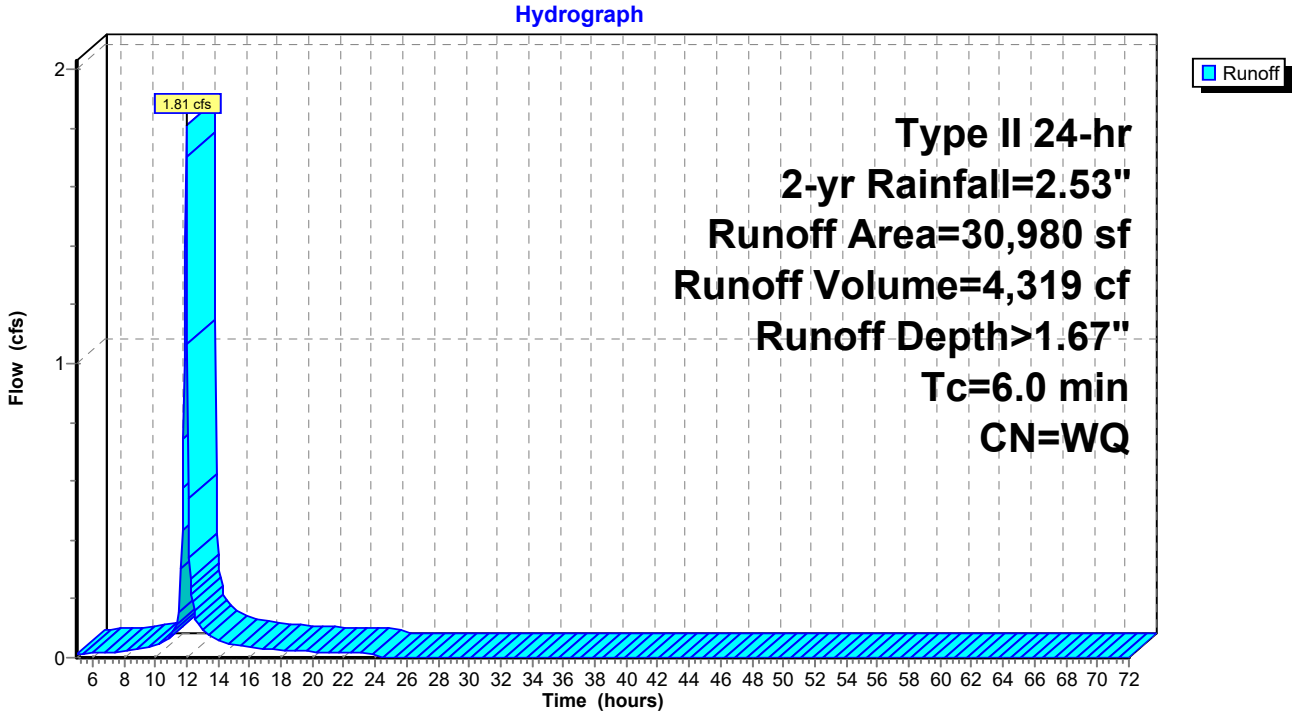
Subcatchment 4S: POA-1 Proposed (Detained)



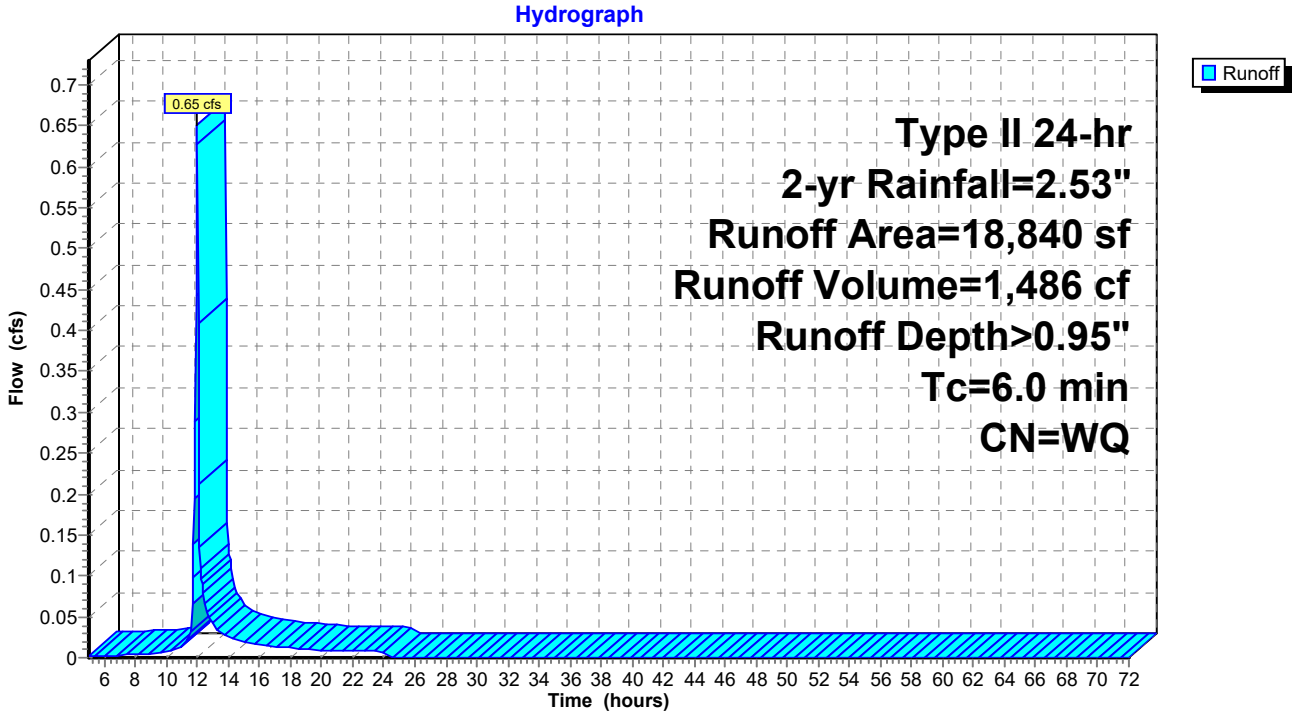
Subcatchment 5S: POA-1 Proposed (Undetained)



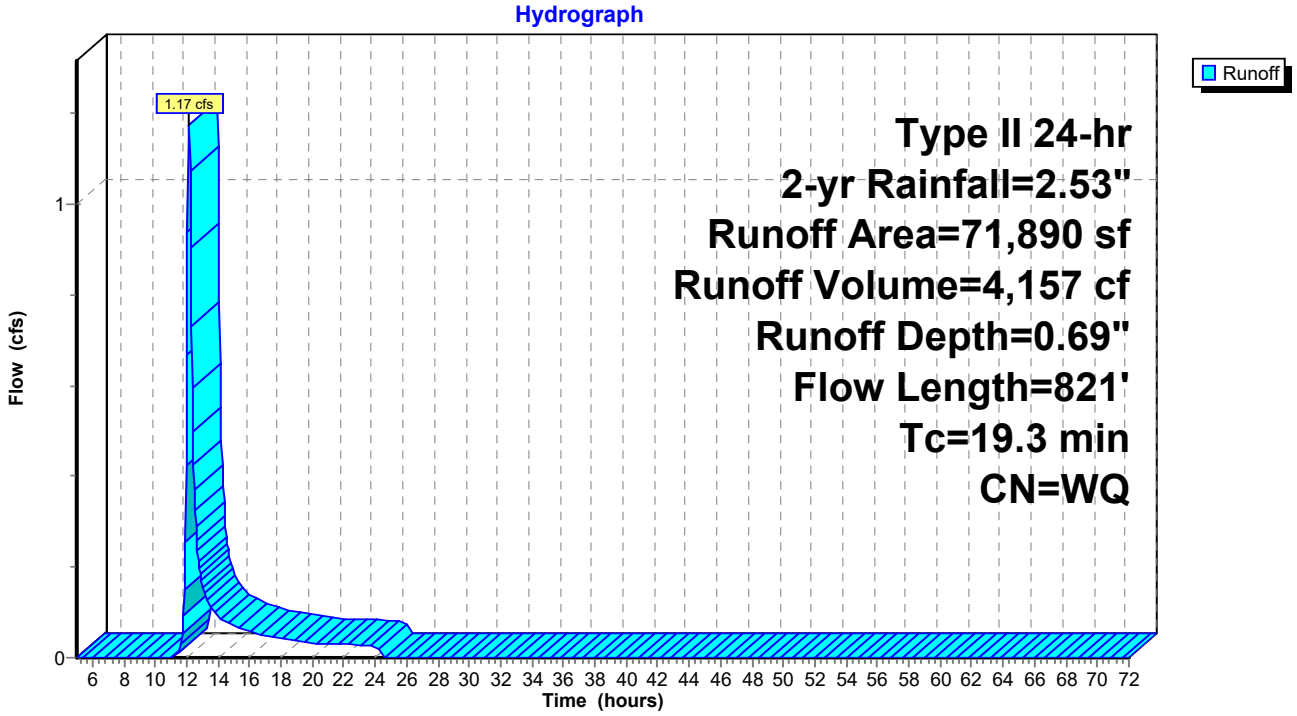
Subcatchment 6S: POI-2A Proposed (Detained)



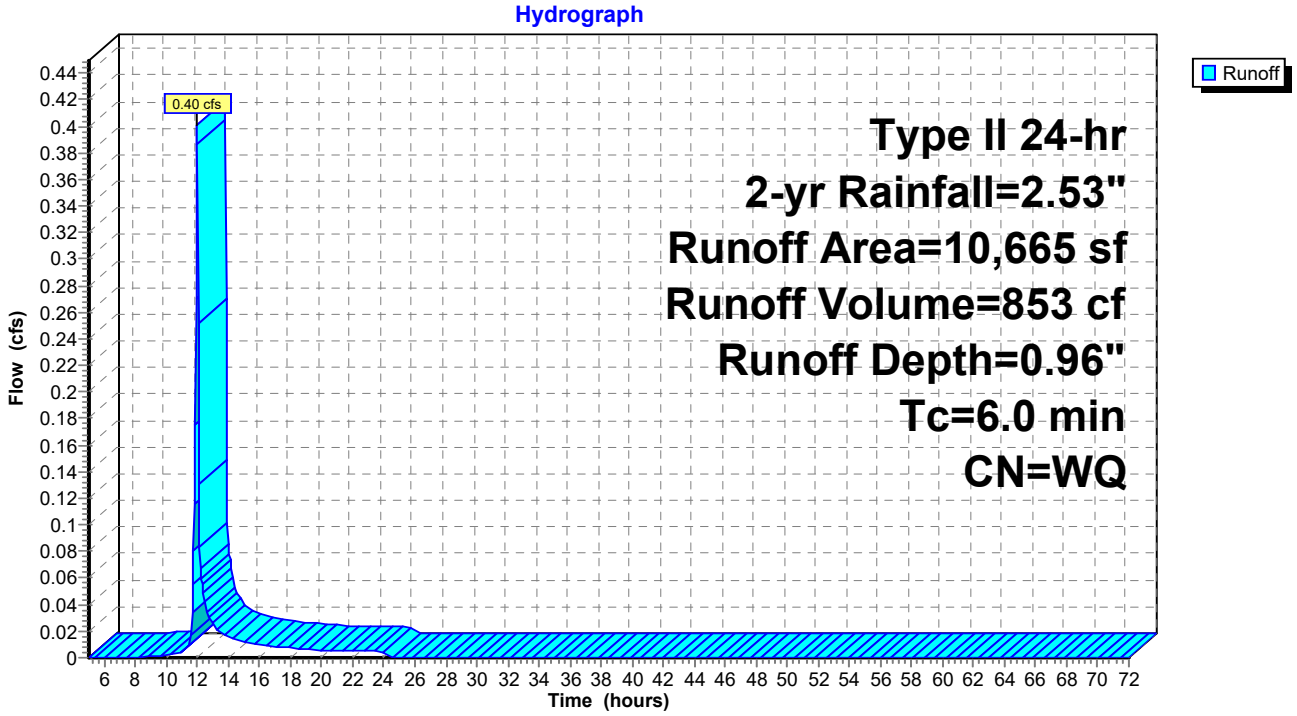
Subcatchment 7S: POI-2B Proposed (Detained)



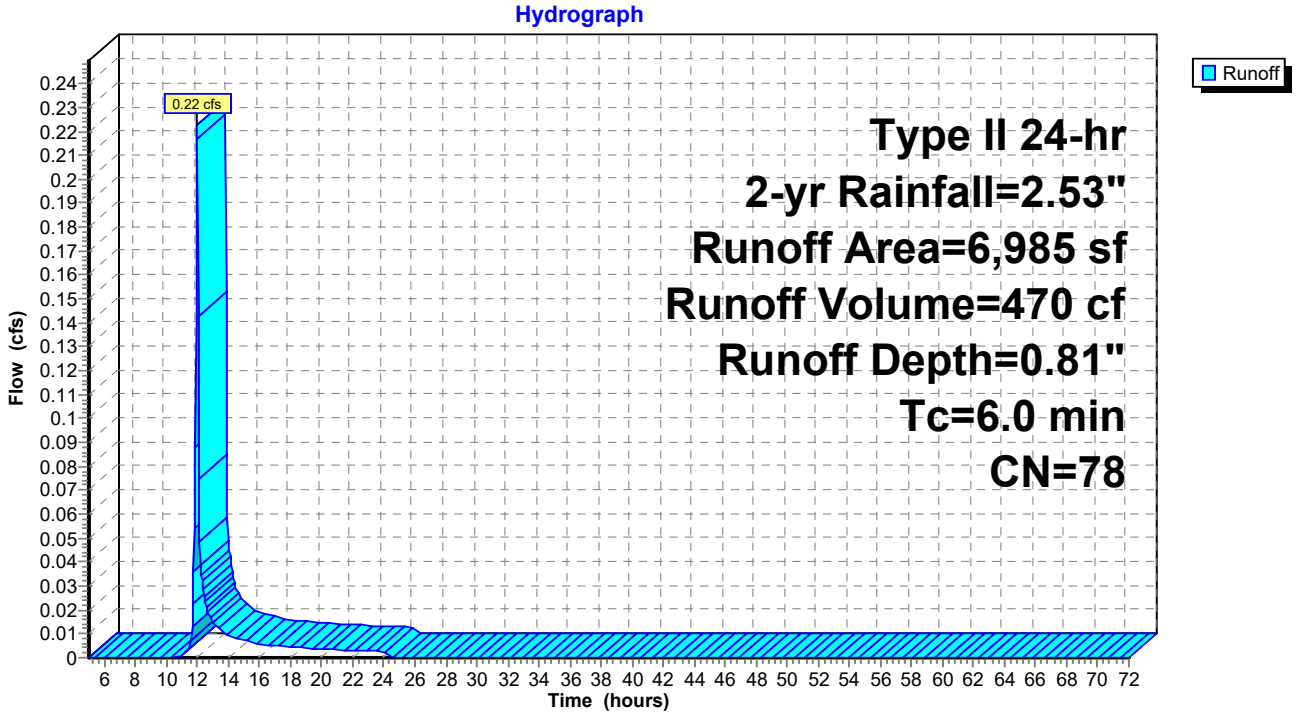
Subcatchment 8S: POI-2 Proposed (Undetained)



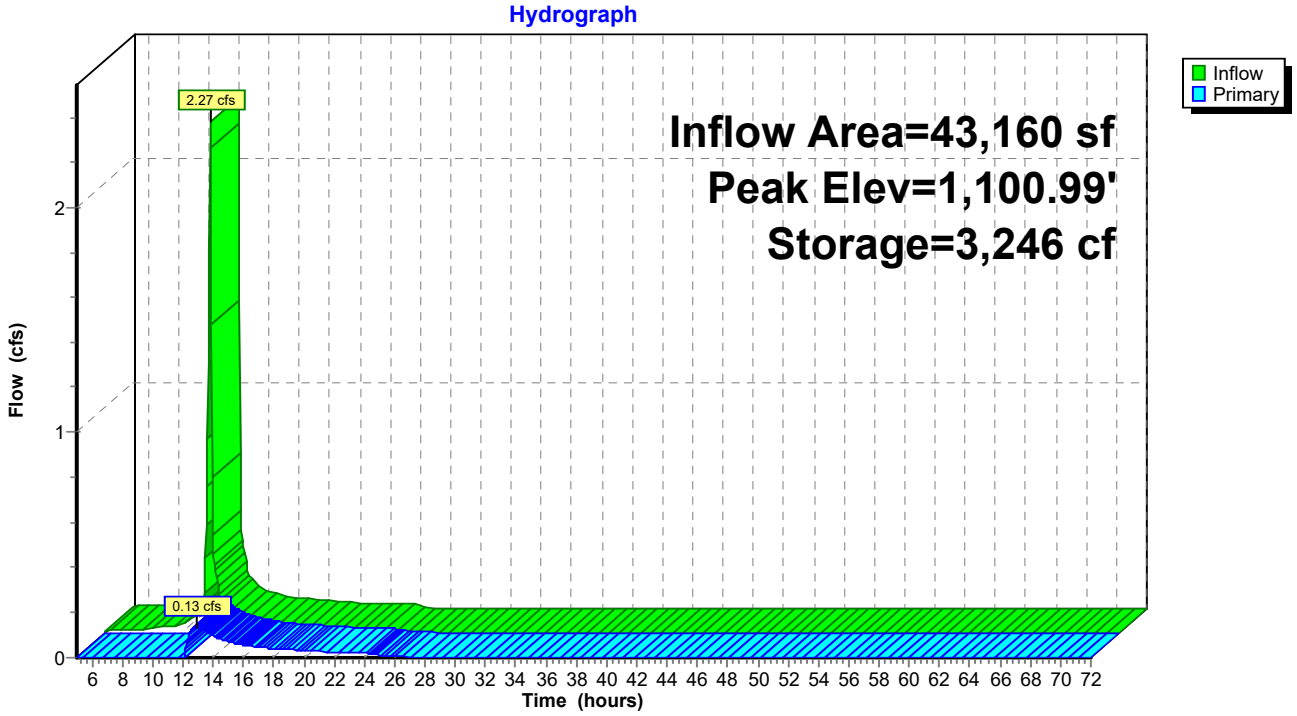
Subcatchment 9S: POA-3 Proposed (Detained)



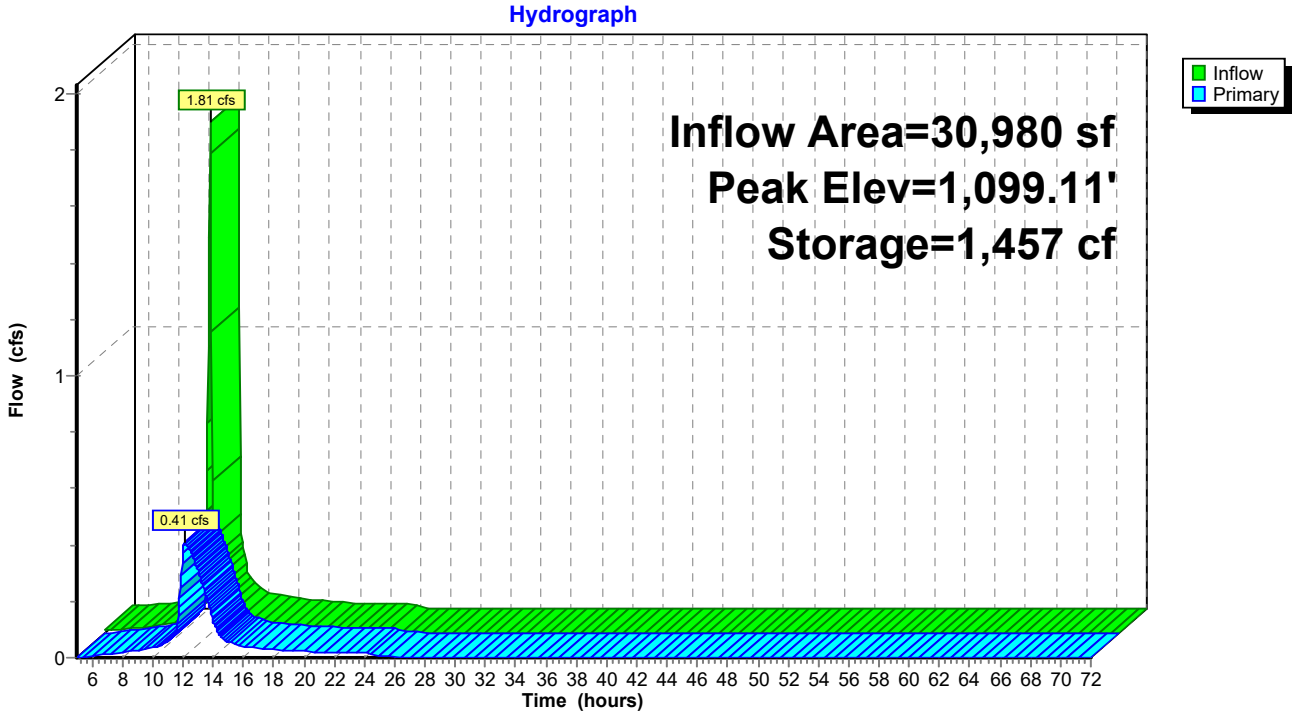
Subcatchment 10S: POA-3 Proposed (Undetained)



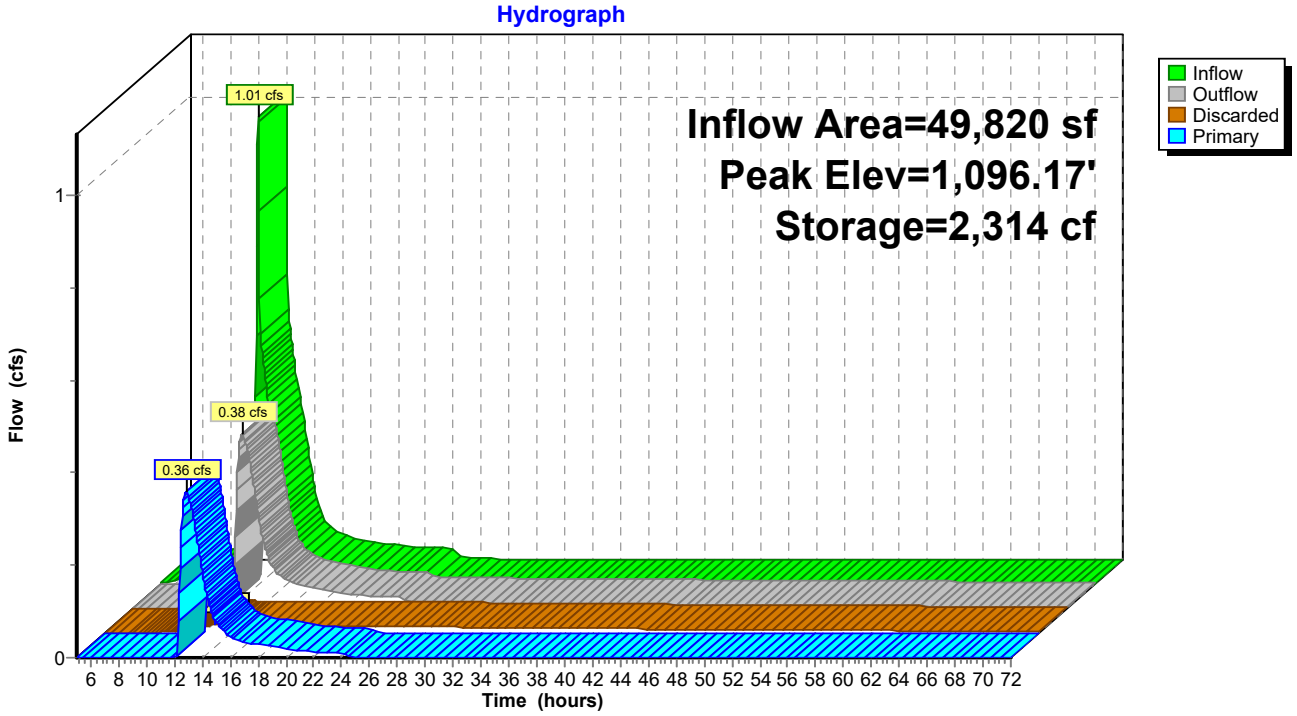
Pond 1P: SCM-1 (Rain Garden)



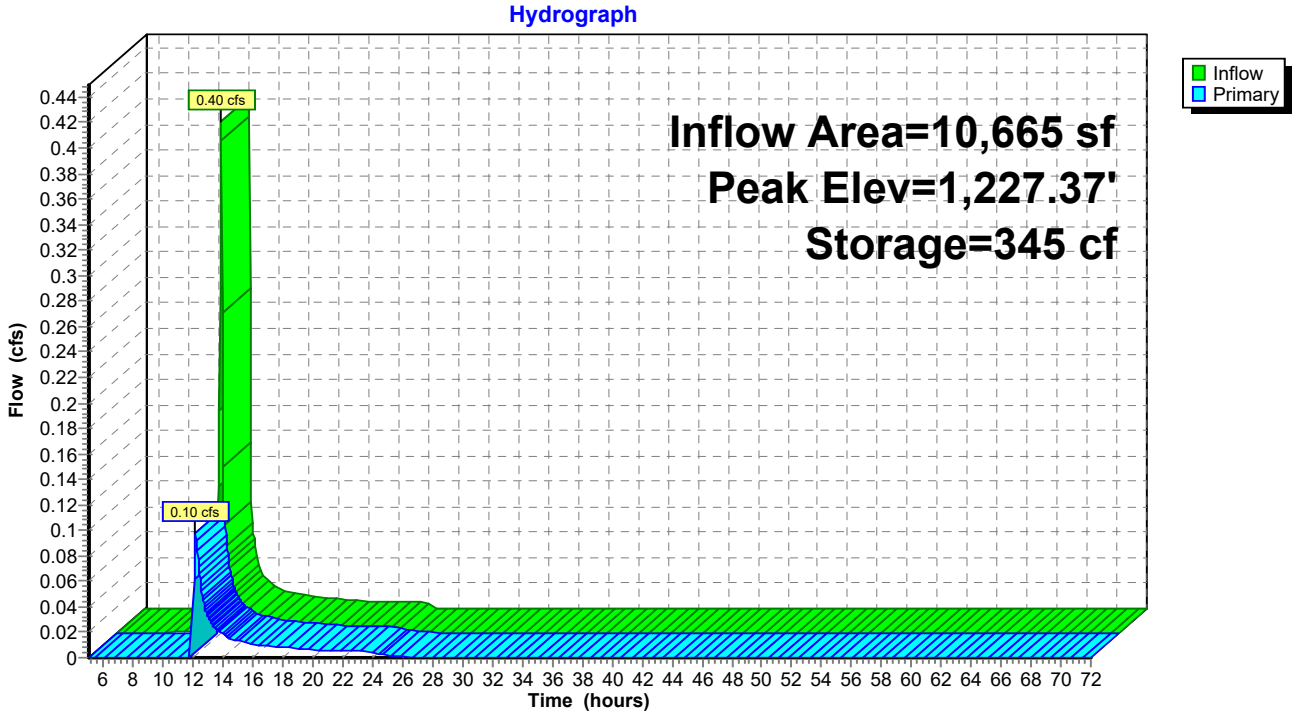
Pond 2P: SCM-2 (Detention Basin)



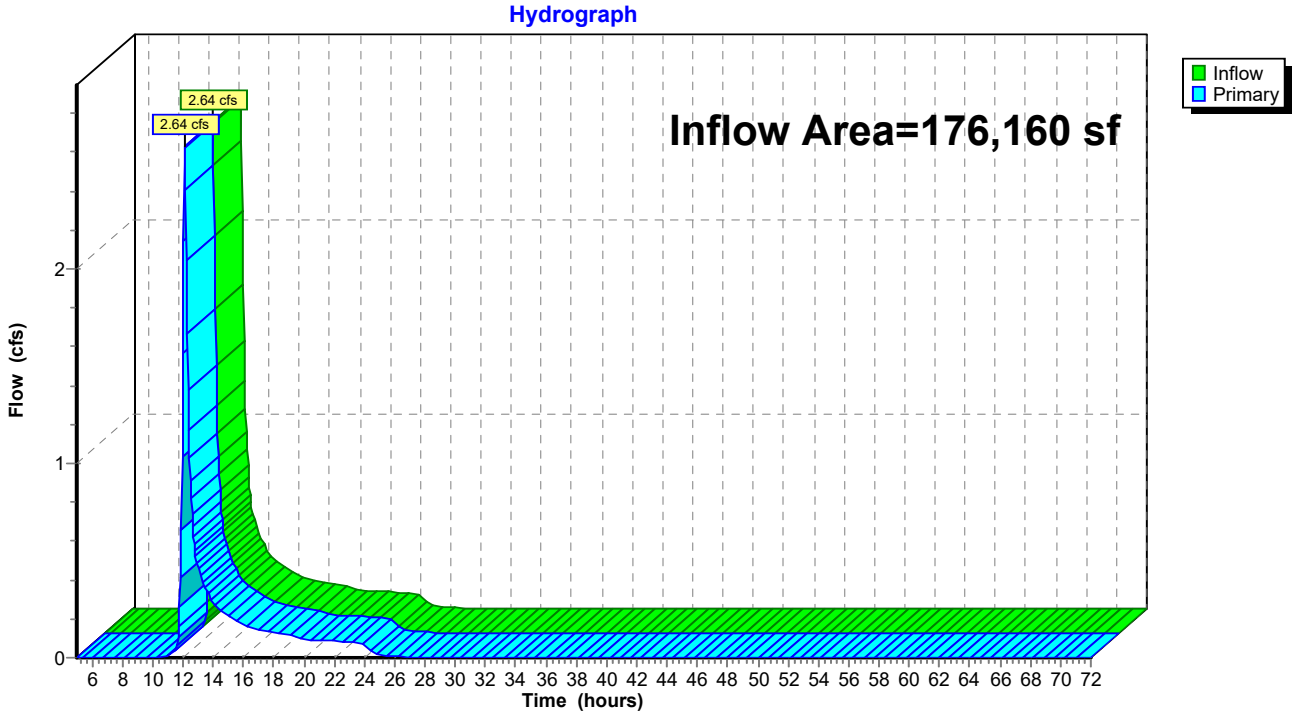
Pond 3P: SCM-3 (Rain Garden)



Pond 4P: SCM-4 (Rain Garden)



Link 1L: POA-1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Primary
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2.64 cfs
Flow (cfs)
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1
2
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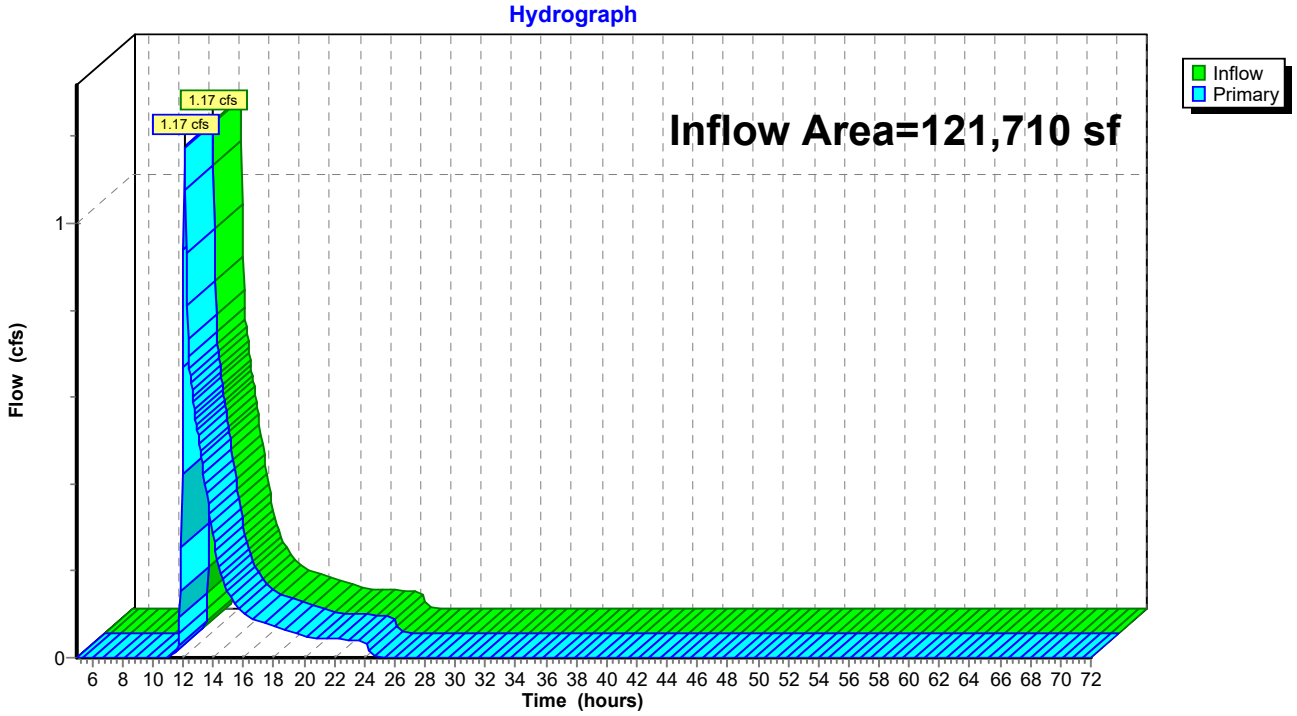
Time (hours)

Link 2L: POA-2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Primary
Flow (cfs)
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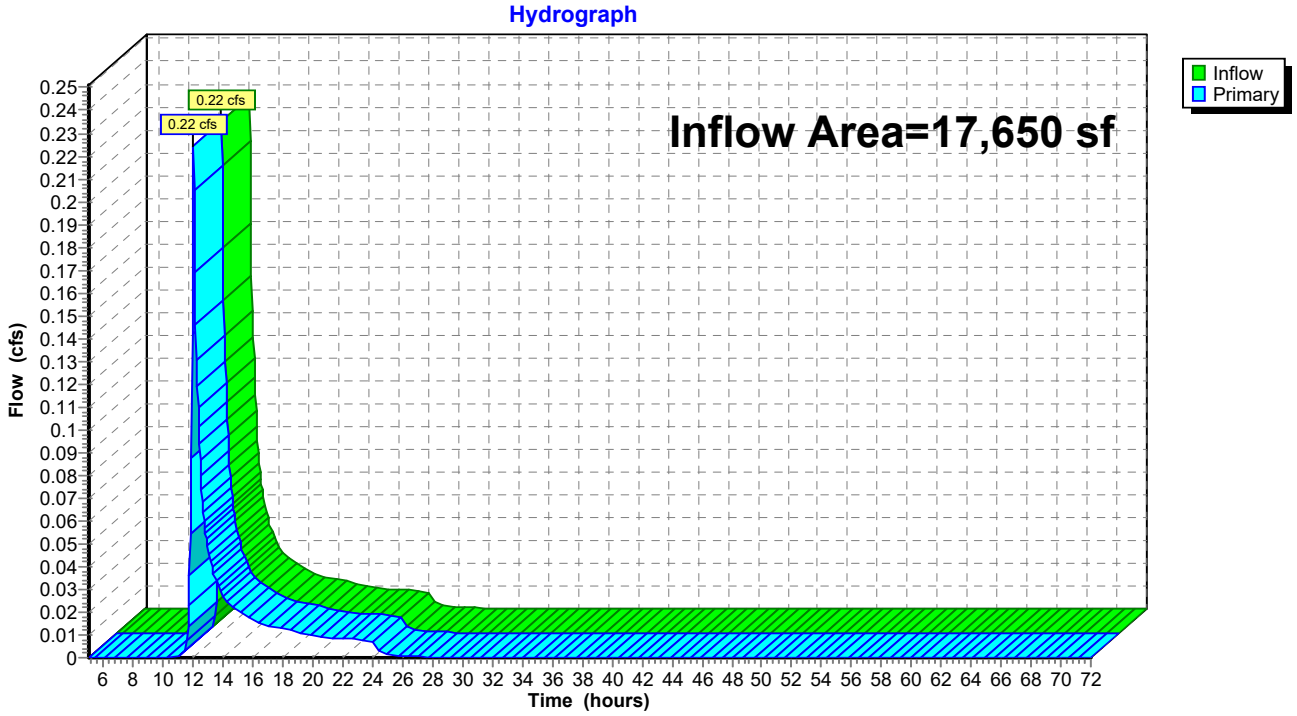
Time (hours)

Link 3L: POA-3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Primary
Flow (cfs)
Time (hours)
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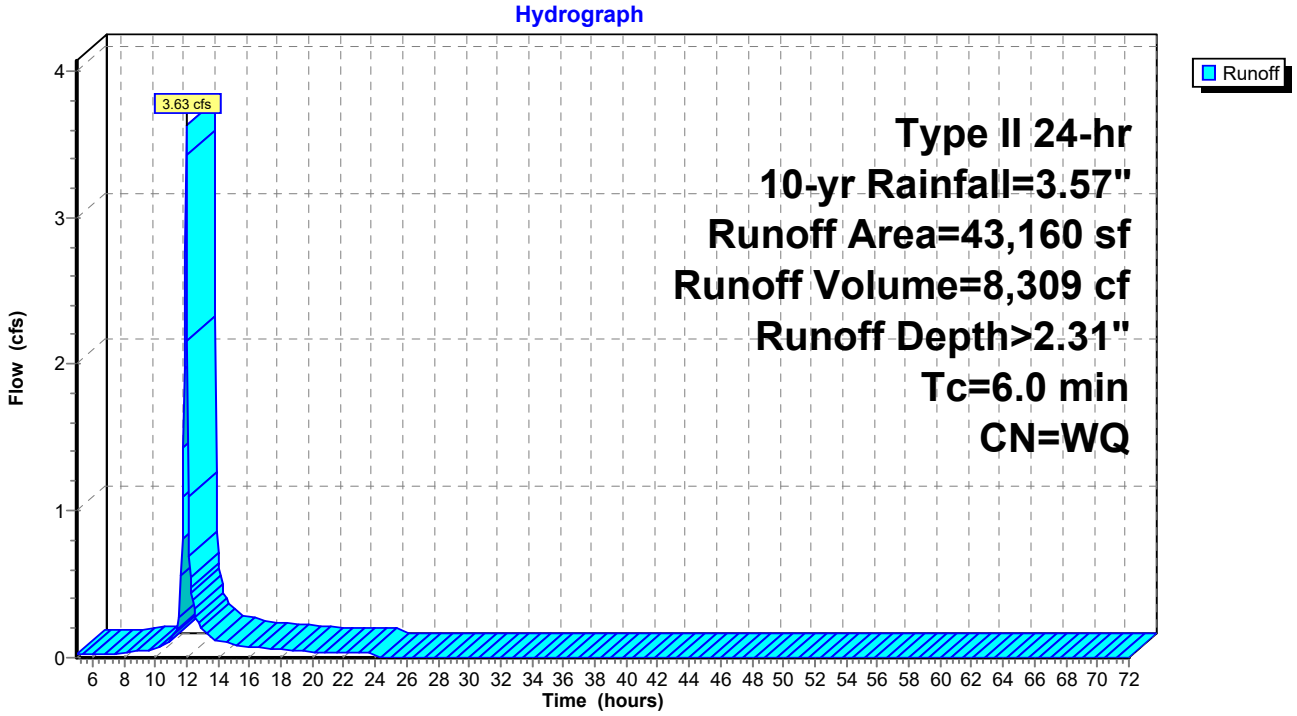
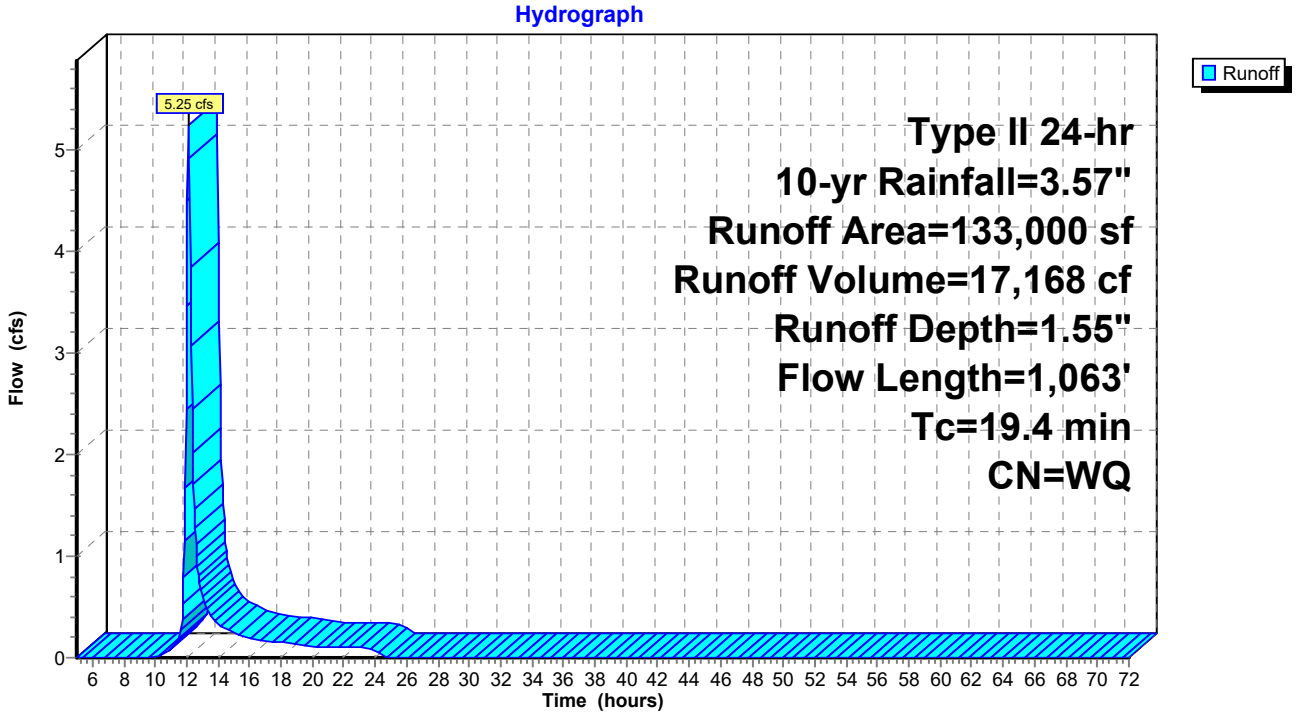
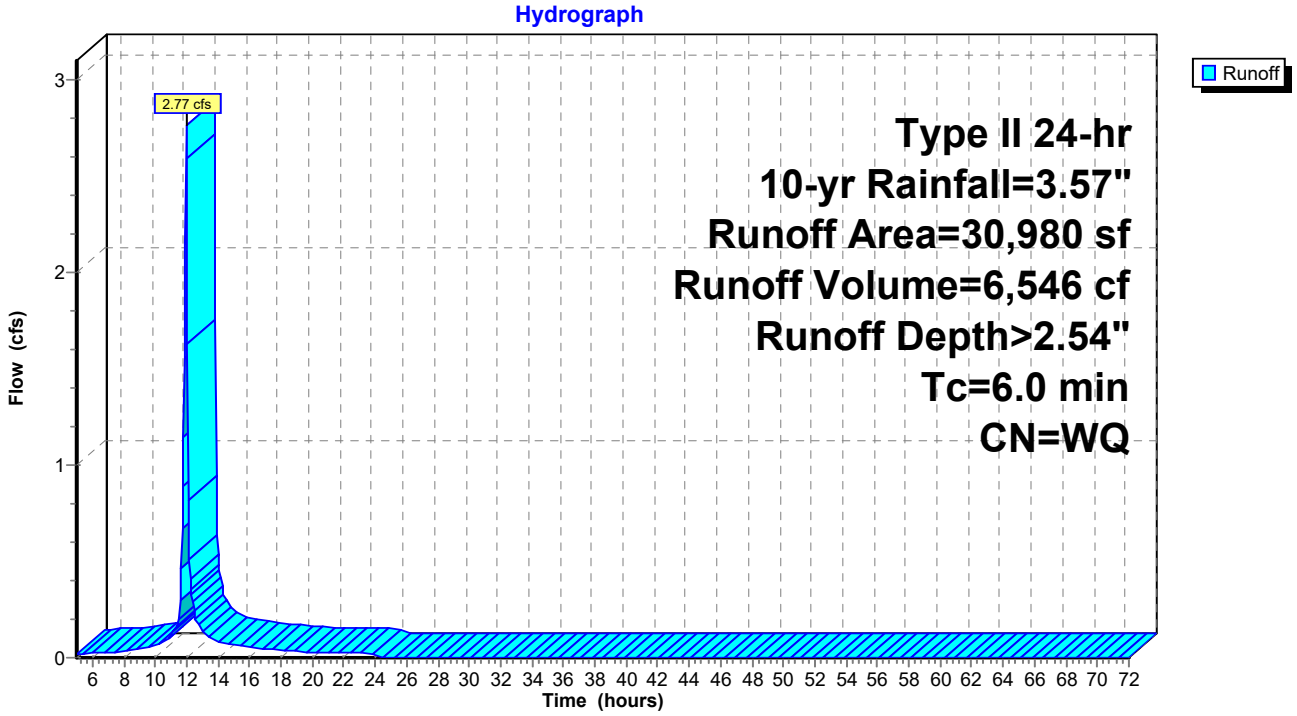
Subcatchment 4S: POA-1 Proposed (Detained)



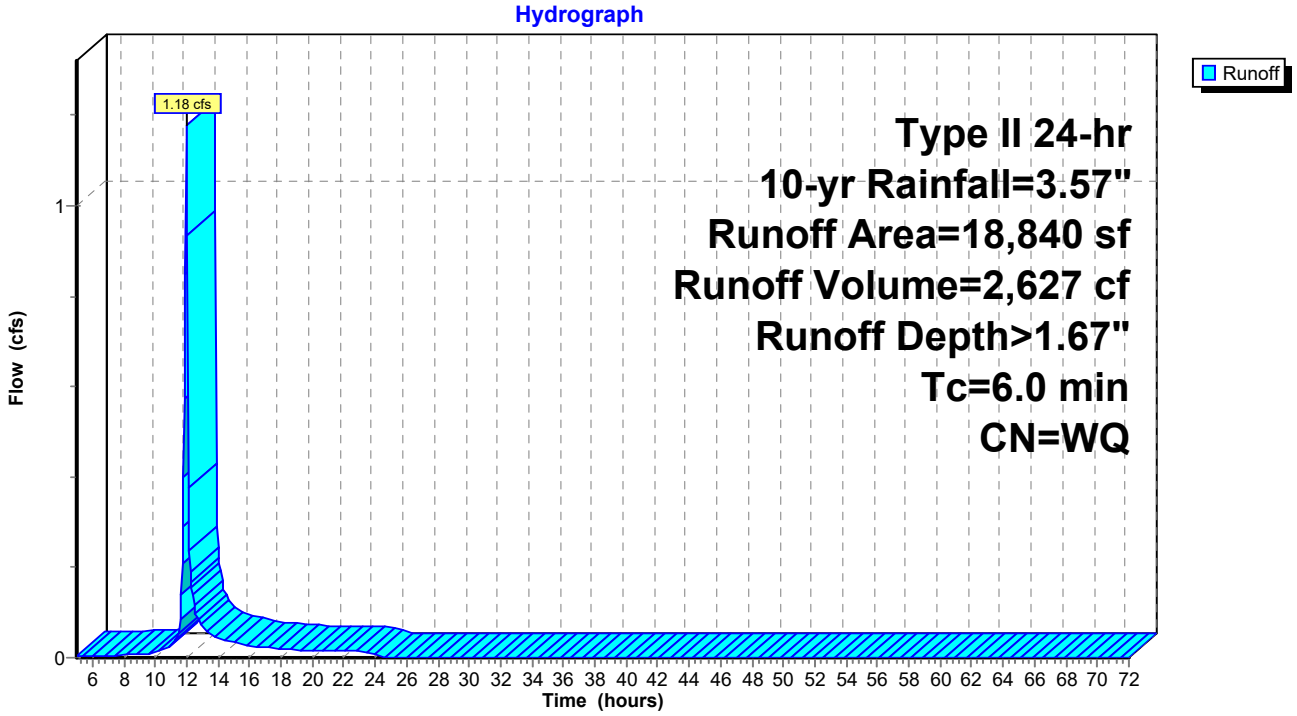
Subcatchment 5S: POA-1 Proposed (Undetained)



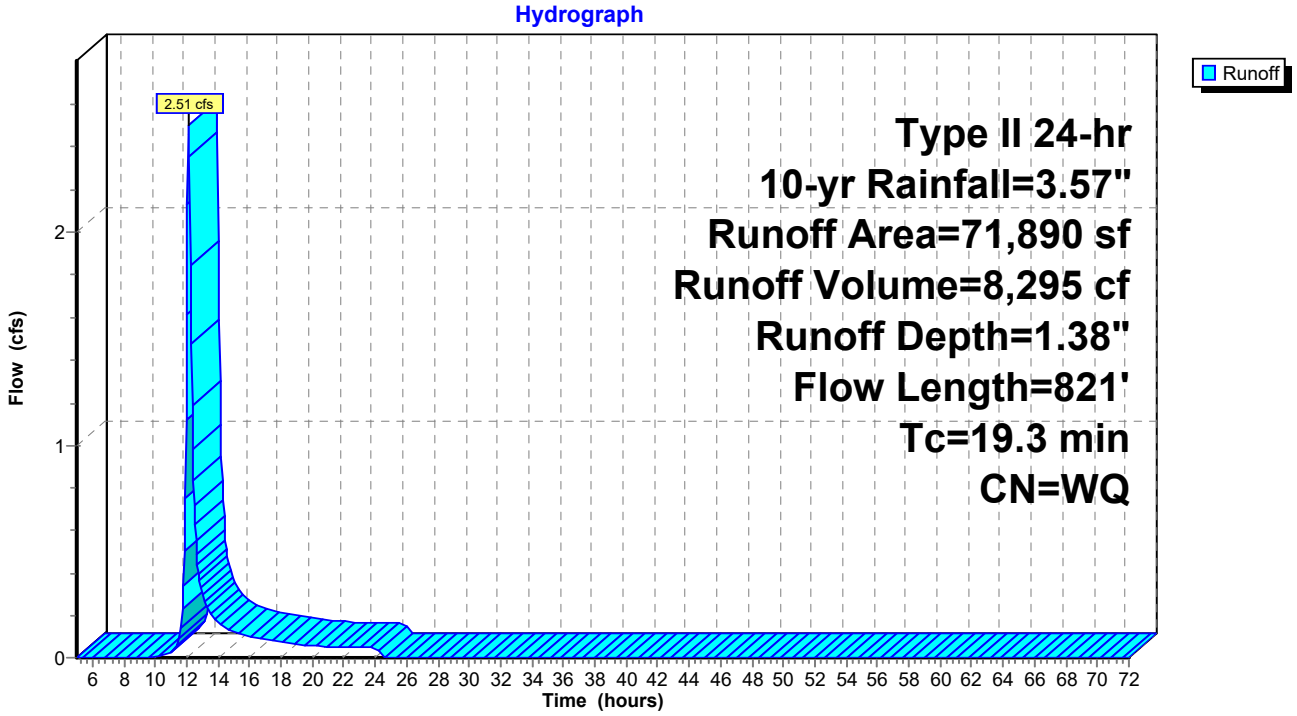
Subcatchment 6S: POI-2A Proposed (Detained)



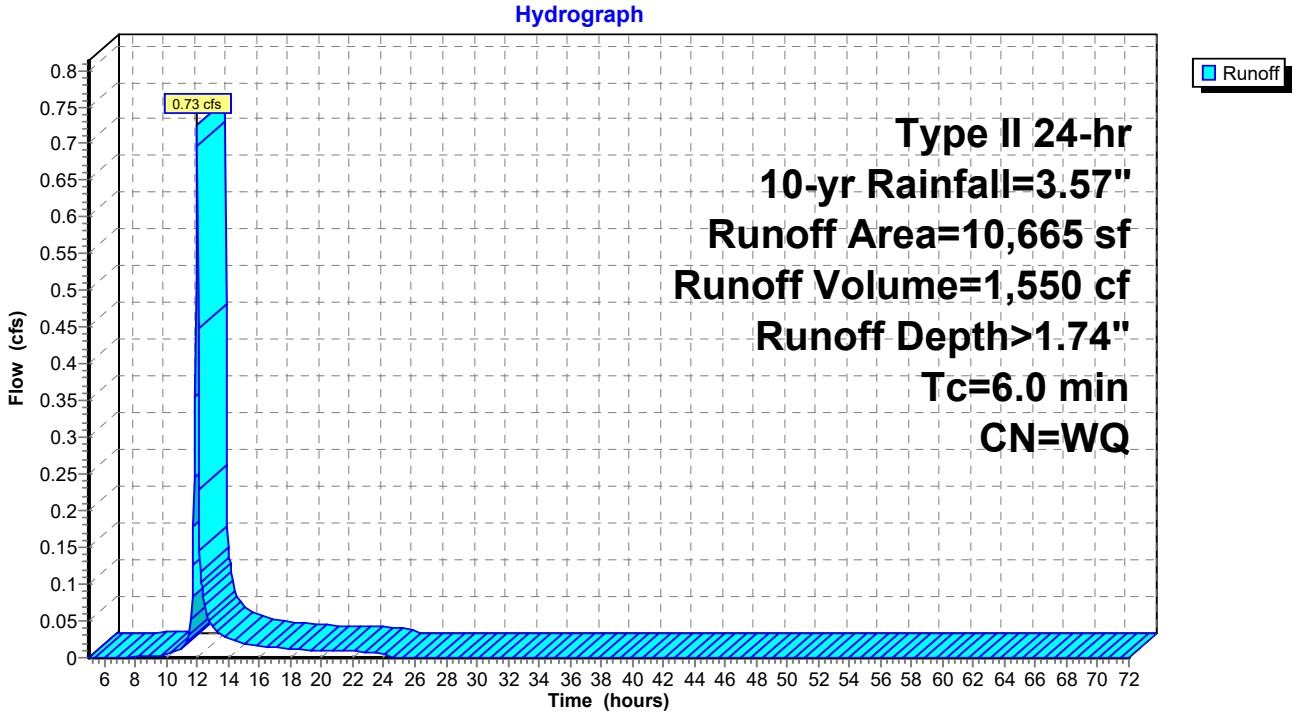
Subcatchment 7S: POI-2B Proposed (Detained)



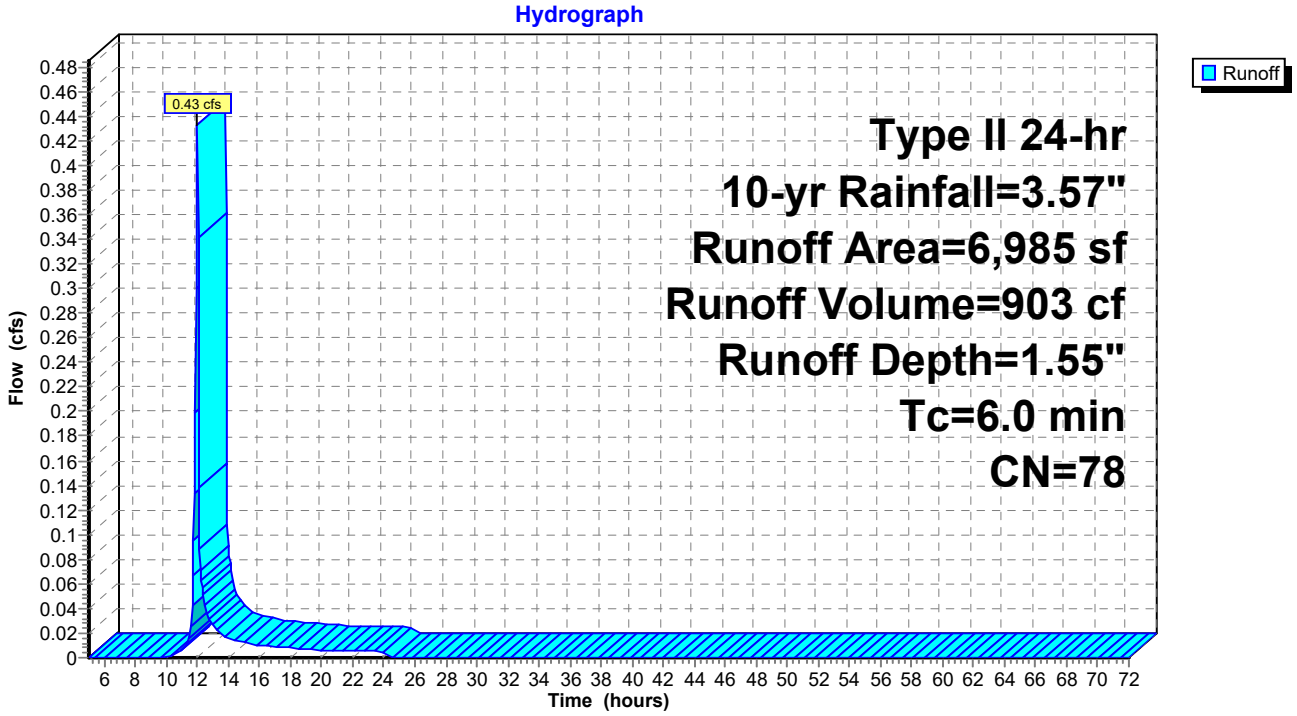
Subcatchment 8S: POI-2 Proposed (Undetained)



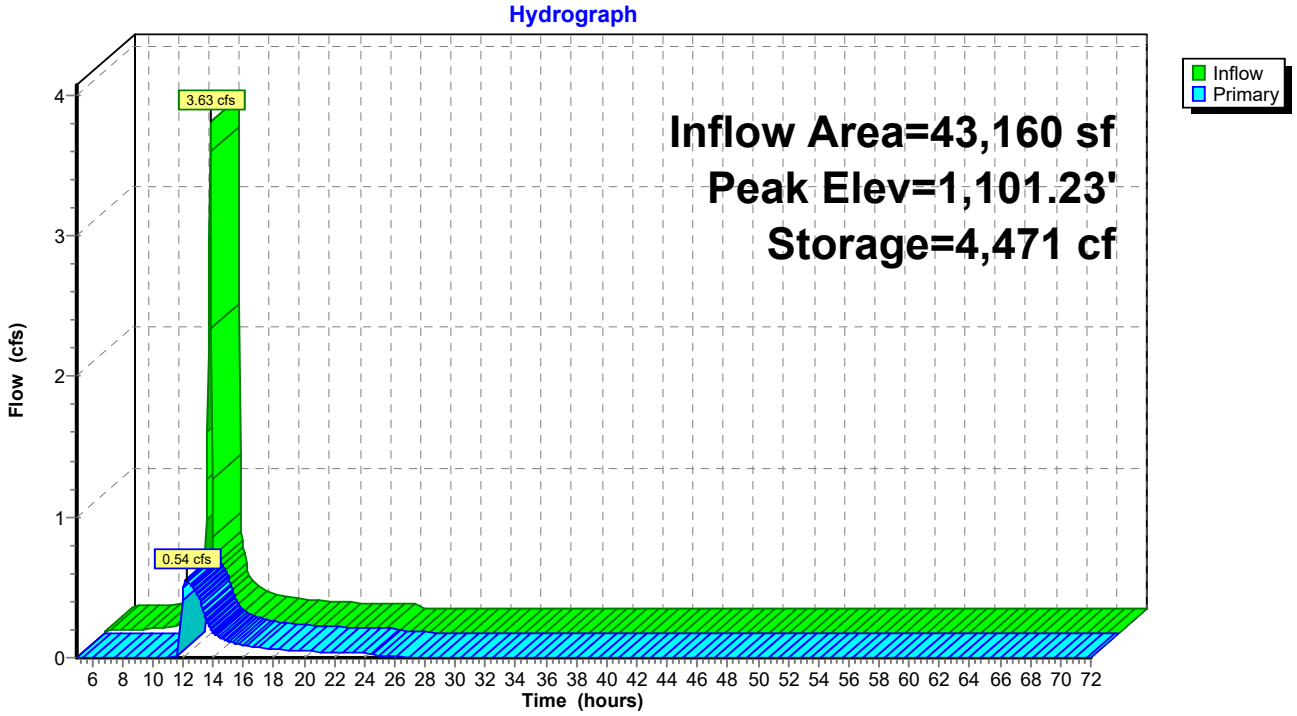
Subcatchment 9S: POA-3 Proposed (Detained)



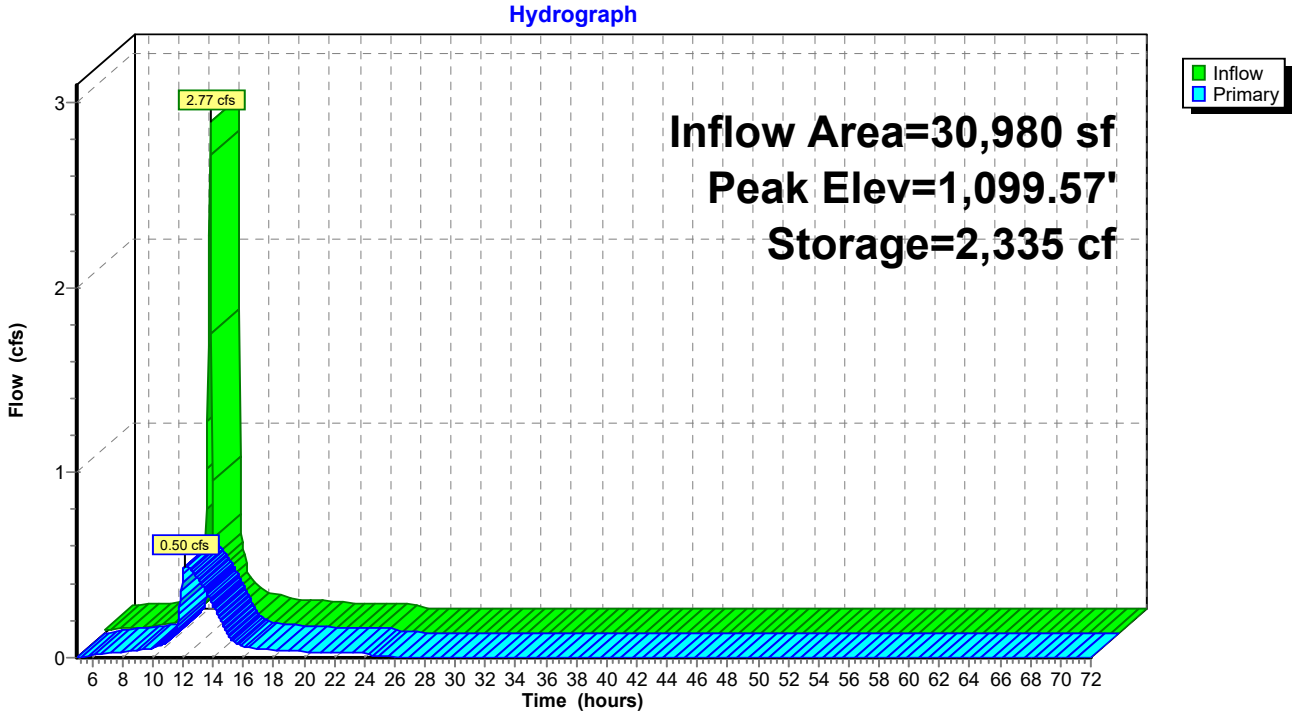
Subcatchment 10S: POA-3 Proposed (Undetained)



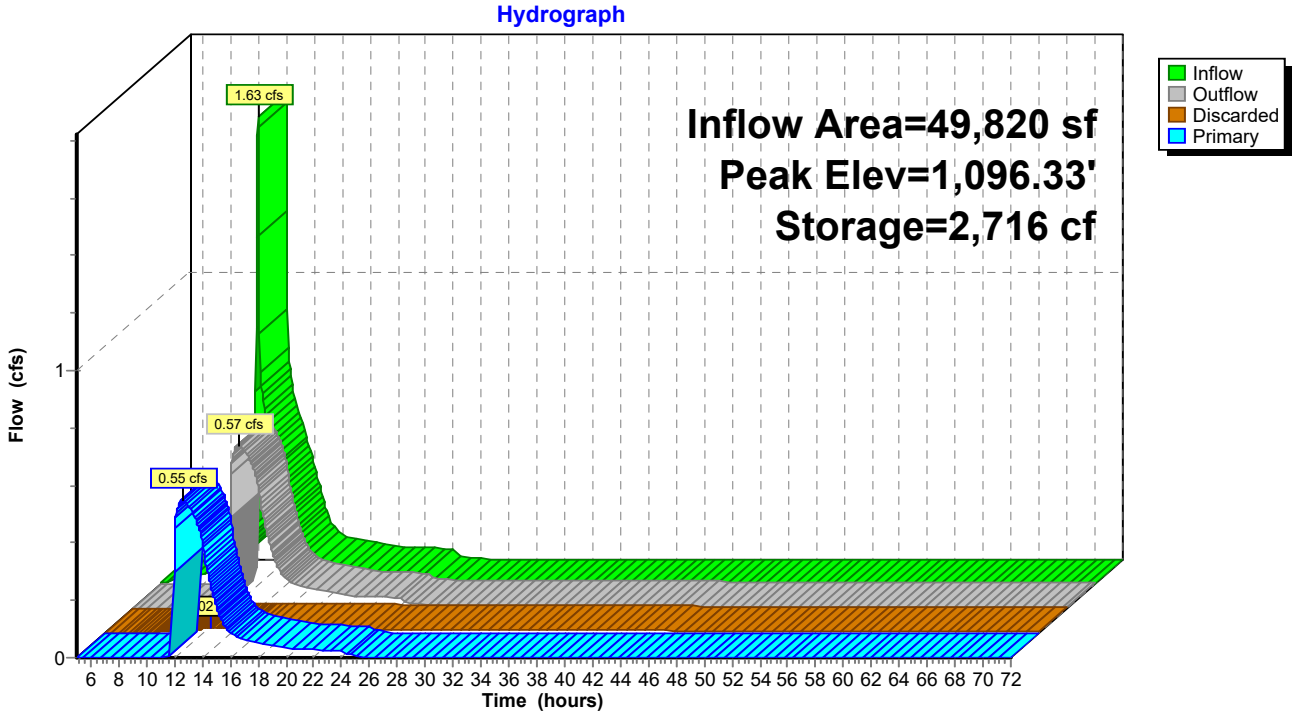
Pond 1P: SCM-1 (Rain Garden)



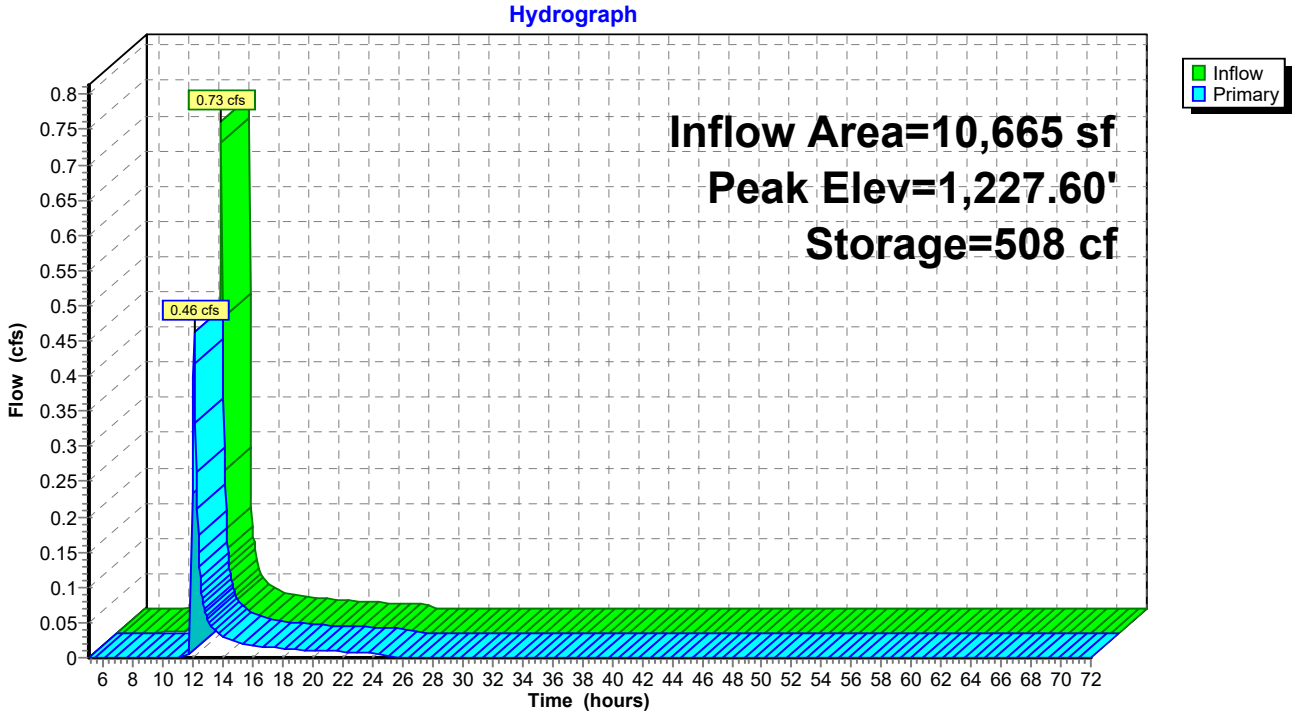
Pond 2P: SCM-2 (Detention Basin)



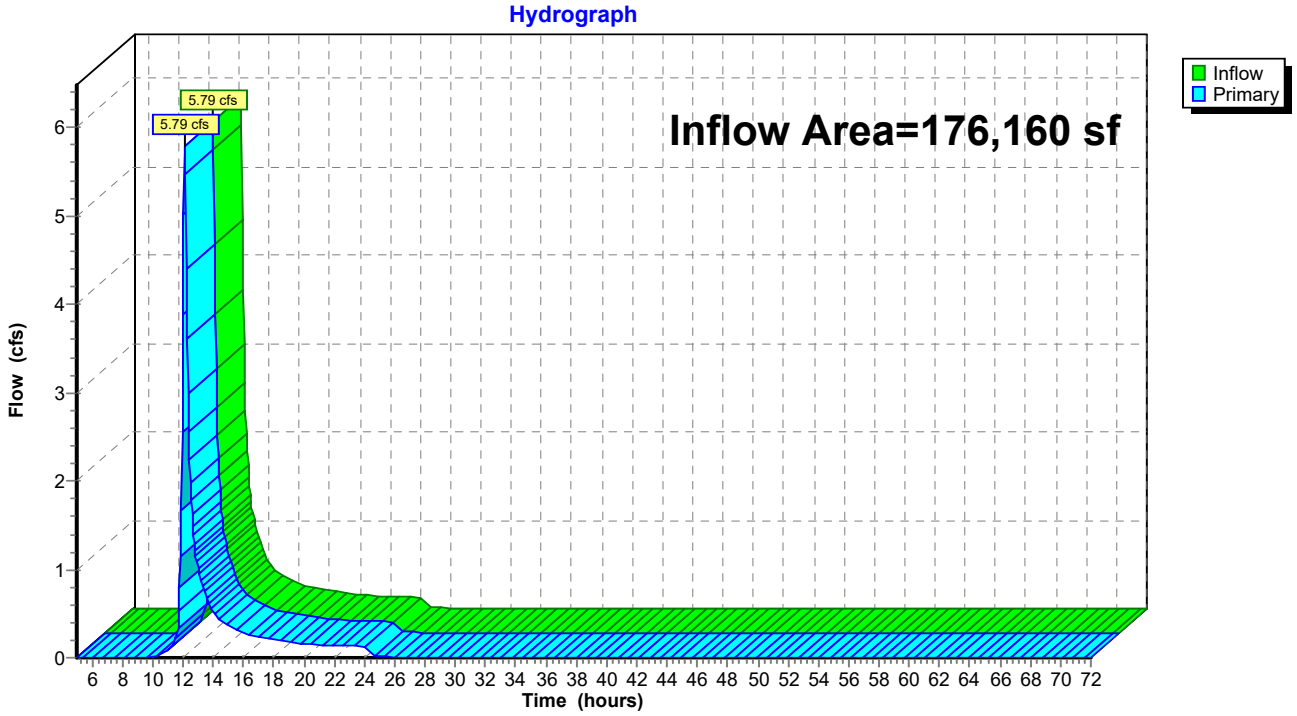
Pond 3P: SCM-3 (Rain Garden)



Pond 4P: SCM-4 (Rain Garden)



Link 1L: POA-1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Inflow
Primary
Flow (cfs)
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1
2
3
4
5
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Time (hours)
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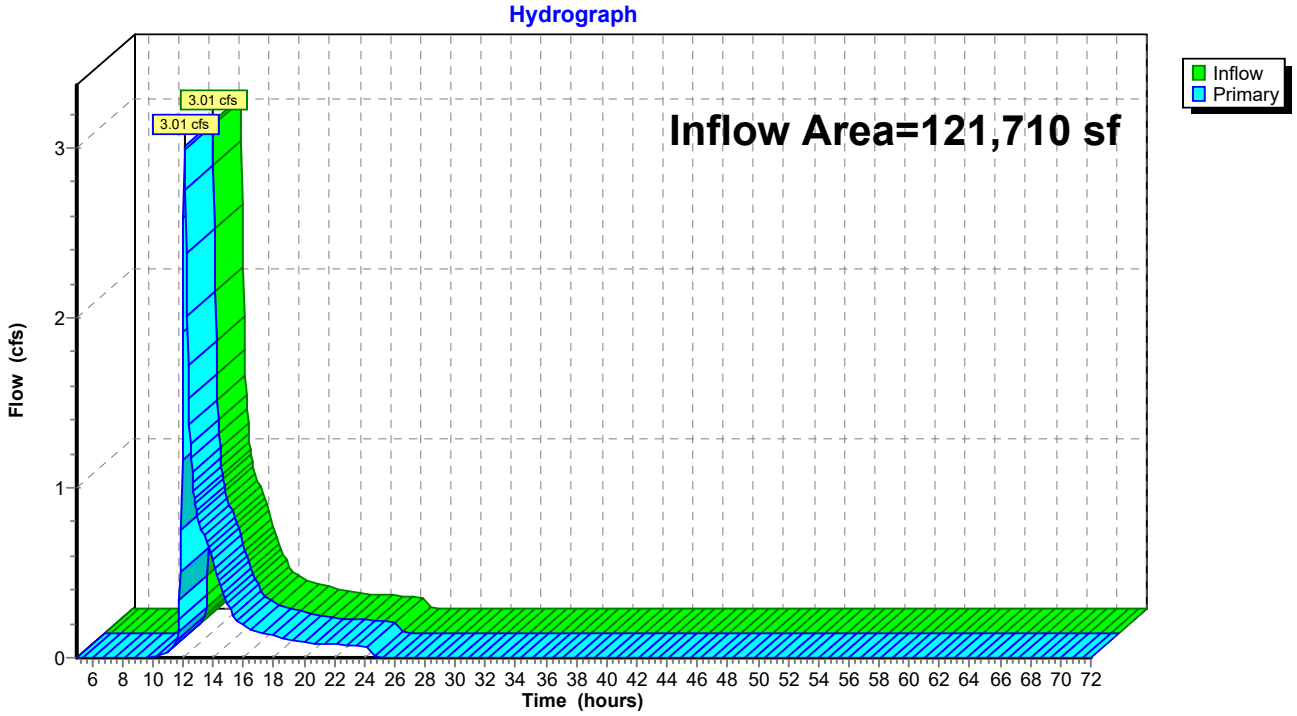
Link 2L: POA-2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Inflow
Primary
Flow (cfs)
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2
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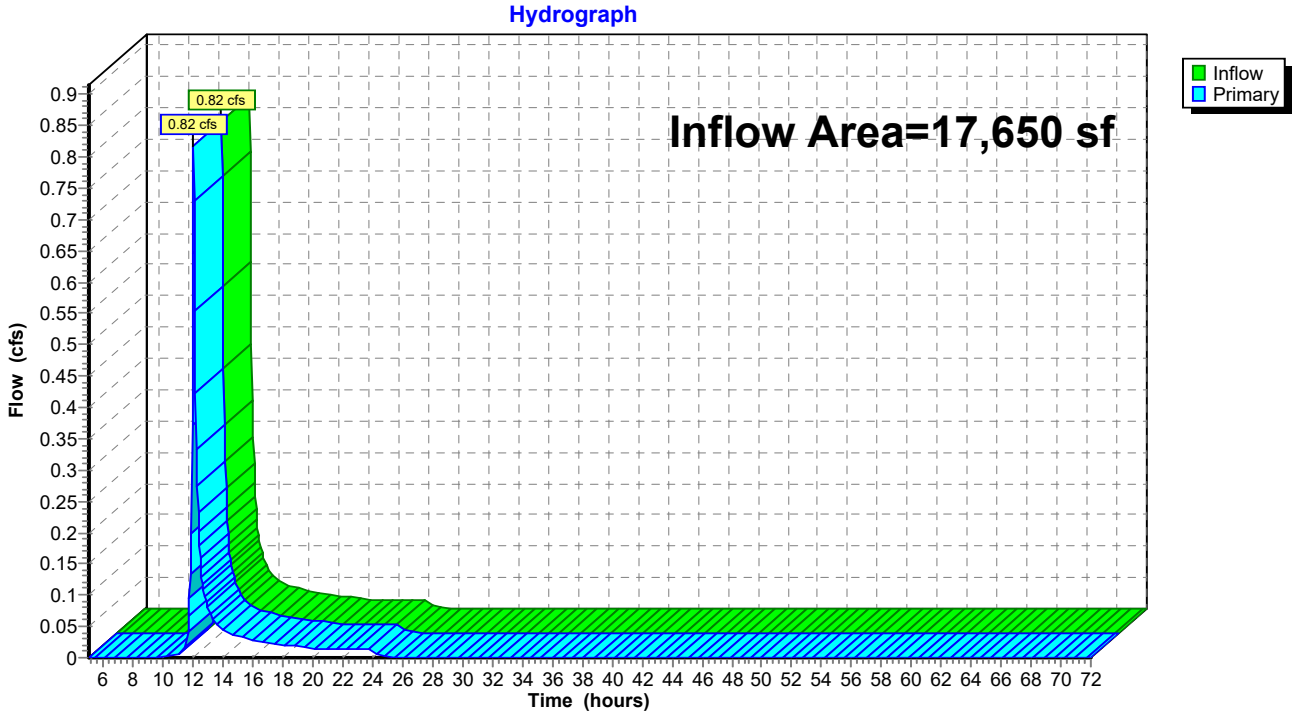
Time (hours)

Link 3L: POA-3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0.35
0.4
0.45
0.5
0.55
0.6
0.65
0.7
0.75
0.8
0.85
0.9
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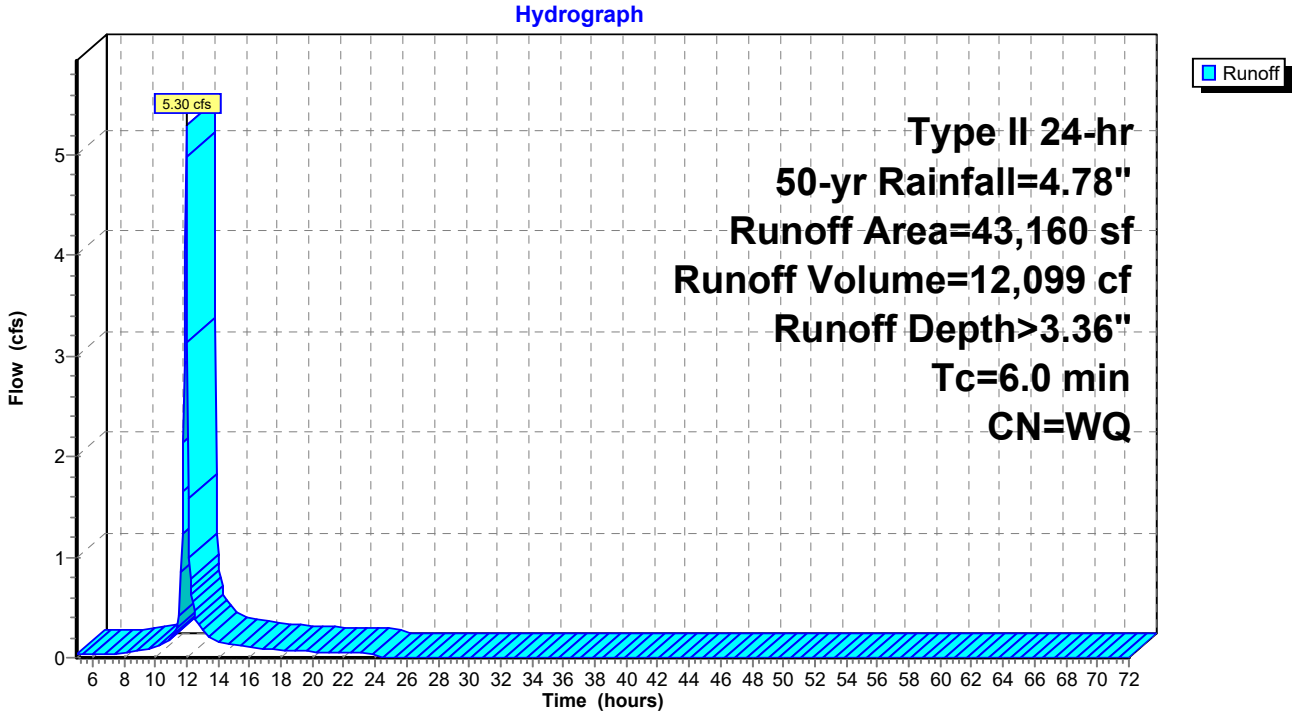
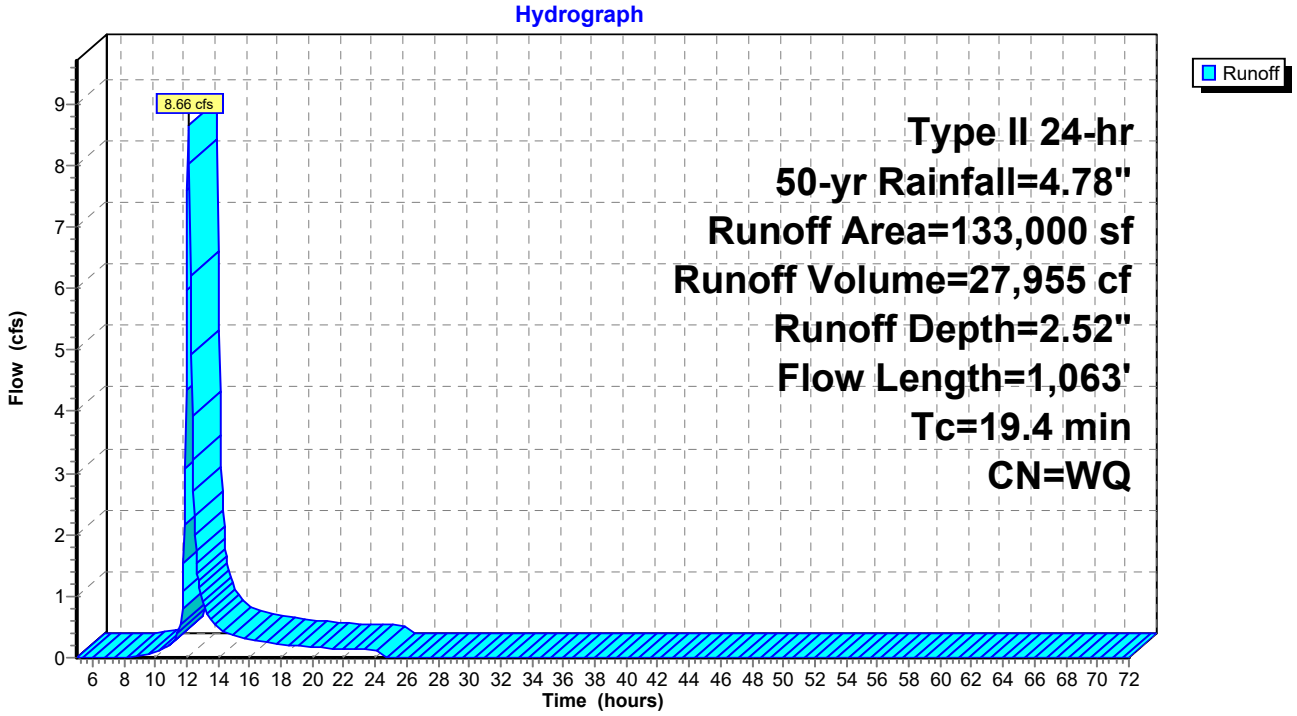
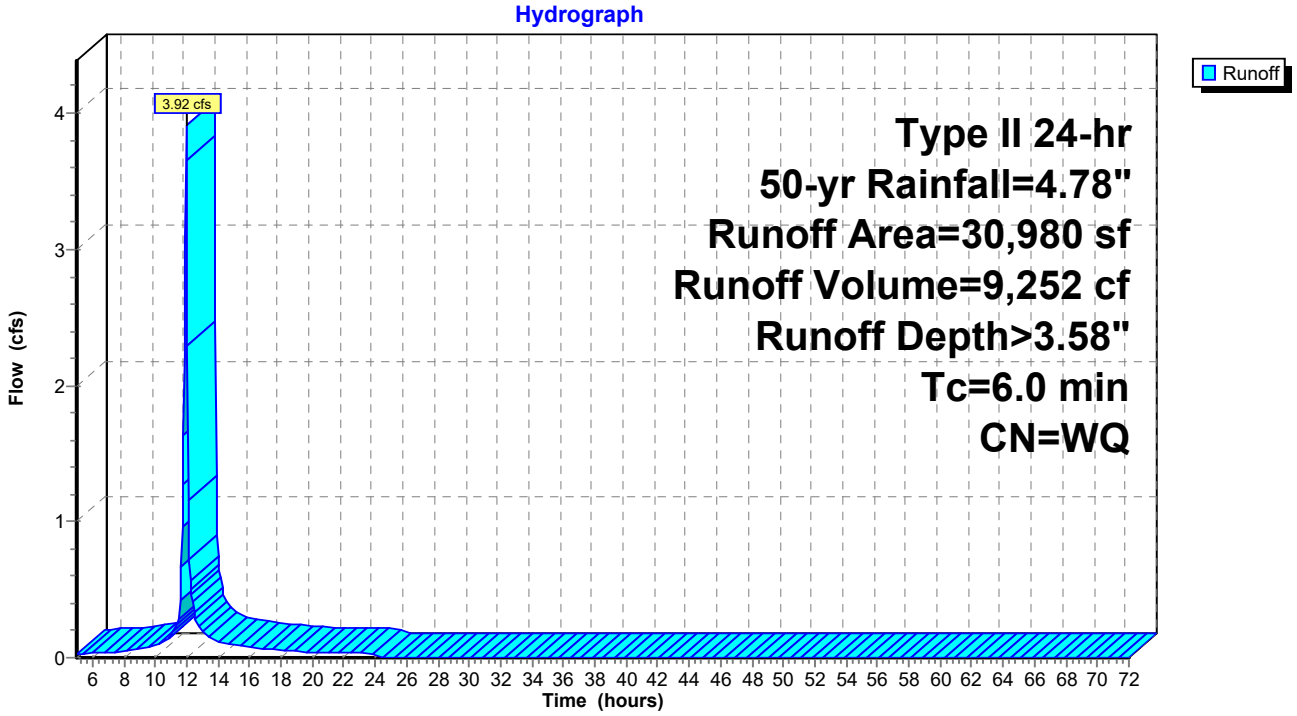
Subcatchment 4S: POA-1 Proposed (Detained)



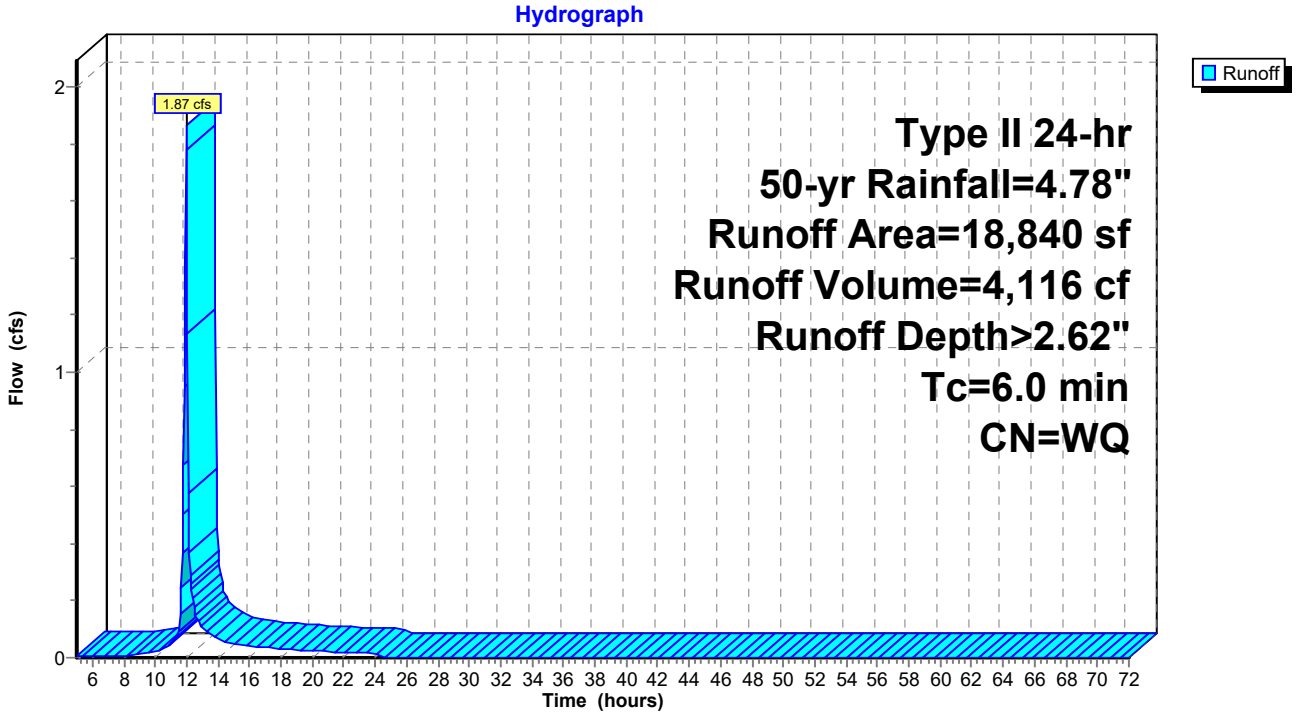
Subcatchment 5S: POA-1 Proposed (Undetained)



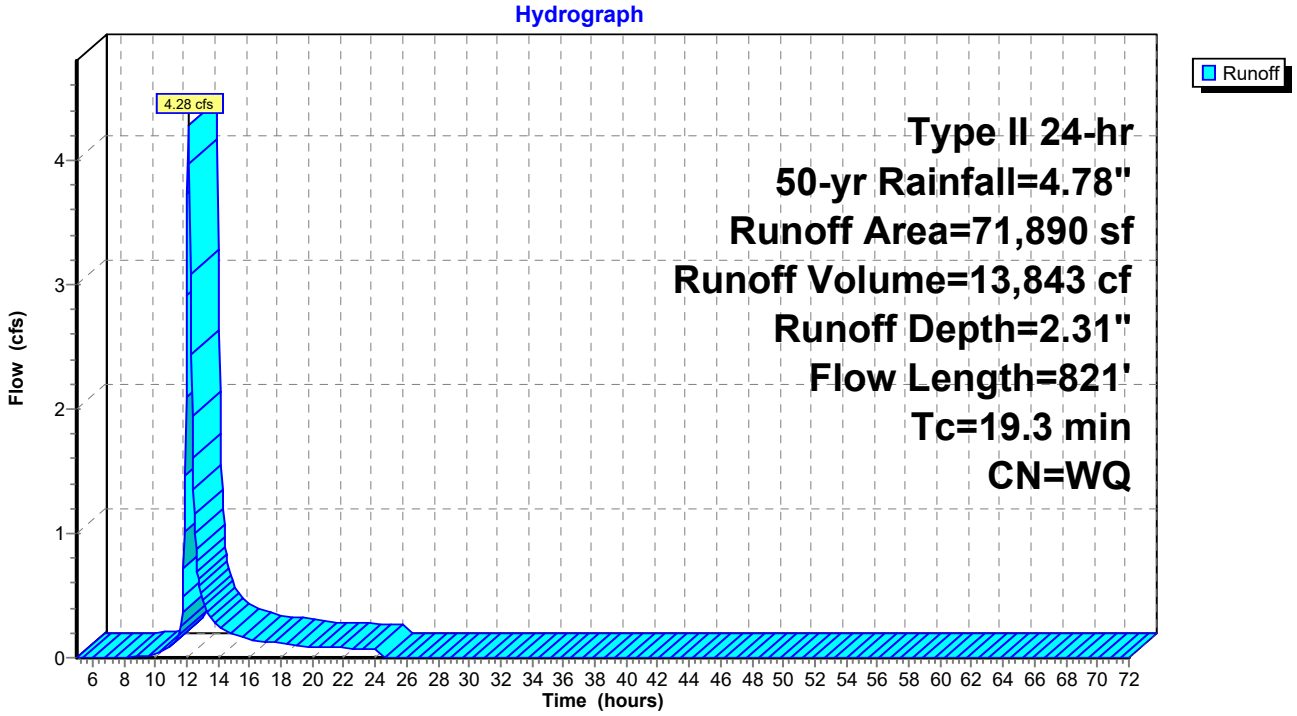
Subcatchment 6S: POI-2A Proposed (Detained)



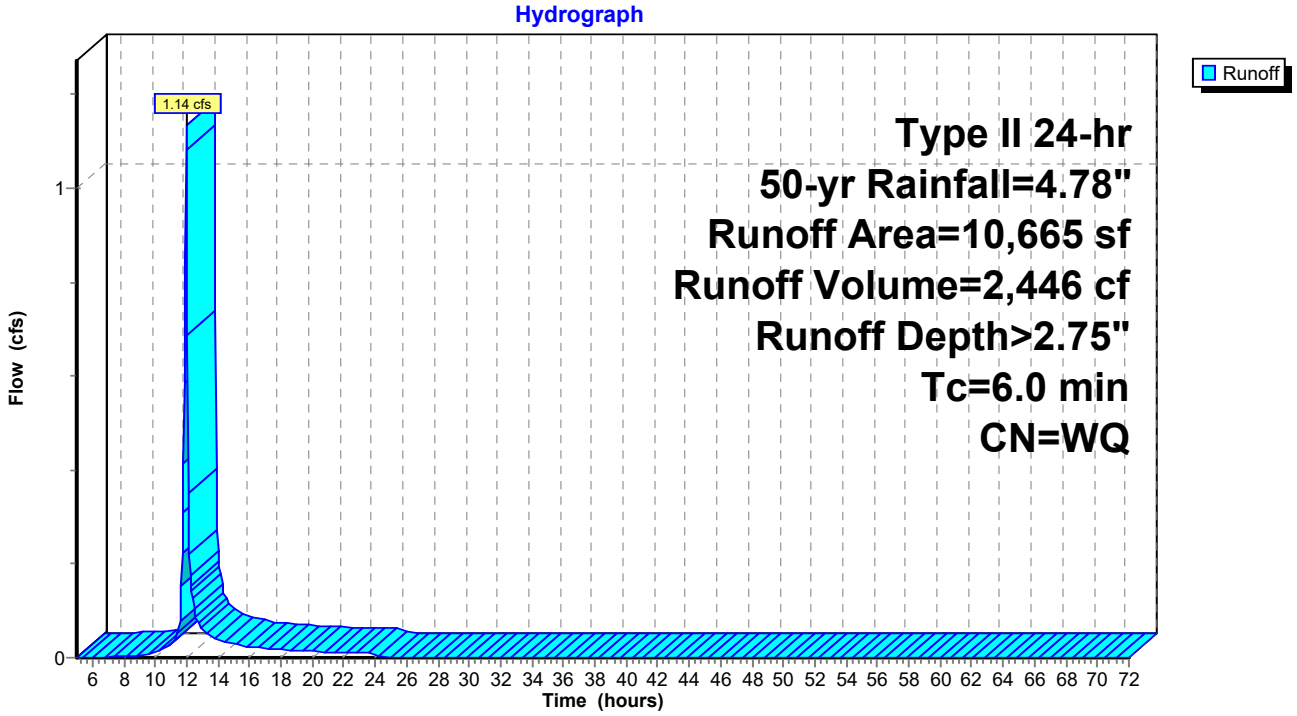
Subcatchment 7S: POI-2B Proposed (Detained)



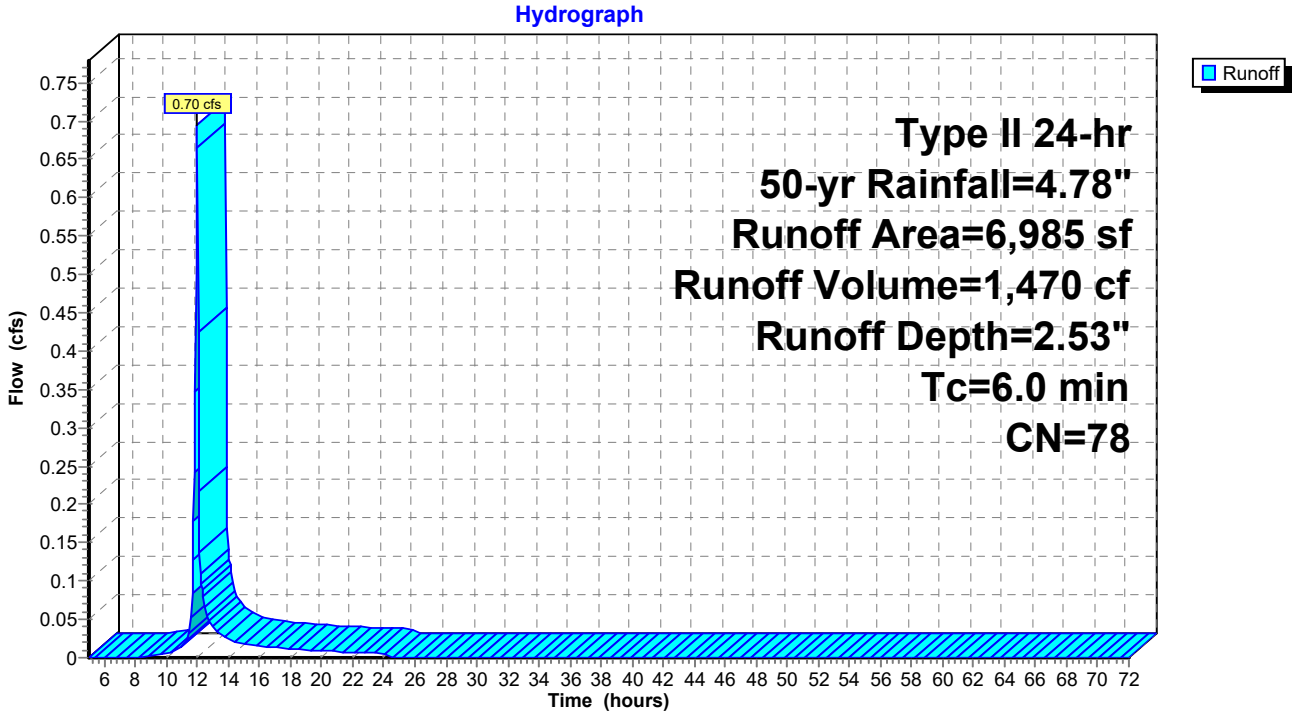
Subcatchment 8S: POI-2 Proposed (Undetained)



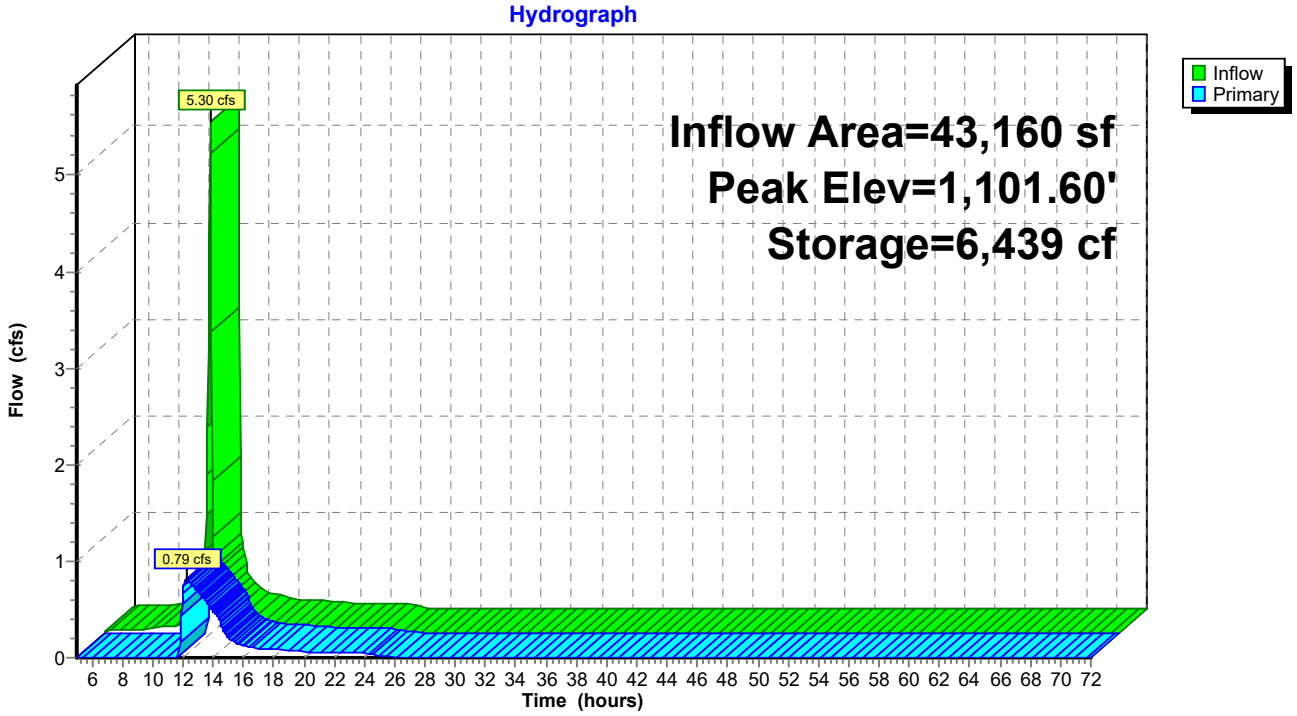
Subcatchment 9S: POA-3 Proposed (Detained)



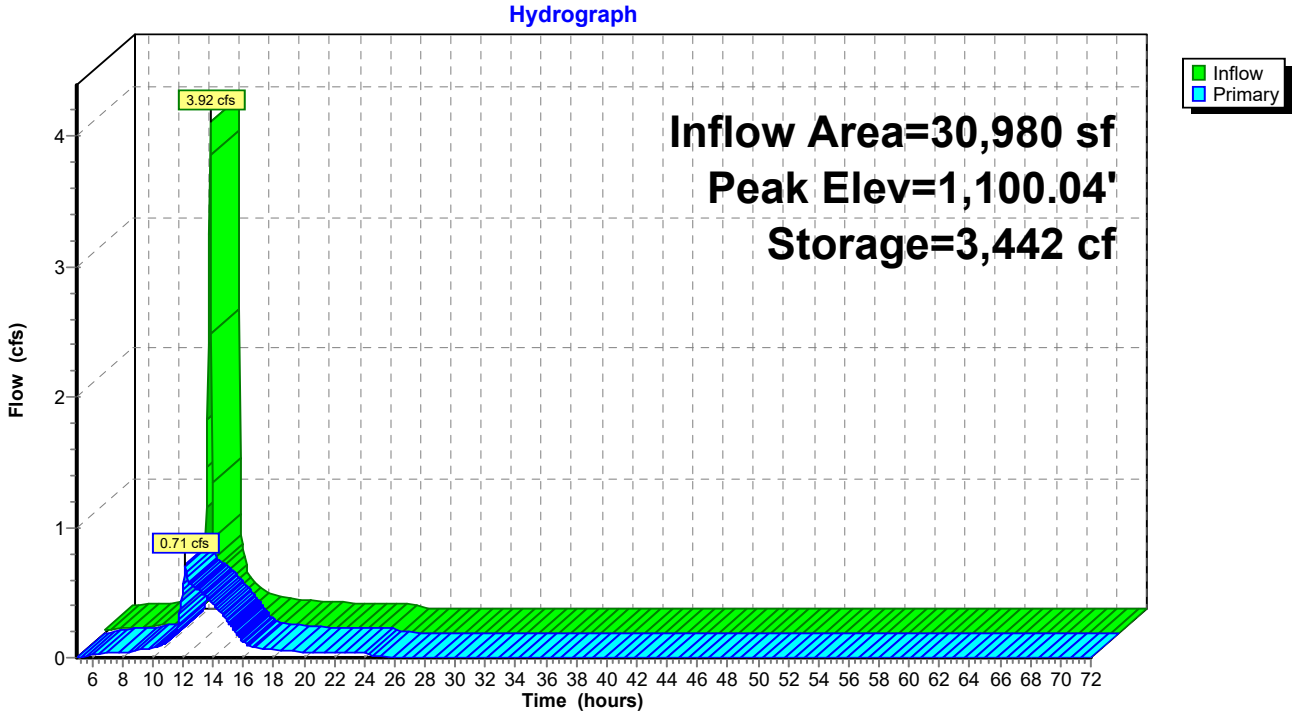
Subcatchment 10S: POA-3 Proposed (Undetained)



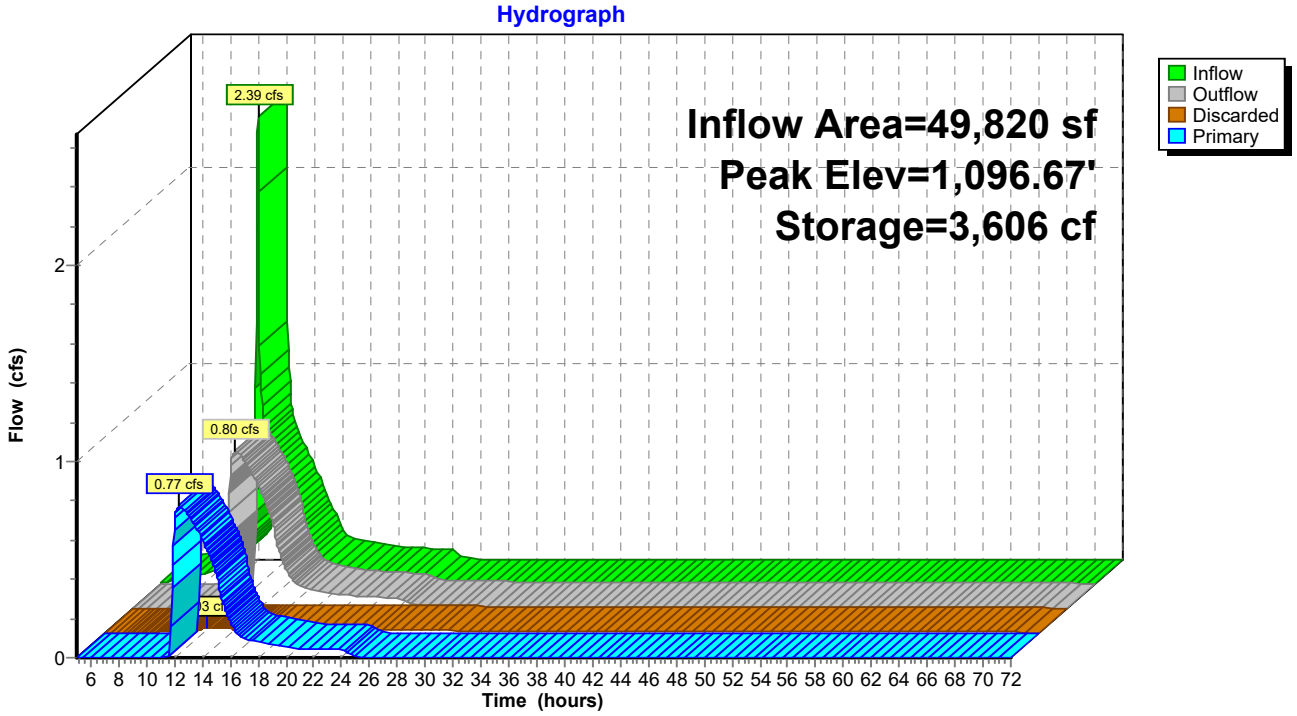
Pond 1P: SCM-1 (Rain Garden)



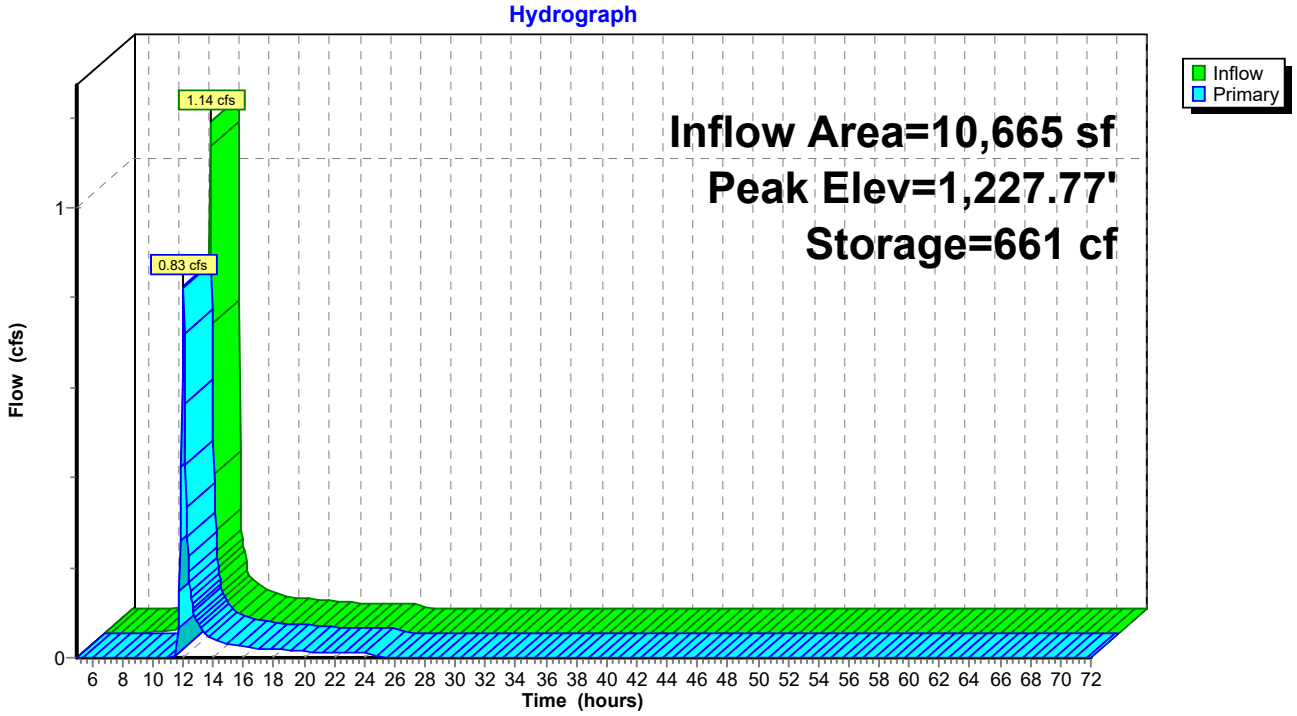
Pond 2P: SCM-2 (Detention Basin)



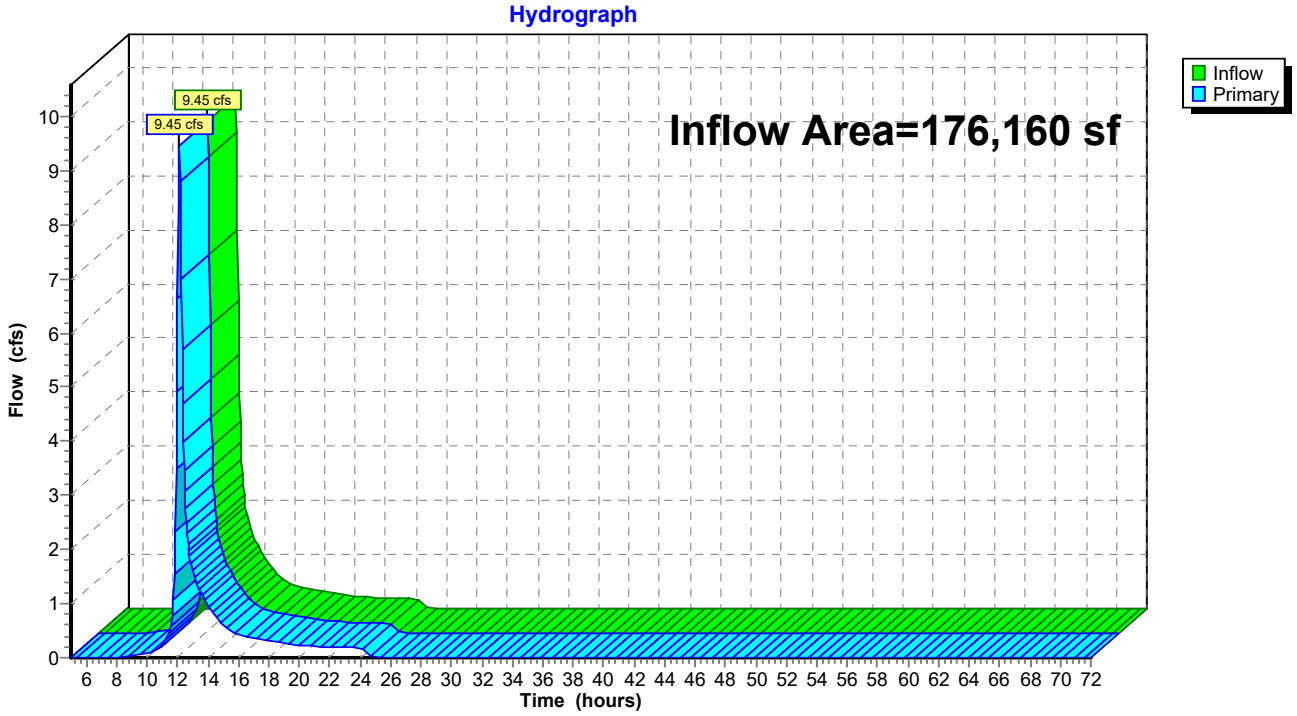
Pond 3P: SCM-3 (Rain Garden)



Pond 4P: SCM-4 (Rain Garden)



Link 1L: POA-1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9.45 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
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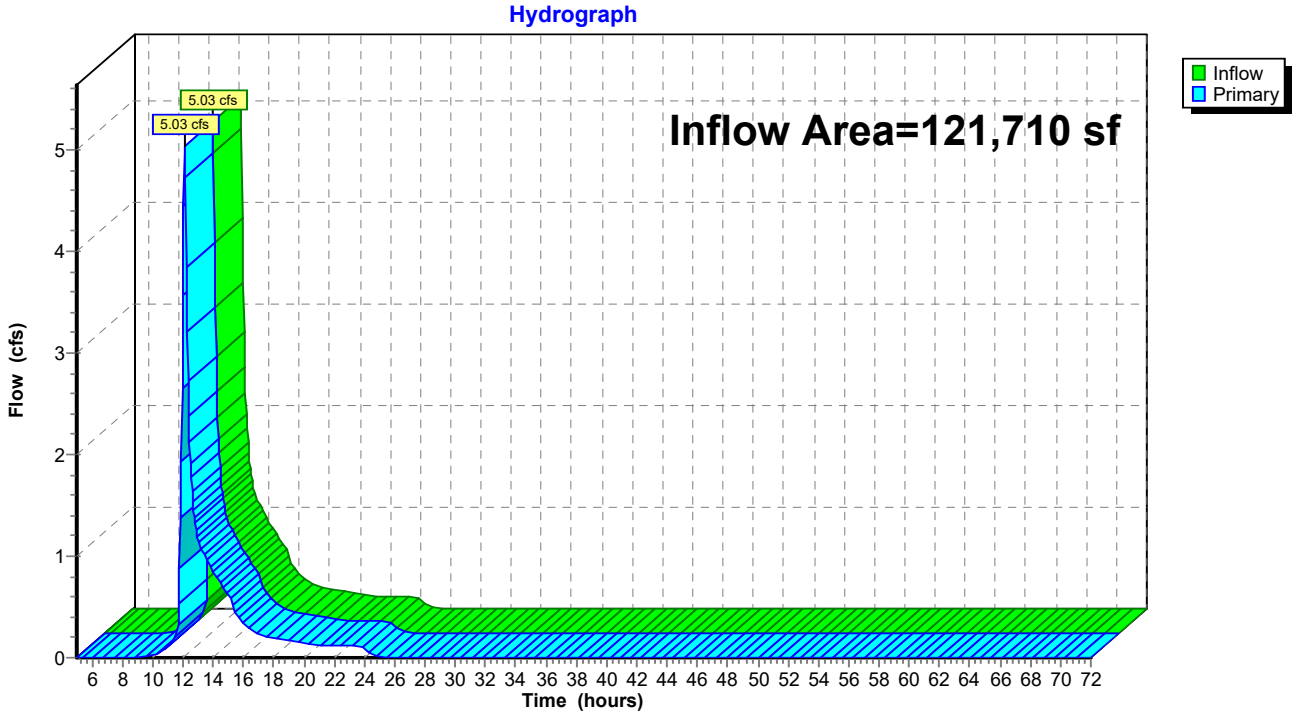
6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72

Link 2L: POA-2


Hydrograph
Inflow Area=121,710 sf
5.03 cfs
5.03 cfs
Inflow
Primary
Flow (cfs)
0
1
2
3
4
5
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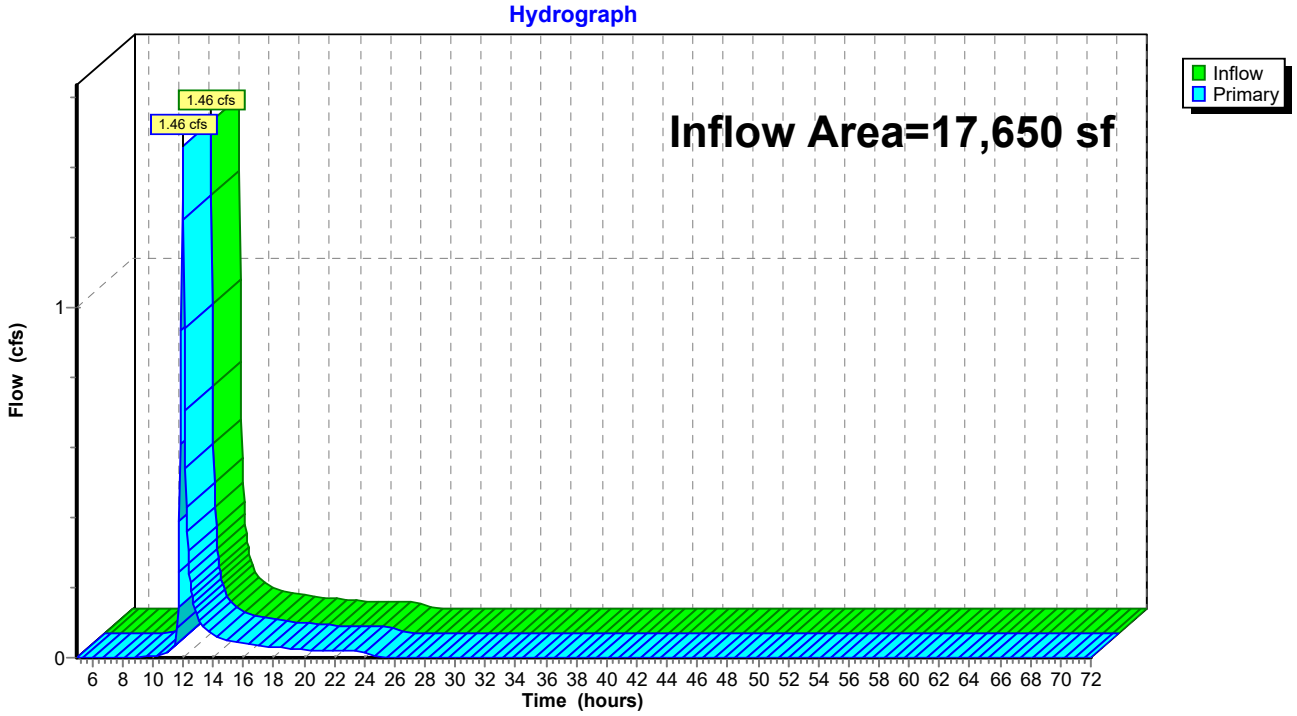
Time (hours)

Link 3L: POA-3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1.46 cfs
Inflow
Primary
Flow (cfs)
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1
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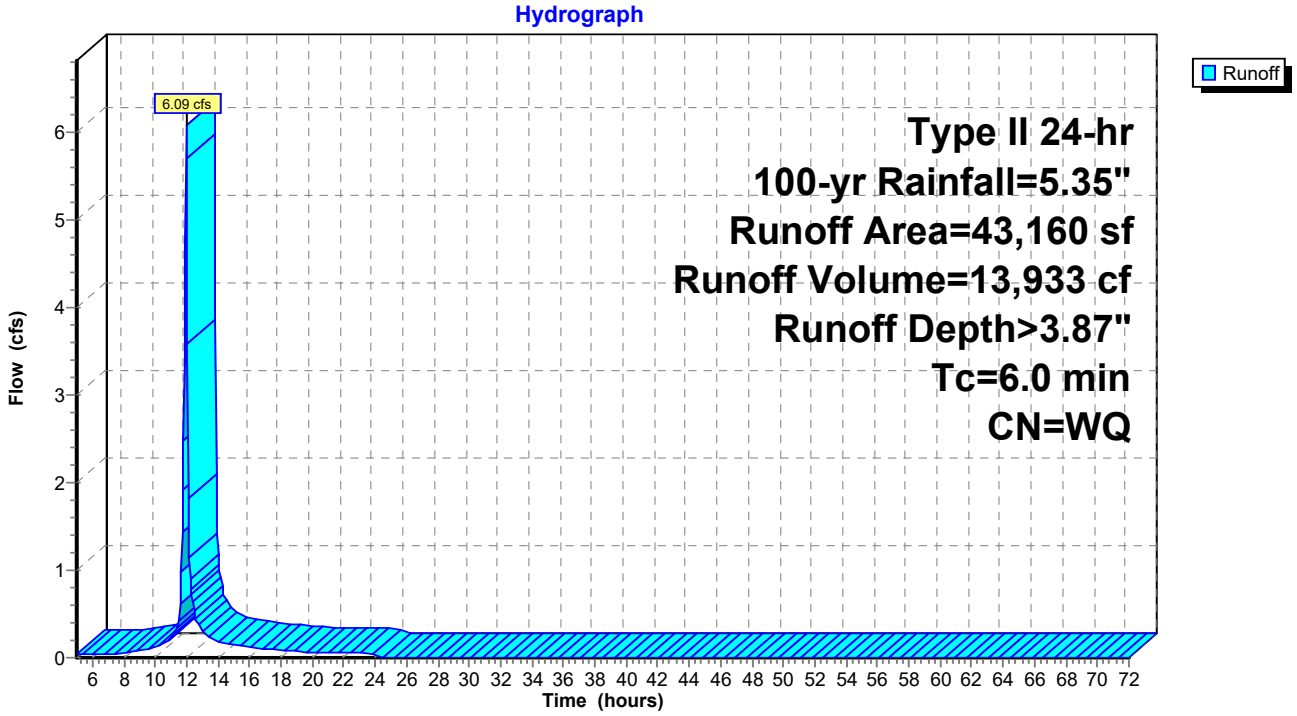
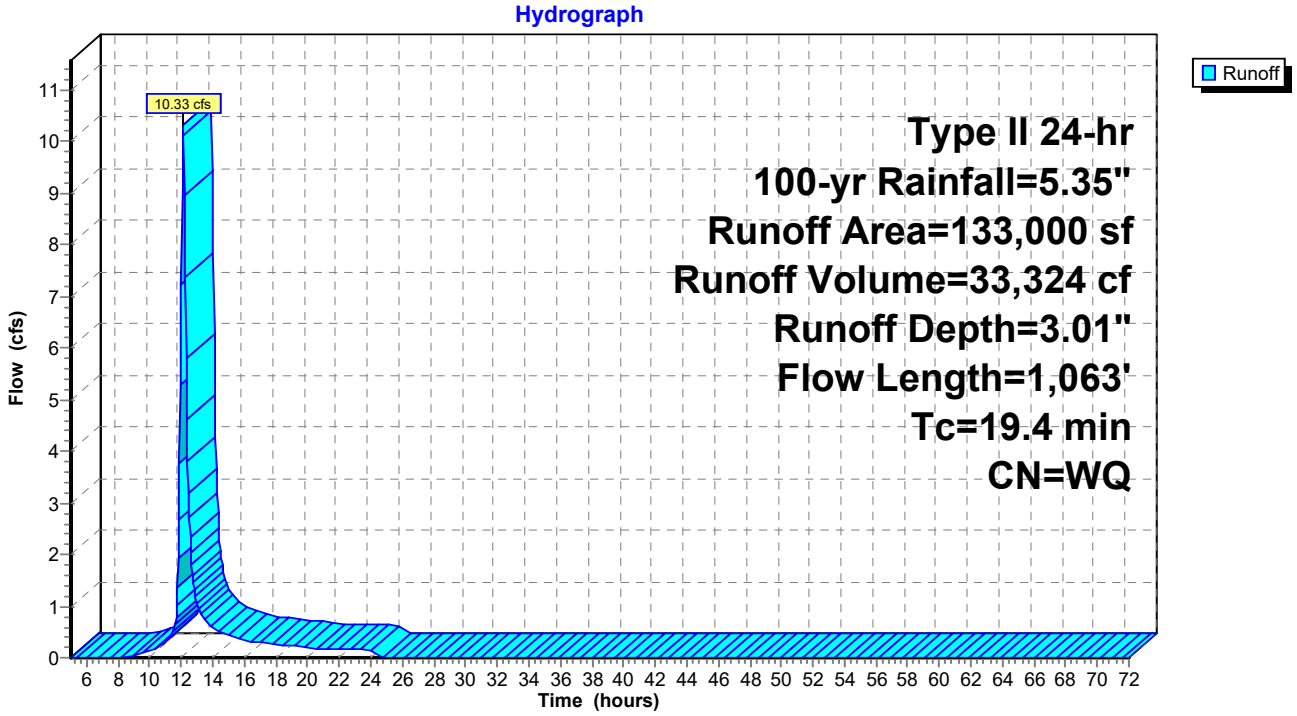
Time (hours)

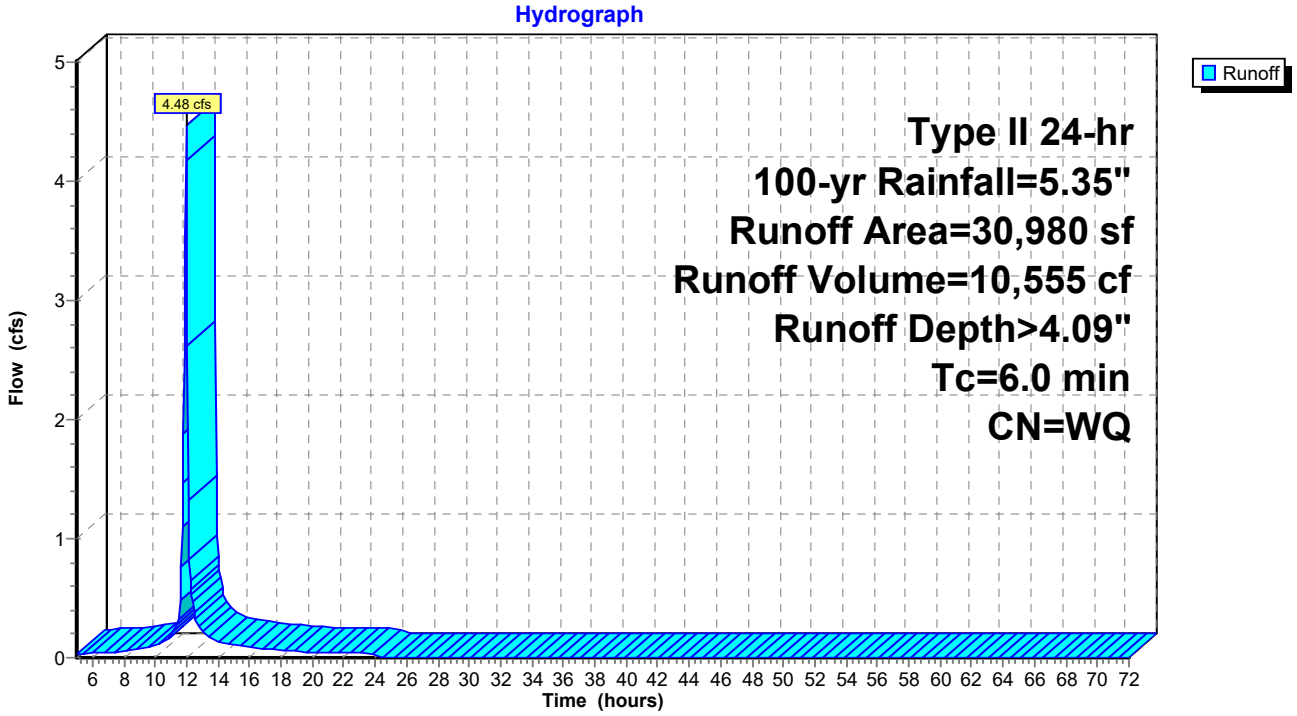
Subcatchment 4S: POA-1 Proposed (Detained)



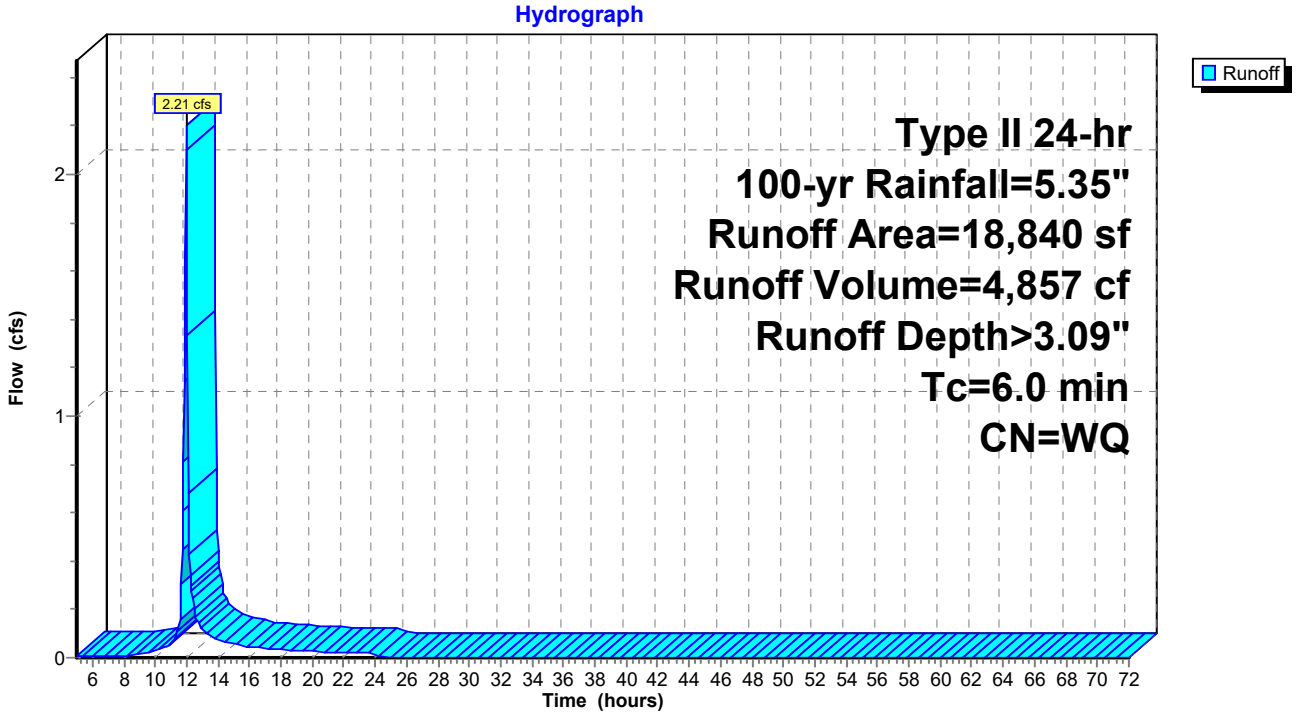
Subcatchment 5S: POA-1 Proposed (Undetained)



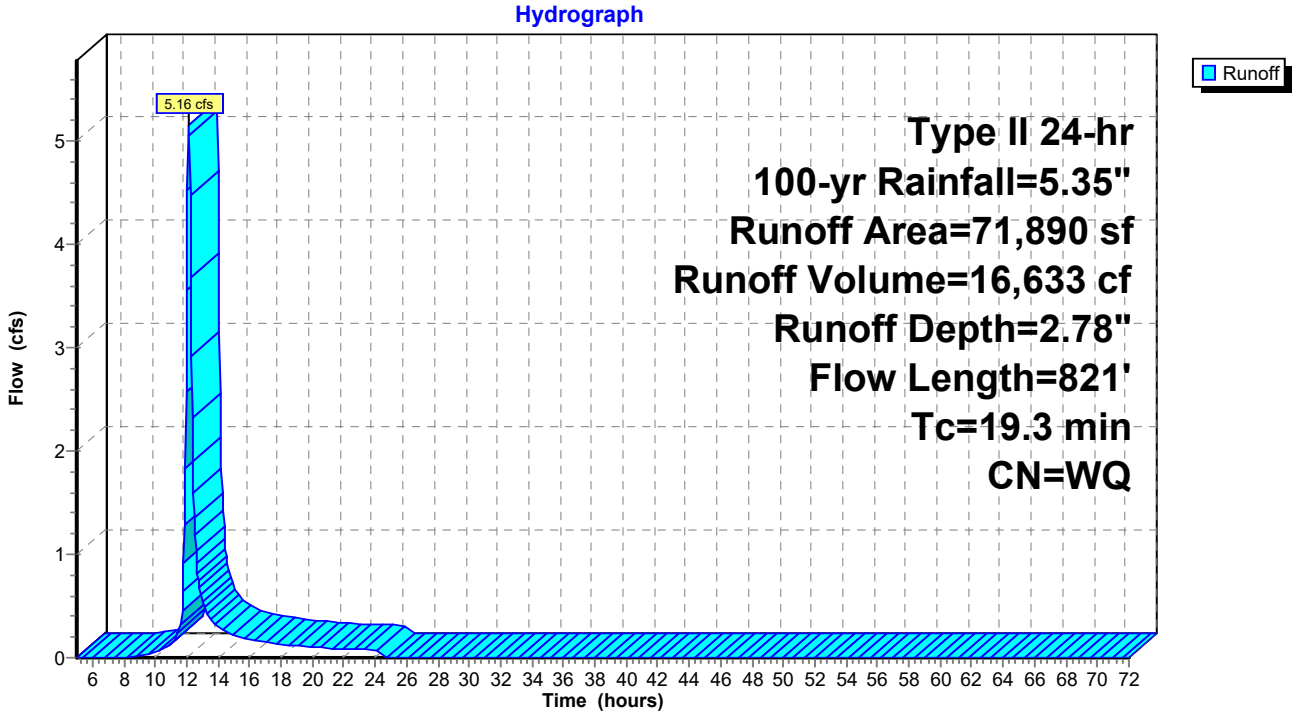
Subcatchment 6S: POI-2A Proposed (Detained)



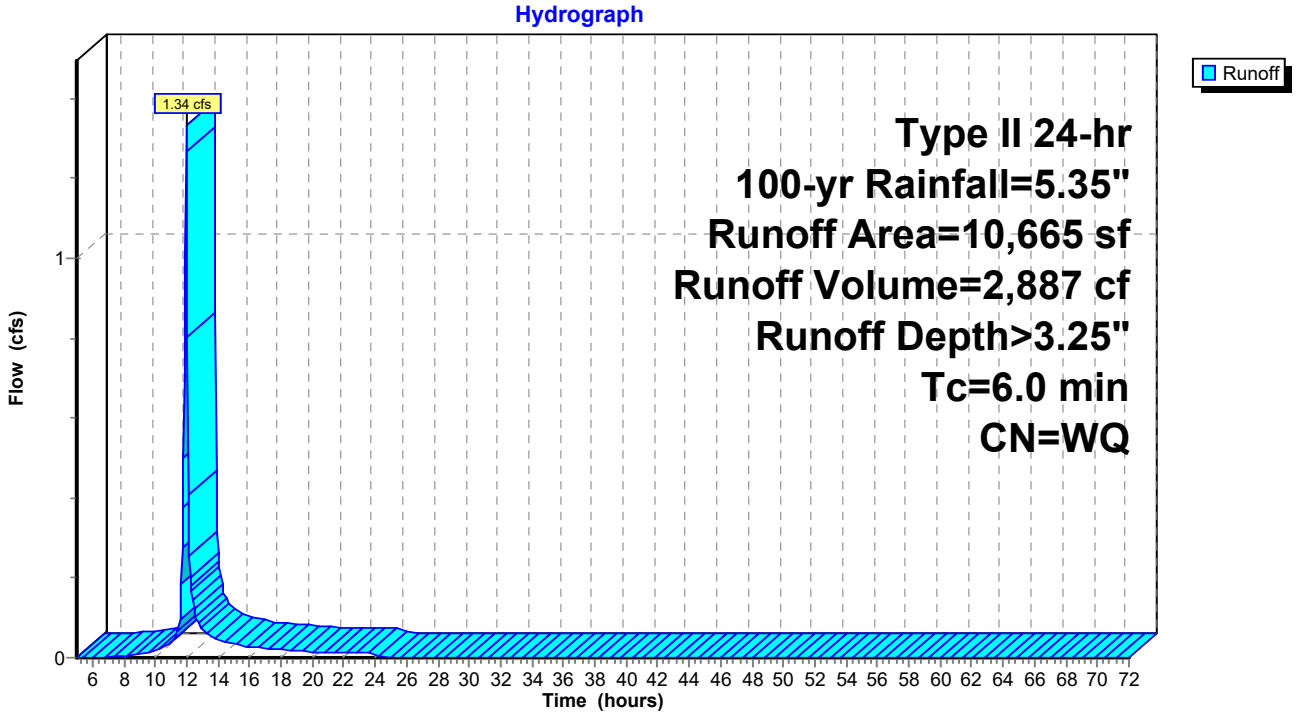
Subcatchment 7S: POI-2B Proposed (Detained)



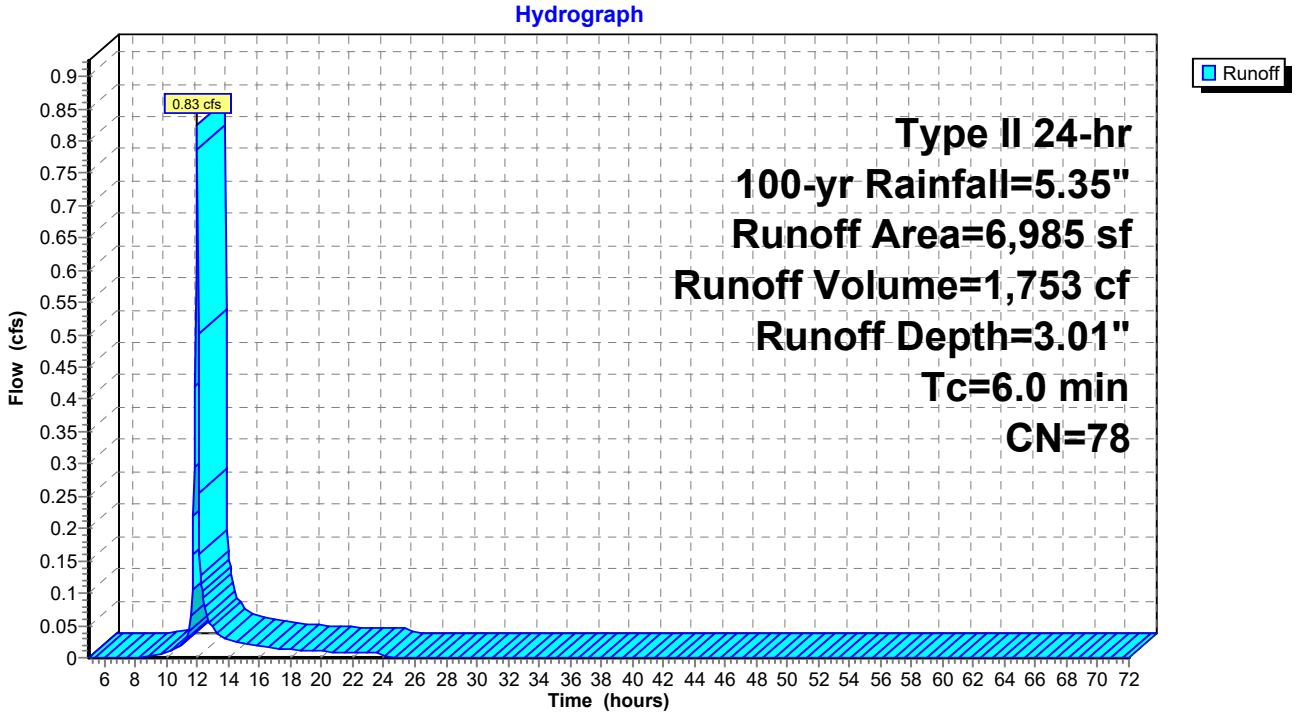
Subcatchment 8S: POI-2 Proposed (Undetained)



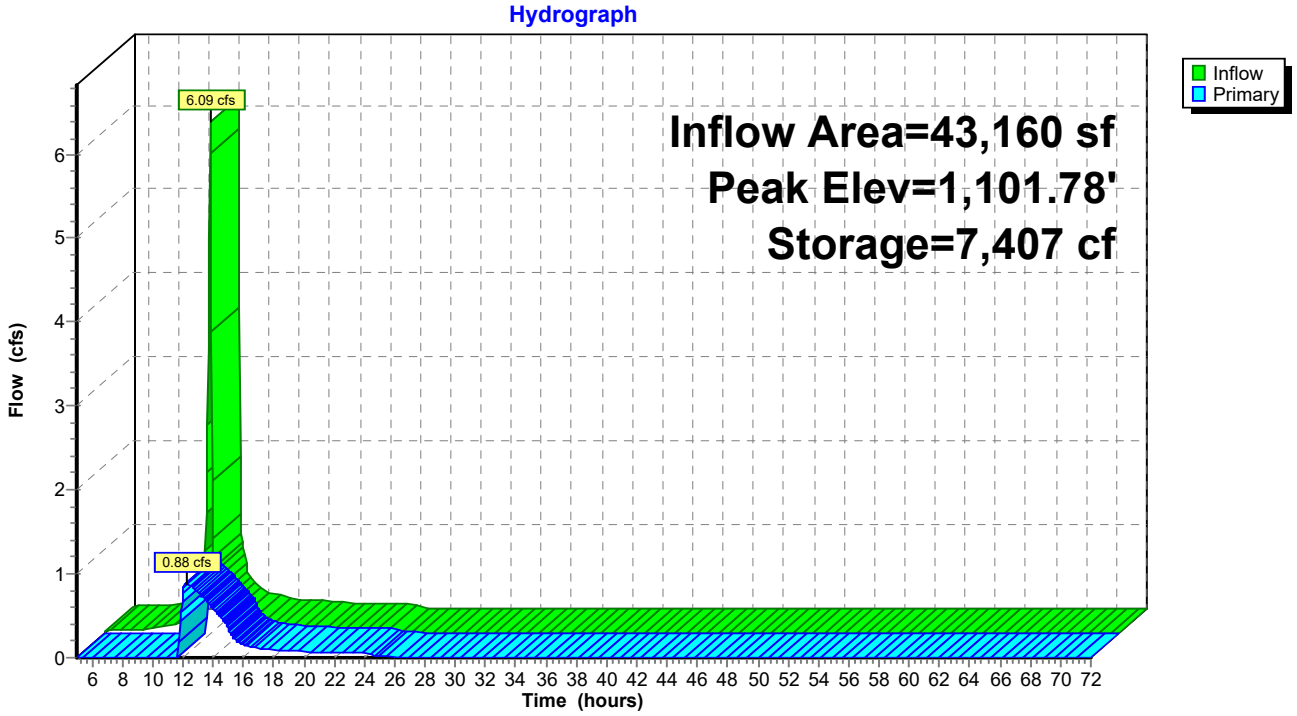
Subcatchment 9S: POA-3 Proposed (Detained)



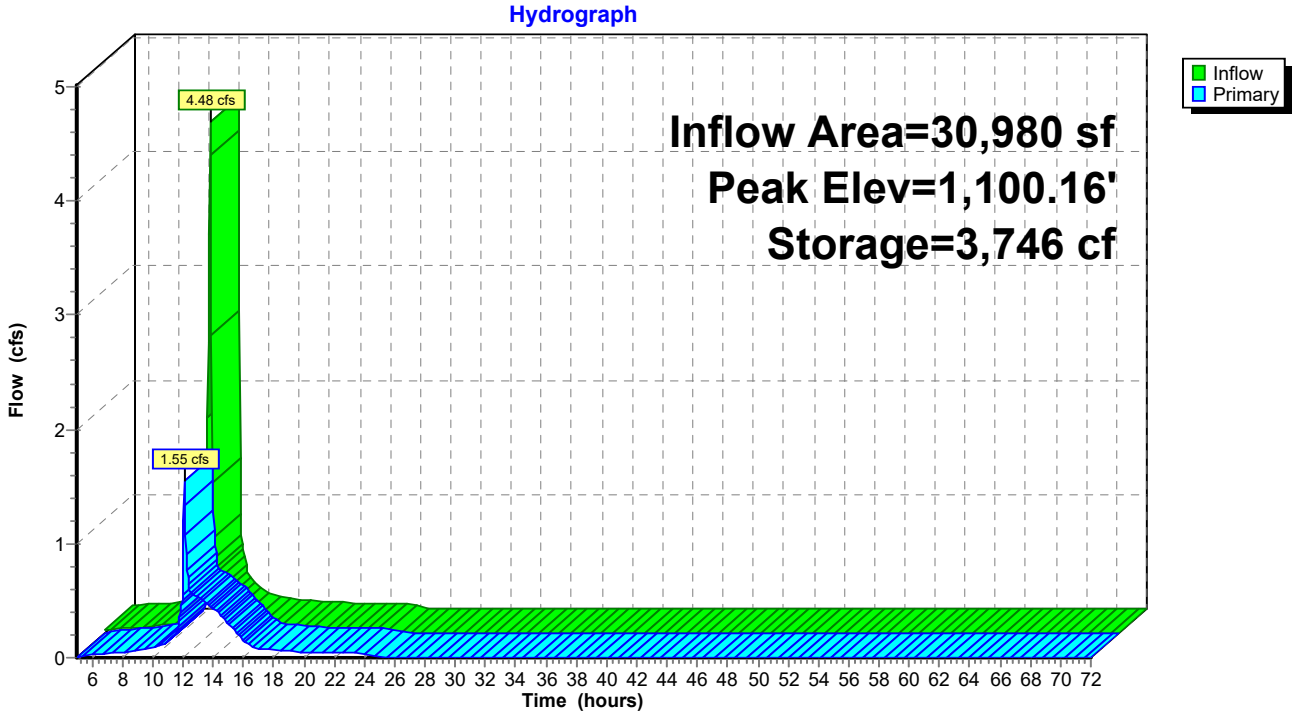
Subcatchment 10S: POA-3 Proposed (Undetained)



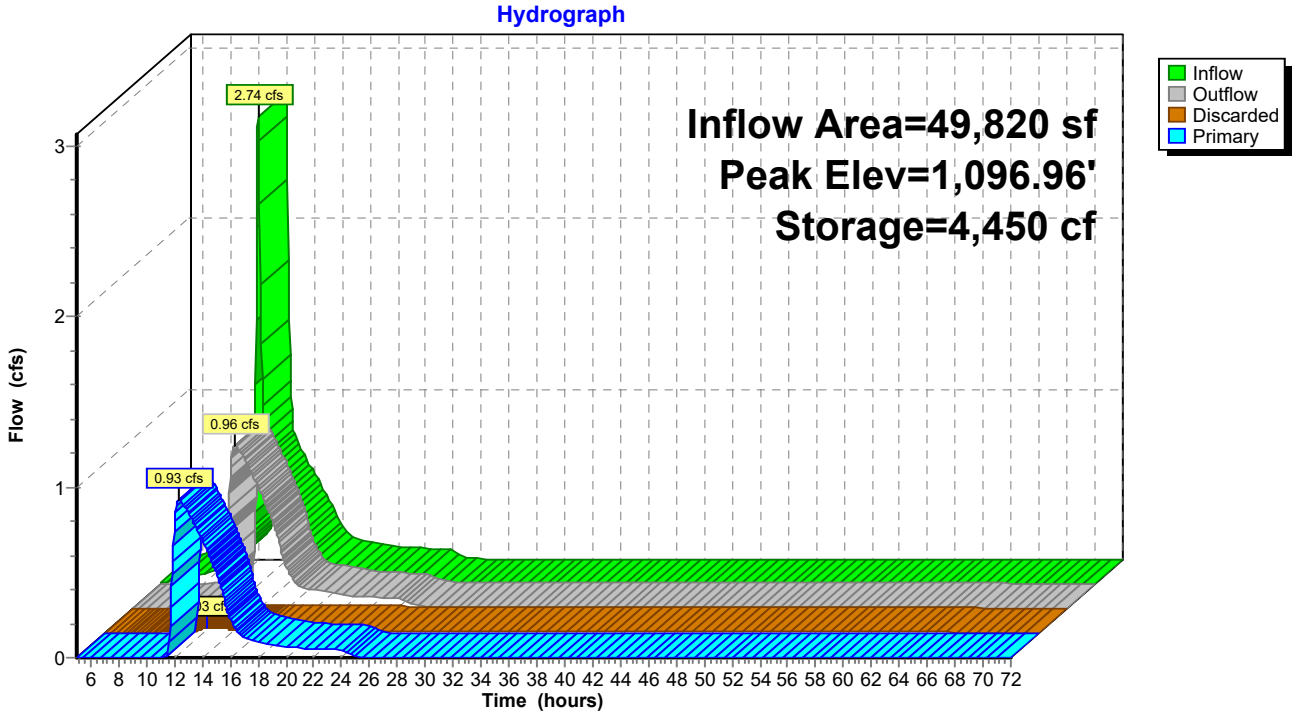
Pond 1P: SCM-1 (Rain Garden)



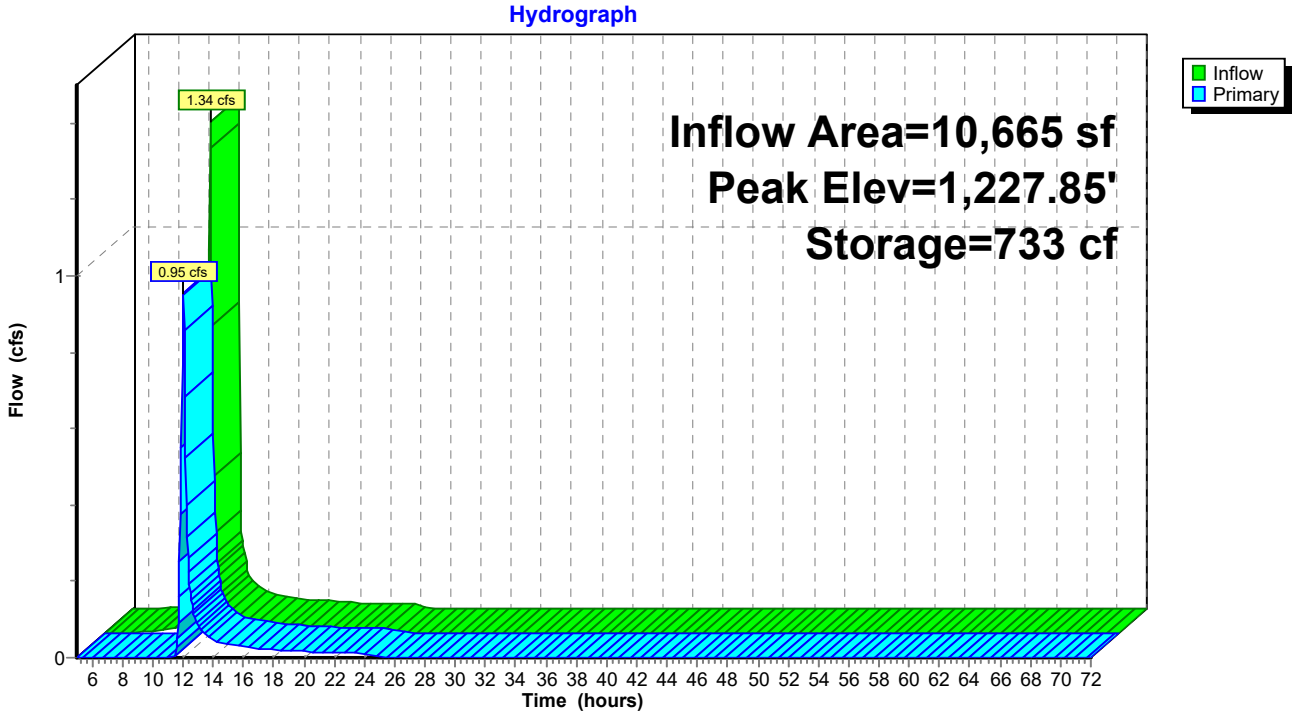
Pond 2P: SCM-2 (Detention Basin)



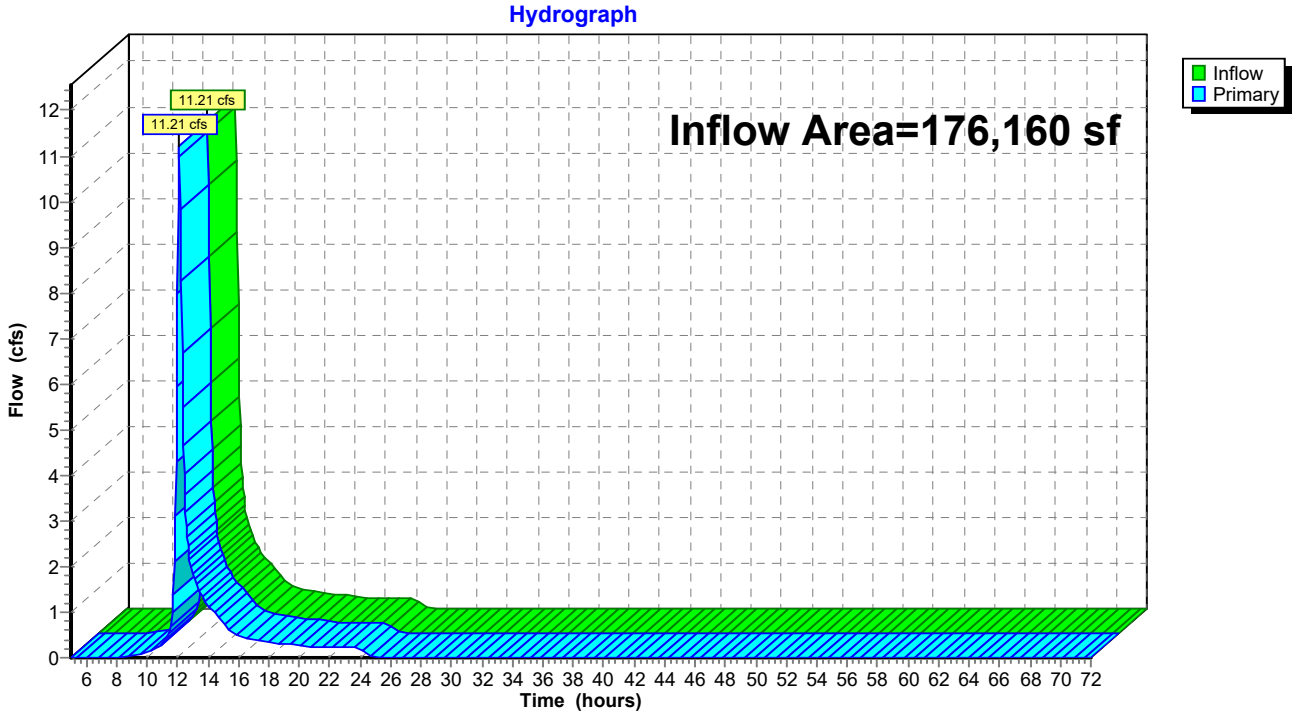
Pond 3P: SCM-3 (Rain Garden)



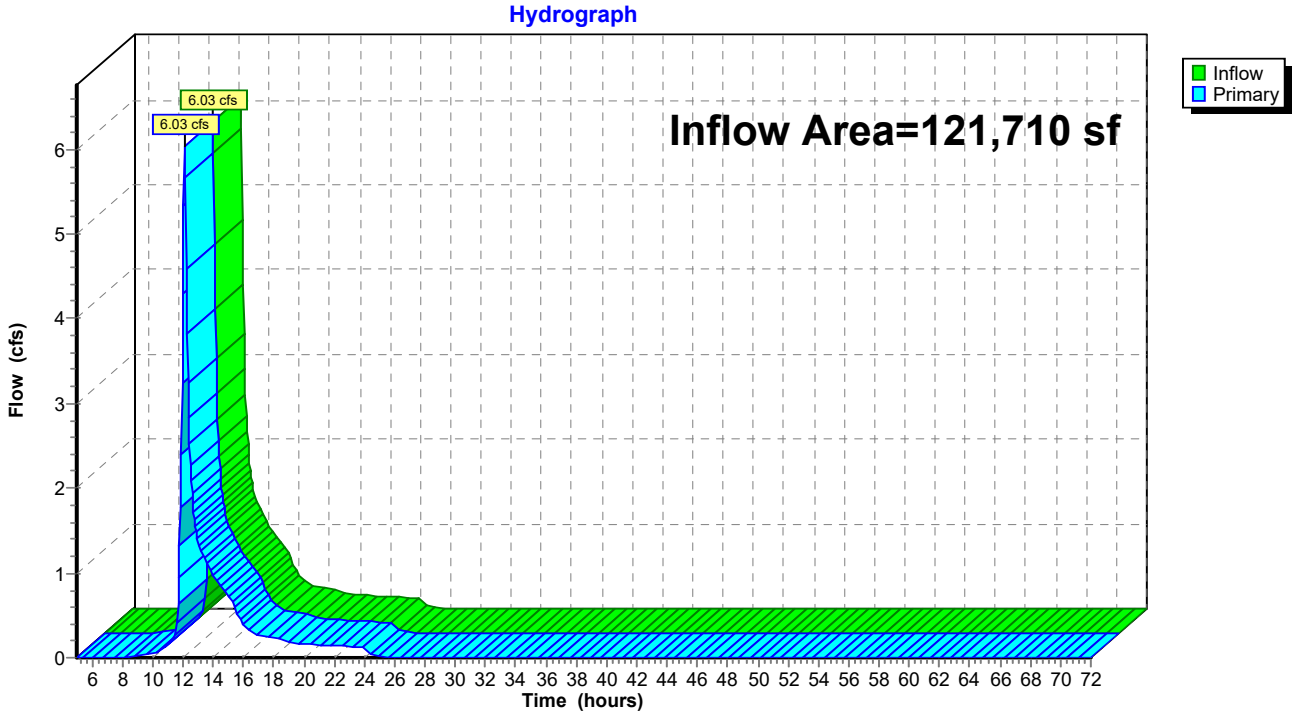
Pond 4P: SCM-4 (Rain Garden)



Link 1L: POA-1


Hydrograph
Inflow Area=176,160 sf
11.21 cfs
11.21 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12
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

Link 2L: POA-2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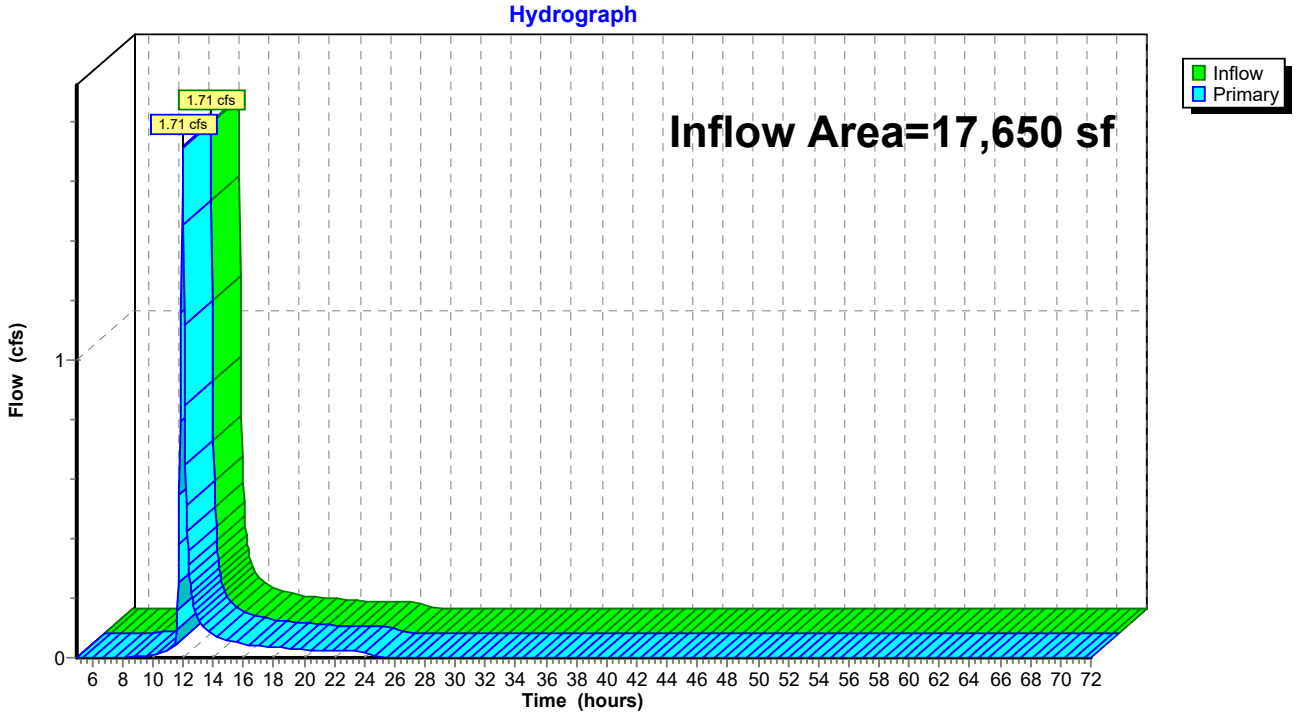
Inflow Area=121,710 sf
6.03 cfs
6.03 cfs
Inflow
Primary
Flow (cfs)
0
1
2
3
4
5
6
6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Link 3L: POA-3


Hydrograph
Inflow Area=17,650 sf
1.71 cfs
1.71 cfs
Inflow
Primary
Flow (cfs)
0
1
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)

APPENDIX D

STORMWATER CONVEYANCE FEATURE CALCULATIONS

CHANNEL/DIVERSION BERM CALCULATIONS

Channel Calculations - Runoff Coefficient

Project: HCPP Pipeline

CEC Project #: 354-010

Prepared By: SCT Checked By: CRK

Date: 8/25/2025 Date: 9/22/2025

Channel	Runoff Coefficient			Total Area	Weighted Runoff Coefficient
	Meadow Area	Gravel	Forest		
	0.36	0.8	0.2		
CFS Diversion Channel No. 1	2.24	0.12	0.00	2.36	0.38
CFS Diversion Channel No. 2	2.96	0.05	0.00	3.01	0.37
Permanent Channel No. 1	0.14	0.04	0.00	0.18	0.46
Permanent Channel No. 2	0.13	0.00	0.00	0.13	0.36

* Runoff Coefficients obtained from PADEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM Manual dated March 2012.

Channel Calculations - Flow/Capacity

Project: HCPP Pipeline
CEC Project #: 354-010
Prepared By: SCT Checked By: CRK
Date: 8/25/2025 Date: 9/22/2025

																		UNVEGETATIVE STATE						
																		Manning's 'n'		Shear Stress[4]		Velocity[4]		
Diversion Berm/Channel	Drainage Area (AC)	Temporary(T)* or Permanent (P)**	Storm Duration/Time of Concentration (min)	Design Storm	Intensity (in/hr)	Runoff Coefficient	Flow, Q=CiA (cfs)	Min. Slope (%)	Max. Slope (%)	Bottom Width (FT)	Left Side Slope, x (X:1)	Right Side Slope, x (X:1)	Channel Depth (FT)	Normal Depth - Min. Slope (FT)	Freeboard (FT)[2]	Normal Depth- Max. Slope (FT)	Bottom Width to Flow Depth Ratio[3]	For use with Min. Slope	For use with Max. Slope	Calculated (PSF)	Allowable (PSF)	Calculated (FPS)	Allowable (FPS)	Channel Lining
CFS Diversion Channel No. 1	2.36	T	18.0	2-Year	2.69	0.38	2.43	2.5	15.0	1.0	1.0	7.0	1.21	0.51	0.70	0.26	3.8	0.040	0.028	2.11	2.3	5.64	N/A[1]	NAG S200
CFS Diversion Channel No. 2	3.01	T	13.0	2-Year	3.14	0.37	3.47	10.0	16.0	1.0	8.0	1.0	1.21	0.35	0.86	0.29	3.4	0.034	0.031	2.68	3.0	5.85	N/A[1]	NAG SC250
Permanent Channel No. 1	0.18	T	5.0	10-Year	6.22	0.46	0.51	5.5	13.5	1.0	2.0	2.0	1.00	0.17	0.83	0.12	8.3	0.039	0.033	1.00	2.3	3.48	N/A[1]	NAG S200
Permanent Channel No. 2	0.13	T	5.0	10-Year	6.22	0.36	0.29	10.0	13.5	1.0	2.0	2.0	1.00	0.10	0.90	0.09	11.1	0.037	0.035	0.75	2.3	2.76	N/A[1]	NAG S200

[1] North American Green channel lining performance is evaluated soley on the basis of shear stress. Therefore, maximum allowable velocities are not applicable in the lined, unvegetated state or in any state for TRM liners.

[2] Freeboard conservatively evaluated using normal depth minimum slope.

[3] Channel bottom width to flow depth ratio conservatively evaluated using normal depth maximum slope.

[4] Shear Stress and Velocity conservatively evaluated at maximum channel slope conditions.

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CHANNEL ANALYSIS

> > > CFS Diversion No.1 (Min.)

Name	CFS Diversion No.1 (Min.)
Discharge	2.43
Channel Slope	0.025
Channel Bottom Width	1
Left Side Slope	1
Right Side Slope	7
Low Flow Liner	
Retardence Class	C 6-12 in
Vegetation Type	Bunch Type
Vegetation Density	Good 65-79%
Soil Type	Silt Loam (SM)

S200

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S200 Unvegetated	Straight	2.43 cfs	2.26 ft/s	0.41 ft	0.04	2.3 lbs/ft2	0.64 lbs/ft2	3.62	STABLE	E
Underlying Substrate	Straight	2.43 cfs	2.26 ft/s	0.41 ft	0.04	1.68 lbs/ft2	0.38 lbs/ft2	4.49	STABLE	E
S200 Reinforced Vegetation	Straight	2.43 cfs	1.59 ft/s	0.51 ft	0.064	10 lbs/ft2	0.79 lbs/ft2	12.69	STABLE	E
Underlying Substrate	Straight	2.43 cfs	1.59 ft/s	0.51 ft	0.064	3.41 lbs/ft2	0.45 lbs/ft2	7.57	STABLE	E

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CHANNEL ANALYSIS

> > > CFS Diversion No. 1 (Max.)

Name	CFS Diversion No. 1 (Max.)
Discharge	2.43
Channel Slope	0.15
Channel Bottom Width	1
Left Side Slope	1
Right Side Slope	7
Low Flow Liner	
Retardence Class	C 6-12 in
Vegetation Type	Bunch Type
Vegetation Density	Good 65-79%
Soil Type	Silt Loam (SM)

S200

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S200 Unvegetated	Straight	2.43 cfs	5.64 ft/s	0.23 ft	0.028	2.3 lbs/ft2	2.11 lbs/ft2	1.09	STABLE	E
Underlying Substrate	Straight	2.43 cfs	5.64 ft/s	0.23 ft	0.028	1.68 lbs/ft2	1.38 lbs/ft2	1.22	STABLE	E
S200 Reinforced Vegetation	Straight	2.43 cfs	4.46 ft/s	0.26 ft	0.039	10 lbs/ft2	2.47 lbs/ft2	4.05	STABLE	E
Underlying Substrate	Straight	2.43 cfs	4.46 ft/s	0.26 ft	0.039	2.3 lbs/ft2	1.57 lbs/ft2	1.47	STABLE	E

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CHANNEL ANALYSIS

> > > CFS Diversion No. 2 (Min.)

Name	CFS Diversion No. 2 (Min.)
Discharge	3.47
Channel Slope	0.1
Channel Bottom Width	1
Left Side Slope	8
Right Side Slope	1
Low Flow Liner	
Retardence Class	C 6-12 in
Vegetation Type	Bunch Type
Vegetation Density	Good 65-79%
Soil Type	Silt Loam (SM)

SC250

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
SC250 Unvegetated	Straight	3.47 cfs	4.62 ft/s	0.31 ft	0.034	3 lbs/ft2	1.95 lbs/ft2	1.54	STABLE	E
Underlying Substrate	Straight	3.47 cfs	4.62 ft/s	0.31 ft	0.034	2.2 lbs/ft2	1.18 lbs/ft2	1.86	STABLE	E
SC250 Reinforced Vegetation	Straight	3.47 cfs	3.9 ft/s	0.35 ft	0.042	10 lbs/ft2	2.17 lbs/ft2	4.61	STABLE	E
Underlying Substrate	Straight	3.47 cfs	3.9 ft/s	0.35 ft	0.042	3 lbs/ft2	1.29 lbs/ft2	2.32	STABLE	E

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CHANNEL ANALYSIS

> > > CFS Diversion No. 2 (Max.)

Name	CFS Diversion No. 2 (Max.)
Discharge	3.47
Channel Slope	0.16
Channel Bottom Width	1
Left Side Slope	8
Right Side Slope	1
Low Flow Liner	
Retardence Class	C 6-12 in
Vegetation Type	Bunch Type
Vegetation Density	Good 65-79%
Soil Type	Silt Loam (SM)

SC250

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
SC250 Unvegetated	Straight	3.47 cfs	5.85 ft/s	0.27 ft	0.031	3 lbs/ft2	2.68 lbs/ft2	1.12	STABLE	E
Underlying Substrate	Straight	3.47 cfs	5.85 ft/s	0.27 ft	0.031	2.2 lbs/ft2	1.67 lbs/ft2	1.32	STABLE	E
SC250 Reinforced Vegetation	Straight	3.47 cfs	5.1 ft/s	0.29 ft	0.037	10 lbs/ft2	2.92 lbs/ft2	3.43	STABLE	E
Underlying Substrate	Straight	3.47 cfs	5.1 ft/s	0.29 ft	0.037	3 lbs/ft2	1.79 lbs/ft2	1.67	STABLE	E

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CHANNEL ANALYSIS

> > > Permanent Channel No. 1 Min

Name	Permanent Channel No. 1 Min
Discharge	0.51
Channel Slope	0.055
Channel Bottom Width	1
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardence Class	C 6-12 in
Vegetation Type	Bunch Type
Vegetation Density	Good 65-79%
Soil Type	Silt Loam (SM)

S200

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S200 Unvegetated	Straight	0.51 cfs	2.28 ft/s	0.17 ft	0.039	2.3 lbs/ft2	0.57 lbs/ft2	4.03	STABLE	E
Underlying Substrate	Straight	0.51 cfs	2.28 ft/s	0.17 ft	0.039	1.68 lbs/ft2	0.44 lbs/ft2	3.86	STABLE	E
S200 Reinforced Vegetation	Straight	0.51 cfs	1.67 ft/s	0.21 ft	0.06	10 lbs/ft2	0.73 lbs/ft2	13.67	STABLE	E
Underlying Substrate	Straight	0.51 cfs	1.67 ft/s	0.21 ft	0.06	2.97 lbs/ft2	0.53 lbs/ft2	5.57	STABLE	E

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CHANNEL ANALYSIS

> > > Permanent Channel No. 1 Max

Name	Permanent Channel No. 1 Max
Discharge	0.51
Channel Slope	0.135
Channel Bottom Width	1
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardence Class	C 6-12 in
Vegetation Type	Bunch Type
Vegetation Density	Good 65-79%
Soil Type	Silt Loam (SM)

S200

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S200 Unvegetated	Straight	0.51 cfs	3.48 ft/s	0.12 ft	0.033	2.3 lbs/ft2	1 lbs/ft2	2.31	STABLE	E
Underlying Substrate	Straight	0.51 cfs	3.48 ft/s	0.12 ft	0.033	1.68 lbs/ft2	0.81 lbs/ft2	2.09	STABLE	E
S200 Reinforced Vegetation	Straight	0.51 cfs	2.69 ft/s	0.15 ft	0.048	10 lbs/ft2	1.23 lbs/ft2	8.15	STABLE	E
Underlying Substrate	Straight	0.51 cfs	2.69 ft/s	0.15 ft	0.048	2.3 lbs/ft2	0.96 lbs/ft2	2.4	STABLE	E

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CHANNEL ANALYSIS

> > > Permanent Channel No. 2 Min

Name	Permanent Channel No. 2 Min
Discharge	0.29
Channel Slope	0.1
Channel Bottom Width	1
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardence Class	C 6-12 in
Vegetation Type	Bunch Type
Vegetation Density	Good 65-79%
Soil Type	Silt Loam (SM)

S200

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S200 Unvegetated	Straight	0.29 cfs	2.41 ft/s	0.1 ft	0.037	2.3 lbs/ft2	0.62 lbs/ft2	3.7	STABLE	E
Underlying Substrate	Straight	0.29 cfs	2.41 ft/s	0.1 ft	0.037	1.68 lbs/ft2	0.52 lbs/ft2	3.27	STABLE	E
S200 Reinforced Vegetation	Straight	0.29 cfs	1.82 ft/s	0.13 ft	0.056	10 lbs/ft2	0.79 lbs/ft2	12.62	STABLE	E
Underlying Substrate	Straight	0.29 cfs	1.82 ft/s	0.13 ft	0.056	2.59 lbs/ft2	0.63 lbs/ft2	4.09	STABLE	E

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CHANNEL ANALYSIS

> > > Permanent Channel No. 2 Max

Name	Permanent Channel No. 2 Max
Discharge	0.29
Channel Slope	0.135
Channel Bottom Width	1
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardence Class	C 6-12 in
Vegetation Type	Bunch Type
Vegetation Density	Good 65-79%
Soil Type	Silt Loam (SM)

S200

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S200 Unvegetated	Straight	0.29 cfs	2.76 ft/s	0.09 ft	0.035	2.3 lbs/ft2	0.75 lbs/ft2	3.08	STABLE	E
Underlying Substrate	Straight	0.29 cfs	2.76 ft/s	0.09 ft	0.035	1.68 lbs/ft2	0.63 lbs/ft2	2.68	STABLE	E
S200 Reinforced Vegetation	Straight	0.29 cfs	2.11 ft/s	0.11 ft	0.052	10 lbs/ft2	0.94 lbs/ft2	10.69	STABLE	E
Underlying Substrate	Straight	0.29 cfs	2.11 ft/s	0.11 ft	0.052	2.3 lbs/ft2	0.76 lbs/ft2	3.01	STABLE	E

CULVERT CALCULATIONS

Inlet Calculations - Runoff Coefficient

Project:	HCPP Pipeline		
CEC Project #:	354-010		
Prepared By:	SCT	Checked By:	VLP
Date:	8/15/2025	Date:	9/23/2025

Channel	Runoff Coefficient*				Total Area (ACRES)	Weighted Runoff Coefficient
	Woods	Meadow	Gravel	Impervious		
	0.20	0.40	0.80	0.90		
INLET 1	0.00	0.00	0.47	0.00	0.47	0.80
INLET 2	0.00	0.00	0.44	0.00	0.44	0.80
Storm Pipe No. 3	0.00	0.13	0.00	0.00	0.13	0.40

* Runoff Coefficients obtained from PADEP ES Manual dated March 2012.

Inlet Flow Calculations - 10-Year Design Storm
Project: HCPP Pipeline
CEC Project #: 354-010
Prepared By: SCT Checked By: VLP
Date: 8/15/2025 Date: 9/23/2025

PERMANENT INLET CONDITION

Channel No.	Drainage Area (AC)	Time of Concentration (min)	Design Storm	Intensity (in/hr)	Runoff Coefficient	Flow, Q=CiA (cfs)
INLET 1	0.47	5	10 Year	6.22	0.80	2.34
INLET 2	0.44	5	10 Year	6.22	0.80	2.19
Storm Pipe No. 3	0.13	5	10 Year	6.22	0.40	0.32

Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Sep 22 2025

SCM-1 (Rain Garden No. 1) Outlet Pipe

Invert Elev Dn (ft)	=	1097.00
Pipe Length (ft)	=	26.20
Slope (%)	=	7.63
Invert Elev Up (ft)	=	1099.00
Rise (in)	=	12.0
Shape	=	Circular
Span (in)	=	12.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Culvert
Culvert Entrance	=	Rough tapered inlet throat
Coeff. K,M,c,Y,k	=	0.519, 0.64, 0.021, 0.9, 0.5

Embankment

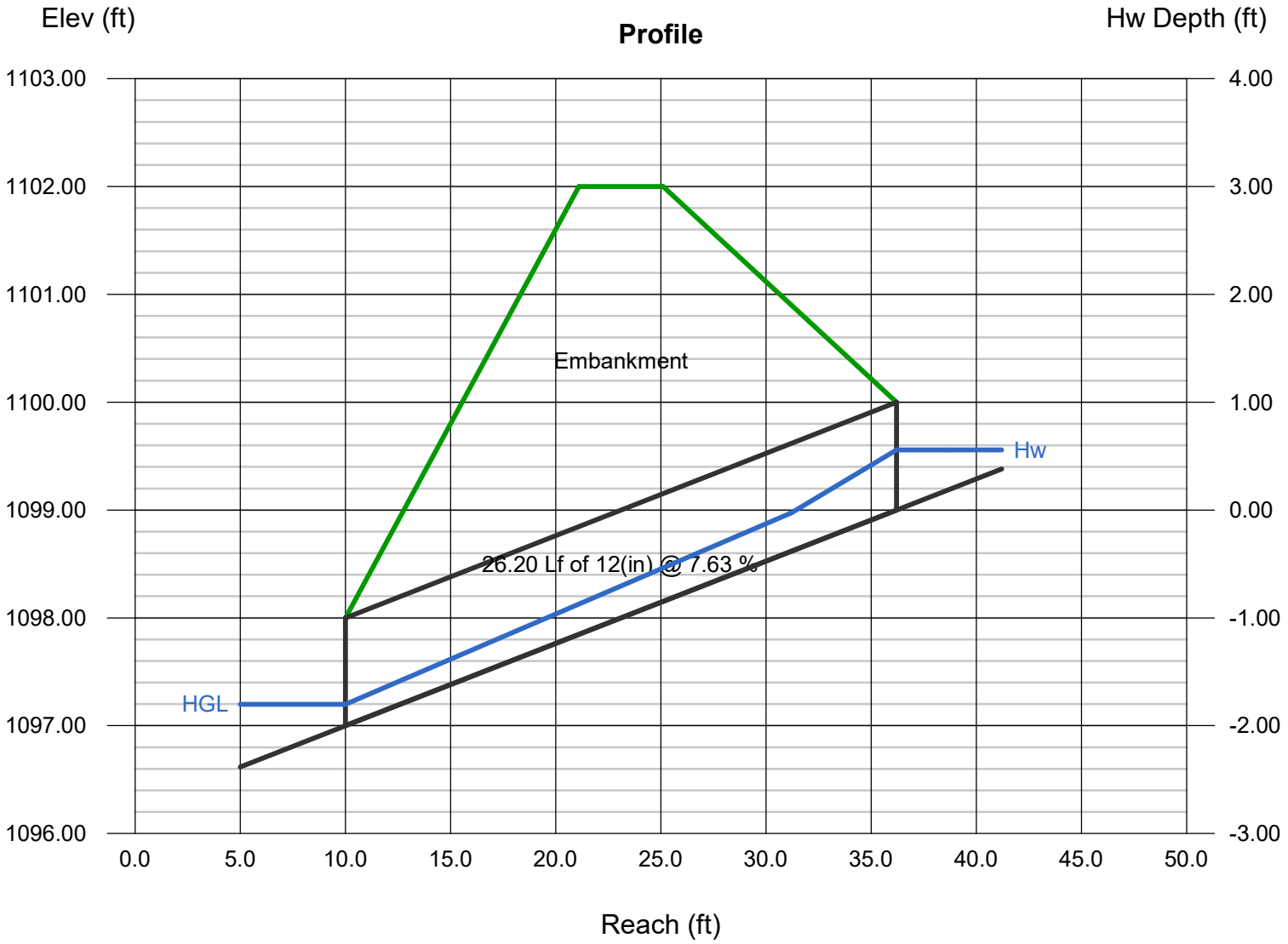
Top Elevation (ft)	=	1102.00
Top Width (ft)	=	4.00
Crest Width (ft)	=	20.00

Calculations

Qmin (cfs)	=	0.88
Qmax (cfs)	=	0.88
Tailwater Elev (ft)	=	Normal

Highlighted

Qtotal (cfs)	=	0.88
Qpipe (cfs)	=	0.88
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	8.04
Veloc Up (ft/s)	=	3.07
HGL Dn (ft)	=	1097.20
HGL Up (ft)	=	1099.39
Hw Elev (ft)	=	1099.56
Hw/D (ft)	=	0.56
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Sep 22 2025

SCM-2 (Detention Basin No. 1) Outlet Pipe

Invert Elev Dn (ft)	=	1095.00
Pipe Length (ft)	=	77.60
Slope (%)	=	2.58
Invert Elev Up (ft)	=	1097.00
Rise (in)	=	15.0
Shape	=	Circular
Span (in)	=	15.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Culvert
Culvert Entrance	=	Rough tapered inlet throat
Coeff. K,M,c,Y,k	=	0.519, 0.64, 0.021, 0.9, 0.5

Embankment

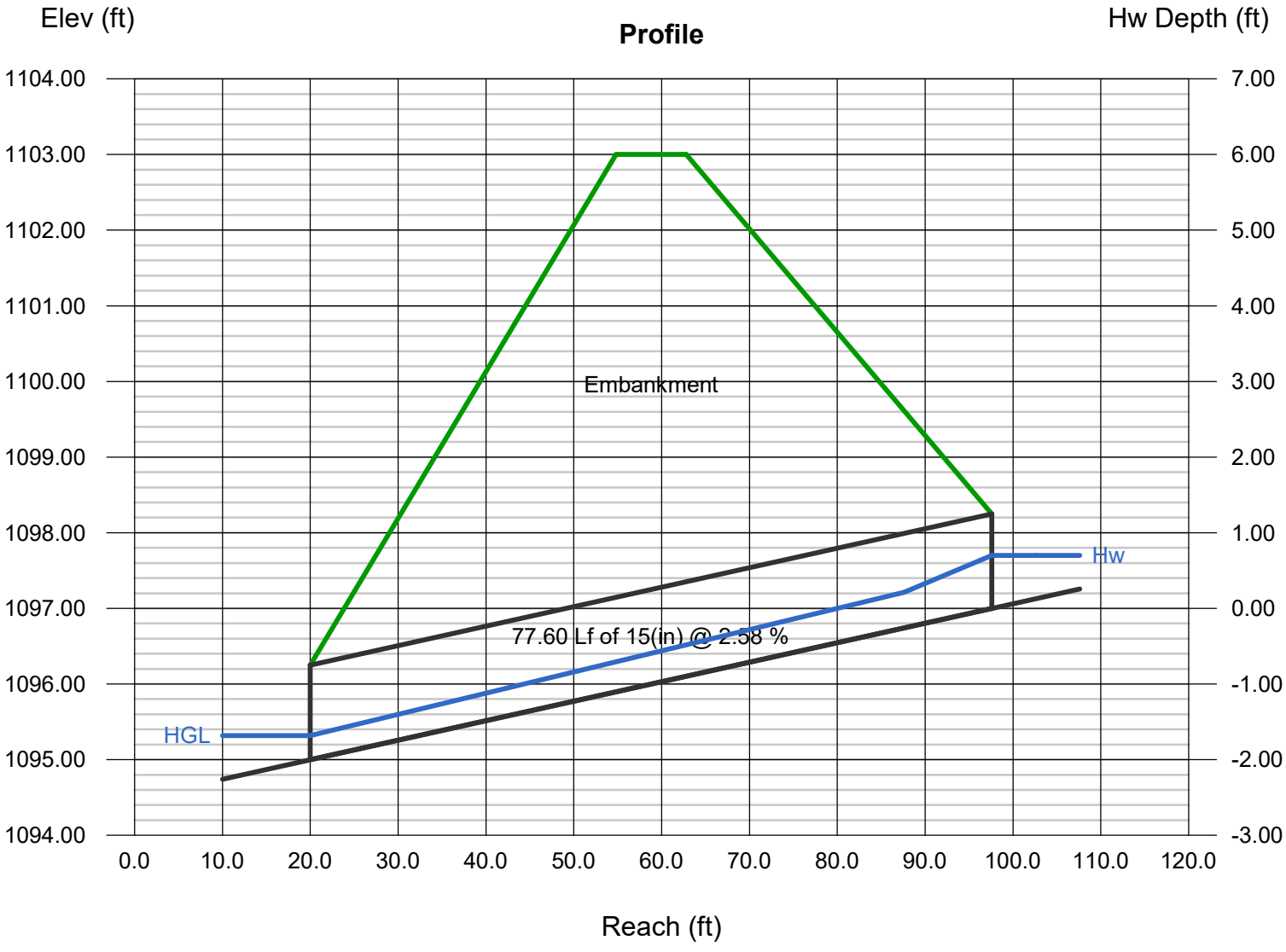
Top Elevation (ft)	=	1103.00
Top Width (ft)	=	8.00
Crest Width (ft)	=	20.00

Calculations

Qmin (cfs)	=	1.55
Qmax (cfs)	=	1.55
Tailwater Elev (ft)	=	Normal

Highlighted

Qtotal (cfs)	=	1.55
Qpipe (cfs)	=	1.55
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	6.34
Veloc Up (ft/s)	=	3.45
HGL Dn (ft)	=	1095.32
HGL Up (ft)	=	1097.49
Hw Elev (ft)	=	1097.70
Hw/D (ft)	=	0.56
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Sep 22 2025

SCM-3 (Rain Garden No. 2) Outlet Pipe

Invert Elev Dn (ft)	=	1093.00
Pipe Length (ft)	=	86.00
Slope (%)	=	1.16
Invert Elev Up (ft)	=	1094.00
Rise (in)	=	12.0
Shape	=	Circular
Span (in)	=	12.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Culvert
Culvert Entrance	=	Rough tapered inlet throat
Coeff. K,M,c,Y,k	=	0.519, 0.64, 0.021, 0.9, 0.5

Embankment

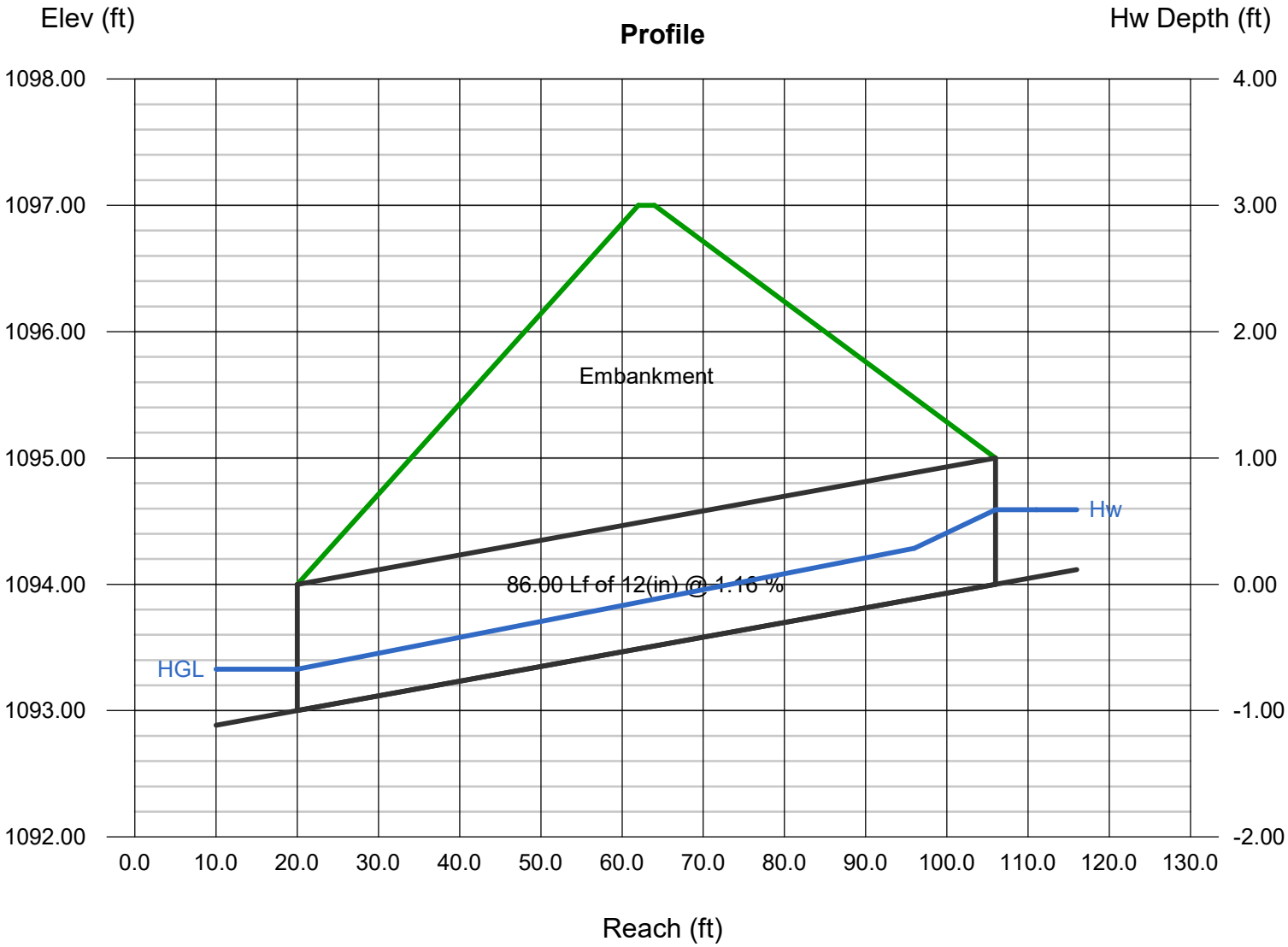
Top Elevation (ft)	=	1097.00
Top Width (ft)	=	2.00
Crest Width (ft)	=	20.00

Calculations

Qmin (cfs)	=	0.96
Qmax (cfs)	=	0.96
Tailwater Elev (ft)	=	Normal

Highlighted

Qtotal (cfs)	=	0.96
Qpipe (cfs)	=	0.96
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	4.28
Veloc Up (ft/s)	=	3.16
HGL Dn (ft)	=	1093.33
HGL Up (ft)	=	1094.41
Hw Elev (ft)	=	1094.59
Hw/D (ft)	=	0.59
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Sep 22 2025

SCM-4 (Rain Garden No. 3) Outlet Pipe

Invert Elev Dn (ft)	=	1224.00
Pipe Length (ft)	=	13.20
Slope (%)	=	11.36
Invert Elev Up (ft)	=	1225.50
Rise (in)	=	12.0
Shape	=	Circular
Span (in)	=	12.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Culvert
Culvert Entrance	=	Rough tapered inlet throat
Coeff. K,M,c,Y,k	=	0.519, 0.64, 0.021, 0.9, 0.5

Embankment

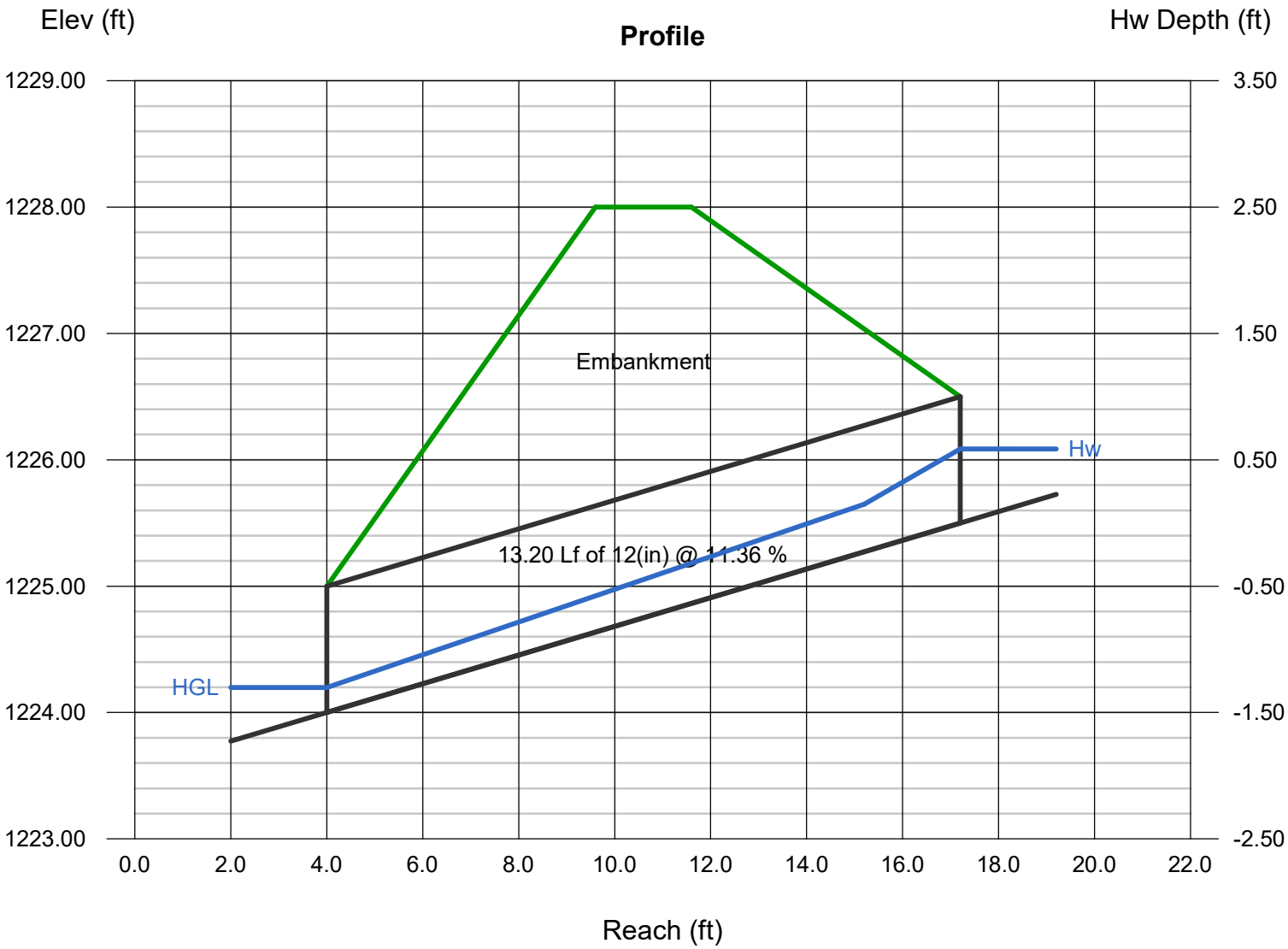
Top Elevation (ft)	=	1228.00
Top Width (ft)	=	2.00
Crest Width (ft)	=	20.00

Calculations

Qmin (cfs)	=	0.95
Qmax (cfs)	=	0.95
Tailwater Elev (ft)	=	Normal

Highlighted

Qtotal (cfs)	=	0.95
Qpipe (cfs)	=	0.95
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	8.68
Veloc Up (ft/s)	=	3.15
HGL Dn (ft)	=	1224.20
HGL Up (ft)	=	1225.91
Hw Elev (ft)	=	1226.09
Hw/D (ft)	=	0.59
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Sep 22 2025

Storm Pipe No. 1

Invert Elev Dn (ft)	=	1100.00
Pipe Length (ft)	=	60.00
Slope (%)	=	3.33
Invert Elev Up (ft)	=	1102.00
Rise (in)	=	15.0
Shape	=	Circular
Span (in)	=	15.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Culvert
Culvert Entrance	=	Smooth tapered inlet throat
Coeff. K,M,c,Y,k	=	0.534, 0.555, 0.0196, 0.9, 0.2

Embankment

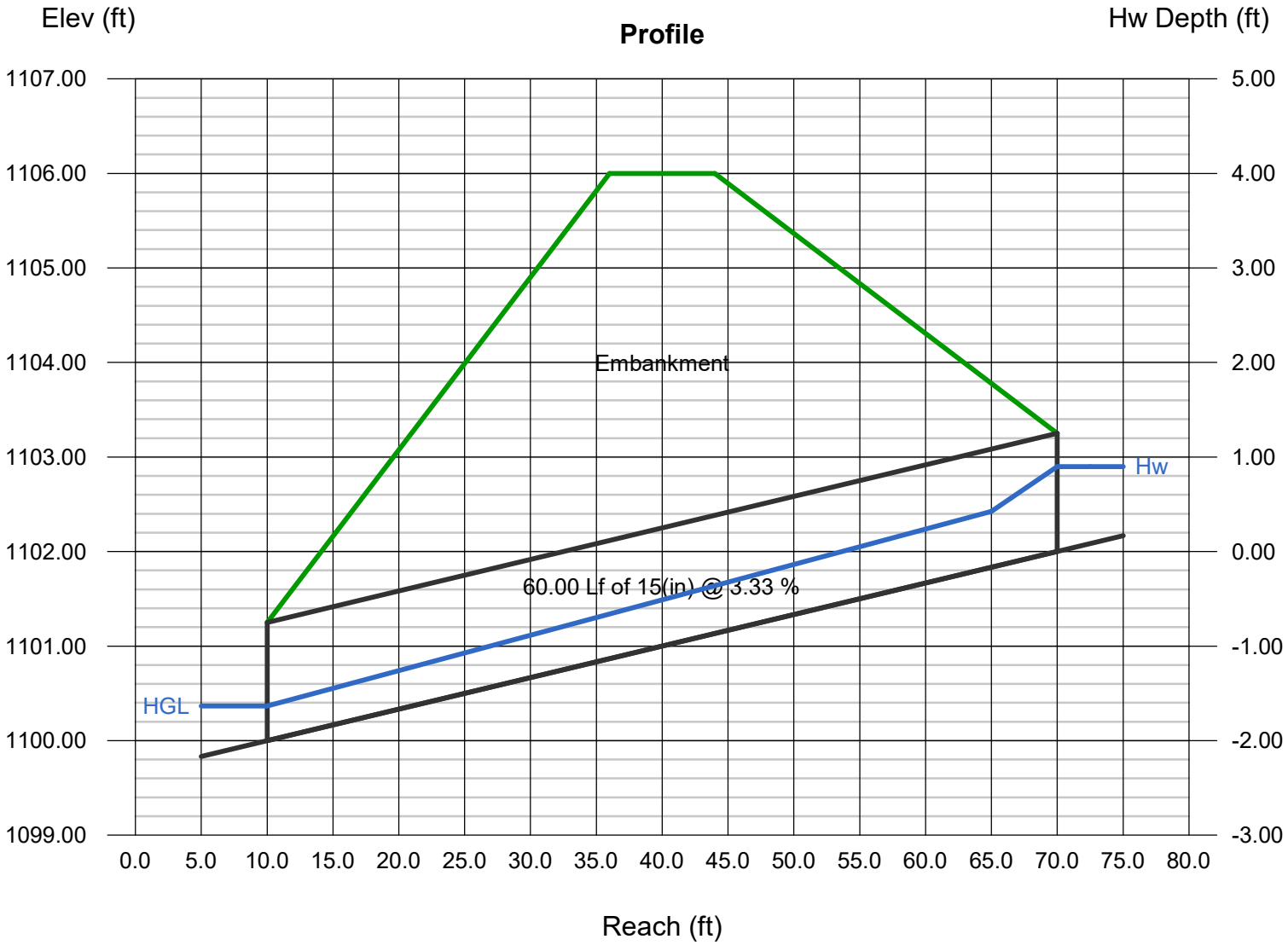
Top Elevation (ft)	=	1106.00
Top Width (ft)	=	8.00
Crest Width (ft)	=	20.00

Calculations

Qmin (cfs)	=	2.34
Qmax (cfs)	=	2.34
Tailwater Elev (ft)	=	Normal

Highlighted

Qtotal (cfs)	=	2.34
Qpipe (cfs)	=	2.34
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	7.79
Veloc Up (ft/s)	=	3.93
HGL Dn (ft)	=	1100.37
HGL Up (ft)	=	1102.61
Hw Elev (ft)	=	1102.90
Hw/D (ft)	=	0.72
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Sep 22 2025

Storm Pipe No. 2

Invert Elev Dn (ft)	=	1101.00
Pipe Length (ft)	=	44.00
Slope (%)	=	3.41
Invert Elev Up (ft)	=	1102.50
Rise (in)	=	15.0
Shape	=	Circular
Span (in)	=	15.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Culvert
Culvert Entrance	=	Smooth tapered inlet throat
Coeff. K,M,c,Y,k	=	0.534, 0.555, 0.0196, 0.9, 0.2

Embankment

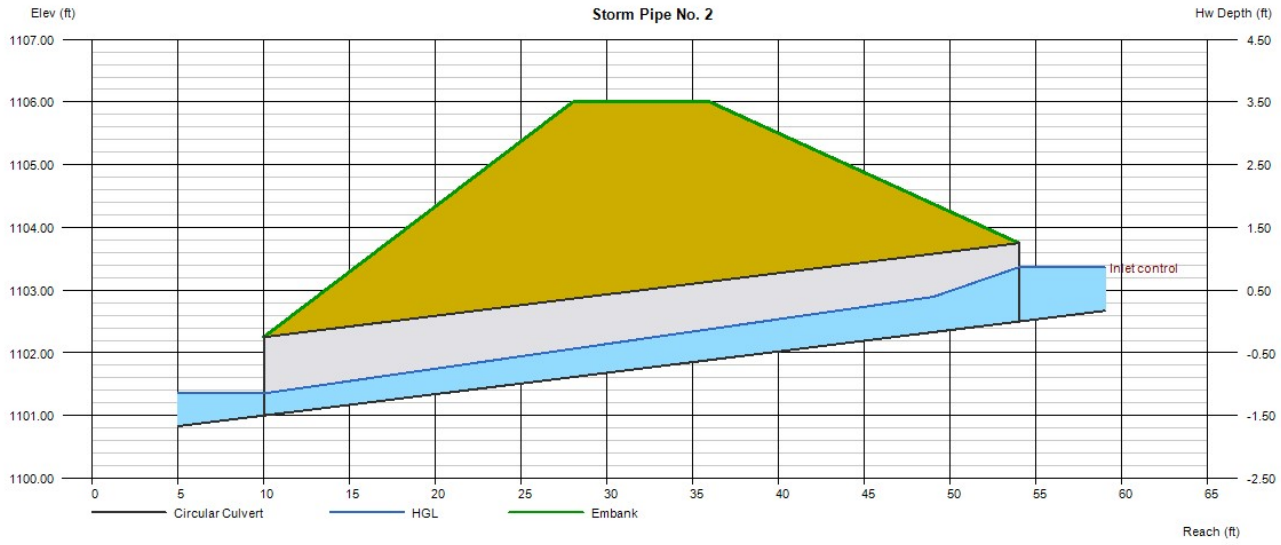
Top Elevation (ft)	=	1106.00
Top Width (ft)	=	8.00
Crest Width (ft)	=	20.00

Calculations

Qmin (cfs)	=	2.19
Qmax (cfs)	=	2.19
Tailwater Elev (ft)	=	Normal

Highlighted

Qtotal (cfs)	=	2.19
Qpipe (cfs)	=	2.19
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	7.70
Veloc Up (ft/s)	=	3.84
HGL Dn (ft)	=	1101.35
HGL Up (ft)	=	1103.09
Hw Elev (ft)	=	1103.37
Hw/D (ft)	=	0.69
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Sep 22 2025

Storm Pipe No. 3

Invert Elev Dn (ft)	=	1095.00
Pipe Length (ft)	=	72.00
Slope (%)	=	2.78
Invert Elev Up (ft)	=	1097.00
Rise (in)	=	15.0
Shape	=	Circular
Span (in)	=	15.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Culvert
Culvert Entrance	=	Smooth tapered inlet throat
Coeff. K,M,c,Y,k	=	0.534, 0.555, 0.0196, 0.9, 0.2

Embankment

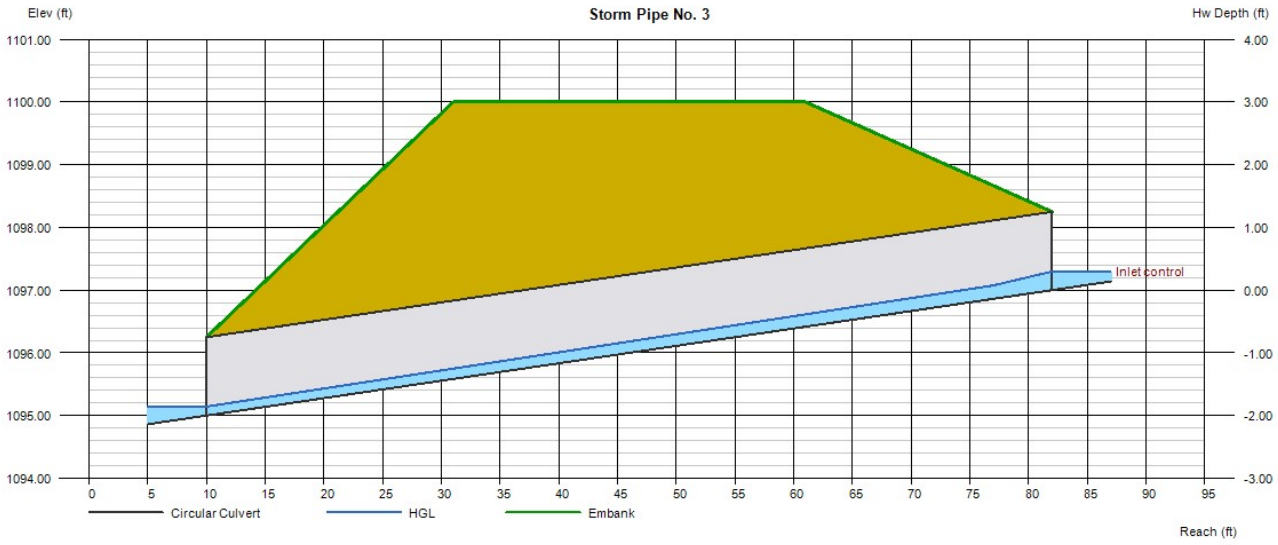
Top Elevation (ft)	=	1100.00
Top Width (ft)	=	30.00
Crest Width (ft)	=	30.00

Calculations

Qmin (cfs)	=	0.32
Qmax (cfs)	=	0.32
Tailwater Elev (ft)	=	Normal

Highlighted

Qtotal (cfs)	=	0.32
Qpipe (cfs)	=	0.32
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	4.12
Veloc Up (ft/s)	=	2.21
HGL Dn (ft)	=	1095.14
HGL Up (ft)	=	1097.22
Hw Elev (ft)	=	1097.30
Hw/D (ft)	=	0.24
Flow Regime	=	Inlet Control



RIPRAP APRONS

Adapted from USDA - NRCS

DESIGN OF RIPRAP APRON OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL
MINIMUM TAILWATER CONDITION (T_W < 0.5 DIAMETER)

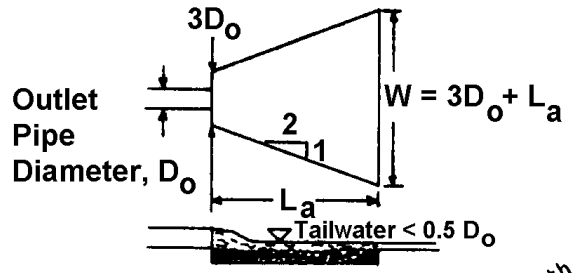


FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition

Not to be used for Box Culverts

NOTE: Do not extrapolate

* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Temp Riprap Apron No. 1
Q = 2.43 cfs
V = 5.64 ft/sec La = 6 ft
Do = 12-in W = 9 ft
Prepared By: VLP 9/17/2025
Checked By:

Vmax for R-4 = 9.0 ft/s
Use R-4 Rip-Rap

Adapted from USDA - NRCS

Not to be used for Box Culverts

NOTE: Do not extrapolate

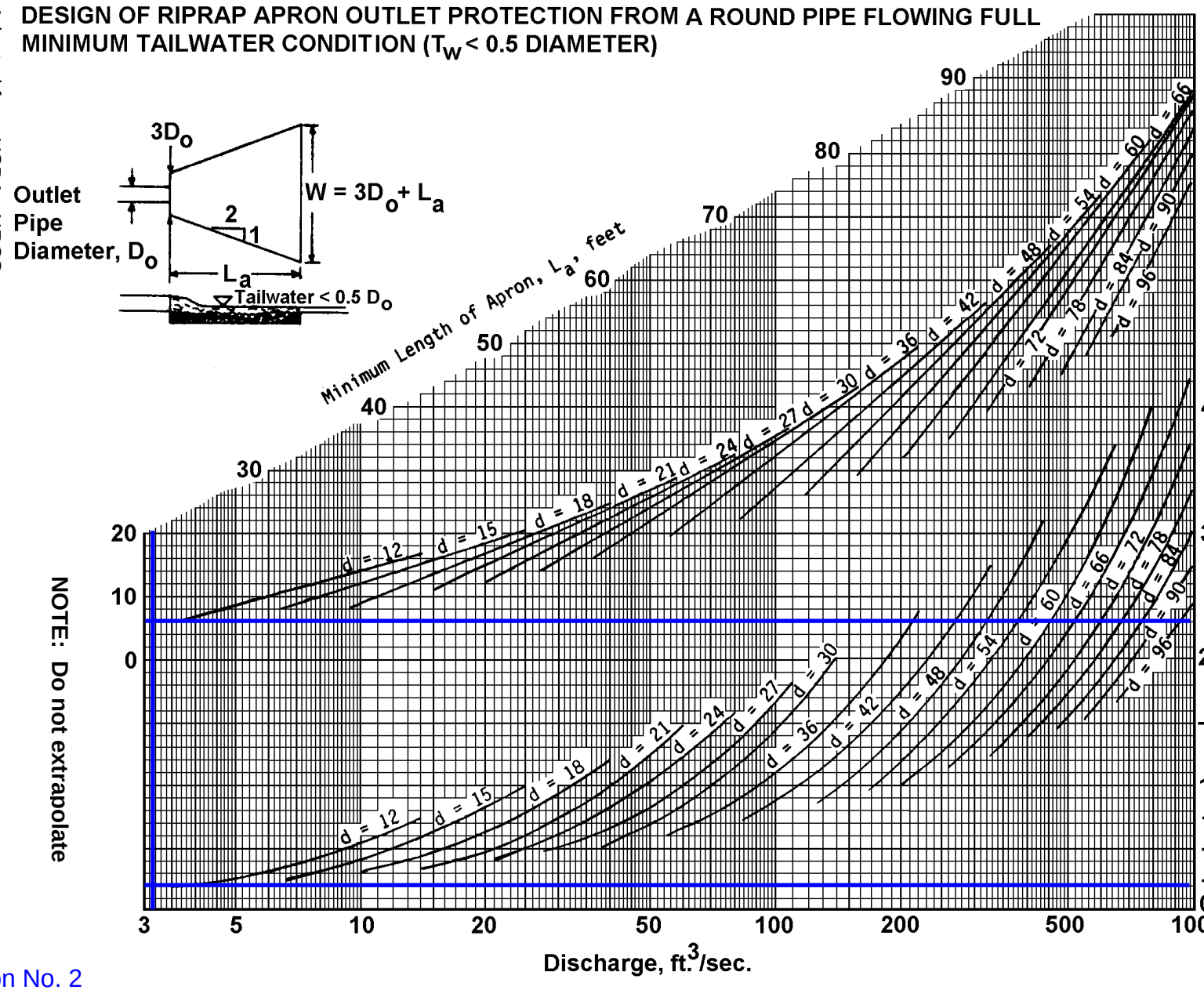


FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition

* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Temp Riprap Apron No. 2
Q = 3.14 cfs
V = 5.85 ft/sec La = 6 ft
Do = 12-in W = 9 ft
Prepared By: VLP 9/17/2025
Checked By:

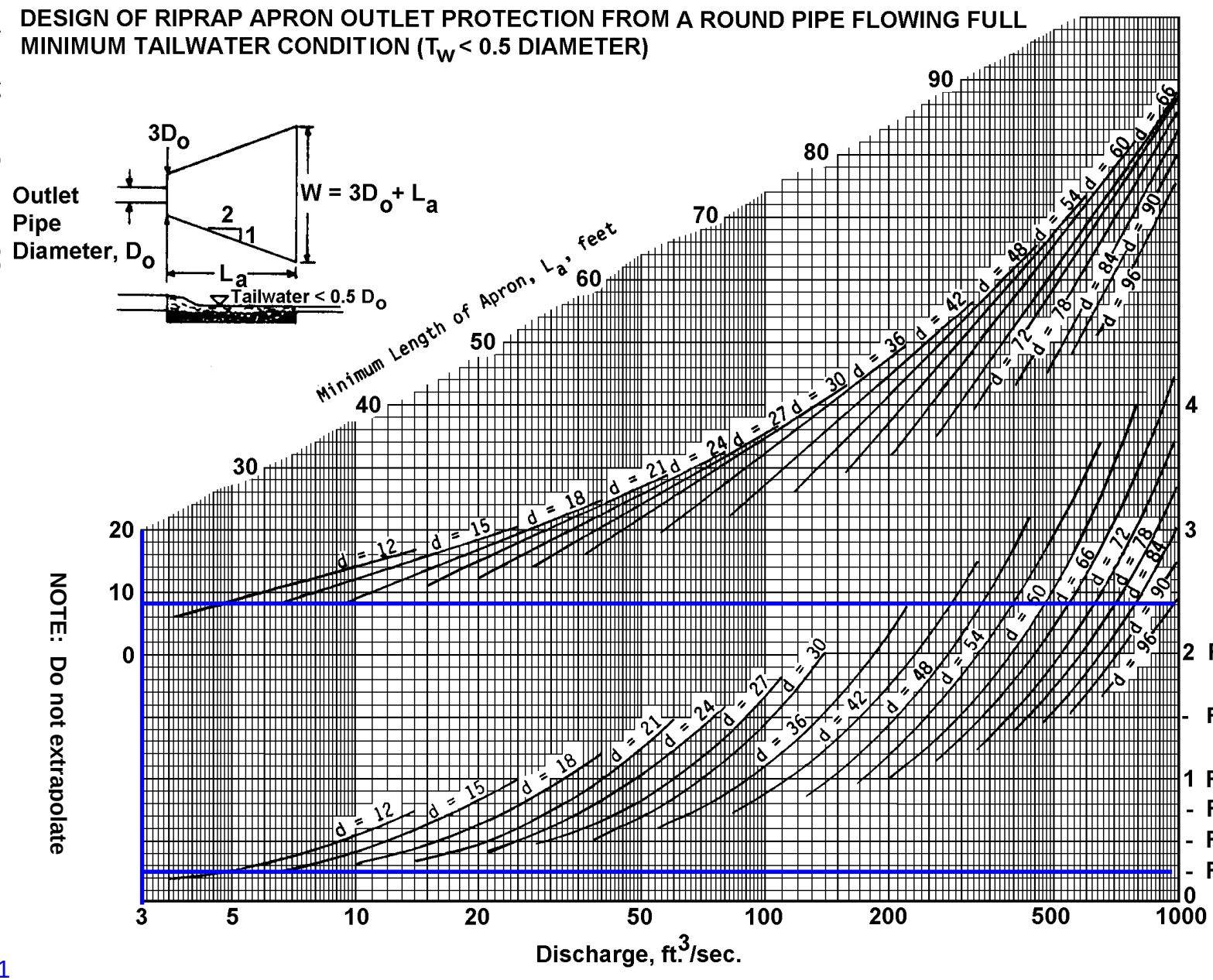
Vmax for R-4 = 9.0 ft/s
Use R-4 Rip-Rap

Adapted from USDA - NRCS

Not to be used for Box Culverts

NOTE: Do not extrapolate

FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition



* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Riprap Apron No. 1
Q = 2.19 cfs
V = 7.70 ft/sec La = 8 ft
Do = 15-in W = 12 ft
Prepared By: VLP 9/22/2025
Checked By:

Vmax for R-4 = 9.0 ft/s
Use R-4 Rip-Rap

Adapted from USDA - NRCS

Not to be used for Box Culverts

NOTE: Do not extrapolate

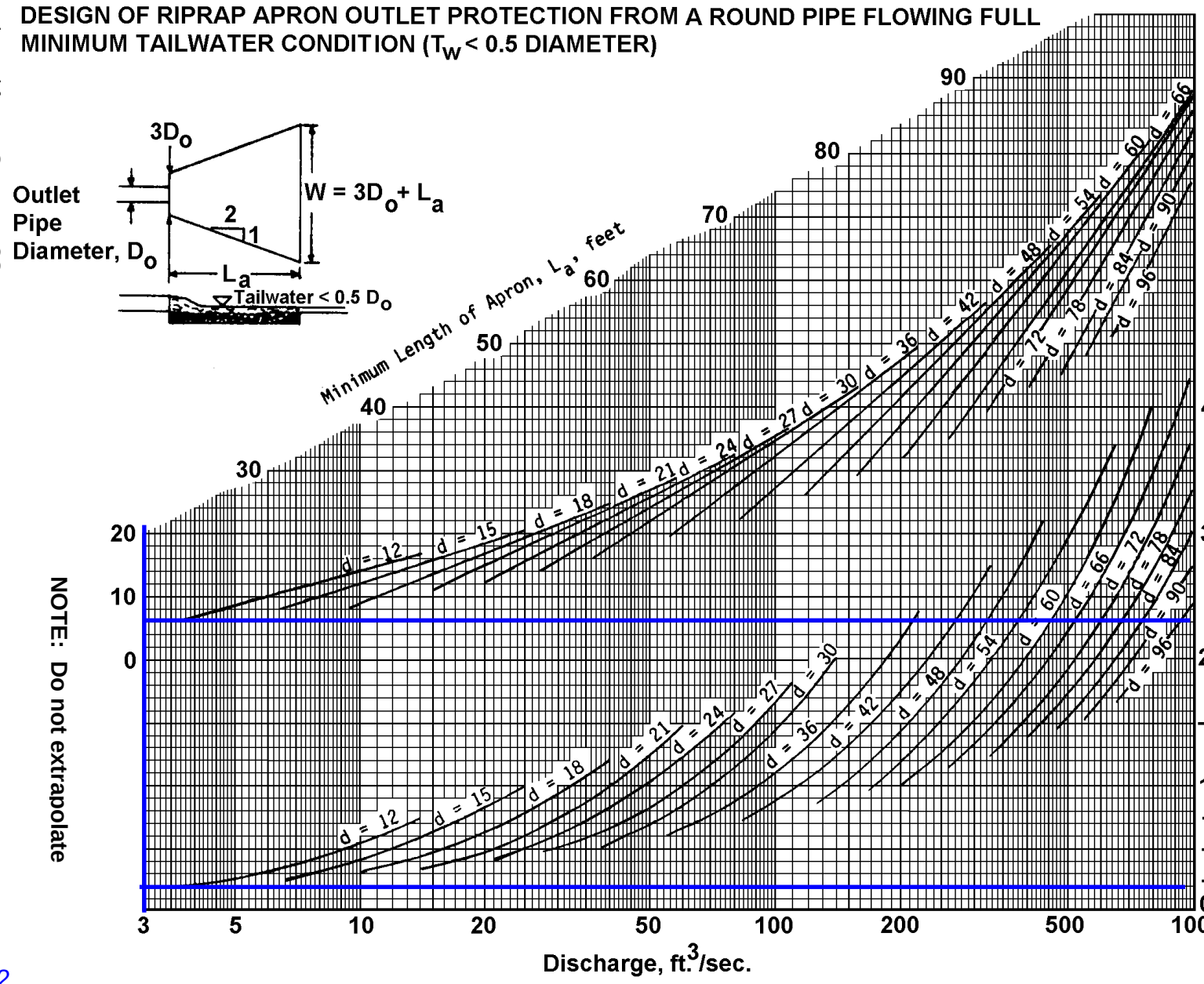


FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition

* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Riprap Apron No. 2
Q = 0.88 cfs
V = 8.04 ft/sec La = 6 ft
Do = 12-in W = 9 ft
Prepared By: VLP 9/22/2025
Checked By:

Vmax for R-4 = 9.0 ft/s
Use R-4 Rip-Rap

Adapted from USDA - NRCS

Not to be used for Box Culverts

NOTE: Do not extrapolate

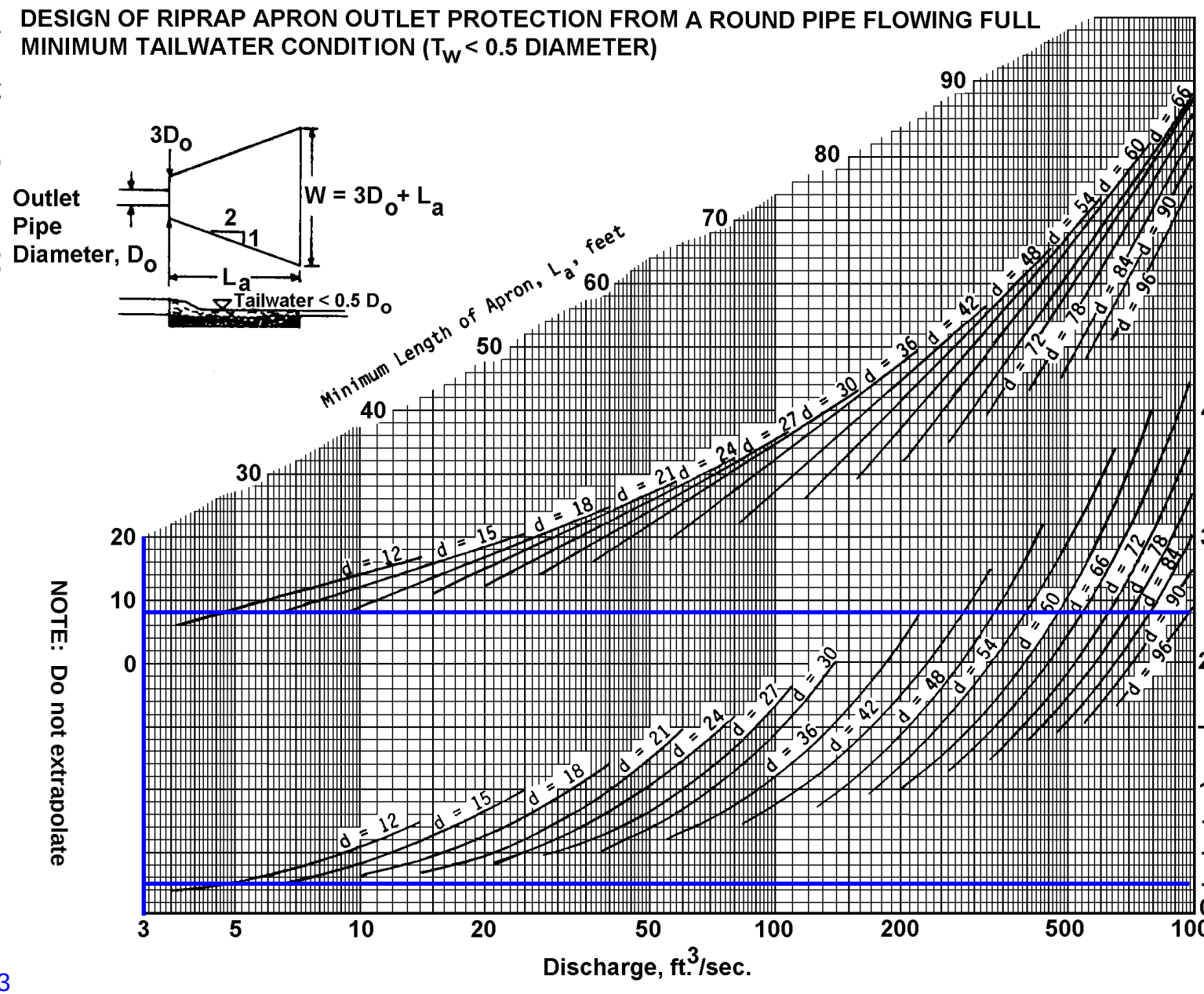


FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition

* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Riprap Apron No. 3
Q = 2.34 cfs
V = 7.79 ft/sec La = 8 ft
Do = 15-in W = 12 ft
Prepared By: VLP 9/22/2025
Checked By:

Vmax for R-4 = 9.0 ft/s
Use R-4 Rip-Rap

Adapted from USDA - NRCS

Not to be used for Box Culverts

NOTE: Do not extrapolate

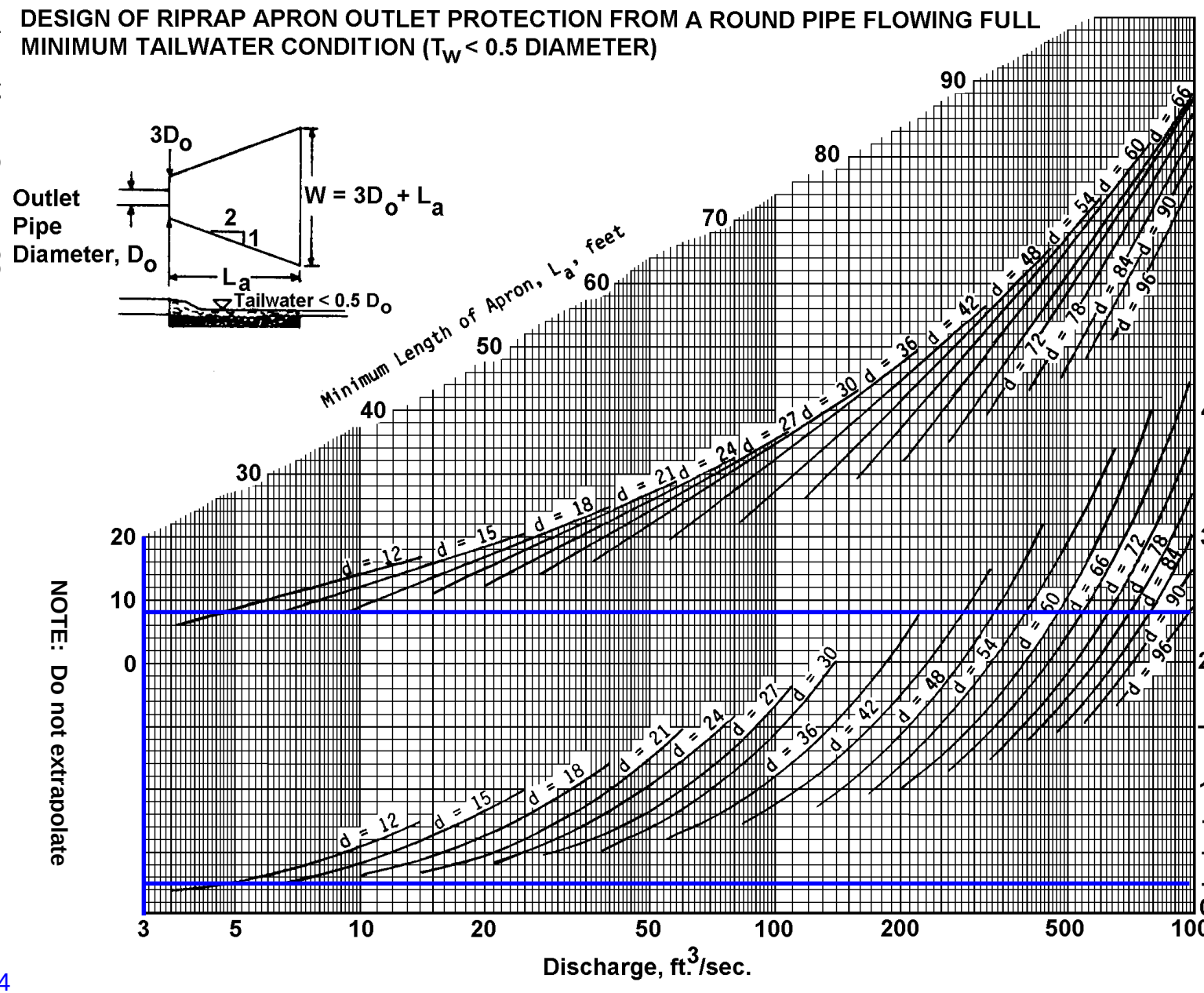


FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition

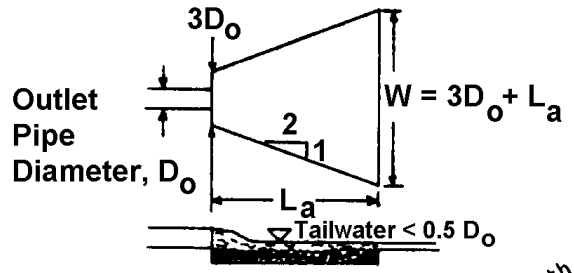
* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Riprap Apron No. 4
Q = 0.32 cfs
V = 4.12 ft/sec La = 8 ft
Do = 15-in W = 12 ft
Prepared By: VLP 9/22/2025
Checked By:

Vmax for R-4 = 9.0 ft/s
Use R-4 Rip-Rap

Adapted from USDA - NRCS

DESIGN OF RIPRAP APRON OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL
MINIMUM TAILWATER CONDITION (T_W < 0.5 DIAMETER)



NOTE: Do not extrapolate

Not to be used for Box Culverts

FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition

* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Riprap Apron No. 5
Q = 1.55 cfs
V = 6.34 ft/sec La = 8 ft
Do = 15-in W = 12 ft
Prepared By: VLP 9/22/2025
Checked By:

Vmax for R-4 = 9.0 ft/s
Use R-4 Rip-Rap

Adapted from USDA - NRCS

Not to be used for Box Culverts

NOTE: Do not extrapolate

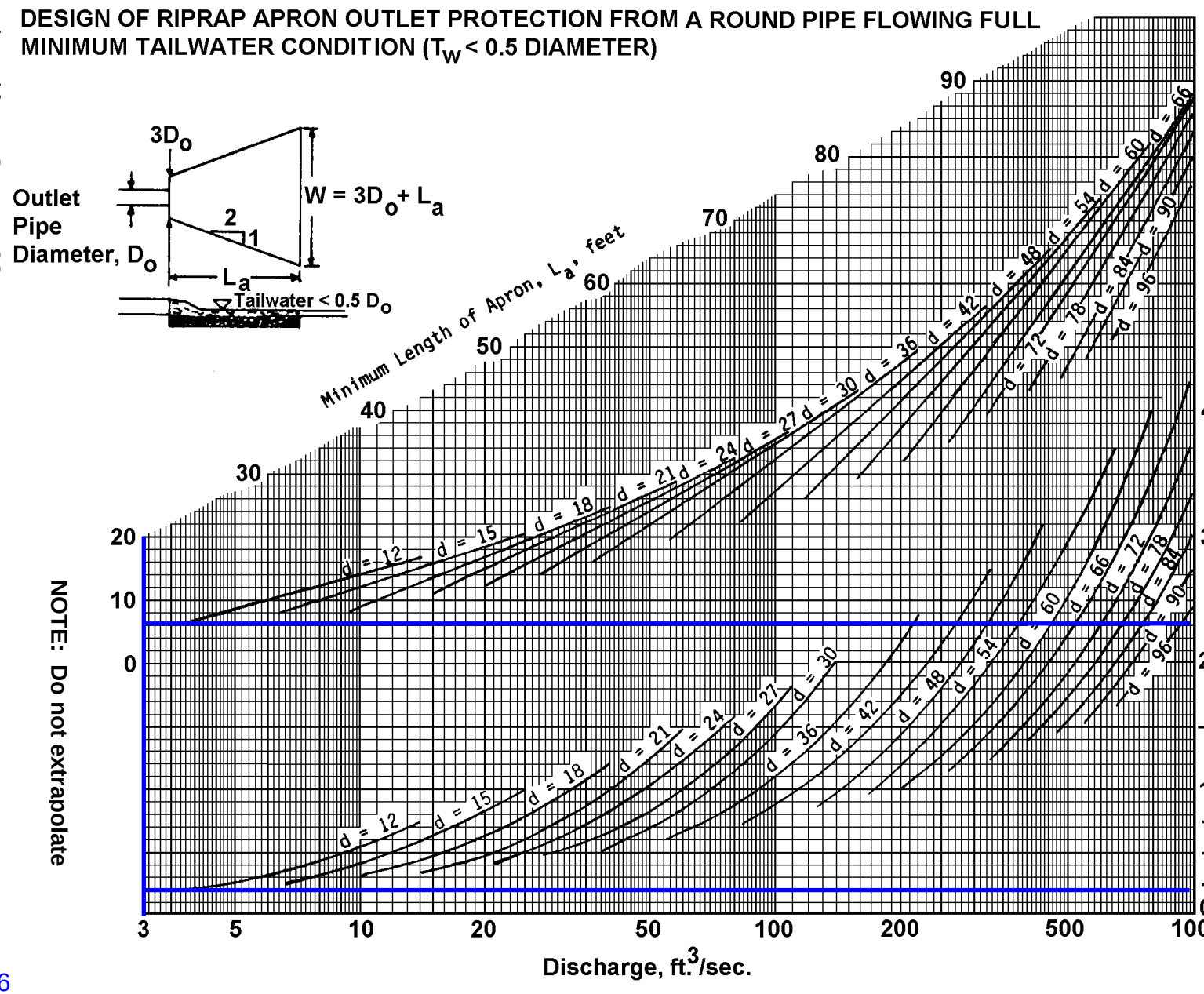


FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition

* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Riprap Apron No. 6
Q = 0.96 cfs
V = 4.28 ft/sec La = 6 ft
Do = 12-in W = 9 ft
Prepared By: VLP 9/22/2025
Checked By:

Vmax for R-4 = 9.0 ft/s
Use R-4 Rip-Rap

Adapted from USDA - NRCS

Not to be used for Box Culverts

NOTE: Do not extrapolate

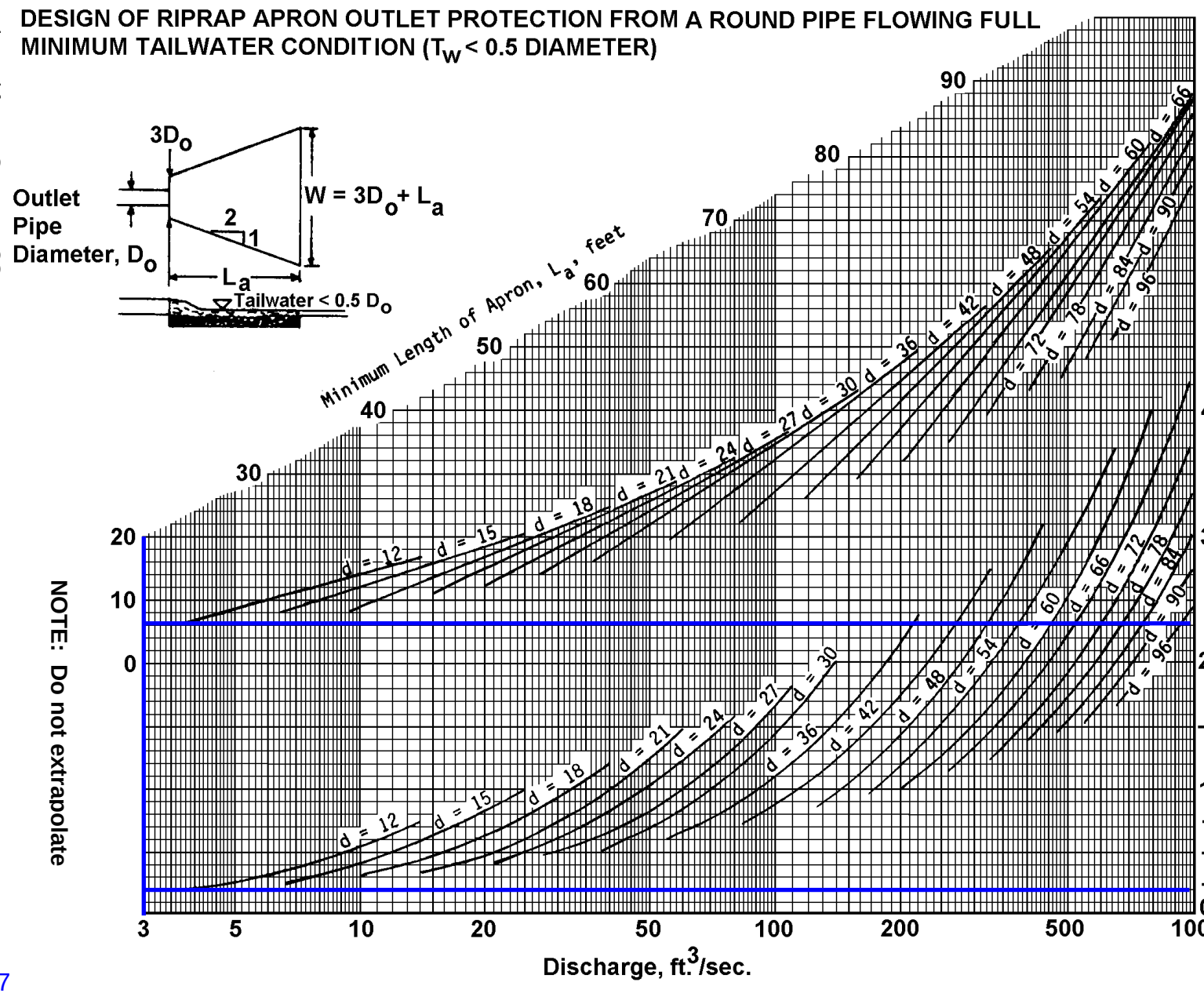


FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition

* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Riprap Apron No. 7
Q = 0.95 cfs
V = 8.68 ft/sec La = 6 ft
Do = 12-in W = 9 ft
Prepared By: VLP 9/22/2025
Checked By:

Vmax for R-4 = 9.0 ft/s
Use R-4 Rip-Rap

ANTI-SEEP COLLAR CALCULATIONS

HCPP PIPELINE
CEC PROJECT NO. 354-010
ANTI-SEEP COLLAR CALCULATION
RAIN GARDEN NO. 1 OUTLET PIPE

MADE BY:	VLP
DATE:	9/22/2025
CHECKED BY:	CRK
DATE:	9/22/2025

From page 204 of the PADEP E&S Manual:

$$L_s = y\,(z+4)\left[1+\frac{\text{pipe slope (ft/ft)}}{0.25-\text{pipe slope}}\right]$$

Where:

y = Distance from upstream invert of principal spillway riser to top of dewatering volume

= 1102.00 -1099.00

= 3.0 ft

z = Horizontal component of upstream embankment slope

= 3

p = Pipe slope

= 0.077 ft/ft

L_s = 3.00 ft (3 + 4) [1 + 0.077 / (0.25 - 0.077)]

= 30.3 ft

Since the pipe length < Ls, use the pipe length

For a permanent basin, the increase in flow path is 15%

L_f = 26 ft x 1.15

= 29.9 ft

Minimum collar projection (V_{min}) = flow path increase/twice the number of collars

Using 2 collars:

V_{min} = (29.9 ft - 26 ft) / 2 (2)

= 0.98 ft

Check the min. and max. spacing for collars:

Min = 5 x 0.975 ft

= 4.9 ft

Max = 14 x 0.975 ft

= 13.7 ft

Space collars evenly along length of pipe in phreatic zone

Spacing = L_s /(No. of collars +1)

= 26 ft / (2 + 1)

= 9 ft

Use 2 - 3 ft by 3 ft collars, spaced at 9 ft starting at the pipe inlet

HCPP PIPELINE
CEC PROJECT NO. 354-010
ANTI-SEEP COLLAR CALCULATION
DETENTION BASIN NO. 1 OUTLET PIPE

MADE BY:	VLP
DATE:	9/22/2025
CHECKED BY:	CRK
DATE:	9/22/2025

From page 204 of the PADEP E&S Manual:

$$L_s = y\,(z+4)\left[1+\frac{\text{pipe slope (ft/ft)}}{0.25-\text{pipe slope}}\right]$$

Where:

y = Distance from upstream invert of principal spillway riser to top of dewatering volume

= 1103.00 -1097.00

= 6.0 ft

z = Horizontal component of upstream embankment slope

= 3

p = Pipe slope

= 0.026 ft/ft

L_s= 6.00 ft (3 + 4) [1 + 0.026 / (0.25 - 0.026)]

= 46.9 ft

For a permanent basin, the increase in flow path is 15%

L_f= 46.9 ft x 1.15

= 53.9 ft

Minimum collar projection (V_{min}) = flow path increase/twice the number of collars

Using 4 collars:

V_{min} = (53.935 ft - 46.9 ft) / 2 (4)

= 0.88 ft

Check the min. and max. spacing for collars:

Min = 5 x 0.879375 ft

= 4.4 ft

Max = 14 x 0.879375 ft

= 12.3 ft

Space collars evenly along length of pipe in phreatic zone

Spacing = L_s /(No. of collars +1)

= 46.9 ft / (4 + 1)

= 9 ft

Use 4 - 3.25 ft by 3.25 ft collars, spaced at 9 ft starting at the pipe inlet

HCPP PIPELINE
CEC PROJECT NO. 354-010
ANTI-SEEP COLLAR CALCULATION
RAIN GARDEN NO. 2 OUTLET PIPE

MADE BY:	VLP
DATE:	9/22/2025
CHECKED BY:	CRK
DATE:	9/22/2025

From page 204 of the PADEP E&S Manual:

$$L_s = y\,(z+4)\left[1+\frac{\text{pipe slope (ft/ft)}}{0.25-\text{pipe slope}}\right]$$

Where:

y = Distance from upstream invert of principal spillway riser to top of dewatering volume

= 1097.00 -1094.00

= 3.0 ft

z = Horizontal component of upstream embankment slope

= 3

p = Pipe slope

= 0.012 ft/ft

L_s= 3.00 ft (3 + 4) [1 + 0.012 / (0.25 - 0.012)]

= 22.1 ft

For a permanent basin, the increase in flow path is 15%

L_f= 22.1 ft x 1.15

= 25.4 ft

Minimum collar projection (V_{min}) = flow path increase/twice the number of collars

Using 3 collars:

V_{min} = (25.415 ft - 22.1 ft) / 2 (3)

= 0.55 ft

Check the min. and max. spacing for collars:

Min = 5 x 0.5525 ft

= 2.8 ft

Max = 14 x 0.5525 ft

= 7.7 ft

Space collars evenly along length of pipe in phreatic zone

Spacing = L_s /(No. of collars +1)

= 22.1 ft / (3 + 1)

= 6 ft

Use 3 - 2.25 ft by 2.25 ft collars, spaced at 6 ft starting at the pipe inlet

HCPP PIPELINE
CEC PROJECT NO. 354-010
ANTI-SEEP COLLAR CALCULATION
RAIN GARDEN NO. 3 OUTLET PIPE

MADE BY:	VLP
DATE:	9/22/2025
CHECKED BY:	CRK
DATE:	9/22/2025

From page 204 of the PADEP E&S Manual:

$$L_s = y\,(z+4)\left[1+\frac{\text{pipe slope (ft/ft)}}{0.25-\text{pipe slope}}\right]$$

Where:

y = Distance from upstream invert of principal spillway riser to top of dewatering volume

= 1228.00 -1225.50

= 2.5 ft

z = Horizontal component of upstream embankment slope

= 2

p = Pipe slope

= 0.167 ft/ft

L_s = 2.50 ft (2 + 4) [1 + 0.167 / (0.25 - 0.167)]

= 45.2 ft

Since the pipe length < Ls, use the pipe length

For a permanent basin, the increase in flow path is 15%

L_f = 9 ft x 1.15

= 10.4 ft

Minimum collar projection (V_{min}) = flow path increase/twice the number of collars

Using 2 collars:

V_{min} = (10.35 ft - 9 ft) / 2 (2)

= 0.34 ft

Check the min. and max. spacing for collars:

Min = 5 x 0.3375 ft

= 1.7 ft

Max = 14 x 0.3375 ft

= 4.7 ft

Space collars evenly along length of pipe in phreatic zone

Spacing = L_s /(No. of collars +1)

= 9 ft / (2 + 1)

= 3 ft

Use 2 - 1.75 ft by 1.75 ft collars, spaced at 3 ft starting at the pipe inlet

APPENDIX E

INFILTRATION TESTING RESULTS

INFILTRATION TESTING DAILY FIELD REPORT

Project Name:	HCPP Pipeline	Job No.:	354-010
Client:	Homer City Generation LP	Site Location:	Burrell Township, Indiana County, PA
Test Designation	IT-01	Weather Conditions:	Sunny
Latitude:	40.45639	Temperature:	57-78
Longitude:	-79.24435	Date:	4/24/2025

DOUBLE-RING INFILTROMETER TEST RESULTS

No Tests Performed

Test ID (Depth, in bgs): **IT-01A ()**

Reading Interval (min)*: 30

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	0.00	--
	0.00	--
1	0.00	--
2	0.00	--
3	0.00	--
4	0.00	--
5	--	--
6	--	--
7	--	--
8	--	--

Test Result: Aborted

Stabilized Rate of Drop?**

Lowest Drop (in) --
Highest Drop (in) --
Difference (in) --

--

Infiltration Rate (in/hr)***: --

Test ID (Depth, in bgs): **IT-01B ()**

Reading Interval (min)*: 30

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	0.00	--
	0.00	--
1	0.00	--
2	0.00	--
3	0.00	--
4	0.00	--
5	--	--
6	--	--
7	--	--
8	--	--

Test Result: Aborted

Stabilized Rate of Drop?**

Lowest Drop (in) --
Highest Drop (in) --
Difference (in) --

--

Infiltration Rate (in/hr)***: --

Design Infiltration Rate (in/hr)** =** **--**

Assumed Safety Factor = 2

Legend

* If the drop during the second 30-minute presoak interval is less than 2 inches, use 30 minute intervals for the testing. If the drop during the second 30-minute presoak interval is 2 inches or greater, use 10 minute intervals.

**A stabilized rate of drop is defined as a difference of ¼ inch or less of drop between the highest and lowest interval readings of four consecutive interval readings.

***The Infiltration Rate is the average drop between the four appropriate consecutive readings.

****The Design Infiltration Rate is the geometric mean of the tested Infiltration Rates reduced by the assumed factor of safety.

Completed By:
X
Austin Perry, E.I.T.
Project Consultant

Reviewed By:
X
Tyler Reynolds, P.E.
Project Manager

Soil Log

Project Name: HCPP Pipeline
Project Number: 354-010
Client: Homer City Generation LP
Site Location: Burrell Township, Indiana County, PA
Test Pit: IT-01
Date: 4/24/2025
Elevation: 1101
Equipment Used: CAT 300.9D Mini Excavator
Geology: Casselman Formation
NRCS Soil Survey Map Unit: GcB (Gilpin Channery Silt Loam)
Land Use: Open Field/Forest
Weather: Sunny
Latitude: 40.45639
Classified by: Austin Perry, E.I.T.
Reviewed by: Tyler Reynolds, P.E.
Longitude: -79.24435
Bottom of test pit (in): 50

Additional Comments: Excavator bucket refusal at approximately 50 inches below ground surface. Tests were not performed due to limiting features (mottling and bedrock) encountered within 18-inches of the proposed test depth.

Horizon	Horizon Boundary (inches)	Soil Textural Class (USDA)	Coarse Fragments	Color Patterns	Pores - Roots	Grade of Structure	Depth to Bedrock (inches)	Depth to Free Water (inches)	Comments
A	0 to 16	Very Dark Grayish Brown (10YR 3/2) Silt Loam	<15% Gravel	--	Common Very Fine to Coarse Tubular Pores; Common Fine to Very Coarse Roots Throughout	Weak Very Fine to Fine Granular Structure; Loose Consistence	--	--	Topsoil
B	16 to 50	Brownish Yellow (10YR 6/6) Clay Loam	35% to <60% Gravel to Boulders	Light Brownish Gray (10YR 6/2) Common Fine to Coarse Prominent Mottles	Common Fine to Medium Interstitial Pores; Few Very Fine to Fine Roots Matted around Rock Fragments	Moderate Very Fine to Coarse Angular Blocky Structure; Friable to Firm Consistence	50	--	--

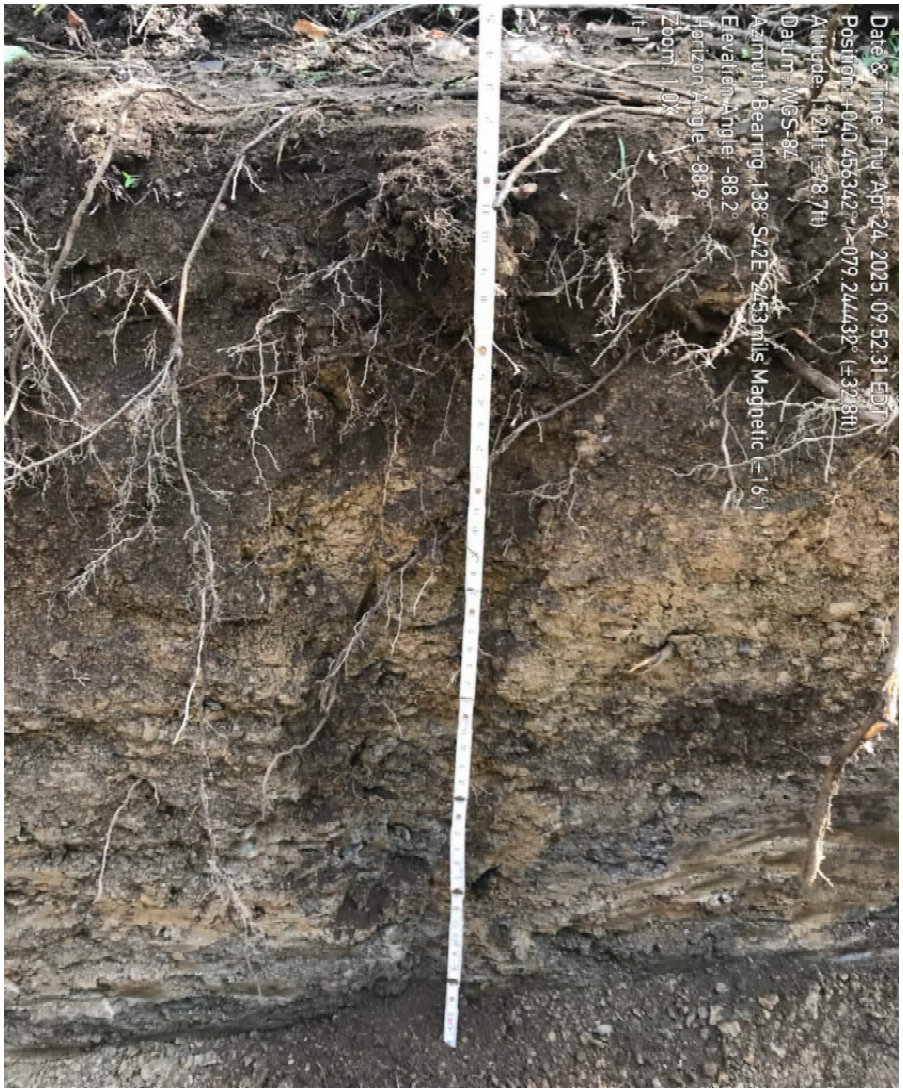


Photo Number: 1
Description: IT-01 Test Pit Photo (approx. 50 in. bgs)
Date Taken: 4/24/2025

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(724) 327-5200
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Homer City Generation LP
HCPP Pipeline
354-010
IT-01

INFILTRATION TESTING DAILY FIELD REPORT

Project Name:	HCPP Pipeline	Job No.:	354-010
Client:	Homer City Generation LP	Site Location:	Burrell Township, Indiana County, PA
Test Designation	IT-02	Weather Conditions:	Sunny
Latitude:	40.45629	Temperature:	57-78
Longitude:	-79.24466	Date:	4/24/2025

DOUBLE-RING INFILTROMETER TEST RESULTS

Tests Performed

Test ID (Depth, in bgs): **IT-02A (36)**

Reading Interval (min)*: 30

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	0.25	--
	0.38	--
1	0.31	0.62
2	0.31	0.62
3	0.25	0.50
4	0.38	0.76
5	--	--
6	--	--
7	--	--
8	--	--

Stabilized Rate of Drop?** → Test Result: Performed

Lowest Drop (in)	0.25
Highest Drop (in)	0.38
Difference (in)	0.13

→ **Yes**

Infiltration Rate (in/hr)***: **0.63**

Test ID (Depth, in bgs): **IT-02B (36)**

Reading Interval (min)*: 30

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	0.38	--
	0.25	--
1	0.38	0.76
2	0.25	0.50
3	0.25	0.50
4	0.25	0.50
5	--	--
6	--	--
7	--	--
8	--	--

Stabilized Rate of Drop?** → Test Result: Performed

Lowest Drop (in)	0.25
Highest Drop (in)	0.38
Difference (in)	0.13

→ **Yes**

Infiltration Rate (in/hr)***: **0.57**

Design Infiltration Rate (in/hr)** =** **0.30** Assumed Safety Factor = 2

Legend

* If the drop during the second 30-minute presoak interval is less than 2 inches, use 30 minute intervals for the testing. If the drop during the second 30-minute presoak interval is 2 inches or greater, use 10 minute intervals.

**A stabilized rate of drop is defined as a difference of ¼ inch or less of drop between the highest and lowest interval readings of four consecutive interval readings.

***The Infiltration Rate is the average drop between the four appropriate consecutive readings.

****The Design Infiltration Rate is the geometric mean of the tested Infiltration Rates reduced by the assumed factor of safety.

Completed By:
X
Austin Perry, E.I.T.
Project Consultant

Reviewed By:
X
Tyler Reynolds, P.E.
Project Manager

Soil Log

Project Name: HCPP Pipeline
Project Number: 354-010
Client: Homer City Generation LP
Site Location: Burrell Township, Indiana County, PA
Test Pit: IT-02
Date: 4/24/2025
Elevation: 1100
Equipment Used: CAT 300.9D Mini Excavator
Geology: Casselman Formation
NRCS Soil Survey Map Unit: GcB (Gilpin Channery Silt Loam)
Land Use: Open Field/Forest
Weather: Sunny
Latitude: 40.45629
Classified by: Austin Perry, E.I.T.
Reviewed by: Tyler Reynolds, P.E.
Longitude: -79.24466
Bottom of test pit (in): 79

Additional Comments:

Horizon	Horizon Boundary (inches)	Soil Textural Class (USDA)	Coarse Fragments	Color Patterns	Pores - Roots	Grade of Structure	Depth to Bedrock (inches)	Depth to Free Water (inches)	Comments
A	0 to 13	Dark Grayish Brown (10YR 4/2) Silt Loam	<15% Gravel	--	Common Very Fine to Coarse Tubular Pores; Common Fine to Very Coarse Roots Throughout	Weak Very Fine to Fine Granular Structure; Loose Consistence	--	--	Topsoil
B	13 to 33	Dark Yellowish Brown (10YR 4/4) Clay Loam	<15% Gravel to Cobble	--	Common Fine to Coarse Interstitial Pores; Few Very Fine Roots Throughout	Moderate Very Fine to Coarse Angular Blocky Structure; Friable Consistence	--	--	--
B	33 to 61	Yellow (10YR 7/6) Sandy Clay	35% to <60% Gravel to Cobble	Light Gray (10YR 7/1) Few Very Fine to Fine Prominent Mottles	Few Very Fine to Fine Interstitial Pores; No Roots	Moderate Very Fine to Coarse Angular Blocky Structure; Friable to Firm Consistence	--	--	--
C	61 to 79	Gray (10YR 6/1) Clay	60% to <90% Gravel to Cobble	--	Common Coarse Interstitial Pores; No Roots	Strong Fine to Coarse Platy Structure; Firm Consistence	79	--	Weathered Rock

Photo Number: 1
Description: IT-02A Double Ring Photo
Date Taken: 4/24/2025

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Homer City Generation LP
HCPP Pipeline
354-010
IT-02

Photo Number: 2
Description: IT-02B Double Ring Photo
Date Taken: 4/24/2025

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Homer City Generation LP
HCPP Pipeline
354-010
IT-02

Photo Number: 3
Description: IT-02 Test Pit Photo (approx. 79 in. bgs)
Date Taken: 4/24/2025

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Homer City Generation LP
HCPP Pipeline
354-010
IT-02

INFILTRATION TESTING DAILY FIELD REPORT

Project Name: HCPP Pipeline
Client: ~~CNX Midstream Partners, LP~~
Test Designation: IT-03
Latitude: 40.456159
Longitude: -79.24494

Job No.: ~~346-002~~
Site Location: Burrell Township, Indiana County, PA
Weather Conditions: Sunny
Temperature: 43-75
Date: 4/23/2025

DOUBLE-RING INFILTROMETER TEST RESULTS

Tests Performed

Test ID (Depth, in bgs): **IT-03A (26)**

Reading Interval (min)*: 30

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	0.13	--
	0.75	--
1	0.44	0.88
2	0.25	0.50
3	0.38	0.76
4	0.75	1.50
5	0.56	1.12
6	0.63	1.26
7	0.63	1.26
8	--	--

Stabilized Rate of Drop?** — Test Result: Performed

Lowest Drop (in)	0.56
Highest Drop (in)	0.75
Difference (in)	0.19

→ **Yes**

Infiltration Rate (in/hr)***: **1.29**

Test ID (Depth, in bgs): **IT-03B (26)**

Reading Interval (min)*: 10

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	5.50	--
	6.00	--
1	3.19	19.14
2	1.06	6.36
3	1.50	9.00
4	1.06	6.36
5	1.19	7.14
6	1.06	6.36
7	1.13	6.78
8	--	--

Stabilized Rate of Drop?** — Test Result: Performed

Lowest Drop (in)	1.06
Highest Drop (in)	1.19
Difference (in)	0.13

→ **Yes**

Infiltration Rate (in/hr)***: **6.66**

Design Infiltration Rate (in/hr)** = **1.46**

Assumed Safety Factor = 2

Legend

* If the drop during the second 30-minute presoak interval is less than 2 inches, use 30 minute intervals for the testing. If the drop during the second 30-minute presoak interval is 2 inches or greater, use 10 minute intervals.

**A stabilized rate of drop is defined as a difference of ¼ inch or less of drop between the highest and lowest interval readings of four consecutive interval readings.

***The Infiltration Rate is the average drop between the four appropriate consecutive readings.

****The Design Infiltration Rate is the geometric mean of the tested Infiltration Rates reduced by the assumed factor of safety.

Completed By:
X
Sean Mingus, E.I.T.
Staff Consultant

Reviewed By:
X
Tyler Reynolds, P.E.
Project Manager

Soil Log

Project Name: HCPP Pipeline
Project Number: ~~346.002~~
Client: ~~CNX Midstream Partners, LP~~
Site Location: Burrell Township, Indiana County, PA
Test Pit: IT-03
Date: 4/23/2025
Elevation: 1097
Equipment Used: CAT 300.9D Mini Excavator
Geology: Casselman Formation
NRCS Soil Survey Map Unit: ErB (Ernest Silt Loam)
Land Use: Open Field/Forest
Weather: Sunny
Latitude: 40.456159
Classified by: Sean Mingus, E.I.T.
Reviewed by: Tyler Reynolds, P.E.
Longitude: -79.24494
Bottom of test pit (in): 50

Additional Comments:

Horizon	Horizon Boundary (inches)	Soil Textural Class (USDA)	Coarse Fragments	Color Patterns	Pores - Roots	Grade of Structure	Depth to Bedrock (inches)	Depth to Free Water (inches)	Comments
A	0 to 12	Very Dark Grayish Brown (10YR 3/2) Silt Loam	<15% Gravel	--	Common Very Fine to Coarse Tubular Pores; Common Coarse Roots Throughout	Weak Very Fine to Fine Granular Structure; Loose Consistence	--	26	Topsoil
B	12 to 39	Brownish Yellow (10YR 6/8) Sandy Clay Loam	35% to <60% Gravel	--	Common Fine to Coarse Interstitial Pores; Few Medium Roots In Cracks	Moderate Very Fine to Coarse Platy Structure; Friable Consistence	--	6.5	--
B	39 to 50	Yellowish Brown (10YR 5/4) Sandy Clay Loam	35% to <60% Gravel	Light Gray (10YR 7/1) Common Medium Distinct Mottles	Few Very Fine Interstitial Pores; Few Fine Roots In Cracks	Moderate Fine Platy Structure; Friable Consistence	--	--	--

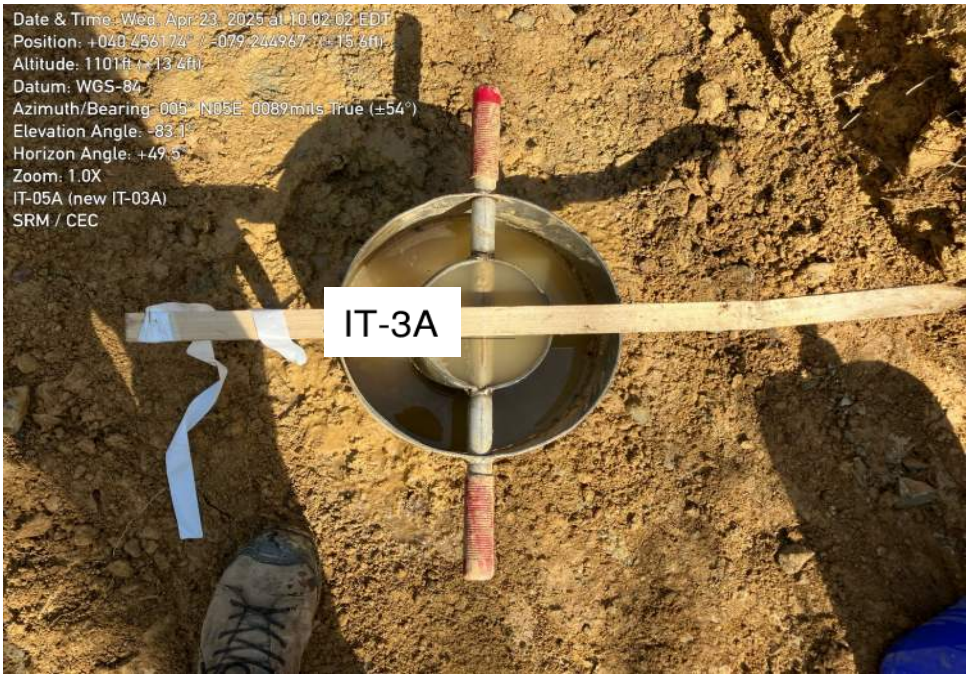

Photo Number: 1
Description: IT-03-A Double Ring Photo
Date Taken: 4/23/2025

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~~CNX Midstream Partners, LP~~
HCPP Pipeline
~~346-002~~
IT-03

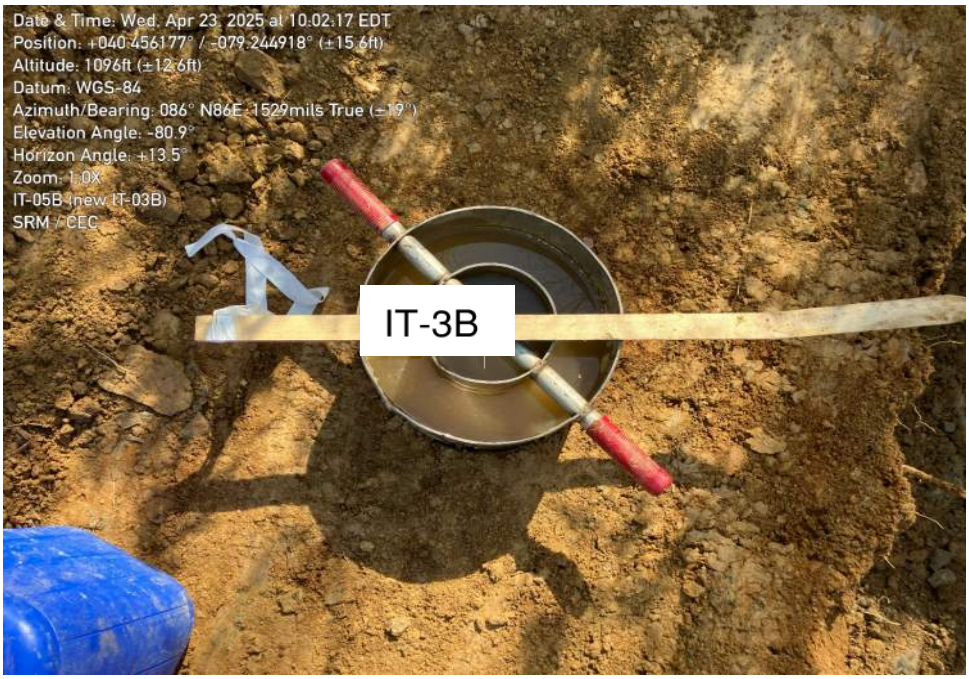

Photo Number: 2
Description: IT-03-B Double Ring Photo
Date Taken: 4/23/2025

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~~CNX Midstream Partners, LP~~
HCPP Pipeline
~~346-002~~
IT-03

Photo Number: 3
Description: IT-03 Test Pit Photo (approx. 50 inches bgs)
Date Taken: 4/23/2025

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INFILTRATION TESTING DAILY FIELD REPORT

Project Name:	HCPP Pipeline	Job No.:	354-010
Client:	Homer City Generation LP	Site Location:	Burrell Township, Indiana County, PA
Test Designation	IT-05	Weather Conditions:	Sunny
Latitude:	40.456502	Temperature:	57-78
Longitude:	-79.245273	Date:	4/24/2025

DOUBLE-RING INFILTROMETER TEST RESULTS

No Tests Performed

Test ID (Depth, in bgs): **IT-05A ()**

Reading Interval (min)*: 30

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	0.00	--
	0.00	--
1	0.00	--
2	0.00	--
3	0.00	--
4	0.00	--
5	--	--
6	--	--
7	--	--
8	--	--

Test Result: Aborted

Stabilized Rate of Drop?** Lowest Drop (in) -- Highest Drop (in) -- Difference (in) -- --

Infiltration Rate (in/hr)***: --

Test ID (Depth, in bgs): **IT-05B ()**

Reading Interval (min)*: 30

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	0.00	--
	0.00	--
1	0.00	--
2	0.00	--
3	0.00	--
4	0.00	--
5	--	--
6	--	--
7	--	--
8	--	--

Test Result: Aborted

Stabilized Rate of Drop?** Lowest Drop (in) -- Highest Drop (in) -- Difference (in) -- --

Infiltration Rate (in/hr)***: --

Design Infiltration Rate (in/hr)** = --

Assumed Safety Factor = 2

Legend

* If the drop during the second 30-minute presoak interval is less than 2 inches, use 30 minute intervals for the testing. If the drop during the second 30-minute presoak interval is 2 inches or greater, use 10 minute intervals.

**A stabilized rate of drop is defined as a difference of ¼ inch or less of drop between the highest and lowest interval readings of four consecutive interval readings.

***The Infiltration Rate is the average drop between the four appropriate consecutive readings.

****The Design Infiltration Rate is the geometric mean of the tested Infiltration Rates reduced by the assumed factor of safety.

Completed By:
X
Austin Perry, E.I.T.
Project Consultant

Reviewed By:
X
Tyler Reynolds, P.E.
Project Manager

Soil Log

Project Name: HCPP Pipeline
Project Number: 354-010
Client: Homer City Generation LP
Site Location: Burrell Township, Indiana County, PA
Test Pit: IT-05
Date: 4/24/2025
Elevation: 1106
Equipment Used: CAT 300.9D Mini Excavator
Geology: Casselman Formation
NRCS Soil Survey Map Unit: ErB (Ernest Silt Loam)
Land Use: Open Field/Forest
Weather: Sunny
Latitude: 40.456502
Classified by: Austin Perry, E.I.T.
Reviewed by: Tyler Reynolds, P.E.
Longitude: -79.245273
Bottom of test pit (in): 68

Additional Comments: Excavator bucket refusal at approximately 68 inches below ground surface. Tests were not performed due to limiting features (mottling) encountered within 18-inches of the proposed test depth.

Horizon	Horizon Boundary (inches)	Soil Textural Class (USDA)	Coarse Fragments	Color Patterns	Pores - Roots	Grade of Structure	Depth to Bedrock (inches)	Depth to Free Water (inches)	Comments
A	0 to 15	Very Dark Grayish Brown (10YR 3/2) Silt Loam	<15% Gravel	--	Common Very Fine to Coarse Tubular Pores; Common Fine to Very Coarse Roots Throughout	Weak Very Fine to Fine Granular Structure; Loose Consistence	--	--	Topsoil
B	15 to 32	Brownish Yellow (10YR 6/8) Sandy Clay Loam	35% to <60% Gravel	--	Common Fine to Coarse Interstitial Pores; Few Very Fine Roots In Cracks	Moderate Very Fine to Coarse Platy Structure; Friable to Firm Consistence	--	--	--
B	32 to 60	Yellowish Brown (10YR 5/4) Sandy Clay Loam	35% to <60% Gravel	Light Gray (10YR 7/1) Common Fine Distinct Mottles	Few Fine Interstitial Pores; Few Very Fine Roots In Cracks	Strong Fine Platy Structure; Friable to Firm Consistence	--	--	--
C	60 to 68	Dark Gray (10YR 4/1) Clay	60% to <90% Gravel to Cobble	--	Common Medium Interstitial Pores; No Roots	Strong Fine to Very Coarse Platy Structure; Firm Consistence	68	--	Weathered Rock

Photo Number: 1
Description: IT-05 Test Pit Photo (approx. 68 in. bgs)
Date Taken: 4/24/2025

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Homer City Generation LP
HCPP Pipeline
354-010
IT-05

INFILTRATION TESTING DAILY FIELD REPORT

Project Name:	HCPP Pipeline	Job No.:	354-010
Client:	Homer City Generation LP	Site Location:	Burrell Township, Indiana County, PA
Test Designation	IT-06	Weather Conditions:	Sunny
Latitude:	40.451735	Temperature:	59-72
Longitude:	-79.243897	Date:	4/25/2025

DOUBLE-RING INFILTROMETER TEST RESULTS

Tests Performed

Test ID (Depth, in bgs): **IT-06A (13)**

Reading Interval (min)*: 30

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	0.13	--
	0.25	--
1	0.13	0.26
2	0.13	0.26
3	0.25	0.50
4	0.13	0.26
5	--	--
6	--	--
7	--	--
8	--	--

Stabilized Rate of Drop?** → Test Result: Performed

Lowest Drop (in)	0.13
Highest Drop (in)	0.25
Difference (in)	0.12

→ **Yes**

Infiltration Rate (in/hr)***: **0.32**

Test ID (Depth, in bgs): **IT-06B (13)**

Reading Interval (min)*: 30

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	0.00	--
	0.06	--
1	0.06	0.12
2	0.13	0.26
3	0.06	0.12
4	0.06	0.12
5	--	--
6	--	--
7	--	--
8	--	--

Stabilized Rate of Drop?** → Test Result: Performed

Lowest Drop (in)	0.06
Highest Drop (in)	0.13
Difference (in)	0.07

→ **Yes**

Infiltration Rate (in/hr)***: **0.16**

Design Infiltration Rate (in/hr)** =** **0.11** Assumed Safety Factor = 2

Legend

* If the drop during the second 30-minute presoak interval is less than 2 inches, use 30 minute intervals for the testing. If the drop during the second 30-minute presoak interval is 2 inches or greater, use 10 minute intervals.

**A stabilized rate of drop is defined as a difference of ¼ inch or less of drop between the highest and lowest interval readings of four consecutive interval readings.

***The Infiltration Rate is the average drop between the four appropriate consecutive readings.

****The Design Infiltration Rate is the geometric mean of the tested Infiltration Rates reduced by the assumed factor of safety.

Completed By:
X
Austin Perry, E.I.T.
Project Consultant

Reviewed By:
X
Tyler Reynolds, P.E.
Project Manager

Soil Log

Project Name: HCPP Pipeline
Project Number: 354-010
Client: Homer City Generation LP
Site Location: Burrell Township, Indiana County, PA
Test Pit: IT-06
Date: 4/25/2025
Elevation: 1229
Equipment Used: CAT 300.9D Mini Excavator
Geology: Monongahela Group
NRCS Soil Survey Map Unit: DoC (Dormont Silt Loam)
Land Use: Open Field/Forest
Weather: Sunny
Latitude: 40.451735
Classified by: Austin Perry, E.I.T.
Reviewed by: Tyler Reynolds, P.E.
Longitude: -79.243897
Bottom of test pit (in): 40

Additional Comments:

Horizon	Horizon Boundary (inches)	Soil Textural Class (USDA)	Coarse Fragments	Color Patterns	Pores - Roots	Grade of Structure	Depth to Bedrock (inches)	Depth to Free Water (inches)	Comments
A	0 to 13	Grayish Brown (10YR 5/2) Silt Loam	<15% Gravel	--	Common Very Fine to Coarse Tubular Pores; Common Very Fine to Fine Roots Throughout	Weak Very Fine to Fine Granular Structure; Loose Consistence	--	--	Topsoil
B	13 to 40	Brownish Yellow (10YR 6/8) Clay Loam	<15% Gravel	--	Few Very Fine to Fine Interstitial Pores; No Roots	Moderate Very Fine to Coarse Angular Blocky Structure; Very Friable to Friable Consistence	--	--	--

Photo Number: 1
Description: IT-06A
Date Taken: 4/25/2025

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Homer City Generation LP
HCPP Pipeline
354-010
IT-06

Photo Number: 2
Description: IT-06B
Date Taken: 4/25/2025

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Homer City Generation LP
HCPP Pipeline
354-010
IT-06

Photo Number: 3
Description: IT-06 (approx. 40 in. bgs)
Date Taken: 4/24/2025

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Homer City Generation LP
HCPP Pipeline
354-010
IT-06

INFILTRATION TESTING DAILY FIELD REPORT

Project Name:	HCPP Pipeline	Job No.:	354-010
Client:	Homer City Generation LP	Site Location:	Burrell Township, Indiana County, PA
Test Designation	IT-07	Weather Conditions:	Sunny
Latitude:	40.455985	Temperature:	43-75
Longitude:	-79.245986	Date:	4/23/2025

DOUBLE-RING INFILTROMETER TEST RESULTS

Tests Performed

Test ID (Depth, in bgs): **IT-07A (48)**

Reading Interval (min)*: 10

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	6.00	--
	5.50	--
1	3.50	21.00
2	3.25	19.50
3	3.25	19.50
4	3.19	19.14
5	3.06	18.36
6	3.00	18.00
7	--	--
8	--	--

Stabilized Rate of Drop?** — Test Result: Performed

Lowest Drop (in)	3.00
Highest Drop (in)	3.25
Difference (in)	0.25

→ **Yes**

Infiltration Rate (in/hr)***: **18.75**

Test ID (Depth, in bgs): **IT-07B (48)**

Reading Interval (min)*: 10

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	6.00	--
	5.88	--
1	3.06	18.36
2	2.81	16.86
3	2.50	15.00
4	2.38	14.28
5	2.25	13.50
6	2.25	13.50
7	--	--
8	--	--

Stabilized Rate of Drop?** — Test Result: Performed

Lowest Drop (in)	2.25
Highest Drop (in)	2.50
Difference (in)	0.25

→ **Yes**

Infiltration Rate (in/hr)***: **14.07**

Design Infiltration Rate (in/hr)** = **8.12**

Assumed Safety Factor = 2

Legend

* If the drop during the second 30-minute presoak interval is less than 2 inches, use 30 minute intervals for the testing. If the drop during the second 30-minute presoak interval is 2 inches or greater, use 10 minute intervals.

**A stabilized rate of drop is defined as a difference of ¼ inch or less of drop between the highest and lowest interval readings of four consecutive interval readings.

***The Infiltration Rate is the average drop between the four appropriate consecutive readings.

****The Design Infiltration Rate is the geometric mean of the tested Infiltration Rates reduced by the assumed factor of safety.

Completed By:
X
Sean Mingus, E.I.T.
Staff Consultant

Reviewed By:
X
Tyler Reynolds, P.E.
Project Manager

Soil Log

Project Name: HCPP Pipeline
Project Number: 354-010
Client: Homer City Generation LP
Site Location: Burrell Township, Indiana County, PA
Test Pit: IT-07
Date: 4/23/2025
Elevation: 1085
Equipment Used: CAT 300.9D Mini Excavator
Geology: Casselman Formation
NRCS Soil Survey Map Unit: ErB (Ernest Silt Loam)
Land Use: Open Field/Forest
Weather: Sunny
Latitude: 40.455985
Classified by: Sean Mingus, E.I.T.
Reviewed by: Tyler Reynolds, P.E.
Longitude: -79.245986
Bottom of test pit (in): 72

Additional Comments:

Horizon	Horizon Boundary (inches)	Soil Textural Class (USDA)	Coarse Fragments	Color Patterns	Pores - Roots	Grade of Structure	Depth to Bedrock (inches)	Depth to Free Water (inches)	Comments
A	0 to 17	Very Dark Grayish Brown (10YR 3/2) Silt Loam	<15% Gravel	--	Common Very Fine to Coarse Tubular Pores; Common Medium Roots Throughout	Weak Very Fine to Fine Granular Structure; Loose Consistence	--	--	Topsoil
B	17 to 32	Brownish Yellow (10YR 6/8) Sandy Clay Loam	35% to <60% Gravel	--	Common Fine to Coarse Interstitial Pores; Few Very Fine Roots In Cracks	Moderate Very Fine to Coarse Platy Structure; Friable Consistence	--	--	--
B	32 to 72	Brown (10YR 5/3) Sandy Clay Loam	60% to <90% Gravel	Light Gray (10YR 7/1) Few Coarse Distinct Mottles	Few Very Fine Interstitial Pores; No Roots	Strong Very Coarse Platy Structure; Very Firm Consistence	--	--	--

Photo Number: 1
Description: IT-07-A Double Ring Photo
Date Taken: 4/23/2025

Civil & Environmental Consultants, Inc.
4350 Northern Pike, Suite 141, Monroeville, PA 15146
(724) 327-5200
www.cecinc.com

Homer City Generation LP
HCPP Pipeline
354-010
IT-07

Photo Number: 2
Description: IT-07-B Double Ring Photo
Date Taken: 4/23/2025

Civil & Environmental Consultants, Inc.
4350 Northern Pike, Suite 141, Monroeville, PA 15146
(724) 327-5200
www.cecinc.com

Homer City Generation LP
HCPP Pipeline
354-010
IT-07

Photo Number: 3
Description: IT-07 Test Pit Photo (approx. 72 inches bgs)
Date Taken: 4/23/2025

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4350 Northern Pike, Suite 141, Monroeville, PA 15146
(724) 327-5200
www.cecinc.com

CNX Midstream Partners, LP
HCPP Pipeline
354-010
IT-07

INFILTRATION TESTING DAILY FIELD REPORT

Project Name:	HCPP Pipeline	Job No.:	354-010
Client:	Homer City Generation LP	Site Location:	Burrell Township, Indiana County, PA
Test Designation	IT-08	Weather Conditions:	Sunny
Latitude:	40.4566799	Temperature:	57-78
Longitude:	-79.245422	Date:	4/24/2025

DOUBLE-RING INFILTROMETER TEST RESULTS

Tests Performed

Test ID (Depth, in bgs): **IT-08A (55)**

Reading Interval (min)*: 10

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	7.00	--
	7.00	--
1	2.50	15.00
2	2.50	15.00
3	2.25	13.50
4	2.25	13.50
5	--	--
6	--	--
7	--	--
8	--	--

Stabilized Rate of Drop?** → Test Result: Performed

Lowest Drop (in)	2.25
Highest Drop (in)	2.50
Difference (in)	0.25

→ **Yes**

Infiltration Rate (in/hr)***: **14.25**

Test ID (Depth, in bgs): **IT-08B (55)**

Reading Interval (min)*: 10

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	7.00	--
	7.00	--
1	2.25	13.50
2	2.00	12.00
3	2.00	12.00
4	2.13	12.78
5	--	--
6	--	--
7	--	--
8	--	--

Stabilized Rate of Drop?** → Test Result: Performed

Lowest Drop (in)	2.00
Highest Drop (in)	2.25
Difference (in)	0.25

→ **Yes**

Infiltration Rate (in/hr)***: **12.57**

Design Infiltration Rate (in/hr)** = **6.69**

Assumed Safety Factor = 2

Legend

* If the drop during the second 30-minute presoak interval is less than 2 inches, use 30 minute intervals for the testing. If the drop during the second 30-minute presoak interval is 2 inches or greater, use 10 minute intervals.

**A stabilized rate of drop is defined as a difference of ¼ inch or less of drop between the highest and lowest interval readings of four consecutive interval readings.

***The Infiltration Rate is the average drop between the four appropriate consecutive readings.

****The Design Infiltration Rate is the geometric mean of the tested Infiltration Rates reduced by the assumed factor of safety.

Completed By:
X
Austin Perry, E.I.T.
Project Consultant

Reviewed By:
X
Tyler Reynolds, P.E.
Project Manager

Soil Log

Project Name: HCPP Pipeline
Project Number: 354-010
Client: Homer City Generation LP
Site Location: Burrell Township, Indiana County, PA
Test Pit: IT-08
Date: 4/24/2025
Elevation: 1104
Equipment Used: CAT 300.9D Mini Excavator
Geology: Casselman Formation
NRCS Soil Survey Map Unit: ErB (Ernest Silt Loam)
Land Use: Open Field/Forest
Weather: Sunny
Latitude: 40.4566799
Classified by: Austin Perry, E.I.T.
Reviewed by: Tyler Reynolds, P.E.
Longitude: -79.245422
Bottom of test pit (in): 80

Additional Comments: Excavator bucket refusal at approximately 80 inches below ground surface.

Horizon	Horizon Boundary (inches)	Soil Textural Class (USDA)	Coarse Fragments	Color Patterns	Pores - Roots	Grade of Structure	Depth to Bedrock (inches)	Depth to Free Water (inches)	Comments
A	0 to 13	Dark Grayish Brown (10YR 4/2) Silt Loam	<15% Gravel	--	Common Very Fine to Coarse Tubular Pores; Common Fine to Coarse Roots Throughout	Weak Very Fine to Fine Granular Structure; Loose Consistence	--	--	Topsoil
B	13 to 60	Yellowish Brown (10YR 5/4) Silty Clay Loam	35% to <60% Gravel	--	Common Fine to Coarse Interstitial Pores; Few Very Fine Roots In Cracks	Moderate Very Fine to Coarse Platy Structure; Friable to Firm Consistence	--	--	--
B	60 to 80	Brownish Yellow (10YR 6/6) Clay	35% to <60% Gravel to Cobble	--	Few Fine to Coarse Interstitial Pores; No Roots	Strong Fine to Very Coarse Angular Blocky Structure; Friable to Firm Consistence	80	--	--

Photo Number: 1
Description: IT-08A Double Ring Photo
Date Taken: 4/24/2025

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(724) 327-5200
www.cecinc.com

Homer City Generation LP
HCPP Pipeline
354-010
IT-08

Photo Number: 2
Description: IT-08B Double Ring Photo
Date Taken: 4/24/2025

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(724) 327-5200
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Homer City Generation LP
HCPP Pipeline
354-010
IT-08

Photo Number: 3
Description: IT-08 Test Pit Photo (approx. 80 in. bgs)
Date Taken: 4/24/2025

Civil & Environmental Consultants, Inc. 4350 Northern Pike, Suite 141, Monroeville, PA 15146 (724) 327-5200 www.cecinc.com	Homer City Generation LP HCPP Pipeline 354-010 IT-08

INFILTRATION TESTING DAILY FIELD REPORT

Project Name:	HCPP Pipeline	Job No.:	354-010
Client:	Homer City Generation LP	Site Location:	Burrell Township, Indiana County, PA
Test Designation	IT-09	Weather Conditions:	Sunny
Latitude:	40.455870°	Temperature:	71-82
Longitude:	-79.245719°	Date:	8/4/2025

DOUBLE-RING INFILTROMETER TEST RESULTS

Tests Performed

Test ID (Depth, in bgs): **IT-09A (52)**

Reading Interval (min)*: 10

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	1.81	--
	2.44	--
1	0.50	3.00
2	0.63	3.78
3	0.63	3.78
4	0.81	4.86
5	0.69	4.14
6	--	--
7	--	--
8	--	--

Stabilized Rate of Drop?** — Test Result: Performed

Lowest Drop (in)	0.63
Highest Drop (in)	0.81
Difference (in)	0.18

→ **Yes**

Infiltration Rate (in/hr)***: **4.14**

Test ID (Depth, in bgs): **IT-09B (52)**

Reading Interval (min)*: 10

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	3.13	--
	3.56	--
1	0.81	4.86
2	0.88	5.28
3	0.69	4.14
4	0.69	4.14
5	--	--
6	--	--
7	--	--
8	--	--

Stabilized Rate of Drop?** — Test Result: Performed

Lowest Drop (in)	0.69
Highest Drop (in)	0.88
Difference (in)	0.19

→ **Yes**

Infiltration Rate (in/hr)***: **4.61**

Design Infiltration Rate (in/hr)** =** **2.18** Assumed Safety Factor = 2

Legend

* If the drop during the second 30-minute presoak interval is less than 2 inches, use 30 minute intervals for the testing. If the drop during the second 30-minute presoak interval is 2 inches or greater, use 10 minute intervals.

**A stabilized rate of drop is defined as a difference of ¼ inch or less of drop between the highest and lowest interval readings of four consecutive interval readings.

***The Infiltration Rate is the average drop between the four appropriate consecutive readings.

****The Design Infiltration Rate is the geometric mean of the tested Infiltration Rates reduced by the assumed factor of safety.

Completed By:
X
Sean Mingus, E.I.T.
Staff Consultant

Reviewed By:
X
Tyler Reynolds, P.E.
Project Manager

Soil Log

Project Name: HCPP Pipeline
Project Number: 354-010
Client: Homer City Generation LP
Site Location: Burrell Township, Indiana County, PA
Test Pit: IT-09
Date: 8/4/2025
Elevation: 1085
Equipment Used: CAT 305.5E2
Geology: Casselman Formation
NRCS Soil Survey Map Unit: ErB (Ernest Silt Loam)
Land Use: Open Field/Forest
Weather: Sunny
Latitude: 40.455870°
Classified by: Sean Mingus, E.I.T.
Reviewed by: Tyler Reynolds, P.E.
Longitude: -79.245719°
Bottom of test pit (in): 71

Additional Comments:

Horizon	Horizon Boundary (inches)	Soil Textural Class (USDA)	Coarse Fragments	Color Patterns	Pores - Roots	Grade of Structure	Depth to Bedrock (inches)	Depth to Free Water (inches)	Comments
A	0 to 22	Very Dark Grayish Brown (10YR 3/2) Silt Loam	<15% Gravel	--	Common Very Fine to Coarse Tubular Pores; Common Medium Roots Throughout	Weak Very Fine to Fine Granular Structure; Loose Consistence	--	--	Topsoil
B	22 to 50	Pale Brown (10YR 6/3) Sandy Clay Loam	35% to <60% Gravel	--	Common Fine to Coarse Interstitial Pores; Few Fine Roots In Cracks	Moderate Fine to Coarse Granular Structure; Friable to Firm Consistence	--	--	--
B	50 to 71	Light Brownish Gray (10YR 6/2) Sandy Clay Loam	35% to <60% Gravel	--	Few Very Fine Interstitial Pores; No Roots	Strong Coarse to Very Coarse Platy Structure; Very Firm Consistence	--	--	--

Photo Number: 1
Description: IT-09-A Double Ring Photo
Date Taken: 8/4/2025

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4350 Northern Pike, Suite 141, Monroeville, PA 15146
(724) 327-5200
www.cecinc.com

Homer City Generation LP
HCPP Pipeline
354-010
IT-09

Photo Number: 2
Description: IT-09-B Double Ring Photo
Date Taken: 8/4/2025

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4350 Northern Pike, Suite 141, Monroeville, PA 15146
(724) 327-5200
www.cecinc.com

Homer City Generation LP
HCPP Pipeline
354-010
IT-09

Photo Number: 3
Description: IT-09 Test Pit Photo (approx. 71 inches bgs)
Date Taken: 8/4/2025

Civil & Environmental Consultants, Inc. 4350 Northern Pike, Suite 141, Monroeville, PA 15146 (724) 327-5200 www.cecinc.com	Homer City Generation LP HCPP Pipeline 354-010 IT-09

INFILTRATION TESTING DAILY FIELD REPORT

Project Name:	HCPP Pipeline	Job No.:	354-010
Client:	Homer City Generation LP	Site Location:	Burrell Township, Indiana County, PA
Test Designation	IT-10	Weather Conditions:	Sunny
Latitude:	40.456721°	Temperature:	71-82
Longitude:	-79.245253°	Date:	8/4/2025

DOUBLE-RING INFILTROMETER TEST RESULTS

No tests performed due to shallow limiting layer.

Test ID (Depth, in bgs): **IT-10A ()**

Reading Interval (min)*: --

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	--	--
	--	--
1	--	--
2	--	--
3	--	--
4	--	--
5	--	--
6	--	--
7	--	--
8	--	--

Test Result: --

Stabilized Rate of Drop?** Lowest Drop (in) -- Highest Drop (in) -- Difference (in) -- --

Infiltration Rate (in/hr)***: --

Test ID (Depth, in bgs): **IT-10B ()**

Reading Interval (min)*: --

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	--	--
	--	--
1	--	--
2	--	--
3	--	--
4	--	--
5	--	--
6	--	--
7	--	--
8	--	--

Test Result: --

Stabilized Rate of Drop?** Lowest Drop (in) -- Highest Drop (in) -- Difference (in) -- --

Infiltration Rate (in/hr)***: --

Design Infiltration Rate (in/hr)** = --

Assumed Safety Factor = --

Legend

* If the drop during the second 30-minute presoak interval is less than 2 inches, use 30 minute intervals for the testing. If the drop during the second 30-minute presoak interval is 2 inches or greater, use 10 minute intervals.

**A stabilized rate of drop is defined as a difference of ¼ inch or less of drop between the highest and lowest interval readings of four consecutive interval readings.

***The Infiltration Rate is the average drop between the four appropriate consecutive readings.

****The Design Infiltration Rate is the geometric mean of the tested Infiltration Rates reduced by the assumed factor of safety.

Completed By:
X
Austin Perry, E.I.T.
Project Consultant

Reviewed By:
X
Tyler Reynolds, P.E.
Project Manager

Soil Log

Project Name: HCPP Pipeline
Project Number: 354-010
Client: Homer City Generation LP
Site Location: Burrell Township, Indiana County, PA
Test Pit: IT-10
Date: 8/4/2025
Elevation: 1108
Equipment Used: CAT 305.5E2
Geology: Casselman Formation
NRCS Soil Survey Map Unit: ErB (Ernest Silt Loam)
Land Use: Open Field/Forest
Weather: Sunny
Latitude: 40.456721°
Classified by: Austin Perry, E.I.T.
Reviewed by: Tyler Reynolds, P.E.
Longitude: -79.245253°
Bottom of test pit (in): 67

Additional Comments: Excavator bucket refusal at approximately 67 inches below ground surface.

Horizon	Horizon Boundary (inches)	Soil Textural Class (USDA)	Coarse Fragments	Color Patterns	Pores - Roots	Grade of Structure	Depth to Bedrock (inches)	Depth to Free Water (inches)	Comments
A	0 to 10	Dark Grayish Brown (10YR 4/2) Silt Loam	<15% Gravel	--	Common Very Fine to Very Coarse Tubular Pores; Many Fine to Very Coarse Roots Throughout	Weak Very Fine to Fine Granular Structure; Loose Consistence	--	--	Topsoil
B	10 to 23	Yellowish Brown (10YR 5/4) Sandy Clay Loam	35% to <60% Gravel	--	Few Fine to Medium Interstitial Pores; Common Very Fine to Fine Roots In Cracks	Moderate Very Fine to Coarse Angular Blocky Structure; Very Friable Consistence	--	--	--
C	23 to 67	Yellowish Brown (10YR 5/4) Sand	60% to <90% Gravel to Cobble	--	Common Fine to Coarse Interstitial Pores; No Roots	Strong Fine to Very Coarse Platy Structure; Firm Consistence	--	--	--

Photo Number: 1
Description: IT-10 Test Pit Photo (approx. 67 in. bgs)
Date Taken: 8/4/2025

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Homer City Generation LP
HCPP Pipeline
354-010
IT-10

INFILTRATION TESTING DAILY FIELD REPORT

Project Name:	HCPP Pipeline	Job No.:	354-010
Client:	Homer City Generation LP	Site Location:	Burrell Township, Indiana County, PA
Test Designation	IT-11	Weather Conditions:	Sunny
Latitude:	40.456829°	Temperature:	71-82
Longitude:	-79.245569°	Date:	8/4/2025

DOUBLE-RING INFILTROMETER TEST RESULTS

Tests Performed

Test ID (Depth, in bgs): **IT-11A (9)**

Reading Interval (min)*: 10

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	2.75	--
	3.00	--
1	0.88	5.28
2	0.88	5.28
3	0.88	5.28
4	0.81	4.86
5	--	--
6	--	--
7	--	--
8	--	--

Stabilized Rate of Drop?** → Test Result: Performed

Lowest Drop (in)	0.81
Highest Drop (in)	0.88
Difference (in)	0.07

→ **Yes**

Infiltration Rate (in/hr)***: **5.18**

Test ID (Depth, in bgs): **IT-11B (9)**

Reading Interval (min)*: 10

Reading	Drop (in)	Rate (in/hr)
1 hr Presoak in 30-minute Increments	3.00	--
	3.06	--
1	0.94	5.64
2	0.81	4.86
3	0.75	4.50
4	0.75	4.50
5	--	--
6	--	--
7	--	--
8	--	--

Stabilized Rate of Drop?** → Test Result: Performed

Lowest Drop (in)	0.75
Highest Drop (in)	0.94
Difference (in)	0.19

→ **Yes**

Infiltration Rate (in/hr)***: **4.88**

Design Infiltration Rate (in/hr)** = **2.51**

Assumed Safety Factor = 2

Legend

* If the drop during the second 30-minute presoak interval is less than 2 inches, use 30 minute intervals for the testing. If the drop during the second 30-minute presoak interval is 2 inches or greater, use 10 minute intervals.

**A stabilized rate of drop is defined as a difference of ¼ inch or less of drop between the highest and lowest interval readings of four consecutive interval readings.

***The Infiltration Rate is the average drop between the four appropriate consecutive readings.

****The Design Infiltration Rate is the geometric mean of the tested Infiltration Rates reduced by the assumed factor of safety.

Completed By:
X
Austin Perry, E.I.T.
Project Consultant

Reviewed By:
X
Tyler Reynolds, P.E.
Project Manager

Soil Log

Project Name: HCPP Pipeline
Project Number: 354-010
Client: Homer City Generation LP
Site Location: Burrell Township, Indiana County, PA
Test Pit: IT-11
Date: 8/4/2025
Elevation: 1097
Equipment Used: CAT 305.5E2
Geology: Casselman Formation
NRCS Soil Survey Map Unit: ErB (Ernest Silt Loam)
Land Use: Open Field/Forest
Weather: Sunny
Latitude: 40.456829°
Classified by: Austin Perry, E.I.T.
Reviewed by: Tyler Reynolds, P.E.
Longitude: -79.245569°
Bottom of test pit (in): 66

Additional Comments:

Horizon	Horizon Boundary (inches)	Soil Textural Class (USDA)	Coarse Fragments	Color Patterns	Pores - Roots	Grade of Structure	Depth to Bedrock (inches)	Depth to Free Water (inches)	Comments
A	0 to 8	Dark Grayish Brown (10YR 4/2) Silt Loam	<15% Gravel	--	Common Very Fine to Very Coarse Tubular Pores; Common Fine to Medium Roots Throughout	Weak Very Fine to Fine Granular Structure; Loose Consistence	--	--	Topsoil
B	8 to 26	Yellowish Brown (10YR 5/4) Sandy Clay Loam	35% to <60% Gravel	--	Few Fine to Medium Interstitial Pores; Few Very Fine to Fine Roots In Cracks	Moderate Very Fine to Coarse Angular Blocky Structure; Very Friable Consistence	--	--	--
C	26 to 66	Yellowish Brown (10YR 5/4) Sand	35% to <60% Gravel to Cobble	--	Common Fine to Coarse Interstitial Pores; No Roots	Strong Fine to Very Coarse Platy Structure; Friable to Firm Consistence	--	--	--

Photo Number: 1
Description: IT-11A Double Ring Photo
Date Taken: 8/4/2025

Civil & Environmental Consultants, Inc.
4350 Northern Pike, Suite 141, Monroeville, PA 15146
(724) 327-5200
www.cecinc.com

Homer City Generation LP
HCPP Pipeline
354-010
IT-11

Photo Number: 2
Description: IT-11B Double Ring Photo
Date Taken: 8/4/2025

Civil & Environmental Consultants, Inc.
4350 Northern Pike, Suite 141, Monroeville, PA 15146
(724) 327-5200
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Homer City Generation LP
HCPP Pipeline
354-010
IT-11

Photo Number: 3
Description: IT-11 Test Pit Photo (approx. 66 in. bgs)
Date Taken: 8/4/2025

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Homer City Generation LP
HCPP Pipeline
354-010
IT-11

APPENDIX F

POST-CONSTRUCTION STORMWATER MANAGEMENT SPREADSHEETS

General Information

Instructions | *General* | Volume | Rate | Quality

Project Name: **HCPP Pipeline - POA-1**

Application Type: **Individual NPDES Application**

County: **Indiana**

Municipality: **Burrell Township**

Project Type: **New Utilities**

(●) New Project ( ) Minor / Major Amendment

Area: **4.04** acres
(In Watershed)

Total Earth Disturbance: **3.03** acres
(In Watershed)

No. of Post-Construction Points of Analysis: **1**

at: **001**

Point of Analysis (POA) No.	Drainage Area (DA) (acres)	Earth Disturbance in DA (acres)	Existing Impervious in DA (acres)	Proposed Impervious in DA (acres)	Receiving Waters	Ch. 93 Class	Structural SCM(s)
001	0.99	0.99	0.00	0.44	Stream 4	CWF	Yes
Undetained Areas	3.05	2.03	0.05	0.05	Stream 4	CWF	
Totals:	**4.04**	**3.03**	**0.05**	**0.49**			

PROJECT SITE MEETS SMALL SITE EXCEPTION - RATE WORKSHEET NOT REQUIRED

Volume Management

Project: HCPP Pipeline - POA-1

Instructions | General | *Volume* | Rate | Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): **2.53** inches

Alternative 2-Year / 24-Hour Storm Event: inches

Alternative Source:

Pre-Construction Conditions: *No. Rows:* **5**

☐ *Exempt from Meadow in Good Condition* ☑ *Automatically Calculate CN, Ia, Runoff and Volume*

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Pervious as Meadow	0.19	D	78	0.564	0.81	560
Forested (Good Condition)	0.01	C	70	0.857	0.47	14
Forested (Good Condition)	1.97	D	77	0.597	0.76	5,436
Impervious Areas: Streets and Roads - Gravel (Including ROW)	0.03	D	91	0.198	1.64	156
Impervious as Meadow	0.01	D	78	0.564	0.81	19
TOTAL (ACRES):	**2.21**				**TOTAL (CF):**	**6,191**

Post-Construction Conditions: *No. Rows:* **3**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	1.73	D	78	0.564	0.81	5,075
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.44	N/A	98	0.041	2.30	3,690

Impervious Areas: Streets and Roads - Gravel (Including ROW)	0.03	D	91	0.198	1.64	190

TOTAL (ACRES): **2.21** **TOTAL (CF):** **8,955**

NET CHANGE IN VOLUME TO MANAGE (CF): **2,764**

Non-Structural SCM Volume Credits:

☐ Tree Planting Credit

☐ Other (attach calculations):

Structural SCM Volume Credits: *No. Structural SCMs:* **1** *Start SCM Numbering at:* **1**

POA No.	SCM No.	SCM Name	MRC?	Discharge	Incremental SCM DA (acres)	Volume Routed to SCM (CF)	Infiltration / Vegetated Area (SF)	Infiltration Rate (in/hr)	Infiltration Period (hrs)	Vegeta-ted?	Media Depth (ft)	Storage Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
001	1	Rain Garden / Bioretention	-	Off-Site	0.99	5,234	1,667	6.69	72	Yes	1.5	2,827	**5,234**	**0**
												Totals:	**5,234**	

INFILTRATION & ET CREDITS (CF): **5,234**

NET CHANGE IN VOLUME TO MANAGE (CF): **2,764**

TOTAL CREDITS (CF): **5,234**

VOLUME REQUIREMENT SATISFIED

Rate Control

Project: HCPP Pipeline - POA-1

Instructions | General | Volume | *Rate* | Quality

SMALL SITE EXCEPTION SATISFIED: RATE CONTROL NOT REQUIRED

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):	**2.53**	Alternative 2-Year 24-Hour Storm Event (in):	
NOAA 10-Year 24-Hour Storm Event (in):	**3.57**	Alternative 10-Year 24-Hour Storm Event (in):	
NOAA 50-Year 24-Hour Storm Event (in):	**4.78**	Alternative 50-Year 24-Hour Storm Event (in):	
NOAA 100-Year 24-Hour Storm Event (in):	**5.35**	Alternative 100-Year 24-Hour Storm Event (in):	

☑ **Report Summary of Peak Rates Only**

Attach model input and output data or other calculations to support the rates reported below.

	Peak Discharge Rates (cfs)			
	Pre-Construction	**Post-Construction**	**Net Change**	
2-Year Storm:	**3.14**	**2.64**	**-0.50**	***Rate Control Satisfied***
10-Year Storm:	**6.38**	**5.79**	**-0.59**	***Rate Control Satisfied***
50-Year Storm:	**10.60**	**9.45**	**-1.15**	***Rate Control Satisfied***
100-Year Storm:	**12.68**	**11.21**	**-1.47**	***Rate Control Satisfied***

POA No.	SCM No.	SCM Name	MRC?	Inflow to SCM (cfs)				Outflow from SCM (cfs)			
				2-yr	10-yr	50-yr	100-yr	2-yr	10-yr	50-yr	100-yr

001	1	Rain Garden / Bioretention	-	2.27	3.63	5.30	6.09	0.13	0.54	0.79	0.88

Water Quality

Project: HCPP Pipeline - POA-1

PRINT

Instructions | General | Volume | Rate | *Quality*

Pre-Construction Pollutant Loads:

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Pervious as Meadow	Grassland/Herbaceous	0.19	D	560	48.8	0.22	2.30	1.71	0.01	0.08
Forested (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	0.01	C	14	45.0	0.13	1.05	0.04	0.00	0.00
Forested (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	1.97	D	5,436	45.0	0.13	1.05	15.28	0.04	0.36
Impervious Areas: Streets and Roads - Gravel (Including ROW)	Highway (general)	0.03	D	156	141.0	0.43	2.65	1.37	0.00	0.03
Impervious as Meadow	Grassland/Herbaceous	0.01	D	19	48.8	0.22	2.30	0.06	0.00	0.00
	TOTAL (ACRES):	**2.21**					**TOTALS:**	**18.47**	**0.06**	**0.47**

Post-Construction Pollutant Loads (without BMPs):

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN

Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	1.73	D	5,075	48.8	0.22	2.30	15.46	0.07	0.73
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	0.44	N/A	3,690	65.0	0.29	2.05	14.98	0.07	0.47
Impervious Areas: Streets and Roads - Gravel (Including ROW)	Highway (general)	0.03	D	190	141.0	0.43	2.65	1.67	0.01	0.03
	TOTAL (ACRES):	**2.21**					**TOTALS:**	**32.11**	**0.14**	**1.23**

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS):	**13.64**	**0.09**	**0.77**

☑ **Characterize Undetained Areas (for Untreated Stormwater)** *No. Rows:* **2**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	**1.19**	**D**	**78**	**0.564**	**0.81**	**3,488**
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	**0.03**	**N/A**	**98**	**0.041**	**2.30**	**251**

Non-Structural SCM Water Quality Credits:

☑ Pervious Undetained Area Credit

TSS	TP	TN
2.66	**0.01**	**0.08**

☐ Other (attach calculations)

TSS	TP	TN

Description:

Structural SCM Water Quality Credits:

☑ *Use default SCM Outflows and Median SCM Outflow Concentrations*

POA	SCM	SCM Name	RC?	SCM DA	Vol. Routed	Inf. & ET	Capture & Buffer	Outflow	Outflow Conc. (mg/L)	Pollutant Loads (lbs)

No.	No.	SCM Name	MP	DA (acres)	to SCM (CF)	Credits (CF)	Buffer Credits (CF)	(CF)	TSS	TP	TN	TSS	TP	TN
001	1	Rain Garden / Bioretention	-	0.99	5,234	5,234		0	10.00	0.24	0.96	0.00	0.00	0.00

	TSS	TP	TN
POLLUTANT LOADS FROM STRUCTURAL SCM (TREATED) OUTFLOWS (LBS):	0.00	0.00	0.00
POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):	11.65	0.05	0.53
NON-STRUCTURAL SCM WATER QUALITY CREDITS (LBS):	2.66	0.01	0.08
NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):	8.99	0.04	0.45
POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):	18.47	0.06	0.47

WATER QUALITY REQUIREMENT SATISFIED

CERTIFICATION

I certify under penalty of law and subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities) that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify that the structure, function, and calculations contained in this spreadsheet have not been modified in comparison to the spreadsheet DEP has posted to its website or, if modifications were made, an explanation of the modifications made is attached to this spreadsheet.

Charles Kane, P.E.	9/24/2025
Spreadsheet User Name	Date

General Information

Instructions | *General* | Volume | Rate | Quality

Project Name: **HCPP Pipeline - POA-2**

Application Type: **Individual NPDES Application**

County: **Indiana**

Municipality: **Burrell Township**

Project Type: **New Utilities**

(●) New Project ( ) Minor / Major Amendment

Area: **2.79** acres
(In Watershed)

Total Earth Disturbance: **2.24** acres
(In Watershed)

No. of Post-Construction Points of Analysis: **1**

at: **002**

Point of Analysis (POA) No.	Drainage Area (DA) (acres)	Earth Disturbance in DA (acres)	Existing Impervious in DA (acres)	Proposed Impervious in DA (acres)	Receiving Waters	Ch. 93 Class	Structural SCM(s)
002	1.14	1.14	0.01	0.56	Stream 2	CWF	Yes
Undetained Areas	1.65	1.10	0.00	0.00	Stream 2	CWF	
Totals:	**2.79**	**2.24**	**0.01**	**0.56**			

PROJECT SITE MEETS SMALL SITE EXCEPTION - RATE WORKSHEET NOT REQUIRED

Volume Management

Project: HCPP Pipeline - POA-2

Instructions | General | *Volume* | Rate | Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): **2.53** inches

Alternative 2-Year / 24-Hour Storm Event: inches

Alternative Source:

Pre-Construction Conditions: *No. Rows:* **6**

☐ *Exempt from Meadow in Good Condition* ☑ *Automatically Calculate CN, Ia, Runoff and Volume*

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Pervious as Meadow	0.06	D	78	0.564	0.81	190
Pervious as Meadow	0.06	C	71	0.817	0.51	119
Forested (Good Condition)	0.59	D	77	0.597	0.76	1,635
Forested (Good Condition)	1.14	C	70	0.857	0.47	1,941
Impervious Areas: Streets and Roads - Gravel (Including ROW)	0.01	D	91	0.198	1.64	54
Impervious as Meadow	0.00	D	78	0.564	0.81	6
TOTAL (ACRES):	**1.87**				**TOTAL (CF):**	**3,944**

Post-Construction Conditions: *No. Rows:* **3**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	0.47	D	78	0.564	0.81	1,382

Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	0.85	C	71	0.817	0.51	1,556
Impervious Areas: Industrial	0.56	N/A	98	0.041	2.30	4,637
	TOTAL (ACRES):	**1.87**			**TOTAL (CF):**	**7,574**

NET CHANGE IN VOLUME TO MANAGE (CF): **3,631**

Non-Structural SCM Volume Credits:

☐ Tree Planting Credit

☐ Other (attach calculations):

Description: **CREDIT (CF):**

Structural SCM Volume Credits: *No. Structural SCMs:* **2** *Start SCM Numbering at:* **2**

POA No.	SCM No.	SCM Name	MRC?	Discharge	Incremental SCM DA (acres)	Volume Routed to SCM (CF)	Infiltration / Vegetated Area (SF)	Infiltration Rate (in/hr)	Infiltration Period (hrs)	Vegeta-ted?	Media Depth (ft)	Storage Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
002	2	Dry Extended Detention Basin	-	to SCM No. 2	0.71	4,319	940	0.00	72	Yes		0	**0**	
002	3	Rain Garden / Bioretention		Off-Site	0.43	5,804	1,995	1.46	72	Yes	1.5	1,920	**4,541**	**835**
												Totals:	**4,541**	**835**

INFILTRATION & ET CREDITS (CF): **5,376**

NET CHANGE IN VOLUME TO MANAGE (CF): **3,631**

TOTAL CREDITS (CF): **5,376**

VOLUME REQUIREMENT SATISFIED

Rate Control

Project: HCPP Pipeline - POA-2

Instructions | General | Volume | *Rate* | Quality

SMALL SITE EXCEPTION SATISFIED: RATE CONTROL NOT REQUIRED

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):	**2.53**	Alternative 2-Year 24-Hour Storm Event (in):	
NOAA 10-Year 24-Hour Storm Event (in):	**3.57**	Alternative 10-Year 24-Hour Storm Event (in):	
NOAA 50-Year 24-Hour Storm Event (in):	**4.78**	Alternative 50-Year 24-Hour Storm Event (in):	
NOAA 100-Year 24-Hour Storm Event (in):	**5.35**	Alternative 100-Year 24-Hour Storm Event (in):	

☑ **Report Summary of Peak Rates Only**

Attach model input and output data or other calculations to support the rates reported below.

	Peak Discharge Rates (cfs)			
	Pre-Construction	**Post-Construction**	**Net Change**	
2-Year Storm:	**1.73**	**1.17**	**-0.56**	***Rate Control Satisfied***
10-Year Storm:	**3.85**	**3.01**	**-0.84**	***Rate Control Satisfied***
50-Year Storm:	**6.69**	**5.03**	**-1.66**	***Rate Control Satisfied***
100-Year Storm:	**8.12**	**6.03**	**-2.09**	***Rate Control Satisfied***

POA No.	SCM No.	SCM Name	MRC?	Inflow to SCM (cfs)				Outflow from SCM (cfs)			
				2-yr	10-yr	50-yr	100-yr	2-yr	10-yr	50-yr	100-yr

002	2	Dry Extended Detention Basin	-	1.81	2.77	3.92	4.48	0.41	0.50	0.71	1.55
002	3	Rain Garden / Bioretention		1.01	1.63	2.39	2.74	0.38	0.57	0.80	0.96

Water Quality

Project: HCPP Pipeline - POA-2

PRINT

Instructions | General | Volume | Rate | *Quality*

Pre-Construction Pollutant Loads:

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Pervious as Meadow	Grassland/Herbaceous	0.06	D	190	48.8	0.22	2.30	0.58	0.00	0.03
Pervious as Meadow	Grassland/Herbaceous	0.06	C	119	48.8	0.22	2.30	0.36	0.00	0.02
Forested (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	0.59	D	1,635	45.0	0.13	1.05	4.59	0.01	0.11
Forested (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	1.14	C	1,941	45.0	0.13	1.05	5.45	0.02	0.13
Impervious Areas: Streets and Roads - Gravel (Including ROW)	Highway (general)	0.01	D	54	141.0	0.43	2.65	0.47	0.00	0.01
Impervious as Meadow	Grassland/Herbaceous	0.00	D	6	48.8	0.22	2.30	0.02	0.00	0.00
	TOTAL (ACRES):	**1.87**					**TOTALS:**	**11.48**	**0.03**	**0.29**

Post-Construction Pollutant Loads (without BMPs):

Land Cover (from Volume Worksheet)	Land Cover for Water	Area	Soil	Runoff Volume	Pollutant Conc. (mg/L)	Pollutant Loads (lbs)

Land Cover (from Volume Worksheet)	Quality	(acres)	Group	Volume (cf)	TSS	TP	TN	TSS	TP	TN
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	0.47	D	1,382	48.8	0.22	2.30	4.21	0.02	0.20
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	0.85	C	1,556	48.8	0.22	2.30	4.74	0.02	0.22
Impervious Areas: Industrial	Industrial	0.56	N/A	4,637	81.0	0.24	2.01	23.45	0.07	0.58
	TOTAL (ACRES):	**1.87**					**TOTALS:**	**32.40**	**0.11**	**1.00**

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS):	**20.93**	**0.08**	**0.72**

☑ **Characterize Undetained Areas (for Untreated Stormwater)** *No. Rows:* **2**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	**0.325**	**D**	**78**	**0.564**	**0.81**	**953**
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	**0.408**	**C**	**71**	**0.817**	**0.51**	**750**

Non-Structural SCM Water Quality Credits:

☑ Pervious Undetained Area Credit

TSS	TP	TN
1.30	**0.00**	**0.04**

☐ Other (attach calculations)

Description:

TSS	TP	TN

Structural SCM Water Quality Credits:

☑ *Use default SCM Outflows and Median SCM Outflow Concentrations*

POA No.	SCM No.	SCM Name	MRC?	SCM DA (acres)	Vol. Routed to SCM (CF)	Inf. & ET Credits (CF)	Capture & Buffer Credits (CF)	Outflow (CF)	Outflow Conc. (mg/L)			Pollutant Loads (lbs)		
									TSS	TP	TN	TSS	TP	TN
002	2	Dry Extended Detention Basin	-	0.71	4,319	0		4,319	-	-	-	-	-	-
002	3	Rain Garden / Bioretention		0.43	5,804	5,376		428	10.00	0.24	0.96	0.27	0.01	0.03

	TSS	TP	TN
POLLUTANT LOADS FROM STRUCTURAL SCM (TREATED) OUTFLOWS (LBS):	**0.27**	**0.01**	**0.03**
POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):	**5.19**	**0.02**	**0.24**
NON-STRUCTURAL SCM WATER QUALITY CREDITS (LBS):	**1.30**	**0.00**	**0.04**
NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):	**4.16**	**0.03**	**0.23**
POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):	**11.48**	**0.03**	**0.29**

WATER QUALITY REQUIREMENT SATISFIED

CERTIFICATION

I certify under penalty of law and subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities) that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify that the structure, function, and calculations contained in this spreadsheet have not been modified in comparison to the spreadsheet DEP has posted to its website or, if modifications were made, an explanation of the modifications made is attached to this spreadsheet.

Charles Kane, P.E.	9/24/2025
Spreadsheet User Name	Date

General Information

Instructions | *General* | Volume | Rate | Quality

Project Name: **HCPP Pipeline - POA-3**

Application Type: **Individual E&S Application**

County: **Indiana**

Municipality: **Burrell Township**

Project Type: **New Utilities**

(●) New Project ( ) Minor / Major Amendment

Area: **0.41** acres
(In Watershed)

Total Earth Disturbance: **0.27** acres
(In Watershed)

No. of Post-Construction Points of Analysis: **1**

at: **003**

Point of Analysis (POA) No.	Drainage Area (DA) (acres)	Earth Disturbance in DA (acres)	Existing Impervious in DA (acres)	Proposed Impervious in DA (acres)	Receiving Waters	Ch. 93 Class	Structural SCM(s)
003	0.25	0.18	0.00	0.05	Stream 46	CWF	Yes
Undetained Areas	0.16	0.09	0.00	0.00	Stream 46	CWF	
Totals:	**0.41**	**0.27**		**0.05**			

PROJECT SITE MEETS SMALL SITE EXCEPTION - RATE WORKSHEET NOT REQUIRED

Volume Management

Project: HCPP Pipeline - POA-3

Instructions | General | *Volume* | Rate | Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): **2.53** inches

Alternative 2-Year / 24-Hour Storm Event _____ inches

Alternative Source: _____

Pre-Construction Conditions: *No. Rows:* **1** ☐ *Exempt from Meadow in Good Condition* ☑ *Automatically Calculate CN, Ia, Runoff and Volume*

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Pervious as Meadow	0.27	D	78	0.564	0.81	786
TOTAL (ACRES):	**0.27**				**TOTAL (CF):**	**786**

Post-Construction Conditions: *No. Rows:* **2**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	0.22	D	78	0.564	0.81	654
Roads (Including ROW) - Gravel	0.05	N/A	91	0.198	1.64	268
TOTAL (ACRES):	**0.27**				**TOTAL (CF):**	**921**

NET CHANGE IN VOLUME TO MANAGE (CF): **136**

Non-Structural SCM Volume Credits:

☐ Tree Planting Credit

☐ Other (attach calculations):

Description: | **CREDIT (CF):**

Structural SCM Volume Credits: *No. Structural SCMs:* **1** *Start SCM Numbering at:* **4**

POA No.	SCM No.	SCM Name	MRC?	Discharge	Incremental SCM DA (acres)	Volume Routed to SCM (CF)	Infiltration / Vegetated Area (SF)	Infiltration Rate (in/hr)	Infiltration Period (hrs)	Vegeta-ted?	Media Depth (ft)	Storage Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
003	4	Infiltration Berm & Retentive Grading	-	Off-Site	0.25	853	250	0.11	72	Yes	1.5	250	**149**	**105**
												Totals:	**149**	**105**

INFILTRATION & ET CREDITS (CF): **253**

NET CHANGE IN VOLUME TO MANAGE (CF): **136**

TOTAL CREDITS (CF): **253**

VOLUME REQUIREMENT SATISFIED

Rate Control

Project: HCPP Pipeline - POA-3

Instructions | General | Volume | *Rate* | Quality

SMALL SITE EXCEPTION SATISFIED: RATE CONTROL NOT REQUIRED

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):	**2.53**	Alternative 2-Year 24-Hour Storm Event (in):	
NOAA 10-Year 24-Hour Storm Event (in):	**3.57**	Alternative 10-Year 24-Hour Storm Event (in):	
NOAA 50-Year 24-Hour Storm Event (in):	**4.78**	Alternative 50-Year 24-Hour Storm Event (in):	
NOAA 100-Year 24-Hour Storm Event (in):	**5.35**	Alternative 100-Year 24-Hour Storm Event (in):	

☑ **Report Summary of Peak Rates Only**

Attach model input and output data or other calculations to support the rates reported below.

	Peak Discharge Rates (cfs)			
	Pre-Construction	**Post-Construction**	**Net Change**	
2-Year Storm:	**0.51**	**0.22**	**-0.29**	***Rate Control Satisfied***
10-Year Storm:	**1.00**	**0.82**	**-0.18**	***Rate Control Satisfied***
50-Year Storm:	**1.63**	**1.46**	**-0.17**	***Rate Control Satisfied***
100-Year Storm:	**1.94**	**1.71**	**-0.23**	***Rate Control Satisfied***

POA No.	SCM No.	SCM Name	MRC?	Inflow to SCM (cfs)				Outflow from SCM (cfs)			
				2-yr	10-yr	50-yr	100-yr	2-yr	10-yr	50-yr	100-yr

003	4	Infiltration Berm & Retentive Grading	-	0.40	0.73	1.14	1.34	0.10	0.46	0.83	0.95

Water Quality

Project: HCPP Pipeline - POA-3

PRINT

Instructions | General | Volume | Rate | *Quality*

Pre-Construction Pollutant Loads:

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Pervious as Meadow	Grassland/Herbaceous	0.27	D	786	48.8	0.22	2.30	2.39	0.01	0.11
	TOTAL (ACRES):	**0.27**					**TOTALS:**	**2.39**	**0.01**	**0.11**

Post-Construction Pollutant Loads (without BMPs):

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	0.22	D	654	48.8	0.22	2.30	1.99	0.01	0.09
Roads (Including ROW) - Gravel	Highway (general)	0.05	N/A	268	141.0	0.43	2.65	2.36	0.01	0.04
	TOTAL (ACRES):	**0.27**					**TOTALS:**	**4.35**	**0.02**	**0.14**

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS):	**1.95**	**0.01**	**0.03**

☑ **Characterize Undetained Areas (for Untreated Stormwater)** *No. Rows:* **1**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	**0.023**	**D**	**78**	**0.564**	**0.81**	**67**

Non-Structural SCM Water Quality Credits:

☑ Pervious Undetained Area Credit

TSS	TP	TN
0.05	0.00	0.00

☐ Other (attach calculations)

Description:

TSS	TP	TN

Structural SCM Water Quality Credits:

☑ *Use default SCM Outflows and Median SCM Outflow Concentrations*

POA No.	SCM No.	SCM Name	MRC?	SCM DA (acres)	Vol. Routed to SCM (CF)	Inf. & ET Credits (CF)	Capture & Buffer Credits (CF)	Outflow (CF)	Outflow Conc. (mg/L)			Pollutant Loads (lbs)		
									TSS	TP	TN	TSS	TP	TN
003	4	Infiltration Berm & Retentive Grading	-	0.25	853	253		600	10.00	0.24	0.96	0.37	0.01	0.04

	TSS	TP	TN
POLLUTANT LOADS FROM STRUCTURAL SCM (TREATED) OUTFLOWS (LBS):	**0.37**	**0.01**	**0.04**
POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):	**0.21**	**0.00**	**0.01**
NON-STRUCTURAL SCM WATER QUALITY CREDITS (LBS):	**0.05**	**0.00**	**0.00**
NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):	**0.53**	**0.01**	**0.04**
POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):	**2.39**	**0.01**	**0.11**

WATER QUALITY REQUIREMENT SATISFIED

CERTIFICATION

I certify under penalty of law and subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities) that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify that the structure, function, and calculations contained in this spreadsheet have not been modified in comparison to the spreadsheet DEP has posted to its website or, if modifications were made, an explanation of the modifications made is attached to this spreadsheet.

Charles Kane, P.E.	9/24/2025
Spreadsheet User Name	Date