
POST-CONSTRUCTION STORMWATER MANAGEMENT NARRATIVE

JULY, 2026

GRANVILLE DC

LEWISTOWN DEVELOPMENT LLC, A DELAWARE LIMITED
LIABILITY COMPANY

PROJECT NO. 1252-57

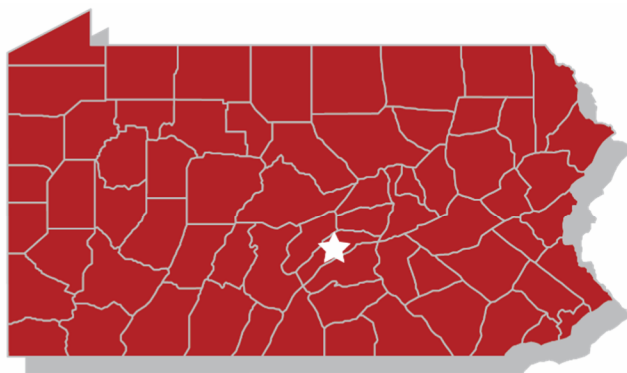


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SECTION 1. PROJECT BACKGROUND

INTRODUCTION

LIVIC Civil has prepared this Post-Construction Stormwater Management (PCSM) Plan and Narrative in coordination with Lewistown Development LLC, a Delaware limited liability company, for the Granville DC project. This plan and narrative have been developed in accordance with the requirements set by the Pennsylvania Department of Environmental Protection and the Granville Township Stormwater Management Ordinance (SWMO), also being in accordance with the Pennsylvania Stormwater Best Management Practices Manual (December 2006).

GENERAL DESCRIPTION

Lewistown Development LLC is proposing to construct 6 industrial buildings along Loop Road, development to the north and south of the intersection with Loop Road and Industrial Park Road in Granville Township, Mifflin County. The project will include construction of industrial buildings, access drives and stormwater management facilities and other site features. Refer to Appendix 1 for USGS location map.



Figure 1.1. General Location Map

DESIGN METHODOLOGY

The stormwater computations were performed in accordance with the criteria set forth by the Granville Township Stormwater Management Ordinance #030911 and the PA Stormwater BMP Manual. Rainfall intensities for each storm duration and frequency were obtained from the National Oceanic and Atmospheric Administration (NOAA). The precipitation frequency totals are included in Appendix 1.

A summary of project soil conditions is provided in Section 2 of this report. USDA/NRCS soil data was obtained to determine runoff coefficients and identify any site limitations. Field testing was performed to determine the feasibility of utilizing infiltration to meet water quality and volume control requirements. Supporting computations are provided to illustrate how these requirements were met for the stormwater management facilities.

A summary of surface runoff computations for pre-development and post-development conditions is included in Section 3 of this report. Peak stormwater runoff rates were calculated using Hydraflow Hydrographs software, which employs the SCS method and TR-55 for analysis. Drainage areas and land coverages were determined using CAD area applications. Time of concentration pathways were calculated for Pre-Development calculations using the SCS segmental approach.

To meet the peak rate runoff requirements, multiple stormwater management facilities have been proposed. A summary of post-development stormwater routings through the proposed infiltration basins is provided. Routing models were performed using Hydraflow Hydrographs software, which employs TR-55 for analysis.

A summary of operation and maintenance procedures for the BMPs is provided in Section 5.

GENERAL PCSM PLANNING AND DESIGN [Section 102.8(b)]

The post-construction stormwater management plan has been developed and is intended to minimize the extent of vegetation clearing and grading for the project's intended outcome.

The proposed improvements displayed on the drawings should be followed to ensure the existing drainage features and vegetation is maintained where intended to ensure protection of downstream off-site waterways. Proposed land coverage is intended to be stabilized with vegetation or impervious features such as pavement or building as shown on the drawings.

The increase in impervious coverage on the site has been managed by proposing the installation of infiltration basins on the project site. The proposed infiltration basins will support the required rate control, keeping post development flows less than or equal to pre-development. The thermal impacts of the proposed site should not adversely increase from the pre-construction conditions since most of the site is directed to the infiltration basins.

The plan has also been developed with the best intentions to utilize existing flow paths and features. The existing downstream drainage pathway is existing overland flow that discharge to the Juniata River (WWF, MF). The runoff peak rates shown have been reduced, benefitting the downstream areas.

The use of heavy equipment shall be avoided on areas that will be utilized for detention and infiltration. In addition, excessive compaction during final grading operations shall be minimized. In the area of the stormwater basin, over excavate a depth of twelve (12") inches from existing grade. Subsoil shall be ripped to a depth no less than six (6") inches before the placement of amended soil mixture, seeding and mulching operations to promote top level infiltration throughout the project site.

All the features listed above contribute to maintaining and protecting the physical, biological and chemical properties of the receiving stream.

SECTION 2. EXISTING SITE AND TOPOGRAPHIC FEATURES

PRE-DEVELOPMENT CONDITIONS [Section 102.8(f)(1)]

The topographic data shown on the plan drawings is from a topographic survey performed by Livic Civil. The existing project site is mainly agriculture fields with forest areas found on the project site. The surrounding area is developed with industrial facilities. The southern project site generally slopes from the west downhill to the east where it flows off the project site in a channel. The northern project site generally slopes from the southwest to the northeast where the flow also exits the project site through a channel.

The southern project site is bounded to the east by Loop Road, to the south by residential properties, and to the west and north by industrial developments. The northern project site is bounded to the east by lands now or formerly owned by Fred C & Marsha A Soult, to the south by industrial developments, to the west by Middle Road, and to the north by lands now formerly owned by David Mathew Maines and lands now or formerly owned by Dennison V & Dorothy J Peiffer. The Lewistown USGS 7 ½ Minute Quadrangles, which are appended to this report, can be used to locate the project and identify its surroundings.

SOILS AND SOIL LIMITATIONS [Section 102.8(f)(2)]

The custom soil resource report, obtained from Web Soil Survey (WSS), has identified the following soil types:

- ❖ Allegheny Loam (AbB) – 2 to 8 percent slopes
These soils are described as moderately well drained. They are classified in Hydrologic Soil Group B and are not considered hydric. The depth to the restrictive feature is more than 80 inches to fragipan. The depth to the water table is more than 80 inches.
- ❖ Andover gravelly loam (AnB) – 0 to 8 percent slopes
These soils are described as poorly drained. They are classified in Hydrologic Soil Group D and are not considered hydric. The depth to the restrictive feature is about 18 to 28 inches to fragipan. The depth to the water table is 0 to 6 inches.
- ❖ Brinkerton silt loam (BrA) – 0 to 3 percent slopes

These soils are described as poorly drained. They are classified in Hydrologic Soil Group D and are considered hydric. The depth to the restrictive feature is 15 to 34 inches to fragipan. The depth to the water table is 0 to 60 inches.

❖ Brinkerton silt loam (BrB) – 3 to 8 percent slopes

These soils are described as poorly drained. They are classified in Hydrologic Soil Group D and are considered hydric. The depth to the restrictive feature is 15 to 34 inches to fragipan. The depth to the water table is 0 to 60 inches.

❖ Edom silty clay loam (EdB) – 3 to 8 percent slopes

These soils are described as well drained. They are classified in Hydrologic Soil Group B and are not considered hydric. The depth to the restrictive feature is about 40 to 72 inches to lithic bedrock. The depth to the water table is more than 80 inches.

❖ Edom silty clay loam (EdC) – 8 to 15 percent slopes

These soils are described as well drained. They are classified in Hydrologic Soil Group B and are not considered hydric. The depth to the restrictive feature is about 40 to 72 inches to lithic bedrock. The depth to the water table is more than 80 inches.

❖ Edom silty clay loam (EdD) – 15 to 25 percent slopes

These soils are described as well drained. They are classified in Hydrologic Soil Group B and are not considered hydric. The depth to the restrictive feature is about 40 to 72 inches to lithic bedrock. The depth to the water table is more than 80 inches.

❖ Edom-Klinesville complex (EeB) – 3 to 8 percent slopes

These soils are described as well drained. They are classified in Hydrologic Soil Group B and are not considered hydric. The depth to the restrictive feature is about 40 to 72 inches to lithic bedrock. The depth to the water table is 48 to 72 inches

❖ Edom-Klinesville complex (EeC) – 8 to 15 percent slopes

These soils are described as well drained. They are classified in Hydrologic Soil Group B and are not considered hydric. The depth to the restrictive feature is about 40 to 72 inches to lithic bedrock. The depth to the water table is 48 to 72 inches

❖ Edom-Weikert complex (EfB) – 3 to 8 percent slopes

These soils are described as well drained. They are classified in Hydrologic Soil Group B and are not considered hydric. The depth to the restrictive feature is about 40 to 72 inches to lithic bedrock. The depth to the water table is more than 80 inches.

- ❖ Edom-Weikert complex (EfC) – 8 to 15 percent slopes
These soils are described as well drained. They are classified in Hydrologic Soil Group B and are not considered hydric. The depth to the restrictive feature is about 40 to 72 inches to lithic bedrock. The depth to the water table is more than 80 inches.
- ❖ Edom-Weikert complex (EfD) – 15 to 25 percent slopes
These soils are described as well drained. They are classified in Hydrologic Soil Group B and are not considered hydric. The depth to the restrictive feature is about 40 to 72 inches to lithic bedrock. The depth to the water table is more than 80 inches.
- ❖ Ernest silt loam (ErB) – 2 to 8 percent slopes
These soils are described as moderately well drained. They are classified in Hydrologic Soil Group C and are not considered hydric. The depth to the restrictive feature is about 20 to 36 inches to fragipan. The depth to the water table is 18 to 36 inches
- ❖ Klinsville shaly silt loam (KlB) – 3 to 8 percent slopes
These soils are described as well drained. They are classified in Hydrologic Soil Group D and are not considered hydric. The depth to the restrictive feature is about 10 to 20 inches to lithic bedrock. The depth to the water table is more than 80 inches.
- ❖ Klinsville shaly silt loam (KlC) – 8 to 15 percent slopes
These soils are described as somewhat excessively drained. They are classified in Hydrologic Soil Group D and are not considered hydric. The depth to the restrictive feature is about 10 to 20 inches to lithic bedrock. The depth to the water table is more than 80 inches.
- ❖ Monongahela silt loam (MoA) – 0 to 3 percent slopes
These soils are described as moderately well drained. They are classified in Hydrologic Soil Group C/D and are not considered hydric. The depth to the restrictive feature is about 18 to 30 inches to fragipan. The depth to the water table is 18 to 30 inches.
- ❖ Monongahela silt loam (MoB) – 3 to 8 percent slopes
These soils are described as moderately well drained. They are classified in Hydrologic Soil Group C/D and are not considered hydric. The depth to the restrictive feature is about 18 to 30 inches to fragipan. The depth to the water table is 18 to 30 inches
- ❖ Opequon-Hagerstown complex (ORF) – steep
These soils are described as well drained. They are classified in Hydrologic Soil Group D and are not considered hydric. The depth to the restrictive feature is about 12 to 20 inches to lithic bedrock. The depth to the water table is more than 80 inches.

❖ Purdy silt loam (Pu)

These soils are described as poorly drained. They are classified in Hydrologic Soil Group D and are considered hydric. The depth to the restrictive feature is more than 80 inches. The depth to the water table is 0 to 6 inches.

❖ Tyler silt loam (Ty)

These soils are described as somewhat poorly drained. They are classified in Hydrologic Soil Group D and are not considered hydric. The depth to the restrictive feature is about 15 to 36 inches to fragipan. The depth to the water table is 6 to 18 inches

On-site soils pose the following issues:

- Cutbanks cave
 - Excavations will be properly supported by sheeting and shoring to prevent caves.
- Corrosive to Concrete/Steel
 - Protection by coating or cathodic protection is recommended.
- Depth to saturated zone/seasonal high-water table
 - Utilize dewatering pump with a pumped water filter bag for any encountered water in excavation.
- Hydric/hydric inclusions
 - Delineated wetlands should be avoided at all times.
- Poor source of topsoil
 - Existing topsoil, which has been proven to be suitable, will be reused on-site.
- Low strength/landslide prone
 - A maximum of 3:1 slopes are proposed.
- Slow percolation
 - Bottom of infiltration basins should be avoided with excavation equipment to avoid compaction. Any ponding water should be removed with pumped water filter bag.
- Frost action
 - Removal and replace with select non-frost susceptible borrow to the expected frost depth penetration.
- Shrink/Swell
 - The site is balanced between cut/fill quantities.
- Piping
 - Provide dewatering during construction activities. Provide adequate underdrain/floodproofing for permanent structures. Avoid basement construction. Any ponded water should be pumped to an adequate erosion and sedimentation control facility.
- Wetness

- Utilize dewatering pump with a pumped water filter bag for any encountered water in excavation.

Further information is included in the PCSM Narrative. Refer to Appendix 2 for additional soils information from the USGS Web Soil Survey.

PAST, PRESENT AND PROPOSED LAND USE [Section 102.8(f)(3)]

The past (50 years) and present (5 years) use of the project site is the same, that use being as agricultural fields. The proposed land use is for the addition of 6 industrial buildings to the existing development. The project site will require grading of the project site, construction of buildings, access drives, and stormwater management. The limit of disturbance area is delineated and shown on the plan drawings. All the proposed changes to the project site will be shown on the plan drawings, including the following:

- Proposed Building Footprints, Site Improvements, Limits and Contouring
- All BMPs proposed for use on the project
- North arrow and legend

RECEIVING SURFACE WATERS [Section 102.8(f)(5)]

The receiving down-stream surface water is the Juniata River, which has been classified as a Warm Water Fishery, Migratory Fishes (WWF, MF) by Title 25, Chapter 93, of the Pennsylvania Code.

WRITTEN DESCRIPTION OF THE PCSM BMPs [Section 102.8(f)(6)]

Permanent PCSM BMP locations and details are shown on the plan drawings and include four (6) infiltration basins.

SEQUENCE OF PCSM BMP IMPLEMENTATION OR INSTALLATION [Section 102.8(f)(7)]

Sequence of BMP implementation and installation in relation to the scheduling of construction activities are located on the plans.

SUPPORTING CALCULATIONS [Section 102.8(f)(8)]

Supporting calculations are summarized in Section 3 to 4 and specific calculations are provided in Appendix 3 to 5 of this Narrative.

PLAN DRAWINGS [Section 102.8(f)(9)]

Site plans that are complete and legible are attached. All BMPs are shown on the plans and a legend is included. BMP details, notes and specifications are also included on the plan drawings.

RECYCLING OR DISPOSAL OF MATERIALS [Section 102.8(f)(11)]

The recycling and disposal of materials shall be in accordance with local, state and federal regulations. Comply with air quality, water quality, solid waste management policies, etc. Specifics on the recycling or disposal of material procedures are included on the plans.

GEOLOGIC FORMATIONS OR SOIL CONDITIONS [Section 102.8(f)(12)]

There are no geologic formation concerns. Exposure of the subgrade when performing earthwork operations should be minimized.

RIPARIAN FOREST BUFFER MANAGEMENT PLAN [Section 102.8(f)(14)]

No riparian buffers are located within the proposed project area.

SECTION 3. SUMMARY OF STORMWATER PEAK FLOWS

POINT OF INTEREST

Pre-development and post-development runoff for the project drainage areas was found to reach a single point of analysis (POA) that combines with other overland flows. Pre-development and post-development maps are shown in Appendix 3.

PRE-DEVELOPMENT PEAK FLOWS

A summary of pre-development runoff rates is below in Table 3.1.

Table 3.1 Summary of Pre-Development Peak Runoff Flows

Drainage Area	1-yr (cfs)	2-yr (cfs)	5-yr (cfs)	10-yr (cfs)	25-yr (cfs)	50-yr (cfs)	100-yr (cfs)
PRE POA A	17.85	34.63	64.36	93.59	140.40	183.40	233.28
PRE POA B	3.56	9.01	19.97	31.57	51.05	69.33	90.90
PRE POA C	1.53	3.90	8.63	13.66	22.01	29.84	39.07
PRE POA D	27.87	54.17	99.95	143.75	213.60	277.52	352.30
PRE POA E	0.32	1.38	4.56	8.49	15.71	22.96	31.72

POST-DEVELOPMENT PEAK FLOWS

A 5-minute time of concentration was utilized for the post-development detained calculations. A calculated time of concentration was utilized for the post-development bypass calculations for drainage area 5. A summary of the rates is listed below, and details are in Appendix 4.

Table 3.2 Summary of Post-Development Peak Runoff Flows

Drainage Area	1-yr (cfs)	2-yr (cfs)	5-yr (cfs)	10-yr (cfs)	25-yr (cfs)	50-yr (cfs)	100-yr (cfs)
POST DETAINED BASIN 1 [discharge]	0.28	0.36	0.49	0.59	0.74	0.98	1.20
POST DETAINED BASIN 2 [discharge]	0.00	0.00	0.00	0.21	0.53	0.77	0.99
POST POA A Undetained [bypass]	16.46	26.29	41.80	56.05	78.07	97.72	120.03
POST DETAINED BASIN 3 [discharge]	0.00	0.00	0.00	0.00	0.10	0.40	0.65
POST DETAINED BASIN 4 [discharge]	0.10	0.14	0.20	0.25	0.34	0.50	0.74
POST POA B Undetained [bypass]	3.06	6.51	12.84	19.22	29.53	39.07	50.21
POST POA C Undetained [bypass]	1.30	3.09	6.56	10.18	16.15	21.73	28.29
POST POA D BASIN 5 [discharge]	0.34	0.46	0.62	0.90	1.23	1.45	1.63
POST POA D BASIN 6 [discharge]	0.03	0.05	0.09	0.13	0.18	0.20	0.23
POST POA D Undetained [bypass]	6.83	16.50	35.03	53.99	84.92	113.74	147.55
POST POA E Undetained [bypass]	0.16	0.93	3.27	6.09	11.07	15.86	21.61

SECTION 4. SUMMARY OF STORMWATER MANAGEMENT

STORMWATER BMP ROUTING

The post-development runoff hydrographs for Post Development Areas have been routed through the proposed stormwater management facilities to reduce peak runoff flows. Table 4.1 summarizes the flows through the drainage areas. The facilities have been sized to control the 100-yr volume from the proposed impervious surfaces, therefore not increasing the overall flow from the site

NET CHANGE IN VOLUME AND RATE OF STORMWATER

Calculations were provided assuming no infiltration for the discharge rates. Refer to Appendix 4 for additional routing information and basin features.

Table 4.1 Summary of Flows

Drainage Area	1-yr (cfs)	2-yr* (cfs)	5-yr (cfs)	10-yr (cfs)	25-yr (cfs)	50-yr (cfs)	100-yr (cfs)
PRE POA A	17.85	34.63	64.36	93.59	140.40	183.40	233.28
POST POA A	16.67	26.56	42.17	56.51	78.71	98.78	121.60
Net Change in Peak Flow	-1.18	-8.07	-22.19	-37.08	-61.69	-84.62	-111.68
PRE POA B	3.56	9.01	19.97	31.57	51.05	69.33	90.90
POST POA B	3.11	6.58	12.97	19.38	29.76	39.38	50.76
Net Change in Peak Flow	-0.45	-2.43	-7.00	-12.19	-21.29	-29.95	-40.14
PRE POA C	1.53	3.90	8.63	13.66	22.01	29.84	39.07
POST POA C	1.30	3.09	6.56	10.18	16.15	21.73	28.29
Net Change in Peak Flow	-0.23	-0.81	-2.04	-3.48	-5.86	-8.11	-10.78
PRE POA D	27.87	54.17	99.95	143.75	213.60	277.52	352.30
POST POA D	7.06	16.82	35.50	54.59	85.82	114.99	149.06
Net Change in Peak Flow	-20.81	-37.35	-64.45	-89.16	-127.78	-162.53	-203.24
PRE POA E	0.32	1.38	4.56	8.49	15.71	22.96	31.72
POST POA E	0.16	0.93	3.27	6.09	11.07	15.86	21.61
Net Change in Peak Flow	-0.16	-0.45	-1.29	-2.40	-4.64	-7.10	-10.11

Table 4.2 Summary of Volumes

	Existing Conditions (ft³)	Developed Conditions (ft³)	Volume Increase (ft³)	Volume Provided (ft³)	Net Volume Reduction (ft³)
POA A	251,191	327,697	76,506	185,945	-109,439
POA B	68,472	422,259	353,787	422,258	-68471
POA C	27,567	26,466	-1,100	N/A	-1,100
POA D	99,210	230,759	131,549	134,549	-3000
POA E	14,137	7,267	-6,871	N/A	-6,871

CONVEYANCE SYSTEM

Conveyance of stormwater to the proposed infiltration basins is achieved through overland flow from grading activity and series of proposed pipe networks.

POTENTIAL THERMAL IMPACTS [Section 102.8(f)(13)]

Thermal impacts have been reduced by directing impervious areas to the infiltration facilities. Also, the difference in the 2-year runoff volume has been maintained.

ANTIDegradation ANALYSIS

The project site is not located within a special protection watershed; therefore, an analysis is not required.

SECTION 5. STORMWATER BMP MAINTENANCE & PLAN PREPARATION

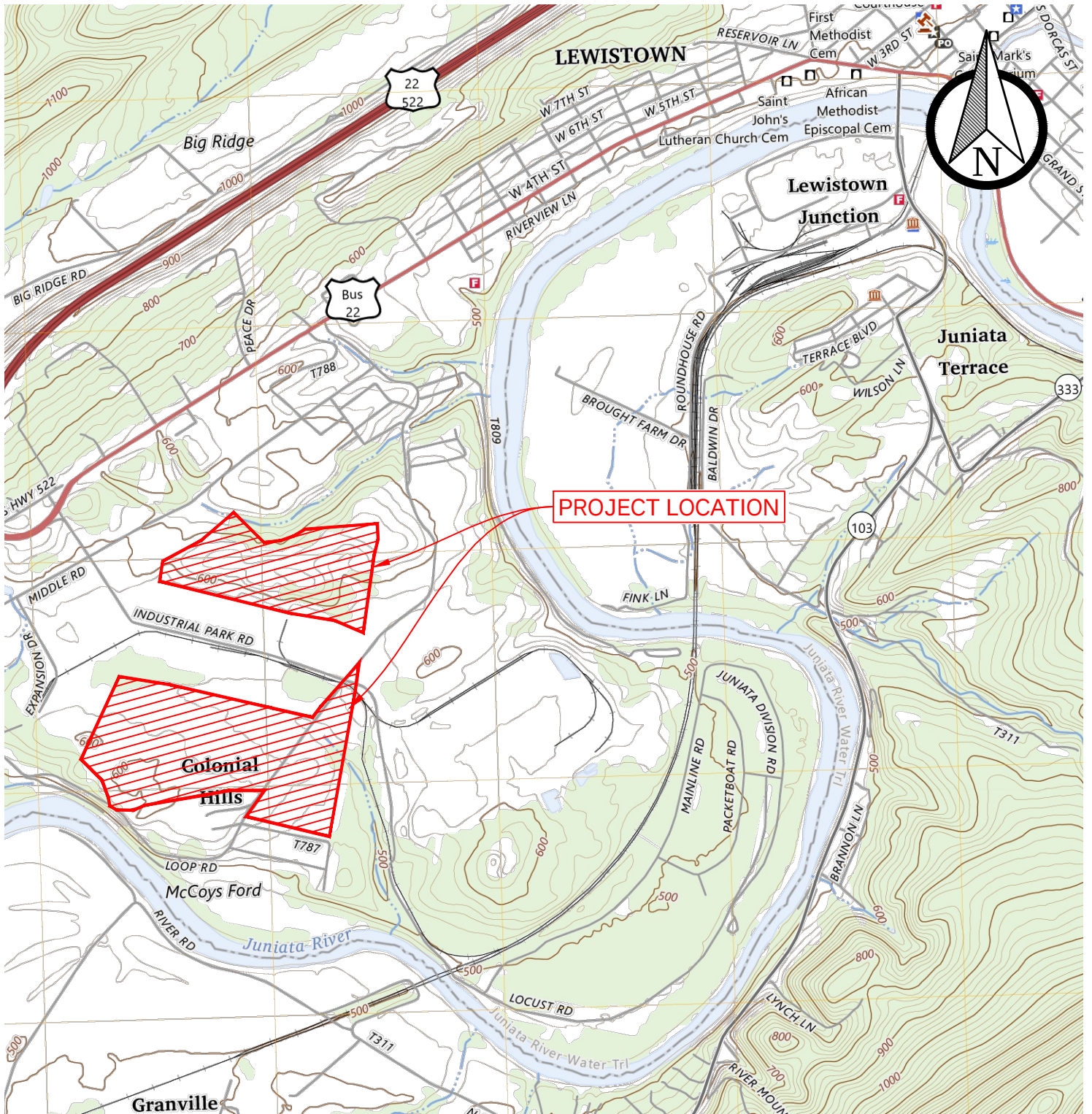
LONG-TERM OPERATION AND MAINTENANCE SCHEDULE

It shall be the responsibility of the owner to maintain the post-construction stormwater BMPs. The following are some typical maintenance items:

Infiltration Basin

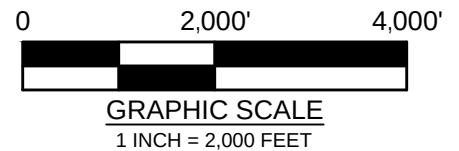
- Shall be inspected at least twice yearly and after every major storm event (greater than 1" rainfall depth) for accumulation of sediment, erosion, vegetation conditions, damage to outlet control structures, erosion control measures, signs of water contamination/spills and slope stability of the berms.
- Protect water quality basin area from compaction prior to installation.
- The vegetation along the surface should be maintained in good condition and any bare spots revegetated.
- Vehicles should not be parked or driven on water quality areas and care should be taken to avoid excessive compaction.
- Mow only as appropriate for vegetative cover species.
- Basin shall be inspected after every major storm event to assure de-watering within 72 hours. The emergency de-watering pipe shall only be utilized for maintenance activity purposes or in an emergency situation, which has been approved by the project engineer and local conservation district representative. After the basin has been drained, the end cap must be immediately re-installed on the de-watering pipe.
- After each inspection, a written report documenting any and all BMP repair and maintenance activities shall be required.

APPENDIX I



PROJECT LOCATION MAP

LEWISTOWN USGS QUAD
PROJECT LOCATED IN GRANVILLE TOWNSHIP,
MIFFLIN COUNTY, PENNSYLVANIA



1015 MUMMA ROAD
2ND FLOOR
WORMLEYSBURG, PA 17043
PHONE: 888.987.1993
www.liviccivil.com

PROJECT LOCATION MAP

PROJECT

GRANVILLE DC

CLIENT

LEWISTOWN
DEVELOPMENT LLC

DATE

07.01.2026

SCALE

AS SHOWN

PROJECT NO.

1258-57

SHEET NO.

1 of 1



NOAA Atlas 14, Volume 2, Version 3
Location: Lewisburg, Pennsylvania, USA*
Latitude: 40.5681°. Longitude: -77.6091°
Elevation: 564 ft**
* source: ESR! Maps
** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M. Yekta, and D. Riley
NOAA, National Weather Service, Silver Spring, Maryland
[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

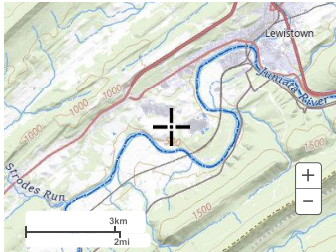
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)¹

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	4.02 (3.58-4.55)	4.82 (4.28-5.45)	5.86 (5.18-6.61)	6.68 (5.90-7.52)	7.79 (6.85-8.75)	8.65 (7.56-9.71)	9.54 (8.29-10.7)	10.5 (9.04-11.7)	11.8 (10.0-13.1)	12.8 (10.8-14.3)
10-min	3.13 (2.78-3.53)	3.76 (3.35-4.25)	4.55 (4.03-5.14)	5.16 (4.55-5.81)	5.96 (5.24-6.70)	6.56 (5.73-7.36)	7.18 (6.25-8.04)	7.82 (6.74-8.73)	8.65 (7.38-9.65)	9.31 (7.88-10.4)
15-min	2.56 (2.27-2.89)	3.07 (2.73-3.47)	3.73 (3.30-4.20)	4.23 (3.74-4.76)	4.91 (4.31-5.51)	5.41 (4.73-6.07)	5.95 (5.17-6.66)	6.48 (5.59-7.24)	7.20 (6.14-8.03)	7.76 (6.56-8.65)
30-min	1.69 (1.50-1.91)	2.05 (1.83-2.32)	2.55 (2.26-2.88)	2.94 (2.59-3.31)	3.46 (3.05-3.89)	3.87 (3.38-4.34)	4.29 (3.73-4.81)	4.73 (4.08-5.28)	5.33 (4.55-5.95)	5.81 (4.92-6.48)
60-min	1.03 (0.917-1.17)	1.26 (1.12-1.42)	1.60 (1.42-1.80)	1.87 (1.65-2.10)	2.25 (1.96-2.52)	2.55 (2.23-2.86)	2.87 (2.50-3.21)	3.21 (2.77-3.58)	3.69 (3.15-4.11)	4.08 (3.45-4.55)
2-hr	0.590 (0.517-0.678)	0.718 (0.630-0.823)	0.914 (0.799-1.05)	1.07 (0.935-1.23)	1.30 (1.13-1.48)	1.49 (1.29-1.70)	1.70 (1.45-1.92)	1.93 (1.64-2.18)	2.27 (1.90-2.55)	2.55 (2.12-2.87)
3-hr	0.427 (0.378-0.487)	0.518 (0.458-0.591)	0.654 (0.579-0.746)	0.766 (0.675-0.871)	0.929 (0.812-1.05)	1.07 (0.927-1.20)	1.22 (1.05-1.37)	1.38 (1.18-1.55)	1.63 (1.38-1.83)	1.84 (1.54-2.06)
6-hr	0.268 (0.241-0.302)	0.324 (0.291-0.365)	0.405 (0.363-0.455)	0.471 (0.421-0.529)	0.570 (0.505-0.636)	0.652 (0.574-0.726)	0.742 (0.648-0.824)	0.842 (0.729-0.934)	0.991 (0.848-1.10)	1.12 (0.945-1.24)
12-hr	0.166 (0.149-0.185)	0.200 (0.180-0.223)	0.248 (0.223-0.276)	0.289 (0.259-0.321)	0.350 (0.311-0.387)	0.402 (0.354-0.444)	0.460 (0.402-0.506)	0.524 (0.453-0.578)	0.621 (0.529-0.681)	0.704 (0.593-0.771)
24-hr	0.098 (0.090-0.106)	0.117 (0.109-0.127)	0.146 (0.135-0.158)	0.170 (0.157-0.184)	0.206 (0.188-0.221)	0.236 (0.215-0.254)	0.269 (0.244-0.289)	0.306 (0.275-0.328)	0.362 (0.321-0.387)	0.410 (0.359-0.438)
2-day	0.056 (0.052-0.061)	0.068 (0.063-0.074)	0.084 (0.078-0.092)	0.098 (0.091-0.106)	0.119 (0.109-0.129)	0.137 (0.124-0.148)	0.157 (0.141-0.169)	0.178 (0.160-0.192)	0.211 (0.186-0.227)	0.240 (0.209-0.258)
3-day	0.040 (0.037-0.043)	0.048 (0.044-0.052)	0.059 (0.055-0.064)	0.069 (0.063-0.074)	0.083 (0.076-0.089)	0.095 (0.087-0.102)	0.108 (0.098-0.117)	0.123 (0.111-0.133)	0.145 (0.129-0.157)	0.164 (0.144-0.177)
4-day	0.031 (0.029-0.034)	0.037 (0.035-0.040)	0.046 (0.043-0.050)	0.054 (0.050-0.058)	0.065 (0.059-0.070)	0.074 (0.068-0.080)	0.084 (0.077-0.091)	0.096 (0.086-0.103)	0.112 (0.100-0.121)	0.127 (0.112-0.137)
7-day	0.021 (0.019-0.022)	0.025 (0.023-0.027)	0.030 (0.028-0.033)	0.035 (0.032-0.038)	0.042 (0.038-0.045)	0.047 (0.043-0.051)	0.053 (0.048-0.057)	0.059 (0.054-0.064)	0.068 (0.062-0.074)	0.076 (0.068-0.082)
10-day	0.017 (0.016-0.018)	0.020 (0.019-0.021)	0.024 (0.022-0.026)	0.027 (0.025-0.029)	0.032 (0.030-0.034)	0.036 (0.033-0.039)	0.040 (0.037-0.043)	0.045 (0.041-0.048)	0.051 (0.046-0.055)	0.057 (0.051-0.061)
20-day	0.011 (0.011-0.012)	0.013 (0.013-0.014)	0.016 (0.015-0.017)	0.018 (0.017-0.019)	0.020 (0.019-0.021)	0.022 (0.021-0.023)	0.024 (0.022-0.026)	0.026 (0.024-0.028)	0.029 (0.027-0.031)	0.031 (0.029-0.033)
30-day	0.009 (0.009-0.010)	0.011 (0.010-0.012)	0.013 (0.012-0.014)	0.014 (0.013-0.015)	0.016 (0.015-0.017)	0.017 (0.016-0.018)	0.019 (0.018-0.020)	0.020 (0.019-0.021)	0.022 (0.020-0.023)	0.023 (0.022-0.025)
45-day	0.008 (0.007-0.008)	0.009 (0.009-0.010)	0.010 (0.010-0.011)	0.011 (0.011-0.012)	0.013 (0.012-0.013)	0.014 (0.013-0.014)	0.015 (0.014-0.015)	0.016 (0.015-0.016)	0.017 (0.016-0.018)	0.018 (0.016-0.019)
60-day	0.007 (0.007-0.007)	0.008 (0.008-0.009)	0.009 (0.009-0.010)	0.010 (0.010-0.011)	0.011 (0.011-0.012)	0.012 (0.011-0.012)	0.013 (0.012-0.013)	0.013 (0.013-0.014)	0.014 (0.013-0.015)	0.015 (0.014-0.016)

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



Large scale terrain

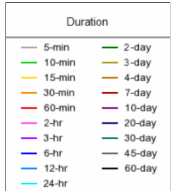
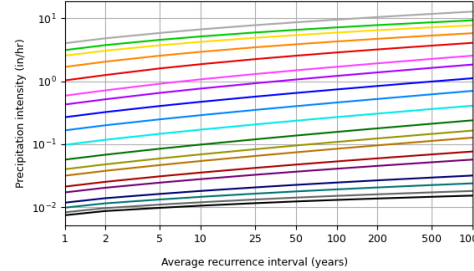
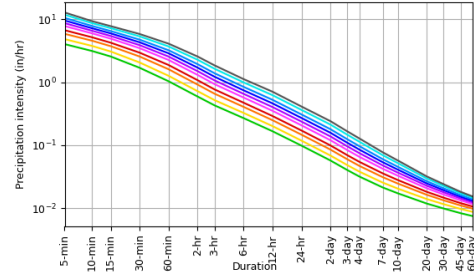


Large scale map



Large scale aerial

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 40.5681°, Longitude: -77.6091°



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Location name: Lewisburg, Pennsylvania, USA*
Latitude: 40.5681°. Longitude: -77.6091°
Elevation: m/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

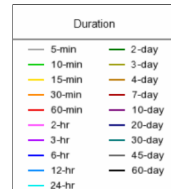
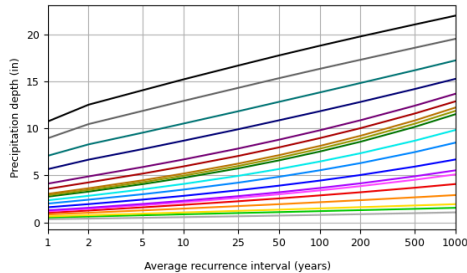
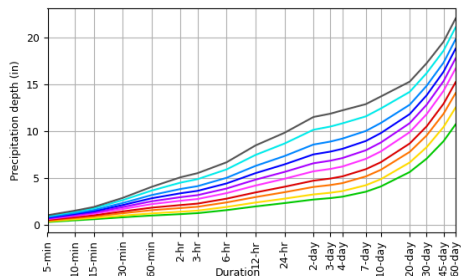
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.335 (0.298-0.379)	0.402 (0.357-0.454)	0.488 (0.432-0.551)	0.557 (0.492-0.627)	0.649 (0.571-0.729)	0.721 (0.630-0.809)	0.795 (0.691-0.890)	0.873 (0.753-0.975)	0.981 (0.837-1.09)	1.07 (0.901-1.19)
10-min	0.521 (0.463-0.589)	0.627 (0.558-0.709)	0.759 (0.672-0.856)	0.860 (0.759-0.968)	0.993 (0.873-1.12)	1.09 (0.955-1.23)	1.20 (1.04-1.34)	1.30 (1.12-1.46)	1.44 (1.23-1.61)	1.55 (1.31-1.73)
15-min	0.639 (0.568-0.722)	0.767 (0.682-0.867)	0.932 (0.824-1.05)	1.06 (0.934-1.19)	1.23 (1.08-1.38)	1.35 (1.18-1.52)	1.49 (1.29-1.66)	1.62 (1.40-1.81)	1.80 (1.54-2.01)	1.94 (1.64-2.16)
30-min	0.845 (0.751-0.956)	1.03 (0.913-1.16)	1.28 (1.13-1.44)	1.47 (1.30-1.65)	1.73 (1.52-1.95)	1.93 (1.69-2.17)	2.15 (1.87-2.40)	2.36 (2.04-2.64)	2.67 (2.28-2.97)	2.91 (2.46-3.24)
60-min	1.03 (0.917-1.17)	1.26 (1.12-1.42)	1.60 (1.42-1.80)	1.87 (1.65-2.10)	2.25 (1.98-2.52)	2.55 (2.23-2.86)	2.87 (2.50-3.21)	3.21 (2.77-3.58)	3.69 (3.15-4.11)	4.08 (3.45-4.55)
2-hr	1.18 (1.04-1.36)	1.44 (1.26-1.65)	1.83 (1.60-2.10)	2.15 (1.87-2.46)	2.60 (2.26-2.97)	2.99 (2.58-3.39)	3.40 (2.92-3.85)	3.86 (3.28-4.36)	4.54 (3.81-5.11)	5.11 (4.25-5.75)
3-hr	1.28 (1.14-1.46)	1.56 (1.38-1.78)	1.97 (1.74-2.24)	2.30 (2.03-2.62)	2.79 (2.44-3.16)	3.20 (2.79-3.62)	3.66 (3.16-4.12)	4.16 (3.56-4.67)	4.90 (4.14-5.49)	5.54 (4.64-6.20)
6-hr	1.61 (1.44-1.81)	1.94 (1.75-2.19)	2.43 (2.17-2.73)	2.83 (2.52-3.17)	3.41 (3.03-3.81)	3.91 (3.44-4.35)	4.45 (3.89-4.94)	5.05 (4.37-5.59)	5.94 (5.08-6.57)	6.70 (5.66-7.41)
12-hr	2.00 (1.80-2.23)	2.41 (2.17-2.69)	3.00 (2.69-3.33)	3.49 (3.12-3.87)	4.22 (3.75-4.67)	4.85 (4.28-5.35)	5.54 (4.85-6.11)	6.31 (5.47-6.94)	7.48 (6.30-8.21)	8.49 (7.15-9.30)
24-hr	2.35 (2.18-2.55)	2.83 (2.62-3.07)	3.51 (3.25-3.80)	4.09 (3.77-4.42)	4.94 (4.54-5.32)	5.67 (5.17-6.10)	6.48 (5.86-6.95)	7.36 (6.61-7.89)	8.70 (7.70-9.31)	9.84 (8.62-10.5)
2-day	2.73 (2.53-2.97)	3.28 (3.04-3.56)	4.07 (3.77-4.42)	4.74 (4.38-5.13)	5.74 (5.26-6.20)	6.60 (6.00-7.11)	7.54 (6.80-8.13)	8.59 (7.68-9.24)	10.2 (9.06-10.9)	11.5 (10.0-12.4)
3-day	2.88 (2.60-3.13)	3.46 (3.21-3.75)	4.28 (3.97-4.63)	4.97 (4.60-5.38)	5.99 (5.51-6.40)	6.87 (6.28-7.40)	7.84 (7.10-8.44)	8.90 (8.00-9.69)	10.5 (9.30-11.3)	11.9 (10.4-12.8)
4-day	3.04 (2.82-3.29)	3.63 (3.38-3.94)	4.48 (4.16-4.85)	5.20 (4.82-5.62)	6.25 (5.75-6.74)	7.15 (6.55-7.70)	8.13 (7.40-8.76)	9.22 (8.32-9.93)	10.8 (9.65-11.7)	12.2 (10.8-13.2)
7-day	3.56 (3.32-3.84)	4.26 (3.97-4.59)	5.19 (4.84-5.60)	5.96 (5.54-6.42)	7.06 (6.54-7.60)	7.98 (7.34-8.57)	8.97 (8.22-9.63)	10.0 (9.13-10.8)	11.6 (10.4-12.5)	12.9 (11.5-13.9)
10-day	4.12 (3.85-4.42)	4.89 (4.59-5.25)	5.89 (5.51-6.31)	6.70 (6.25-7.17)	7.85 (7.30-8.40)	8.80 (8.14-9.39)	9.80 (9.03-10.5)	10.9 (9.96-11.6)	12.4 (11.3-13.3)	13.7 (12.3-14.7)
20-day	5.66 (5.33-6.01)	6.68 (6.28-7.10)	7.80 (7.34-8.29)	8.70 (8.17-9.23)	9.90 (9.28-10.5)	10.9 (10.2-11.5)	11.8 (11.0-12.5)	12.8 (11.9-13.6)	14.2 (13.1-15.1)	15.3 (14.0-16.3)
30-day	7.09 (6.72-7.49)	8.31 (7.87-8.78)	9.55 (9.04-10.1)	10.5 (9.96-11.1)	11.8 (11.2-12.5)	12.8 (12.1-13.5)	13.8 (13.0-14.6)	14.8 (13.9-15.7)	16.2 (15.1-17.2)	17.2 (16.0-18.3)
45-day	8.95 (8.51-9.42)	10.5 (9.94-11.0)	11.9 (11.3-12.5)	12.9 (12.3-13.6)	14.3 (13.6-15.1)	15.3 (14.5-16.1)	16.3 (15.4-17.2)	17.3 (16.3-18.3)	18.6 (17.4-19.6)	19.5 (18.3-20.7)
60-day	10.7 (10.2-11.3)	12.5 (11.9-13.2)	14.1 (13.4-14.8)	15.2 (14.5-16.0)	16.7 (15.9-17.5)	17.8 (16.9-18.6)	18.8 (17.9-19.7)	19.8 (18.8-20.8)	21.1 (19.9-22.2)	22.0 (20.7-23.2)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 40.5681°, Longitude: -77.6091°



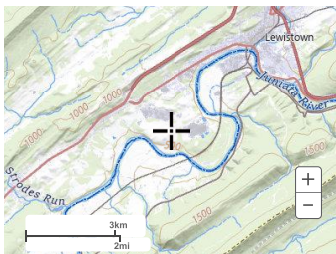
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APPENDIX II



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Juniata and Mifflin Counties, Pennsylvania**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

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MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Juniata and Mifflin Counties, Pennsylvania

Survey Area Data: Version 22, Sep 5, 2025

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

Date(s) aerial images were photographed: Apr 13, 2023—May 17, 2023

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AbB	Allegheny loam, 2 to 8 percent slopes	203.6	13.6%
AnB	Andover gravelly loam, 2 to 8 percent slopes	13.0	0.9%
BrA	Brinkerton silt loam, 0 to 3 percent slopes	8.8	0.6%
BrB	Brinkerton silt loam, 3 to 8 percent slopes	21.0	1.4%
BxD	Buchanan channery loam, 8 to 15 percent slopes, rubbly	37.4	2.5%
CaB	Chavies loam, 2 to 8 percent slopes	17.4	1.2%
EdB	Edom silty clay loam, 3 to 8 percent slopes	6.1	0.4%
EdC	Edom silty clay loam, 8 to 15 percent slopes	8.7	0.6%
EdD	Edom silty clay loam, 15 to 25 percent slopes	5.6	0.4%
EeB	Edom-Klinesville complex, 3 to 8 percent slopes	76.3	5.1%
EeC	Edom-Klinesville complex, 8 to 15 percent slopes	62.7	4.2%
EfB	Edom-Weikert complex, 3 to 8 percent slopes	132.7	8.8%
EfC	Edom-Weikert complex, 8 to 15 percent slopes	205.5	13.7%
EfD	Edom-Weikert complex, 15 to 25 percent slopes	112.7	7.5%
ErB	Ernest silt loam, 2 to 8 percent slopes	5.8	0.4%
HSD	Hazleton-Dekalb complex, 15 to 25 percent slopes, rubbly	8.6	0.6%
KIB	Klinesville shaly silt loam, 3 to 8 percent slopes	2.3	0.2%
KIC	Klinesville shaly silt loam, 8 to 15 percent slopes	61.0	4.1%
LaC	Laidig channery loam, 8 to 15 percent slopes	5.8	0.4%
LcD	Laidig extremely stony loam, 8 to 25 percent slopes	28.3	1.9%
MoA	Monongahela silt loam, 0 to 3 percent slopes	17.1	1.1%
MoB	Monongahela silt loam, 3 to 8 percent slopes	80.6	5.4%

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Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
No	Nolin silt loam	3.8	0.3%
ORF	Opequon-Hagerstown complex, steep	19.2	1.3%
Pe	Penlaw silt loam	34.9	2.3%
Ph	Philo silt loam	39.7	2.6%
Pu	Purdy silt loam	71.7	4.8%
Ru	Rubble land	0.0	0.0%
Ty	Tyler silt loam	153.6	10.2%
W	Water	55.7	3.7%
Totals for Area of Interest		1,499.8	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Juniata and Mifflin Counties, Pennsylvania

AbB—Allegheny loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 1911
Landscape: Hills
Elevation: 390 to 3,000 feet
Mean annual precipitation: 36 to 55 inches
Mean annual air temperature: 46 to 59 degrees F
Frost-free period: 120 to 214 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Allegheny and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Allegheny

Setting

Landscape: Hills
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Old fine-loamy alluvium

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 42 inches: silt loam
H3 - 42 to 65 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F147XY007PA - Loamy To Coarse Terrace
Hydric soil rating: No

Minor Components

Monongahela

Percent of map unit: 8 percent
Hydric soil rating: No

Tyler

Percent of map unit: 3 percent

Hydric soil rating: No

Blairton

Percent of map unit: 2 percent

Hydric soil rating: No

Philo

Percent of map unit: 1 percent

Hydric soil rating: No

Hustontown

Percent of map unit: 1 percent

Hydric soil rating: No

AnB—Andover gravelly loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 1916

Landscape: Mountains

Elevation: 600 to 2,400 feet

Mean annual precipitation: 27 to 50 inches

Mean annual air temperature: 46 to 57 degrees F

Frost-free period: 110 to 180 days

Farmland classification: Not prime farmland

Map Unit Composition

Andover and similar soils: 75 percent

Minor components: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Andover

Setting

Landscape: Mountains

Landform: Depressions

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Mountainbase, base slope

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Colluvium weathered from acid sandstone

Typical profile

H1 - 0 to 8 inches: gravelly loam

H2 - 8 to 19 inches: gravelly clay loam

H3 - 19 to 46 inches: gravelly clay loam

H4 - 46 to 65 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent

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Depth to restrictive feature: 18 to 28 inches to fragipan
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: F147XY005PA - Poorly Drained Mixed Sedimentary Toeslope
Hydric soil rating: Yes

Minor Components

Buchanan

Percent of map unit: 15 percent
Hydric soil rating: No

Atkins

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Terric haplosaprists

Percent of map unit: 3 percent
Landform: Till plains, Lake plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Philo

Percent of map unit: 2 percent

Sideling

Percent of map unit: 2 percent

BrA—Brinkerton silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: I9lh
Elevation: 300 to 3,000 feet

Custom Soil Resource Report

Mean annual precipitation: 35 to 55 inches
Mean annual air temperature: 46 to 59 degrees F
Frost-free period: 120 to 217 days
Farmland classification: Not prime farmland

Map Unit Composition

Brinkerton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Brinkerton

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Local fine-silty colluvium derived from sedimentary rock

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 18 inches: silty clay loam
H3 - 18 to 46 inches: silty clay loam
H4 - 46 to 65 inches: channery silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 15 to 34 inches to fragipan
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: F147XY005PA - Poorly Drained Mixed Sedimentary Toeslope
Hydric soil rating: Yes

Minor Components

Atkins

Percent of map unit: 6 percent
Landform: Flood plains
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Laidig

Percent of map unit: 5 percent

Custom Soil Resource Report

Landform: Mountains

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Lower third of mountain flank

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: No

Philo

Percent of map unit: 5 percent

Hydric soil rating: No

Berks

Percent of map unit: 4 percent

Landform: Ridges, Valleys

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Hydric soil rating: No

BrB—Brinkerton silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 19lj

Elevation: 300 to 3,000 feet

Mean annual precipitation: 30 to 65 inches

Mean annual air temperature: 46 to 59 degrees F

Frost-free period: 120 to 217 days

Farmland classification: Not prime farmland

Map Unit Composition

Brinkerton and similar soils: 75 percent

Minor components: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Brinkerton

Setting

Landform: Depressions

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Local fine-silty colluvium derived from sedimentary rock

Typical profile

H1 - 0 to 9 inches: silt loam

H2 - 9 to 18 inches: silty clay loam

H3 - 18 to 46 inches: silty clay loam

H4 - 46 to 65 inches: channery silt loam

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Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 15 to 34 inches to fragipan
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: F147XY005PA - Poorly Drained Mixed Sedimentary Toeslope
Hydric soil rating: Yes

Minor Components

Ernest

Percent of map unit: 10 percent
Hydric soil rating: No

Laidig

Percent of map unit: 5 percent
Landform: Mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Lower third of mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Berks

Percent of map unit: 5 percent
Landform: Ridges, Valleys
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Atkins

Percent of map unit: 3 percent
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Philo

Percent of map unit: 2 percent
Hydric soil rating: No

BxD—Buchanan channery loam, 8 to 15 percent slopes, rubbly

Map Unit Setting

National map unit symbol: 2z1n8
Landscape: Mountains
Elevation: 390 to 1,990 feet
Mean annual precipitation: 37 to 50 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 155 to 177 days
Farmland classification: Not prime farmland

Map Unit Composition

Buchanan and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Buchanan

Setting

Landscape: Mountains
Landform: Mountain slopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Lower third of mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Parent material: Fine-loamy colluvium derived from sandstone and shale

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
Oe - 2 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: channery loam
BE - 4 to 12 inches: channery loam
Bt1 - 12 to 20 inches: channery loam
Bt2 - 20 to 29 inches: channery loam
Btx1 - 29 to 35 inches: channery loam
Btx2 - 35 to 50 inches: channery loam
C - 50 to 71 inches: very channery loam
R - 71 to 81 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 20.0 percent
Depth to restrictive feature: 24 to 30 inches to fragipan; 60 to 79 inches to lithic bedrock
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 15 to 24 inches

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Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C/D

Hydric soil rating: No

Minor Components

Laidig

Percent of map unit: 7 percent

Landscape: Mountains

Landform: Mountain slopes

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Concave, linear

Across-slope shape: Concave, linear

Hydric soil rating: No

Andover

Percent of map unit: 3 percent

Landscape: Mountains

Landform: Mountain slopes

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Lower third of mountainflank

Down-slope shape: Concave, linear

Across-slope shape: Concave, linear

Hydric soil rating: Yes

CaB—Chavies loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 191q

Elevation: 300 to 1,000 feet

Mean annual precipitation: 35 to 55 inches

Mean annual air temperature: 45 to 59 degrees F

Frost-free period: 120 to 180 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Chavies and similar soils: 90 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chavies

Setting

Landform: Terraces

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Landform position (two-dimensional): Summit

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Coarse-loamy alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 10 inches: loam

H2 - 10 to 40 inches: fine sandy loam

H3 - 40 to 76 inches: gravelly fine sandy loam

Properties and qualities

Slope: 2 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: Rare

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 0.2 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: A

Ecological site: F147XY007PA - Loamy To Coarse Terrace

Hydric soil rating: No

Minor Components

Monongahela

Percent of map unit: 5 percent

Hydric soil rating: No

EdB—Edom silty clay loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: I9lr

Elevation: 480 to 1,100 feet

Mean annual precipitation: 36 to 46 inches

Mean annual air temperature: 48 to 55 degrees F

Frost-free period: 150 to 210 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Edom and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Edom

Setting

Landform: Hillslopes, Limestone valleys
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 35 inches: silty clay
H3 - 35 to 67 inches: channery silty clay
H4 - 67 to 71 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 40 to 72 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F147XY003PA - Mixed Limestone Upland
Hydric soil rating: No

EdC—Edom silty clay loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: I9ls
Elevation: 480 to 1,100 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 150 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Edom and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Edom

Setting

Landform: Limestone valleys, Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 35 inches: channery clay
H3 - 35 to 67 inches: channery clay
H4 - 67 to 71 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 40 to 72 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F147XY003PA - Mixed Limestone Upland
Hydric soil rating: No

EdD—Edom silty clay loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: I9lt
Elevation: 480 to 1,100 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 150 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Edom and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Edom

Setting

Landform: Hillslopes, Limestone valleys
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 35 inches: channery clay
H3 - 35 to 67 inches: channery clay
H4 - 67 to 71 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 40 to 72 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F147XY003PA - Mixed Limestone Upland
Hydric soil rating: No

EeB—Edom-Klinesville complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: I9lv
Elevation: 300 to 3,000 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 45 to 57 degrees F
Frost-free period: 120 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Edom and similar soils: 50 percent
Klinesville and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Edom

Setting

Landform: Upland valleys hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Fine-loamy residuum weathered from limestone and shale

Typical profile

H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 36 inches: silty clay
H3 - 36 to 46 inches: very channery silty clay
H4 - 46 to 50 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 40 to 72 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F147XY003PA - Mixed Limestone Upland
Hydric soil rating: No

Description of Klinesville

Setting

Landscape: Valleys
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Shale and siltstone residuum weathered from shale and siltstone

Typical profile

H1 - 0 to 6 inches: channery silt loam
H2 - 6 to 12 inches: very channery silt loam
H3 - 12 to 19 inches: very channery silt loam
H4 - 19 to 23 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: D

Ecological site: F147XY003PA - Mixed Limestone Upland

Hydric soil rating: No

Minor Components

Opequon

Percent of map unit: 5 percent

Hydric soil rating: No

Weikert

Percent of map unit: 5 percent

Hydric soil rating: No

EeC—Edom-Klinesville complex, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 19lw

Elevation: 300 to 3,000 feet

Mean annual precipitation: 30 to 50 inches

Mean annual air temperature: 45 to 57 degrees F

Frost-free period: 120 to 210 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Edom and similar soils: 50 percent

Klinesville and similar soils: 30 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Edom

Setting

Landform: Upland valleys hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Parent material: Fine-loamy residuum weathered from limestone and shale

Custom Soil Resource Report

Typical profile

H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 36 inches: silty clay
H3 - 36 to 46 inches: very channery silty clay
H4 - 46 to 50 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 40 to 72 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F147XY003PA - Mixed Limestone Upland
Hydric soil rating: No

Description of Klinesville

Setting

Landscape: Valleys
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Shale and siltstone residuum weathered from shale and siltstone

Typical profile

H1 - 0 to 6 inches: channery silt loam
H2 - 6 to 12 inches: very channery silt loam
H3 - 12 to 19 inches: very channery silt loam
H4 - 19 to 23 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e

Custom Soil Resource Report

Hydrologic Soil Group: D

Ecological site: F147XY003PA - Mixed Limestone Upland

Hydric soil rating: No

Minor Components

Weikert

Percent of map unit: 5 percent

Hydric soil rating: No

Opequon

Percent of map unit: 5 percent

Hydric soil rating: No

EfB—Edom-Weikert complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 19ly

Elevation: 480 to 1,600 feet

Mean annual precipitation: 36 to 50 inches

Mean annual air temperature: 46 to 57 degrees F

Frost-free period: 120 to 210 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Edom and similar soils: 60 percent

Weikert and similar soils: 20 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Edom

Setting

Landform: Hills

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Clayey residuum weathered from limestone and shale

Typical profile

H1 - 0 to 8 inches: silty clay loam

H2 - 8 to 38 inches: silty clay

H3 - 38 to 46 inches: very channery silty clay loam

H4 - 46 to 50 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 40 to 72 inches to lithic bedrock

Drainage class: Well drained

Custom Soil Resource Report

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Maximum salinity: Nonsaline (0.0 to 0.2 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland

Hydric soil rating: No

Description of Weikert

Setting

Landscape: Valleys

Landform: Shale hillslopes

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Parent material: Residuum weathered from siltstone

Typical profile

H1 - 0 to 6 inches: channery silt loam

H2 - 6 to 15 inches: very channery silt loam

H3 - 15 to 19 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 0.2 mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: D

Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland

Hydric soil rating: No

Minor Components

Clarksburg

Percent of map unit: 5 percent

Hydric soil rating: No

EfC—Edom-Weikert complex, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 191z
Elevation: 300 to 3,000 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 45 to 57 degrees F
Frost-free period: 120 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Edom and similar soils: 60 percent
Weikert and similar soils: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Edom

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 38 inches: silty clay
H3 - 38 to 46 inches: very channery silty clay loam
H4 - 46 to 50 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 40 to 72 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline (0.0 to 0.2 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Custom Soil Resource Report

Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F147XY003PA - Mixed Limestone Upland
Hydric soil rating: No

Description of Weikert

Setting

Landscape: Valleys
Landform: Shale hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Residuum weathered from siltstone

Typical profile

H1 - 0 to 6 inches: channery silt loam
H2 - 6 to 15 inches: very channery silt loam
H3 - 15 to 19 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 0.2 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F147XY003PA - Mixed Limestone Upland
Hydric soil rating: No

Minor Components

Clarksburg

Percent of map unit: 5 percent
Hydric soil rating: No

Opequon

Percent of map unit: 5 percent
Hydric soil rating: No

EfD—Edom-Weikert complex, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 19m0
Elevation: 300 to 3,000 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 45 to 57 degrees F
Frost-free period: 120 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Edom and similar soils: 60 percent
Weikert and similar soils: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Edom

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 38 inches: silty clay
H3 - 38 to 46 inches: very channery silty clay loam
H4 - 46 to 50 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 40 to 72 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline (0.0 to 0.2 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e

Custom Soil Resource Report

Hydrologic Soil Group: B

Ecological site: F147XY003PA - Mixed Limestone Upland

Hydric soil rating: No

Description of Weikert

Setting

Landscape: Valleys

Landform: Shale hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Parent material: Residuum weathered from siltstone

Typical profile

H1 - 0 to 6 inches: channery silt loam

H2 - 6 to 15 inches: very channery silt loam

H3 - 15 to 19 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Somewhat excessively drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 0.2 mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: D

Ecological site: F147XY003PA - Mixed Limestone Upland

Hydric soil rating: No

Minor Components

Klinesville

Percent of map unit: 5 percent

Hydric soil rating: No

Opequon

Percent of map unit: 5 percent

Hydric soil rating: No

ErB—Ernest silt loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 19m5

Elevation: 300 to 3,000 feet

Mean annual precipitation: 30 to 65 inches

Mean annual air temperature: 44 to 59 degrees F

Frost-free period: 120 to 214 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Ernest and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ernest

Setting

Landform: Hills

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Local fine-silty colluvium derived from sedimentary rock

Typical profile

H1 - 0 to 7 inches: silt loam

H2 - 7 to 27 inches: channery silty clay loam

H3 - 27 to 43 inches: channery silty clay loam

H4 - 43 to 65 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 20 to 36 inches to fragipan

Drainage class: Moderately well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)

Depth to water table: About 18 to 36 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Ecological site: F147XY002PA - Mixed Sedimentary Upland

Hydric soil rating: No

Minor Components

Berks

Percent of map unit: 8 percent
Landform: Ridges, Valleys
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Brinkerton

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Atkins

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

HSD—Hazleton-Dekalb complex, 15 to 25 percent slopes, rubbly

Map Unit Setting

National map unit symbol: 2wkcw
Landscape: Hills
Elevation: 450 to 2,330 feet
Mean annual precipitation: 37 to 50 inches
Mean annual air temperature: 50 to 56 degrees F
Frost-free period: 155 to 177 days
Farmland classification: Not prime farmland

Map Unit Composition

Hazleton and similar soils: 50 percent
Dekalb and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hazleton

Setting

Landscape: Hills

Custom Soil Resource Report

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
Oe - 2 to 3 inches: moderately decomposed plant material
A - 3 to 6 inches: channery sandy loam
E - 6 to 9 inches: channery sandy loam
Bs - 9 to 11 inches: channery sandy loam
Bw1 - 11 to 19 inches: very channery sandy loam
Bw2 - 19 to 30 inches: very channery sandy loam
C - 30 to 59 inches: extremely channery sandy loam
R - 59 to 69 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 32.0 percent
Depth to restrictive feature: 40 to 69 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F147XY004PA - Sandstone Upland
Hydric soil rating: No

Description of Dekalb

Setting

Landscape: Hills
Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 4 inches: very channery sandy loam
E - 4 to 7 inches: very channery sandy loam
Bw - 7 to 26 inches: very channery sandy loam
C - 26 to 34 inches: extremely channery sandy loam
R - 34 to 44 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 33.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.20 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F147XY004PA - Sandstone Upland
Hydric soil rating: No

Minor Components

Rubble land

Percent of map unit: 10 percent
Hydric soil rating: No

Laidig

Percent of map unit: 10 percent
Landscape: Hills
Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

KIB—Klinesville shaly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 19mr
Elevation: 300 to 1,300 feet
Mean annual precipitation: 35 to 50 inches
Mean annual air temperature: 46 to 57 degrees F
Frost-free period: 120 to 214 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Klinesville and similar soils: 90 percent
Minor components: 3 percent

Custom Soil Resource Report

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Klinesville

Setting

Landform: Low hills

Landform position (two-dimensional): Summit, backslope

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex, linear

Across-slope shape: Convex, linear

Parent material: Shale and siltstone residuum weathered from shale and siltstone

Typical profile

H1 - 0 to 4 inches: channery silt loam

H2 - 4 to 12 inches: very channery silt loam

H3 - 12 to 19 inches: very channery silt loam

H4 - 19 to 23 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Drainage class: Somewhat excessively drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 4.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: D

Ecological site: F127XY003WV - Acidic Shale Upland Oak/Heath, F147XY008PA
- Shallow Mixed Sedimentary Upland

Hydric soil rating: No

Minor Components

Brinkerton

Percent of map unit: 3 percent

Landform: Hills

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

KIC—Klinesville shaly silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 19ms
Elevation: 300 to 1,300 feet
Mean annual precipitation: 35 to 50 inches
Mean annual air temperature: 46 to 57 degrees F
Frost-free period: 120 to 214 days
Farmland classification: Not prime farmland

Map Unit Composition

Klinesville and similar soils: 90 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Klinesville

Setting

Landform: Low hills
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Shale and siltstone residuum weathered from shale and siltstone

Typical profile

H1 - 0 to 4 inches: channery silt loam
H2 - 4 to 12 inches: very channery silt loam
H3 - 12 to 19 inches: very channery silt loam
H4 - 19 to 23 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 4.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland,
F127XY003WV - Acidic Shale Upland Oak/Heath
Hydric soil rating: No

Minor Components

Brinkerton

Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

LaC—Laidig channery loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 19n0
Elevation: 400 to 3,800 feet
Mean annual precipitation: 34 to 60 inches
Mean annual air temperature: 50 to 57 degrees F
Frost-free period: 120 to 175 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Laidig and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Laidig

Setting

Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Lower third of mountainflank
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy colluvium derived from sandstone and siltstone

Typical profile

H1 - 0 to 8 inches: channery loam
H2 - 8 to 32 inches: very channery loam
H3 - 32 to 60 inches: very channery sandy clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 28 to 35 inches to fragipan
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 30 to 48 inches
Frequency of flooding: None
Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

Ecological site: F147XY002PA - Mixed Sedimentary Upland

Hydric soil rating: No

LcD—Laidig extremely stony loam, 8 to 25 percent slopes

Map Unit Setting

National map unit symbol: 19n3

Elevation: 400 to 3,800 feet

Mean annual precipitation: 34 to 55 inches

Mean annual air temperature: 46 to 57 degrees F

Frost-free period: 110 to 180 days

Farmland classification: Not prime farmland

Map Unit Composition

Laidig and similar soils: 90 percent

Minor components: 9 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Laidig

Setting

Landform: Ridges

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Lower third of mountainflank

Down-slope shape: Concave

Across-slope shape: Linear

Parent material: Colluvium derived from sandstone and siltstone

Typical profile

H1 - 0 to 10 inches: cobbly loam

H2 - 10 to 30 inches: channery sandy clay loam

H3 - 30 to 65 inches: very channery sandy clay loam

Properties and qualities

Slope: 8 to 25 percent

Surface area covered with cobbles, stones or boulders: 9.0 percent

Depth to restrictive feature: 30 to 50 inches to fragipan; 60 to 99 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)

Depth to water table: About 30 to 50 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F147XY002PA - Mixed Sedimentary Upland
Hydric soil rating: No

Minor Components

Hazleton

Percent of map unit: 5 percent
Hydric soil rating: No

Buchanan

Percent of map unit: 3 percent
Hydric soil rating: No

Andover

Percent of map unit: 1 percent
Landform: Mountain slopes
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Hydric soil rating: Yes

MoA—Monongahela silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: I9nc
Elevation: 300 to 1,800 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 45 to 57 degrees F
Frost-free period: 110 to 187 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Monongahela and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Monongahela

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Old alluvium derived from sedimentary rock

Custom Soil Resource Report

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 23 inches: silt loam
H3 - 23 to 48 inches: loam
H4 - 48 to 63 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 18 to 30 inches to fragipan
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F147XY007PA - Loamy To Coarse Terrace
Hydric soil rating: No

Minor Components

Wheeling

Percent of map unit: 7 percent
Hydric soil rating: No

Holly

Percent of map unit: 5 percent
Landscape: Sandstone & shale hills
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Unadilla

Percent of map unit: 5 percent
Landform: Outwash terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lakin

Percent of map unit: 3 percent
Hydric soil rating: No

MoB—Monongahela silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: I9nd

Elevation: 300 to 1,800 feet

Mean annual precipitation: 30 to 55 inches

Mean annual air temperature: 45 to 57 degrees F

Frost-free period: 110 to 187 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Monongahela and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Monongahela

Setting

Landform: Stream terraces

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Old alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 10 inches: silt loam

H2 - 10 to 23 inches: silt loam

H3 - 23 to 48 inches: loam

H4 - 48 to 63 inches: silt loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 18 to 30 inches to fragipan

Drainage class: Moderately well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)

Depth to water table: About 18 to 30 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C/D

Ecological site: F147XY007PA - Loamy To Coarse Terrace

Hydric soil rating: No

Minor Components

Unadilla

Percent of map unit: 7 percent
Landform: Outwash terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Wheeling

Percent of map unit: 5 percent
Hydric soil rating: No

Lakin

Percent of map unit: 5 percent
Hydric soil rating: No

Holly

Percent of map unit: 3 percent
Landscape: Sandstone & shale hills
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

No—Nolin silt loam

Map Unit Setting

National map unit symbol: I9nm
Elevation: 300 to 1,500 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 205 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Nolin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nolin

Setting

Landform: Valleys
Landform position (three-dimensional): Talf
Down-slope shape: Linear

Custom Soil Resource Report

Across-slope shape: Linear

Parent material: Alluvium derived from sedimentary rock over residuum weathered from limestone and shale

Typical profile

H1 - 0 to 15 inches: silt loam

H2 - 15 to 50 inches: silt loam

H3 - 50 to 60 inches: gravelly silt loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 60 to 99 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)

Depth to water table: About 36 to 60 inches

Frequency of flooding: Occasional

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very high (about 12.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: B

Ecological site: F147XY009PA - Loamy Mixed Floodplain

Hydric soil rating: No

Minor Components

Hagerstown

Percent of map unit: 8 percent

Hydric soil rating: No

Clarksburg

Percent of map unit: 5 percent

Hydric soil rating: No

Melvin

Percent of map unit: 2 percent

Landscape: Hills

Landform: Flood plains

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: Yes

ORF—Opequon-Hagerstown complex, steep

Map Unit Setting

National map unit symbol: I9nn

Elevation: 400 to 3,000 feet

Mean annual precipitation: 30 to 46 inches

Custom Soil Resource Report

Mean annual air temperature: 46 to 57 degrees F

Frost-free period: 140 to 210 days

Farmland classification: Not prime farmland

Map Unit Composition

Opequon and similar soils: 40 percent

Hagerstown and similar soils: 25 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Opequon

Setting

Landform: Hills

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from limestone

Typical profile

H1 - 0 to 6 inches: silty clay loam

H2 - 6 to 16 inches: silty clay

H3 - 16 to 20 inches: bedrock

Properties and qualities

Slope: 25 to 60 percent

Depth to restrictive feature: 12 to 20 inches to lithic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Ecological site: F147XY003PA - Mixed Limestone Upland

Hydric soil rating: No

Description of Hagerstown

Setting

Landform: In limestone valleys hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Typical profile

A - 0 to 8 inches: silt loam

Bt - 8 to 45 inches: clay

C - 45 to 75 inches: clay loam

Properties and qualities

Slope: 25 to 60 percent
Depth to restrictive feature: 40 to 80 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F147XY003PA - Mixed Limestone Upland
Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 5 percent
Hydric soil rating: No

Edom

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Pe—Penlaw silt loam

Map Unit Setting

National map unit symbol: 19ns
Landscape: Hills
Elevation: 300 to 1,500 feet
Mean annual precipitation: 34 to 50 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 140 to 205 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Penlaw and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Penlaw

Setting

Landscape: Hills
Landform: Swales
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Colluvium derived from limestone, sandstone, and shale

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 30 inches: silty clay loam
H3 - 30 to 45 inches: silty clay loam
H4 - 45 to 69 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 15 to 30 inches to fragipan; 40 to 72 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F147XY006PA - Mixed Limestone Lower Slope, F148XY026PA - Moist, High Base-Saturation, Upland, Mixed Oak - Hickory - Conifer Forest
Hydric soil rating: No

Minor Components

Clarksburg

Percent of map unit: 5 percent
Landscape: Hills
Landform: Swales
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Melvin

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Ph—Philo silt loam

Map Unit Setting

National map unit symbol: 19nt
Elevation: 520 to 1,600 feet
Mean annual precipitation: 40 to 55 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 170 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Philo and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Philo

Setting

Landform: Flood plains
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Recent coarse-loamy alluvium derived from sandstone and shale

Typical profile

Ap - 0 to 10 inches: silt loam
Bw - 10 to 40 inches: silt loam
2C - 40 to 65 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F147XY009PA - Loamy Mixed Floodplain
Hydric soil rating: No

Minor Components

Atkins

Percent of map unit: 10 percent
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Pu—Purdy silt loam

Map Unit Setting

National map unit symbol: 19nw
Elevation: 300 to 2,000 feet
Mean annual precipitation: 35 to 50 inches
Mean annual air temperature: 48 to 59 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Purdy and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Purdy

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Slackwater clayey alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 40 inches: silty clay
H3 - 40 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 0.2 mmhos/cm)

Custom Soil Resource Report

Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: D

Ecological site: F147XY001PA - Poorly Drained Fine Alluvial Terrace

Hydric soil rating: Yes

Minor Components

Tyler

Percent of map unit: 10 percent

Hydric soil rating: No

Ru—Rubble land

Map Unit Setting

National map unit symbol: I9ny

Elevation: 400 to 3,800 feet

Mean annual precipitation: 34 to 55 inches

Mean annual air temperature: 46 to 57 degrees F

Frost-free period: 110 to 180 days

Farmland classification: Not prime farmland

Map Unit Composition

Rubble land: 80 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rubble Land

Setting

Landform: Mountain slopes

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from acid sandstone

Typical profile

C - 0 to 60 inches: fragmental material

Properties and qualities

Slope: 0 to 80 percent

Surface area covered with cobbles, stones or boulders: 90.0 percent

Depth to restrictive feature: 40 to 99 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very high (20.00 to 99.90 in/hr)

Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydric soil rating: No

Minor Components

Laidig

Percent of map unit: 10 percent

Hydric soil rating: No

Ty—Tyler silt loam

Map Unit Setting

National map unit symbol: 19nz

Elevation: 300 to 2,000 feet

Mean annual precipitation: 35 to 55 inches

Mean annual air temperature: 45 to 59 degrees F

Frost-free period: 120 to 180 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Tyler and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tyler

Setting

Landform: Terraces

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Old alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 9 inches: silt loam

H2 - 9 to 19 inches: silty clay loam

H3 - 19 to 50 inches: silty clay loam

H4 - 50 to 60 inches: stratified gravelly loam to silty clay loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 15 to 36 inches to fragipan

Drainage class: Somewhat poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: About 6 to 18 inches

Custom Soil Resource Report

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: D

Ecological site: F147XY007PA - Loamy To Coarse Terrace

Hydric soil rating: No

Minor Components

Purdy

Percent of map unit: 5 percent

Landform: Depressions

Landform position (two-dimensional): Toeslope

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: Yes

Monongahela

Percent of map unit: 5 percent

Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: l9p1

Mean annual precipitation: 36 to 50 inches

Mean annual air temperature: 46 to 59 degrees F

Frost-free period: 120 to 214 days

Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Parent material: Rivers streams ponds

Properties and qualities

Frequency of ponding: Frequent

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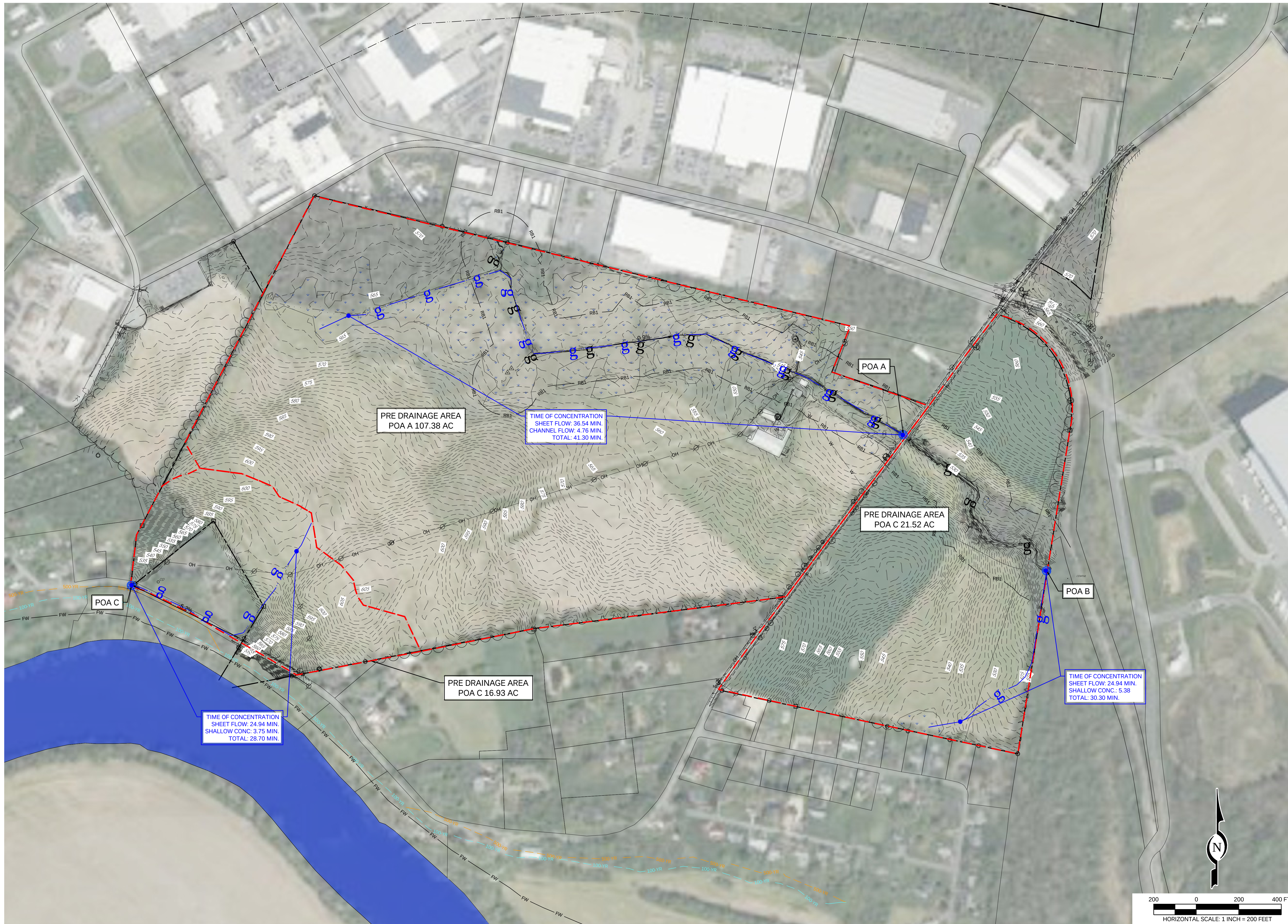
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APPENDIX III



REVISIONS				
NO.	DATE	BY	CHKD	DESCRIPTION
01	07/06/2026	RJG	CMJ	INITIAL SUBMISSION

LIVIC
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PHONE: 888.987.1993
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PROJECT No: 1258-57
DATE: JULY 6, 2026
SCALE: AS SHOWN
DRAWN BY: RJG | CHECKED BY: CMJ

PROJECT
GRANVILLE DC

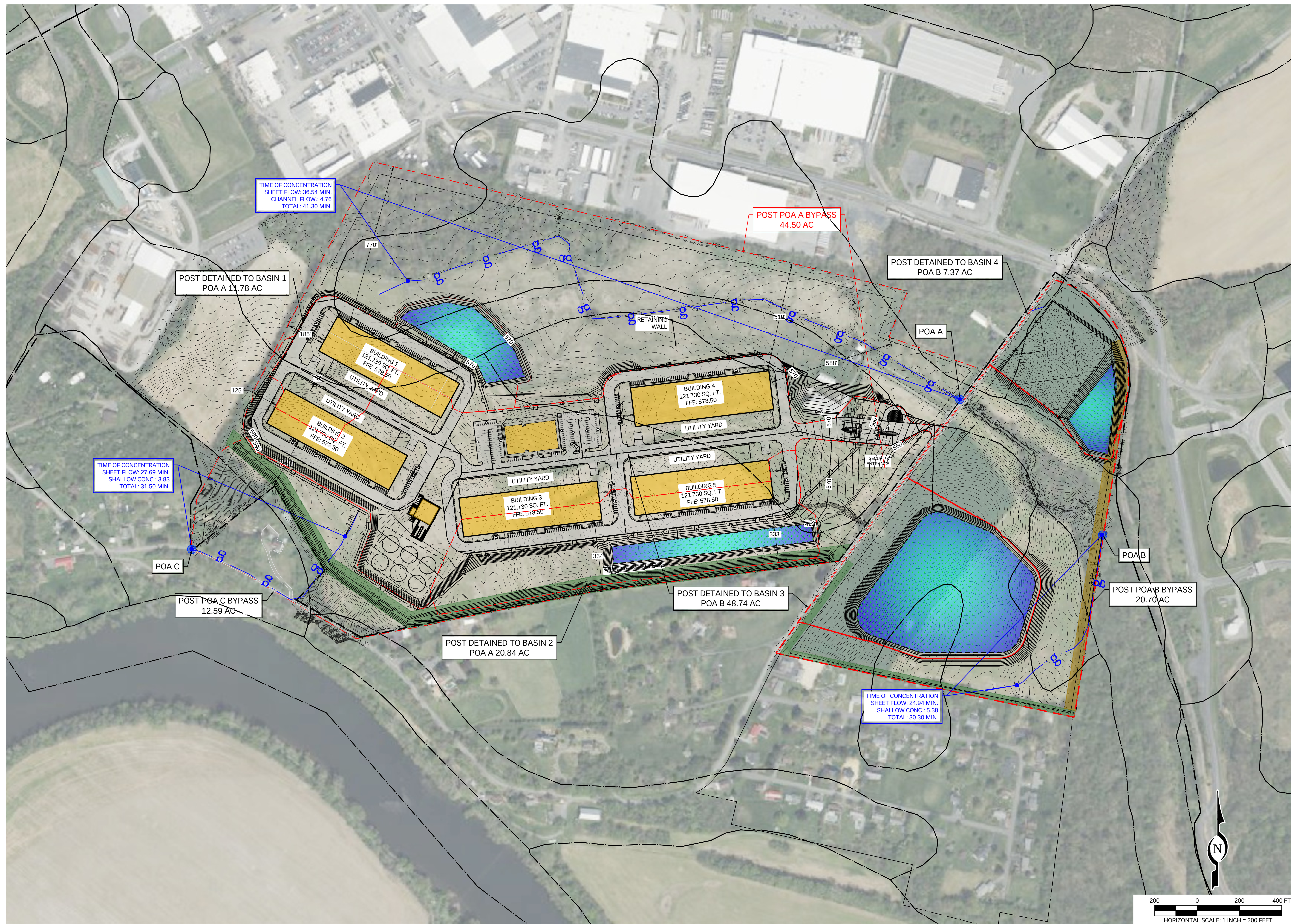
**GRANVILLE
TOWNSHIP
MIFFLIN COUNTY**

PENNSYLVANIA

CLIENT
LEWISTOWN DEVELOPMENT
LLC, A DELAWARE LIMITED
LIABILITY COMPANY
1015 MUMMA ROAD
WORMLEYSBURG, PA, 17043
PHONE: 888.987.1993

SHEET TITLE
**PRE
DEVELOPMENT
DRAINAGE AREA
MAP SITE 1**

SHEET NO.
PRE DA-1

[illegible]

29 EAST MAIN STREET
BLOOMSBURG, PA 17815
PHONE: 888.987.1993
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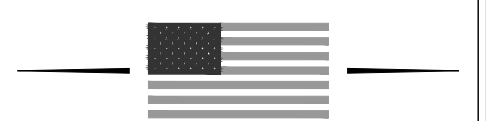
PROJECT No:		1258-57	
DATE:		JULY, 6, 2026	
SCALE:		AS SHOWN	
DRAWN BY:		RJG	CHECKED BY: CMJ

PROJECT

GRANVILLE DC

GRANVILLE
TOWNSHIP
MIFFLIN COUNTY

PENNSYLVANIA

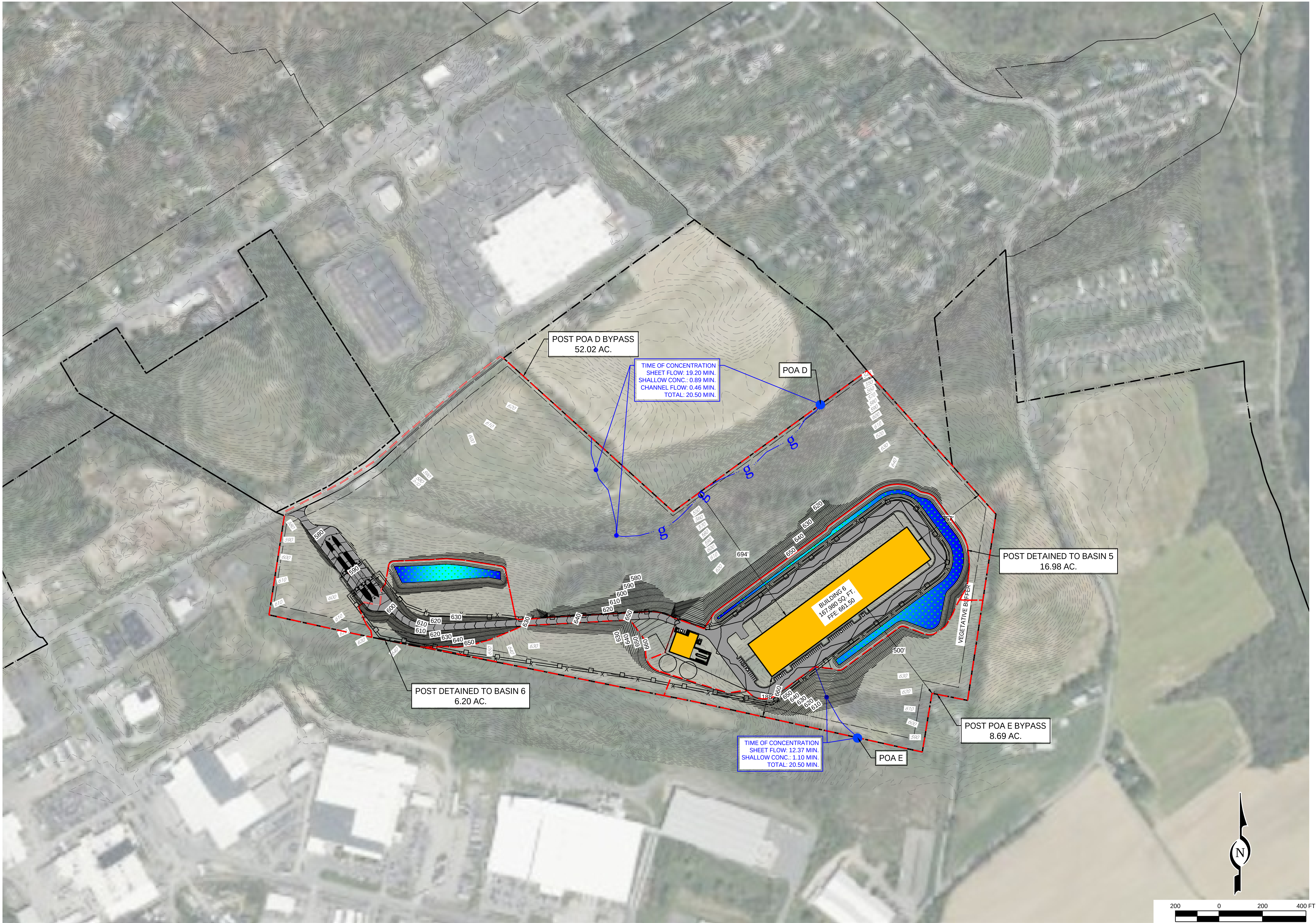


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LIABILITY COMPANY
1015 MUMMA ROAD
WORMLEYSBURG, PA, 17043
PHONE: 888.987.1993

SHEET TITLE

POST
DEVELOPMENT
DRAINAGE AREA
MAP SITE 1

SHEET NO. POST DA-1



POST POA D BYPASS
52.02 AC.

TIME OF CONCENTRATION
SHEET FLOW: 19.20 MIN.
SHALLOW CONC.: 0.89 MIN.
CHANNEL FLOW: 0.46 MIN.
TOTAL: 20.50 MIN.

POA D

POST DETAINED TO BASIN 5
16.98 AC.

POST DETAINED TO BASIN 6
6.20 AC.

TIME OF CONCENTRATION
SHEET FLOW: 12.37 MIN.
SHALLOW CONC.: 1.10 MIN.
TOTAL: 20.50 MIN.

POA E

POST POA E BYPASS
8.69 AC.

BUILDING 6
167,900 SQ. FT.
FFE: 661,500

VEGETATIVE BUFFER



200 0 200 400 FT
HORIZONTAL SCALE: 1 INCH = 200 FEET

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--	--

REV	DATE	ISSUE / REVISIONS	BY	CHKD
01	07/06/2026	INITIAL SUBMISSION	RJG	CMJ

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civil

29 EAST MAIN STREET
BLOOMSBURG, PA 17815
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PROJECT No:	1258-57
DATE:	JULY, 6, 2026
SCALE:	AS SHOWN
DRAWN BY:	RJG
CHECKED BY:	CMJ

PROJECT
GRANVILLE DC

**GRANVILLE
TOWNSHIP
MIFFLIN COUNTY**

PENNSYLVANIA

CLIENT
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LLC, A DELAWARE LIMITED
LIABILITY COMPANY
1015 MUMMA ROAD
WORMLEYSBURG, PA, 17043
PHONE: 888.987.1993

SHEET TITLE
**POST
DEVELOPMENT
DRAINAGE AREA
MAP SITE 2**

SHEET NO.
POST DA-2

APPENDIX IV

**WEIGHTED CN - PRE DEVELOPMENT****PROJECT INFORMATION**

Name:	GRANVILLE DC	Date:	6/29/2026
Number:	1258-57	Prepared By:	TDW
Location:	GRANVILLE TOWNSHIP, MIFFLIN COUNTY	Reviewed By:	CMJ

PRE DEVELOPMENT DRAINAGE AREA - POA A

Land Use	Soil Group	CN	Area SqFt	Area Ac	A*CN
Meadow	B	58	1,814,552	41.656	2,416.0704
Meadow	C	71	940,808	21.598	1,533.4566
Meadow	D	78	1,373,447	31.530	2,459.3400
Woods	D	77	487,759	11.197	862.2007
Impervious	D	98	61,110	1.403	137.4834
TOTAL			4,677,676	107.38	7,408.551

Weighted CN = 69

PRE DEVELOPMENT DRAINAGE AREA - POA B

Land Use	Soil Group	CN	Area SqFt	Area Ac	A*CN
Meadow	B	58	1,176,120	27.000	1,566.0000
Meadow	C	71	339,768	7.800	553.8000
Meadow	D	78	132,858	3.050	237.9000
Woods	D	77	166,171	3.815	293.7363
Impervious	D	98	19,313	0.443	43.4507
TOTAL			1,834,230	42.11	2,694.887

Weighted CN = 64

PRE DEVELOPMENT DRAINAGE AREA - POA C

Land Use	Soil Group	CN	Area SqFt	Area Ac	A*CN
Meadow	B	58	488,981	11.225	651.0761
Meadow	D	71	0	0.000	0.0000
Woods	B	55	46,580	1.069	58.8127
Woods	D	77	184,070	4.226	325.3762
Impervious	D	98	17,985	0.413	40.4626
TOTAL			737,615	16.93	1,075.727

Weighted CN = 64



WEIGHTED CN - POST DEVELOPMENT

PROJECT INFORMATION

Name:	GRANVILLE DC	Date:	6/29/2026
Number:	1258-57	Prepared By:	TDW
Location:	GRANVILLE TOWNSHIP, MIFFLIN COUNTY	Reviewed By:	CMJ

POST DEVELOPMENT DRAINAGE AREA - BASIN 1

Land Use	Soil Group	CN	Area SqFt	Area Ac	A*CN
Open Space	B	61	29,629	0.680	41.4914
Open Space	C	74	30,060	0.690	51.0661
Open Space	D	80	111,474	2.559	204.7270
Impervious	D	98	342,104	7.854	769.6555
TOTAL			513,267	11.78	1,066.940
Weighted CN =		91			

POST DEVELOPMENT DRAINAGE AREA - BASIN 2

Land Use	Soil Group	CN	Area SqFt	Area Ac	A*CN
Open Space	B	61	543,101	12.468	760.5408
Open Space	C	74	18,623	0.428	31.6369
Open Space	D	80	0	0.000	0.0000
Impervious	D	98	346,264	7.949	779.0145
TOTAL			907,988	20.84	1,571.192
Weighted CN =		75			



WEIGHTED CN - POST DEVELOPMENT

PROJECT INFORMATION

Name:	GRANVILLE DC	Date:	6/29/2026
Number:	1258-57	Prepared By:	TDW
Location:	GRANVILLE TOWNSHIP, MIFFLIN COUNTY	Reviewed By:	CMJ

POST DEVELOPMENT DRAINAGE AREA - BASIN 4

Land Use	Soil Group	CN	Area SqFt	Area	A*CN
				Ac	
Open Space	B	61	151,389	3.475	212.0008
Open Space	C	74	0	0.000	0.0000
Open Space	D	80	17,987	0.413	33.0340
Impervious	D	98	151,525	3.479	340.8965
TOTAL			320,901	7.37	585.931
Weighted CN =		80			

POST DEVELOPMENT DRAINAGE AREA - BASIN 3

Land Use	Soil Group	CN	Area SqFt	Area	A*CN
				Ac	
Open Space	B	61	536,745	12.322	751.6402
Open Space	C	74	113,645	2.609	193.0608
Open Space	D	80	0	0.000	0.0000
Impervious	D	98	1,472,846	33.812	3,313.5654
TOTAL			2,123,236	48.74	4,258.266
Weighted CN =		87			



WEIGHTED CN - POST DEVELOPMENT

PROJECT INFORMATION

Name:	GRANVILLE DC	Date:	6/29/2026
Number:	1258-57	Prepared By:	TDW
Location:	GRANVILLE TOWNSHIP, MIFFLIN COUNTY	Reviewed By:	CMJ

POST DEVELOPMENT DRAINAGE AREA - UNDETAINED POA A

Land Use	Soil Group	CN	Area SqFt	Area	A*CN
				Ac	
Open Space	B	61	0	0.000	0.0000
Open Space	C	74	41,818	0.960	71.0400
Open Space	D	80	66,647	1.530	122.4000
Meadow	C	71	266,587	6.120	434.5200
Meadow	D	78	994,475	22.830	1,780.7400
Meadow	B	58	67,518	1.550	89.9000
Woods	D	77	487,872	11.200	862.4000
Impervious	D	98	13,504	0.310	30.3800
TOTAL			1,938,420	44.50	3,391.380
Weighted CN =		76			

POST DEVELOPMENT DRAINAGE AREA - UNDETAINED POA B

Land Use	Soil Group	CN	Area SqFt	Area	A*CN
				Ac	
Open Space	B	61	32,670	0.750	45.7500
Open Space	C	74	34,412	0.790	58.4600
Open Space	D	80	3,087	0.071	5.6694
Meadow	B	58	371,585	8.530	494.7642
Meadow	C	71	199,940	4.590	325.8900
Meadow	D	78	93,581	2.148	167.5696
Woods	D	77	156,564	3.594	276.7538
Impervious	D	98	9,754	0.224	21.9443
TOTAL			901,594	20.70	1,396.801
Weighted CN =		67			

POST DEVELOPMENT DRAINAGE AREA - UNDETAINED POA C

Land Use	Soil Group	CN	Area SqFt	Area	A*CN
				Ac	
Meadow	B	58	299,909	6.885	399.3279
Woods	B	55	46,609	1.070	58.8500
Woods	D	77	184,070	4.226	325.3762
Impervious	D	98	17,860	0.410	40.1800
TOTAL			548,448	12.59	823.734

Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

1

2

3

Legend

Hyd.	Origin	Description
1	SCS Runoff	POA C
2	SCS Runoff	POA A
3	SCS Runoff	POA B

Project: Pre_Dev_Hydrographs_Site_1.gpw

Wednesday, 07 / 1 / 2026

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	-----	1.525	3.902	-----	8.630	13.66	22.01	29.84	39.07	POA C
2	SCS Runoff	-----	17.85	34.63	-----	64.36	93.59	140.40	183.40	233.28	POA A
3	SCS Runoff	-----	3.564	9.014	-----	19.97	31.57	51.05	69.33	90.90	POA B

Proj. file: Pre_Dev_Hydrographs_Site_1.gpw

Wednesday, 07 / 1 / 2026

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.525	2	736	13,458	-----	-----	-----	POA C
2	SCS Runoff	17.85	2	744	139,452	-----	-----	-----	POA A
3	SCS Runoff	3.564	2	740	33,891	-----	-----	-----	POA B

Pre_Dev_Hydrographs_Site_1.gpw

Return Period: 1 Year

Wednesday, 07 / 1 / 2026

Hydrograph Report

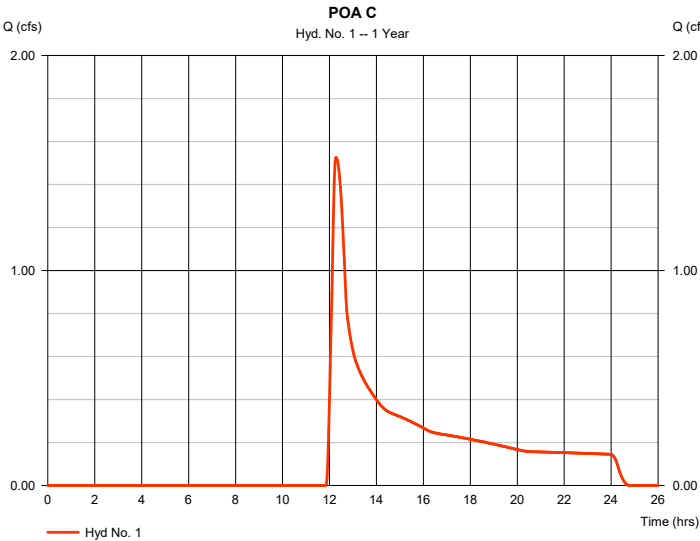
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 1

POA C

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.525 cfs
Storm frequency	=	1 yrs	Time to peak	=	12.27 hrs
Time interval	=	2 min	Hyd. volume	=	13,458 cuft
Drainage area	=	16.930 ac	Curve number	=	64
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	28.70 min
Total precip.	=	2.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

5

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No. 1

POA C

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 150.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.83	0.00	0.00	
Land slope (%)	= 1.30	0.00	0.00	
Travel Time (min)	= 24.94	+ 0.00	+ 0.00	= 24.94
Shallow Concentrated Flow				
Flow length (ft)	= 519.38	521.38	0.00	
Watercourse slope (%)	= 8.20	5.20	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=4.62	4.64	0.00	
Travel Time (min)	= 1.87	+ 1.87	+ 0.00	= 3.75
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	=0.00	0.00	0.00	
Flow length (ft)	{{0}}0.0	0.0	0.0	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				28.70 min

Hydrograph Report

6

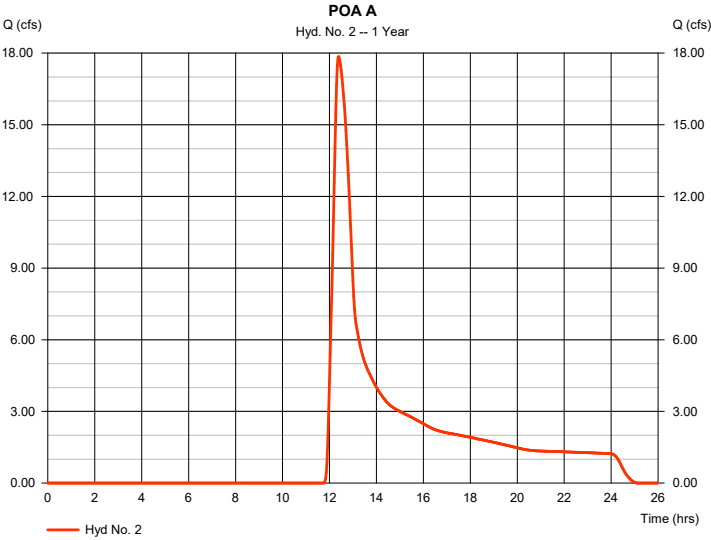
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 2

POA A

Hydrograph type	= SCS Runoff	Peak discharge	= 17.85 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 139,452 cuft
Drainage area	= 107.380 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 41.30 min
Total precip.	= 2.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

7

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No. 2

POA A

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 150.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.83	0.00	0.00	
Land slope (%)	= 0.50	0.00	0.00	
Travel Time (min)	= 36.54	+ 0.00	+ 0.00	= 36.54
Shallow Concentrated Flow				
Flow length (ft)	= 0.00	0.00	0.00	
Watercourse slope (%)	= 0.00	0.00	0.00	
Surface description	= Paved	Paved	Paved	
Average velocity (ft/s)	=0.00	0.00	0.00	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Channel Flow				
X sectional flow area (sqft)	= 7.75	15.50	0.00	
Wetted perimeter (ft)	= 3.00	8.00	0.00	
Channel slope (%)	= 1.10	0.90	0.00	
Manning's n-value	= 0.025	0.025	0.015	
Velocity (ft/s)	=11.81	8.81	0.00	
Flow length (ft)	{{0}}1999.0	1025.6	0.0	
Travel Time (min)	= 2.82	+ 1.94	+ 0.00	= 4.76
Total Travel Time, Tc				41.30 min

Hydrograph Report

8

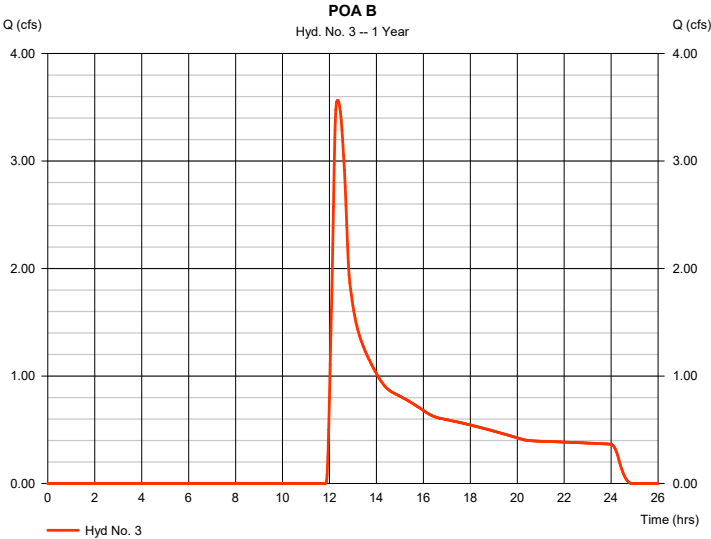
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 3

POA B

Hydrograph type	= SCS Runoff	Peak discharge	= 3.564 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 33,891 cuft
Drainage area	= 42.110 ac	Curve number	= 64
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 30.30 min
Total precip.	= 2.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hyd. No. 3

POA B

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 150.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.83	0.00	0.00	
Land slope (%)	= 1.30	0.00	0.00	
Travel Time (min)	= 24.94	+ 0.00	+ 0.00	= 24.94
Shallow Concentrated Flow				
Flow length (ft)	= 438.30	438.82	0.00	
Watercourse slope (%)	= 2.60	3.10	0.00	
Surface description	= Unpaved	Unpaved	Paved	
Average velocity (ft/s)	=2.60	2.84	0.00	
Travel Time (min)	= 2.81	+ 2.57	+ 0.00	= 5.38
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.025	0.015	0.015	
Velocity (ft/s)	=0.00	0.00	0.00	
Flow length (ft)	{{0}}0.0	0.0	0.0	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				30.30 min

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	3.902	2	734	24,373	-----	-----	-----	POA C
2	SCS Runoff	34.63	2	742	228,520	-----	-----	-----	POA A
3	SCS Runoff	9.014	2	736	61,380	-----	-----	-----	POA B
Pre_Dev_Hydrographs_Site_1.gpw					Return Period: 2 Year			Wednesday, 07 / 1 / 2026	

Hydrograph Report

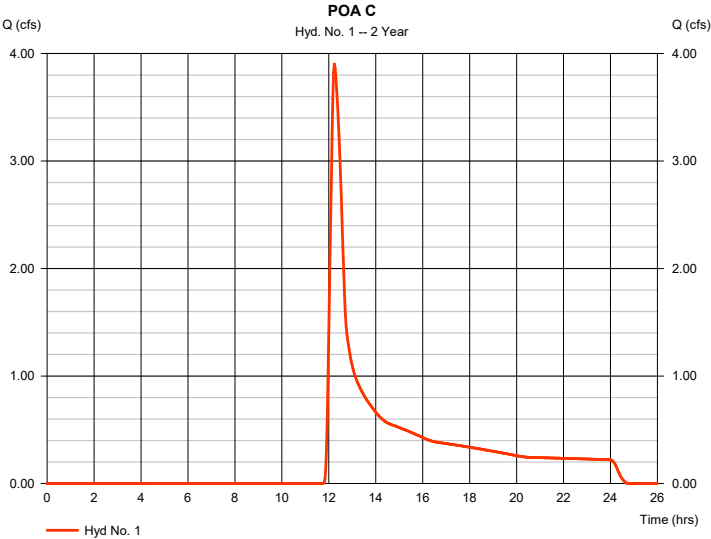
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 1

POA C

Hydrograph type	= SCS Runoff	Peak discharge	= 3.902 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 24,373 cuft
Drainage area	= 16.930 ac	Curve number	= 64
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 28.70 min
Total precip.	= 2.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

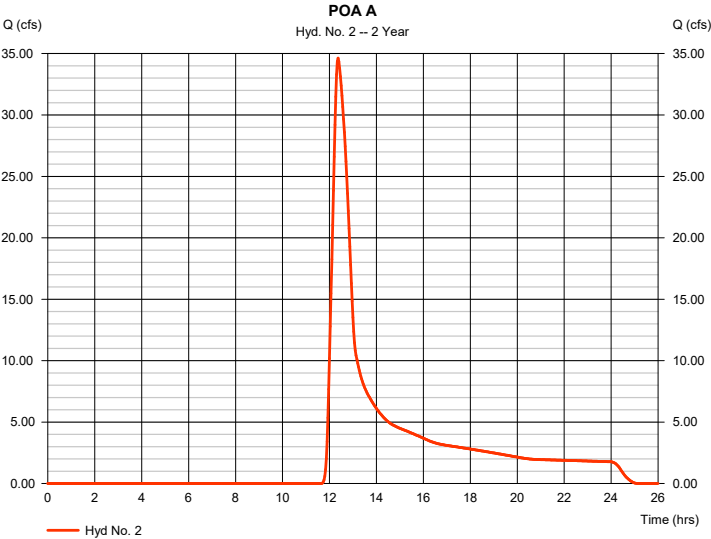
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 2

POA A

Hydrograph type	= SCS Runoff	Peak discharge	= 34.63 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 228,520 cuft
Drainage area	= 107.380 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 41.30 min
Total precip.	= 2.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

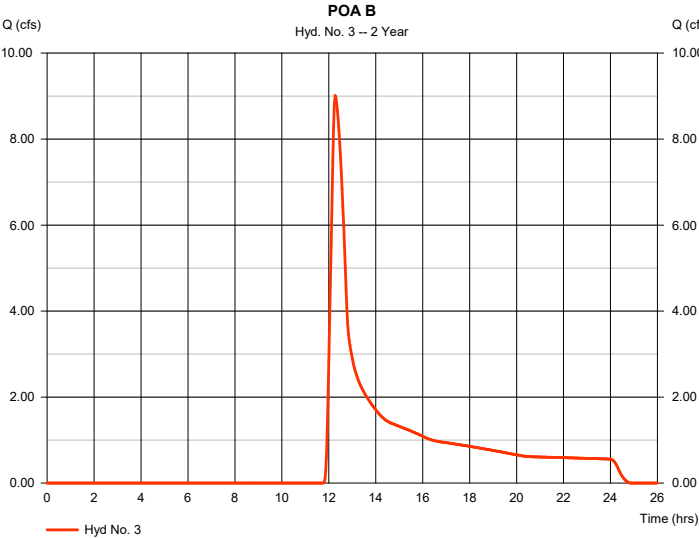


Hydrograph Report

Hyd. No. 3

POA B

Hydrograph type	=	SCS Runoff	Peak discharge	=	9.014 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.27 hrs
Time interval	=	2 min	Hyd. volume	=	61,380 cuft
Drainage area	=	42.110 ac	Curve number	=	64
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	30.30 min
Total precip.	=	2.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

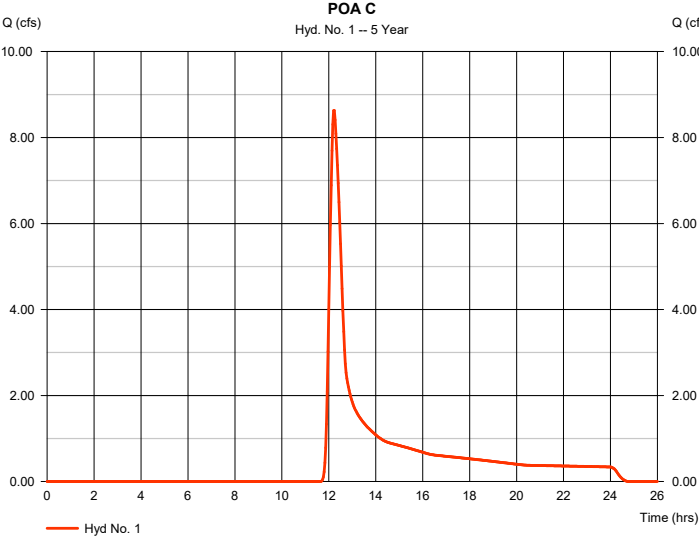
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	8.630	2	734	43,642	-----	-----	-----	POA C
2	SCS Runoff	64.36	2	740	377,773	-----	-----	-----	POA A
3	SCS Runoff	19.97	2	736	109,908	-----	-----	-----	POA B
Pre_Dev_Hydrographs_Site_1.gpw					Return Period: 5 Year			Wednesday, 07 / 1 / 2026	

Hydrograph Report

Hyd. No. 1

POA C

Hydrograph type	=	SCS Runoff	Peak discharge	=	8.630 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.23 hrs
Time interval	=	2 min	Hyd. volume	=	43,642 cuft
Drainage area	=	16.930 ac	Curve number	=	64
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	28.70 min
Total precip.	=	3.51 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

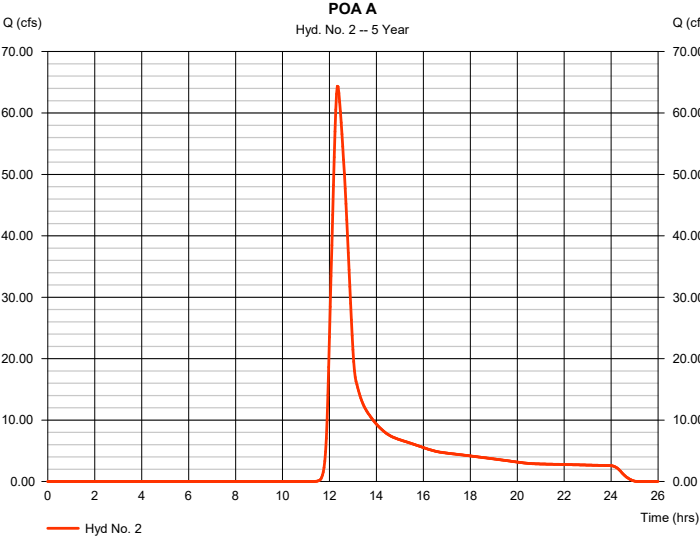


Hydrograph Report

Hyd. No. 2

POA A

Hydrograph type	=	SCS Runoff	Peak discharge	=	64.36 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	377,773 cuft
Drainage area	=	107.380 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	41.30 min
Total precip.	=	3.51 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

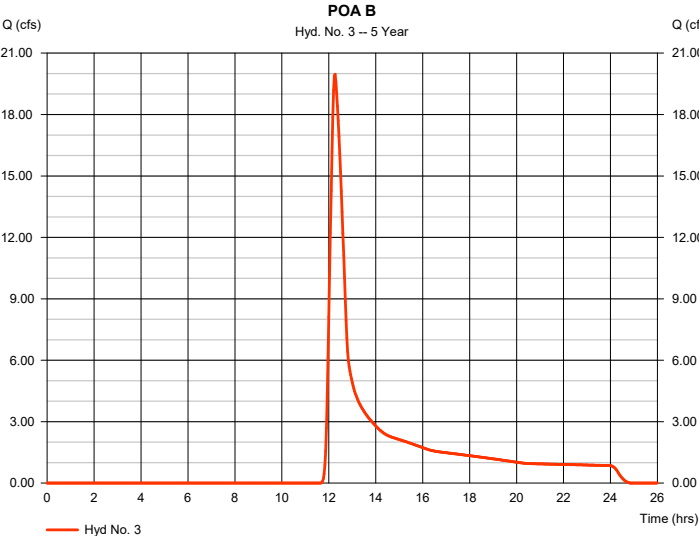


Hydrograph Report

Hyd. No. 3

POA B

Hydrograph type	=	SCS Runoff	Peak discharge	=	19.97 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.27 hrs
Time interval	=	2 min	Hyd. volume	=	109,908 cuft
Drainage area	=	42.110 ac	Curve number	=	64
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	30.30 min
Total precip.	=	3.51 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	13.66	2	732	62,896	-----	-----	-----	POA C
2	SCS Runoff	93.59	2	740	521,630	-----	-----	-----	POA A
3	SCS Runoff	31.57	2	734	158,396	-----	-----	-----	POA B

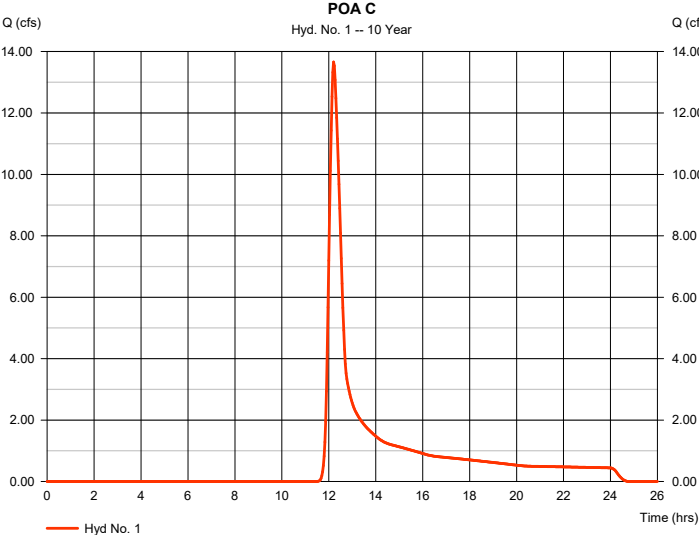
Pre_Dev_Hydrographs_Site_1.gpw	Return Period: 10 Year	Wednesday, 07 / 1 / 2026
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Hydrograph Report

Hyd. No. 1

POA C

Hydrograph type	=	SCS Runoff	Peak discharge	=	13.66 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.20 hrs
Time interval	=	2 min	Hyd. volume	=	62,896 cuft
Drainage area	=	16.930 ac	Curve number	=	64
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	28.70 min
Total precip.	=	4.09 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

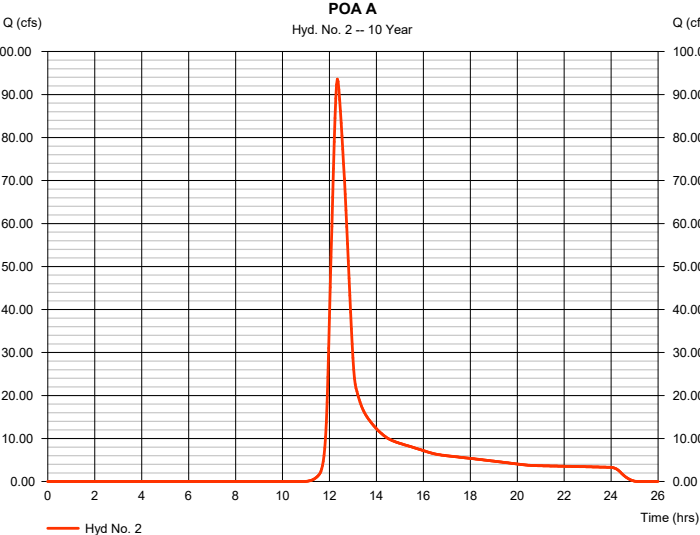


Hydrograph Report

Hyd. No. 2

POA A

Hydrograph type	=	SCS Runoff	Peak discharge	=	93.59 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	521,630 cuft
Drainage area	=	107.380 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	41.30 min
Total precip.	=	4.09 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

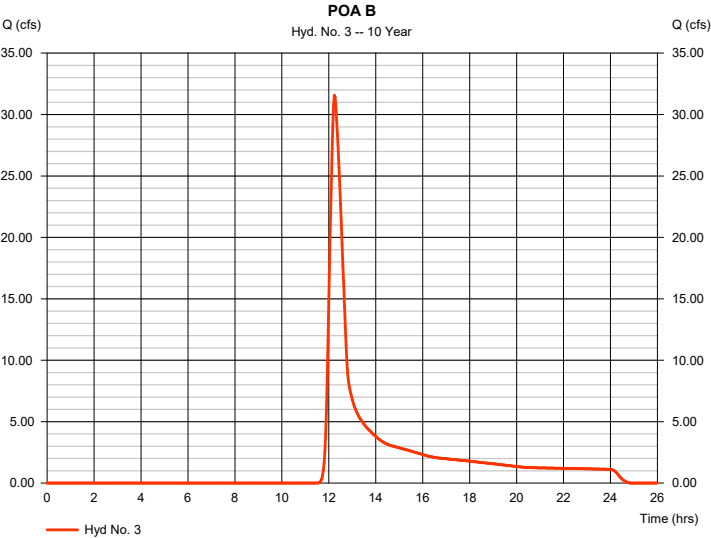


Hydrograph Report

Hyd. No. 3

POA B

Hydrograph type	=	SCS Runoff	Peak discharge	=	31.57 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.23 hrs
Time interval	=	2 min	Hyd. volume	=	158,396 cuft
Drainage area	=	42.110 ac	Curve number	=	64
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	30.30 min
Total precip.	=	4.09 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	22.01	2	732	94,750	-----	-----	-----	POA C
2	SCS Runoff	140.40	2	740	753,177	-----	-----	-----	POA A
3	SCS Runoff	51.05	2	734	238,618	-----	-----	-----	POA B

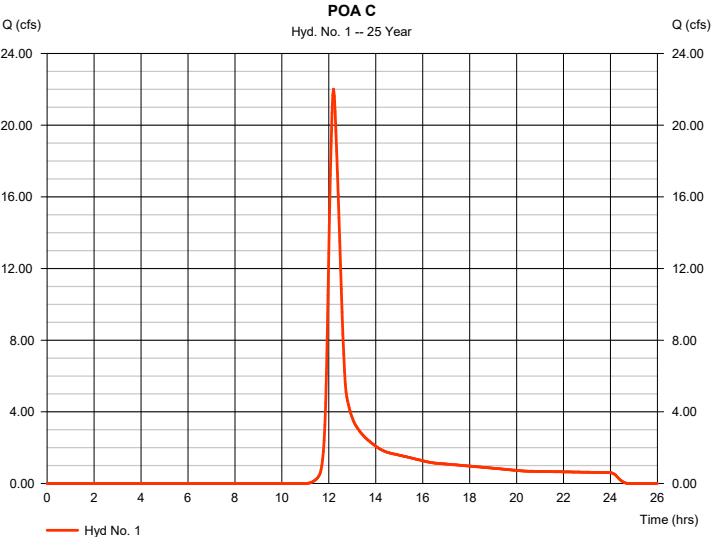
Pre_Dev_Hydrographs_Site_1.gpw					Return Period: 25 Year			Wednesday, 07 / 1 / 2026	
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Hydrograph Report

Hyd. No. 1

POA C

Hydrograph type	=	SCS Runoff	Peak discharge	=	22.01 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.20 hrs
Time interval	=	2 min	Hyd. volume	=	94,750 cuft
Drainage area	=	16.930 ac	Curve number	=	64
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	28.70 min
Total precip.	=	4.94 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

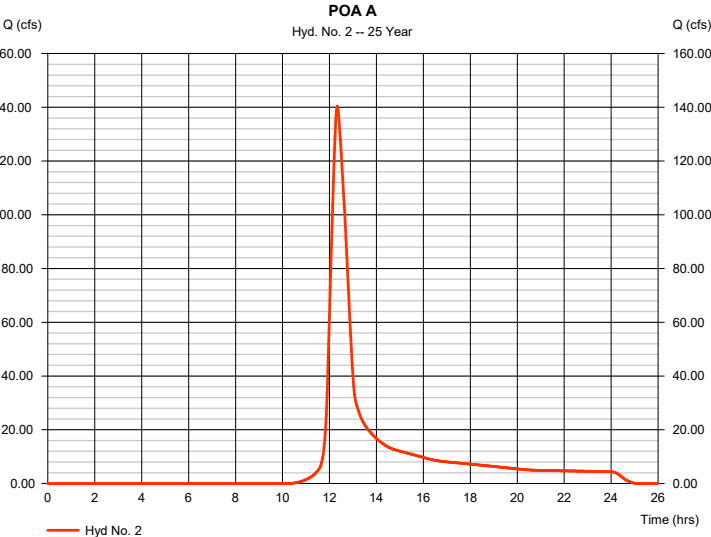


Hydrograph Report

Hyd. No. 2

POA A

Hydrograph type	=	SCS Runoff	Peak discharge	=	140.40 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	753,177 cuft
Drainage area	=	107.380 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	41.30 min
Total precip.	=	4.94 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

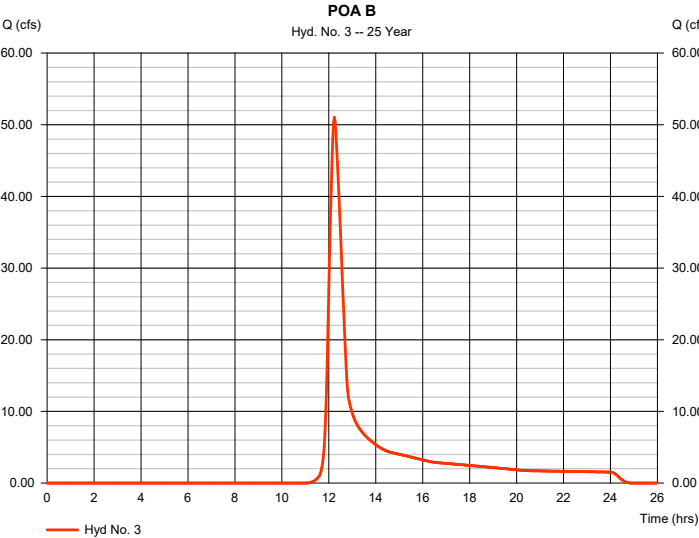


Hydrograph Report

Hyd. No. 3

POA B

Hydrograph type	=	SCS Runoff	Peak discharge	=	51.05 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.23 hrs
Time interval	=	2 min	Hyd. volume	=	238,618 cuft
Drainage area	=	42.110 ac	Curve number	=	64
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	30.30 min
Total precip.	=	4.94 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

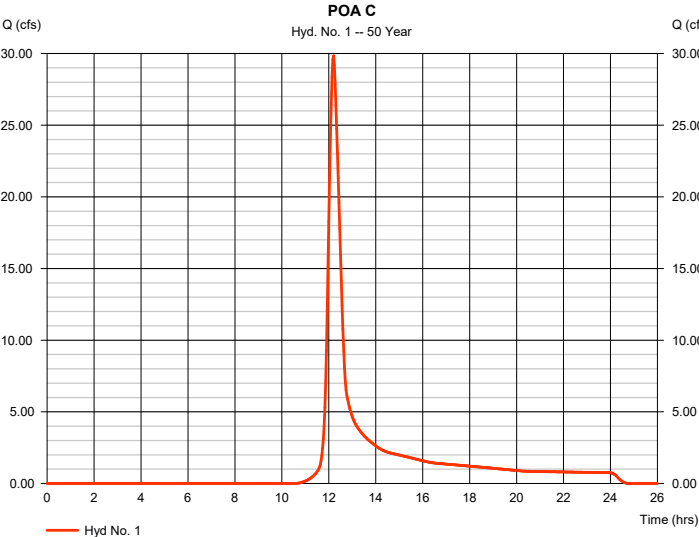
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	29.84	2	732	124,828	-----	-----	-----	POA C
2	SCS Runoff	183.40	2	740	967,115	-----	-----	-----	POA A
3	SCS Runoff	69.33	2	734	314,364	-----	-----	-----	POA B
Pre_Dev_Hydrographs_Site_1.gpw					Return Period: 50 Year			Wednesday, 07 / 1 / 2026	

Hydrograph Report

Hyd. No. 1

POA C

Hydrograph type	=	SCS Runoff	Peak discharge	=	29.84 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.20 hrs
Time interval	=	2 min	Hyd. volume	=	124,828 cuft
Drainage area	=	16.930 ac	Curve number	=	64
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	28.70 min
Total precip.	=	5.67 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

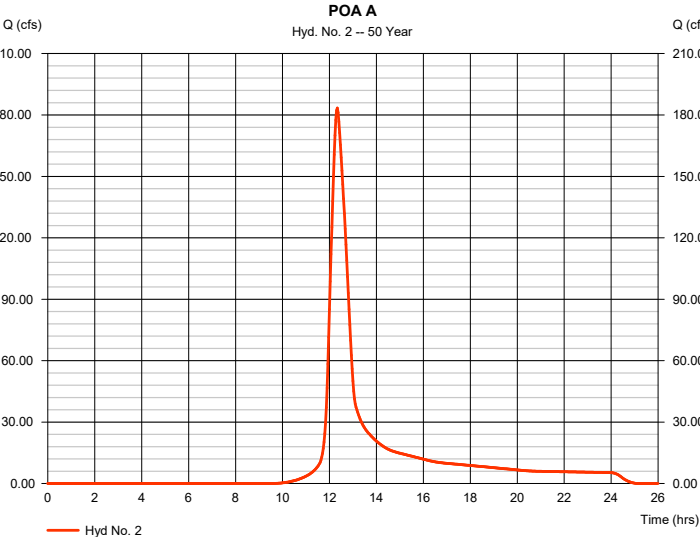


Hydrograph Report

Hyd. No. 2

POA A

Hydrograph type	=	SCS Runoff	Peak discharge	=	183.40 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	967,115 cuft
Drainage area	=	107.380 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	41.30 min
Total precip.	=	5.67 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

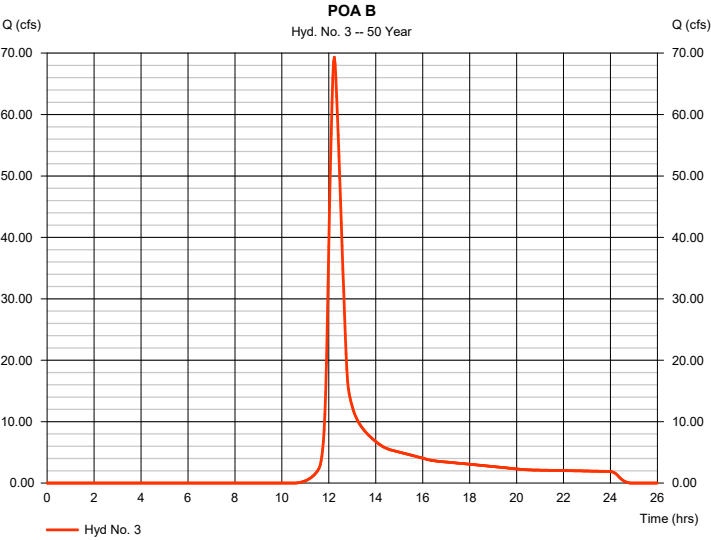


Hydrograph Report

Hyd. No. 3

POA B

Hydrograph type	=	SCS Runoff	Peak discharge	=	69.33 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.23 hrs
Time interval	=	2 min	Hyd. volume	=	314,364 cuft
Drainage area	=	42.110 ac	Curve number	=	64
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	30.30 min
Total precip.	=	5.67 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	39.07	2	732	160,502	-----	-----	-----	POA C
2	SCS Runoff	233.28	2	740	1,216,940	-----	-----	-----	POA A
3	SCS Runoff	90.90	2	734	404,207	-----	-----	-----	POA B

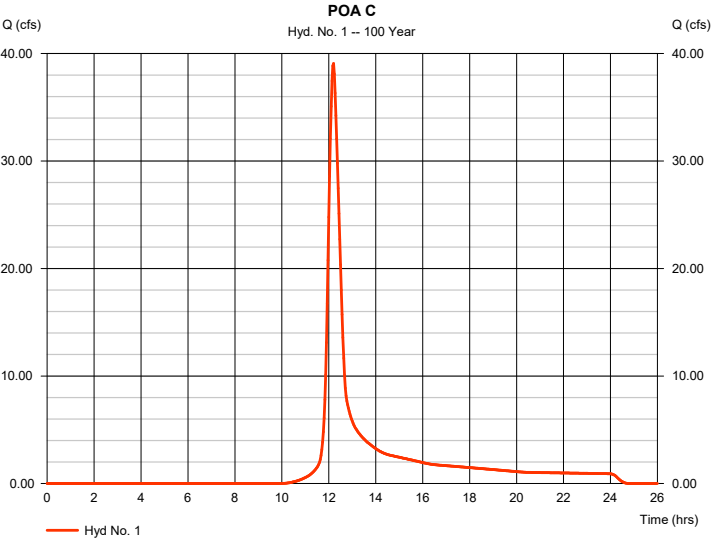
Pre_Dev_Hydrographs_Site_1.gpw	Return Period: 100 Year	Wednesday, 07 / 1 / 2026
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Hydrograph Report

Hyd. No. 1

POA C

Hydrograph type	=	SCS Runoff	Peak discharge	=	39.07 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.20 hrs
Time interval	=	2 min	Hyd. volume	=	160,502 cuft
Drainage area	=	16.930 ac	Curve number	=	64
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	28.70 min
Total precip.	=	6.48 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

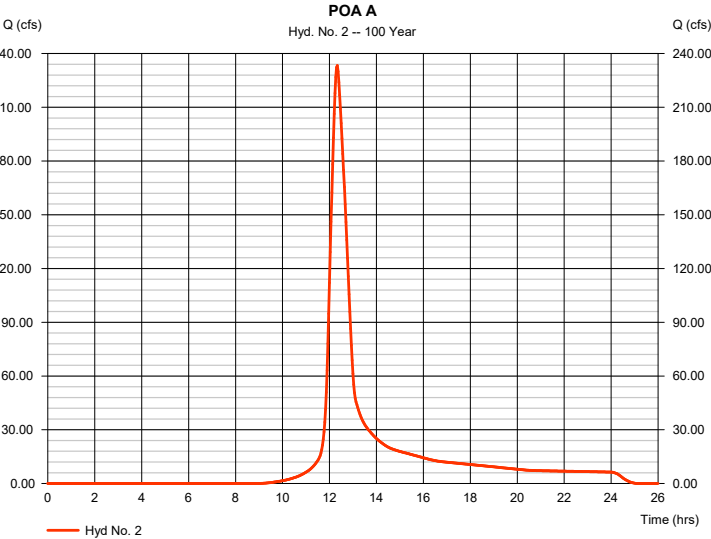


Hydrograph Report

Hyd. No. 2

POA A

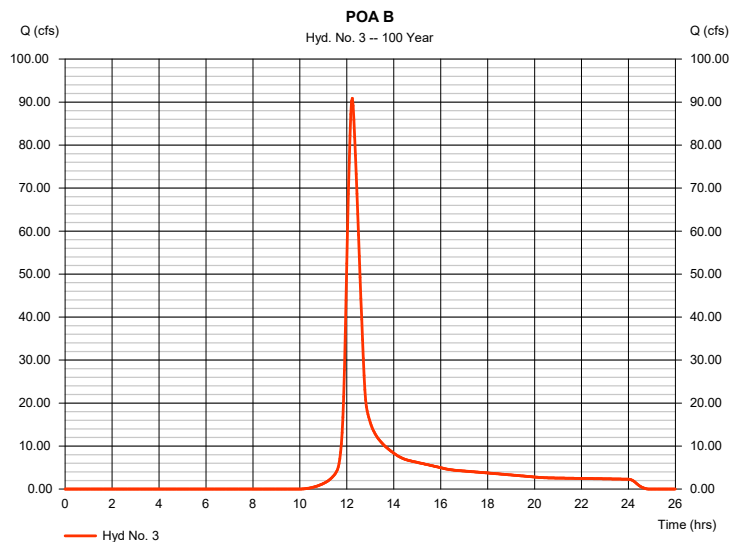
Hydrograph type	=	SCS Runoff	Peak discharge	=	233.28 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	1,216,940 cuft
Drainage area	=	107.380 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	41.30 min
Total precip.	=	6.48 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hvd. No. 3

POA B

Hydrograph type	= SCS Runoff	Peak discharge	= 90.90 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 404,207 cuft
Drainage area	= 42,110 ac	Curve number	= 64
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 30.30 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	44.5787	10.1000	0.8865	-----
2	50.7169	10.0000	0.8698	-----
3	0.0000	0.0000	0.0000	-----
5	52.0794	9.3000	0.8217	-----
10	52.4929	8.7000	0.7884	-----
25	48.0803	7.2000	0.7277	-----
50	47.2198	6.5000	0.6954	-----
100	44.9538	5.6000	0.6576	-----

File name: Granville.idf

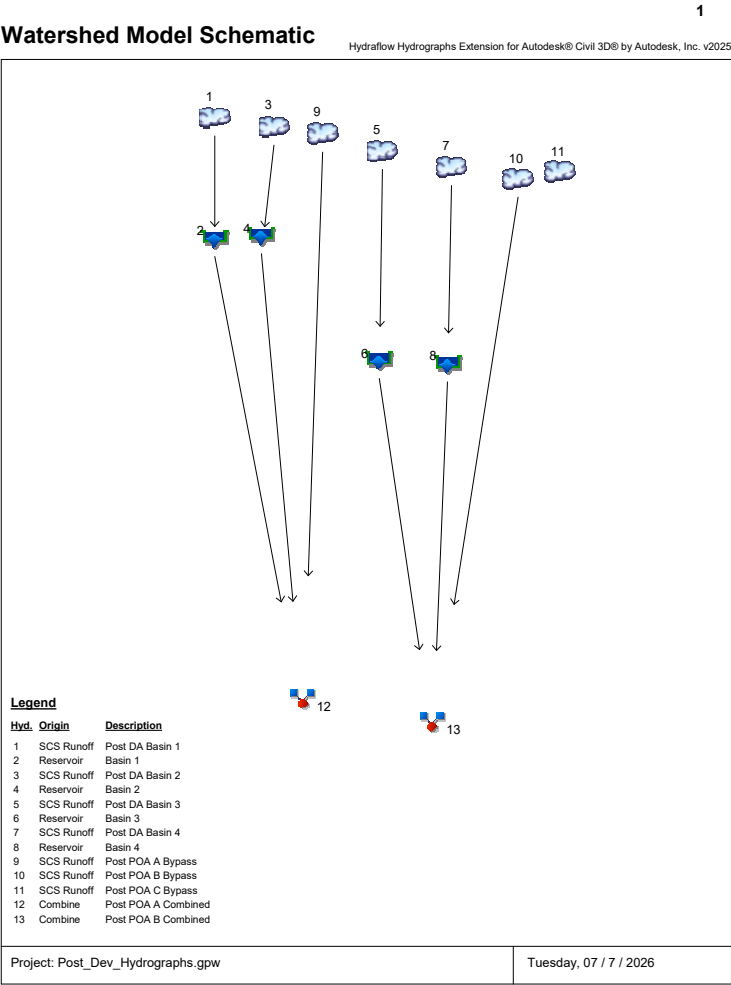
$$\text{Intensity} = B / (T_c + D)^E$$

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.02	3.12	2.56	2.18	1.90	1.69	1.52	1.39	1.28	1.18	1.10	1.03
2	4.81	3.75	3.09	2.63	2.30	2.05	1.85	1.69	1.55	1.44	1.34	1.26
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	5.85	4.57	3.79	3.25	2.85	2.55	2.31	2.12	1.96	1.82	1.70	1.60
10	6.67	5.22	4.33	3.72	3.28	2.94	2.67	2.45	2.27	2.12	1.98	1.87
25	7.79	6.07	5.04	4.35	3.84	3.46	3.16	2.91	2.70	2.53	2.38	2.25
50	8.64	6.72	5.59	4.84	4.29	3.87	3.54	3.27	3.05	2.86	2.69	2.55
100	9.52	7.38	6.15	5.33	4.74	4.29	3.93	3.65	3.40	3.20	3.02	2.87

Tc = time in minutes. Values may exceed 60

\\8 Stone Canyon Capital Partners\02 Datacenter Dev Prospects\00 Development Sites\57 Granville\Calcs\Granville.pcp

[illegible]



2

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	-----	28.82	36.97	-----	48.53	58.37	72.72	84.97	98.49	Post DA Basin 1
2	Reservoir	1	0.280	0.363	-----	0.485	0.590	0.738	0.978	1.197	Basin 1
3	SCS Runoff	-----	19.47	30.02	-----	46.42	61.33	84.33	105.26	128.97	Post DA Basin 2
4	Reservoir	3	0.000	0.000	-----	0.000	0.121	0.525	0.774	0.987	Basin 2
5	SCS Runoff	-----	97.43	130.06	-----	177.30	218.02	277.85	329.18	385.95	Post DA Basin 3
6	Reservoir	5	0.000	0.000	-----	0.000	0.000	0.101	0.399	0.645	Basin 3
7	SCS Runoff	-----	9.855	14.09	-----	20.45	26.26	35.04	42.71	51.30	Post DA Basin 4
8	Reservoir	7	0.095	0.136	-----	0.198	0.254	0.340	0.495	0.736	Basin 4
9	SCS Runoff	-----	16.46	26.29	-----	41.80	56.05	78.07	97.72	120.03	Post POA A Bypass
10	SCS Runoff	-----	3.059	6.505	-----	12.84	19.22	29.53	39.07	50.21	Post POA B Bypass
11	SCS Runoff	-----	1.304	3.091	-----	6.556	10.18	16.15	21.73	28.29	Post POA C Bypass
12	Combine	2, 4, 9,	16.67	26.56	-----	42.17	56.51	78.71	98.78	121.60	Post POA A Combined
13	Combine	6, 8, 10,	3.113	6.587	-----	12.97	19.38	29.76	39.38	50.76	Post POA B Combined

Proj. file: Post_Dev_Hydrographs.gpw

Tuesday, 07 / 7 / 2026

3

Hydrograph Summary Report

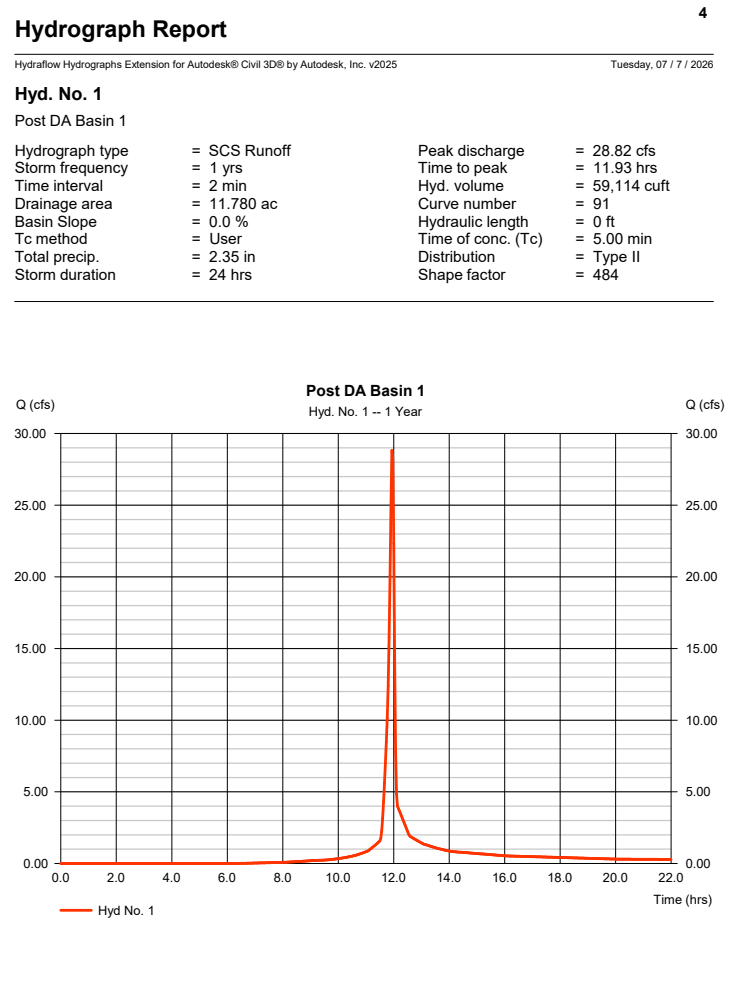
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	28.82	2	716	59,114	-----	-----	-----	Post DA Basin 1
2	Reservoir	0.280	2	1332	48,879	1	565.45	47,387	Basin 1
3	SCS Runoff	19.47	2	718	40,059	-----	-----	-----	Post DA Basin 2
4	Reservoir	0.000	2	846	0	3	567.40	32,713	Basin 2
5	SCS Runoff	97.43	2	716	196,831	-----	-----	-----	Post DA Basin 3
6	Reservoir	0.000	2	2208	0	5	545.40	158,968	Basin 3
7	SCS Runoff	9.855	2	718	19,733	-----	-----	-----	Post DA Basin 4
8	Reservoir	0.095	2	1442	16,303	7	538.29	16,028	Basin 4
9	SCS Runoff	16.46	2	742	98,762	-----	-----	-----	Post POA A Bypass
10	SCS Runoff	3.059	2	738	22,522	-----	-----	-----	Post POA B Bypass
11	SCS Runoff	1.304	2	738	11,259	-----	-----	-----	Post POA C Bypass
12	Combine	16.67	2	742	147,640	2, 4, 9,	-----	-----	Post POA A Combined
13	Combine	3.113	2	738	38,825	6, 8, 10,	-----	-----	Post POA B Combined

Post_Dev_Hydrographs.gpw

Return Period: 1 Year

Tuesday, 07 / 7 / 2026



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

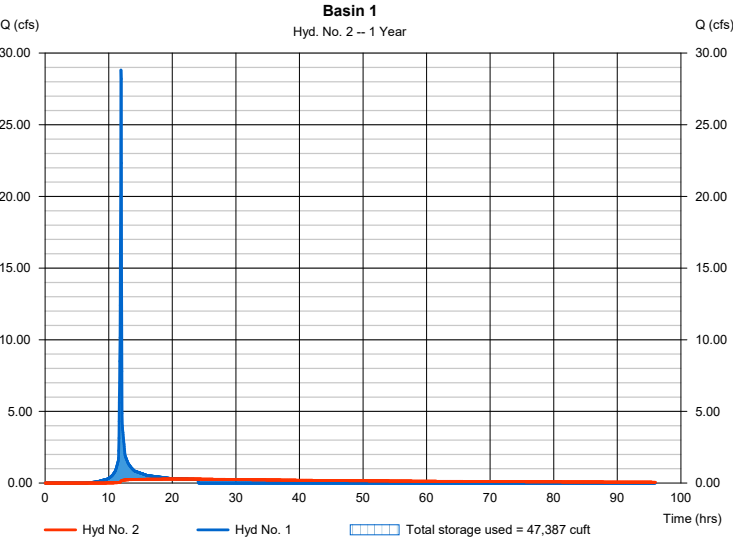
Tuesday, 07 / 7 / 2026

Hyd. No. 2

Basin 1

Hydrograph type	=	Reservoir	Peak discharge	=	0.280 cfs
Storm frequency	=	1 yrs	Time to peak	=	22.20 hrs
Time interval	=	2 min	Hyd. volume	=	48,879 cuft
Inflow hyd. No.	=	1 - Post DA Basin 1	Max. Elevation	=	565.45 ft
Reservoir name	=	Basin 1	Max. Storage	=	47,387 cuft

Storage Indication method used. Outflow includes exfiltration.



Pond Report

6

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Pond No. 1 - Basin 1

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 565.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	565.00	102,700	0	0
1.00	566.00	107,140	104,902	104,902
2.00	567.00	111,680	106,396	214,298
3.00	568.00	116,300	113,976	328,274
4.00	569.00	120,960	118,611	446,884
5.00	570.00	125,680	123,300	570,184

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	6.00	0.00	0.00
Span (in)	= 18.00	6.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 565.00	566.00	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	100.00	0.00	0.00
Crest El. (ft)	= 568.50	568.75	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= 1	Broad	---	---
Multi-Stage	= Yes	No	No	No
Exfil. (in/hr)	= 0.250 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (xs).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	565.00	0.00	0.00	---	---	0.00	0.00	---	---	0.000	---	0.000
0.10	10,490	565.10	0.00	0.00	---	---	0.00	0.00	---	---	0.062	---	0.062
0.20	20,980	565.20	0.00	0.00	---	---	0.00	0.00	---	---	0.124	---	0.124
0.30	31,471	565.30	0.00	0.00	---	---	0.00	0.00	---	---	0.186	---	0.186
0.40	41,961	565.40	0.00	0.00	---	---	0.00	0.00	---	---	0.248	---	0.248
0.50	52,451	565.50	0.00	0.00	---	---	0.00	0.00	---	---	0.310	---	0.310
0.60	62,941	565.60	0.00	0.00	---	---	0.00	0.00	---	---	0.372	---	0.372
0.70	73,431	565.70	0.00	0.00	---	---	0.00	0.00	---	---	0.434	---	0.434
0.80	83,921	565.80	0.00	0.00	---	---	0.00	0.00	---	---	0.496	---	0.496
0.90	94,412	565.90	0.00	0.00	---	---	0.00	0.00	---	---	0.558	---	0.558
1.00	104,902	566.00	0.00	0.00	---	---	0.00	0.00	---	---	0.620	---	0.620
1.10	115,841	566.10	0.03 ic	0.03 ic	---	---	0.00	0.00	---	---	0.682	---	0.682
1.20	126,781	566.20	0.12 ic	0.11 ic	---	---	0.00	0.00	---	---	0.744	---	0.744
1.30	137,721	566.30	0.23 ic	0.23 ic	---	---	0.00	0.00	---	---	0.806	---	0.806
1.40	148,660	566.40	0.36 ic	0.36 ic	---	---	0.00	0.00	---	---	0.868	---	0.868
1.50	159,600	566.50	0.49 ic	0.47 ic	---	---	0.00	0.00	---	---	0.930	---	0.930
1.60	170,539	566.60	0.58 ic	0.56 ic	---	---	0.00	0.00	---	---	0.992	---	0.992
1.70	181,479	566.70	0.65 ic	0.63 ic	---	---	0.00	0.00	---	---	1.054	---	1.054
1.80	192,419	566.80	0.72 ic	0.70 ic	---	---	0.00	0.00	---	---	1.116	---	1.116
1.90	203,358	566.90	0.76 ic	0.76 ic	---	---	0.00	0.00	---	---	1.178	---	1.178
2.00	214,298	567.00	0.84 ic	0.82 ic	---	---	0.00	0.00	---	---	1.240	---	1.240
2.10	225,695	567.10	0.88 ic	0.87 ic	---	---	0.00	0.00	---	---	1.302	---	1.302
2.20	237,093	567.20	0.93 ic	0.92 ic	---	---	0.00	0.00	---	---	1.364	---	1.364
2.30	248,491	567.30	0.97 ic	0.97 ic	---	---	0.00	0.00	---	---	1.426	---	1.426
2.40	259,888	567.40	1.02 ic	1.01 ic	---	---	0.00	0.00	---	---	1.488	---	1.488
2.50	271,286	567.50	1.06 ic	1.06 ic	---	---	0.00	0.00	---	---	1.550	---	1.550
2.60	282,683	567.60	1.11 ic	1.10 ic	---	---	0.00	0.00	---	---	1.612	---	1.612
2.70	294,081	567.70	1.16 ic	1.14 ic	---	---	0.00	0.00	---	---	1.674	---	1.674
2.80	305,479	567.80	1.21 ic	1.18 ic	---	---	0.00	0.00	---	---	1.736	---	1.736
2.90	316,876	567.90	1.21 ic	1.21 ic	---	---	0.00	0.00	---	---	1.798	---	1.798
3.00	328,274	568.00	1.26 ic	1.25 ic	---	---	0.00	0.00	---	---	1.860	---	1.860
3.10	340,135	568.10	1.31 ic	1.29 ic	---	---	0.00	0.00	---	---	1.922	---	1.922
3.20	351,996	568.20	1.32 ic	1.32 ic	---	---	0.00	0.00	---	---	1.984	---	1.984
3.30	363,857	568.30	1.37 ic	1.35 ic	---	---	0.00	0.00	---	---	2.046	---	2.046
3.40	375,718	568.40	1.42 ic	1.39 ic	---	---	0.00	0.00	---	---	2.108	---	2.108
3.50	387,579	568.50	1.42 ic	1.42 ic	---	---	0.00	0.00	---	---	2.170	---	2.170
3.60	399,440	568.60	2.73 ic	1.45 ic	---	---	1.26	0.00	---	---	2.232	---	2.232

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Hydrograph Report

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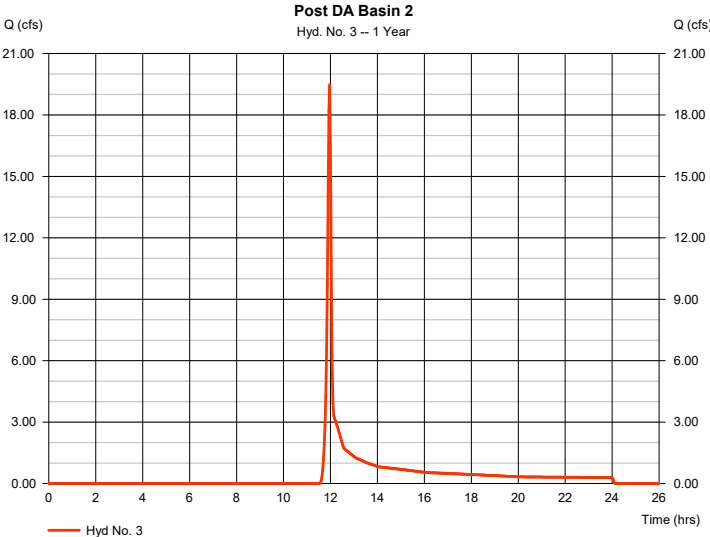
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 3

Post DA Basin 2

Hydrograph type	=	SCS Runoff	Peak discharge	=	19.47 cfs
Storm frequency	=	1 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	40,059 cuft
Drainage area	=	20.840 ac	Curve number	=	75
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

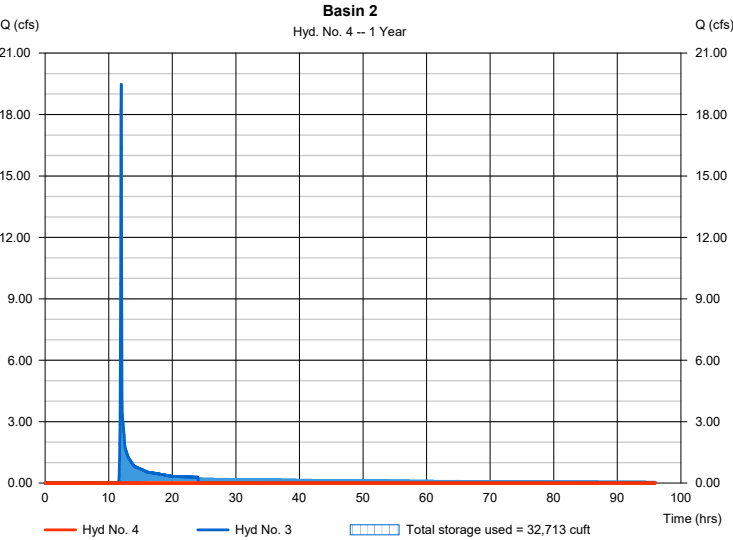
Tuesday, 07 / 7 / 2026

Hyd. No. 4

Basin 2

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	1 yrs	Time to peak	=	14.10 hrs
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	3 - Post DA Basin 2	Max. Elevation	=	567.40 ft
Reservoir name	=	Basin 2	Max. Storage	=	32,713 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Pond No. 2 - Basin 2

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 567.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	567.00	77,962	0	0
1.00	568.00	84,180	81,043	81,043
2.00	569.00	90,469	87,297	168,340
3.00	570.00	96,830	93,622	261,962
4.00	571.00	103,263	100,019	361,981
5.00	572.00	109,768	106,488	468,470

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	6.00	0.00	0.00
Span (in)	= 18.00	6.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 567.00	568.00	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	100.00	0.00	0.00
Crest El. (ft)	= 570.00	570.50	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= 1	Broad	---	---
Multi-Stage	= Yes	No	No	No
Exfil. (in/hr)	= 0.250 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (xs).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	567.00	0.00	0.00	---	---	0.00	0.00	---	---	0.000	---	0.000
0.10	8,104	567.10	0.00	0.00	---	---	0.00	0.00	---	---	0.049	---	0.049
0.20	16,209	567.20	0.00	0.00	---	---	0.00	0.00	---	---	0.097	---	0.097
0.30	24,313	567.30	0.00	0.00	---	---	0.00	0.00	---	---	0.146	---	0.146
0.40	32,417	567.40	0.00	0.00	---	---	0.00	0.00	---	---	0.195	---	0.195
0.50	40,522	567.50	0.00	0.00	---	---	0.00	0.00	---	---	0.244	---	0.244
0.60	48,626	567.60	0.00	0.00	---	---	0.00	0.00	---	---	0.292	---	0.292
0.70	56,730	567.70	0.00	0.00	---	---	0.00	0.00	---	---	0.341	---	0.341
0.80	64,834	567.80	0.00	0.00	---	---	0.00	0.00	---	---	0.390	---	0.390
0.90	72,939	567.90	0.00	0.00	---	---	0.00	0.00	---	---	0.438	---	0.438
1.00	81,043	568.00	0.00	0.00	---	---	0.00	0.00	---	---	0.487	---	0.487
1.10	89,173	568.10	0.03 ic	0.03 ic	---	---	0.00	0.00	---	---	0.491	---	0.522
1.20	98,502	568.20	0.12 ic	0.11 ic	---	---	0.00	0.00	---	---	0.494	---	0.608
1.30	107,232	568.30	0.23 ic	0.23 ic	---	---	0.00	0.00	---	---	0.498	---	0.728
1.40	115,962	568.40	0.36 ic	0.36 ic	---	---	0.00	0.00	---	---	0.502	---	0.864
1.50	124,691	568.50	0.49 ic	0.47 ic	---	---	0.00	0.00	---	---	0.505	---	0.978
1.60	133,421	568.60	0.58 ic	0.56 ic	---	---	0.00	0.00	---	---	0.509	---	1.068
1.70	142,151	568.70	0.65 ic	0.63 ic	---	---	0.00	0.00	---	---	0.513	---	1.147
1.80	150,881	568.80	0.72 ic	0.70 ic	---	---	0.00	0.00	---	---	0.516	---	1.217
1.90	159,610	568.90	0.76 ic	0.76 ic	---	---	0.00	0.00	---	---	0.520	---	1.282
2.00	168,340	569.00	0.84 ic	0.82 ic	---	---	0.00	0.00	---	---	0.524	---	1.342
2.10	177,070	569.10	0.88 ic	0.87 ic	---	---	0.00	0.00	---	---	0.527	---	1.399
2.20	187,064	569.20	0.93 ic	0.92 ic	---	---	0.00	0.00	---	---	0.531	---	1.452
2.30	196,427	569.30	0.97 ic	0.97 ic	---	---	0.00	0.00	---	---	0.535	---	1.503
2.40	205,789	569.40	1.02 ic	1.01 ic	---	---	0.00	0.00	---	---	0.538	---	1.552
2.50	215,151	569.50	1.06 ic	1.06 ic	---	---	0.00	0.00	---	---	0.542	---	1.599
2.60	224,513	569.60	1.11 ic	1.10 ic	---	---	0.00	0.00	---	---	0.546	---	1.644
2.70	233,875	569.70	1.16 ic	1.14 ic	---	---	0.00	0.00	---	---	0.549	---	1.688
2.80	243,238	569.80	1.21 ic	1.18 ic	---	---	0.00	0.00	---	---	0.553	---	1.730
2.90	252,600	569.90	1.21 ic	1.21 ic	---	---	0.00	0.00	---	---	0.557	---	1.771
3.00	261,962	570.00	1.26 ic	1.25 ic	---	---	0.00	0.00	---	---	0.560	---	1.811
3.10	271,964	570.10	1.28 ic	1.29 ic	---	---	1.26	0.00	---	---	0.564	---	3.113
3.20	281,966	570.20	4.94 ic	1.32 ic	---	---	3.57	0.00	---	---	0.568	---	5.461
3.30	291,968	570.30	7.75 oc	1.19 ic	---	---	6.56	0.00	---	---	0.572	---	8.324
3.40	301,970	570.40	11.03 oc	0.92 ic	---	---	10.11	0.00	---	---	0.575	---	11.60
3.50	311,972	570.50	13.29 ic	0.53 ic	---	---	12.76 s	0.00	---	---	0.579	---	13.86
3.60	321,974	570.60	13.88 ic	0.41 ic	---	---	13.46 s	8.20	---	---	0.583	---	22.66

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Basin 2
Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.70	331,976	570.70	14.29 ic	0.34 ic	---	---	13.95 s	23.23	---	---	0.586	---	38.10
3.80	341,978	570.80	14.63 ic	0.29 ic	---	---	14.34 s	42.68	---	---	0.590	---	57.90
3.90	351,979	570.90	14.93 ic	0.25 ic	---	---	14.68 s	65.72	---	---	0.594	---	81.24
4.00	361,981	571.00	15.21 ic	0.22 ic	---	---	14.99 s	91.92	---	---	0.598	---	107.73
4.10	372,630	571.10	15.47 ic	0.19 ic	---	---	15.27 s	120.83	---	---	0.601	---	136.89
4.20	383,279	571.20	15.72 ic	0.17 ic	---	---	15.54 s	152.26	---	---	0.605	---	168.58
4.30	393,928	571.30	15.97 ic	0.16 ic	---	---	15.80 s	186.02	---	---	0.609	---	202.59
4.40	404,577	571.40	16.20 ic	0.15 ic	---	---	16.03 s	221.96	---	---	0.613	---	238.74
4.50	415,225	571.50	16.43 ic	0.13 ic	---	---	16.27 s	259.95	---	---	0.616	---	276.97
4.60	425,874	571.60	16.66 ic	0.12 ic	---	---	16.50 s	299.90	---	---	0.620	---	317.14
4.70	436,523	571.70	16.89 ic	0.12 ic	---	---	16.70 s	341.71	---	---	0.624	---	359.20
4.80	447,172	571.80	17.09 ic	0.11 ic	---	---	16.97 s	385.29	---	---	0.628	---	403.00
4.90	457,821	571.90	17.31 ic	0.10 ic	---	---	17.19 s	430.59	---	---	0.631	---	448.52
5.00	468,470	572.00	17.52 ic	0.10 ic	---	---	17.42 s	477.65	---	---	0.635	---	495.80

...End

Hydrograph Report

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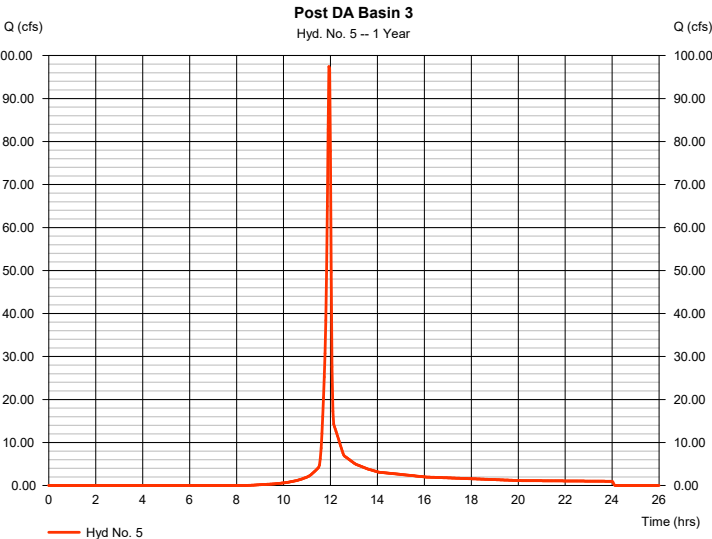
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 5

Post DA Basin 3

Hydrograph type	=	SCS Runoff	Peak discharge	=	97.43 cfs
Storm frequency	=	1 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	196,831 cuft
Drainage area	=	48,740 ac	Curve number	=	87
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



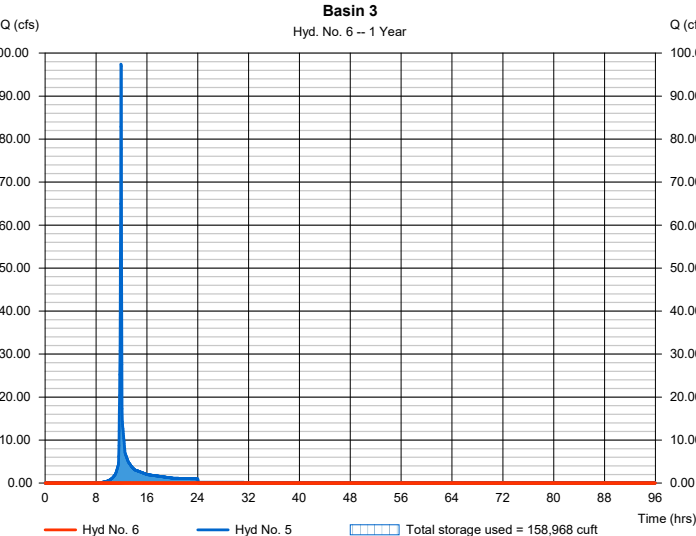
Hydrograph Report

Hyd. No. 6

Basin 3

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	1 yrs	Time to peak	=	36.80 hrs
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	5 - Post DA Basin 3	Max. Elevation	=	545.40 ft
Reservoir name	=	Basin 3	Max. Storage	=	158,968 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 3 - Basin 3

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 545.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	545.00	396,590	0	0
1.00	546.00	403,700	400,100	400,100
2.00	547.00	410,870	407,239	807,339
3.00	548.00	418,100	414,438	1,221,777
4.00	549.00	425,380	421,693	1,643,470
5.00	550.00	432,720	429,001	2,072,471
6.00	551.00	440,120	436,372	2,508,843

Culvert / Orifice Structures

Weir Structures

	[A]	[B]	[C]	[PrfRsr]		[A]	[B]	[C]	[D]
Rise (in)	= 18.00	6.00	0.00	0.00	Crest Len (ft)	= 12.00	100.00	0.00	0.00
Span (in)	= 18.00	6.00	0.00	0.00	Crest El. (ft)	= 548.50	549.50	0.00	0.00
No. Barrels	= 1	1	0	0	Weir Coeff.	= 3.33	2.60	3.33	3.33
Invert El. (ft)	= 545.00	546.00	0.00	0.00	Weir Type	= 1	Broad	---	---
Length (ft)	= 50.00	0.00	0.00	0.00	Multi-Stage	= Yes	No	No	No
Slope (%)	= 1.00	0.00	0.00	n/a					
N-Value	= .013	.013	.013	n/a					
Orifice Coeff.	= 0.60	0.60	0.60	0.60	Exfil.(in/hr)	= 0.250 (by Contour)			
Multi-Stage	= n/a	Yes	No	No	TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	545.00	0.00	0.00	---	---	0.00	0.00	---	---	0.000	---	0.000
0.10	40,010	545.10	0.00	0.00	---	---	0.00	0.00	---	---	0.234	---	0.234
0.20	80,020	545.20	0.00	0.00	---	---	0.00	0.00	---	---	0.467	---	0.467
0.30	120,030	545.30	0.00	0.00	---	---	0.00	0.00	---	---	0.701	---	0.701
0.40	160,040	545.40	0.00	0.00	---	---	0.00	0.00	---	---	0.934	---	0.934
0.50	200,050	545.50	0.00	0.00	---	---	0.00	0.00	---	---	1.168	---	1.168
0.60	240,060	545.60	0.00	0.00	---	---	0.00	0.00	---	---	1.402	---	1.402
0.70	280,070	545.70	0.00	0.00	---	---	0.00	0.00	---	---	1.635	---	1.635
0.80	320,080	545.80	0.00	0.00	---	---	0.00	0.00	---	---	1.869	---	1.869
0.90	360,090	545.90	0.00	0.00	---	---	0.00	0.00	---	---	2.103	---	2.103
1.00	400,100	546.00	0.00	0.00	---	---	0.00	0.00	---	---	2.336	---	2.336
1.10	440,110	546.10	0.03 ic	0.03 ic	---	---	0.00	0.00	---	---	2.569	---	2.569
1.20	481,120	546.20	0.12 ic	0.11 ic	---	---	0.00	0.00	---	---	2.802	---	2.802
1.30	522,130	546.30	0.23 ic	0.23 ic	---	---	0.00	0.00	---	---	3.035	---	3.035
1.40	562,140	546.40	0.36 ic	0.36 ic	---	---	0.00	0.00	---	---	3.268	---	3.268
1.50	603,150	546.50	0.49 ic	0.47 ic	---	---	0.00	0.00	---	---	3.501	---	3.501
1.60	644,160	546.60	0.58 ic	0.56 ic	---	---	0.00	0.00	---	---	3.734	---	3.734
1.70	685,170	546.70	0.65 ic	0.63 ic	---	---	0.00	0.00	---	---	3.967	---	3.967
1.80	725,180	546.80	0.72 ic	0.70 ic	---	---	0.00	0.00	---	---	4.200	---	4.200
1.90	766,190	546.90	0.76 ic	0.76 ic	---	---	0.00	0.00	---	---	4.433	---	4.433
2.00	807,200	547.00	0.84 ic	0.82 ic	---	---	0.00	0.00	---	---	4.666	---	4.666
2.10	848,210	547.10	0.88 ic	0.87 ic	---	---	0.00	0.00	---	---	4.899	---	4.899
2.20	889,220	547.20	0.93 ic	0.92 ic	---	---	0.00	0.00	---	---	5.132	---	5.132
2.30	931,230	547.30	0.97 ic	0.97 ic	---	---	0.00	0.00	---	---	5.365	---	5.365
2.40	973,140	547.40	1.02 ic	1.01 ic	---	---	0.00	0.00	---	---	5.598	---	5.598
2.50	1,014,150	547.50	1.06 ic	1.06 ic	---	---	0.00	0.00	---	---	5.831	---	5.831
2.60	1,055,160	547.60	1.11 ic	1.10 ic	---	---	0.00	0.00	---	---	6.064	---	6.064
2.70	1,097,170	547.70	1.16 ic	1.14 ic	---	---	0.00	0.00	---	---	6.297	---	6.297
2.80	1,138,180	547.80	1.21 ic	1.18 ic	---	---	0.00	0.00	---	---	6.530	---	6.530
2.90	1,180,190	547.90	1.21 ic	1.21 ic	---	---	0.00	0.00	---	---	6.763	---	6.763
3.00	1,221,200	548.00	1.26 ic	1.25 ic	---	---	0.00	0.00	---	---	6.996	---	6.996
3.10	1,263,210	548.10	1.31 ic	1.29 ic	---	---	0.00	0.00	---	---	7.229	---	7.229
3.20	1,305,220	548.20	1.32 ic	1.32 ic	---	---	0.00	0.00	---	---	7.462	---	7.462
3.30	1,348,230	548.30	1.37 ic	1.35 ic	---	---	0.00	0.00	---	---	7.695	---	7.695
3.40	1,390,240	548.40	1.42 ic	1.39 ic	---	---	0.00	0.00	---	---	7.928	---	7.928
3.50	1,432,250	548.50	1.42 ic	1.42 ic	---	---	0.00	0.00	---	---	8.161	---	8.161

Continues on next page...

Hydrograph Report

Basin 3

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.60	1,474,793	548.60	2.73 ic	1.45 ic	---	---	1.26	0.00	---	---	2.445	---	5.155
3.70	1,516,962	548.70	5.09 ic	1.48 ic	---	---	3.57	0.00	---	---	2.449	---	7.498
3.80	1,559,131	548.80	7.91 oc	1.35 ic	---	---	6.96	0.00	---	---	2.453	---	10.37
3.90	1,601,300	548.90	11.22 oc	1.12 ic	---	---	10.10	0.00	---	---	2.457	---	13.68
4.00	1,643,470	549.00	14.33 ic	0.81 ic	---	---	13.72	0.00	---	---	2.462	---	16.79
4.10	1,686,370	549.10	15.01 ic	0.46 ic	---	---	14.55	0.00	---	---	2.466	---	17.47
4.20	1,729,270	549.20	15.44 ic	0.38 ic	---	---	15.08	0.00	---	---	2.470	---	17.90
4.30	1,772,170	549.30	15.77 ic	0.32 ic	---	---	15.45	0.00	---	---	2.474	---	18.24
4.40	1,815,071	549.40	16.07 ic	0.27 ic	---	---	15.79	0.00	---	---	2.479	---	18.54
4.50	1,857,971	549.50	16.33 ic	0.24 ic	---	---	16.09	0.00	---	---	2.483	---	18.81
4.60	1,900,871	549.60	16.58 ic	0.21 ic	---	---	16.37	8.20	---	---	2.487	---	27.27
4.70	1,943,771	549.70	16.82 ic	0.19 ic	---	---	16.63	23.23	---	---	2.491	---	42.54
4.80	1,986,672	549.80	17.05 ic	0.17 ic	---	---	16.86	42.68	---	---	2.496	---	62.21
4.90	2,029,572	549.90	17.27 ic	0.16 ic	---	---	17.09	65.72	---	---	2.500	---	85.47
5.00	2,072,471	550.00	17.49 ic	0.15 ic	---	---	17.33	91.52	---	---	2.504	---	111.90
5.10	2,116,109	550.10	17.70 ic	0.13 ic	---	---	17.55	120.83	---	---	2.508	---	141.02
5.20	2,159,746	550.20	17.91 ic	0.13 ic	---	---	17.77	152.26	---	---	2.513	---	172.67
5.30	2,203,383	550.30	18.12 ic	0.12 ic	---	---	17.99	186.02	---	---	2.517	---	206.63
5.40	2,247,020	550.40	18.32 ic	0.11 ic	---	---	18.20	221.96	---	---	2.521	---	242.79
5.50	2,290,657	550.50	18.52 ic	0.10 ic	---	---	18.41	259.95	---	---	2.526	---	280.99
5.60	2,334,294	550.60	18.72 ic	0.10 ic	---	---	18.62	299.90	---	---	2.530	---	321.14
5.70	2,377,931	550.70	18.91 ic	0.09 ic	---	---	18.75	341.71	---	---	2.534	---	363.08
5.80	2,421,568	550.80	19.10 ic	0.09 ic	---	---	18.98	385.29	---	---	2.538	---	406.90
5.90	2,465,205	550.90	19.29 ic	0.08 ic	---	---	19.20	430.59	---	---	2.543	---	452.42
6.00	2,508,843	551.00	19.48 ic	0.08 ic	---	---	19.36	477.65	---	---	2.547	---	499.63

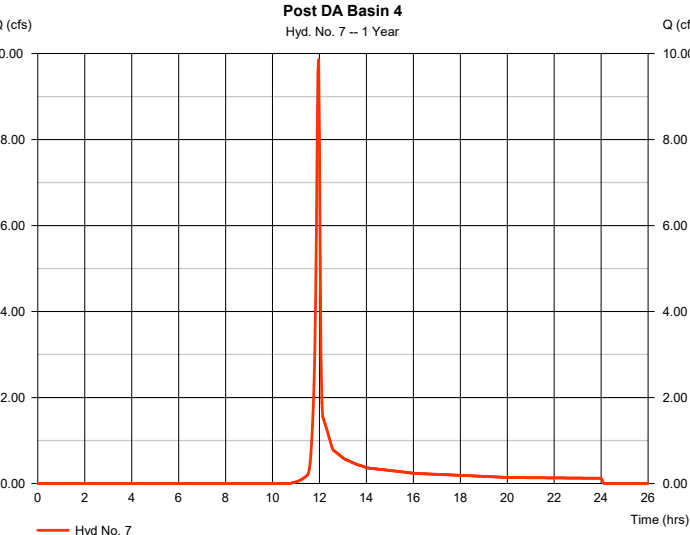
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Hydrograph Report

Hyd. No. 7

Post DA Basin 4

Hydrograph type	=	SCS Runoff	Peak discharge	=	9.855 cfs
Storm frequency	=	1 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	19,733 cuft
Drainage area	=	7.370 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

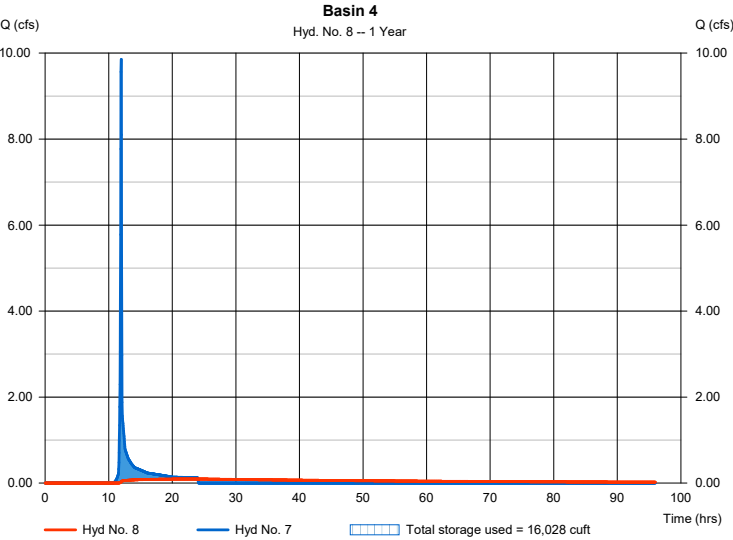
Tuesday, 07 / 7 / 2026

Hyd. No. 8

Basin 4

Hydrograph type	=	Reservoir	Peak discharge	=	0.095 cfs
Storm frequency	=	1 yrs	Time to peak	=	24.03 hrs
Time interval	=	2 min	Hyd. volume	=	16,303 cuft
Inflow hyd. No.	=	7 - Post DA Basin 4	Max. Elevation	=	538.29 ft
Reservoir name	=	Basin 4	Max. Storage	=	16,028 cuft

Storage Indication method used. Outflow includes exfiltration.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Pond No. 4 - Basin 4

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 538.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	538.00	52,850	0	0
1.00	539.00	55,940	54,382	54,382
2.00	540.00	59,120	57,517	111,899
3.00	541.00	62,360	60,727	172,626
4.00	542.00	65,650	63,992	236,618
5.00	543.00	68,995	67,309	303,926

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	6.00	0.00	0.00
Span (in)	= 18.00	6.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 538.00	539.00	0.00	0.00
Length (ft)	= 100.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	100.00	0.00	0.00
Crest El. (ft)	= 540.50	541.50	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= 1	Broad	---	---
Multi-Stage	= Yes	No	No	No
Exfil. (in/hr)	= 0.250 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (xs).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	538.00	0.00	0.00	---	---	0.00	0.00	---	---	0.000	---	0.000
0.10	5,438	538.10	0.00	0.00	---	---	0.00	0.00	---	---	0.032	---	0.032
0.20	10,876	538.20	0.00	0.00	---	---	0.00	0.00	---	---	0.065	---	0.065
0.30	16,315	538.30	0.00	0.00	---	---	0.00	0.00	---	---	0.097	---	0.097
0.40	21,753	538.40	0.00	0.00	---	---	0.00	0.00	---	---	0.129	---	0.129
0.50	27,191	538.50	0.00	0.00	---	---	0.00	0.00	---	---	0.162	---	0.162
0.60	32,629	538.60	0.00	0.00	---	---	0.00	0.00	---	---	0.194	---	0.194
0.70	38,068	538.70	0.00	0.00	---	---	0.00	0.00	---	---	0.227	---	0.227
0.80	43,506	538.80	0.00	0.00	---	---	0.00	0.00	---	---	0.259	---	0.259
0.90	48,944	538.90	0.00	0.00	---	---	0.00	0.00	---	---	0.291	---	0.291
1.00	54,382	539.00	0.00	0.00	---	---	0.00	0.00	---	---	0.324	---	0.324
1.10	60,134	539.10	0.03 ic	0.03 ic	---	---	0.00	0.00	---	---	0.326	---	0.357
1.20	65,886	539.20	0.12 ic	0.11 ic	---	---	0.00	0.00	---	---	0.327	---	0.441
1.30	71,637	539.30	0.23 ic	0.23 ic	---	---	0.00	0.00	---	---	0.329	---	0.559
1.40	77,389	539.40	0.36 ic	0.36 ic	---	---	0.00	0.00	---	---	0.331	---	0.694
1.50	83,141	539.50	0.49 ic	0.47 ic	---	---	0.00	0.00	---	---	0.333	---	0.806
1.60	88,892	539.60	0.58 ic	0.56 ic	---	---	0.00	0.00	---	---	0.335	---	0.894
1.70	94,644	539.70	0.65 ic	0.63 ic	---	---	0.00	0.00	---	---	0.337	---	0.971
1.80	100,396	539.80	0.72 ic	0.70 ic	---	---	0.00	0.00	---	---	0.338	---	1.039
1.90	106,148	539.90	0.76 ic	0.76 ic	---	---	0.00	0.00	---	---	0.340	---	1.102
2.00	111,899	540.00	0.84 ic	0.82 ic	---	---	0.00	0.00	---	---	0.342	---	1.161
2.10	117,972	540.10	0.88 ic	0.87 ic	---	---	0.00	0.00	---	---	0.344	---	1.216
2.20	124,045	540.20	0.93 ic	0.92 ic	---	---	0.00	0.00	---	---	0.346	---	1.267
2.30	130,117	540.30	0.97 ic	0.97 ic	---	---	0.00	0.00	---	---	0.348	---	1.316
2.40	136,190	540.40	1.02 ic	1.01 ic	---	---	0.00	0.00	---	---	0.350	---	1.363
2.50	142,263	540.50	1.06 ic	1.06 ic	---	---	0.00	0.00	---	---	0.352	---	1.408
2.60	148,335	540.60	2.37 ic	1.10 ic	---	---	1.26	0.00	---	---	0.353	---	2.713
2.70	154,408	540.70	4.72 ic	1.14 ic	---	---	3.57	0.00	---	---	0.355	---	5.063
2.80	160,481	540.80	7.62 ic	1.06 ic	---	---	6.56	0.00	---	---	0.357	---	7.973
2.90	166,553	540.90	10.77 oc	0.66 ic	---	---	10.10	0.00	---	---	0.359	---	11.12
3.00	172,626	541.00	11.79 oc	0.44 ic	---	---	11.35 s	0.00	---	---	0.361	---	12.15
3.10	179,025	541.10	12.25 oc	0.35 ic	---	---	11.90 s	0.00	---	---	0.363	---	12.61
3.20	185,424	541.20	12.59 oc	0.29 ic	---	---	12.31 s	0.00	---	---	0.365	---	12.96
3.30	191,823	541.30	12.89 oc	0.24 ic	---	---	12.65 s	0.00	---	---	0.367	---	13.26
3.40	198,223	541.40	13.17 oc	0.21 ic	---	---	12.95 s	0.00	---	---	0.368	---	13.53
3.50	204,622	541.50	13.42 oc	0.18 ic	---	---	13.23 s	0.00	---	---	0.370	---	13.78
3.60	211,021	541.60	13.66 oc	0.16 ic	---	---	13.48 s	8.20	---	---	0.372	---	22.22

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Basin 4

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.70	217,420	541.70	13.89 oc	0.15 ic	---	---	13.74 s	23.23	---	---	0.374	---	37.49
3.80	223,819	541.80	14.12 oc	0.14 ic	---	---	13.96 s	42.68	---	---	0.376	---	57.15
3.90	230,218	541.90	14.34 oc	0.12 ic	---	---	14.21 s	65.72	---	---	0.378	---	80.43
4.00	236,618	542.00	14.56 oc	0.11 ic	---	---	14.43 s	91.92	---	---	0.380	---	106.85
4.10	243,348	542.10	14.77 oc	0.11 ic	---	---	14.65 s	120.83	---	---	0.382	---	135.97
4.20	250,079	542.20	14.98 oc	0.10 ic	---	---	14.88 s	152.26	---	---	0.384	---	167.62
4.30	256,810	542.30	15.18 oc	0.09 ic	---	---	15.09 s	186.02	---	---	0.386	---	201.56
4.40	263,541	542.40	15.38 oc	0.09 ic	---	---	15.29 s	221.96	---	---	0.388	---	237.72
4.50	270,272	542.50	15.58 oc	0.08 ic	---	---	15.45 s	259.95	---	---	0.390	---	275.88
4.60	277,003	542.60	15.78 oc	0.08 ic	---	---	15.65 s	299.90	---	---	0.392	---	316.02
4.70	283,734	542.70	15.97 oc	0.07 ic	---	---	15.84 s	341.71	---	---	0.393	---	358.01
4.80	290,465	542.80	16.16 oc	0.07 ic	---	---	16.00 s	385.29	---	---	0.395	---	401.76
4.90	297,195	542.90	16.35 oc	0.07 ic	---	---	16.21 s	430.59	---	---	0.397	---	447.26
5.00	303,926	543.00	16.53 oc	0.06 ic	---	---	16.36 s	477.65	---	---	0.399	---	494.47

...End

Hydrograph Report

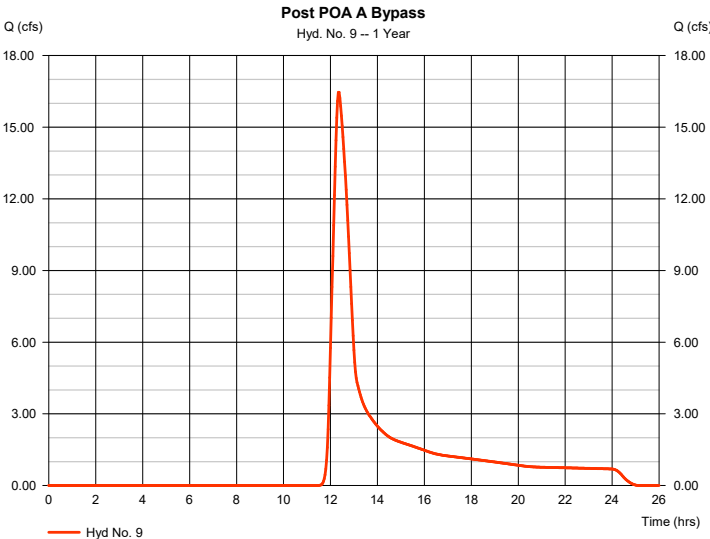
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 9

Post POA A Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	16.46 cfs
Storm frequency	=	1 yrs	Time to peak	=	12.37 hrs
Time interval	=	2 min	Hyd. volume	=	98,762 cuft
Drainage area	=	44,500 ac	Curve number	=	76
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	41.31 min
Total precip.	=	2.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No. 9

Post POA A Bypass

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 150.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.83	0.00	0.00	
Land slope (%)	= 0.50	0.00	0.00	
Travel Time (min)	= 36.54	+ 0.00	+ 0.00	= 36.54
Shallow Concentrated Flow				
Flow length (ft)	= 0.00	0.00	0.00	
Watercourse slope (%)	= 0.00	0.00	0.00	
Surface description	= Paved	Paved	Paved	
Average velocity (ft/s)	=0.00	0.00	0.00	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Channel Flow				
X sectional flow area (sqft)	= 7.75	15.50	0.00	
Wetted perimeter (ft)	= 3.00	8.00	0.00	
Channel slope (%)	= 1.10	0.90	0.00	
Manning's n-value	= 0.025	0.025	0.015	
Velocity (ft/s)	=11.81	8.81	0.00	
Flow length (ft)	{{0}}1999.0	1025.6	0.0	
Travel Time (min)	= 2.82	+ 1.94	+ 0.00	= 4.76
Total Travel Time, Tc				41.31 min

Hydrograph Report

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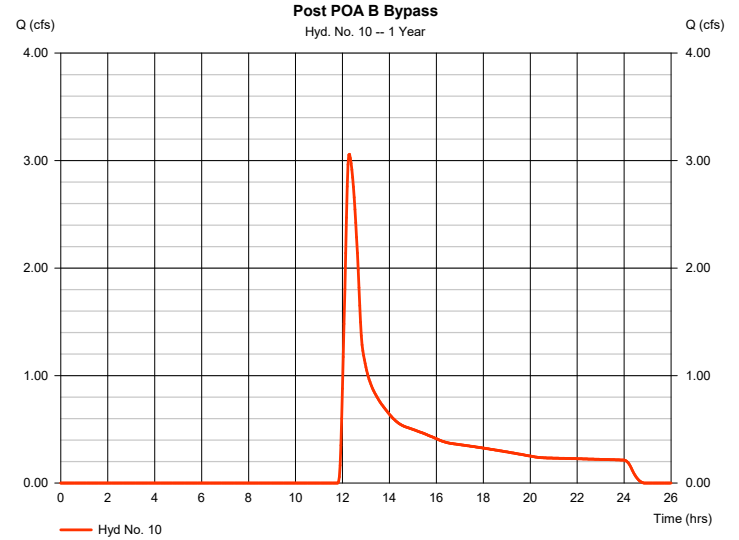
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 10

Post POA B Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 3.059 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 22,522 cuft
Drainage area	= 20.700 ac	Curve number	= 67
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 30.30 min
Total precip.	= 2.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No. 10

Post POA B Bypass

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 150.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.83	0.00	0.00	
Land slope (%)	= 1.30	0.00	0.00	
Travel Time (min)	= 24.94	+ 0.00	+ 0.00	= 24.94
Shallow Concentrated Flow				
Flow length (ft)	= 438.30	438.82	0.00	
Watercourse slope (%)	= 2.60	3.10	0.00	
Surface description	= Unpaved	Unpaved	Paved	
Average velocity (ft/s)	=2.60	2.84	0.00	
Travel Time (min)	= 2.81	+ 2.57	+ 0.00	= 5.38
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.025	0.015	0.015	
Velocity (ft/s)	=0.00	0.00	0.00	
Flow length (ft)	{{0}}0.0	0.0	0.0	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				30.30 min

Hydrograph Report

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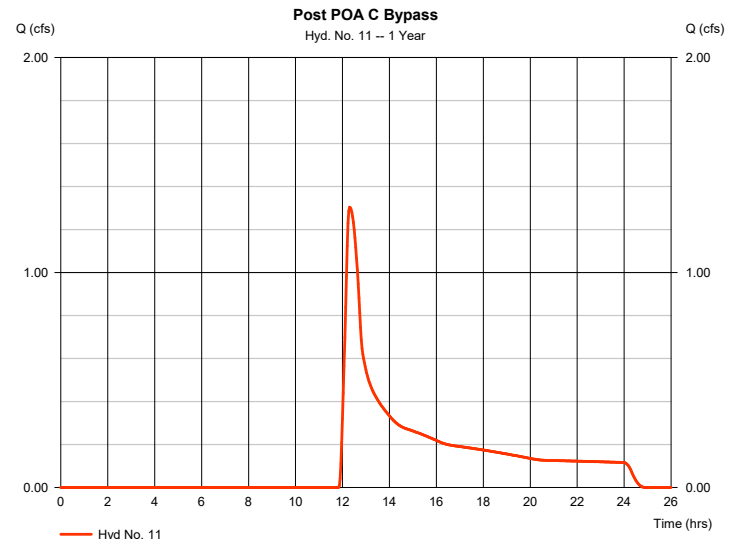
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 11

Post POA C Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 1.304 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 11,259 cuft
Drainage area	= 12.590 ac	Curve number	= 65
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 31.53 min
Total precip.	= 2.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hyd. No. 11

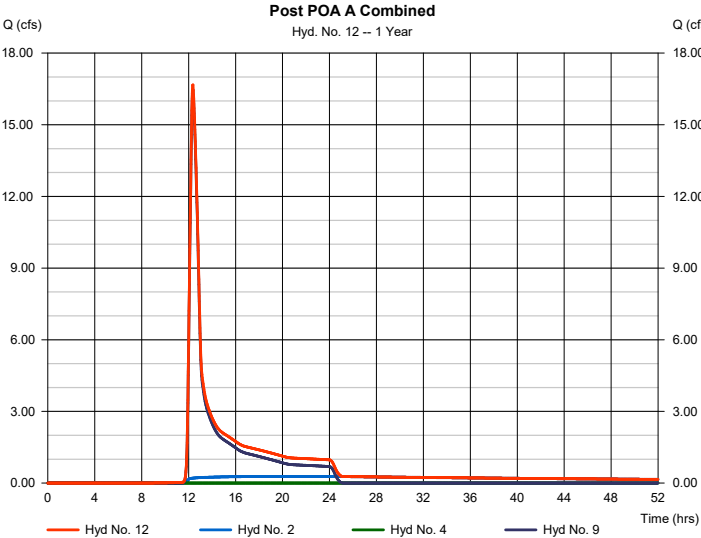
Post POA C Bypass

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 150.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.83	0.00	0.00	
Land slope (%)	= 1.00	0.00	0.00	
Travel Time (min)	= 27.69	+ 0.00	+ 0.00	= 27.69
Shallow Concentrated Flow				
Flow length (ft)	= 408.00	521.38	0.00	
Watercourse slope (%)	= 8.20	5.20	0.00	
Surface description	= Unpaved	Unpaved	Paved	
Average velocity (ft/s)	=4.62	3.68	0.00	
Travel Time (min)	= 1.47	+ 2.36	+ 0.00	= 3.83
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	=0.00	0.00	0.00	
Flow length (ft)	{{0}}0.0	0.0	0.0	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				31.53 min

Hyd. No. 12

Post POA A Combined

Hydrograph type	= Combine	Peak discharge	= 16.67 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 147,640 cuft
Inflow hyds.	= 2, 4, 9	Contrib. drain. area	= 44.500 ac

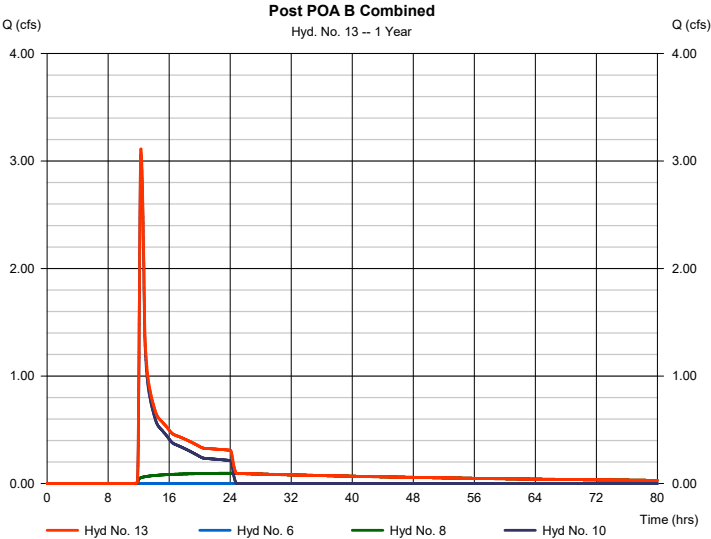


Hydrograph Report

Hyd. No. 13

Post POA B Combined

Hydrograph type	= Combine	Peak discharge	= 3.113 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 38,825 cuft
Inflow hyds.	= 6, 8, 10	Contrib. drain. area	= 20.700 ac



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	36.97	2	716	76,702	-----	-----	-----	Post DA Basin 1
2	Reservoir	0.363	2	1262	63,456	1	565.59	61,462	Basin 1
3	SCS Runoff	30.02	2	718	60,384	-----	-----	-----	Post DA Basin 2
4	Reservoir	0.000	2	1288	0	3	567.61	49,064	Basin 2
5	SCS Runoff	130.06	2	716	263,991	-----	-----	-----	Post DA Basin 3
6	Reservoir	0.000	2	1008	0	5	545.53	212,593	Basin 3
7	SCS Runoff	14.09	2	718	28,191	-----	-----	-----	Post DA Basin 4
8	Reservoir	0.136	2	1442	23,310	7	538.42	22,809	Basin 4
9	SCS Runoff	26.29	2	740	147,156	-----	-----	-----	Post POA A Bypass
10	SCS Runoff	6.505	2	736	38,244	-----	-----	-----	Post POA B Bypass
11	SCS Runoff	3.091	2	736	19,922	-----	-----	-----	Post POA C Bypass
12	Combine	26.56	2	740	210,612	2, 4, 9,	-----	-----	Post POA A Combined
13	Combine	6.587	2	736	61,554	6, 8, 10,	-----	-----	Post POA B Combined

Post_Dev_Hydrographs.gpwReturn Period: 2 YearTuesday, 07 / 7 / 2026

Hydrograph Report

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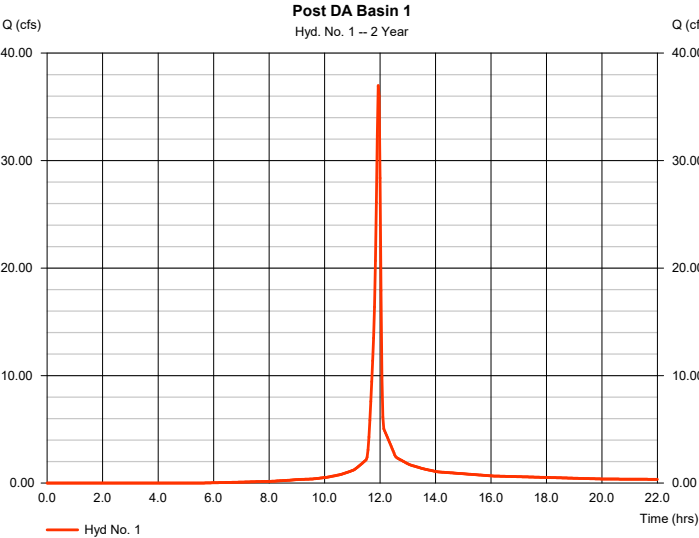
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 1

Post DA Basin 1

Hydrograph type	=	SCS Runoff	Peak discharge	=	36.97 cfs
Storm frequency	=	2 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	76,702 cuft
Drainage area	=	11.780 ac	Curve number	=	91
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

30

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

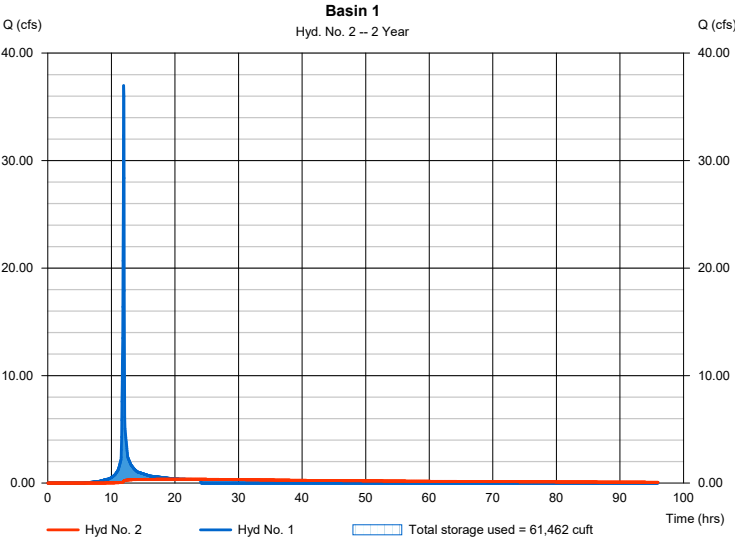
Tuesday, 07 / 7 / 2026

Hyd. No. 2

Basin 1

Hydrograph type	=	Reservoir	Peak discharge	=	0.363 cfs
Storm frequency	=	2 yrs	Time to peak	=	21.03 hrs
Time interval	=	2 min	Hyd. volume	=	63,456 cuft
Inflow hyd. No.	=	1 - Post DA Basin 1	Max. Elevation	=	565.59 ft
Reservoir name	=	Basin 1	Max. Storage	=	61,462 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

31

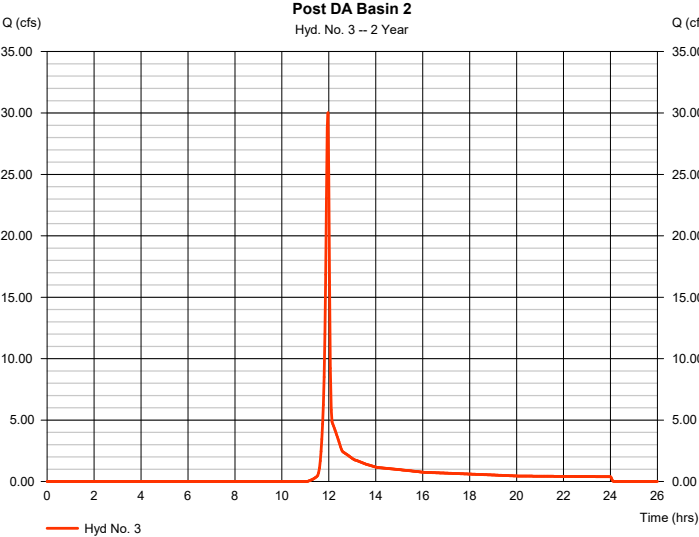
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 3

Post DA Basin 2

Hydrograph type	=	SCS Runoff	Peak discharge	=	30.02 cfs
Storm frequency	=	2 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	60,384 cuft
Drainage area	=	20.840 ac	Curve number	=	75
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

32

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

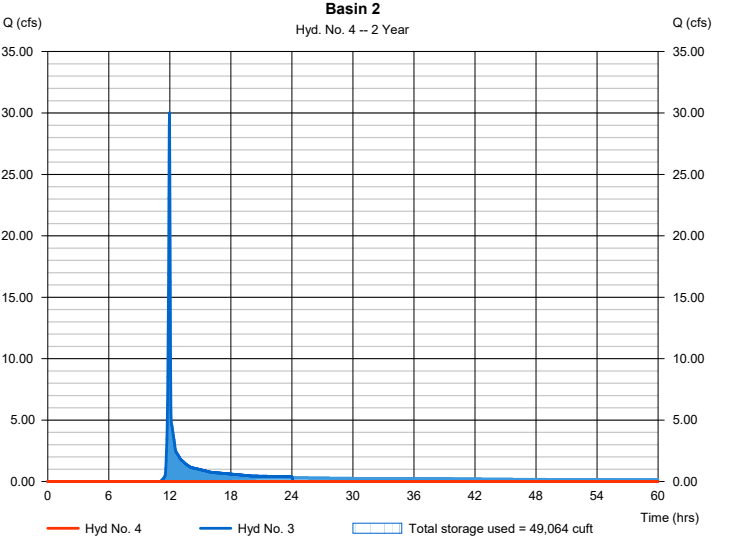
Tuesday, 07 / 7 / 2026

Hyd. No. 4

Basin 2

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	21.47 hrs
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	3 - Post DA Basin 2	Max. Elevation	=	567.61 ft
Reservoir name	=	Basin 2	Max. Storage	=	49,064 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

33

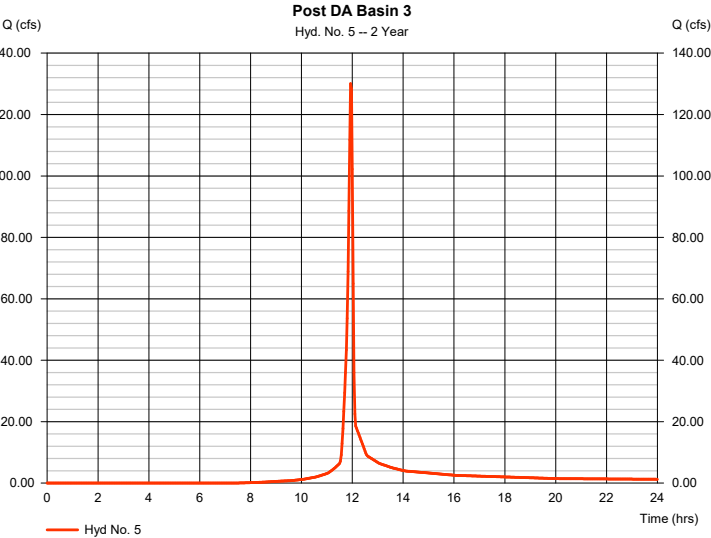
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 5

Post DA Basin 3

Hydrograph type	=	SCS Runoff	Peak discharge	=	130.06 cfs
Storm frequency	=	2 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	263,991 cuft
Drainage area	=	48.740 ac	Curve number	=	87
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

34

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

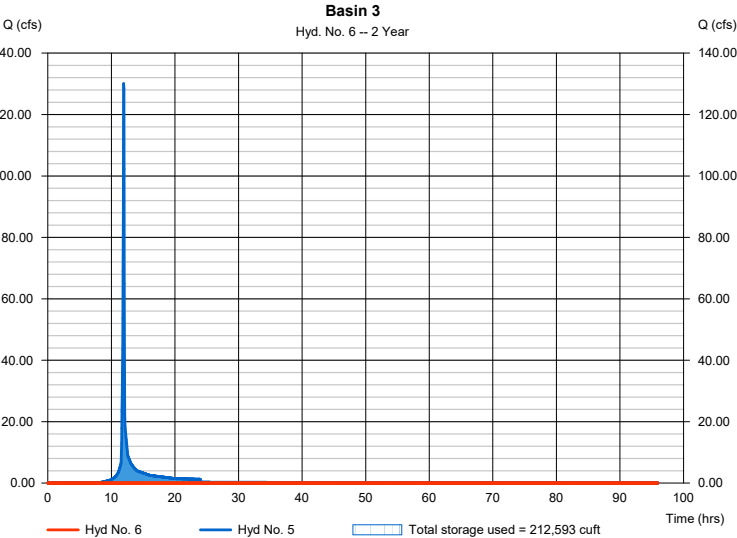
Tuesday, 07 / 7 / 2026

Hyd. No. 6

Basin 3

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	16.80 hrs
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	5 - Post DA Basin 3	Max. Elevation	=	545.53 ft
Reservoir name	=	Basin 3	Max. Storage	=	212,593 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

35

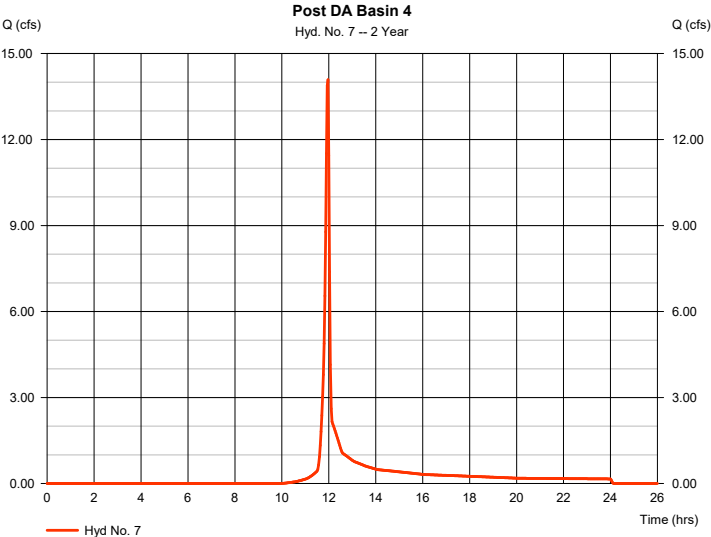
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 7

Post DA Basin 4

Hydrograph type	=	SCS Runoff	Peak discharge	=	14.09 cfs
Storm frequency	=	2 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	28,191 cuft
Drainage area	=	7.370 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

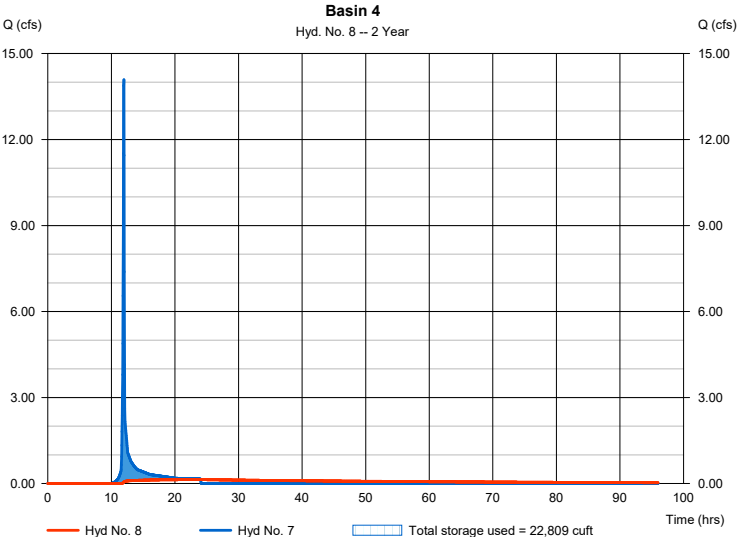
Tuesday, 07 / 7 / 2026

Hyd. No. 8

Basin 4

Hydrograph type	=	Reservoir	Peak discharge	=	0.136 cfs
Storm frequency	=	2 yrs	Time to peak	=	24.03 hrs
Time interval	=	2 min	Hyd. volume	=	23,310 cuft
Inflow hyd. No.	=	7 - Post DA Basin 4	Max. Elevation	=	538.42 ft
Reservoir name	=	Basin 4	Max. Storage	=	22,809 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

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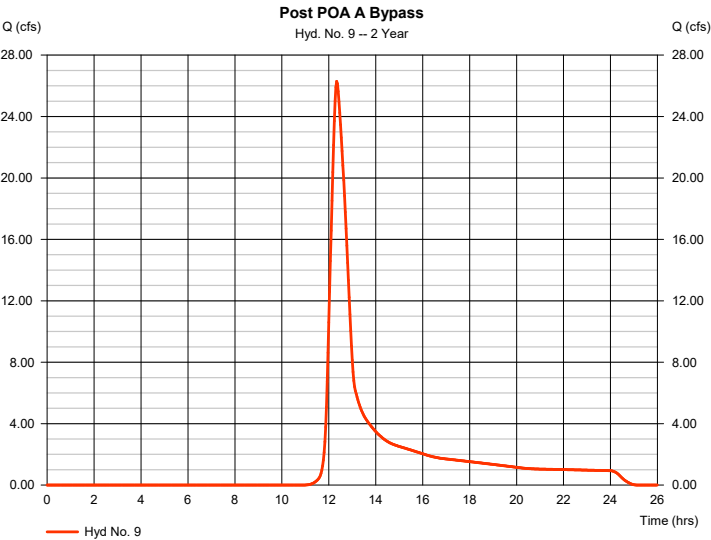
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 9

Post POA A Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	26.29 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	147,156 cuft
Drainage area	=	44.500 ac	Curve number	=	76
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	41.31 min
Total precip.	=	2.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

38

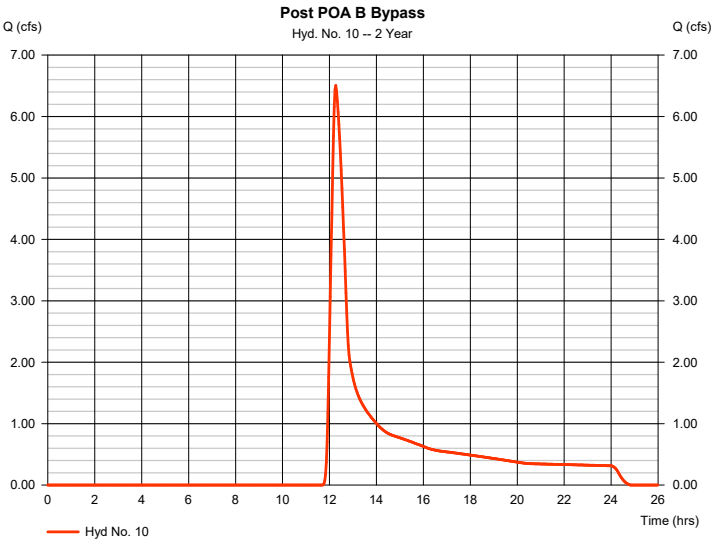
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 10

Post POA B Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.505 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.27 hrs
Time interval	=	2 min	Hyd. volume	=	38,244 cuft
Drainage area	=	20.700 ac	Curve number	=	67
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	30.30 min
Total precip.	=	2.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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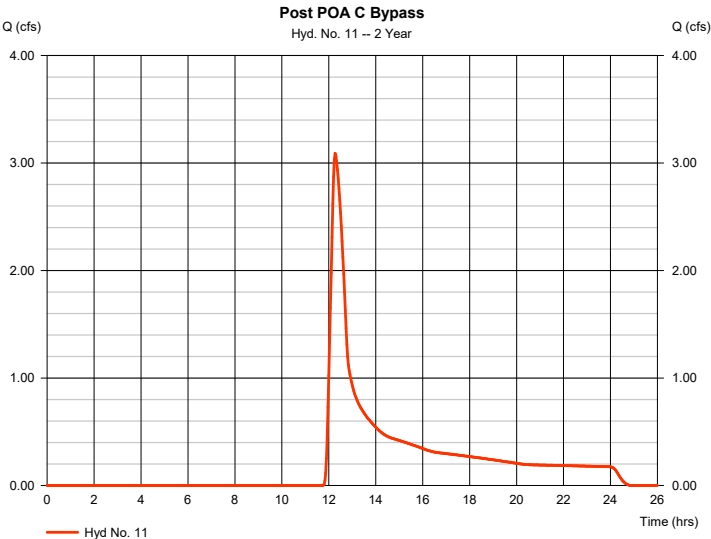
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 11

Post POA C Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.091 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.27 hrs
Time interval	=	2 min	Hyd. volume	=	19,922 cuft
Drainage area	=	12.590 ac	Curve number	=	65
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	31.53 min
Total precip.	=	2.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

40

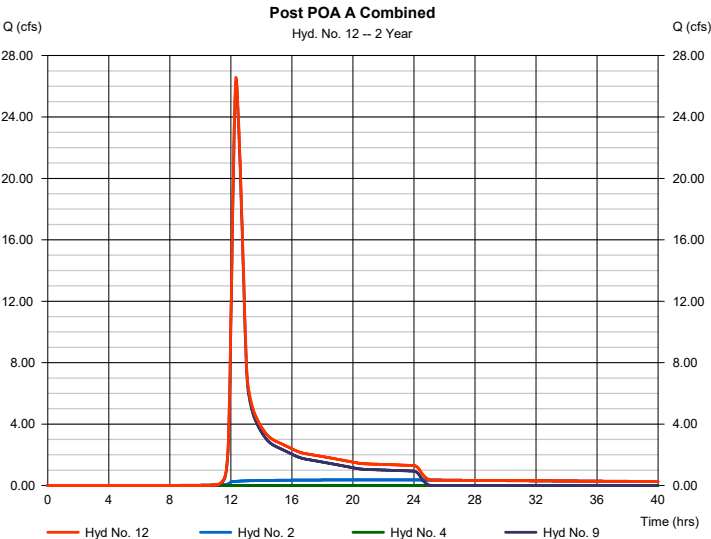
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 12

Post POA A Combined

Hydrograph type	=	Combine	Peak discharge	=	26.56 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	210,612 cuft
Inflow hyds.	=	2, 4, 9	Contrib. drain. area	=	44.500 ac



Hydrograph Report

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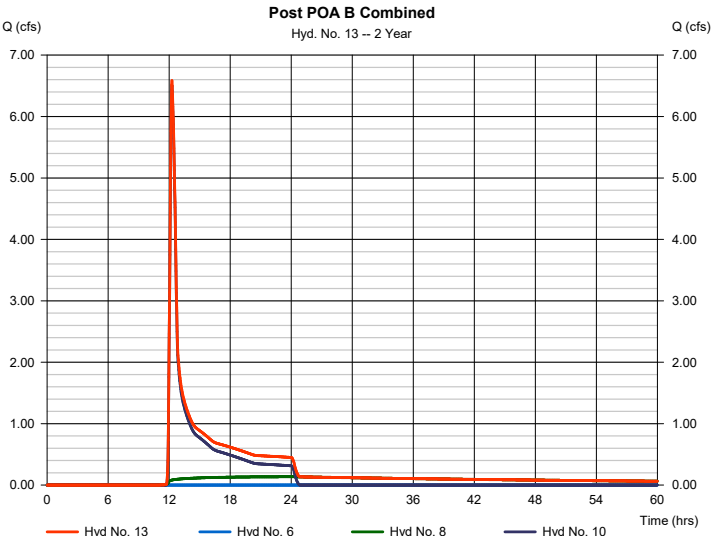
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 13

Post POA B Combined

Hydrograph type	= Combine	Peak discharge	= 6.587 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.27 hrs
Time interval	= 2 min	Hyd. volume	= 61,554 cuft
Inflow hyds.	= 6, 8, 10	Contrib. drain. area	= 20.700 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	48.53	2	716	102,250	-----	-----	-----	Post DA Basin 1
2	Reservoir	0.485	2	1200	84,643	1	565.78	81,977	Basin 1
3	SCS Runoff	46.42	2	718	92,828	-----	-----	-----	Post DA Basin 2
4	Reservoir	0.000	2	1120	0	3	567.93	75,061	Basin 2
5	SCS Runoff	177.30	2	716	363,486	-----	-----	-----	Post DA Basin 3
6	Reservoir	0.000	2	736	0	5	545.73	292,063	Basin 3
7	SCS Runoff	20.45	2	718	41,241	-----	-----	-----	Post DA Basin 4
8	Reservoir	0.198	2	1440	34,129	7	538.61	33,236	Basin 4
9	SCS Runoff	41.80	2	740	223,851	-----	-----	-----	Post POA A Bypass
10	SCS Runoff	12.84	2	734	65,102	-----	-----	-----	Post POA B Bypass
11	SCS Runoff	6.556	2	736	35,040	-----	-----	-----	Post POA C Bypass
12	Combine	42.17	2	740	308,494	2, 4, 9,	-----	-----	Post POA A Combined
13	Combine	12.97	2	734	99,231	6, 8, 10,	-----	-----	Post POA B Combined

Post_Dev_Hydrographs.gpw

Return Period: 5 Year

Tuesday, 07 / 7 / 2026

Hydrograph Report

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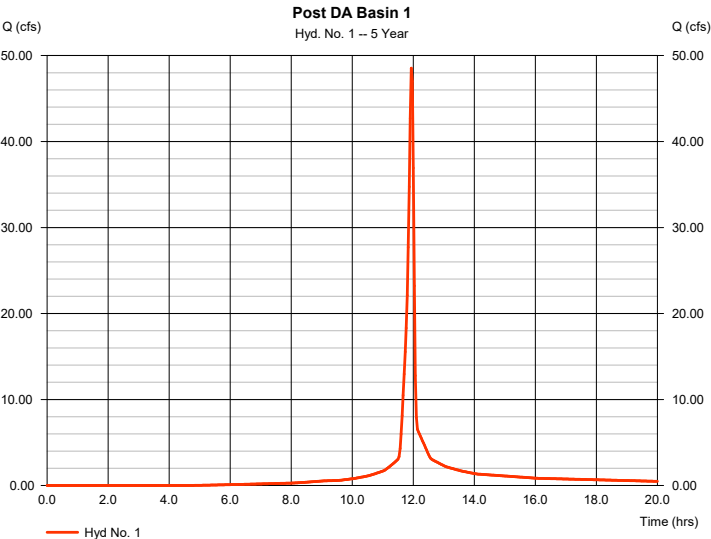
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 1

Post DA Basin 1

Hydrograph type	= SCS Runoff	Peak discharge	= 48.53 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 102,250 cuft
Drainage area	= 11.780 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.51 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

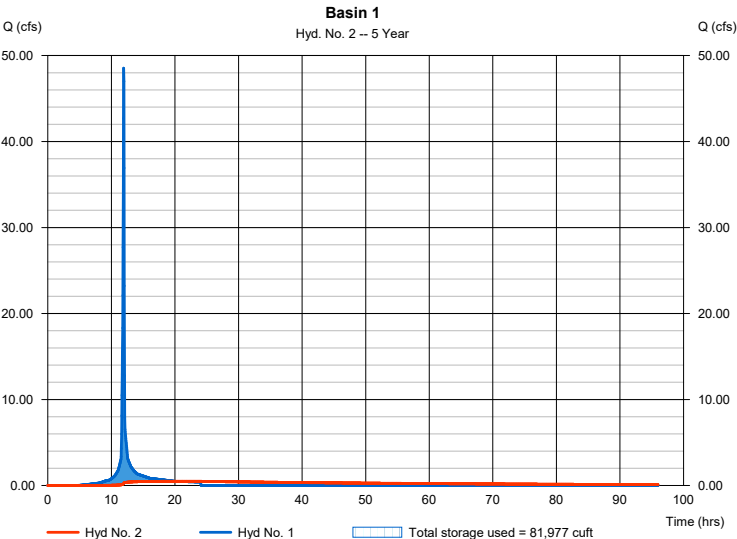
Tuesday, 07 / 7 / 2026

Hyd. No. 2

Basin 1

Hydrograph type	= Reservoir	Peak discharge	= 0.485 cfs
Storm frequency	= 5 yrs	Time to peak	= 20.00 hrs
Time interval	= 2 min	Hyd. volume	= 84,643 cuft
Inflow hyd. No.	= 1 - Post DA Basin 1	Max. Elevation	= 565.78 ft
Reservoir name	= Basin 1	Max. Storage	= 81,977 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

45

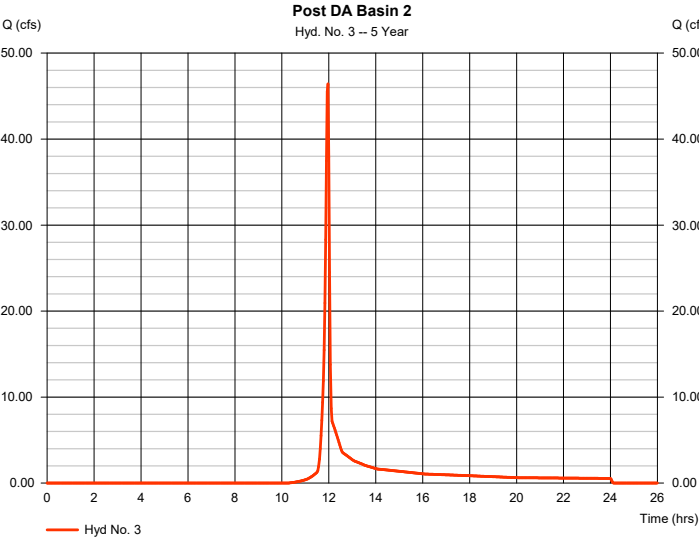
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 3

Post DA Basin 2

Hydrograph type	=	SCS Runoff	Peak discharge	=	46.42 cfs
Storm frequency	=	5 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	92,828 cuft
Drainage area	=	20.840 ac	Curve number	=	75
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.51 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

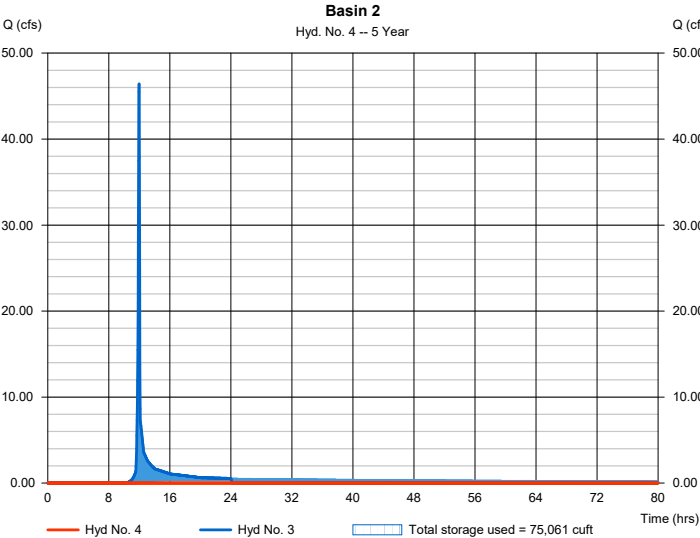
Tuesday, 07 / 7 / 2026

Hyd. No. 4

Basin 2

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	5 yrs	Time to peak	=	18.67 hrs
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	3 - Post DA Basin 2	Max. Elevation	=	567.93 ft
Reservoir name	=	Basin 2	Max. Storage	=	75,061 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

47

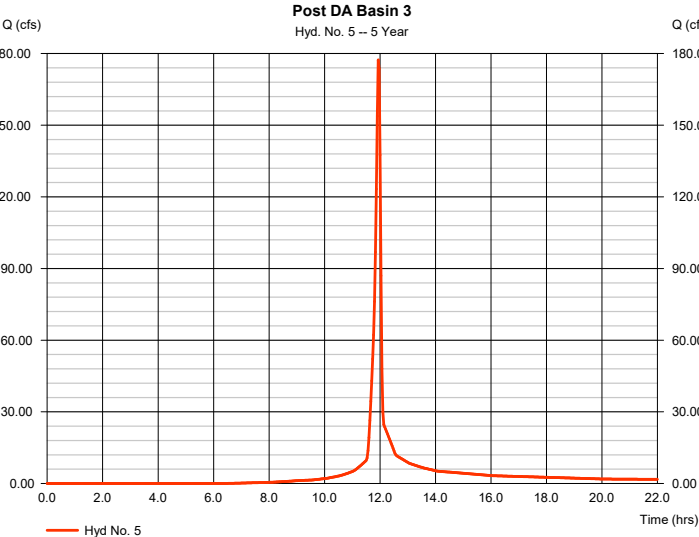
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 5

Post DA Basin 3

Hydrograph type	=	SCS Runoff	Peak discharge	=	177.30 cfs
Storm frequency	=	5 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	363,486 cuft
Drainage area	=	48.740 ac	Curve number	=	87
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.51 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

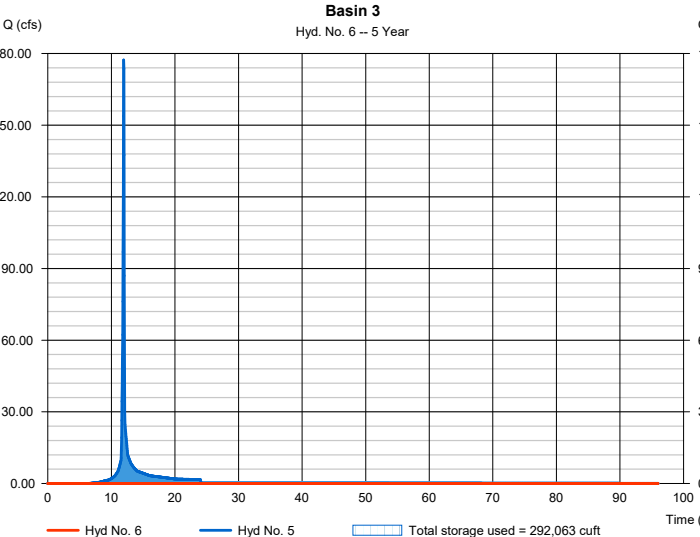
Tuesday, 07 / 7 / 2026

Hyd. No. 6

Basin 3

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.27 hrs
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	5 - Post DA Basin 3	Max. Elevation	=	545.73 ft
Reservoir name	=	Basin 3	Max. Storage	=	292,063 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

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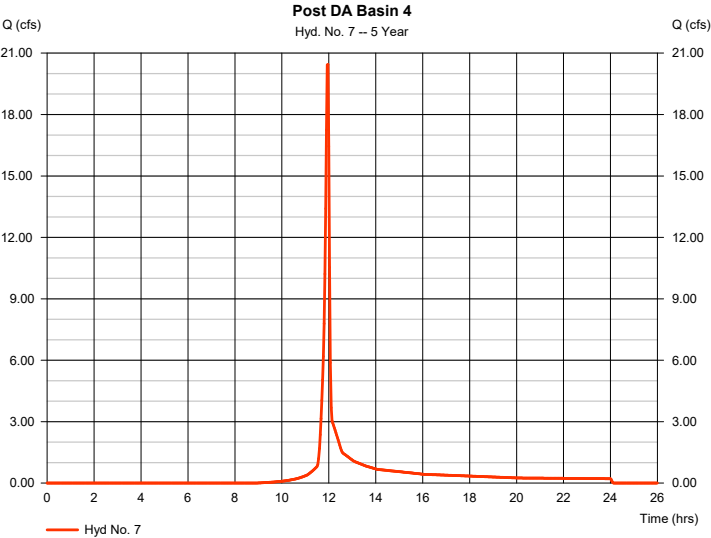
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 7

Post DA Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 20.45 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 41,241 cuft
Drainage area	= 7.370 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.51 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

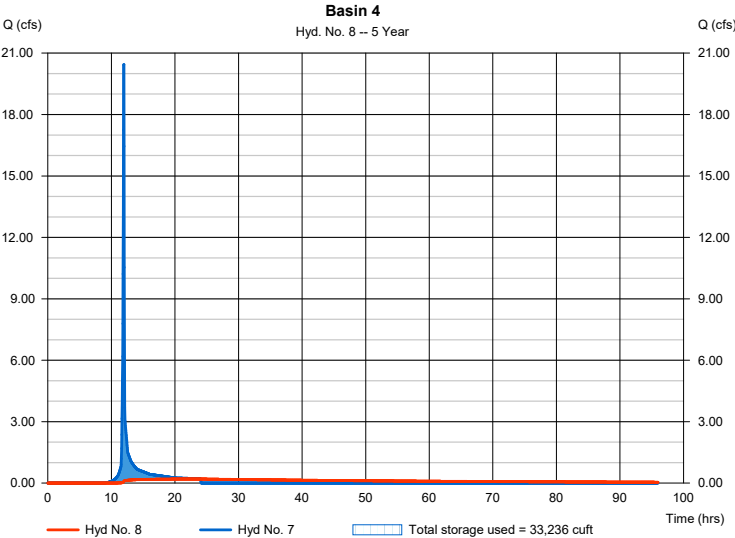
Tuesday, 07 / 7 / 2026

Hyd. No. 8

Basin 4

Hydrograph type	= Reservoir	Peak discharge	= 0.198 cfs
Storm frequency	= 5 yrs	Time to peak	= 24.00 hrs
Time interval	= 2 min	Hyd. volume	= 34,129 cuft
Inflow hyd. No.	= 7 - Post DA Basin 4	Max. Elevation	= 538.61 ft
Reservoir name	= Basin 4	Max. Storage	= 33,236 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

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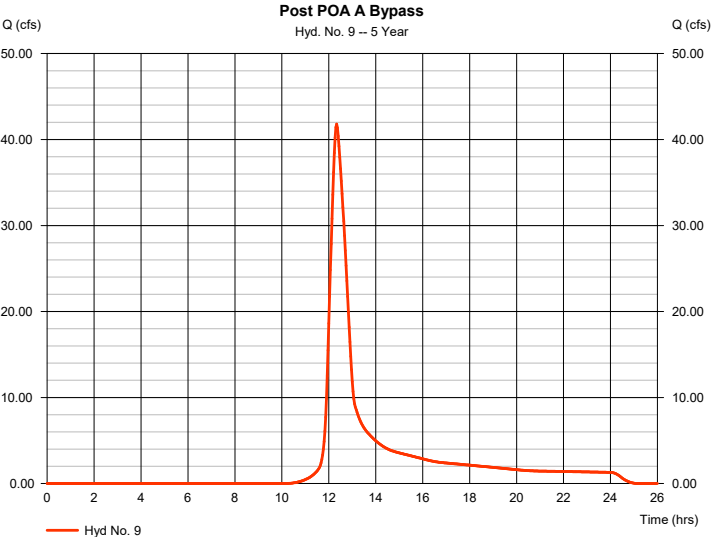
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 9

Post POA A Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 41.80 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 223,851 cuft
Drainage area	= 44.500 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 41.31 min
Total precip.	= 3.51 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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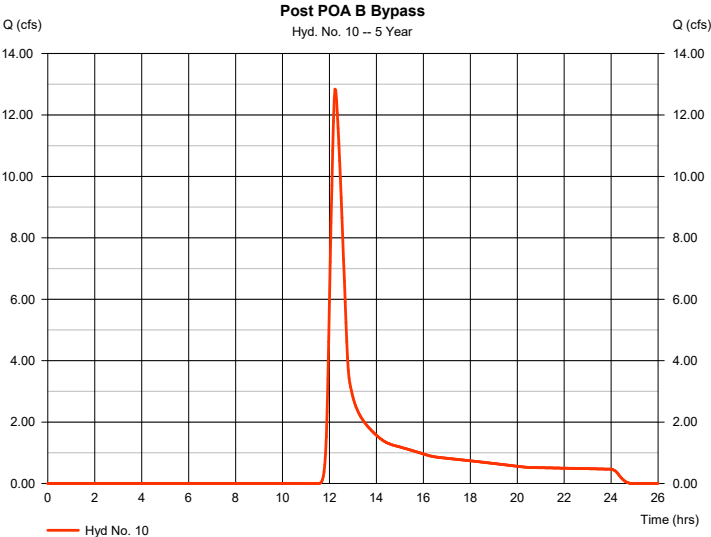
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 10

Post POA B Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 12.84 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 65,102 cuft
Drainage area	= 20.700 ac	Curve number	= 67
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 30.30 min
Total precip.	= 3.51 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

53

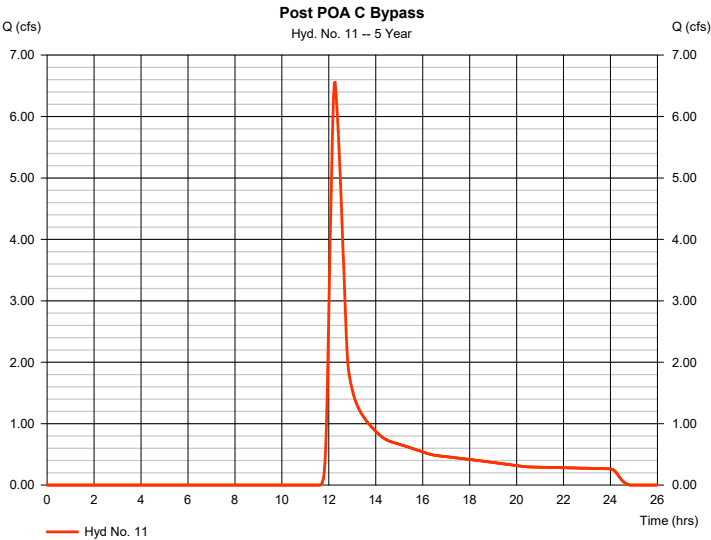
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 11

Post POA C Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.556 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.27 hrs
Time interval	=	2 min	Hyd. volume	=	35,040 cuft
Drainage area	=	12.590 ac	Curve number	=	65
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	31.53 min
Total precip.	=	3.51 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

54

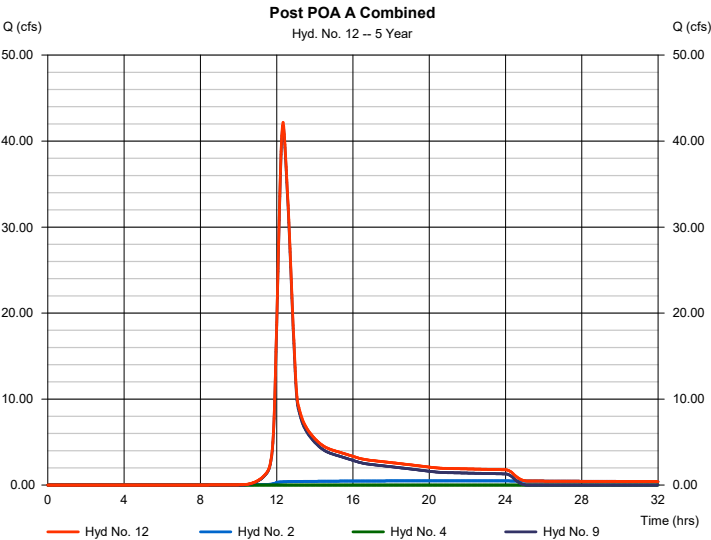
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 12

Post POA A Combined

Hydrograph type	=	Combine	Peak discharge	=	42.17 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	308,494 cuft
Inflow hyds.	=	2, 4, 9	Contrib. drain. area	=	44.500 ac



Hydrograph Report

55

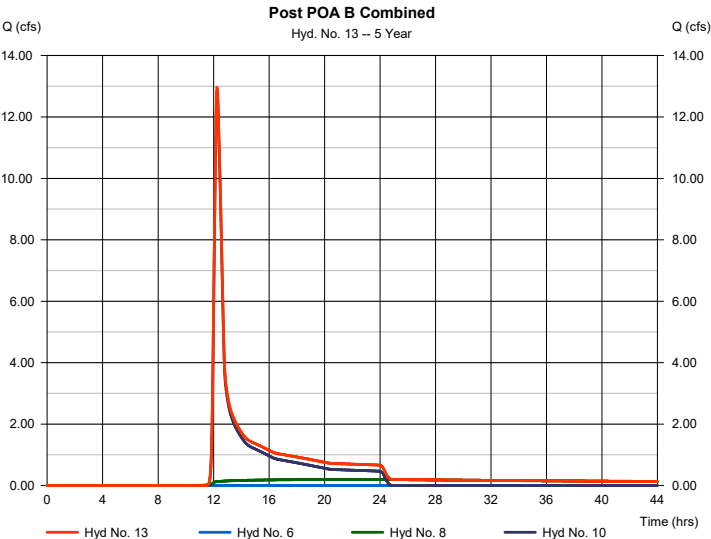
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 13

Post POA B Combined

Hydrograph type	=	Combine	Peak discharge	=	12.97 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.23 hrs
Time interval	=	2 min	Hyd. volume	=	99,231 cuft
Inflow hyds.	=	6, 8, 10	Contrib. drain. area	=	20.700 ac



Hydrograph Summary Report

56

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	58.37	2	716	124,419	-----	-----	-----	Post DA Basin 1
2	Reservoir	0.590	2	1190	103,035	1	565.95	99,794	Basin 1
3	SCS Runoff	61.33	2	718	123,010	-----	-----	-----	Post DA Basin 2
4	Reservoir	0.121	2	1440	4,340	3	568.21	98,996	Basin 2
5	SCS Runoff	218.02	2	716	451,052	-----	-----	-----	Post DA Basin 3
6	Reservoir	0.000	2	722	0	5	545.91	362,203	Basin 3
7	SCS Runoff	26.26	2	716	53,078	-----	-----	-----	Post DA Basin 4
8	Reservoir	0.254	2	1440	43,949	7	538.78	42,666	Basin 4
9	SCS Runoff	56.05	2	740	294,823	-----	-----	-----	Post POA A Bypass
10	SCS Runoff	19.22	2	734	91,336	-----	-----	-----	Post POA B Bypass
11	SCS Runoff	10.18	2	734	50,025	-----	-----	-----	Post POA C Bypass
12	Combine	56.51	2	740	402,199	2, 4, 9,	-----	-----	Post POA A Combined
13	Combine	19.38	2	734	135,285	6, 8, 10,	-----	-----	Post POA B Combined

Post_Dev_Hydrographs.gpw

Return Period: 10 Year

Tuesday, 07 / 7 / 2026

Hydrograph Report

57

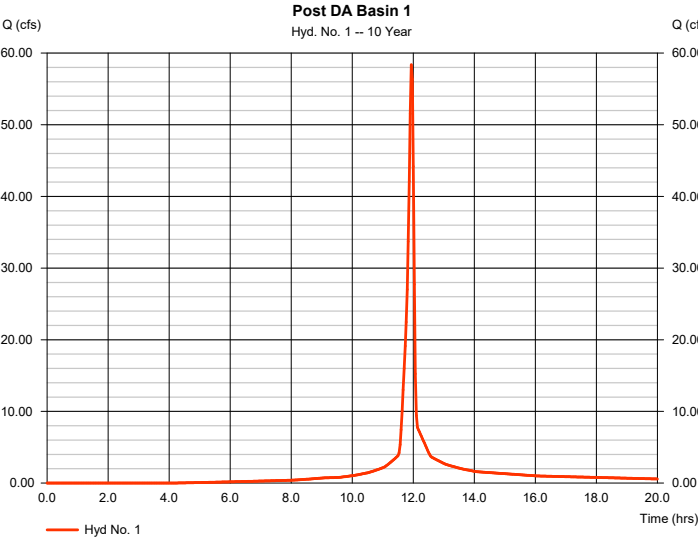
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 1

Post DA Basin 1

Hydrograph type	=	SCS Runoff	Peak discharge	=	58.37 cfs
Storm frequency	=	10 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	124,419 cuft
Drainage area	=	11.780 ac	Curve number	=	91
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.09 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

58

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

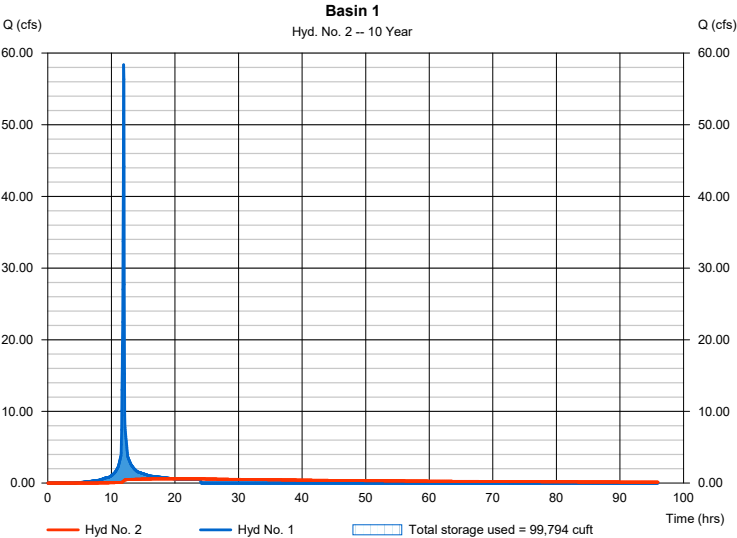
Tuesday, 07 / 7 / 2026

Hyd. No. 2

Basin 1

Hydrograph type	=	Reservoir	Peak discharge	=	0.590 cfs
Storm frequency	=	10 yrs	Time to peak	=	19.83 hrs
Time interval	=	2 min	Hyd. volume	=	103,035 cuft
Inflow hyd. No.	=	1 - Post DA Basin 1	Max. Elevation	=	565.95 ft
Reservoir name	=	Basin 1	Max. Storage	=	99,794 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

59

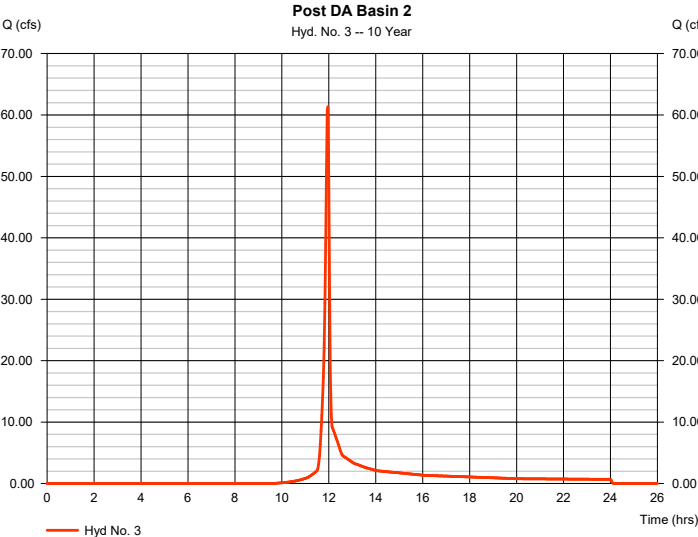
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 3

Post DA Basin 2

Hydrograph type	=	SCS Runoff	Peak discharge	=	61.33 cfs
Storm frequency	=	10 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	123,010 cuft
Drainage area	=	20.840 ac	Curve number	=	75
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.09 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

60

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

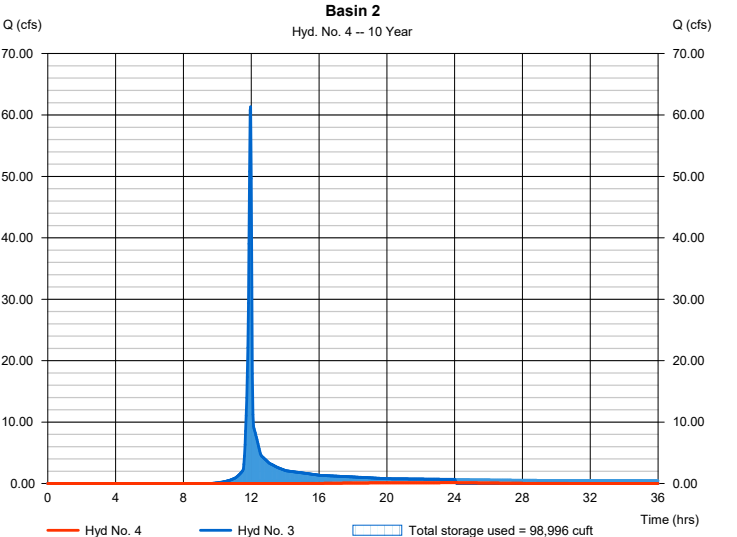
Tuesday, 07 / 7 / 2026

Hyd. No. 4

Basin 2

Hydrograph type	=	Reservoir	Peak discharge	=	0.121 cfs
Storm frequency	=	10 yrs	Time to peak	=	24.00 hrs
Time interval	=	2 min	Hyd. volume	=	4,340 cuft
Inflow hyd. No.	=	3 - Post DA Basin 2	Max. Elevation	=	568.21 ft
Reservoir name	=	Basin 2	Max. Storage	=	98,996 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

61

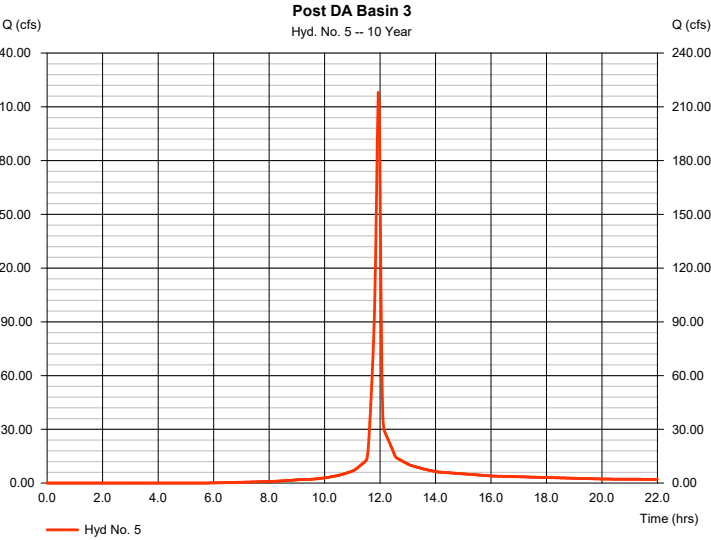
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 5

Post DA Basin 3

Hydrograph type	= SCS Runoff	Peak discharge	= 218.02 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 451,052 cuft
Drainage area	= 48.740 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.09 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

62

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

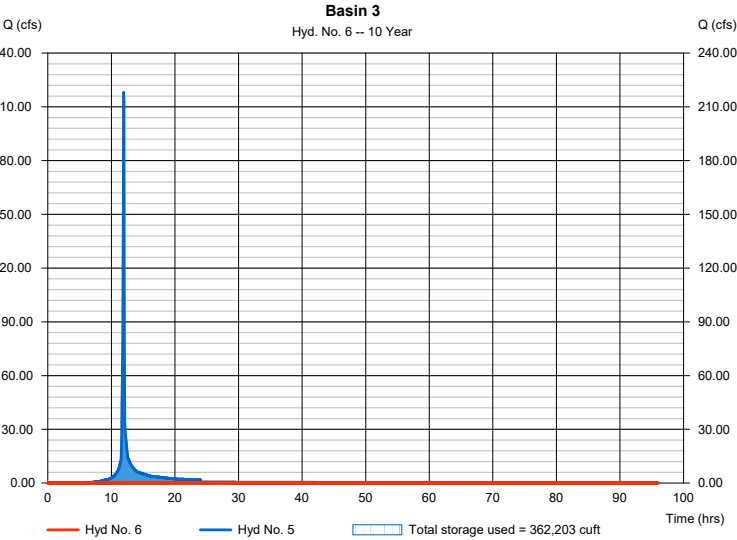
Tuesday, 07 / 7 / 2026

Hyd. No. 6

Basin 3

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 5 - Post DA Basin 3	Max. Elevation	= 545.91 ft
Reservoir name	= Basin 3	Max. Storage	= 362,203 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

63

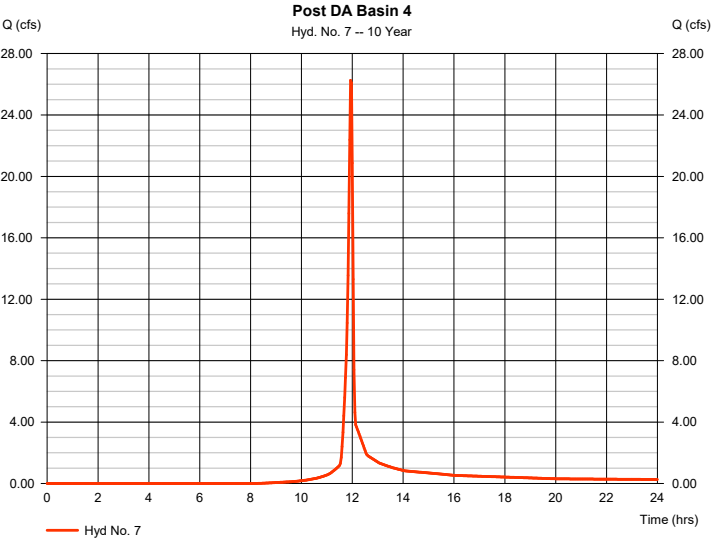
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 7

Post DA Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 26.26 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 53,078 cuft
Drainage area	= 7.370 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.09 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

64

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

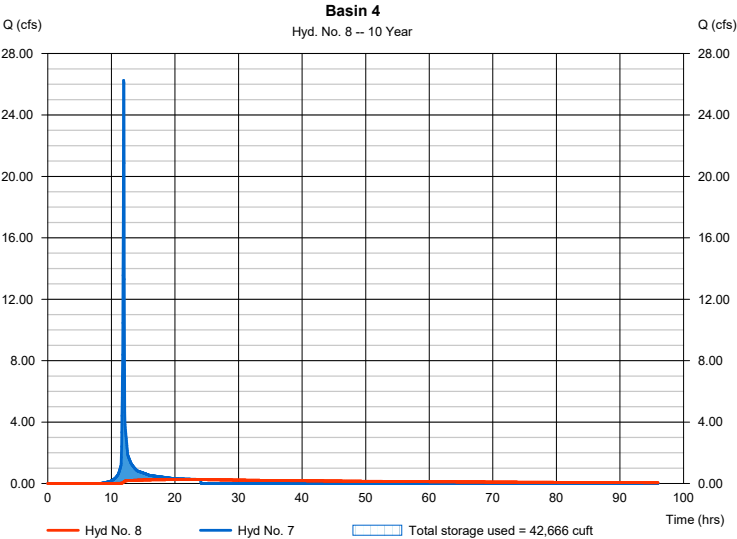
Tuesday, 07 / 7 / 2026

Hyd. No. 8

Basin 4

Hydrograph type	= Reservoir	Peak discharge	= 0.254 cfs
Storm frequency	= 10 yrs	Time to peak	= 24.00 hrs
Time interval	= 2 min	Hyd. volume	= 43,949 cuft
Inflow hyd. No.	= 7 - Post DA Basin 4	Max. Elevation	= 538.78 ft
Reservoir name	= Basin 4	Max. Storage	= 42,666 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

65

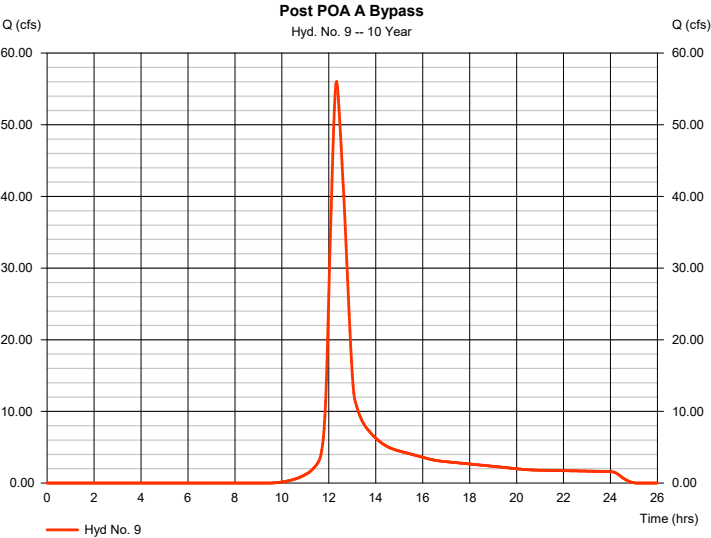
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 9

Post POA A Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	56.05 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	294,823 cuft
Drainage area	=	44.500 ac	Curve number	=	76
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	41.31 min
Total precip.	=	4.09 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

66

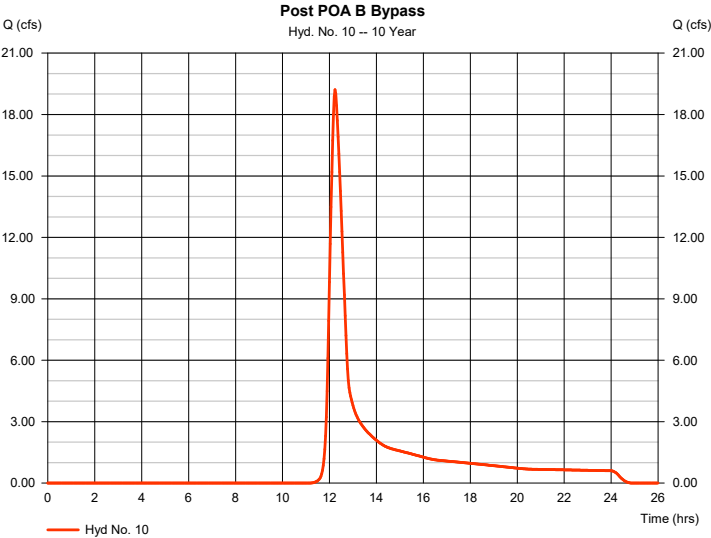
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 10

Post POA B Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	19.22 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.23 hrs
Time interval	=	2 min	Hyd. volume	=	91,336 cuft
Drainage area	=	20.700 ac	Curve number	=	67
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	30.30 min
Total precip.	=	4.09 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

67

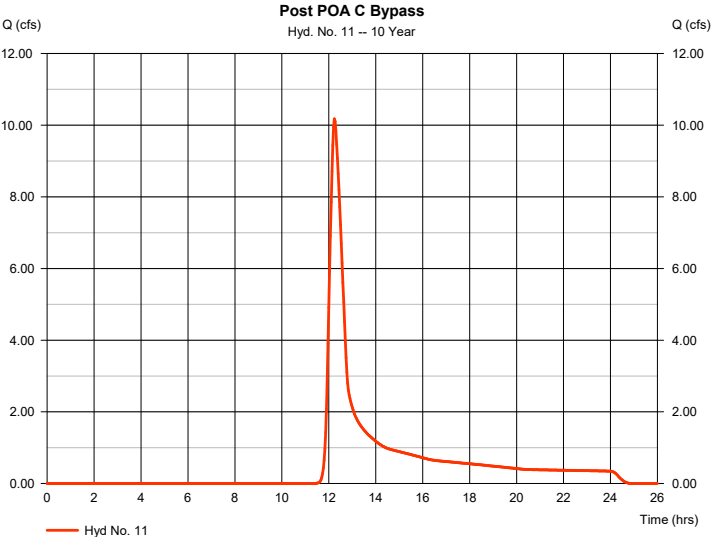
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 11

Post POA C Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.18 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.23 hrs
Time interval	=	2 min	Hyd. volume	=	50,025 cuft
Drainage area	=	12.590 ac	Curve number	=	65
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	31.53 min
Total precip.	=	4.09 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

68

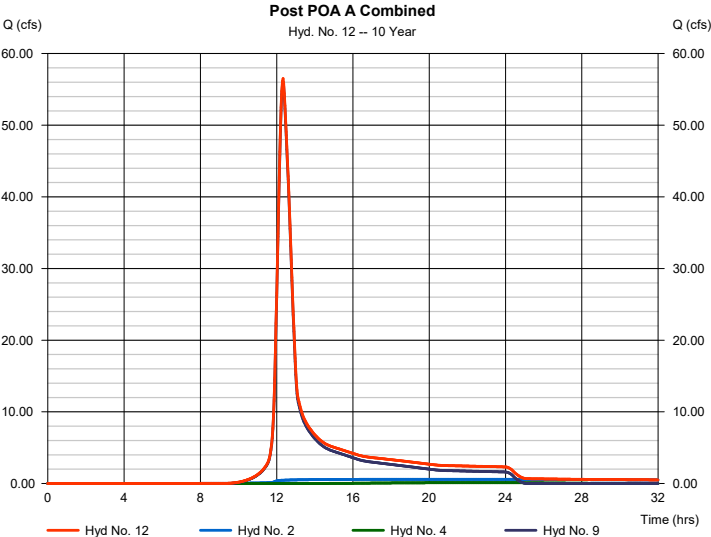
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 12

Post POA A Combined

Hydrograph type	=	Combine	Peak discharge	=	56.51 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	402,199 cuft
Inflow hyds.	=	2, 4, 9	Contrib. drain. area	=	44.500 ac



Hydrograph Report

69

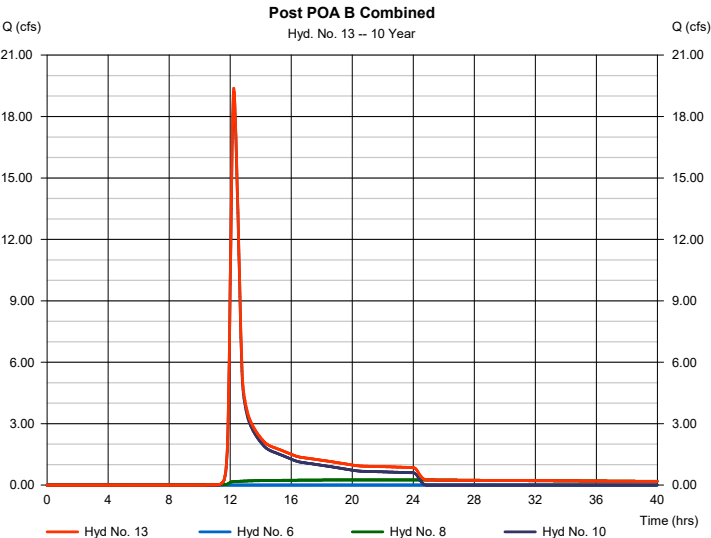
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 13

Post POA B Combined

Hydrograph type	= Combine	Peak discharge	= 19.38 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 135,285 cuft
Inflow hyds.	= 6, 8, 10	Contrib. drain. area	= 20.700 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	72.72	2	716	157,303	-----	-----	-----	Post DA Basin 1
2	Reservoir	0.738	2	1182	130,084	1	566.20	126,604	Basin 1
3	SCS Runoff	84.33	2	716	170,261	-----	-----	-----	Post DA Basin 2
4	Reservoir	0.525	2	1196	32,044	3	568.56	130,003	Basin 2
5	SCS Runoff	277.85	2	716	582,333	-----	-----	-----	Post DA Basin 3
6	Reservoir	0.101	2	1392	4,111	5	546.18	475,033	Basin 3
7	SCS Runoff	35.04	2	716	71,245	-----	-----	-----	Post DA Basin 4
8	Reservoir	0.340	2	1400	59,026	7	539.05	57,120	Basin 4
9	SCS Runoff	78.07	2	740	405,465	-----	-----	-----	Post POA A Bypass
10	SCS Runoff	29.53	2	734	134,005	-----	-----	-----	Post POA B Bypass
11	SCS Runoff	16.15	2	734	74,672	-----	-----	-----	Post POA C Bypass
12	Combine	78.71	2	740	567,593	2, 4, 9,	-----	-----	Post POA A Combined
13	Combine	29.76	2	734	197,142	6, 8, 10,	-----	-----	Post POA B Combined

Post_Dev_Hydrographs.gpw

Return Period: 25 Year

Tuesday, 07 / 7 / 2026

Hydrograph Report

71

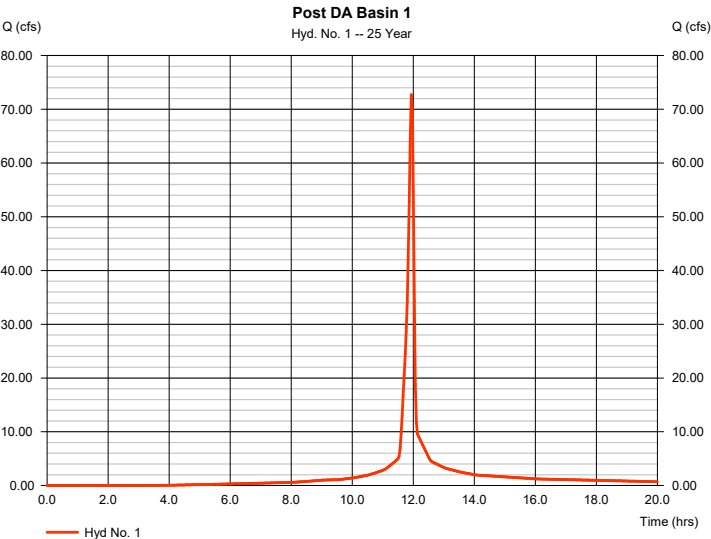
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 1

Post DA Basin 1

Hydrograph type	= SCS Runoff	Peak discharge	= 72.72 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 157,303 cuft
Drainage area	= 11.780 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.94 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

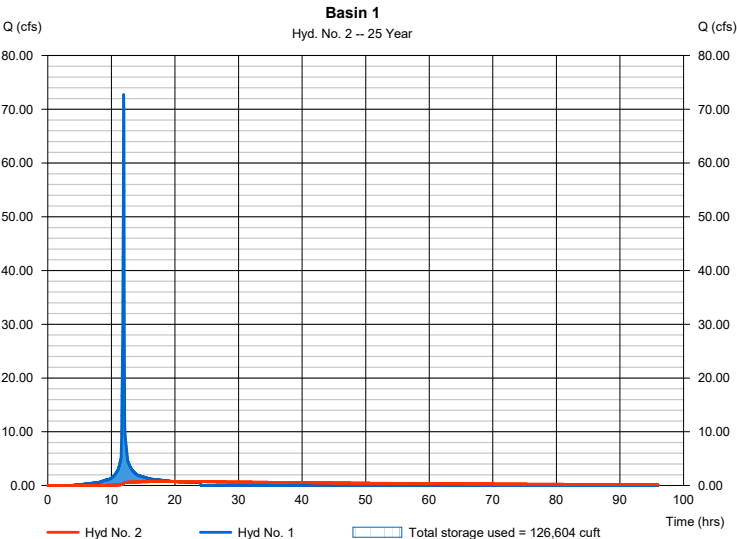
Tuesday, 07 / 7 / 2026

Hyd. No. 2

Basin 1

Hydrograph type	= Reservoir	Peak discharge	= 0.738 cfs
Storm frequency	= 25 yrs	Time to peak	= 19.70 hrs
Time interval	= 2 min	Hyd. volume	= 130,084 cuft
Inflow hyd. No.	= 1 - Post DA Basin 1	Max. Elevation	= 566.20 ft
Reservoir name	= Basin 1	Max. Storage	= 126,604 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

73

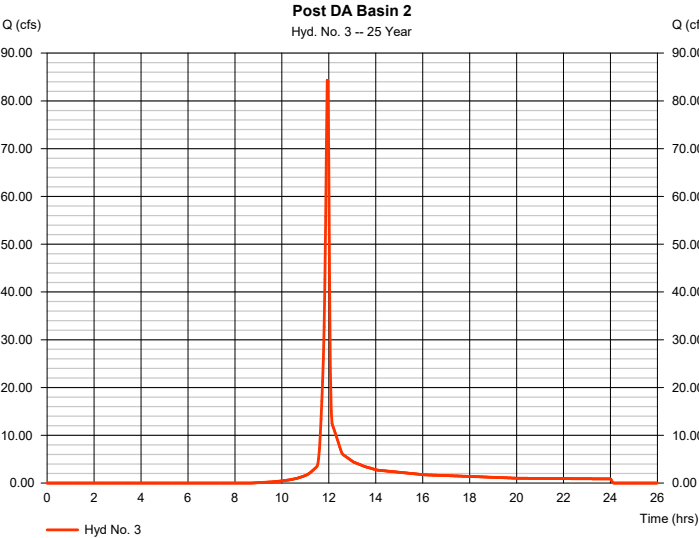
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 3

Post DA Basin 2

Hydrograph type	= SCS Runoff	Peak discharge	= 84.33 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 170,261 cuft
Drainage area	= 20.840 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.94 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

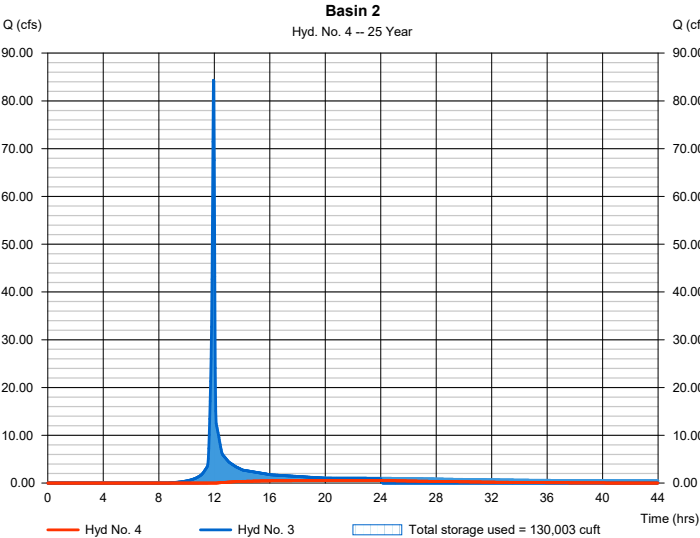
Tuesday, 07 / 7 / 2026

Hyd. No. 4

Basin 2

Hydrograph type	= Reservoir	Peak discharge	= 0.525 cfs
Storm frequency	= 25 yrs	Time to peak	= 19.93 hrs
Time interval	= 2 min	Hyd. volume	= 32,044 cuft
Inflow hyd. No.	= 3 - Post DA Basin 2	Max. Elevation	= 568.56 ft
Reservoir name	= Basin 2	Max. Storage	= 130,003 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

75

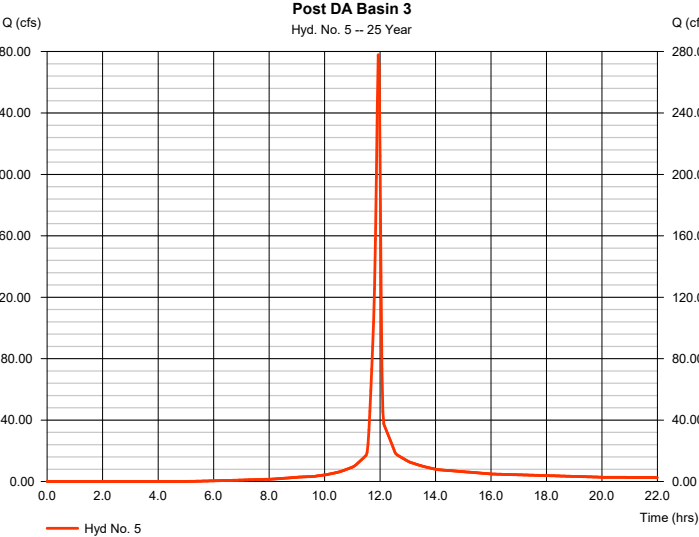
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 5

Post DA Basin 3

Hydrograph type	= SCS Runoff	Peak discharge	= 277.85 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 582,333 cuft
Drainage area	= 48.740 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.94 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

76

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

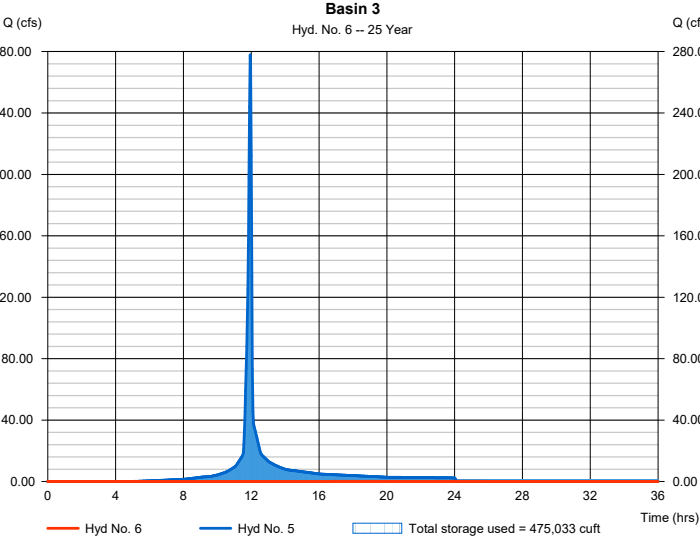
Tuesday, 07 / 7 / 2026

Hyd. No. 6

Basin 3

Hydrograph type	= Reservoir	Peak discharge	= 0.101 cfs
Storm frequency	= 25 yrs	Time to peak	= 23.20 hrs
Time interval	= 2 min	Hyd. volume	= 4,111 cuft
Inflow hyd. No.	= 5 - Post DA Basin 3	Max. Elevation	= 546.18 ft
Reservoir name	= Basin 3	Max. Storage	= 475,033 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

77

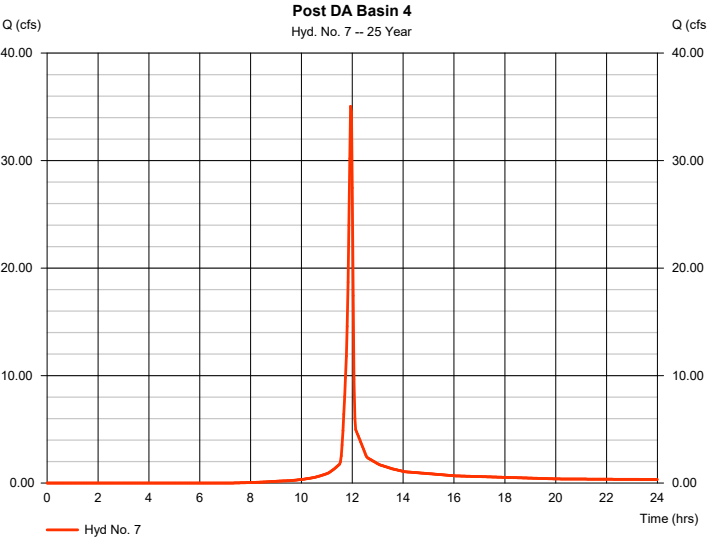
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 7

Post DA Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 35.04 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 71,245 cuft
Drainage area	= 7.370 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.94 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

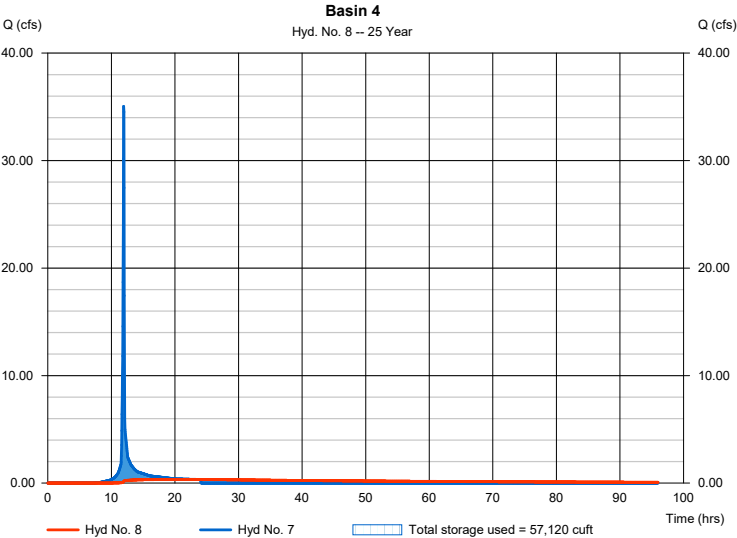
Tuesday, 07 / 7 / 2026

Hyd. No. 8

Basin 4

Hydrograph type	= Reservoir	Peak discharge	= 0.340 cfs
Storm frequency	= 25 yrs	Time to peak	= 23.33 hrs
Time interval	= 2 min	Hyd. volume	= 59,026 cuft
Inflow hyd. No.	= 7 - Post DA Basin 4	Max. Elevation	= 539.05 ft
Reservoir name	= Basin 4	Max. Storage	= 57,120 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

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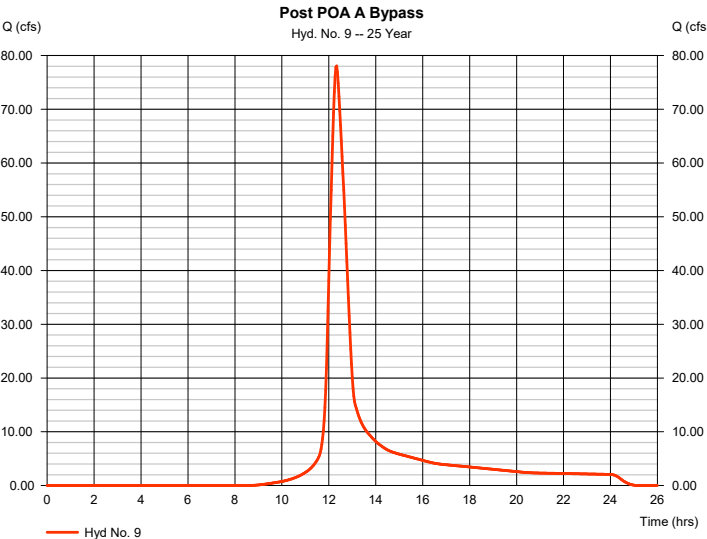
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 9

Post POA A Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 78.07 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 405,465 cuft
Drainage area	= 44.500 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 41.31 min
Total precip.	= 4.94 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

80

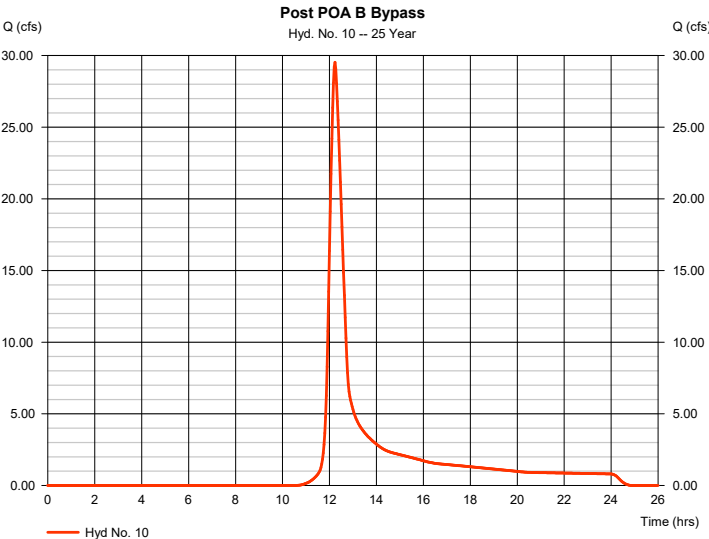
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 10

Post POA B Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 29.53 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 134,005 cuft
Drainage area	= 20.700 ac	Curve number	= 67
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 30.30 min
Total precip.	= 4.94 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

81

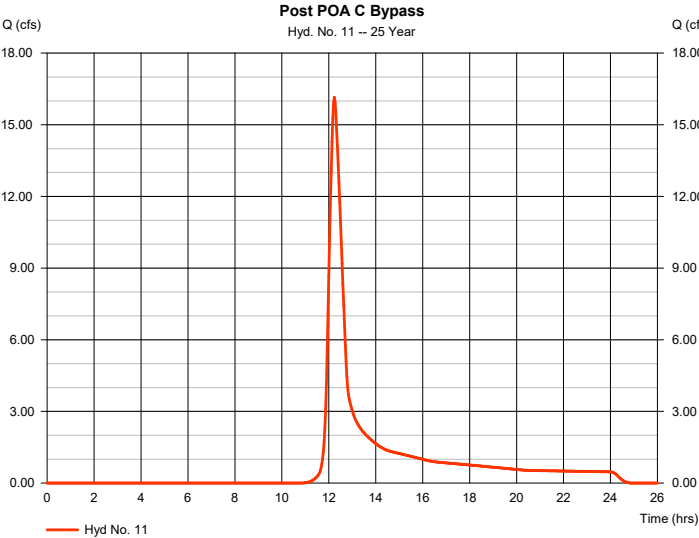
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 11

Post POA C Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	16.15 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.23 hrs
Time interval	=	2 min	Hyd. volume	=	74,672 cuft
Drainage area	=	12.590 ac	Curve number	=	65
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	31.53 min
Total precip.	=	4.94 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

82

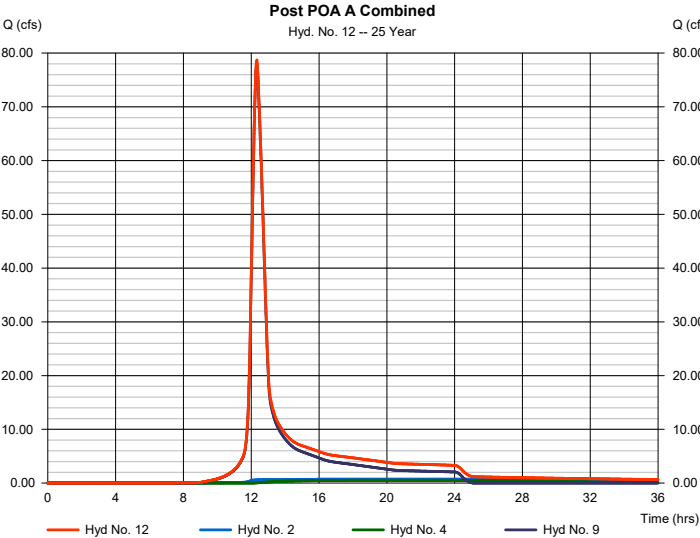
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 12

Post POA A Combined

Hydrograph type	=	Combine	Peak discharge	=	78.71 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	567,593 cuft
Inflow hyds.	=	2, 4, 9	Contrib. drain. area	=	44.500 ac



Hydrograph Report

83

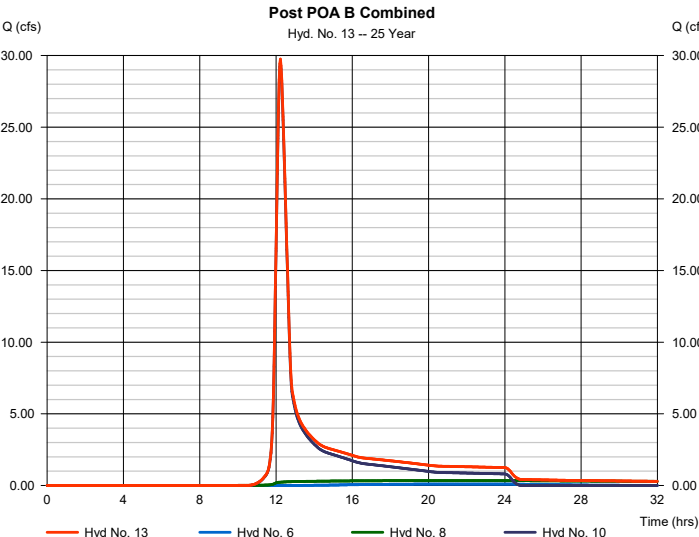
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 13

Post POA B Combined

Hydrograph type	=	Combine	Peak discharge	=	29.76 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.23 hrs
Time interval	=	2 min	Hyd. volume	=	197,142 cuft
Inflow hyds.	=	6, 8, 10	Contrib. drain. area	=	20.700 ac



Hydrograph Summary Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	84.97	2	716	185,795	-----	-----	-----	Post DA Basin 1
2	Reservoir	0.978	2	1134	154,650	1	566.39	147,434	Basin 1
3	SCS Runoff	105.26	2	716	212,962	-----	-----	-----	Post DA Basin 2
4	Reservoir	0.774	2	1180	60,490	3	568.92	161,417	Basin 2
5	SCS Runoff	329.18	2	716	696,999	-----	-----	-----	Post DA Basin 3
6	Reservoir	0.399	2	1436	24,319	5	546.43	576,404	Basin 3
7	SCS Runoff	42.71	2	716	87,404	-----	-----	-----	Post DA Basin 4
8	Reservoir	0.495	2	1176	73,073	7	539.25	68,510	Basin 4
9	SCS Runoff	97.72	2	740	505,118	-----	-----	-----	Post POA A Bypass
10	SCS Runoff	39.07	2	734	173,756	-----	-----	-----	Post POA B Bypass
11	SCS Runoff	21.73	2	734	97,837	-----	-----	-----	Post POA C Bypass
12	Combine	98.78	2	740	720,259	2, 4, 9,	-----	-----	Post POA A Combined
13	Combine	39.38	2	734	271,149	6, 8, 10,	-----	-----	Post POA B Combined

Post_Dev_Hydrographs.gpw

Return Period: 50 Year

Tuesday, 07 / 7 / 2026

Hydrograph Report

85

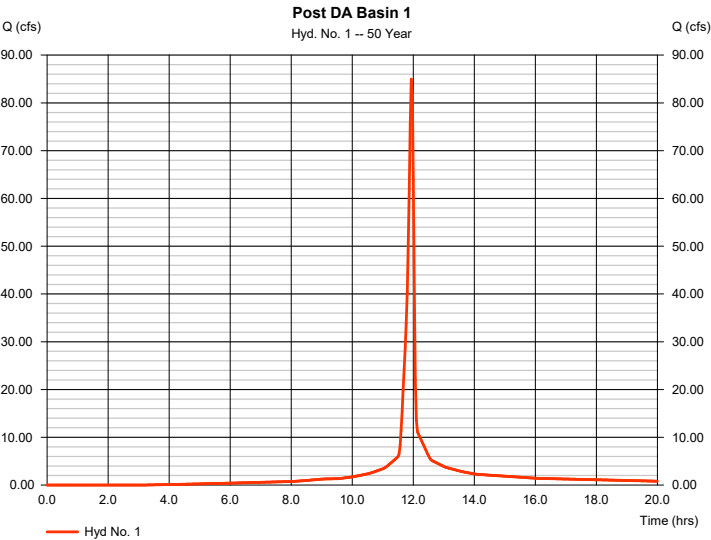
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 1

Post DA Basin 1

Hydrograph type	= SCS Runoff	Peak discharge	= 84.97 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 185,795 cuft
Drainage area	= 11.780 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

86

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

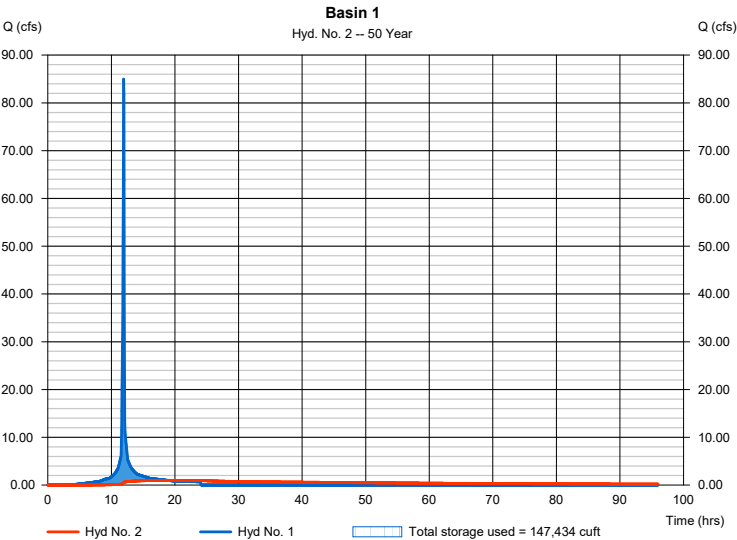
Tuesday, 07 / 7 / 2026

Hyd. No. 2

Basin 1

Hydrograph type	= Reservoir	Peak discharge	= 0.978 cfs
Storm frequency	= 50 yrs	Time to peak	= 18.90 hrs
Time interval	= 2 min	Hyd. volume	= 154,650 cuft
Inflow hyd. No.	= 1 - Post DA Basin 1	Max. Elevation	= 566.39 ft
Reservoir name	= Basin 1	Max. Storage	= 147,434 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

87

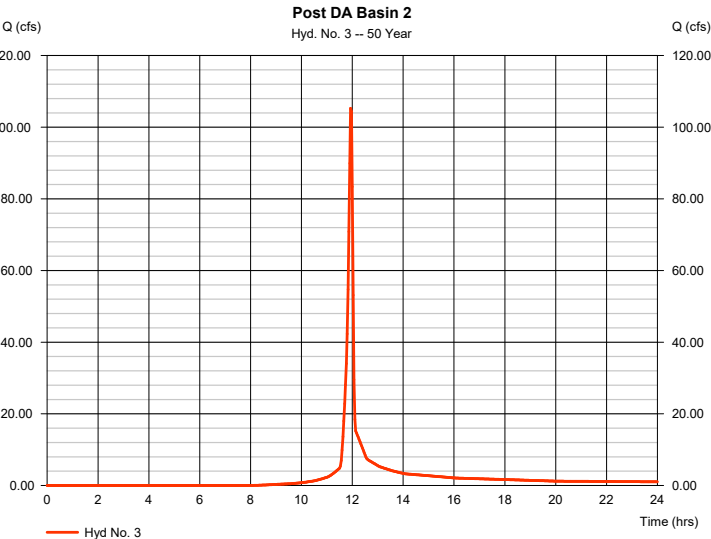
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 3

Post DA Basin 2

Hydrograph type	= SCS Runoff	Peak discharge	= 105.26 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 212,962 cuft
Drainage area	= 20.840 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

88

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

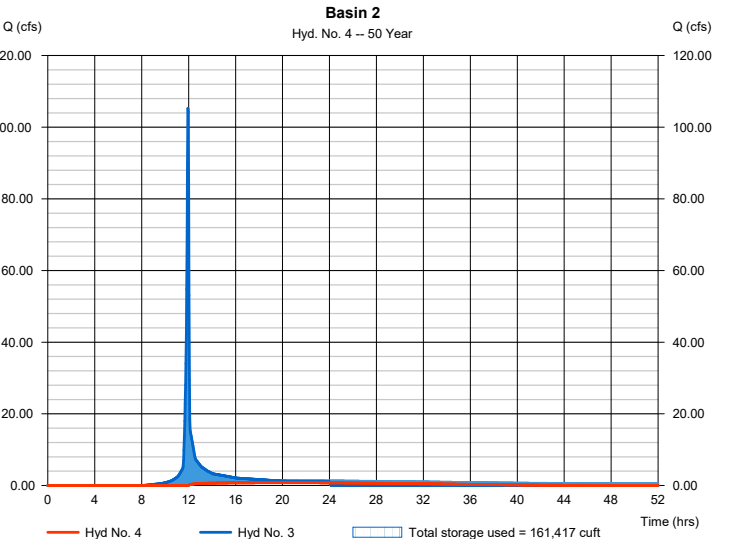
Tuesday, 07 / 7 / 2026

Hyd. No. 4

Basin 2

Hydrograph type	= Reservoir	Peak discharge	= 0.774 cfs
Storm frequency	= 50 yrs	Time to peak	= 19.67 hrs
Time interval	= 2 min	Hyd. volume	= 60,490 cuft
Inflow hyd. No.	= 3 - Post DA Basin 2	Max. Elevation	= 568.92 ft
Reservoir name	= Basin 2	Max. Storage	= 161,417 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

89

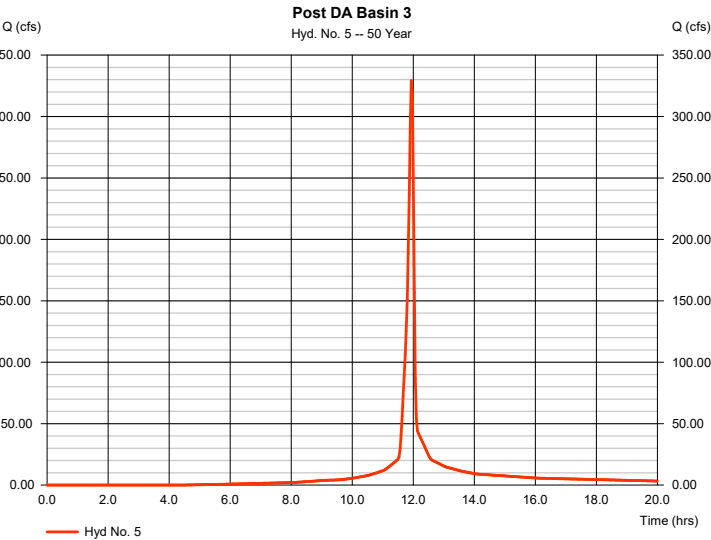
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 5

Post DA Basin 3

Hydrograph type	= SCS Runoff	Peak discharge	= 329.18 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 696,999 cuft
Drainage area	= 48.740 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

90

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

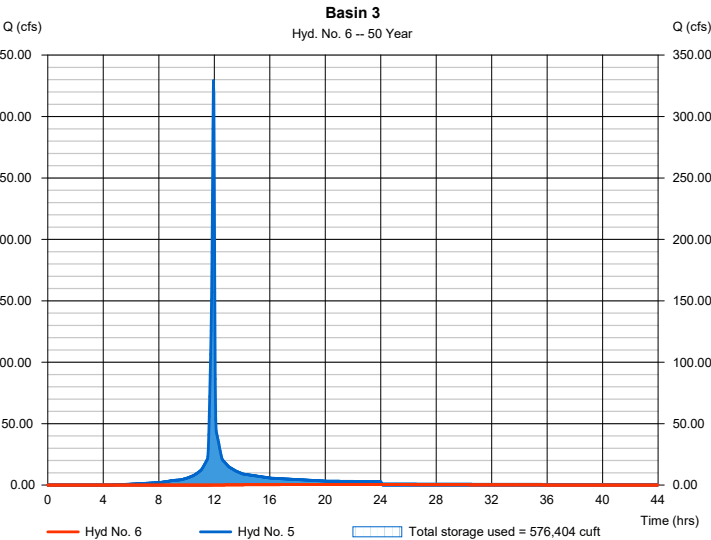
Tuesday, 07 / 7 / 2026

Hyd. No. 6

Basin 3

Hydrograph type	= Reservoir	Peak discharge	= 0.399 cfs
Storm frequency	= 50 yrs	Time to peak	= 23.93 hrs
Time interval	= 2 min	Hyd. volume	= 24,319 cuft
Inflow hyd. No.	= 5 - Post DA Basin 3	Max. Elevation	= 546.43 ft
Reservoir name	= Basin 3	Max. Storage	= 576,404 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

91

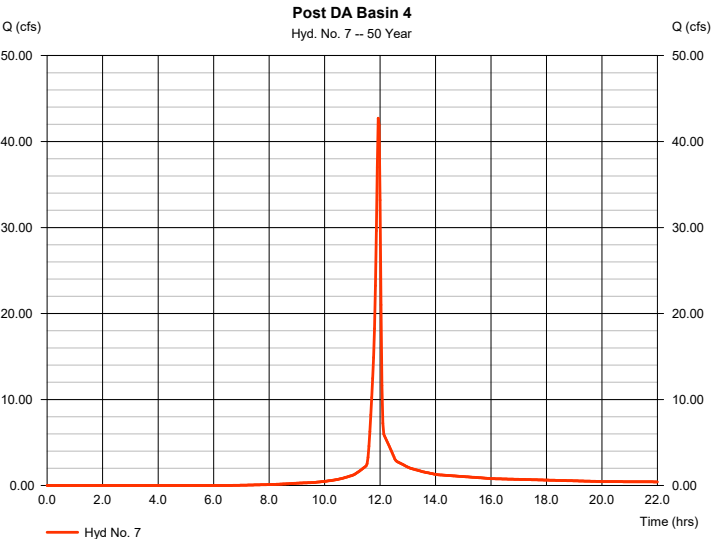
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 7

Post DA Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 42.71 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 87,404 cuft
Drainage area	= 7.370 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

92

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

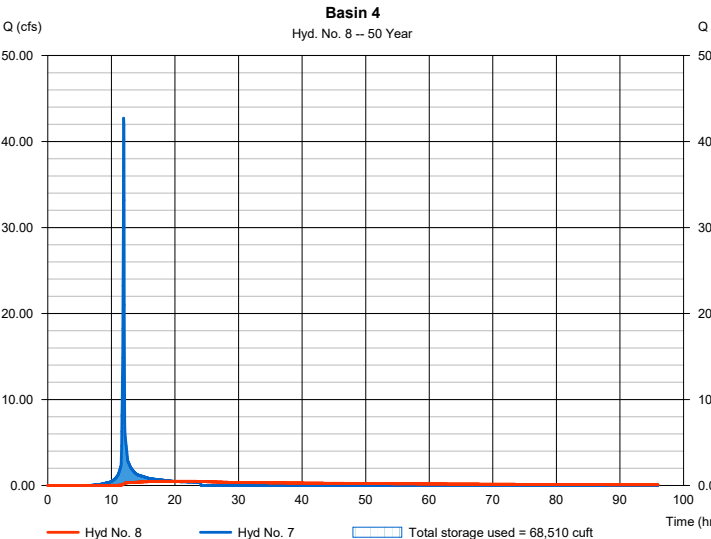
Tuesday, 07 / 7 / 2026

Hyd. No. 8

Basin 4

Hydrograph type	= Reservoir	Peak discharge	= 0.495 cfs
Storm frequency	= 50 yrs	Time to peak	= 19.60 hrs
Time interval	= 2 min	Hyd. volume	= 73,073 cuft
Inflow hyd. No.	= 7 - Post DA Basin 4	Max. Elevation	= 539.25 ft
Reservoir name	= Basin 4	Max. Storage	= 68,510 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

93

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

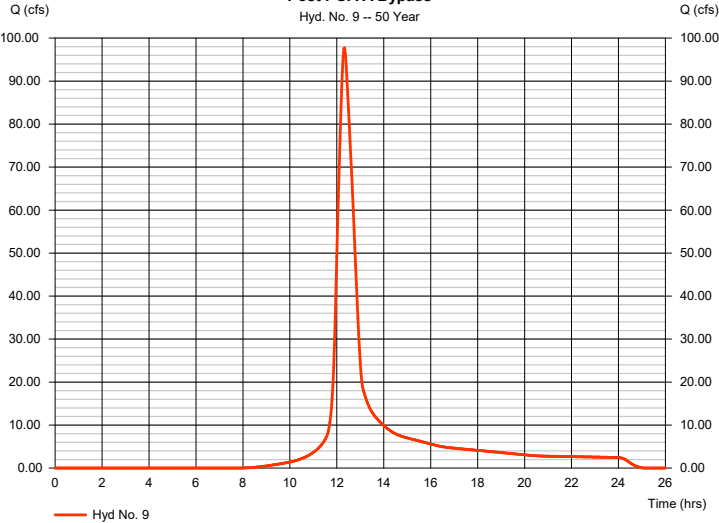
Hyd. No. 9

Post POA A Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	97.72 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	505,118 cuft
Drainage area	=	44.500 ac	Curve number	=	76
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	41.31 min
Total precip.	=	5.67 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

Post POA A Bypass

Hyd. No. 9 -- 50 Year



Hydrograph Report

94

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

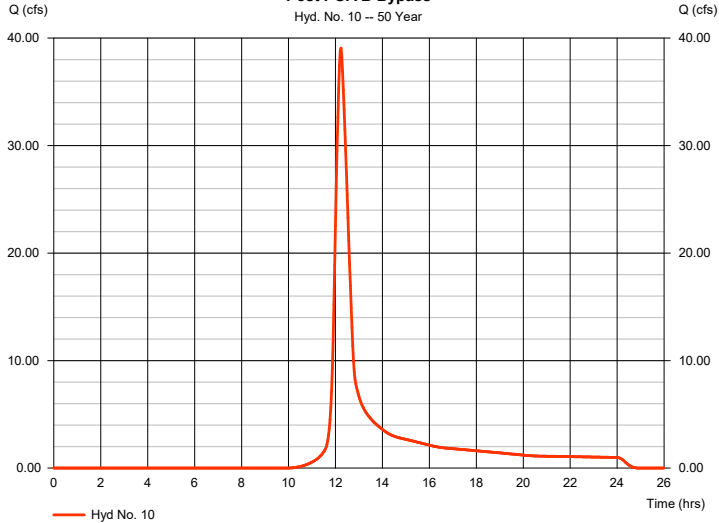
Hyd. No. 10

Post POA B Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	39.07 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.23 hrs
Time interval	=	2 min	Hyd. volume	=	173,756 cuft
Drainage area	=	20.700 ac	Curve number	=	67
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	30.30 min
Total precip.	=	5.67 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

Post POA B Bypass

Hyd. No. 10 -- 50 Year



Hydrograph Report

95

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

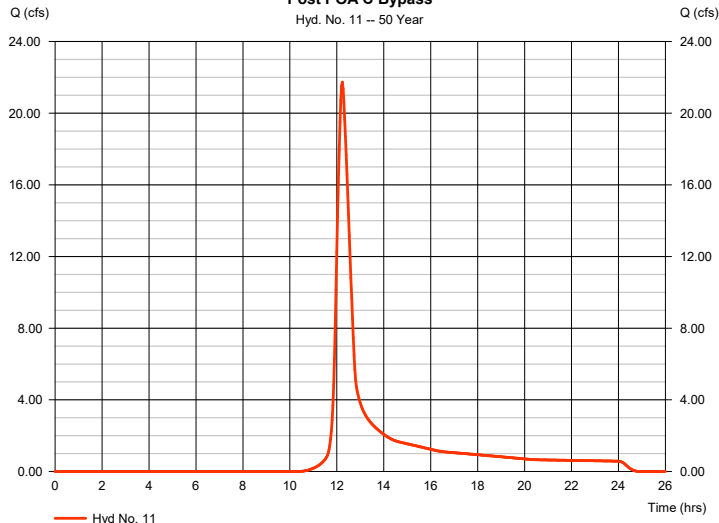
Hyd. No. 11

Post POA C Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	21.73 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.23 hrs
Time interval	=	2 min	Hyd. volume	=	97,837 cuft
Drainage area	=	12.590 ac	Curve number	=	65
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	31.53 min
Total precip.	=	5.67 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

Post POA C Bypass

Hyd. No. 11 -- 50 Year



Hydrograph Report

96

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

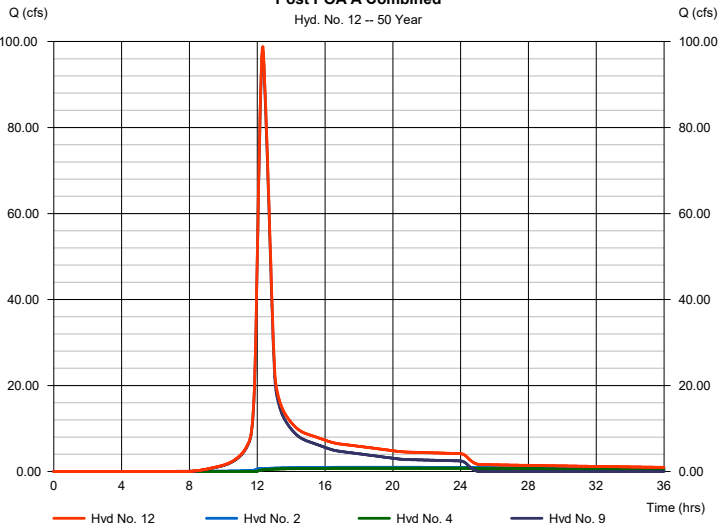
Hyd. No. 12

Post POA A Combined

Hydrograph type	=	Combine	Peak discharge	=	98.78 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	720,259 cuft
Inflow hyds.	=	2, 4, 9	Contrib. drain. area	=	44.500 ac

Post POA A Combined

Hyd. No. 12 -- 50 Year



Hydrograph Report

97

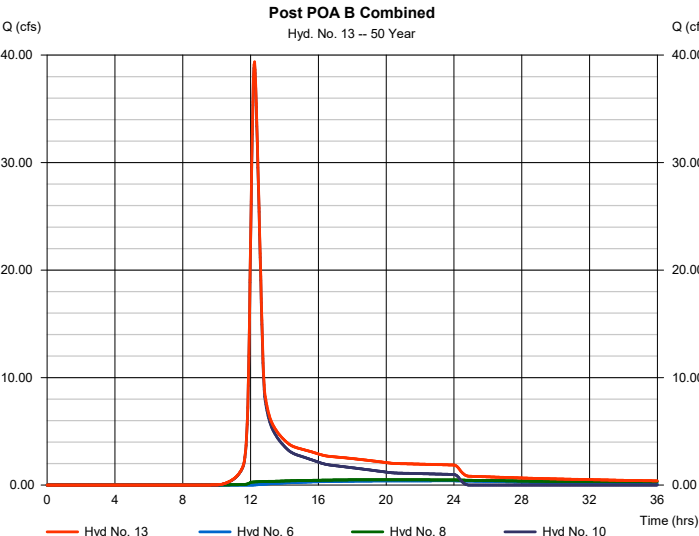
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 13

Post POA B Combined

Hydrograph type	= Combine	Peak discharge	= 39.38 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 271,149 cuft
Inflow hyds.	= 6, 8, 10	Contrib. drain. area	= 20.700 ac



Hydrograph Summary Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	98.49	2	716	217,590	-----	-----	-----	Post DA Basin 1
2	Reservoir	1.197	2	1108	182,449	1	566.60	170,808	Basin 1
3	SCS Runoff	128.97	2	716	262,037	-----	-----	-----	Post DA Basin 2
4	Reservoir	0.987	2	1182	94,140	3	569.34	200,190	Basin 2
5	SCS Runoff	385.95	2	716	825,659	-----	-----	-----	Post DA Basin 3
6	Reservoir	0.645	2	1440	56,528	5	546.72	691,949	Basin 3
7	SCS Runoff	51.30	2	716	105,767	-----	-----	-----	Post DA Basin 4
8	Reservoir	0.736	2	1082	90,095	7	539.44	79,556	Basin 4
9	SCS Runoff	120.03	2	740	619,374	-----	-----	-----	Post POA A Bypass
10	SCS Runoff	50.21	2	734	220,453	-----	-----	-----	Post POA B Bypass
11	SCS Runoff	28.29	2	734	125,222	-----	-----	-----	Post POA C Bypass
12	Combine	121.60	2	740	895,963	2, 4, 9,	-----	-----	Post POA A Combined
13	Combine	50.76	2	734	367,076	6, 8, 10,	-----	-----	Post POA B Combined

Post_Dev_Hydrographs.gpw Return Period: 100 Year Tuesday, 07 / 7 / 2026

Hydrograph Report

99

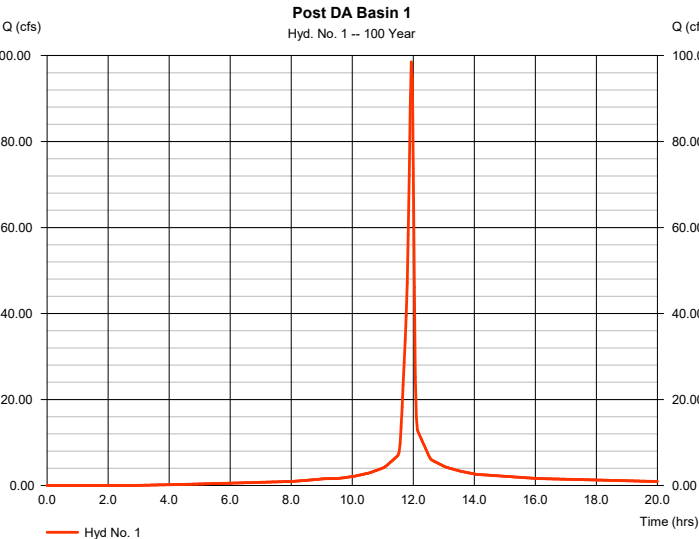
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 1

Post DA Basin 1

Hydrograph type	= SCS Runoff	Peak discharge	= 98.49 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 217,590 cuft
Drainage area	= 11.780 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

100

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

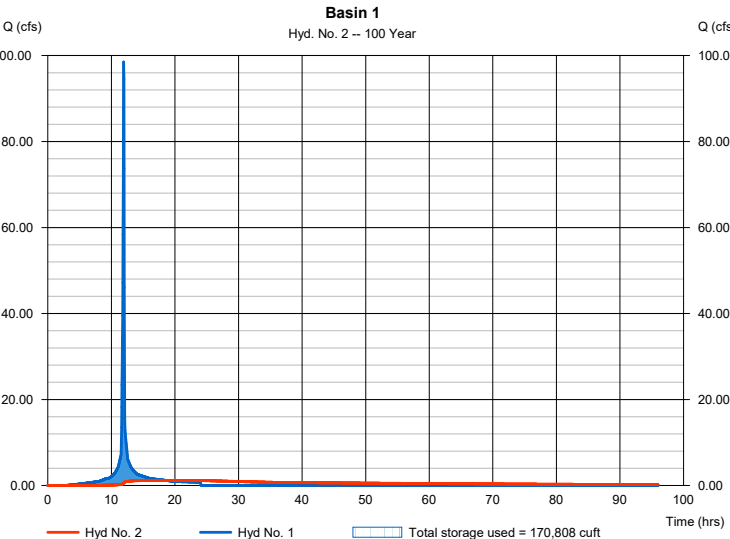
Tuesday, 07 / 7 / 2026

Hyd. No. 2

Basin 1

Hydrograph type	= Reservoir	Peak discharge	= 1.197 cfs
Storm frequency	= 100 yrs	Time to peak	= 18.47 hrs
Time interval	= 2 min	Hyd. volume	= 182,449 cuft
Inflow hyd. No.	= 1 - Post DA Basin 1	Max. Elevation	= 566.60 ft
Reservoir name	= Basin 1	Max. Storage	= 170,808 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

101

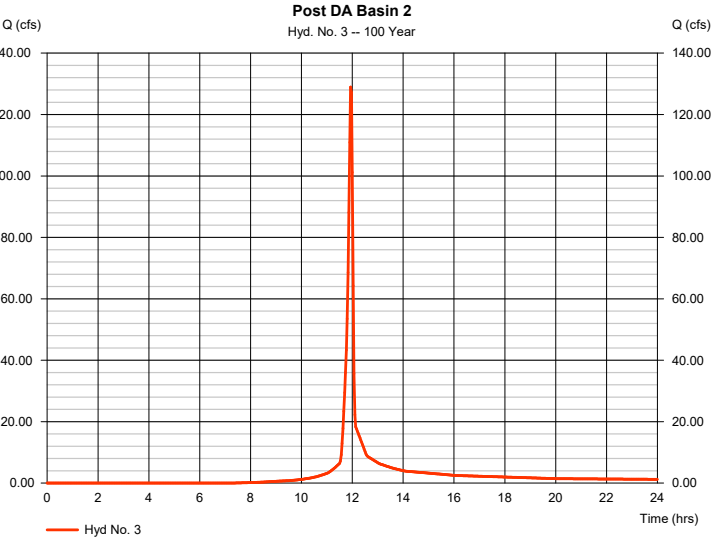
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 3

Post DA Basin 2

Hydrograph type	= SCS Runoff	Peak discharge	= 128.97 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 262,037 cuft
Drainage area	= 20.840 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

102

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

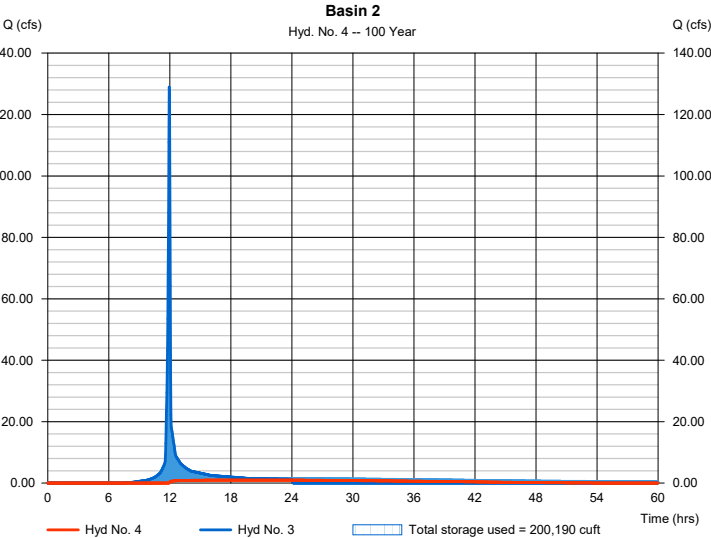
Tuesday, 07 / 7 / 2026

Hyd. No. 4

Basin 2

Hydrograph type	= Reservoir	Peak discharge	= 0.987 cfs
Storm frequency	= 100 yrs	Time to peak	= 19.70 hrs
Time interval	= 2 min	Hyd. volume	= 94,140 cuft
Inflow hyd. No.	= 3 - Post DA Basin 2	Max. Elevation	= 569.34 ft
Reservoir name	= Basin 2	Max. Storage	= 200,190 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

103

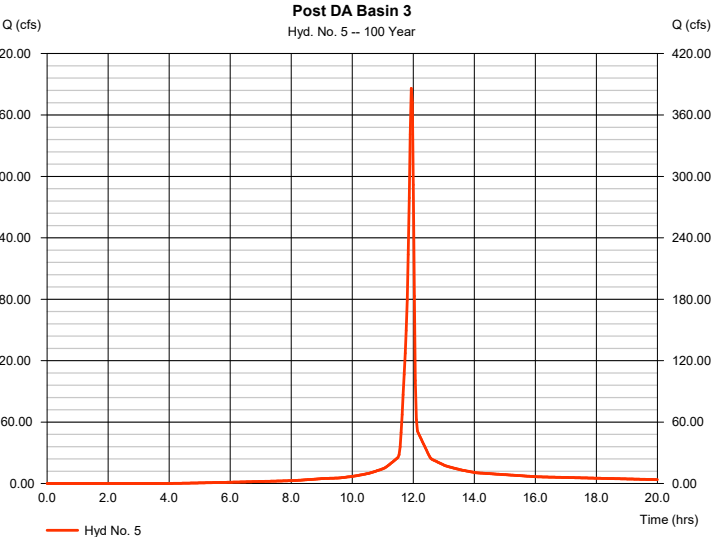
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 5

Post DA Basin 3

Hydrograph type	= SCS Runoff	Peak discharge	= 385.95 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 825,659 cuft
Drainage area	= 48.740 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

104

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

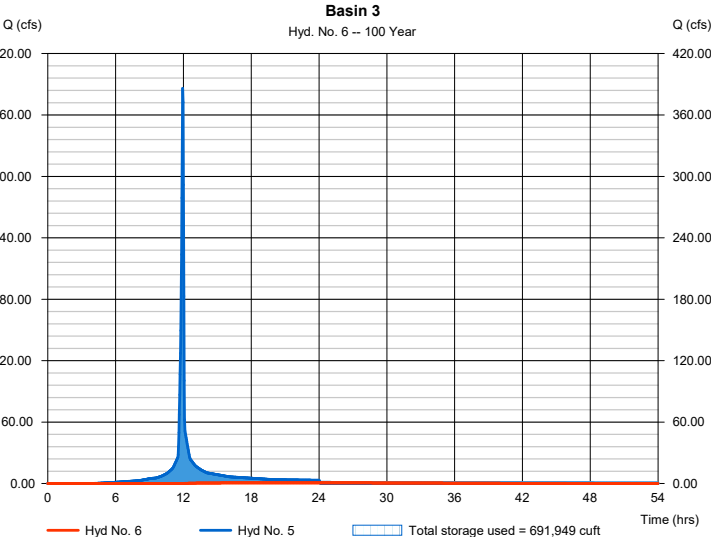
Tuesday, 07 / 7 / 2026

Hyd. No. 6

Basin 3

Hydrograph type	= Reservoir	Peak discharge	= 0.645 cfs
Storm frequency	= 100 yrs	Time to peak	= 24.00 hrs
Time interval	= 2 min	Hyd. volume	= 56,528 cuft
Inflow hyd. No.	= 5 - Post DA Basin 3	Max. Elevation	= 546.72 ft
Reservoir name	= Basin 3	Max. Storage	= 691,949 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

105

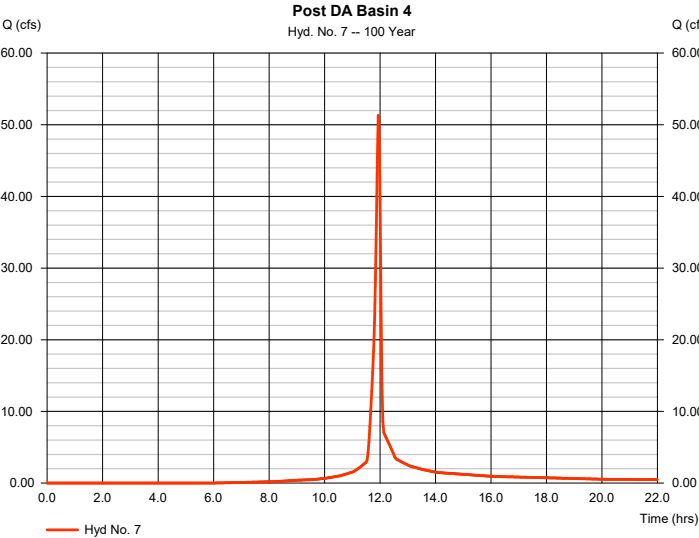
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 7

Post DA Basin 4

Hydrograph type	=	SCS Runoff	Peak discharge	=	51.30 cfs
Storm frequency	=	100 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	105,767 cuft
Drainage area	=	7.370 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.48 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

106

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

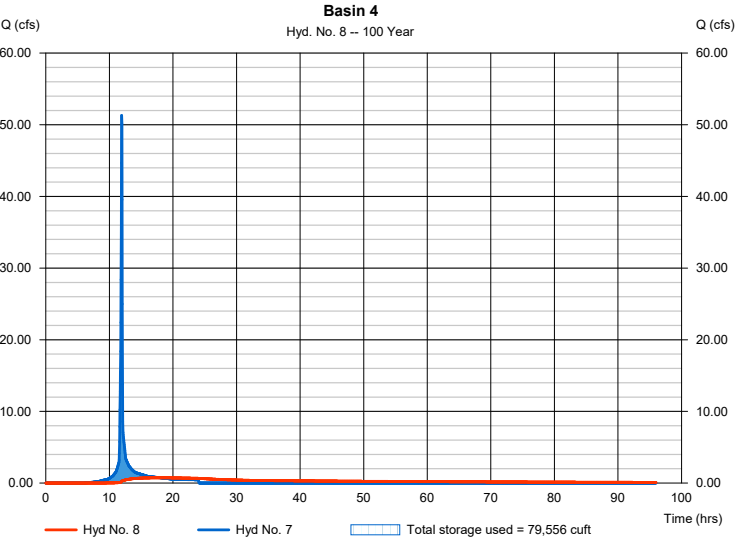
Tuesday, 07 / 7 / 2026

Hyd. No. 8

Basin 4

Hydrograph type	=	Reservoir	Peak discharge	=	0.736 cfs
Storm frequency	=	100 yrs	Time to peak	=	18.03 hrs
Time interval	=	2 min	Hyd. volume	=	90,095 cuft
Inflow hyd. No.	=	7 - Post DA Basin 4	Max. Elevation	=	539.44 ft
Reservoir name	=	Basin 4	Max. Storage	=	79,556 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

107

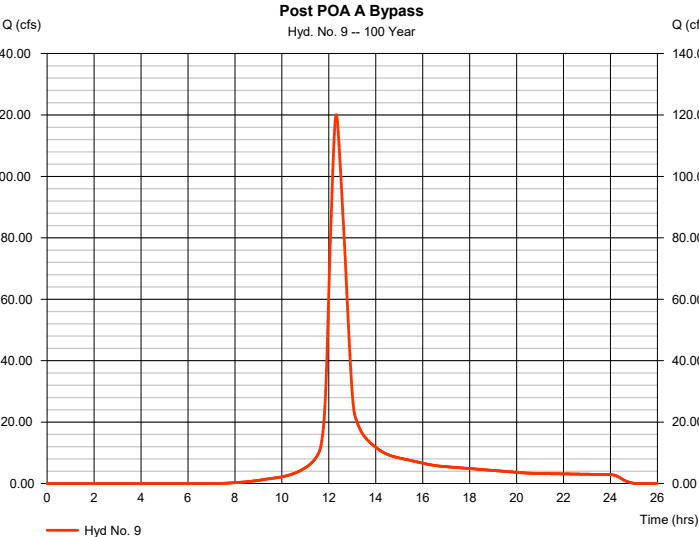
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 9

Post POA A Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	120.03 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	619,374 cuft
Drainage area	=	44.500 ac	Curve number	=	76
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	41.31 min
Total precip.	=	6.48 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

108

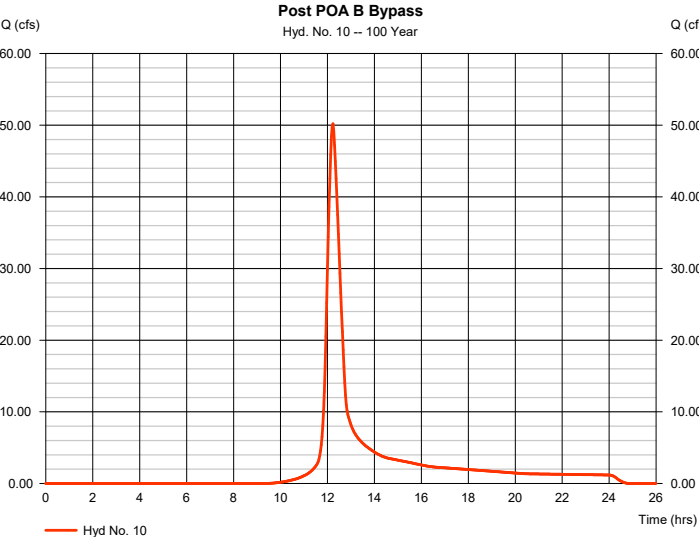
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 07 / 7 / 2026

Hyd. No. 10

Post POA B Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	50.21 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.23 hrs
Time interval	=	2 min	Hyd. volume	=	220,453 cuft
Drainage area	=	20.700 ac	Curve number	=	67
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	30.30 min
Total precip.	=	6.48 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



109

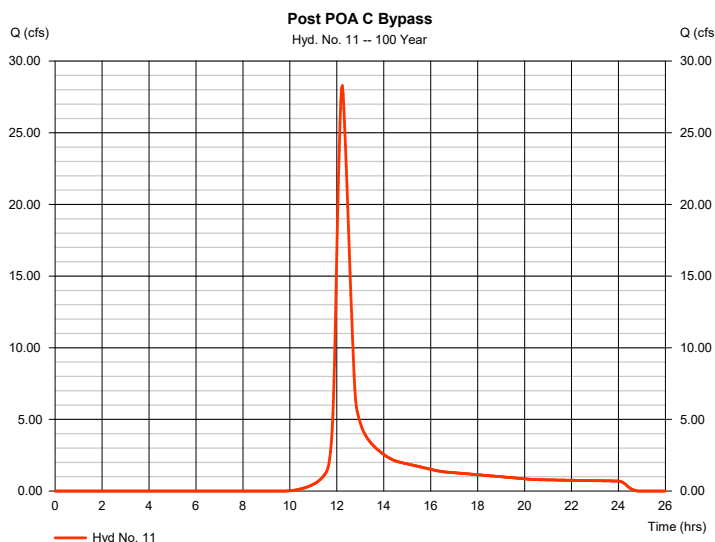
Tuesday, 07 / 7 / 2026

Hvd. No. 11

Post POA C Bypass

Hydrograph type	=	SCS Runoff
Storm frequency	=	100 yrs
Time interval	=	2 min
Drainage area	=	12,590 ac
Basin Slope	=	0.0 %
Tc method	=	TR55
Total precip.	=	6.48 in
Storm duration	=	24 hrs

Peak discharge = 28.29 cfs
Time to peak = 12.23 hrs
Hyd. volume = 125,222 cuft
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 31.53 min
Distribution = Type II
Shape factor = 484



111

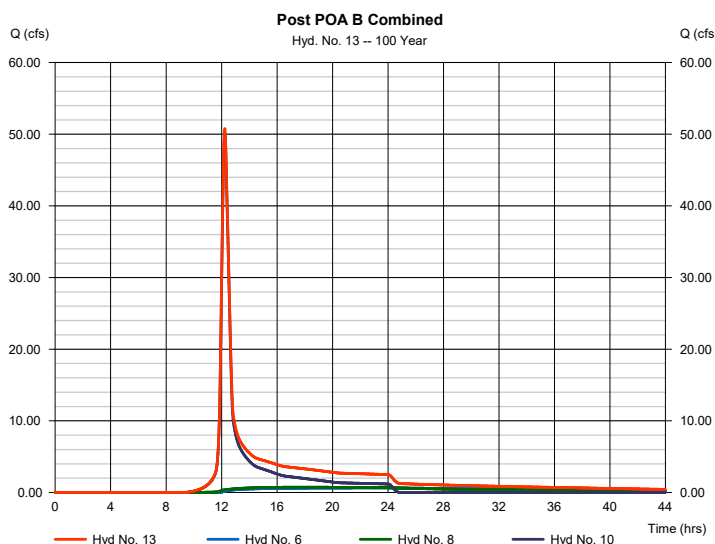
Tuesday, 07 / 7 / 2026

Hyd. No. 13

Post POA B Combined

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 2 min
Inflow hvds. = 6, 8, 10

Peak discharge = 50.76 cfs
Time to peak = 12.23 hrs
Hyd. volume = 367,076 cuft
Contrib. drain. area = 20,700 ac



110

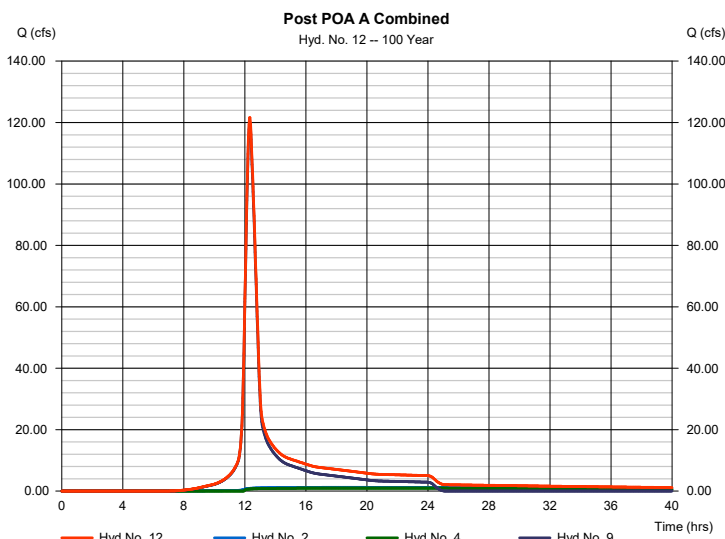
Tuesday, 07 / 7 / 2026

Hvd. No. 12

Post POA A Combined

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 2 min
Inflow hyds. = 2, 4, 9

Peak discharge = 121.60 cfs
Time to peak = 12.33 hrs
Hyd. volume = 895,963 cuft
Contrib. drain. area = 44.500 ac



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Tuesday, 07 / 7 / 2026

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	44.5787	10.1000	0.8865	-----
2	50.7169	10.0000	0.8698	-----
3	0.0000	0.0000	0.0000	-----
5	52.0794	9.3000	0.8217	-----
10	52.4929	8.7000	0.7884	-----
25	48.0803	7.2000	0.7277	-----
50	47.2198	6.5000	0.6954	-----
100	44.9538	5.6000	0.6576	-----

File name: Granville.idf

$$\text{Intensity} = B / (T_c + D)^E$$

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.02	3.12	2.56	2.18	1.90	1.69	1.52	1.39	1.28	1.18	1.10	1.03
2	4.81	3.75	3.09	2.63	2.30	2.05	1.85	1.69	1.55	1.44	1.34	1.26
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	5.85	4.57	3.79	3.25	2.85	2.55	2.31	2.12	1.96	1.82	1.70	1.60
10	6.67	5.22	4.33	3.72	3.28	2.94	2.67	2.45	2.27	2.12	1.98	1.87
25	7.79	6.07	5.04	4.35	3.84	3.46	3.16	2.91	2.70	2.53	2.38	2.25
50	8.64	6.72	5.59	4.84	4.29	3.87	3.54	3.27	3.05	2.86	2.69	2.55
100	9.52	7.38	6.15	5.33	4.74	4.29	3.93	3.65	3.40	3.20	3.02	2.87

Tc = time in minutes. Values may exceed 60

\\8 Stone Canyon Capital Partners\02 Datacenter Dev Prospects\00 Development Sites\57 Granville\Calcs\Granville.pcp

[illegible]



WEIGHTED CN - PRE DEVELOPMENT

PROJECT INFORMATION

Name:	GRANVILLE DC	Date:	6/29/2026
Number:	1258-57	Prepared By:	TDW
Location:	GRANVILLE TOWNSHIP, MIFFLIN COUNTY	Reviewed By:	CMJ

PRE DEVELOPMENT DRAINAGE AREA - POA D

Land Use	Soil Group	CN	Area SqFt	Area Ac	A*CN
Meadow	B	58	2,131,391	48.930	2,837.9400
Meadow	D	78	283,397	6.506	507.4606
Woods	D	77	392,436	9.009	693.7006
Woods	B	55	41,818	0.960	52.8000
Impervious	D	98	24,233	0.556	54.5183
TOTAL			2,873,275	65.96	4,146.420

Weighted CN = 63

PRE DEVELOPMENT DRAINAGE AREA - POA E

Land Use	Soil Group	CN	Area SqFt	Area Ac	A*CN
Meadow	B	58	713,077	16.370	949.4600
Woods	B	55	77,438	1.778	97.7749
TOTAL			790,515	18.15	1,047.235

Weighted CN = 58



WEIGHTED CN - POST DEVELOPMENT

PROJECT INFORMATION

Name:	GRANVILLE DC	Date:	6/29/2026
Number:	1258-57	Prepared By:	TDW
Location:	GRANVILLE TOWNSHIP, MIFFLIN COUNTY	Reviewed By:	CMJ

POST DEVELOPMENT DRAINAGE AREA - BASIN 5

Land Use	Soil Group	CN	Area SqFt	Area Ac	A*CN
Open Space	B	61	222,010	5.097	310.8955
Impervious	D	98	517,740	11.886	1,164.7961
TOTAL			739,750	16.98	1,475.692
Weighted CN =		87			

POST DEVELOPMENT DRAINAGE AREA - BASIN 6

Land Use	Soil Group	CN	Area SqFt	Area Ac	A*CN
Open Space	B	61	223,525	5.131	313.0171
Impervious	D	98	46,456	1.066	104.5153
TOTAL			269,981	6.20	417.532
Weighted CN =		67			



WEIGHTED CN - POST DEVELOPMENT

PROJECT INFORMATION

Name:	GRANVILLE DC	Date:	6/29/2026
Number:	1258-57	Prepared By:	TDW
Location:	GRANVILLE TOWNSHIP, MIFFLIN COUNTY	Reviewed By:	CMJ

POST DEVELOPMENT DRAINAGE AREA - UNDETAINED POA D

Land Use	Soil Group	CN	Area SqFt	Area	A*CN
				Ac	
Open Space	B	61	205,168	4.710	287.3100
Open Space	D	80	22,651	0.520	41.6000
Meadow	B	58	1,254,964	28.810	1,670.9800
Meadow	D	78	238,709	5.480	427.4400
Woods	B	55	99,317	2.280	125.4000
Woods	D	77	371,131	8.520	656.0400
Impervious	D	98	73,838	1.695	166.1181
TOTAL			2,265,777	52.02	3,374.888
Weighted CN =		65			

POST DEVELOPMENT DRAINAGE AREA - UNDETAINED POA E

Land Use	Soil Group	CN	Area SqFt	Area	A*CN
				Ac	
Open Space	B	61	105,415	2.420	147.6200
Meadow	B	58	198,198	4.550	263.9000
Woods	B	55	74,923	1.720	94.6000
TOTAL			378,536	8.69	506.120
Weighted CN =		58			

Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

1

2

Legend

Hyd.	Origin	Description
1	SCS Runoff	POA D
2	SCS Runoff	POA E

Project: Pre_Dev_Hydrographs_Site_2.gpw

Wednesday, 07 / 1 / 2026

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	-----	27.87	54.17	-----	99.95	143.75	213.60	277.52	352.30	POA D
2	SCS Runoff	-----	0.319	1.383	-----	4.559	8.489	15.71	22.96	31.72	POA E

Proj. file: Pre_Dev_Hydrographs_Site_2.gpw

Wednesday, 07 / 1 / 2026

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	27.87	2	730	140,590	-----	-----	-----	POA D
2	SCS Runoff	0.319	2	758	6,579	-----	-----	-----	POA E

Pre_Dev_Hydrographs_Site_2.gpw

Return Period: 1 Year

Wednesday, 07 / 1 / 2026

Hydrograph Report

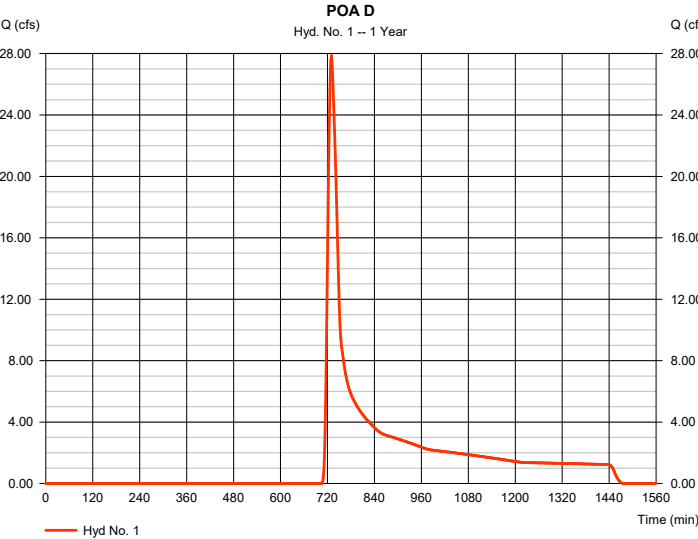
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 1

POA D

Hydrograph type	=	SCS Runoff	Peak discharge	=	27.87 cfs
Storm frequency	=	1 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	140,590 cuft
Drainage area	=	107.380 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	20.50 min
Total precip.	=	2.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No. 1

POA D

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 150.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.83	0.00	0.00	
Land slope (%)	= 2.50	0.00	0.00	
Travel Time (min)	= 19.20	+ 0.00	+ 0.00	= 19.20
Shallow Concentrated Flow				
Flow length (ft)	= 167.33	151.91	0.00	
Watercourse slope (%)	= 7.20	39.60	0.00	
Surface description	= Unpaved	Unpaved	Paved	
Average velocity (ft/s)	=4.33	10.15	0.00	
Travel Time (min)	= 0.64	+ 0.25	+ 0.00	= 0.89
Channel Flow				
X sectional flow area (sqft)	= 294.00	0.00	0.00	
Wetted perimeter (ft)	= 18.00	0.00	0.00	
Channel slope (%)	= 1.20	0.00	0.00	
Manning's n-value	= 0.025	0.025	0.015	
Velocity (ft/s)	=42.42			
		0.00	0.00	
Flow length (ft)	{{0}}1160.5	0.0	0.0	
Travel Time (min)	= 0.46	+ 0.00	+ 0.00	= 0.46
Total Travel Time, Tc				20.50 min

Hydrograph Report

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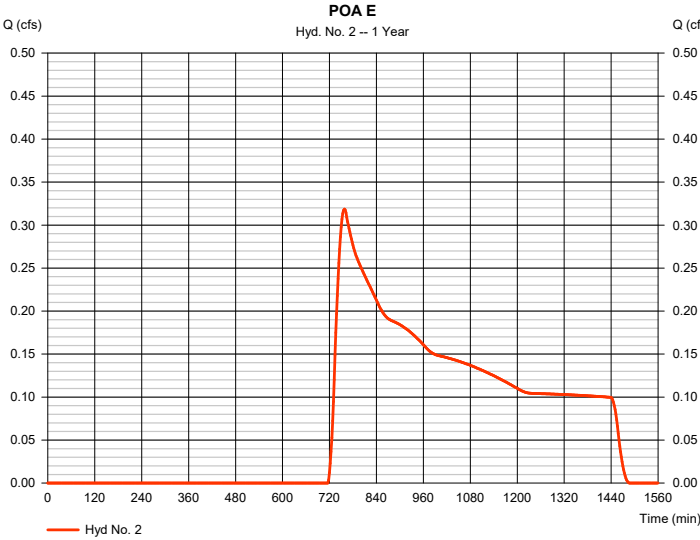
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 2

POA E

Hydrograph type	= SCS Runoff	Peak discharge	= 0.319 cfs
Storm frequency	= 1 yrs	Time to peak	= 758 min
Time interval	= 2 min	Hyd. volume	= 6,579 cuft
Drainage area	= 18.150 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 27.50 min
Total precip.	= 2.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No. 2

POA E

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 150.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.83	0.00	0.00	
Land slope (%)	= 2.00	0.00	0.00	
Travel Time (min)	= 20.99	+ 0.00	+ 0.00	= 20.99
Shallow Concentrated Flow				
Flow length (ft)	= 715.90	746.54	0.00	
Watercourse slope (%)	= 3.80	8.20	0.00	
Surface description	= Unpaved	Unpaved	Paved	
Average velocity (ft/s)	=3.15	4.62	0.00	
Travel Time (min)	= 3.79	+ 2.69	+ 0.00	= 6.49
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.025	0.015	0.015	
Velocity (ft/s)	=0.00			
		0.00	0.00	
Flow length (ft)	{{0}}0.0	0.0	0.0	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				27.50 min

Hydrograph Summary Report

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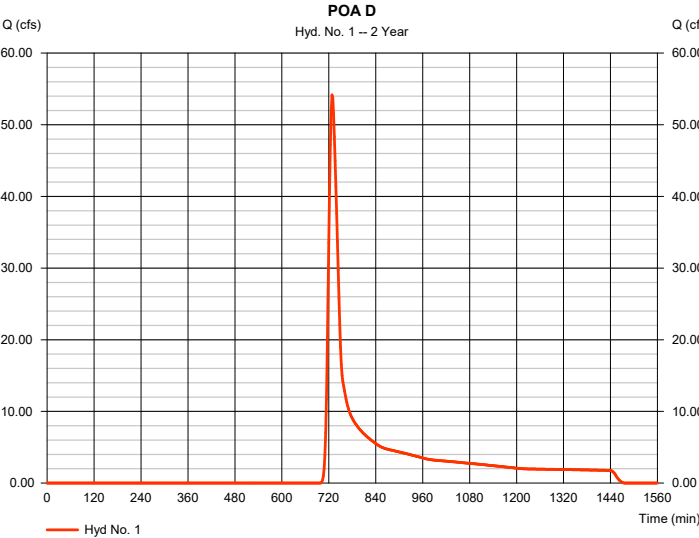
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	54.17	2	728	230,386	-----	-----	-----	POA D
2	SCS Runoff	1.383	2	742	14,586	-----	-----	-----	POA E
Pre_Dev_Hydrographs_Site_2.gpw						Return Period: 2 Year		Wednesday, 07 / 1 / 2026	

Hydrograph Report

Hyd. No. 1

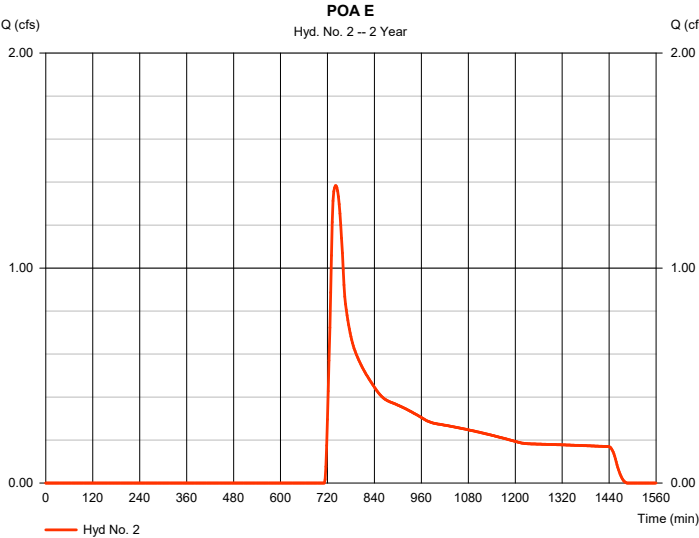
POA D			
Hydrograph type	= SCS Runoff	Peak discharge	= 54.17 cfs
Storm frequency	= 2 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 230,386 cuft
Drainage area	= 107.380 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.50 min
Total precip.	= 2.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hyd. No. 2

POA E			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.383 cfs
Storm frequency	= 2 yrs	Time to peak	= 742 min
Time interval	= 2 min	Hyd. volume	= 14,586 cuft
Drainage area	= 18.150 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 27.50 min
Total precip.	= 2.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	99.95	2	728	380,857	-----	-----	-----	POA D
2	SCS Runoff	4.559	2	734	30,085	-----	-----	-----	POA E

Pre_Dev_Hydrographs_Site_2.gpw

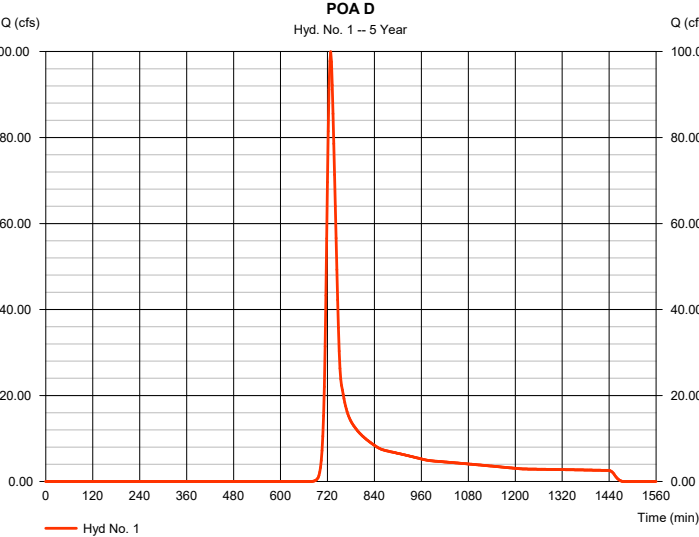
Return Period: 5 Year

Wednesday, 07 / 1 / 2026

Hydrograph Report

Hyd. No. 1

POA D			
Hydrograph type	= SCS Runoff	Peak discharge	= 99.95 cfs
Storm frequency	= 5 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 380,857 cuft
Drainage area	= 107.380 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.50 min
Total precip.	= 3.51 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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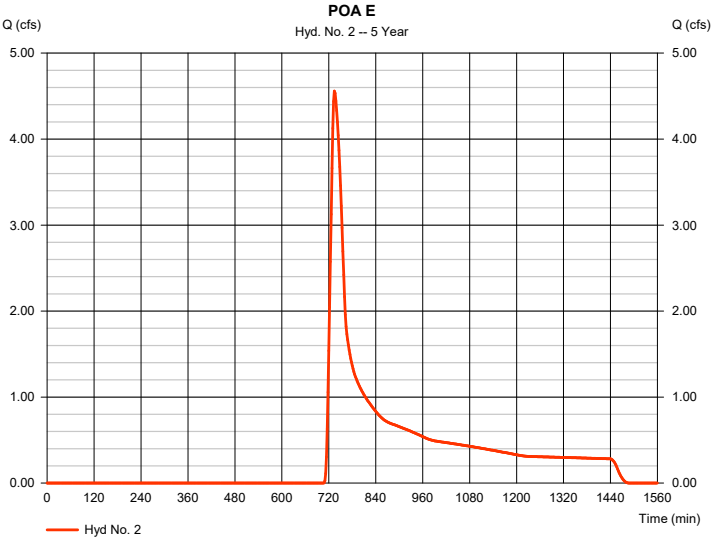
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 2

POA E

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.559 cfs
Storm frequency	=	5 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	30,085 cuft
Drainage area	=	18.150 ac	Curve number	=	58
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	27.50 min
Total precip.	=	3.51 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	143.75	2	728	525,888	-----	-----	-----	POA D
2	SCS Runoff	8.489	2	734	46,523	-----	-----	-----	POA E
Pre_Dev_Hydrographs_Site_2.gpw					Return Period: 10 Year			Wednesday, 07 / 1 / 2026	

Hydrograph Report

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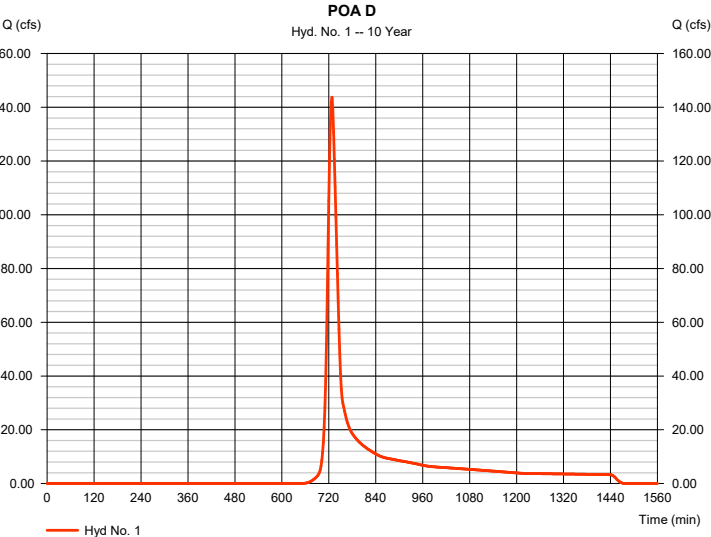
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 1

POA D

Hydrograph type	=	SCS Runoff	Peak discharge	=	143.75 cfs
Storm frequency	=	10 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	525,888 cuft
Drainage area	=	107.380 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	20.50 min
Total precip.	=	4.09 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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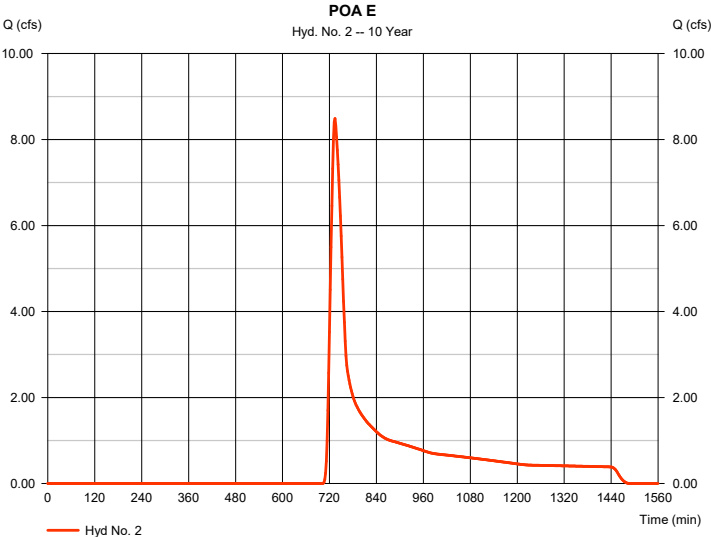
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 2

POA E

Hydrograph type	=	SCS Runoff	Peak discharge	=	8.489 cfs
Storm frequency	=	10 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	46,523 cuft
Drainage area	=	18.150 ac	Curve number	=	58
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	27.50 min
Total precip.	=	4.09 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	213.60	2	728	759,325	-----	-----	-----	POA D
2	SCS Runoff	15.71	2	732	74,839	-----	-----	-----	POA E

Pre_Dev_Hydrographs_Site_2.gpw

Return Period: 25 Year

Wednesday, 07 / 1 / 2026

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Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 1

POA D

Hydrograph type = SCS Runoff

Storm frequency = 25 yrs

Time interval = 2 min

Drainage area = 107.380 ac

Basin Slope = 0.0 %

Tc method = TR55

Total precip. = 4.94 in

Storm duration = 24 hrs

Peak discharge = 213.60 cfs

Time to peak = 728 min

Hyd. volume = 759,325 cuft

Curve number = 69

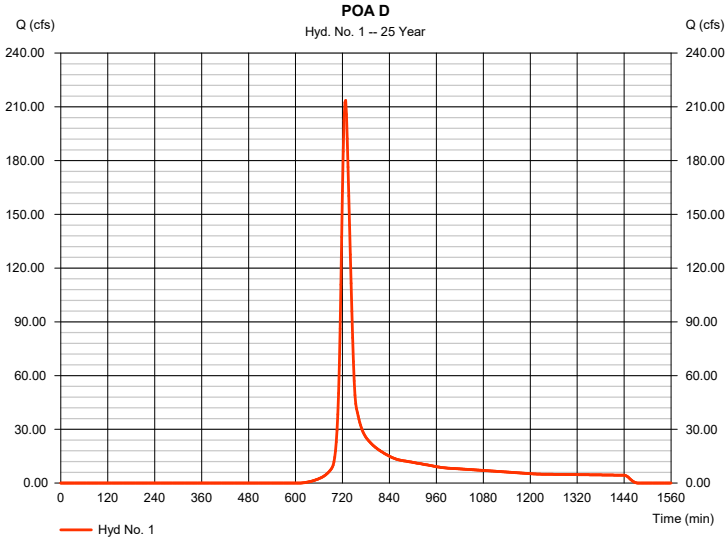
Hydraulic length = 0 ft

Time of conc. (Tc) = 20.50 min

Distribution = Type II

Shape factor = 484

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Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 2

POA E

Hydrograph type = SCS Runoff

Storm frequency = 25 yrs

Time interval = 2 min

Drainage area = 18.150 ac

Basin Slope = 0.0 %

Tc method = TR55

Total precip. = 4.94 in

Storm duration = 24 hrs

Peak discharge = 15.71 cfs

Time to peak = 732 min

Hyd. volume = 74,839 cuft

Curve number = 58

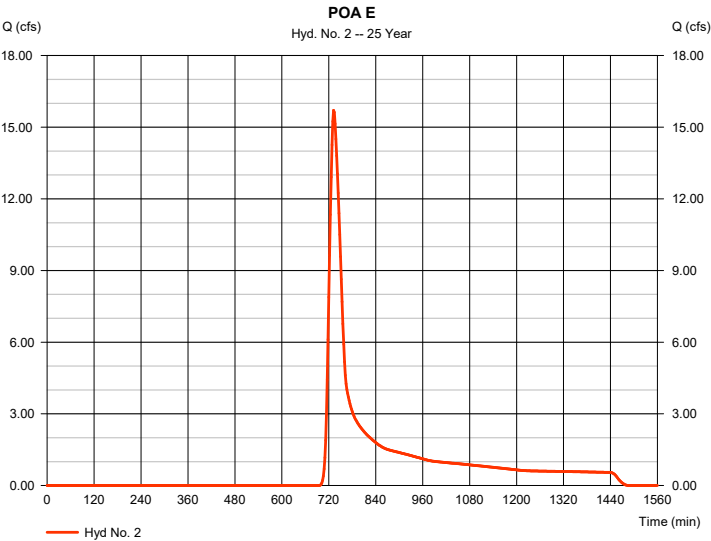
Hydraulic length = 0 ft

Time of conc. (Tc) = 27.50 min

Distribution = Type II

Shape factor = 484

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Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	277.52	2	728	975,010	-----	-----	-----	POA D
2	SCS Runoff	22.96	2	732	102,438	-----	-----	-----	POA E

Pre_Dev_Hydrographs_Site_2.gpw

Return Period: 50 Year

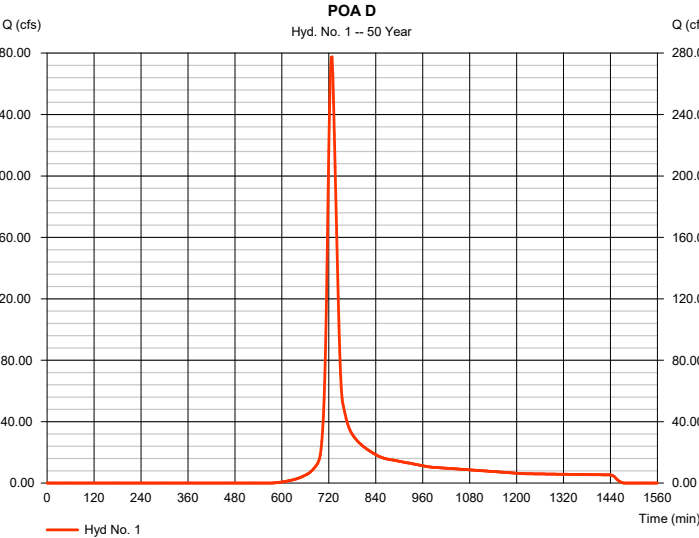
Wednesday, 07 / 1 / 2026

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Hydrograph Report

Hyd. No. 1

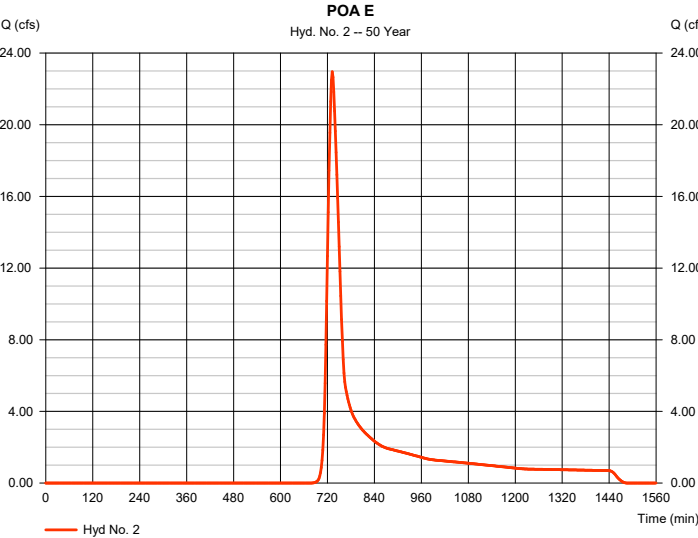
POA D			
Hydrograph type	= SCS Runoff	Peak discharge	= 277.52 cfs
Storm frequency	= 50 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 975,010 cuft
Drainage area	= 107.380 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.50 min
Total precip.	= 5.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hyd. No. 2

POA E			
Hydrograph type	= SCS Runoff	Peak discharge	= 22.96 cfs
Storm frequency	= 50 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 102,438 cuft
Drainage area	= 18.150 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 27.50 min
Total precip.	= 5.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	352.30	2	726	1,226,874	-----	-----	-----	POA D
2	SCS Runoff	31.72	2	732	135,914	-----	-----	-----	POA E

Pre_Dev_Hydrographs_Site_2.gpw

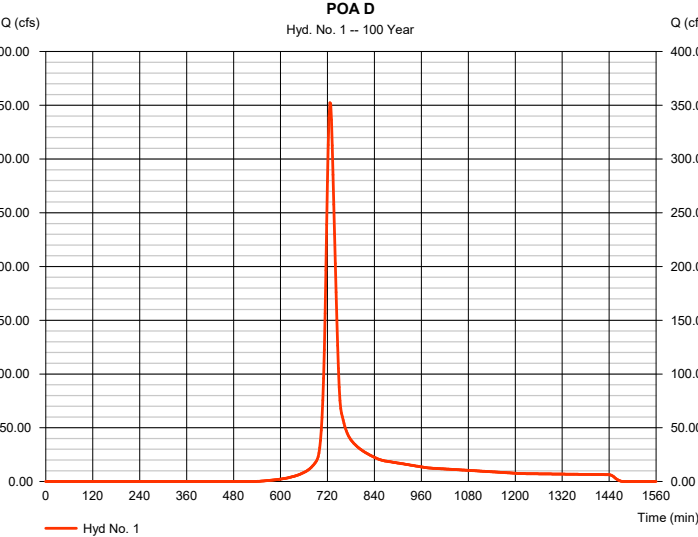
Return Period: 100 Year

Wednesday, 07 / 1 / 2026

Hydrograph Report

Hyd. No. 1

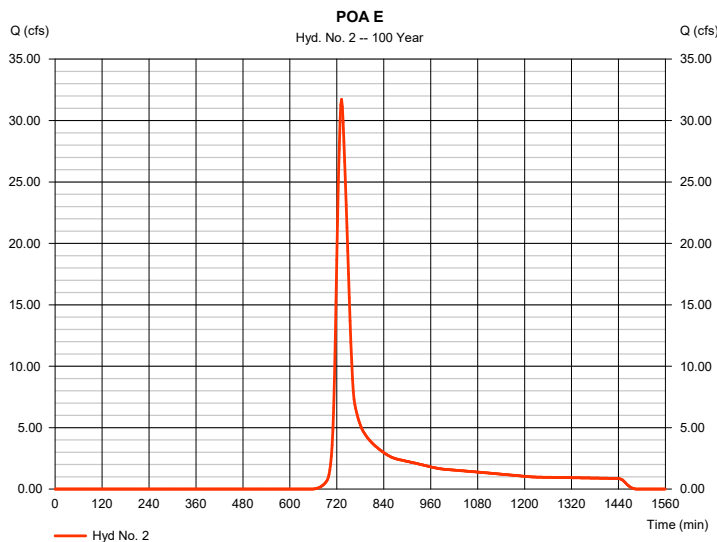
POA D			
Hydrograph type	= SCS Runoff	Peak discharge	= 352.30 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 1,226,874 cuft
Drainage area	= 107.380 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.50 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hvd. No. 2

POA E

Hydrograph type	= SCS Runoff	Peak discharge	= 31.72 cfs
Storm frequency	= 100 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 135,914 cuft
Drainage area	= 18.150 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 27.50 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	44.5787	10.1000	0.8865	-----
2	50.7169	10.0000	0.8698	-----
3	0.0000	0.0000	0.0000	-----
5	52.0794	9.3000	0.8217	-----
10	52.4929	8.7000	0.7884	-----
25	48.0803	7.2000	0.7277	-----
50	47.2198	6.5000	0.6954	-----
100	44.9538	5.6000	0.6576	-----

File name: Granville.idf

$$\text{Intensity} = B / (T_c + D)^E$$

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.02	3.12	2.56	2.18	1.90	1.69	1.52	1.39	1.28	1.18	1.10	1.03
2	4.81	3.75	3.09	2.63	2.30	2.05	1.85	1.69	1.55	1.44	1.34	1.26
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	5.85	4.57	3.79	3.25	2.85	2.55	2.31	2.12	1.96	1.82	1.70	1.60
10	6.67	5.22	4.33	3.72	3.28	2.94	2.67	2.45	2.27	2.12	1.98	1.87
25	7.79	6.07	5.04	4.35	3.84	3.46	3.16	2.91	2.70	2.53	2.38	2.25
50	8.64	6.72	5.59	4.84	4.29	3.87	3.54	3.27	3.05	2.86	2.69	2.55
100	9.52	7.38	6.15	5.33	4.74	4.29	3.93	3.65	3.40	3.20	3.02	2.87

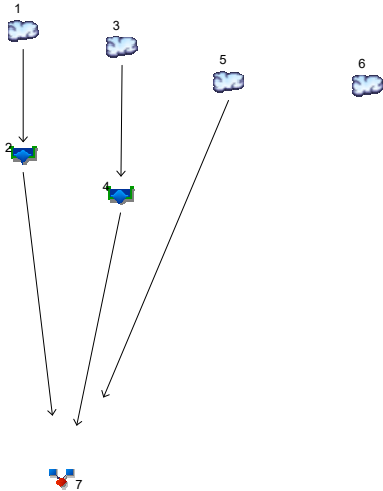
Tc = time in minutes. Values may exceed 60

\\8 Stone Canyon Capital Partners\02 Datacenter Dev Prospects\00 Development Sites\57 Granville\Calcs\Granville.pcr

[illegible]

Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025



Legend

Hyd. Origin	Description
1	SCS Runoff Post DA Basin 5
2	Reservoir Basin 5
3	SCS Runoff Post DA Basin 6
4	Reservoir Basin 6
5	SCS Runoff Post POA D Bypass
6	SCS Runoff Post POA E Bypass
7	Combine Post POA D Combined

Project: Post_Dev_Hydrographs_Site_2.gpw Wednesday, 07 / 1 / 2026

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	-----	33.94	45.31	-----	61.77	75.95	96.80	114.68	134.46	Post DA Basin 5
2	Reservoir	1	0.341	0.457	-----	0.624	0.897	1.231	1.445	1.629	Basin 5
3	SCS Runoff	-----	2.423	4.825	-----	8.792	12.57	18.58	24.07	30.40	Post DA Basin 6
4	Reservoir	3	0.031	0.053	-----	0.089	0.125	0.182	0.198	0.228	Basin 6
5	SCS Runoff	-----	6.834	16.50	-----	35.03	53.99	84.92	113.74	147.55	Post POA D Bypass
6	SCS Runoff	-----	0.157	0.933	-----	3.269	6.086	11.07	15.86	21.61	Post POA E Bypass
7	Combine	2, 4, 5,	7.061	16.82	-----	35.50	54.59	85.82	114.99	149.06	Post POA D Combined

Proj. file: Post_Dev_Hydrographs_Site_2.gpw Wednesday, 07 / 1 / 2026

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

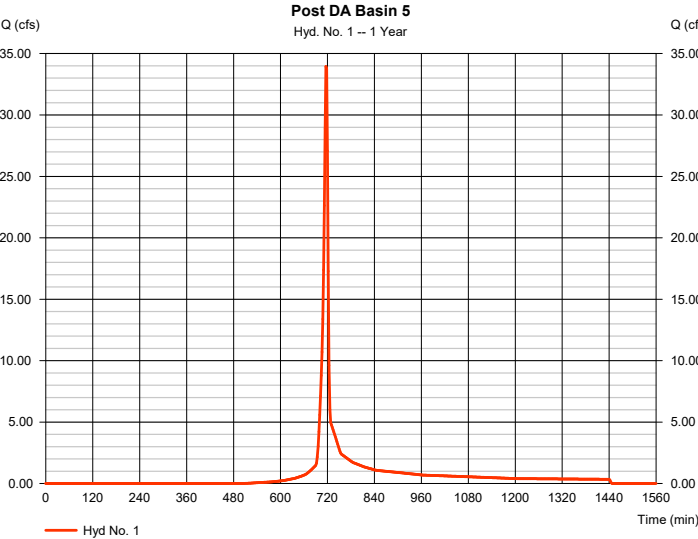
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	33.94	2	716	68,572	-----	-----	-----	Post DA Basin 5
2	Reservoir	0.341	2	1440	57,791	1	650.64	54,551	Basin 5
3	SCS Runoff	2.423	2	718	6,246	-----	-----	-----	Post DA Basin 6
4	Reservoir	0.031	2	1444	5,175	3	590.16	5,170	Basin 6
5	SCS Runoff	6.834	2	730	46,766	-----	-----	-----	Post POA D Bypass
6	SCS Runoff	0.157	2	746	3,071	-----	-----	-----	Post POA E Bypass
7	Combine	7.061	2	730	109,733	2, 4, 5,	-----	-----	Post POA D Combined

Post_Dev_Hydrographs_Site_2.gpw Return Period: 1 Year Wednesday, 07 / 1 / 2026

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025 Wednesday, 07 / 1 / 2026

Hyd. No. 1			
Post DA Basin 5			
Hydrograph type	= SCS Runoff	Peak discharge	= 33.94 cfs
Storm frequency	= 1 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 68,572 cuft
Drainage area	= 16,980 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

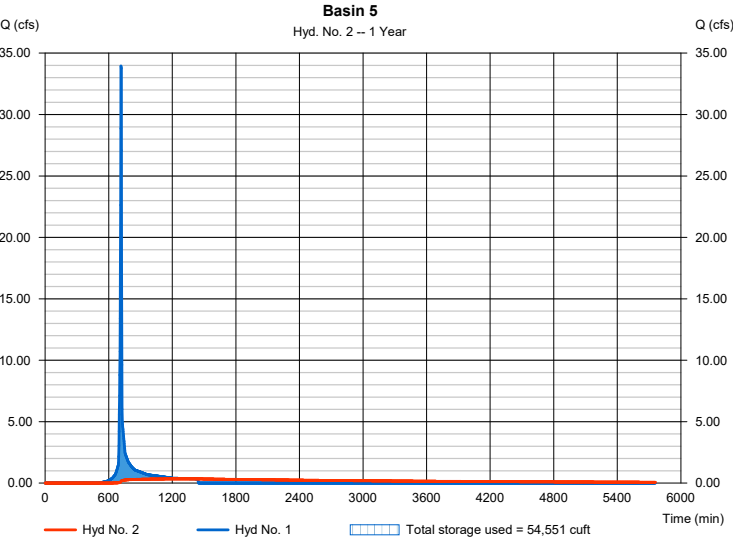
Wednesday, 07 / 1 / 2026

Hyd. No. 2

Basin 5

Hydrograph type	=	Reservoir	Peak discharge	=	0.341 cfs
Storm frequency	=	1 yrs	Time to peak	=	1440 min
Time interval	=	2 min	Hyd. volume	=	57,791 cuft
Inflow hyd. No.	=	1 - Post DA Basin 5	Max. Elevation	=	650.64 ft
Reservoir name	=	Basin 5	Max. Storage	=	54,551 cuft

Storage Indication method used. Outflow includes exfiltration.



Pond Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Pond No. 1 - Basin 5

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 650.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	650.00	78,410	0	0
1.00	651.00	92,110	85,160	85,160
2.00	652.00	106,875	98,903	184,062
3.00	653.00	119,700	112,706	296,768
4.00	654.00	133,575	126,562	423,329
5.00	655.00	147,510	140,471	563,800

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	6.00	0.00	0.00
Span (in)	= 18.00	6.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 650.00	651.00	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	100.00	0.00	0.00
Crest El. (ft)	= 653.00	653.50	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= 1	Broad	---	---
Multi-Stage	= Yes	No	No	No
Exfil. (in/hr)	= 0.250 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	650.00	0.00	0.00	---	---	0.00	0.00	---	---	0.000	---	0.000
0.10	8,516	650.10	0.00	0.00	---	---	0.00	0.00	---	---	0.053	---	0.053
0.20	17,032	650.20	0.00	0.00	---	---	0.00	0.00	---	---	0.107	---	0.107
0.30	25,548	650.30	0.00	0.00	---	---	0.00	0.00	---	---	0.160	---	0.160
0.40	34,064	650.40	0.00	0.00	---	---	0.00	0.00	---	---	0.213	---	0.213
0.50	42,580	650.50	0.00	0.00	---	---	0.00	0.00	---	---	0.267	---	0.267
0.60	51,096	650.60	0.00	0.00	---	---	0.00	0.00	---	---	0.320	---	0.320
0.70	59,612	650.70	0.00	0.00	---	---	0.00	0.00	---	---	0.373	---	0.373
0.80	68,128	650.80	0.00	0.00	---	---	0.00	0.00	---	---	0.426	---	0.426
0.90	76,644	650.90	0.00	0.00	---	---	0.00	0.00	---	---	0.480	---	0.480
1.00	85,160	651.00	0.00	0.00	---	---	0.00	0.00	---	---	0.533	---	0.533
1.10	93,676	651.10	0.03 ic	0.03 ic	---	---	0.00	0.00	---	---	0.541	---	0.572
1.20	102,192	651.20	0.12 ic	0.11 ic	---	---	0.00	0.00	---	---	0.549	---	0.683
1.30	110,708	651.30	0.23 ic	0.23 ic	---	---	0.00	0.00	---	---	0.557	---	0.787
1.40	119,224	651.40	0.36 ic	0.36 ic	---	---	0.00	0.00	---	---	0.565	---	0.928
1.50	127,740	651.50	0.49 ic	0.47 ic	---	---	0.00	0.00	---	---	0.573	---	1.046
1.60	136,256	651.60	0.58 ic	0.56 ic	---	---	0.00	0.00	---	---	0.581	---	1.140
1.70	144,772	651.70	0.65 ic	0.63 ic	---	---	0.00	0.00	---	---	0.589	---	1.223
1.80	153,288	651.80	0.72 ic	0.70 ic	---	---	0.00	0.00	---	---	0.597	---	1.298
1.90	161,804	651.90	0.76 ic	0.76 ic	---	---	0.00	0.00	---	---	0.605	---	1.367
2.00	170,320	652.00	0.84 ic	0.82 ic	---	---	0.00	0.00	---	---	0.613	---	1.431
2.10	178,836	652.10	0.88 ic	0.87 ic	---	---	0.00	0.00	---	---	0.621	---	1.492
2.20	187,352	652.20	0.93 ic	0.92 ic	---	---	0.00	0.00	---	---	0.629	---	1.550
2.30	195,868	652.30	0.97 ic	0.97 ic	---	---	0.00	0.00	---	---	0.637	---	1.605
2.40	204,384	652.40	1.02 ic	1.01 ic	---	---	0.00	0.00	---	---	0.645	---	1.658
2.50	212,900	652.50	1.06 ic	1.06 ic	---	---	0.00	0.00	---	---	0.653	---	1.710
2.60	221,416	652.60	1.11 ic	1.10 ic	---	---	0.00	0.00	---	---	0.661	---	1.759
2.70	229,932	652.70	1.16 ic	1.14 ic	---	---	0.00	0.00	---	---	0.669	---	1.807
2.80	238,448	652.80	1.21 ic	1.18 ic	---	---	0.00	0.00	---	---	0.677	---	1.854
2.90	246,964	652.90	1.21 ic	1.21 ic	---	---	0.00	0.00	---	---	0.685	---	1.899
3.00	255,480	653.00	1.26 ic	1.25 ic	---	---	0.00	0.00	---	---	0.693	---	1.943
3.10	264,000	653.10	1.28 ic	1.29 ic	---	---	1.26	0.00	---	---	0.701	---	3.250
3.20	272,520	653.20	1.32 ic	1.32 ic	---	---	3.57	0.00	---	---	0.709	---	5.602
3.30	281,040	653.30	1.36 ic	1.36 ic	---	---	6.56	0.00	---	---	0.717	---	8.469
3.40	289,560	653.40	1.40 ic	1.39 ic	---	---	10.11	0.00	---	---	0.725	---	11.75
3.50	298,080	653.50	1.44 ic	1.43 ic	---	---	12.78 s	0.00	---	---	0.733	---	14.02
3.60	306,600	653.60	1.48 ic	1.47 ic	---	---	13.46 s	8.20	---	---	0.741	---	22.82

Continues on next page...

Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 3

Post DA Basin 6

Hydrograph type	=	SCS Runoff	Peak discharge	=	2,423 cfs
Storm frequency	=	1 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	6,246 cuft
Drainage area	=	6.200 ac	Curve number	=	67
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

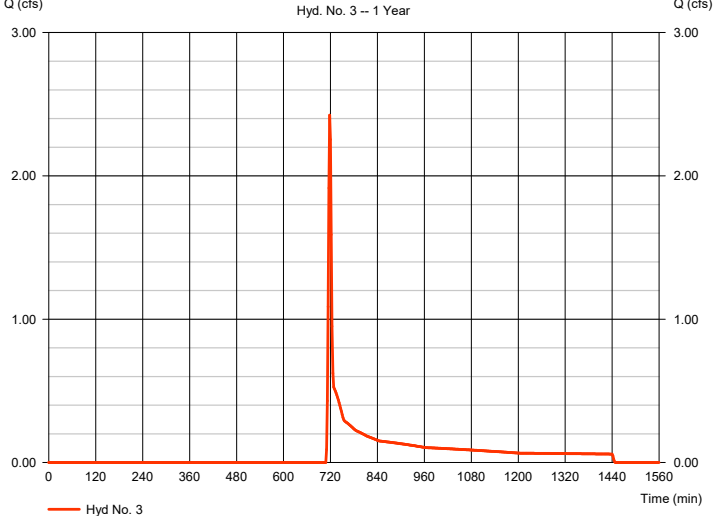
Basin 5

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.70	385,361	653.70	14.29 ic	0.34 ic	---	---	13.95 s	23.23	---	---	0.749	---	38.26
3.80	398,017	653.80	14.63 ic	0.29 ic	---	---	14.34 s	42.68	---	---	0.757	---	58.07
3.90	410,673	653.90	14.93 ic	0.25 ic	---	---	14.68 s	65.72	---	---	0.765	---	81.42
4.00	423,329	654.00	15.21 ic	0.22 ic	---	---	14.99 s	91.92	---	---	0.773	---	107.91
4.10	437,377	654.10	15.47 ic	0.19 ic	---	---	15.27 s	120.83	---	---	0.781	---	137.07
4.20	451,424	654.20	15.72 ic	0.17 ic	---	---	15.54 s	152.26	---	---	0.789	---	168.76
4.30	465,471	654.30	15.97 ic	0.16 ic	---	---	15.80 s	186.02	---	---	0.797	---	202.77
4.40	479,518	654.40	16.20 ic	0.15 ic	---	---	16.03 s	221.96	---	---	0.805	---	238.94
4.50	493,565	654.50	16.43 ic	0.13 ic	---	---	16.27 s	259.95	---	---	0.813	---	277.17
4.60	507,612	654.60	16.66 ic	0.12 ic	---	---	16.50 s	299.90	---	---	0.821	---	317.34
4.70	521,659	654.70	16.89 ic	0.12 ic	---	---	16.70 s	341.71	---	---	0.829	---	359.41
4.80	535,706	654.80	17.09 ic	0.11 ic	---	---	16.97 s	385.29	---	---	0.838	---	403.21
4.90	549,753	654.90	17.31 ic	0.10 ic	---	---	17.19 s	430.59	---	---	0.846	---	448.73
5.00	563,800	655.00	17.52 ic	0.10 ic	---	---	17.42 s	477.65	---	---	0.854	---	498.02

...End

Post DA Basin 6



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

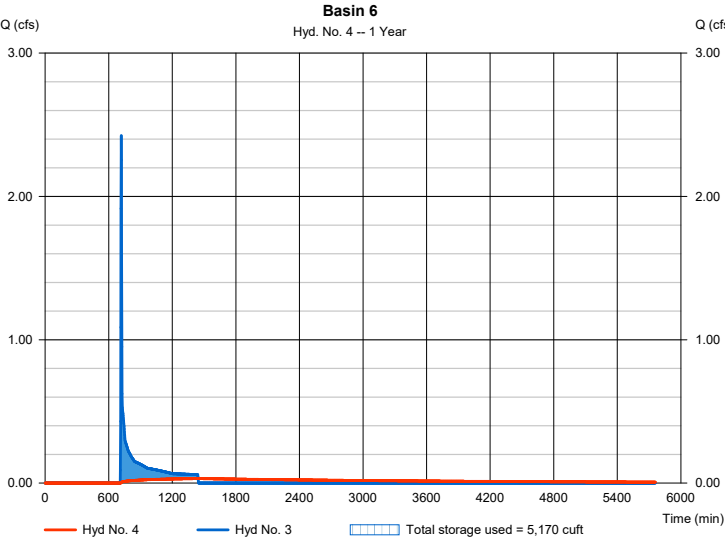
Wednesday, 07 / 1 / 2026

Hyd. No. 4

Basin 6

Hydrograph type	=	Reservoir	Peak discharge	=	0.031 cfs
Storm frequency	=	1 yrs	Time to peak	=	1444 min
Time interval	=	2 min	Hyd. volume	=	5,175 cuft
Inflow hyd. No.	=	3 - Post DA Basin 6	Max. Elevation	=	590.16 ft
Reservoir name	=	Basin 6	Max. Storage	=	5,170 cuft

Storage Indication method used. Outflow includes exfiltration.



Pond Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Pond No. 2 - Basin 6

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 590.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	590.00	30,300	0	0
1.00	591.00	33,500	31,883	31,883
2.00	592.00	36,800	35,134	67,017
3.00	593.00	40,155	38,462	105,479
4.00	594.00	43,570	41,847	147,325
5.00	595.00	47,030	45,284	192,610

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	6.00	0.00	0.00
Span (in)	= 18.00	6.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 590.00	591.50	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	100.00	0.00	0.00
Crest El. (ft)	= 593.00	593.50	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= 1	Broad	---	---
Multi-Stage	= Yes	No	No	No
Exfil. (in/hr)	= 0.250 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	590.00	0.00	0.00	---	---	0.00	0.00	---	---	0.000	---	0.000
0.10	3,188	590.10	0.00	0.00	---	---	0.00	0.00	---	---	0.019	---	0.019
0.20	6,377	590.20	0.00	0.00	---	---	0.00	0.00	---	---	0.039	---	0.039
0.30	9,565	590.30	0.00	0.00	---	---	0.00	0.00	---	---	0.058	---	0.058
0.40	12,753	590.40	0.00	0.00	---	---	0.00	0.00	---	---	0.078	---	0.078
0.50	15,942	590.50	0.00	0.00	---	---	0.00	0.00	---	---	0.097	---	0.097
0.60	19,130	590.60	0.00	0.00	---	---	0.00	0.00	---	---	0.116	---	0.116
0.70	22,318	590.70	0.00	0.00	---	---	0.00	0.00	---	---	0.136	---	0.136
0.80	25,507	590.80	0.00	0.00	---	---	0.00	0.00	---	---	0.155	---	0.155
0.90	28,695	590.90	0.00	0.00	---	---	0.00	0.00	---	---	0.174	---	0.174
1.00	31,883	591.00	0.00	0.00	---	---	0.00	0.00	---	---	0.194	---	0.194
1.10	35,071	591.10	0.00	0.00	---	---	0.00	0.00	---	---	0.196	---	0.196
1.20	38,260	591.20	0.00	0.00	---	---	0.00	0.00	---	---	0.198	---	0.198
1.30	41,448	591.30	0.00	0.00	---	---	0.00	0.00	---	---	0.200	---	0.200
1.40	44,637	591.40	0.00	0.00	---	---	0.00	0.00	---	---	0.202	---	0.202
1.50	47,825	591.50	0.00	0.00	---	---	0.00	0.00	---	---	0.203	---	0.203
1.60	51,014	591.60	0.03 ic	0.03 ic	---	---	0.00	0.00	---	---	0.205	---	0.237
1.70	54,202	591.70	0.12 ic	0.11 ic	---	---	0.00	0.00	---	---	0.207	---	0.321
1.80	57,391	591.80	0.23 ic	0.23 ic	---	---	0.00	0.00	---	---	0.209	---	0.439
1.90	60,579	591.90	0.36 ic	0.36 ic	---	---	0.00	0.00	---	---	0.211	---	0.574
2.00	63,768	592.00	0.49 ic	0.47 ic	---	---	0.00	0.00	---	---	0.213	---	0.686
2.10	66,956	592.10	0.58 ic	0.56 ic	---	---	0.00	0.00	---	---	0.215	---	0.774
2.20	70,145	592.20	0.65 ic	0.63 ic	---	---	0.00	0.00	---	---	0.217	---	0.851
2.30	73,333	592.30	0.72 ic	0.70 ic	---	---	0.00	0.00	---	---	0.219	---	0.920
2.40	76,522	592.40	0.76 ic	0.76 ic	---	---	0.00	0.00	---	---	0.221	---	0.983
2.50	79,710	592.50	0.84 ic	0.82 ic	---	---	0.00	0.00	---	---	0.223	---	1.041
2.60	82,899	592.60	0.88 ic	0.87 ic	---	---	0.00	0.00	---	---	0.225	---	1.096
2.70	86,087	592.70	0.93 ic	0.92 ic	---	---	0.00	0.00	---	---	0.227	---	1.148
2.80	89,276	592.80	0.97 ic	0.97 ic	---	---	0.00	0.00	---	---	0.228	---	1.197
2.90	92,464	592.90	1.02 ic	1.01 ic	---	---	0.00	0.00	---	---	0.230	---	1.244
3.00	95,653	593.00	1.06 ic	1.06 ic	---	---	0.00	0.00	---	---	0.232	---	1.289
3.10	98,841	593.10	1.10 ic	1.10 ic	---	---	1.26	0.00	---	---	0.234	---	2.596
3.20	102,030	593.20	1.14 ic	1.14 ic	---	---	3.57	0.00	---	---	0.236	---	4.949
3.30	105,218	593.30	1.18 ic	1.18 ic	---	---	6.56	0.00	---	---	0.238	---	7.979
3.40	108,407	593.40	1.13 oc	0.92 ic	---	---	12.10	0.00	---	---	0.240	---	11.27
3.50	111,595	593.50	0.53 ic	0.53 ic	---	---	12.76 s	0.00	---	---	0.242	---	13.53
3.60	114,784	593.60	0.41 ic	0.41 ic	---	---	13.46 s	8.21	---	---	0.244	---	22.33

Continues on next page...

Basin 6

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.70	134,771	593.70	14.29 ic	0.34 ic	---	---	13.95 s	23.23	---	---	0.246	---	37.76
3.80	138,956	593.80	14.63 ic	0.29 ic	---	---	14.35 s	42.68	---	---	0.248	---	57.56
3.90	143,141	593.90	14.93 ic	0.25 ic	---	---	14.69 s	65.72	---	---	0.250	---	80.90
4.00	147,325	594.00	15.21 ic	0.22 ic	---	---	14.99 s	91.92	---	---	0.252	---	107.38
4.10	151,509	594.10	15.47 ic	0.19 ic	---	---	15.27 s	120.83	---	---	0.254	---	136.55
4.20	155,693	594.20	15.72 ic	0.17 ic	---	---	15.54 s	152.28	---	---	0.256	---	168.25
4.30	160,877	594.30	15.97 ic	0.16 ic	---	---	15.79 s	186.02	---	---	0.258	---	202.22
4.40	165,439	594.40	16.20 ic	0.15 ic	---	---	16.04 s	221.96	---	---	0.260	---	238.40
4.50	169,967	594.50	16.43 ic	0.13 ic	---	---	16.29 s	259.95	---	---	0.262	---	276.64
4.60	174,496	594.60	16.66 ic	0.12 ic	---	---	16.52 s	299.92	---	---	0.264	---	316.84
4.70	179,024	594.70	16.89 ic	0.12 ic	---	---	16.76 s	341.71	---	---	0.266	---	358.84
4.80	183,553	594.80	17.09 ic	0.11 ic	---	---	16.97 s	385.29	---	---	0.268	---	402.64
4.90	188,081	594.90	17.31 ic	0.10 ic	---	---	17.19 s	430.59	---	---	0.270	---	448.16
5.00	192,610	595.00	17.52 ic	0.10 ic	---	---	17.42 s	477.65	---	---	0.272	---	495.44

...End

Hydrograph Report

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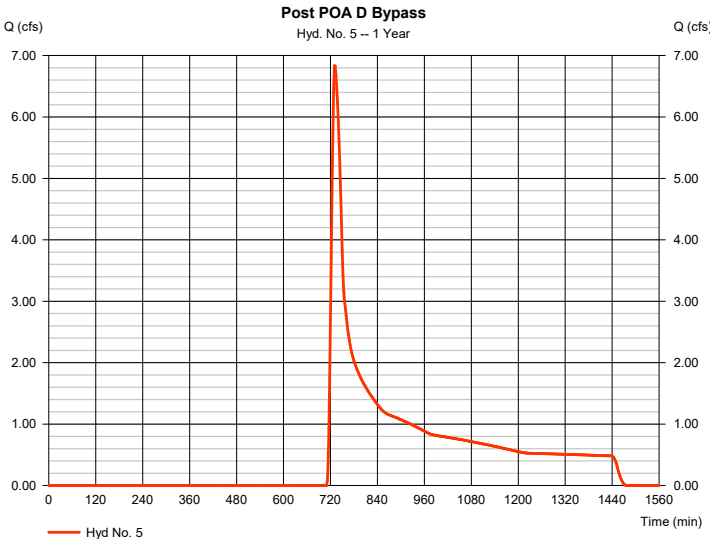
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 5

Post POA D Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.834 cfs
Storm frequency	=	1 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	46,766 cuft
Drainage area	=	52.020 ac	Curve number	=	65
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	20.50 min
Total precip.	=	2.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hyd. No. 5

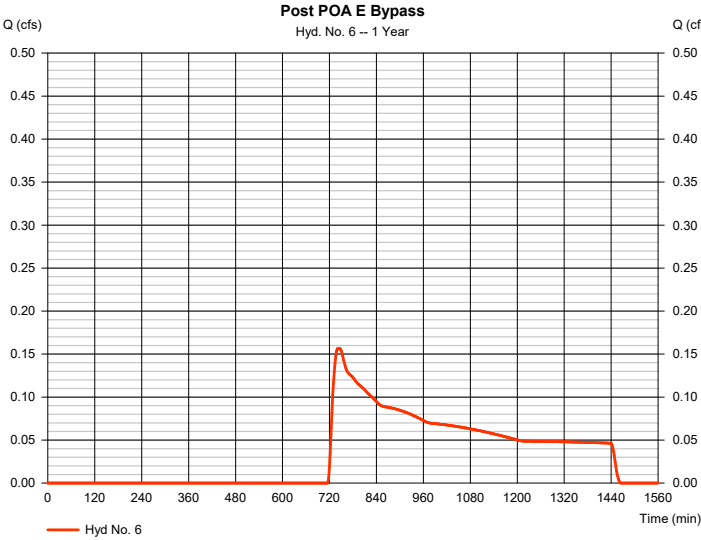
Post POA D Bypass

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 150.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.83	0.00	0.00	
Land slope (%)	= 2.50	0.00	0.00	
Travel Time (min)	= 19.20	+ 0.00	+ 0.00	= 19.20
Shallow Concentrated Flow				
Flow length (ft)	= 167.33	151.91	0.00	
Watercourse slope (%)	= 7.20	39.60	0.00	
Surface description	= Unpaved	Unpaved	Paved	
Average velocity (ft/s)	=4.33	10.15	0.00	
Travel Time (min)	= 0.64	+ 0.25	+ 0.00	= 0.89
Channel Flow				
X sectional flow area (sqft)	= 294.00	0.00	0.00	
Wetted perimeter (ft)	= 18.00	0.00	0.00	
Channel slope (%)	= 1.20	0.00	0.00	
Manning's n-value	= 0.025	0.015	0.015	
Velocity (ft/s)	=42.42			
		0.00	0.00	
Flow length (ft)	{{0}}1160.5	0.0	0.0	
Travel Time (min)	= 0.46	+ 0.00	+ 0.00	= 0.46
Total Travel Time, Tc				20.50 min

Hyd. No. 6

Post POA E Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.157 cfs
Storm frequency	= 1 yrs	Time to peak	= 746 min
Time interval	= 2 min	Hyd. volume	= 3,071 cuft
Drainage area	= 8.690 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 13.50 min
Total precip.	= 2.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hyd. No. 6

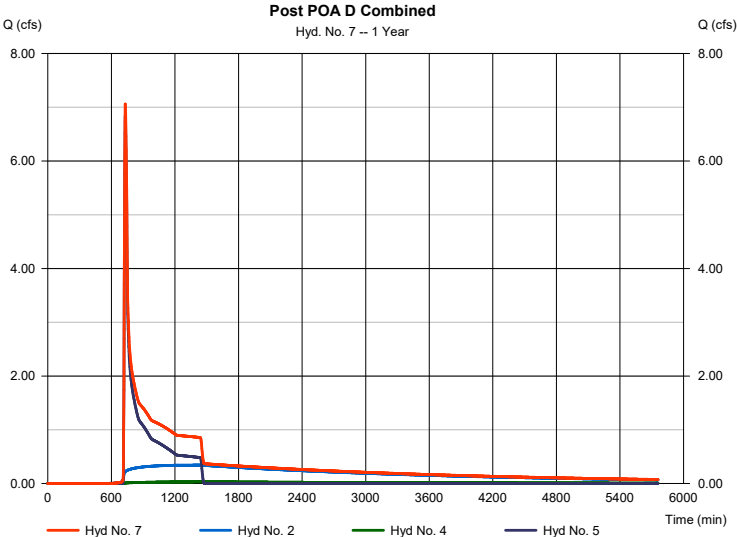
Post POA E Bypass

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 150.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.83	0.00	0.00	
Land slope (%)	= 7.50	0.00	0.00	
Travel Time (min)	= 12.37	+ 0.00	+ 0.00	= 12.37
Shallow Concentrated Flow				
Flow length (ft)	= 238.48	0.00	0.00	
Watercourse slope (%)	= 5.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=3.61	0.00	0.00	
Travel Time (min)	= 1.10	+ 0.00	+ 0.00	= 1.10
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	=0.00			
		0.00	0.00	
Flow length (ft)	{{0}}0.0	0.0	0.0	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				13.50 min

Hyd. No. 7

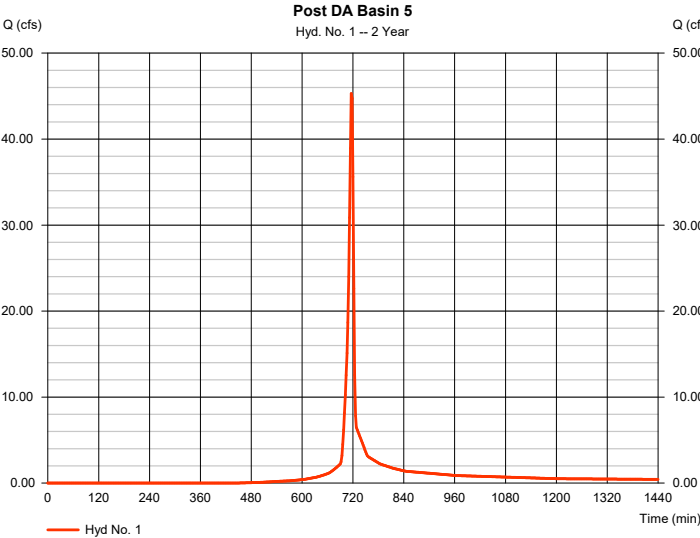
Post POA D Combined

Hydrograph type	= Combine	Peak discharge	= 7.061 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 109,733 cuft
Inflow hyds.	= 2, 4, 5	Contrib. drain. area	= 52.020 ac

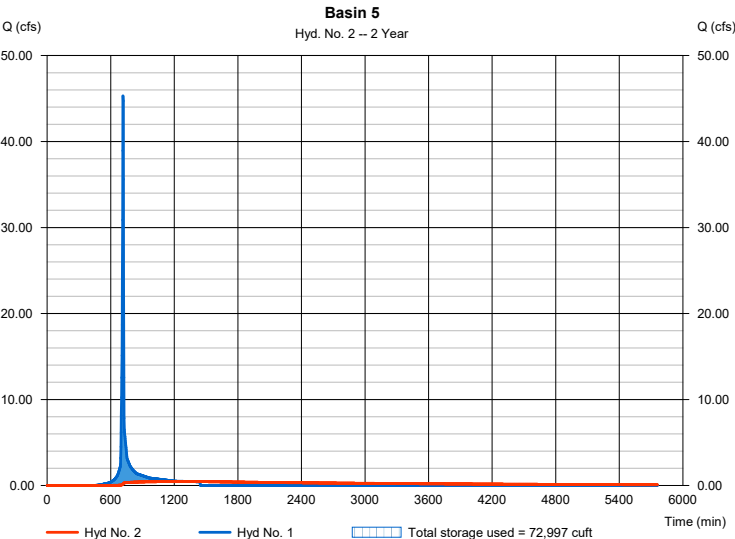


Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	45.31	2	716	91,969	-----	-----	-----	Post DA Basin 5
2	Reservoir	0.457	2	1358	77,556	1	650.86	72,997	Basin 5
3	SCS Runoff	4.825	2	718	10,606	-----	-----	-----	Post DA Basin 6
4	Reservoir	0.053	2	1442	8,804	3	590.27	8,703	Basin 6
5	SCS Runoff	16.50	2	730	82,750	-----	-----	-----	Post POA D Bypass
6	SCS Runoff	0.933	2	728	6,809	-----	-----	-----	Post POA E Bypass
7	Combine	16.82	2	730	169,111	2, 4, 5,	-----	-----	Post POA D Combined
Post_Dev_Hydrographs_Site_2.gpw					Return Period: 2 Year			Wednesday, 07 / 1 / 2026	

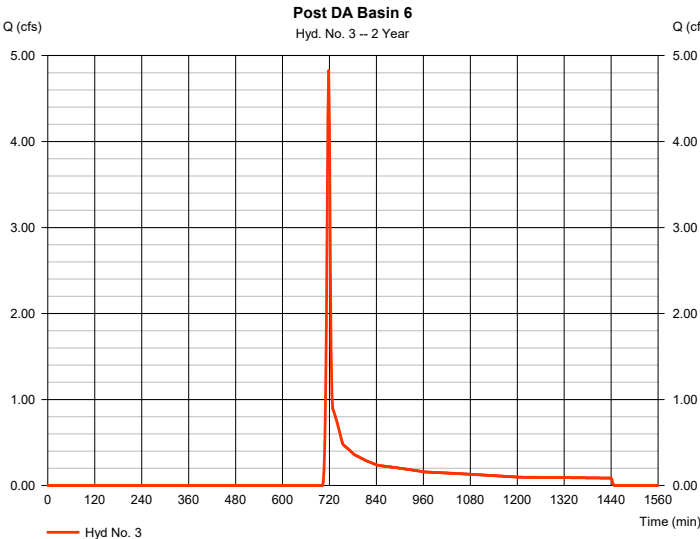
Hyd. No. 1			
Post DA Basin 5			
Hydrograph type	= SCS Runoff	Peak discharge	= 45.31 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 91,969 cuft
Drainage area	= 16.980 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hyd. No. 2			
Basin 5			
Hydrograph type	= Reservoir	Peak discharge	= 0.457 cfs
Storm frequency	= 2 yrs	Time to peak	= 1358 min
Time interval	= 2 min	Hyd. volume	= 77,556 cuft
Inflow hyd. No.	= 1 - Post DA Basin 5	Max. Elevation	= 650.86 ft
Reservoir name	= Basin 5	Max. Storage	= 72,997 cuft
Storage Indication method used. Outflow includes exfiltration.			



Hyd. No. 3			
Post DA Basin 6			
Hydrograph type	= SCS Runoff	Peak discharge	= 4.825 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 10,606 cuft
Drainage area	= 6.200 ac	Curve number	= 67
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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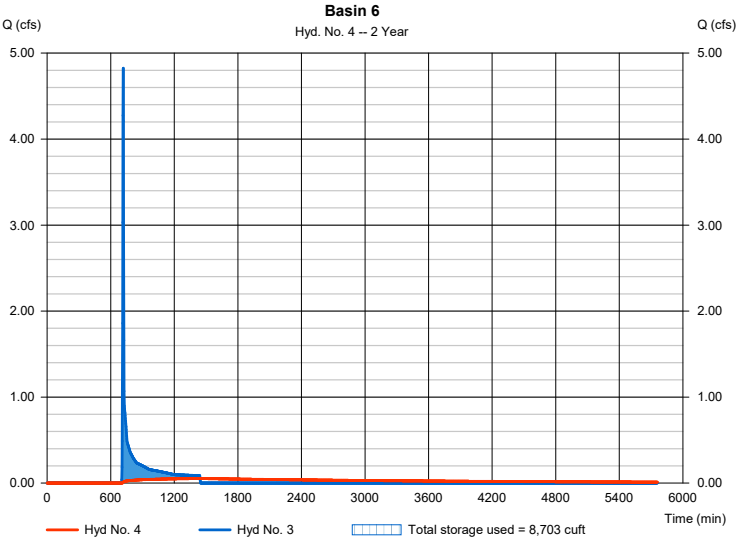
Wednesday, 07 / 1 / 2026

Hyd. No. 4

Basin 6

Hydrograph type	=	Reservoir	Peak discharge	=	0.053 cfs
Storm frequency	=	2 yrs	Time to peak	=	1442 min
Time interval	=	2 min	Hyd. volume	=	8,804 cuft
Inflow hyd. No.	=	3 - Post DA Basin 6	Max. Elevation	=	590.27 ft
Reservoir name	=	Basin 6	Max. Storage	=	8,703 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

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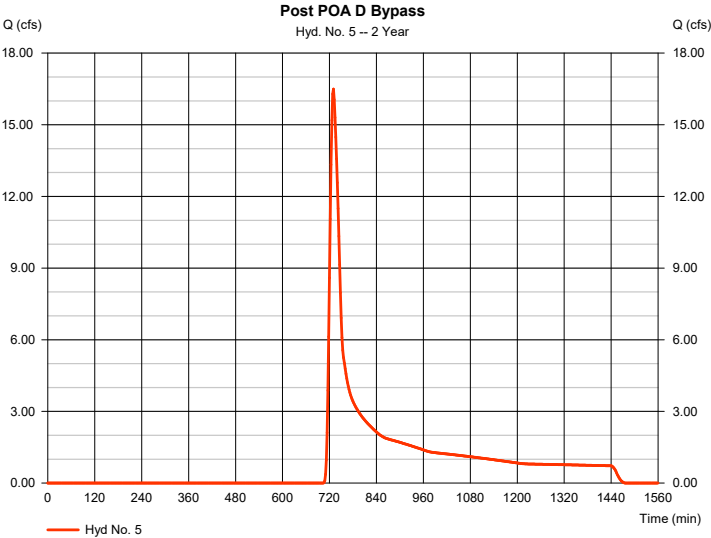
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 5

Post POA D Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	16.50 cfs
Storm frequency	=	2 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	82,750 cuft
Drainage area	=	52.020 ac	Curve number	=	65
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	20.50 min
Total precip.	=	2.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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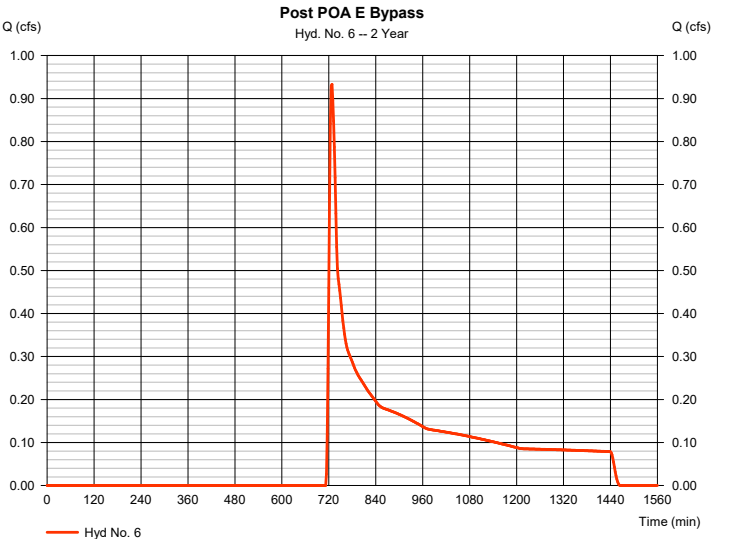
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Wednesday, 07 / 1 / 2026

Hyd. No. 6

Post POA E Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.933 cfs
Storm frequency	=	2 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	6,809 cuft
Drainage area	=	8.690 ac	Curve number	=	58
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.50 min
Total precip.	=	2.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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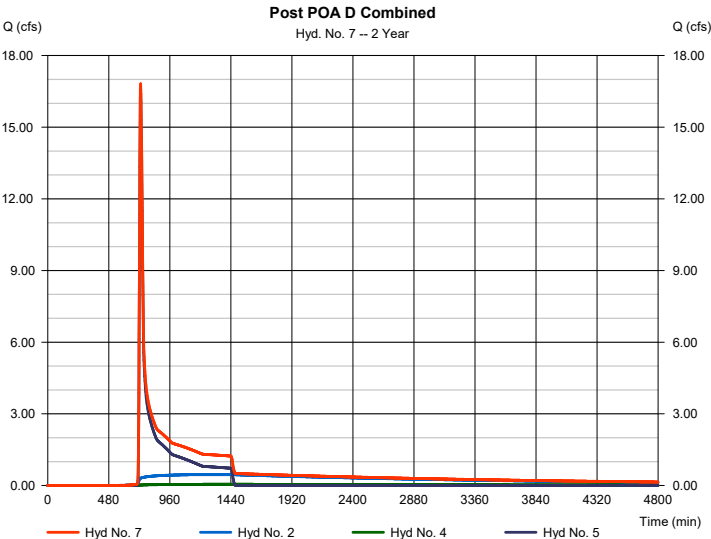
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 7

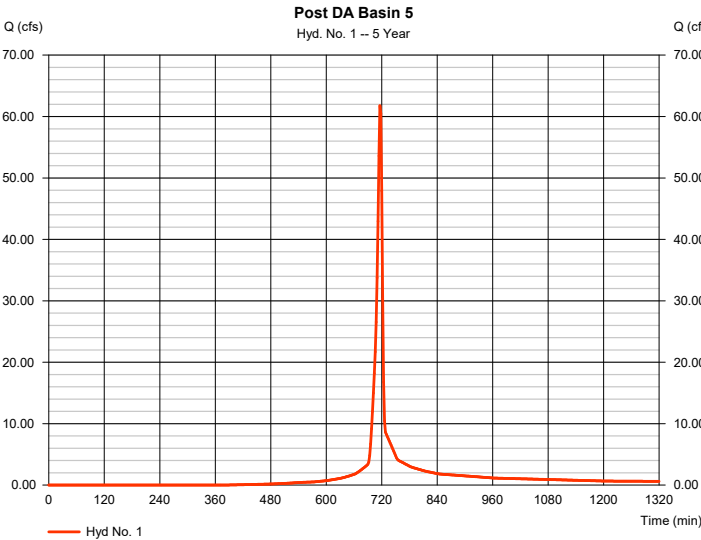
Post POA D Combined

Hydrograph type	=	Combine	Peak discharge	=	16.82 cfs
Storm frequency	=	2 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	169,111 cuft
Inflow hyds.	=	2, 4, 5	Contrib. drain. area	=	52.020 ac



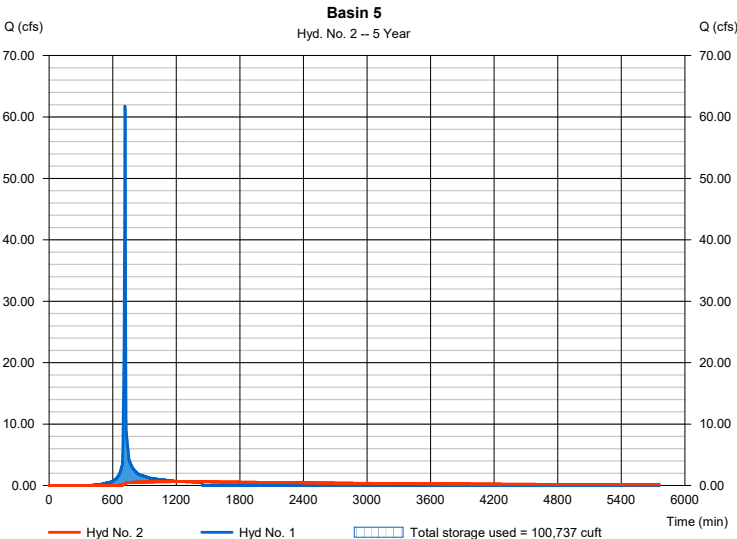
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	61.77	2	716	126,631	-----	-----	-----	Post DA Basin 5
2	Reservoir	0.624	2	1276	106,718	1	651.16	100,737	Basin 5
3	SCS Runoff	8.792	2	718	18,055	-----	-----	-----	Post DA Basin 6
4	Reservoir	0.089	2	1442	15,010	3	590.46	14,705	Basin 6
5	SCS Runoff	35.03	2	728	145,545	-----	-----	-----	Post POA D Bypass
6	SCS Runoff	3.269	2	726	14,044	-----	-----	-----	Post POA E Bypass
7	Combine	35.50	2	728	267,272	2, 4, 5,	-----	-----	Post POA D Combined
Post_Dev_Hydrographs_Site_2.gpw					Return Period: 5 Year			Wednesday, 07 / 1 / 2026	

Hyd. No. 1			
Post DA Basin 5			
Hydrograph type	= SCS Runoff	Peak discharge	= 61.77 cfs
Storm frequency	= 5 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 126,631 cuft
Drainage area	= 16.980 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.51 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

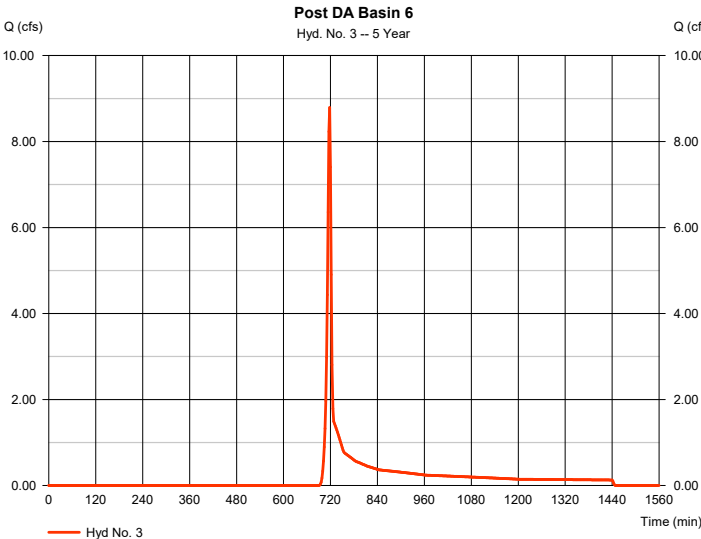


Hyd. No. 2			
Basin 5			
Hydrograph type	= Reservoir	Peak discharge	= 0.624 cfs
Storm frequency	= 5 yrs	Time to peak	= 1276 min
Time interval	= 2 min	Hyd. volume	= 106,718 cuft
Inflow hyd. No.	= 1 - Post DA Basin 5	Max. Elevation	= 651.16 ft
Reservoir name	= Basin 5	Max. Storage	= 100,737 cuft

Storage Indication method used. Outflow includes exfiltration.



Hyd. No. 3			
Post DA Basin 6			
Hydrograph type	= SCS Runoff	Peak discharge	= 8.792 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 18,055 cuft
Drainage area	= 6.200 ac	Curve number	= 67
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.51 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

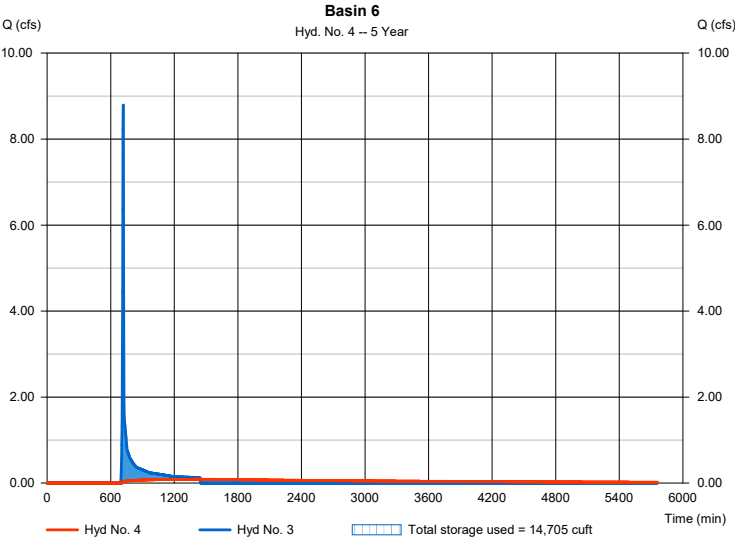
Wednesday, 07 / 1 / 2026

Hyd. No. 4

Basin 6

Hydrograph type	=	Reservoir	Peak discharge	=	0.089 cfs
Storm frequency	=	5 yrs	Time to peak	=	1442 min
Time interval	=	2 min	Hyd. volume	=	15,010 cuft
Inflow hyd. No.	=	3 - Post DA Basin 6	Max. Elevation	=	590.46 ft
Reservoir name	=	Basin 6	Max. Storage	=	14,705 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

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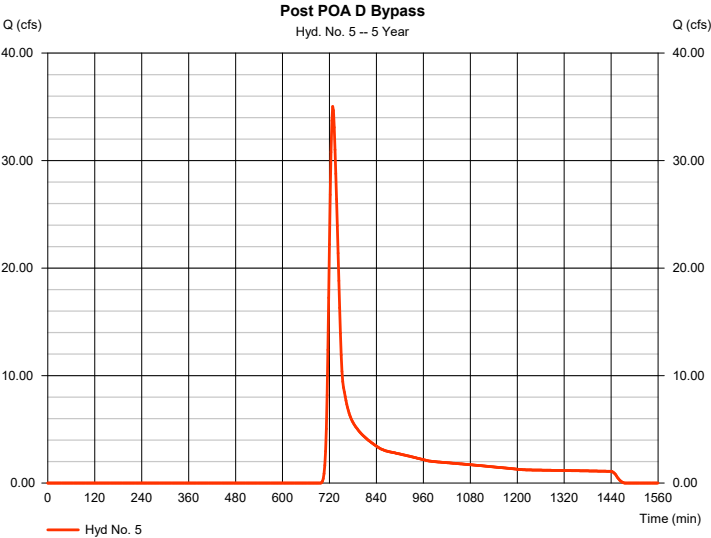
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 5

Post POA D Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	35.03 cfs
Storm frequency	=	5 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	145,545 cuft
Drainage area	=	52.020 ac	Curve number	=	65
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	20.50 min
Total precip.	=	3.51 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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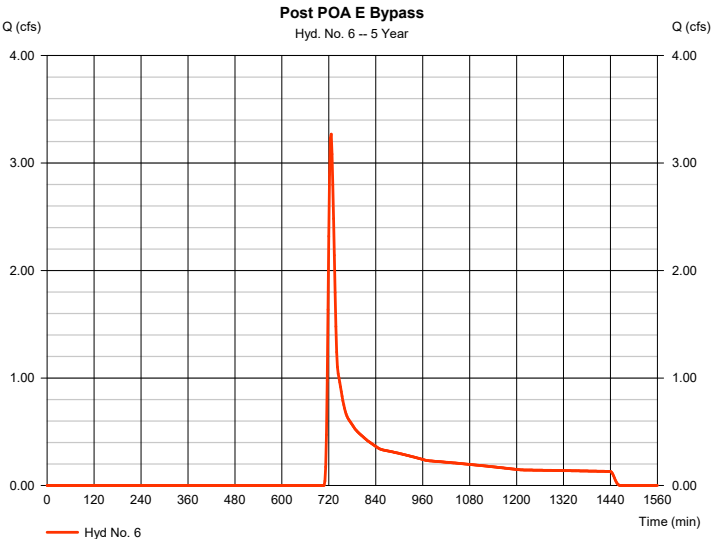
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 6

Post POA E Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.269 cfs
Storm frequency	=	5 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	14,044 cuft
Drainage area	=	8.690 ac	Curve number	=	58
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.50 min
Total precip.	=	3.51 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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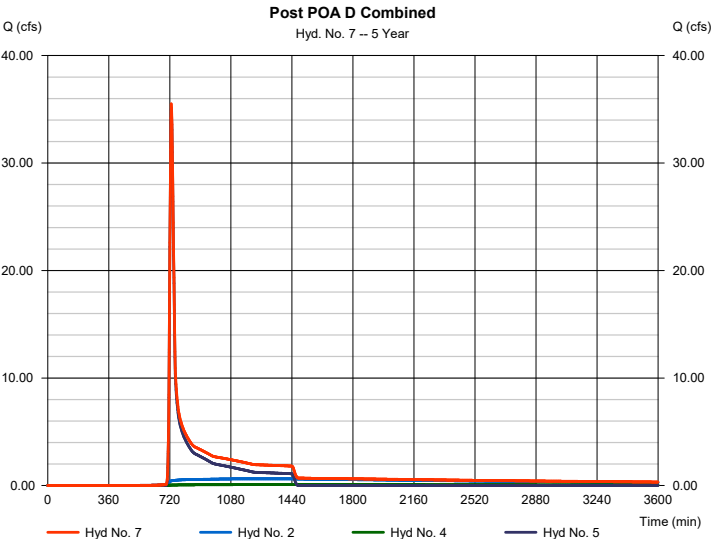
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 7

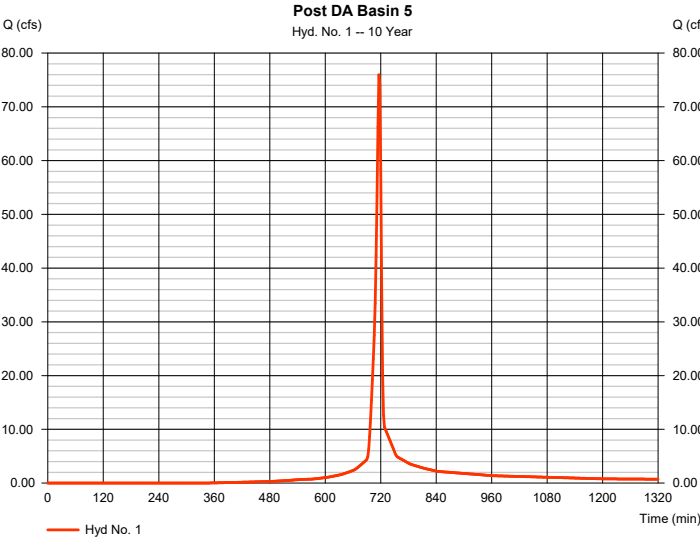
Post POA D Combined

Hydrograph type	=	Combine	Peak discharge	=	35.50 cfs
Storm frequency	=	5 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	267,272 cuft
Inflow hyds.	=	2, 4, 5	Contrib. drain. area	=	52.020 ac

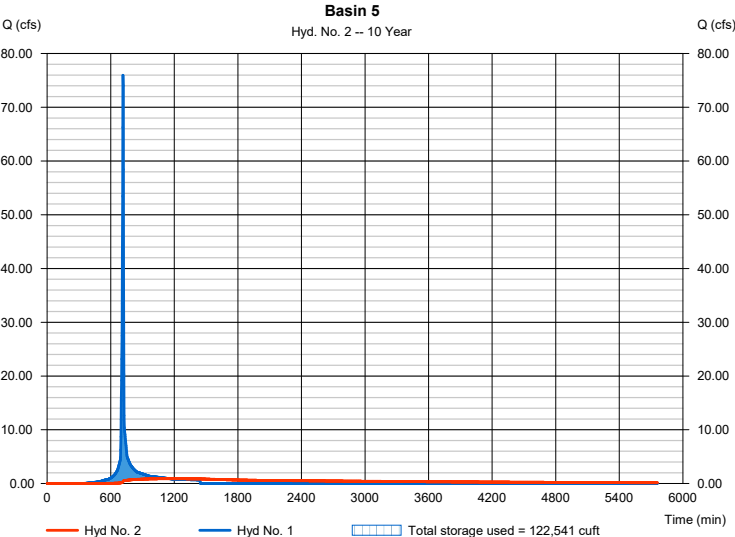


Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	75.95	2	716	157,137	-----	-----	-----	Post DA Basin 5
2	Reservoir	0.897	2	1156	133,536	1	651.38	122,541	Basin 5
3	SCS Runoff	12.57	2	718	25,330	-----	-----	-----	Post DA Basin 6
4	Reservoir	0.125	2	1442	21,076	3	590.64	20,545	Basin 6
5	SCS Runoff	53.99	2	728	207,789	-----	-----	-----	Post POA D Bypass
6	SCS Runoff	6.086	2	724	21,718	-----	-----	-----	Post POA E Bypass
7	Combine	54.59	2	728	362,401	2, 4, 5,	-----	-----	Post POA D Combined
Post_Dev_Hydrographs_Site_2.gpw					Return Period: 10 Year			Wednesday, 07 / 1 / 2026	

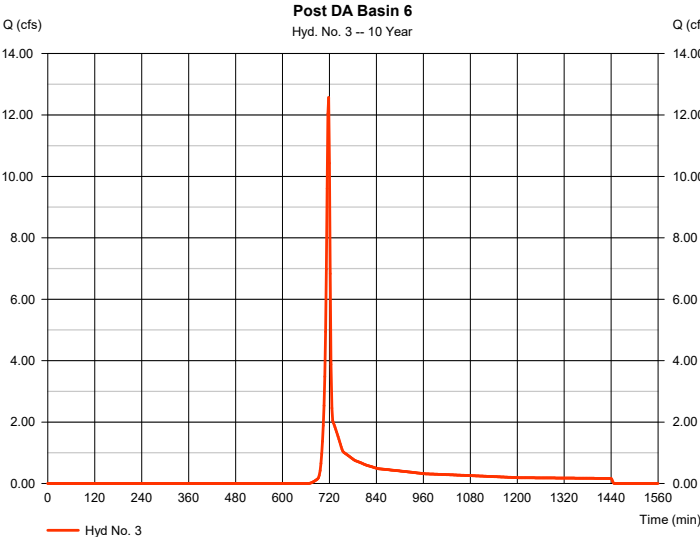
Hyd. No. 1			
Post DA Basin 5			
Hydrograph type	= SCS Runoff	Peak discharge	= 75.95 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 157,137 cuft
Drainage area	= 16.980 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.09 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hyd. No. 2			
Basin 5			
Hydrograph type	= Reservoir	Peak discharge	= 0.897 cfs
Storm frequency	= 10 yrs	Time to peak	= 1156 min
Time interval	= 2 min	Hyd. volume	= 133,536 cuft
Inflow hyd. No.	= 1 - Post DA Basin 5	Max. Elevation	= 651.38 ft
Reservoir name	= Basin 5	Max. Storage	= 122,541 cuft
Storage Indication method used. Outflow includes exfiltration.			



Hyd. No. 3			
Post DA Basin 6			
Hydrograph type	= SCS Runoff	Peak discharge	= 12.57 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 25,330 cuft
Drainage area	= 6.200 ac	Curve number	= 67
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.09 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

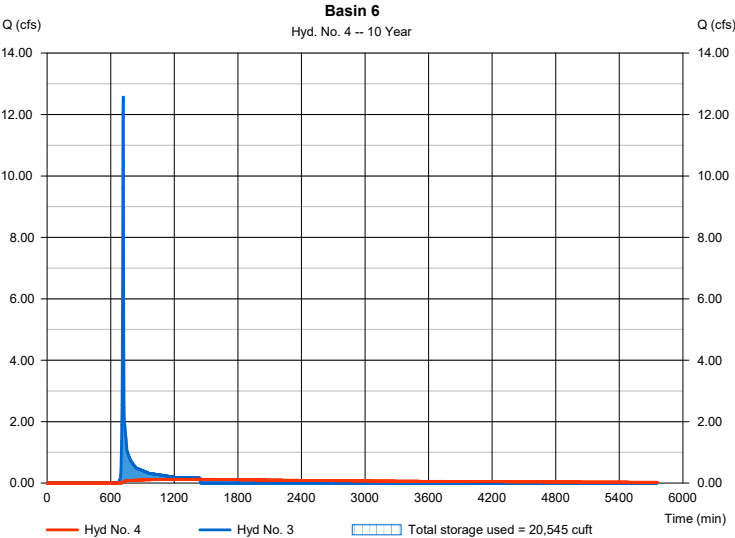
Wednesday, 07 / 1 / 2026

Hyd. No. 4

Basin 6

Hydrograph type	=	Reservoir	Peak discharge	=	0.125 cfs
Storm frequency	=	10 yrs	Time to peak	=	1442 min
Time interval	=	2 min	Hyd. volume	=	21,076 cuft
Inflow hyd. No.	=	3 - Post DA Basin 6	Max. Elevation	=	590.64 ft
Reservoir name	=	Basin 6	Max. Storage	=	20,545 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

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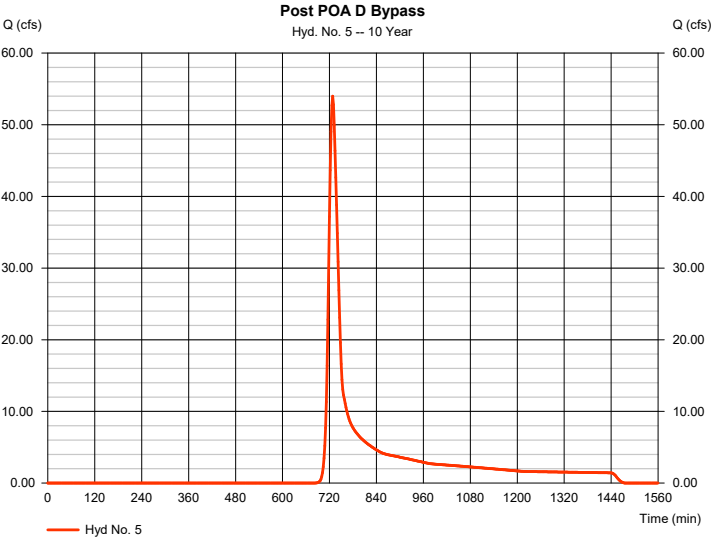
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 5

Post POA D Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	53.99 cfs
Storm frequency	=	10 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	207,789 cuft
Drainage area	=	52.020 ac	Curve number	=	65
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	20.50 min
Total precip.	=	4.09 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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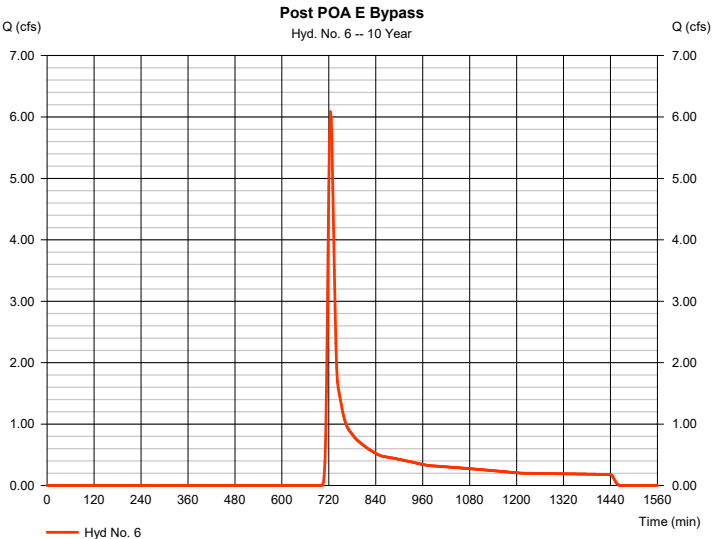
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 6

Post POA E Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.086 cfs
Storm frequency	=	10 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	21,718 cuft
Drainage area	=	8.690 ac	Curve number	=	58
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.50 min
Total precip.	=	4.09 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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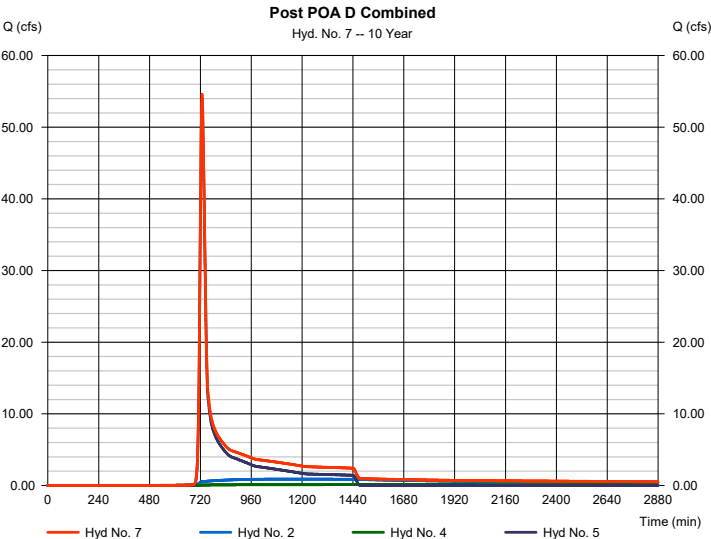
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 7

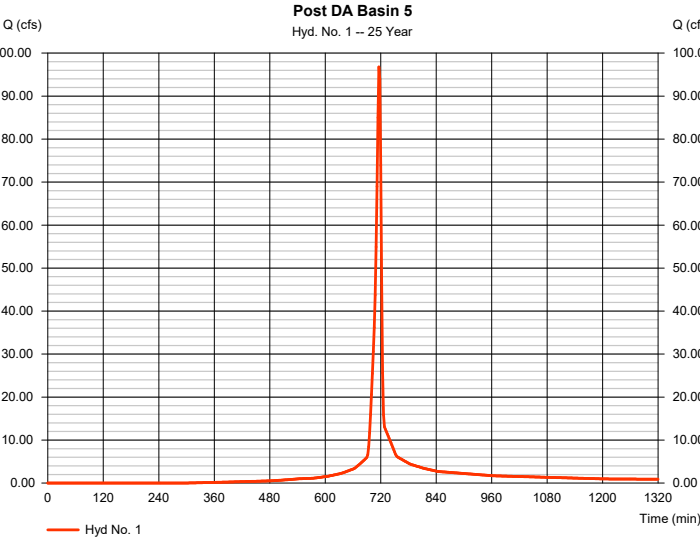
Post POA D Combined

Hydrograph type	=	Combine	Peak discharge	=	54.59 cfs
Storm frequency	=	10 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	362,401 cuft
Inflow hyds.	=	2, 4, 5	Contrib. drain. area	=	52.020 ac

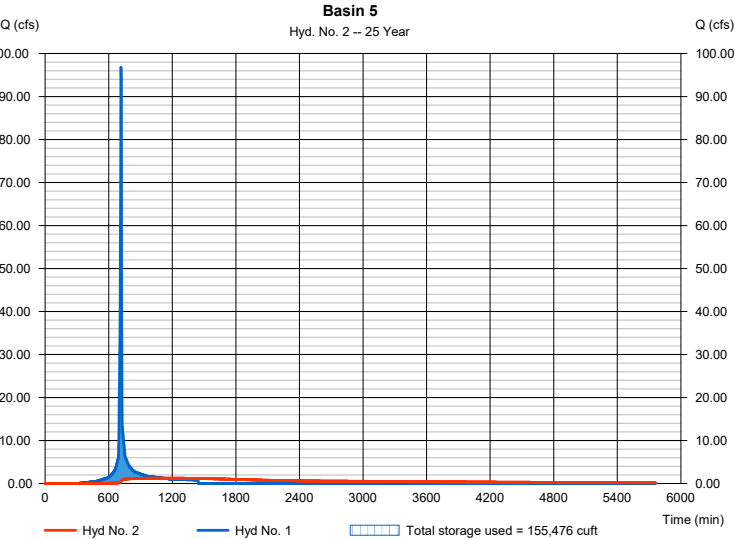


Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	96.80	2	716	202,873	-----	-----	-----	Post DA Basin 5
2	Reservoir	1,231	2	1116	174,542	1	651.71	155,476	Basin 5
3	SCS Runoff	18.58	2	718	37,164	-----	-----	-----	Post DA Basin 6
4	Reservoir	0.182	2	1442	30,951	3	590.94	30,010	Basin 6
5	SCS Runoff	84.92	2	728	310,168	-----	-----	-----	Post POA D Bypass
6	SCS Runoff	11.07	2	724	34,936	-----	-----	-----	Post POA E Bypass
7	Combine	85.82	2	728	515,660	2, 4, 5,	-----	-----	Post POA D Combined
Post_Dev_Hydrographs_Site_2.gpw					Return Period: 25 Year			Wednesday, 07 / 1 / 2026	

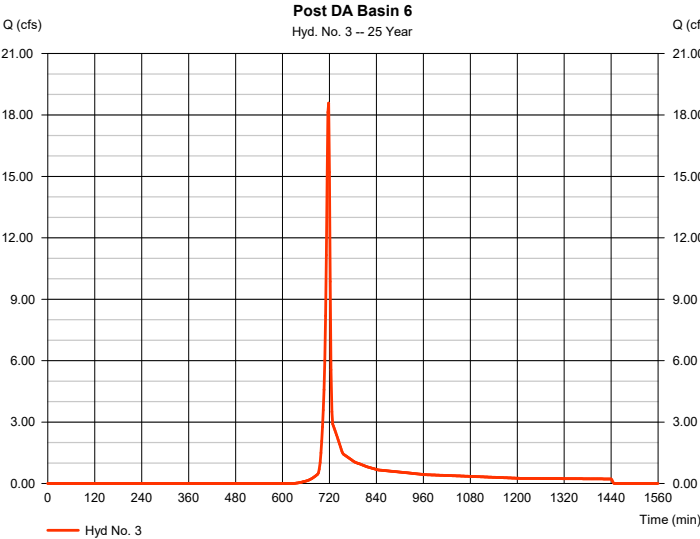
Hyd. No. 1			
Post DA Basin 5			
Hydrograph type	= SCS Runoff	Peak discharge	= 96.80 cfs
Storm frequency	= 25 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 202,873 cuft
Drainage area	= 16.980 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.94 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025				Wednesday, 07 / 1 / 2026
Hyd. No. 2				
Basin 5				
Hydrograph type	= Reservoir	Peak discharge	= 1,231 cfs	
Storm frequency	= 25 yrs	Time to peak	= 1116 min	
Time interval	= 2 min	Hyd. volume	= 174,542 cuft	
Inflow hyd. No.	= 1 - Post DA Basin 5	Max. Elevation	= 651.71 ft	
Reservoir name	= Basin 5	Max. Storage	= 155,476 cuft	
Storage Indication method used. Outflow includes exfiltration.				



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025				Wednesday, 07 / 1 / 2026
Hyd. No. 3				
Post DA Basin 6				
Hydrograph type	= SCS Runoff	Peak discharge	= 18.58 cfs	
Storm frequency	= 25 yrs	Time to peak	= 718 min	
Time interval	= 2 min	Hyd. volume	= 37,164 cuft	
Drainage area	= 6.200 ac	Curve number	= 67	
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft	
Tc method	= User	Time of conc. (Tc)	= 5.00 min	
Total precip.	= 4.94 in	Distribution	= Type II	
Storm duration	= 24 hrs	Shape factor	= 484	



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

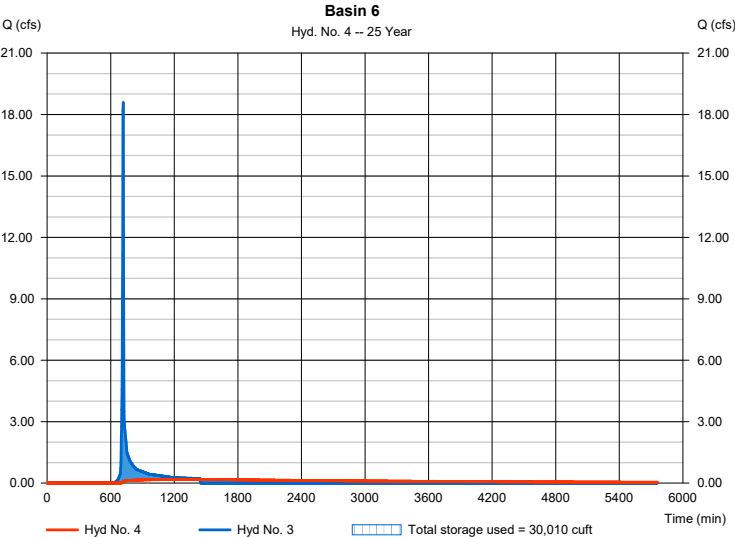
Wednesday, 07 / 1 / 2026

Hyd. No. 4

Basin 6

Hydrograph type	=	Reservoir	Peak discharge	=	0.182 cfs
Storm frequency	=	25 yrs	Time to peak	=	1442 min
Time interval	=	2 min	Hyd. volume	=	30,951 cuft
Inflow hyd. No.	=	3 - Post DA Basin 6	Max. Elevation	=	590.94 ft
Reservoir name	=	Basin 6	Max. Storage	=	30,010 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

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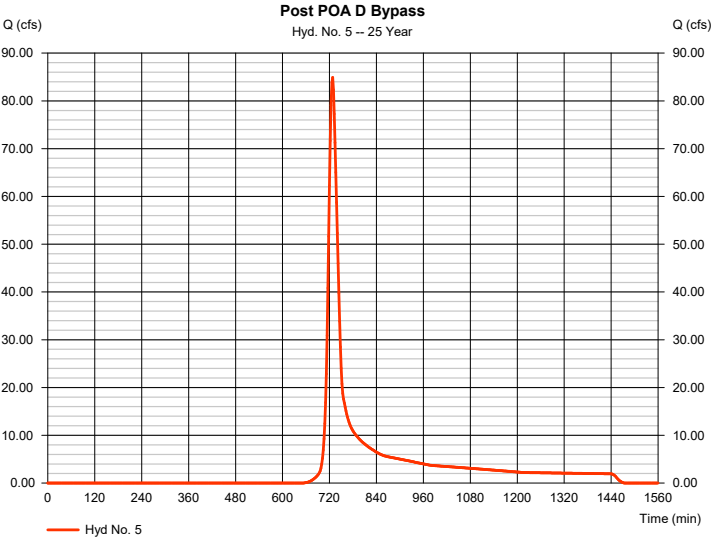
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 5

Post POA D Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	84.92 cfs
Storm frequency	=	25 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	310,168 cuft
Drainage area	=	52.020 ac	Curve number	=	65
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	20.50 min
Total precip.	=	4.94 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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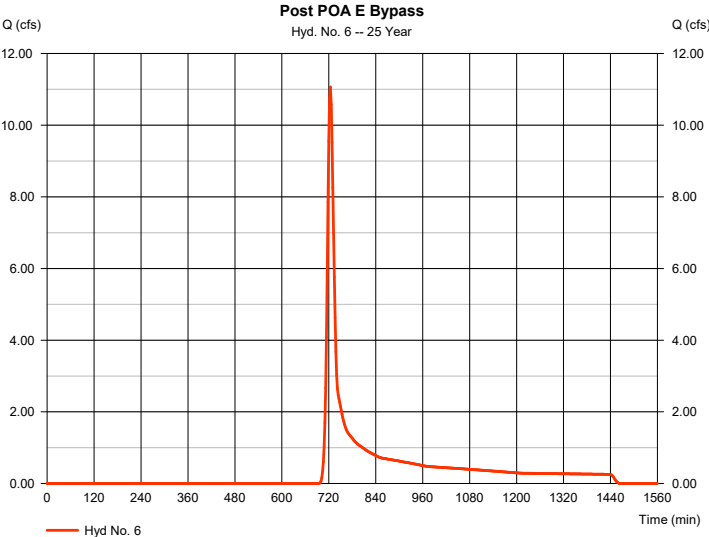
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 6

Post POA E Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	11.07 cfs
Storm frequency	=	25 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	34,936 cuft
Drainage area	=	8.690 ac	Curve number	=	58
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.50 min
Total precip.	=	4.94 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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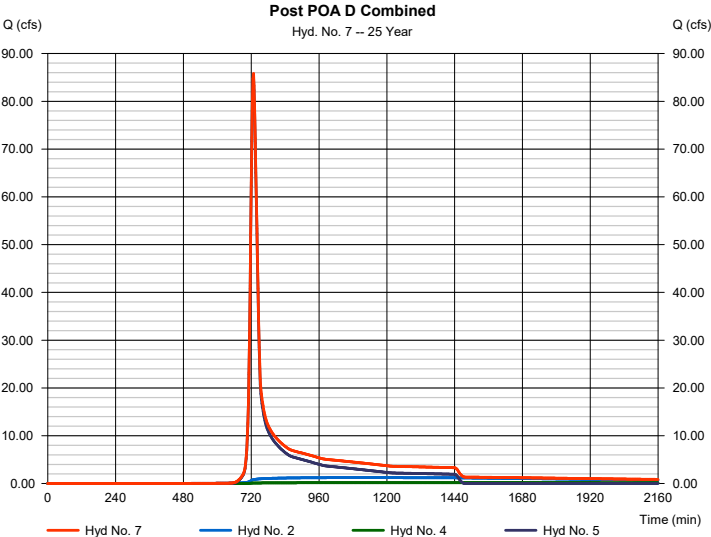
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 7

Post POA D Combined

Hydrograph type	=	Combine	Peak discharge	=	85.82 cfs
Storm frequency	=	25 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	515,660 cuft
Inflow hyds.	=	2, 4, 5	Contrib. drain. area	=	52.020 ac



Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	114.68	2	716	242,820	-----	-----	-----	Post DA Basin 5
2	Reservoir	1.445	2	1114	210,106	1	652.02	186,503	Basin 5
3	SCS Runoff	24.07	2	718	48,188	-----	-----	-----	Post DA Basin 6
4	Reservoir	0.198	2	1442	39,755	3	591.22	39,775	Basin 6
5	SCS Runoff	113.74	2	728	406,388	-----	-----	-----	Post POA D Bypass
6	SCS Runoff	15.86	2	724	47,820	-----	-----	-----	Post POA E Bypass
7	Combine	114.99	2	728	656,974	2, 4, 5,	-----	-----	Post POA D Combined

Post_Dev_Hydrographs_Site_2.gpw

Return Period: 50 Year

Wednesday, 07 / 1 / 2026

Hyd. No. 1

Post DA Basin 5

Hydrograph type

Storm frequency

Time interval

Drainage area

Basin Slope

Tc method

Total precip.

Storm duration

= SCS Runoff

= 50 yrs

= 2 min

= 16.980 ac

= 0.0 %

= User

= 5.67 in

= 24 hrs

Peak discharge

Time to peak

Hyd. volume

Curve number

Hydraulic length

Time of conc. (Tc)

Distribution

Shape factor

= 114.68 cfs

= 716 min

= 242,820 cuft

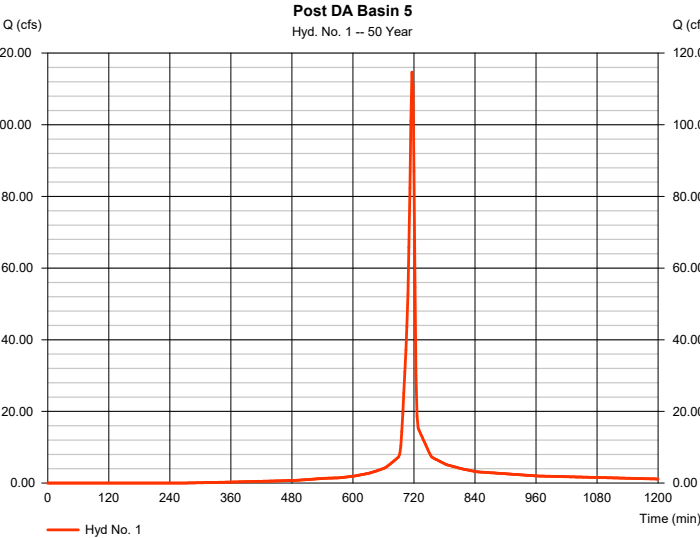
= 87

= 0 ft

= 5.00 min

= Type II

= 484



Hyd. No. 2

Basin 5

Hydrograph type

Storm frequency

Time interval

Inflow hyd. No.

Reservoir name

= Reservoir

= 50 yrs

= 2 min

= 1 - Post DA Basin 5

= Basin 5

Peak discharge

Time to peak

Hyd. volume

Max. Elevation

Max. Storage

= 1.445 cfs

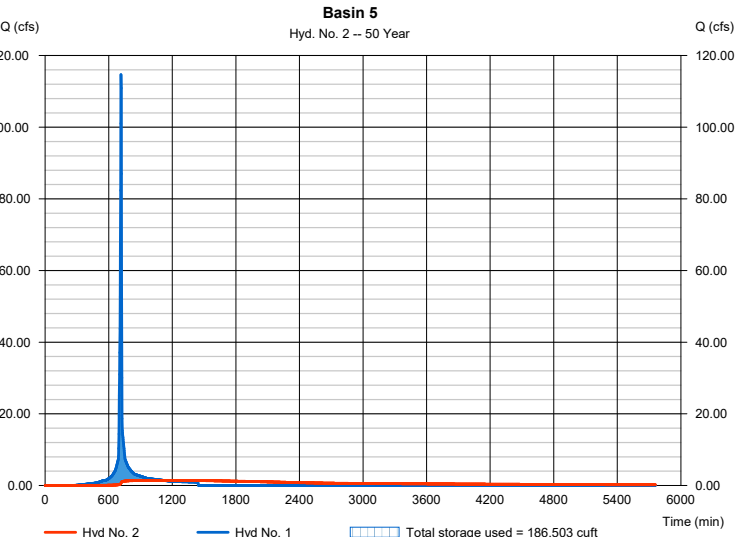
= 1114 min

= 210,106 cuft

= 652.02 ft

= 186,503 cuft

Storage Indication method used. Outflow includes exfiltration.



Hyd. No. 3

Post DA Basin 6

Hydrograph type

Storm frequency

Time interval

Drainage area

Basin Slope

Tc method

Total precip.

Storm duration

= SCS Runoff

= 50 yrs

= 2 min

= 6.200 ac

= 0.0 %

= User

= 5.67 in

= 24 hrs

Peak discharge

Time to peak

Hyd. volume

Curve number

Hydraulic length

Time of conc. (Tc)

Distribution

Shape factor

= 24.07 cfs

= 718 min

= 48,188 cuft

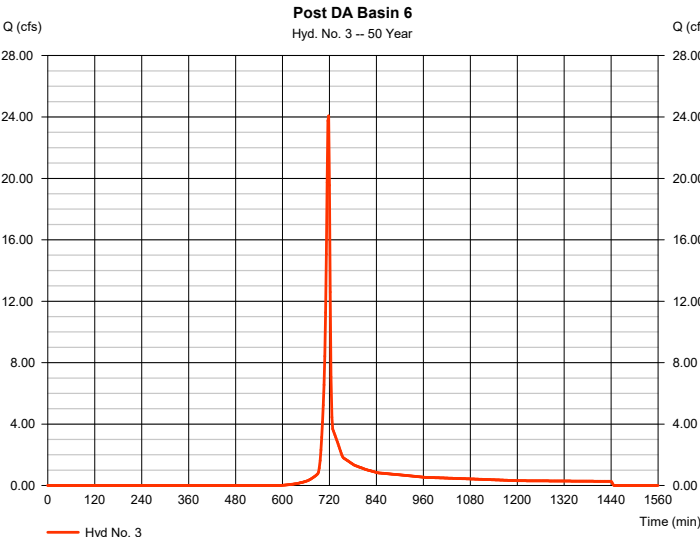
= 67

= 0 ft

= 5.00 min

= Type II

= 484



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

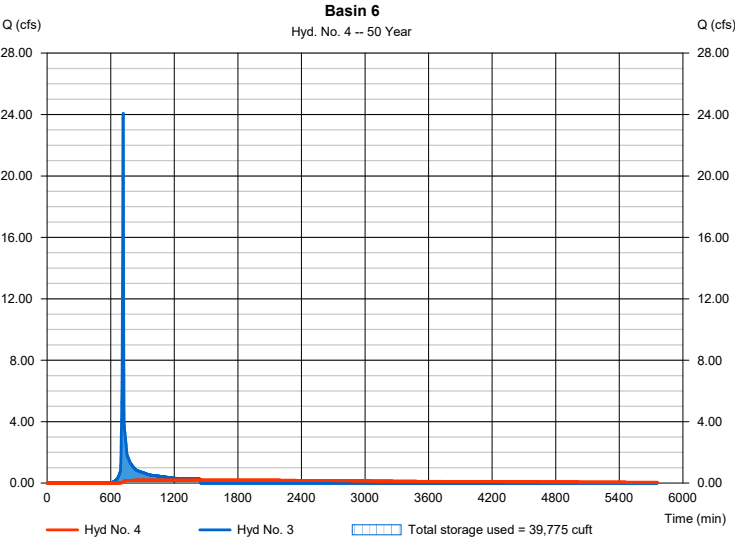
Wednesday, 07 / 1 / 2026

Hyd. No. 4

Basin 6

Hydrograph type	=	Reservoir	Peak discharge	=	0.198 cfs
Storm frequency	=	50 yrs	Time to peak	=	1442 min
Time interval	=	2 min	Hyd. volume	=	39,755 cuft
Inflow hyd. No.	=	3 - Post DA Basin 6	Max. Elevation	=	591.22 ft
Reservoir name	=	Basin 6	Max. Storage	=	39,775 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

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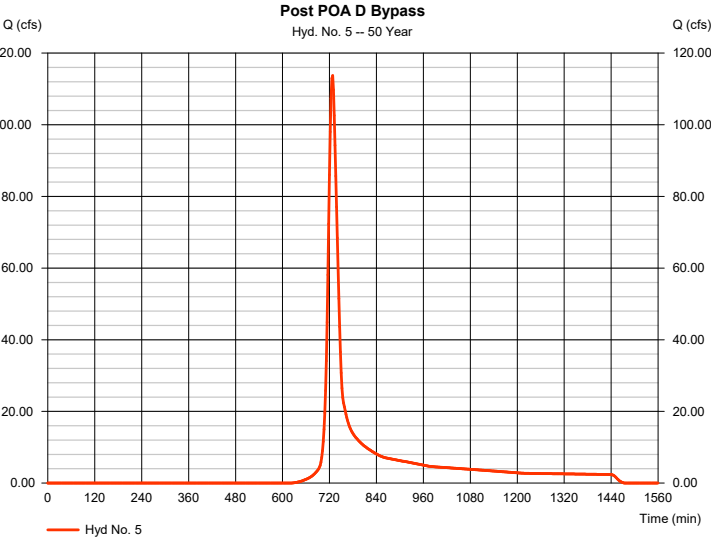
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 5

Post POA D Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	113.74 cfs
Storm frequency	=	50 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	406,388 cuft
Drainage area	=	52.020 ac	Curve number	=	65
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	20.50 min
Total precip.	=	5.67 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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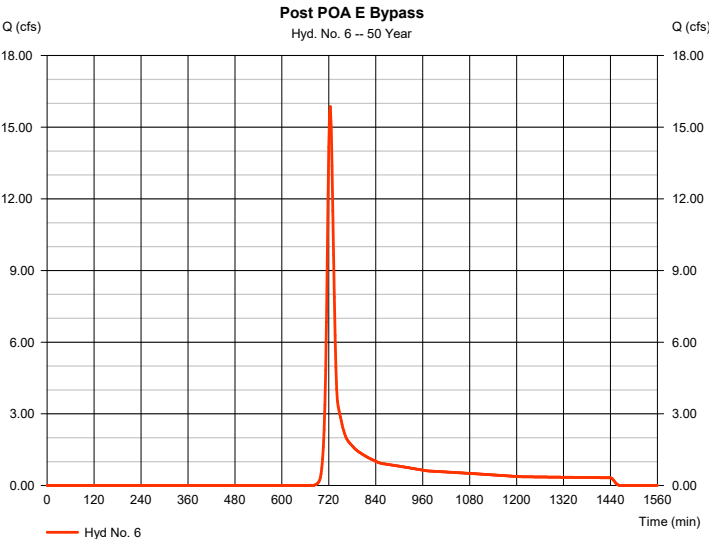
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 6

Post POA E Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	15.86 cfs
Storm frequency	=	50 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	47,820 cuft
Drainage area	=	8.690 ac	Curve number	=	58
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.50 min
Total precip.	=	5.67 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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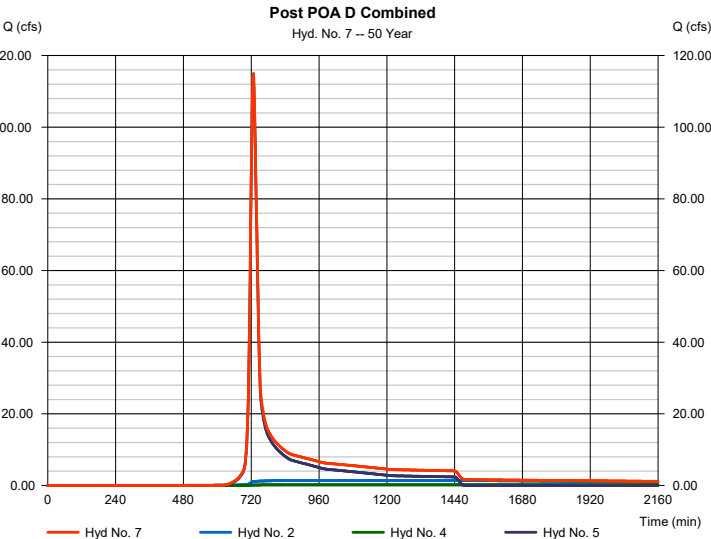
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 7

Post POA D Combined

Hydrograph type	=	Combine	Peak discharge	=	114.99 cfs
Storm frequency	=	50 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	656,974 cuft
Inflow hyds.	=	2, 4, 5	Contrib. drain. area	=	52.020 ac



Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	134.46	2	716	287,643	-----	-----	-----	Post DA Basin 5
2	Reservoir	1.629	2	1124	249,637	1	652.34	222,831	Basin 5
3	SCS Runoff	30.40	2	718	61,138	-----	-----	-----	Post DA Basin 6
4	Reservoir	0.228	2	1442	48,979	3	591.57	52,031	Basin 6
5	SCS Runoff	147.55	2	728	520,137	-----	-----	-----	Post POA D Bypass
6	SCS Runoff	21.61	2	724	63,447	-----	-----	-----	Post POA E Bypass
7	Combine	149.06	2	728	822,533	2, 4, 5,	-----	-----	Post POA D Combined
Post_Dev_Hydrographs_Site_2.gpw					Return Period: 100 Year			Wednesday, 07 / 1 / 2026	

Hyd. No. 1

Post DA Basin 5

Hydrograph type = SCS Runoff

Storm frequency = 100 yrs

Time interval = 2 min

Drainage area = 16.980 ac

Basin Slope = 0.0 %

Tc method = User

Total precip. = 6.48 in

Storm duration = 24 hrs

Peak discharge = 134.46 cfs

Time to peak = 716 min

Hyd. volume = 287,643 cuft

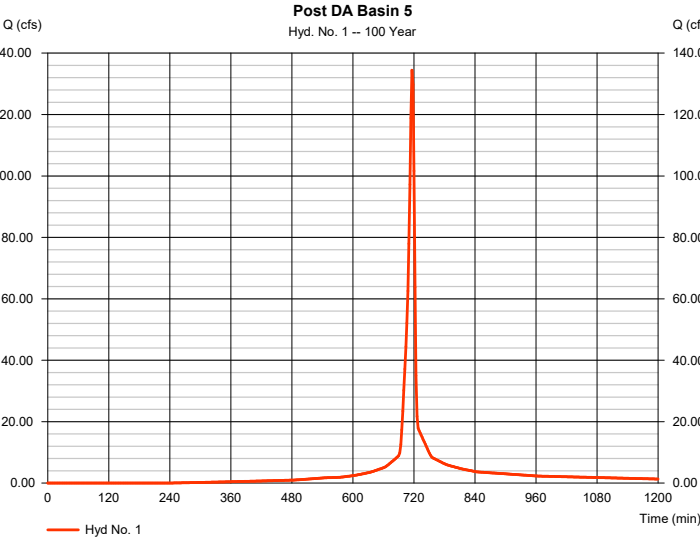
Curve number = 87

Hydraulic length = 0 ft

Time of conc. (Tc) = 5.00 min

Distribution = Type II

Shape factor = 484



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 2

Basin 5

Hydrograph type = Reservoir

Storm frequency = 100 yrs

Time interval = 2 min

Inflow hyd. No. = 1 - Post DA Basin 5

Reservoir name = Basin 5

Peak discharge = 1.629 cfs

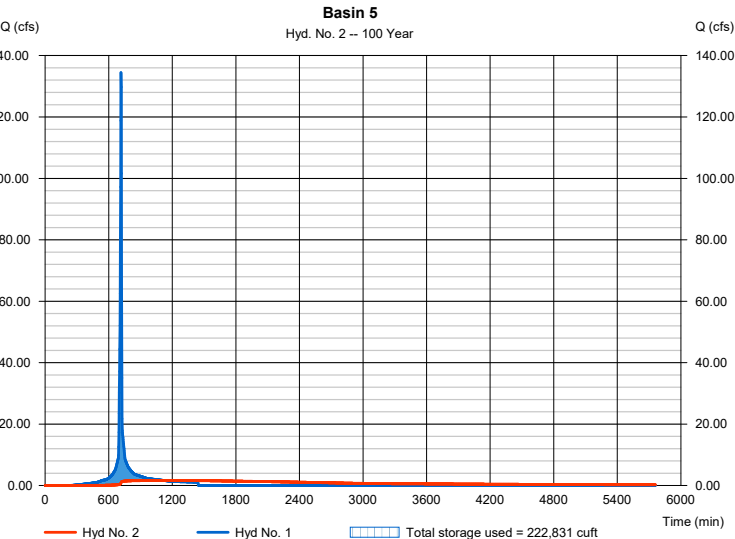
Time to peak = 1124 min

Hyd. volume = 249,637 cuft

Max. Elevation = 652.34 ft

Max. Storage = 222,831 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 3

Post DA Basin 6

Hydrograph type = SCS Runoff

Storm frequency = 100 yrs

Time interval = 2 min

Drainage area = 6.200 ac

Basin Slope = 0.0 %

Tc method = User

Total precip. = 6.48 in

Storm duration = 24 hrs

Peak discharge = 30.40 cfs

Time to peak = 718 min

Hyd. volume = 61,138 cuft

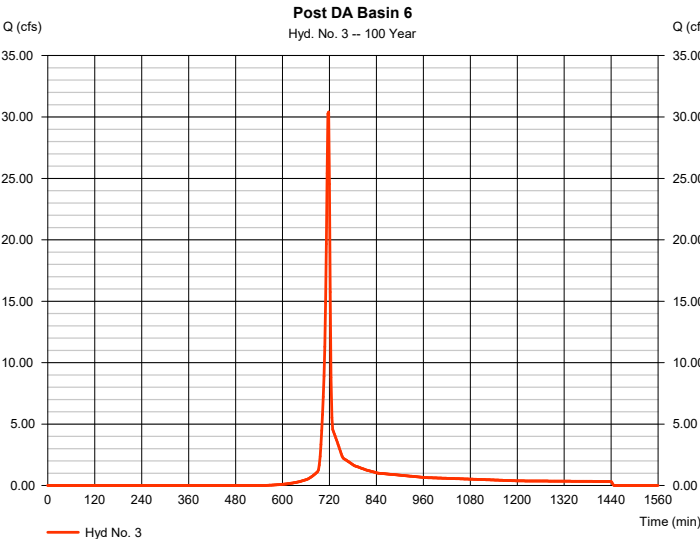
Curve number = 67

Hydraulic length = 0 ft

Time of conc. (Tc) = 5.00 min

Distribution = Type II

Shape factor = 484



Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

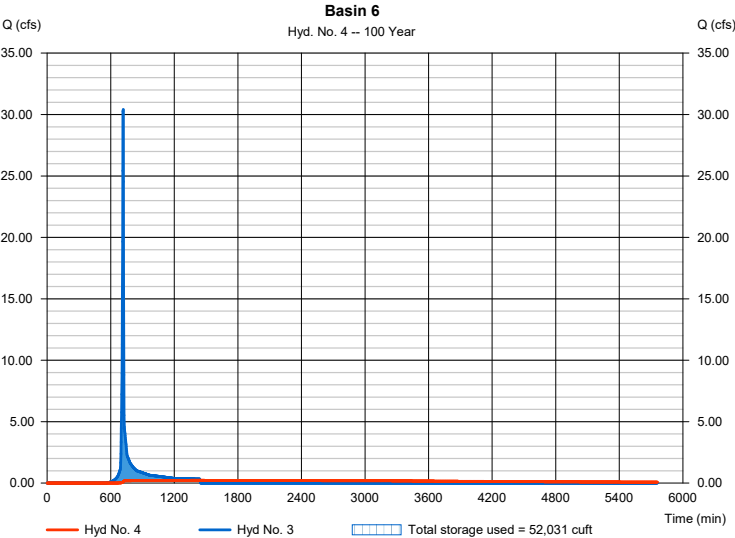
Wednesday, 07 / 1 / 2026

Hyd. No. 4

Basin 6

Hydrograph type	=	Reservoir	Peak discharge	=	0.228 cfs
Storm frequency	=	100 yrs	Time to peak	=	1442 min
Time interval	=	2 min	Hyd. volume	=	48,979 cuft
Inflow hyd. No.	=	3 - Post DA Basin 6	Max. Elevation	=	591.57 ft
Reservoir name	=	Basin 6	Max. Storage	=	52,031 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

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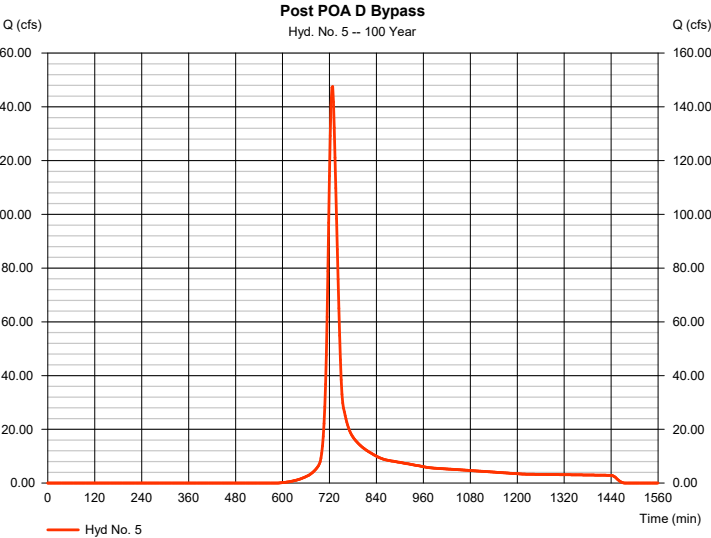
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 5

Post POA D Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	147.55 cfs
Storm frequency	=	100 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	520,137 cuft
Drainage area	=	52.020 ac	Curve number	=	65
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	20.50 min
Total precip.	=	6.48 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

63

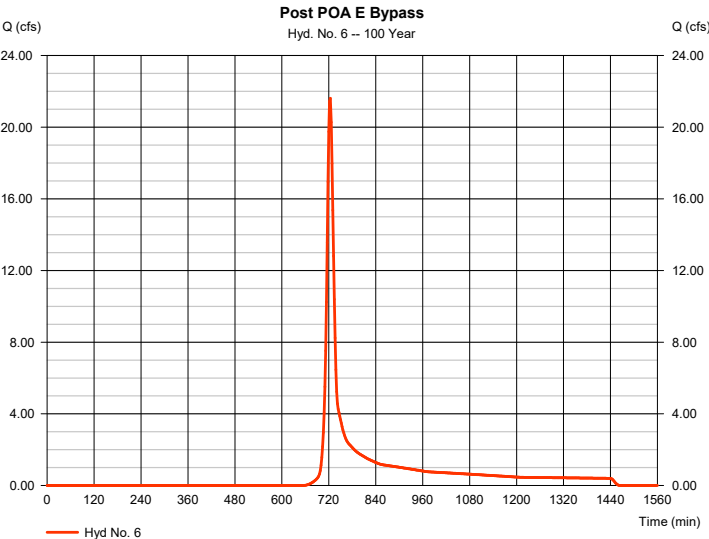
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 6

Post POA E Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	21.61 cfs
Storm frequency	=	100 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	63,447 cuft
Drainage area	=	8.690 ac	Curve number	=	58
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.50 min
Total precip.	=	6.48 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

64

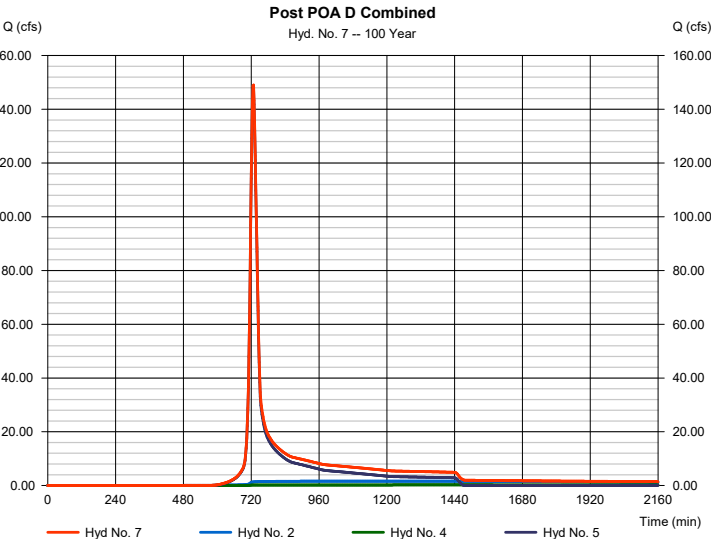
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Wednesday, 07 / 1 / 2026

Hyd. No. 7

Post POA D Combined

Hydrograph type	=	Combine	Peak discharge	=	149.06 cfs
Storm frequency	=	100 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	822,533 cuft
Inflow hyds.	=	2, 4, 5	Contrib. drain. area	=	52.020 ac



Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	44.5787	10.1000	0.8865	-----
2	50.7169	10.0000	0.8698	-----
3	0.0000	0.0000	0.0000	-----
5	52.0794	9.3000	0.8217	-----
10	52.4929	8.7000	0.7884	-----
25	48.0803	7.2000	0.7277	-----
50	47.2198	6.5000	0.6954	-----
100	44.9538	5.6000	0.6576	-----

File name: Granville.idf

$$\text{Intensity} = B / (Tc + D)^E$$

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.02	3.12	2.56	2.18	1.90	1.69	1.52	1.39	1.28	1.18	1.10	1.03
2	4.81	3.75	3.09	2.63	2.30	2.05	1.85	1.69	1.55	1.44	1.34	1.26
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	5.85	4.57	3.79	3.25	2.85	2.55	2.31	2.12	1.96	1.82	1.70	1.60
10	6.67	5.22	4.33	3.72	3.28	2.94	2.67	2.45	2.27	2.12	1.98	1.87
25	7.79	6.07	5.04	4.35	3.84	3.46	3.16	2.91	2.70	2.53	2.38	2.25
50	8.64	6.72	5.59	4.84	4.29	3.87	3.54	3.27	3.05	2.86	2.69	2.55
100	9.52	7.38	6.15	5.33	4.74	4.29	3.93	3.65	3.40	3.20	3.02	2.87

Tc = time in minutes. Values may exceed 60.

\\8 Stone Canyon Capital Partners\02 Datacenter Dev Prospects\00 Development Sites\57 Granville\Calcs\Granville.pcp

[illegible]

General Information

Instructions General Volume Rate Quality

Project Name: **Granville DC** Application Type: **PAG-02 NOI**

County: **Mifflin** Municipality: **Granville Township**

Project Type: **Other** ☒ New Project ☐ Minor / Major Amendment

Area: **150.000** acres Total Earth Disturbance: **150.000** acres
(In Watershed)

Analysis: **1** at: **001**

Point of Analysis (POA) No.	Total Drainage Area (DA) (acres)	Project Site DA (acres)	Existing Imp., Project Site DA (acres)	Proposed Imp., Project Site DA (acres)	Receiving Waters	Ch. 93 Class	Structural SCM(s)
001	107.380	107.380	1.403	16.113	Discharge to Non-Surface Waters	CWF, MF	Yes
Undetained Areas							
Totals:	107.380	107.380	1.403	16.113			

Volume Management

Project: Granville DC

Instructions General **Volume** Rate Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): 2.83 inches Alternative 2-Year / 24-Hour Storm Even 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	Outside LOD	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Pervious as Meadow	41.656	B	☐	58	1.448	0.22	33,478
Pervious as Meadow	21.598	C	☐	71	0.817	0.66	52,106
Pervious as Meadow	31.530	D	☐	78	0.564	1.01	115,531
Woods (Good Condition)	11.197	D	☐	77	0.597	0.95	38,814
Impervious as Meadow	0.280	C	☐	71	0.817	0.66	676
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	1.122	N/A	☐	98	0.041	2.60	10,585

TOTAL (ACRES): 107.383

TOTAL (CF): 251,191

Post-Construction Conditions: No. Rows: 8

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	13.148	B	61	1.279	0.30	14,457
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	2.078	C	74	0.703	0.80	6,052
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	4.089	D	80	0.500	1.12	16,684

Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	16.113	N/A	98	0.041	2.60	152,017
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	6.120	C	71	0.817	0.66	14,765
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	22.830	D	78	0.564	1.01	83,653
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	1.550	B	58	1.448	0.22	1,246
Woods (Good Condition)	11.200	D	77	0.597	0.95	38,825

TOTAL (ACRES): 77.128

TOTAL (CF): 327,697

ET CHANGE IN VOLUME TO MANAGE (CF): 76,506

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:

1

POA No.	SCM No.	SCM Name	MRC?	Discharge	Incremental SCM DA (acres)	Total Vol. Routed to SCM (CF)	Off-Site Vol. Routed to SCM (CF)	Infiltration / Vegetated Area (SF)	Infil. Rate (in/hr)	Infil. Period (hrs)	Vegetated?	Media Depth (ft)	Stored Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
001	1	Infiltration Basin	-	Off-Site	11.780	104,902	0	102,700	0.25	72	Yes	2.0	104,902	104,902	0
001	2	Infiltration Basin	-	Off-Site	20.840	81,043	0	97,250	0.25	72	Yes	2.0	81,043	81,043	0

Totals: 185,945 0

INFILTRATION & ET CREDITS - PROJECT SITE (CF): 185,945

NET CHANGE IN VOLUME TO MANAGE (CF): 76,506

TOTAL CREDITS (CF): 185,945

Rate Control

Project: Granville DC

- Instructions
- General
- Volume
- Rate**
- Quality

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):	2.83	Alternative 2-Year 24-Hour Storm Event (in):	
NOAA 10-Year 24-Hour Storm Event (in):	4.09	Alternative 10-Year 24-Hour Storm Event (in):	
NOAA 50-Year 24-Hour Storm Event (in):	5.67	Alternative 50-Year 24-Hour Storm Event (in):	
NOAA 100-Year 24-Hour Storm Event (in):	6.48	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:	34.63	26.56	-8.07	Rate Control Satisfied
10-Year Storm:	93.59	56.51	-37.08	Rate Control Satisfied
50-Year Storm:	183.40	98.78	-84.62	Rate Control Satisfied
100-Year Storm:	233.28	121.60	-111.68	Rate Control Satisfied

Water Quality

Project: Granville DC

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	41.66	B	33,478	48.8	0.22	2.30	102.02	0.46	4.81
Pervious as Meadow	Grassland/Herbaceous	21.60	C	52,106	48.8	0.22	2.30	158.78	0.72	7.48
Pervious as Meadow	Grassland/Herbaceous	31.53	D	115,531	48.8	0.22	2.30	352.05	1.59	16.59
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	11.20	D	38,814	45.0	0.13	1.05	109.06	0.32	2.54
Impervious as Meadow	Grassland/Herbaceous	0.28	C	676	48.8	0.22	2.30	2.06	0.01	0.10
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	1.12	N/A	10,585	65.0	0.29	2.05	42.96	0.19	1.36

TOTAL (ACRES): 107.38

TOTALS: 766.93 3.28 32.88

Post-Construction Pollutant Loads (without SCMs):

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

Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	13.15	B	14,457	78.0	0.25	1.25	70.41	0.23	1.13
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	2.08	C	6,052	78.0	0.25	1.25	29.47	0.09	0.47
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	4.09	D	16,684	78.0	0.25	1.25	81.26	0.26	1.30
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	16.11	N/A	152,017	65.0	0.29	2.05	617.00	2.75	19.46
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	6.12	C	14,765	48.8	0.22	2.30	44.99	0.20	2.12
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	22.83	D	83,653	48.8	0.22	2.30	254.91	1.15	12.01
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	1.55	B	1,246	48.8	0.22	2.30	3.80	0.02	0.18
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	11.20	D	38,825	45.0	0.13	1.05	109.09	0.32	2.55

TOTAL (ACRES): 77.13

TOTALS: ##### 5.02 39.22

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS):

444.01	1.74	6.34
---------------	-------------	-------------

☒ **Characterize Undetained Areas (for Untreated Stormwater)**

No. Rows:

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)

Non-Structural SCM Water Quality Credits:

☐ Pervious Undetained Area Credit

☐ Other (attach calculations)

TSS	TP	TN

Description:

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
001	1	Infiltration Basin	-	11.78	104,902	104,902		0	10.00	0.24	0.96	0.00	0.00	0.00
001	2	Infiltration Basin	-	20.84	81,043	81,043		0	10.00	0.24	0.96	0.00	0.00	0.00

POLLUTANT LOADS FROM STRUCTURAL SCM (TREATED) OUTFLOWS (LBS):

POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):

NON-STRUCTURAL SCM WATER QUALITY CREDITS (LBS):

NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):

POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):

TSS	TP	TN
0.00	0.00	0.00
523.82	2.17	16.97
523.82	2.17	16.97
766.93	3.28	32.88

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.

Corey Johnson

Spreadsheet User Name

7/1/2026

Date

General Information

Instructions General Volume Rate Quality

Project Name: **Granville DC** Application Type: **PAG-02 NOI**

County: **Mifflin** Municipality: **Granville Township**

Project Type: **Other** ☒ New Project ☐ Minor / Major Amendment

Area: **150.000** acres Total Earth Disturbance: **150.000** acres
(In Watershed)

Analysis: **1** at: **001**

Point of Analysis (POA) No.	Total Drainage Area (DA) (acres)	Project Site DA (acres)	Existing Imp., Project Site DA (acres)	Proposed Imp., Project Site DA (acres)	Receiving Waters	Ch. 93 Class	Structural SCM(s)
001	76.810	76.810	0.443	37.515	Discharge to Non-Surface Waters	CWF, MF	Yes
Undetained Areas							
Totals:	76.810	76.810	0.443	37.515			

Volume Management

Project: Granville DC

Instructions General **Volume** Rate Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): 2.83 inches Alternative 2-Year / 24-Hour Storm Even 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	Outside LOD	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Pervious as Meadow	27.000	B	☐	58	1.448	0.22	21,699
Pervious as Meadow	7.800	C	☐	71	0.817	0.66	18,818
Pervious as Meadow	3.050	D	☐	78	0.564	1.01	11,176
Woods (Good Condition)	3.815	D	☐	77	0.597	0.95	13,225
Impervious as Meadow	0.089	C	☐	71	0.817	0.66	215
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.354	N/A	☐	98	0.041	2.60	3,340

TOTAL (ACRES): 42.108

TOTAL (CF): 68,472

Post-Construction Conditions: No. Rows: 8

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	16.547	B	61	1.279	0.30	18,195
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	3.399	C	74	0.703	0.80	9,899
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.484	D	80	0.500	1.12	1,975

Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	37.515	N/A	98	0.041	2.60	353,933
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	4.590	C	71	0.817	0.66	11,074
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	2.148	D	78	0.564	1.01	7,871
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	8.530	B	58	1.448	0.22	6,855
Woods (Good Condition)	3.594	D	77	0.597	0.95	12,459

TOTAL (ACRES): 76.807

TOTAL (CF): 422,259

ET CHANGE IN VOLUME TO MANAGE (CF): 353,787

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:

3

POA No.	SCM No.	SCM Name	MRC?	Discharge	Incremental SCM DA (acres)	Total Vol. Routed to SCM (CF)	Off-Site Vol. Routed to SCM (CF)	Infiltration / Vegetated Area (SF)	Infil. Rate (in/hr)	Infil. Period (hrs)	Vegetated?	Media Depth (ft)	Stored Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
001	3	Infiltration Basin	-	Off-Site	48.740	367,876	0	396,590	0.25	72	Yes	2.0	367,876	367,876	0
001	4	Infiltration Basin	-	Off-Site	7.370	54,382	0	52,850	0.25	72	Yes	2.0	54,382	54,382	0

Totals: 422,258 0

INFILTRATION & ET CREDITS - PROJECT SITE (CF): 422,258

NET CHANGE IN VOLUME TO MANAGE (CF): 353,787

TOTAL CREDITS (CF): 422,258

Rate Control

Project: Granville DC

Instructions General Volume **Rate** Quality

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):	2.83
NOAA 10-Year 24-Hour Storm Event (in):	4.09
NOAA 50-Year 24-Hour Storm Event (in):	5.67
NOAA 100-Year 24-Hour Storm Event (in):	6.48

Alternative 2-Year 24-Hour Storm Event (in):	
Alternative 10-Year 24-Hour Storm Event (in):	
Alternative 50-Year 24-Hour Storm Event (in):	
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.

<i>Peak Discharge Rates (cfs)</i>			
	Pre-Construction	Post-Construction	Net Change
2-Year Storm:	9.01	6.59	-2.42
10-Year Storm:	31.57	19.38	-12.19
50-Year Storm:	69.33	39.38	-29.95
100-Year Storm:	90.90	50.76	-40.14

Rate Control Satisfied

Rate Control Satisfied

Rate Control Satisfied

Rate Control Satisfied

Water Quality

Project: Granville DC

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	27.00	B	21,699	48.8	0.22	2.30	66.12	0.30	3.12
Pervious as Meadow	Grassland/Herbaceous	7.80	C	18,818	48.8	0.22	2.30	57.34	0.26	2.70
Pervious as Meadow	Grassland/Herbaceous	3.05	D	11,176	48.8	0.22	2.30	34.05	0.15	1.61
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	3.82	D	13,225	45.0	0.13	1.05	37.16	0.11	0.87
Impervious as Meadow	Grassland/Herbaceous	0.09	C	215	48.8	0.22	2.30	0.65	0.00	0.03
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	0.35	N/A	3,340	65.0	0.29	2.05	13.56	0.06	0.43

TOTAL (ACRES): 42.11

TOTALS: 208.89 0.88 8.75

Post-Construction Pollutant Loads (without SCMs):

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

Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	16.55	B	18,195	78.0	0.25	1.25	88.62	0.28	1.42
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	3.40	C	9,899	78.0	0.25	1.25	48.21	0.15	0.77
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	0.48	D	1,975	78.0	0.25	1.25	9.62	0.03	0.15
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	37.52	N/A	353,933	65.0	0.29	2.05	#####	6.41	45.31
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	4.59	C	11,074	48.8	0.22	2.30	33.74	0.15	1.59
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	2.15	D	7,871	48.8	0.22	2.30	23.98	0.11	1.13
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	8.53	B	6,855	48.8	0.22	2.30	20.89	0.09	0.98
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	3.59	D	12,459	45.0	0.13	1.05	35.01	0.10	0.82

TOTAL (ACRES): 76.81

TOTALS: ##### 7.33 52.18

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS):

#####	6.45	43.43
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☒ **Characterize Undetained Areas (for Untreated Stormwater)**

No. Rows:

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)

Non-Structural SCM Water Quality Credits:

☐ Pervious Undetained Area Credit

☐ Other (attach calculations)

TSS	TP	TN

Description:

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
001	3	Infiltration Basin	-	48.74	367,876	367,876		0	10.00	0.24	0.96	0.00	0.00	0.00
001	4	Infiltration Basin	-	7.37	54,382	54,382		0	10.00	0.24	0.96	0.00	0.00	0.00

POLLUTANT LOADS FROM STRUCTURAL SCM (TREATED) OUTFLOWS (LBS):

POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):

NON-STRUCTURAL SCM WATER QUALITY CREDITS (LBS):

NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):

POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):

TSS	TP	TN
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
208.89	0.88	8.75

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.

Corey Johnson

Spreadsheet User Name

7/1/2026

Date

General Information

Instructions General Volume Rate Quality

Project Name: **Granville DC** Application Type: **PAG-02 NOI**

County: **Mifflin** Municipality: **Granville Township**

Project Type: **Other** ☒ New Project ☐ Minor / Major Amendment

Area: **150.000** acres Total Earth Disturbance: **150.000** acres
(In Watershed)

Analysis: **1** at: **001**

Point of Analysis (POA) No.	Total Drainage Area (DA) (acres)	Project Site DA (acres)	Existing Imp., Project Site DA (acres)	Proposed Imp., Project Site DA (acres)	Receiving Waters	Ch. 93 Class	Structural SCM(s)
001	16.930	16.930	0.413	0.410	Discharge to Non-Surface Waters	CWF, MF	Yes
Undetained Areas							
Totals:	16.930	16.930	0.413	0.410			

Volume Management

Project: Granville DC

Instructions General **Volume** Rate Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): 2.83 inches Alternative 2-Year / 24-Hour Storm Even 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	Outside LOD	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Pervious as Meadow	11.225	B	☐	58	1.448	0.22	9,021
Pervious as Meadow	0.000	D	☐	78	0.564	1.01	0
Woods (Good Condition)	1.069	B	☐	55	1.636	0.15	590
Woods (Good Condition)	4.226	D	☐	77	0.597	0.95	14,649
Impervious as Meadow	0.080	C	☐	71	0.817	0.66	193
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.330	N/A	☐	98	0.041	2.60	3,113

TOTAL (ACRES): 16.930

TOTAL (CF): 27,567

Post-Construction Conditions: No. Rows: 4

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	6.885	B	58	1.448	0.22	5,533
Woods (Good Condition)	1.070	C	70	0.857	0.62	2,415
Woods (Good Condition)	4.226	D	77	0.597	0.95	14,649

Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.410	N/A	98	0.041	2.60	3,868
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TOTAL (ACRES): 12.591

TOTAL (CF): 26,466

ET CHANGE IN VOLUME TO MANAGE (CF): -1,100

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:

1

POA No.	SCM No.	SCM Name	MRC?	Discharge	Incremental SCM DA (acres)	Total Vol. Routed to SCM (CF)	Off-Site Vol. Routed to SCM (CF)	Infiltration / Vegetated Area (SF)	Infil. Rate (in/hr)	Infil. Period (hrs)	Vegetated?	Media Depth (ft)	Stored Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
	1		-												

Totals: 0 0

INFILTRATION & ET CREDITS - PROJECT SITE (CF): 0

NET CHANGE IN VOLUME TO MANAGE (CF): -1,100

TOTAL CREDITS (CF):

Rate Control

Project: Granville DC

Instructions General Volume **Rate** Quality

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):	2.83
NOAA 10-Year 24-Hour Storm Event (in):	4.09
NOAA 50-Year 24-Hour Storm Event (in):	5.67
NOAA 100-Year 24-Hour Storm Event (in):	6.48

Alternative 2-Year 24-Hour Storm Event (in):	
Alternative 10-Year 24-Hour Storm Event (in):	
Alternative 50-Year 24-Hour Storm Event (in):	
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.

	<i>Peak Discharge Rates (cfs)</i>			
	Pre-Construction	Post-Construction	Net Change	
2-Year Storm:	3.90	3.09	-0.81	<i>Rate Control Satisfied</i>
10-Year Storm:	13.66	10.18	-3.48	<i>Rate Control Satisfied</i>
50-Year Storm:	29.84	21.73	-8.11	<i>Rate Control Satisfied</i>
100-Year Storm:	39.07	28.29	-10.78	<i>Rate Control Satisfied</i>

Water Quality

Project: Granville DC

[PRINT](#)

Instructions

General

Volume

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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	11.23	B	9,021	48.8	0.22	2.30	27.49	0.12	1.30
Pervious as Meadow	Grassland/Herbaceous	0.00	D	0	48.8	0.22	2.30	0.00	0.00	0.00
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	1.07	B	590	45.0	0.13	1.05	1.66	0.00	0.04
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	4.23	D	14,649	45.0	0.13	1.05	41.16	0.12	0.96
Impervious as Meadow	Grassland/Herbaceous	0.08	C	193	48.8	0.22	2.30	0.59	0.00	0.03
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	0.33	N/A	3,113	65.0	0.29	2.05	12.64	0.06	0.40
TOTAL (ACRES):		16.93			TOTALS:			83.53	0.31	2.72

Post-Construction Pollutant Loads (without SCMs):

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	6.89	B	5,533	48.8	0.22	2.30	16.86	0.08	0.79
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	1.07	C	2,415	45.0	0.13	1.05	6.79	0.02	0.16
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	4.23	D	14,649	45.0	0.13	1.05	41.16	0.12	0.96
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	0.41	N/A	3,868	65.0	0.29	2.05	15.70	0.07	0.50
TOTAL (ACRES):		12.59	TOTALS:		80.51	0.28	2.41			

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS):

0.00	0.00	0.00
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☒
 Characterize Undetained Areas (for Untreated Stormwater)
 No. Rows:

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)

Non-Structural SCM Water Quality Credits:

- ☐ Pervious Undetained Area Credit
- ☐ Other (attach calculations)

TSS	TP	TN

Description:

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

	1		-											
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POLLUTANT LOADS FROM STRUCTURAL SCM (TREATED) OUTFLOWS (LBS):

POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):

NON-STRUCTURAL SCM WATER QUALITY CREDITS (LBS):

NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):

POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):

TSS	TP	TN
0.00	0.00	0.00
80.51	0.28	2.41
80.51	0.28	2.41
83.53	0.31	2.72

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.

Corey Johnson

Spreadsheet User Name

7/1/2026

Date

General Information

Instructions General Volume Rate Quality

Project Name: **Granville DC** Application Type: **PAG-02 NOI**

County: **Mifflin** Municipality: **Granville Township**

Project Type: **Other** ☒ New Project ☐ Minor / Major Amendment

Area: **85.000** acres Total Earth Disturbance: **85.000** acres
(In Watershed)

Analysis: **1** at: **001**

Point of Analysis (POA) No.	Total Drainage Area (DA) (acres)	Project Site DA (acres)	Existing Imp., Project Site DA (acres)	Proposed Imp., Project Site DA (acres)	Receiving Waters	Ch. 93 Class	Structural SCM(s)
001	75.200	75.200	0.556	14.650	Discharge to Non-Surface Waters	CWF, MF	Yes
Undetained Areas							
Totals:	75.200	75.200	0.556	14.650			

Volume Management

Project: Granville DC

Instructions General **Volume** Rate Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): 2.83 inches Alternative 2-Year / 24-Hour Storm Even 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	Outside LOD	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Pervious as Meadow	48.930	B	☐	58	1.448	0.22	39,324
Pervious as Meadow	6.506	D	☐	78	0.564	1.01	23,839
Woods (Good Condition)	0.960	B	☐	55	1.636	0.15	530
Woods (Good Condition)	9.009	D	☐	77	0.597	0.95	31,230
Impervious as Meadow	0.111	B	☐	58	1.448	0.22	89
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.445	N/A	☐	98	0.041	2.60	4,198

TOTAL (ACRES): 65.961

TOTAL (CF): 99,210

Post-Construction Conditions: No. Rows: 7

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	14.938	B	61	1.279	0.30	16,425
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.520	D	80	0.500	1.12	2,122
Woods (Good Condition)	2.280	B	55	1.636	0.15	1,258

Woods (Good Condition)	8.520	D	77	0.597	0.95	29,534
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	28.810	B	58	1.448	0.22	23,154
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	5.480	D	78	0.564	1.01	20,080
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	14.647	B	98	0.041	2.60	138,186
TOTAL (ACRES):		75.195		TOTAL (CF):		230,759

ET CHANGE IN VOLUME TO MANAGE (CF):

131,549

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:

5

POA No.	SCM No.	SCM Name	MRC?	Discharge	Incremental SCM DA (acres)	Total Vol. Routed to SCM (CF)	Off-Site Vol. Routed to SCM (CF)	Infiltration / Vegetated Area (SF)	Infil. Rate (in/hr)	Infil. Period (hrs)	Vegetated?	Media Depth (ft)	Stored Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
001	5	Infiltration Basin	-	Off-Site	16.980	85,160	0	78,410	0.25	72	Yes	2.0	85,160	85,160	0
001	6	Infiltration Basin	-	Off-Site	6.200	49,450	0	30,300	0.25	72	Yes	2.0	49,450	40,905	8,545
Totals:													126,065	8,545	

INFILTRATION & ET CREDITS - PROJECT SITE (CF):

134,610

NET CHANGE IN VOLUME TO MANAGE (CF):

131,549

TOTAL CREDITS (CF):

134,610

Rate Control

Project: Granville DC

- Instructions
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Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):	2.83
NOAA 10-Year 24-Hour Storm Event (in):	4.09
NOAA 50-Year 24-Hour Storm Event (in):	5.67
NOAA 100-Year 24-Hour Storm Event (in):	6.48

Alternative 2-Year 24-Hour Storm Event (in):	
Alternative 10-Year 24-Hour Storm Event (in):	
Alternative 50-Year 24-Hour Storm Event (in):	
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.

<i>Peak Discharge Rates (cfs)</i>			
	Pre-Construction	Post-Construction	Net Change
2-Year Storm:	54.17	16.82	-37.35
10-Year Storm:	143.75	54.59	-89.16
50-Year Storm:	277.52	114.99	-162.53
100-Year Storm:	352.30	149.06	-203.24

Rate Control Satisfied

Rate Control Satisfied

Rate Control Satisfied

Rate Control Satisfied

Water Quality

Project: Granville DC

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	48.93	B	39,324	48.8	0.22	2.30	119.83	0.54	5.65
Pervious as Meadow	Grassland/Herbaceous	6.51	D	23,839	48.8	0.22	2.30	72.64	0.33	3.42
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	0.96	B	530	45.0	0.13	1.05	1.49	0.00	0.03
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	9.01	D	31,230	45.0	0.13	1.05	87.75	0.25	2.05
Impervious as Meadow	Grassland/Herbaceous	0.11	B	89	48.8	0.22	2.30	0.27	0.00	0.01
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	0.45	N/A	4,198	65.0	0.29	2.05	17.04	0.08	0.54

TOTAL (ACRES): 65.96

TOTALS: 299.02 1.20 11.70

Post-Construction Pollutant Loads (without SCMs):

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

Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	14.94	B	16,425	78.0	0.25	1.25	80.00	0.26	1.28
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	0.52	D	2,122	78.0	0.25	1.25	10.33	0.03	0.17
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	2.28	B	1,258	45.0	0.13	1.05	3.53	0.01	0.08
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	8.52	D	29,534	45.0	0.13	1.05	82.99	0.24	1.94
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	28.81	B	23,154	48.8	0.22	2.30	70.56	0.32	3.33
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	5.48	D	20,080	48.8	0.22	2.30	61.19	0.28	2.88
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	14.65	B	138,186	65.0	0.29	2.05	560.87	2.50	17.69

TOTAL (ACRES): 75.20

TOTALS: 869.47 3.64 27.36

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS): **570.44 2.43 15.66**

☒ **Characterize Undetained Areas (for Untreated Stormwater)**

No. Rows: **7**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	4.710	B	61	1.279	0.30	5,179
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.520	D	80	0.500	1.12	2,122
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	28.810	B	58	1.448	0.22	23,154
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	5.480	D	78	0.564	1.01	20,080

Woods (Good Condition)	2.280	B	55	1.636	0.15	1,258
Woods (Good Condition)	8.520	D	77	0.597	0.95	29,534
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	1.695	D	98	0.041	2.60	15,991

52.015

Non-Structural SCM Water Quality Credits:

☒ Pervious Undetained Area Credit

TSS	TP	TN
61.95	0.22	1.75

☐ Other (attach calculations)

TSS	TP	TN

Description:

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
001	5	Infiltration Basin	-	16.98	85,160	85,160		0	10.00	0.24	0.96	0.00	0.00	0.00
001	6	Infiltration Basin	-	6.20	49,450	49,450		0	10.00	0.24	0.96	0.00	0.00	0.00

POLLUTANT LOADS FROM STRUCTURAL SCM (TREATED) OUTFLOWS (LBS):

POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):

NON-STRUCTURAL SCM WATER QUALITY CREDITS (LBS):

NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):

POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):

TSS	TP	TN
0.00	0.00	0.00
318.73	1.25	10.84
61.95	0.22	1.75
256.77	1.03	9.09
299.02	1.20	11.70

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.

Corey Johnson

Spreadsheet User Name

7/1/2026

Date

General Information

Instructions General Volume Rate Quality

Project Name: **Granville DC** Application Type: **PAG-02 NOI**

County: **Mifflin** Municipality: **Granville Township**

Project Type: **Other** ☒ New Project ☐ Minor / Major Amendment

Area: **150.000** acres Total Earth Disturbance: **150.000** acres
(In Watershed)

Analysis: **1** at: **001**

Point of Analysis (POA) No.	Total Drainage Area (DA) (acres)	Project Site DA (acres)	Existing Imp., Project Site DA (acres)	Proposed Imp., Project Site DA (acres)	Receiving Waters	Ch. 93 Class	Structural SCM(s)
001	18.150	18.150	0.000	0.000	Discharge to Non-Surface Waters	CWF, MF	Yes
Undetained Areas							
Totals:	18.150	18.150	0.000	0.000			

Volume Management

Project: Granville DC

Instructions

General

Volume

Rate

Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): 2.83 inches

Alternative 2-Year / 24-Hour Storm Even inches

Alternative Source:

Pre-Construction Conditions: No. Rows: 2 ☐ Exempt from Meadow in Good Condition ☒ Automatically Calculate CN, Ia, Runoff and Volume

Land Cover	Area (acres)	Soil Group	Outside LOD	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Pervious as Meadow	16.370	B	☐	58	1.448	0.22	13,156
Woods (Good Condition)	1.778	B	☐	55	1.636	0.15	981
TOTAL (ACRES):		18.148		TOTAL (CF):		14,137	

Post-Construction Conditions:

No. Rows: 3

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	2.420	B	61	1.279	0.30	2,661
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	4.550	B	58	1.448	0.22	3,657
Woods (Good Condition)	1.720	B	55	1.636	0.15	949
TOTAL (ACRES):		8.690		TOTAL (CF):		7,267

ET CHANGE IN VOLUME TO MANAGE (CF): -6,871

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:

1

POA No.	SCM No.	SCM Name	MRC?	Discharge	Incremental SCM DA (acres)	Total Vol. Routed to SCM (CF)	Off-Site Vol. Routed to SCM (CF)	Infiltration / Vegetated Area (SF)	Infil. Rate (in/hr)	Infil. Period (hrs)	Vegetated?	Media Depth (ft)	Stored Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
	1		-												

Totals: 54,3820

INFILTRATION & ET CREDITS - PROJECT SITE (CF):

54,382

NET CHANGE IN VOLUME TO MANAGE (CF):

-6,871

TOTAL CREDITS (CF):

54,382

Rate Control

Project: Granville DC

Instructions General Volume **Rate** Quality

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):	2.83
NOAA 10-Year 24-Hour Storm Event (in):	4.09
NOAA 50-Year 24-Hour Storm Event (in):	5.67
NOAA 100-Year 24-Hour Storm Event (in):	6.48

Alternative 2-Year 24-Hour Storm Event (in):	
Alternative 10-Year 24-Hour Storm Event (in):	
Alternative 50-Year 24-Hour Storm Event (in):	
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.

<i>Peak Discharge Rates (cfs)</i>			
	Pre-Construction	Post-Construction	Net Change
2-Year Storm:	1.38	0.93	-0.45
10-Year Storm:	8.49	6.09	-2.40
50-Year Storm:	22.96	15.86	-7.10
100-Year Storm:	31.72	21.61	-10.11

Rate Control Satisfied

Rate Control Satisfied

Rate Control Satisfied

Rate Control Satisfied

Water Quality

Project: Granville DC

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	16.37	B	13,156	48.8	0.22	2.30	40.09	0.18	1.89
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	1.78	B	981	45.0	0.13	1.05	2.76	0.01	0.06
TOTAL (ACRES):		18.15			TOTALS:			42.85	0.19	1.95

Post-Construction Pollutant Loads (without SCMs):

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
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	2.42	B	2,661	78.0	0.25	1.25	12.96	0.04	0.21
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	4.55	B	3,657	48.8	0.22	2.30	11.14	0.05	0.53
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	1.72	B	949	45.0	0.13	1.05	2.67	0.01	0.06
TOTAL (ACRES):		8.69			TOTALS:			26.77	0.10	0.80

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS): 0.00 0.00 0.00

☒ Characterize Undetained Areas (for Untreated Stormwater) No. Rows:

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)

Non-Structural SCM Water Quality Credits:

☐ Pervious Undetained Area Credit

☐ 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
	1		-											

POLLUTANT LOADS FROM STRUCTURAL SCM (TREATED) OUTFLOWS (LBS):

POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):

NON-STRUCTURAL SCM WATER QUALITY CREDITS (LBS):

NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):

POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):

TSS	TP	TN
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
42.85	0.19	1.95

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.

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